Executive summary:
Based on existing research and practice the project CLOSER focused on the:

a) identification of emerging mobility schemes
b) analysis of interchanges between short and long-distance transport of all different modes for passengers and freight with a slightly higher regard on freight
c) examination of the regulatory environment and decision making process
Project Context and Objectives:
According to the European Transport Policy, the project CLOSER was set up to support co-modality ("the efficient use of different modes on their own and in combination") by understanding and improving the interfaces between short and long distance transport.

As already mentioned in the DoW of the CLOSER project, these interchanges remain frequently as the weak links in the transport chain for both, passengers and freight. This leads to a favouring of uni-modal solutions without interchanges or with integrated interchange links. The development of innovative services supporting sustainable transport by combining different modes is impeded by complex, non-efficient and expensive operations in interfaces. These issues, combined with accessibility and flexibility requirements, lead to a strong and growing dependence on road traffic (passenger cars or trucks) as a single mode in all categories of transport.

The purpose of CLOSER is to build upon existing research and practice, developing innovative tools for the analysis of interfaces, check these tools in a number of case studies, and make concrete recommendations to stakeholders in order to get:
1. A more systematic approach to the whole project cycle of interfaces (from planning to design and operation).
2. Concrete guidelines for decision makers in order to cope with the challenges of a particular project, and to get the most from the opportunities that each project offer in the areas of transport, spatial and economic development.
3. A friendlier regulatory environment; fostering cooperation and supporting better integrated interfaces.
4. Improved mechanisms for financing those concepts with a higher degree of integration (including EU’s funding schemes).
5. In-depth involvement of stakeholders, and particularly of transport operators.

The project CLOSER was designed to be valuable for the technical level as well as for the decision making level. The framework conditions for both perspectives and their recognition within CLOSER were also defined in the DoW.

At the technical level, CLOSER improves existing knowledge on the operation of intermodal long-to-short-distance interfaces, by:
- Providing the tools for the characterisation of those interfaces, including the development of key indicators, which should facilitate the characterisation of interchanges, and help to identify the associated opportunities for sustainable development associated in each case (WP.3 and WP.5).
- Streamlining the project cycle, including financing aspects, by identifying key barriers and obstacles within the process (WP.4).
- Customising research results in the form of ad hoc recommendations and guidelines for each group of stakeholders (WP.6).
- Consolidating results from previous research projects and updating the discussion of future trends (WP.2).

At the decision making level, the development of the supporting framework developed by closer helps to:
- Identify and analyse new, emerging mobility patterns for interurban, long distance intermodal passenger
and freight transport, and what these new patterns demand to the long/short distance interface.
- Identify and disseminate best practices in a systematic way.
- Establish a number of indicators, which should help practitioners to categorize the long/short distance interface problem, so that they could propose decision-makers a more standardized approach to the definition of the interface, well in advance within the project cycle.
- Support decision makers with guidelines to adopt a more systematic approach to the whole project cycle of interfaces, and their management.
- Optimize the action of the European Commission, and of National, Regional and Local Administrations through a number of recommendations concerning their role in supporting and financing improvement schemes for interfaces, and the reform of current regulatory frameworks.
- Facilitate cooperation among stakeholders, and the consideration of users’ needs at the core of decision-making and operation.

The main goal is to support all stakeholders involved in a particular interface project, to facilitate the setup of a coherent vision of the development process and desirable results and improving the node between different transport modes to reduce the barriers for co-modality.

Besides CLOSER two additional projects were funded under the same topic of Seventh Framework Programme (FP7). These projects, HERMES and INTERCONNECT, mainly focused on passenger transport. While HERMES put a lot of effort in adequate business models, INTERCONNECT followed a very practically based approach, identifying a lot of gaps and solutions for special problems. Both projects performed case studies and provided a lot of input useful for CLOSER in the passengers sector.

To cover the full transport theme, CLOSER adapted to include more freight related research and to identify the differences and conflicts, but also the common requirements and evolutions in both sectors. This perfectly fitted to the endeavour of CLOSER providing a view to the whole problem and a systematic approach to the solution.

Project Results:
Overview
The project CLOSER was divided into seven workpackages, two organising and five scientific.

Starting with an intensive literature review and the identification of relevant stakeholders, the current situation in transport was described and new mobility schemes were identified and categorised in WP 2. The results were used as input for WP 3 to categorise interfaces and provide indicators with a close look to the trends expected for the future. The results of WP 2 as well as the main findings of WP 3 were provided to WP 4 as a base for discussion in the Policy Advisory Group (PAG) and to support recommendations for the decision making framework. The indicators identified in WP3 were used as important key points for preparing the questionnaires and defining the case studies in WP 5.

The growth in specific knowledge about selected terminals and the conclusions derived from the evaluation of seven very different situations were an important input to the three CLOSER guidebooks prepared in WP 6 as recommendations for different stakeholder groups. Besides the results from WP 4, the suggestions of the PAG as well as the project findings concerning an adequate legal framework and appropriate decision making processes directly influenced these guidebooks.
WP 2: Emerging Mobility Schemes

Work Undertaken

WP 2 was divided into five tasks related to the work:

- Establishment of reviewing strategy
- Review and assignment of the material
- Identification of the emerging mobility trends
- Implications for the urban/interurban interface and the 'last mile'
- Coordination with other Seventh Framework Programme (FP7) projects and final report of WP2

Establishment of reviewing strategy

To support the reviewing process a database tool was prepared, allowing each reviewer to include the links to the documents together with categorisation, characteristics, important content and rating of the document. The list was available to all members of the consortium, but each document was assigned to one partner, the reviewer.

Review and assignment of material

Each partner carried out the review for documents in English and in his own language or languages and prepared relevant information to those partners involved in the special topic. This allowed the usage of important information only available in a certain language for all partners in CLOSER. The final list contained 238 documents covering all important topics related to CLOSER.

Identification of the emerging mobility trends

The work was divided into two parts, dealing with the current situation in the first phase and analysing and categorising new trends and emerging mobility schemes in the second period of the workpackage. These different steps are reflected in two deliverables of WP 2. The first describes the review strategy and the current situation in transport, the second focusses on barriers and gaps obstructing the free movement of persons and goods and on new trends and schemes.

Implications for the urban/interurban interface and the "last mile"

Especially the expected evolution in transport, the definition of emerging mobility schemes, has to be taken into account, when analysing the impact on the interface and on the 'last mile'. Therefore the mobility schemes were assigned to the terminal categories defined in WP 3 (see below) and rated with regard to their impact on the interface attributes, taking into account both the interconnection point itself and the consequences for the short first or last part of the transport chain.

Coordination with other Seventh Framework Programme (FP7) projects and final report of WP2

There was an intensive interaction established with the sister projects HERMES and INTERCONNECT. Results from these projects were used in CLOSER, as for example the list of gaps identified by INTERCONNECT, which was supplemented by some special CLOSER results. The interim results were exchanged and many aspects were discussed between the partners of the three projects.

Some additional work was done to prepare the WP 2 findings for the guidebooks developed in WP 6. This work led to a special report prepared based on WP 2 for WP 6.
Scientific and Technical Results

Current Situation

Based on an intensive analysis of the state of the art for both passenger and freight transport, from national and international scales, main characteristics in both categories of transportation were identified.

Passenger Transport:
Even though the use of a certain transport mode is highly dependent on distance, the private car remains the most frequently used mode, because it is the most efficient in door-to-door trips. Nevertheless, it is air transportation that displays the largest growth rates. This situation can be partly explained by the opening of the air market to low-cost carriers. These particularly stimulated air travel for leisure purpose and for young travellers. With regard to buses and coaches, the deregulation of their markets, which is often partial, permitted to meet the mobility needs of low income and low value of time consumers and to fill gaps of public transport networks. But the impact of deregulation is ambiguous and cannot clearly be separated from other influences. The market share of buses and coaches is relatively stagnating. On the contrary, the competition of railways and the growing availability of high-speed trains across Europe have made rail the second most popular mode for long distance travel. High-speed rail is growing in terms of network size and number of passengers carried.

Freight Transport:
Concerning freight transport, the principal facts that are observed and that are expected consist in a significant increase in the development of freight transport, mainly by road. The progress in containerization and Information and Communication Technologies allowing Just-in-Time logistics contributed to this situation. Freight transport also shows an increasing complexity of the whole logistics and transportation chains. The globalisation of flows, the concentration of production and warehousing sites, the fragmentation of the value chain and the logistic sprawl generated by the farther and farther location of freight hubs from city-centres are main characteristics.

Emerging Mobility Schemes (EMS)
Future trends and emerging mobility schemes can only be predicted with a certain probability. The identification in CLOSER was based on three cornerstones:
- the review of documents and the categorisation of the content and findings,
- the experience and knowledge of the CLOSER consortium and
- profound discussions with experts during the CLOSER WP2 workshop in September 2010
Some of the EMS identified are listed in the following tables and some important impacts for the terminal or 'last mile' are mentioned.

Passenger:
Young adults in cities prefer PT
- planning PT for the last mile with respect to young peoples' needs
- improving terminals/vehicles for young peoples' interest, e.g. WiFi
Parents take children by car
- more security in terminals and vehicles and in access/egress
- network, interconnection, frequency with regard to children's needs
Enhanced bicycle use - more (safe) bicycle stands at terminals
- possibility to take bicycles into vehicles

**Flexibilisation of services**
- design and implementation of flexible services
- recruiting, timing (payment) of staff as guides

**Simplification of payment** - equipment for payment services, ticket control tools for eTickets
- hardware for registration in terminals* Real time information - information boards in terminals
- scheduling of routes on base of real time data

**Personal navigation**
- availability of localisation information in terminals
- information about personal navigation systems in terminal  * Cooperation of transport operators
- shared terminals
- coordination of schedules

**Individual Access and Egress**
- safe and affordable parking areas/stands for private vehicles
- appropriate equipment in terminal area and access lanes

**Electro mobility**
- possibility to charge batteries in the parking area

**Driverless transportation**
- driverless vehicles and appropriate (and safe) lanes
- multilingual, understandable signature describing the usage

**Low cost carrier flights**
- upgrade of PT access to airports used by LCC, rail and fly
- cooperation between all airlines in terminals

**Freight:**

**Construction developments**
- increase of reliability of goods being delivered undamaged
- decongestion in the last mile

**Light rail, electric, distribution vehicles**
- “greener” distribution of goods in the last mile  * International logistics centres (ILC)
- direct access of an ILC to global transport networks
- cooperation with other centres Eco-efficient terminals
- adjustment of terminal equipment and transfer vehicles
- improvement of the sustainability of logistics and operation

**Low emission zones** - ‘greener’ distribution of goods in the last mile

**Containerization** - container transhipment hubs in the interconnection chain
- establishing integrated facilities in inland terminals, and logistics centres

**Synchronization**
- need for improvement of transparency

**Consolidation and collaboration**
- adjustment of terminal technologies and equipment when considered as hubs in the consolidation transportation system

**Hybridization**
- modernization of terminal technology and equipment
Integration of an e-logistics platform
- creation of interfaces with transport/logistics partners
- decrease of lead times-costs-environmental impact Green corridors
- adjustment of terminal technology and equipment in order to connect to green corridors
Implementation of TRANS European networks
- adjustment of terminal structure and properties in order to connect to TRANS networks
Rail interoperability - modernization of existing rail terminals, “Greener” rail terminals
- energy consumption at rail terminals
Deep or short sea shipping
- increase of investments and increase of short-distance maritime lines in ports
- development of infrastructure and logistics of ports
The schemes are more or less important for different types of terminals, which is important for their impact on recommendations.

Impact on other Work Packages
The results of WP 2 were used as an input for WP 3 and WP 4. The description of the current situation, the gaps identified by the sister project INTERCONNECT and supplemented by some CLOSER results and the analysis of EMS were used to prepare the indicator list for terminal description. For example the expected increase of electro mobility must be taken into account when designing or improving terminals. The appropriate equipment has to be planned and provided. Similarly, the improvement of the decision making process and legal framework must be based on the current transport schemes and by the expected changings and future trends. Barriers must be avoided and good ideas must pave the way. The research results of WP 2 were one of the foundations of the Policy Advisory Group discussions. Besides, WP 2 directly contributed to the recommendations prepared in WP 6 by assigning the results to the structures prepared in WP 3 and compiling the results in a special report for WP 6.

WP 3: Categorization of interconnection between short and long-distance transport networks
Work Undertaken
The main objective of WP3 was to establish a set of core indicators that reflect the most crucial issues connected to interfaces between short and long-distance transport networks, both for passenger and freight transport. The work was divided into four tasks:
- Structuring the interfaces between short and long-distance transport networks
- Assessment of existing indicators
- Determination of core indicators
- Users’ and stakeholders’ validation

Structuring the interfaces between short and long-distance transport networks
The purpose of this task was to develop a structured representation of the interfaces between long and short-distance transport networks both for passenger and freight transport. To have a broad overview of these interfaces, a set of candidate terminals was defined. A candidate terminal is a specific terminal/interface allowing the analysis of organisational structure (stakeholders) in a variety of settings. In total 24 interfaces were analysed with this approach, giving the opportunity to capture differences and similarities across countries and contexts.
Assessment of existing indicators

In order to have comprehensive overview of indicators describing long and short-distance transport networks, a thorough indicator review was performed by all CLOSER partners. A range of data bases, research projects, and consultancy reports were screened for indicators. Indicators were registered by use of a web-based data collection database. For each indicator, the following information was collected:

- Name of indicator, a brief description and unit of measurement
- Segment: Whether the indicator applies to passenger transport, freight or both
- Assessment level; access/egress, long-distance, terminal or other
- Applicable long-distance and access/egress modes, type of terminal/station, spatial scale
- Type of concept; policy, institutional, legal, users' level.

The indicator review resulted in more than 250 indicators ranging from detailed to aggregated level and from quantitative to qualitative perspectives. The indicators have been organised in line with the proposed categorisation structure for long/short-distance interfaces. Then, the indicators were related to EC transport policy objectives.

Determination of core indicators

The objective of this task was to establish a set of core indicators for interfaces between long and short-distance transport interfaces. The core should facilitate:

- Description of the functioning of interfaces (good/bad)
- Recommendations for improving the interfaces
- Global assessment: prioritisation of actions (what is important to work on)
- Benchmarking of interconnections

The core indicators were selected in a three-level process, including review of indicator selection criteria, test quantification of indicators for a set of specific candidate terminals and input from the CLOSER expert panel Policy Advisory Group.

Users’ and stakeholders’ validation

To capture the viewpoints of different stakeholders and users, intermediate results were presented to a range of stakeholders at a workshop that took place in Lille, France in May 2011. In the workshop, draft results were presented and discussed in groups. The project's Policy Advisory Group was also involved in the validation of the results and developments.

Scientific and Technical Results

Core indicators are the main outcome of CLOSER WP3. In total 30 indicators are defined, covering issues like policy and environment, organisational and institutional aspects, supply-side performance, terminal properties and level of service. The core indicators are listed below. For each indicator, we present ID in the first column of Table 10 (the indicators are numbered from C1-C30, where C stands for Core). Then there are columns for indicator name and description, respectively. We also define which segments of transport each indicator applies to. Some indicators are related to all segments, meaning all long/short-distance interfaces in passenger and freight transport. Other indicators apply to either passenger or freight transport, while there also are indicators that are applicable for specific interchange types (e.g. passenger transport airports). In the last two columns (labelled "I" and "A"), we indicate by ‘x’ if the indicator is applicable at interchange level (for specific terminals/interchanges), at more aggregated level (typically for a city, region or country), or both. Each indicator was further discussed by Andersen and Eidhammer...
WP 3 also produced typologies of interfaces between long and short-distance transport. A typology is a taxonomic classification of a phenomenon, where a set of important characteristics (the types) are used to create a structured representation. For freight transport, a simplified version of the REFORM typology (REFORM 2002) was used. This typology focuses on the functions that the terminals are having in the transport chains. For passenger transport it appeared useful to define a typology based on spatial range and orientation of long/short-distance interfaces. The typology description is provided as attachment.

Impact on other Work Packages
WP 3 was to a large degree running in parallel with WP 4. The development of candidate terminals in WP 3 was also utilised in WP 4 for the stakeholders review. There were also significant inputs from WP 3 to the case studies in WP 5. First of all, the 24 candidate terminals studied in WP 3 were used as a pre-selection tool for the case studies in order to contribute to the final case study selection. Secondly, the core indicators of WP 3 have been used for the case study analysis in terms of characterisation of the case study terminals. Thirdly, the typologies defined in WP 3 have been used further in WP 5 and other parts of the project.

WP 4: Towards a coherent Decision-Making framework
Work Undertaken
WP4’s work was divided into five tasks, which are:
- Identification of the involved stakeholders and their corresponding interests and goals.
- Analysis of the existing regulatory framework in European Union and its member states regarding the planning and provision of transport infrastructure and services.
- Analysis of the planning and financing processes adopted across Europe that deal with the interconnection of the short and long-distance networks.
- Investigation of collaborative practices that apply in the decision-making processes undertaken at long-short distance interconnection terminals.
- Creation of a Policy Advisory Group (PAG) to provide input in the above analyses and the subsequent methodological proposals.

Identification of the involved stakeholders and their corresponding interests and goals
Six representative European countries, namely Spain, France, Norway, Finland, Czech Republic and Greece were used for the investigation of the national conditions that are developed in the Decision-Making (D-M) processes and are related to the interconnection of long and short distance transport. Towards this direction, the D-M processes were investigated under four levels, namely, planning and policy, infrastructure, operations and demand side.

Creation of a Policy Advisory Group (PAG) to provide input in the above analyses and the subsequent methodological proposals.

For the identification and selection of the PAG members, an internal approval procedure was followed,
according to which the consortium investigated and proposed European practitioners that could be involved in the project. Key parameters that were taken into account when establishing the PAG were the widest possible geographical coverage of Europe, the emphasis on freight transport and the presence of members from different groups and subgroups (i.e. national and regional decision makers, transport researchers and members of European associations with international experience).

Scientific and Technical Results

Illustration of D-M processes in European countries
Results showed that D-M processes on long and short distance transport networks, involve a wide range of public and private bodies. The strategic frame for the long-short distance transport interfaces is illustrated by planning and policy stakeholders, further specified as an integrated plan, referring separately or in accordance to the development of the required infrastructure, and the system operation. The demand side works as a catalytic key driver that affects the D-M at any level, i.e. strategic, tactical or operational.

From all the countries used as case studies for the identification of a robust D-M pattern, it is possible to identify five main categories of actors: European Union, national governments, regional and local governments, private firms (i.e. operators) and users (i.e. travellers, consumers). More specifically:

- EU legislative actors give the general trends in policy related aspects to EU member states and the financial instruments to implement them.
- National governments form their policies and strategies according to EU general provisions and the special concerns of their country. At the same time, national governments 'translate' their strategies in priorities for investments and operations and proceed with the utilization.
- Regional/local authorities specialize further the general provisions of the EU and the guidelines of the national government and usually utilize initiatives at their level.
- Firms are responsible for exploiting efficiently the provisions of the public bodies, in terms of supply (infrastructure) and legislative-regulatory framework.
- Finally, the end users, consumers of services and goods have the right to turn the outcome of the D-M procedure into advantage for them and the obligation to raise inefficiencies of the system.

Obstacles and problems in the decision making processes

The most significant problems that were met in the above representative European countries, and could be probably considered as critical barriers in the decision making process, are the following:
- Involvement of more than one entity (i.e. ministry or region) in the stages of D-M process. The absence of a strict hierarchical flow chart of responsibilities makes the procedure more complicated.
- Conflict of interests of the stakeholders involved in the D-M process (among central governments and regional/local authorities).
- Absence of the relative legal framework for the interconnection and harmonized development of long and short distance transport networks.
- Lack of obligations regarding intermodality, for existing or new terminals.
- Limited national funding for land acquisition.
- Lack of required infrastructure.
PAG Recommendations
CLOSER provided recommendations on specific stages of the decision-making process, thus: policy, planning, financing, organisational schemes, infrastructure development and operations. Indicative recommendations for each category are presented below.

Policy recommendations:
- Create a strategy vision on intermodality and interconnectivity of various modes for both passenger and freight transport.
- Incorporate the strategy vision in a Policy Paper ('Roadmap for the Future') concerning the development of the transport sector in terms of infrastructure and operations, ratified from the national parliament.
- Adopt the above Roadmap and implement it during the next ten years with the appropriate small scale revisions every two years and the potential for more changes in the mid-term (e.g. every five years).
- Create a 'think tank' group able to advice policy makers and guide the whole process.
- Integrate the administration of the public transport system.
- Harmonize modal focused legislation and regulation as the first step before integration to a multimodal platform, and in accordance to EU directives and regulations, integrate commons standards at the EU level.
- Policy and legal framework should facilitate intermodal cooperation.
- Form regulatory and/or certified authorities targeted to interoperability and interconnectivity.
- Regulate the charges for the use of the terminal.

Planning recommendations:
- Counterbalance delays in the D-M process.
- Formulate the strategic plan taking into consideration national principles of transportation planning, and the EU regulations.
- Incorporate the transport planning process with land use planning.
- Evaluate D-M processes of transport planning, land use and financial plans (where some kind of benchmarking could be welcome for certain facilities per unit to have, in advance, a presumption about the financial extent).
- Every initiative or project of terminal construction should include an in depth cost-benefit analysis and detailed public consultation.
- Propose a list of planned multimodal facilities with financial viability, potential resources for implementation, priorities and time frame.
- Analyse freight flows and understand customers' needs, and define logistic chains for developing intermodal transport.

Financing recommendations:
- Pursue Private-Public Partnerships (PPPs) model to solve complex local and regional problems and financing issues.
- Identify the permanent participation of the public sectors and the EU as a necessity to guarantee the financial assurance.
- Requirement from the private investment to play a supplementary role to the public subsidies – The private sector should have initiatives for freight transportation, and the public or private sector for
passenger transportation.
- Prepare rules for cross border connection (lack of public resources in an economy recession time, for example).
- Integrate the pricing of the public transport system.

Organisational schemes recommendations:
- Use business models for cooperation that also publically owned terminals can use.
- Check case by case how far decisions could be delegated to the lowest possible level of government.
- Enhance the public involvement.
- Structure the information provision.

Infrastructure recommendations:
- Constitute transport infrastructure management body for all modes in one (as an umbrella for today modal focused managements).
- Adopt or create standards for physical infrastructure interconnectivity (especially in intermodal terminals).
- Integrate the infrastructure of the public transport system.

Operations recommendations:
- Separate the owner from the operator.
- Establish the cooperative framework between the terminal and the transportation operators.
- Integrate the operations of the public transport interchanges.
- Operate effectively the delaying services to ensure that connections are not missed.
- Incorporate optimization in the D-M process as a robust tool for concrete analysis and reliable output.

Impact on other Work Packages
The results were used as an input for WP5 and WP6. More specifically, the proposed recommendations were evaluated in the seven case studies investigated under WP5, while the outcome of the theoretical research on decision making processes and the documentation of recommendations of WP4, were integrated at a practical level through the case studies of WP5, and also, provided the basis for the elaboration of a decision making guidebook for the interconnection between short and long distance passenger and freight transport, in the frame of WP6.

WP 5: Case studies
Work Undertaken
The main objective of WP 5 was to accomplish in depth case studies to deepen and validate the understanding of results derived in earlier work packages. The work was organised in three tasks:
- Case evaluation framework
- Cases
- Synthesis of results

Case evaluation framework
In this task the final selection of cases were made and templates for the case study analyses were developed. A draft suggestion of cases had been included in the Description of Work, but based on the experiences from the work on candidate terminals in WP 3 an alternative case selection was made in
agreement with the Project Officer of the European Commission.
Templates for case study data collection was made and focused on the need to review and examine developments from WP 2 (gaps and emerging mobility schemes), WP 3 (indicators) and WP 4 (information on decision-making). The templates were supported by guidelines for semi-structured interviews with local stakeholders in each case study.

Cases
A set of seven case studies have been used to shed light on interconnections between short and long-distance transport networks:
- Flughafen Leipzig-Halle, Germany (mainly freight)
- Armentières station, France (passenger)
- Oslo bus terminal Vaterland, Norway (passenger)
- Port of Helsinki – Vuosaari, Finland (mainly freight)
- Thessaloniki port, Greece (mainly freight)
- Constantza port, Romania (freight)
- Vilnius Airport, Lithuania (passenger)

Synthesis of the results
The individual cases were studied in light of the reported information and conclusions from the individual cases were compared. For the different conclusions, possibilities for transfer to other segments were considered. The potential for transfer of practice and solutions across contexts was also considered. Based on the individual and joint case study analyses, three types of conclusions and recommendations were identified:
- Recommendations for freight ports and terminals
- Recommendations for passenger terminals
- Recommendations for decision-making for all terminals

Scientific and Technical Results
The main outcomes from WP 5 are the conclusions and recommendations from the case studies. Main recommendations are presented below.

Freight ports and terminals
For freight ports and terminals, there were three main recommendations:
1. Standardisation of gate systems. Port operators have separate gates and procedures, which complicate logistics operator's work. Superstructure owned by operators may be a good solution, but it also reduces flexibility and requires clear operational principles. A common gate system and integrated information system would improve efficiency of information exchange by removing the need for middleware programmes between information systems, Integrating information systems would have a larger perspective (e.g. national) as operators are operating in other harbours too, making the integration more complex.
2. Standardisation of vessel information systems. The Port of Helsinki uses the Portnet service, which is a service network for nationwide vessel traffic in Finland maintained by Finnish Transport Agency. Ships have to provide information regarding its timetable, route, cargo, any hazardous cargo and maritime fees.
It is also possible to give security announcements. The user interface for the PortNet system is internet-based, but companies can also send notices in EDIFACT or XML formats. Such a system would be useful and efficient to insert and receive vessel traffic information. Upper level guidance and coordination could improve the situation if it would create recommendations for port related information systems that would be in line with other information systems used in logistics. An EU level Portnet system could thus harmonise information systems of different ports and operators operating in several ports.

3. Clustering and co-localisation of freight terminals and logistics centres. The increasing importance of international logistics centres is one of the emerging mobility schemes that were identified the project. The case study from Helsinki suggests that a single logistic centre can provide sufficient infrastructure/superstructure in the area and positive attitude towards the development of rail transportation. Currently there is no rail terminal in Vuosaari Harbour and appropriate infrastructure for large-scale efficient operation is missing. Single logistics centre in port area would promote rail transportation to/from port. Thessaloniki suggests implementing a logistics centre that will be better established in the container terminal. A logistics centre with integrated services would strengthen the container terminal. In Leipzig-Halle, one of the success factors of the airport is the co-localisation with the freight village Güterverkehrszentrum Leipzig.

4. Improved planning and support for intermodality. Rail transport is important for the EC goal on optimizing the performance of multimodal logistic chains, including by making greater use of more energy-efficient modes. In Helsinki the case study seems to point out a lack of planning for rail freight at the port. Rail tracks are built, but there is no infrastructure for large-scale operations. A new terminal may also cause capacity problems in land use. It is therefore possible that authorities should have set requirements for facilities. It is also important to emphasize that the main reasons hindering multimodal transport are related to transport volumes, lack of capacity and lack of competition. Therefore there are important factors outside the terminal responsibilities which also can explain lack of use of rail transport. Other aspects are related to the distance of the transhipment and the characteristics of the goods.

Passenger terminals

1. Need for more integrated planning of public transport systems. Lack of having one responsible actor for developing and integrating transport junctions and public transport might be an important barrier towards efficient planning processes. There is a great potential for better coordination and earlier discussions of adjoining problems. At least to some extent there is a fragmented system meaning that actors only have responsibilities for part of the process and have not an interest of developing a public transport system which integrates and coordinates short and long public transport. It is examples of unclear responsibilities and lack of leadership in processes.

2. Harmonisation of information systems. A common challenge for most of the passenger terminals is to foster better information systems across modes. Lack of integration can be linked to the competition between short and long transport, technological development, financing and organisation. In Armentières the main gap is the missing dynamic bus information inside the railway station, which obliges train users to move out of the station and into the bus terminal to obtain dynamic information about buses. The case study from Norway suggests that there is a need of national projects aimed at providing better information systems across modes. This aspect is also relevant for access/egress of Vilnius airport.

Decision-making processes for all terminals

1. Development of master plans. Nathanail and Adamos (2011) identified lessons learned from decision
making processes. One of the recommendations was to create a strategic plan in accordance with existing land use development plans. This could synchronize initiatives and projects and thus avoid competition, rivalries and promote balanced development and integration of wider areas. The Thessaloniki port case can illustrate this aspect, pointing out that such a plan is absent. According to the interviews, the implementation of such a plan could strengthen collaboration with stakeholders and make robust perspectives connected to future plans in port operations. For Helsinki it is emphasized that the potential increase in rail transportation could be anticipated better in the land use plan. With a higher level approach taking all transport modes into account, the situation could be better in a long term. Constantza, on the other hand, has many public authorities and bodies involved in port operations. In addition several private companies and stakeholders are involved. In 2001-2002 they created a master plan which comprised the constitutional map according to which any project or activity associated with the port operation and development is planned, routed and processed. Moreover, the role, jurisdiction and responsibilities of all involved actors is determined, as well as communication role.

2. Establishment of forums for proper dialogue between all relevant stakeholders involved in the terminal. Some of the case studies illustrate that it is important to bring up adjoining problems at an early stage. This is especially important in cases where planning involves several actors. Steering groups or networks consisting of members from relevant actors can create an arena for discussing, analysing and perceive development in a coherent view. A recommended strategy to build competence and promote awareness is to establish inter- and intra-organisational networks. Such networks can bridge barriers connected to e.g. fragmented integration of responsibilities, difference in perspectives and policy integration, and thus greatly facilitate local initiatives (Kasa et al 2011:15).

3. Integrated planning of new terminals. This is partly linked to the recommendation on master plans. Helsinki is a case in which the passenger terminal needs were not taken into account in the planning phase for a freight terminal. Development of a new freight terminal was done without considerations on possible future changes that could imply needs for also accommodating passengers from ro-ro ferries. In Oslo it is challenges connected to plan new terminals integrating short and long distance transport. Another perspective can also shed light on lack of integrated planning of new terminals.

4. Improve efficiency of planning process. The number of actors affected by or involved in the actual implementation of measures can be large. Operators, users and public authorities are some of the actors directly involved. In addition there might be maintenance, security, neighbours and neighbouring facilities that are indirectly affected by the new implementation. Each of these groups may have the power to delay and some also the organisational, financial, legal or political platform for vetoing a given implementation. Even where there is an overall agreement to foster better integration between short and long transport, the number and variety of actors, perspectives and interaction make for complex implementation processes (Pressman and Wildavsky 1973).

5. Precision of competition laws. There is an ongoing legal conflict between EC and Leipzig-Halle. At the moment there is no common understanding on how to handle infrastructure objects owned by a privately organised company with solely public shareholders. Since the airport is a privately organised stoke company public funding is not authorised by the commission. Thereby it doesn't seem to make any difference that 100 % of the shareholders are public authorities.

Impact on other Work Packages
The results from the cases studies and the recommendations that are based on the joint case study analysis fed into the development of guidebooks in WP 6.
WP 6: Recommendations

Work Undertaken

The objective of the final phase of the CLOSER project is to give guidance and recommendations by summing up the project results of all R &D work packages WP2 – WP5 in three parallel guidebooks: one addressing the decision-making level and two guidebooks focusing on more practical aspects specific to passenger and freight transport separately. The guidebooks are published and made available on the CLOSER website.

As an outcome of WP6, three guidebooks were compiled summing up the CLOSER research:
- Deliverable D6.1 Guidance and recommendations for interconnection between long distance and local/regional passenger transport,
- Deliverable D6.2 Guidance and recommendations for interconnection between long distance and local/regional freight transport,
- Deliverable 6.3. Decision-making guidebook for the interconnection between short and long-distance transport networks.

Scientific and Technical Results

Passenger transport guidebook

The passenger transport guidebook gives guidance aimed to promote and enhance the use of public transport from door-to-door in long distance travel. The introductory part of the guidebook presents shortly all main issues regarding operation of passenger transport interchanges that have been covered in the CLOSER project in the operational point of view of all actors involved, terminal managers and operators, transport operators, transport service providers, public authorities but also stakeholders involved in the planning and designing phases of the interconnection points. The main issues dealt with are transport policy goals, emerging mobility schemes, indicators for assessment and evaluation in accordance with the CLOSER typology for passenger transport interchanges. Finally, practical recommendations based on the passenger transport case studies are given:
- Armentieres station, France
- Oslo bus terminal Vaterland, Norway
- Thessaloniki port, Greece (passenger study)
- Vilnius Airport, Lithuania.

The main topics taken up in the fact sheets are structured as follows:
- Core indicators
- Policy
- Organisational and institutional structure
- Supply-side performance
- Terminal properties
- Level of service.
- Emerging mobility schemes
- Mobility trends
- Improved public transport services
- New technology
- Air and maritime transport
Avoiding traffic, especially during rush hours.

The fact sheets are divided in two main sections by the CLOSER typology:
1. National hubs. A national hub may be an airport, a rail station (high-speed or conventional), a bus station or a passenger port or ferry terminal which connects with other terminals at national or international level. The terminal operation and guidance is presented in terms of core indicators, contribution to the common policy goals of the European Commission and affecting emerging mobility schemes.
2. National city terminals and other city or local terminals. A national city terminal may have more or less the same long-distance modes as a national hub, but it is located closer to a city centre and with more direct access to local city network of public transport. Its orientation is mainly at regional and national (interregional) level, but international connections may also be offered. Other city or local terminals are interchanges within a city, commuting area or local community.

Freight transport guidebook
The main target groups of the freight transport guidebook are the stakeholders owning, managing and operating in the freight terminals. The aim is to give the most relevant information related to freight transport based on previous work packages in a compact form sorted by topic. The guidebook covers the entire terminal life cycle, from planning and design to operation, taking also into account the category of the terminal by the freight terminal typology. It also covers related aspects such as financing, ICT and environmental issues. In total, eleven topics are presented:
- Policy and regulations
- Ownership and organisation
- Planning
- Financing
- Location and area
- Business models and operation
- Terminal properties and performance
- Information provision and ICT
- Services
- Security and safety
- Environment and ecology.

The introductory section provides information regarding the CLOSER project and some specific results concentrating mainly on freight transport. The following chapters present the eleven main topics in a fact sheet format, topic by topic. Recommendations and good practises fact sheets for all topics are outlined to start with general description and to follow by good practices and challenges recognised in the case studies. In addition, based on the good practices and challenges perceived, general recommendations are given. Indicator fact sheets as well as Emerging mobility schemes and gaps fact sheets are established when relevant, i.e. where they have been specifically studied in the test cases in relation to the specific topic. The referred freight transport case studies are:
- Flughafen Leipzig-Halle, Germany
- Port of Helsinki – Vuosaari, Finland
- Thessaloniki port (freight study), Greece
- Constantza port, Romania
The decision making guidebook

The decision making guidebook is aimed at local, regional, national and the EU level transport policy decision-makers, the most important target groups being national governments and regional and local authorities. The scope of this macro-level guidebook covers both passenger and freight transport with distinction made between the two when necessary. Regarding the life cycle of a specific terminal project, focus is more on the early phases of planning and design.

The decision-making guidebook is structured in three sections. The first section provides an introductory overview of the CLOSER project, presents transport policy goals, land use developments in the European Union and financing instruments as well as emerging mobility schemes. In addition, a short introduction is given to the identified CLOSER case studies. Section two describes the stakeholders and governance tasks in the context of long- and short-distance transport interconnections. Governance tasks of control, management, planning, ownership, financing and operation are explained in more detail, and guidance how to organise them efficiently is given. Then the entire decision-making process aiming to establish a transport terminal is analysed. These two sections are presented in a normal report format.

The third, final section addresses a selection of specific topics regarding terminal performance and properties raised in the CLOSER research work. These include various aspects in the context of transport terminals, such as life cycle management using a master plan, land use issues, environmental impacts and use of ICTs (information and communications technologies) in passenger and freight services:

- Key performance indicators
- Terminal specification
- Life cycle management
- Location and land use
- Business models
- Environment and ecology
- Equity
- Safety and security
- Passenger services
- Freight services.

Potential Impact:
CLOSER will influence different groups/categories of stakeholders (operators, policymakers, research community, end users, planners, infrastructure and service providers). Benefits for

- Operators:
- Identification of gaps in their terminals
- Use of CLOSER indicators for assessment and performance measurement
- Realisation of user needs related to new trends
- Identification of barriers to be solved, best practice and lessons to be learned when expanding existing or building new terminals in different environment
- Reminder of the needs for use of ICT and standardisation in transport
- Legislation overview

- Policy makers
- Planning for new interface can be improved
- Legal situation in different countries can be compared
- Improvement of processes through best practice examples taken from case studies
- Overview of stakeholders to involve when planning and explaining policies for urban interurban interchange and terminals
- Public transport systems and new freight terminals dedicated to last mile distribution must be developed through integrated planning systems
- In the planning process of new terminals/master plans etc. there must be a defined owner of the different tasks that should be solved

- Researchers
- Knowledge of emerging schemes and state of the art can be used
- Large review database
- Core indicator list usable for new projects
- Questionnaires provided for future investigation
- Case study templates available, can be used in related projects
- Case study results (best practice)
- Knowledge of different needs in different type of terminals, localisation and market to operate

- Planners:
- User requirements on design and location of terminals connecting urban and interurban networks
- The need for master plans when planning interconnections and networks connecting long and short distance transport
- Identification of issues to be taken into account like public and private transport, walking and cycling as well as last mile distribution in freight transport, when developing master plans
- The key role of land use and Public Private Partnership when planning urban interurban networks

- End Users
- Identification of gaps and trends can lead to a collection/checklist of user needs
- All stakeholders must have a common vision on integration all modes (public and private transport, walking and cycling as well as last mile distribution)

In parallel to CLOSER, some new projects have started already building on CLOSER results.

Conclusions from CLOSER underpinning the need for a comprehensive approach to urban freight solutions, particularly linking urban to interurban freight movements is part of the facts used as background for initializing the EC FP7 financed STRAIGHTSOL project (STRAtegies and measures for smarter urban freIGHT SOLutions, see http://www.straightsol.eu/ online). Indicators developed in CLOSER will be used for developing an assessment framework that can be applied to all kinds of measures within urban and interurban freight transport. Following the analysis of CLOSER impacts in STRAIGHTSOL, this project will connect cities and give important inputs to future prioritising of measures
aiming at further developing Smart Urban Freight Systems in Europe.

Impact of WP 2
Two main results are provided by WP2:
- A literature database and a summary report, reflecting the state-of-the art and gaps, and
- the identification and categorisation of emerging mobility trends for passengers and freight.

Both can be used as base for follow-up projects dealing with interchange points and intermodality but also for projects related to new trends and technologies.

The analysis of the current situation allows identifying good practices and ideas on one hand, but also gaps and improvement potential on the other hand. The study of new schemes helps to find a consolidated prognosis for future necessities. Since this work package was not focussed on interchange terminals, the whole transport topic was investigated. The results provide an overview, usable for the identification of gaps and creation of ideas in various transport related topics. For CLOSER, the new schemes were assigned to the different types of interface terminals according to the categorisation derived from WP3. This allows to directly access the relevant schemes for each type of terminal.

Some results of WP2, as for example the expected impact of the demographical change and the rural migration, were already used as a base to define new project ideas. The combination of research for passenger transport and freight transport helps to see commonalities and dependencies and to identify shared components and find solutions with regard to both categories of transport.

Impact of WP 3
In WP 3 'Categorization of interconnection between short and long-distance transport networks' a set of characteristics of transport interfaces has been defined and used for structuring of long/short-distance interfaces and to organise indicators for these interfaces. The group of characteristics is: Policy and planning, Supply side organisation, Supply side performance, Terminal properties and Level of service. In addition it was also necessary to distinguish between different assessment levels. Five assessment levels were suggested: Access/egress, Long-distance, Terminal/integration, Door-to-door and General perspective.

The indicators have been related to EC transport policy objectives defined in the mid-term review of the 2001 White Paper on Transport (European Commission, 2006). The analysis revealed that policy objectives connected to environment/sustainability, availability, quality and efficiency are very well covered by indicators for the long/short-distance interfaces. Affordability, protection of passengers and citizens, and innovation for reduced emissions and congestion are also covered well, while ensuring energy security and use of alternative forms of energy are weakly covered. For the promotion of labour standards, as well as policy objectives related to connecting internationally, there is almost no coverage from the indicators that have been reviewed.

Indicators and assessed structure for long/short distance from WP 3 have been used to organise the guidelines within 3 deliverables (‘Guidebooks’, cf. WP 6). These documents contain the final exploitable results from the project. The indicators and the characteristics of long/short distance interfaces are used
for structuring the approach to terminal and last mile distribution issues in both EC-funded projects like CITY-HUB and STRAIGHSOL and national projects addressing tasks connected to last mile distribution and terminals and long/short-distance interfaces for both passenger and freight transport.

Impact of WP 4

Despite the European policy objectives, as stated in the White Papers (COM (2001) 370 final, and COM (2011) 144 final), as well as the initiatives undertaken by various Directorates related to promoting co-modality in order to alleviate congestion and its consequences at nodal transportation points, the interconnection between long-short distance transportation still suffers from the lack of a coherent decision-making framework.

WP 4 collected and analysed data regarding the Decision –Making (D-M) processes developed in six representative European countries, i.e. Spain, France, Norway, Finland, Czech Republic and Greece, indicated demonstrated problems and gaps and identified important factors that determine a successful D-M framework. The results of this analysis were used for the introduction of a coherent D-M framework, addressed by discrete steps: problem description, clear definition of the legal and regulatory framework, strategic documents ratification across the political spectrum, clear statement or mission of the problem, clear, logical and transparent means of evaluation, and public acceptance and implementation.

In addition, WP 4 provided a set of recommendations on specific stages of the D-M process, which are: policy, planning, financing, organisational schemes, infrastructure development and operations. Also, for each category of recommendations, the potential applicability of the recommendations was assessed, in terms of spatial scale (European, national, regional, local, urban, interurban), transport coverage (passengers, freight, both), implementation period (short-term, medium-term, long-term) and involved actors.

The applicability of the above findings of WP 4 has already been practically evaluated in seven European case studies in the framework of CLOSER WP 5, and enhanced the potentiality of their implementation. Towards this direction, the added value of WP 4, documented in the introduction of a coherent D-M framework and the provision of recommendations, is the formation of a theoretical and demonstrated basis to be used by practitioners involved in the interconnection of long and short distance transport networks, at a strategic, tactical and operational level of the D-M process.

Impact of WP 5

WP 5 ‘Case studies’ dealt with in-depth studies to deepen and validate the understanding of results obtained in previous work packages. This was achieved by enveloping a joint assessment and evaluation framework for the case studies, carrying out and synthesising the results of the studies in order to give inputs for the development of recommendations in WP 6 ‘Guidelines’.

The case studies that have been conducted and analysed are:
- Leipzig-Halle airport (Germany),
- Armentiéres station (France),
- Oslo bus terminal Vaterland (Norway),
- Port of Helsinki (Finland),
Focus for the analysis and validation of interconnections between long and short-distance transport have been: emerging mobility schemes, indicators for the assessment of crucial issues and recommendations from the members of the Policy Advisory Group.

The results from the case studies feed into WP 6 Recommendations that give guidance and recommendations for establishing new mobility schemes and related organisational patterns at the interface and interconnection between long distance transport networks and local/regional transport networks.

Impact of WP 6
All three guidebooks developed in this work package are targeted to be used by all stakeholders involved in their own work domain, in the planning and renovation phases of a terminal but also in assessment, evaluation and improvement of an operating interchange as well as in strategic planning for the future. The guidebooks may also be further used in research projects is also envisaged. The easy use of the guidebooks is facilitated by introducing the uniform fact sheet format for each individual subject that is described in detail. Thus the user can easily pick up only those subjects that are of his/her interest. In addition, reference to the source, i.e. to the specific CLOSER deliverable where the research and detailed results have been documented, is given under each topic.

The main target group of the decision-making guidebook is the transport policy decision-makers. These are most importantly national governments and regional and local authorities but include the European Union level as well. Further target groups comprise stakeholders involved in transport system operation. However, the more practical aspects and operational issues crucial to these stakeholders are given in the two other guidebooks, the operational guidebooks for passenger and freight transport respectively.

The main target groups of the passenger transport guidebook are terminal managers and operators, transport operators, transport service providers, public authorities and infrastructure providers but also stakeholders involved in the planning and designing phases of the terminals and other main interconnection points. The main target groups of the freight transport guidebook are the stakeholders owning, managing and operating freight terminals.

It should be noted that even the highlighted good practices, challenges and recommendations given in the guidebooks need to be assessed carefully before applied to another terminal project. Optimum solutions can only be found if case-specific factors and characteristics are respected.

In addition to the guidance role of the guidebooks, they can be used as check lists for including all relevant issues and aspect in the development and renovation projects of terminals.

List of Websites:
Related documents

- Final Report - CLOSER (Connecting Long and Short-distance networks for Efficient tRansport)

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