



Summary of projects and results from topic  
**Integrated Transport Chains**

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## **Integrated Transport Chains**

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# 1. INTRODUCTION AND METHODOLOGY

This report has been compiled by UCLM to summarise the conclusions of the activities undertaken on the key topic "Public Transport Planning and Operation: Integrated Transport Chains" as part of Work Package 2 of the PORTAL project.

## 1.1 Methodology

The first search of information about the assigned projects was made the internet. The websites used were mainly CORDIS, ELTIS and EXTRA.

The EU official publication office provided us with final reports for INTRAMUROS and COST 318. Final Reports of other projects and a lot of brochures and newsletters were downloadable from project websites.

For those projects, where UCLM had contacts with co-ordinators or partners (INTERCEPT, CAPTURE, PIRATE) we communicated with them (telephone interviews) about the intentions of PORTAL asking for information about the projects and available materials. We mailed PORTAL partners who had participated in the projects (EU-SPIRIT, MIMIC, GUIDE, PIRATE) and finally we tried with the co-ordinators of other projects (SWITCH and CARISMA) where we had no direct contacts (and neither did the PORTAL cross-section KT-expert, LUND, have contacts).

A lot of information about the status of the projects, websites and availability of materials were provided from all the partners contacted. In some cases they attached several deliverables, newsletters and other dissemination material.

### **Problems encountered**

Although the CORDIS database provided us with a lot of very interesting information, it was not always updated, so that it was necessary to check it several times in order to find new information up to the deadline.

It was difficult to get to know the status of the projects as many of them are not running according to their timeplan. Some projects are not finished yet or are waiting for approval from the Commission to make their results public, so that we could not get the definitive results.

A lot of information was downloaded from internet in "pdf" format, .The partners of the different projects sent in most cases a prompt answer and sent us when available "doc", or "ppt" files with the documents and presentations, but they also sent some printed materials by post. So did the official publications office. The latter took quite a lot of time to reach us, so that it should be considered when designing the timeplans as the time to review the received materials was really short.

Most materials are free but some of them are charged.

## 2. INTEGRATED TRANSPORT CHAINS IN PUBLIC TRANSPORT

### 2.1 Description of the Key-Topic "Integrated Transport Chains"

The increasing complexity of mobility, not only in urban areas but in long-distance journeys, results in spread out congestion, economic and environmental problems.

Against the door-to-door trip by private car, a more sustainable model of public transport should offer passengers the possibility of a "seamless journey" taking advantage of the flexible combination of features of the different transport modes and the covering supply of interconnected long-distance, regional and local networks of public transport.

The Key-Topic Integration of Transport Chains can be considered at different levels:

- **Transport and Land-use Planning.** Design of the transport networks and development patterns do heavily determine mobility patterns.
- **Interchange surrounding area.** Not only a node but an access to the transport network. The investment on intermodal infrastructures can be used to support the regeneration of existing urban areas. New developments should lean on the accessibility provided by an interchange, generating demand for public transport services.
- **Interface infrastructure.** The design and operation of the infrastructure must consider several aspects to facilitate the transfer between the different modes.

The complexity of the topic, makes all three levels to be considered under different points of views:

- **Policy and Institutional issues.** Because of the complex public transport system including authorities, public and private transport operators, infrastructure owners or licence holders, the co-operation of the different stakeholders is essential to achieve efficient intermodality.
- **Management, and operational issues:** Finance, ownership, schedules harmonisation, ticketing integration, provision of services, accurate passenger information, convenient payment systems, etc. (ITS can provide a good help for many of the issues related).
- **Planning, Design and Implementation.** Location, accessibility, on site information, lighting, security, attractiveness, comfort, etc.

The interests of different Key-topics of PORTAL converge in "Integration of Transport Chains" such as "Transport planning, land use and implementation and policy formulation", "Economics and pricing", "Urban Traffic management &

prioritisation of PT", "Modelling and data-analysis", "Economics and pricing". Intelligent Transport Systems are also involved, as several of the reviewed projects deal with ITS information or journey planner systems.

Those links should be considered in WP4 in order not to overlap the didactic modules.

Projects related with this Key-Topic and assigned to UCLM for review were:

**COST-318** (Interactions between High-Speed Rail and Passenger Transport).

Identifies and analyses the interactions and complementarities between high-speed rail (HSR) and air passenger transport (APT).

**COST-335** (Passengers` Accessibility of Heavy Rail Systems).

Guide for governments and railway operators on best practice in achieving full accessibility for their services and facilities.

**CAPTURE** (Cars to Public Transport in the Urban Environment).

Assesment of the effectiveness of physical measures aimed at increasing the use of public transport, cycling and walking for journeys in urban areas, while reducing those made by private cars.

**CARISMA** (Concerted Action for the Interconnection of transport Systems)

This concerted Action is aimed at supporting consensus-building on a number of transport issues related to networks-in particular the Trans-European Networks-and local/regional transport networks of all modes.

**EU-SPIRIT** (European system for passenger services with intermodal reservation, information and ticketing).

This is aimed at the development and demonstration of a customer-friendly, Internet-based, multimodal information system. It provides door-to-door public transport and travel information across Europe by integrating long-distance railway, local transport systems and travel-related, non-transport information.

**GUIDE** (Group for Urban Interchanges, Development and Evaluation).

Guide tries to identify and summarise existing European research on interface issues; establish a framework for collaborative research amongst major European public transport operators on issues concerned with improving passenger interface; assess best practice in the functional specification and design aspects of passenger interface by means of case studies and to disseminate the outputs.

**HSR-COMET** (Intermodal connections of HSR terminals in metropolitan areas).

It focuses on high-speed railway (HSR) station interconnections with other transport modes

**INTERCEPT** (Intermodal Concepts in European Passenger Transport).

The overall mission for the project is to "Encourage by example the implementation of intermodal door-to-door transport solutions in European cities, to INTERCEPT car usage as close as possible to its source."

**INTRAMUROS** (Integrated urban transport concepts and systems).

This project studies the integration of different actors involved in Urban Transport, through the development and validation of a conceptual methodology for assessing this integration.

**MIMIC** (Mobility, Intermodality and Interchanges).

MIMIC studies barriers to intermodality, with ‘barriers’ defined as all those interchange-specific factors that influence travellers to choose single-mode (generally car-based) options instead of intermodal ones.

**OPIUM** (Operational Project for integrated urban management)

The project aimed to evaluate a range of physical measures for traffic management through their practical implementation in a number of cities, and make recommendations for the future development of urban transport policies.

**PIRATE** (Promoting Interchange Rationale, Accessibility & Transfer).

PIRATE tries to enable more efficient and successful development of public transport interchanges by developing and testing two complementary research approaches

**SWITCH** (Sustainable, Workable, Intermodal Transport Choices)

It studies the underlying principles of a seamless intermodal transport network through demonstrating innovative and co-ordinated project applications, allied to an integrated market research and validation scenario.

## 2.2 Results of COST-318

**COST-318** : Interactions between High-Speed Rail and Passenger Transport

The main objective of the project is to identify and analyse the interactions and complementarities between high-speed rail (HSR) and air passenger transport (APT), and to stress the benefit which arise from these combined actions for the users and public welfare. The main fields (theses) of interest are:

- Effects of HSR on APT
- Reverse effects of APT on HSR
- The effects of rail stations at airports on rail and air transport

The materials available are an Interim report (it aims to underline what has been done until April 1996 and in particular what shall be done and worked out in the next stage) and the Final Report of the Action.

Representatives from nine countries have participated in this research. The overall coordination was ensured by a management committee and supported by the European Commission. The participants are transport professionals and policy-makers.

The sites for study visits are High Speed Rail Lines and airports where the experts analyse the theses and hypotheses.

There are no leading educational institutes participating in the project.

Information about the COST-Transport actions is to be found at CORDIS, but there is no project website.

## **Results of the project**

The general result which can be emphasised is that the area of influence of road, rail and air transport will alter significantly if HSR is realised for all connections with high traffic load. Best effects result if both HSR and APT-networks are connected by efficient railway stations at all important airports.

While travel distance of more than 400 kms are declining for conventional railways, for HSR this only applies for travel distances of 600-700 km. But APT will still predominate in the future for longer distances.

A consequence of this shift of the area of influence is, that air traffic is reduced for certain relations by upto 50% if HSR connections provide an outstanding alternative. But also with a fully accomplished HSR network in Europe of about 30.000 Km the medium air transport reduction in modal split will probably not exceed 15-20%.

There are also important effects on the reduction of environmental damage (especially on air quality and reduction of congestion at the airports).

The consequence of all these modifications is a new and more sustainable balance of long distance trip distribution between road, rail and air transport.

The effects on the rail companies alone show normally positive results as far as only operating costs are concerned. If the investment costs of the new infrastructure are included, results varied depending on the different cases.

The result of the investigation shows also that the impact of rail stations on the balance of accounts for the whole public ground transport system at the airports is negative

The results are expected to give support to decision making in the planning and financing of speed train projects, airport infrastructure projects and rail station projects at airports

## **Materials**

The materials available are:

- Deliverable: (interim report), the useful contains are already in the final report.
- Handbook: (final report), useful for self-learning.

The interim report is not interesting. The final report is very interesting as it includes an inventory/database of existing documentation, statistics, forecasts and feasibility studies relating to high speed rail and air passenger transport that can be used in training and teaching.

## 2.3 Results of COST-335

### **COST-335:** (Passengers` Accessibility of Heavy Rail Systems)

The main objective is to produce guidance for governments and railway operators on best practice in achieving full accessibility for their services and facilities. Both technical and economic issues are addressed as well as the extent to which totally independent access can be achieved. Secondary objectives include the raising of awareness among train operators of the actual and potential size of the market for rail travel among disabled and elderly people, and giving them a clear indication of the wide range of issues involved in realising that market potential.

The available materials include: economic aspects, pre-travel information issues, access to and within station issues, the interface between station and rolling stock, rolling stock design, staff issues, training and information for the users and regulatory framework.

The experts are transport professionals, decision-makers, directors and employees of transport authorities.

The sites for study visits are stations where there are important elements that improve passenger`accessibility.

The participating leading educational institutes are: Technological Institute of Athens, Institute of Transportation Traffic, Highway and Railway Engineering (Zurich), Norwegian Building Research Institute (Oslo) and Prometni institut Ljubljana.

Publications of COST-Transport projects can be found at the CORDIS database or requested from the EU Official Publications Office.

### **Results of project**

The main result of the project is to produce guidance for governments and railway operators on best practice in achieving full accessibility to their services and facilities, including economic issues. The benefits to different users are :

The technical requirements developed will be useful to governments, industry or other bodies who wish to develop technical standards for rolling stock, stations and interface mechanisms.

The economic and market information can be used by railway companies to develop related commercial policies.

The social information may be used by governments or local authorities to define and implement policies for improved accessibility to rail services.

There is a very large potential demand for rail travel for disabled and elderly people. That demand will increase in the future.

Potential demand can only be reached through a strategy of progressive removal of barriers to travel, affecting disabled and elderly people.

To turn the potential into real demand, railways must also develop marketing strategies which segment the demand, identify the key user benefits and communicate with the target markets.

The railways of Europe have much to gain and little to lose from a planned approach to accessibility. Substantial market growth can be achieved.

There are some results which are very interesting about the design of interchanges. These outcomes could be used to be introduced in a module. The design of stations is very important section of our key-topic.

### **Materials**

The available materials are:

- Handbook: useful for self-learning (Final Reports of the Action)
- Seminar: useful for self-learning

The materials are user-friendly. They include pictures and functional diagrams that could be used as didactic materials.

## **2.4 Results of the CAPTURE project**

**CAPTURE** : Cars to Public Transport in the Urban Environment

The principal objective of the CAPTURE project was to assess the effectiveness of physical measures aimed at increasing the use of public transport, cycling and walking for journeys in urban areas, while reducing those made by private cars.

The project has evaluated the implementation of demonstrations of physical measures in each of the cities. The policies under study included improvements to public transport movement and high occupancy cars in corridors, and changes to the access and management of areas with high levels of trip making, such as in city centres.

The available materials describe the results of implementation of physical measures in each of the cities. The cities and the measures studied are described in the material.

The CAPTURE team includes public authorities and universities providing experts in the field of public transport.

The proposed study sites are cities where the physical measures have been implemented.

There are two participating universities (University of Roma “La Sapienza” (Italy) and University of Leeds (UK)).

Information about the project can be found in ELTIS, CORDIS and COMPUSERVE databases, but no project website has been found.

### **Results of the project**

The results do not show a “measurable??? specific outcome” in terms of the results. Measures such as bus lanes have had great success in some cities, and little in others.

While some measures can be described as having little impact on the use of different modes because of their nature, the usefulness of most measures which can be used to encourage a modal shift is dependent very much on how they are specified in terms of local conditions. In general there has been greater success in improving reliability of bus services than in saving time, but reliability improvements can often do a lot to reduce the overall travel time for passengers.

City size is not a major determining factor in determining the measures which should be initiated. Using bus priority lanes as an example, they may be of as much value in a very small settlement as in a large capital city.

City type can be of importance. Measures requiring much road space may be inappropriate in crowded historic cities where there is much competition for limited road space, while in more modern industrial cities there may be more scope for making changes.

Implementation issues have to be considered as being very important. The CAPTURE demonstrations have pointed out the impossibility of implementing some measures, and the delays that occur when implementing others. It was found that there was little correlation of success in implementation with city type or measure type, and the complexity of the implementation procedure made little difference with two or more actors likely to lead to problems. The main success criteria were successful public consultation and participation, reliable financing, and supportive government and institutions.

Physical measures can have an effect. They need to be on a large scale to show modal split benefits.

There are some results that can be very interesting to WP4, and could be introduced in a module of this key topic.

## **Materials**

The final report has not yet been published, and is waiting for approval from the Commission.

Other available materials are:

- Case study summaries: overview of demonstrations of physical measures in the six cities.
- Final summary report: short overview of the whole project .
- Article: overview of the project for outsiders.

A didactic oriented presentation of the results and case studies should be prepared out of the written materials including illustrative graphics.

## 2.5 Results of the CARISMA project

**CARISMA-Transport:** Concerted Action foR the Interconnection of transport Systems

**CARISMA-Telematics** Co-ordinated Architectures foR the Interconnection of networks for Sustainable Mobility with telematics Applications is an Accompanying Measure of the Transport sector of the Telematics Applications Programme.

CARISMA-Transport focus the promotion of improved interconnections and interoperability between local and long-distance passenger networks for all transport modes by:

- Researching ways of overcoming barriers to transport decision-making
- Advising on the location, planning, design, implementation, management and operation of transport interchanges; and
- Identifying roles for intelligent transport (ITS)- or transport telematics- in enhancing transport intermodality.

The project identified a number of projects designed to promote the effective integration of European transport networks, to review their results and make recommendations for the future. Lille (France), Frankfurt (Germany), Budapest (Hungary), Trieste (Italy) and London (UK).

CARISMA-Telematics is an evaluation of how seven European cities/regions are adopting transport telematics in the management of their transport systems. It reviews the technical, institutional, political and financial aspects of telematics deployment, primarily as it affects road and public transport. The project looked at trials and demonstrations of new telematics applications, and also evaluated cases where the technology is sufficiently established to justify full-scale deployment. The conclusions of the project illustrate clearly the great potential that telematics offer cities and regions at the start of the 21<sup>st</sup> century.

Only an information pack about the CARISMA-Transport project was available from the Co-ordinators, as the final report has not yet been published. The Final Report for the CARISMA-Telematics is downloadable from CORDIS database.

Professionals participating in the project have been considered as experts in the topic and the sites visited by the CARISMA-Transport team included as Study sites.

No leading educational institutes are included between CARISMA-Transport partners  
POLIS maintains a website where information about CARISMA is to be found.

### Results of the project

CARISMA-Telematics

On their own, transport telematics and intelligent transport systems will not solve the increasing problems of traffic congestion and the resultant effects which many cities

and regions in Europe are experiencing. Technology can hold part of the answer but it is critical that transport telematics be deployed as part of an integrated transport strategy to obtain the maximum benefits.

In metropolitan areas the challenge is to develop transport measures and ITS in such a way that improved traffic capacity and effectiveness in using the road network does not simply generate additional volumes of private car traffic. Instead, telematics needs to supply sustainable solutions, for example to allow present demand to be accommodated whilst giving increased priority to public transport vehicles and releasing roadspace for other uses.

### **Materials**

Only an information pack about the CARISMA-Transport project was available from the Co-ordinators, as the final report has not yet been published. The Final Report for the CARISMA-Telematics is downloadable from CORDIS database.

- Brochure: short overview of the CARISMA-Transport project
- Deliverables: good for self-learning

The CARISMA-Transport final report could be very interesting for the PORTAL objectives as it revises the results of several projects concerning the Key-topic.

Because the focus has not been very much towards the non-technical aspects of the use of the technology, covering political support, public awareness, consensus formation, etc., the CARISMA-Telematics final deliverable can be used as a very useful material for self-learning providing a good overview of the topic.

## **2.6 Results of the EU-SPIRIT project**

**EU-SPIRIT:** European system for passenger services with intermodal reservation, information and ticketing

The EU-Spirit project has developed a customer-friendly, Internet-based system offering information on door-to-door public transport across Europe. Customer-friendly information is crucial to ensure a competitive edge to public transport and reduce dependency on private vehicles.

The concept of EU-Spirit is that public transport users should be able to plan door-to-door for an inter-regional journey, using the Internet or traditional information systems, and having information at hand on routes and services, as if it all comes from a single source. This is expected to increase the use of public transport, making it easier to examine competing offers, make travelling itself more user-friendly, and opening the way to real-time applications in the near future.

There is a corresponding benefit to providers of public transport, who should have the chance to improve their image and attract new customers. Other service providers in the travel sphere will have an easy and flexible channel to the customer and the prospect of growth in demand.

It is expected that this would add significant value to public transport services, long distance as well as regional. Thus, through market expansion, EU-Spirit would

contribute to sustaining the activity of industry in this domain, including for the provision of information network software.

From the viewpoint of EU policy, these features underline European ideas of global mobility, which seek to encourage a shift from individual motorised travel to public transport modes, and contribute to the policy of sustainable mobility.

Although the project is not yet finished, until now, four newsletters, two public and several presentations have been developed.

The current composition of the EU-SPIRIT consortium includes Travel Planners, Industry and System Developers and Researchers and Consultants from Sweden to Italy through Denmark, Germany and Austria. The experts of the project come from the partners companies. Two universities took part as Leading Educational Institutions.

The interest of the project is the system architecture itself which can be used by internet. No study visits are recommended for this project.

EU-SPIRIT supports it's own website [www.eu-spirit.org](http://www.eu-spirit.org) providing information about the project where newsletters are available. More information and downloadable deliverables are to found in the CORDIS database.

### **Results of the project**

First tests have shown that all the planned functionality can be demonstrated successfully as regards the door-to-door travel information and an extension to further demonstration sites can be done without difficulty.

The concept is being demonstrated at six European sites, specifically on five links between the sites.

Beta tests show, that, through the EU-Spirit travel planning ring, different systems can be connected and are able to communicate with each other. Thus, the developments realised by EU-SPIRIT make communication in the market of public transport within Europe easier and more effective.

The concept has been developed on a European level, with parties from many different countries involved which had developed their own travel planning systems. It now offers an open concept, which provides the opportunity for new parties to join the travel planning ring.

### **Materials**

Although the project is not yet finished, until now, four newsletters, two public deliverables (Customer's needs and market report and Specification document) and several presentations have been developed inside EU-SPIRIT. Some deliverables will not be public because of being an IST project with technological developments.

- Brochure: very short introduction to the project. Not very useful.
- Deliverables: these may be too complex for outsiders
- Presentations: "ppt" presentations of the project. Not very useful for PORTAL aims

It could be interesting to introduce EU\_SPIRIT and the utility of ITS to improve inter-modal travel information in order to promote the use of public transport in long-

distance and local trips, but a detailed and systematic explanation of the system would be outside this Key-topic.

## 2.7 Results of the GUIDE project

**GUIDE** : Group for Urban Interchanges, Development and Evaluation

It was operated through surveys and case studies drawn from a number of major European cities including Amsterdam, Athens, Birmingham, London, Manchester, Lyon, Paris, Toulouse, Uppsala and Utrecht.

It's major objectives concerning urban interchange were to

- identify and summarise existing European research and practice;
- establish a framework for collaborative research amongst major European public transport operators on issues concerned with improving passenger interchange;
- assess best practice in the functional specification and design of interchanges by means of a peer group review of selected case studies;
- disseminate the outputs.

The project finished with five public deliverables including a final report that can be ordered at the project website. At the same site a brochure and presentation by some of the experts are available at the site.

The GUIDE group includes researchers and public transport planners and operators, providing experts in the field of public transport interchanges.

GUIDE case studies have been proposed as study sites including major European cities: Athens, Birmingham, London, Manchester, Paris, Stockholm and Utrecht.

The interchanges website offers information and downloadable material of GUIDE, MIMIC and PIRATE projects at: [www.interchanges.co.uk](http://www.interchanges.co.uk)

### Results of the project

The most consistent lesson from the research of the GUIDE group is that improvements to interchanges requires a holistic view of the experience provided to interchanging passengers. An important corollary is that an **organisation and management** structure needs to be in place that is capable of examining interchange aspects of the public transport 'offer' that is unconstrained by organisational boundaries.

Both Paris and London offer examples of network-wide organisational structures operating at these two levels (Network Level Committees in Paris and London Interchange Network).

These arrangements encourage a multidisciplinary approach which brings together both the planner's strategic view of the place of interchange activity within the network as a whole, as well as the implementation skills and practical experience of operators.

One of the most significant initiatives that can thus be taken at a network wide level is the promotion of liaison and coordination arrangements at the location specific level. It is evident that local managers are often able to identify opportunities to improve the interchange experience for passengers, but may feel inhibited from doing so because it may require crossing organisational boundaries. General encouragement and the establishment of 'model' local organisations (such as the Paris Site Committees) will go a long way to reduce such inhibitions.

### **Materials**

The project finished with six deliverables (D1: Inception Report, not available, D2: Literature Review, D3i: Surveys of current practice, D3ii: Surveys of Passenger Perceptions and D4: Report on case studies) including a Final report (D5). Dissemination material includes a brochure and a presentation (GUIDE: Identifying good and bad practice in passenger transport interchange).

- Brochure: short overview of the whole project
- Deliverables: except D5 which is a summary of all others, are too long and exhaustive as didactic material. The literature review can be useful as a bibliography for professionals interested in Interchanges.
- Presentation: gives a good overview of the conclusions of the project and could be useful for self-learning

A more friendly presentation of the results and the case studies should be provided as the written material is absolutely not didactically orientated. It should include pictures, functional diagrams and plans of the different interchanges. That material could be orientated for different users, structuring the results in different levels as done in Part 1, 2 and 3 of Final Report.

## 2.8 Results of the HSR-COMET project

**HSR-COMET:** Intermodal connections of HSR terminals in metropolitan areas.

The project focuses on high-speed railway (HSR) station interconnections with other transport modes. The functional concept of the HSR system implies high-capacity transport between origin–destination poles, which are usually large metropolitan centres of great economic and social importance on both national and international levels. The efficiency of such a system, which produces massive arrivals of users at fixed intervals, depends on its ability to offer passengers a complementary system, no less efficient than HSR itself, making possible the integration and interconnection with the other transport modes needed to reach the final destination.

The Project carried out an analysis of HRS demand, extended to the present time and to medium- and long-term forecast scenarios, aimed particularly at identifying the specific features of the users' demand for modal interconnection at HSR terminals.

HSR-COMET finished with the publication of a final report by the Office for Official Publications of the European Communities in 1998.

The partners are HSR operators or HSR infrastructure concessionaires and experienced consultants in Italy, France and Germany. The experts included representatives of those companies.

The three case studies are recommended for study visits being representative of the different typologies described by the project, represent a significant sample of HSR terminals in metropolitan areas because of their structural characteristics.

More information and a final summary report can be found in CORDIS.

### **Results of the project**

The efficiency of a high-speed railway system is closely connected with service quality—meaning frequency, trip time, comfort, reliability and a range of related services on board and at the station. Service supply must be modelled on the requirements of the demand, differentiated according to specific activity and interests, income level and willingness to spend.

HSR services at terminals—refreshments, shops, information—should be conceived for the average stays in the terminal of less than half an hour, which means that HSR terminals require high-quality basic services rather than a wide variety of different services. On-board services are indispensable since cruise time is usually two or three hours.

The reduction of travel time, which is what HSR is all about, begins with a vision of a trip as a door-to-door chain. Modal interconnection to and from the HSR terminal is an aspect that assumes a relevant importance with respect to comfort, generally speaking, and total trip length.

The HSR supply must therefore be integrated with the transport services of the entire metropolitan area, which can be done through multiple technical-organisational

solutions. These include: management of the HSR service, management of the railway station containing the HSR service, management of the local public transport and local authorities.

Regarding the results made available by the Systeminal model (largely quantitative), according to the type of metropolitan area involved, there are supply models (specifically calibrated on data from case studies in Rome, Frankfurt and Marseille) that can be applied to similar situations elsewhere. The use of public transport for HSR terminal access/egress should be boosted through a supply that responds more closely to the wishes of the users of this service. At present the means most used to reach the terminal is the private car.

A kiss-and-ride system for HSR terminals, with short-term parking spaces, or a park-and-ride system could be a good compromise between the comfort of the private car and welfare of the city. From the point of view of comfort, taxi service is important, as it provides a comfortable public service, at appropriately high cost, and is less harmful for the public welfare.

There is a potential market for a new public transport mode expressly dedicated to HSR users (a special taxi service or minibus).

Within a HSR station a series of interventions are foreseen to move the passenger along more rapidly and more pleasantly, including clear and visible signs, easy ticketing, baggage service and dedicated itineraries. Co-ordination of the various types of computerised information is to be encouraged —joint ticketing, reservations (train + taxi), timetables that permit making connections.

The user wants an accessible service with as few interfaces as possible, in that his concept of his trip extends to his final destination: this is where all the various components that come together to "produce" as complex a service as door-to-door transport must make a joint commitment if they are to provide effectively an innovative, customer-oriented service.

The innovation represented by HSR provides an opportunity to regenerate degraded urban areas and to improve service levels in transport systems.

### **Materials**

The project finished with the publication of a final report by the Office for Official Publications of the European Communities in 1998.

- Handbook: extended overview of the whole project. Useful, but too long for didactic purposes

The conclusions of the project could be used for a module. A summary of the methodology could be also introduced.

## 2.9 Results of the INTERCEPT project

**INTERCEPT :** Intermodal Concepts in European Passenger Transport

The overall mission for the project is to “Encourage by example the implementation of intermodal door-to-door transport solutions in European cities, to INTERCEPT car usage as close as possible to its source.” Specific objectives of the project are:

- to establish a tool-box of best practice in city intermodal transport and to propose policy benchmarks.
- to provide demonstrations of the intermodal tool-box through common European demonstrations.
- through an original approach to intermodality demonstration (focused upon key interfaces in the chain), to highlight the necessary success criteria for intermodal transport solutions, including an examination of user needs and potential barriers to implementation.
- to promote a partnership between the public and industrial sectors that is able to deliver standardised tool-box deployment that is customised and fine-tuned to take account of varied needs across the common market.
- to utilise this partnership to exploit pilot results in the demonstration cities and elsewhere in Europe using common materials to enable suppliers to promote the INTERCEPT tool-box.

There are not many materials available.

The experts are professionals from industry and consultancy organisations.

The study sites are cities where the experts implement intermodal door-to-door transport solutions.

No leading educational institutes participated in the project.

This project has no website. Some useful information is to be found in the CORDIS-database.

### **Results of the project**

The results of the project are not yet available. The project is not finished.

### **Materials**

There are not many available materials. The deliverables and final report are not available.

The materials are available:

- Article: summary of the project with examples for outsiders.
- Brochure: short overview of the whole project.

These materials are not interesting for WP4.

## 2.10 Results of the INTRAMUROS project

**INTRAMUROS :** Integrated urban transport concepts and systems

The main goal of the INTRAMUROS project was the definition of a flexible methodology to help the Urban Transport actors in the process of assessment of the level of integration in an Urban Transport System.

The main result of INTRAMUROS is a methodology defined to help the Urban Transport actors -public transport operators, traffic authorities, etc.- when assessing their level of integration within an overall Urban Transport System. The power and flexibility of this methodology enables the quantitative comparison of the different alternatives -either technology or policy related- the user can apply in order to improve the situation of transport in its area of jurisdiction. In this way, a transport authority or operator can, before taking an action, get a quantitative assessment from INTRAMUROS on how this action will affect the current scenario -will it be improved? Will this action improve some aspects of the scenario at the price of degrading others? Etc.-.

The project finished with the publication of a final report by the Office for Official Publications of the European Communities in 1999.

INTRAMUROS has had a Pan-European scope, taking a cross-section sample from different EU countries. In each of these countries, one city or region has taken the responsibility for piloting the project activities. The experts in the different areas are from the partners staff, with two universities (University of North London and Centre d'etudes et de Recherches de Toulouse) taking part.

The demo sites were Athens (Greece), Brescia (Italy), Kuusankoski (Finland), London (United Kingdom), Toulouse (France) and Valencia (Spain). They were selected to participate because of their experience in integration of transport means and actors, and also because of the desire of these actors to anticipate on the impacts on users and improve the expected results. It was considered that visits to those demo sites has no sense in order to understand the functionality of the assessment methodology of the project, so that no recommendations for study visits are made.

Although the set up of an INTRAMUROS website was planned for the dissemination of the project, only a reference to the project in CORDIS and EXTRA was found.

### **Results of the project**

The project has produced and site-tested a multi-criteria decision support tool, which helps UTS organisations identify areas where greater co-operation is possible. The current situation in a city is assessed against best and worst case scenarios according to selected criteria and objectives.

A survey together with investigations at six test sites showed that:

- most organisations perceive the need for co-operation, and some are installing institutional arrangements and common procedures as a result;
- competition between operators often acts as a brake on technical and financial integration;
- the efficiency benefits of public-private partnerships have been demonstrated.

The project concluded that there is no single organisational, financial and legal structure that will best encourage transport integration for all the different types and sizes of urban areas in Europe. An activity-based organisation, where actors have powers extending over different transport modes and across wide geographic areas, may be regarded as the most likely to induce better transport integration. However, such a structure cannot be imposed abruptly, and this major transition may not be as sensible as smaller modifications to existing structures.

### **Materials**

The project finished with the publication of a final report by the Office for Official Publications of the European Communities in 1999.

- Handbook: extended overview of the project with no very useful information for this K-topic.

The conclusions of the project could be used to be introduced in a module, but a detailed explanation of the assessment method would be outside the topic.

## **2.11 Results of the MIMIC project**

**MIMIC** : Mobility, Intermodality and Interchanges

The project goal is to study barriers to intermodality, with 'barriers' defined as all those interchange-specific factors that influence travellers to choose single-mode (generally car-based) options instead of intermodal ones. The project aims to breakdown barriers according to how serious they are and whether they are relative or absolute, and the population to which they apply.

This notion directs the project towards an objective assessment of interchanges, backed up by surveys and models to find out proportions of people affected by barriers and perceived importance of barriers. Barriers are analysed from the supply side as well, through interviews with planners, designers, transport operators, local authorities.

MIMIC's scope extends outside the interchange itself, involving feeding modes and characteristics of the surrounding areas. Moreover, MIMIC assesses the relative role and importance of the interchange site in intermodal journeys and quantifies demand responses when changes occur at the interchange site (e.g. opening of shops, better surveillance).

The project finished with four public deliverables including a final report. A CD-Rom, edited by Ingegneria dei Trasporti contains D2A: literature review, D2B: methodological framework, and D3: sites' results. Different brochures and presentations of the project are found in the project websites, CORDIS and ELTIS databases.

The MIMIC team includes public authorities, universities and transport research organisations, providing experts in the field of public transport interchanges.

We recommend the case studies in five European cities for study visits as covering the scope of different urban interchanges where the four study areas of the project can be

observed: 1) Door-to-door factors and demand responses, 2) Catchment area, 3) Types of barriers, 4) Implementing cost-effective local solutions.

Four universities from Austria, Denmark, United Kingdom and Poland took part in the project.

The interchanges website offers information and downloadable material from GUIDE, MIMIC and PIRATE projects at: [www.interchanges.co.uk](http://www.interchanges.co.uk). More information about the project can be found in CORDIS and ELTIS databases.

### **Results of the project**

Even if surveying and modelling findings differed from site to site, many common barriers were identified. While service operators appear more concerned about management integration issues, users are mainly concerned about information (both pre-trip and on-trip information), waste of time (queues) and fear of crime (both physical attack and thefts). The disabled, in particular, often face significant problems when accessing stations and vehicles, and generally no special information is available to them.

The most serious barriers to intermodality proved to be ‘difficult access to vehicles’ and ‘difficult access to information’. It is mainly people with vision and hearing problems who are affected by difficult access to information. Brochures and signs in Braille are rarely available, as well as staff who know sign language.

The most important barrier that emerged from interviews with service operators is ‘lack of integration and co-ordination’. Poorly integrated management of interchanges with different bodies responsible for different modes and areas is a serious barrier to use. Lack of integration and co-ordination leads to several problems, including lack of timetable co-ordination between modes and lack of an integrated passenger information system.

The MIMIC research showed that travellers give great importance to the interchange when they choose whether to make intermodal trips. The transport interchange is a crucial part of the public transport system, and a well-designed and well-managed interchange can do much to reduce congestion, environmental pollution, and regeneration thereby achieving the objective of sustainable mobility.

However, there are circumstances (e.g. consequences of urban sprawl or competition with better roads) where land-use and transport network characteristics of a city can substantially influence travellers’ intermodal choices, much more than barriers at the interchange. In all these cases removing barriers is a necessary condition for a successful interchange, but not a sufficient one.

### **Materials**

The project finished with four public deliverables including a final report. A CD-Rom, edited by Ingegneria dei Trasporti contains D2A: literature review, D2B: methodological framework, and D3: sites' results. Different brochures and presentations of the project are found in the project websites, CORDIS and ELTIS databases.

- Brochures: short overview of the whole project
- CDROM: includes three deliverables. (we could not yet have a look at it, as it was just ordered to IT, more information will be available in some days)

- Final Report: contains interesting information for courses that should be presented in a didactic format.
- Papers: useful for self-learning

Although the MIMIC materials are far more accessible than those from other projects, it could still be summarised and adjusted to the different users. It should be considered that graphic information (plans, pictures and sketches) is very useful for understanding the problems detected in the different interchanges and its surroundings.

## 2.12 Results of the OPIUM project

**OPIUM** : Operational Project for Integrated Urban Management

Just a reference in CORDIS was found and it was considered not to meet the interests of the Key-Topic.

## 2.13 Results of the project PIRATE project

**PIRATE** : Promoting Interchange Rationale, Accessibility & Transfer

The objective of PIRATE is to enable more efficient and successful development of public transport interchanges by developing and testing two complementary research approaches, one being current state of the art, the other being new, to:

- Discover what is important for all groups of stakeholders in public transport interchanges;
- Involve the public in the planning and design processes;
- Convince the providers of public transport and interchanges to improve their products and services and to be truly market driven;
- Bridge the gap between market research and public consultation.

The materials available provide step-by-step guidance on how to conduct the two research approaches. The interchange characteristics found to be important across all sites are presented as an illustrated checklist with advice for good practice based on the research findings, site visits and partner experiences.

The PIRATE consortium consisted of ten partners in six European countries. Four partners were public transport authorities, four were transport research organisations, and two supplying services to public transport.

The sites for study visits are transport interchanges in European countries where the research has been conducted. There are two leading educational institutes: Lund University (SE) and the University of Wuppertal (DE).

The website is [www.interchanges.co.uk](http://www.interchanges.co.uk) .

### **Results of project**

The studies reveal that for travellers the most important features of an interchange relate to park and ride issues and general security and safety considerations. However, on a scale of 1 - 5 (5 being most important) 60 out of 66 characteristics are rated higher than 3.5. There are significant differences between the priorities of the different groups; experts being highly focused on some aspects that are not always of the highest priority to users whilst having 'blind spots' with regard to the importance of other aspects. The people who actually work in interchanges rate safety, comfort and information issues highly. The least important aspects are luggage handling and special services. Shopping is not given high priority, surprisingly.

Toilets generally perform worst of all, but the expert group agrees with the assessment of users. In general there is much agreement between the groups on priorities and current performance. At an overall level, it is noted that there are many poor performers, although the performance of the most important aspects tends to be better than that of the less important. There are case study sites where the assessment of users is significantly higher for specific aspects than at others.

The new methodology, termed the 'Planning Approach' and discussed in detail in the deliverable, revealed that user and non-user needs for new interchanges at specific sites (Doncaster, Adwick, Moncloa and Antwerp) were significantly different to those of the experts, the latter rating location and organisational issues of greatest importance. Security, safety, comfort and service frequency were considered overriding by users and nonusers. User needs were also highly differentiated according to the site involved.

The results of the work form a handbook of guidelines for architects, engineers, planners and policy-makers. The guidelines give advice on:

- good and bad practice at PIRATE case study sites;
- the improvements needed by users and non-users;
- the implications of this for Interchanges meet the needs of users, and
- methods for planning and developing Interchanges.

These are many features within a public transport interchange, i.e. the place where interchange between modes of transport takes place. These need to be properly considered if the interchange is to function successfully and achieve its full potential.

The conclusions of the project could be used for a module. A summary of the methodology could be also introduced.

### **Materials**

There are available: handbook, syllabus (framework, results, recommendations) and papers given to conference.

- Handbook: it include the results of the project for architects, engineers, planners and policy-markers. Useful for self-learning.
- Papers: overview of the project with examples for non-participants.

The materials are user-friendly including photographs which are very didactic for teachers and self-learning.

## **2.14 Results of the SWITCH project**

**SWITCH** : Sustainable, Workable, Intermodal Transport Choices

The SWITCH project is based on promoting sustainability through the development of integrated intermodal transport. SWITCH examines the effectiveness of the demonstration projects in terms of sustainability and their impact on encouraging a positive modal shift in favour of public transport.

The demonstration projects are designed to eliminate barriers to intermodality and to encourage an increase in the use of public transport modes. It is anticipated that the impact of the SWITCH applications will facilitate a positive modal shift in favour of sustainable public transport modes, together with significant environmental, social, and financial impacts and an improvement in the overall service quality of the transport system. In addition, the project aims to evaluate secondary impacts with relation to economic and socio-economic aspects.

SWITCH recognises that intermodality is an essential component in the design and implementation of integrated transport systems. It is important to incorporate intermodal strategies within this context in order to ensure an effective and integrated transport policy development process. In the case of SWITCH, it is anticipated that a truly intermodal passenger transport system will be developed which will effectively increase existing levels of patronage and attract non-users or car drivers, together with an anticipated increase in labour movement and social inclusion.

Up to eight deliverables are planned for the SWITCH project. The summaries are (or will be) public at the project website. For lack of the publication of the Final Report, the whole documents of D4 and D6 were available from TTR. The dissemination material of PORTAL consists basically in five newsletters, and several leaflets. User needs and Park and Ride presentations have been provided by one of the partners.

The Consortium consists of public transport operators and planners, universities and transport research organisations involving five European cities where the SWITCH measures have been implemented. Those partners provide the project with their experts in the topic

Four case studies from the demonstration sites have been included as recommended visits with the students.

The Istituto Universitario di Architettura di Venezia holds a project website at <http://www.iuav.unive.it/citiesonwater/switch>

### **Results of the project**

By the moment the results of this project are not available.

### **Materials**

Two deliverables have been made public for lack of the publication of the Final Report that will be available at the project website. The dissemination material of PORTAL consists basically in five newsletters, and several leaflets. User needs and Park and Ride presentations have been provided by one of the partners.

- Leaflets: not useful
- Newsletters: Except the last one that gives a brief overview of the case studies they are not useful for learning
- Deliverables: useful for self-learning

As in other project the material should be worked out to adapt it to the different users and modules.

### 3. RECOMMENDATIONS FOR NEW MODULES

Although quite a lot of useful information related to the Key-topic is contained in the projects and can be used for the elaboration of didactic materials, it is usually not presented in the right format for teaching purposes.

A general package about "Integration of Transport Chains" could be prepared, touching the different levels and issues involved in the topic. Further materials to go deep into those subtopics which are not covered by other Key-topics in PORTAL (Transport and Land use planning is already met in KT 1 and 9), and studied in specific projects may be developed.

The general package could be structured in modules oriented to different users.

- **Policy and Institutional issues.**
- **Management, and operational issues.**
- **Planning, Design and Implementation.**

These could be developed for politicians, transport operators and technicians. The projects contain quite a lot of information and good practice guides to develop specific modules about design and implementation of physical measures in Interchanges and its surroundings to eliminate barriers to the use of intermodal public transport.

There is a generalised lack of graphical information about the case studies, that could be very useful for didactic purposes, in order to show the application of the concepts. It would be important to include new photographs, plans and functional diagrams, as it is often the most easy material to understand, and a lot of written descriptions of the different interchanges can be substituted by expressive images.

## 4. FINAL CONCLUSIONS

Although a lot of interesting material has been found in the projects concerning *Integrated Transport Chains*, the deliverables have not been didactically oriented. The WP4 should mostly use the concepts and examples to elaborate new materials for teachers and students, but not rely so much on the existent ones that were developed with different aims.

Some projects focus on the same topics with different research methodologies, producing lots of deliverables and reports on case studies. As the conclusions are usually convergent, it could be interesting to merge them in very clear and concise concepts to be used together with the most representative case studies where those concepts can be clearly understood, to elaborate easy to use materials.

PORTAL could be used to disseminate the projects and the existing materials, as the access to them has been found to be quite difficult. In many cases there are still lack of information about the specialisation of the partners, and missing reports for projects that are either not finished or waiting for approval.

In order to be considered in further research projects, it can be concluded that there is a great need to homogenise all the information about the projects, from organisational aspects to research results. It is often difficult to get to know the roles of the partners and fields of specialisation. About the presentation of research data, it would be very useful to use similar parameters allowing comparisons from different case studies.