

REKOMO: REGIONAL COOPERATION- AND MOBILITY-PLATFORM

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ABSTRACT

The objective of the research project ReKoMo (“Regional Cooperation- and Mobility-Platform”), funded by the German Federal Ministry of Transport and Digital Infrastructure, is the development and prototypical implementation of a provider-neutral regional platform for inter-modal transport. Organizational structures and models of cooperation are being developed to achieve a close link between complementary mobility services like car and bike sharing with public transport. The technical basis for this targeted integration of mobility services is a multi-client enabled platform which especially allows smaller local and regional mobility providers to participate and offer their services to an enlarged range of customers. The connectivity of different regional mobility platforms in perspective allows a transregional scope of the ReKoMo-approach, enabling the customer of a platform to use mobility services of other connected platforms as well (roaming). The article describes how the Rhein-Main-Verkehrsverbund (RMV), the regional transportation authority for the Frankfurt/Rhine-Main-Area, defines its future role as an integrator of inter-modal transport, thereby strengthening its core business public transport. Organizing and operating a platform that provides its customers comprehensive information, booking and payment of inter-modal travel chains is a vital component of this strategy. Intended to become a productive system, the development of a prototype within the research project serves to gain experience with aspects like customer requirements, system architecture, design of the graphical user interface, cooperation with service providers or legal and data protection obligations. The prototype consists of a mobile app and the corresponding background system. The app enables a customer to register for all the integrated mobility services online and at once (single sign-on), allows him to buy tickets or book services for the entire inter-modal travel chain and provides him with a collective invoice for all the provided services he used in a defined billing period. With the research project ending in September 2018, a field test with selected test customers will take place in the Rhine-Main-Area this summer to evaluate the prototype and to derive conclusions for the future productive system.

Keywords: inter-modal transport, platform, public transport, car sharing, bike sharing, complementary mobility, service chain, regional transportation authority.

1 INTRODUCTION

Mobility behaviour in Germany is currently subject to change. Especially in urban areas, many people today are more flexible regarding their choice of transport mode. And car ownership becomes less important, especially for young urban adults. Advancing urbanization and technological progress with mass distribution of smartphones and other mobile internet devices are the essential cause of those changes.

As the result of rapid technical advances and an increasing customer demand, more and more providers enter the mobility market and try to get customers interested in their mobility services – like car sharing and bike sharing [1]. From the viewpoint of the customer, the advantages of these new services do not yet come into full effect, since they are currently blocked by a number of disadvantages:

- Customers have to deal with a variety of service and utilization models, pricing models and business conditions
- Separate application and registration processes as well as provider-specific service processes (e.g. booking, payment) cause high transaction costs on both sides



- Mobility providers operating at a local level are usually not considered and integrated by existing mobility platforms and can therefore hardly be perceived by the customers
- Access to the vehicles is often realised by service-specific apps or chip cards
- Use of the provided services is often complicated and/ or impractical due to local constraints, poor conjunction of providers and a multitude of different terms of service and handling processes.

2 NOVELTY OF REKOMO

A number of mobility platform solutions trying to lower the specific entry barriers regarding inter-modal traveling are already in operation in Germany. However, those existing solutions do either have a national focus, vastly diminishing the chances for an integration of local and regional mobility services, or they are operated by the transportation companies of larger cities. This second type of platform then usually integrates only a small number of mobility services, often their own subsidiary companies, leaving potential customers with rather limited options when planning a journey.

The ReKoMo-platform is being established for the Rhein-Main-Area, comprising of a densely populated, polycentric core region with cities like Frankfurt am Main, Offenbach, Wiesbaden/Mainz and Darmstadt, but also some rather peripheral areas like the mountain ranges of Taunus, Odenwald and Vogelsberg. With some 5 million inhabitants and 14.000 square kilometres, the area of service is far bigger than that of other existing regional platforms. Also, the supplier structure for mobility services – public transport as well as sharing services – is far more complex than in the larger German cities with existing mobility platforms. The local and regional network of public bus transport in the Rhein-Main-Area, for example, is currently being operated by more than 160 bus companies.

Furthermore, existing regional platform solutions, often built within the context of research and development projects (R&D), are in many cases still in test mode. Although ReKoMo is a research project as well, system design is strictly aimed at productive operation. Immediately after the R&D-project ends in September 2018, the kick-off of a successive implementation project will take place.

Up to now, many of the platforms focus solely on information or integrate other parts of the service chain only rudimentarily at the best [2]. ReKoMo in its final stage of extension will try a much deeper integration of all services, providing access to the entire service chain from registration, information and booking all the way to payment.

Regarding the platforms with a national focus, the neutrality (considering the provision of information on inter-modal travel chains) of profit-oriented platform-operators – like automobile groups or large railway companies – is at least worthy of discussion. ReKoMo, with a regional transportation authority as its designated operator, can benefit from the credit of trust the RMV has gained in organizing public transport for the last decades.

The basic idea of ReKoMo might not be a novelty, especially not if viewed from a transnational perspective. However, with its designated operator, its scope and area of service, its provider structure and variety and with its intended integration depth of complementary mobility services, an immediate predecessor of the undertaking cannot be found in Germany.

3 OBJECTIVES AND APPROACH

The number of customers actually making use of the already operating platform-solutions so far is distinctly lower than predicted. Hypothesis of ReKoMo is that an insufficient depth of integration of complementary mobility services is the main reason for the divergence. Up to



today, remaining access barriers keep potential customers from using intermodal travel chains to a greater extent. Against this background the main objective of the undertaking ReKoMo is to open up unused potential by firmly integrating sharing services and connecting it with public transport services. This goal is to be achieved by the build-up of a provider-neutral regional platform for inter-modal transport that integrates the entire service chain information – booking – driving – payment within a single mobile application.

In addition to the demonstration of the technical feasibility of the approach (ReKoMo-prototype), the research project also tries to identify and deal with the organizational requirements for building and operating a platform like this.

4 REQUIREMENTS CONCERNING PLATFORMS FOR INTER-MODAL TRANSPORT

The initial point for the development of the platform and the associated user interfaces are – since the depletion of access barriers is a crucial goal of the undertaking – the customer requirements [3]. Of course, to be able to develop a sustaining platform organisation with a corresponding business model, profound knowledge about the requirements of other relevant stakeholders like mobility service providers, platform operators, politics and other required service providers (e.g. for payment services) must be acquired and integrated in system development as well.

While identifying the requirements of relevant stakeholders concerning platforms for inter-modal transport, results of preceding research and development projects could be reused to a greater extent. Furthermore, already established platform solutions were analysed; expert interviews, guided interviews with users and focus groups were carried out. Afterwards, the minimum scope of the functions the system prototype must have, were determined using a story-approach. This ReKoMo-story among others defined the following system requirements:

- New customers must be able to register for all the integrated mobility services of the platform within a single step – covering the process completely by a mobile device, meaning the customer doesn't have to show up personally at some service point.
- Selection and booking of the intermodal travel chain the customer wants to use takes place on the basis of an inter-modal journey planner. This journey planner provides information (including information on expected costs) on all the mobility options the platform has integrated.
- Booking (as well as adjustment/ cancellation) of services, and ideally service processes like opening vehicles as well, should be implemented only using the mobile application as well.
- At the end of a defined billing cycle the customer is provided with a single comprehensive bill for all the services of the platform he has used within this period.

5 ORGANIZATION MODEL AND BUSINESS MODEL

Proceeding from the defined requirements the platform has to fulfil from the point of view of the customer, the tasks to be performed for the realization of the project could be derived. Those tasks then were the basis for the development of an organizational structure for ReKoMo with a definition of the corresponding core roles that have to be staffed. Especially the definition and staffing of the role of organizer respectively operator of the platform is crucial since it predefines which business model alternatives can be chosen from.



Considering the composition of research partners, the suitability of a regional transportation authority, already organizing public transport within its area of responsibility, as an operator for a multi-modal platform has been contemplated and checked. When the same organizational principles (distinction between public purchaser and (private) providers) are in place, establishing a transportation authority for public transport as operator of the platform is promising [4]. Being obliged to public welfare and not having a (strict) business orientation, a public transportation authority enjoys a credit of trust. This statement is an insight of the interviews with mobility service providers and potential customers.

Staffing the role of platform operator this way makes even more sense since, for the time being, no sustainable business model could be identified that would enable the refinancing of development and operating costs of an inter-modal platform.

Potential customers show no (noticeable) willingness to pay extra for the services of the platform itself. Having the goal of the depletion of access barriers in mind, letting customers pay for platform-access would also be counterproductive.

Mobility service providers would only show a willingness to pay for their participation if the platform would significantly enhance market penetration. This, however, makes a critical mass of customers a precondition. Providing the platform can acquire the necessary number of active customers, it would be interesting especially for smaller service providers with a local or at best regional focus. However, even then this source of income would be limited, since these providers usually lack financial power and have expense on their sides for platform-integration and -operation as well.

While integrating the first services into a platform, the critical mass of customers will not yet be reached – even when organized with public transport, already provided with a large customer base, as the core. Therefore, like with many responsibilities of the public sector, at least for an extended starting period, public funding will be required. Parts of the necessary public funding, at least for platform build-up, is already being provided by the research program of the German Federal Ministry of Transport and Digital Infrastructure that ReKoMo is part of. If the provision of the opportunity of inter-modal travelling can successfully be defined as a service of general interest in political debate, public funding for operating platforms could probably be assured as well.

6 DEMO VERSION AND FIELD TEST

After the requirements for the demo version of the ReKoMo-platform were fixed and the general outline of the organizational structure had been described, specification of the required system components could begin. The provision of components for the user interface/application as well as for the associated background systems was predetermined mainly by the partners that applied for the research project together. The mobility service providers for the initial implementation of intermodal modes/ services were also mostly predetermined, since the existing network of the Rhein-Main-Verkehrsverbund was used and those service providers were already involved as associated project partners during the application phase.

With the defined functionality the system has to provide the customer with as blueprint, the basic system architecture was being developed and later on refined step by step. Interfaces for data transfer between the system-components were specified, with most areas (except perhaps for the information part) still showing extensive potential for standardisation. Starting point for the design of the user interfaces was a description of application-procedures for the phase's registration, information, booking and payment. With the procedures worked out, user interfaces were developed graphically and later on prepared as clickable mock-ups for user tests. At the time this article is written, step by step all of the required system components are being interconnected and undergo functional testing, before the demo



version will be evaluated by the customer during the field test in the Rhine-Main-Area in summer 2018.

7 PERSPECTIVE: FURTHER NEEDS FOR RESEARCH AND DEVELOPMENT

Establishing regional mobility platforms is meant to be only a first step, resulting from an often regional focus of mobility service providers and potential platform operators, to a widespread interconnection of inter-modal mobility services. For further reduction of access barriers the perspective must be to connect existing platforms in a way that allows the customer a transregional “roaming”, providing him with an easy access to the full range of mobility options even if he is travelling outside of his home region.

But further needs for research and development still exist concerning the regional platform built within the ReKoMo-project itself. The integration of additional mobility services (with local/ regional as well as with nationwide focus) will be a permanent task for the operator of the platform. A modular expandability of architecture and systems therefore is a crucial premise for the permanent operation of inter-modal mobility platforms. Further technical standardisation in the relevant areas can make a valuable contribution in this regard, making integration of new services significantly less effortful.

Out of the scope of the current research project were topics like the development of an intermodal pricing system as well as the provision of real-time-based information and support for re-planning trips in case of delays or breakdowns (e.g. alternative travel suggestions comprising different modes of transport). Those two “construction zones” alone would provide more than enough interesting questions for further exciting research in the area of promoting inter-modal traveling.

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