High Efficient and Reliable arrangements for Crossmodal Transport

Reporting

Project Information

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Final Report Summary - HERMES (High Efficient and Reliable arrangements for Crossmodal Transport)

Executive summary:
Intermodal transport lies at the heart of the Europe transport policy. Even recently, in the 2011 White Paper on transport, the European Commission (EC) underscored the relevance of intermodal transport through its vision of the core network. Despite the all the efforts and investments, integration of infrastructure has so far been largely an exception. Moreover, on the demand side it is still unclear which level of intermodality is currently achieved, as no proper measurement of intermodal behaviour or no integrated statistical demand database exist. This is mainly the outcome of the usually applied modal view: transport statistics or surveys focus mainly on single modes and do not consider intermodality. Consequently, we may state that the user requirements in terms of intermodality remain unknown. Even the integrated concept of level of service is not fully matured and its implementation is hardly found.

The objective of HERMES project is the development and analysis of prototypes of business models for intermodal service between long and short-distance transport networks. The concept under focus lies on the rational that it is possible to improve the experience in the long-distance journeys by enhancing the integration with the short distance transport services. These services, despite representing a small portion of the mobility chain, offer an upgraded fluidity in the whole door-to-door journey and, as such, have a considerable influence on the passenger’s perception of the quality of service and of the expected difficulties of the local component of long distance transport.

Prototypes of business models for intermodal services are examples of new mobility schemes and related organisational patterns that describe core aspects of the intermodal transport business, including: added value to the passenger, offerings, strategies, infrastructure, organisational structures, trading practices, operational processes and policies.

11 case studies supported the design of the prototypes of business models. Every case study refers to long and short-distance transport example. All modes of transport have been covered in different combinations. They can be grouped in three categories accordingly with the type of the transfer terminal, being: airports, sea terminals, and road terminal. The barriers for improved intermodality identified in the case studies either occurred within the terminal or were related with the intermodal links.

Two prototypes of business models were developed, for tackling the barriers at the terminal and at the intermodal links. The prototypes were developed from the perspective of the agent that is interested in promoting the intermodal transport. They aim to improve the passenger’s quality of transport or reduce the price and to achieve benefits to the society, through a better intermodality promoted by intermediary agents (e.g. private operators, public institutions).

The prototypes are expected to be deployed by public decision makers and private operators in the development of new transport services or in the improvement of existent ones.

Project context and objectives:

In the past, intermodality has mainly been understood as related to the transfer of passengers between vehicles. Efforts have been undertaken in order to develop an intermodal infrastructure like railway stations
at airports and transfer points with optimised transfer ways. Nevertheless, fully integrated infrastructure has been an exception so far. The German AIRail (LH, DB, and Fraport) system or the French Thalys AirFrance cooperation show that integrated services are generally manageable.

On the demand side, it is still unclear which level of intermodality is currently achieved. No proper measurement of intermodal behaviour and no integrated statistical demand database exist, which could identify intermodal trips on a European level. This is mainly the outcome of the usually applied modal view: transport statistics or surveys focus mainly on single modes and do not consider the underlying journeys that are often a combination of an access mode, one or more long-distance modes and an egress mode. Thus, it must be stated that up till today the user requirements in terms of intermodality are not fully identified. Even the integrated concept of level of service is not fully matured and its implementation is hardly found.

A substantial amount of research has been dedicated to this topic, like for example, i-TRAVEL, KITE, MODAIR, CONPASS, eMotion, SWITCH or LINK.

Overcoming barriers to passenger intermodality in EU involves three major categories of next steps: continued development of physical infrastructure (especially terminals), improvement and enhancement of technological aspects, and expanded policy and legal frameworks that facilitate intermodal cooperation. The physical infrastructure of passenger transportation systems must continue to be improved if passenger intermodality is to develop. This is particularly important for the intermodal terminals that serve as the linchpins connecting the system. Concerning technological aspects, information systems that include all major modes of passenger transportation can greatly facilitate intermodal connections. These systems are a necessary prerequisite to achieving the vision of one-stop, seamless, door-to-door passenger service that has become the industry standard for package delivery. Regarding policy aspects, cooperation within and between the private and public sectors remains the key ingredient in making intermodality a reality. Private sector progress will occur only so far as the industry can create profitable services. As more passenger intermodal initiatives are implemented over time, a longer track record of performance can be assessed to determine the successfulness of these innovations, which should result in an expansion of intermodal services. Mutually beneficial cooperation between private sector companies will make this happen. But cooperation must also include the public sector in the provision of physical infrastructure, information systems, and the policies that will facilitate implementing intermodal initiatives.

Intermodal transport lies at the heart of the Europe transport policy. Even recently, in the 2011 White Paper on transport, EC underscored the relevance of intermodal transport through its vision of the core network. Three main pillars of strategic policy objectives can be identified, being: unblocking the major routes, humanising the transport and rationalising the urban transport.

In what concerns the first pillar, the planned investments in the TEN-T, meanwhile converted into the core network, particularly in the priority infrastructure projects, are expected to result in positive impacts on passenger intermodality and interconnectivity, particularly in terms of improving physical interfaces between different modes and between different networks of the same mode.

Looking now into the second pillar, improving the user-friendliness of passenger transport implies
facilitating intermodal trips. An important pre-condition is to enable customers to plan intermodal trips by inter-modal timetable information systems, and to offer cross-modal ticketing solutions (intermodal through-ticketing). Furthermore, services across modes to ease intermodal trips have to be fostered, such as baggage handling.

Finally, concerning the last pillar, in urban areas with high population density, negative impacts of intra-zone and transit traffic raise a high level-of-concern. Therefore, EU transport policy postulates efficient and environmentally friendly transport systems in urban areas. To achieve this, the services offered by public transport modes have to allow user-friendly interchanges between different public modes, as well as between public transport modes and taxis and between public transport modes and private transport (slow modes and passenger car). Furthermore, urban public transport modes have to be interconnected to long-distance and regional public transport modes. Such efficient urban transport system requires physical interfaces at terminals, inter-coordinated service concepts, and a sound institutional framework. In order to reduce the demand potential of urban passenger transport, the EU stipulates an integrated planning of land-use / urban planning and transport planning.

The objective of HERMES, as defined in EC in the Seventh Framework Programme (FP7), is the development and analysis of new mobility schemes and related organisational patterns at the interface and interconnection between long distance transport networks and local / regional transport networks of all modes. HERMES explicitly focused on enhancing crossmodal transport arrangements with the purpose of exploring and thus developing prototypes of new business models for interconnectivity. The project analysed the existing connections and further evaluated the level of interconnectivity in the passenger terminals where short and long-distance transport networks cross and where fluidity between crossing networks should ensure the maintenance of the level of service when the passenger is transferred from one to the other. The concept under focus lies on the rational that it is possible to obtain better market share in long distance passenger transport modes (e.g. rail, coach or air transport) if only the long-distance part of the trip was considered by travellers for their modal choice. However, if the final destination is not easy to reach any of these advantages would be easily cancelled. Time spent on board the long-distance mode can be used to provide passengers with information about the best path from the arrival station to their final destination, and possibly also sell them valid tickets for that local transport, and to identify groups of passengers going to destinations close-by to one-another and organise, for example, a taxi or mini-van transport for them, selling the corresponding voucher aboard the long-distance mode.

Prototypes of business models are examples that represent core aspects of a business, including purpose, offerings, strategies, infrastructure, organisational structures, trading practices, and operational processes and policies. Using Osterwalder's broad definition a business model is a conceptual tool containing a set of objects, concepts and their relationships with the objective to express the business logic of a specific firm. Therefore we must consider which concepts and relationships allow a simplified description and representation of what value is provided to customers, how this is done and with which financial consequences. The business model spells-out how a company makes money by specifying where it is positioned in the value chain. Accordingly with this author, a business modal can be divided into nine fundamental dimensions, being: customer segment, value proposition, communication channels, customer relationship, revenue streams, key resources, key activities, key partnerships and cost structure.
Case studies illustrated the possible variants to these missing links. They concentrated on the identification of key requirements of the travellers, the corresponding services and necessary underlying company agreements to provide them, followed by a business plan for the operation. Case studies should cover a wide diversity of situations of interconnectivity providing sound examples.

The analyses embraced:

- interfaces and interconnections between different modes, such as long-distance rail/urban transport or air/rail;
- interfaces and interconnections between different types of services of the same mode, such as long-distance rail services/regional rail services or urban bus/express coach;
- interfaces and interconnections between high capacity mode and low capacity, such as long-distance rail or coach/taxis.

In order to encompass the complex domain of interconnectivity in the passenger terminals where different transport networks involving different transport modes come across, the study of interconnectivity as a concept included the following sub-domains:

- physical (time and space as well as interfaces) interconnectivity;
- logical (information) interconnectivity;
- economical (Fares) interconnectivity;
- contractual interconnectivity (company agreements);
- institutional (regulators and organising agencies) aspects;
- legal and regulatory (market access, minimum operating and service requirements and other relevant regulation) conditions.

The analysis of these sub-domains provided background for the identification of the good practices in interconnectivity. This strengthened our conclusions and proposals of actions to improve the current level of interconnectivity in the coming future. Finally, a plan of actions for future improvements of interconnectivity in the passenger terminals was developed.

Project results:

HERMES project has produced a wide variety of results and outputs. The main output of HERMES project is the handbook of recommended practices for cross modal transport arrangements. The purpose of the handbook is to provide the reader with the necessary knowledge and tools for developing new business models for an improved intermodality. In particular, the handbook offers ready-to-use prototypes of business models for real world practitioners (including: transport operators, terminal managers, or public authorities). The handbook blends theory with practice offering a balanced piece of text that any practitioner could use in their daily operations.

HERMES project developed a total set of eleven case studies. The 11 case studies are developed in seven EU Member States (being: Belgium, France, Germany, Greece, Portugal, Spain and Sweden). Three types of intermodal transfer points are analysed, being: airport, maritime port and stations. In terms
of combinations of modes of transport, the case studies cover the majority of the situations, including: air and road, air and rail, sea and rail, sea and road, sea and sea, rail and road, rail and rail, road and road, metropolitan and road, and metropolitan and rail. Consequently, the case studies provide an accurate and reliable picture of the current state of intermodality and interconnectivity across the EU.

The case studies provide valuable and reliable information on each case, at several levels, including:

- assessment of the current level of intermodal transport and interconnectivity;
- assessment of the current business model;
- assessment of the current barriers and missing links to intermodal transport;
- tailored measures and recommendations for overcoming the barriers;
- design and validation of new business models.

A third set of results include the prototype of business models. A prototype of business model is a conceptual representation of a business model that can be used in any real world situation, as long as the initial assumptions are taken into consideration. The analytical framework deployed in the development of the business models was the one proposed by Alexander Osterwalder. The analytical framework is easy to understand and to use. It characterises the business model along nine dimensions, thus making a very detailed analysis of the business model. Two prototypes have been developed in HERMES project. Each one was developed to tackle a specific set of barriers, accordingly with their location, that is: barriers located in the intermodal links, and barriers located in the transfer points. Other relevant result of HERMES project includes a thorough compilation of the body of knowledge, built by the EU’s research projects, on the barriers to passenger intermodality and on the measures and solutions to overcome them.

Potential impact:

HERMES project delivered interesting results at multiple levels. The state of the art on the interconnectivity between transport networks can provide an interesting starting point for further studies, as well as serve as a reference guidebook. In addition, HERMES has identified the key barriers, challenges to intermodality and provided solutions to overcome them. This can be quite useful to guide local, national and European authorities to develop policies and actions on this matter. The results of the case studies will also provide rich information about each transport system, which of utmost relevancy for local transport authorities and operators. In addition, the case studies will also support to the identification and analysis of business models, and how to assess new ones. Yet, the most relevant output of HERMES project is the handbook on ‘Enhanced business models for crossmodal transport arrangements’. The handbook provides guidance to stakeholders (namely, transport operators, terminal managers and transport authorities) to implement stable intermodal transport arrangements.

HERMES is expected to generate benefits at several levels of the EU society, including: transport operators and terminal managers, local, national and European authorities by identifying the barriers and offering tools to overcome them, and to society in general by contributing for a better transport network, based on high quality intermodal transport services. HERMES is also supporting the EC achieving the vision and strategies as defined in the 2011 White Paper on transport, by contributing for an integrated European mobility system and also to the construction of the European core network.
The dissemination activities in HERMES project included the following actions:

1. publication of peer-review papers and reports;
2. organisation of conferences and seminars;
3. participation in workshops and events promoted by other entities;
4. development of a website;
5. preparation of flyers and booklet containing;
6. preparation and presentation of more than 20 presentation about the works and outcomes;
7. printing of poster with the key elements and results of the project.

The multiple and valuable results of HERMES project are now being intensively exploited by all HERMES partners. Besides the prototypes of business model, each case study offers rich and valuable information for public authorities and private companies to improve the quality of offer of the transport services. Furthermore, the various deliverables contain relevant information.

The exploitation of HERMES project is being done along six dimensions being:

1. support to the production of scientific papers (for journals and conferences) and other documents (already prepared or in preparation 14 papers);
2. support to the production of master and doctoral thesis (a total of five thesis);
3. support to the development of other research projects (interactions with 6 other research projects);
4. support in the preparation of advising documents for policy makers, public authorities and other stakeholders (more than five initiatives are being developed);
5. support in the development of new transport services (in a total of three transport services); and
6. support in the preparation of curricula for courses and other educational actions (in a total of nine academic disciplines, including one course).

Project website: http://www.hermes-7fp.eu

Related documents

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