

MASTER'S THESIS

M.Sc. Environmental Engineering

Success Factors of Integrated Multimodal Mobility Services

Analyses of Existing Examples and Recommendations for their
Implementation

Author

Lisa Luginger

Matriculation Number: 03610039



Fachgebiet für Siedlungsstruktur und Verkehrsplanung
Prof. Dr.-Ing. Gebhard Wulfhorst



Technische Universität München

MASTER'S THESIS

M.Sc. Environmental Engineering

Success Factors of Integrated Multimodal Mobility Services

Analyses of Existing Examples and Recommendations
for their Implementation

Author:

Lisa Luginger

Matriculation Number: 03610039

Supervisor:

M.Sc. Montserrat Miramontes

Munich, March, 2016

Abstract

Recently, the implementation of multimodal mobility stations has become more and more widespread all over Germany. Combined with virtual platforms and an integrated tariff they are part of a multimodal mobility service. So far, only few studies concerning multimodal mobility stations and recommendations for their implementation are available. Thus this master's thesis aims to identify success factors of multimodal mobility offers and hence deliver recommendations for their implementation. A comprehensive literature review on four German case studies – *mobil.punkte* in Bremen, *switchh* in Hamburg, *EinfachMobil* in Offenburg and *Leipzig mobil* in Leipzig – is performed. In this context, eight tiers of integration are identified: physical, marketing, information, registration, trip planning, booking, access and billing integration. Based on these findings a classification scheme is developed in order to examine the respective integration strategy of the four depicted case studies. According to these results as well as expert interviews, success factors for the implementation of multimodal mobility services are identified. The key success factors concerning the results of the classification scheme are the development of an integrated marketing strategy, the supply of integrated information and the provision of an integrated access medium. With regard to the statements of the expert interviews, an agile project management, the timely involvement of all actors as well as the willingness to take a certain level of risk are mentioned to positively contribute towards a successful implementation of projects like these. Recommendations are delivered for the determination of station location and configuration as well as for integration strategies.

Table of Contents

1	Introduction.....	1
2	New Mobility Concepts - Theoretical Principles	3
	2.1 Definition.....	3
	2.2 Components of New Mobility Concepts - Shared Mobility	4
	2.2.1 Car-sharing.....	5
	2.2.2 Bike-sharing	7
	2.2.3 Further Complementary Offers: Carpooling, Taxi and Rideselling	8
	2.2.4 Impacts Evaluation of Sharing Offers Presented by the Example of Car-sharing	9
	2.3 Combined Mobility.....	12
	2.3.1 Multimodality and Intermodality	12
	2.3.2 Integrated Multimodal Mobility Platforms	14
	2.3.3 Multimodal Mobility Stations	16
3	Case Studies	19
	3.1 Selection of Case Studies	19
	3.2 Mobil.punkte – Bremen	20
	3.2.1 Bremen and its Transport System	20
	3.2.2 Main Characteristics	21
	3.2.3 Implementation Process, Development and Goals	22
	3.2.4 System Design	23
	3.2.5 Impacts of mobil.punkte.....	26
	3.3 Switchh – Hamburg.....	27
	3.3.1 Hamburg and its Transport System	27
	3.3.2 Main Characteristics	28
	3.3.3 Implementation Process, Development and Goals	29
	3.3.4 System Design	31
	3.3.5 Switchh Relaunch – Short Outlook on switch 2.0.....	35
	3.4 EinfachMobil - Offenburg.....	37
	3.4.1 Offenburg and its Transportation System	37
	3.4.2 Main Characteristics	38
	3.4.3 Implementation Process, Development and Goals	39
	3.4.4 System Design	40
	3.5 Leipzig mobil - Leipzig.....	45
	3.5.1 Leipzig and its Transportation System	45
	3.5.2 Main Characteristics	46

3.5.3	Implementation Process, Development and Goals	47
3.5.4	System Design	48
3.6	Identification of Different Tiers of Integration	51
4	Methodology	55
4.1	Development of the Classification Scheme	55
4.2	Expert Interviews.....	58
5	Analyses and Results	59
5.1	Application of the Classification Scheme	59
5.1.1	Application Instructions.....	59
5.1.2	IntegrationStrategy of mobil.punkte	62
5.1.3	Integration Strategy of switchh 1.0.....	66
5.1.4	Integration Strategy of switchh 2.0.....	72
5.1.5	Integration Strategy of EinfachMobil	78
5.1.6	Integration Strategy of Leipzig mobil.....	82
5.1.7	Summary of the Results	88
5.2	Identification of Success Factors	90
5.2.1	Evaluation Results	90
5.2.2	Expert Interviews	91
6	Derivation of Recommendations for the Implementation of Multimodal Mobility Stations	93
6.1	Identification, Activation and Involvement of Actors and Partners.....	93
6.2	Number of Mobility Stations and Spatial Expansion.....	93
6.3	Location Determination	94
6.4	Station Configuration.....	95
6.5	Mobility Stations as Part of the Integration Strategy of Multimodal Mobility Services	97
6.5.1	Integrated Marketing.....	97
6.5.2	Integrated Information.....	99
6.5.3	Integrated Registration	99
6.5.4	Integrated Trip Planning	100
6.5.5	Integrated Booking	100
6.5.6	Integrated Access.....	100
6.5.7	Integrated Billing.....	101
7	Conclusion.....	103
	List of References.....	107
	List of Abbreviations.....	117

List of Figures	119
List of Tables	121
Appendix.....	123
Appendix A	123
Appendix B	124
Appendix C	128
Appendix D	132
Appendix E	136
Appendix F	141
Declaration Concerning the Master's Thesis	143

1 Introduction

Continuously increasing traffic volume, the finiteness of fossil fuels, challenges posed by climate change and the shift in society's values require a rethinking of urban mobility strategies (Cranzler & Knie, 2009). To be able to satisfy the future demand for mobility in a more sustainable way, not only public transport has to be strengthened, but also individual and flexible mobility must be ensured.

In this context the promotion of sustainable urban mobility concepts plays a key role for the quality of life and competitiveness of cities. In order to achieve more sustainable transport, attractive alternatives to the use of privately owned cars have to be offered (UITP, 2011). Yet several new mobility offers, such as car-sharing or bike-sharing, are in existence. They have already proved to be successful in terms of contributing to more sustainable mobility behaviour.

In this context the implementation of multimodal mobility stations is a relatively new concept. These stations can be described as transport nodes that combine different forms of mobility, spatially concentrated and virtually integrated via information platforms and combined tickets. Mobility stations are expected to promote multimodal travel behaviour and thus lead to more environmental friendly and efficient mobility.

The implementation of multimodal mobility stations has recently become more and more widespread all over Germany. Bremen even started with the implementation of *mobil.punkte* 13 years ago. These mobility points link the local car-sharing provider *cambio* with public transport by building car-sharing stations in public space near public transport stops.

In recent years some municipalities and transportation companies started the implementation of similar projects with the scope exceeding bimodal connections, such as Park and Ride or Bike and Ride and offer complementary mobility services as well: Hamburg, Leipzig, Offenburg and Würzburg are just a few other examples indicating that the implementation of mobility stations, at least in Germany, plays an increasingly important role with regard to the promotion of sustainable urban mobility.

Up to now, only few studies concerning multimodal mobility stations and recommendations for their implementation are available. Thus, within the scope of this master's thesis, success factors of multimodal mobility offers shall be identified. Amongst the comprehensive analysis of different case studies plus their examination concerning integration strategies, expert interviews shall provide the basis for the identification of success factors of multimodal mobility services. Hence recommendations for their implementations shall be derived.

The current work is divided into one introductory part, followed by three main parts and a conclusion.

The introductory chapter (chapter 2) presents general developments in the scope of new mobility concepts and its (expected) effects on sustainable urban mobility. The main

characteristics of various sharing concepts as well as different forms of mobility behavior are explored.

Within the third chapter four examples of mobility stations and the corresponding integrated multimodal services already in operation are identified and analysed by means of literature review. The following aspects are to be investigated on:

- Main characteristics
- Implementation process, development and goals
- System design
- Impacts on mobility behaviour based on evaluation results

Chapter four describes the methods applied for the analysis of the four depicted case studies. On the one hand a classification scheme shall be developed to examine the respective integration strategy of the different case studies. On the other hand expert interviews will be carried out for further investigations on the depicted examples as well as in order to identify success factors of multimodal mobility services.

In chapter five the developed classification scheme is applied on each example. Based on the results of this classification scheme and the results of the expert interviews, success factors for the implementation of multimodal mobility stations are identified.

Within chapter six recommendations for the implementation of multimodal mobility stations shall be derived based on the results of chapter 3 and 5 with regard to, inter alia, a location concept, station configuration and an integration strategy as part of a multimodal mobility service.

To conclude the findings of the case study's analyses, the developed classification scheme and its application as well as the given recommendations are discussed. Furthermore a brief outlook concerning further strategies will be given.

2 New Mobility Concepts - Theoretical Principles

2.1 Definition

So far, a universal definition of the term *new mobility concepts* does not exist. For this reason, initially the term *mobility* is defined and it is differentiated between classic mobility offers and *new mobility offers*.

Speaking of mobility, it is important to distinguish between potential and realized mobility. Potential Mobility generally describes the capability of any person's physical movement, whereas realized mobility describes the satisfaction of mobility needs through actual spatial movement (Becker, Gerike & Völlings, 1999). Thus, mobility only describes the need of spatial change without any statement about the modal choice.

Among private means of transport, mobility services serve for the realization of mobility needs. According to Böhler (2010) mobility offers present location-based services that provide for people's mobility, offered by local public transportation companies, companies that operate on behalf of public authorities, private bus companies, taxi companies or car rental companies. New mobility offers present flexible services without fixed routes and timetables (Wilke, 2002). In this context it is often spoken of individual means of transport with public access, which include car-sharing and bike-sharing systems – both in combination with electric drive – as well as other forms of sharing like car-pooling or “modern” scooter sharing (cf. UITP, 2011; Sommer & Much, 2014). **Figure 2-1** shows a classification of classic (grey background) and new mobility offers (green background) according to Krismanski (2015).

With regard to the past, it is noticeable that mobility concepts often were closely related to the upcoming of new modes of transport, such as railway or automobile (Schade & Kühn, 2012). Accordingly, new mobility concepts can arise through new forms of vehicles, new forms of vehicle usage and its combinations.

New drive technologies such as electric mobility and information and communication technologies (ICT) for booking, payment, location information or routing, such as modern location detection and smartphones, positively contribute to further developments of new mobility concepts, which will be discussed more detailed in the following sections.

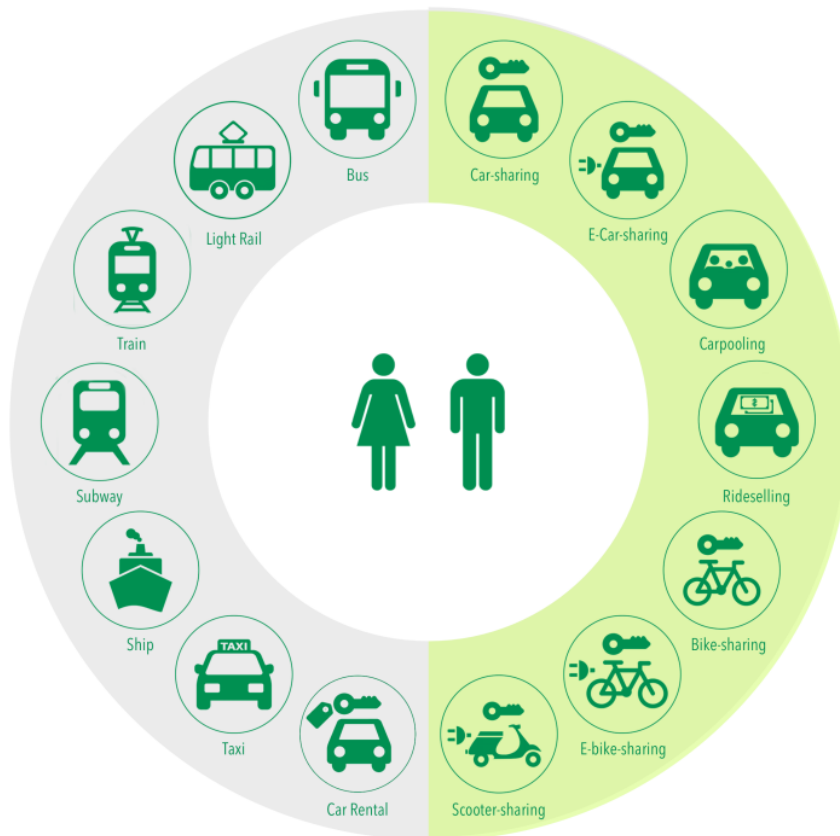


Figure 2-1: Mobility offers, differentiated by classic and new offers; source: own graphic with added services according to Krismanski (2015); icons retrieved from <http://www.flaticon.com> (n.y.)

2.2 Components of New Mobility Concepts - Shared Mobility

Recent trends tend towards using instead of owning. In this context the term *Sharing economy* is used and defined as the collaborative consumption built on the activities of sharing, exchanging and rental of human or physical resources (Gabler Wirtschaftslexikon, n.y.).

Due to the development of the internet, the trend of sharing have become more and more popular over the last few years and new business models have been generated. Platforms for home exchange on holidays (e.g. *airbnb*), dress exchange (e.g. *Kleiderkreisel*) or jewellery sharing (e.g. *HUU*) are just a few examples for collective consumption. (ibid., n.y.)

This trend also can be observed in transportation (e.g. car-sharing, bike-sharing, ridesharing etc.). Sharing offers in transportation can be summarized as *Shared Mobility* (Freese & Schönberg, 2014) and will be subsequently presented.

2.2.1 Car-sharing

According to the Bundesverband CarSharing bcs' (n.y.) official definition, car-sharing is the organised, joint use of vehicles.

Car-sharing is membership based, so users only have to register and sign a general agreement once and then have the possibility to reserve and use the vehicles autonomously 24 hours a day and 7 days a week. The vehicles are distributed throughout the city at decentral, unattended locations, often close to living areas. (bcs, n.y.)

The usage of car-sharing is charged on a time and/ or kilometre based tariff with so called "pay-as-you-drive" rates that include fuels and maintenance. Insurance not always is included and can be contracted separately on a voluntary basis. A monthly bill is sent to each customer where only the exact usage is charged. (ibid., n.y.)

In the last few years the number of car-sharing users in Germany grew exponentially: from 18.000 users at the beginning of 1997 to 1.26 Million users at the beginning of 2016. (bcs, 2016a)

Until recently there existed two different versions of professional provided car-sharing in Germany which are offered by more than 140 providers in more than 500 cities: station based and free floating car-sharing (cf. **Figure 2-2**). (bcs, n.y.)

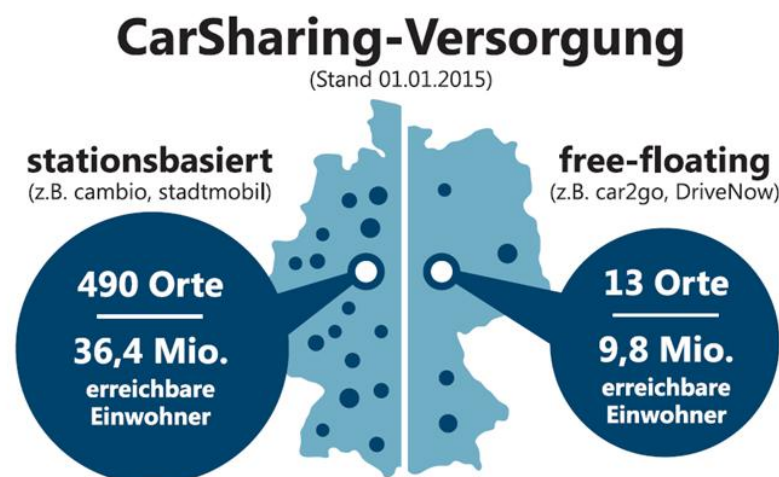


Figure 2-2: Car-sharing availability in Germany differentiated by station based and free floating systems; source: bcs (2015a)

According to the bcs' annual balance of car-sharing 2015, a new trend of car-sharing systems exists, which combine station based and free floating car-sharing from a single provider. This offer is currently provided in four German cities and within the Rhein-Main-Region (as per February 2016). (bcs, 2016b)

Since 2009 electric vehicles are coming into use in car-sharing fleets. More and more providers integrate electric vehicles into their offer. (Puzalowski, 2009)

Station based car-sharing

Classic, station based car-sharing is available in Germany since 1988 (Loose, 2014). The vehicles are distributed to fixed stations, which are usually located on private ground. Classic car-sharing hence is also known as station-based car-sharing (carsharing-news.de, 2016a). Membership usually requires the payment of a small monthly fee and the deposit of a financial guarantee. Members have access to a fleet of various vehicle classes from small cars up to transporters. (ibid., 2016a)

In order to use a car it needs to be booked in advance under the specification of the expected returning time. The cars have to be returned to the same station where they have been picked up and are charged with relatively inexpensive hourly rates and an additional mileage allowance. (ibid., 2016a)

Flinkster (provided by the DB Rent GmbH), *cambio*, *teilAuto* and *Stadtmobil* present some well-known examples of car-sharing providers in Germany. (carsharing-news.de, 2016b)

Free floating car-sharing (FFC)

A newer, more recent form of car-sharing is the free floating car-sharing, also known as flexible car-sharing. (carsharing-news.de, 2016a) This new offer, first introduced in Ulm in 2008, distributes the vehicles in a predefined home area. Within this home area vehicles can be parked at any public space in accordance to the city's parking rules. Ideally, the vehicles are distributed automatically by the users. (car2go Deutschland GmbH)

It is not necessary to reserve a car in advance however, if desired there is the possibility to reserve one for a short period of time. Free floating car-sharing have time-based tariffs with a certain number of kilometres included. In comparison to classic car-sharing offers, free-floating is more flexible, however relatively more expensive in case of longer trips (carsharing-news.de, 2016a).

Especially automobile manufacturers integrated this form of car-sharing offers into their businesses and provide free floating services. The two largest providers in Germany are *DriveNow* (provided by BMW and Sixt) and *car2go* (provided by Daimler and Europcar). Further providers are Multicity (Citroen) and Quicar (VW, from April 2016 continued by Greenwheels). (carsharing-news.de, 2016b)

Combined Car-Sharing (station based and free floating)

Since recently, some German providers not only offer station based car-sharing but also integrate free floating fleets into their service. In most cases a citywide station based car-sharing offer is complemented by small flexible fleets. The service areas for the free floating for the free floating fleets is defined in a way that both systems optimally complement each other. Thus combined systems offer both: Users on the one hand have the possibility to book vehicles in advance in case of foreseeable occasions such as excursions or shopping trips.

On the other hand users are able to do spontaneous trips without having a car reserved. (bcs, 2015b)

Both variants are accounted with the same tariff on a time kilometre basis. By contrast to pure free floating systems the tariff for the use of the free floating fleet in a combined system is much cheaper. (ibid., 2015b)

Pioneer of this combined concept is *stadtmobil* in Hannover, which integrated 30 flexible car-sharing vehicles, called *stadtfliitzer*, into their station based offer in 2012. Similar projects are *JoeCar* of *stadtmobil* in Hannover, *flow>k* of *stadtteilauto* in Osnabrück or *CityFlitzer* of *book-n-drive* in the Rhein-Main-Gebiet. (ibid., 2015b)

Private Car-Sharing

Private car-sharing, also known as peer-to peer car-sharing, is another variation of car-sharing and works similar to professional car-sharing. In this case vehicle owners temporarily convert their personal car into a shared car and rent them to other people in their surroundings (Hampshire & Gaites, 2011).

Usually internet platforms provide for a framework where car owners can offer their vehicles for rent and renters have access to affordable cars. These platforms offer additional insurances for the time period of renting and charge for commission. Billing is according to the vehicle owner's conditions and also happens via the platform. By contrast to professional provided car-sharing, the vehicle is still handed over personally. (carsharing-news.de, 2016a) *Drivy* and *Tamyca* are two examples for platforms which offer the arrangement of private car-sharing. (carsharing-news.de, 2016c)

2.2.2 Bike-sharing

In recent years, bike-sharing systems (BSS) became a popular service worldwide in order to provide for a reasonable mode to reach the final destination. It is described as a "short term bicycle rental available at a network of unattended locations" (DeMaio, 2007) and characterized by "self-service, short-term [and] one-way-capable" (Büttner et al., 2011). In contrast to classic bike rental, the bikes hence are available 24/7 and can be borrowed and returned autonomously. After an initial registration various users share a fleet of bicycles located in public space. (Monheim et al., 2012)

There exist station based schemes, in this case bikes have to be returned to any station and flexible schemes, where bicycles can be returned anywhere in a defined city area. Well-known bike-sharing providers in Germany are *nextbike* and *Call a Bike* (DB Rent GmbH). (Monheim et al., 2012) In the meantime, systems that offer a combination of both are available as well, e.g. *MVG Rad* in Munich offers a hybrid system (MVG, n.y.).

Bike-sharing systems are designed for usage at short notice and for a short time. Most systems account for time (per 30 minutes or per hour) and some systems even offer the first 30 minutes for free. This shall ensure a high turnover rate and contribute to establish the use

sharing bikes in combination with the use of public transport for the first and last mile. Simultaneously conflicts with traditional bike rental shall be avoided. (Monheim et al., 2012)

BBS offer many positive effects. One undeniable positive effect of BSSs is, that they provide an emission-free mode of transport (Shaheen, Guzman, & Zhang, 2010). Furthermore they extend the catchment areas of public transport stations beyond walking distances and make the use of public transport more attractive (UITP, 2011). From the user's point of view, BSS offer an attractive alternative to the use of private bike with regard to the absence of maintenance costs as well as concerns about theft.

Recently, many BBS expand their offers by integrating Pedal Electric Cycles (pedelecs) into their fleets. In contrast to other two-wheelers with electric motors, such as e-bikes or scooters, the electric power of pedelecs only assists human power instead of replacing it. As their speed is limited to 25 km/h, pedelecs do not require any licences, neither concerning plates nor driving. (Prediger, 2011)

2.2.3 Further Complementary Offers: Carpooling, Taxi and Rideselling

In the following further complementary offers, such as carpooling, taxi and rideselling are briefly presented.

Carpooling/ Ridesharing

Carpooling (also ridesharing) describes the share of rides of (unrelated) individuals in order to make their trip more efficient (Bonsall, 1981). According to Randelhoff (2014) ridesharing is defined as a carpool with private vehicles in order to realize a specific common way. Destination and time of the trip are defined by the driver and will also be realized if no further person goes with. Travel expenses usually are shared amongst all passengers without any commercial purpose. Carpooling either can be organized privately or online via (fee-based) matching service platforms, e.g. *mitfahrgelegenheit.de*. (Randelhoff, 2014)

It has direct impact on the environment, because less cars are driving and so it may lead to less congestion (UITP, 2011).

Taxi

Taxi is a vehicle for hire with a professional driver, which transports single passengers or small groups of passengers in return for a kilometre based payment (Bibliographisches Institut GmbH).

Modified taxi offers, such as demand responsive taxi or shared taxi, also exist. Depending on the system design, the taxis either take passengers on a virtual, semi-fixed service route or customers are picked-up/ dropped off at pre-defined meeting points. Usually these services provide for mobility at night or rural areas where demand is less or more irregular. (UITP, 2011)

Rideselling

Companies, such as *Uber* or *Lyft*, provide platforms that arrange one-time shared rides on very short notice (Amey, Attanucci & Mishalani, 2010). These companies claim for themselves that they are ridesharing companies. However, according to Randelhoff's previously mentioned definition of ridesharing (cf. *carpooling/ ridesharing*), this definition is inconsistent with the services of Uber or Lyft: the passenger defines destination and time. Randelhoff (2014) thus speaks of rideselling, which is understood as an offer of trips in private vehicles. Platforms mediate provider and demanders, for the mediation fees may be charged. In contrast to ridesharing, the trip will not happen without the demand. Payment may be set bilateral between driver and passenger or unilateral, either by the provider of the trip or through the provider of the platform. (Randelhoff, 2014)

Taxi as well as rideselling services are able to enlarge the public transport offer in time and space, especially at night or in areas, where public transport is not as efficient (UITP, 2011). Carpooling, as it is depending on the driver's destination and travel time does not have that high potential and thus is not able to really provide for individual requirements (ibid., 2011). In Brussels, the public transport operator STIB has an agreement with the Taxi operator Taxi Verts (ibid., 2011). This collaboration, called COLLECTO, enables STIB to offer an optimized and cost-efficient demand-responsive transport service during the night (Taxi Verts, n.y.).

2.2.4 Impacts Evaluation of Sharing Offers Presented by the Example of Car-sharing

Car-sharing services in general focus on reducing car-ownership and tend towards a more rationalised usage of motorized individual traffic. The pay-as-you-drive principal promotes a mobility behaviour that no longer is dominated by cars. Public transport (PT) as well as other sustainable means of transport (cycling, walking etc.) provide for daily mobility. (UITP, 2011)

Several studies investigate on the impacts of car-sharing on mobility behaviour. Especially studies on station-based car-sharing have been conducted, but even though free floating car-sharing and the implementation of electric mobility does not exist very long, there are some studies available.

In the following the results of three different studies are briefly presented:

- Results of the Münchner Verkehrs- und Tarifverbund (MVG) concerning the effects of station-based car-sharing on public transport usage
- Investigations on station-based and free-floating carsharing of the German research project 'Wirkungen von E-Car-Sharing Systemen auf die Mobilität und Umwelt in urbanen Räumen' (WiMobil).
- Findings of the civity Management Consultants concerning the effects of free-floating car-sharing

Due to a marketing cooperation between the MVV and Munich's station based car-sharing provider *Stattauto* since 1996, surveys to *Stattauto* members are regularly conducted to examine the effects of this cooperation. The first survey was carried out in 1996, followed by two advertising trackings in 2002 and 2011 with predominant same survey design. (Krietemyer, 2012)

The results of these three survey waves show a positive correlation between station-based car-sharing and public transport usage: the proportion of MVV-subscribers within the group of car-sharing users is in 2011 (45%) four times higher than in 1996 (12%), which is also noticeable in the user frequency of public transport. Car-sharing users are mainly intensive PT users, even though this proportion significantly decreased in 2011:

- In 1996, 57% of the car-sharing user (almost) daily used public transport after joining car-sharing (in comparison: 50% used public transport before (almost) daily).
- In 2002, 54% of the car-sharing user (almost) daily used public transport after joining car-sharing (in comparison: 52% used public transport before (almost) daily).
- In 2011, only 44% of the car-sharing users (almost) daily used public transport after joining car-sharing (in comparison: 56% used public transport before (almost) daily). (ibid., 2012)

All three examinations show a significant reduction in person-kilometres travelled after joining car-sharing: In 1996 and 2002 the reduction amounts to approximately 80%, in 2011 this proportion still is 60%. With regard to the purpose of the journeys, car-sharing and PT are complementing each other: Car-sharing is used predominantly for holidays, excursions or bulk purchases whereas PT is mainly used for daily trips, such as work. (ibid., 2012)

The proportion of car-sharing users who abolished their privately owned car due to the car-sharing membership on average is 16% and the mean value of those who did not purchase a private car is around 35%. (ibid., 2012)

A customer service amongst *cambio* clients in Brussels, which was carried out within the scope of the *European project momo*, shows similar results: 16% of the customers got rid of their cars after becoming a *cambio* member and 35% stated that they would (probably) have bought car if they had not joined *cambio*. (bcs, 2010)

Within the scope of the German research project *WiMobil*, car-sharing users in Munich and Berlin are questioned and vehicle data of the station based provider *Flinkster* (subsidiary of DB Rental GmbH) and the free floating provider *DriveNow* (BMW) are analysed between 2012 and 2015. Among the comparison of the usage and the impact of both systems on car-ownership, the acceptance of electric car-sharing is evaluated as well. (WiMobil, 2015)

Station-based car-sharing is mainly used on weekends and the average distance driven is between 59 kilometres (Berlin) and 85 kilometres (Munich), whereas the peak in demand of free-floating car-sharing is in after work travel and more than three thirds of the trips amount to a shorter distance than 10 kilometres. This leads to the impression that both systems seem to be used for different purposes. User surveys confirm this impression: station-based car-sharing is primarily used for shopping whereas free-floating car-sharing is preferred for

leisure travel and to drive home in the evening. Free-floating systems additionally provide an alternative to public transport at times with low supply: 10% of all trips take place between 0:00 am and 6:00 am. (ibid., 2015)

In order to determine the environmental impacts of car-sharing, the abolition of private cars is an important indicator concerning emissions and space requirement. Surveys in both cities show that car-sharing can play a role in this context. However, it has to be distinguished between the different services: more than twice of the Flinkster users (15.5%) state that they got rid of their car after joining car-sharing than DriveNow users (6.5%). However, the total number of abolished cars is higher for DriveNow due to a significant higher number of customers. (ibid., 2015)

Both, Flinkster and DriveNow, provide electric cars in their fleets, even though just few vehicles operate fully electrically powered. Despite this fact, WiMobil can prove a positive correlation between car-sharing and electric mobility and shows that users accept this offer very well. (ibid., 2015)

A recent study of *civity Management Consultants* named 'Urban mobility in transition?' takes a closer look at the example of free floating car-sharing systems on the basis of 115 million data points of 18 million car rentals worldwide. According to the authors free floating car-sharing only has a proportion of 0.1% on the modal split due to small fleet sizes and comparatively low utilization rates, and hence is not able to contribute positively to any traffic problems. (civity Management Consultants GmbH & Co. KG, 2014)

Furthermore, free floating car-sharing is commonly used for an average distance of 5.8 kilometres. According to the study's authors free floating car-sharing in general substitutes trips which were previously realised by sustainable means of transport (usually by public transport or bicycle) and thus they pursue the hypothesis that free floating car-sharing is a "short-range motorized convenience-mobility". Free floating cars are used only few minutes more per day (approximately 15 to 30 minutes) than privately owned cars and thus hardly contribute to a more effective usage of the car. (ibid., 2014)

In summary all three studies come to similar results. Station based car-sharing has high potential to positively contribute to a more sustainable mobility in terms of reducing car ownership as well as a reasonable usage of motorized individual transport, whereas free floating car-sharing so far, does not show that high potential. In this case it remains to be seen what further investigations on long-term effects will show.

The bcs' final report 'The state of European Car-sharing' also comes to the conclusion "that [station based] Car-Sharing makes a noteworthy contribution to the reduction of the burden on transport and the environment." (bcs, 2010, p. 3).

But car-sharing not only changes travel behaviour, according to the report mentioned above it also saves public space: one station based car-sharing vehicle replaces four to eight private cars (ibid., 2010).

2.3 Combined Mobility

The previous chapters demonstrate how different components of new mobility concepts could look like. This section deals with the integration of these components into multimodal mobility platforms and their combination with public transport via ICT and mobility maps.

2.3.1 Multimodality and Intermodality

The terms *multimodality* and *intermodality* are often coming along while speaking of new mobility concepts. They both describe different ways of combining various means of transport. Multimodality describes the general usage of several modes of transport (“multi modi”) in a defined period of time, usually a seven day week. This means that a person travels with different means of transport on different days of the week (cf. **Figure 2-3**). (Von der Ruhen et al., 2005)

In context with new mobility concepts this term is often used to describe a rational and resource conserving travel behaviour in which the appropriate travelling mode is chosen depending on the situation. By contrast, *monomodality* describes the use of only one mode and often is associated with the motorized individual transport (ibid., 2005).

As it is shown in **Figure 2-3** intermodal travel behaviour can be seen as a special form of multimodality. It can be described as a combination of different means of transport during a single journey. Intermodality therefore requires a transfer from one to another means of transport. Especially while talking about the first and last mile during a journey, intermodality plays an important role. (Chlond & Manz, 2000).

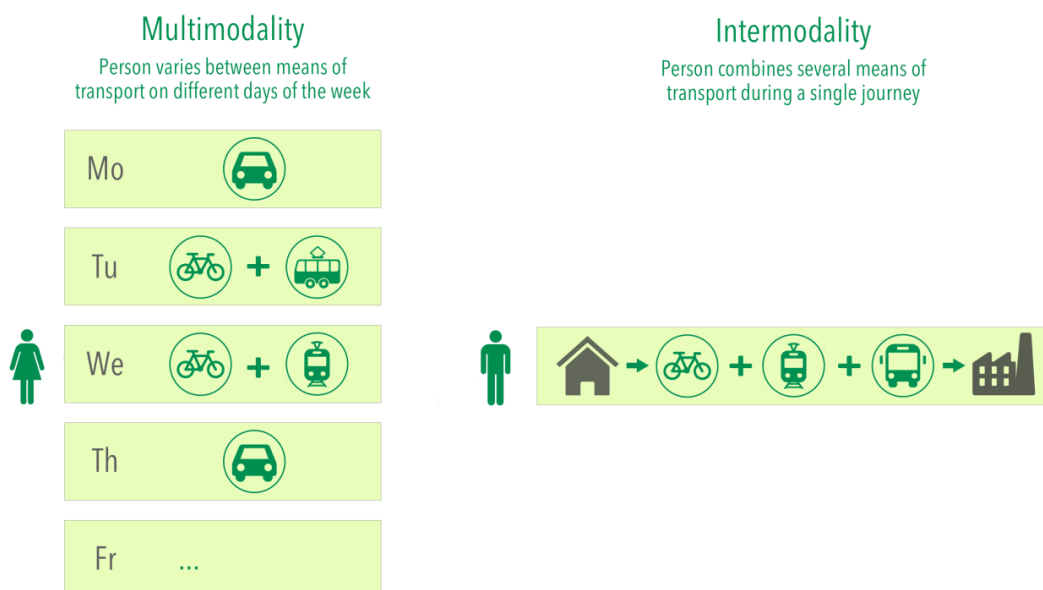


Figure 2-3: Definition of multimodal and intermodal travel behavior; source: own graphic according to Von der Ruhen (2003)

Bike and Ride (B+R) and Park and Ride (P+R) are well-known examples for this. In both cases an individual mode (bike or car) is used to reach a public transport station and then the trip is continued by bus or train or vice versa.

In general, new mobility concepts, such as sharing concepts, are based on multimodal or intermodal travel behaviour. According to the *Federal Institute for Research on Building, Urban Affairs and Spatial Development* (German: Bundesinstitut für Bau- Stadt und Raumforschung (BBSR)) (2015), neither car-sharing (irrespective of station based or free-floating) nor bike-sharing is suitable for daily trips to work. The use of both offers is supposed to complement a travelling behaviour in which public transport ensures daily mobility. (BBSR, 2015)

Especially bike-sharing systems can be suitable for completing the first or last mile to or from a public transport station, but also car-sharing stations which are not located in walking distance can be reached by PT or bike. Therefore the promotion of multi- and intermodality is an adequate measure to strengthen local public transport without renouncing individual transport and hence contribute to more sustainable mobility. (ibid., 2015)

Concerning future mobility the International Association of Public Transport (UITP) speaks of “combined mobility”. In its position paper ‘Becoming a real mobility provider’ the UITP defines combined mobility as “the result of public transport in synergy with other modes, such as car-sharing, taxis, cycling...” (UITP, 2011).

Furthermore, these different mobility offers shall be integrated, e.g. in a platform, in order to reach a high level of convenience and flexibility and so create a real alternative to the private car. Combined mobility aims to “form a complete and coherent mobility solution” (UITP, 2011), where public and private modes no longer can be considered as competitive modes, but as mutually beneficial. (ibid., 2011)

Figure 2-4 shows that the UITP in terms of combined mobility not only distinguishes between public and private transport, but also between collective and individual use with public or private access. According to the UITP all services written in orange should be part of a combined mobility offer. (ibid., 2011)

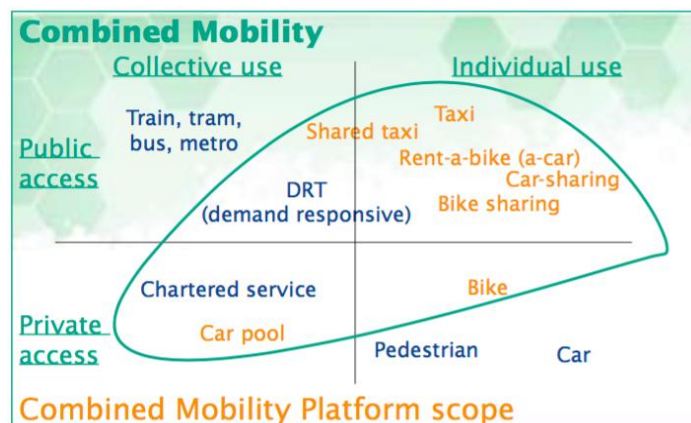


Figure 2-4: Illustration of different transport modes and mobility services classified by collective and individual use, and public or private access; source: UITP (2011)

2.3.2 Integrated Multimodal Mobility Platforms

As described in chapter 2.3.1 the integration of public transport with sharing offers and other sustainable modes into one platform has big potential with regard to the promotion of more sustainable transport. New information and communication technologies play a key role in this context as they provide an easy way to switch means of transports.

Integrated multimodal mobility platforms are not officially defined, but all of them offer comprehensive information about available means of transport including schedule information and journey planning.

More and more platforms try to expand their services by offering real time information or the possibility of reservation, booking, billing and ticketing and thus try to become a real mobility provider by offering a holistic mobility management system. Currently there exist many isolated solutions which only include a part of the entire mobility offer. Extensive stocks of central and regional data, often opaque and incompatible with each other, but also a lack of open data, need to be challenged. (Stopka, 2016)

The *All in One Mobilitätsapp BeamBeta* is a recent example which deals with the challenges mentioned above and integrates various mobility providers into one platform. It is a regional based service for the greater area of Wien which integrates classic public transport (Wiener Linien, ÖBB), taxi, bike-sharing and car-sharing. BeamBeta is based on the experiences and results of the preceding research project *smile – einfach mobil*. (Neue Urbane Mobilität Wien GmbH, 2015)

The main idea of smile is to provide a platform that offers a wide range of transportation providers with all corresponding functions, such as information, booking, payment, use and billing (cf. Figure 2-5). A standardized interface has been developed which enables all partners to link their systems to the platform in order to provide their data, ticketing and routing services. (ibid., 2015)

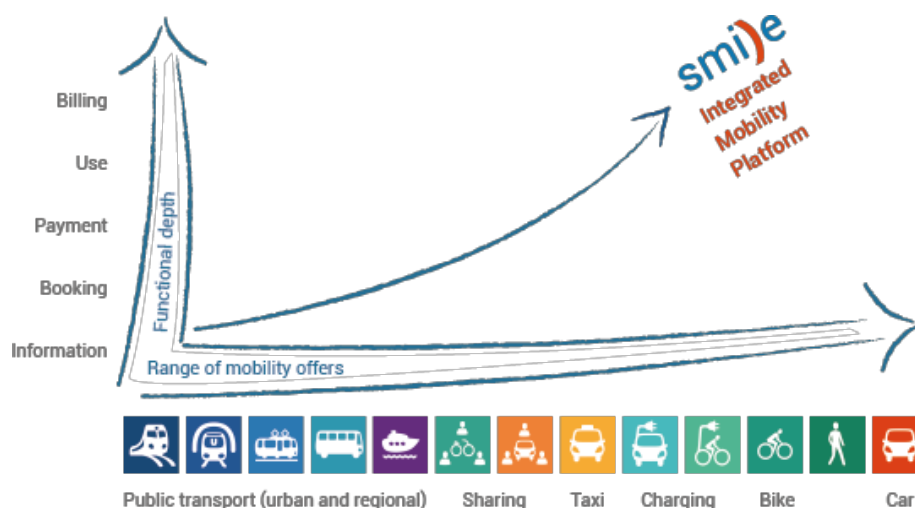


Figure 2-5: Integrated mobility platform of smile: wide range and functional integration; source: Neue Urbane Mobilität Wien GmbH (2015)

An application (app) represents the users' interface. It informs about all available mobility services in the surroundings of the users' current position or any chosen point, offers individual trip planning (including different alternatives) from A to B depending on personal settings (mode, price). Furthermore, it allows the user to book, reserve and pay cash-less for the services taken, e.g. tickets, taxi or car-sharing. After one year of pilot operation as well as an on-going evaluation, *smile* was successfully completed and is now continued by the *All in One Mobilitätsapp BeamBeta*. (ibid., 2015)

The new application is provided by the subsidiary *Neue Urbane Mobilität Wien GmbH (NeuMo)* of *Wiener Stadtwerke* and continuously aims to acquire new partners and to be constantly improved (*Wiener Stadtwerke Holding AG*, 2016).

Another example for the successful integration of various mobility providers is *moovel*, a mobility platform that "intelligently brings together various means of transport, and plans the best route from A to B." (*moovel Group GmbH*, n.y.).

Contrary to *BeamBeta*, *moovel* is providing its services nationwide for several European countries. *Moovel* unites car-sharing, taxi, bus and train connections as well as bicycle rentals of several mobility providers in one application. The service displays mobility options available in the surroundings of the user's current position and offers different mobility alternatives including information about price and travel time so that the user can compare them. *Moovel* also offers the possibility to book and pay many of these options: *car2go*, *mytaxi* and *Deutsche Bahn* are examples for fully integrated partners. (ibid., n.y.)

In Germany, more and more public transport operators and transport associations offer platforms, apps and mobility cards, which integrate several mobility offers. (Loose & Glotz-Richter, 2012) *Hannovermobil*, for example, is a joint ticket offered by the *Großraum-Verkehr Hannover (GVH)* that integrates public transport, German rail service, car-sharing, taxi and other services (GVH, 2014). Another example is the *Mobilpass*, an integrated offer of the *Verkehrs- und Tarifverbund Stuttgart (VVS)*, which enables clients to easily access various mobility offers, like car-sharing, (e-) bike-sharing and public transport with one card (VVS, n.y.).

2.3.3 Multimodal Mobility Stations

Multimodal mobility stations are a relatively new concept in urban transportation and so far no uniform and established definition exists. The recently published *ExWoSt-study* – commissioned by Germany’s Federal Institute for Research on Building, Urban Affairs and Spatial Development – deals with the impacts of new forms of mobility on cityscapes. It defines mobility stations as follows:

“[Mobility stations are] multimodal connection points, with their scope exceeding the usual bimodal connections (such as Park&Ride or Bike&Ride) and combing, for example, car sharing, bike sharing, public transportation, as well as the parking of private bicycles and cars in several combinations. [...] The equipment of mobility stations ranges from being functional and minimal to setting an artistic emphasis through striking infrastructure. The location is based mainly on closeness to stops of public transport.” (BBSR, n.y.).

Multimodal mobility stations hence result from a physical concentration of individual, flexible means of transport at public transport stations. Often infrastructure for private vehicles, in most cases bicycle storage, is provided as well. Additional elements, such as shelters or charging infrastructure, can complement the stations. But the concept of mobility stations in most cases includes some more aspects and the BBSR’s definition has to be supplemented by the following characteristics:

“Mobility stations are recognisable through their uniform corporate design (e.g. colouring, branding, signage or steles) [...] within the cityscape. In addition to the urban design elements and the uniform appearance, [the concept of] mobility stations [is] often combined with further products: The offer of mobility stations partially includes own mobility-apps, virtual mobility platforms (websites) and mobility cards, which are usable for all means of transport involved in this concept.” (Krismanski, 2015, p. 57)¹.

Figure 2-6 shows an example for the design of a stele, a branding, a mobility card and the interface of a mobility app.

¹ Translated from German: „Mobilitätsstationen sind durch ihr einheitliches Corporate Design (z.B. durch Farbgebung, Logo, Beschilderung oder Stele) [...] im Stadtbild wiedererkennbar. Zu den stadtgestalterischen Elementen und dem einheitlichen Erscheinungsbild werden Mobilitätsstationen oftmals mit weiteren Produkten kombiniert: Zum Angebot der Mobilitätsstationen gehören teilweise produkteigene Mobilitäts-Apps, virtuelle Mobilitätsplattformen (Webseiten) und verkehrsmittelübergreifende Mobilitätskarten.“



Figure 2-6: Different designs of steles, brandings, mobility cards and applications; source: Freie Hansestadt Bremen, Senator für Umwelt, Bau und Verkehr (n.y.); Hamburger Hochbahn AG (n.y.); fairkehr (n.y.); Leipziger Verkehrsbetriebe (n.y.)

Different examples of multimodal mobility stations will be presented in the following chapter.

3 Case Studies

3.1 Selection of Case Studies

As the implementation of mobility stations is not very widespread beyond the borders of Germany, the selection of case studies to be analysed is limited and only concentrates on German examples. At this, the fact of being able to visit the different case studies as well as being able to meet and interview people in charge of each project played an additional role while deciding to concentrate on Germany.

Furthermore it seemed to be important to select examples which are already in operation in order to be able to identify success factors.

Another important aspect while choosing the case studies was the aspect of the multimodal integration of at least three different modes at one station. Thus, projects which only provide a bimodal integration did not play any role for the selection.

Due to a limited number of case studies fitting these criteria and the fact of being able to provide a deep and profound analysis, it has been decided to concentrate on the following four examples:

- *Mobil.punkte* in Bremen
- *Switchh* in Hamburg
- *EinfachMobil* in Offenburg
- *Leipzig mobil* in Leipzig

In the following subchapters (3.2 to 3.4) the four depicted case studies are presented. After an initial introduction to each city itself and its transport system, the respective multimodal offer is presented in detail: First it is started by giving an overview of the main characteristics of the multimodal service, followed by the description of the implementation process, the development and the goals of the service provided. Furthermore, the system design of each project is analysed in terms of station location, station configuration, corporate design, actors involved and an explanation on how to use the offer.

Impact evaluations on the services are presented as well, if available. The findings of the following subchapters are based on profound literature review as well as complementary expert interviews (cf. Appendix A - F).

3.2 Mobil.punkte – Bremen

3.2.1 Bremen and its Transport System

The City of Bremen is located in the Northwest of Germany with a population of 551,767 people in an area of approximately 325 km² (Statistisches Landesamt Bremen, 2015). Together with the city of Bremerhaven it forms the Free Hanseatic City of Bremen (German: Freie Hansestadt Bremen), which is one of three city states in Germany (Bremen Land, 2016).

City transport

In the city of Bremen the *Bremer Straßenbahn AG (BSAG)* is the local public transport provider and offers a dense network of bus and light rail services in order to provide for daily mobility (bremen.online, 2016). The Regio-S-Bahn, a commuter rail service, connects Bremen with its surrounding cities (NordWestBahn GmbH, n.y.). Both services are integrated within the transport association of the *Verkehrsverbund Bremen/Niedersachsen (VBN)* (VBN, n.y.). Regional and long distance trains are available at several stations in Bremen (Deutsche Bahn AG, 2016c).

Cycling plays an important role and is quite popular amongst Bremen's citizens. The city offers a dense cycle path network of more than 600 kilometres. (Der Senator für Umwelt, Bau und Verkehr, n.y.-a)

In Bremen, three station-based car-sharing companies provide their services: *cambio*, *Flinkster* and *Move About*. (carsharing-news.de, 2016d)

Call a bike provides one station for bike-sharing in the city of Bremen. (Deutsch Bahn AG, 2016e)

Modal share

Figure 3-1 illustrates the modal share of Bremen in 2013: The share of cycling is relatively high with 25% and is supposed to be one of the highest amongst all German cities, whereas the share of MIT is comparatively low to other cities. The proportion of PT amounts to 16% and that of walking to 27%. (Ahrens, 2015)

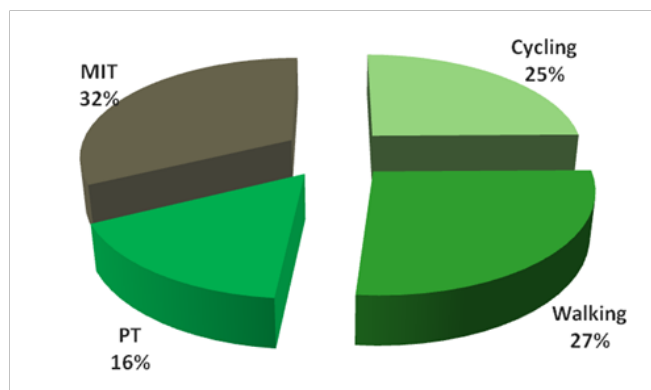



Figure 3-1: Modal share of Bremen: number of trips (domestic traffic); source: own graphic; values retrieved from Ahrens (2015)

3.2.2 Main Characteristics



BRAND IDENTITY	mobil.punkte
COMISSIONING	02.04.2003
STATUS OF PROJEKT	regular operation
NUMBER OF STATIONS	10 mobil.punkte, 14 mobil.püunktchen (as per 03/2016)
INTEGRATED SERVICES	 <p>Bike (B+R) Public Transport Car-sharing Taxi</p>
ELECTRIC MOBILITY	no
ACTORS INVOLVED AND THEIR ROLES	<p>City of Bremen - initiator</p> <p>BREPARK GmbH (municipal parking space management organisation) – operator of mobil.punkte; letting of car-sharing places on public ground (=mobil.punkte) to car-sharing provider</p> <p>BSAG – operator of local public transport (light rail and bus)</p> <p>Cambio – car-sharing provider</p>
FACILITIES	blue <i>mobil.punkt</i> stele, stands for bicycles, flipping parking locks, at some stations operator terminals and information boards
USERS	No specific mobil.punkt user numbers available, only number of car-sharing users in total: 10.000 (as per 02/2015)
EVALUATION	yes, continous through the car-sharing provider

3.2.3 Implementation Process, Development and Goals

Although the modal share of MIT is relatively low (cf. 3.2.1), Bremen has to deal with high land usage by parking and great parking pressure within the city area. In solving these problems as well as in order to improve the quality of urban life, car-sharing plays an important role. (Der Senator für Umwelt, Bau und Verkehr, n.y.-b)

Bremen already started the promotion and integration of car-sharing approximately twenty years ago: by the late 1990s a joint offer for car-sharing and public transport was introduced. Citizens, who paid a surcharge to their annual season ticket (*Bremer Karte*) could upgrade to a *Bremer Karte plus AutoCard*, which included car-sharing privileges (BBSR, 2010).

In order to further extend the use of car-sharing, the city of Bremen together with the car-sharing provider *cambio* and the transport company *BSAG* initiated the implementation of intermodal mobility stations including car-sharing parking places in public space. Within the scope of a pilot project, two mobility stations, also known as *mobil.punkte* (mobile points), were set up in 2003. (Der Senator für Umwelt, Bau und Verkehr, n.y.-b)

The first two *mobil.punkte* *Bahnhof* and *Am Dobben* combine a car-sharing station with public transport, easy cycling and pedestrian access as well as taxi facilities (Freie Hansestadt Bremen, 2003).

After two years of pilot operation the *mobil.punkte* were positively evaluated in terms of their success and acceptance (cf. chapter 3.2.5). Since 2007 new *mobil.punkte* were continuously installed (Der Senator für Bau, Umwelt und Verkehr, 2005).

Since 2013, smaller versions of the *mobil.punkte*, called *mobil.punktchen*, are installed within densely populated neighbourhoods in order to “bring the service closer to the users and help improve the driveability of streets for emergency and rubbish collection vehicles” (Der Senator für Umwelt, Bau und Verkehr, n.y.-b).

Currently, ten *mobil.punkte* and fourteen *mobil.punktchen* are available in the city of Bremen (as per March 2016) (cf. Appendix A).

Goals

With the implementation of *mobil.punkte*, the city combines car-sharing with public transport and other environmentally friendly means of transport (bicycle, walking and in some cases taxi) aiming to **decrease the dependency of privately owned vehicles and to relieve inner-city neighborhoods from parking pressure** (Der Senator für Umwelt, Bau und Verkehr, n.y.-b).

In order to increase the use of car-sharing, Bremen adopted a *car-sharing action plan*: the number of car-sharing users is to be increased to 20,000 by the year 2020 (cf.: in 2009 – 5,000 users; in 2015 – 10,000 users). As a result public space is to be relieved by 6,000 private vehicles. In order to achieve these goals, car-sharing in public space (*mobil.punkte*) plays an important role. (Der Senator für Umwelt, Bau und Verkehr, 2015)

The goals of the car-sharing action plan hence are closely related to those of the *mobil.punkte*.

3.2.4 System Design

Station location

Mobil.punkte are located in or close to the inner-city areas with high parking pressure. All of them are situated nearby public transport stops, one of the stations is to be found in close proximity to the main station. (Schmauß, 2008)

The quarter commissions of Bremen as well as the car-sharing provider of mobil.punkte (cambio) and the parking space management organisation (BREPARK) may submit proposals for station locations to the city, e.g. based on increasing booking figures (Glotz-Richter, 2015).

With the implementation of mobil.pünktchen the city of Bremen wants to provide car-sharing in public space within residential districts. It also takes into account problem zones of emergency and rubbish collection vehicles. Especially corners and crossings of small and narrow streets within living areas are hoisted with vehicles. This leads to obstruction while turning or crossing. Mobil.pünktchen therefore are often located at junctions in order to ensure the drivability of streets (cf. **Figure 3-2**). (Der Senator für Umwelt, Bau und Verkehr, 2015)



Figure 3-2: Mobil.pünktchen located at junctions; source: Michael Glotz-Richter

Station Configuration

Mobil.punkte provide between five to twelve parking spaces for car-sharing vehicles (Freie Hansestadt Bremen, 2010). In addition to the provision of parking places for car-sharing, each station provides parking facilities for private bikes. Mobil.punkte are located close to public transport stops, some even have taxi stands in the immediate surroundings. The mobility stations shall be easily recognizable in public space. Therefore an appealing corporate design was developed: each station is furnished with a three metre high blue stele including the brand *mobil.punkt* (Schmauß, 2008). Furthermore, information boards and key safes (to access car-sharing vehicles in case they do not have on-board-computers) and flipping parking locks (to block the parking spaces for car-sharing vehicles) are available at mobil.punkt stations. (Der Senator für Umwelt, Bau und Verkehr, 2015)

As mobil.pünktchen are the smaller version of mobil.punkte, they only provide two or three parking lots. Accordingly the blue stele at these stations is dimensioned smaller. The provision of flipping parking locks as well as bicycle parking facilities is part of the station configuration, too. The access to all car-sharing vehicles is possible via smart-cards, key safes thus are not necessary. Mobil.pünktchen are located within residential areas and do not necessarily require the proximity to public transport stops. (ibid., 2015)

Figure 3-3 shows some examples for elements of mobil.punkt stations: a key safe and an information board with a taxi stand in the background, a flipping parking lock and a mobil.punkt sign, bicycle parking facilities with a mobil.punkt stele.



Figure 3-3: Examples for mobil.punkt configurations; source: Krismanski (2015), Glotz-Richter

Corporate design

Apart from the blue mobil.punkt stele, car-sharing parking places are branded with a mobil.punkt sign. Public transport stops are equipped with mobil.punkt signs that point to the mobility stations. Besides, no further elements or vehicles are labeled with this corporate design.

Actors involved and their roles

The project of mobil.punkte was initiated and executed by the city of Bremen, however it is not the operator of the stations. The municipal parking space management organization BREPARK was authorised with the construction and operation of the mobil.punkte. It rents the parking spaces to car-sharing providers and finances the operating expenses (cleaning, maintenance etc.) with the rental income. Car-sharing companies, which want to rent mobil.punkt parking spaces have to prove public benefits by meeting two requirements: Firstly to be certificated with the environmental label *Blue Angel*, secondly to continuously prove a significant relief of the parking place situation. In Bremen, so far only cambio fulfills the prerequisite of the Blue Angel. (Der Senator für Bau, Umwelt und Verkehr, 2005) BSAG is the local public transport company and operates bus and light rail transportation at the mobil.punkte and offers a combi-ticket with car-sharing. (ibid., 2005)

How to use mobil.punkte

The use of mobil.punkte is open to anyone. The website of mobil.punkte (mobilpunkt-bremen.de (cf. **Figure 3-4**) informs about car-sharing and mobil.punkte in general. It also provides information of all car-sharing station locations (cambio, Flinkster and Move About) in the city of Bremen, however it is not distinguished between mobil.punkte and other car-sharing stations. (Der Senator für Umwelt, Bau und Verkehr, n.y.-b)

There is no multimodal trip planning in terms of a mobility platform available. For more detailed information, e.g. the number and types of vehicles available at each station, users have to navigate to the car-sharing provider's homepage. Users can book vehicles via telephone, the provider's website or smartphone application. After the use, the vehicle has to be brought back to its own dedicated parking space at the start location (cambio CarSharing, 2014a).



Figure 3-4: Homepage of mobil.punkte (mobilpunkt-bremen.de); source: <http://mobilpunkt-bremen.de/> (n.y.)

With the acquisition of a season ticket for the local public transport provider BSAG or a VBN-semester ticket, people get discounts on car-sharing membership (BSAG, n.y.), e.g. season ticket holders save the 30,- EUR registration fee at cambio (cambio CarSahring, 2014b).

3.2.5 Impacts of mobil.punkte

In 2005, the pilot operation of the first two mobil.punkte was evaluated. After two years of operation, the office of transport ecology (German: Büro für Verkehrsökologie) conducted a user survey by means of standardised telephoned interviews: 189 of 435 users within a radius of 500 metres around the stations were questioned. (Der Senator für Bau, Umwelt und Verkehr, 2005)

The results show, that mobil.punkte predominantly are used by private users (83%). 30% of private users abolished their car and 55% did not purchase one due to their car-sharing membership. With regard to company users 21% abolished a company vehicle and 67% did not purchase one due to car-sharing. (ibid., 2005)

The main focus of this survey was to find out, how these new stations effect car ownership of the users. The analysis of the survey showed the following result: Each of the car-sharing vehicles at mobil.punkt stations replaced nine private vehicles. With this result, the national average of five to seven cars replaced per car-sharing vehicle was excelled. (ibid., 2005)

Furthermore, within the two years of operation, 173 new car-sharing users registered within the surroundings of mobil.punkte (increase of 66%). Without the car-sharing offer approximately one third of the respondents would reacquire a private vehicle. (ibid., 2005)

As mentioned in chapter 3.2.4 the car-sharing provider at mobil.punkt stations has to continuously prove a significant relief of the parking place situation. For this reason cambio conducts a user survey every year, in which it also examines the car-fleet. The results from 2014 show that 38% of new car-sharing customers had access to a private car before using car-sharing. This value decreased to 10% after joining car-sharing, thus 28% of the new members abolished their car. As one car-sharing vehicle is used by more than 40 users, this leads to the conclusion that one car-sharing vehicle replaces eleven private vehicles. (Der Senator für Umwelt, Bau und Verkehr, 2015)

Especially with regard to the replacement of private vehicles, the results of 2005 and 2014 show an interesting development: In 2005 the relation was 1:9, whereas the relation in 2014 increased to 1:11. (ibid., 2015)

In summary, more than 2,200 vehicles have been replaced through the offer of car-sharing within Bremen's road space, which contributes to a significant relief of the parking place situation. (ibid., 2015)

3.3 Switchh – Hamburg

3.3.1 Hamburg and its Transport System

The Free and Hanseatic City of Hamburg (German: Freie und Hansestadt Hamburg) is located in the north of Germany, situated on the river Elbe with an area of 755.22 km². With a population of 1,762,791 people, Hamburg is the second largest city in Germany. (Statistikamt Nord, n.y.)

City transport

The Hamburg public transport association, *Hamburger Verkehrsverbund (HVV)* offers a variety of different modes for travelling around the city: bus, metro, commuter rail, regional train, and ferry (Hamburger Verkehrsverbund GmbH, n.y.). The largest partner within the HVV is *Hamburger Hochbahn AG*, operator of the subway and of several bus lines. (Hamburger Hochbahn AG, 2015)

In Hamburg several car-sharing offers (station based as well as free floating systems) are available, e.g. *car2go*, *DriveNow*, *cambio*, and *Flinkster* (carsharing-news.de, 2016).

StadtRAD Hamburg (cooperation between the city of Hamburg and DB) as well as *nextbike* operate a bike-sharing system in the city of Hamburg, however the offer of StadtRad Hamburg is significantly bigger than the one of nextbike. (cf. nextbike GmbH, n.y.; DB Rent GmbH, 2016)

Modal share

Figure 3-5 displays the modal share of Hamburg in 2008 (more current data are not available yet). The share of PT amounts to 18% and the one of MIT accounts 42%. The share of walking is in comparison to other cities relatively high with 28%, whereas the share of cycling is comparatively low (12%). (MiD, 2008)

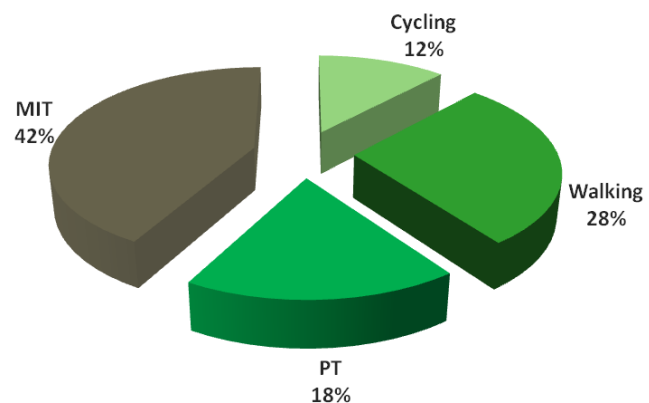



Figure 3-5: Modal share of Hamburg: number of trips (domestic traffic); source: own graphic, values retrieved from MiD (2008)

3.3.2 Main Characteristics



BRAND IDENTITY	switchh
COMISSIONING	31.05.2013
STATUS OF PROJEKT	Transition phase (from pilot phase to regular operation)
NUMBER OF STATIONS	9 (as per 03/2016)
INTEGRATED SERVICES	 <p>Bike (B+R) Public Transport Car-sharing Car rental Bike-sharing Taxi</p>
ELECTRIC MOBILITY	no
ACTORS INVOLVED AND THEIR ROLES	<p>Hamburger Hochbahn – initiator, operator of mobility stations, operator of bus and subway services</p> <p>Car2go/ car2go black – car-sharing providers</p> <p>Europcar – car rental company</p> <p>StadtRAD Hamburg– bike-sharing provider</p> <p>Hamburger Verkehrsverbund (HVV) – transport association</p> <p>City of Hamburg – free provision of areas for mobility stations to Hamburger Hochbahn</p> <p>P+R Betriebsgesellschaft mbH – rent of switchh parking places in P+R Facilities to the Hamburger Hochbahn AG</p>
FACILITIES	Switchh stele and sign posting with logo and slogan, uniform floor colouring in green, B+R Facilities, barriers at some stations
USERS	2500 (as per 11/2015)
EVALUATION	Yes (final report not yet available, as per 03/2016)

3.3.3 Implementation Process, Development and Goals

In 2010, the Hamburger Hochbahn AG dealt with the topic of changing mobility behaviour amongst Hamburg's citizens. In this context, the *corporate strategy 2030* from 2012 includes the organisation of complementary mobility offers for HVV users as future task (cf. Appendix B). The objective is to simplify the use of public transport in combination with supplementary offers and thus make it more convenient. (cf. Appendix B)

In 2012, the project is started aiming to implement the complementary offer within one year. Two big partners – car2go (free floating car-sharing provider of Daimler) and Europcar (car rental company) – have been acquired for a two years pilot phase. (cf. *ibid.*)

After 15 months, all framework conditions were set and the project got its own name: *switchh*. (cf. Appendix B) The name emphasises the change from one to another means of transport and also refers to the city's name: Hansestadt Hamburg by being written with double h. (hamburg.de GmbH & Co. KG, n.y.)

Switchh offers complementary mobility based on three components: mobility-platform, switchh tariff product and switchh points (Brückner, 2016, p. 52).

The first switch point was opened at the 31st of May in 2013 at the public transport station *Berliner Tor*. Amongst parking places for car-sharing and car rental vehicles, a customer service centre was installed as well (Hamburger Hochbahn AG, n.y.-a).

Since 2013 the number of switchh points rises constantly, currently there are nine mobility stations all over the city area available (*ibid.*, n.y.-a).

In November 2014, switchh expanded the existing offer by implementing car2go black, a station based car-sharing provider, into its service and in June 2015, StadtRAD was implemented into the offer as well (*ibid.*, n.y.-a).

Originally planned from autumn 2015, now starting from spring 2016, switchh opens the market to further providers and expands its offer (cf. chapter 0). Within this scope Europcar exclusively continues its partnership with switchh in terms of a marketing cooperation, wherefore it removed its vehicles from the mobility stations in October 2015 already. (cf. Appendix C)

In total fifteen switchh points are planned to be installed by 2017. (Hamburger Hochbahn AG, n.y.-b)

Since November 2015, switchh counts 2700 users. (Hamburger Hochbahn AG, n.y.-a)

Figure 3-6 displays the development of switchh until today (March 2016).

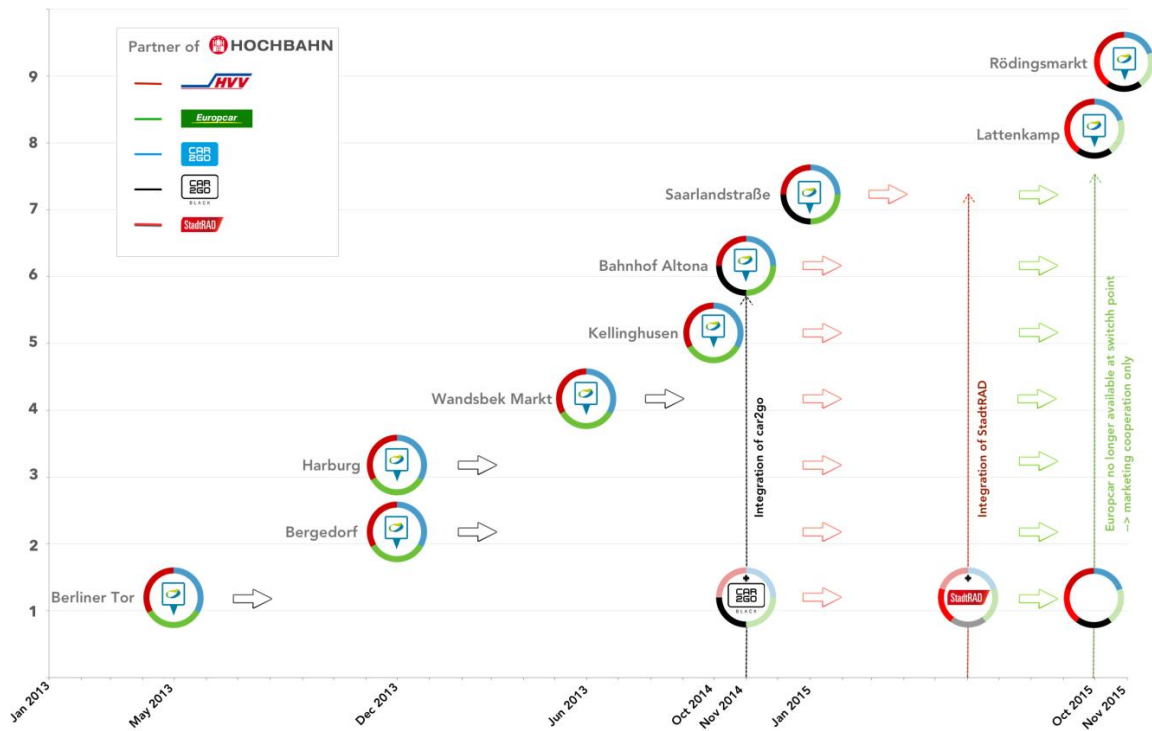


Figure 3-6: Development of switch; source:own graphic

Goals

The project aims to contribute **changing the mobility behaviour of Hamburg's citizens** by providing attractive alternatives to the use of privately owned cars. In order to achieve the change to less motorized MIT, switch provides tools and incentives which make the use of the "mobility-mix" better and more efficient. The new mobility offer has to be firmly embedded into people's minds: "switching" shall be taken for granted. (cf. Appendix B)

The core business of Hamburger Hochbahn shall be further strengthened by acquiring additional customers with switchh, hence the economic efficiency plays an important role, too. (cf. *ibid.*)

According to Jens Brückner the project of switchh takes on a leading role in mobility stations and their integration solution and thus shows how to successfully implement multimodal mobility offers. (cf. *ibid.*)

3.3.4 System Design

Station location

According to Brückner (2016) the pre-selection of possible station locations is based on the following criteria:

- **High population density** and the associated **parking pressure**
- **Availability of complementary offers** (e.g. business or home area of FFC) as well as providers' **logistic and sales data**
- Suggestions from politics and administration (Brückner, 2016)
- Until 2017, all stations will be located within the surroundings of **local public transport stops with connections to subway and or commuter rail services**. Afterwards, within the scope of postcompaction, stations will not exclusively be located at rapid transit stations, however the size will not necessarily decrease (not comparable to mobil.punktchen) (cf. **3.2.4**; Appendix C)
- The catchment areas of switch points shall not overlap, so stations are not to be located too close to each other. Switch points shall be distributed evenly all over the city area in order to create a **network**. (cf. *ibid.*)

After the pre-selection of several possible station locations, they are evaluated in terms of their realization feasibility including land availability and its accessibility, existence of visual links between station location and PT stop and a cost-benefit consideration (Brückner, 2016).

Station configuration

Depending on the land availability, switch points provide between eight to eleven parking places for car-sharing vehicles, the one at Berliner Tor even provides 18 parking lots. The parking places are switch branded and not specially dedicated to any provider (cf. Appendix B).

The bike-sharing system of StadtRAD is available at almost every switch point or in its immediate surroundings (cf. *ibid.*; DB Rent GmbH, 2016)

A stele including the switch logo as well as the logos of all associated partners is part of each mobility station. Switch sign posting with logo and slogan is implemented in the surroundings of the mobility station in order to call attention to the provided mobility service.

All stations provide Bike and Ride facilities (cf. Appendix B in terms of bicycle support stands or rentable bicycle storage boxes (PGV-Alrutz, DR-Architekten, 2015).

The largest switch point Berliner Tor also provides taxi stands (Hamburger Hochbahn AG, n.y.-a).

At some stations, additional facilities, such as access bars to the parking places are installed as well. (cf. Appendix C)

Figure 3-7 displays the switchh stele with a StadtRAD bike-sharing station in the background, switchh branded parking place including the green coloured switchh area, a switchh sign posting and a Bike and Ride bicycle storage box.



Figure 3-7: Examples for switchh point configurations; source: Hamburger Hochbahn AG (n.y.)

Corporate Design

While developing the concept for the implementation of mobility stations, a logo was developed as well. It can be found on sign postings in the surroundings of the mobility stations, on switchh parking places as well as on Bike and Ride bicycle storage boxes and the switchh stele. In order to round off the identity of a switchh point, parking areas which are dedicated to the switchh point are coloured in green (cf. Figure 3-7).

Actors involved and their roles

The entire project management including conceptual planning, strategy as well as the realisation, construction and operation of the mobility stations is coordinated by the Hamburger Hochbahn AG. (cf. Appendix B)

For the implementation of switchh points on public space, the city of Hamburg (proprietor) dedicates areas to the Hamburger Hochbahn AG for free (Brückner, 2016). Two stations (Harburg and Bergedorf) are located on Park and Ride facilities owned by the *P+R Betriebsgesellschaft mbH*, a sister company of Hamburger Hochbahn AG. The parking

places are rented to the Hamburger Hochbahn AG in return for a small fee (cf. (Krismanski, 2015, p. XXIX)

Currently, car2go and car2go black provide their car-sharing vehicles at switchh points. Europcar, a car rental company, provided its vehicles at switchh points from May 2013 until October 2015. (cf. Appendix C)

The integrated bike-sharing-system of switchh is operated by StadtRAD Hamburg. (cf. ibid.)

Until recently the taxi intermediary *mytaxi* (subcompany of moovel GmbH – Daimler AG) was included in the mobility-platforms of switchh. It is not available anymore. (cf. ibid.)

How to switchh?

As a relaunch of switchh is planned for spring 2016 (cf. chapter 3.3.5), the service currently is in transition phase. The following part represents how switchh worked before the transition phase began and is based on the status of September 2015.

Switchh offers complementary mobility based on three components: mobility-platform, switchh tariff and switchh points. (Brückner, 2016)

The switchh website (www.switchh.de, cf. Figure 3-8) provides all relevant information concerning the switchh product as well as the registration process. Precondition for becoming a switchh user is a HVV subscription (season ticket, ProfiCard or semester-ticket). People either already have a subscription or need to sign up for one at the beginning of the switchh registration process. The registration for all switchh partners is included within the this process, however a separated contract has to be filled out for each partner. The online registration process has to be completed at the switchh service centre at Berliner Tor. After the successful registration, switchh users are issued with their personal switchh card. (Hamburger Hochbahn AG, n.y.-c)

The screenshot shows the homepage of switchh.de. At the top right, there are links for SITEMAP, PRESSE, AGB, DATENSCHUTZ, and IMPRESSUM. Below these are navigation links: Was ist switchh, Wie switchhe ich, Neuigkeiten, Registrieren, and Kontakt. The main banner features the slogan "Weiter sagen, was weiter bringt!" and the switchh logo. A yellow callout box says "Jeweils ein Freimonat für Werber und Geworbenen!". Below the banner is a registration process flow with three steps: 1. "Registrieren + profitieren: Melden Sie sich an und switchhen Sie mit." (with a checkmark icon), 2. "So switchhen Hamburger: Jetzt probieren und profitieren." (with a person icon), and 3. "switchh App jetzt laden: Erweiterte HVV-App fürs Telefon." (with a smartphone icon). To the right of the flow is a button for "FAHRPLANAUSKUNFT" with the HVV logo. At the bottom, there is a call to action: "switchhen Sie Ihr HVV-Abo automobil. Für monatlich nur 10 Euro mehr erhalten Sie:" followed by the HVV logo and the text "Mit uns die Mobilität der Zukunft starten".

Figure 3-8: Switchh homepage (www.switchh.de), source: www.switchh.de (n.y.)

For a monthly fee of 10,- EUR users receive benefits amongst all integrated partners: 60 free-minutes per month for car2go, one bonus hour per month for car2go black and 20,- EUR discount on each Europcar rental. Furthermore, the registration fee for car2go is reduced by 10,- EUR (9,- EUR instead of 19,- EUR) and the one for StadtRAD is for free (instead of 5,- EUR) including 5,- EUR initial credit. (Hamburger Hochbahn AG, n.y.-c)

Table 3-1 summarizes the customer benefits:

Service	Benefits for switchh users
Car2go	<ul style="list-style-type: none"> • 10,- EUR discount on registration fee (9,- EUR instead of 19,-EUR) • 60 free minutes per month
Car2go black	One bonus hour per month
Europcar	20,- EUR discount on each rental
StadtRAD	<ul style="list-style-type: none"> • No registration fee (instead of 5,-EUR) • 5,-EUR initial credit

Table 3-1: Benefits for switchh users; source: own table, information retrieved from (Hamburger Hochbahn AG, n.y.-c)

The switchh card acts as HVV ticket, Europcar customer card and as key for car- and bike-sharing vehicles (Hamburger Hochbahn AG, n.y.-c). In the meantime, car2go vehicles are only accessible via the provider's smartphone application, hence the card does no longer act as key for those cars (Hamburger Hochbahn AG, n.y.-d).

Users have the possibility to easily "swtichh" online, either via the extended HVV smartphone application or via the combined switchh search function of the HVV website (Hamburger Hochbahn AG, n.y.-c). Both, the website and the smartphone application provide maps, which show the location of local public transport stops, StadtRAD bicycles, car2go car-sharing vehicles, Europcar cars and mytaxi vehicles. Furthermore users have the possibility to plan their trip via website or application by receiving different route options in form of bar displays (cf. **Figure 3-9**). (ibid., n.y.-d.)

Users are able to book car-sharing and car rental vehicles as well as mytaxi taxis directly via the extended HVV smartphone application and the website. (Hamburger Hochbahn AG, n.y.-c)

All services are separately billed through the different partners (ibid., n.y.-c).

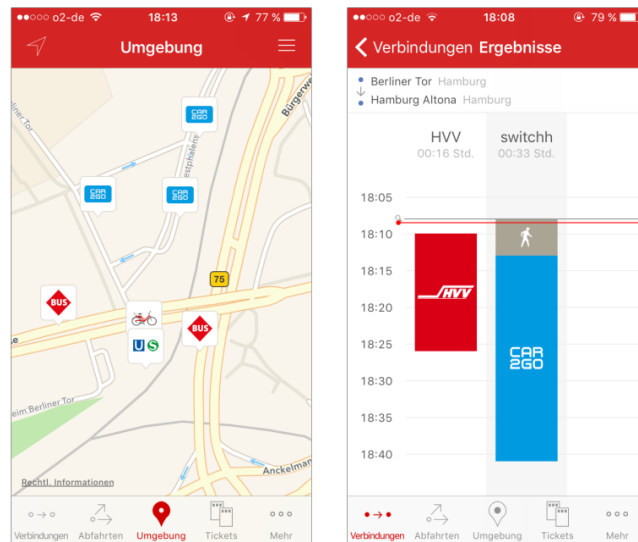


Figure 3-9: Switchh smartphone application: map and trip planning in form of bar displays; source: own photographs

3.3.5 Switchh Relaunch – Short Outlook on switch 2.0

From spring 2016 the offer of switchh shall be available for every citizen, the prerequisite of an HVV subscription is no longer valid. Besides the offer of car2go and car2go black, two new partners will be available at the switch points: DriveNow and cambio. Europcar no longer will be available at the switchh points, however they still will continue their partnership in terms of a marketing cooperation with switchh. (cf. Appendix C)

The taxi intermediary mytaxi is no longer included within the HVV mobility platforms (website and smartphone application), however switchh will integrate the services of a large taxi company of Hamburg into the extended HVV smartphone application (cf. *ibid.*).

In future, new switchh members will have to pay a one-time registration fee of 29,- EUR. This amount includes the registration for all switch partners. Instead of paying a monthly fee including free minutes for each partner, switch users will have the possibility to buy minute-packages for each provider (e.g. 100 minutes for car2go) at certain switch conditions, comparable to a prepaid credit. According to Brückner this can be seen as a first step into the direction of *mobility credit*. (cf. *ibid.*)

As before, users will get a switchh card, which allows them to open all card-based vehicles and StadtRAD bicycles. The switch card will no longer act as Europcar customer card. (cf. *ibid.*)

Both, the website and the smartphone application will continue to provide maps, which show the location of local public transport stops, StadtRAD bicycles and the car-sharing vehicles of all integrated partners. However, neither the smartphone application nor the website will provide integrated trip planning amongst all services by offering different route options with bar displays (cf. **Figure 3-10**). According to Brückner users do not need this of information, it is only important to show the services available (cf. Appendix B). Route options will only be given for public transport.



Figure 3-10: Changes of switchh smartphone application; source: Brückner (2016)

In order to book or access sharing vehicles, users have to click on the chosen vehicle and will be redirected to the partner's application, where they can execute the process itself. (cf. Appendix C)

Further on, the services will be billed separately. (cf. *ibid.*)

The new concept can be seen as an entry-level product, which focuses on people who have not been using sharing offers so far. New users shall have the possibility to easily try those offers without feeling pressured to consume available free-minutes. (cf. *ibid.*)

3.4 EinfachMobil - Offenburg

3.4.1 Offenburg and its Transportation System

The City of Offenburg is located in the west of the state of Baden-Württemberg with a total population of 59,561 people in an area of approximately 78.38 km². Offenburg is located 25 kilometres East of Strasbourg (France) close to the river Rhine. It is the biggest city within the Ortenaukreis and has a strong economic position in this area due to the provision of 40,000 workplaces. Due to this fact, every day more than 24,000 employees commute to Offenburg (Stadt Offenburg, n.y.-a)

City transport

The local public transport in Offenburg is called *Schlüsselbus* and serves the inner-city. Various regional bus lines connect the city with surrounding areas of the Ortenaukreis. Both bus services are element of the tariff community Ortenaukreis *TGO (Tarifverbund Ortenau GmbH)* and are operated under the lead of the *Technische Betriebe Offenburg (TBO)*. (Stadt Offenburg, 2013) Regional and long distance train services are available at two stations in Offenburg, however light rail transport is not offered (Deutsche Bahn AG, 2016a).

The municipality provides a cycle network of 220 kilometres as well as a large number of free bike-parking spaces, rentable storage boxes and one *Radhaus*, a fully-automated system at the central station that is able to store 120 private bikes. (Stadt Offenburg, n.y.-b)

Currently, two companies provide stationary car-sharing services in Offenburg: *Flinkster* (Deutsche Bahn AG, 2016b) and *Stadtmobil Südbaden* (Stadtmobil Südbaden AG, 2012)

The provider for bike-sharing in Offenburg is *nextbike*. In addition to the BSS of nextbike, the TBO organize a free bike rental from Monday till Saturday. (ibid., n.y.-b)

Modal share

Figure 3-11 displays the modal share of Offenburg in 2006. The share of MIT amounts to almost one half of the total (48%), whereas the share of PT only amounts to 6%. The share of cycling amounts to 25% and the one of walking is 21%. In 2009, the city decided to further strengthen environmentally friendly transport (bus, bicycle and walking). Within the scope of these decisions the city aims to increase the shares of bus (up to 10%) and bicycle (up to 27%) and hence reduce car traffic (down to 43%). The share of walking should not fall below 20%. (Stadt Offenburg, n.y.-c)

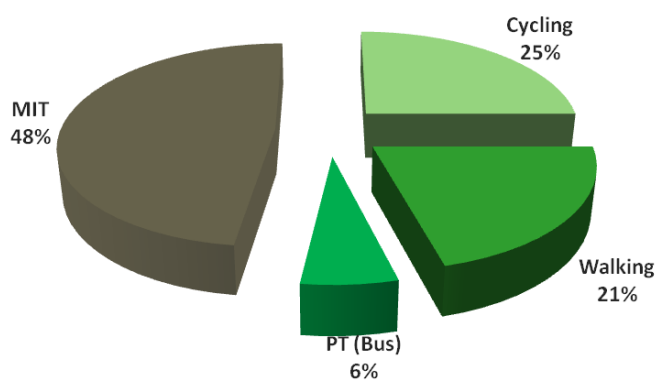






Figure 3-11: Modal share of Offenburg: number of trips (domestic traffic); source: own graphic, values retrieved from City of Offenburg (n.y.b)

3.4.2 Main Characteristics



BRAND IDENTITY	EinfachMobil
COMISSIONING	23.06.2015
STATUS OF PROJEKT	Pilot phase (2015 – 2017)
NUMBER OF STATIONS	4 (as per 03/2016)
INTEGRATED SERVICES	<p>     </p> <p> Bike (B+R, infrastructure) Public Transport Car-sharing Bike-sharing </p>
ELECTRIC MOBILITY	yes: e-car-sharing and pedelecs
ACTORS INVOLVED AND THEIR ROLES	City of Offenburg – initiator Technische Betriebe Offenburg (TBO) – operator of mobility stations and local public transport (bus) Stadtmobil Südbaden – (e-)car-sharing provider Nextbike – (e-)bike-sharing provider
FACILITIES	Depending on location: parking places for car-sharing and bike-sharing (boxes for nextbike pedelecs); charging point for electric vehicles; private bike parking (normal support stands, boxes); integration of bus shelters
USERS	200 (as per 02/2016)
EVALUATION	Until 2017

3.4.3 Implementation Process, Development and Goals

In 2012, within the scope of the integrated traffic and climate protection concept of Offenburg, the implementation of a network of mobility stations in Offenburg and its surroundings was decided. In this context, the implementation of electric mobility as well as the integration of car-sharing into companies plays an important role. (Kassel, 2015)

The planning process for this integrated multimodal mobility offer, called *EinfachMobil*, started in 2013 and the entire project is scheduled until 2030. The stations shall be implemented in living areas, commercial areas, at central points in the inner city as well as in neighbouring communities. In December 2014, the municipal council decided the realisation of the first stage of expansion (ibid., 2015).

To start with, four stations in the city area are operated in the course of a pilot phase from 2015 to 2017. On June 23, 2015 the first station was implemented followed by further three stations in October. Since, all stations are available to the public. The test operation shall help to test the planned measures for integrating different means of transport and be evaluated till 2017. If successful it will be decided about further realisations in 2018. Although this project is in operation for less than a year, more than 200 people already registered. (ibid., 2015)

Goals

The integrated traffic concept of Offenburg describes the goals pursued with its mobility management very detailed. With the implementation of mobility stations, the city of Offenburg aims to **promote a sustainable local mobility while supporting shared mobility – using instead of owning – combined with electric mobility**. (Kassel, 2015)

In this context, the city of Offenburg hopes for a reduction in car ownership which would lead to savings in terms of space needed for parking. The existing bike-sharing system, which already operates 15 stations in Offenburg, as well as the local car-sharing offer, with currently seven stations, is integrated into the new system. (ibid., 2015)

At two of the four stations electric car-sharing is available and one station offers pedelecs in addition to normal bike-sharing. Users shall have the possibility to decide the best mode, depending on their trip purpose in order to strengthen multimodal travel behaviour. The physical concentration of several means of transport at one location not only promotes multimodal travel behaviour, but also intermodal travel behaviour. (ibid., 2015)

This new concept not only goes easy on environment and climate, but also on the own costs for mobility. (ibid., 2015)

3.4.4 System Design

Station location

According to Kassel (2015) the choice of location is based on a site concept, which has been developed by the city of Offenburg in corporation with potential service providers and experts. The following criterions have been determined to identify possible stations locations:

- Identification of **existing car-sharing and bike-sharing stations with high demand**: High frequented stations show a big potential for possible mobility station locations and should be integrated.
- The stations should be **accepted** in terms of **urban development** as well as in terms of **neighbourhood**.
- So called **founder quarters** (German: Gründerzeitviertel) show high potentials in terms of **potential user groups**: due to high parking pressure, residents of those areas commonly are more affine in using sharing-offers and more likely dispense with privately owned cars. In addition to that, many service companies, whose employees could use car-sharing vehicles as company cars, are located within these quarter areas. (Kassel, 2015)
- **Land availability and accessibility** (barrier-free and safe) plays an important role for choosing possible locations (cf. Appendix D).

Thus, two stations are located exactly within these quarters: *Technisches Rathaus* and *Kulturforum*. Two existing bike- and car-sharing stations were combined and relocated at the bus station on-site (cf. *ibid.*).

As mentioned in chapter 3.4.1 more than 24,000 employees commute to the city every day. Most of them reach Offenburg at the central (bus) station and then have to continue their trip by bus to get into the commercial areas. Because of the lack of an efficient public transport offer supplying these areas, the third location was implemented at the central station (*Bahnhof – ZOB*) in order to provide attractive alternatives for commuters. (Kassel, 2015)

The fourth station *Messe* is located at the trade fair of Offenburg and links events and hotels on-site. Guests of the trade fair and the hotel prospectively should have the possibility to use the car-sharing offer during their stay (cf. Appendix D).

Currently, all four stations are located on public parking spaces next to public transport stops in Offenburg itself and provide car-sharing in cooperation with Stadtmobil Südbaden (local car-sharing provider) and bike-sharing in cooperation with nextbike. (Kassel, 2015)

Figure 3-12 displays the locations of the existing stations (green) as well as three further planned stations (blue) - two in residential areas and one at the Rural District Office. In order to sustain this concept beyond the city boundaries, Offenburg intends to spread the network along major inter-city routes to Kitzingtal, Renchtal and Straßbourg/ Kehl.

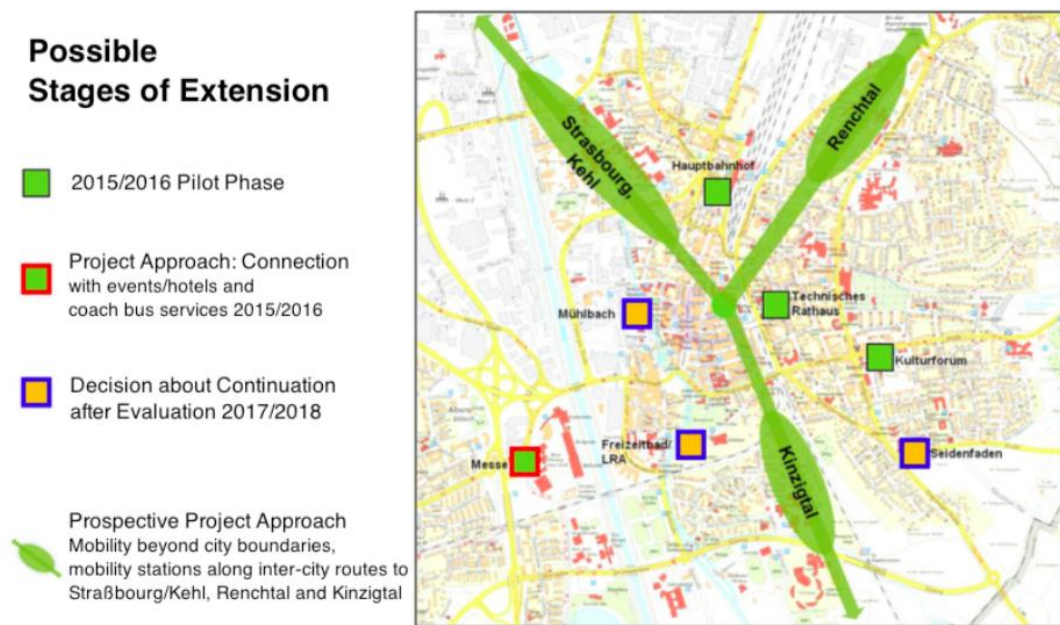


Figure 3-12: Current station location and planned development for mobility; source: Kassel (2015)

Station configuration

The basic configuration of a mobility station includes the provision of parking places for car-sharing and bike-sharing vehicles as well as the provision of parking facilities for private bicycles. In order to guarantee an easy, flexible and hence cost-efficient construction of the mobility stations, Offenburg developed a modular design (cf. Figure 3-13). The system can be changed and adjusted to the users' and urban planning's demands without great effort. According to their endowments the stations can be categorized as *Premium*, *Medium* and *Singular*. (Kassel, 2016)

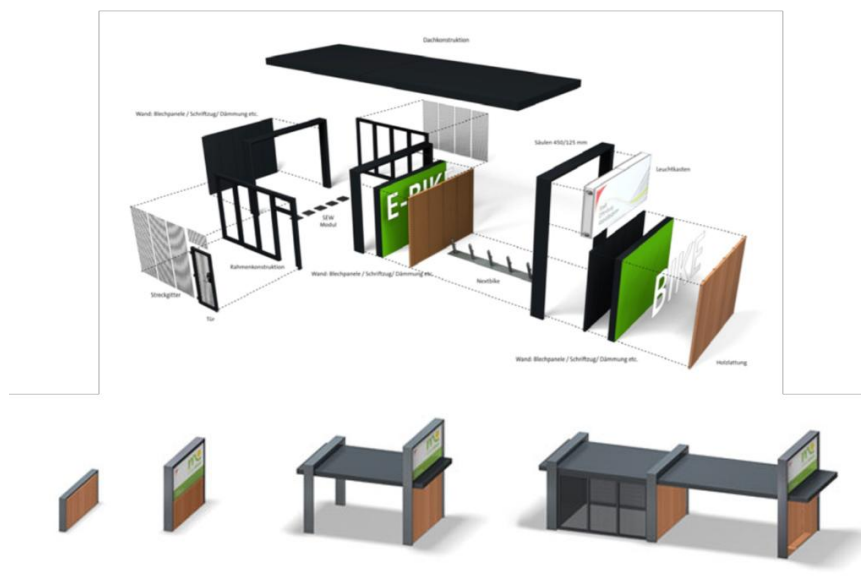


Figure 3-13: Modular design of Offenburg's mobility stations; source: André Stocker design (2013)

Corporate design

Within the scope of the implementation of mobility stations, a new brand for the entire public mobility was developed for communication and marketing purposes. With the slogan *EinfachMobil* and green colouring, the new brand sublimates all mobility services: the infrastructure elements of mobility stations, the sharing vehicles as well as bicycle infrastructure (cf. **Figure 3-14**). By and by all public transport stops and buses shall be branded with the EinfachMobil logo and adjusted in terms of their design. (Kassel, 2015)



Figure 3-14: Corporate design of EinfachMobil: infrastructure elements of mobility stations, car-sharing and bike-sharing vehicles, bicycle infrastructure; source: Stadt Offenburg (2015), Kienzler Stadtmobiliar GmbH (n.y.)

Actors involved and their roles

Planning, construction, marketing and financing is in the responsibility of the city of Offenburg. After their commissioning the platforms are signed over into the fund assets of the *Technische Betriebe Offenburg (TBO)*, a dependent subsidiary of the city of Offenburg. Thus, the operation and provision of the mobility platforms occurs through TBO as a commercial institution. Mobility providers use the platforms in order to provide their services. Within the pilot phase the use of the mobility platforms is exclusive for nextbike and Stadtmobil Südbaden. Afterwards concessions will be awarded in a five years rhythm and the procedure is open for any provider. (Kassel, 2015)

How to use EinfachMobil?

As part of the new mobility strategy, the city of Offenburg introduced the *EinfachMobil* card, which allows the use of the multimodal offers at the mobility stations. People have to register for EinfachMobil on the project's website (www.mobilinoffenburg.de, cf. **Figure 3-15**) and have to pay a registration fee of 5 EUR for the receipt of the card. EinfachMobil is available for everyone and does not have any requirements to be fulfilled (cf. switchh chapter **3.3.4** or Leipzig mobil chapter **3.5.4**). (Stadt Offenburg, 2015)



Figure 3-15: Screen shot of EinfachMobil website; source: Stadt Offenburg (2015)

The website provides information on how to use the mobility offer and redirects to the registration forms of nextbike and Stadtmobil Südbaden. With the membership of EinfachMobil, users save the monthly fee of 5,- EUR for car-sharing membership and have the possibility to get a 9,- EUR discount on the annual subscription of nextbike's RadCard tariff (instead of 48,- EUR they only pay 39,- EUR). The RadCard tariff offers each first 30 minutes of the bike-sharing usage for free, normal users have to pay 1,- EUR per 30 minutes. (Stadt Offenburg, 2015)

Table 3-2 summarises the monetary benefits for EinfachMobil users:

Service	Benefits for EinfachMobil users	Savings/ year
Stadtmobil Südbaden	The monthly fee of 5,- EUR for membership is omitted	60 €
nextbike	20% discount on RadCard tariff (39,- EUR instead of 48,- EUR)	9 €
SUM		69 €

Table 3-2: Monetary savings for EinfachMobil users; source: own table, information retrieved from Stadt Offenburg, 2015

After registering for each integrated service users have access to all of them. The website of EinfachMobil shows the location of the four existing mobility stations as well as the other stations of Stadtmobil Südbaden and nextbike, which are not integrated into mobility stations yet. (Stadt Offenburg, 2015)

Users have to book car-sharing vehicles via the Stadtmobil Südbaden website, it is not possible to do a reservation via the EinfachMobil Website. With the EinfachMobil card users can open the vehicles of nextbike and Stadtmobil Südbaden. The card also acts as key for bicycle storage boxes. In the future the card should also be applicable as ticket for public transport. The billing for each service occurs separated by the partners itself. (Stadt Offenburg, 2015)

3.5 Leipzig mobil - Leipzig

3.5.1 Leipzig and its Transportation System

Leipzig is the largest city in the federal state of Saxony (German: Sachsen), with a total population of 556,000 people living in an area of area of 297.60 km². Currently, Leipzig is the fastest growing city in Germany. (Heinemann, 2016)

City transport

Leipzig's public transport system offers a large and wide-reaching tram network, which is complemented by large number of lines. The city's tram and bus network is operated by the *Leipziger Verkehrsbetriebe (LVB)*, the largest local public transport company in Leipzig. (Stadt Leipzig, 2016a) Since 2013, a commuter rail service is operated by the *S-Bahn Mitteldeutschland* in Leipzig as well. It connects the inner-city of Leipzig with the Leipzig/Halle metropolitan area. (Deutsche Bahn AG, 2016d) All public transport services are integrated in the Central German Transportation Association *Mitteldeutscher Verkehrsverbund (MDV)* (Stadt Leipzig, 2016a).

The city of Leipzig provides a cycle path network of 436 kilometres (Heinemann, 2016) and continuously invests in its cycling infrastructure aiming to increase the share of cyclists. More than 1,000 bike parking facilities, called *Leipziger Bügel*, had been installed all over the inner-city area within the past few years. (Stadt Leipzig, 2016b)

So far, *teilAuto* is the only car-sharing provider in Leipzig and operates a station-based system (carsharing-news.de, 2016f).

Nextbike operates the local bike-sharing system in cooperation with the LVB and the municipal utilities of Leipzig (Stadt Leipzig, 2016b).

Modal share

Figure 3-16 displays the modal share of Leipzig in 2013. The share of MIT amounts to 34%, the one of PT values 17%. Almost one third of all trips are realized by walking and 17% of all trips are made by bike. (Ahrens, 2015) The city of Leipzig aims to increase both, the share of PT (to 23% by 2025) and the one of cycling (to 20% by 2020) (cf. Stadt Leipzig, 2016c; Appendix E).

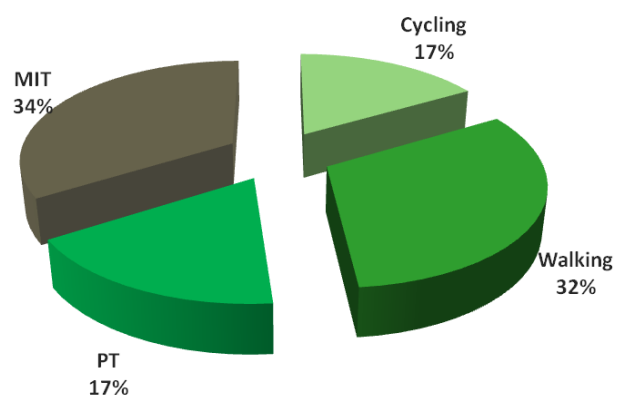



Figure 3-16: Modal share of Leipzig: number of trips (domestic traffic); source: own graphic, values retrieved from Ahrens (2015)

3.5.2 Main Characteristics



BRAND IDENTITY	Leipzig Mobil
COMISSIONING	08.07.2015
STATUS OF PROJECT	Regular operation
NUMBER OF STATIONS	25 (as per 03/2016)
INTEGRATED SERVICES	 <p>Bike (B+R) Public Transport Car-sharing Bike-sharing Taxi</p>
ELECTRIC MOBILITY	Yes: e-car-sharing, electric charging points
ACTORS INVOLVED AND THEIR ROLES	<p>City of Leipzig - initiator</p> <p>Leipziger Verkehrsbetriebe (LVB) – operator of mobility stations and of ocal public transport</p> <p>TeilAuto – car-sharing provider</p> <p>Nextbike – bike-sharing provider</p> <p>Stadtwerke Leipzig – operator of electric charging stations and provision of their power</p>
FACILITIES	Bicycle parking facilities; information and booking terminal; charging stations
USERS	no information
EVALUATION	no

3.5.3 Implementation Process, Development and Goals

The implementation of mobility stations is part of Leipzig's urban development plan *traffic and public space 2003* (German: *Stadtentwicklungsplan Verkehr und öffentlicher Raum*) more precisely its update, which was decided within the scope of the discussion about an integrated transportation concept in 2011. (Heinemann, 2016)

Thus, the city of Leipzig intensively deals with the topic of mobility stations since 2012. By developing a concept for updating Leipzig's urban development plan in 2013, the implementation of mobility stations played an important role and is embedded within several fields of action (cf. (Stadt Leipzig, 2015a)). In February 2015, the developed concept was confirmed by the city council. (ibid., 2016)

Less than five months later, the LVB opened the first mobility station at *Willhelm-Leuschner-Platz* on the 8th of July 2015 under the slogan *Leipzig mobil*. The implementation of further 24 stations followed in August and September. All 25 stations are distributed through the city-area and combine local public transport with car-sharing and bike-sharing offers. (Stadt Leipzig, 2015b)

Amongst mobility stations, an integrated tariff as well as a multimodal mobility platform are part of Leipzig mobil. (cf. Appendix E)

Future planning for further implementations consider different approaches: to additionally implement three to five stations comparable with existing ones or to implement smaller stations comparable with mobil.pünktchen (cf. ibid., chapter 3.2).

Furthermore the integration of taxi services beyond physical availability (at some stations taxi stands are located in the immediate surroundings) is planned. It is considered to reward environmental friendly mobility behaviour with taxi vouchers, for instance. (cf. Appendix E)

Goals

The project aims to contribute **changing the mobility behaviour of Leipzig's citizens towards a sustainable mobility**. In the past few years the costs for using local public transport raised by approximately 30%, whereas the prices for fuels significantly decreased. Leipzig thus faces the problem of continuously decreasing shares of PT. By providing complementary offers Leipzig (city as well as LVB) aims to restrengthen local public transport and increase its share by 5% within the next ten years. (cf. Appendix E)

According to Heinemann, with the implementation of mobility stations, Leipzig citizens shall recognize that the local public transport is a modern one, which provides for future mobility. In combination with a positive marketing strategy, the potentials of increasing the attractiveness of local public transport and accordingly the number of customers will rise. (cf. ibid.)

Due to the implementation of mobility station, car-sharing is visible in public space, which is of special importance to the city in order to promote sustainable mobility and reduce private car ownership (cf. ibid.)

3.5.4 System Design

Station location

In order to determine possible station locations, important public transport stops were identified as a first step to ensure their integration. Subsequently existing car-sharing stations within the surroundings of those stops were determined. In this context, proposals and needs for new station locations of the local car-sharing provider were taken into account as well. Accordingly, bike-sharing sites were analysed. (cf. Appendix E)

The combination of the collected information, including the consideration where further implementations of stations would be necessary and reasonable, resulted in a list of approximately 50 sites. The coordination of 25 stations to be realized took place between the LVB and its partners by involving the city of Leipzig. (cf. *ibid.*)

Station configuration

Leipzig mobil stations provide up to five parking places for car-sharing vehicles, most of the stations provide two parking lots (cf. Appendix F).

At each station bike-sharing is available. In Leipzig nextbike bicycles do not have fixed parking places. (cf. *ibid.*)

An information and booking terminal is part of each mobility station. (cf. *ibid.*)

Furthermore, each station provides various bicycle parking facilities for private and nextbike bicycles as well as electric charging stations. (cf. *ibid.*)

In the course of constructing mobility stations, taxi stands were implemented or relocated at several stations in order to physically integrate this offer. (cf. *ibid.*)

Figure 3-17 displays car-sharing parking places at a Leipzig mobil station, an information and booking terminal next to nextbike bike-sharing bicycles with bike parking facilities in the background as well as one electric charging station.

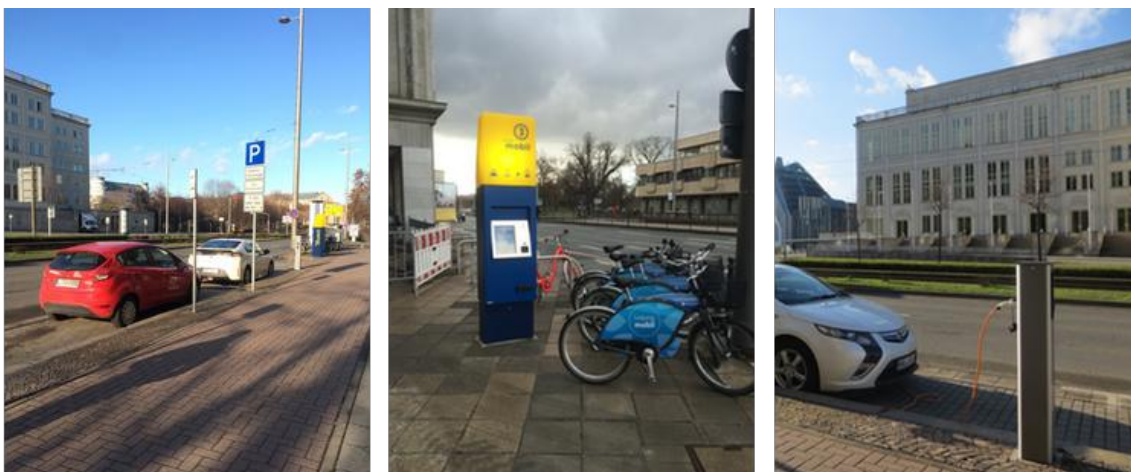


Figure 3-17: Elements of Leipzig mobil stations; source: own photographs

Corporate design

Leipzig mobil does not have a uniform corporate design for its offer: The terminals are designed in blue and yellow and differ from design on next bike vehicles (cf. **Figure 3-17**). Car-sharing vehicles, car-sharing parking places as well as electric charging stations are not Leipzig mobil branded at all. The Leipzig mobil card is designed correspondingly to the bike-sharing vehicles (cf. **Figure 3-18**). (cf. Appendix E)

Actors involved and their roles

The project Leipzig mobil is organised by the LVB. Planning, implementation and operation of the mobility stations is in the responsibility of this company as well. (cf. Appendix E)

The city of Leipzig is involved in the project in terms of coordination planning and infrastructural decisions concerning location determination. It is also responsible for the realisation of the goals embedded within the urban development plan. (cf. *ibid.*)

TeilAuto is the local car-sharing company, which provides its car-sharing vehicles at the mobility stations and *nextbike* provides its bike-sharing vehicles at the mobility stations.

The provision of the electric charging stations as well as their power is in the responsibility of the *municipal utilities of Leipzig* (German: *Stadtwerke Leipzig*). (cf. *ibid.*)

How to use Leipzig mobil

Leipzig mobil is exclusively available for LVB-subscribers. People can inform themselves about the offer at the LVB website (www.l.de/verkehrsbetriebe/produkte/leipzig-mobil) or in one of the LVB service centres. Registering is either possible at the LVB website or as well in LVB service centres. The registration for all partners is integrated within the registration process for Leipzig mobil and is not required separately. For a monthly fee of 4,- EUR Leipzig mobil users receive special conditions for the partners' services: Leipzig mobil users do not have to pay a monthly fee for teilAuto and are able to use car-sharing from 6,-EUR per hour including free kilometres. Nextbike bike-sharing is available for 0,50 EUR per 30 minutes, instead of normally 1,- EUR. After the successful registration users receive their personal Leipzig mobil card (cf. **Figure 3-18**) which replaces the existing LVB-ticket and acts as key for car-sharing vehicles. (LVB, n.y.-a)



Figure 3-18: Leipzig mobil card; source: own photographs

Both, the smartphone application and the terminal provide maps which show the location of Leipzig mobil stations as well as local public transport stops and other car- and bike-sharing stations (cf. **Figure 3-19**). By clicking onto a Leipzig mobil station symbol detailed information about the exact station location as well as vehicles available can be retrieved (cf. **Figure 3-19**). If users want to travel from A to B, they have the possibility to plan their trip via the Leipzig mobil smartphone application as well as via the Leipzig mobil terminal and get different route options in form of bar displays. (LVB, n.y.-a)

Users have the possibility to book car-sharing vehicles via the terminal on-site or the Leipzig mobil smartphone application. The Leipzig mobil card allows users to open car-sharing vehicles, bike-sharing bikes can be accessed via the Leipzig mobil card or the smartphone application. Users receive one monthly bill, which accounts for all services used plus the monthly fee of 4,- EUR. The electric charging stations can be activated via the Leipzig mobil terminal, however this offer is not part of the Leipzig mobil tariff and will be charged separately (ibid., n.y.-a).

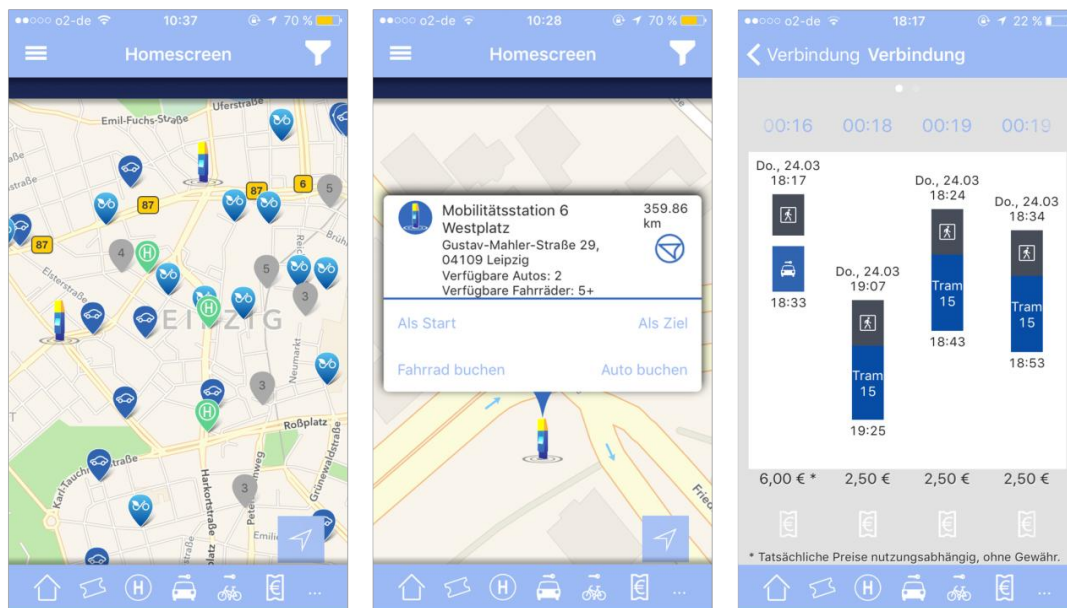


Figure 3-19: Leipzig mobil, smartphone application: map with station locations, information of one Leipzig mobil station, trip planning with different route options; source: own photographs

3.6 Identification of Different Tiers of Integration

Based on the analysis of the four depicted case studies different tiers of integration were identified.

Furthermore the multimodal mobility services were looked at from a non-user's point of view, beginning from how to become aware of the provided offer over becoming a user and finally using the offer. The different steps from being a non-user to becoming a user complete the previous findings.

Therefore the current work differentiates among eight tiers of integration: physical, marketing, information, registration, trip planning, booking, access and billing integration.

Due to a sparse amount of literature focusing these tiers in context of multimodal mobility offers, own definitions for the previously mentioned tiers of integration are provided. All definitions are made in agreement with the thesis' supervisor and are briefly described in the following lines.

Physical integration

As the term *mobility station* already implies, location is a main aspect of this concept. Physical integration is thus defined as the linking between two or more means of transport at one single location. The modes have to be in the immediate mutual area and if possible shall be reachable without any barriers (e.g. street crossings).

Physical integration shortens distances between connections, simplifies the change from one mode to another and hence positively contributes to intermodal mobility behaviour. It is assumed that a high level of physical integration therefore contributes to a decreasing need of private cars.

Marketing integration

Marketing integration shall include any activity concerning promotion, distribution and selling the service. Marketing measures attract people's attention and increase the public's awareness of the available offer. Using a brand identity promotes consciousness and shows potential users the availability of the complementary offer.

Furthermore marketing strategies often imply benefits or discounts in order to attract more users. Even small financial benefits could help to make the offer more attractive and facilitate the uptake of multimodal mobility in this way. From the provider's point of view, marketing cooperation can positively contribute to gain a greater share of the mobility market.

Information integration

In the context of multimodal mobility offers, integrated information involves the implementation of all relevant information about the mobility offer into one platform. The information has to include services available, pricing, customer benefits, registration and how to use the offer. This can either be achieved by providing an information board or by installing an information terminal on-site or by providing a website. The integration facilitates gathering information and gives an overview of the services provided at one glance.

Registration

Integrated registration implies that people intending to use a multimodal mobility offer do not have to register for each partner separately. The registration for the service itself authorizes the usage of the services provided by all participating partners.

On the one hand this process is comfortable and timesaving for users and thereby lowers the barriers to entry. On the other hand it requires a high level of cooperation amongst the service provider and its partners. Offering an integrated registration process is difficult due to the lack of standardised interfaces for data processing and the partners' privacy policies concerning data transfer.

Trip planning

Integrated trip planning describes the capability of one single platform to provide location information of all services e.g. in one map. The platform can either be integrated into a terminal on site, a website or a smartphone application. The user does not have to switch to each provider's platform to get this information, but is able to see all offers at a glance. Integrated trip planning also includes the provision of different route options by different means of transport while requesting how to get from A to B.

Booking

The capability of booking all offers, which are part of the mobility offer, via one platform is defined as integrated booking. Users do not have to change the platform in order to reserve e.g. a car-sharing vehicle. Again, this platform can be part of a terminal on site, a website or a smartphone application.

Access

Access integration implies that two or more modes of transport can be opened or used with the same medium, e.g. with the same card or smartphone application.

Integrated access simplifies the usage of several different modes and is an important aspect in terms of promoting multimodal mobility behaviour.

Billing

The integration of billing means that users receive one bill that accounts for all services used, instead of receiving separate bills. Amongst the costs for using the mobility services, membership fees (if charged) are included, too. Integrated billing requires one central institution for its processing and may lead to conflicts with the partners' privacy policies.

The following table (**Table 3-3**) briefly summarises the definitions above. Several tiers have more than one possibility for integrating the offer. If so, they are listed as well and will be called sub-tier below.

Integration Category	Description
Physical	connection between two or more means of transport at one single location
Marketing	any activity concerning promotion, distribution and selling the product and service attraction of people's attention: achieve awareness of the available offer <ul style="list-style-type: none"> • brand identity • complementary tariff offers
Information	implementation of relevant information concerning mobility offers, such as pricing, customer benefits, registration and how to use the offer into one platform <ul style="list-style-type: none"> • on-site: information board/terminal • website
Registration	one single registration for all offers <ul style="list-style-type: none"> • service centre • website
Trip Planning	provision of a) location information of all services for example in one map and b) different route options by different means of transport for any trip from A to B <ul style="list-style-type: none"> • terminal on site • website • smartphone application
Booking	capability of booking all offers, which are part of the mobility offer, via one platform <ul style="list-style-type: none"> • terminal on site • website • smartphone application
Access	Capability of accessing two or more modes of transport with the same medium <ul style="list-style-type: none"> • card (in case of car-sharing vehicles the card has to be pressed on the board computer; in case of bike sharing vehicles the card either has to be put into a terminal or pressed on a board computer in order to receive the lock code) • smartphone application
Billing	Collective bill for all integrated offers which accounts for all services

Table 3-3: Description of tiers of integration; source: own table

4 Methodology

Section 3 gives a comprehensive overview of the four depicted case studies. Furthermore it identifies and defines different tiers of integration. This chapter aims to develop a classification scheme based on the previous findings. Along with expert interviews this shall provide a basis for the identification of success factors (cf. chapter 5.2.1).

4.1 Development of the Classification Scheme

In order to determine the success factors of multimodal mobility services they are examined in terms of their integration strategy based on the eight tiers of integration defined in chapter 3.6.

Following Table 3-3 the classification scheme is developed in the form of tables:

- columns represent the different tiers of integration including their sub-tiers
- rows list all services (modes) included within the offer

The number of columns with the eight defined tiers their sub-tiers is identical for all case studies. However, the number of rows may vary from case study to case study as only services which are integrated within the offer will be taken into account.

The cells are filled with different colours (and notes) according to the description provided in Figure 4-1.

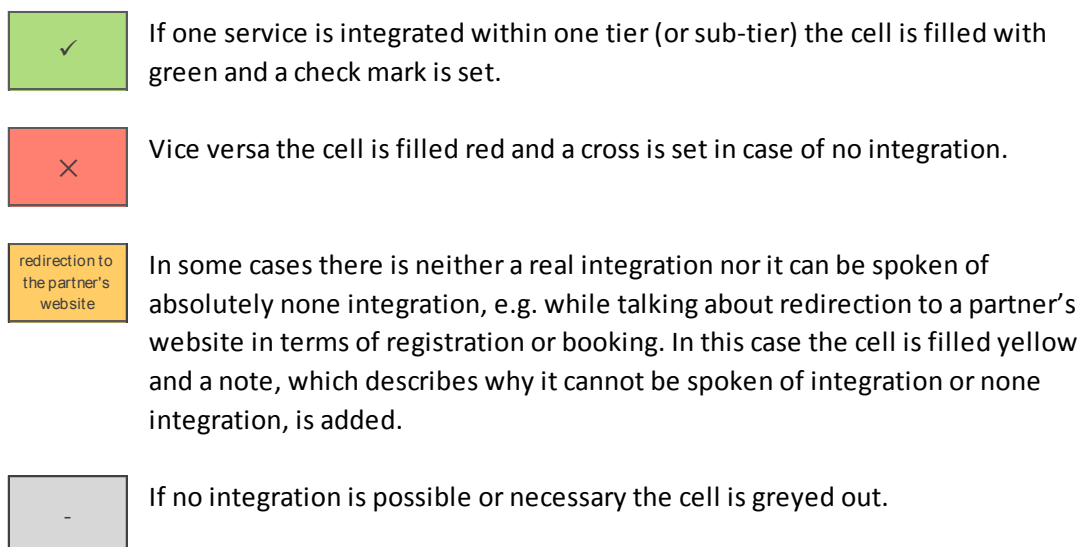


Figure 4-1: Explanation of cell fillings within the classification scheme; source: own graphic

In order to measure how well each of the eight tiers are integrated amongst all services, different levels of integration are defined. The conducted literature review concerning mobility offers did not provide any suggestions how to divide different levels of integration. The following division of five levels, shown in **Table 4-1**, hence is oriented to findings from economics, programming and automobile industry. In all three branches mentioned the classification of the levels follows a five step division (cf. Rodrigue, n.y.; Amsden, 2001; Wisselmann & Schaller, 2012).

The allocation to the five different levels occurs by calculating a percentage of integration for each column by summing up the cells which represent existing integration (green and yellow) and dividing them through the total number of green, yellow and red cells within the column:

- Green cells are weighted by one as they represent a full integration
- Yellow cells are only counted half, because they do not represent a full integration (cf. explanation in **Figure 4-1**)
- Red cells do not stand for integration and are represented by zero
- Grey cells are not taken into account at all as they represent the case where no integration is possible or necessary

This leads to the following formula:

$$\text{Percentage of integration} = \frac{1 * \text{No. of green cells} + 0.5 * \text{No. of yellow cells} + 0 * \text{No. of red cells}}{\text{No. of green, yellow and red cells (without weighting)}} [\%]$$

By dividing the numerator through the number of green, yellow and red cells the resulting value is normalized (grey values are not taken into account). This is important to keep the results comparable.

	Description	Range
Level 0	No integration	0 %
Level 1	Low integration	1-33 %
Level 2	Partial integration	34-66 %
Level 3	High integration	67-99 %
Level 4	Full integration	100 %

Table 4-1: Level division of integration; source: own table

According to the ranges of **Table 4-1** the columns are assigned with levels of integration. In case of sub-tiers, the level of integration for the entire tier is determined by building the mean value of the calculated percentages amongst all sub-tiers.

The following step-by-step guide (cf. **Figure 4-2**) shall help to clarify the explained process:

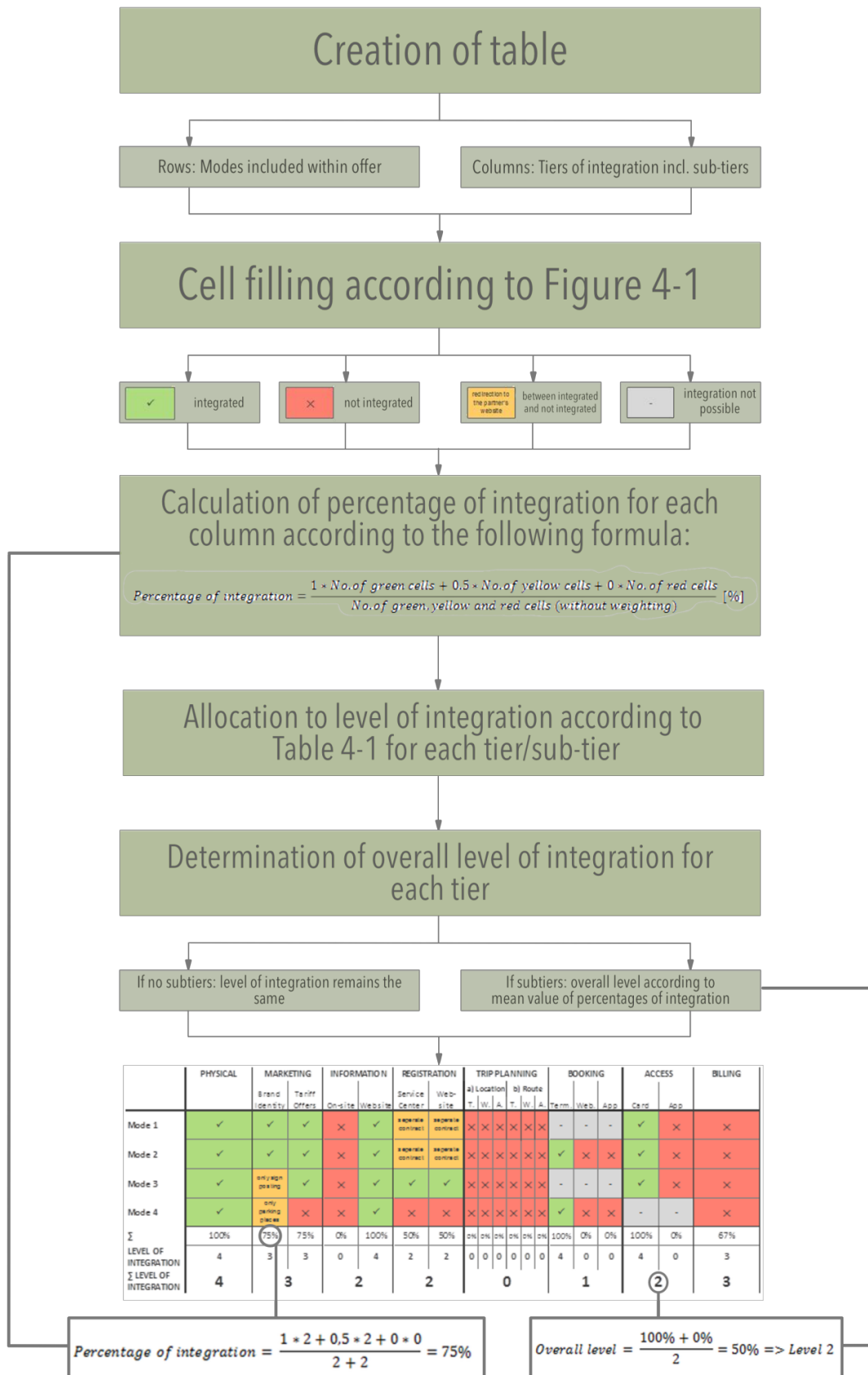


Figure 4-2: Step-by-step guide of classification scheme; source: own graphic

4.2 Expert Interviews

Amongst intensive literature review and comprehensive data collection expert interviews were carried out. For each case study one expert was interviewed. The interviews shall serve to further investigations in order to complete the analysis of the four depicted case studies as well as the application of the classification scheme. People in charge or strongly involved with the project are inter alia asked about their experiences in operation and how to implement multimodal mobility services successfully. The answers and statements shall build one basis for the identification of success factors and contribute to the derivation of recommendations for the implementation of similar projects. All interviews follow more or less the same guideline of questions trying to get answers on the following topics (unless answers were found within the literature review):

- Implementation process
 - Which steps precede the implementation of the mobility stations?
 - How does future planning look like?
- Project's goals
 - Which goals are to be achieved by the project?
- Location criteria
 - How are locations determined for the implementation of mobility stations?
 - Which criteria play an important role?
- Actors involved and their roles
 - Who is involved in the project?
 - Which role do they play?
 - Do different actors pursue different aims?
- Corporate Design
 - Which role does the development of a corporate design/a new brand play?
- Current concept
 - How does the current concept work?
- Current findings
 - What is the current number of users?
 - What experiences in operation does the interviewed person have?
 - What is the occupancy rate of the mobility stations?
- Success factors
 - How can multimodal mobility services/stations successfully be implemented?
 - What are the success factors?

A summary of each interview is attached in the appendix (cf. Appendix A-E).

5 Analyses and Results

5.1 Application of the Classification Scheme

Relevant information for the application of the classification scheme is either based on the findings within chapter 3.2 to 3.5 or based on own field research. All websites as well as corresponding smartphone applications (if available) of each mobility offer were tested concerning their functions. All results are included in the following application of the classification scheme.

5.1.1 Application Instructions

The following instructions for the application of the classification scheme shall help to remove uncertainties.

Physical integration

It may be the case that not every mobility station provides each single service. If it has to be checked whether the offer can be identified as part of the service or not, two approaches seem to be possible:

- If the provision of the service is only reasonable at certain locations, the service is seen as part of the mobility station, however, not all of the stations will provide this service → green cell filling (e.g. the provision of cargo bikes (German: Lastenräder) may only be reasonable in residential areas)
- Unless it is possible to decide on whether one service would be reasonable at all stations the following approach is proposed: if more than one third of the mobility stations provide one specific offer the cell receives a green filling, otherwise it receives a yellow filling and is only counted half.

Bike

The mode bike is included within all four case studies. It implies the provision of Bike and Ride. However, it has to be distinguished between the provision of simple Bike and Ride parking facilities and the provision of bicycle storage boxes.

In case only *simple Bike and Ride parking facilities* are available the following instructions have to be applied:

- Bike will not be counted within the tier of marketing → grey cell
 - Brand identity: simple Bike and Ride parking facilities do not receive the service's brand
 - Tariff offers: the use of simple Bike and Ride parking facilities is for free, so there is no need for complementary offers

- Bike will not be taken into account within the tier of information: the only information which is classified as relevant concerning simple Bike and Ride parking facilities is the one of location. However, this kind of information is included within the tier trip planning (sub-tier location)
- Bike does not account within the tiers of registration, booking, access and billing as none of these tiers are required for the use of simple Bike and Ride parking facilities

In case that *rentable storage boxes* are also provided, it is taken into account within all previously mentioned tiers except for booking (it is not possible to book rentable storage boxes, users have their own dedicated storage box).

- Bike will account within the tier of marketing
 - Brand identity: the analysis of the four case studies showed, that in case of the provision of rentable storage boxes (cf. switchh and EinfachMobil), they received the offer's logo. Therefore it has been decided to include this sub-tier for bicycle storage boxes.
 - Tariff offers: as the use of storage boxes is not free, it is also included within the sub-tier of tariff offers
- Bike will be taken into account within the tier of information: amongst the information of location (part of the tier trip planning) it is also classified as necessary to inform about the offer in general, e.g. costs, where to register etc.
- Bike does account within the tiers of registration, access and billing
 - Registration: Users who want to park their private bikes in a storage box, need to register for its use.
 - Access: bicycle storage boxes are locked and not accessible for anyone, hence an access medium is required.
 - Billing: as the use of bicycle storage boxes is not free, it would be theoretically possible to include their rent in an integrated bill.

There is one exceptional case for the mode bike, where the mode is not considered in terms of Bike and Ride, but as the vehicle itself: within the sub-tier of route (trip planning) bike is considered as the vehicle itself, because route information for bikers only makes sense if the bike is actually used.

Bike-sharing

It is not possible to reserve bike-sharing bicycles, they can only be borrowed directly. Hence bike-sharing does not account within the tier of booking.

Public transport

The same applies for public transport: it is impossible to book local public transport. Long distance rail services that offer the possibility of seat reservation are not taken into consideration.

Taxi

In case of taxi services, it has to be distinguished between traditional taxi services (taxi stands) and modern taxi services that offer intermediary services by providing a platform, such as mytaxi.

- In order to determine the physical integration of taxi services, only the availability of taxi stands (regardless if intermediary services are integrated or not) is taken into account.
- For the determination of marketing, information, trip planning, booking and access integration, it does not make any differences which kind of taxi service is integrated.
 - Marketing: regardless which kind of service is integrated it has to be determined whether the service receives the brand identity or not and whether there are complementary tariff offers available or not.
 - Information: the provision of information about the integration of taxi services (e.g. complementary offers, etc.) is necessary regardless which kind of offer is integrated.
 - Trip planning: Either the location of taxi stands or the location of vehicles (intermediary) is possible. Route information is equal for both kind of services.
 - Booking: regardless, which kind of service is integrated, it has to be determined whether the service can be booked via the same platform as other integrated services.
 - Access: the use of taxi services in general does not require a specific access medium, therefore taxi services do not count in this tier at all.
- For the determination of registration integration, only services that integrate intermediary taxi services have to be taken into consideration.

5.1.2 Integration Strategy of mobil.punkte

Table 5-1 displays the integration strategy of Bremen's mobil.punkte. Mobil.punktchen are not taken into account for the application of the classification scheme. In the following all findings within each of the eight tiers are explained.

Physical integration: Level 4 – fully integrated

The multimodal mobility concept of Bremen integrates four different modes at their mobility stations: Bike (in this case Bike and Ride parking facilities), public transport, car-sharing and taxi stands. This leads to a physical integration of 100% and the level of physical integration is determined by 4.

Marketing integration: Level 2 – partially integrated

Bike and Ride parking facilities neither count within the sub-tier of brand identity nor in the one for tariff offers.

Brand identity

Besides the mobil.punkt stele which can be found at each mobil.punkt station, the mobil.punkt brand identity can be found again at car-sharing parking places and at integrated public transport stops: parking places are furnished with a mobil.punkt sign and at public transport stations signs point to the mobil.punkte. As the car-sharing vehicles are not mobil.punkt branded, the sub-tier of brand identity for car-sharing only is filled with yellow and counts by half. The same applies for public transport stops, besides the sign postings no further elements are mobil.punkt branded. Together this leads to 33% integration for brand identity and to the allocation to level 1.

Tariff offers

Public transport season ticket holders save the registration fee for car-sharing membership. There are no tariff offers for the use of taxi services available, which leads to a 67% integration within the sub-tier complementary offers and the level of integration hence is determined by 3.

The mean value of both sub-tiers within marketing is determined by 50% which leads to the allocation to level 2 for marketing integration.

Information integration: Level 2 – partially integrated

Information about Bike and Ride facilities is classified as irrelevant within this tier, thus it is not considered at all.

On-site

Mobil.punkt stations provide information boards, which give information about public transport departure times as well as about the service of mobil.punkte. On-site information is integrated by 67% and can be allocated to level 3.

Website

The mobil.punkt website gives information about car-sharing stations as well as about car-sharing and the mobil.punkte itself. However, the websites does not provide any further information about Bike and Ride, public transport or taxi services. Thus, the level of the sub-tier is determined by 1, due to 33% integration.

The mean value of both sub-tiers results in 50% integration, which leads to the allocation of level 2 for information integration.

Registration: Level 0 – not integrated

There is no need to register for Bike and Ride parking facilities or for the use of taxi services, hence those modes do not account within this category

Neither the service center nor the website provides a possibility for integrated registration. The registration for the mobil.punkt car-sharing provider is only possible via the provider's homepage. BSAG season tickets can only be purchased in BSAG service centres. Hence, the level of integration for both sub-tiers as well as the entire tier is 0.

Trip planning: Level 0 – not integrated

The offer of mobil.punkte does not provide integrated trip planning in any form, hence for all sub-tiers as well for the entire tier level is determined by 0.

Booking: Level 0 – not integrated

Booking is only possible in case of car-sharing and taxi services, public transport and bike hence do not account within this category.

Booking of car-sharing vehicles and taxis is not possible via the same terminal, website or smartphone application. Hence, the level for all sub-tiers as well as that for the entire tier is determined by 0.

Access: Level 0 – not integrated

The different offers which require access, in this case public transport and car-sharing, cannot be accessed with the same medium and hence the offer of mobil.punkte does not provide integrated access at all.

Billing: Level 0 – not integrated

Mobil.punkt services are all separated billed. This leads to the allocation to level 0 for integrated billing.

Integration Strategy of mobil.punkte

	PHYSICAL	MARKETING		INFORMATION		REGISTRATION	
		Brand Identity	Tariff Offers	On-site	Website	Service Centre	Website
BIKE	✓	-	-	-	-	-	-
PUBLIC TRANSPORT	✓	public transport stops point to mobil.punkt stations	✓	✓	×	×	×
CAR-SHARING	✓	mobil.punkt parking places are furnished with a mobil.punkt sign	✓	✓	✓	×	×
TAXI	✓	×	×	×	×	-	-
Σ	100%	33%	67%	67%	33%	0%	0%
LEVEL OF INTEGRATION	4	1	3	3	1	0	0
Σ LEVEL OF INTEGRATION	4	2		2		0	

Table 5-1: Integration strategy of mobil.punkte; source: own table

TRIP PLANNING						BOOKING			ACCESS		BILLING
a) Location			b) Route			Terminal	Website	App	Card	App	
Term.	Webs.	App	Term.	Webs.	App						
×	×	×	×	×	×	-	-	-	-	-	-
×	×	×	×	×	×	-	-	-	×	×	×
×	×	×	×	×	×	×	×	×	×	-	×
×	×	×	×	×	×	×	×	×	-	-	-
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
0	0	0	0	0	0	0	0	0	0	0	0
0						0			0		0

5.1.3 Integration Strategy of switchh 1.0

Table 5-2 displays the integration strategy of switch 1.0. In the following all findings within each of the eight tiers are explained.

Physical integration: Level 4 – fully integrated

Switchh physically integrates several modes at their mobility stations: the stations provide Bike and Ride (parking facilities and/ or rentable storage boxes), public transport, parking places for car-sharing and car rental vehicles as well as generally a bike-sharing station and taxi stands. Together, this leads to 100% integration and the level for physical integration can be determined by 4.

Marketing integration: Level 2 – partially integrated

Brand identity

The Hamburger Hochbahn AG established a new brand called switchh while implementing mobility stations. The logo can be found on the following parts of the mobility stations:

- Bicycle storage boxes
- Sign posting at public transport stops
- Car-sharing and car rental parking places

Sharing vehicles as well as taxis are not switchh branded. Due to the fact, that besides switchh sign posting no further elements at public transport stations are switchh branded, it only counts by half. The same applies car-sharing/ car rental vehicles: only parking places are switchh branded, not the vehicles themselves. The sub-tier of brand identity thus is integrated by 42% and allocated to level 2.

Tariff offer

HVV subscribers can expand their public transport season ticket with the complementary offers of switchh and receive benefits for car-sharing, car rental and bike-sharing. There are no discounts for bicycle storage or the use of taxi services. This leads to 67% integration, which is in Level 3.

The mean value of both sub-tiers results in 55% integration within the tier marketing and thus it is within level 2.

Information: Level 2 – partially integrated

On-site

There is no integrated information at the mobility stations, which leads to 0% information integration on-site.

Website

The switchh website informs about the entire complementary offer of switchh: it gives i.a. information about the services integrated, how to use them as well as the costs, registration

and benefits involved. Information about renting bicycle storage boxes is not provided on the switchh website. This leads to an integration of 83% and level 3.

Both values account to a mean value of 42% and thus the level of integrated information is determined by 2.

Registration: Level 2 – partially integrated

Service centre

There are two services points, one at Berliner Tor (switchh service centre) and another one close to Steinstraße (HVV service centre). Both offer the possibility to register for switchh. The registration process of switchh includes the purchase of a HVV season ticket (if not yet in possession) and the registration for Europcar.

However, for car- and bike-sharing separated contracts have to be fulfilled. Due to this fact the registration for car- and bike-sharing only accounts by half, as the switchh registration process does not directly integrate this process. The rental of bicycle storages and the registration for mytaxi is not integrated in the switchh registration process. This leads to 50% integration and the allocation to level 2.

Website

People also have the possibility to register on the switchh website. The registration process is equal to the registration at the service centres described above. Hence, the website is also integrated with 50% and level 2 can be determined for this sub-tier.

Together, this leads to 50% integration and the entire tier receives level 2.

Trip Planning: Level 2 – partially integrated

Switchh does not provide terminals at the mobility stations, hence this sub-tier receives level 0 for location information as well as for route planning.

a) Location

Website

The HVV website offers the possibility to extend its functionalities by switchh options. Users are able to display the location of Bike and Ride parking facilities, sharing and rental vehicles as well as of mytaxi vehicles. This leads to 100% integration (Level 4).

Smartphone application

Apart from the location of Bike and Ride parking facilities, the extended HVV smartphone application provides the same location information as the website. This leads to 83% integration and the level of integration can be determined by 3.

b) Route

Website

The HVV website provides route information in form of bar displays including all integrated services. It is even possible to include the use of private bikes. This leads to 100% integration (Level 4).

Smartphone application

The smartphone application provides the same functionalities as the website excluding the possibility to set the use of private bikes. As for location an integration of 83% can be achieved within this sub-tier and the level of integration can be determined by 3.

All together, the mean value for integrated trip planning results in 61% integration and the level of integration for trip planning can be determined by 2.

Booking: Level 3 – highly integrated

It is not possible to book bicycle storage, public transport or bike-sharing bicycles, thus those offers do not account within the entire tier.

Terminal

As there are no terminals available at switchh points, this sub-tier cannot be integrated and receives a level of integration of 0.

Website

The HVV website offers the possibility to book car-sharing and car rental vehicles as well as mytaxi vehicles. It is possible to book all services, which can be reserved in advance via the website, which leads to a full integration within this sub-tier and the level of integration is determined by 4.

Smartphone application

It is also possible to book all of the previously mentioned services within the smartphone application, so this sub-tier also is fully integrated (Level 4) amongst all bookable services.

The mean value of integrated booking hence is determined by 67% and results in Level 3.

Access: Level 2 – partially integrated

As taxis do not require a specific access medium at all, taxi does not count within the entire tier of access.

Card

The switchh card acts as key for car-sharing and bike-sharing vehicles. The switchh card also acts as season ticket for the HVV. It is not possible to open bicycle storage boxes or car rental vehicles with the switchh card. Hence this sub-tier is integrated by 60% which leads to the determination of level 2.

Smartphone application

Although it is assumed, that season ticket holders do not need the possibility to buy any further tickets for the use of public transport, it has been decided to include the fact that it is theoretically possible to buy public transport via the smartphone application. This could e.g. be necessary if a switchh user decides to carry his private bike. Hence the smartphone can act as ticket. It is not possible to open any further services via the HVV smartphone application. Opening of car-sharing or bike-sharing vehicles only is possible via the provider's applications. This leads to a 20% integration and the allocation to level 1.

All findings lead to a mean value of 40% which results in the determination of level 2 for integrated access.

Billing: Level 0 – not integrated

Switchh does not offer integrated billing. Each service submits their claims separately.

Integration Strategy of switchh 1.0

	PHYSICAL	MARKETING		INFORMATION		REGISTRATION	
		Brand Identity	Tariff Offers	On-site	Website	Service Centre	Website
BIKE (B+R)	✓	✓	✗	-	✗	✗	✗
PUBLIC TRANSPORT	✓	Switchh sign posting at public transport stops	✓	✗	✓	✓	✓
CAR-SHARING	✓	Parking places are switchh branded	✓	✗	✓	seperate contracts have to be fulfilled	seperate contracts have to be fulfilled
CAR RENTAL	✓	Parking places are switchh branded	✓	✗	✓	✓	✓
BIKE-SHARING	✓	✗	✓	✗	✓	seperate contracts have to be fulfilled	seperate contracts have to be fulfilled
TAXI (mytaxi)	✓	✗	✗	✗	✓	✗	✗
Σ	100%	42%	67%	0%	83%	50%	50%
LEVEL OF INTEGRATION	4	2	3	0	3	2	2
Σ LEVEL OF INTEGRATION	4	2		2		2	

Table 5-2: Integration strategy of switchh 1.0; source: own table

TRIP PLANNING						BOOKING			ACCESS		BILLING
a) Location			b) Route			Terminal	Website	App	Card	App	
Term.	Webs.	App	Term.	Webs.	App						
×	✓	×	×	✓	×	-	-	-	×	×	×
×	✓	✓	×	✓	✓	-	-	-	✓	✓	×
×	✓	✓	×	✓	✓	×	✓	✓	✓	×	×
×	✓	✓	×	✓	✓	×	✓	✓	×	×	×
×	✓	✓	×	✓	✓	-	-	-	✓	×	×
×	✓	✓	×	✓	✓	×	✓	✓	-	-	-
0%	100%	83%	0%	100%	83%	0%	100%	100%	60%	20%	0%
0	4	3	0	4	3	0	4	4	2	1	0
2						3			2		0

5.1.4 Integration Strategy of switchh 2.0

In order to show how the integration strategy from switch 1.0 to switch 2.0 changes a classification scheme for the new concept is examined as well. Most of the findings are based on the interview's statements. However, at the interviews time not every single detail of the future functions of the HVV website and smartphone application had yet been determined or had not been discussed. Hence findings within the tiers trip planning, booking and access concerning the HVV website or smartphone application may change till the actual relaunch.

Table 5-3 displays the integration strategy of switch 2.0. In the following all findings within each of the eight tiers are explained.

Physical integration: Level 3 – highly integrated

The following modes are physically integrated at switch mobility stations: Bike and Ride (parking facilities and/ or rentable storage boxes), public transport, parking places for car-sharing vehicles as well as a bike-sharing station and taxi stands. Car rental vehicles no longer will be available at switch points. Together, this leads to 83% integration and the level for physical integration can still be determined by 3.

Marketing integration: Level 2 – partially integrated

Brand identity

The switchh logo can be still found on the following parts of the mobility stations:

- Bicycle storage boxes
- Sign posting at public transport stops
- Car-sharing parking places

Sharing vehicles as well as taxis are not switchh branded. Due to the fact, that besides switchh sign posting no further elements at public transport stations are switchh branded, it only counts by half. The same applies car-sharing vehicles: only parking places are switchh branded, not the vehicles themselves. As car rental vehicles no longer are available at switchh points, they are no longer integrated in any form within this sub-tier. Brand identity thus is integrated by 33% and allocated to level 1.

Tariff offer

An HVV subscription no longer is required for the use of switchh. Complementary offers thus are available for car-sharing, car rental and bike-sharing. There are still no discounts for bicycle storage or the use of taxi services. This leads to 50% integration, which is in Level 2.

The mean value of both sub-tiers results in 42% integration within the tier marketing and thus it is within level 2.

Information: Level 2 – partially integrated

On-site

There will be no integrated information at the mobility stations. On-site information thus still is within level 0.

Website

The switchh website informs about the entire complementary offer of switchh: it gives inter alia information about the services integrated, how to use them as well as the costs, registration and benefits involved. Information about renting bicycle storage boxes still is not provided on the switchh website. This leads to an integration of 67% and level 2.

Both values account to a mean value of 34% and thus the level of integrated information is determined by 2.

Registration: Level 1 – lowly integrated

Since mytaxi no longer is part of the offer, a registration for its use is no longer required. It is assumed that the integration of the taxi company into the HVV smartphone application will require a registration for the use of its services and thus taxi will be taken into account within the tier of registration.

Service centre

Both services centres will continue to offer the possibility to register for switchh. As the possession of a public transport season ticket no longer is required, it is assumed that the purchase of a season ticket no longer will be possible within the registration process for switchh. For the use of car- and bike-sharing still separated contracts have to be fulfilled. Due to this fact the registration for car- and bike-sharing only accounts by half. It is no longer possible to register for the use of car rental via switchh. The rental of bicycle storages still is not included within the switchh registration process. It is assumed that (as in the case of mytaxi) the registration for the use of taxi will not be included within the switchh registration process. This leads to 17% integration and the allocation to level 1.

Website

People also will have the possibility to register on the switchh website. The registration process is equal to the registration at the service centres described above. Hence, the online registration process as well is integrated by 17% and the level of integration is also determined by 1.

Together, this leads to mean value of 17% for the integration and the entire tier receives level 1.

Trip Planning: Level 2 – partially integrated

Switchh still will not provide terminals at the mobility stations, hence this sub-tier receives level 0 for location information as well as for route planning.

a) Location

Website

The HVV website offers the possibility to extend its functionalities by switchh options. Users are able to display the location of Bike and Ride parking facilities, sharing vehicles, car rental and taxis. This leads to 100% integration (Level 3).

Smartphone application

Apart from the location of Bike and Ride parking facilities and the location of car rental stations, the extended HVV smartphone application provides the same location information as the website. This leads to 67% integration and the level of integration can be determined by 3.

b) Route

Website

The HVV website only will provide route information for the use of private bikes and public transport. There will be no route information which includes the use of sharing, rental vehicles or taxis. This leads to 33% integration (Level 1).

Smartphone application

The smartphone application provides only provides route information for the use of public transport. No further services are included within this sub-tier. This leads to 17% integration and the sub-tier receives level 1.

Altogether, the mean value for integrated trip planning results in 34% integration and the level of integration for trip planning can be determined by 2.

Booking: Level 1 – lowly integrated

It is not possible to book bicycle storage, public transport or bike-sharing bicycles, thus those offers do not account within the entire tier.

Terminal

As there are no terminals available at switchh points, this sub-tier cannot be integrated and receives a level of integration of 0.

Website

The HVV website does not offer the possibility to directly book any services. However it redirects to the car rental provider's homepage if booking is desired. Due this fact, booking of car rental vehicles only counts by half. Booking of car-sharing vehicles or taxis is not possible. This leads to 17% integration and the allocation to level 1 for integrated booking via the website.

Smartphone application

It is no longer possible to directly book sharing vehicles or taxis via the smartphone application, however the smartphone application redirects to the partner's smartphone

application. Due to this fact these modes are taken into account by half. Hence, this sub-tier integrated by 33% as well and allocated to level 1.

The mean value of integrated booking is determined by 25% and results in Level 1 for the entire tier.

Access: Level 2 – partially integrated

As taxis do not require a specific access medium at all, taxi does not count within the entire tier of access.

Card

The switchh card acts as key for car-sharing and bike-sharing vehicles. However, the switchh card no longer acts as season ticket for the HVV. It is not possible to open bicycle storage boxes or car rental vehicles with the switchh card. Hence this sub-tier is integrated by 40% which leads to the determination of level 2.

Smartphone application

Bicycle storage boxes as well as car rental vehicles cannot be opened via the smartphone application. It is possible to buy public transport tickets with the smartphone application, hence the smartphone application acts as ticket for the use of public transport. It is not possible to directly open car-sharing and bike-sharing vehicles with the smartphone application, however the HVV smartphone application redirects to the partner's applications to execute the process. Due to this fact, car-sharing and bike-sharing only counts by half. This results in 40% integration and the level of integration for this sub-tier is determined by 2 as well.

All findings lead to a mean value of 40% which results in the determination of level 2 for integrated access.

Billing: Level 0 – not integrated

Switchh still will not offer integrated billing. Each service submits their claims separately.

Integration Strategy of switchh 2.0

	PHYSICAL	MARKETING		INFORMATION		REGISTRATION	
		Brand Identity	Tariff Offers	On-site	Website	Service Centre	Website
BIKE (B+R)	✓	✓	×	-	×	×	×
PUBLIC TRANSPORT	✓	Switchh sign posting at public transport stops	×	×	×	×	×
CAR-SHARING	✓	Parking places are switchh branded	✓	×	✓	seperate contracts have to be fulfilled	seperate contracts have to be fulfilled
CAR RENTAL	×	×	✓	×	✓	×	×
BIKE-SHARING	✓	×	✓	×	✓	seperate contracts have to be fulfilled	seperate contracts have to be fulfilled
TAXI	✓	×	×	×	✓	×	×
Σ	83%	33%	50%	0%	67%	17%	17%
LEVEL OF INTEGRATION	3	1	2	0	2	1	1
Σ LEVEL OF INTEGRATION	3	2		2		1	

Table 5-3: Integration strategy of switchh 2.0; source: own table

TRIP PLANNING						BOOKING			ACCESS		BILLING
a) Location			b) Route			Terminal	Website	App	Card	App	
Term.	Webs.	App	Term.	Webs.	App						
×	✓	×	×	✓	×	-	-	-	×	×	×
×	✓	✓	×	✓	✓	-	-	-	×	✓	×
×	✓	✓	×	×	×	×	×	redirection to partner's website	✓	redirection to partner's website	×
×	✓	×	×	×	×	×	redirection to partner's website	×	×	×	×
×	✓	✓	×	×	×	-	-	-	✓	redirection to partner's website	×
×	✓	✓	×	×	×	×	×	redirection to partner's website	-	-	×
0%	100%	67%	0%	33%	17%	0%	17%	33%	40%	40%	0%
0	4	3	0	1	1	0	1	1	2	2	0
2						1			2		0

5.1.5 Integration Strategy of EinfachMobil

Table 5-4 displays the integration strategy of EinfachMobil. In the following all findings within each of the eight tiers are explained.

Physical integration: Level 4 – fully integrated

The multimodal mobility concept of Offenburg integrates four different services: Bike (in this case infrastructure and storage is part of the integrated offer), public transport, car-sharing and bike-sharing. Hence the level of physical integration is determined by Level 4.

Marketing integration: Level 3 – highly integrated

Brand identity

The city of Offenburg established a new brand called EinfachMobil. All services integrated within the new mobility concept are labeled with the logo or coloured accordingly:

- Bicycle storage as well as cycling infrastructure mobility stations and bus stops
- Car-sharing vehicles and nextbike bicycles

Due to the fact, that all services within the offer of EinfachMobil receive the same branding, the sub-tier of brand identity is integrated by 100% and allocated to level 4.

Tariff offer

Complementary tariff offers only are available for car-sharing and bike-sharing. There are no discounts for bicycle storage boxes or public transport. Hence the sub-tier of tariff offers is integrated by 50% and allocated to level 2.

The mean value of both sub-tiers is 75% and thus marketing is within Level 3.

Information: Level 1 – low integrated

On-site

There is no integrated information at the mobility stations, which leads 0% information integration on-site and the allocation to level 0.

Web-site

The EinfachMobil website only informs about car-sharing and bike-sharing. It does not provide any information about bicycle storage or public transport. This leads to 50% integration and hence the sub-tier is allocated to level 2.

This lead to a mean value of 25% and thus the level of integration is determined by 1.

Registration: Level 1 – Low integrated

Service centre

There is no service centre existing so far, so the integration within this sub-tier is 0%.

Website

At the EinfachMobil website it is only possible to register for EinfachMobil itself. However, the website redirects to the partner's websites for registering. Due to this fact, car- and bike-sharing only account by half within this sub-tier. It is not possible to register for the rent of a bicycle storage box, a parking place in the RadHaus or to purchase a public transport season ticket. This leads to a 25% integration and results in the determination of level 1.

The mean value of both sub-tiers (13%) results in the allocation of level 1 for registration.

Trip Planning: Level 0 – not integrated

So far, EinfachMobil does not offer integrated trip planning at all. Hence, the entire tier as well as all sub-tiers receive level 0.

Booking: Level 1 – lowly integrated

As it is not possible to book bicycle storage, bike-sharing bikes or public transport, these services do not account within the entire tier.

Terminal

There are no terminals available at the mobility stations, hence this subcategory is not integrated at all and allocated to level 0.

Website

The EinfachMobil website does not offer the possibility of booking cars directly. Users are redirected to the partner's websites instead. Due to this fact, the integration is valued by half and thus leads to a 50% integration and the allocation to level 2.

Smartphone application

There is no smartphone application available so far, thus this sub-tier is not integrated at all.

On average, booking is integrated by 17%, which is within level 1.

Access: Level 1 – lowly integrated

Card

The EinfachMobil card acts as key for car- and bike-sharing vehicles as well as for bicycle storage boxes. It is not yet possible yet to open the RadHaus at the central station. This is why bike is only weighted by half. Currently the card does not include the use of public transport. The card hence is integrated by 63% and receives level 2.

App

There is no smartphone application available for EinfachMobil so far, so this subcategory is not integrated at all.

On average, access is integrated by 32%, which is in Level 1.

Billing: Level 0 – not integrated

EinfachMobil does not offer integrated billing. Each service submits their claims separately.

Integration Strategy of EinfachMobil

	PHYSICAL	MARKETING		INFORMATION		REGISTRATION	
		Brand Identity	Tariff Offers	On-site	Website	Service Center	Website
BIKE (B+R, Infrastructure)	✓	✓	×	×	×	×	×
PUBLIC TRANSPORT	✓	✓	×	×	×	×	×
CAR-SHARING	✓	✓	✓	×	✓	×	redirection to the partner's website
BIKE-SHARING	✓	✓	✓	×	✓	×	redirection to the partner's website
Σ	100%	100%	50%	0%	50%	0%	25%
LEVEL OF INTEGRATION	4	4	2	0	2	0	1
Σ LEVEL OF INTEGRATION	4	3		1		1	

Table 5-4: Integration strategy of EinfachMobil; source: own table

TRIP PLANNING						BOOKING			ACCESS		BILLING
a) Location			b) Route			Terminal	Website	App	Card	App	
Term.	Webs.	App	Term.	Webs.	App						
×	×	×	×	×	×	-	-	-	only bike boxes, Radhaus planned	×	×
×	×	×	×	×	×	-	-	-	×	×	×
×	×	×	×	×	×	×	redirection to the partners website	×	✓	-	×
×	×	×	×	×	×	-	-	-	✓	×	×
0%	0%	0%	0%	0%	0%	0%	50%	0%	63%	0%	0%
0	0	0	0	0	0	0	2	0	3	0	0
0						1			1		0

5.1.6 Integration Strategy of Leipzig mobil

Table 5-5 displays the integration strategy of Leipzig mobil. In the following all findings within each of the eight tiers are explained.

Physical integration: Level 4 – fully integrated

The multimodal mobility concept of Leipzig mobil integrates five different services on the physical tier: Bike (in this case bike parking facilities), public transport, car-sharing, bike-sharing and taxi. Hence the level of physical integration is determined by Level 4.

Marketing integration: Level 2 – partially integrated

Bike parking facilities do not count within the entire tier of marketing.

Brand identity

With the implementation of mobility stations, the LVB established a new brand called Leipzig mobil. Besides the terminal, only bike-sharing bicycles are branded with Leipzig mobil. This leads to 25% integration and the determination of level 1 for brand identity.

Tariff offer

LVB-subscribers have the possibility to extend their public transport season ticket with the complementary offers of Leipzig mobil and receive benefits for car-sharing and bike-sharing. So far, there are no complementary offers for the use of taxis available. This leads to 75% integration and the level of integration for tariff offer can be determined by 3.

The mean value of both sub-tiers results in 50% integration and hence marketing is within level 2.

Information: Level 3 – highly integrated

Bike does not account within this tier, as it is assumed not to be necessary to inform about the offer of bike parking facilities on-site or the website.

On-site

The terminal on-site informs about the offer of Leipzig mobil: information about public transport, car-sharing and bike-sharing services is made available. There is no information about taxi available. The information on-site is hence integrated by 73% and the level of integration can be determined by 3.

Web-site

The LVB website informs about the complementary offer of Leipzig mobil including information about car-sharing and bike-sharing. It also provides information about the entire local public transport. This leads to 75% integration within this sub-tier and to the determination of Level 3.

Both values lead to a mean value of 75% and thus the level of integrated information is determined by 3.

Registration: Level 3 – highly integrated

As it is not necessary to register for the use of Bike and Ride parking facilities or taxi services, both do not account within the tier of registration.

Service centre

It is possible to register for Leipzig mobil at one of the LVB service centres. The registration for car- and bike-sharing is integrated within the Leipzig mobil registration process and does not require the fulfilment of separate contracts. It is not possible to directly sign up for a LVB-subscription if none is available so far, however the service centre offers the possibility as well. Due to this fact the registration for a public transport season ticket only accounts by half. This leads to an integration of 83% within this sub-tier and the level of integration is determined by 3.

Website

The findings for registering at a LVB service centre equally apply for registering at the LVB website.

Thus the mean value for integrated information results in 83% integration which leads to the allocation to level 3.

Trip Planning: Level 2 – partially integrated

a) Location

Terminal

The terminal on site offers the determination of locations of car- and bike sharing vehicles as well as of public transport stops. It is not possible to display the location of Bike and Ride parking facilities or taxi stands. Hence this sub-tier is integrated by 60%, which is within level 2.

Website

The LVB website does not provide any location information at all, hence this sub-tier is not integrated at all and allocated to level 0.

Smartphone application

The Leipzig mobil smartphone application provides the same location information as the terminal. Thus this sub-tier is also integrated by 60% and the level of integration can be determined by level 2 as well.

b) Route

Terminal

The Leipzig mobil terminal on-site provides route information in form of bar displays for the use of public transport, car-sharing and bike-sharing. The use of private bikes or taxis is not integrated within this sub-tier. This results in an integration of 60% and the allocation to level 2.

Website

The LVB website only provides route information for public transport. There is no route information available for the use of private bikes, car-sharing, bike-sharing or taxi. This leads to 20% integration within this sub-tier, which is within level 1.

Smartphone application

The findings for the terminal also apply for the Leipzig mobil smartphone application. Thus this sub-tier is integrated by 60% and the level of integration can be determined by level 3.

Altogether, the mean value for integrated trip planning results in an integration of 43% and the level of integration for trip planning can be determined by 2.

Booking: Level 1 – lowly integrated

As it is not necessary or possible to book bike parking facilities, public transport or bike-sharing vehicles, these offers do not account within the entire tier of booking.

Terminal

It is only possible to book car-sharing vehicles via the terminal on-site. Booking of taxi services is not integrated. This leads to 50% integration and the allocation to level 2 within this sub-tier.

Website

The website does not offer the possibility to book any services, hence the level of integration is determined by 0.

Smartphone application

The findings for the terminal also apply for the Leipzig mobil smartphone application. The integration for this sub-tier hence also results in 50% and the level of integration is determined by 2.

The mean value for integrated booking hence results in an integration of 33% which leads the allocation to Level 1.

Access: Level 4 – fully integrated

As bike parking facilities as well as the use of taxi do not require an access medium they do not account within the entire tier of access.

Card

The Leipzig mobil card acts as key for car-sharing and bike-sharing vehicles. It also acts as ticket for the use of public transport. Hence, the card is integrated amongst all services and the sub-tier is allocated to level 4.

App

It is possible to buy public transport tickets via the Leipzig mobil app. Normally it is assumed that this function would not be necessary, if the possession of a season ticket is required. However, the LVB offers a subscription, called *ABO Flex*, which not public transport ticket in the common sense. ABO Flex charges a monthly fee of 4.90 EUR and allows users to buy

discounted tickets. Thus ABO Flex users are not automatically in possession of a public transport ticket, but have to buy one every time when using public transport. Due to this fact the possibility of acquiring public transport tickets via the smartphone application, is included within this sub-tier. (LVB, n.y.-b)

TeilAuto does not offer vehicles which can be opened via smartphone application at all, they are only accessible via an on-board computer and a corresponding card (Mobility Center GmbH, n.y.) . Hence, car-sharing does not count within this sub-tier. All further service can be opened via the Leipzig mobil smartphone application. Altogether, this leads to a full integration and the allocation to level 4.

On average, access is integrated by 100%, which is in Level 4.

Billing: Level 3 – highly integrated

Leipzig mobil offers integrated billing for car-sharing and bike-sharing. The use of local public transport or the charge for season tickets is not included within that bill. The use of bike parking facilities is free, hence it does not count within this tier. The use of taxi also does not count within integrated billing, as they have to be paid directly after its use. This leads to an integration of 67% and the allocation to level 3.

Integration Strategy of Leipzig mobil

	PHYSICAL	MARKETING		INFORMATION		REGISTRATION	
		Brand Identity	Tariff Offers	On-site	Website	Service Center	Website
BIKE (B+R)	✓	-	-	-	-	-	-
PUBLIC TRANSPORT	✓	×	✓	✓	✓	possible, but not within the Leipzig mobil registration process	possible, but not within the Leipzig mobil registration process
CAR-SHARING	✓	×	✓	✓	✓	✓	✓
BIKE-SHARING	✓	✓	✓	✓	✓	✓	✓
TAXI	✓	×	×	×	×	-	-
Σ	100%	25%	75%	75%	75%	83%	83%
LEVEL OF INTEGRATION	4	1	3	3	3	3	3
Σ LEVEL OF INTEGRATION	4	2		3		3	

Table 5-5: Integration strategy of Leipzig mobil; source:own table

TRIP PLANNING						BOOKING			ACCESS		BILLING
a) Location			b) Route			Terminal	Website	App	Card	App	
Term.	Webs.	App	Term.	Webs.	App						
×	×	×	×	×	×	-	-	-	-	-	-
✓	×	✓	✓	✓	✓	-	-	-	✓	✓	×
✓	×	✓	✓	×	✓	✓	×	✓	✓	-	✓
✓	×	✓	✓	×	✓	-	-	-	✓	✓	✓
×	×	×	×	×	×	×	×	×	-	-	-
60%	0%	60%	60%	20%	60%	50%	0%	50%	100%	100%	67%
2	0	2	2	1	2	2	0	2	4	4	3
2						1			4		3

5.1.7 Summary of the Results

Figure 5-1 shows the summary of the findings within all tiers of integration (cf. chapters 5.1.2 to 5.1.6.)

Physical integration

The levels of integration determined for physical integration are all almost all the highest: mobil.punkte, switchh 1.0, EinfachMobil and Leipzig mobil are fully integrated within this tier, switch 2.0 is highly integrated.

Marketing integration

Within the tier marketing integration almost all multimodal mobility offers received a level of integration of 2. Only EinfachMobil is more integrated, it is within level 3.

Information integration

The levels of integrated information vary from 1 to 3: EinfachMobil is lowly integrated, switch 1.0, switch 2.0 and mobil.punkte are partially integrated and Leipzig mobil is highly integrated.

Registration

For integrated registration the summary of the results are even more various. Mobil.punkte do not offer integrated registration at all. Switchh 2.0 and Leipzig mobil offer lowly integrated registration. Switchh 1.0 is partially integrated and the offer of Leipzig mobil is highly integrated.

Trip planning

Two multimodal mobility services do not provide integrated trip planning at all: mobil.punkte and EinfachMobil. Switchh 1.0, Swichh 2.0 and Leipzig mobil offer partially integrated trip planning. Within this tier the levels of integration of switchh 1.0 and switchh 2.0 are not that high as the service does not offer one of the three sub-tiers at all. Switchh does not provide terminals at their mobility stations, which results into a relatively high reduction of the overall level within the entire tier.

Booking

Except in the case of switch 1.0, which is highly integrated within the tier of booking, the resulting levels are relatively low: mobil.punkte do not offer integrated booking at all, switch 2.0, EinfachMobil and Leipzig mobil offer lowly integrated booking.

Access

The levels of integration determined for integrated access vary from not integrated to fully integrated. Mobil.punkte do not provide one medium that integrates the access to more than one service. EinfachMobil offers lowly integrated access and switch 1.0 as well as switch 2.0 offer partially integrated access. Leipzig mobil is the only service that provides fully integrated access.

Billing

Except for the offer of Leipzig mobil (highly integrated), no service provides integrated billing at all.



Figure 5-1: Summary of the results of the classification scheme; source: own graphic

5.2 Identification of Success Factors

In the following two subchapters success factors of multimodal mobility services are identified. The first subchapter deals with the results of the classification scheme, the second one summarises the outcomes of the expert interviews.

5.2.1 Evaluation Results

Based on the results of the classification scheme tiers of integration with on average high levels of integration are identified as important aspects for the implementation of multimodal mobility stations.

As the term mobility station already implies the concentration of several modes at one location is the key aspect. **Figure 5-1** confirms that statement: all offers set their main focus on physical integration. Only the example of switch 2.0 does not offer a full integration of this tier.

An integrated marketing strategy also seems to be important. Besides physical integration it is the only tier where no level below 2 can be determined (cf. **Figure 5-1**) It seems to be important to implement marketing measures in order to promote the offer of multimodal mobility services. The development of a corporate design, which can be found at each station contributes to becoming aware of the service. Simultaneously, the implementation of complementary tariff offers contributes to making the offer more attractive. The importance of establishing an own brand and offering complementary offers is also confirmed by experts (cf. **5.2.2**).

It also seems to be important to provide sufficient information about the offer. People who become aware of the service want to (comprehensively) inform themselves before registering. The provision of information can help to lower entry-barriers and thereby acquire new users. Furthermore, existing customers may be guided with regard to the offers' usage.

In case of registering no general statement can be identified, as the results vary too much. However the fact that the level of integration of switchh decreased from 2 to 1 may indicate, that it does not play a major role. Additionally, the registration process only is required once and it is assumed that the fulfillment of several contracts does not impose too great entry barriers. This fact can be confirmed by expert statements as well (cf. **5.2.2**).

Despite the fact, that two of four multimodal mobility services do not offer integrated trip planning at all, the two (Leipzig mobil and switchh) services that provide trip planning offer it on a medium level of integration. However, as already mentioned in chapter **5.1.7**, the fact that the service of switchh 1.0 does not provide integrated trip planning in one of the three sub-tiers at all (terminal), has a relevant influence on the overall level. Considering the levels of integration for the sub-tiers separately, it is observable that in case of switch 1.0 level 4 and 3 had been determined for location as well as for route information. Switchh 2.0 only

received level 4 and 3 for location information, integrated route information no longer will be provided. As the development of switch shows, the importance of integrated route information, at least in their experience, does not play a relevant role.

Nevertheless, it does not seem to be possible to identify a general statement concerning the integration of trip planning regarding the results of the classification scheme.

Booking is only highly integrated for the example of switch 1.0. As the level of integration decreases from 3 to 1 for switch 2.0, it is assumed that integrated booking does not play a significant role for the success of multimodal mobility services. Expert statements confirm that booking not necessarily need to be directly integrated: the implementation of good redirections to the partner's platforms offers an easy and cost-efficient alternative (cf. 5.2.2).

The results of integrated access again show diverse results. However, it is assumed that from the user's point of view it does play an important role, to integrate various modes into at least one access medium. While considering the results of the access' sub-tiers it can be observed that offering a mobility card, which allows the access to several modes, has a real role to play. With regard to the results of switchh, which only results in a partial integration it has to be mentioned, that the card allows to open the car-sharing vehicles of multiple providers. The relevance of providing a mobility card is confirmed by experts, too (cf. 5.2.2).

The provision of access via one smartphone application is associated with high costs. Here too, the implementation of good redirections to the partner's platforms offers an easy and cost-efficient alternative (cf. 5.2.2).

Summing up, the integration of the following tiers is identified as promising measures for the successful implementation of multimodal mobility stations:

- Physical integration
- Marketing integration
- Information integration
- Access integration

5.2.2 Expert Interviews

In the following the interview's statements concerning success factors for the implementation of multimodal mobility services are summarized.

To begin with, one important aspect for the successful implementation of mobility stations are the **framework conditions at the political and administrative level**. Both, Brückner (switchh) and Heinemann (Leipzig mobil) mention this aspect while talking about mobility stations. (cf. Appendix B, E)

In this context, **committed staff** as well as the **support at several levels** (politics, administration, management board) positively contributes to a successful implementation of mobility stations. According to Brückner, switchh only could be implemented that fast (within

15 months) due to the support from several sides. Furthermore he states that the **good cooperation with the transport association** additionally has positive impacts.

From Kassel's (EinfachMobil) perspective, one key success factor is the **timely involvement of all parties** that could be anyhow implicated with the project. From his experiences, late involvement can lead to discrepancies and thus to extreme delay during the project implementation. (cf. Appendix D) This fact is also confirmed by Heinemann: he stated that a **more diverse network of partners** would have made the implementation of the mobility stations a whole lot easier. (cf. Appendix E)

According to Brückner one key success factor is an **agile project management**: Multimodal mobility projects can only be successful in the long-term by quick-reacting on impediments and current developments. From his point of view, it is not advisable to adhering to every single detail of the planned approach, but considering different approaches as well. (cf. Appendix B)

In addition, Brückner and Heinemann state that the implementation of mobility stations might involve a level of **risk, which you have to be willing to take** (cf. Appendix B, E). So far, limited experience is available in this field and success cannot be guaranteed.

The **visibility** of the multimodal offer plays a key role for the public's acceptance (cf. Appendix A). In this context the **development of an own brand and a corporate design** positively contributes to more awareness. Brückner and Kassel emphasise the importance of visibility and confirm the benefits of establishing a new brand (cf. Appendix B, D). According to Kassel the uniform appearance at the mobility stations is very well received amongst the public (cf. Appendix D). Thus, the findings within chapter **5.2.1** (importance of marketing integration – brand identity) can be confirmed.

Developing an own brand not only positively contributes to more awareness, according to Brückner it furthermore facilitates rapid and brave decisions as it hence is not necessary to coordinate those decisions with the core business (cf. Appendix B). (This aspect may only be true in case of having a company as operator)

According to Glotz-Richter (mobil.punkte) **good accessibility** of the mobility stations is important for their acceptance as well (cf. Appendix A). By installing the stations close to public transport stops as well as by the provision of Bike and Ride parking facilities, the catchment areas of the stations can be enlarged beyond pedestrian accessibility.

Furthermore the practical aspect of having a **dedicated parking place** helps increasing the acceptance of mobility stations (cf. Appendix A).

Heinemann recommends to implement a test phase, in order to ensure a well functioning system. According to his experience this would have avoided several problems Leipzig was and is still faced with. (cf. Appendix E)

6 Derivation of Recommendations for the Implementation of Multimodal Mobility Stations

Based on the findings of the previous chapters (case studies, integration strategy and success factors), this chapter aims to work out recommendations for the implementation of mobility stations. The findings are completed with statements concerning the operation of the mobility stations.

6.1 Identification, Activation and Involvement of Actors and Partners

The implementation of multimodal mobility services requires the involvement of several actors and partners from different sectors as well as a clear division of responsibilities. Authorities need to be involved in terms of urban and transport planning aspects, building regulations or the provision of areas. With regard to the involvement of authorities not only vertical cooperation within one authority may be required, but also horizontal cooperation amongst different authorities (cf. Zukunftsnetz Mobilität NRW; 2015), Appendix D). Public transport companies and mobility providers are involved in terms of operating the mobility services at the stations and transport associations may be involved in terms of tariff aspects. Depending on the respective situation, in particular cases further actors need to be involved.

In order to avoid time delays during the implementation process, it is therefore recommended to identify all possible actors and involve them at an early stage within the project (cf. chapter 5.2.2.).

According to Brückner the project has to grow continuously, which can be illustrated by switchh: The project started with two partners, Europcar and car2go. Within two years the offer could be expanded by integrating two more partners (car2go black and StadtRAD) and from spring on further partners will be included into switchh (DriveNow and cambio). This is why it may be advisable to start with less mobility providers (e.g. one car-sharing provider instead of three) in avoidance of lengthy planning and coordination processes.

6.2 Number of Mobility Stations and Spatial Expansion

Before starting concrete planning of the multimodal mobility services it has to be clarified how many stations should be established as well as their spatial expansion.

The analysis of the four case studies showed that three of four projects started with a pilot operation and a small number of mobility stations combined with an on-going evaluation: Bremen started with the implementation of two mobility stations, Hamburg started with one switchh point (followed by further eight within the pilot operation) and Offenburg opened four stations within the first stage of expansion. Leipzig is the only city which implemented 25 stations at once. According to Heinemann, a preceding test phase would have helped to

solve technical problems among others before starting regular operation (cf. Appendix E). However, it has to be mentioned that Leipzig did not have any alternative: the state's subsidy, received for the implementation of Leipzig mobil, was combined with the demand of implementing an entire network of mobility stations.

This shows that it is reasonable to start with a small number of stations combined with an evaluation concerning users' acceptance, benefits and changes in mobility behaviour. If the results are positive the project should be gradually expanded over the entire city area or even beyond the city's borders to establish a network.

6.3 Location Determination

The analysis of the case studies showed that in all four projects similar approaches were applied concerning the determination of station locations.

One important aspect for the implementation of mobility stations is the *identification of areas with high population density* in order to ensure a sufficient number of (potential) users. Within these areas the acceptance of sharing offers as well as the usage of public transport is usually already high. According to Kassel founder quarters with high urban density and compact structures fulfill these criteria and thus are identified as locations to start with. Especially in terms of positive evaluation results he recommends to start implementing mobility stations where it is easy to increase the usage in order to guarantee the continuation of the project. (cf. Appendix D).

Furthermore densely populated areas are often associated with *high parking pressure* and as a consequence positively contribute to the acceptance of mobility stations (cf. Schmauß, 2008; Brückner, 2016): on the one hand the mobility stations ensure the availability of parking places and thus save the annoying search for a parking, on the other hand users may save the parking charge because they are already included within the vehicle rental.

The intermodal change from public transport to sharing offers and vice versa is one key aspect of the provision of mobility stations. Thus an attractive public transport offer is one basic requirement for station locations. PT stations which connect several lines as well as stations with connections to tramway, subway or commuter rail are recommended since they are highly frequented and show a high number of transfer passengers. Either the stations are to be located in the immediate surroundings of the public transport stop or at least within the range of visibility.

Small stations, such as mobil.pünktchen (cf. chapter 3.2) represent an exception: they only provide car-sharing parking places and bike parking facilities. The key aspect here is not the intermodal change, but the multimodal: the mobility station mostly represents the origin or destination (Zukunftsnetz Mobilität NRW, 2015). Additionally, those stations have a positive effect on traffic regulation and may also provide mobility in areas where the local public transport offer is low.

According to Kassel and Heinemann the identification of *existing highly frequented sharing stations* is an important aspect to be included within the determination of station locations (cf. Appendix D, E). The advantage of integrating existing stations is that the mobility offers are already accepted. Due to this fact it is recommended to implement the first mobility stations within the home areas of existing mobility offers. At best a station already exists at the location or only needs to be relocated by 100-200 metres (cf. Appendix D).

The establishment of locations is always closely related to *land availability*. When selecting an area, not only sufficient space and *good visibility* is required, but it is also important that the area is *barrier-free* in terms of accessibility as well as safety (cf. Brückner, 2016; Appendix A, D)

Further interesting locations for the implementation of mobility stations may be *commercial areas*. The mobility offers of the station can complement the companies' vehicle fleet during the day, whereas in the mornings and evenings employees can use the offer in order to get to work or home. Thus new users can be acquired on the one side and the utilisation of the car-sharing offer can be ensured on the other side. (Zukunftsnetz Mobilität NRW, 2015) In this context cooperation with trade fares or hotels may also represent good approaches for the implementation of mobility stations (cf. chapter 3.4.4; Appendix D).

While *planning new housing quarters* the implementation of mobility stations should be considered from the beginning. With a sufficient number of housing units, these areas can be identified as potential locations as well. (cf. Appendix B)

In summary, the analysis of the case studies led to the conclusion that mobility stations at highly frequented public transport stops are suitable for the implementation of pilot stations: the mobility station *Am Dobben* in Bremen, the switchh point *Berliner Tor* in Hamburg and the mobility station *Messe* in Offenburg played an important role while initiating the project. Furthermore it is recommended to concentrate on densely populated areas as well as areas with already existing highly frequented sharing stations in the beginning.

6.4 Station Configuration

Key components: transport offers

The key components of mobility stations are the offers of the local public transport providers on the one hand, on the other hand the complementary offers mobility providers. Amongst the different public transport offers (rail, commuter rail, subway, light rail, bus) the following complementary mobility offers can be implemented at mobility stations:

- Car-sharing – station based, free floating or combined systems including electric vehicles
- Bike-sharing – normal bikes and/or pedelecs and/or cargo bikes
- Taxi stands

- Car rental
- Coach stop
- Meeting point for carpooling

The case studies examined provide between two and eighteen parking spaces for car-sharing vehicles and up to twenty-five bike-sharing bicycles. It can be observed that mobility stations located at or near highly frequented public transport stops provide the highest number of vehicles (e.g. mobil.punkt Am Dobben, switchh point Berliner Tor, mobility station Messe in Offenburg or the Leipzig mobil stations at W.-Leuscher-Platz and the central station).

However, the actual configuration (provided offers as well as number of vehicles/parking spaces) of every single station depends on the respective area available and the concrete position. At some station locations the provision of a specific offer may not even be reasonable with regard to adequate user potential. The provision of cargo bikes, for example, is more reasonable in residential areas and close to shopping facilities than at highly frequented public transport stops, whereas the provision of taxi stands may rather be reasonable at highly frequented public transport stops than in residential areas.

Therefore the station configuration is a case-by-case decision that has to be made in dependence of the single station's framework conditions and thus no general recommendations can be derived.

It may be plausible to consider a modularised construction (cf. Kassel, 2015) as well as an intelligent distribution of vehicles (cf. Appendix C). Both offer an opportunity of easy customized adaption: a modularised construction enables to enlarge or reduce the stations size easily and the intelligent distribution of vehicles ensures they are available when and where demanded.

Furthermore, it is recommended to provide various vehicle types (from small cars to family cars and transporters) in order to cover all users' needs (cf. Appendix C).

Supplementary components

Among the key components mobility stations may be equipped with a large number of supplementary components, such as bike parking facilities, design elements, elements for parking space regulation or electric charging stations. These are just some examples for supplementary offers. However, within the scope of this thesis only the previously mentioned aspects are briefly examined, because they are assumed to be the most relevant ones to be presented.

In all four case studies *bike parking facilities* are included within the offer of the mobility stations (cf. chapters 3.2.4 to 3.5.4). The provision of bike parking facilities or rentable storage boxes enlarges the catchment area of mobility stations and hence it is strongly recommended to include them within the offer (cf. chapter 5.2.2.).

The stations should be equipped with *design elements* in order to increase the recognition factor. By installing steles and sign postings that have the offer's brand identity, the recognition value of the mobility stations is increased. A floor covering of contrasting colours intensifies the visual appearance of the mobility station (cf. switchh).

Elements for parking regulation, such as flipping parking locks or access bars, prevent parking violation and may also be seen as barriers from the users perspective. According to Brückner, switchh points with access bars are less accepted (cf. Appendix C), whereas Glotz-Richter emphasises the benefits of having an own dedicated parking place (cf. chapter 5.2.2.). Thus it is recommended to keep the access as simple as possible, but also ensure the absence of parking offenders, e.g. by commissioning a regulatory agency with the parking place control in order to increase the users' acceptance.

The establishment of *electric charging stations* provides sustainable and future-oriented mobility. As the example of Leipzig mobil demonstrates, the introduction of electric mobility cannot only be achieved by providing electric sharing vehicles. The charging points can be used by private electric vehicle owners and so simplify the usage. The activation however, has proven to be problematic: due to technical problems the access currently is removed from the terminal's system. (cf. Appendix E) On principle the access should be as easy as possible. The handbook of mobility stations in NRW (German: Handbuch für Mobilstationen in NRW) recommends a registration-free access with payment via credit cards or online payment systems. But not only charging infrastructure for electric cars can be provided, loading facilities for electric bikes also may be considered.

6.5 Mobility Stations as Part of the Integration Strategy of Multimodal Mobility Services

Multimodal mobility services are to be understood as systems based on three components: mobility stations, mobility platforms and tariff products. This chapter deals with the integration of the service amongst identified tiers (cf. chapter 3.6). As the aspects of the mobility stations (station location and configuration of the station) have already been included in chapters 6.3 and 6.4 the aspect of physical integration will not be discussed.

6.5.1 Integrated Marketing

Brand identity

The development of an own branding and a corresponding corporate design play a key role for the implementation of multimodal mobility services. Both, the results of the classification scheme (cf. chapter 5.2.1) as well as the expert interviews (cf. chapter 5.2.2) prove the importance.

Particularly in terms of public awareness and high recognition values, the development of an own branding and corporate design is strongly recommended. Stations as well as corresponding platforms and marketing concepts should be recognized as one system and thus receive the same corporate design. Vehicles also could receive the brand in order to identify them with the mobility offer. The colouring should be a compromise between being conspicuous on the one hand and inconspicuous concerning the integration into the cityscape on the other hand. In all four case studies green and blue tones (rather inconspicuous) in combination with yellow tones (rather conspicuous) were chosen for the corporate design.

If the brand is developed for a city network the brand may refer to the city's identity: by being written with double h switchh refers to the city's name, Leipzig mobil even includes the entire city name. However, while developing a regional network of mobility stations, such as Offenburg is planning, the brand should be kept neutral and not refer to the city's identity. Offenburg's brand EinfachMobil fulfils these criteria and hence is easily adoptable for other cities in the surroundings (cf. Kassel, 2015).

Complementary tariff offers

As the mobility stations provide several mobility offers it is recommended to include their usage into one tariff. The provision of complementary offers increases their acceptance since they can be seen as incentives which provide benefits for the users. According to Kassel, the provision of tariff offers is obligatory in order to achieve the provision of an attractive product (cf. Appendix D). The analysis of all four case studies shows that all projects provide integrated tariff offers at least for some of the integrated services (cf. chapters 5.1.2 to 5.1.6).

In this context, it has to be discussed whether it is recommendable to make the use of the mobility service exclusively available for season ticket holders or not. The examples of switchh 1.0 and Leipzig mobil do require a season ticket as precondition for the use of the multimodal mobility service. As it is described in chapter 3.3.5 the concept of switchh 2.0 no longer is subject to this condition and so the customer base can be expanded. Heinemann however, emphasises the importance of making the offer only available to public transport season ticket holders in order to strengthen the use of public transport. That's why within the scope of Leipzig mobil a new season ticket was introduced, ABO Flex (cf. chapter 5.1.6). This subscription offers an attractive alternative to normal season tickets.

If making the offer exclusively available for season ticket holders, it is recommended to introduce an attractive alternative, comparable to ABO Flex, in order to not exclude potential users.

But not only users benefit from integrated tariff offers, also the different mobility providers and the public transport providers may benefit in terms of gaining new users and customer loyalty. The complementary mobility services expand the offers of the local public transport company and may help to improve its image with regard to presenting themselves as a

modern transport provider which ensures future mobility (cf. Appendix F). The mobility providers benefit from the cooperation in terms of marketing measures (cf. Appendix C).

6.5.2 Integrated Information

The provision of integrated information is identified as important aspect for the acceptance and use of multimodal mobility services (cf. chapter 5.2.1). It has to be distinguished between information about the offer itself (which services are included, prices, how to use it) and information concerning trip planning (cf. chapter 6.5.4).

Detailed information about the offer should be available on-site as well as online via one platform, such as a website. On-site information can either be provided by installing an information board, by integrating the information into a terminal or by installing a service centre at central highly frequented points. In any case, it is strongly advised to provide information on-site. Passing people who recognize the available offer shall be able to directly inform themselves and so may get interested for registering. The information should be provided in a transparent and easy understandable way to reduce entry barriers.

The same applies for the provision of information online. By providing a website the most important information channel nowadays is covered.

6.5.3 Integrated Registration

The provision of an integrated registration process may reduce entry barriers for potential users. However, as the results classification scheme show, the provision of a completely integrated registration process is not applied in most of the examples. Its provision is linked with several difficulties due to privacy policies and the lack of standardised interfaces for data processing (cf. chapters 3.6 and 5.2.1).

Thus, it is recommended to register for each partner separately, but if possible via one central platform and within one registration process in order to keep entry barriers low (cf. switchh, chapters 5.1.3 and 5.1.4).

Furthermore, an integrated registration may entail that complaints concerning the use of the offer are all addressed to one contact, the one where users registered. Providing a good complaint management (first level support) requires staff as well as good organised redirections to the right contacts. According to Kassel separated complaint management is even more user-friendly since they directly contact the respective partner. Switchh, however, will provide a first level support with the implementation of the new concept – independent of the registration (not integrated). The first level support includes receiving complaints and their redirecting to the right contact partner without being on hold. (cf. Appendix C)

It remains to be seen if the added value with regard to the additional cost is worth that effort.

6.5.4 Integrated Trip Planning

Although only two of the four case studies provide integrated trip planning (cf. chapter 5.2.2), the provision of information concerning the trip represents a significant added value for users. Integrated trip planning includes the provision of location information of the integrated offers combined with information concerning their availability on the one hand and on the other hand it includes the provision of route information.

The experiences of switchh show that integrated route information in form of bar displays has no significant added value for users, whereas the provision of location information is identified as very important (cf. Appendix B). However, the *smile pilot user survey* came to the result that the provision of alternative routes “can support breaking mobility routines and increase usage of alternatives” (Neue Urbane Mobilität Wien GmbH, 2015).

Trip planning can either be offered on-site by providing a terminal, or online by providing a website and/or smartphone application.

In order to provide integrated trip planning, it is recommended to use existing platforms and extend their functionalities by implementing the complementary offers. Both, switchh and Leipzig mobil decided to take up existing structures provided by the respective transport associations: switchh provides integrated trip planning by integrating switchh options into the HVV website and smartphone application, and the Leipzig mobil smartphone application is a further development of the existing *easy.go* smartphone application provided by the MDV (MDV, n.y.). Offenburg also plans to offer integrated trip planning in the next stage of expansion by taking up existing structures (cf. Appendix D). In this context, good cooperation with the respective tariff association can be an essential advantage, which is also confirmed by Brückner (cf. chapter 5.2.2)

6.5.5 Integrated Booking

Users should have the possibility to book the provided offers via one platform in order to keep their use simple. However, as the results of the classification scheme show, it is not necessarily required to directly integrate booking into one platform. Good redirections to the partner’s platforms present a cost-efficient alternative. (cf. chapter 5.2.1)

The provision of terminals on-site may provide an alternative to online platforms, such as websites or smartphone applications.

6.5.6 Integrated Access

The provision of one integrated access medium is identified as an important aspect for the implementation of multimodal mobility services in chapter 5.2.1. Mobility cards and smartphone applications are two mediums which are suitable for this purpose. Providing a mobility card has several advantages compared to smartphone applications:

- With regard to the demographic change the provision of a mobility card does not exclude people (especially the elderly) who are not in possession of a smartphone
- In case of empty battery or receiving no signal the smartphone application cannot be used as access medium and the user is not able to use the mobility offer. This will not happen while having a mobility card (at least as a back-up)

However, the provision of a smartphone application should not be excluded. Particularly with regard to the current technological status, Heinemann recommends to keep up with the times to be able to compete with e.g. the motorized individual transport (cf. Appendix E). Again, the provision of good redirections to the partner's applications is a cost-efficient alternative to direct integration of access into the smartphone application (cf. switchh, chapters **5.1.3** and **5.1.4**)

If resources are available, it is advised to provide both, a mobility card as well as a smartphone application.

6.5.7 Integrated Billing

From the users' point of view, integrated billing may have the advantage that they only have to pay once and thus have a good overview of their mobility costs at a glance. However, according to Kassel, separated billing of the different services does not necessarily have disadvantages and some users even stated that they do prefer receiving separate bills (cf. Appendix D).

With regard to the classification schemes' results (cf. chapter **5.2.1**) it is also observable that the majority of the projects do not offer integrated billing. It is associated with various difficulties, such as the requirement of one central institution for its processing, conflicts with the partner's privacy policies or difficulties with the revenue management.

So, it is recommended to bill each service separately through the provider itself. This may also have the advantage that in case of inconsistencies the user can directly contact the respective partner.

7 Conclusion

Within the scope of the current work success factors of multimodal mobility services and recommendations for their implementation were to be elaborated. Therefore four different case studies were analysed based on literature review as a first step. The findings have been completed with expert interviews. The results give a comprehensive insight into the concept of mobility stations with regard to their implementation process, goals, main characteristics and their system design. While analysing the system design the main focuses were set on station location, station configuration, corporate design, actors involved and how to use the offer.

In this respect, different tiers of integration were identified and a classification scheme was developed in order to further investigate on the respective integration strategy of each case study. To provide a possibility to quantify the findings, percentages of integration are determined and allocated to different levels of integration. By juxtaposing these different levels (cf. chapter 5.2.1), it can be determined which areas particularly stress a high level of integration. However, it has to be pointed out that the forming of an overall level for tiers which contain sub-tiers can lead to certain inaccuracies. This is why an additional individual consideration for the sub-tiers should be contemplated in order to decide whether the corresponding tier might have more relevance than accounted for by the overall level. The higher the number of sub-tiers, the more inaccurate the overall level might be.

The developed classification scheme does not claim to be complete. Further analyses have to show, whether there might be additional areas of integration within one tier or sub-tier as well as in total. Within the scope of this thesis direct payment, for instance, was deliberately omitted. It can be discussed whether it might not be sensible to include this tier for future research. Leipzig mobil offers already a mobility card with payment functions. So it may be well conceivable to include this tier for future work.

Furthermore, the classification scheme does not distinguish between the individual cells, all of them are counted in the same way (either counted by 1, half or zero). It might be appropriate to examine whether certain cells are more important within one tier or sub-tier than others. For example, it could be differentiated between the importance of including car-sharing into an integrated tariff offer and the rent of storage boxes. In this context it might also play a role, what goals the respective project is pursuing: even though all of them aim to promote sustainable transport, strengthen intermodal as well as multimodal behaviour and reduce car ownership, different approaches may be possible.

Another aspect to discuss is whether it would be reasonable to weight one mode higher in case several providers exist. The project of switchh has more than one car-sharing provider included. Further research on the mentioned topics is necessary in order to determine whether corresponding adjustments within the classification scheme may be reasonable.

Within the scope of this thesis the developed classification scheme mainly served as basis for identification of relevant tiers of integration and to derive recommendations for the implementation of multimodal mobility services.

However, this scheme may also be useful to assess single projects. Providers of multimodal mobility services may apply the scheme to find out where improvements of their project are possible or reasonable. The recommendations of this thesis may provide a guideline to identify which tiers may require a higher level of integration and which tiers do not necessarily.

The application of the classification scheme provides an overview of the integration strategies of the respective projects. It is observable that different services pursue different approaches with regard to integrating their offer.

Bremen predominately focuses on the provision of car-sharing in public space in order to decrease the dependency of privately owned vehicles and to relieve inner-city neighborhoods from parking pressure. The integration strategy of Bremen is rather low. The main focus is set on the physical tier, marketing and information is partially integrated and within the rest of the tiers no integration exists at all. On the contrary, Leipzig places great value on achieving high levels of integration. There is no tier which is not integrated at all and most of them reached a level of 2 or even higher. Despite the tiers of physical and marketing integration Offenburg pursues a rather low integration strategy. The project is “kept simple” on various tiers (cf. Appendix D). The examples of switchh are integrated on a medium level in total. In this connection the changes from switchh 1.0 to switchh 2.0 show interesting results with regard to the integration strategy. In several tiers the levels of integration decreased, which lead to the conclusion that a high level of integration not necessarily comes along with success.

This is also observable with regard to the example of mobil.punkte: although Bremen does not pursue a high integration strategy, the multimodal mobility service offered is quite successful and well accepted among Bremen’s citizens. However, the low integration strategy, especially in terms of the provision of integration in tiers linked with ICT, may be related to the fact, that Bremen introduced its multimodal mobility stations already in 2003. Thus, the project grew in a time when the integration of ICT has not yet played a role and it could be assumed that this is why its relevance still is not that high since the offer has been already accepted.

Nevertheless, based on the findings of the classification scheme it has been possible to determine which of the identified tiers of integration have greater importance than others. An integrated marketing strategy is identified as particularly relevant. This cannot only be proved with the results of the classification scheme, but can also be confirmed by experts. Furthermore an integrated access medium is of high importance with regard to the implementation of mobility stations. The overall level of access integration is not above average among all multimodal mobility services. However, the individual consideration of the sub-tiers lead to the result, that particularly with regard to an integrated mobility card, higher levels are determined.

The given recommendations for the implementation of mobility stations focus on the aspects of station location, station configuration and the integration strategy of multimodal mobility services (cf. chapter 6). With regard to the recommendations for the integration strategy, it may be possible that further investigations on the classification scheme and its adaption may lead to different results. In addition, its application on more than the four depicted case studies may also lead to changed conclusions. Therefore the given recommendations have served as a first concept and it remains to be seen, whether they can be confirmed by future research.

Furthermore, not all of the success factors mentioned by the experts are included within the recommendations. Nevertheless, some of them might facilitate the project implementation, for example an agile project management or the level of risk, which you have to be willing to take. Both aspects may be useful to consider when decisions have to be taken.

While deciding to implement multimodal mobility services, further analysis concerning the clarification of financing as well as the determination of an operator model are necessary. In this context, the work of Krismanski (2015) gives a good overview of financial and operator concepts as well as recommendations for their adaption.

Missing legal framework conditions for the implementation of mobility stations in public space may present serious barriers. So far, the German legislator does not provide uniform and mandatory conditions, neither for the designation of car-sharing parking places in public space nor for mobility stations. Currently the providers of mobility stations help themselves by designating areas with special use permits (German: *Sondernutzungserlaubnis*) for the implementation of car-sharing parking places in public space (cf. Appendix D, (Brückner, 2016)). Although the German Federal Government announced a car-sharing law in January 2015 (bcs, 2015), no corresponding law has been passed until now. According to the Ministry of Transport, a draft law is worked out and currently in the final vote (as per January 2016) (Spiegel Online, 2016). Therefore it is expected that the implementation of car-sharing parking places as component of mobility stations may become much easier in future.

Multimodal mobility stations are expected to positively contribute to a change in mobility behaviour as well as a reduction in private car ownership. Several studies prove the positive effects of station-based car-sharing (cf. chapter 2.2.4) and also bike-sharing systems are proved to promote sustainable transport.

However, among the case studies impact evaluations are only available for mobil.punkte so far. A reduction in car-ownership can be proved (cf. chapter 3.2.5), whereas mobility behavior is not examined. Furthermore, it has to be mentioned that the only mode examined in their evaluations is car-sharing. They do not take into account in which way the combination of different means of transport at the mobility stations influences the mobility behaviour. Therefore, general statements concerning positive effects of mobility stations cannot be derived.

The university Hamburg-Harburg examined an evaluation on switchh, however the final report is not available yet. In this context it would be reasonable to evaluate the new concept

of switch 2.0 as well, in order to compare the results. This would particularly be interesting with regard to the users' acceptance of the new and lower integration levels (cf. **5.1.4**). Offenburg recently started an evaluation of its multimodal mobility service. It is planned to be finished till the end of 2017. Leipzig does not plan to evaluate its mobility stations, so far.

Therefore, it remains to be seen, whether positive effects of multimodal mobility stations can be proven and in which way a combined offer contributes to more sustainable transport.

List of References

- Ahrens, G. (2015). *Sonderauswertung zum Forschungsprojekt "Mobilität in Städten - SrV 2013" - Städtevergleich*. Technische Universität Dresden, Verkehrs- und Infrastrukturplanung, Dresden.
- Amey, A., Attanucci, J., & Mishalani, R. (2010). *"Real-time" Ridesharing - The Opportunities and Challenges of Utilizing Mobile Phone Technology to Improve Rideshare Services*. TRB Annual Meeting 2011.
- Amsden, J. (2001). *Levels Of Integration*. Retrieved February 27, 2016, from <https://www.eclipse.org/articles/Article-Levels-Of-Integration/levels-of-integration.html>
- BBSR. Bundesinstitut für Bau- Stadt- und Raumforschung (BBSR) (2010). Retrieved March 19, 2016, from <http://www.werkstatt-stadt.de/en/projects/212>
- BBSR. Bundesinstitut für Bau- Stadt- und Raumforschung (BBSR) (2015). *Neue Mobilitätsformen, Mobilitätsstationen und Stadtgestalt*. Bonn.
- BBSR. Bundesinstitut für Bau- Stadt- und Raumforschung (BBSR) (n.y.). *New forms of mobility, mobility stations and urban design*. Retrieved March 04, 2016, from <http://bbsr.bund.de/BBSR/EN/RP/ExWoSt/Studies/forms-of-mobility-mobility-stations/01-start.html?nn=386522¬First=true&docId=1207446>
- bcs. Bundesverband CarSharing e.V. (bcs) (2010). *The State of European Car-Sharing - Final Report D 2.4 Work Package 2..*
- bcs. Bundesverband CarSharing e.V. (bcs) (2015). Retrieved March 20, 2016, from <http://www.carsharing.de/pressemitteilung-vom-27022015>
- bcs. Bundesverband CarSharing e.V. (bcs) (2015a). *Räumliche Verbreitung*. Retrieved February 11, 2016, from: http://www.carsharing.de/sites/default/files/uploads/press/pdf/infografik_räumliche_verbreitung_anf2015.pdf
- bcs. Bundesverband CarSharing e.V. (bcs) (2015b). Retrieved March 2016, from http://www.carsharing.de/sites/default/files/uploads/ueber_den_bcs/pdf/bcs-factsheet_1_final.pdf
- bcs. Bundesverband CarSharing e.V. (bcs) (2016a). Retrieved February 13, 2016, from http://www.carsharing.de/sites/default/files/uploads/press/pdf/grafik_carsharing_entwicklung_deutschland_2016_gesamt_mit_logo.pdf

- bcs. Bundesverband CarSharing e.V. (bcs) (2016b). *CarSharing Jahresbilanz 2015*. Retrieved March 16, 2016, from: http://carsharing.de/sites/default/files/uploads/pm_carsharing-bilanz_2016_0.pdf
- bcs. Bundesverband CarSharing e.V. (bcs) (n.y.). Retrieved January 05, 2016, from Was ist CarSharing?: <http://www.carsharing.de/alles-ueber-carsharing/faq>
- Becker, U., Gerike, R., & Völlings, A. (1999). *Gesellschaftliche Ziele von und für Verkehr*. Schriftenreihe des Dresdner Instituts für Verkehr und Umwelt e.V. (DIVU), Heft 1, p. S.71.
- Bibliographisches Institut GmbH. (n.d.). *Duden*. Retrieved Februar 9, 2016, from www.duden.de/rechtschreibung/Taxi
- Böhler, S. (2010). *Nachhaltig mobil. Eine Untersuchung von Mobilitätsdienstleistungen in deutschen Großstädten* (Vol. 8). (T. U. Institut für Raumplanung, Ed.)
- Bonsall, P. (1981). *Car sharing in the United Kingdom*. Transport Economics Policy, pp. 35-44.
- Bremen Land. (2016). *Der Zwei-Städte-Staat Bremen*. Retrieved from Landesportal Bremen: <http://landesportal.bremen.de/der-zwei-staedte-staat-bremen-33803538>
- bremen.online. (2016). Retrieved March 19, 2016, from <http://www.bremen.de/leben-in-bremen/stadtteile/mobilitaet-und-verkehr/bus-und-starsenbahn>
- Brückner, J. (2016). *Erfahrungen aus der multimodalen Angebotspraxis*. Fachtagung Mobilität und Kommunikation - Umdenken im ÖPV - Smarte Vernetzung mit Auto, Rad & Co (pp. 50-59). Dresden: Technische Universität Dresden.
- BSAG. Bremer Straßenbahn Aktiengesellschaft (BSAG) (n.y.). Retrieved March 21, 2016, from <http://www.bsag.de/de/service/externe-partner/car-sharing.html>
- Büttner et al. (2011). *OBIS - Optimising Bike SHaring in European Cities - A Handbook*. Retrieved March 21, 2016 from https://ec.europa.eu/energy/intelligent/projects/sites/iee-projects/files/projects/documents/obis_handbook_en.pdf
- cambio CarSahring. (2014b). *Einstiegsangebote für Dauernutzer von Bus und Bahn*. Retrieved March 21, 2016, from http://www.cambio-carsharing.de/cms/carsharing/de/1/cms_f2_8/cms_knuuid=5f9d2c0b-b308-4849-a480-75624dc1f46d

- cambio CarSharing. (2014a). *CarSharing. So funktioniert's*. Retrieved March 21, 2016, from cambio carsharing: http://www.cambio-carsharing.de/cms/carsharing/de/1/cms_f2_8/cms?cms_knuuid=05984922-851a-42ac-aab8-bdbeac1a0819
- car2go Deutschland GmbH. (n.d.). *car2go*. Retrieved February 3, 2016, from <http://www.car2go.com/de/berlin/unternehmen/>
- carsharing-news.de. (2016a). *Carsharing Varianten*. Retrieved February 1, 2016, from <http://www.carsharing-news.de/carsharing-varianten>
- carsharing-news.de. (2016b). *Carsharing Anbieter*. Retrieved February 14, 2016, from <http://www.carsharing-news.de/carsharing-anbieter>
- carsharing-news.de. (2016c). *Privates Carsharing*. Retrieved March 16, 2016, from <http://www.carsharing-nwms.de/privates-carsharing/>
- carsharing-news.de. (2016d). *Carsharing Bremen*. Retrieved March 19, 2016, from <http://www.carsharing-news.de/carsharing-bremen/>
- carsharing-news.de. (2016e). *Carsharing Hamburg*. Retrieved March 21, 2016, from <http://www.carsharing-news.de/carsharing-hamburg/>
- carsharing-news.de. (2016f). *Carsharing Leipzig*. Retrieved March 24, 2016, from <http://www.carsharing-news.de/carsharing-leipzig/>
- Chlond, B., & Manz, W. (2000). INVERMO - *Das Mobilitätspanel für den Fernverkehr*. Dynamische und statistische Elemente des Verkehrsverhaltens - Das Deutsche Mobilitätspanel. Schriftenreihe der Deutschen Verkehrswissenschaftlichen Gesellschaft, pp. 203-227.
- civity Management Consultants GmbH & Co. KG. (2014). *Urban mobility in transition?* Hamburg.
- Cranzler, W., & Knie, A. (2009). *Grüne Wege aus der Autokrise. Vom Autobauer zum Mobilitätsdienstleister*. Heinrich-Böll-Stiftung. Band 4 Reihe Ökologie. Retrieved February 11, 2016, from <https://www.boell.de/de/content/gruene-wege-aus-der-autokrise>
- DB Rent GmbH. (2016). *StadtRad Hamburg Standorte im Überblick*. Retrieved March 21, 2016 from <http://stadtrad.hamburg.de/kundenbuchung/>
- DeMaio, P. M. (2007). *The Bike-Sharing Blog (Hrsg.: Metrobike, LLC)*. Retrieved February 10 from <http://bike-sharing-blogspot.de>

- Der Senator für Bau, Umwelt und Verkehr. (2005). *Ergebnisse des Bremer Modellprojects "Mobilpunkt" - Ansätze für Car-Sharing im öffentlichen Raum*. Retrieved March 15, 2016 from <http://www.bvoe-bremen.de/download/pdf/Mobilpunkt2005.pdf>
- Der Senator für Umwelt, Bau und Verkehr. (2015). *Umsetzung des Car-sharing Aktionsplans*. Retrieved March 20, 2016, from http://www.bauumwelt.bremen.de/sixcms/media.php/13/BdV_S_Car-Sharing_Endf.17177.pdf
- Der Senator für Umwelt, Bau und Verkehr. (n.y.-a). *Radverkehr*. Retrieved March 25, 2016, from <http://www.bauumwelt.bremen.de/sixcms/detail.php?gsid=bremen213.c.14567.de>
- Der Senator für Umwelt, Bau und Verkehr. (n.y.-b). *mobil.punkt*. Retrieved March 19, 2016 from <http://mobilpunkt-bremen.de/mobil-punkte/>
- Deutsche Bahn AG. (2016e). *Call a bike - Städte und Stationen*. Retrieved March 25, 2016 from <https://www.callabike-interaktiv.de/kundenbuchungen/process.php?proc=bikesuche&f=500&>
- Deutsche Bahn AG. (2016a). Retrieved March 17, 2016 from <http://www.bahnhof.de/bahnhof.de/bahnhof-de/suche/suche.html#q=offenburg>
- Deutsche Bahn AG. (2016b). *Flinkster - Stationsfinder*. Retrieved March 17, 2016 from <http://www.flinkster.de/kundenbuchungen/process.php?proc=stadtauswahl>
- Deutsche Bahn AG. (2016c). Retrieved March 19, 2016, from <http://www.bahnhof.de/bahnhof-de/suche/suche.html#q=bremen>
- Deutsche Bahn AG. (2016d). *Die S-Bahn Mitteldeutschland*. Retrieved March 24, 2016, from http://www.s-bahn-mitteldeutschland.de/s_mitteldeutschland/view/wir/ueber-uns.shtml
- Freese, C., & Schönberg, T. (2014). *Shared Mobility*. Retrieved February 17, 2016, from http://www.rolandberger.de/media/pdf/Roland_Berger_TAB_Shared_Mobility_20140716.pdf
- Freie Hansestadt Bremen. (2003). *Umweltfreundliche Mobilität hat jetzt einen Namen: mobil.punkt*. Retrieved March 19, 2016, from <http://senatspressestelle.bremen.de/sixcms/detail.php?id=9315&asl=bremen146.c.25714>
- Freie Hansestadt Bremen. (2010). *Drei neue mobil.punkte entlasten Innenstadtquartiere*. Retrieved March 10, 2016, from <http://senatspressestelle.bremen.de/sixcms/detail.php?id=32775>

- Gabler Wirtschaftslexikon. (n.y.). *Gabler Wirtschaftslexikon*. (S. G. Verlag, Editor) Retrieved March 10, 2016, from <http://wirtschaftslexikon.gabler.de/Archiv/688938792/sharing-economy-v5.html>
- Glötz-Richter, M. (2015). *Der Bremer Umweltverbund: mobil.punkte und mobil.pünktchen ergänzen Rad und ÖPNV*. Retrieved February 10, 2016, from http://innovationskongress-bw.de/wp-content/uploads/2015/Vortrag_Michael-Glotz-Richter_10_03_2015.pdf
- GVH. Großraum-Verkehr Hannover GmbH (2014). Retrieved January 25, 2016, from <http://www.gvh.de/service/rad-auto-carsharing/hannovermobil/>
- hamburg.de GmbH & Co. KG. (n.y.). *Switchh - Praktische Vernetzung des Öffentlichen Nahverkehrs*. Retrieved March 21, 2016, from <http://www.hamburg.de/hvv/4123240/switchh/>
- Hamburger Hochbahn AG. (2015). *Die Hochbahn auf einen Blick*. Retrieved March 15, 2016, from http://www.hochbahn.de/wps/portal/de/Home/Unternehmen/Unser_Job_fuer_Hamburg/Zahlen-%20Daten-%20Fakten abgerufen
- Hamburger Hochbahn AG. (n.y.-a). *switchh.de - Pressemitteilungen*. Retrieved March 21, 2016, from <http://www.switchh.de/wps/portal/switchh/neuigkeiten#Presse>
- Hamburger Hochbahn AG. (n.y.-b). *switchh.de - Was ist switchh*. Retrieved March 21, 2016, from http://www.switchh.de/wps/portal/switchh/was_ist_switchh
- Hamburger Hochbahn AG. (n.y.-c). *Wie switchhe ich - FAQ*. Retrieved March 23, 2016, from http://www.switchh.de/wps/portal/switchh/wie_switchhe_ich#FAQ
- Hamburger Hochbahn AG. (n.y.-d). *Neuigkeiten*. Retrieved March 23, 2016, from <http://www.switchh.de/wps/portal/switchh/neuigkeiten#Aktuelles>
- Hamburger Verkehrsverbund GmbH. (n.y.). *Übersicht Verkehrsangebot*. Retrieved March 19, 2016, from <http://www.hvv.de/ueber-uns/verkehrsangebot/uebersicht/index.php>
- Hampshire, R., & Gaites, C. (2011). Peer-to-Peer-Carsharing - Market Analysis and Potential Growth. *Transportation Research Record Journal of the Transportation Research Board*.
- Heinemann, T. (2016). *Neue Mobilitätsstationen in Leipzig*. Retrieved from http://www.vt.bgu.tum.de/fileadmin/w00bnf/www/2015_16/VKA_Heinemann.pdf
- Kassel, M. (2015). *Aufbau eines Netztes von Mobilitätsstationen in Offenburg und Umgebung*. Offenburg.

- Kassel, M. (2016). *Mobilitätsstationen - Schnittstellen der Nahmobilität in Offenburg*.
- Krietemeyer, H. (2012). *Effekte einer langjährigen Marketing-Kooperation zwischen dem Münchner Verkehrs- und Tarifverbund (MVV) und der Car-Sharing Organisation STATAUTO München*. In W. Loose, & M. Glotz-Richter (Eds.), *Car-Sharing und ÖPNV - Entlastungspotenziale durch vernetzte Angebote* (pp. 99-116). ksv-verlag.
- Krismanski, H. (2015). *Mobilitätsstationen - Räumliche Verknüpfung von Mobilitätsangeboten: Fallstudienbasierte Handlungsempfehlungen zur Planung, Gestaltung und Umsetzung von Mobilitätsstationen*.
- Loose, W. (2014). *Wie alles anfing - CarSharing als Reaktion auf die Verkehrs- und Umweltsituation in den 90er Jahren*. In B. C. (Hrsg.), *Eine Idee setzt sich durch! 25 Jahre CarSharing* (pp. 11-16). Köln.
- Loose, W., & Glotz-Richter, M. (2012). *Car-Sharing und ÖPNV-Entlastungspotentiale durch vernetzte Angebote*. ksv - Kölner Stadt- und Verkehrsverlag.
- LVB. Leipziger Verkehrsbetriebe (LVB) GmbH (n.y.-a). Retrieved March 24, 2016, from *Mit Leipzig mobil einfach clever von A nach B kommen*: <https://www.l.de/verkehrsbetriebe/produkte/leipzig-mobil>
- LVB. Leipziger Verkehrsbetriebe (LVB) GmbH (n.y.-b). Retrieved March 28, 2016, from *ABO Flex*: <https://www.l.de/verkehrsbetriebe/produkte/abo-flex>
- MDV. Mitteldeutscher Verkehrsverbund GmbH (n.y.). Retrieved March 28, 2016, from <https://easygo.mdv.de>
- MiD. (2008). *Mobilität in Deutschland (MiD)*. Retrieved March 19, 2016, from http://www.mobilitaet-in-deutschland.de/pdf/Preäsentationen_MiD_Bericht_Region_HH_Regionalkonferenz_VerkehrMobilität.pdf
- Mobility Center GmbH. (n.y.). *teilAuto - Funktionsweise*. Retrieved 28 March, from <http://www.teilauto.net/funktionsweise.php?f=1>
- Monheim, H., Reimann, J., Muschwitz, C., & Streng, M. (2012). *Fahrradverleihsysteme in Deutschland*. Köln: ksv - Kölner Stadt- und Verkehrsverlag.
- moovel Group GmbH. (n.y.). Retrieved February 18, 2016, from <http://www.moovel.com>
- MVG. Münchner Verkehrsgesellschaft mbH (MVG) (n.y.). Retrieved January 20, 2016, from <https://www.ices/mobile-services/mvg-rad.htmlmvg.de/serv>
- Neue Urbane Mobilität Wien GmbH. (2015). *smile - einfach mobil*. Retrieved January 21, 2016, from <http://simle-einfachmobil.at>

- nextbike GmbH. (n.y.). *Standort Hamburg*. Retrieved March 22, 2016, from <http://www.nextbike.de/hamburg/standorte>
- NordWestBahn GmbH. (n.y.). Retrieved March 19, 2016, from <http://nordwestbahn.de/regio-s-bahn/unsere-region/streckenetz.html>
- PGV-Alrutz, DR-Architekten. (2015). *B+R-Entwicklungskonzept für die Freie und Hansestadt Hamburg*. Retrieved March 23, 2016, from <http://www.hamburg.de/contentblob/4440776/data/b-r-entwicklungskonzept-hamburg.pdf>
- Prediger, U. (2011). *E-Bikes - "alte Leute" Fahrzeug, Spaßgerät oder echte Mobilitätsalternative*. In T. Mager, *Nachhaltige Mobilität* (S. 137-146). Köln: ksv - Kölner Stadt- und Verkehrsverlag.
- Puzalowski, J. (2009). *Pole-Position bei Elektro-Autos*. RP.Online. Retrieved March 02, 2016 from <http://www.rp-online.de/nrw/staedte/duesseldorf/pole-position-bei-elektroautos-aid-1.1138964>
- Randelhoff, M. (2014). *Ueberpop, Wundercar, Lyft & Co. - Ridesharing oder vielmehr Rideselling*. Retrieved January 20, 2016, from *Zukunft Mobilität*: <http://www.zukunft-mobilitaet.net/74151/analyse/definition-ridesharing-rideselling-unterschiede-taxi-carpooling/>
- Rodrigue, J.-P. (n.y.). *Levels of Economic Integration*. Retrieved February 27, 2016, from <https://people.hofstra.edu/geotrans/eng/ch5en/conc5en/economicintegration.html>
- Schade, W., & Kühn, A. (2012). *Neue Mobilitätskonzepte - Die Zukunft der Automobilindustrie?* TAB-Brief Nr. 41, Karlsruher Institut für Technologie, TAB - Büro für Technikfolgen-Abschätzungen beim Deutschen Bundestag.
- Schmauß, A. (2008). *CIVITAS:"mobil.punkt":Interchanges between Car-Sharing, Public Transport and cycling in Bremen, Germany*. Retrieved March 15, 2016, from http://www.add-home.eu/docs/FGM_Bremen_MobilPunkt_ADDHOME.pdf
- Shaheen, S., Guzman, S., & Zhang, H. (2010). *Bikesharing in Europe, the Americas, and Asia - Past, Present, and Future*. *Transportation Research Record*, pp. 159-167.
- Sommer, C., & Much, E. (2014). *Integrierte multimodale Mobilitätsdienstleistungen*. In H. Proff (Ed.), *Radikale Innovationen in der Mobilität - Technische und betriebswirtschaftliche Aspekte* (pp. 499-514). Wiesbaden.
- Spiegel Online. (2016). *Car-Sharing: SPD attackiert Verkehrsminister Dobrindt*. Retrieved March 23, 2016 from *Spiegel Online*: <http://www.spiegel.de/wirtschaft/soziales/carsharing-spd-attackiert-alexander-dobrindt-a-1071171.html>

- Stadt Leipzig. (2015a). *Stadtentwicklungsplan Verkehr und öffentlicher Raum - Erste Fortschreibung*. Retrieved March 22, 2016, from http://www.leipzig.de/bauen-und-wohnen/stadtentwicklung/stadtentwicklungsplaene-step/step-verkehr-und-oeffentlicher-raum/?elD=dam_frontend_push&docID=49892
- Stadt Leipzig. (2015b). *Erste Mobilitätsstation in Leipzig eröffnet*. Retrieved March 23, 2016, from <http://www.leipzig.de/news/news/erste-mobilitaetsstation-in-leipzig-eroeffnet/>
- Stadt Leipzig. (2016a). *Bus and Rail*. Retrieved March 24, 2016, from <http://english.leipzig.de/environment-and-transport/getting-around-in-leipzig/bus-and-rail-in-leipzig>
- Stadt Leipzig. (2016b). *Radfahren in Leipzig*. Retrieved March 24, 2016, from <http://www.leipzig.de/umwelt-und-verkehr/unterwegs-in-leipzig/fahrrad/>
- Stadt Leipzig. (2016c). *Radverkehrsentwicklung*. Retrieved March 24, 2016, from <http://www.leipzig.de/umwelt-und-verkehr/verkehrsplanung/radverkehr/>
- Stadt Offenburg. (2013). *Schlüsselbusverkehr Offenburg*. Retrieved March 17, 2016, from http://ortenaulinie.de/site/OrtenaulinieRoot/get/documents_E517286585/ortenaulinie/Dateien/Downloads/schluesselbus_linienetzplan_2015.pdf
- Stadt Offenburg. (2015). *Mobil in Offenburg*. Retrieved March 2016, from <http://mobilinoffenburg.de>
- Stadt Offenburg. (n.y.-a). Retrieved March 16, 2016, from http://offenburg.de/html/offenburg_im_ueberblick.html?&
- Stadt Offenburg. (n.y.-b). *Radverkehr*. Retrieved March 17, 2016, from <http://offenburg.de/radverkehr.html>
- Stadt Offenburg. (n.y.-c). *Verkehrliches Leitbild*. Retrieved March 15, 2016, from http://offenburg.de/html/verkehrliches_leitbild.html?&
- Stadtmobil Südbaden AG. (2012). *Standorte*. Retrieved March 15, 2016, from <http://www.stadtmobil-suedbaden.de/fuhrpark-standorte/standorte/>
- Statistikamt Nord. (n.y.). *Regionaldaten für Hamburg*. Retrieved March 19, 2016, from Statistisches Amt für Hamburg und Schleswig-Holstein: <http://region.statistik-nord.de/detail/10000000000000/2/>
- Statistisches Landesamt Bremen. (2015). *Bremen in Zahlen 2015*. Freie Hansestadt Bremen: Statistisches Landesamt Bremen.

- Stopka, U. (2016). *Umdenken im ÖPV - Smarte Vernetzung mit Auto, Rad & Co*. Fachtagung Mobilität und Kommunikation - Umdenken im ÖPV - Smarte Vernetzung mit Auto, Rad & Co (pp. 2-13). Dresden: Technische Universität Dresden.
- Taxi Verts. (n.y.). Retrieved February 19, 2016, from <http://www.taxiverts.be>
- UITP. (2011, April). *Becoming a real mobility provider*. Retrieved March 01, from <http://www.uitp.org/sites/default/files/cc-focus-paper-files/FPComMob-en.pdf>
- VBN. Verkehrsverbund Bremen/Niedersachsen GmbH. (n.y.). Retrieved March 19, 2016, from <http://www.vbn.de/der-vbn/unsere-partner.html>
- Von der Ruhen, S., Rindsfüßer, G., Beckmann, K., Kuhimof, T., Chlond, B., & Zumkeller, D. (2003). *Schlussbericht FE-Nr. 70.724/2003, Forschungsprogramm zur Verbesserung der Verkehrsverhältnisse in den Gemeinden*. Aachen/Karlsruhe.
- Von der Ruhen, S., Rindsfüßer, G., Beckmann, K., Kuhimof, T., Chlond, B., & Zumkeller, D. (2005). *Bestimmung multimodaler Personengruppen. Schlussbericht zu FE 70.724 - Projektliste 2003*. Institut für Stadtbauwesen und Stadtverkehr der RWTH Aachen, Institut für Verkehrswesen der Universität Karlsruhe.
- VVS. (n.y.). Verkehrs- und Tarifverbund Stuttgart GmbH (VVS). Retrieved January 27, 2016, from Flexibel unterwegs mit dem VSS-Mobilpass: <http://www.vvs.de/mobilpass/>
- Wiener Stadtwerke Holding AG. (2016). *Wiener Stadtwerke*. Retrieved February 10, 2016, from <http://www.wienerstadtwerke.at/eportal3/ep/channelView.do/pageTypeld/71282/channelId/-54696>
- Wilke, G. (2002). *Neue Mobilitätsdienstleistungen und Alltagspraxis*. Wuppertal papers.
- WiMobil. (2015). *Carsharing und Elektromobilität - Ein Praxisleitfaden für Kommunen*. Retrieved March 10, 2016 from www.erneuerbar-mobil.de/de/projekte/foerderungenvonvorhabenimbereichderelektromobilitaetab2012/ermittlungderumweltklimafaktorenderelektromobilitaet/dateien-perssematerial-ect/wimobil-carsharing-und-elektromobilitaet-ein-praxisleitfaden-fuer-kommunen.
- Wisselmann, D., & Schaller, T. (2012, November 9). *Highly Automated Driving - A BMW Research Project*.
- Zukunftsnetz Mobilität NRW. (2015). *Handbuch Mobilstationen Nordrhein-Westfalen*. Geschäftsstelle des Landesnetzwerkes "Zukunftsnetz Mobilität NRW", Verkehrsverbund Rhein Sieg GmbH.

List of Abbreviations

app	application
B+R	Bike and Ride
BSAG	Bremer Straßenbahn AG
BBS	Bike-Sharing-System
BBSR	Bundesinstitut für Bau-, Stadt- und Raumforschung
bcs	Bundesverband CarSharing
cf.	confer
FFC	Free Floating Car-sharing
GVH	Großraum-Verkehr Hannover
HVV	Hamburger Verkehrsverbund
ibid.	ibidem
ICT	Information and Communication Technologies
LVB	Leipziger Verkehrsbetriebe
MDV	Mitteldeutscher Verkehrsverbund
MiD	Mobilität in Deutschland
MIT	Motorized Individual Transport
MVG	Münchner Verkehrsgesellschaft
MVV	Münchner Verkehrs- und Tarifverbund
NeuMo	Neue urbane Mobilität Wien
P+R	Park and Ride
Pedelec	Pedal Electric Cycle
PT	Public Transport
TBO	Technische Betriebe Offenburg
TGO	Tarifverbund Ortenau

UITP International Public Transport Association

VBN Verkehrsverbund Bremen/Niedersachsen

VSS Verkehrs- und Tarifverbund Stuttgart

List of Figures

Figure 2-1: Mobility offers, differentiated by classic and new offers; source: own graphic with added services according to Krismanski (2015); icons retrieved from http://www.flaticon.com (n.y.)	4
Figure 2-2: Car-sharing availability in Germany differentiated by station based and free floating systems; source: bcs (2015a)	5
Figure 2-3: Definition of multimodal and intermodal travel behavior; source: own graphic according to Von der Ruhen (2003)	12
Figure 2-4: Illustration of different transport modes and mobility services classified by collective and individual use, and public or private access; source: UITP (2011)	13
Figure 2-5: Integrated mobility platform of smile: wide range and functional integration; source: Neue Urbane Mobilität Wien GmbH (2015)	14
Figure 2-6: Different designs of steles, brandings, mobility cards and applications; source: Freie Hansestadt Bremen, Senator für Umwelt, Bau und Verkehr (n.y.); Hamburger Hochbahn AG (n.y.); fairkehr (n.y.); Leipziger Verkehrsbetriebe (n.y.)	17
Figure 3-1: Modal share of Bremen: number of trips (domestic traffic); source: own graphic; values retrieved from Ahrens (2015)	20
Figure 3-2: Mobil.pünktchen located at junctions; source: Michael Glotz-Richter	23
Figure 3-3: Examples for mobil.punkt configurations; source: Krismanski (2015), Glotz-Richter	24
Figure 3-4: Homepage of mobil.punkte (mobilpunkt-bremen.de); source: http://mobilpunkt-bremen.de/ (n.y.)	25
Figure 3-5: Modal share of Hamburg: number of trips (domestic traffic); source: own graphic, values retrieved from MiD (2008)	27
Figure 3-6: Development of switch; source: own graphic	30
Figure 3-7: Examples for switchh point configurations; source: Hamburger Hochbahn AG (n.y.)	32
Figure 3-8: Switchh homepage (www.switchh.de), source: www.switchh.de (n.y.)	33
Figure 3-9: Switchh smartphone application: map and trip planning in form of bar displays; source: own photographs	35
Figure 3-10: Changes of switchh smartphone application; source: Brückner (2016)	36
Figure 3-11: Modal share of Offenburg: number of trips (domestic traffic); source: own graphic, values retrieved from City of Offenburg (n.y.b)	37
Figure 3-12: Current station location and planned development for mobility; source: Kassel (2015)	41
Figure 3-13: Modular design of Offenburg's mobility stations; source: André Stocker design (2013)	41
Figure 3-14: Corporate design of EinfachMobil: infrastructure elements of mobility stations, car-sharing and bike-sharing vehicles, bicycle infrastructure; source: Stadt Offenburg (2015), Kienzler Stadtmobiliar GmbH (n.y.)	42
Figure 3-15: Screen shot of EinfachMobil website; source: Stadt Offenburg (2015)	43

Figure 3-16: Modal share of Leipzig: number of trips (domestic traffic); source: own graphic, values retrieved from Ahrens (2015)	45
Figure 3-17: Elements of Leipzig mobil stations; source: own photographs	48
Figure 3-18: Leipzig mobil card; source: own photographs	49
Figure 3-19: Leipzig mobil, smartphone application: map with station locations, information of one Leipzig mobil station, trip planning with different route options; source: own photographs	50
Figure 4-1: Explanation of cell fillings within the classification scheme; source: own graphic	55
Figure 4-2: Step-by-step guide of classification scheme; source: own graphic.....	57
Figure 5-1: Summary of the results of the classification scheme; source: own graphic.....	89

List of Tables

Table 3-1: Benefits for switchh users; source: own table, information retrieved from (Hamburger Hochbahn AG, n.y.-c)	34
Table 3-2: Monetary savings for EinfachMobil users; source: own table, information retrieved from Stadt Offenburg, 2015.....	44
Table 3-3: Description of tiers of integration; source: own table	53
Table 4-1: Level division of integration; source: own table	56
Table 5-1: Integration strategy of mobil.punkte; source: own table	64
Table 5-2: Integration strategy of switchh 1.0; source: own table	70
Table 5-3: Integration strategy of switchh 2.0; source: own table	76
Table 5-4: Integration strategy of EinfachMobil; source: own table	80
Table 5-5: Integration strategy of Leipzig mobil; source:own table	86

Appendix

Appendix A

Interview zum Thema Mobilitätsstationen in Deutschland: Projekt mobil.punkte in Bremen

Eckdaten des Interviews

Gesprächspartner: Michael Glotz-Richter
Organisation: Der Senator für Umwelt, Bau und Verkehr
Rolle: Referent für Nachhaltige Mobilität

Datum: 22.03.2016

Uhrzeit: -

Ort: via Email

Die Erlaubnis zur Veröffentlichung und Verwertung des Interviews für die vorliegende Masterarbeit wurde durch Herrn Michael Glotz-Richter am 29.03.2015 erteilt.

Zusammenfassung des Interviews

1. Es gibt aktuell 10 mobil.punkte und 14 mobil.punktchen, stimmen diese Angaben?
 - Ja.
2. Gibt es Nutzungszahlen für die mobil.punkte?
 - Im Prinzip ja – beim Car-Sharing Anbieter. Wir überlassen die Flächen nur und bekommen die aggregierten Daten.
 - Allerdings sprechen wir die Daten auch intern durch. Da der CS Markt sehr wettbewerbsintensiv ist, werden diese Daten jedoch nicht weitergegeben.
 - Generell lässt sich sagen: Die meisten mobil.punkte sind sehr gut angelaufen (besser als der Hochlauf der meisten Stationen außerhalb der öffentlichen Straßenraums) und haben sehr schnell das durchschnittliche Auslastungsmaß der Bremer CS Stationen erreicht.
3. Inwieweit ist das Taxi in das Angebot der mobil.punkte eingebunden? Gibt es über die räumliche Integration von Taxiständen an einigen mobil.punkten weitere Kooperationen?
 - Der Bremer TaxiRuf macht seit vielen Jahren über Nacht auch das Call-Cener für den größten CS Anbieter in Bremen.
4. Das Angebot der mobil.punkte besteht mittlerweile seit 10 Jahren und wird stetig erweitert. Worin sehen Sie die Erfolgsfaktoren der mobil.punkte/ .punktchen?
 - Für KundInnen: Sichtbarkeit und gute Erreichbarkeit, Praxisaspekte bei der Rückgabe der Fahrzeuge (reservierter Stellplatz)
 - Die Begriffe mobil.punkt und mobil.punktchen sind in Bremen in der öffentlichen und politischen Wahrnehmung gesettlet.

- Im politischen Bereich: der nachweisbare Entlastungseffekt im Parkraum (und die Alternativlosigkeit, da Bremen die finanziellen Mittel wie beispielsweise für den Bau von Parkgaragen fehlen).

Appendix B

Interview zum Thema Mobilitätsstationen in Deutschland: Projekt switchh in Hamburg

Eckdaten des Interviews

Gesprächspartner: Jens Brückner

Organisation: Hamburger Hochbahn AG, Vertrieb und Verkehrswirtschaft, Stabsstelle Komplementäre Mobilität

Rolle: Leiter Stabsstelle Komplementäre Mobilität, Leiter switchh

Datum: 19.11.2015

Uhrzeit: 11:00 – 13:00 Uhr

Ort: Stadtwerke München, München

Die Erlaubnis zur Veröffentlichung und Verwertung des Interviews für die vorliegende Masterarbeit wurde durch Herrn Jens Brückner am 21.03.2016 erteilt.

Zusammenfassung des Interviews

Hinweis: Einige hier zusammengefassten Informationen können zum heutigen Datum nicht mehr aktuell sein. Die Zusammenfassung beschränkt sich auf das Gespräch vom 19.11.2015 und berücksichtigt keine aktuellen Entwicklungen.

1. Welche Rolle spielt die Hamburger Hochbahn AG bei dem Projekt switchh?
 - Die HOCHBAHN ist in diesem Projekt für die gesamte Projektleitung, inklusive Konzeption/Planung, Strategie, sowie die Umsetzung und den Bau verantwortlich. Bei switchh handelt es sich sozusagen um ein Projekt, bei dem „alles aus einer Hand“ kommt. Außerdem sieht die HOCHBAHN sich in diesem Projekt als den sogenannten „Platzhirsch“, d.h. sie hat die Kunden, die die Partner gerne haben wollen.
2. Welche Ziele werden mit dem Projekt switchh verfolgt?
 - Das Projekt zielt darauf ab, eine Veränderung im Mobilitätsverhalten der Hamburger zu erreichen. Dafür muss das neue Mobilitätsangebot zunächst in die Köpfe der Menschen gebracht und auf sämtlichen Ebenen verankert werden.
 - „Switchhen“ soll zu einer Selbstverständlichkeit werden und somit beispielsweise automatisch in neue Quartiersplanungen einbezogen werden. Die Wirtschaftlichkeit des Projekts spielt dabei eine wesentliche Rolle.
 - Switchh nimmt in dem Bereich Mobilitätsstationen eine Vorreiterrolle ein und zeigt somit, wie ein solches Projekt erfolgreich umgesetzt werden kann (Best Practice) und ist idealerweise (zumindest in einem gewissen Rahmen) auf andere Städte übertragbar.

3. Welche Prozesse hat das Projekt bis zur Realisierung durchlaufen (grobe Skizzierung)?

- Die Unternehmensstrategie der HOCHBAHN bis 2030 umfasst die Organisation komplementärer Mobilitätsangebote für die HVV-Nutzer. Ziel ist es, den Mobilitätsmix aus ÖPNV und den ergänzenden Angeboten einfach und bequem nutzbar zu machen – als zunehmende Alternative zum eigenen Pkw.
- Hierzu gab es zunächst ein internes Vorläuferprojekt von switchh, indem sich intensiv mit der Rolle der HOCHBAHN in diesem Rahmen auseinandergesetzt wurde sowie bereits eine grobe Projektskizzierung stattfand.
- Im Februar 2012 startet das tatsächliche Projekt mit dem Ziel, das Ganze innerhalb eines Jahres umzusetzen.
- Zwei große Partner, car2go und Europcar, konnten für eine zweijährige Pilotphase gewonnen werden.
- Erst mit dem Start des Projektes wird mit konkreten Überlegungen zur Umsetzung begonnen (Wie soll das Projekt aussehen? Welche Dimensionen: räumliche Integration an den Stationen? Virtuelle/ digitale Plattform? Integrierte Registrierung?)
- Nach 15 Monaten sind sämtliche Rahmenbedingungen gesetzt: das Projekt erhält einen eigenen Namen (switchh) und der erste switchh Punkt wird am 31.05.2013 eröffnet. Kompromisse müssen lediglich bei der integrierten Registrierung eingegangen werden.
- Die Registrierung umfasst: switchh-Kunde, Europcar-Kunde und ggf. ein HVV-Abonnement. Eine integrierte Registrierung für car2go konnte kurzfristig nicht umgesetzt werden und ist somit separat erforderlich.

4. Wie sieht das aktuelle Konzept (Stand 19.11.2015) von switchh aus? Wie wird man Kunde und welche Vorteile ergeben sich?

- Voraussetzung um switchh-Kunde zu werden ist ein HVV-Abonnement, eine ProfiCard oder ein Semesterticket.
- Switchh-Kunden erhalten vergünstigte Angebote bei den Partnern (car2go, car2go black, Europcar und StadtRAD).
- Eine Registrierung ist online möglich und kostenlos. Die Anmeldung bei den Partnern kann im Rahmen der Registrierung gleich mit erfolgen: die Registrierung für Europcar erfolgt integriert, für car2go und StadtRAD erfolgt sie separat.
- Bei switchh wird ein monatlicher Beitrag in Höhe von 10,- EUR erhoben. Dafür erhält der Kunde Vorteile bei den Partnern:
 - 60 Freiminuten pro Monat bei car2go Hamburg
 - 1 Bonusstunde pro Monat bei car2go black
 - 10,- EUR Ermäßigung bei car2go Registrierung
 - 20,- EUR Preisnachlass bei jeder Europcar-Anmietung
- Entfallen der Registrierungsgebühr (5,- EUR) bei StadtRAD sowie 5,- EUR Startguthaben
- Nach erfolgreicher Registrierung kann die switchh-Card gegen Vorlage des Personalausweises und Führerscheins abgeholt werden. Die Karte hat folgende Funktionen:
 - Zugang zu StadtRAD
 - Europcar-Kundenkarte
 - öffnet car2go Fahrzeuge in Städten, die eine nicht rein smartphone basierte Technologie nutzen

5. Welche Kenntnisse konnten aus den bisherigen Erfahrungen gewonnen werden, wie schätzen Sie das Projekt aktuell ein?
- Eine Evaluierung wird gerade fertiggestellt und voraussichtlich bis Ende des Jahres in der Endfassung vorliegen.
 - Die bisherigen Erfahrungen zeigen, dass eine multimodale Fahrtauskunft mit Balkendarstellung für den Kunden keine Relevanz hat.
 - Lediglich die Information über die Verfügbarkeit des Angebots spielt eine Rolle, d.h. die Entscheidung des Kunden über die Wahl des Verkehrsmittels findet i.d.R. bereits im Vorfeld statt und es muss dem Kunden nur die Information zur Verfügung gestellt werden, wo er welches Angebot findet.
 - Es wurde zudem festgestellt, dass ein Angebot auf Monatsebene mit Freiminuten nicht dem (durchschnittlichen) Kundennutzungsverhalten entspricht. Vielmehr sollte das Produkt, dem Kunden dann das passende Angebot zur Verfügung stellen, wenn er es braucht, ohne monatlichen Grundbeitrag und ohne Druck die monatlichen Freiminuten „noch verbrauchen zu müssen“.
 - Bezüglich der Parkplatzverfügbarkeit an den switchh-Punkten besteht keine Gefahr für Engpässe. An den meisten Stationen werden tendenziell mehr Ausleihvorgänge, als Rückgabevorgänge verzeichnet. Es besteht daher keine Notwendigkeit die Stellplätze nach den Partnern zu differenzieren.
 - Switchh Punkte repräsentieren das öffentliche Mobilitätsangebot der Stadt, gebündelt und einfach zugänglich. Das Carsharing-Angebot ist sehr gut sichtbar, die räumliche Vernetzung macht die dahinterstehende Idee gut greifbar – die Stadtbewohner werden sensibilisiert für dieses Angebot.
 - Insgesamt kann man sagen, dass switchh mit seinen bisher 2500 Kunden ein erfolgreiches Projekt ist.
6. Ab dem kommenden Frühjahr ist ein neues Konzept geplant, können Sie hierzu mehr erzählen?
- Ab dem kommenden Frühjahr soll switchh noch attraktiver werden. Dabei erwartet den Kunden „ein völlig neues Produkt“.
 - Zu den derzeitigen Partnern kommen neue hinzu: In Zukunft umfasst switchh auch die Car-Sharing-Anbieter DriveNow, Citeecar (Anmerkung: Citeecar ist auf Grund von Insolvenz leider kein zukünftiger switchh Partner) und cambio.
 - Das neue Konzept sieht außerdem vor, das Angebot für jedermann zugänglich zu machen.
 - Demnach ist ein HVV-Abo künftig keine Voraussetzung mehr, um die Möglichkeit des switchhens nutzen zu können.
 - Das neue Konzept basiert darauf, eine möglichst einfache Handhabung zu gewährleisten. Konkret bedeutet dies:
 - 1 mal registrieren für alle Anbieter
 - 1 mal zahlen
 - 1 Anlaufstelle
 - 1 Karte für alles (alle kartenbasierten Anbieter, ausgenommen car2go: Smartphone only)
 - First Level Support

- Die oben genannten Punkte umfassen also das künftige Basisprodukt. Dieses kann, je nach Bedarf, auf dem sogenannten „switchh-Marktplatz“ erweitert werden, d.h. es können dort bestimmte, nur bei switchh erhältliche, Pakete der jeweiligen Anbieter (z.B. 100 Minuten bei car2go) hinzugekauft werden. Anders als im bisherigen Konzept, verfallen diese Minuten (vergleichbar mit Prepaid) nicht nach einem Monat und können ganz einfach dann genutzt werden, wenn sie gebraucht werden
 - Der Fokus des neuen Konzepts liegt dabei klar auf der Gruppe der „Einsteiger“ sowie den Gelegenheitsnutzern. Durch den einfachen Zugang zu switchh, sowie eine möglichst breite Abdeckung der Car-Sharing-Anbieter sollen die Zugangshemmnisse minimiert werden und dem Kunden somit ein „entspanntes Ausprobieren“ des Mobilitätsangebots ermöglicht werden.
 - Künftig wird switchh außerdem zusätzlich zu den Kunden über Beiträge der Partner finanziert. Die Partner müssen ab dem Frühjahr 2016 für Neukunden (die sie über switchh hinzugewinnen), Vertriebsleistung (z.B. Werbung im Fahrgastfernsehen etc) sowie die Inanspruchnahme der switchh-Punkte (bisher kostenlos) Gebühren bezahlen.
7. Worin sehen Sie die Erfolgsfaktoren von switchh bzw. eines solchen Projektes?
- Wichtige Voraussetzungen für den Erfolg eines solchen Projekts sind zunächst die Rahmenbedingungen auf politischer und Verwaltungsebene.
 - Ebenso wichtig sind engagierte Personen sowie die Unterstützung von sämtlichen Seiten (Vorstände, Stadt usw.).
 - Eine gute Zusammenarbeit zwischen Betreiber und Verbund, bei der alle „an einem Strang“ ziehen, wirkt sich zusätzlich positiv aus.
 - Einen wesentlichen Faktor für den Erfolg spielt dabei immer ein agiles Projektmanagement. Nur wenn schnell auf Hindernisse/ aktuelle Entwicklungen etc. reagiert wird, kann ein langfristig erfolgreiches Produkt geschaffen werden.
 - Außerdem gehört die Bereitschaft, ein gewisses Risiko bei der Umsetzung einzugehen, dazu.
 - Schnelle und mutige Entscheidungen ohne Abstimmung mit dem Kerngeschäft des dahinterstehenden Unternehmens sind vor allem dann möglich, wenn das Produkt unter einer eigenen Marke etabliert wird.
 - Das wiederum bietet auf der einen Seite den Vorteil mit der Seriosität und dem Vertrauen in das dahinterstehende Unternehmen zu werben, auf der anderen Seite ist es so möglich, unter dem Namen der neuen Marke, Dinge auszuprobieren, die sonst nicht möglich wären.

Nachtrag vom 07.12.2015 via Email

8. Gibt es genaue Stellplatzanzahlen für car2go, car2go black, Europcar und StadtRAD für die einzelnen Stationen? An welchen switchh Punkten sind Bike and Ride Anlagen verfügbar?
- Eine Differenzierung der Pkw-Stellplätze nach Partner gibt es nicht mehr. Alle Stellplätze sind mittlerweile switchh-gebrandet (vorher car2go/ car2go black/ Europcar).
 - Der Anteil der Europcar-Stellplätze war sehr standortabhängig und reichte von 25% (Bergedorf und Harburg) bis zu 50% (Berliner Tor). Der übrige Teil entfiel auf car2go, wobei car2go black dort jeweils mit 2-3 Fahrzeugen vertreten war.
 - Seit Oktober ist Europcar nicht mehr an den switchh Punkten präsent, d.h. in der aktuellen Übergangsphase bis zum Launch von switchh 2.0 im Frühjahr 2016 werden die Pkw-Stellplätze an unseren switchh Punkten ausschließlich von car2go (inkl. Car2go black) genutzt.

- Eine detaillierte Übersicht der Stellplatzkapazitäten finden Sie anbei:

switchh Punkt	Anzahl Stellplätze			Bike+Ride
	car2go	Europcar	StadtRAD	
U/S Berliner Tor	18		25	ja
S Harburg	8		0	ja
S Bergedorf	8		0	ja
U Wandsbek Markt	9		21	ja
U Kellinghusenstraße	11		24	ja
S Altona	11		22	ja
U Saarlandstraße	9		26	ja
U Lattenkamp	8		24	ja
U Rödingsmarkt	10		16	ja
	92		158	

Appendix C

Interview zum Thema Mobilitätsstationen in Deutschland: Projekt switchh in Hamburg

Eckdaten des Interviews

Gesprächspartner: Jens Brückner

Organisation: Hamburger Hochbahn AG, Vertrieb und Verkehrswirtschaft, Stabsstelle Komplementäre Mobilität

Rolle: Leiter Stabsstelle Komplementäre Mobilität, Leiter switchh

Datum: 26.01.2016

Uhrzeit: 20:30 – 21:45 Uhr

Ort: Dreikönigskirche, Dresden

Die Erlaubnis zur Veröffentlichung und Verwertung des Interviews für die vorliegende Masterarbeit wurde durch Herrn Jens Brückner am 29.03.2016 erteilt.

Zusammenfassung des Interviews

Hinweis: Einige hier zusammengefassten Informationen können zum heutigen Datum nicht mehr aktuell sein. Die Zusammenfassung beschränkt sich auf das Gespräch vom 26.01.2016 und berücksichtigt keine aktuellen Entwicklungen.

1. Welche Erfahrungen konnten Sie im bisherigen Betrieb der Stationen sammeln, wie ist die Frequenz/ Auslastung an den unterschiedlichen Standorten?
 - Es gibt Standorte, die höher frequentiert werden, als andere, beispielsweise Standorte mit Fernbahnanschluss.
 - Außerdem spielt die Sichtbarkeit eine ganz entscheidende Rolle: der switchh-Punkt in Harburg liegt in einem Parkhaus und ist deshalb nicht gut sichtbar → geringere Nutzungszahlen.
 - Die örtlichen „Parkoptionen“ sind ebenso von Bedeutung, ob ein switchh Punkt wahrgenommen wird oder nicht, z.B. stellen Schranken am Parkplatz ein Hindernis dar

- Die Umschalgraten an den switchh-Punkten sind generell sehr hoch, deswegen ist die Sorge es könnte zu wenig Platz auf den switchh-Punkten sein unbegründet.
 - Car2go führt gezielt Fahrzeuge an den switchh-Punkten zu. Momentan ist es oft noch so, dass die Fahrzeuge lieber 200 Meter vom switchh-Punkt entfernt abgestellt werden, dafür aber direkt vor der Haustüre.
 - Gerade im Bezug auf neue Kunden, Leute, die sich bisher noch nicht getraut haben, dieses Angebot zu nutzen, kann das Parkplatz-Angebot auf einem switchh-Punkt sehr interessant sein, da man sich so keine Gedanken muss, ob man einen Parkplatz findet oder nicht.
2. Nach welchen Kriterien werden die Standorte für die switchh Punkte ausgewählt?
- Ein Kriterium zur Standortauswahl ist eine hohe Einwohnerdichte sowie ein damit verbundener hoher Parkdruck.
 - Des Weiteren sollen keine Überschneidungen der Einzugsgebiete entstehen —> Netzgedanke
 - Bis 2017 werden switchh-Punkte an Schnellbahnhaltstellen errichtet, die Nachverdichtung geht dann auch weg von Schnellbahnhaltstellen. Die Stationen werden dadurch jedoch nicht unbedingt kleiner (nicht wie mobil.pünktchen).
 - Berliner Tor ist ein Standort, der dazu dient, Wahrnehmung zu schaffen.
 - Die Flächenverfügbarkeit spielt natürlich auch immer eine entscheidende Rolle.
 - Es wird eine Liste mit mehreren Standorten erstellt, die dann mit den Partnern, Politik, Bezirken und Verwaltung abgestimmt werden
3. Welche Einzugsgebiete haben die switchh Punkte in der Regel?
- Mittels Daten auf Baublockebene kann man in GIS genau sehen, wie viele Einwohner an welchem Punkt vorhanden sind.
 - Einzugsgebiete werden in der Regel im 300 bis 500 m Umkreis des switchh Punktes angeschaut: das ist die Distanz, die ein Nutzer bereit ist zu laufen, um zum nächsten Car-Sharing Fahrzeug zu gelangen, darüber hinaus sinkt die Bereitschaft sehr schnell bzw. es ist keine vorhanden.
4. Zum neuen Konzept gibt es noch ein paar offene Fragen: Wie wird mit den Bestandskunden umgegangen?
- Die bisherigen 2500 gewonnen Kunden, sollen möglichst schnell in das neue System überführt werden. Es ist in etwa ein Zeitraum von 3-6 Monaten angedacht, indem versucht wird diese Kunden zu motivieren in das neue System zu wechseln, da das alte Produkt definitiv abgeschaltet wird.
 - Bestehende Kunden sollen die Möglichkeit bekommen ohne Kosten in das neue Produkt zu wechseln, eventuell erhalten sie zusätzlich Freiminuten.
 - Prinzipiell müssen sich bestehende Kunden für die neuen Partner (DriveNow und cambio) nochmals registrieren.
5. Welche Kosten fallen zukünftig für die Registrierung an?
- Die regulären Kosten für die Registrierung betragen 29,- EUR (dafür kann man sich bei allen Partnern registrieren)
 - Im Rahmen von zeitlich oder auf Zielgruppen begrenzten Absatzaktivitäten können diese Kosten auch auf 19,- EUR oder 9,- EUR reduziert werden

- Die 29,- EUR Registrierungsgebühr bleiben bei der Hochbahn für die Medialeistung (Marketing, Kampagnen), die sie erbringen, die Infrastruktur (sowohl die Betriebsinfrastruktur als auch die an den switch-Punkten), die bereit gestellt wird sowie die Mobilitätsplattform, die zur Verfügung gestellt wird.
6. Sehen die unterschiedlichen Partner sich nicht als Konkurrenten?
- Es gab von keinem der Partner die Äußerungen wegen dem anderen nicht mitzumachen.
 - Vielmehr kann man es als Ergänzung des jeweiligen anderen Angebots sehen.
 - Außerdem zielt das Angebot der Free-Flaoter auf andere Wegezwecke ab, als die stationsbasierten Angebote: mit cambio als Partner wird somit eine Lücke geschlossen.
 - Zusätzlich wird durch das Angebot unterschiedlicher Fahrzeugtypen (v.a. durch die künftigen Angebote von DriveNow und cambio) für jeden Fahrtzweck ein passendes Auto bereitgestellt und kann damit zusätzlich zu einer höheren Akzeptanz der switchh Punkte beitragen.
7. Was beinhaltet der First Level Support?
- Switchh gilt als erster Ansprechpartner, der bei Problemen/ Schwierigkeiten kontaktiert wird: darauf muss man vorbereitet sein und sich positionieren können.
 - Es wird zusammen mit den Partnern ein Service-Konzept erarbeitet, bei dem switchh die ersten Themen entgegennimmt und dann schaut, wohin der Kunden weitergeleitet werden muss, um genau an der richtigen Stelle rauszukommen, ohne Warteschleifen, sondern direkt und schnell (sozusagen ein gewisser Premiumservice)
 - second und third level support (Abrechnung, Kundenspezifische Daten) liegt dann bei den Partnern
8. Wird die switchh Karte künftig mit einer Bezahlungsfunktion ausgestattet sein?
- Die Karte hat keine Bezahlungsfunktion.
 - Es handelt sich um eine DriveNow-Karte, da die Anforderungen von BMW und DriveKnow an dieser Stelle die höchsten sind und die Karte von DriveNow das alles abdeckt.
 - Eine Bezahlungsfunktion auf der Karte zu integrieren würde das Ganze sehr komplex machen und der Kundennutzen ist an dieser Stelle überschaubar. Es wurde sich daher auf eine Karte geeinigt, die alle Autos öffnen kann. Dies ist kompliziert genug, da auch hier die anderen Anbieter Anpassungen vornehmen müssen usw. Das alleine dauert lange genug und die Philosophie des Projektes ist es ja Änderungen schnell umzusetzen.
 - Außerdem bleibt abzuwarten, welche Relevanz eine Karte in den kommenden Jahren überhaupt noch hat.
9. Wie kann man sich den switchh Marktplatz vorstellen? Was können Kunden dort erwerben?
- Es gibt sozusagen Voucher, beispielsweise über 100 Freiminuten für Drive Now etc., die Voucher sind anbieterspezifisch.
 - Der Kunde kauft den Voucher bei uns im Shop und bezahlt das auch direkt. Dafür bekommt er einen Code, den er auf einer Seite, auf die er verlinkt wird einlöst und somit sind die Freiminuten automatisch bei seinem Konto hinterlegt
 - Im Prinzip ist hiermit die erste Stufe eines Mobilitätsguthabens geschaffen worden.

10. Laut dem Nachtrag Ihrer Email ist Europcar seit Oktober nicht mehr an den switchh Punkten? Was bedeutet dies genau?

- Europcar ist weiterhin switchh-Partner, allerdings besteht nur noch eine Marketing-Kooperation
- Aktuell gelten die Preivorteile von Europcar von 20€/ Anmietung noch, künftig wird das nicht mehr so viel sein.
- Switchh-Karte wird ab Relaunch nicht mehr als Kundenkarte fungieren.

11. Welche Funktionen wird die App künftig haben?

- Aktuell gibt es schon nicht mehr die Möglichkeit direkt über die switchh-App Fahrzeuge zu reservieren.
- Diese Möglichkeit zu integrieren ist enorm kostenaufwändig und sehr komplex, deswegen wurde diese Funktion wieder ausgelagert.
- Es besteht jetzt die Möglichkeit, sich in der „switchh-Auskunftswelt“ alle Fahrzeuge anzeigen zu lassen, wenn man ein Auto buchen will, klickt man es an, und wird in der entsprechenden Partner-App zu genau diesem Fahrzeug weitergeleitet.
- Die Weiterleitung funktioniert sehr schnell und stellt daher kein Problem dar.
- Der Vorteil dieser Variante ist, dass switchh keine Änderungen oder Anpassungen vornehmen muss, wenn sich etwas bei Partnern ändert, beispielsweise der Reservierungsprozess o.Ä..
- Für StadtRAD gilt das gleiche: Man kann in der App sehen, wo Stationen sind und wie viele Räder vorhanden sind, die Buchung erfolgt über die App von StadtRAD.
- Es gilt quasi für alle Partner das gleiche: Reservierung und öffnen (außer mit der Karte) passiert in der Partnerwelt, alles was Auskunft, HVV-Ticketing, HVV-Auskunft betrifft passiert in der switchh/ HVV-Welt.

Nachtrag vom 29.03.2016 via Email

12. Inwieweit gehört das Taxi zum Angebot von switchh? Ist mytaxi mittlerweile nicht mehr in der HVV-App integriert?

- Mytaxi ist nicht mehr in der App integriert.
- Taxi gehört insoweit zu switchh, dass an den switchh Punkten i.d.R. auch Taxenstände vorhanden sind.
- Zukünftig werden die Angebote einer großen hamburgischen Taxizentrale in der switchh App vertreten sein

Appendix D

Interview zum Thema Mobilitätsstationen in Deutschland: Projekt EinfachMobil in Offenburg

Eckdaten des Interviews

Gesprächspartner: Mathias Kassel

Organisation: Stadt Offenburg, Abteilung Verkehrsplanung

Rolle: Abteilungsleiter Verkehrsplanung, Verkehrsberuhigung, Schienenverkehr, Straßenplanung

Datum: 16.02.2016

Uhrzeit: 16:30 – 18:00 Uhr

Ort: Café Altschwabing, München

Die Erlaubnis zur Veröffentlichung und Verwertung des Interviews für die vorliegende Masterarbeit wurde durch Herrn Mathias Kassel am 24.03.2016 erteilt.

Zusammenfassung des Interviews

Hinweis: Einige hier zusammengefassten Informationen können zum heutigen Datum nicht mehr aktuell sein. Die Zusammenfassung beschränkt sich auf das Gespräch vom 16.02.2016 und berücksichtigt keine aktuellen Entwicklungen.

1. Wie ist die Idee EinfachMobil entstanden?

- Letzten Endes ist die Idee 2011 auf dem Fachkongress Eco.Mobil in Offenburg 2011 entstanden.
- Dort ging es um alternative Fortbewegungsmittel, Elektromobilität, Nahmobilität und vieles mehr. Zwischen den Vorträgen sowie danach (die Veranstaltung ging 2 Tage lang) kamen viele Gespräche, mit unterschiedlichsten Leuten zustande, Leute aus anderen Städten, aus Firmen mit Sitz in Offenburg und Umgebung, die alle ihre Ideen mitgeteilt haben: Angefangen von der Forderung car2go nach Offenburg zu holen, über die Idee einen eigenen Car-Sharing Pool mit Einwegsystem zu etablieren, der sowohl in der Innenstadt, als auch in den Gewerbegebieten nutzbar ist, bis hin zu der Idee, dass die Car-Sharing Fahrzeuge, die morgens in das Gewerbegebiet gefahren werden tagsüber in den Firmen-Carpool übernommen werden und abends wieder zurückgefahren werden.
- Außerdem haben Car-Sharing Anbieter und der Bike-Sharing Anbieter nextbike ihr Interesse bezüglich solcher Projekte bekundet. Somit ist die Idee entstanden, Standorte von CS und BS mit ÖPNV-Haltestellen zu verknüpfen und somit ein Netz aus Mobilitätsstationen zu implementieren.

2. Projektprozess (grobe Skizzierung)

- 2011 wurde somit mit der Entstehung der Idee, gestartet.
- 2012 wurde die Idee in Konzeptform zusammengestellt und für die Auslobung des Deutschen Verkehrsplanungspreises 2012 nominiert. Der Aufbau eines Netzes von Mobilitätsstationen in Offenburg und Umgebung ist Teil des „Mobilitätsmanagements“ des Integrierten Verkehrs- sowie des Klimaschutzkonzeptes.
- Die Realisierung des Projekts ist für einen Zeitraum von 2013 bis 2030 ausgelegt.
- Ursprünglich wollte man 30-35 Stationen in Offenburg realisieren, auf Grund der finanziellen Ziele der Stadt (schuldenfrei bis 2019 bzw. dann vorgezogen schon in 2015) hat man sich nach

- einigen Gesprächen (angefangen von der Diskussion, ob die Implementierung von Mobilitätsstationen eine Pflichtaufgabe der Kommune sei oder nur eine freiwillige Aufgabe über die Finanzierung bis hin zu der Überlegung, das Projekt komplett zu stoppen) zunächst auf die Realisierung von vier Stationen geeinigt.
- Diese wurden im Sommer/ Herbst 2015 in Betrieb genommen, sollen bis Ende 2017 evaluiert werden und die Ergebnisse dem Gemeinderat vorgelegt werden, danach wird entschieden, ob und wie es weitergeht.
3. Welche Prozesse hat das Projekt bis zur Realisierung durchlaufen (grobe Skizzierung)?
- Die Standorte wurden nach mehreren Kriterien ausgesucht.
 - In Offenburg gibt es derzeit 15 Stationen des FVS nextbike sowie 7 Stationen des Car-Sharing Anbieters Stadtmobil Südbaden. Der Offenburger Ansatz war diese Stationen (CS und BS) mit Haltepunkten des ÖPNV zu verknüpfen. Dafür wurden zunächst die Stationen identifiziert, bei denen bereits gute Nutzerzahlen vorherrschen.
 - Das sind in Offenburg die Stationen in den sogenannten Gründerzeitvierteln der Oststadt (60er Jahre Blockrandbebauung). Hier herrscht einerseits großer Parkdruck, andererseits ist hier der Anteil autofreier Haushalte schon relativ groß.
 - Außerdem gibt es in diesen Vierteln auch eine Vielzahl öffentlicher Einrichtungen, sodass nicht nur Einwohner, sondern auch Beschäftigte (sowie deren Unternehmen) und Besucher potentielle Nutzer darstellen.
 - Das Klientel dieser Viertel ist genau das, auf das mit den Mobilitätsstationen gezielt wird. Gerade vor dem Hintergrund gute Evaluationsergebnisse zu erzielen, ist es sinnvoll in den Gebieten zu starten, in denen bereits vor der Realisierung einer Mobilitätsstation Sharing-Angebote gut wahrgenommen werden, da es einfacher ist bereits vorhandene Nutzung zu steigern.
 - Die Flächenverfügbarkeit spielt natürlich auch eine wesentliche Rolle. Des Weiteren sollte bei der Auswahl der Flächen auf Barrierefreiheit – nicht nur im Sinne von Zugänglichkeit, sondern auch in Hinsicht auf Sicherheit (gut beleuchtet etc.) – geachtet werden
 - Zwei der vier Stationen sind somit in der Oststadt realisiert worden, eine am Technischen Rathaus, die andere am Kulturforum. Dafür wurden die bestehenden CS- und BS-Stationen mit Bushaltestellen zusammengelegt (sie lagen davor 100-200 m auseinander).
 - Es handelt sich bei beiden Stationen um relativ einfache Standorte mit zurückhaltendem Auftritt, um nicht zu sehr in das denkmalgeschützte Stadtbild einzugreifen.
 - Die dritte Station liegt am Bahnhof/ ZOB. Offenburg bieten 45.000 Arbeitsplätze (im Vergleich zu 60.000 Einwohnern) und es pendeln jeden Tag 26.000 Beschäftigte in die Stadt und wieder zurück.
 - Die meisten Pendler kommen am Bahnhof/ ZOB an und müssen dann weiter in die Gewerbegebiete, die derzeit jedoch relativ schlecht mit dem Bus erschlossen sind. Durch die Mobilitätsstation wird somit eine Alternative geschaffen.
 - Der vierte Standort liegt an der Messe Offenburg. Mit ca. 340 Veranstaltungen im Jahr zieht die Messe große Publikumsmassen an, die Mobilitätsstation wird so auch von Menschen außerhalb Offenburgs wahrgenommen.
 - Außerdem sind Kooperationen mit dem dort ansässigen Seminarhotel, sowie mit der Messeverwaltung geplant. Beide Kooperationspartner wollen ihren Kunden/ Besuchern die Möglichkeit bieten, die Angebote der Mobilitätsstationen während ihres Aufenthalts zu nutzen, indem sie einfach die Karte des Hotels/ der Messe benutzen können. Haftungsfragen werden derzeit geklärt.

- Der Standort Messe ist außerdem der einzige Standort, an dem zusätzlich zum Leihradangebot, drei Pedelecs von nextbike zur Verfügung stehen.
 - Da es für die Reservierung von Car-Sharing Stellplätzen im öffentlichen Raum offiziell bisher keine Regelung nach StVo gibt, erfolgt die Bereitstellung der Car-Sharing-Stellplatzfläche über Sondernutzung.
4. Welche Akteure sind in das Projekt EinfachMobil eingebunden, welche Rolle spielen sie?
- Planung, Marketing, Infrastruktur, Organisation liegt bei der Stadt.
 - Die Mobilitätsstationen selbst wurden jedoch in das Sondervermögen der TBO (Technische Betriebe Offenburg, eine unselbstständige Tochter der Stadt) überführt und ist somit Eigentümer der Plattformen.
 - Die Stellplätze werden an die Car-Sharing Anbieter vermietet. Darüber hinaus wird dem Anbieter nahe gelegt, dass er sich freiwillig finanziell an Marketingmaßnahmen beteiligen kann dafür, dass er von der Stadt die Möglichkeit bekommt im öffentlichen Straßenverkehr sichtbar zu sein und Werbung für EinfachMobil gemacht wird.
 - Der Car-Sharing-Anbieter an den Mobilitätsstationen ist Stadtmobil Südbaden, der Bike-Sharing-Anbieter nextbike, die TBO betreiben neben den Plattformen auch die Schlüsselbusse.
 - Die Deutsche Bahn ist bisher nicht eingebunden, ebenso sind bisher keine Taxiunternehmen beteiligt.
 - Alle vier Stationen haben einen sogenannten Paten, beispielsweise ist dies am Bahnhof der Bahnhoftsmanager oder an der Messe, die Messechefin. Die Paten sollen bei ihrem täglichen Weg zur Arbeit (bei dem sie an den Stationen vorbeikommen) ein Auge auf die Station haben. Außerdem sollen sie als „Multiplikatoren in die Umgebung“ fungieren, sozusagen für die Nachbarschaft eine Vorreiterfunktion einnehmen.
5. Welche Rolle spielt die Entwicklung einer eigenen Marke/ eines Corporate Designs?
- Die Entwicklung einer eigenen Marke war der Stadt sehr wichtig.
 - Ursprünglich sollte das Logo nur für die Mobilitätsstationen entwickelt werden. Während des Entstehungsprozesses wurde jedoch festgestellt, dass die neue Marke eigentlich für die gesamte neue Nahmobilität in Offenburg stehen sollte und das öffentliche Verkehrsangebot zukünftig auch unter diesem Namen laufen soll.
6. Wie sieht das aktuelle Konzept aus, können Sie dazu mehr erzählen?
- Um EinfachMobil Kunde zu werden, muss man sich auf der Webseite für einmalig 5,- EUR (Schutzgebühr für die Karte) registrieren und erhält dafür die EinfachMobil Karte. Bei Aktionen wird die Karte auch kostenlos ausgegeben.
 - EinfachMobil-Kunden erhalten (monetäre) Vorteile bei den Partnern nextbike und Stadtmobil Südbaden. Es ist wichtig dem Kunden im Rahmen solcher Projekte Vorteile zu bieten, da sonst das Angebot uninteressant und nicht attraktiv ist.
 - Eine Registrierung ist für beide Partner jeweils separat erforderlich und ist nicht in die Registrierung für EinfachMobil integriert, man wird lediglich zu den Seiten der Partner weitergeleitet. Das hat natürlich den Nachteil, sich dreimal registrieren zu müssen, andererseits, ist es bei unserer Stadtgröße und der Anzahl der Partnern zu vertreten.
 - Bei Stadtmobil Südbaden entfällt mit EinfachMobil der monatliche Grundbeitrag in Höhe von 5,- EUR, was eine Ersparnis von 60,- EUR im Jahr bedeutet (Im Rahmen von EinfachMobil hat

Stadtmobil Südbaden sein Tarifsystem vereinfacht, so dass es jetzt statt drei verschiedenen Tarifen nur noch einen Regionaltarif für Offenburg gibt.)

- Bei nextbike bietet sich die Möglichkeit einen Rabatt von ca. 20% auf den RadCard Tarif (jede erste halbe Stunde umsonst) zu erhalten. Dies ist immerhin eine Ersparnis von 9,- EUR im Jahr.
- Die EinfachMobil-Karte dient als Zugangsmedium für Car-sharing, Bike-sharing sowie Fahrradboxen. Künftig soll sie auch als Zugangsmedium für das Radhaus einsetzbar sein.
- Die Buchung der Fahrzeuge erfolgt über eine Weiterleitung zu den jeweiligen Partnern (von der EinfachMobil Webseite) bzw. über deren eigene Smartphone-Apps oder Webseiten.
- Es gibt Überlegungen auf dem Online-Portal zukünftig ein Auskunftssystem zu integrieren, das dem Nutzer für seine Fahrt von A nach B eine Mobilitätskette bzw. seine Möglichkeiten anzeigt. Dafür könnte auf bereits bestehende Systeme zurückgegriffen werden und diese könnten in das Online-Portal integriert werden.
- Eine Smartphone-App ist momentan zu teuer. Dieses soll eventuell nach der Pilotphase angegangen werden.
- Die Abrechnung der jeweiligen Dienstleistungen erfolgt separat durch den jeweiligen Anbieter. Dieser Weg wurde bewusst gewählt, da kein Projektpartner dazu bereit war, die Abwicklung zu übernehmen (auch aus datenschutzrechtlichen Gründen). Außerdem ist es einigen Kunden durchaus lieber, separate Rechnungen zu erhalten.
- EinfachMobil ist auf mehreren Ebenen „einfach“ gehalten (keine integrierte Registrierung/Buchung/Rechnung), es wurde der pragmatische Weg gegangen, und auf komplizierte und aufwändige (kostenintensive) Integrierungsprozesse verzichtet. Im Hinblick auf Schwierigkeiten mit einem Anbieter aus Kundensicht ist dies vielleicht auch durchaus von Vorteil: er kann sich direkt an den richtigen Ansprechpartner wenden.

7. Welche Erkenntnisse konnten bisher gewonnen werden, wie sind Ihre aktuellen Einschätzungen?

- Eine Evaluierung wird bis Ende 2017 von der Stadt selbst durchgeführt, bisher steht diese jedoch noch ganz am Anfang und es gibt daher noch keine belastbaren Erkenntnisse.
- Es wurden bis dato 200 EinfachMobil Karten ausgegeben, womit die Stadt Offenburg sehr zufrieden ist.

8. Worin sehen Sie die Erfolgsfaktoren von EinfachMobil bzw. für ein solches Projekt?

- Ein ganz entscheidender Punkt für den Erfolg eines solchen Projektes ist, bereits von Anfang an alle möglichen beteiligten Akteure mit einzubinden. Eigene Erfahrungen haben gezeigt, dass der spätere Einstieg von Akteuren schnell zu Unstimmigkeiten und hohen Reibungsverlusten führt (Bsp: Bau der Stationen musste an die Kollegen vom Hochbau abgegeben werden).
- Es ist daher sehr wichtig, ganz zu Beginn des Projektes noch einmal durchzugehen, wen man alles für das Projekt braucht, vom Anfang bis zum Ende.
- Es hat Vor- und Nachteile nicht zu lange zu planen, sondern einfach zu machen. Wenn man bei uns vorher gewusst hätte, mit welchem Aufwand und Kosten das Projekt letztendlich verbunden war, hätten wir wahrscheinlich nie damit angefangen (Fördermittel werden z.B. sehr spät bewilligt, aber mit hohen Förderquoten) bzw. wäre das Projekt gar nicht genehmigt worden.

Appendix E

Interview zum Thema Mobilitätsstationen in Deutschland: Projekt Leipzig Mobil in Leipzig

Eckdaten des Interviews

Gesprächspartner: Torben Heinemann
Organisation: Stadt Leipzig, Verkehrs- und Tiefbauamt
Rolle: Abteilungsleiter Generelle Planung

Datum: 12.02.2016
Uhrzeit: 11:15 – 13:00 Uhr
Ort: Vorhoelzer Forum, München

Die Erlaubnis zur Veröffentlichung und Verwertung des Interviews für die vorliegende Masterarbeit wurde durch Herrn Torben Heinemann am 30.03.2016 erteilt.

Zusammenfassung des Interviews

Hinweis: Einige hier zusammengefassten Informationen können zum heutigen Datum nicht mehr aktuell sein. Die Zusammenfassung beschränkt sich auf das Gespräch vom 12.02.2016 und berücksichtigt keine aktuellen Entwicklungen.

1. Wie ist das Projekt Leipzig mobil entstanden?

- Grundlage für die Errichtung von Mobilitätsstationen bildet der Stadtentwicklungsplan „Verkehr und öffentlicher Raum“ 2003 bzw. dessen Fortschreibung von 2015. Diese wurde im Rahmen der Diskussion zu einem ganzheitlichen Verkehrskonzept zu Beginn des Jahres 2011 begonnen und im Februar 2015 durch den Stadtrat beschlossen
- Der Zeitplan der Fortschreibung sah folgende Phasen vor:
 - 1) Analyse (2011)
 - Aufbereitung der 2003 beschlossenen Leitlinien und Ziele
 - Veröffentlichung der Ergebnisse in der Broschüre 'Mobilität 2020 – Stadtentwicklungsplan Verkehr und öffentlicher Raum - Grundlagen für die Fortschreibung'
 - 2) Auftakt (2012)
 - Intensiver Abstimmungsprozess unter Beteiligung der Bürger, Wissenschaft und Politik
 - Diskussion zum Inhalt und den Prioritäten der Fortschreibung
 - 3) Konzept (2013)
 - 4) Beschluss des Stadtrats (2014)
- Weiterer Zeitplan (2015):
 - Erstellung der Stadtratsvorlage (abgeschlossen)
 - Beschluss der DB OBM
 - Beratung in den Fachausschüssen
 - Stadtratsbeschluss 25.02.2015
- In diesem Rahmen sind Mobilitätsstationen ein Instrument, um mehr Kunden für den ÖPNV zu gewinnen. Bremen liefert hierfür ein gutes Beispiel, an dem man sehen kann, dass so ein Projekt funktionieren kann.

- Die erste von 25 Stationen wurde am 08.07.2015 eröffnet, die restlichen bis August/September 2015.
2. Welche Ziele werden mit dem Projekt Leipzig mobil verfolgt?
- Das Projekt zielt darauf ab, eine Veränderung im Mobilitätsverhalten hin zu einer nachhaltigen Mobilität der Leipziger zu erreichen (Förderung der Nahmobilität).
 - Hierfür soll u.a. der Anteil des ÖPNV im Modal Split von aktuell 17,6% auf 23% bis zum Jahr 2025 gesteigert werden. Der aktuelle Anteil liegt sogar unter dem Anteil von 2008, was davon zeugt nicht in der richtigen Richtung unterwegs zu sein.
 - Eine entscheidende Rolle hat hierfür sicherlich die Entwicklung des Kraftstoffpreises in den letzten Jahren gespielt. Vergleicht man beispielsweise die Kosten für einen Liter Diesel von 2008 mit den heutigen Preisen, lässt sich eine Preisreduktion von 37% feststellen, der Liter Diesel kostet also aktuell nur noch 63% des damaligen Preises.
 - Im gleichen Zeitraum sind die Fahrpreise (Einzelfahrschein und Abo) für den ÖPNV in Leipzig jedoch um ca. 30% gestiegen. Der ÖPNV wird also im Vergleich zur Haltung eines eigenen Kraftfahrzeugs immer unattraktiver.
 - Mittels den Mobilitätsstationen soll aber nicht nur eine Änderung des Mobilitätsverhaltens erreicht werden, sondern vor allem auch gezeigt werden, dass der Leipziger ÖPNV ein moderner ÖPNV ist, der Verkehrsmittel der Zukunft zusammenführt und bereitstellt.
 - Die Entwicklungen des MIV, bei dem immer mehr computergestützte Systeme zum Einsatz kommen und somit die virtuelle Welt in die des Autos mit einbezogen wird, müssen ebenso in den Bereich des ÖPNV integriert werden.
 - Hierbei sind Mobilitätsstationen vielleicht nicht die allerletzte Lösung, aber durch sie wird zum einen Präsenz im Stadtgebiet gezeigt zum anderem wird den Menschen gezeigt, dass man etwas kann, etwas zu bieten hat.
 - Wenn es gelingt dies geschickt in eine positive Marketing-Strategie umzuwandeln, ergeben sich große Potentiale, die Attraktivität des ÖPNV wieder zu steigern und somit letzten Endes neue Kunden zu gewinnen.
3. Welche Akteure/ Partner sind in das Projekt Leipzig mobil eingebunden und was sind ihre Rollen/ Ziele?
- Nachfolgend sind alle wesentlichen Akteure/Partner von Leipzig mobil sowie ihre Rollen und Ziele aufgelistet, die Ziele der Partner sind aus Sicht der Stadt frei interpretiert und haben keinen Anspruch auf Vollständigkeit:
 - Leipziger Verkehrsbetriebe
 - Rolle: Mobilitätsdienstleister, Betreiber der Mobilitätsstationen, verantwortlich für Planung, Umsetzung, Organisation, Marketing
 - Ziele: Mehr Kunden (Marketingseite), Wahrnehmung/Selbstdarstellung als moderner ÖPNV
 - Stadt Leipzig
 - Rolle: Verantwortlich Ziele im Rahmen des Stadtentwicklungsplan Verkehr und öffentlicher Raum erreichbar zu machen, Koordination bei der Planung/ Infrastruktur, Decision Making, Standortwahl
 - Ziele: CS im öffentlichen Raum —> Sichtbarkeit, ÖPNV-Anteil im Modal Split erhöhen
 - teilAuto
 - Rolle: Car-Sharing Anbieter (lokal)

- Ziele: Präsenz (teilAuto als Mitteldeutscher CS-Anbieter mit meisten Kunden in Leipzig), Kundenzugewinne
 - nextbike
 - Rolle: Bike-Sharing-Anbieter
 - Ziele: Präsenz (Heimatstandort, nextbike 2004 in Leipzig gegründet), Kundenzugewinne
 - Stadtwerke Leipzig
 - Rolle: Bereitstellung des Stroms und (technischer) Betrieb der Ladesäulen
 - Bei der Auswahl der CS- und BS-Anbieter war es der Stadt wichtig, dass die LVB mit lokalen Anbietern zusammenarbeitet. Das bringt zwar evtl. Nachteile für die Verhandlungsposition der LVB, aber es kann auch von Vorteil sein, da keine langwierigen Auswahlverfahren vorangehen mussten etc.
 - Ob es jedoch dauerhaft bei den beiden Anbietern bleibt, oder ob in Zukunft weitere CS-/ BS-Partner hinzugenommen werden, kann momentan nicht eingeschätzt werden.
 - Es ist jedoch in jedem Fall geplant zukünftig Taxis in das Angebot zu integrieren. Bereits bei der Planung wurden vorhandene Taxi-Standorte einbezogen, ein paar wurden sogar verlegt, sodass alles an einer Station zusammenliegt.
 - Eine vertragliche Zusammenarbeit besteht jedoch noch nicht. Es bestehen außerdem Überlegungen (im Rahmen eines EU-Projektes) unter dem Stichwort „Gamification“ umweltfreundliches Verkehrsverhalten zu belohnen, beispielsweise mit Taxigutscheinen.
4. Wie sieht das aktuelle Konzept von Leipzig mobil aus?
- Voraussetzung um Leipzig mobil-Kunde zu werden ist ein LVB-Abonnement oder AboFlex.
 - Die LVB übernimmt hierbei die Rolle des Mobilitätsdienstleisters und das Angebot ist exklusiv für Abo-Kunden (anders als bei switchh gibt es keine Überlegungen Leipzig mobil für alle Leipziger, die keine Abo-Kunden sind, zugänglich zu machen).
 - Leipzig mobil-Kunden erhalten vergünstigte Angebote bei den Partnern (teilAuto und nextbike).
 - Eine Registrierung ist online oder in einer der Service Stellen möglich und kostenlos. Die Anmeldung bei den Partnern erfolgt im Rahmen der Registrierung gleich mit.
 - Bei Leipzig mobil wird ein monatlicher Beitrag in Höhe von 4,- EUR erhoben. Dafür erhält der Kunde Vorteile bei den Partnern:
 - keine monatliche Grundgebühr bei teilAuto, sowie Car-Sharing ab 6,00€/ Stunde inkl. Freikilometer
 - Bike-Sharing für 0,50€/ halber Stunde
 - Nach erfolgreicher Registrierung ersetzt Leipzig mobil das bestehende Tarifprodukt und dessen Chipkarte. Alle Verkehrsmittel können also über die Karte genutzt (CS- und BS-Fahrzeuge geöffnet) werden.
 - An jeder Station ermöglicht ein Terminal sich zu informieren sowie Buchungen zu tätigen.
 - Außerdem können alle Informationen und Buchungen über eine App, die Leipzig mobil-App getätigt werden.
 - Am Ende des Monats erhält der Kunde eine Abrechnung für alle getätigten Leistungen.
 - Ursprünglich war geplant, die Elektro-Ladesäulen, die an jeder Station verfügbar sind, mit über das Terminal freischalten zu können. Aktuell ist dies jedoch auf Grund technischer Probleme (Freischaltung funktioniert nicht) aus dem System herausgenommen und es kann kostenfrei geladen werden.

5. Welche Kenntnisse konnten aus den bisherigen Erfahrungen gewonnen werden, wie schätzen Sie das Projekt aktuell ein?

- Eine Evaluierung gibt es aktuell noch nicht und ist nach Kenntnissen der Stadt auch aktuell noch nicht vorgesehen.
- Zum jetzigen Zeitpunkt (nach einem halben Jahr Laufzeit) wäre das auch noch zu früh, um belastbare Erkenntnisse über eine Veränderung im Mobilitätsverhalten feststellen zu können.
- Die bisherigen Erfahrungen zeigen jedoch, dass eine Pilotphase durchaus von Vorteil gewesen wäre.
- So hätten technische Schwierigkeiten, Probleme mit der Software usw. bereits im Vorfeld ausgeräumt werden können und würden nicht im realen Betrieb erst sichtbar werden.
- Hierzu muss allerdings gesagt werden, dass aufgrund der Förderung keine andere Möglichkeit bestand, als diese 25 Stationen auf einmal zu eröffnen, der Zeitrahmen für eine Testphase war nicht gegeben.
- Wir bekommen zwar viele Beschwerden (v.a. von E-Autoinhabern, die Probleme bei der Freischaltung zum Laden hatten), auf der anderen Seite hilft das auch Probleme schneller zu erkennen und zu beseitigen, bei einer Station würde es wahrscheinlich nicht großartig auffallen, wenn etwas nicht funktioniert.

6. Nach welchen Kriterien werden die Standorte ausgewählt?

- Bereits 2010 ist der lokale Car-Sharer auf die Stadt gekommen, mit dem Wunsch sein Stationsnetz zu erweitern.
- Außerdem stand damals die Diskussion der Bundesinitiative aus 2009, CS im öffentlichen Straßenraum zu positionieren, im Raum (aus der leider bis heute keine Ergebnisse erzielt werden konnten). Es wurde also bereits damals angefangen sich mit dem Thema neuer Stationen auseinander zu setzen.
- Für die Standortauswahl der Mobilitätsstationen wurden zunächst wichtige ÖPNV-Haltepunkte, Straßenbahnhaltestellen identifiziert, um die Verknüpfung zum ÖPNV sicherzustellen.
- Anschließend wurde ermittelt, wo sich bereits Car-Sharing Stationen im Umfeld der zuvor identifizierten ÖPNV-Haltepunkte befinden bzw. wo Wünsche/ ein Bedarf für neue Stationen bestehen.
- Ähnlich sind wir bei dem Fahrradverleiher vorgegangen: es wurde geschaut, wo die Firma nextbike üblicherweise ihre Leihräder abstellt.
- Beide Ergebnisse wurden nebeneinander gestellt und zusätzlich geschaut, wo es sinnvoll und wichtig war, zusätzliche Stationen zu errichten, d.h. wichtige ÖPNV-Haltepunkte spielten eine große Rolle.
- Das Ergebnis war eine Liste von 50 (Grob-)Standorten, von denen letzten Endes 25 Stationen realisiert worden sind. Die Abstimmung für die Stationen lief zwischen der LVB und den Partnern, unter Einbezug der Stadt, statt.
- Die Anzahl von 25 Stationen, die alle mehr oder weniger auf einmal realisiert worden sind, resultiert aus den mit der Förderung verbundenen Randbedingungen.
- Es gab nur die Möglichkeit ein Paket zu fördern, angefangen bei der Softwareentwicklung über die Technik usw. Die Stadt Leipzig verfügt nicht über die finanziellen Mittel, solche Stationen „portionsweise“ zu finanzieren.

- Um die Förderung für die Software/ Technik (die Technik ist letzten Endes immer die gleiche, ob für eine Station oder Hunderte) zu erhalten, gab es die Vorgabe, ein Netz darzustellen, was mit einer Anzahl von 25 Stationen gegeben ist.
 - Auch wenn aktuell noch nicht alles optimal funktioniert, haben wir mit der Realisierung der 25 Stationen erreicht, dass für die Leipziger Bürger erkennbar ist, dass sich etwas tut.
 - Überall im Stadtgebiet der Halbmillionenstadt trifft man auf diese Stationen und es ist erkennbar, dass etwas passiert. (Bei einer 1,6 Millionen Stadt wie München kann man nicht sagen, dass eine Station wahrgenommen wird. „Eine Station in München ist keine Station“)
7. Welche Rolle spielt die Entwicklung einer eigenen Marke/ eines Corporate Designs?
- Das Stationsdesign (in dem damaligen Fahrkarten-blau und gelb der LVB) ist in Abstimmung mit der Stadt entstanden, alle anderen Partner mussten sich diesen Vorgaben unterordnen, also weder nextbike noch teilAuto kann sich hier mit seinen eigenen Farben/ Logos präsentieren.
 - Wichtig war v.a. auch, dass keinerlei Werbung an den Stationen ist, um keine Konflikte mit den Werbeverträgen der Stadt zu provozieren.
 - Spannend in der ganzen Diskussion wird sein, inwieweit die LVB, nachdem sie sich unter „die Leipziger“ untergeordnet haben, neue Farben und Logos erhalten und ob es hier eine Neuordnung gibt.
 - Bei den Ladesäulen, die wie bereits angesprochen, von den Stadtwerken betrieben werden, gibt es jetzt die ersten Vorstellungen einer neuen Aufkleber-Designs in dem neuen gelb der Leipziger (Solostationen =Stationen außerhalb der Mobilitätsstationen bisher in himmelblau).
 - Alles in allem, kann man sagen, dass das Ziel, alles unter einer „Design-Familie“ erkennbar zu machen, verfehlt wurde: Die Räder und die Karte haben ein anderes Design, als die Infostelen und die Ladesäulen (künftig), teilAutos haben überhaupt kein Leipzig mobil Branding.
 - Die Parkplätze erhalten zukünftig ein weißes Piktogramm (Auto mit Schlüssel-Symbol, angelehnt an die Diskussionen im Bund), auf ein Leipzig mobil Logo/ Schriftzug wird hier bewusst verzichtet.
8. Erfahrungen im Betrieb/ Probleme
- Terminals funktionieren teilweise nicht.
 - Ladesäulen konnten nicht freigeschaltet werden → Laden momentan aus Technik herausgenommen
 - Parkregelungsschwierigkeiten („Schilder-Wirr-Warr“)
 - Behinderung durch nextbike-Räder aufgrund fehlender fester Stationen (ursprünglich geplant, aber jetzt nur zusätzlich zu den 5 B+R Bügeln, nochmal 5 Fahrradbügel → werden natürlich auch von anderen genutzt)
 - Probleme mit Falschparkern: v.a. Beschwerden von E-Auto-Besitzern
9. Welche Rolle spielt das Thema Elektromobilität?
- Der Stadt war wichtig mit dem Thema Mobilitätsstationen auch die Möglichkeit zu bieten Elektro-Fahrzeuge zu laden, daher befinden sich an fast jeder der 25 Stationen Ladesäulen.
 - Elektro-Car-Sharing gibt es bisher nicht an den Stationen und bisher bietet teilAuto auch erst ein E-Auto zum Sharen an.
 - Die Einbeziehung von Pedelecs in das bestehende FVS wird diskutiert. Angedacht ist eine Anzahl von ca. 20 Stück.

10. Wie sehen zukünftige Planungen aus? Sollen weitere Stationen errichtet werden?

- Es gibt verschiedene Planungen für weitere Stationen:
- Zum einen langfristig mehr große Stationen errichten: drei bis fünf Stationen aus der Liste der 50 Standorte
- Dann gibt es eine private Anfrage der Leipziger Volkszeitung, die den Wunsch nach einer Mobilitätsstation auf ihrem eigenem Grundstück geäußert haben.
- Außerdem besteht die Überlegung kleinere Mobilitätsstationen ohne kostspieliges Infoterminal, vergleichbar mit mobil.pünktchen in Bremen, zu errichten

11. Worin sehen Sie die Erfolgsfaktoren von Leipzig mobil bzw. eines solchen Projektes?

- Das System sollte vor Inbetriebnahme ordentlich funktionieren (Testphase sollte nicht mit realer Phase zusammenfallen).
- Außerdem spielen die rechtlichen Rahmenbedingungen eine wesentliche Rolle.
- Ein breiter aufgestelltes Netzwerk wäre durchaus von Vorteil gewesen.
- Man muss eine Risikobereitschaft aufweisen, um ein solches Projekt zu implementieren (Ja, wir machen das, und zwar nicht nur mit einer Station).

Appendix F

Anfrage zur Ausstattung der Mobilitätsstationen von Leipzig Mobil in Leipzig

Eckdaten der Anfrage

Anfrage gestellt an: Leipziger Verkehrsbetriebe (LVB)

Datum: 26.01.2016

Uhrzeit: -

Ort: via Email

Übersicht über die Ausstattung der Mobilitätsstationen mit Stand 06/2015

Mobilitätsstationen im Stadtgebiet Leipzig Stand: 06/2015										
Nr.	Standort	Adresse		Ort	Haltestelle LVB	Parkplätze			Fahrradleihbügel	
		Straße	PLZ			teilAuto	Ladepunkte	Fahrrad	nextbike	
						CarSharing	e-CarSharing	E	Bügel	Bügel
1	Markgrafenstraße	Markgrafenstraße 2	04109	Leipzig	W.-Leuschner-Platz	2		2	16	6
2	Georgiring 3 / Schützenstraße	Georgiring 3	04103	Leipzig	Augustusplatz	2		2	2	4
3	Augustusplatz	Augustusplatz 7	04109	Leipzig	Augustusplatz	-		2	5	4
4	Hauptbahnhof, Westseite	Willy-Brandt-Platz 7	04109	Leipzig	Hauptbahnhof	2	2	2	9	4
5	Goerdelerring / Pfaffendorfer Straße	Rosentalgasse 3	04105	Leipzig	Goerdelerring	2		2	4	4
6	Westplatz	Gustav-Mahler-Straße 29	04109	Leipzig	Westplatz	2		2	4	2
7	Riemann- bzw. Kohlenstraße	Riemannstraße 8	04107	Leipzig	Bayrischer Platz	2		2	5	5
8	Nordplatz / Kickerlingsberg	Nordplatz 3	04105	Leipzig	Nordplatz	2		2	0	2
9	W.-Schwabe-Straße / Jahnallee	Willmar-Schwabe-Straße 2-4	04109	Leipzig	Waldplatz	4		2	5	4
10	Südplatz / Kochstraße	Karl-Liebknecht-Straße 54	04275	Leipzig	Südplatz	2		2	3	4
11	Ostplatz / Jahnallee	Ostplatz 5	04317	Leipzig	Ostplatz	2		2	6	4
12	Delitzscher / G.-Schumann-Straße	Delitzscher Straße 3	04105	Leipzig	Chausseehaus	2		2	4	3
13	S-Bf. Gohlis / Blochmannstraße	Blochmannstraße 59	04155	Leipzig	S-Bf. Gohlis	2		2	10	5
14	Strbf. Angerbrücke	Jahnallee 71	04177	Leipzig	Strbf. Angerbrücke	3		2	0	3
15	Schnorrstraße	Oeserstraße 23	04229	Leipzig	Rödelstr.	teilAuto-Station		2	3	2
16	Scheffel- oder Kochstraße	Scheffelstraße 35	04277	Leipzig	Connewitz, Kreuz	1		2	2	2
17	Siegismundstraße	Karl-Siegismund-Straße 12	04317	Leipzig	Technisches Rathaus	5	2	2	0	8
18	Stannebeinplatz	Paul-Heyse-Straße 1	04347	Leipzig	Stannebeinplatz	2		2	3	3
19	Eutritzscher Markt	Thaerstraße 1	04129	Leipzig	Eutritzscher Markt	2		2	4	3
20	Huygens- / G.-Schumann-Straße	Heygenstraße 1	04159	Leipzig	S-Bf. Möckern	1		1	5	
21	Lindenauer Markt	Lindenauer Markt 19	04177	Leipzig	Lindenauer Markt	teilAuto-Station		2	2	2
22	Bornaische / Klemmstraße	Klemmstraße 16	04277	Leipzig	S-Bf. Connewitz	2		2	5	5
23	Schönauer Straße / Lützner Straße	Am Schwalbennest 13	04205	Leipzig	Schönauer Ring	2		2	5	3
24	G.-Schwarz- / H.-Driesch-Str.	Hans-Driesch-Straße 40	04179	Leipzig	Rathaus Leutzsch	2		2	4	4
25	Virchowstraße	Max-Liebermann-Straße 105	04157	Leipzig	Gohlis-Nord	2		2	5	4
Gesamt						48	4	49	111	90

Declaration Concerning the Master's Thesis

I hereby confirm that the presented thesis work has been done independently and using only the sources and resources as are listed. This thesis has not previously been submitted elsewhere for purposes of assessment.

Munich, March 31, 2016



Lisa Luginger