mamba

mobility – accessibility – innovation

Pre-Study of Mobility Centre Models

WP 2, GoA 2.3

Author: Peter D. Franke, Kiel University of Applied Sciences

Published: 26 June, 2018

Interreg Baltic Sea Region

EUROPEAN UNION

EUROPEAN REGIONAL DEVELOPMENT FUND

Pre-Study of Mobility Centre Models

WP 2, GoA 2.3

By

Peter D. Franke

Published by: MAMBA

MAMBA – Maximising Mobility and Accessibility in Regions Affected by Demographic Change is a project funded by the European Regional Development Fund under the Interreg Baltic Sea Region Programme 2013-2020. The content of the report reflects the author's/partner's views and the EU Commission and the Managing Authority/Joint Secretariat are not liable for any use that may be made of the information contained therein. All images are copyrighted and property of their respective owners.

Contents

Table of Figures

Pre-study of mobility centre models

Introduction

This pre-study builds on the inventory of Mobility Centre (MC) solutions (from Activity 2.2) and summarises the results of the analysis of previous attempts at establishing MCs, and of expert interviews with initiators/managers of Mobility Centres. Based on the analysis, it suggests an up-to-date definition of what a Mobility Centre is. A second outcome is the formulation of three basic models of Mobility Centres. The third outcome is a Reference Framework for Mobility Centres.

Mobility Centre - A contemporary definition

The first Mobility Centres were introduced in Germany in the 1990s, as part of larger initiatives to manage individual mobility, with the ultimate aim to increase the percentage of people using public transport.[1] At that time, the idea was to establish shops or call centres where customers would be able to get advice and buy tickets for various means of transportation.[2] Most of the previous research and available literature on Mobility Centres being largely normative, there is only sparse information on the success of existing Mobility Centres. Reports indicate that the effects on individual mobility choices were rather modest.[3] Müller et al. (2003) indicate that there has been a 5% shift to public transport thanks to mobility centres but also demand more rigorous research into the effects of Mobility Centres. Since the early 2000s, not many new Mobility Centres have been opened and no significant further research has been done. Mobility Centres have lost some of their original appeal because in very few cases they actually fulfilled the promise to offer access to more than just public transport.[4]

Today, the original idea seems outdated since access to mobility need not be through a ticket office or ticket machine but could be through various electronic forms, without physical presence of a Mobility Centre. At the same time a large number of new passenger transport options have evolved (e.g. Demand Responsive Transport, Mobility as a Service[5]), increasing the need to combine and co-ordinate to make all options available to all citizens.[6]

[1] Heer (2003)
[2] Müller et al. (2003), p.11
[3] Bundesamt für Raumentwicklung (2007), Appendix 9 p. 3
[4] Kasten (2018)
[5] Foulser (2017), Goodall et al. (2017)
[6] Brake et al. (2006)

Therefore, a more modern definition of Mobility Centres is suggested which allows using the term in a broader way:

Mobility Centres are interconnected facilities and/or service providers, which offer information and services around personal mobility, combining all available transport modes.

Mobility Centres are interconnected, they need to be linked to other Mobility Centres and to transport operators.

Mobility Centres can be (physical) facilities but they do not have to be. They might just be internet service providers without physical presence.

Mobility Centres offer information and services around personal mobility. The more services they offer around mobility, the more attractive they should be. Merely offering information, however, would not be sufficient, the Mobility Centre would be no more than a search engine, then. Usually a core service of a Mobility Centre would be to offer access, i.e. tickets. Mobility Centres' main task is to deal with people and not freight.

Mobility Centres are combining all available transport modes. This is the original call of Mobility Centres, improving the access to combinations of different carriers.

Mobility Centre Models

The above definition of Mobility Centres can be applied to very different mobility solutions. Three basic types of MC have been identified in the inventory of MC solutions, the Traditional, Advanced and Local types of MC.

The Traditional Mobility Centre

The „Traditional" Mobility Centre is a central physical facility or hotline which offers access to a variety of transport modes to people, in line with the original idea of Mobility Centres from the 1990s. Traditional MC are often complemented with a call centre. For those who live close to the facility or those who only need advice from a call centre it is a user-friendly solution. Also, the fact that in Traditional MC customers are helped by human advisors is beneficial in a rural environment. However, Traditional MC are costly as, unless they are merely a call centre, they require space in the best locations and qualified staff. Being in a central location, Traditional MC are of limited value to the rural population.

The Advanced Mobility Centre

The „Advanced" Mobility Centre is a virtual facility or smartphone app which offers access to a variety of transport modes to people, access meaning information, tickets and possibly further services. Their advantage is that they are available day and night, seven days a week at no extra cost. Their services

are programmed and hence can be made error-proof. In rural areas, with a growing proportion of older people, however, electronic solutions may exclude some potential passengers.

The Local Mobility Centre

The „Local" Mobility Centre (or „Mobility Hub") is a physical location which offers access to a variety of transport modes to people without relying on the presence of staff. Local Mobility Centres can be organised around existing bus stops with services like Bikesharing, Carsharing, Parcelboxes, Wifi-Access etc. made available in the immediate environment. The advantage of this type of MC is that it can offer a wide range of services locally, even in rural areas. Multiple local Mobility Centres will require some coordination, therefore it can be expected that they would normally be combined with some type of advanced or traditional MC.

Advanced MC Example: Ubigo, Sweden[7]

Challenges adressed	• Urban households more and more perceive owning a car in urban areas as being a nuisance due to congestion, costs of parking, and the negative effects on the environment
Solution	• Ubigo offers a subscription based service that combines public transport, car rental and car sharing, taxi and bikes according to the needs of customers (MaaS – Mobility as a service) • The service is available through an app, and currently in pilot phase in Stockholm
Barriers	• According to Ubigo, the main challenge is silo thinking from established public and commercial transport service provider, who are hesitant to share data and agree to payment arrangements
Success factors	• Strong public support through government grants

Figure 1 - Advanced MC Example: Ubigo, Sweden

Local MC Example: Mobilstation Hamdorf, Germany[8]

Challenges adressed	• Hamdorf is a rural town in west of Rendsburg located on the national highway B203 • Breiholz, another village close to Hamdorf with >1000 inhabitants has currently very few bus connections
Solution	• An existing bus stop located close to a supermarket forms the core of a mobility center (Mobilstation) where passengers have access to E-Bikes, Car Sharing, Car Park, Secure Bicycle Parking and a Pick-up bench thereby offering a better link between Hamdorf and Breiholz
Barriers	• Numerous actors and partly unclear responsibilities in public transport
Success factors	• Strong support in the local communities

Figure 2 - Local MC Excample: Hamdorf, Germany

[7] Arby (2018)
[8] Helten (2018)

The Mobility Centre Joint Reference Framework

The Reference Framework is designed to serve as a guideline through the issues that need to be addressed and decided on in the implementation of Mobility Centres. The Reference Framework is based on existing literature about mobility centres[9] and on interviews with mobility experts[10]. Its layout is inspired by Osterwalder's Business Model Canvas[11]. The Framework addresses four main decision areas:

- Aims and Performance Measurement for the MC
- The Provider Side, including the questions who runs the MC, whose services are offered by the MC and how the MC is financed
- The Services offered by the MC and where they are offered
- The Customer Side, looking at target customers, access to customers and advertising

Presenting the Provider Side opposite to the Customer side with the Services offered in between, helps checking that for everything that is offered, the required partners and finance are available and on the other side that the services are relevant and accessible for the Customers. In the following, all parameters of the Framework are explained and guidance for policy makers is given, with particular attention to the special requirements in rural areas.

<table>
<tr><td colspan="3">Aims
Cost (combining different offers for efficiency)
Quality (e.g. Single Point of Contact, Error-free, Easy Transfer, Reduce Emissions, up-to-date information, simplicity)
Availability (e.g. 24/7, for everyone, everywhere, as promised)
Speed (e.g zero waiting time)
Flexibility (e.g. to provide customised services, reaction times)
Aims and Performance</td></tr>
<tr><td colspan="3">Performance Measurement
Tickets sold, # of people using public transport, CO2 Emissions from Transport, Cost, Revenue, Quality of Advice, # of calls</td></tr>
<tr><td>Provider Side
Provider
Transport Operator (Public or Private), Regional Government, 3rd Party</td><td>Services
Services
Information/Communication, Influencing/Promotion, Ticket Sales, Transport Organisation, Special Requirements Support, Claim Management, Insurance, Lost and Found, Requirements Analysis, Consulting/Co-Ordination/Platform for Exchange for Service Providers, Match Supply and Demand, Multilingual Services, Cooperation with Home Deliveries</td><td>Customer Side
Target Customers
General Public, Senior Citizens, Young People, New Citizens, Transport Providers, Education Institutions, Employers, People without Cars, People without Driving Licence, Car Owners, Tourists</td></tr>
<tr><td>Transport Providers included
Public Transport Operators, Private Transport Operators, NGO, IT Platforms / Services (Uber, Google Maps), Citizen-to-Citizen</td><td>Transport Modes included
Rail, Bus, Carsharing, Taxi, Bikesharing, Carpooling/Pickup, Demand-responsive Transport, Air, Special Transport...</td><td>Advertising
Social Media, Newspapers, Flyers, Bus Stop, Mobility Hub...</td></tr>
<tr><td>Funding
Ticket Sales, Subscription, Government Subsidy, Advertising....</td><td>Physical Location
Centralised, Decentralised</td><td>Access
Online (incl. „App"), Telephone, Physical, Customer Visits</td></tr>
</table>

Figure 3 - Overview of the Joint Reference Framework

[9] Müller et al. (2003)
[10] Arby (2018), Helten (2018), Kasten (2018), Stiewe (2018)
[11] Osterwalder (2004)

Aims

Certainly one of the most important but also most difficult decisions to make is what the aims of the MC implementation are. The decision will depend on the regional policy objectives. However, in practice, the difficulty might be for the multitude of stakeholders to agree on one common set of objectives (cf. the Hamdorf case). In particular, transport operators are following objectives, which may be contradictory to the aims of transport policy makers (e.g. fear to lose customers to other providers).

In the table below, some options for setting objectives are suggested, based on commonly applied objectives in operations management. The choice of a Mobility Centre Model will depend on the importance of each of the five basic performance objectives, as they differ considerably in their performance with respect to the objectives.

Aims	Cost (combining different offers for efficiency) Quality (e.g. Single Point of Contact, Error-free, Easy Transfer, Reduce Emissions, up-to-date information, simplicity) Availability (e.g. 24/7, for everyone, everywhere, as promised) Speed (e.g. zero waiting time) Flexibility (e.g. to provide customised services, reaction times)
Specific adjustments for rural areas	None
Relevance for Traditional Model	High cost, high quality but strong human element, Potential availability issues, High flexibility
Relevance for Advanced Model	Potentially low cost but high investment, Guaranteeed 24/7 availability, questionable flexibilty
Relevance for Local Model	High cost, high (physical) availability

Figure 4 - Aims

Performance Measurement

The selection of performance measures will depend on the selected aims. The table below gives some examples of possible performance measures. To date, there is little practical experience with performance measurement for MC and not much research is available. However, general literature in the performance measurement in mobility management (like Black et al., 2002) may be applicable.[12]

Performance Measurement	Tickets sold, Rides provided # of passengers served # of people using public transport CO_2 Emissions from Transport Cost / Revenue Quality of Advice # of calls
Specific adjustments for rural areas	None
Relevance for Traditional Model	For traditional Mobility Centres the number of calls or customers seems to be a required measurement especially if the provider of the service needs to be reimbursed for ist efforts
Relevance for Advanced Model	Advanced Mobility Centres that are run as businesses will try to maximise profits, hence use similar metrics as businesses (Revenue, Cost)
Relevance for Local Model	No experience yet made, but most probably will monitor numbers of users

Figure 5 - Performance Measurement

[12] Sarmistha et al. (2014), Black et al. (2002)

Provider

Many MC in the past, were run by the dominant regional transport operator. There are, however, good reasons why this may not be the best choice (see Aims, above). As the below table outlines the selection of the provider will be very different depending on the regional conditions and on the chosen type of MC. While transport providers have been the natural choice for Traditional MC in the past, with a growing number of transport options and with the rise of new business models in transport there is a much stronger case for 3rd parties or private operators to run MC, possibly with government support.

Provider	Transport Operator (Public or Private) Regional Government 3rd Party
Specific adjustments for rural areas	Generally, private providers currently more interested in urban areas, therefore in rural areas more involvement of public sector required
Relevance for Traditional Model	Usually provided by existing Transport Operator
Relevance for Advanced Model	Private operators of Advanced MC will be mostly interested in urban areas. Public provision of Advanced MC by public providers questionable, because of lack of IT competence and undue competition for private operators of Advanced MC. A mixed public-private model or subsidised private operation might be feasible in rural areas
Relevance for Local Model	Some involvement of private sector in Local MC (e.g. for carshare or bikeshare) may be required

Figure 6 - Provider

Service Providers Included

The more service providers can be included the better will be the service for passengers. Any solution will therefore have to be as open as possible to new partners. Service providers might be providers of transport, of software or of data.

Service Providers Included	Public Transport Operators Private Transport Operators NGO IT Platforms / Services (Uber, Google Maps) Citizen-to-Citizen
Specific adjustments for rural areas	NGO might play bigger role in rural areas
Relevance for Traditional Model	No specific issues
Relevance for Advanced Model	No specific issues
Relevance for Local Model	No specific issues

Figure 7 - Service Providers Included

Funding

Sources of funding are the same as for all public transport. Financial requirements will depend strongly on the chosen type of MC as the table below outlines.

Funding	Ticket Sales Subscription Government Subsidy Advertising
Specific adjustments for rural areas	Government subsidies likely to play bigger role in rural areas
Relevance for Traditional Model	It is questionable if Traditional MC can operate without subsidy
Relevance for Advanced Model	In the long run much less financing required, flexible ticketing models possible (e.g. subscription) Privately-run Advanced MC may be able to provide services in rural areas even without subsidies once they have become accepted in urban areas
Relevance for Local Model	High upfront investment required that will most likely need to come from public sources

Figure 8 - Funding

Services

Which services to offer through the MC is probably the most important decision for the success of the MC. The list of potential services, below, just gives some impression of the diversity of services that can be combined in an MC beyond core services of information and ticket sales. Clearly, the more services are offered, the more complex will the operation be, but also the more attractive it might be. The decision should be based on a thorough analysis of the expected costs and benefits of the possible service offers (financial and non-financial), taking into account the specific requirements of the regional population and the regional policy objectives.

Services	Information/Communication, Influencing/Promotion, Ticket Sales, Transport Organisation, Special Requirements Support, Claim Management, Insurance, Lost and Found, Requirements Analysis, Consulting/Co-Ordination/Platform for Exchange for Service Providers, Match Supply and Demand, Multilingual Services, Cooperation with Home Deliveries
Specific adjustments for rural areas	In rural areas combined transport (e.g. with Home Deliveries) may play a bigger role
Relevance for Traditional Model	The more services are offered, the more difficult it will be to coordinate and give reliable information in a Traditional MC (HR being a limiting factor)
Relevance for Advanced Model	Best suited for complex combinations of services, limited only by accessability (especially with respect to older generation)
Relevance for Local Model	Provision of services other than physical transport can best be achieved in combination with Traditional or Advanced MC

Figure 9 - Services

Transport Modes Included

All transport modes that are available should, if possible be included in the MC service, to make it as easy as possible for customers. The issue has the greatest relevance for Local MC, as including more transport modes will influence the choice of the location and will possibly mean that additional investments need to be made.

Transport Modes Included	Rail, Bus, Carsharing, Taxi, Bikesharing, Carpooling/Pickup, Demand-responsive Transport, Air, Special Transport
Specific adjustments for rural areas	None
Relevance for Traditional Model	The more transport modes combined, the more difficult it will be to coordinate and give reliable information in a Traditional MC (HR being a limiting factor)
Relevance for Advanced Model	Best suited for complex combinations of services, limited only by accessability (especially with respect to older generation)
Relevance for Local Model	Limited by available infrastructure

Figure 10 - Transport Modes Included

Physical Location

While Traditional MC are usually positioned in a regional centre, causing the problem of accessibility to a rural population, Advanced MC do not need a physical location. The location decision might be most complex for Local MC, especially in a large region where multiple communities are keen on getting support for a Local MC.

Physical Location	Centralised, Decentralised
Specific adjustments for rural areas	Rural areas might require decentral solution (Can central traditional MC provide enough support to rural areas?)
Relevance for Traditional Model	Multiple Traditional MC are costly
Relevance for Advanced Model	No physical location required
Relevance for Local Model	Decentral by definition. Location decision may be difficult where multiple communities compete for MC funds

Figure 11 - Physical Location

Target Customers

Public transport often finds it difficult to define target groups as it is meant to be for all citizens. But in any case, it is helpful to segment customers to be able to assess and respond to the needs of different customer groups.[13] In the given context, it is, for example, certainly helpful to recognise that an ageing rural population might have trouble accessing an Advanced Model MC.

Target Customers	General Public, Senior Citizens, Young People, New Citizens, Transport Providers, Education Institutions, Employers, People without Cars, People without Driving Licence, Car Owners, Tourists
Specific adjustments for rural areas	Due to demographic developments need to care especially for senior citizens
Relevance for Traditional Model	Possibly best suited to support senior citizens who expect personal contact
Relevance for Advanced Model	Younger people expect easy access through online solutions. Need to enable senior citizens to use software
Relevance for Local Model	No specific issues.

Figure 12 - Target Customers

Advertising

The challenge with advertising will be especially in a rural area, to keep the cost of advertising in a reasonable relationship to the potential reach. A suitable well-targeted option in many regions might be flyers, which offer the potential to explain the advantages of the MC in quite a detail, at relatively low cost.

Advertising	Social Media Newspapers Flyers Bus Stop Mobility Hub
Specific adjustments for rural areas	None
Relevance for Traditional Model	Can be advertised through traditional channels
Relevance for Advanced Model	Least visible solution. Will therefore require biggest marketing effort.
Relevance for Local Model	Most visible locally. Can be used to advertise Traditional or Advanced MC

Figure 13 - Advertising

[13] For a detailed treatment of identifying target groups in mobility management see Hunecke et al. (2012)

Access

The type of MC selected defines customer access. Traditional and Local MC might be enhanced by additional telephone and online access.

Access	Online (incl. „App“) Telephone Physical Customer Visits
Specific adjustments for rural areas	None
Relevance for Traditional Model	Physical by definition (plus any other access possibility)
Relevance for Advanced Model	Virtual by definition
Relevance for Local Model	Physical only by definition, possibly enhanced by Wifi or screen access to Traditional or Advanced MC

Figure 14 - Access

Summary

This deliverable, the Pre-Study of Mobility Centre Solutions, presents the summary of the work completed within GoA2.3 of the MAMBA project. Within this project activity the Inventory of Mobilty Centre Solutions from GoA2.2 was used to derive three basic Mobility Centre models in line with a new definition of Mobility Centres, also made in this activity, based on the literature. The Mobility Centre Models are illustrated by two brief case studies.

Existing literature, project team workshops, expert interviews and the inventory all influenced the design of the Joint Reference Framework for Mobility Centres, which consists of 4 main decision areas (Aims and Performance Measurement, Provider Side, Services and Customer Side) and total 11 parameters which need to be looked at and decided on in the implementation of Mobility Centres.

Limitations

The Joint Reference Framework has not been tested in the implementation of Mobility Centres. It does not cover all issues that will come up during the actual implementation of Mobility Centres (especially more detailed issues like equipment and staffing), but it provides a structure for the initial steps of Mobility Centre implementation that can easily be adapted.

References

Arby, Hans (2018): Interview by the author on 1 March, 2018

Black, J., Páez, A., Suthanaya, P. (2002): Sustainable Urban Transportation: Performance Indicators and Some Analytical Approaches, Journal of Urban Planning and Development, 8 (128)

Brake, J., Mulley, C., Nelson, J. (2006): Good Practice Guide for Demand Responsive Transport Services using Telematics, University of Newcastle upon Tyne

Bundesamt für Raumentwicklung (2007): Evaluation Mobilitätszentralen, Ittigen

Foulser, Ben (2017): Re-imagine Places – Mobility as a service, KPMG

Goodall, W., Fishman, T., Bornstein, J., Bonthron, B. (2017): The Rise of Mobility as a service, Deloitte Research, https://www2.deloitte.com/content/dam/Deloitte/nl/Documents/consumer-business/deloitte-nl-cb-ths-rise-of-mobility-as-a-service.pdf

Heer, Claudia (2003): Mobilitätszentrale - Eine Idee aus Deutschland erreicht die Schweiz, in tec21 39, 2003

Helten, Michael (2018): Interview by the author on 26 February, 2018

Hunecke, M., Haustein, S. (2012): Methoden der empirischen Sozialforschung zur Identifikation von Zielgruppen für umweltfreundliche Mobilitätsangebote, in Stiewe et al. (2012)

Kasten, Gabi (2018): Interview by the author on 15 February, 2018

Müller, G., Rabe, S., Stierand, P. (2003): Standards für Mobilitätszentralen, ILS Dortmund

Majumdar, S., Sen L., Highsmith, M., Cherrington, L. (2014): The Case of Performance Measurement in Mobility Management Programs, Public Performance & Management Review, 37:2, 280-301

Osterwalder, A., Pigneur, Y., Oliveira, M. A. Y., Ferreira, J. J. P. (2011): Business Model Generation: A handbook for visionaries, game changers and challengers, African journal of business management, 5(7), 8918-8932

Stiewe, Mechthild (2018): Interview by the author on 19 February, 2018

Stiewe, M., Reutter, U. (2012): Mobilitätsmanagement – Wissenschaftliche Grundlagen und Wirkungen in der Praxis, IlS Essen

Appendix – Reference Model Template

Aims and Performance	Aims	Performance Measurement	***Provider Side***	Provider	Transport Providers Included	Funding
			Services	Services	Transport Modes Included	Physical Location
			Customer Side	Target Customers	Advertising	Access