Infomobility and public transport: the European experience

POLITE Technical Publication

POLICY LEARNING IN INFORMATION TECHNOLOGIES
FOR PUBLIC TRANSPORT ENHANCEMENT

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Introduction – Lead Partner
Calabria Regional Administration

The Cooperation service of the Calabria Region operates within the Fifth Sector "Cooperazione, internazionalizzazione e Politiche di Sviluppo Euro-Mediterranee" of the Department for EU Special Programs, Euro-Mediterranean Policies, Internationalization, Cooperation among nations and Policies for peace.

Since 1994, as a leading or operational partner, the Calabria Region has been promoting and joining in with European territorial cooperation projects, intended to develop international relationships between public and private sectors and to share best practices for building up action plans for local and regional development.

The mission of the department is to promote economic, social and cultural development through a successful exchange of experiences financed by the European territorial cooperation. In collaboration with the Fourth Sector "Trasporti Pubblici Locali"

within the INTERREG IVC program, the Calabria Region promotes POLITE - Policy Learning in Information Technologies for Public Transport Enhancement.
After three years of hard work, the project has resulted in increased consciousness of European infomobility services, and the implementation plans are an effective instrument of development available for public administrations.

The local implementation plan is at the heart of the regional plan for ITS, focused on collaboration among different public sectors, the university and the private sector.

This network between public and private sectors has been crucial in promoting integrated development of transport systems, in order to improve and enhance public services offered by the Calabria Region.

Calabria Regional Administration (IT)
Lead partner

Province of Ferrara (IT)

Polis (BE)

Reading Borough Council (UK)

Institute of Logistics and Warehousing (ILIM) (PL)

Transport Research Centre (CDV) (CZ)

Latvian Transport Development and Education Association (LaTDEA) (LV)

Contents

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Introduction

The POLITE project is co-funded by the European Commission's INTERREG IVC programme and focuses on policy learning in the field of ICT for Public Transport. It is a three year project running from January 2012 to December 2014 with a budget of €1,3m.

Mobility issues are increasingly important in today's fast-growing urban centres all over the world, but particularly in the European Union where 75% of inhabitants live in urban areas.

Developments in Information and Communication Technology (ICT) platforms and Intelligent Transport Systems (ITS) have brought new possibilities to address mobility issues. To help ensure the coordinated and coherent deployment of ITS systems and services throughout the EU the EC published Directive 2010/40 (July 2010).

Against this technology and EU policy backdrop many European cities and metropolitan areas are addressing their problems with an integrated approach which includes technology based solutions.

At a local level, Public Transport policies have been developed providing many different services for citizens, such as "infomobility", which provides travellers with information on Public Transport services. However, there are significant variations in the delivery of these services across Europe by local and regional authorities and there is significant potential for the improvement in services by raising awareness of existing Good Practices.

POLITE aims to enhance the use of Public Transport by increasing the awareness of a wide range of innovative ICT / ITS based measures, and encouraging the effective transfer of these measures.

The POLITE partnership consists of 7 partners led by the Calabria Region (IT) and including the good practice sites, the Province of Ferrara (IT) and Reading Borough Council (UK), and transfer sites, ILIM (PL), CDV (CZ) and LaTDEA (LV). POLIS (BE) is the final partner focusing on the wider dissemination of results.

The level of experience and maturity of the POLITE partners complement each other, all driven by the need for cooperation to capitalize, search and transfer relevant best practices in a policy improvement perspective.

POLITE was born with the aim to improve knowledge in the field of policies concerning the development and management of traveller's information systems. The project was instigated by the interest of the Calabrian Regional Administration (CRA) in developing Intelligent Transport Systems (ITS) on its territory to improve safety, security and efficiency of the regional transport system. This strong policy interest

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REGIONS OF EUROPE SHARING SOLUTIONS

European Union
European Regional Development Fund

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in infomobility has been found to be common to the different partners at different geographic levels (national, regional, local) in different European areas. In addition, the POLITE partners share the strong will to adopt new and innovative infomobility policies to improve Public Transport.

POLITE therefore addresses infomobility, specifically the problem of providing travellers with adequate and complete information on the Public Transport services available in a region at different geographic levels. POLITE promotes public actions to enhance the awareness of travellers' choice and to increase the use of Public Transport services.

In recent years, the development of ITS has grown significantly and the EC published Directive 2010/40 (July 2010) to ensure the coordinated and coherent deployment of interoperable ITS throughout the EU. Consistent with the EC goals POLITE:
▷ Helps define the specifications for ITS deployment in terms of geographic continuity, technological upgrades and joint standards.
▷ Helps public authorities in regulating the market of ITS, while stimulating the information society.

▷ Fosters the development of the e-citizen concept.
▷ Promotes co-modality, i.e. the efficient use of different modes of transport on their own and in combinations, resulting in an optimal use of transport resources.
▷ Helps the roll out of ICT of solutions in Public Transport across Europe as quickly and efficiently as possible.

POLITE targets the adoption of ICT in Public Transport systems as key leverage to:
▷ Increase citizen's quality of life by allowing them to dynamically manage their transport choices.
▷ Reduce pollution and transport negative externalities by making PT more efficient, attractive and easy to use.

Different regions and cities (especially in the UK) provide experiences in this sector, which can benefit greatly the many others who are looking to implement such systems. POLITE therefore aims to make available to all key experiences relating to knowledge of the existing systems, technical solutions available, costs and benefits that such systems can provide in terms of transport efficiency, and user satisfaction.
POLITE therefore promotes the exchange,

discussion and transfer of experiences, improvement on policies, knowledge and Good Practices on infomobility. This exchange is focused on policy and planning levers and implemented by advanced as well as less experienced sites. Some of them can be considered as "Good Practice" sites, others as "transfer" sites.
POLITE bases its approach on the study of EU Good Practices for developing tools to support policy making, including:
▷ Training sessions, workshops, round tables, and policy-oriented events, in which the project administrations and others improve their technical, policy skills and knowledge with the goal of addressing policy developments.
▷ Development of publications and training products, which will record the knowledge gained during the project and which are usable by further public administrations.

The project also contributes to:
▷ Increase the capacity of public administrations' staff to implement more effective and efficient policy levers and planning approaches to traveller information systems.
▷ Directly improve national, regional and local policies.

POLITE helps the involved public administrations to develop greener, safer, more accessible, more fluid and intelligent/flexible transport systems through ICT. This then brings together the core issues of improved public services, more rational transport systems and related improved environmental conditions, technological innovation and diffusion within the local and regional communities.

The project focuses on sharing existing solutions at a European level with a multilevel approach (national, regional, local), by exchanging experiences and by analysing the transferability of the implemented solutions.

POLITE stimulates the creation of a common vision of the policies and strategies of National, Regional and Local Authorities on Public Transport information systems, while also supporting the partners in developing targeted implementation plans for infomobility.

POLITE Goals

1

To **ENHANCE ATTRACTIVENESS** and thus use **OF PUBLIC TRANSPORT**, thanks to better travel information.

2

To **SUPPORT CO-MODALITY**, an efficient use of various modes separately and in synergy, for optimizing Public Transport options.

3

To **ASSIST PUBLIC SECTOR** and its decision makers by PROVIDING KNOWLEDGE and skills related to policies for info-mobility measures deployment.

4

To focus attention on various already existing and **PROVEN SOLUTIONS IN EUROPE**, as Good Practices.

5

To stimulate coordinated implementation of **INTEROPERABLE ITS FOR PUBLIC TRANSPORT** across borders.

POLITE Good Practices Collection

The INTERREG IVC definition of a Good Practice (GP) is "an initiative which has already proved successful (where the GP has already provided tangible and measurable results in achieving a specific objective) and which has the potential to be transferred to a different geographic area."

Initially the POLITE consortium identified a comprehensive list of 10 groups of measures covering 54 more detailed sub-measures which the partners currently have, or would like to see implemented in the future. The 10 groups focus on:

1. Public Transport legislation and regulation.
2. Public Transport operation reorganisation into multimodal systems.
3. Cooperation among administrations.
4. ITS technical standardisation for interoperability.
5. Infrastructural measures.
6. Innovative ICT for Public Transport.
7. Modelling tools and measures.
8. Public Transport and traffic management measures.
9. Public Transport information measures.
10. Advanced Public Transport ticketing.

Each project partner then identified a long list of potential GPs which was then reduced to a shortlist of 5 or 6 GPs to follow up with a questionnaire which best addressed the measures. From this process 32 GPs (later extended to 34) were identified and of these,6 GPs were further selected for site visits at which a more detailed questionnaire was completed.

LaTDEA developed a methodology for the identification of which GPs would be best to implement to meet particular policy objectives. Comparative assessment of GPs and choice of the best one are considered as the task of the multi-criteria comparative analysis. As follows from the studies conducted in the project, GPs are compared taking into account the number of measures which comprehensively cover the following objectives of Public Transport (PT):
▷ Improving city attractiveness.
▷ Improving Public Transport services.
▷ Improving Public Transport efficiency.
▷ Increasing the Public Transport mode share.
▷ Decreasing congestion.
▷ Emissions and pollution reduction.

To simplify the analysis the 10 measures were generalised into the following 5 groups and the 34 GPs were assigned to one of the groups for the analysis:

1. Public Transport and/or Multimodal Information Systems.
2. Sustainable Mobility Management Systems.
3. Public Transport Integration.
4. Public Transport Priority Systems.
5. Public Transport Payment Systems.

The above methodology was implemented at a Good Practice Round Table event in Reading and was used by the project partners as an input into which GPs they should identify for transfer as part of their Implementation Plans and which should be used for training. A training workshop was held in Ferrara which focused on 4 of the GPs and a Policy Training event was held in Brno to support the partners in developing their Implementation Plans.
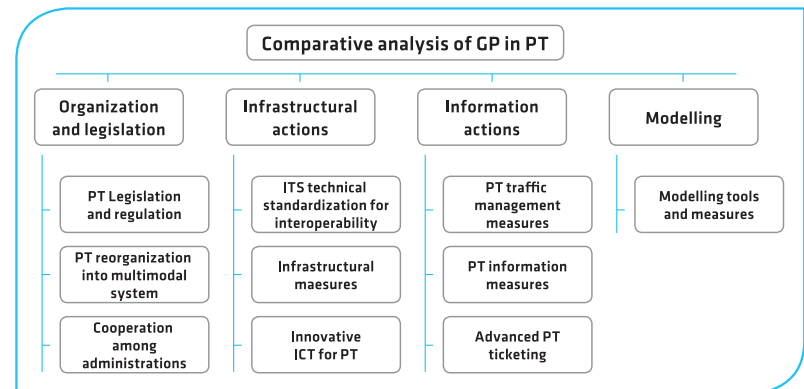
Hierarchical structure of the criteria

Public Transport / Multimodal Information Systems

Introduction
This group covers the provision of information to the travelling public to encourage the use of Public Transport through improved user experience. Examples are Public Transport information systems such as Real Time Passenger Information, using Automatic Vehicle Location systems providing information to roadside infrastructure and mobile devices. Other examples include intermodal journey planning or combinations of functions.

Summary of Good Practices:

Traveller Information / Mobilitami - Italy
Mobilitami is a Sustainable Transport Community. It is an online platform which combines Public Transport data and journey planning with a wide range of travel destinations from sporting events, to retail to leisure etc. By being able to access all of this information in one place it encourages more sustainable patterns of travel which leads to reduced congestion. It

is a technological and innovative platform able to match sustainable mobility demand and supply within the regional territory.

Intermodal infomobility platform and SMS ticketing – Italy
In Genova, the Mobility Agency promotes an SMS ticketing system and an intermodal infomobility platform which provides traffic and travel information (real time and mode-specific), with special services for disabled users.

Open Public Transport Data – United Kingdom
Information dissemination has been a key element of the London system since its inception, through on street bus shelter signs and internet based content and mobile content. Transport for London has very successfully set up an open data service which has enabled 3rd parties to develop mobile apps, delivering real time traveller information and multimodal journey planning efficiently and cost effectively to the public.

At present there are 41 users receiving a live stream of the data direct from TfL's servers, and there are around 35 popular mobile apps developed by third parties. Data includes bus, underground, and rail amongst other services.

Mobile travel information – Denmark
Although priority is granted to Public Transport in Aalborg, delays do still occur and passengers still miss their connections. Uncertainty about departure times and possible problems in reliability prior to and on Public Transport trips are some of the barriers that can discourage potential passengers from using Public Transport. On-board information about delays and connections and access to the same kind of information prior to entering the bus, for example via mobile phones, is expected to lower these barriers and give the traveller "peace of mind".
Aalborg developed two mobile phone applications, including a set of Location Based Services (LBS) for mobile phones

(based on the mobile phone' GPS), making it easier for Public Transport users to plan their journeys in the city. The LBS includes Real Time Passenger Information (RTPI) from 30 nearest bus stops selected from the present GPS position, and a 'Take Me Home' service that gives the user a combined walking and Public Transport trip from their present GPS position to their predefined home address. It achieves this by integrating the GPS position, and saved user information, with the national Journey Planner.

On-board bus travel information – Denmark
On-board information screens have been implemented on 100 city buses at NordjyllandsTrafikselskab (NT - Public Transport Authority of North Denmark). Information on the current journey (eg up-coming bus stops and overall destination) as well as information on connections and traffic information as changes in routes or cancellations will be shown. The information on the flat screens is based on NT's Real

Time Passenger Information system (RTPI). The screens show information on the current trip as the destination for the trip and the three upcoming bus stops. News, weather forecasts and advertisements are shown in between as well as simultaneously with Public Transport information.

Real Time Passenger Information System – Switzerland
By providing real-time-information on the phone, transport operator BERNMOBIL is giving travellers in the Swiss capital a head start. Users download the MEZI – Mobile Echtzeit-Information – application to their mobiles to obtain timetables, up-to-the-minute departure times and updates on delays, deviations and incidents, to ensure a seamless journey experience.

Multimodal Journey planner – Czech Republic
IDOS is a door-to-door journey planner for the Czech Republic and Slovakia. It also provides other cross-border travel connections around Europe by bus and train. Whilst this is considered by the users as a very ordinary service it is very innovative when considered in the context of Europe. It was awarded Europe's best multimodal planner 2012 in the EU's first Smart Mobility Challenge

competition, awarded by ERTICO. The IDOS planner has been designed by the CHAPS company to be user friendly for all users from children to seniors. It was commissioned by the Ministry of Transport several years ago and is now one of the most visited web sites in the Czech Republic with an average monthly usage of over 1,7 million users. The service is continuously being developed and has a high level of information integration of all transport modes including international, national, regional and local levels. The information contains all lines timetables; tariffs/ prices and information for the disabled, in multiple languages. Tickets are also available via electronic sale through IDOS, and Public Transport information is available in Google maps.

Real Time Passenger Information System – Czech Republic
In 2004, Prague Integrated Transport joined the CONNECT project. The main goal of the project was to enhance the quality of Public Transport information provided and to ensure its availability for blind and visually impaired persons also. During the project, a system for monitoring vehicle movement, and two holistic applications MPVnet and MPVdesktop have been implemented.

A system for delay evaluation is connected to the National Time-table System (Celostátní systém o jízdních řádech - CIS JŘ) which enables further extension for any regular Public Transport.

Interactive passenger service in train traffic – Latvia
To satisfy the needs of passengers, an interactive information system has been created. This system allows passengers to manage and plan their trip. Using interactive information services, passengers can, in real time, determine the schedule of the train and find key information, such as duration and distance of the route, ticket prices, discounts, etc. To improve the convenience of purchasing tickets alternative solutions are offered, among them: buying tickets via Internet and mobile phone (SMS). Additional important functions are also offered, such as seat reservations, access to wireless Internet, carriage of bulky luggage (such as bicycles), as well as access to requesting special equipment for passengers with special needs.

Premier Route Bus Corridor Network – United Kingdom
Reading Borough Council implemented

a policy to significantly upgrade the bus services in Reading through the implementation of the Premier Route network. This was a holistic approach including a complete route by route rebranding of bus services (different colours for each route), the introduction of higher capacity, fully accessible vehicles on the most popular routes, a commitment to only making major changes to the bus network once a year, provision of new and additional bus shelters, accessible kerbing to complement the low floor buses and

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a real time passenger information system including roadside and on-bus screens. The approach enabled Reading to reverse a general UK decline in bus use and the branding means that passengers have a strong identification with 'their' bus.

Gestione Informata Mobilita' – G.I.M. – Italy

Implementation of a national project financed from the National Department of Regional Affairs focused on ITS for private and public mobility. The Province of Ferrara together with the Municipality of Ferrara, the Emilia Romagna Region, and other Italian Provinces are implementing a national project financed from the National Department of Regional Affairs focused on ITS on private and public mobility.

The aim of this project is to improve all available ITS systems for both private and public uses.

AMACO Infobus – Traveller Information – Italy

Through the Infomobility APP developed by H2i the user can check the surrounding AMACO bus stops on a Map.

The user can find a location and automatically download the updated information about the position of the nearest bus stops, can interact with the map, through Zoom-in and Zoom-out operations, can check for each route and next stops, and manually recap

a possible itinerary to move from a generic point A to a generic point B of the city.
It is adaptable to all major urban areas as well as the provinces of Calabria, and to all citizens as well as visitors' mobility.

Partner Experience of Transferability – CDV

London – Open Public Transport data - information system in real time – CDV's view.

London, due to its size is fairly unique in

Europe and hence their experiences can be difficult to transfer. The success of this GP could be the fact that there is only one central provider of relevant open data from one data platform which impacts on data quality and provision. Another advantage is the possible use of Public Transport data for road traffic management in general. This information link between individual and Public Transport is very beneficial and necessary for the Czech Republic.

Finding instances of open data and institutions that are providing it, with a goal to monitor capabilities in our country is challenging. The most important aspect is the analysis and comparison of regulation, rules and conditions of open data provision, between the United Kingdom and our country. As a valuable transfer, we can see the legislative framework and policy for deployment of rules for open data usage by potential stakeholders.

Management of data is highly influenced by the data owners; terms and conditions. If the public sector generates data it should work in close cooperation with the private sector to create an operational system providing the ability for an open API interface with already evaluated and validated data. It is important to offer to stakeholders the knowledge of how to deal with all relevant data feeds and how to interpret them. In the case of future procurements, there is still a chance to demand a certain form and content of data, and/or of any other result, to be arisen from contracts initiated by the public sector.

Lessons Learnt
It is important:
▷ To have a legislation background,

search for a legislation background and if necessary, ask for changes. Prepare a unique methodology regarding relevant data.
▷ To define the form and content of public data from the beginning, although the data is not open at the moment – but could be opened later on.
▷ To publish the terms and methodology on data demanded/provided. Consider whether to establish a third party as a neutral manager of the integrated platform that collects, manages and provides data.
▷ To implement a policy for the definition of standards for real time information in Public Transport.
▷ To follow all rules regarding standards, norms and data formats which can provide interoperability with different kind of systems.
▷ At the beginning of the project design it is necessary to understand the needs of travellers to enable the system and all its applications to be designed with respect to this (infrastructure equipment, mobile and web apps, interconnection with other information systems).
▷ During the design phase, particular attention should be paid to API interface creation to enable the opening up of data to other entities for making relevant applications.
▷ During the creation phase an efficient collaboration among state level policy makers, regions, municipalities and companies is important.

Sustainable Mobility Management Systems

Introduction

This group covers systems for public / sustainable fleet management, freight management and network management. These are aimed at improving take up of sustainable modes through reduced journey times, better planning information and improved customer experience. The Good Practices cover a variety of methods including integration of parking and Public Transport, unified cargo management, and personalised Public Transport.

Summary of Good Practices:

Sustainable Mobility Plan (SUMP) in Santander – Spain

The SUMP in Santander relates to Public Transport improvement through a variety of measures including both new technologies and management, and policy decisions. The plan has been developed over the past 5 years but includes measures introduced previously such as intermodal Public Transport as well as more recent measures such as the Public Transport information system using signs and SMS. "SmartSantander" proposes a city-scale experimental research facility in support of typical applications and services for a smart city. This unique experimental facility will be sufficiently large, open and flexible to enable horizontal and vertical federation with other experimental facilities and stimulate development of new applications of various types. The project envisions the deployment of 12.000 sensors in Santander, exploiting a large variety of technologies.

The first services deployed over the Santander facilities are on-street parking area control and monitoring of environmental parameters including temperature, CO, noise, and light. In addition, SmartSantanderRA includes information about 2700 places in the city of Santander divided in different categories.

Traffic Management - Italy

The municipality of Verona has introduced a real time information and network management system. This system comprises a variety of technologies including variable messages panels, parking information, citizen's information through smart phones, Access Control and a Limited Traffic Area, as well as dynamic control of traffic-lights. The system has resulted in significant reductions in journey times during peak periods as well as an improved ability to manage incidents on the network.

Traffic Management during big events - Italy

The City of Perugia has introduced network management and information

systems to address the specific transport issues associated with its status as a host of multiple major events. Recently, an environmentally friendly and innovative transport system, the Minimetrò, has been introduced which connects the parking areas "the Valley of Pian di Massiano" to the city centre.

Mobility and traffic management in firms – Serbia

The centre of Valjevo houses many important public companies, as well as several municipality buildings; the private sector is mainly concentrated in the industrial zones. This results in a lot of commuting by car and has created a problem with parking in the city centre. A team of experts has analysed the situation, and their conclusion was to implement better Public Transport, involve private companies in transporting workers to their place of work, and encourage alternative transport modes to improve the traffic situation and the environment.

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Demand responsive transport – Poland

The city of Krakow has introduced and tested a new demand responsive transport (DRT) service in the three districts area. The DRT service in Krakow, called Tele-Bus, is the first flexible Public Transport service on a national scale. The main objective of demand-responsive transport (DRT) in Krakow was to better serve passengers by giving them a more personalised service that could be adjusted to their actual needs regarding journey time and destination without generating significant costs for the service launch and daily operation.

Unified Intermodal Cargo Service – Latvia

LDz Cargo Ltd., a subsidiary company of SJSC Latvian Railways provides freight carriage by rail. APOVS is an automated system for the management of carriages. The service is offered to carriers only.

Component parts of APOVS are the following: upkeep of container and wagon data base according to their numbers; administration of technological documents, control of formation plan and train condition, control of dislocation of locomotives; mutual payments for the use of freight wagons; inventory of wagon acceptance/delivery, processing of delivery list; control of freight loading and discharging; prognosis of freight arrival; upkeep of freight wagon "Archive" since 1995.

Partner Experience of Transferability – CDV
Sustainable Mobility Plan (SUMP)
in Santander – Spain – CDV's view

CDV initiated development of sustainable mobility plan activities (SUMP) on the national level. The Czech Republic is preparing a sustainable mobility plan framework and unified methodology for creating such plans for Czech cities. Cities are at a starting point, and going to consult and create their own strategic documents for supporting traffic optimisation and reduction of negative aspects of transport. The approach of Santander to welcome research results and to examine their suitability for the city is rather challenging.

The city of Santander instigated the ITS development through sustainable mobility plans, which is the most important fact for knowledge transfer into our site. There are a number of related activities at a lower level, which increase the impact of ITS systems for visitors and residents of the city. As a result of this knowledge transfer, we can see contribution towards encouraging modal shift from individual to Public Transport, through a more effective Public Transport offer in terms of infomobility.

As the most difficult part of the GP transfer, we cannot see implementation of a test bed for ICT applications in the city, because of high purchase costs and uncertain operating costs. This is the role of lighthouse projects which we still do not organize. Therefore, CDV does not consider implementation of this part of the mobility plan. The initiative would need to be undertaken by the cities. We can see more opportunities for testing in cooperation with other stakeholders such as universities, industry or research institutions here.

Lessons Learnt

It is important:

▷ To create the methodology for SUMP creation at the level of state policy, as well as regional and city levels based on the EU methodology.
  ▷ To search for successful SUMPs in similar cities abroad and initiate activities necessary for creating SUMP in the city.
  ▷ To investigate the needs, capabilities and available options for implementation of the SUMP in the city.
  ▷ To establish a working group which should comprise all the potential stakeholders.
▷ To analyse other strategic documents such as an ITS master plan or regional development plan of ITS.
▷ To include Infomobility in the SUMP as an individual part of the document.

ICT is the source of data for future SUMP and the source for the KPI (key performance indicators) so all the strategic documents on ICT should have suitable provision for, or consideration of, infomobility.

Public Transport Integration

Introduction

This group covers the systems implemented to facilitate intermodal Public Transport and network management to provide improved services. Through integration, the efficiency and ease of use of Public Transport can be improved to better compete with individual transport. The Good Practices cover areas such as the integration of Public Transport information systems into network management tools, single point multi-modal ticketing technology and the provision of improved physical transport interchanges.

Summary of Good Practices:

Traffic monitoring and management: Floating Car Data (FCD) as traffic sensors. Result of S.I.MO.NE Project – Italy

Torino has implemented a system to use its vehicle fleets to provide Floating Car Data (FCD). This is enabling Torino to cost effectively increase the size and network coverage of its survey systems, reducing or substituting traditional infrastructure, and

further developing telematic management platforms. Specifically, the service will be used by the mobility control centre applications. The surveyed data consists of traffic flow data, data on network performance, trips, and on Origin / Destination matrices.

Multi-channel Information system on mobility at regional scale – Italy

"Muoversi" is an information system for mobility in Campania. The main characteristics of the system concern the ability to provide information to users from data received and elaborated by the Center of Services.

The main steps are:
▷ data collection by different sources (e.g., police, transit agencies, etc.) or data from survey (traffic flow counting through sensors or webcam, etc.);
▷ data processing and validation;
▷ distribution of the information to the media by Internet, radio, television, mobile".

Public Transport dispatching under KORDIS integrator/organizer: CED - Czech Republic

CED dispatch centre is a part of the regional integrated multimodal PT system. The main CED aim is to manage operational issues, to transfer information on real time transportation status to the information centres, and to ensure effective intermodal interchanges etc.

Multimodal Integrated Transport – Czech Republic

PID.is a modern integrated mass transport system established according to a European Union recommendation as a communal transport federation. It is developing gradually within the capital city of Prague and in the Central Bohemia region along the main transport links to the capital city. Integrated transport has been established

with the goal of ensuring high-quality transport services in order to make mass transport competitive with individual transport. The determinative criteria for making the integrated system attractive are time, price, comfort, reliability and safety.

INTERCHANGE PRÍNCIPE PÍO - Spain

Príncipe Pío is one of the most important interchanges in Madrid and it offers connections between all forms of Public Transport: metro, suburban railways and city and suburban buses. Connections between the Metro, the suburban railway network and suburban buses have been steadily increasing year after year. This has led to traffic jams in the square close to the station building because the bus stops were located above ground. In an attempt to sidestep this problem, a new underground interchange has been constructed under the station courtyard in order to house the suburban bus companies that serve the A-5 corridor. Its unveiling in 2007 has done away with the congestion that the above-ground bus stops previously caused.

**Partner experience
of transferability – Ferrara**

The vision for Ferrara and the Emilia Romagna region is to integrate different mobility information and mobility services and to create an integrated access and billing system in order to establish an active intermodal bi-directional communication between customers and the mobility services providers.

As such the GP approach taken by Torino provides a useful example to be adapted. In this case the 5T structure should help us to realise the harmonization in our Regional area. One of the key learning points is the strong connection between 5T (the company responsible for running the system) and the local public administrations. 5T is a private company owned by various public institutions like as GTT, Città di Torino, Regione Piemonte and Provincia di Torino, combining all services related to mobility into a single company, with the public bodies in the dual role of partners and customers. The experience is of particular interest for the Province of Ferrara given the similarities both in terms of participants and systems.

Lessons Learnt

It is important:
▷ To have an analysis of the policies and projects at local level, in order to know which type of transport planning tools are under development or in use.
▷ To have a common ICT system at territorial level, in our case at regional level.

▷ To have a clear list of the system requirements.
▷ To shape the ITS solutions according to the standard and requirements.
▷ To have an efficient monitoring, management and maintenance system.

Public Transport Priority Systems

Introduction

This group covers both physical and technological measures implemented to provide priority to Public Transport. The Good Practices cover a variety of priority systems including physical improvements such as guided busways, Public Transport priority systems at junctions and systems aimed at ensuring the correct usage of bespoke Public Transport routes.

Summary of Good Practices:

Real Time Passenger Information System, Bus Priority at Signals, Disability Accessibility – United Kingdom
Cambridge Busway is a 16mile/25km guided busway from St Ives to the centre of Cambridge. The scheme has been constructed on the alignment of a disused railway to provide a guided bus service. There are a range of technologies to assist in the scheme and to make the scheme as attractive and efficient as possible. These include on bus CCTV, smart ticketing, real time passenger information, traffic signal priority, passenger WIFI and power sockets. Smartcard ticketing has been implemented by the main operator and the Council has provided a multi operator smartcard which can be used on all services. A funding model has been developed with the bus operators paying an annual access charge to the guide way and a charge per kilometer related to use. Currently two opearators provide services on the guideway.

Bus Lane Enforcement – United Kingdom
Bus lane enforcement uses Closed Circuit Television (CCTV) and Automatic Number Plate Recognition (ANPR) to enforce the use of bus lanes and bus only gates in Reading and discourage contraventions by general traffic. Bus lanes can be used by buses, taxis, emergency vehicles and cyclists but not private hire vehicles. Money raised through penalty charges is specifically allocated to fund transport related services including Readibus, a bus service for the mobility impaired and school crossing wardens.

Real Time Passenger Information System, Bus Priority at Signals, Public Transport mobile apps, City Access Control. Smart Card - United Kingdom
The City and County of Swansea has introduced an urban transit bus scheme in partnership with First Group. Swansea

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has implemented a range of infrastructure measures that have been supported by information and bus priority measures to maximise the benefits of the scheme. As part of the scheme, visually impaired users can trigger sign information via the use of fobs and this system has been extended to the new bus station and aids navigation around the building.

The bus priority system has rebalanced the road space to give physical priority measures through the city center. The arrangement with First Group is a public private partnership with the bus operator delivering a new high quality bus service along the corridor. The service operates commercially and has seen a significant growth in passenger numbers since opening.

Real Time Information System & Bus Priority at Signals – United Kingdom

Bristol has implemented a policy of ensuring the delivery of high quality bus routes along arterial corridors into Bristol. There have been a number of physical and operational changes to the network which has been designed to enhance the performance of the priority measures. In addition there is a state of the art real time passenger information system which distributes up to the minute bus information between tracked buses and on-street displays in the Greater Bristol area. Information is also delivered to travel information websites and mobile phones. The system that is implemented is a differential based priority system through smart onboard units providing intelligent bus priority at signal junctions to give late running buses priority via a link between the real time information and urban traffic control systems, helping to reduce journey times and ensure buses keep to timetable.

Partner experience of transferability – CDV and Reading

Bristol: Public Transport priority system (CDV's view)

The Greater Bristol Good Practice is a good example of cooperation/communication between on-board vehicle systems and traffic infrastructure. It connects an information system for vehicle journey information provision with the intelligent priority system at a roadside. The major problem in the Czech Republic is a high fragmentation of individual solutions, which prevents rapid development of a single system that would allow the priority of Public Transport vehicles, regardless of area, city, or region of implementation. Bristol's GP shows us how to

achieve successful and effective cooperation between all involved stakeholders and what technical solutions are optimal for Public Transport priority needs.

The most transferable aspect of Bristol's GP into the Czech Republic is the use of GPS systems (vehicle tracking purposes) for intelligent priority system implementation. The reason is that these systems are already implemented in the majority of Public Transport vehicles as a part of the on-board vehicle information system. Other types of vehicle tracking devices are mainly used for Public Transport priority purposes in the Czech Republic (infrared beacons, loops, video detection).

The most difficult part of Bristol's GP to implement in the Czech Republic would

be the scale of implementation. The area of the Czech Republic significantly differs from Bristol´s. So, it is possible to transfer the technical solution, organisational and legal framework, but only at the level, which regional area specification allows.

Lessons Learnt
It is important:
▷ All relevant stakeholders are incorporated into the implementation processes of intelligent priority systems. It means involvement of cities, region representatives, policy makers on all levels, manufacturers, carriers, drivers and also passengers.
▷ Mutual cooperation and communication about potential technical solutions will enable the development of sustainable priority systems covering Public Transport all over the country.
▷ It is necessary to analyse in detail the potentials of technologies and their applicability in the specific crossroads.

Public Transport Priority at Signals – Bristol – Reading's view.
Reading were looking to transfer Bristol's specific experience in implementing bus priority at traffic signals where all or late

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only running buses change the signal timings to get priority. Reading has the equipment to implement the bus priority but has only undertaken limited trials which did not provide clear overall benefits to buses.

Whether bus priority at traffic signals provides overall benefits to buses is critical on factors such as the number of competing bus demands, the level of congestion on the network if the buses are also delayed by this congestion, the ability of signal timing plans to recover from a bus demand. Not all junctions are suitable to implement bus priority and if not set up correctly bus priority can increase rather than decrease bus delay.

Lessons learned

▷ Bus priority at signals can provide real benefits to bus journey times and bus service reliability however it is not a system which necessarily provides benefits at all signal junctions.

▷ Significant detailed work is required to evaluate where it could work prior to implementation and then to fine tune the parameters to ensure that the benefits to buses are full realised.

General Lessons Learned

Implementation of bus priority at signals requires careful consideration and set up to prevent priority being given to one bus service more than they would otherwise have been. The major gap is insufficient amount of financial resources to undertake extensive priority research, construction and system implementation.

Depending on the type of priority system, number of junctions which are to be equipped with such system as well as the number of vehicles to be equipped with new technologies, costs can vary greatly. There are several cost categories which need to be considered (construction costs, segregated lanes, upgrading infrastructure, vehicles equipment, traffic lights priority system implementation).

It is also necessary to consider the fact that cost can vary considerably in different cities and countries. For setting up separate tracks for mass rapid transit (MRT) vehicles it is important if space was just taken over from parking facilities or if a new track was constructed especially for this reason.

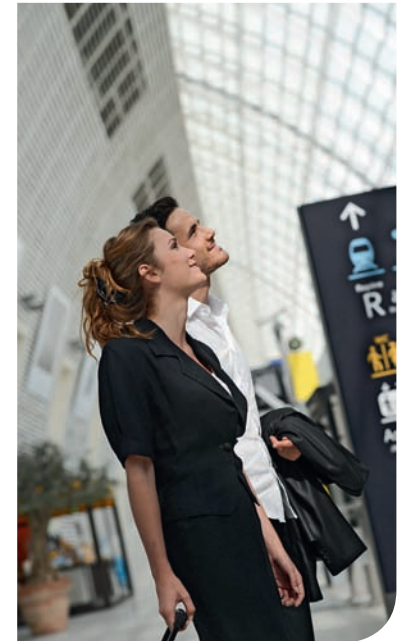MRT and traffic lights priority systems are key policy areas in cities. There is a strong need for the development of strategic policy documents. Those documents are very useful materials for a successful introduction of priority measures and working steps of the implementation process.

The quality of data from different sources will vary considerably. It is necessary to evaluate the sources of available data, make a judgement as to their accuracy and pertinence – sometimes traffic volume figures can be extrapolated from data of relatively low observed traffic flows. Data integrity will need to be comprehensively assessed to allow participating organisations to decide whether and how it can be meaningfully used in managing traffic in the urban environment.

The formulation, implementation and evaluation of Public Transport priority measures always requires extensive analysis, an essential feature of which is the requirement not only to identify a range of potential project partners but also to articulate the precise role and function that each partner will perform within a given project. It is also necessary to ensure good cooperation between the partners of the measure (police, transport operator, Public Transport authority, municipality, taxi companies if allowed to use dedicated lanes, etc.)

Implementation of Public Transport priority solutions can be a very difficult process for all involved stakeholders and a variety of barriers and obstacles can occur. Successful implementation process should be accompanied by regular discussions and meetings concerning these issues.

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Public Transport Payment Systems

Introduction

This group covers the provision of systems aimed at providing faster and more convenient payment systems for Public Transport to improve user experience and further encourage Public Transport use. The GPs cover systems to provide fully integrated multi-modal fare payment systems, SMS based ticketing, and fully online systems.

Summary of Good Practices:

Stimer/MiMuovo Project – Mobility Integrated Fare System in RER (Emilia-Romagna Region) buses, trains and bike sharing – Italy

The project is using technology for the provision of a single electronic ticket and an integrated pricing system (bus and train), with the consequential increase of use of Public Transport. It is also intended to promote other transport modes (bike and car sharing, electric car, etc.).

Stimer is the mobility integrated fare system based on an integrated ticket for local and regional Public Transport and operates on an innovative technological management system. The fare integration is made possible through the chip card "MI MUOVO (I Move)".

The project aims to provide:
▷ multimodal transport and pricing integration (Public Transport, bike sharing, car sharing, etc.), from the local to the regional scale;

▷ improvement of the accessibility of services through multichannel platforms;
▷ open criteria of clearing among the operators;
▷ optimized service planning.

SMS ticketing service – Belgium

De Lijn is the Flemish bus and tram company. They launched their new SMS ticketing service in February 2010. The De Lijn system permits travellers to buy tickets via SMS before they get on the bus.

Advanced PT Ticketing (Skycash) – Poland

SkyCash is an independent service universally available to all telecommunication operators to allow mobile payments. As such SkyCash works on any GSM network and on any phone with Internet access.

Having the ticket in the mobile phone is a very convenient solution for users of Public Transport. SkyCash eliminates the need to carry small change, look for places where you can change notes into coins, and also there is no need to buy a ticket from the driver. Tickets can be purchased anywhere, 24 hours a day, using a mobile phone with Internet access. The number of cooperating companies and modes of transport using it is growing.

Integrated Public Transport system and smart ticketing - Czech Republic

CED dispatch centre is a part of the regional integrated multimodal PT system. The main CED aim is to manage operational issues, to transfer information on real time transportation status towards information centres, and to ensure intermodal interchanges.
It also provides capabilities to integrate tariffs, ticketing, and information on a regional basis.

Integrated system of selling and reserving tickets - Latvia

Riga International Coach Terminal is located in the Centre of Riga city. It allows passengers to travel around Latvia and throughout the whole of Europe. Riga coach terminal uses an integrated system for ticket purchase and trip management and allows for the continuous inter-exchange of information flows.

Atlas Public Transport Ticketing System in Riga – Latvia

In Riga Public Transport e-tickets (Atlas system) were fully introduced on May 1, 2009, and they are valid in all Public Transport vehicles of "Rīgas Satiksme".

During the transition period of March-April 2009, passengers could use either of the fare payment systems, the previous one and also the new electronic system.

Partner experience of transferability

Transferability considerations:
▷ Use of standard protocols.
▷ Agreement with telecommunication providers.
▷ Clearing rules.

Lessons Learnt

Implementation of smart ticketing solutions can be a very difficult process for all involved stakeholders and a variety of barriers and obstacles can occur. Successful implementation process should be accompanied by regular discussions and meetings concerning those issues.

Local political support is an essential aspect in the implementation process and it should be engaged from the beginning of the planning process. In order to ensure this support, it has to be determined that the majority of the Public Transport users can benefit from a new payment system.
It is necessary to define clearly single roles in the whole system. Who is to be responsible for

deployment funding? Who is to be the owner of the system? (Hardware, Technology).

All involved stakeholders have to define their specific roles. In particular, role definition between transport authority and transport operators is essential.

Policy makers have to ensure the extension and/or use of new technology – promotional and marketing campaigns.

Responsible bodies have to set up specific requirements on interoperability.

Policy makers have to follow the EU standards and technical requirements.

It is necessary to set up an organisation which will be responsible for maintenance of the technical equipment and services related to the payment systems.

Companies responsible for the payment service have to ensure data security (personal data, bank details).

Policy makers have to ensure that the new payment solution complies with national and local legislation.

A clear strategy on how to distribute the revenues among the Public Transport operators has to be agreed to ensure that all parties are benefiting without any net loss of revenues caused by the introduction of an interoperable ticket.

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Summary

The key issue addressed by the POLITE project is how to improve knowledge in the field of policies concerning the development and management of travellers' information systems, network and fleet management and how to introduce the concept of co-modality; specifically how to enhance the use and attractiveness of Public Transport and centralised freight management by means of Infomobility and system integration at different geographic levels (national, regional, local) in different European areas.

The aim of the project has been to achieve the above objectives by "policy-learning." When using Good Practices, that is the learning of how to shape future policies with tangible results in terms of new defined policies and targeted policy implementation plans for systems and policies in all the involved sites.

Against this background, the unique partnership of six partners from different geographic levels (national, regional, local) in different European areas in the POLITE project has found a strong common interest in the various systems and policies which have been reviewed.

One of the main goals of the project was that POLITE should result in improved policies, plans and programmes regarding ITS systems in partner sites, through the exchange of experience and the ability to use this to inform future projects.

Some of the key general lessons to be learnt from the project have been:

▷ Close working relationships between the public and private sectors can take a lot of time to be built. Policy makers need to be clear about the issue that they want to engage the private sector in consultation and joint working on, and to decide how to use time and efforts of the private sector in these initiatives efficiently. However the setting up of a working group can accelerate the processes whether they relate to a particular scheme or the creation of necessary standards.

▷ The need for effective multi agency co-operation is critical in devising an integrated transport system. Political problems associated with policy formulation and project implementation are often more challenging than technical problems.

▷ It is essential to create strategies that are focused on delivering relevant services and information to individual end users and establish interoperable and seamless ITS services.

▷ It is important to design strategies, plans and models that will help with the further development of an integrated Public Transport system. Also it is important to learn how to involve a variety of stakeholders, how valuable citizen engagement is in achieving public acceptance for major changes and how to harmonize different views and opinions.

▷ Good campaigns help to spread information about projects and increase the use of Public Transport.

▷ Mass rapid transit and traffic light priority systems are key policy areas in cities. There is a strong need for the development of strategic policy documents. Those documents are very useful materials for a successful introduction of priority measures and working steps of implementation process.

▷ The formulation, implementation and evaluation of Public Transport priority measures always requires extensive analysis, an essential feature of which is the requirement not only to identify a range of potential project partners but

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also to articulate the precise role and function that each partner will perform within a given project.

▷ It is necessary to ensure good cooperation between the partners of the measure (police, transport operator, Public Transport authority, municipality, taxi companies if allowed to use dedicated lanes, etc.).

▷ Implementation of smart ticketing solutions can be a very difficult process for all involved stakeholders and a variety of barriers and obstacles can occur. Successful implementation process should be accompanied by regular discussions and meetings concerning these issues.

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POLITE PARTNERSHIP

Calabria Regional Administration (IT) – Leader partner

Calabria Region, thanks to the geographic position and structure of its territory (a long strip of land located in the heart of the Mediterranean), has always deemed "transport" as being a key development topic at both external (mainly maritime) and internal levels.

In a region where the use of the car exceeds EU average, the administration's current efforts aim at improving the urban environment and the citizens' quality of life through the adoption of several measures such as: general restructuring of the system, strengthening, optimization and modernization of public services, encouragement of slow mobility, implementation of dissuasive methods regarding the use of private vehicles, introduction of informative technologies to support travellers' mobility, etc.

At EU-interregional level, the Region has been actively involved in several cooperation projects in the course of the last (and current) EU funding periods, often as lead partner. Topics covered include: accessibility, passengers' flows, cross-border systems, innovative solutions on mobility and logistics, enhancement of sea shipping in the Mediterranean, etc.

Province of Ferrara (IT) – PP2

Province of Ferrara is located in the North-Eastern part of Italy in Emilia-Romagna Region along the axis Venice-Florence-Rome. The Province comprises of 26 municipalities with a total population of about 350,000 inhabitants.

The Province is a local intermediate public body with competences (as well as delegations from the Emilia-Romagna Region) in several fields, amongst which territorial management, planning and development. In that it is responsible for the definition and implementation of the Territorial Coordination Plan, and thus it has competences of territorial steering and coordination. The administration is organised into departments with specific competences.

As far as POLITE project is concerned, the department involved is "Territorial planning, mobility and energy". It carries out institutional coordination for transport planning with specific competences in the field of green urban transport development. The Province has specific skills in infomobility related to the realization of the first real time monitoring and control centre of road traffic of the Emilia Romagna Region, the creation of a Network of Institutions - so called Observatory - for road safety, the demand responsive transport system (approximately 800,000 Km-bus/year) in rural areas with the lowest density of the province made of an informatics hub for booking and routing of the buses. What is more, in the urban area the Province has implemented variable message panels with traffic information, events and parking availability info. It carries out policy making institutional coordination for transport services planning together with Emilia Romagna Region, Ferrara's Mobility Agency - AMI and with the Municipalities of its territory.

In the POLITE project it has provided its know-how in policy making and in specific infomobility interventions such as the implementation and management of the road traffic monitoring centre, the DRT-taxibus system, etc. On the other hand, the aim of the Province has been the collection of information and experiences from partners in order to improve its policies, in particular with reference to, the monitoring of traffic flows through the information collection centre with a view to creating an intelligent Provincial/Regional Mobility Station, real time updating services for both private and Public Transport means' traffic flows at Provincial/Regional level.

Polis (BE) – PP3

Polis is a network of European cities and regions working together to develop

innovative technologies and policies for local transport.

Polis fosters cooperation and partnerships across Europe with the aim of making transport research and innovation accessible to cities and regions. It supports the exchange of experiences and the transfer of knowledge between European local and regional authorities, and between them and other actors of the sector such as industry, research centres and universities, and NGOs. Polis maintains a constant dialogue with the European institutions and provides decision-makers with the necessary information and tools for making sustainable mobility a reality.

The network and its secretariat actively support the participation of Polis members in European projects. Polis' aim is to improve local transport through integrated strategies that address the economic, social and environmental dimensions of transport.

Reading Borough Council (UK) – PP4
Reading Borough Council (RBC) is a public administrative body. Reading is a town of some 260,000 inhabitants located in the Thames Valley to the west of London. The Thames Valley is a focus of high tech industry in the UK and a number of large international IT businesses are located in Reading. Reading has good links to London Heathrow Airport and is also located on the strategic rail network with Reading station currently undergoing a £895m redevelopment.

As a Unitary Authority RBC is responsible for a wide range of public services and these include highways and transportation. Reading is a leading authority in the UK in the development and implementation of multimodal transport strategies and it has invested significantly in recent years. Reading has an access controlled town centre with pedestrian areas and bus priority measures which are coupled with one of the newest bus fleets in the country and an advanced network management system which is continually being developed. Recently Reading has been awarded £25m of LSTF funding by central government to invest in its transport systems including its network management system.

Institute of Logistics and Warehousing (ILIM) (PL) – PP5
The Institute of Logistics and Warehousing (ILiM) is widely acknowledged as Poland's centre of competence in logistics, providing support for national policy-making in the fields of e-business and logistics. It is an interdisciplinary, state-owned R&D unit where logistics is perceived as both a subject of research as well as the field of practical application. It promotes and implements innovative logistics solutions in key business processes, increasing companies' efficiency and whole supply chains. The Institute's areas of competence embrace logistics and supply chain management including logistics processes, transport system designing and optimisation, intermodal transport systems, optimisation of distribution networks, etc. Moreover, it provides solutions within e-business, IT and data communication.

Apart from coordinating the projects POLLOCO (FP5) and FOR-EMC (FP5, Thematic Network of 26 members from 20 countries), CENTRAL LOCO (FP6), KOMODA (FP7) as well as B2B LOCO (FP7) the Institute has also participated in many European projects: 5th Framework Programme: e-Thematic, SIT; 6th Framework Programme: TRACEBACK, DIFFERENT, FREIGHTWISE, BRIDGE, BESTUFS I and II, Co-DESNET, eMENSA; 7th Framework Programme: GRIFS; CIP - ICT PSP: SPOCS, epSOS; and Interreg IIIB: BASIM, INLOC, BALTIC TANGENT, CORELOG, INTER BALTIC; Interreg IIIC: ENLOCC, ECO4LOG, SRLOG, TRIPLE HELIX; Interreg: CASTLE, SUGAR, KASSETTS, TRANSBALTIC; EC tenders: FIAP, COMPETE; DiSCwise.

Transport Research Centre (CDV) – PP6
POLITE partner CDV (Transport Research Centre) represents the interests of the Czech Republic. The centre has a tradition of more than fifty years. After 1992, part of the old VUD became an independent public research institution known as CDV. More than one hundred experts provide projects, services and technical support to the Ministry of Transport of the Czech Republic and other governmental and regional bodies or cities as well as to the private sector. The organisation also offers its experience in creating national transport policy and recommendations for the European transport policy.

CDV is involved in international projects and activities of a wide scope and has become an integrated partner in the European research community, being a member in several transport research and other transport-related associations (FEHRL, FERSI, ECTRI, ELITE, POLIS etc.). CDV also represents the Czech Republic in the OECD/ITF Transport Research Programme, IRTAD, ERTRAC

and PIARC. CDV experts are members of the CEN and ISO technical committees as national representatives. The company holds the certificate of a quality system CSN EN ISO 9001:2001 concerning transport related scientific, research and development activities.

The main objective of the ITS department is to increase traffic quality, provide better mobility, enhance traffic safety and reduce adverse impacts of traffic on the environment, especially in road transport. The department also helps to disseminate new knowledge from the ITS sector by organising conferences and seminars, the purpose of which is to make professional public familiar with advanced possibilities offered by ITS.

In the area of ITS for public passenger transport, CDV has a long experience resulting from several national projects such as projects for the standardization of information systems in Public Transport, a project on telematics in Public Transport, a project on unified data system in public passenger transport, etc.

Latvian Transport Development and Education Association (LaTDEA) (LV) - PP7

The Latvian transport development and education association (LaTDEA) was established in December 15, 2005. The major Latvian transport companies and educational and research establishments are members of the association.

The Association's main activities are implementation of projects in the transport sector, development of logistics systems on a regional level, introduction of modern navigation and IT solutions to transport monitoring applications, as well as support of educational facilities in the development of curriculum.

At present, the association represents the interests of the Latvian state and local companies in international projects, conferences and symposiums. Among those are Trans-Baltic, International symposium Space & global security of humanity, and others.

Among the services provided are: organization of international projects and conferences, organization of educational seminars, development of educational courses and methodical materials, assistance in attraction of investors, as well as consulting. The Latvian transport development and education association organizes large consulting projects, for instance, development of consulting projects concerning Euro-Asian transit, as well as monitoring of European-Russian market of transportation services.

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