ACTIVITY 3.2B

Analysis and Reporting on Best Practices

POLICY LEARNING IN INFORMATION TECHNOLOGIES FOR PUBLIC TRANSPORT ENHANCEMENT

Dissemination level	Project Partner
Component	Component 3
Author(s)	LaTDEA
Co – author(s)	CRA, PoF
Status (F: final, D: draft)	Final
Date	17/06/2013
File name	POLITE_Activity 3.2b_v0.21

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

CONTENTS

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

1. INTRODUCTION

1.1. ABOUT POLITE PROJECT AND 3.2.B REPORT

This study is part of a large EU-funded project POLITE aimed at public transport sector and increasing the awareness of infomobility services and Public Transport attractiveness through the application of identified best practices and other recommendations. POLITE partners work together in the exchange and transfer of experiences and improvement of policies, knowledge & good practices on infomobility services in their regions, with the goal of improving their public transport information systems. Multiple institutions are participating in the project, including academical and research establishments and local authorities. Due to exchange and transfer knowledge POLITE partners are devided on two groups:

1. **Good Practice (GP) Sites:**
   - Province of Ferrara (IT)
   - Reading Borough Council (UK)
2. **Transfer Sites:**
   - Calabria Regional Administration (CRA) (IT) – Leader partner
   - Polis (BE)
   - Institute of Logistics and Warehousing (ILIM) (PL)
   - Transport Research Centre (CDV) (CZ)
   - Latvian Transport Development and Education Association (LaTDEA) (LV)

At the time of writing POLITE consortium identified a comprehensive list of 10 groups of measures covering in total 54 more detailed submeasures which the partners in the project currently have, or would like to see implemented in the future. And now the main task is to analyse Good Practice (GP) and site visit questionnaire results.
This report presents the result of analysis of Good practices and site visits of all project partners. It describes the results of POLITE Activity 3.2. called – Good Practices - search & analysis.
Activity starts with the identification of the locations for the site visits to non project sites. In this period the involvement of administrations in local/regional/national level is useful and vital. The best practices detailed questionnaires were completed after the 6 site visits to non project sites and a list of GPs were finalised with desk work. The GPs are analysed and benchmarked and each partner defines its position with reference to the GPs. 31 GPs and 6 site visits are reported and classified on the basis of policy intervention fields.
Results of this report are used as input to activity 3.3. (Transfer-oriented sessions) in which PPs, in a 3 steps path, mutually learn on how to improve infomobility policies. As well the results will be discussed during Good Practice Round Table in May.
At the end POLITE will result in improved policies, plans and programmes regarding public transport information systems in partners' sites, through experiences exchange and competencies strengthening.
We express our acknowledgement for consultations during the report creation to Dr.sc.ing. Boris Kadish.

1.2. ACTIVITY 3.2B OBJECTIVES

The main objective of the activity 3.2 is to analyze and benchmark GPs. Extended questionnaire of GPs and 6 site visits are analysed and classified on the base of policy intervention fields.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

Each partner filled-in 5 questionnaires of good practice and 1 extended questionnaire for site visit. Both questionnaires comprises two main parts:

- The written text boxes for the main input of information associated with the good practice
- The Table of Measures

After all PPs filled-in and sent all questionnaires, whose results were analysed and presented in this report.

Based on the results of questionnaires, an excel chart was developed. The purpose of excel chart is the collection of all partners results into one common tool for future analysis.

Submeasures with missing or lack of information were removed to ensure a homogenous sample.

A matrix/excel file was prepared based on the questionnaire results prepared by POLITE partners. This information served as input for the table for analysis.

Each partner was asked to map its current positioning in infomobility policy objectives, as well as providing details of lessons learned/expected, the actual phase of development and the personal contact details of the leaders of activities.

The extended questionnaire was divided into three main chapters and each chapter included different questions:

1. **GENERAL**

- Information on the Site Visit
- Interviewee information
- Point of view of the interviewee
- Interests and next steps
- Type of Measure / Field of Application (please tick all that apply)
- Background and Context
- Supporting Information
- Primary Policy Objectives (please tick all that apply)
- Further Description / Other Primary Policy Objectives
- Policy Design Steps and Timing
- Actors Involved
- Cooperation amongst Administrations
- Public Transport Legislation and Regulation
- Design Steps
- Innovation in Scheme Design / Evaluation
- Decision Making Process

2. **IMPLEMENTATION DETAIL**

- Implementation Steps and Timing
- ICT Required
- Infrastructure Required
- PT Operation and Reorganisation Undertaken
- Other Measures
- Specifications and
- Human Resources
- Enforcement Scheme
- Monitoring Procedures

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

3. **SUPPORT MECHANISMS**

- Awareness/Information Campaigns
- Incentive Programmes / Financial Instruments
- Partnerships/Key Supporting Stakeholders
- Other Policies
- Results
- Expected vs Actual Benefits
- Quantitative Results Achieved
- Qualitative Results Achieved
- Lessons Learned
- Primary Obstacles
- Critical Success Factors
- Transferability Considerations
- Up-scaling Considerations
- Contact

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

2. METHODOLOGY OF ANALYSIS AND BENCHMARKING OF 30 GPS

2.1. DEFINITIONS OF GOOD & BEST PRACTICES AND SOURCES OF BP AND GP

The key-stone of project is to study the current state of infomobility in ES and to propose actions destined to reduce and close any competitiveness gap with best practices. One of the ways of improving public organizations is to identify, communicate and facilitate the transfer of practices that seem to work successfully somewhere else[1].

This increasingly popular approach is called "best practice research" and is based on the idea that instead of formulating an abstract ideal state we want to reach, we should develop what has been or is being implemented and is proven to work somewhere else. According to this approach, one should, above all, study carefully and disseminate "what works" instead of formulating hitherto unimplemented objectives and ways of attaining them.

POLITE refers to the identification of Best Practices and Good Pactices. Several interrelated terms are used in the literature to refer to such approach: the terms "best practice", "good practice" and "smart practices". Those terms sometimes overlap in some aspects and differ in others, refer to different things. Below are some definitions of "best practice" and "good practice".

Bretschneider et al. (2005) determined this term as:

> *"The term "best practice" implies that it is best when compared to any alternative course of action and that it is a practice designed to achieve some deliberative end"*

Overman and Boyd (1994) gave the most precise definition of BP

> *"... is the selective observation of a set of exemplars across different contexts in order to derive more generalizable principles and theories".*

Encyclopedia of Small Business (3rd ed. Vol. 1. Detroit: Gale, 2007) identify a Best Practices as:

> *"The phrase "best practices" or, in the singular, "best practice" is business jargon arising from the management tool known as "benchmarking." The assumption underlying this term is that production and management processes are uniform enough so that a "best practice" can be identified and then adopted more or less "as is" by another entity".*

Encyclopedia of Management (2009) identify a Best Practices as:

> *"In a general sense, the term best practice refers to the most efficient way of doing something. The fastest method that uses the least resources (including labor and parts) to create the highest quality output is the "best practice." Almost every thinkable industry has adopted best practices in some aspect of its processes, but those that have made use of it successfully and publicly have typically done so in the fields of technology development, quality control, project management, teaching (on the college and secondary circuits), manufacturing, health-care, and sales*"

The UK's Communities and Local Government has a definition for Best Practice for ERDF funding of:

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

> *"Best practice – a way, technique, methodology, innovative practice that, through experience and research, has proven to reliably lead to a desired result and is considered to be superior to all other known. It contributes to the improved performance of an organisation, usually recognised as "best" by other peer organisations"*

Stenström and Laine (2006) noted that, that BPR is oriented on constant learning, feedback and reflection of what works and why, or even what does not work. But the definition of good practices emphasizes function and orientation on process, transformation and innovation (Tuominen et.al, 2004).

INTERREG IVC identify a Good Practice as:

> *"an initiative (eg methodologies, projects, processes and techniques) undertaken in one of the programme's thematic priorities which has already proved successful and which has the potential to be transferred to a different geographic area. Proved successful is where the good practice has already provided tangible and measurable results in achieving a specific objective."* [Ref: www.interreg4c.eu – Glossar]

POLITE is focused on the application of Information Technologies for Public Transport. Good Practice sites for Polite are likely to have implemented a system / systems or services each of which are likely to cover a range of the 54 detailed measures. Examples of systems would be a Real Time Passenger Information system, a Smart ticketing payment system or public transport priority at traffic signals. Each separate system / service, where they are clearly distinct and could be implemented on their own can be considered to be a **POLITE Good Practice Measure**.

Key Points for Good Practice identification were used:

- A Good Practice is a system or service which can be identified as a clearly separate measure. EG RTPI, Smart Ticketing, Bus Priority at Signals etc.
- The Good Practices will inform the more detailed 3.1a measures
- A Good Practice site could provide one or more Good Practices
- The target 30 Good Practices should all include ITS elements and POLITE can identify more than 30 Good Practices
- Additional non ITS Good Practices can be recorded where they arise at Good Practice sites.

The POLITE project should strive to identify Best Practices where possible, however it should be recognised that the successful identification of Good Practice fully meets the objectives of the POLITE project.

Good Practices were identified from either a desktop study, through a questionnaire, and from site visits.

The methodology of of Identification of potential Good Practices was presented in previous report. - Definition of Infomobility Policy Themes for Exchange (Activity 3.1A).

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

2.2. METHODOLOGY FOR COMPARATIVE ASSESSMENT OF GOOD PRACTICES AND CHOICE THE BETTER PRACTICES

OVERVIEW

Comparative analysis of Good Practices and choice of the Best Practice are considered as the task of the multi-criteria comparative analysis. As follows from the studies conducted in the previous activities (3.1a, 3.1b and 3.2a), we can compare Good practices taking in account the number of measures (or submeasures) which comprehensively cover the overall objectives of Public Transport (PT). It should be noted that a comparative evaluation and choice of Good practices should be carried out for practices that have the same functional purpose, for example, for Real Time Passenger Information systems.

The methodology comparative analysis of GP involves the following stages:

Stage 1. Study of GPs descriptions and Questionnaires completed by POLITE partners.

Stage 2. GPs classification based on functional purpose.

Stage 3. Determination of objectives priorities (impotence) for each group of GP.

Stage 4. Choice of indices characterizing efficiency GP/ Determination of each measure covering the objectives of GP.

Stage 5. Comparative analysis of Good Practices and the selection of the better one for each group of Good Practices.

Let us consider each of the steps in more detail.

Stage 1. *Study of Good Practices descriptions and Questionnaires completed by POLITE partners*.

In the frame of project the 32 Good Practices from several EU countries were identified, 6 of them were selected for site-visits. The desktop reviews of GPs and the detailed GP data through visiting the GP sites were described in GP Questionnaires completed by POLITE partners, and were analyzed and presented in appropriate charts and tables.

Stage 2. *Good Practices classification based on functional purpose*.

The classification of GPs suggested in Activity 3.1B (document **"**Joint Methodology for Good Practices Search and Exchange") consists of five following groups:

1. Public Transport and/or Multimodal Information Systems
    a. Bus Automatic Vehicle Location (AVL)
    b. Real Time Passenger Information Systems (RTPI)
    c. Real Time Traveller Information Systems (RTTIS), bus stops, on bus, in public locations, on web, on mobile devices
    d. Journey Planning Systems (single mode / multimodal)
2. Public Transport Fleet Management Systems
3. Public Transport Interchanges
4. Public Transport Priority Systems
    a. Bus priority at signals
    b. Bus Gates / Bus Lanes
    c. Enforcement systems eg bus lane enforcement
    d. Access controls
5. Public Transport Payment Systems

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

a. Pre Pay Contactless Smart Cards
b. Innovative Incentive Schemes.

The distribution of 32 good practices under consideration is the following:

Table 2.1. Distribution of 32 good practices

ID	Practice	Groups				
		1. Public Transport and / or Multimodal Information Systems	2. Public Transport Fleet Management Systems	3. Public Transport Interchanges	4. Public Transport Priority Systems	5. Public Transport Payment Systems
1	Traffic monitoring and management : Floating Car Data (FCD) as traffic sensors. Result of S.I.MO.NE Project			X		
2	Stimer/Mi Muovo Project - Mobility Integrated Fare System in RER (Emilia-Romagna Region) - buses, trains and bike sharing			X		
3	Multi-channel Information system on mobility at regional scale			X		
4	Sustainable Mobility Plan (SMP)		X			
5	Traveller Information / Mobilitami				X	
6	Traffic Management		X			
7	Intermodal infomobility platform and sms ticketing	X				
8	Traffic Management during big events		X			
9	SMS ticketing system of public transport operator					X
10	Mobility and traffic management in firms		X			
11	Open Public Transport Data	X				
12	Real Time Passenger Information System, Bus Priority at Signals, Public Transport mobile apps, City Access Control. Smart Card				X	
13	Bus Lane Enforcement				X	
14	Real Time Information System & Bus Priority at Signals	X				
15	Real Time Passenger Information System, Bus Priority at Signals, Disability Accessibility				X	
16	Mobile travel information	X				
17	On-board bus travel information	X				
18	Real Time Passenger Information System (Mezi)	X				
19	Demand responsive transport (Tele-bus)		X			
20	Advanced PT Ticketing (Skycash)					X
21	Multimodal Journey planner for the Czech Republic	X				
22	Integrated public transport system and smart ticketing					X
23	Public Transport dispatching under KORDIS integrator/organizer: CED			X		
24	Real Time Passenger Information System	X				
25	Multimodal Integrated Transport			X		
26	Unified intermodal cargo service		X			
27	Interchange Principe Pio			X		
28	Integrated system of selling and reserving tickets					X
29	Atlas Public Transport Ticketing System in Riga					X
30	Interactive passenger service in train traffic	X				
31	Premier Route Bus Corridor Network	X				
32	Gestione Informata Mobilita' – G.I.M.	X				

Further steps of GP comparative assesment are performed separately for each group.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Stage 3. *Determination of objectives priorities for each group of Good Practices*.
For the given group of GP the weights of objectives are defined by the vector $\boldsymbol{\beta} = (\beta_1, \beta_2, ..., \beta_6)$, where β_j is the weight of *j*-th objective; $\beta_j \geq 0,\ j = 1,2,...,6$ and $\sum_{j=1}^{6} \beta_j = 1$.
Notice that for equal weights of all objectives we have: β_j =0,167 for $j = 1,2,...,6$. The example of objectives weights for group of Good Practices "Public Transport Payment Systems" is presented in Table 4.2 (see Section 4) .

Stage 4. *Calculation of indices characterizing GP efficiency* .

The set of indices, characterized the degree of the PT objectives covering by GP measures, is used as criteria of GP efficiency. The method of GP efficiency calculations is considered below.
Let *n* is the number of submeasures in the *k*-th measure;
m_j is the number of submeasures which cover *j*-th objective; $m_j = \sum_{i=1}^{n} k_{i,j}$, $j = 1,2,...,6$,

where $k_{i,j} = \begin{cases} 1, & \text{if } i-\text{th submeasure covers } j-\text{th objective}, \\ 0, & \text{if } i-\text{th submeasure does not cover } j-\text{th objective} \end{cases}$ $i = 1,2,...,n$, $j = 1,2,...,6$.
Coefficient r_j characterizes proportion of measure's submeasures which cover *j*-th objective, $r_j = \frac{m_j}{n}$, $j = 1,2,...,6$.

Index p_j characterizes the degree of *j*-th objective covering by considered measure and is calculated by following formulae:

$$p_j = \begin{cases} 0{,}5 + 0{,}5\frac{m_j - 1}{n-1} & \text{when } m_j > 0; \\ 0, & \text{when } m_j = 0. \end{cases} \quad (1)$$

The criterion P_k of *k*-th measure efficiency characterizes the degree of all 6 objectives covering by the measure with number *k*, and is determined by formulae:

$$P_k = \sum_{j=1}^{6} \beta_j p_j . \quad (2)$$

Vector $\mathbf{P} = (P_1, P_2, ..., P_k, ..., P_{10})$ is the criteria of GP efficiency and is used in GP comparative assessment process.

Stage 5. *Comparative analysis of Good Practices and choice of the better one for each group of Good Practices*
The results of testing the chosen methods of the multi-criteria analysis gives possibility to determine the Analytic Hierarchy Process (AHP) method [Saaty, 2001] as the most suitable one for comparative evaluation of Good Practices and selection the better one. The AHP method allows arranging the Good Practices in the order of their efficiency and showing their difference in the given set of criteria. It allows the distribution of the criteria by several groups, and evaluates the significance of each group's components.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

The opportunity of the pairwise comparison of a smaller number of criteria in every group allows the experts to determine better weighted values according to these criteria. The AHP method also allows the possibility of controlling the consistency of the experts' judgements, making it possible to increase the reliability of estimation.
To perform the calculations of criteria, the commonly used pairwise comparison scale 1-9 proposed by Saaty, 2001is offered. This scale has the following weights **W1 and W2**: for two alternatives **A1** and **A2**:

W1=1; **W2**=1, if two alternatives **A1** and **A2** are equal in importance;
W1=3; **W2**=1/3, if **A1** is weakly more important than **A2**;
W1=5; **W2**=1/5, if **A1** is strongly more important than **A2**;
W1=7; **W2**=1/7, if **A1** is very strongly more important than **A2**;
W1=9; **W2**=1/9, if **A1** is absolutely more important than **A2**,

and 2, 4, 6, and 8 are intermediate values between the two adjacent judgments.
The importance of the criteria is evident from the evaluation of the priority vector.

The Good practices' measures used in criteria of efficiency are distributed in four groups: Organization and Legislation; Infrastructural Actions, Information Actions, Modelling. The created hierarchical structure of the criteria is shown in Figure 2.1.

Comparative analysis of Good practices in PT

1.Organization and Legislation	2.Infrastructural Actions	3.Information Actions	4.Modelling
PT Legislation and regulation	ITS technical standardization for interoperability	PT traffic management measures.	Modelling tools and measures.
PT reorganization into multimodal system	Infrastructural measures	PT information measures	
Cooperation among administrations	Innovative ICT for PT.	Advanced PT ticketing	

Figure 2.1. Hierarchical structure of the criteria (indices of measures)

The next step of considered problem solving is constructing a set of pairwise comparison matrices: paired comparison matrices for groups of measures (an upper level, see example in Table 2.1) and paired comparison matrices for measures in each of the group (see example for group "Organization and legislation" in Table 2.2). Note that each element in an upper level is used to compare the elements in the level immediately below with respect to it.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Table 2.2. Paired comparison matrix for groups of measures: GP group "Public Transport Payment Systems"

Groups of Measures	Organization and legislation	Infrastructural actions	Information actions	Modelling
Organization and legislation	**1**	1/5	1/7	1
Infrastructural actions	5	**1**	1/3	5
Information actions	7	3	**1**	7
Modelling	1	1/5	1/7	**1**

Table 2.3. Paired comparison matrix for measures of the group "Organization and legislation": GP group "Public Transport Payment Systems"

Measures	PT Legislation and regulation	PT reorganization into multimodal system	Cooperation among administrations
PT Legislation and regulation	1	1/5	1/7
PT reorganization into multimodal system	5	1	1/3
Cooperation among administrations	7	3	1

The paired comparison of Good Practices with numbers *i* and *j* for the measure with number *k* is determined by index: $\delta_K = P_K^{(i)} - P_K^{(j)}$. The values of paired comparison criterion are determined for the scale 1-9 using the value of index δ_K according the Table 2.3.

Using paired comparison matrices and results of vector $\mathbf{P} = (P_1, P_2, ..., P_k, ..., P_{10})$ the vectors of measures' priorities for each group of measures should be calculated. These vectors should be used for global vector of GP priorities calculation [Saaty, 2001].
The suggested methodology is applied for comparative assessment of Good Practices considered in Sections 4.2 – 4.6.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Table 2.3. The scale for criterion of measure calculation in the paired comparison of Good Practices.

Difference $\delta_K = P_K^{(i)} - P_K^{(j)}$	Value of criterion of the measure with greater coefficient of efficiency $P_K^{(i)}$	Value of criterion of the measure with smaller coefficient of efficiency $P_K^{(j)}$
$\delta_K < 0{,}1$	1	1
$0{,}1 \le \delta_K < 0{,}2$	2	1/2
$0{,}2 \le \delta_K < 0{,}3$	3	1/3
$0{,}3 \le \delta_K < 0{,}4$	4	1/4
$0{,}4 \le \delta_K < 0{,}5$	5	1/5
$0{,}5 \le \delta_K < 0{,}6$	6	1/6
$0{,}6 \le \delta_K < 0{,}7$	7	1/7
$0{,}7 \le \delta_K < 0{,}8$	8	1/8
$\delta_K \ge 0{,}8$	9	1/9

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

3. THE GOOD PRACTICES IDENTIFIED IN POLITE

3.1. OVERVIEW

The table 3.1. bellow presents Good Practice with short description.

Table 3.1. Good Practice with short description

ID	Good Practice Name	City/Region/ Country	Short Description	Project partner
1	Traffic monitoring and management: Floating Car Data (FCD) as traffic sensors. Result of S.I.MO.NE Project	Torino/ Italy	The use of FCD as sensors in monitoring traffic in real time required the study and development of: •A new scalable architecture able to link several fcd providers with local mobility control centre; •New protocol able to deal with all data related the mobility management; •New functions able to aggregate and normalize different FCD format coming from different providers; •New algorithms to integrate FCD data in already available traffic models; •New functions to publish data coming from local mobility control centre.	Calabrian Regional Administration (CRA)
2	Stimer/Mi Muovo Project - Mobility Integrated Fare System in RER (Emilia-Romagna Region) - buses, trains and bike sharing	Regione Emilia-Romagna/ Italy	Stimer is the Mobility integrated fare system based on an all encompassing ticket for the local and regional public transport and on the RER fare zoning and a technological management system. The fare integration is made possible through the chip card “MI MUOVO (I Move)”.	Calabrian Regional Administration (CRA)
3	Multi-channel Information system on mobility at regional scale	Campania/ Italy	The Service Centre "Moving" acquires processes and distributes information about the entire mobility system of the Campania Region. The particular characteristics of the service are: completeness of the information related to the entire regional system of mobility, and the "intercanalità", namely the dissemination of all media from the data and information received and processed by the center.	Calabrian Regional Administration (CRA)
4	Sustainable Mobility Plan (SMP)	Santander/ Spain	In this questionnaire we describe the general guidelines about our Mobility plan in Santander City. This plan has been developed during the last five years and tackles several aspects related to the public transport improvement. In some cases the adopted measures involve new technologies but in other cases they	Calabrian Regional Administration (CRA)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

			are political decisions or good practices in the management process. This process is too complex to be summarized in only a few pages and its something alive in a constant evolution.	
5	Traveller Information / Mobilitami	Marche / Ancona and Senigallia/ Italy	Mobilitami is the Sustainable Transport Community - A virtual place for exchange information between demand and supply where innovative ways of travelling, environmentally friendly, meet – or contribute to satisfy- all kind of users requirements, reducing traffic jams and travelling time. A technological and innovative platform able to match sustainable mobility demand and supply within the regional territory.	Calabrian Regional Administration (CRA)
6	Traffic Management	Verona/ Italy	The measures are referred to Traffic Management in historical city. The "Verona Mobile" system is based on variable messages panels, info parking, dynamic regulation of traffic-lights, citizens information through smartphones and web applications, and access control to limited traffic zones (LTZ).	Province of Ferrara (PoF)
7	Intermodal infomobility platform and SMS ticketing	Genova / Liguria/ Italy	In Genova, the Mobility Agency promotes SMS ticketing system that together with the intermodal infomobility platform are the two interesting measures for that city.	Province of Ferrara (PoF)
8	Traffic Management during big events	Perugia/ Italy	City of Perugia has been working on mobility issues since 70s years taking in consideration its particular historical and touristic vocation. They created a suburban parking system with connections to the city centre. During last years the connection between parking areas and the city centre was implemented thanks the Minimetrò system.	Province of Ferrara (PoF)
9	SMS ticketing service	Flanders/ Belgium	De Lijn is the Flemish bus and tram company. They rolled out 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.	Province of Ferrara (PoF)
10	Mobility and traffic management in firms	Valjevo/ Serbia	During the rush hour, streets in the city centre are overcrowded. It is also difficult to find a parking spot for a private vehicle. The city is expanding in several directions, and commuting to and from work is beginning to become a big problem for workers. Many companies, public and private, have undertaken initiatives to solve this problem. A team of experts analyzed the situation, and their	Province of Ferrara (PoF)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

			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.	
11	Open Public Transport Data	London/ UK	TfL have opened up their public transport data sources to the public. This has enabled 3rd party mobile application developers to use the data to provide a variety of real time traveller information apps (iphone, android, blackberry, mobile windows) for the bus, rail and underground services in London.	Reading Borough Council (RBC)
12	Real Time Passenger Information System, Bus Priority at Signals, Public Transport mobile apps, City Access Control. Smart Card	Cambridgeshire County Council/ UK	Cambridge Bus way is the implementation of a 16mile/25km guided bus way 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. The scheme uses guided buses along the length of the scheme. There are a range of technologies to assist in the scheme and to make the scheme as attractive and efficient as possible. These include the following technologies, on bus CCTV, smart ticketing, real time passenger system information, traffic signal priority, passenger WIFI.	Reading Borough Council (RBC)
13	Bus Lane Enforcement	Reading Borough Council/ UK	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.	Reading Borough Council (RBC)
14	Real Time Information System & Bus Priority at Signals	Greater Bristol/ UK	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.	Reading Borough Council (RBC)
15	Real Time Passenger Information System, Bus Priority at Signals, Disability Accessibility	City and County of Swansea/ UK	The City and County of Swansea has introduced an urban transit bus scheme in partnership with First Group. Swansea has implemented a range of infrastructure measures that have been supported by information and bus priority measures to maximise the benefits of the	Reading Borough Council (RBC)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

			schemes. 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.	
16	Mobile travel information	Aalborg/ Denmark	Although significant emphasis is put on securing quality of public transport in Aalborg, delays do still occur, and sometimes passengers report feeling uncertain if the bus is delayed, or if they themselves have arrived too late at the bus stop. Uncertainty about planned and actual departure times and the location of bus stops are some of the barriers that discourage potential passengers from using public transport.	Institute of Logistics and Warehousing (ILIM)
17	On-board bus travel information	Aalborg/ 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.	Institute of Logistics and Warehousing (ILIM)
18	Real Time Passenger Information System (Mezi)	Bern/ Switzerland	Bern is the city where more than one operators are in a service of passengers. Bernmobil is city operator, conducting the transport mainly by trams, but some lines, like connection with airport, use buses. Postbus Bern is operator, covering its lines bigger part of Swizerland, where Bern is one of the transfer centres. Postbus offers the service for commuters living in suburban areas or passenger travelling on longer distances.	Institute of Logistics and Warehousing (ILIM)
19	Demand responsive transport (Tele-bus)	Kraków/ Poland	In order to better customize PT offer to citizens' needs the city of Krakow has introduced and tested a new demand responsive transport service in a chosen area of three districts. The DRT service in Krakow is the first flexible PT service on the national scale. The implementation of the service was based on the technology and know-how transfer.	Institute of Logistics and Warehousing (ILIM)
20	Advanced PT Ticketing (Skycash)	Poland	SkyCash is independent of the telecommunication operator universal system of mobile payments, providing the simplicity and speed of transfer to the highest safety standards. SkyCash works on any GSM network and on any phone with Internet access.	Institute of Logistics and Warehousing (ILIM)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

			Cities: Warszawa, Wrocław, Rzeszów, Bydgoszcz, Lublin, Puławy, Biała Podlaska, Inowrocław, Radom, Stalowa Wola, Łódź, Dębica, Płock, Jelenia Góra, Zduńska Wola, Suwałki	
21	Multimodal Journey planner for the Czech Republic	Brno/ 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.	Transport Research Centre (CDV)
22	Integrated public transport system and smart ticketing	Ostrava and Silesian-Moravian region/ Czech Republic	Ostravský dopravní integrovaný systém (ODIS) is an integrated public transportation system, gradually developed in the area of Moravian-Silesian Region (5 427 km², 1.250.000 inhabitants). ODISka is a standard for interoperability of various cards in multimodal smart ticketing regionally used in the ODIS area.	Transport Research Centre (CDV)
23	Public Transport dispatching under KORDIS integrator/ organizer: CED	Brno and South Moravian region/Czech Republic	CED dispatching centre is a part of the regional integrated multimodal PT system. The main CED aim is to ensure operational issues, to transfer information on real time transportation status towards information centres, to ensure transportation organizing during traffic closures etc.	Transport Research Centre (CDV)
24	Real Time Passenger Information System	Central Bohemia region/ Czech Republic	The main goal was to enhance quality of provided information and ensure availability of the information for the blind and visually handicapped while using the public transport. The programme followed the first attempts for development of information systems on the stops and already well-established standard of installations of receivers for the blind and visually handicapped in PIT vehicles and also development of information kiosks.	Transport Research Centre (CDV)
25	Multimodal Integrated Transport	Prague and Central Bohemia region/ Czech Republic	Prague Integrated Transport, PIT (Pražská integrovaná doprava - PID), is a modern integrated mass transport system established according to a European Union recommendation as a communal transport federation. It is developing gradually on the territory of the capital city of Prague and on the territory of Central Bohemia with vital transport relationships to the capital city. Integrated transport has been established with the goal of ensuring high-quality transport services to the territory in order to make mass transport competitive with individual transport. The determinative criteria	Transport Research Centre (CDV)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

			for making the integrated system attractive are time, price, comfort, reliability and safety.	
26	Unified intermodal cargo service	Rigas region/ Latvia	APOVS is automated system for operative 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 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.	Latvian Transport Development and Education Association (LaTDEA)
27	Interchange Principe Pio	Madrid/ Spain	Príncipe Pío is one of the most important interchanges in Madrid, as it offers connections between all forms of public transport: metro, suburban railways and city and suburban buses. The operations carried out in 1995 brought Metro Lines 6 and 10 inside the historic station building, thus significantly improving connections with the commuter rail network and the Metro branch line running to Ópera. 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, and has also made significant improvements in the day-to-day lives of over 60,000 travelers who use suburban buses and the Metro every day.	Latvian Transport Development and Education Association (LaTDEA)
28	Integrated system of selling and reserving tickets	Riga/ Latvia	Riga International Coach Terminal is located in the Center of Riga city. It gives opportunity for all passengers to travel around Latvia and whole Europe. Riga coach terminal use integrated system for tickets purchase and trip management on	Latvian Transport Development and Education Association (LaTDEA)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

			the bases of IS „Baltic Lines". The structure of IS is formed by ten modules with the continuous inter-exchange of information flows.	
29	Atlas Public Transport Ticketing System in Riga	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 both fare payment systems, the previous one and also the new electronic system.	Latvian Transport Development and Education Association (LaTDEA)
30	Interactive passenger service in train traffic	Rigas region/ Latvia	Interactive complex solutions services for railway passengers are implemented on the base of infrastructure and IT solutions. Services are intended for multi-purpose auditorium and consider the basic requests of passengers in Latvia. To satisfy the needs of passengers the interactive information systems have been created. These systems allow passengers to manage and plan the trip, needed resources, and to determine the level of comfort in their travels. Using interactive IS, passengers can in real time determine the schedule of the train and find the main indexes of the route, such as duration and distance of the route, tickets prices, discounts, etc. For the convenience of purchasing tickets the multi-alternative solutions are offered, among them: buying tickets via Internet and mobile phone (SMS). To increase the level of comfort and security the additional important functions are offered, such as seats reservation in the wagons, usage of wireless Internet, carriage the bulky luggage (such as bicycles), as well as usage of special equipment for passengers with special needs.	Latvian Transport Development and Education Association (LaTDEA)
31	Premier Route Bus Corridor Network	UK	Significant upgrade to 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, 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 addition bus shelters and accessible kerbing to complement the low floor buses.	Reading Borough Council (RBC)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

32	Gestione Informata Mobilita' – G.I.M.	Province of Ferrara – Emilia Romagna Region	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. The management of the information related to mobility is going to be centralized - a mobility central unit is going to be set up at Regional Level with important connections with the Provincial Level. This centralized system should help the harmonization of mobility information and its use. In this way a big amount of data related to traffic among different cities of the region will be managed at regional level in order to develop common policies and technologies.	Province of Ferrara (PoF)

This section includes the preliminary analysis of Good Practices identified in POLITE project.

In the table 3.2 a cross reference between the a measures / scenarios list and which Good Practice / Good Practices can be found in is presented.

Table 3.2. Surveyed sites and good practices: overview and categories of measures

ID	Practice	Measure									
		1. PT Legislation and Regulation	2. PT Operational Reorganisation into Multimodal Measure	3. Cooperation among administrations	4. ITS Technical Standardisation for Interoperability	5. Infrastructure Measures	6. Innovative ICT for PT	7. Modelling Tools and Measures	8. PT and Traffic Management Measures	9. PT Information Measures	10. Advanced PT Ticketing
1	Traffic monitoring and management: Floating Car Data (FCD) as traffic sensors			X	X			X	X		
2	Stimer/Mi Muovo Project - Mobility Integrated Fare System in RER (Emilia-Romagna Region) - buses, trains and bike sharing	X	X	X	X		X	X		X	X
3	Multi-channel Information system on mobility at regional scale		X				X		X	X	
4	Sustainable Mobility Plan (SMP)	X	X	X		X	X	X	X	X	X

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

ID	Practice	Measure									
		1. PT Legislation and Regulation	2. PT Operational Reorganisation into Multimodal Measure	3. Cooperation among administrations	4. ITS Technical Standardisation for Interoperability	5. Infrastructure Measures	6. Innovative ICT for PT	7. Modelling Tools and Measures	8. PT and Traffic Management Measures	9. PT Information Measures	10. Advanced PT Ticketing
5	Traveller Information / Mobilitami						X				
6	Traffic Management				X	X			X		
7	Intermodal infomobility platform and SMS ticketing		X			X				X	X
8	Traffic Management during big events		X			X			X		
9	SMS ticketing service				X		X				X
10	Mobility and traffic management in firms		X						X		
11	Open Public Transport Data	X			X		X			X	
12	Real Time Passenger Information System, Bus Priority at Signals, Public Transport mobile apps, City Access Control. Smart Card	X		X		X	X		X	X	X
13	Bus Lane Enforcement	X		X	X		X		X		
14	Real Time Information System & Bus Priority at Signals	X		X		X	X	X	X	X	
15	Real Time Passenger Information System, Bus Priority at Signals, Disability Accessibility					X	X		X	X	
16	Mobile travel information						X		X		
17	On-board bus travel information								X	X	
18	Real Time Passenger Information System (Mezi)									X	
19	Demand responsive transport (Tele-bus)								X		
20	Advanced PT Ticketing (Skycash)										X
21	Multimodal Journey planner for the Czech Republic		X		X	X				X	X
22	Integrated public transport system and smart ticketing	X	X	X	X	X	X	X	X	X	
23	Public Transport dispatching under KORDIS integrator/organizer: CED		X	X	X	X	X	X	X	X	
24	Real Time Passenger Information System		X	X	X	X	X	X	X	X	
25	Multimodal Integrated Transport		X	X	X	X	X	X	X	X	
26	Unified intermodal cargo service			X		X				X	
27	Interchange Principe Pio		X								
28	Integrated system of selling and reserving tickets	X			X					X	X
29	Atlas Public Transport Ticketing System in Riga										X
30	Interactive passenger service in train			X					X	X	

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ID	Practice	Measure									
		1. PT Legislation and Regulation	2. PT Operational Reorganisation into Multimodal Measure	3. Cooperation among administrations	4. ITS Technical Standardisation for Interoperability	5. Infrastructure Measures	6. Innovative ICT for PT	7. Modelling Tools and Measures	8. PT and Traffic Management Measures	9. PT Information Measures	10. Advanced PT Ticketing
	traffic										
31	Premier Route Bus Corridor Network			X		X	X		X	X	
32	Gestione Informata Mobilita' – G.I.M.		X	X	X	X			X		

The POLITE partners involved in Component 3 specified measures in the matrix chart against objectives

- improving city attractiveness;
- improving PT services;
- improving PT efficiency;
- increasing the PT mode share;
- decrease congestion;
- emissions and pollution reduction.

Table 3.3. Surveyed sites and good practices: covered objectives

ID	Practice	Objectives					
		Improving City attractiveness	Improving PT services	Improving PT efficiency	Increasing the PT mode share	Decreasing congestion	Emissions and pollution reduction
1	Traffic monitoring and management : Floating Car Data (FCD) as traffic sensors. Result of S.I.MO.NE Project					X	X
2	Stimer/Mi Muovo Project - Mobility Integrated Fare System in RER (Emilia-Romagna Region) - buses, trains and bike sharing	X	X	X	X		
3	Multi-channel Information system on mobility at regional scale				X	X	
4	Sustainable Mobility Plan (SMP)	X	X	X	X	X	X
5	Traveller Information / Mobilitami	X	X	X	X	X	X
6	Traffic Management	X	X	X	X	X	X
7	Intermodal infomobility platform and sms ticketing	X	X	X			
8	Traffic Management during big events	X	X	X	X	X	X
9	SMS ticketing system of public transport operator	X	X	X			
10	Mobility and traffic management in firms	X	X	X			

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

ID	Practice	Objectives					
		Improving City attractiveness	Improving PT services	Improving PT efficiency	Increasing the PT mode share	Decreasing congestion	Emissions and pollution reduction
11	Open Public Transport Data				X	X	X
12	Real Time Passenger Information System, Bus Priority at Signals, Public Transport mobile apps, City Access Control. Smart Card		X	X	X	X	
13	Bus Lane Enforcement		X	X	X	X	X
14	Real Time Information System & Bus Priority at Signals	X	X	X	X	X	X
15	Real Time Passenger Information System, Bus Priority at Signals, Disability Accessibility		X	X	X	X	X
16	Mobile travel information	X	X	X			
17	On-board bus travel information	X	X	X			
18	Real Time Passenger Information System (Mezi)	X	X				
19	Demand responsive transport (Tele-bus)		X	X	X	X	X
20	Advanced PT Ticketing (Skycash)	X			X		
21	Multimodal Journey planner for the Czech Republic	X	X	X	X	X	X
22	Integrated public transport system and smart ticketing		X	X	X		
23	Public Transport dispatching under KORDIS integrator/organizer: CED		X	X	X		
24	Real Time Passenger Information System		X	X	X		
25	Multimodal Integrated Transport		X	X	X		
26	Unified intermodal cargo service		X	X			X
27	Interchange Principe Pio		X	X	X		
28	Integrated system of selling and reserving tickets		X	X	X		
29	Atlas Public Transport Ticketing System in Riga		X				
30	Interactive passenger service in train traffic		X	X			X
31	Premier Route Bus Corridor Network	X	X	X	X	X	X
32	Gestione Informata Mobilita' – G.I.M.		X	X			

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

As visual performance from the table above can be presented the following pie chart.

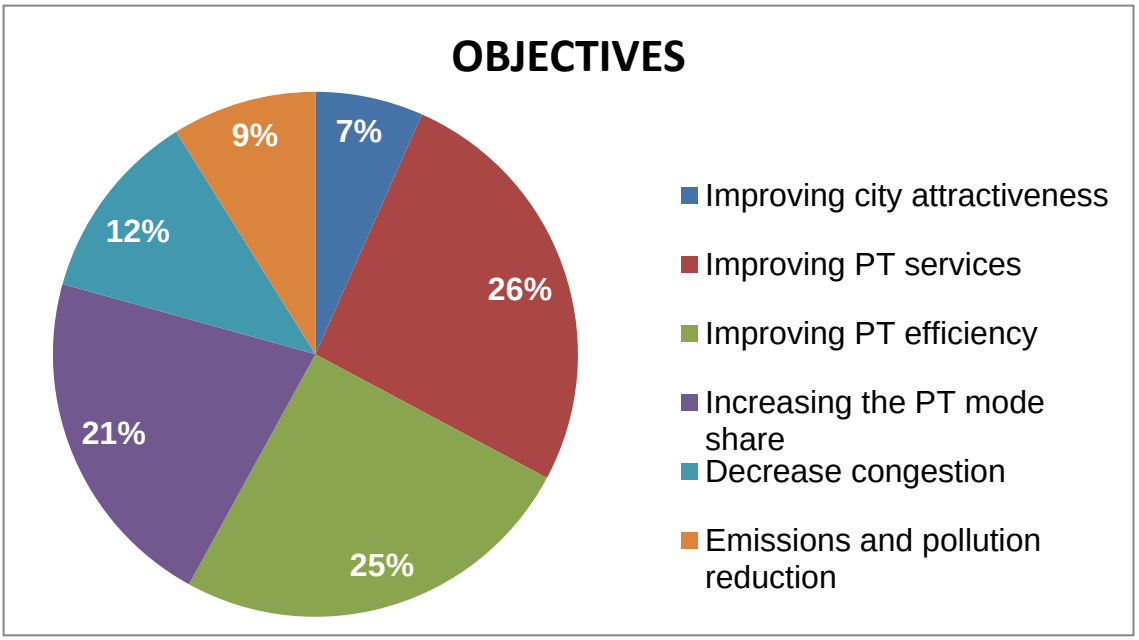


Figure 3.1. GP distribution by objective

It can be clearly seen from the pie char fig. 3.1. that the main objective for analysed GP is improvement of public transport (PT). Totally objectives for PT improvement have 72%. Following objective – decrease of congestion level has 12%, emission and pollution reduction has 9% and improvement of city attractiveness has 7%.
Pie chart on fig. 3.2. describes target groups level for GP. Two leading positions with 41% and 47% has private sector and public sector. PPP target group has 12%.

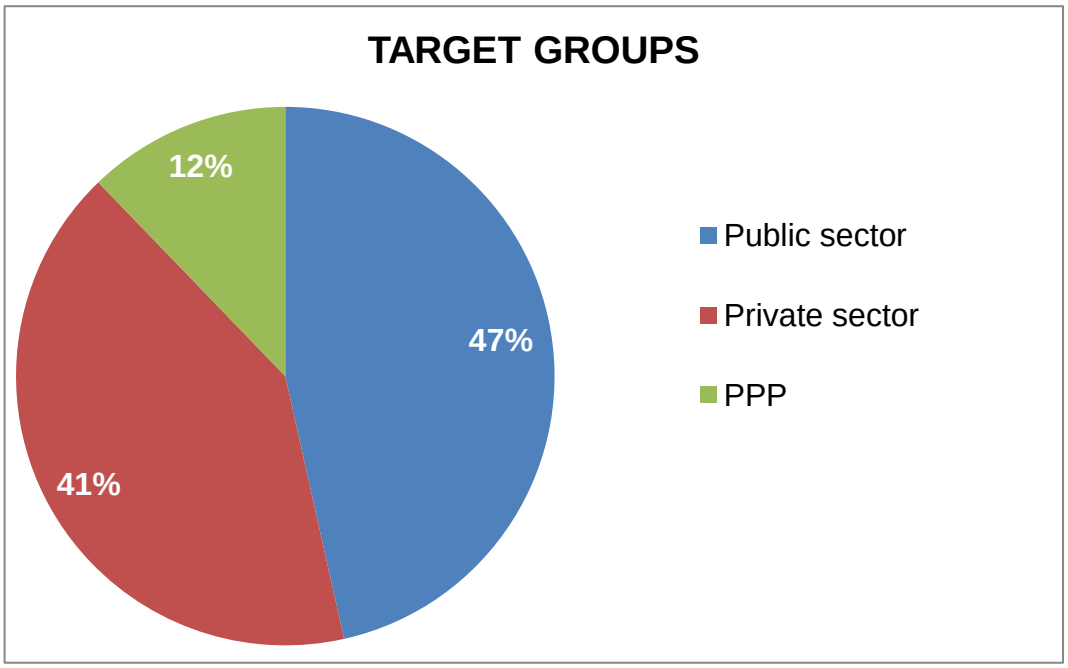


Figure 3.2. GP Target groups distribution

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

The pie chart fig. 3.3. bellow illustrates target territorial level division. The leading position with 30% have regions and metropolis territorial levels with 24%. Almost the same number has state (18%) and local (20%) policy divition.

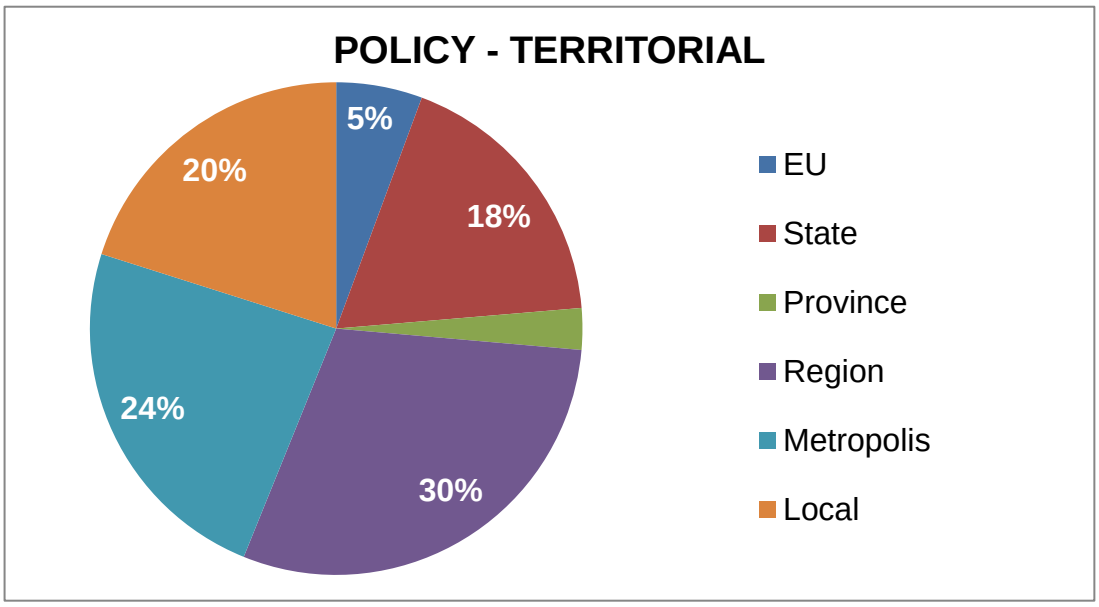


Figure 3.3. Policy – territorial distribution in GP

Following pie chart fig. 3.4.“Policy – Bodies” describes level of policy division. At the first place are two policy bodies: city level and region level with 35% both. Next policy body – state has 15%, private sector 12% and province just 3%.

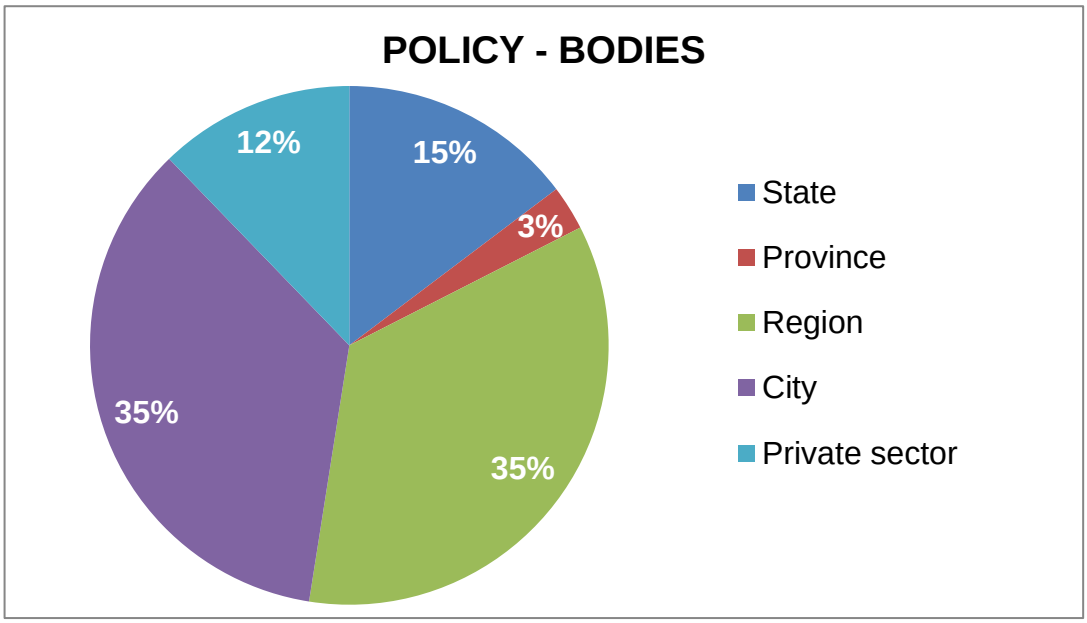


Figure 3.4. Policy-bodies distribution in GP

Following bar chart fig. 3.5. presents countries from wich GP for analysis came. Four leading countries are Italy, UK and, Czechя Republic. The highest level has Italy with 7 GP. Following UK with 6 GP and Czech Republic with 5 GP.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

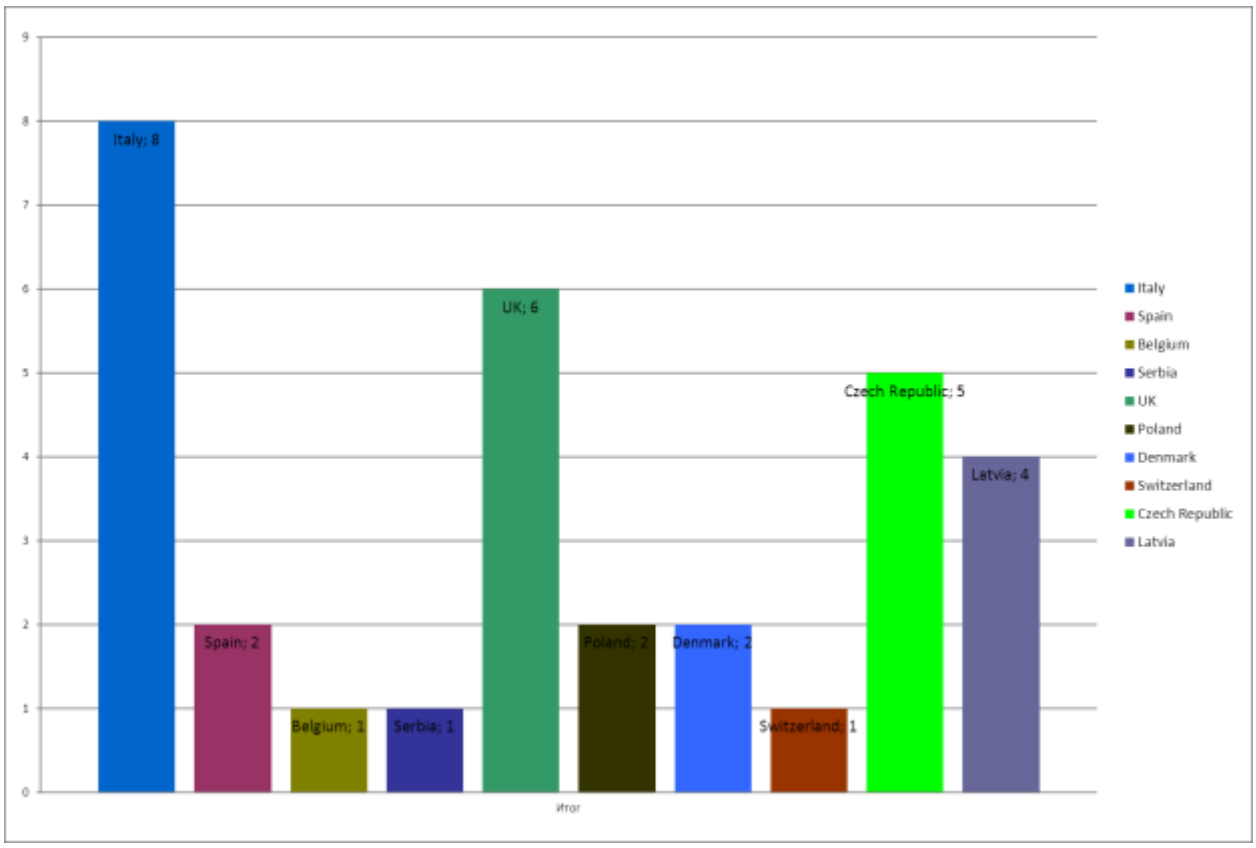


Figure 3.5. Countries from which are GP

3.2. GOOD PRACTICE REVIEW

Section 3.2. represents the aggregated information from the questionnaires, which were filled by project partners. The authors of the report are not responsible for the accuracy of the information provided.

3.2.1. GP_1: TRAFFIC MONITORING AND MANAGEMENT: FLOATING CAR DATA (FCD) AS TRAFFIC SENSORS. RESULT OF S.I.MO.NE PROJECT

Text of this GP is provided by Calabrian Regional Administration (CRA)

Good Practice' ID	1
City/Region/Country	Torino/Italy
Prepared by	Calabrian Regional Administration (CRA)

General information

Description

The use of FCD as sensors in monitoring traffic in real time required the study and development of:

- A new scalable architecture able to link several FCD providers with local mobility control centre;
- New protocol able to deal with all data related the mobility management;
- New functions able to aggregate and normalize different FCD format coming from different providers;
- New algorithms to integrate FCD data in already available traffic models;

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- New functions to publish data coming from local mobility control centre.

The design and the implementation of all these stuffs had been made in order to be used in three different towns (Torino, Genova and Bologna) and in two Provinces (Cagliari and Florence).

All the component developed are in day by day use in all the sites involved in the project.

Backround and Context

All the partners of the SIMONE Project were already operating a traffic control centre before of the start of the project. Simone provided the change to renew and improve these centres and to better integrate with other ITS system already in place in the area (UTC, Parking management, LTZ, PT facilities, VMS).

Policy design details

Policy Design Steps and Timing

Turin as project leader provided the architecture and the main components (building blocks), other partners developed their local systems following the SIMONE architecture and their specific goals.

Duration: 4 years.

Actors Involved

Turin Municipality -- Legal and Administrative responsible.

5T Ltd (appointed by Turin Municipality) - *www.5t.torino.it* --Technical coordination of project development .

5T is responsible of all ITS system development, operation and management in the Turin area.

Decision Making Process

Turin (5T) as project leader was asked to defined a set of possible solutions and the rest of the consortium validated them. The project was conducted by a sort of steering committee leaded by Turin partners. (Piedmont area)

Implementation details

Implementation Steps and Timing

Turin (5T)

- defined the functional specifications of each building block of SIMONE architecture;
- launched tenders in order to select a providers able to implement /provide each building block;
- assigned tenders and followed developments;
- tested the full chain constituting the SIMONE architecture;
- coordinated the implementation and deployment of building block in each site.

Other partners:

- Defined functional specification of their traffic control centre;
- Launched tenders and them assigned them in order to grant the development and deployment of their components.

Integrated their “specific” components with the build block provide by Turin (5T).

ICT/Infrastructures needed

Simone Protocol:

protocol to transfer every kind of data related to traffic management and covering also FCD issues.

Responsible 5T s.r.l.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

Cost: 100.000 €
Aggregation module:
It is able to aggregate and make available to the traffic control centre supervisor, all kind of FCD data coming from different provider with different network definition and data collection policies.
Publication module.
Sw able to publish all data elaborated by traffic control centre, to all actors involved
Responsible 5T s.r.l.
Total cost: 60.000 €

Human Resources

Turin Municipality + 5T :
Staff : 14 for Turin Municipality and 65 for 5T company Man Months
External resources (only for Turin and Piedmont area):

- Consultants: 30 Man Months
- Development and Deployment: 30 Man Months

Supporting Mechanism

Partnerships/Key Supporting Stakeholders

- Turin Municipality: political and financial support.
- Piedmont region: political and financial support.
- Regional Affairs Dept.: political and financial support.

Results

Expected vs Actual Benefits

Report the main benefits of the PT policy was expected to delivery during the planning stage and describe how the actual benefits compare.Not a PT policy.

Quantitative Results Achieved

SIMONE project allowed to extend the monitored area from the Turin metropolitan area to the Piedmont region area.
(only for Turin and Piedmont area)

Qualitative Results Achieved

Creation of a new market for FCD data; creation of new opportunities for monitoring large area with low cost of infrastructure.
Renew of already working traffic control centers.

Key Considerations

Primary Obstacles

Bureaucratic procedures in managing public tenders for external provisions;
Lack of commitment in public administration.

Critical Success Factors

Strong technical and administrative coordination and support from all partners (public and private).

Transferability Considerations

All building blocks of the project have been designed and implement to be portable and scalable; these are already used in 5 different traffic control centres.

Up-scaling Considerations

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

All the delivers of the project have been designed and implement to be portable and scalable.

Contact

Administrative and Institutional:
Gianfranco PRESUTTI,
Head of Department for Work, Training and Economic Development
City of Torino,
gianfranco.presutti@comune.torino.it
Technical Coordination:
Fabrizio Arneodo
Responsible for R&D Department
5T S.r.l. – Gruppo GTT
Tecnologie Telematiche Trasporti Traffico Torino
corso Bramante, 66/A - 10126 Turin – ITALY
Fabrizio.arneodo@5t.torino.it

3.2.2. GP_2: STIMER/MI MUOVO PROJECT - MOBILITY INTEGRATED FARE SYSTEM IN RER (EMILIA-ROMAGNA REGION) BUSES, TRAINS AND BIKE SHARING

Text of this GP is provided by Calabrian Regional Administration (CRA)

Good Practice' ID	2
City/Region/Country	Regione Emilia-Romagna/ Italy
Prepared by	Calabrian Regional Administration (CRA)

General information

Description

STIMER is the Mobility integrated fare system based on an all encompassing ticket for the local and regional public transport and on the RER fare zoning and a technological management system.The fare integration is made possible through the chip card "MI MUOVO (I Move)".

Backround and Context

The need to allow Emilia Romagna citizens to use trains, buses and bike with an integrated ticket. In force since 1997.

The Mi Muovo web site: http://mobilita.regione.emilia-romagna.it/mi-muovo-1

Policy design details

Policy Design Steps and Timing

The key policy is the realization of tariff and modal integration regarding the services of LPT and other complementary services (bike sharing, car sharing, parking and so on) through the technology interoperability.

September 2008 - Start of the train and urban bus integrated annual paper ticket for students and commuters (Mi Muovo).

January 2010 - First use of Mi Muovo electronic contact-less card in Bologna, Parma, Reggio Emilia and Ravenna basins.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

From 2010 - Extention of Mi Muovo to the other EmiliaRomagna's basins.

Actors Involved

RER, Local Authorities, LPT Companies, PTAs (Public Trasport Agencies) - 13 urban services + 9 province suburban services

Decision Making Process

The RER is the coordinator and point of reference for the basic features of the system, while local authorities and public agencies made some changes and realized local implementation tools, while the LPT enterprises realized and manage the system.

Implementation details

Implementation Steps and Timing

STIMER has substituted the old fare system, based on the trip distance to be covered (calculated in kilometers), with a new system based on areas (zones) to be crossed.

To reach this aim RER has divided the regional territory in over 400 fare zones. The use of different transport means at an integrated fare, regardless of the transport means used (bus or train), is made possible by the contact-less card MI MUOVO.

The advantages of an integrated fare system are:

- (for users) easier access to and use of public transport;
- (for LPT planners) data-gathering useful for local public transport services planning and scheduling;
- fares more corresponding to the service;
- LPT improvement through more flexible and efficient services;
- Stimulating demand and customer loyalty.

ICT/Infrastructures needed

The ticket of the normal ride is printed. It is disposable and with a magnetic band. The season tickets are on a plastic card.

LPT enterprises are responsible for the implementation of all the system. The total cost of the project is about 35 millions €.

Human Resources

For the Region:

1 Director General

1 Chief executive

1 Technical staff

1 Accountant

External expertise

For the enterprises: specific structures according to their needs

Monitoring Procedures

Journey database creation for better planning and programming LPT services. 5.000 stamping machines together with further technological devices will afford to:

- monitor citizens' journeys and routes;
- carry out statistic analysis on the (origin-destination) flow and on LPT utilization;
- inter-modality analysis (train-bus, bike sharing, car sharing, etc.).

Supporting Mechanism

Awareness/Information Campaigns

Many information campaigns were made to help the spread of the project "MI Muovo" and to tempt other users of this transport service and to increase the use of LPT.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

Communication plans have been centred on the creation of new titles of integrated trips (Mi Muovo Mese, Mi Muovo City+ and City+ students).
Moreover, the communication campaign has been integrated in the "CIVITAS MIMOSA" European project resources. A direct communication and several action plans for mass-media communication were realized in order to know in detail the advantages of the new proposals.
A reserved section on the website Mobilità (http://mobilita.regione.emilia-romagna.it/) and tool-free number 800 388 988, advertising banners on University and Transport enterprises website.

Partnerships/Key Supporting Stakeholders

RER, Local Authorities, LPT Companies, PTAs (Public Trasport Agencies) - 13 urban services + 9 province suburban services.

Results

Expected vs Actual Benefits

One of the success factors is the easier ticket purchase. In addition to the actors initially involved (LPT companies, Italian rail company Trenitalia, etc.), new solutions to improve the access to travel tickets purchase and to services are already in use or being implemented all across the regional territory.

Quantitative Results Achieved

One indicator is represented by the monitoring on MI MUOVO ticket sales from 2008 onwards, i.e.:
A strong increase to "fidelization" took place: annual ticket +40%; monthly ticket +51%.
At present over 192,000 cards have already been issued.
Satisfying feedback came out from the customer satisfaction research, that is 95,3% with a medium mark of 7,86 out of 10,00.

Qualitative Results Achieved

- The possibility to recharge the cards MI MUOVO through more than 800 ATMs (available);
- home banking systems;
- large-scale distribution;
- internet;
- mobile phones,

to be added to the ticket machines at train stations and on-board on bus.
Passengers can choose among different kinds of MiMuovo tickets:

- Mi Muovo (annual)
- Mi Muovo students (annual)
- Mi Muovo monthly ticket
- Mi Muovo City+ (annual)
- Mi Muovo City+ students (annual)

In addition there are season tickets only for urban and suburban bus services.

Key Considerations

Lessons Learned

The initial projecthas presented remarkable implementation difficulties arising from the technology evolution system on one side, and on other side from the impacts on the company setting.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

To the initial project gradual changes and adjustments were realized, which allowed the launch of "MI MUOVO".
Flexibility, coordination and hard sharing with all involved actors were the strength factors for the implementation of such a complex project.

Primary Obstacles

Difficulties encountered are the definition of “clearing” rules for the revenue allocation among the LPT companies due to the possibility for the users to take both buses and trains; and interoperability of different technological systems in relationship to the possibility to extend their use to other services (for example. Mi Muovo by electric vehicles, Mi Muovo by bike, etc.)

Critical Success Factors

Consultations among different actors, involved in LPT rail/road, have revealed quite difficult.

Transferability Considerations

We want to inform that, apart from all the difficulties, the integration concept is strong and positive. In fact, users can appreciate it for the clear tariffs and also for a better accessibility to the services.

Up-scaling Considerations

The technology “MI Muovo”, is the instrument permitting the implementation of integrated policies regarding Transport in the RER. In particular, new projects about this theme have been launched as, for example, the fleet remote control system, variable message panels, ecodriving, the travel planner, real-time news about traffic flow for the users, app and so on and, tt’s much easier to develop them thanks to the investment made by RER in “Mi Muovo” project.

Contact

Urban Mobility and local transport department
Viale Aldo Moro, 30
Tel. 051 5273819
Fax: 051 5273833
E-mail:

3.2.3. GP_3: MULTI-CHANNEL INFORMATION SYSTEM ON MOBILITY AT REGIONAL SCALE

Text of this GP is provided by Calabrian Regional Administration (CRA)

Good Practice’ ID	3
City/Region/Country	Campania/ Italy
Prepared by	Calabrian Regional Administration (CRA)

General information

Description

The Service Centre "Moving" acquires, processes and distributes information about the entire mobility system of the Campania Region. The particular characteristics of the service are: completeness of the information related to the entire regional system of

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

mobility, and the "intercanalità", namely the dissemination of all media from the data and information received and processed by the center.
The information is acquired either directly interfacing with the operators of transport systems that operate in the region. The direct acquisition takes place using video cameras for traffic monitoring, placed on the main roads of regional interest. The interface with the operators is defined both by the level of computerization of the managers that the type of information to be acquired. In some cases it has been made a direct connection between the service center and the central control period, in other occurs through the transmission of text messages. The information thus acquired are included in the database of the computer platform.
When preparing the information to be validated and localized. The location allows you to correlate information from different sources and related to the same geographical area. At each item of information is assigned a priority level based on the type of the transport system and the duration of the event. The priority level assigned to information regulates the spread.
For the distribution of the news editors of the Service Center produces newsletters (audio and video), containing real, virtual animations and virtual animations on real images. The information is disseminated through the dedicated website, also available in mobile format, and the facebook page.

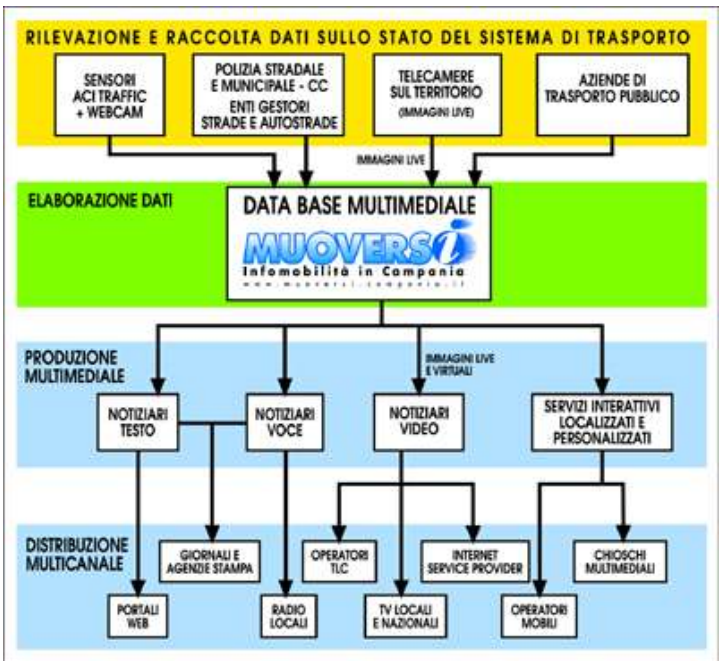
Backround and Context

“Muoversi” was realized in 2004 and was:

- Reported among the projects submitted for the Prize "Regionando 2005, le Regioni e le politiche per la sicurezza" given to the Forum for Public Administration;
- Winner of the "Progetti, sistemi e soluzioni per lo sviluppo del sistema città – edizione 2005", promoted by Assolombardia and ATM, in "Il cittadino al centro del sistema mobilità e degli altri servizi pubblici";
- Included in the report EITO 2005, European Monitoring Centre for Information Technology, one of the 12 best practices in Europe.

The Service Centre interfaces with the Capodichino Airport (Naples), with the managers of roads (Tangenziale di Napoli, Highways, ANAS), with the Municipal Police of five provincial capitals, with the managers of rail transport services (Circumvesuviana, Metronapoli) and the operators of public transport services by road (ANM, SITA, AIR and others). In the following the main organizational architecture of the service is proposed and the facebook page.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme



Policy design details

Policy Design Steps and Timing

The project was launched in 2004, with an initial trial of 2 years and thereafter regime. To date, the cooperation between the Region and ACI is regulated by a Convention with start date in April 2012 expiring in June 2015.

Actors Involved

- The Campania Region - Department of Transportation - has financed the construction of the Service Center;
- ACI - Automobile Club of Italy - the technological partner in the region, has designed and built the system;
- ACAM - Agenzia Campana Mobilità Sostenibile - coordinates the activities of the project moving.

Decision Making Process

The decision making process is regulated by Campania Region and ACI.

Implementation details

Implementation Steps and Timing

The creation of the service center took about 5 months.

To date, the cooperation between the Region and ACI is regulated by a Convention with start date in April 2012 expiring in June 2015.

ICT/Infrastructures needed

FTP server access.

In this first stage, the data and the information are collected in service center database.

In this second stage, the information coming from heterogeneous sources are processed and validated according to the reliability of the source. The system also checks, using the geo-information, the absence of errors .

In this third stage, the news is provided by the Service Center to all media participating in the project, by several channels (e.g. video, radio , web, etc.).

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

At first there was a server in a operative platform; successively, the server is available on cloud computing. The operative platform is connected at web and it is accessible by any remote user. Moreover, there are a network of 40 webcam to traffic monitoring finalized to informer real time. The total cost (ICT and Infrastructure) is about 400'000 €/year.

Human Resources

- 5 operators;
- 1 coordinator;
- Several technological partners.

Monitoring Procedures

The monitoring process is realized by Campania Region and ACI.

Supporting Mechanism

Awareness/Information Campaigns

To raise awareness of the service, various information campaigns have been carried out over the years; e.g.:

Partnerships/Key Supporting Stakeholders

Synergic action among:

- Campania Region;
- ACI;
- ACAM.

Results

Qualitative Results Achieved

The project allowed to extent the monitored area of Campania Region.

Key Considerations

Primary Obstacles

Limited available to release traffic data by local authorities.

Critical Success Factors

Strong technical and administrative coordination and support from all partners.

Transferability Considerations

The project has been designed to be transferable.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

3.2.4. GP_4: SUSTAINABLE MOBILITY PLAN (SMP) IN SANTANDER

Text of this GP is provided by Calabrian Regional Administration (CRA)

Good Practice' ID	4
City/Region/Country	Santander/ Spain
Prepared by	Calabrian Regional Administration (CRA)

General information

Description

This plan has been developed during the last five years and tackles several aspects related to the public transport improvement. In some cases the adopted measures involve new technologies but in other cases they are political decisions or good practices in the management process. This process is complex and in a constant evolution. For more details please find a description here:
http://portal.ayto-santander.es/documentos/pmss.zip

Backround and Context

The Santander's SMP has been developed during several year and is in constant evolution. Some measures like Intermodal PT were applied 15 years ago, others like PT Information System using panels or SMS were introduced around 4 years ago.

Policy design details

Policy Design Steps and Timing

The SMP describes in detail the policy design steps and timing. Anyway this process is still unconcluded and it could suffer some changes.

Actors Involved

Main bodies are:

- Santander City Council;
- Regional Government (intermodal measures);
- University of Cantabria (evaluation and modeling).

Decision Making Process

Decision making process involves:

- Santander City Council;
- Regional Government (intermodal measures);
- University of Cantabria (evaluation and modeling).

Implementation details

Implementation Steps and Timing

The implementation steps and their timing are described, as other aspects, in the DoW of the SMP.

ICT/Infrastructures needed

Described in the SMP.

Human Resources

The SMP is in constant evaluation. At least two people from the University of Cantabria are hired for its evaluation.

Monitoring Procedures

Main bodies are:

- Santander City Council;

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- Regional Government (intermodal measures);
- University of Cantabria (evaluation and modeling.

Supporting Mechanism

Awareness/Information Campaigns

The main methods to promote the SMP have been press, Public Transport Department Web Page (*http://www.tusantander.es*) and an internal TV channel in the buses in which the citizens are informed about local activities in PT and the city activities.

Partnerships/Key Supporting Stakeholders

There has been a tight collaboration with the SmartSantander project.

Results

Expected vs Actual Benefits

The main expected benefits are:

- Costs reduction;
- Pollution reduction;
- Better Public Transport Service;
- Intermodal services.

Most of these benefits has been achieved, others are still pending.

Qualitative Results Achieved

The main expected qualitative results are about improvement of transport conditions (traffic, public transport, intermodal transport) and pollution reduction.

Key Considerations

Transferability Considerations

All the technologies and measures used in the SMP are generic enough to be applied in any other city. In fact all these measures haven been taken from other successful projects and applied in Santander.

Up-scaling Considerations

The SMP is based in simple solutions precisely in order to scale the systems as much as possible.

Contact

Jose Antonio Teixeira Vitienes
General Director of Innovation
Santander City Council
jteixeira@santander.es

3.2.5. GP_5: TRAVELLER INFORMATION / MOBILITAMI

Text of this GP is provided by Calabrian Regional Administration (CRA)

Good Practice' ID	5
City/Region/Country	Marche / Ancona and Senigallia/ Italy
Prepared by	Calabrian Regional Administration (CRA)

General information

Description

Mobilitami is the Sustainable Transport Community - a virtual place for exchange information between demand and supply where innovative ways of travelling, environmentally friendly, meet – or contribute to satisfy - all kind of users requirements,

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

reducing traffic jams and travelling time. A technological and innovative platform able to match sustainable mobility demand and supply within the regional territory.
Mobilitami allows to:

- Plan trips at regional level (available);
- Plan long-haul trips to reach Marche Region (Interregional transport service) (available);
- Book and buy tours/planned travels (available);
- Book flexible services (partially available);
- Book shuttle services (door to door service) (not available yet);
- Book Taxi (not available yet);
- Organize the holidays or spare time, checking all available events in the area indicated by the user (available);
- Reach points of interest of the region (available);
- Communicate with monitors distributed on the territory, DESMO circuit project (available);
- The web portal provides different services and uses a variety of technologies, such as algorithms for research the best travel solutions at regional level (LDEQUE + A* - only for pedestrian solutions).

Estimation and instructions about the best route in order to reach the desired destination from any place of the territory by using the network of the local public service. The estimation is achieved by combining the provision of all the transport operators located on the territory.

- Implementation of a proprietary Geocoder based on Tele Atlas cartography;
- Smart search – full text indexation (only for some specific fields of the DB as POIs, Events, Bus Stops);
- Possibility to implement national and community standards;
- Multimodal system for the provision of multimodal transport services by combining aircrafts + ships + trains;
- Binary graph generation for search the optimal mathematician;
- WS to expose useful data to mobile apps;
- Data normalization for each transport operator;
- Centralized DBMS for central system.

Mobilitami realizes the first Marketplace of the Sustainable Mobility where different subjects can meet: tour operator and accommodation facilities, transport operators, local bodies/ events organizer, residents, tourists and commuters.

To keep each subject connected to the community, several monitors have been installed across the region where some information is displayed (events, advertising, timetable of the public transport, delays of the buses, some important notices). There is

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

a real time connection with the centre and a continuously updating of the news. Each localized monitor is detected so that it is also possible to contextualize the publishing data. Another important element to consider is the high richness beside this web portal: the data georeferencing is the main important phase to assure the reliability of information. Not only, all data are certified to give an high level of service to the end users. Mobilitami has two different accesses, one for the users and the other for all partners involved in this project (public authority, transport operator, seller, etc.).
The offered service is aimed at providing information of public-interest about the territory such as events, public transport services and any other information that the advertiser may consider worthy of publication. This information is published through the Internet and multimedia screens distributed all over the entire territory. Its purpose is to promote both the territory (towns, provinces, regions) and the available mobility services in order to foster the use by citizens/tourists. In particular, Mobilitami organizes and gives direct access on the map to information of particular interest about the territory (schools, cinemas, theatres, gyms, pharmacies, public offices, museums, banks, post offices, air/land/water/rail transport nodes, etc.). It also provides information on events on the territory with the purpose of offering rapid and integrated information on how to reach the desired destination by public means of transport (taxi, DRT, car sharing, etc.) through an effective and advanced travel planner which can connect different transport modes (bus, train, metro, on foot, etc.). As concerns the events, the advertiser can publish the scheduled events (sport competitions, cultural/social events, etc.) himself.
Moreover, multimedia screens offer to citizens the most advanced integrated infomobility services, including images and information to promote the territory with the possibility of editing contents.

Backround and Context

At the beginning of 2011, right to proceed with the important South African experience, Pluservice set up a special purpose company called MobilitAMI with AMI SpA, the public transport operator of the Province of Pesaro. MobilitAMI is aimed at realizing and managing integrative LPT services which need specific automation interventions for processes and systems. First, MobilitAMI designed and realized BLUeMobility, the first virtual community for sustainable transport, with the purpose of contributing to reduce CO2 emissions in order to have a significant and immediate impact on tourism and economy. The project was submitted within a recent national call by the Ministry of Environment and it focuses on the following themes: sustainable mobility, sustainable development and protection of the environment. The project objective is to raise public awareness by educating residents, commuters and tourists on the use of public transport, by reducing the use of private cars and adopting a new style of local mobility without penalizing travel comfort. The project is currently active on the Marche territory and it is also achieving a resounding success in other national areas.
Some relevant data:

- Number of monitors installed across the region: 15
- Number of Point of Interests into the portal: 17372

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- (POIs are grouped by different categories such as School, Pharmacies, Law enforcement, Events, Restaurants, and Places of worship. Number of categories: 165)
- Number of Events into the portal: 130
- Average monthly accesses in the portal to query travel solution (Travel Planner – 2012): 6,565
- Annual accesses in the portal to query travel solution (Travel Planner - 2012): 78,782

Policy design details

Policy Design Steps and Timing

Design criteria and steps:

- Identify the main scope of the whole project and define the objectives to achieve;
- Define stakeholders: Pluservice has identified the possible stakeholders;
- Requirements analysis and meetings with stakeholders;
- Define which services can be hosted into the platform;
- Design: the development of the software follows a specific model called "Evolutionary Process Model", specifically spiral model. With this model, the design runs along a spiral from the beginning of the project until the release of the product. Each spiral is divided in several sectors: Communication with the stakeholders, Planning, Risk analysis, Design, Construction and Release, Evaluation by the stakeholders. Essentially, the phases characterizing the development of the portal are related to:
    - Architectural design - definition of software components (subsystems) and their relationships;
    - Abstract specification - specific of the high-level components;
    - Interface design - Define and specify the interfaces of the components;
    - Component design - Detailed specifics of each components;
    - Data structure design - Design of data structures for containing the data of the problem;
    - Algorithm design - Design of the algorithms for travel planning.

IMPORTANT MILESTONE

This project started at the beginning of April 2011 and a very important milestone was reached in February 2012 with a big release of the project. The platform was presented during an International exhibition in Milan: "BIT" International Tourism Exchange". After this event several meetings took place with subjects who work on tourism and transport. These meetings brought a lot of developments, upgrades of the entire portal with new services and functions available for the users (tourists or citizens).

Design Steps (high level design):

1st Step of the project → Acquiring, capturing and publishing the offer (services available to the users). All actors above mentioned have been involved in this step.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

2st Step of the project → Contextualization of information. All actors mentioned above have been involved in this step.

3rd Step of the project → Development of applications supporting specific transport services. The actors involved in this step are Pluservice srl, Ami spa and Mobilitami srl.

4th Step of the project → The CARD as a tool to fully enjoy the Marche Region. The actors involved in this step are Pluservice srl, Ami spa, Mobilitami srl, Marche Region and Confcommercio.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

5th Step of the project → A CARD facilitates customers' retention. The aim is to relate the hospitality, transport services, local production, the attractions of the region and its commercial offer.

6th Step of the project → Involvement of all those who live in the territory. Why? Join the community to

- GIVE citizens and potential visitors a new tool to discover the Region at best;
- USE an innovative network to promote your own business;
- Earning money, etc.

Actors Involved

Mobilitami: Pluservice and Ami Pluservice set up a special purpose company called MobilitAMI with AMI SpA, the public transport operator of the Province of Pesaro. MobilitAMI is aimed at realizing and managing integrative LPT services which need specific automation interventions for processes and systems. Few months after its foundation, also the local section in Ancona of Confcommercio (the Italian General Confederation of Commerce, Tourism and Services) joined the company.

Pluservice srl: System Integrator for passenger transport companies. After over 20 years' activity, Pluservice is currently the leading Italian company in the field of integrated IT systems (ERP) for passenger transport companies, with over 250 clients evenly distributed throughout Italy and over 1000 application packages

Decision Making Process

1. Define the problem → get demand and supply to meet each other, increase the tourism sector and enhance the use of public transport
2. Identify limiting factors. The asset of the portal is made up by data of different kinds: public transport service data of every single operator, POIs, information on events and much more. One of the main limits is that of acquiring normalized data to be organized an managed and make them useful for the end user.
3. Develop potential alternatives. For instance, this phase in characterized by the study of possible communication channels: kiosk, web, smartphone, IVR, call centre.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

4. Analyse the alternatives. Every single communication channel has been analysed, highlighting pros and cons, evaluating which alternative would have been suitable for satisfying the users' needs. This phase is very important to reject the unsuitable solutions or to decide which solutions can be adopted in the first starting phase of the project.
5. Select the best alternative. During the evaluation of pros and cons, it has been decided, for instance, to abandon the implementation of an IVR and the provision of a call centre, especially during the first starting phase of the project. Much more emphasis was given to the web and to the development of smartphone applications.
6. Implement the decision. The portal and every single element have been developed based on the project decisions taken by a technical working group assessing different aspects: economic comparison, impact towards users (implementing user friendly interfaces and compliant with national usable laws).
7. Establish a control and evaluation system. The entire implementation process complies with specific steps followed by control and evaluation phases of the single modules and after that of the whole project (regression testing). Evaluations are perform in order to understand if every achievement is compliant with the decisions taken during the designing phase. In addition, the system is equipped with tools to control the number of accesses to the portal and verify if the user is satisfied or not with the research in the portal.

Implementation details

Implementation Steps and Timing

The implementation steps follow the design process:

1. Realization of the portal as a box to contain different services available to the users.
2. Definition of web services.
3. First service usable by the users: Multimodal Travel Planner at regional level.
4. Information for the users through web site, monitor and Apps. Moreover, it has been developed a back-office system for the management of data used by the portal.
5. It is possible to book a seat and pay for a long-haul trip.
6. Special applications for smartphone have been developed: timetable of the Public Transport on mobile.
7. Buy tickets for PT on mobile or web portal.
8. Publish tours/organized trips.
9. Book and pay for a tour/organized trip.

ICT/Infrastructures needed

Mobilitami is supported by several modules and platforms, such as:

- Platform for users' registration and launch of loyalty system;
- Travel Planner;
- eTicketing System;
- Fleet Management System;
- AVL/AVM System;
- Infomobility ;
- Use of web site and smartphone.

The actors involved are Mobilitami srl, Pluservice srl and Ami spa.

Human Resources

Here the members (and the number) of the staff who work behind the Mobilitami project:

- Project manager: 1;

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- Analyst: 5;
- Developers: 15;
- Area manager: 12;
- Consultants in marketing and communication: *2.*

Monitoring Procedures

In general, the monitoring phase to evaluate the entire process of development related to "Mobilitami portal" is characterized by several and detailed tests made by technicians at each design or implementation step: White-Box Test and Black-Box Test. After these tests, there is another phase for monitoring the right working of the system with a specific test: the regression test.

The system uses Google Analytics to check the number of accesses.

Supporting Mechanism

Awareness/Information Campaigns

Undertaken by web, email, manned Kiosk in the malls, social networks, regional TV channels, etc.

Partnerships/Key Supporting Stakeholders

The partners that supported the successful delivery of the project are:

- Marche Region: it has promoted the platform during the congresses/exhibitions at national/international level;
- Confcommercio: it has promoted the platform to all its members;
- Ami: it has kept in touch with public bodies.

Results

Expected vs Actual Benefits

EXPECTED BENEFITS:

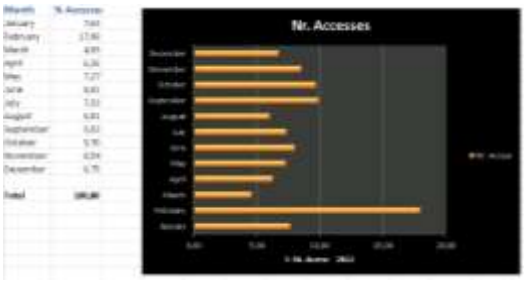
- Increase of tourists;
- Reliability of published data;
- Increase of users;
- Increase of number of services available.

ACTUAL BENEFITS:

- more attention during the publication of data;
- Increase of accesses: more tourists across Marche Region and increase of public transport.

Quantitative Results Achieved

Trend of accesses to the portal:



Qualitative Results Achieved

- Increased awareness acquired by the user on the resources offered by the region.
- Knowledge of public transport.
- More attention of the individual transport operators on the data displayed in the system through certified data.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- Important political feedback: offer to the users better services.

Key Considerations

Lessons Learned

- In order to promote the portal it is required a deeper involvement of political entities.
- Educational policies on transport for the user → it is necessary to teach the users on the LPT use.
- It is necessary to put on the network the local bodies to share opportunities and available resources on the market.

Primary Obstacles

- Find and normalize data acquired.
- Reliability of data displayed.
- Provide an environment where the published contents are associated to information and data (metadata) that specify the semantic context in a format suitable for query and interpretation of data.

Critical Success Factors

- Relationships with the political institutions obstructed by a long and complicated bureaucracy.
- Enhance the end user's trust.
- Maintaining the truthfulness of data.

Transferability Considerations

Mobilitami is a transverse project, it handles several aspects of the public transport satisfying different kind of needs and, above all, combining different interests of the involved actors: end user, public administration, operators, retailers. An important element to be considered is the need of drafting an agreement between the system integrator and the public administration in order to guarantee the data retrieval and maintenance in the platform. In addition, the public administration is in charge of the involvement of companies/associations of a territory both public and private.

Up-scaling Considerations

The main key factor is the acquisition of the normalized data (the main resource of the entire project).

Contact

Project Manager: Giannini Monica
http://www.pluservice.net/en
info@pluservice.net

3.2.6. GP_6: TRAFFIC MANAGEMENT

Text of this GP is provided by Province of Ferrara (PoF)

Good Practice' ID	6
City/Region/Country	Verona/ Italy
Prepared by	Province of Ferrara (PoF)

General information

Description

The Municipality of Verona aims and strategies on mobility management are focused on:

- reducing pollutant emissions;
- optimizing travel time of public and private transports;

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- improving the quality of PT services through the reduction of management costs;
- improving the commercial bus speed. Commercial bus speed is a key factor in the operation of public transport systems as it represents a direct measure of the quality of service provided to users;
- diffusion of traffic information through web (newsletter and social network);
- promotion of alternative mobility (bike-sharing).

The approach of Verona Municipality keeps in consideration the ICT approach as a main point.

On web site http://veronamobile.it/_mobile/ it is possible to have real time information regarding: accidents, parking availability, restricted traffic area limitations, road maintenance.

A webcam system is able to provide information on traffic in particular city areas.

Backround and Context

The traffic management, in Verona city, has been implementing in 1997 within the PGTU (Piano Generale del Traffico Urbano – General Urban Traffic Plan).

The process started with a set up of a mobility control center as an information technology platform.

The mobility system consists in:

- A traffic lights centralized management;
- Facilitating public transport fleet;
- Monitoring of roads congestion;
- Forecasting traffic models;
- Managing of restricted traffic areas and priority lines;
- Traffic control;
- Variable message signs (VMS);
- Dissemination of traffic information on the web, Smartphone, social networks, text messaging, email.

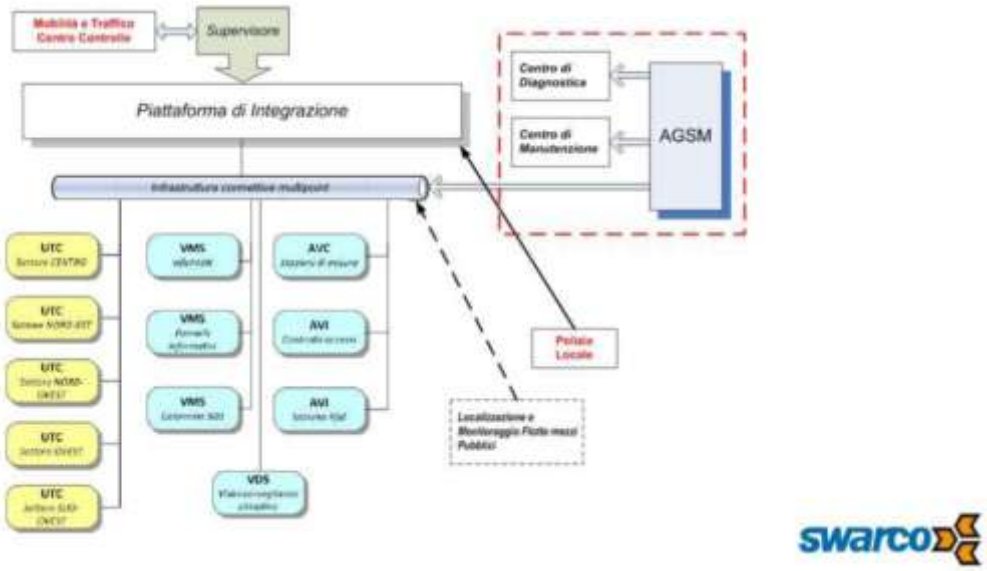
The traffic control is performed thanks to:

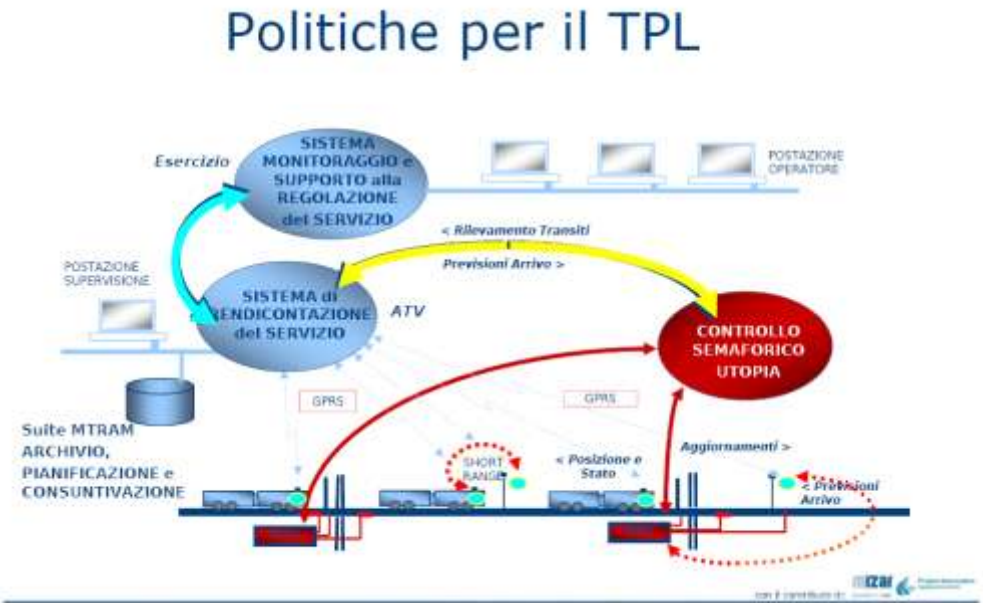
- 62 UTC - Urban Control System;
- 13 AVC Automatic Vehicle Classification;
- 34 VMS Variable Message System;
- 13 AVI Automatic Vehicle Identification;
- 31 CcTV Closed circuit TeleVision Cameras;
- 13 SOS Emergency Assistence System.

In the next years the objectives are:

- Reduction of heavy traffic in the city centre;
- Active monitoring traffic through the video analysis;
- Dissemination of data on public platforms (open data).

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme





Policy design details

Policy Design Steps and Timing

Since 1992, Italy has introduced ICT on Private Transports mainly focused on safety on the highways .the Law n. 422/1997 introduced the necessity to apply ICT on PT, and the law n. 340/2000 introduced the necessity to adopt the Traffic Urban Plan in each cities/areas.

Recently the law n. 179/2012 contemplates the ICT diffusion in transport sector.

The " Verona Mobile" project steps are:

- initial design of the integrated system for mobility and safety;
- system of traffic management;
- The supervisor citizen: cooperation, integration and models;
- Scenarios and results;
- Energy saving and reduction of pollution generated by private transport;
- Collection of real-time traffic information;
- Informations to users (traffic information).

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

Actors Involved

Municipality of Verona and the local PT company (ATV - Transport Company Verona).

Decision Making Process

Local economic sources.

Sharing initiatives at local leve.l

Adjustment of the organizational structure of the public administration.

Implementation details

Implementation Steps and Timing

In the Verona City as in many Italian city thanks the national legislations (see Policy Design Steps and Timing) It was possible to build mobility and traffic regulation systems.

ICT/Infrastructures needed

See voice "Innovation in Scheme Design / Evaluation".

The System Traffic Supervision includes:

- Variable message signs
- Management of traffic lights
- Access control TLZ
- Control vehicular speeds
- Surveillance and SOS
- Traffic light priority for PT
- Information to citizens
- Data for environmental pollution
- Parking information.

Human Resources

Employees of office mobility and traffic town of Verona and employees of local public transport company (ATV Verona).

Monitoring Procedures

The best monitoring procedure are the results in term of decreasing of traffic congestion and customer satisfaction, that the city of Veronaobtained during these years.

Supporting Mechanism

Awareness/Information Campaigns

Dissemination of information on road conditions and services:

- Internet;
- Newsletter;
- Sms;
- Web 2.0 (social network).

Partnerships/Key Supporting Stakeholders

Municipality of Verona, ATV (local public transport company) and some municipalities in province of Verona.

Results

Expected vs Actual Benefits

All measures expected were realized: Reducing vehicle traffic, improved journey times with telematics systems, pressure reducing vehicular traffic on the central area through the management of a Limited Traffic Zone, facilitation of public transport, promotion of alternative mobility, less congestion, less environmental impact, improved road safety for a better quality of life.

Quantitative Results Achieved

The Centralized Ttraffic Management System permitted (on high traffic conditions) a reduction of journey times by 37% on morning and 41% on evening hours.

Qualitative Results Achieved

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

See also voice “Expected vs Actual Benefits”;
Rationalization of human resources with savings in terms of numbers of agents / operators:

- Management of critical situations without modification of traffic lights regulation system.
- Remote control of every traffic situation road, even in emergency
- Analysis of traffic flows in order to understand the behavior of drivers.

Key Considerations

Lessons Learned

The process followed to create the Mobility and Traffic Management Center (Verona Mobile Project) permitted to the Municipality of Verona a creation of a good synergy among the local police, the mobility dept., and the” ITS systems”.

Transferability Considerations

The approach to the traffic management through a centralized system might help to solve different problem linked the traffic management, in fact many competences are collected in unique “decision place”. The same approach is applied, in Italy, also on PT management, with good results.
The management scheme used in Verona permitted a rationalization of resources and a strong collaboration among different figure that works in the same field (Local Police, PT stakeholder, policy makers).

Contact

Arch. Bruno Pezzuto - Head of Telematics Systems for Mobility and Safety - High Professionalism
Organizational unit: Traffic and Mobility
Address: Lungadige Galtarossa, 20/b 37131 VERONA
Phone: 045 807 9359 Fax: 045 807 9300
E-mail: bruno_pezzuto@comune.verona.it veronamobile@comune.verona.it
http://veronamobile.it - http://twitter.com/veronamobile

3.2.7. GP_7: INTERMODAL INFOMOBILITY PLATFORM AND SMS TICKETING

Text of this GP is provided by Province of Ferrara (PoF)

Good Practice’ ID	7
City/Region/Country	Genova / Liguria/ Italy
Prepared by	Province of Ferrara (PoF)

General information

Description

In Genova it is possible to appreciate a lot of measures relate to the mobility.

- Clean high-mobility corridors;
- Integrated mobility strategy for trade fairs;
- Establishing the Mobility Forum;
- Agency for on-demand transport and other mobility services;
- Integrated mobility initiatives for the San Martino Hospital;
- Enlarging the goods distribution scheme;
- Integrated access control and road charging scheme;
- Transition towards a clean vehicle fleet;
- Sustainable mobility marketing and eco-points;
- Creating an intermodal info-mobility platform;

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- Decision support for environmental impact assessment of traffic planning;
- Introducing a bus lane control system;
- Expanding the car-sharing service;
- Monitoring centre for road safety and accident prevention.

In Genova, the Mobility Agency promotes SMS ticketing system that together with the intermodal infomobility platform are the two interesting measures for that city.

Backround and Context

Genova City is located between the sea and the mountains, with a long and narrow coastline. The city centre covers just 28 sqkm, with a population density of around 10 inhabitants per sqkm. In terms of accessibility, Genoa has a very difficult street layout due to lack of space and the absence of alternative routes. Nevertheless, the seaport is one of the most important seaports in Italy.

There are 138 bus lines and 2.500 bus stops to offer a dense possibility of exchanges and more effective options. Quantification:

- 740 buses;
- 18 vehicles underground;
- 2 vehicles for the cog railway;
- 4 vehicles for funiculars;
- 23 supplementary services;
- 3 areas served by on-call service (Drin Bus).

Policy design details

Policy Design and Implementation steps and Timing In order to manage the infomobility platform and the SMS ticketing system, we have to take in consideration that the actors are many and very different.

Concerning the infomobility platform (managed from Mobility agency and Municipality of Genova) initial activities included two main activities:

- awareness raising and consensus building among stakeholders;
- the definition of operational goals and specific user needs.

The design step concerned to:

- analysis of available and potential data sources
- possibilities for their integration;
- definition of technical specifications;
- development of a delivery model via different media.

The new internet portal, offering aggregated data from various sources, was launched in 2007 as a section of the portal service for Genoa citizens dedicated to traffic and travel information.

The SMS ticketing measures were managed to ATM (PT company in Genova) together with Movicom consortia and CircleCap (wireless applications company).

Decision Making Process

The decision process needs the collaboration between the municipality of Genova (which is in charge of mobility issues) and the mobility agency. It is of course necessary a strict cooperation among the territorial transport companies.

The PUM derives from an Italian national law that foreseen a technical analysis/ approach and then a political decision.

All this process are carried out with the citizen involvement (citizen associations) and stakeholders:

- first phase is the definition of the objectives of the Plan;

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- second phase concerns the available data processing, and definition of alternative scenarios of the Plan;
- Third phase: the Evaluation of the scenarios, with the application of the simulation model and the estimation of the transport terms and indicators of the environmental impact;
- Fourth and final phase is considered as the proposal phase, with the draft of the final projects of the Plan.

Implementation details

ICT/Infrastructures needed

Dynamic information regarding traffic on main routes (based on average bus speeds via on-board GPS); Images from 20 webcams; information on the number of available parking places coming in 11 car parks;

Bemoov System, for SMS Ticketing.

- Real-time information at bus stops with new and improved "smart stops" (showing arrival time of next bus and service information such as route changes);
- Upgraded information in bus shelters, including maps of the immediate area, route maps, intermodality options and points of interest;
- Next-stop information and general service information on board buses in both audio and visual formats;
- Better integration with the traffic control system allowing bus priority at all intersections controlled by traffic lights;
- Monitoring and better control of reserved bus lanes using cameras or other electronic systems to ensure that bus priority lanes are respected;
- Fleet renewal programmes based on energy-efficient vehicles;
- Bus stops designed to improve access for all, including people with special needs and the elderly;

Supporting Mechanism

Awareness/Information Campaigns

Media campaign was launched to promote the awareness of the SMS Ticketing and Intermodal infomobility platform services. The web sites of the Municipality of Genova gives a lot of information related mobility issues.

Partnerships/Key Supporting Stakeholders

See "Cooperation amongst Administrations".A key factor in the realization of the Intermodal infomobility platform and SMS ticketing, was the cooperation between the Municipality of Genova, the Mobility Agency, and the Genova's transports company.

Results

Expected vs Actual Benefits

All the measures took place in Genova permitted to the citizen a better approach to the PT.

3.2.8. GP_8: TRAFFIC MANAGEMENT DURING BIG EVENTS

Text of this GP is provided by Province of Ferrara (PoF)

Good Practice' ID	8
City/Region/Country	Perugia/ Italy
Prepared by	Province of Ferrara (PoF)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

General information

Description

City of Perugia has been working on mobility issues since 70s years taking in consideration its particular historical and touristic vocation. They created a suburban parking system with connections to the city centre. During last years the connection between parking areas and the city centre was implemented thanks the Minimetrò system.

Minimetro is an environmental and innovative transport system which connects in 12 minutes the parking areas "the Valley of Pian di Massiano", to the city centre. The parking area capacity is about 2800 cars.

This transport system (considered as a strong urban public transport corridor) has provided an opportunity to implement a tourist flows management, and the Minimetrò is now considered as the principal access mode to the city centre in Perugia.

Concerning the mobility management the City of Perugia set up, some years ago, a Central Monitoring System developing and monitoring the road network.

Backround and Context

In order to solve the traffic congestion problems related to the big events that take place in Perugia annually (Umbria Jazz and Eurochocolate are the bigger ones) the City decided to organize a suburban parking system. Thanks to this system it is now possible to keep cars away from the city centre.

Connections to the city centre are possible thanks to the Minimetrò.

After years this system is on duty daily and not only during big events.

Policy design details

Policy Design Steps and Timing

The Minimetrò system and park & ride areas were born in 1998, thanks to an agreement among the Italian Ministry of Transport, Umbria Region and the Municipality of Perugia.

Actors Involved

Municipality of Perugia, Umbria public transport company "Umbria TPL SpA and Mobility" and Minimetro SpA (Company created by Municipality of Perugia).

Decision Making Process

On April 1998 there was the creation of the 'company Minimetro' SpA from the Municipality of Perugia, joint-stock company with most public capitals. The task of this company is to design, build and operate a light rail, called Minimetrò as innovative and alternative Public Transport with the path Pian Massiano - Monteluce, for a total length of 3.863,2 meters.

At the same time, the private shareholder of the Company mixed public-private partnerships were identified by the Perugia Municipality through a public tender (April 1998), with the adoption of two fundamental acts: the resolution of the City Council no. 71 of 20 April 1998 and no. 324, April 21, 1998.

The agreement signed on 12 December 1997 among the Ministry for Communities and Local Government, the Ministry of Transport and Navigation, The President of the Regional Government of Umbria and the Mayor of Perugia, granted to the city of Perugia the 50% of the construction cost of the light rail first section: Pian di-Massiano Piazzale della Cupa.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

During the years the path of Minimetrò was extended in accordance to General Plan, and to Environmental Impact rules.

Implementation details

Implementation Steps and Timing

Part of steps have been made since 1998:

- Modeling of the road network (software VISUM and AIMSUN) made with composition analysis of flows and isochrones;
- Urban Traffic Controller – UTOPIA, a system for flows optimization, based on prioritization for transit (special vehicles, PT) traffic signals at intersections;
- Integrated Platform Infomobility (MISTIC), which provides the middleware (program income) required to validate and synchronize the information and data provided by the connected systems, monitoring the state of the road network;
  - Calculation of the optimal distribution of traffic inside the network;
  - Development and update the matrix o / d;
  - Determine the actual availability of the road network;
  - Provide for the distribution of traffic flows in the entire area under control;
  - Development and publish media information for road users;
- Implementation of minimetro (year 2006).

ICT/Infrastructures needed

Construction of the minimetro rail and installation of variable message signs (VMS) at bus stops to show the availability of car parks.

Human Resources

Employees of:

- Municipality of Perugia;
- Umbria company public transport "Umbria TPL SpA and Mobility";
- Minimetro SpA.

Monitoring Procedures

Using modeling software of the road network (VISUM and AIMSUN) and data from Integrated Platform Infomobility (MISTIC).

Supporting Mechanism

Awareness/Information Campaigns

Information campaigns on PT (trains, buses and minimetrò) with fare integration, mobility, parking and LTZ.

Partnerships/Key Supporting Stakeholders

Municipality of Perugia, in cooperation with Umbria company public transport "Umbria TPL SpA and Mobility" and Minimetro SpA.

Results

Expected vs Actual Benefits

Report the main benefits of the PT policy was expected to delivery during the planning stage and describe how the actual benefits compare.

Quantitative Results Achieved

Through introduction of Minimetro and car parks outside the city center, with LTZ, estimated savings in terms of polluting emissions is approximately 55% per year.

UTOPIA System - results:

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- 15% reduction of travel time;
- 50% reduction of queues;
- 10% savings in terms of emissions and fuel consumption in urban areas.

Qualitative Results Achieved

Improvement is perceived in various contexts:

- Environmental (reduced noise and emissions);
- Less traffic congestion and increase road safety;
- Cheap (payment available at parking area);
- Planning (via the data analysis of traffic and use of public transport it is possible to design new infrastructures).

Key Considerations

Lessons Learned

It is possible to reduce the traffic congestion and manage the PT also in particular cities.

Primary Obstacles

The biggest challenge was to create a public transport system overcoming the barrier of the historic city, making it environmentally friendly and suitable to host big events, such as Umbria Jazz or Eurochocolate.

Critical Success Factors

Installation of "Minimetrò" has been important in order to promote the use of suburban car parks; in Perugia there are various points escalators and elevators, to overcome many architectural barriers existing.

Transferability Considerations

All the actions from Perugia are potentially transferable to other cities, obstacles are the lack of financial sources and the citizens consensus.

Contact

Arch. Leonardo Naldini – Municipality of Perugia,
e-mail: l.naldini@comune.perugia.it, Web site: www.comune.perugia.it

3.2.9. GP_9: SMS TICKETING SERVICE

Text of this GP is provided by Province of Ferrara (PoF)

Good Practice' ID	9
City/Region/Country	Flanders/ Belgium
Prepared by	Province of Ferrara (PoF)

General information

Description

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

Backround and Context

In 1998, De Lijn buses drove 125 million kilometres and gave 216 million rides throughout Belgium.

Only established ten years ago, Belgian bus and transport company De Lijn has grown steadily since the merger between the Flemish part of the National Companies of Branch Lines, and the companies responsible for local district transport in Antwerp and Gent.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Today, with headquarters in Mechelen, De Lijn serves the Flanders region of Belgium by offering transportation between major cities, and operates several local public transportation systems throughout the nation.
De Lijn company started SMS Ticketing initiative to discourage the sale of tickets on the bus in order to maximize the circulation of buses and the punctuality of its services. Studies show that punctuality is one of the most important quality factors for travellers. In order to reduce the number of transactions performed by the driver (ie selling tickets), De Lijn had already installed a network of presale ticket outlets in March 2006. Since then, almost 80% of tickets are sold in presale.
SMS-ticketing is an alternative to the sale of tickets on the bus. The SMS ticketing system of De Lijn company has the important feature that no prior registration (which is a requirement of most other systems) is needed. All customers may use the distribution system at any time. Similar systems are in use in Helsinki (Finland) and in various cities in Sweden.

Policy design details

Policy Design Steps and Timing

SMS ticketing was launched as a pilot project in September 2007 together with the phone operator Belgacom (Proximus) in the cities of Antwerp and Ghent.
Based on the positive sales figures and the high degree of satisfaction of the users on the system, the project was successfully evaluated by De Lijn and Belgacom.
Since February 2010 customers have been able to buy a ticket for the bus or the tram anywhere in Flanders by SMS.
During the first month, they were already selling 1700 SMS tickets per day. In March, that increased to an average of 2200 tickets per day. So that's a huge success. Demonstrably, demand for this service is driven by the customer. The relative share of SMS sales is increasing, and that is exactly what we wanted to achieve."

Actors Involved

De Lijn Transport company and Belgacom

Implementation details

Implementation Steps and Timing

SMS ticketing was launched as a pilot project in September 2007 together with the phone operator Belgacom (Proximus); based on the positive sales figures and the high degree of satisfaction of the users on the system, the project was successfully evaluated by De Lijn and Belgacom.
In 2010 only Proximus phone customers could use this paying system but since January 1st 2011 customers with other phone operators can obtain the tickets by SMS.

ICT/Infrastructures needed

Smartphone applications.
It is necessary to establish a contract between the public transport companies and phone companies to issue the ticket by sms.

Monitoring Procedures

Monitoring is carried out in collaboration between public transport operators and phone companies that have entered into a contract for the sale of tickets through SMS.

Supporting Mechanism

Awareness/Information Campaigns

Advertising by De Lijn.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Partnerships/Key Supporting Stakeholders

A contracts were signed between De Lijn (the public transport company) and telephone companies (Belgacom – Proximus and others) to issue tickets via SMS.

Results

Expected vs Actual Benefits

All benefits expected are now actual benefits – See "Qualitative Result Achieved".

Quantitative Results Achieved

In February 2010, De Lijn sold almost 50,000 tickets; by December 2010 this figure had increased to 130,000;In total 865,000 SMS tickets were sold in the year 2010. Ticket sales doubled in January 2011 and 157,440 SMS tickets were sold, this was 20% more than in December 2010, and double the monthly average of 2010.

Qualitative Results Achieved

The SMS Ticketing is faster than traditional ticketing, it is user-friendly, cheaper and less paperwork. The service is better and more professional & progressive image.

Key Considerations

Lessons Learned

A good synergy between a transport company and a mobile phone company can give benefit to PT users.

Primary Obstacles

To find a right way to manage the information through informatics system. The most important step in order to set up the ticketing system was to consolidate all different library entities into one central library, where we could turn all data into useful information.

Transferability Considerations

It is necessary that public transport companies and local phone companies reach a strong agreement to implement the service ticket via sms.

Up-scaling Considerations

There should be no problems in extending the service to larger scales.

Contact

Filip Brutsaert, B-2800 Mechelen. Tel. 003215440939.
E-mail: filip.brutsaert@delijn.be. Fax 003215440998

3.2.10. GP_10: MOBILITY AND TRAFFIC MANAGEMENT IN FIRMS

Text of this GP is provided by Province of Ferrara (PoF)

Good Practice' ID	10
City/Region/Country	Valjevo/ Serbia
Prepared by	Province of Ferrara (PoF)

General information

Description

During the rush hour, streets in the city centre are overcrowded. It is also difficult to find a parking spot for a private vehicle. The city is expanding in several directions, and commuting to and from work is beginning to become a big problem for workers. Many companies, public and private, have undertaken initiatives to solve this problem. A team

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

of experts analyzed 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.
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. This created a problem with parking in the city centre. The high volume of private vehicles endangers the environment and creates high levels of noise. A solution for the current situation would be a reduction in vehicle numbers and encouraging alternative modes of transport, improving the quality of life in the city.

3.2.11. GP_11: OPEN PUBLIC TRANSPORT DATA

Text of this GP is provided by Reading Borough Council (RBC)

Good Practice' ID	11
City/Region/Country	London/ UK
Prepared by	Reading Borough Council (RBC)

General information

Description

TfL have opened up their public transport data sources to the public. This has enabled 3rd party mobile application developers to use the data to provide a variety of real time traveller information apps (iphone, android, blackberry, mobile windows) for the bus, rail and underground services in London.
As 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 using these data streams which are being downloaded by the public. Within this process there are intermediary developers who are taking the raw data from TfL, further processing it, and then selling it on to the app developers.

Backround and Context

London is a large city with a population of around 8 million living within the Greater London area. London has an extensive public transport network including the underground, over-ground rail, and the bus network which consists of around 8,000 buses operating on 700 bus routes with over 19,000 bus stops. London has an extensive range of bus priority measures and the London Oyster Card can be used for contactless payments on all public transport.
London has long had a real time passenger information system at bus stops however this was comprehensively upgraded between 2007 to 2009 when 'iBus' was fitted on London's 8,000 buses. This upgrade included implementing a GPS (Global Positioning System) to track the buses, on bus audio visual outputs, priority at traffic signals and improved bus arrivals information. In October 2011 TfL updated their website to include this live 'Countdown' bus information and they also launched a mobile app.
The information includes actual predicted arrival time for each bus at each of the 19,000 bus stops and not just the approximate 2,500 with real time information signs. In addition TfL are publishing a range of data including real time London Underground data.
Almost immediately developers started to scrape real time bus information off TfL's website for use in their own mobile apps and very quickly in November 2011 TfL responded to this demand and started to work with the developers on providing open

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

bus data. The systems were implemented and data was formally released in an open and free to use API on the 6th June 2012.
Open data can accessed via the TfL website: (www.tfl.gov.uk/developers). To date there are around 41 users who are signed up for the continuous live stream of real time data and there are around 35 good 3rd party apps being downloaded by the public which use this data. In addition there are around 650 subscribers to the non-streaming data.

Policy design details

Policy Design Steps and Timing

The policy objective to provide the real time information for free was agreed in 2010 following the implementation of iBus with delivery through a TfL website and mobile app. The development of this policy in around October/ November 2011 to open up the raw data to 3rd parties including 3rd party app developers was a 'bottom up' change led by the demand for the data.

Actors Involved

- London Mayor's Office – Responsible for setting the strategic policy objectives for London.
- Transport for London (TfL) – TfL are an agency of the London Mayor's Office and have responsibility for the planning and delivery of the majority of London's transport system and services (Fig 1). As a large organization with a range of powers and in-house skills the majority of the policy changes, approvals and design / specification was undertaken in house.
- Cubic – Cubic is a multinational systems and services company and were awarded the Contract by TfL to implement the open data service, taking TfL's raw data, ensuring quality of service, publishing it to live feeds, providing the developer interface for accessing the data and the signing up to the terms and conditions of use.
- App Developers – a range of individuals and small businesses which use the data to deliver a range of apps and added value services to the end users on a range of mobile phone platforms. These were engaged with to ensure that the open data was delivered in a form which could be used by them.

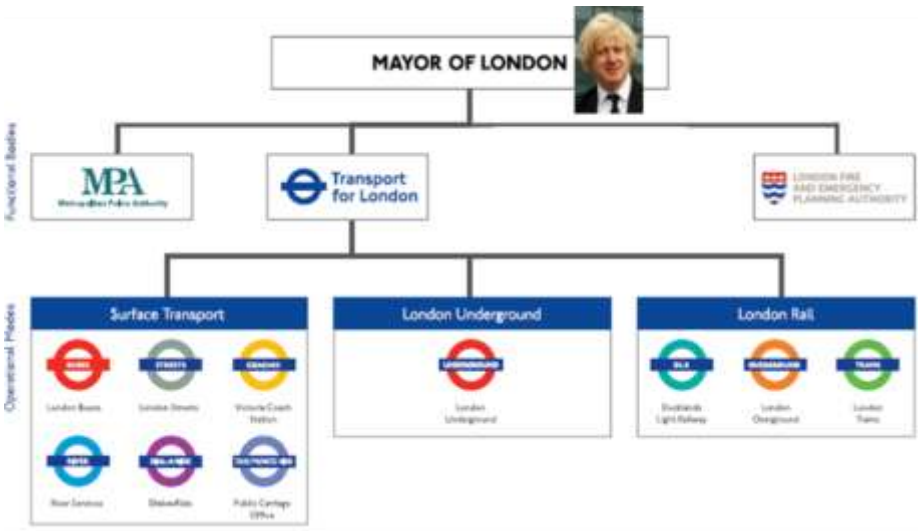


Fig 1 - Overview of TfL's responsibilities

Decision Making Process

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

The decisions were made by TfL on the advice of Cubic who also incorporated the comments from the API Development Group.

Implementation details

Implementation Steps and Timing

2008/2009 implementation of iBus real time passenger information system. [TfL]
2010 Review of information Policy and agreement that the real time bus data (Countdown data) should be released to the public for free. [TfL]
2011 (Oct) Launch of live bus data on TfL website and TfL mobile application. [TfL]
2011 (Nov) API Developer group set up. [TfL, Developers]
2011/2012 – Development of API's and Developer interface. [TfL, Cubic]
2012 (March) Beta testing of the Open Data API's. [TfL, Developers]
2012 (May) Data published (API). [TfL]
2012 (6th June) Formal Launch of Open Data API. [TfL]

ICT/Infrastructures needed

The key elements of ICT required are:

1. Public Transport 'Countdown' data – this is generated by the real time passenger information system, iBus.
2. Data server with sufficient capacity to accommodate all the requests for data.
3. Web based Developer interface allowing developers to register for access to the data and to set up the data feeds. This also enables TfL to cut the live feeds if there is a problem with the data to avoid the public getting miss information.
4. Mobile apps delivered by 3rd Party developers.

The cost of open data is marginal when compared to the overall cost of the iBus real time system which provides the data. The full system set up including the server, data feeds, developing new API's for the data and web interface cost approximately £300,000.

The cost of the apps sits with 3rd parties and therefore is no cost to the authority. The ongoing cost to support is marginal as the staff responsible for the data server are the same as are responsible for the RTPI system.

Human Resources

TfL have not increased their head count for the open data service as this service falls within the existing team roles associated with the management of the RTPI system and represents only a marginal increase in workload.

Monitoring Procedures

Fig 2 shows the monitoring by TfL which is the number of hits on the server for TfL's website, the SMS mobile messaging service and the open data API. This shows that the open data API has reduced the number of hits on the website by around 50%, as the developers moved to live streaming through the open data API.

Whilst the number of hits on TfL's data servers are recorded, the actual number of users using the data to help make travel choices is not recorded. There is no requirement from TfL that app developers should record the number of hits on their servers from individual users or that these stats should be shared with TfL.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

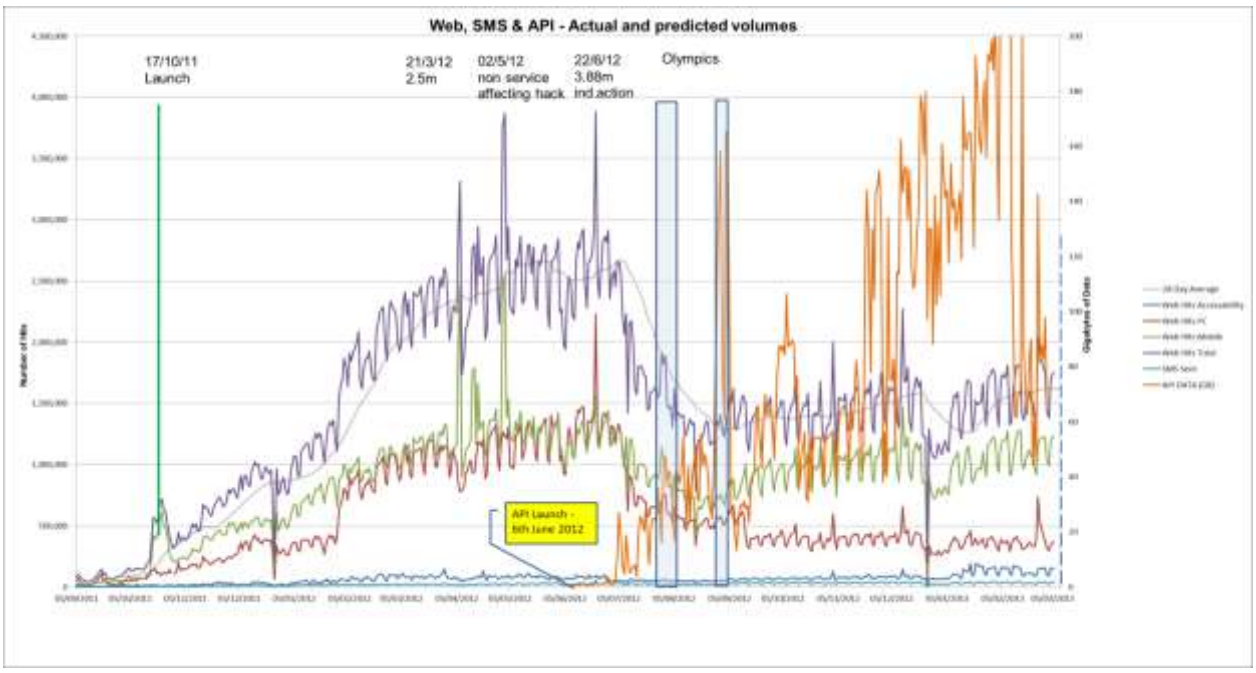


Fig 2 - Monitoring of bus data requests

Supporting Mechanism

Awareness/Information Campaigns

TfL undertook a marketing campaign for the launch of their iBus data through the website and their own app which was very successful in generating demand. This included marketing at the bus stops, at the website and through direct marketing to oyster card users.

TfL do not provided marking or endorse the 3rd party apps.

Partnerships/Key Supporting Stakeholders

The active interest by 3rd party application developers to develop apps without any TfL funding was key to the success of the policy.

Results

Expected vs Actual Benefits

The main policy was based around the delivery of the TfL website and TfL app and hence the extensive demand from the app developers exceeded this expectation. This has meant that there is a far wider choice for travelers to access TfL data at no additional cost to TfL which is a significant benefit.

The risk of opening up data to 3rd parties which may then use it in a negative way with regards to the delivery of London Bus services has not been realised to date.

Quantitative Results Achieved

The implementation of the Open Data service has resulted in around 35 good quality apps being developed at no cost to TfL.

Key Considerations

Lessons Learned

The main lessons learned are:

1. There was a large amount of interest from 3rd parties to use TfL's data to provide mobile apps to the market without any TfL funding and hence there was a real value of providing open data as the cost of providing it is marginal when compared to the cost of the systems generating it.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

2. The market will deliver apps to the main market for travel information but will not necessarily deliver apps for all users. For example, TfL have recently launched a competition with a prize for the development of an app for mobility impaired people (ie disabled, those carrying heavy luggage, those with small children and elderly) as the market has not delivered an app for these travellers.

Primary Obstacles

The primary obstacles to providing TfL data for free was whether it had a value and hence could be sold, either the data or advertising around the data provision. However no good monitary model could be indentified and the policy decision taken was for the data to be distributed for free.

With regards to then opening up the data to the developer market, TfL was very much 'pushing at an open door' given the developer demand for the data.

Critical Success Factors

Critical to the success was the strong developer demand for data which meant that apps were developed at no cost to TfL, and the quality requirements to ensure that only timely data is distributed to the public. Also critical was the extensive investment in iBus which provides the robust and reliable dataset on which the apps rely.

Transferability Considerations

London is a very large city in Europe with very few parallels in terms of size and this size is likely to have an influence on the availability of a suitable developer market. Hence engaging with the local developer market to determine interest and the type of data to be released is a consideration in determining whether open data should be supplied. TfL has been happy to open the data up with only limited restrictions as to its use and this approach may not be suitable depending on local and national policies. Where there is not a strong developer market, this may not necessarily mean that open data should not be provided. Limited funding from the authority, such as through a competition or challenge funding, could be provided to 'pump prime' the market in a more cost effective way than just providing all the apps centrally.

Up-scaling Considerations

There are no significant scaling factors to be considered.

Contact

Through Simon Beasley at Reading Borough Council

3.2.12. GP_12: REAL TIME PASSENGER INFORMATION SYSTEM, BUS PRIORITY AT SIGNALS, DISABILITY ACCESSIBILITY

Text of this GP is provided by Reading Borough Council (RBC)

Good Practice' ID	12
City/Region/Country	Cambridgeshire County Council/ UK
Prepared by	Reading Borough Council (RBC)

General information

Description

The City and County of Swansea has introduced an urban transit bus scheme in partnership with First Group. Swansea has implemented a range of infrastructure measures that have been supported by information and bus priority measures to maximise the benefits of the schemes. 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.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Backround and Context

The City and County of Swansea is a unitary civil authority in south west Wales. The city urban population is 170,000 residents with the wider authority administrative area covering a total population of around 300,000. Swansea is the second city of Wales and is also the gateway to the more rural counties of Pembrokeshire and Carmarthenshire. It has good transport links to the Welsh capital, Cardiff.

The city highway network has a number of arterial routes which are generally congested during the peak periods. Swansea was severely damaged during the second world war and its layout reflects the substantial rebuild in the 1950's. In recent years the city center has been going through a £1 billon redevelopment.

The delivery of the scheme is a public / private partnership where the infrastructure has been delivered by the Highway Authority and the bus service has been delivered commercially by First Group.

Following a 3 year implementation phase the Metro scheme has now been operational since 2009. The route covers a distance of approximately 8.3 miles connecting The University and Singleton Hospital to the south and Morriston to the north and travels through Swansea city centre. Significant alterations to the highway network were made to provide high quality bus priority together with the construction of 2 sections of dedicated bus only route which by pass particularly congested sections of highway in Hafod and Dyfatty.

As part of an arrangement with First Group, First committed to the purchase and operation of the ftrMetro street style buses to operate on the route. These operate a 12 minute frequency during the day on Mondays to Fridays and 15 minutes on Saturdays.

Policy design details

Policy Design Steps and Timing

Bus priority has long been a political priority in Swansea and they were early implementers of bus priority at traffic signals.

The City and County of Swansea prepared a Local Transport Plan in 2000 which set the Council's sustainable transport policies including the promotion of public transport.

One of the themes in Swansea's Community Plan (2004) (Ambition is Critical) was developing sustainable transport and accessibility including the provision of high quality bus services.

Actors Involved

Welsh Assembly Government – provided the funding for the scheme (European Objective One and Transport Grant)

City and County of Swansea - Highway and Planning Authority and responsible for overseeing the design and implementation of the infrastructure.

First Group - Bus operator – First Group identified that they could deliver a service commercially. They supply the vehicles and operate the service.

Arup - Consultant - Undertook the feasibility study of the service and undertook the outline infrastructure design of the bus priority measures

Decision Making Process

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Swansea Council Performance Review Board looked at public transport provision in the City in 2003. This review identified that there would be a demand for a cross city service.

This coincided with a review by First Group of their operations in the area. First then approached the Council with a view to investigating the possibility of bringing their ftrMetro service to the City. They considered that a route across Swansea would potentally be suitable for a bus rapid transit system providing links between key attractors including two major hospitals, the University, Railway Station, City Centre, Bus Station, Civic Centre and Liberty Stadium.

Swansea was awarded funding for the scheme through the Welsh Assembly Government in 2005. Arup were commissioned to undertake the wider feasibility study and to bring forward the principles of bus priority measures for a cross Swansea system. The results of this where then progressed to the full scheme.

Implementation details

Implementation Steps and Timing

The infrastructure was implemented during a 3 year period from 2007 to 2009 in a 2 phase program.

The implementation required significant network alterations with the introduction of a bus only section and altering junctions to maximize the bus priority. There were considerable local concerns about some of the proposed measures. Extensive consultation was therefore required which added to the original time scales

The construction was delivered in two phases. The first phase focused on the city centre where it offered the widest improvements to a large number of bus services and this was complete in 2008. The second phase completed the works to the rest of the corridor and these were complete towards the end of 2009.

The first service used the full system in late 2009.

ICT/Infrastructures needed

The buses where purchased by First Group. The ftrMetro vehicles were installed with the Wright buses telemetric package which includes a Vix Real Time Passenger Information (RTPI) system that is used to trigger priority at the traffic signal junctions.

Onboard the buses have CCTV for security and there are information screens that show the next stop information. The system also has audio messages that are either triggered by the on-board customer host or via the RNIB (Royal National Institute for the Blind) fobs.

The shelters at the main bus stops and key interchange points include real time passenger information displays and the Vix RTPI system also offers real time information over the web and via SMS messaging to mobile phones.

Human Resources

4 Swansea officers where involved with managing and assisting the delivery during the 3 year implementation stage of the project. The on-going support from the Swansea officers has reduced since the system has been operational.

Monitoring Procedures

First Group monitor the patronage and reliability of their service. Some post implementation customer satisfaction surveys have been undertaken and there are

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

regular meetings with the Council to monitor the on going performance of the scheme and how it can be developed further.

Supporting Mechanism

When the scheme was opened there was a local media campaign to raise awareness of the scheme and the benefits. The service has also been given a distinctive livery which is carried through onto the marketing material, roadside infrastructure and signage thereby assisting in raising the profile of the project.

Results

Expected vs Actual Benefits

It was predicted at the beginning of the project that implementing the scheme would allow a 20 minute route saving across the whole of the route.

This has been achieved and considerable journey time savings have been made by removing the need for passengers to change buses in the city centre when travelling across the city. The Metro service continues to operate fully commercially with no revenue support from the authority whereas other bus services have been reduced in frequency, periods of operation have been curtailed and some have required financial support from the Council.Quantitative

Results Achieved

It has been reported that there where 1 million passengers within 9 months of the scheme opening. Operating commercially with no subsidy.

Quantitative Results Achieved

It has been reported that there were1 million passengers within the first 9 months of operation. The service operates commercially with no subsidy from the Council.

Customer satisfaction with the quality and reliability of the service is very high.

Cross city journey times have been significantly reduced.

Qualitative Results Achieved

A user survey was undertaken in 2010 by the County and City of Swansea with a poll of users attitudes to the service. The following key findings have been reported:

- 92.2% of users surveyed thought that the ftr route journey time was very or fairly good.
- 21% thought the service encouraged them to use their car less.
- 85% of users thought the information provided by the service was very good or fairly good.

Key Considerations

Lessons Learned

The automated messages which are triggered by the RNIB fobs can be overridden by the customer host on the bus. If the scheme were to be undertaken again then the units would not allow the override function as some drivers / passengers are annoyed by the announcements and the service is turned off.

Primary Obstacles

More extensive public consultation was required than originally anticipated due to concerns over the scale and disruption that was likely to occur, particularly within the city centre, as a result of the scheme. Future similar schemes would need to allow additional time for this.

Critical Success Factors

It is thought that the strong brand has assisted in the success of the project.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Clearly identified roles for each party and good communication between the partners and the Welsh Government over funding bids and the phasing of the project were essential.

A Partnership Agreement has meant that both parties have given a formal commitment to meeting clearly defined objectives.

Taking a wider approach to the infrastructure measures to provide a comprehensive system of priority has meant that a high level of success has been achieved.

Transferability Considerations

The scheme demonstrates the successful partnership of public and private sector to provide a high quality public transport system

Having clear roles and a good contract has enabled both parties to invest with confidence and a good working relationship which has ensured a successful scheme.

Good product and strong branding ensured ridership and financial success.

Up-scaling Considerations

The key factors are the public transport demand for a service and securing the funding for the necessary priority measures to deliver a high quality scheme.

Contact

Chris Vinestock, BSc (Econ), MBA, CPFA, MCIHT
Head of Transportation
City and County of Swansea

3.2.13. GP_13: BUS LANE ENFORCEMENT

Text of this GP is provided by Reading Borough Council (RBC)

Good Practice' ID	13
City/Region/Country	Reading Borough Council/ UK
Prepared by	Reading Borough Council (RBC)

General information

Description

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, taxi's, emergency vehicles and cyclists but not private hire vehicles.

There are 23 enforcement sites in total of which half are automated using ANPR and half are attended enforcement using CCTV. In addition Reading has a camera car, introduced in 2012, which is used to identify parking offences such as parking in bus lanes.

Reading is able to use their civil enforcement powers to issue penalty charges to the owners, or the confirmed driver, for bus lane and bus gate contraventions of the Traffic Regulation Order.

The revenue raised from the payment of the fines is currently around £3.5m per annum which is used to support the free provision of 'dial a ride' bus services within Reading.

Backround and Context

A strong policy of investing in public transport and public transport priority over recent years has resulted in Reading having more bus lanes per kilometre of road than anywhere else in the UK. Whilst enforcement of the bus lanes was under the jurisdiction of the police they were periodically enforced, but it was not possible to prevent

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

contravention of the bus lanes and bus gates when the police were not present. This use of the bus lanes by traffic reduced the benefit of the investment in the bus lanes to public transport.

An Act of Parliament in 2000 enabled the powers for civil enforcement for certain traffic offences, including bus lane enforcement, to be transferred to Highway Authorities. However it was not until 2005 that the necessary supporting legislation came into place to enable it to be done and Reading was one of 10 authorities who worked to implement this and in 2006 were the first authority to deliver bus lane enforcement outside of London.

The original enforcement used CCTV video and then digital recordings. This was known as attended enforcement and involves the enforcement officers viewing the full recordings from the CCTV on fast forward and identifying contraventions which were then passed on to the enforcement team who issued the fixed penalty notices. The fixed penalty notices are currently £70 or £35 if paid early.

Reading Borough Council (RBC) has been switching to an automated system since 2008 and around a half of the sites now use Automatic Number Plate Recognition (ANPR). These automatically identify a vehicle in the bus lane, check it against a '*white list*' of approved vehicles and if it is not approved it sends back the image of the number plate and a 60 second video recording of the offence covering 30 seconds before and 30 seconds after. The video recording is to ensure that there was not a legitimate reason why the vehicle moved into the bus lane, for example moving over to create space for an emergency vehicle coming the other way in the centre of the road. All video clips still require manual checking before an enforcement notice is issued.

Policy design details

Policy Design Steps and Timing

Reading Borough Council's policy closely followed the national policy to decriminalize bus lane enforcement in the 2000 Act. Policy implementation timing necessarily had to follow the national government timing for putting the instruments in place to enable the ACT to be delivered. This led to RBC having their policy in place before 2005 and led to RBC being the first to implement outside of London.

Actors Involved

The main parties involved include:

- DfT – Advisory / expert role on the implementation of the Act – they took the lead role in the early days and then stepped back as the highway authorities took on the role of enforcement and the Adjudication Service was set up.
- Adjudication Service was formed as part of the implementation of the Act to deal with bus lane enforcement appeals. It was based on the existing Parking Appeals service whose legal powers were extended. This service consists of people of prominent standing in the public arena such as ex-magistrates, ex- army officers etc.
- Vehicle Certification Agency [check] – Government Agency responsible for the Type approval of the system including cameras and back office systems for the enforcement of bus lanes. System Type approval ensures: minimum quality standards of images recorded; security of personal data; and accuracy and reliability of systems to avoid incorrect notices being issued. They are responsible for approving the automatic ANPR system.
- Reading Borough Council - Highway Authority responsible for the civil enforcement of bus lanes and bus gates.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- JAI streetwatch – supplier of the original video capture system to meet DfT type approval – system had to time / date and unique identifier stamp each frame of the video.
- Tyco – supplier of CCTV and ANPR cameras for JAI Streetwatch and Zenco back office image processing and enforcement management systems.
- Zenco – manufacturer of the Type approved bus lane enforcement system for ANPR based enforcement installed in 2008.
- Driver and Vehicle Licensing Agency (DVLA) – UK national body which holds all the records of number-plates and vehicle ownership information which is used by RBC to issue civil enforcement notices.

Decision Making Process

The decision making process was through meetings where the 10 authorities, Adjudication Service and Highways Agency came together.

Implementation details

Implementation Steps and Timing

The implementation in Reading was undertaken in 2006 with the system live in September 2006. Initially an attended system was implemented using Tyco CCTV cameras and a JAI Streetwatch image capture system in accordance with specifications under the 2005 statutory instrument. Originally videos were used to record the images and then these were switched to digital DVD recordings.

In 2008, with the superseding of the 2005 statutory instrument the Vehicle Certification Agency made it possible for Reading to implement the Zenco ANPR digital data capture systems and this started the process of converting to digital in Reading.

As digital is more cost effective and it is quicker to identify and process contraventions it has been possible to extend the system with the same number of staff. The system includes a 'white list' of approved vehicles which are stored in the cameras and these are not sent to the back office. There is a further white list in the back office to allow for vehicles, such as maintenance vehicles with approval to be in the bus lane that day, to be ignored by the system.

The current situation is that Reading are currently operating 12 CCTV attended cameras and 12 ANPR cameras. A further 6 ANPR cameras will be installed over the coming months leaving 12 bus lanes / bus gates with no enforcement.

ICT/Infrastructures needed

The ICT required for the ANPR based system have to be approved by the Vehicle Certification Agency and include:

- Automatic Number Plate (ANPR) Cameras – Type approved cameras on street which include a '*white list*' of approved vehicles to travel in the bus lane. The camera records the vehicle numberplate and video clip so that the context of the violation can be manually checked before any enforcement notice is issued.
- Communications between camera and back office. RBC is currently using 3G mobile services for these, but any reliable digital communications can be used.
- Back office enforcement system – Provides an interface for the traffic enforcement officer to review each potential contravention and identify those which require a notice to be issued. It also provides a secure store of the evidence of the contravention. The notices are printed and issued through the existing parking enforcement system.

Infrastructure is minimal as it requires an ANRP camera, a pole where it cannot be fitted to existing infrastructure, and a power supply. The supply, installation and commissioning of the fully compliant ANPR equipment is around 15,000 Euro's per site.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

In Reading, as the back office system is Zenco, Zenco cameras must be purchased to ensure that the system is as Type Approved although Zenco do not sell their cameras direct and there are a number of resellers of these cameras who can supply and install.

Human Resources

Reading started their attended CCTV system with 2 part time members of staff (equivalent to one full time member of staff) to review the video from 3 cameras plus support from the parking enforcement team. This has increased to 4 full time members of staff + supervisor (part time) for the current system + 2 additional members of staff in the parking enforcement team providing part time support for the appeals process. Increasing automation has enabled increased ANPR coverage without a change in the number of staff.

Monitoring Procedures

RBC publish annual reports on number of offences committed, the number of payments made including the proportion paid early, the number of reduced cost early payments, the number of challenges to the enforcement and number of challenges upheld.

Supporting Mechanism

Awareness/Information Campaigns

There is clear signing of bus lanes and bus gates on the highway. Different colour surfacing is used as well as road side signs and enforcement camera signs. In addition there is clear information on the council's website and articles were published in the local press when it was introduced.

Marketing of what is done with the revenue has ensured public support with the ring fencing of money for 'dial a ride' transport services. This funding is making a big difference to these services for the mobility impaired and elderly where funding cuts have meant that other authorities are struggling to support these services.

Results

Expected vs Actual Benefits

The policy has been effective in removing the main infringement of traffic into bus lanes and through bus gates and has therefore been successful.

In addition significant revenue continues to be made from the enforcement. At the beginning of the scheme and when new cameras are added there are a high number of locals who get caught by the scheme, but this rapidly falls off over 8 – 12 months as generally people do not re-offend. After that the majority of the contraventions are visitors to Reading.

Quantitative Results Achieved

- In 2011/12 approx £3.5m was raised for the funding of the 'dial a ride' scheme.
- The first bus lane PCN was issued in September 2006.
- Between Sep-06 and Apr-13 over 270,000 bus lane/gate PCNs have been issued.
- In 2011/12 only 1.02% of bus lane/gate PCNs were appealed, of which only 7% were overturned.

Qualitative Results Achieved

No longer queuing in bus lanes by general traffic on the approach to junctions. This has not been specifically measured but has been observed. Also this leads to improved bus journey times and a clear message that buses have priority over traffic in Reading.

Key Considerations

Lessons Learned

For a successful scheme with public and political support it is important that the monies raised can be demonstrated to be put to good use and not just go into a central local authority budget.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

The bus lanes and bus gates need to be clearly signed to demonstrate that the enforcement is fair and that this is not just a revenue generation scheme.
Automated systems using ANPR maximize the cost effectiveness of the scheme and enable expansion of coverage without increasing the size of the team. Full automation may be technically possible which would remove the need for any manual checking of the data however this would result in more errors and this manual check requirement is part of the legislation in the UK.

Primary Obstacles

The primary obstacle is the need for legislation to enable authorities to be able to undertake this.
There is strong public opinion against anonymous fines through the post in the UK (too much CCTV - 'big brother') rather than a discussion with an enforcement officer and this has to be addressed through 'selling' the benefits of the scheme and the responsible use of the monies raised.
There is a local political argument that with a large amount of revenue which is allowed for in the next year's budgets that enforcement becomes a financial target. There is a political argument that despite fully according with the design requirements that RBC should be taking more steps to stop people contravening.

Critical Success Factors

The main success of the project was the DfT support for making bus lane enforcement a Civil offence and the DfT support for the coordination of the Highway Authorities in setting up the technical and procedural requirements for implementation.

Transferability Considerations

The key considerations for transfer are:

- The legislation for enforcement of bus lanes and who have the powers to enforce. It does not necessarily have to be the Highway Authorities who implement the systems.
- Public and political attitudes to fiscal penalties and whether the 'ring fenced' approach in the UK will translate into local policy.
- The standards for markings and signing of bus lanes and bus gates to ensure that enforced areas are clear. UK standards may not translate directly but there will be equivalent national standards.
- The technology for enforcement. There are varying attitudes to CCTV and ANPR technology across Europe which could effect transferability.

Up-scaling Considerations

Easy to upscale and add enforcement cameras to the system. Staffing needs to increase but cost of staffing is low compared to the value of the income to the local authority.

Contact

Simon Beasley – Reading Borough Council

3.2.14. GP_14: REAL TIME INFORMATION SYSTEM & BUS PRIORITY AT SIGNALS

Text of this GP is provided by Reading Borough Council (RBC)

Good Practice' ID	14
City/Region/Country	Greater Bristol/ UK
Prepared by	Reading Borough Council (RBC)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

General information

Description

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.

In addition to passenger information, the system provides 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.

GPS technology is used to track the location of buses, forming the basis of a journey time prediction calculation from which the information is transmitted between the buses, a central system, bus stop display screens and traffic signals.

The system has been implemented throughout the West of England sub region, which has over 52 million bus trips every year.

Backround and Context

The West of England sub region has a population of over 1 million residents within the authority areas of Bath & North East Somerset, North Somerset, Bristol and South Gloucestershire. The provision of a Real Time Information (RTI) system for bus services is a core part of the West of England's transport strategy, helping to achieve the objective of reducing traffic congestion and pollution by making bus travel easier and more attractive. There are currently over 52 million bus journeys made in the region every year.

The RTI system was first implemented for the Greater Bristol area in 1997 and has been significantly upgraded and expanded in subsequent years. The system comprises on-bus Global Position System (GPS) equipment which communicates via a radio base station with a central system server. The equipment is linked to the bus ticket machine to enable the predicted arrival time at each stop on that vehicle's route to be generated, which is then sent to the bus stop displays to provide a countdown in minutes to the predicted arrival time. This information is also sent to local travel information websites to provide the same information for a selected stop (whether or not it has an on-street display) so long as the route is operated by equipped buses.

The system allows Bristol's Urban Traffic Control (UTC) centre and bus operator's depots to monitor the location of all equipped vehicles and to identify early and late running services. Other features of the system include the operator's voice radio system and the ability to send an emergency alert from the bus driver to the depot.

The RTI system also includes the provision of intelligent bus priority at traffic lights, via a link to Bristol's UTC systems. This function helps to reduce journey times and ensure buses keep to the timetable by providing late running vehicles with priority at signal controlled junctions. The system works by the bus sending an identifying message to the signals on its approach, which the UTC system will then process and adjust the signal phasing accordingly. The system can be set to give different levels of priority, for instance to all buses or just to those operating behind schedule. It is currently set up to provide priority to all equipped buses that are running late by 3 minutes or more. The signal phasing can be adjusted by the UTC system to either extend a green phase to allow a bus in a queue to progress through the junction, or to adjust the phasing of the lights to provide a green light to the arm with a late running bus sooner than would happen under the normal cycle. To operate correctly it is essential that the data relating to the timetable, route, bus stop allocation and the location of all stops served is correct within the RTI system.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Policy design details

Policy Design Steps and Timing

The main policy design steps for the system include:

- The provision of the RTI system and associated bus priority is a core part of the West of England's transport strategy, as outlined in Joint Local Transport Plans from 2001 to the latest plan covering the period 2012-26.
- The recommendation made in the Greater Bristol Strategic Transport Study in 2005 for greater provision of bus priority in the sub region.
- The introduction of the Punctuality Improvement Programme (PIP) in 2007 as an agreement between Bristol City Council and First Bristol. The PIP contained commitments and proposed actions on behalf of the Council and First with a range of targets to be progressively achieved over the programme's five year lifetime.
- Securing funding from central Government and First Bristol in 2008 to implement the Greater Bristol Bus Network major scheme, providing a comprehensive upgrade of ten corridors between 2008 and 2012. The project aims were to significantly improve service for passengers by upgrading 40 routes, 1,000 bus shelters and the creation of bus priority lanes. The programme of works included the provision of RTI at bus stops and bus priority at traffic signals.
- The introduction of Quality Partnership Schemes (QPS) in 2010 to govern bus operations on the ten within the Greater Bristol Bus Network. The QPS include agreements on maximum fare levels, minimum frequencies, vehicle standards and service performance (including punctuality levels). The QPS is complimented by voluntary partnership agreements with trigger points, whereby, when agreed levels of patronage and/or revenue are obtained operators will deliver specified improvements to services. The QPS has therefore been established to lock in the benefits and provide a virtuous circle of investment by all local bus operators and the local authorities.

Actors Involved

The main parities involved in the RTI system are:

- Bristol City Council (lead local authority);
- Bath & North East Somerset Council (partner local authority);
- North Somerset Council (partner local authority);
- South Gloucestershire Council (partner local authority);
- First Bristol (main bus operator);
- Wessex Connect (bus operator);
- Abus (bus operator);
- Vix (supplier of system and current maintenance provider).

Decision Making Process

The implementation of the original RTI system and substantial development and expansion in subsequent years has been enabled through the decision making process formed by the West of England partnership, the four individual local authorities and their ability to secure funding from central government for the system.

Implementation details

Implementation Steps and Timing

The main implementation steps for the system include:

- Implementation of the original RTI system in 1997.
- Implementation of selective vehicle detection to enable bus priority at signal junctions through the RTI and UTC systems.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- Installation of a new radio system to provide increased capacity and wider coverage in 2007.
- Expansion of the system to include additional bus 'showcase' routes, particularly as part of the implementation of the Greater Bristol Bus Network major scheme between 2008 and 2012.
- Implementation of renewed maintenance arrangement for the RTI system in 2011.

ICT/Infrastructures needed

ICT is fundamental to the RTI and bus priority system, from the GPS based vehicle tracking system, to the RTI server software to calculate arrival time predictions and the link to the UTC system to provide bus priority at signal junctions.

ICT is used within the UTC and associated SCOOT systems to enable the provision of bus priority. This includes an assessment the current performance of each junction to ensure providing bus priority does not have any unintentional consequences on other services or parts of the highway network.

In addition, ICT is used to provide information from the RTI system more widely, including the ability for virtual RTI displays to be used on local travel information websites and to be communicated to mobile phones.

Human Resources

A substantial level of resource has been allocated by the four local authorities, bus operators and RTI system supplier during the lifetime of this project from the original procurement in 1997 to the current date.

Monitoring Procedures

Monitoring of the success of the RTI and bus priority system is undertaken through the reporting of targets and indicators included within the West of England's Joint Local Transport Plan, particularly with regarding to bus punctuality performance and customer satisfaction.

The monitoring and incentivising of performance through the PIP and QPS agreements between local authorities and bus operators is vital to the success of the RTI system and the wider provision of good quality bus services throughout the Greater Bristol area. In addition, monitoring of performance is carried out at regular working group meetings and real-time monitoring of bus services and the wider network status is undertaken within Bristol's UTC centre.

Supporting Mechanism

Awareness/Information Campaigns

Awareness and information campaigns to promote the RTI system have been undertaken through the Travel West, Travel Bristol and Next Bus Bristol brands, including the provision of RTI data on local travel information websites.

Partnerships/Key Supporting Stakeholders

Key partnerships and key supporting stakeholders include:

- The West of England Partnership, which encompasses the authority areas of Bath & North East Somerset, North Somerset, Bristol and South Gloucestershire.
- The partnership arrangements between local authorities and bus operators secured through the PIP and QPS initiatives.

Results

Expected vs Actual Benefits

Overall the expected benefits from the RTI and bus priority system have been realised, including benefits relating to improvements to bus journey times, punctuality, reliability and passenger satisfaction.

Quantitative Results Achieved

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Quantitative results achieved through the RTI system include improvements to bus service punctuality, reliability and reduced journey times.

Qualitative Results Achieved

Quantitative results achieved through the RTI system include a substantial improvement in the quality of bus provision, particularly the information provided to the travelling public which has been dramatically improved through the introduction of the RTI system. This has resulted in improved levels of customer satisfaction with the bus services.

Key Considerations

Lessons Learned

The main lessons learnt from the project to date include:

- The importance of meeting the tight timescales to implement timetable changes within the RTI system, and the differing requirements of the system operator and bus operators during this process.
- The recognition that the provision of bus priority has different levels of effectiveness at different junctions, due to a range of factors relating to the junctions itself and the current traffic conditions.
- The need for a holistic approach to network management to maximise the benefits of the bus priority system, for instance through the provision of messages on VMS roadside displays.

Primary Obstacles

The main obstacles experienced through the project to date include:

- The maintenance costs associated with the system are high and purchase of equipment can be prohibitive, particularly for small bus operators.
- Obstacles have delayed implementation of future enhancements to the system, including the provision of scrolling messages on at-stop RTI displays and provision of on-bus screens and audio announcements.

Critical Success Factors

The key factors which were critical to the success of the project include:

- The importance of all data relating to the timetable, route, bus stop allocation and the location of all stops served being fully up to date for every journey at all times to ensure the RTI system and associated bus priority operates correctly and provides accurate information to the travelling public.
- Reliable comms throughout the system is vital to ensure there is no loss of connection and therefore the system is able to operate. For this reason enhanced comms infrastructure is likely to be a fundamental aspect of any future bus rapid transit scheme in the area.
- The importance of effective partnership working, both between local authorities and bus operators, but also between different teams within the same organisation, both through the formal PIP and QPS arrangements but also through regular liaison at a working group level.

Transferability Considerations

Transferring the knowledge gaining from the implementation of the system in Great Bristol to other public bodies within the country of the good practice is enabled through the use of standard protocols and the forums established by Real Time Information Group (RTIG) for RTI systems and UTMC Development Group (UDG) for UTC systems.

Up-scaling Considerations

The RTI system has been extended to include additional bus ‘showcase’ routes, particularly as part of the implementation of the Greater Bristol Bus Network major scheme between 2008 and 2012.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

The main factor required to enable the wider scale role out of the system is the requirements to install the relevant equipment on buses, at stops and to enable bus priority at signal junctions on the new corridors.

Contact

via Simon Beasley, Network Manager, Reading Borough Council

3.2.15. GP_15: REAL TIME PASSENGER INFORMATION SYSTEM, BUS PRIORITY AT SIGNALS, PUBLIC TRANSPORT MOBILE APPS, CITY ACCESS CONTROL. SMART CARD

Text of this GP is provided by Reading Borough Council (RBC)

Good Practice' ID	15
City/Region/Country	City and County of Swansea/ UK
Prepared by	Reading Borough Council (RBC)

General information

Description

Cambridge Bus way is the implementation of a 16mile/25km guided bus way 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. The scheme uses guided buses along the length of the scheme. There are a range of technologies to assist in the scheme and to make the scheme as attractive and efficient as possible. These include the following technologies, on bus CCTV, smart ticketing, real time passenger system information, traffic signal priority, passenger WIFI.

Backround and Context

Cambridge is a university city with a population of 172,000. The city is known as the cycling city and it continuously tops the surveys of the highest proportion of cyclist's trips to work in the UK with 25% of all commuters using their bikes. These high figures are assisted by an extensive network of on and off highway cycle facilities and extensive cycle parking. Cambridge as with most urban center suffers from congestion issue along the main corridors into the city.

The city center has Urban Traffic Management Control. To minimize the congestion within the city center Cambridge have implemented a radical access restriction with associated information provision which has cut city center congestion and improved the reliability of the bus services in the area. In 2005 all buses operating in Cambridge and surrounding authorities area where fitted with GPS tags and there is a city wide RTPI system installed at a number of shelters. The information is also available via a free Android or iPhone app and through Cambridgeshire county councils website.

Approximately 20km to the north west of the city is the town of St Ives. The town has a population of 16,000 with a high proportion commuting to the Cambridge. St Ives and Cambridge used to be connected via a rail link which was shut to passenger transport in 1970 and freight service in 1990. The only link between the two is via the congested A14.

The busway scheme went operational in 2011. The 25 km route has 20km of guided bus way. There are 26 specially adapted buses running along the route that have been purchased by the bus companies. The scheme introduced 2 park and ride sites and has 8 stops along the route with associated passenger terminals.

Policy design details

Policy Design Steps and Timing

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

1990 investigated the possibility of a light railway.1992 Cambridge guided bus study outline the practical benefits over a railed option
Cambridge to Huntingdon Multi-Modal Study 2001 demonstrated that a guided bus offered the best cost benefit ratio over other options. Findings where then presented to the Government who recommended that the council came forward with a further developed scheme to allow the scheme to be included within the 2003/2004 local transport capital expenditure. The scheme was provisionally accepted subject to a TWA inquiry that required a wider consolation on the plans coming forward.
A public enquiry was undertaken in 2004 to examine the proposals in light of some strong opposition to the proposal. On winning the enquiry the Government awarded Cambridge the required funding.
The primary contractor Bam Nuttall, was awarded a design and build contract in 2006. The detail design of the project was undertaken by consultants Arups/ Parson Brinkerhoff.

Actors Involved

Cambridgeshire County Council - The authority who is has been the key driver behind the scheme. They are responsible for the operation of scheme.
Central Government – Have been the main funding body behind the scheme.
Arup - Employed by Cambridgeshire county council to undertake the preliminary scheme design and business case used to secure central Government approval.
Steer Davies Gleave – Acted as project manager for Cambridge county council for the scheme up to the planning enquiry
Bam Nuttal – Awarded the scheme design and build contract.
Arups/ Parson Brinkerhoff – Employed by Bam Nuttal to act as they detail designers of the scheme.
Atkins - Cambridge term consultants served as the council project manager during the construction stage of the project.
Stagecoach/ Whippet – Commercial bus operators who have entered into a 10 year partnership to operate the services.

Decision Making Process

2001: Findings of the Cambridge and Huntingdon Multi Modal Study where used by central Government to give Cambridge the green light to further the proposals.
2002: The government reviewed the business case and scheme design and awarded the funding for the scheme through the Local Transport Plan process.
2004: The scheme was submitted for planning and subsequently went to planning appeal which the scheme successfully won.
2006: The scheme was awarded to Bam Nuttall following an open tender process for a £90millon contract.

Implementation details

Implementation Steps and Timing

As part of the planning process in 2005 the compulsory Purchase of section of the scheme was undertaken.
The design and build contract was awarded to Bam Nuttell in 2006.
The original programs was for the scheme to be completed by Autumn 2009 but delays and quality issues around the scheme meant that did not open fully till August 2011.

ICT/Infrastructures needed

The Cambridge busway has a significant amount of ICT that is assisting in making the scheme successful
Real time Passenger System – the system uses VIX real time information system and associated shelter screens. The system is fully intergrated into the county wide system.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Bus WiFi – to assist in the passenger experience free WiFi has been included on all services using the Busway.
SmartCard – The Busway used the VIX ticketing machine.
Bus Priority – Local bus priority has been installed at all junction intersections along the route of the BusWay.
There is also an operational support center that monitors the track to ensure that track is clear and the stations are safe there are 57 CCTV cameras along the route. Some of the track is liable to flooding and sensors have been installed in the track to monitor this. There is communication to the service vehicles on the track to allow the appropriate action to be taken if there is an issue.
The BusWay route has be constructed by civils engineering contractor Ban Nuttell. The Busway consists of 20km of constructed guided bus route. The route has been constructed from concrete beam sections that are 30metres long with associated piling foundation that minimizes the associated on-going maintenance of the scheme. The bus way crosses existing highways at 12 locations so transition points where required. Aside from the track the largest infrastructure was the replace of an existing 220 meter viaduct over the river great Oure. The scheme included 2 park and ride site and 9 stops. The route has a 2 branch Line" to allow the Busway to service new areas of development.
The route required the alteration to an existing bridge structure to allow double decker buses to pass underneath and a bridge to cross the network rail mainline.
The scheme attempted to be as environmentally friendly as possible by using collected rain waters in the concrete making process, the 30 meter concrete beams sections where cast on site to minimize the transit of the materials and recycled 1.8millon tyres were located between the beams to provide a drainage medium.

Monitoring Procedures

The scheme is fully monitored for operational performances through the RTPI system and the day to day performance through the use to the operational centre.

Supporting Mechanism

Awareness/Information Campaigns

At the launch of the service there was a structured media campaign to aid the awareness of the service. All the marketing and service vehicles have matching branding to create a strong image.
The service has its own supporting website.

Results

Expected vs Actual Benefits

It was forecast that in the first year of the scheme opening that there would be 1.75millon passengers in the first year and rising to 3.5millon by year 3. The actual number was 2.5millon passengers in year which is 43% higher than the original forecast.

Quantitative Results Achieved

The journey time of the route has not seen any notable improvement over the previous journey time but the system has allowed the reliability of the journey to be improved.

Qualitative Results Achieved

A customer survey was undertaken in May 2012. The key findings of the survey were:-
The bus way is contributing to reducing the number of private vehicles trips in the area as 24% of the passengers who made the same journey before the Busway opened had switched from car(as driver) , and 13% had changed to the Busway from being given a lift.
78% of users surveyed thought the arrival time at their destination is more reliable than using a car

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

74% users thought that the Busway is quicker than using a car
83% user thought that the Real Time Information was useful
60% users thought the availability of free WiFi on the bus was useful to them.

3.2.16. GP_16: MOBILE TRAVEL INFORMATION

Text of this GP is provided by Institute of Logistics and Warehousing (ILIM)

Good Practice' ID	16
City/Region/Country	Aalborg/ Denmark
Prepared by	Institute of Logistics and Warehousing (ILIM)

General information

Description

Although significant emphasis is put on securing quality of public transport in Aalborg, delays do still occur, and sometimes passengers report feeling uncertain if the bus is delayed, or if they themselves arrive too late at the bus stop. Uncertainty about planned and actual departure times and the location of bus stops are some of the barriers that discourage potential passengers from using public transport. The availability of Real Time Passenger Information prior to getting on a bus and on board information (via screens. At the same time the systems contribute to improving the image of public transport as a modern means of transport and thereby helping public transport to appear as an attractive alternative to car use. In this measure, a mobile portal for public transport has been developed, including a set of Location Based Services (LBS) for mobile phones (based on the mobile phone' GPS).

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 PT trip from their present GPS position to your predefined Home address. It achieves this by integrating the GPS position, and saved user information, with the national Journey Planner.

The complete IT infrastructure for delivering RTPI including busPc and back offices system with prognoses algorithms in Aalborg were planned as part of EU project VIKING and implemented during the CIVITAS I VIVALDI project.

As part of the VIVALDI project, RTPI was implemented on 40 variable message signs (VMS) at major bus stops in Aalborg. The information has proved to be of great benefit for public transport users and as a consequence is helping to maintain uptake of public transport, although it does only cover the most important bus stop in Aalborg. Equipping bus stops with VMS is very expensive and is therefore only possible for major stops with a high customer flow. But in Denmark, almost everyone aged over 8 carries a mobile phone. So by using these mobile phones as VMS for RTPI, the information is spread to all people and all bus stops; the investment is taken up by the users and the technology is always kept up-to-date. As a consequence of this, a mobile service was implemented as part of the EU MIDAS project. This service was menu based prompting the user to choose in a three level menubefore the RTPI were presented. In this way, it was possible to get round the two problems of the customer not knowing the precise name of the bus stop, and the difficulties of keying long names on a mobile phone.

As an even better solution it is now possible to skip the menus and present the user for RTPI based on the users GPS position. As a parallel, an interface to the national Journey Planner have been develop, where keying in is substituted by either GPS positions or predefined locations. The approach used in ARCHIMEDES provides information in a convenient manner that is expected to increase user satisfaction among

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

present users and potentially attract new users to public transport including tourists unfamiliar with the public transport system, thereby expanding the market for public transport.

The measure introduces three different new public transport mobile phone features. The first feature is “NTmobil.dk”, which is a mobile phone platform integrating different PT mobile services. The second feature is a Location Based Service that provides RTPI via mobile phone on the nearest bus stops, based on GPS. The third feature is the “Take Me Home” feature based on GPS data, that saves user data and the National Journey Planner provides the user with public transport information.

Specification of NTmobil.dk

The mobile platform **NTmobil.dk** is a platform where mobile phone users can access a range of mobile PT features such as buying a SMS ticket, getting RTPI information and accessing personalised travel information created via ARCHIMEDES measure 9 ‘Modernizing travel information’. With the fast technological development of mobile phones it is expected that NTmobil.dk will be further developed along with the change in technological possibilities and user needs.

The first possibility is the RTPI system NTLive that allows passengers to check if buses are on-time and to get information on eventual major changes or disturbances such as heavy snow.

The second possibility is the Mobile ticket, allowing the passenger to buy a ticket via the mobile phone by sending a text message.

The third possibility is Rejseplanen, ‘the National Journey Planner’ offering the user journey planning information with access to all public transport in Denmark supplemented by map based walking instruction from address to bus stop.

The fourth possibility is an integration of functions based on personalised travel information from MitNT (ARCHIMEDES measure 9). For example, actual real time information and disruptions for the users preferred routes and bus stops.

Last but not least, the menu item NTertainment offers different forms for entertainment to the passenger during travelling.

Specification of the GPS based RTPI

The NTLive JAVA application is an expansion of the functionality and an improvement of user interface of the HTML based mobile phone RTPI system. The LBS includes RTPI from 30 nearest bus stops selected from the present GPS position.

At the present it is not possible to access the mobile phones GPS from a build-in browser.1. To reach the goals for this task, it has thus been necessary to develop a JAVA application, even though it is still generally accepted that having to install an application constitutes a barrier for many customers. Fortunately, this barrier is less significant for the target group for this task, mostly being young people.

When using the JAVA application, the application uses the phone’ GPS to position the user. The 30 nearest bus stops are found and presented to the user – sorted by closest first and with an option to see all stops on a map instead. When a bus stop is selected, the RTPI from this stop is shown for the next 50 departures with an option to see even more. Off course it is still possible to choose a stop or a terminal further away by typing in the name. The time displayed is the scheduled departure time, supplemented with any eventual delay in minutes. Times marked with * mean that the bus has not yet started driving, so no real time information is available. After having selected one departure you can click the departure time and see the whole trip for that bus, with prognosis for the rest of the trip.

All buses running for the day and the next can be shown on the departure board. Of course, RTPI is only relevant for an hour or so forward, but as planned departure times

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

are shown for the next day, people tend to use the mobile phones as a replacement for a printed timetable.
The service is free except for ordinary data traffic costs which are very low in Denmark.

Specification of the "Take Me Home" Feature

The 'Take Me Home' service is another menu item in the java application. This function gives the user a combined walking and PT trip from present GPS position to the users predefined Home address. It achieves this by integrating GPS positions and saved user information with the national Journey Planner.
To start, the user would define their home address in the programs settings. When journey advice home is required the user would just need to push the programs 'Take Me Home' button. The program will then find the three first possible public transport journeys from your present GPS position to your home address from the national journey planner, including possible walking trips to and from the bus stops.
Due to the national journey planner containing data on all public transport and all bus stops and train stations, this function can take the user home from anywhere in Denmark. Of course, if required the user can choose another destination than Home, or a later departure time than Now'.
Besides using the program pre-trip to find the right PT journey, integrating the GPS in the program's search makes the program a good help on-trip. If PT is delayed or interchanges between buses or train fails the GPS based search from current position is a fast and reliable way to reschedule your trip.
This GPS based 'Take Me home' function is expected to significantly lower the barrier against using public transport among infrequent PT users.

Backround and Context

The measure introduces three different new public transport mobile phone features.The first feature is "NTmobil.dk", which is a mobile phone platform integrating different PT mobile services. The second feature is a Location Based Service that provides RTPI via mobile phone on the nearest bus stops, based on GPS. The third feature is the "Take Me Home" feature based on GPS data, that saves user data and the National Journey Planner provides the user with public transport information.

Policy design details

Policy Design Steps and Timing

This task have been planned and implemented by a working group consisting ofARCHIMEDES' measure leader, two members from Nordjyllands Trafikselskab (NT) (Public Transport Authority of North Jutland) and a planner from the Department for Sustainable Development of the City of Aalborg. Within the working group, ideas were discussed, the solution designed and the project has been implemented.
The planning started in the winter 2008 and the strategic decisions were taken during 2009. Different possibilities for the framework were discussed. It was decided to subcontract with an IT company for the mobile portal. A decision was taken to work with the National Journey Planner Cooperation (Rejseplanen A/S) on the GPS based RTPI and the 'Take me Home'function, since this would offer the best end-user product. The National Journey Planner Cooperation, owned by the Public Transport Authorities in Denmark, was ready to implement an application with similar GPS function to what was described in the full ARCHIMEDES project description as a goal for this measure. Therefore, it was decided to benefit from thesynergy effects by building upon this National Journey Planner service and implement RTPI for the bus users in the Journey Planner.Different features of the measure were discussed and it was decided to focus on the three features:
1. the development of the mobile platform "NTmobil.dk";

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

2. the Location Based Services providing RTPI via mobile phone on the nearest bus stops, based on GPS;
3. the "Take Me Home" feature for mobile phone based on GPS data and the National Journey Planner.

Actors Involved

ARCHIMEDES is an integrating project, bringing together 6 European cities to address problems and opportunities for creating environmentally sustainable, safe and energy efficient transport systems in medium sized urban areas.

The two Learning cities, to which experience and best-practice will be transferred, are Monza (Italy) and Ústí nad Labem (Czech Republic). The strategy for the project is to ensure that the tools and measures developed have the widest application throughout Europe, tested via the Learning Cities' activities and interaction with the Lead City partners.

The four Leading cities in the ARCHIMEDES project are:

- Aalborg (Denmark);
- Brighton & Hove (UK);
- Donostia-San Sebastián (Spain); and
- Iasi (Romania).

Decision Making Process

All information are included in "policy design steps and timing"

Implementation details

Implementation Steps and Timing

The mobile platform, NTmobil.dk, included a slight makeover of the mobile phone RTPI system, originally from the MIMOSA project, which had been launched early in 2010. The 'Take Me Home' and the new GPS based RTPI were launched as a java application in October 2010. Migration of the functionality to HTML5 is expected to be launched in the next phase.

Human Resources

Number of staff: 2 – 3. However, larger number of staffs tested solutions.

Monitoring Procedures

It is monitoring how many people downloaded application.

Supporting Mechanism

Awareness/Information Campaigns

Communication has been important for this measure with a consistent layout and the gathering of the different features on NTmobil.dk.

The marketing of NTmobil.dk started in spring 2010. The marketing campaign consisted of flyers posters and magazine advertisement introducing and explaining NTmobil.dk. The information screens in the buses are also being used to advertise for the mobile phone features. In addition, advertisement for NTmobil.dk was placed in the introduction handbook for the new students in September 2010. As for the marketing of NTLive and the Take Me Home feature, those were a part of the overall marketing of NTmobil.dk. In order to test new information channels ARCHIMEDES recorded 3 small humorous campaign movies featuring the Take Me Home function, to be played on the information screens in the buses and to be promoted on YouTube.com. The most common way for users to get the JAVA application will be from the websites of NT, the City of Aalborg and Trafikken.dk/Nordjylland (measure 9) or the journey planner website, Rejseplanen.dk.

Partnerships/Key Supporting Stakeholders

Public Transport Authority of North Denmark.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Results

Quantitative Results Achieved

More than 3.000 people have downloaded the JAVA application.

Qualitative Results Achieved

Aalborg has following expects from this measure: increased levels of satisfaction among public transport users and an increase in public transport usage.

Key Considerations

Lessons Learned

The big challenge in this measure is the speed of technological development when it comes to mobile phone applications. When including the GPS dependent mobile phones functions in the proposal for a FP7 project, this was very innovative and ambitious and there was even reasonable uncertainty, if it would be possible to develop such a function in the project period. But with the launch of the iPhone and Android, and the open programming interfaces associated with these systems, some of the GPS based journey planner functions is already being created by third party developers, as for example private talented young people.

Critical Success Factors

- "NTmobil.dk", which is a mobile phone platform integrating **different PT** mobile services.
- User friendly application on mobile phones.
- Availability of real data time.
- Good information campaigns.

Contact

Lars Elgaard Thomsen
Public Transport Authority of North Denmark
It Coordinator
let@NTmail.dk.

3.2.17. GP_17: ON-BOARD BUS TRAVEL INFORMATION

Text of this GP is provided by Institute of Logistics and Warehousing (ILIM)

Good Practice' ID	17
City/Region/Country	Aalborg/ Denmark
Prepared by	Institute of Logistics and Warehousing (ILIM)

General information

Description

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 on delays and connections, and access to the same kind on information prior to entering the bus (via mobile phones ARCHIMEDES measure 68) is expected to lower these barriers and give the traveller "peace of mind". Another benefit is that the system contributes to improving the image of public transport and thus helps public transport to appear as an attractive alternative. In this measure, on-board information screens have been implemented on 100 city buses at Nordjyllands Trafikselskab (NT - Public Transport Authority of North Denmark). Information on the current journey (e.g. 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

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

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. In addition transfers and connection information will be shown in the next phase. Of the 100 city buses, 50 buses operating in the CIVITAS corridor are financed with the support of ARCHIMEDES, whereas the remaining 50 city buses are financed by NT. The ARCHIMEDES project contributes to the purchase and installation of flat screens as well as the upgrading of the bus computer system to handle data for the flat screens.

Backround and Context

The measure aims at installing and providing information on screens in 100 city buses in Aalborg. These information screens show information about the current trip with the upcoming bus stops and the overall trip destination as well as other services such as traffic information, news, weather forecast and advertisement.

Policy design details

Policy Design Steps and Timing

The planning and pre-data collection phase started in winter 2008 with a working group consisting of the ARCHIMEDES' measure leader, two people from Nordjyllands Trafikselskab and a traffic planner from the Department for Sustainable Development of the City of Aalborg.

In 2009, NT initiated a pilot-project on one selected bus line to test the system and to Rather user evaluations as input to the final system. The pilot project consisted of installation of software and two flat screens in each of 6 buses on the bus line starting in the end of June 2009.

After the pilot project, experiences with the user interface and the passengers' acceptance were collected with the help of a questionnaire that was conducted in November 2009 to which 368 people responded. The respondents showed a very positive attitude towards the information screens. Key results from this survey were as follow:

- 88% of the respondents liked the information screens.
- 87% of the respondents found it positive that news and advertisement were shown as a supplemental to the traffic information.
- 91% supported the method of providing traffic information on screens in buses.
- 90% thought that the information screens were a service improvement.
- Only 15% prefer announcements of the next bus stop via loudspeakers instead of the screens. (40% would prefer the information both via screen and loudspeakers, whereas 50% would like only to have the screen information.).

Combining on-screen announcement with loudspeaker announcements of central bus stops was consequently chosen as a solution to the dilemma of infrequent travelers – or elderly and disabled people - wanting this information and frequent users wishing to avoid this auditory disturbance. In addition to evaluating the user interface, the pilot project provided experience in the operation of the screens, including the timing of passenger information and the combination with other types of information. Based on these experiences, specifications for the on-bus information system were incorporated into the tender for public transport in Aalborg. The new

contracts become effective from end of June 2010 and by September 2010 the system was implemented on all 100 buses.

In the contract the responsibility for keeping the system running is shared between NT and the bus operators (Arriva and CityTrafik). The operators install and maintain the

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

screens in the bus and are paid a dedicated amount for this. NT delivers the centralised and decentralised system which manages the content of the information.
An interface was created that allows RSS news to be read by the BusPc and integrated on the screens. Agreements were reached and contracts signed with the local media concerned with the delivery of a special bus RSS newsfeed consisting of the normal news feed tailored for use in the bus, where for example links are removed. The RSS feed is delivered once an hour to the buses via GPRS communication (data communication over a mobile phone network).
The commercials are delivered from an advertising company in the form of readymade JPGs, WMV or other standard file formats. Communication is over GPRS. All files are transferred during bus start-up and new files that are released during the day are transferred to the buses 'on the fly'.

Decision Making Process

All information are included in "policy design steps and timing"

Implementation details

Implementation Steps and Timing

Installation of the two information screens in each of the 100 city buses was finished in September 2010. There were still a few minor software problems; however it was expected that all the information screens will be running without problems from the end of October 2010.

ICT/Infrastructures needed

Information screens are installed in 100 city buses and on each bus there are two flat screens. The supplier uses the term ´infotainment´ as a description for the screens that display information as well as entertainment. Infotainment is one part of a fully integrated information solution based on a central databases providing real time public transport information.
The screens are divided into three parts (figure below):

Source: Deliverable: T69.1 On-trip Bus Traveller Information in Aalborg

- The top line shows the final destination and the present time.
- The middle part shows changing types of information.
    - One third traffic and general information from NT and the City of Aalborg

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

Source: Deliverable: T69.1 On-trip Bus Traveller Information in Aalborg
Source: Deliverable: T69.1 On-trip Bus Traveller Information in Aalborg

- One third news and weather forecasts

Source: Deliverable: T69.1 On-trip Bus Traveller Information in Aalborg

Source: Deliverable: T69.1 On-trip Bus Traveller Information in Aalborg

- One third public and commercial advertising

Source: Deliverable: T69.1 On-trip Bus Traveller Information in Aalborg

- The bottom part shows the next three bus stops.

Human Resources

Number of staff: 2 – 3. However, larger number of staffs installed screens in buses.

Monitoring Procedures

For the evaluation, a questionnaire was conducted in November 2010. The questionnaire undertaken will be similar to the one that was conducted in 2009. The goal was to make a comparison to the first questionnaire to and evaluate if the changes made in the final system have further improved satisfaction with the user interface and the passengers' acceptance.

Supporting Mechanism

Awareness/Information Campaigns

In a press release NT announced that "all of Aalborg city, metro and service buses service will be equipped with information screens and real time passenger information" (NT press release, 22.1.2010).

The local radio channel (P4) brought a short story about the information screens in the buses.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

In month 27 of the ARCHIMEDES project (November 2010) a SMS competition with riddles will run as a campaign on the screens to attract attention to the screens and in this way to disseminate the knowledge of the screens.
In addition, four large screens showing similar information have been set up in the waiting room of NT.

Partnerships/Key Supporting Stakeholders

Public Transport Authority of North Denmark.

Results

Quantitative Results Achieved

Installation of the two information screens in each of the 100 city buses.

Qualitative Results Achieved

Increased user satisfaction.
Passengers satisfaction.
PT companies image improvement.

Key Considerations

Lessons Learned

The on-bus information system is an information channel whose prime function is to deliver existing Real Time Information on next bus stops etc. to the passengers. The success or failure of the system is therefore dependent on the reliability of the underlying RTPI system and the quality of the information in the system. As NT has a clear IT strategy for these matters and has been deliberately working on the data and IT infrastructure for some years, this has not been a problem in Aalborg. But attention has to pay to this issue.

Primary Obstacles

Securing a satisfactory uptime for the system can be challenge, especially in the technically demanding bus environment. A clear division of responsibility for the different parts of the system is a prerequisite for success. In Aalborg, NT is responsible for the busPc and the software where as the public transport operator is responsible for the uptime of the screens. This is a natural and sound division as it is the operator's employee, the driver, who is the first person to identify when the screens are not running.
As the system is an information system first, and a news and entertainment system second, it is important that the responsible organisation (the City or the Public Transport Authority), deliberately sets up the scheme so that information provision takes priority over news /entertainment. In Aalborg it was decided that the route destination and next stops should be shown all the time and that one third of the screen time should be reserved for traffic information.
During the project using sound on commercials and news was considered. It was decided to begin with a silent solution and to later test the impact of adding sound. In the meantime, experiences from a parallel system in the urban commuter rail system in Copenhagen have shown great discontent with the use of sound.
The final system became rather complex with a lot of parties involved (contractors, news providers, advertisement agencies, NT etc.). Therefore responsibility must be kept clear and internal and external interfaces must be open and simple. This requires a clear strategy and the willingness to simplify the system and keep traffic information the focus, if necessary.

Critical Success Factors

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

After the pilot project, experiences with the user interface and the passengers' acceptance were collected with the help of a questionnaire which 368 people responded. Project was conducted with strong relations with public transport users.

Transferability Considerations

It is possible to transfer the solutions to other sites. Although many requirements can be met.

Contact

Lars Elgaard Thomsen
Public Transport Authority of North Denmark
It Coordinator
let@NTmail.dk.

3.2.18. GP_18: REAL TIME PASSENGER INFORMATION SYSTEM

Text of this GP is provided by Institute of Logistics and Warehousing (ILIM)

Good Practice' ID	18
City/Region/Country	Bern/ Switzerland
Prepared by	Institute of Logistics and Warehousing (ILIM)

General information

Description

Bern is the city where more than one operators are in a service of passengers . Bernmobil is city operator, conducting the transport mainly by trams, but some lines, like connection with airport, use buses. Postbus Bern is operator, covering its lines bigger part of Swizerland, where Bern is one of the transfer centres. Postbus offers the service for commuters living in suburban areas or passenger travelling on longer distances. RBS is the local and city trains and operator, managing, among the others, the lines of Bern S-bahn. MOOLINER is the option for night transport in Bern and towns around. Consolidation of information from 4 different operators was aim of the Glue Software Engineering AG, which have taken on the task of joint information system for local commuters preparation. This way MEZI (Mobile real-time information system) was created and four different companies, supplying transport services to commuters, have been connected with one real time passenger information system.

The MEZI supplies the timetable for the mobile phones information in real-time (RT) on the lines of BERNMOBIL, Postbus Bern, RBS and MOONLINER. Some applications apart from timetable offers geopositioning and directions to the nearest city transport stop or station. The newest version of MEZI offers even some augmented reality solutions.

The solution was developed and implemented together with the Bernese software engineering company Glue Software Engineering AG. Originally the application was available for both Java-enabled mobile phones as well as iPhones. Mobile is the time table for the entire route network of BERNMOBIL, for most PostBus routes in Greater Bern and the bus routes available from RBS (Since 2012 also the Regional Trains of RBS are covered).

Backround and Context

The objectives to be achieved by real-time information service:

- customer information with place, time and actual situation along the travel chain;
- automated processing and coverage with stable quality;
- simply integrated into the existing infrastructure;
- marketing tool - new forms of dialogue;

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- increases customer satisfaction.

Policy design details

Policy Design Steps and Timing

August 2009: First discussions with customers,
September 2009: Demo prototype,
October 2009: Design and Development,
November 2009: Testing,
December 2009: Semi-public launch with the annual Swiss timetable change.

Actors Involved

1. Glue Software Engineering AG, Bern – software company, developer of the application, system integrator
2. Bernmobil – city transport operator, supplier of the data, beneficiary
3. Moonliner – night transport operator, supplier of the data, beneficiary
4. PostAuto Schweiz – national bus operator, supplier of the data, beneficiary
5. RBS – local and regional train operator, supplier of the data, beneficiary

Decision Making Process

MEZI for the region of Berne was developed for a group of Bernese Public Transport Organisations: BERNMOBIL, PostAuto Berne, RBS and Moonliner. In order to accelerate the decision process prepared a prototype to show the benefits of an app based mobile solution were prepared.

Implementation details

Implementation Steps and Timing

December 2009 – initial implementation of MEZI. From the change of timetable from 13th December 2009 BERNMOBIL, Postbus and RBS launch for bus and tram in Greater Bern one new service for the passengers: The Mobile Timetable with real-time information.

September 2011 – updated version of MEZI with augmented reality and Moonliner timetable. MEZI update 2.2.0 is available for iPhone and iPad now available on the App Store. Besides optimizations and adjustments in data production are the newly Moonliner departures for the Bern region on board. Alternatively, to list and Google Maps can be near the new stations with the associated departures show the live camera image. These 'augmented reality' mentioned functionality also shows at a glance the direction and distance to the desired station.

November 2011 – updated version of MEZI (Android). New features: revised layout (eg favorites as mini departure tables on the home screen), augmented reality, Moonliner timetables, corrected data (stops, lines).

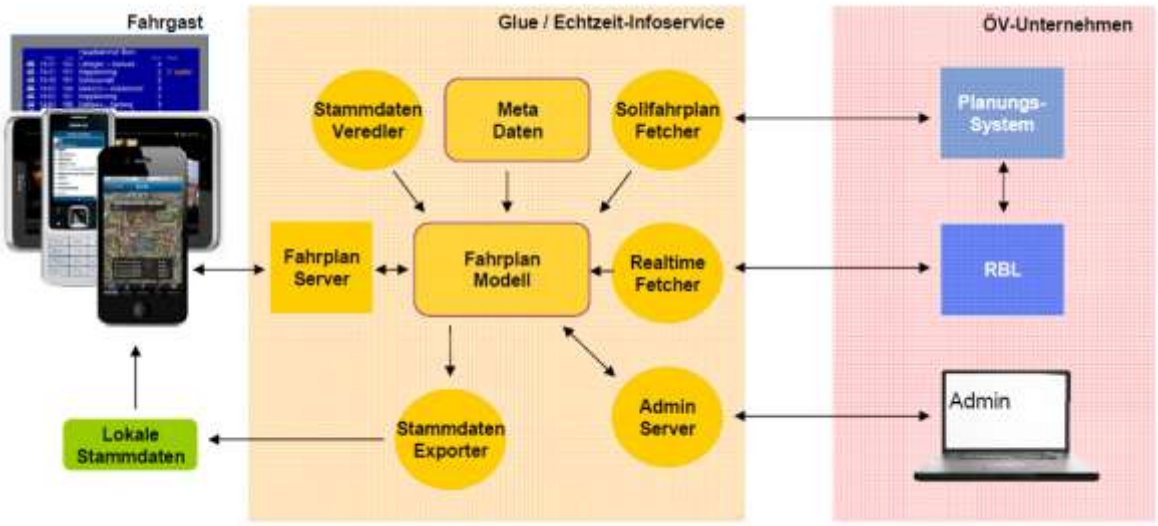
May 2012 – RBS railway in MEZI. From 7th May 2012 in the App MEZI can also schedule the RBS railway lines can be queried in real-time. RBS, BERNMOBIL and bus are responding to the needs of passengers and for more recent information - which is now possible thanks to modern technology (MEZI development).

Till May 2012, with MEZI of RBS BERNMOBIL and bus for technical reasons only the bus and tram lines in the region of Bern could be queried. But thanks to an innovative solution that Berner Glue Company has developed together with the RBS, the new train schedules in real-time can be obtained.

ICT/Infrastructures needed

The MEZI operates on two platforms Android and iOS (Apple). Windows 8 Mobile is planned. The Glue Company was responsible for its implementation on both platforms. Iterative Process starting from some general specifications, interface descriptions to get the traffic data and early prototype. Design method: Agile software development.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme



Supporting Mechanism

Awareness/Information Campaigns

Semi-public launch only with a press release and via word of mouth in order to prove concept and get first performance results. In autumn 2010 advertising campaign: posters inside the vehicles, adverts in newspapers, online publications, newsletters. Since then yearly campaigns when adding new features or extending the transportation network the app was covering.

Partnerships/Key Supporting Stakeholders

1. Glue Software Engineering AG, Bern – software developer and supplier, data integrator,
2. Bernmobil – city transport operator, supplier of the data, beneficiary
3. Moonliner – night transport operator, supplier of the data, beneficiary
4. PostAuto Schweiz – national bus operator, supplier of the data, beneficiary
5. RBS – local and regional train operator, supplier of the data, beneficiary

Results

Expected vs Actual Benefits

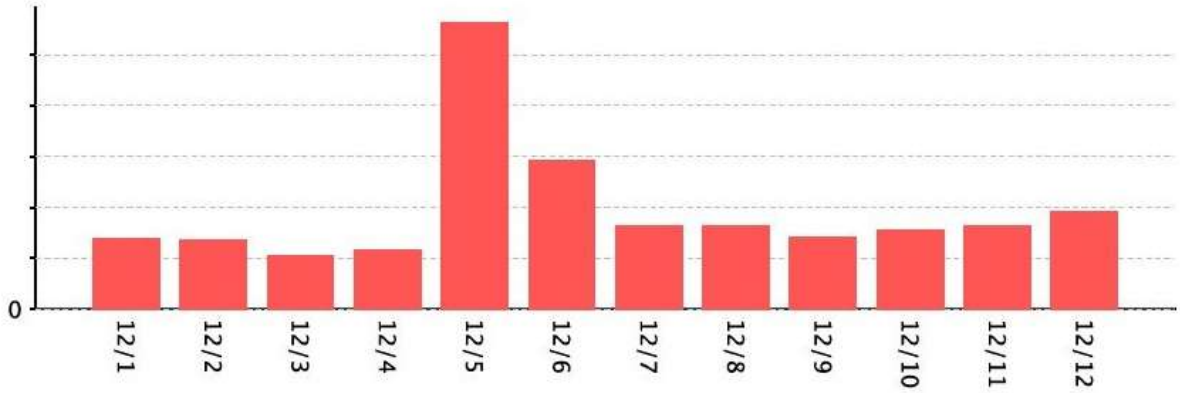
The objectives achieved by real-time information service:

- customer information with place, time and actual situation along the travel chain;
- automated processing and coverage with stable quality;
- marketing tool - new forms of dialogue;
- increases customer satisfaction (expected, not researched).

Quantitative Results Achieved

In May 2012 over 20 000 passengers were using timetable application - trend continues to grow. By comparison, a year earlier, two year after implementation of the application, there were about 11 000 users. Accordingly, the number of users has almost doubled within a year. 2012 statistics (monthly) - new users of the application:

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme



Source: data of Glue Software Engineering AG

Example of daily passengers activity (July 2011):

Platform	Queries	Unique visitors	Downloads (overall)
iPhone	96 200	13 500	30 380
Android	10 220	1 033	2 950

Source: data of Glue Software Engineering AG

Qualitative Results Achieved

- On-line information available.
- Passengers satisfaction.
- PT companies image improvement.

Key Considerations

Lessons Learned

There were technical issues since the quality of the timetable and real time data was not ready initially for the purpose of dynamic passenger information.

Primary Obstacles

The most difficult step was to persuade the group of transportation companies about the benefit of such an application. Second matter is source data quality and accessibility, what was crucial before implementing the application.

Critical Success Factors

It is most important that there is full availability of reliable real time data. And it's important to provide intermodal information, customers change line and want end to end information coverage for their journey.

Transferability Considerations

The Glue company offers MEZI solution (the platform) on open market. The transferability is only the question of funds, translation to local language, customization of implementation and integration of available PT suppliers data sources.

Up-scaling Considerations

The MEZI covers most part of available means of city public transport. The up-scaling is not necessary, widening of the service eg. by panels on the stops and transfer nodes are possible.

Contact

GLUE Software Engineering AG
www.glue.ch
Telephone: +41 31 385 30 11
Mr. Stefan Luder
Dipl El. ETH, Certified. Marketing Manager
Marketing & Sales

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

E-Mail: stefan.luder@glue.ch

3.2.19. GP_19: DEMAND RESPONSIVE TRANSPORT

Text of this GP is provided by Institute of Logistics and Warehousing (ILIM)

Good Practice' ID	19
City/Region/Country	Kraków/ Poland
Prepared by	Institute of Logistics and Warehousing (ILIM)

General information

Description

In order to better customize PT offer to citizens' needs the city of Krakow has introduced and tested a new demand responsive transport service in a chosen area of three districts. The DRT service in Krakow is the first flexible PT service on the national scale. The implementation of the service was based on the technology and know-how transfer. In 2005 with the start of the CiViTAS/CARAVEL Krakow decided to implement innovative, flexible public transport based on the experience of Genoa's DRINBUS. The main objective of demand-responsive transport (DRT) in Krakow was to better serve passengers by giving them more personalised service that could be adjusted to their actual needs regarding journey time and destination, and without generating significant costs for the service launch and daily operation. The DRT service in Krakow, called Tele-Bus, was launched in July 2007 with good results.

The launch of the Tele-Bus service in Krakow was based on technology and know-how transfer from Genoa. This kind of public transport flexible service with different target groups (e.g. people with reduced mobility, students travelling to schools, etc.) is successful in many European countries.

Tele-Bus is "many to many" public transport service with fixed stop points and flexible routes and timetables. It operates every day in the southeastern part of the city and during defined operating hours.

Backround and Context

The DRT service in Krakow, called Tele-Bus, was launched in July 2007 after the transfer of technology and know-how from Genoa to Krakow. The preparation of the service operating design, adaptation of the software for managing flexible service, and staff training were all conducted in collaboration of Polish and Italian CARAVEL project partners.

The new DRT service developed gradually during the first year, from 300 clients per month in the first quarter to more than 2,000 passengers in January 2008 and a subsequent stable monthly average of around 1,700 TELE-BUS users.

The daily DRT service operation is managed by Transport Dispatch Center – a part of MPK (Miejskie Przedsiebiorstwo Komunikacyjne – PT operator in Krakow) organizational structure. DRT clients contact dispatchers by phone using a special free line dedicated only for DRT services. Dispatchers collect the information from passengers, input data to the system, the system plans routes and output information is given to TELE-BUS drivers. The only limitation from the passengers' point of view is fact that an order must be placed at least 30 minutes before the planned start of the trip. The communication between TDC and drivers is based on mobiles phones and private radio network.

Operating hours:

Tele-bus service:

- Monday – Friday from 8.00 to 23.00

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- Saturday – Sunday from 6.00 to 23.00

Transport Dispatch Centre:

- every day from 7.30 to 21.00

Policy design details

Policy Design Steps and Timing

Stages of measure implementation		
Nr.	Description of the stage	Time frames
1	Analysis and research on Genoa DRT service	March – October 2006
2	Work on operating design	November 2006 – May 2007
3	Preparation of marketing campaign	April 2007– June 2007
4	Service model designing	11/06/2007 – 18/06/2007
5	Software adaptation, installation and training	March 2007– June 2007
6	Preparation and execution of communication and marketing campaign	May 2007– July 2007
7	Start of the transport dispatch center	July 2007
8	Start of the service operation (first bus run)	July 2007
9	Service performance and monitoring	July 2007 – January 2009
10	Survey on the Tele-Bus users (preparation, execution and analysis of results)	March 2008 – July 2008
11	Work on the Polish version of the software for managing flexible PT service	March 2008 – December 2008

Actors Involved

- The idea of DRT service in Krakow was realized by CARAVEL project partners:
- Miejskie Przedsiębiorstwo Komunikacyjne SA w Krakowie (MPK) – PT operator in Krakow responsible for the Tele-Bus implementation and daily performance as well as management of the Transport Dispatch Centre;
- Public Transport Authority – municipal entity responsible for the organization of public transport in Krakow agglomeration, the party of contract for public service provision signed with MPK;
- AMI S.p.A (Genoa, Italy) – CARAVEL project partner – giving support to MPK in introduction of flexible service;
- Softeco Sismat (Genoa, Italy) – a provider of the DRT technology – software for managing flexible transport services.

Implementation details

Implementation Steps and Timing

2005: Krakow decided to implement innovative, flexible public transport based on the experience of Genoa's DRINBUS.

June 2007: The service covers three districts: Rybitwy, Podwierzbie and a part of Biezanów. This area consists of residential and industrial zones of low population density. Conventional service here is not efficient and runs infrequently.

March 2009: Following the request of both already gained and potential clients the operator doubled the DRT network, covering Płaszów district.

ICT/Infrastructures needed

- Planning and Management System
- Application for terminals for in-vehicle applications
- GPS
- Communication system

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Call center had to be organized, equipped in online communication with buses infrastructure. GPS terminal with direct connection with call center for every DRT bus (so called “green” bus).
Terminals for in-vehicle applications. Driver support through graphic display and maps, Global Positional System (GPS), communication with monitoring headquarters and service management.

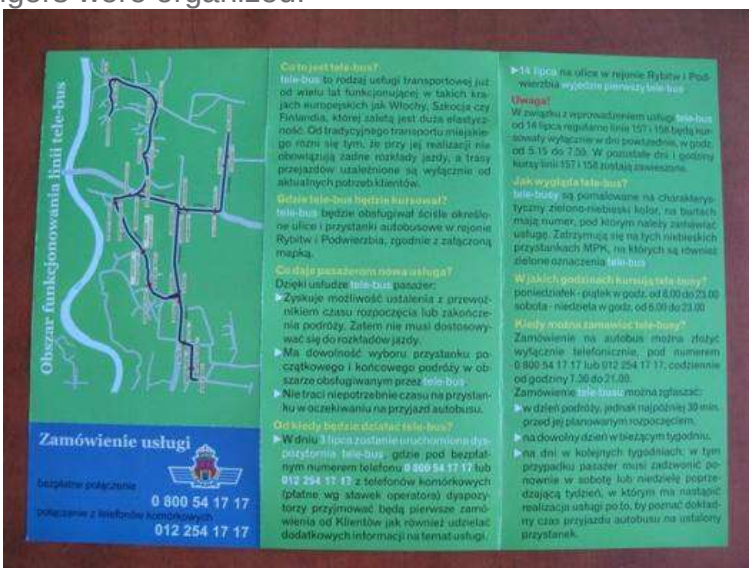
Human Resources

Two operators work on one shift (two shifts system) in Transport Dispatch Center.
Numbers of drivers depends on actual demand and the stage of the DRT development.

Supporting Mechanism

Awareness/Information Campaigns

The innovative character of the Tele-bus required a well-planned communications and marketing campaign targeted at inhabitants of the service area. The main objective of the campaign was to let potential clients know and understand the rules of the flexible service.
Start of every Tele-Bus development stage was advertised and the meetings with interested passengers were organized.



Tele-Bus flyer (source – MPK data)

The presentations of the “green” buses have been organized during events connected with local public transport. One of the most powerful tool of Tele-Bus promotion was/is the word of mouth marketing.

Partnerships/Key Supporting Stakeholders

- Krakow inhabitants – mainly those living in the DRT service area as well as commuters.
- District Council – local decision makers, intermediary between PT operator and inhabitants of chosen region.

Results

Expected vs Actual Benefits

The main goal - to enlarge PT reach and increase PT patronage in a chosen area by introduction of a new demand responsive transport service which is better customized to potential passengers’ needs, has been achieved. Details in table.

Nr.	Target	Rating
1	Enlargement of PT offer by implementing the first demand responsive transport service in Poland	**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

2	Testing of demand-responsive lines in the areas suburban of Rybitwy, Podwierzbie and Biezanow in South - East Krakow, 2 small buses will be used to run the system	**
3	Launch of the management and control centre for the demand responsive system Introduction of a new phone number to make system available for all users	**
4	Institutionally integrate this efficient flexible PT service tailored to individual passengers needs	*
0 = Not Assessed *=Substantially achieved (i.e. at least 50%) **=Achieved in full ***=Exceeded		

Quantitative Results Achieved

Since mid-July 2007, the Tele-Bus service has been developing and the number of transported passengers has been gradually increasing (starting with about 300 passengers in July and August 2007 and exceeding 2,000 in January 2008). The long term statistics will allow all the involved actors to evaluate the impact and the functionality of the flexible service with a view to future development of DRT in the city of Krakow. Further statistic show stable growth of passengers' number:
(see: enclosed file – Tele-Bus maps.docx)

Cost increase in initial phase - during 2 years of DRT performance the Tele-Bus was an additional service provided in parallel with the regular PT (no reduction of regular bus lines due to lack of public acceptance). Consequently the total costs of PT were higher when comparing to the situation before the Tele-Bus introduction.

Cost savings after 2 years - since July 2009, after doubling the Tele-Bus network and successful limitation of regular bus lines the Public Transport Authority has started to observe cost savings.

Qualitative Results Achieved

The main objective of demand-responsive transport (DRT) in Krakow was to better serve passengers by giving them more personalised service that could be adjusted to their actual needs regarding journey time and destination, and without generating significant costs for the service launch and daily operation. According to assumptions, the DRT service could replace conventional public transport in low density areas where regular service is inefficient.

The goals have been achieved, what is confirmed by further development of the area, covered by the DRT.

The service has its own regular clients, and students attending local schools are important group among them.

Rise of the number of transported passengers id very significant - the sum of passengers transported by conventional lines and the Tele-Bus vehicles have increased in comparison to the amount from the similar period before the service launch.

The last but not least result of Tele-Bus implementation is social acceptance for the new kind of PT service - continuous increase of users registered in the Tele-Bus system proves the interest in the flexible PT service.

Key Considerations

Lessons Learned

The implementation of the DRT service must be preceded by a profound study of the specific character of flexible transport and existing examples in order to better use its benefits in a certain public transport system and reach a target which really needs and will appreciate such customised service.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

It is recommended to insist on replacement or limitation of regular lines because in the situation when two PT services are being provided in parallel operating costs are too high in comparison to gained revenues.

Primary Obstacles

Significant problems that occurred during implementation of the Tele-Bus were related to organizational issues as well as social acceptance of this innovative solution. The first issue was to agree on a share of responsibilities for DRT service between two public transport actors: MPK (the operator) and Public Road and Transport Authority (PT&RA). Changes in the Public Transport organisation and provision chain that took place in August 2006. The responsibilities of PT planning and operation were split between two entities: MPK (since August 2006 - only the PT operator) and Public Transport and Road Authority (established for PT planning and representing the City in the contract for PT services provision). The establishment of PT&RA and the preparation of a clear agreement regarding the responsibilities in the realisation of DRT services were time consuming therefore the implementation of the service was a bit delayed. The problem of the payment for service availability had to be solved as well.

Lack of social acceptance for partial limitation of regular PT with simultaneous introduction of flexible better customized transport service. The introduction of the Tele-Bus service was based on the assumption that two of the regular bus lines would be limited i.e. would only operate during the peak time. Unfortunately, inhabitants of the target area couldn't see additional value of the new flexible service - a possibility to be served exactly at the time they need without adjusting their trips to fixed schedules. They perceived the proposal only as an attempt to reduce the City costs and to take away PT service. Politicians decided to take into account the public complaints and keep conventional PT unchanged during the pilot phase. Such a decision, inconsistent with the assumption made in preparation stage, has its influence on chosen economy indicators, which in fact are difficult to be measured.

To make potential Tele-Bus users learn innovative character of the flexible PT service and respect rules regarding trip reservations.

Critical Success Factors

The key factors for the DRT service success are the following:

- definition of the objectives of the service implementation,
- a good choice of the service availability area,
- implementation of good DRT technology,
- clear regulations between involved public transport actors and
- a corporate image of the service that distinguishes it from regular public transport.

Transferability Considerations

Krakow Tele-Bus, the first flexible public transport service in Poland, is now in the pilot 4th year of the operation. The solution was transferred from Genoa and it has already been demonstrated as a transferable solution.

Up-scaling Considerations

The Tele-Bus has gone a few phases of development from its start in 2007. The experiences from functioning solutions are positive and further extensions of the Tele-Bus are under consideration.

Contact

Company: Miejskie Przedsiebiorstwo Komunikacyjne SA
Address: ul. Jana Broka 3, 30-347
Krakow, Poland
Mr. Adrian Obuchowicz

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

E-mail: aobuchow@mpk.krakow.pl
Tel: +48 12 254 11 46

3.2.20. GP_20: ADVANCED PT TICKETING (SKYCASH)

Text of this GP is provided by Institute of Logistics and Warehousing (ILIM)

Good Practice' ID	20
City/Region/Country	Poland
Prepared by	Institute of Logistics and Warehousing (ILIM)

General information

Description

SkyCash is independent of the telecommunication operator universal system of mobile payments, providing the simplicity and speed of transfer to the highest safety standards. SkyCash works on any GSM network and on any phone with Internet access.

To gain the convenience and independence that comes from the use of SkyCash it is necessary to register on the system, install the free app on mobile phone and credit the cash on the SkyCash account. Accepted payment methods allows to use the service without having an account in the bank.

Registration and implementation of mobile payments using SkyCash system is free. The development of cooperation with companies offering various services extends to the ability to pay with SkyCash. Through this application, passengers can already buy tickets for public transport in several cities and for a trains of two regional operator without being forced to wait in the queue.

Backround and Context

SkyCash is a universal system of mobile payments (not only for the tickets) money transfer providing intuitive and immediate transfer to a phone number with safety at the level of online banking and credit cards. Works on any GSM network and on any phone with Internet access. Payments can be made from an application installed on the phone and via the internet transaction system. Users can even invite each other up to SkyCash holder and transfer the money between.

Ticket phone is a complementary ticket sales channel with basic functionality:

- users registration;
- charging of cash in their entirety from a mobile phone;
- purchase tickets;
- control ticket based on unique 2D code generated for each ticket.

Policy design details

Policy Design Steps and Timing

In case of the SkyCash appropriate word will be customization apart from design. The system exists, under permanent development, and its specific functionality depends only on the agreement between SkyCash and PT operator.

Actors Involved

1. Local public transport company or railway operator (depends on place of implementation);
2. SkyCash representative (sales, marketing);
3. SkyCash technical staff;
4. http://www.mennica.com.pl;
5. Some city authorities or agencies/offices;
6. Passengers/commuters (beneficiary).

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Implementation details

Implementation Steps and Timing

Precursor when it comes to the use of mobile phones for public transport ticketing in Poland was Poznan, where such a possibility was introduced in 2002. Unfortunately, the first SMS system garnered too much attention and passengers abandoned this form of distribution.

Mobile sales system returned in February 2008 with the launch of a solution under the name mobilet. A year later, mobile tickets appeared in Szczecin, Wrocław, Olsztyn, Tychy, Lublin, Swidnica, Stargard and Grudziadz, and in 2010 - in Gorzow, Zgierz, Jastrzębie Zdrój, Elblag, Inowroclaw, Bialystok, Krakow and so on. In addition to mPay, SkyCash and mobilet in Poland, there are also other interesting solutions - such as CallPay, introduced in Konin, which does not require any additional software, and ticket can be simply bought by using direct voice call.

ICT/Infrastructures needed

Communication between the phone and the system encoded by strong encryption protocols (VeriSign certificate - the leader in digital security). 128-level encryption to 256 bits.

Data transmission using HTTPS (Hypertext Transfer Protocol Secure).

Any communication between the client and the server is encrypted using SSL (Secure Socket Layer), which prevents the interception of data transmitted and changing.

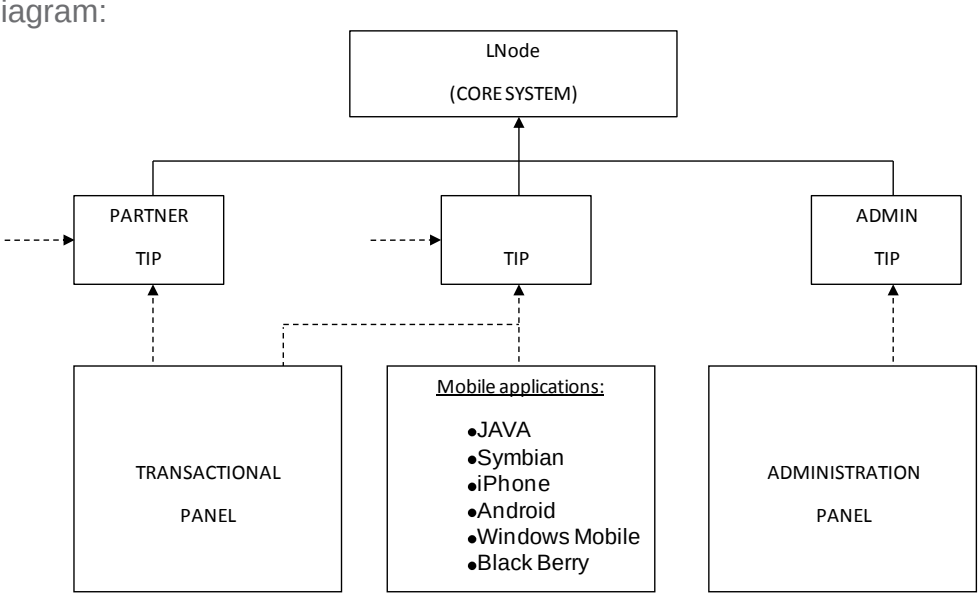
Three-layered structure of the system:

First layer: Core System called LNode processes all operations available for users LNode is the only element connected with database.

Second layer: Web Interfaces for communication with LNode Main API, called TIP, which contains all methods for users operations. It is used by mobile applications and web transactional panel.

Third layer: Endpoint Interfaces for users - mobile applications and web panels with additional web services.

System diagram:



Supporting Mechanism

Awareness/Information Campaigns

Usually during or just before SkyCash implementation:

- press releases,

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- information in/on buses and trams.

Promotion – first ticket on the value up to 3PLN (0.75 EUR) free of charge, after installing the application on the mobile phone.

The example campaign promoting e-tickets (between the others) can be lasting one month campaign "ZTM tickets - closer than you think", indicating the possibilities of tickets in the capital of Poland. Tourists and residents of Warsaw were informed where (sales points) and how (e-tickets) tickets can be bought.

Partnerships/Key Supporting Stakeholders

For operation concerned with transfer of the money usually cooperation with bank is necessary. Mennica Polska (Mint of Poland) handles a network of public transport ticket sales in the SkyCash payments system.

Results

Quantitative Results Achieved

As example citizens of Warsaw was persuaded to mobile solutions and are buying more and more e-tickets. At the very beginning, in December 2008, there were only 4.6 thousand transactions per month. The "threshold" of 10 thousand units was exceeded in September 2009, and the level of 15 thousand in October 2009. In early 2010, was sold on average 17 thousand tickets a month. In the same year for the first time the level of 20 thousand pieces was exceeded. Since 2011, after entering the market by two additional operators (including SkyCash), the number of tickets sold through mobile phones achieved more than 40 thousand monthly.

Qualitative Results Achieved

Still growing awareness of the possibility of buying a ticket in electronic way is one of the most important results achieved by implementation of the SkyCash in every described city. For example Warsaw is one of the few cities in Poland, where passengers can choose between three different systems on a mobile phone tickets. The first such service, in cooperation with the electronic payment system, mPay and Citibank was launched on 8 December 2008. The second operator - SkyCash, appeared in the capital of February 14, 2011, and the third - mobilet September 6, 2011. The most popular ticket is month one, which is sold on number of nearly 50 thousand every month. This is directly connected with decrease of workload of “standard” points of tickets sales.

Key Considerations

Transferability Considerations

SkyCash is the system offered on the open market. It is possible to buy and implement the system in every public transport organisation, after appropriated translation.

Up-scaling Considerations

The service of SkyCash is under the development. The network of cities and companies, where it will be possible to buy tickets or for the parking is still growing. Similarly the scope of services offered by the SkyCash, including payments for the cinema tickets, withdraws in the ATM or money transfer between the system users.

Contact

SkyCash Poland SA
www.skycash.com
Mr. T. Ogrodowicz
Tel. +48 22 403 80 20
e-mail: togrodowicz@skycash.com

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

3.2.21. GP_21: MULTIMODAL JOURNEY PLANNER FOR THE CZECH REPUBLIC

Text of this GP is provided by Transport Research Centre (CDV)

Good Practice' ID	21
City/Region/Country	Brno/ Czech Republic
Prepared by	Transport Research Centre (CDV)

General information

Description

Europe's best multimodal planner 2012 in the EU's First Smart Mobility Challenge competition, awarded by ERTICO (for Internet links see Bibliography).

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.

Traveller multimodal public transport information, planning and payment system available in platforms for: 1) personal computers and networks, 2) PDA and smartphones, 3) Internet, 4) mobile phones (SMS, call centres).

One of the most web sites being visited in our country, recommended to be followed/to share knowledge and experience.

Easy orientation, user friendly applications. Users from children to seniors.

The application at *http://www.idos.cz* allows searching for train, bus, air and public transport connections or combinations of train, bus and public transportation timetables. For selected train routes, it is possible to reserve a seat, sleeper seat or bed in advance, purchase a ticket, or locate the train (delay). For selected bus routes, it is possible to purchase a ticket or a seat reservation.

IDOS for internet is composed of two layers: layer of an independent search engine and presentation layer.

This solution allows the use of the same search algorithm on different platforms (e.g. search engine is used by almost all on-line applications for smart phones - see *IDOS for PDA and Smartphone*).

One of the most famous uses of the search engine is the above application at *http://www.idos.cz*, its map version at *http://mapy.idos.cz* or the version for mobile phones without operating system on address *http://m.idos.cz/*.

Another application that uses the search engine is *http://vykony.idos.cz*, which allows to evaluate the distance traveled and the number of connections in the timetables (fully replaced the previously supplied product Dotace)

At the present time an application in the real time is under construction, and will be available soon in test version.

Backround and Context

CHAPS started to develop first electronic timetables in 1993, firstly for the Czech Railways only. Later, more transport modes and various functionalities were added.

Thanks to bilateral agreements, the European transport service providers´ information is included.

Today, operational and development costs based mainly from advertisement displayed together with the IDOS application - there are 66 million online views per month.

Policy design details

Policy Design Steps and Timing

Ministry of Transport has expressed its interest to develop electronic timetables and allocated resources for 1993, for a basic railway service.

SW tool online search engine tool available since 1995.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Two major acts (Act No. 111/1994 and act No. 266/1994) which were released in 1994, set up rules, mandatory data provisions, data formats and unique national wide identification for NTIS.
Strategic decision to follow technology developments and offer more platforms for IDOS access.
Since 2001, role of an entity authorized by Ministry of Transport of the Czech Republic (MoT) for maintenance and development stated. Partnership between private sector (CHAPS/the provider) and public sector (MoT/the customer) established, based on commercialization of the services provided (cheaper operation for the state administration).

Actors Involved

1. CHAPS Ltd:
    - Private commercial sector,
    - Delivering side/service provider,
    - Systems integrator.
2. Ministry of Transport:
    - Public sector on national level,
    - Ordering side/customer/users,
    - Legislation support.
3. Czech Railways:
    - State owned joint-stock company,
    - Arterial public transport provider/users,
    - Basic and first transport information provider.
4. Other public transport operators:
    - Various types of ownership,
    - Local/regional/national/international transport,
    - Timetables/transport information providers/users.

Decision Making Process

Before 1993 - Own initiatives of Chaps company to collect schedules from PT operators.

Implementation details

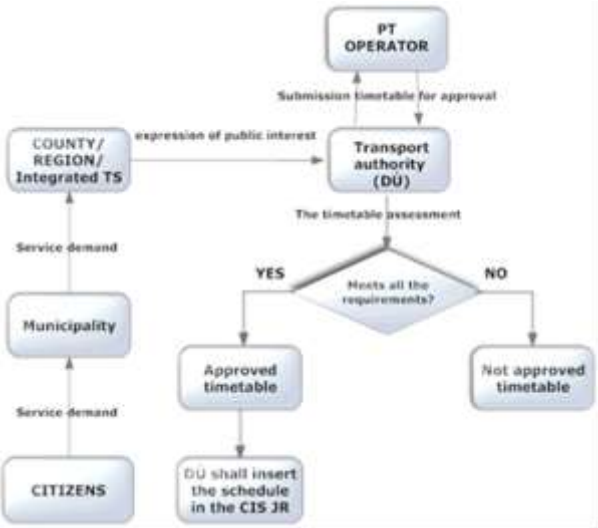
Implementation Steps and Timing

- 2001 - CHAPS spol. s r.o. has been authorized by the Ministry of Transport of the Czech National Information System of Timetables;
- 2002 - Version for viewing web pages in mobile phones.

ICT/Infrastructures needed

The ICT application is JDF form and responsible for implementation is CHAPS company.
PT operators has an obligation to notify a change of timetable and send in JDF form to the CHAPS company.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme



Supporting Mechanism

Awareness/Information Campaigns

Workshops for PT operators, conference for public.

Partnerships/Key Supporting Stakeholders

PT operators, Regional Department of Transport.

Results

Expected vs Actual Benefits

- The main benefits of the PT policy was that CIS JŘ is unique policy, that facilitates the development of the real time information system.
- The current benefits are known it is the first place to achieve IDOS as a multimodal planer.

Quantitative Results Achieved

- Integration of all the schedules from PT operators operating in our country.
- Approximately 67M pageviews/month.
- PT lines in the CIS JR: 215 railways, 5000 bus lines, 1000 city transport lines (multimodal); air transportation is not organized onto lines.
- PT connections: 449 526 railways, 79 794 bus lines, approximately 150 000 city transport lines (multimodal); 113 619 air connections (from the Galileo system).
- 5 railway PT operators, 229 bus operators, 75 city transport operators.
- In IDOS integrated all Czech city transport systems, most of Slovak cities and city of Lodz in Poland.

Qualitative Results Achieved

Functional system IDOS, 1.75M unique users/month.

Key Considerations

Lessons Learned

The duration of training regulations and legislation governing.

Primary Obstacles

Data availability and enforcement.

Systems integration necessary.

Critical Success Factors

Legislation, regulation and enforcement rules to be set up.

Financial resources availability for development to be stated in the policy.

Transferability Considerations

Strategic decision of the MoT to support these activities.

Central information system on PT timetables established in the legislation.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

National wide data formatting and enumerations established.
Legislation, regulation and enforcement rules set up.
Decision on co-operation of public and private sector for optimisation of operation and maintenance costs.

Up-scaling Considerations

1: leading Edge

Contact

CHAPS Ltd.
Person in charge: Tomáš Chlebničan, COO and development manager
tchlebnican@chaps.cz
Pilot project JSDV: CHAPS and CDV
CDV person in charge: Marek Ščerba, project manager
marek.scerba@cdv.cz

3.2.22. GP_22: INTEGRATED PUBLIC TRANSPORT SYSTEM AND SMART TICKETING

Text of this GP is provided by Transport Research Centre (CDV)

Good Practice' ID	22
City/Region/Country	Ostrava and Silesian-Moravian region/ Czech Republic
Prepared by	Transport Research Centre (CDV)

General information

Description

Ostravský dopravní integrovaný systém (ODIS) is an integrated public transportation system, gradually developed in the area of Moravian-Silesian Region (5 427 km², 1.250.000 inhabitants).
ODISka is a standard for interoperability of various cards in multimodal smart ticketing regionally used in the ODIS area.

Backround and Context

ODIS has been created on the initiative of the city of Ostrava and several towns in its close vicinity and in the Hlučín city area (altogether 24 towns including Ostrava) on November 23rd 1997. All tram, bus and trolleybus services operated by Ostrava public transport company (Dopravní podnik Ostrava), some of the bus services operated by ČSAD BUS Ostrava (present-day Veolia Transport Morava) and ČSAD Karviná as well as some train connections of the ČD (Czech Railways) have been integrated within the frame of ODIS, in this first phase.
The system has then expanded with new areas and new operators each year. Expansion of ODIS to Karviná and Havířov areas has been a significant problem as ODIS meets the resistance of local authorities as well as local monopolistic bus operators of the CIDEM group (these are ČSAD Havířov, ČSAD Karviná and ČSAD Frýdek-Místek) here. Some of these operators´ services have been already integrated to ODIS.
Total 105 towns with the area of 1779 km² and 735 341 citizens had participated in ODIS in September 2006. Besides urban transportation in Ostrava and part of suburban and regional transportation in Moravian-Silesian Region, the ODIS also fully integrates urban transportation in Opava (buses and trolleybuses).
Next expansion of the system occurred on March 4th 2007 when significant parts of Opava and Vítkov regions up to Odry and Bruntál have been included to the ODIS – 39 towns have been added in total.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ODIS has been expanded with additional 31 towns in the Nový Jičín - west area on December 9th 2007.
Other 10 town in the Osoblaha area and the town of Orlová have been added on April 1st 2008. Altogether 186 towns had been integrated in the ODIS by August 25th 2008. Next five bus services by ČSAD Karviná have been integrated on September 1st 2008.
More important changes occurred along with nationwide timetable change on December 14th 2008 when nearly all suburban services operated by ČSAD Karviná and the rest of rail lines in the region (excluding line 313 operated by AWT) became integrated. Rail line marking has been changed as well, original line marking of 900 series has been exchanged with identification of a line by letter S, R or V complemented with a single- or two-digits number.
Urban transportation services in the town of Havířov have been integrated on March 8th 2009.
Along with the timetable change on December 12th 2010, the rail line no. 313 (V17 service) has been integrated which means that all the rail lines in the region area are now integrated
ODISka is an integrated standard according to which some operators within ODIS issue or will issue specific own smart cards. The standard enables to use these cards for season tickets as well as for individual fares within the frame of ODIS. It is based on the electronic card issued by the Ostrava public transport company since February 1st 2011 which was originally to be used just to prepay season tickets valid in the vehicles of this operator only. Its use has been extended to bus services operated by Veolia, TQM and Maxner on March 1st 2012. The card is valid in all trains integrated into ODIS and the tickets are loaded to it in all railway ticket offices within ODIS since September 17th 2012. Veolia Transport Morava is the second operator to issue this card and to enable individual fare payment for its services through this card. Other operators, such as ČD (Czech Railways), are supposed to commence issuing ODISka standard cards in the spring 2013.

Policy design details

Policy Design Steps and Timing

Project start date: 23.11.1997 – initiative of the City of Ostrava and several towns and villages in the immediate vicinity of Ostrava (in total there were 24 municipalities, including Ostrava).
First phase: the ODIS integrates all tram, bus and trolleybus lines operated by PT operators for Ostrava city and some bus operators with connections to Ostrava, and some trains of the Czech Railways.

Actors Involved

Key partners of the project were these stakeholders:

1. Moravian–Silesian Region:
- Partner in the project;
- As an ordering party of the regional PT.
2. DPmO:
- Partner in the project;
- City multimodal core PT provider.
3. Czech Railways:
- Partner in the project;
- In the role of a provider in the region.
4. Bus operators:
- Partner in the project.
- In the role of a provider in the region.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

5. KODIS (coordinator of the integration system):
- Partner in the project and project manager of the integration.
6. City of Ostrava:
- Stakeholder.

Decision Making Process

Regional level decision making determines the degree of integration in the area.

Implementation details

Implementation Steps and Timing

In general, it is necessary to consider following factors during the phase of integrated transport system creation and its area definition:

- Geographical relations,
- Characteristics of public transport in operation,
- Extent of offered public transport,
- Quality and price of the offered public transport services,
- Functional area distribution in the region,
- Mutual relations of individual functional areas,
- Integrity of the region,
- Natural tendency for spatial catchments,
- Economic relations and interests.

ICT/Infrastructures needed

In its appendix, the legislative act no. 194/2010 of the Collection of Laws of the Czech republic includes minimal quality and security standards that an operator has to meet in order to provide public passenger transport services.

Standards, indicators and proving procedures are specified in greater detail by delegated legislation, i.e. Government Regulation no. 63/2011 of the Collection of Laws of the Czech republic. Transport serviceability standards relate apply to following basic areas:

- Information devices for passengers,
- Transportation of passengers with limited mobility and orientation,
- Technical parameters of vehicles,
- The law considers these standards to be minimal necessary qualitative criteria. It also enables a client to set even more demanding standard values.

The provided information falls most often into the following domains:

(I.) Transportation network extent;
(II.) Division of the territorial scope of integrated transportation systems (tariff zones);
(III.) Individual operators, participating in an integrated transportation system;
(IV.) Tariff system, joint tickets offer;
(V.) Timetables;
(VI.) Transfers and service link-up options;
(VII.) Places to purchase joint ticket;
(VIII.) Transport conditions in an integrated transportation system.

Monitoring Procedures

Transport serviceability standards.

Supporting Mechanism

Awareness/Information Campaigns

Promotion of sustainable transport, change of behaviour, intensive campaigns; □ Effective marketing and information service.

Partnerships/Key Supporting Stakeholders

Project was very intensively supported mainly by the regional political representatives.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Results

Expected vs Actual Benefits

Integration of the region was expected to progress much faster, at the beginning.

Quantitative Results Achieved

Proportional integration rate.

Qualitative Results Achieved

Achieving high quality standard rate.

Key Considerations

Lessons Learned

Positive experience:

- Process of strategy preparation and adoption (long-term strategy + shorter implementation plans, regular and intensive consultation with stakeholders and public representatives).

Negative experience:

- Financial demands of integration

Primary Obstacles

Goals of PT policy to be set up at the side of the self-governing regions.
Willingness of various actors to cooperate.

Critical Success Factors

As a critical factor during the implementation of the Integrated public transport was legislation, financial aspect, standard approaches.

Transferability Considerations

- Legislation support necessary;
- Political demand for establishing the Integrated public transport system;
- Financial instruments for investment costs very welcome;
- Operational costs to be considered.

Up-scaling Considerations

- Representation and communication with stakeholders (operators, municipalities, passengers etc.);
- Coordination of transport demand, cooperation with operators;
- Negotiation of rules, principles, conditions and contracts between municipalities, operators and passenger;
- Management of effective investment in public transport (modernization, optimization, response to real demand, savings);
- Information and marketing;
- Long-term cooperation with transport universities and professional associations.

Contact

CDV: Zuzana Švédová, *zuzana.svedovava@cdv.cz*
Koordinátor ODIS: Aleš Stejskal , *ales.stejskal@kodis.cz*

3.2.23. GP_23: PUBLIC TRANSPORT DISPATCHING UNDER KORDIS INTEGRATOR/ORGANIZER: CED

Text of this GP is provided by Transport Research Centre (CDV)

Good Practice' ID	23
City/Region/Country	Brno and South Moravian region/Czech Republic
Prepared by	Transport Research Centre (CDV)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

General information

Description

CED dispatching centre is a part of the regional integrated multimodal PT system. The main CED aim is to ensure operational issues, to transfer information on real time transportation status towards information centres, to ensure transportation organizing during traffic closures etc.
CED also offers a long term monitoring and evaluating of PT regularity in the region to obtain a feedback for PT timetables, maintenance and development of routes and fleets, and also enables checking of standards compliance and quality control.
The regional PT subjects (mainly transporters) are coordinated by CED in the time of designing and planning of timetables. Centrally integrated regional CED functionalities are very important for PT controlling, necessary for a smooth operation and timely managing of exceptional situations.
Learn more on IDS JMK online http://www.idsjmk.cz/.

Backround and Context

Since January 2004, the first phase of the regional integrated multimodal PT system (IDS JMK) started in the city of Brno and its surrounding area.
The CED reach the full version by end of 2006 and after testing operation with support of CEDRIS system went into the regular operation in 2008.
The whole integration process was completed in the 2010 year and locally reaches or neighboring regions.
Some of the IDS JMK lines offer PT service internationally as to the Low Austrian Laa an der Thaya or via Skalica in Western Slovakia.
For dispatcher of the CED, the current positioning of all vehicles integrated in the system and also phone connection are available.
The CED dispatcher communicates also with dispatchers of specific transporters, including the Czech Railways.
The CED dispatcher is allowed in the case of journey failure to ensure alternative service also by certain vehicle (bus) of another transporter.
The Czech Railways, as the key partner, have two stand-by train sets allocated in Brno that could be used in a case of significant railway connection delay.

Policy design details

Policy Design Steps and Timing

The application for the project “Development of transport services in the South Moravian Region in the form of IDS” from SROP in the overall concept was based on the development of public transport in South Moravia. The project was also in line with the strategic plans for the development of the South Moravian Region and the City of Brno.
Project start date: March 2005.
Completion date: December 2006.
Project duration: 22 months.

Actors Involved

Key partners of the project were these stakeholders:

1) South Moravian Region (JMK)
   Receiver of the CED project
   As an ordering party of the regional PT
2) DPmB
   Partner in the project
   City multimodal PT provider
3) Czech Railways

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Partner in the project
In the role of a core PT provider in the region

4) SŽDC
Partner in the project
Railway infrastructure manager

5) KORDIS JMK
Partner in the project and project manager of the CED, leading the intensive cooperation with regional bus transport providers and multimodal city transport providers
Regional multimodal PT organizer and integrator

Decision Making Process

When implementing the project CED IDS JMK decision roles were set as follows:

1. South Moravian Region: financial issues,
2. KORDIS JMK: technical issues.

Implementation details

Implementation Steps and Timing

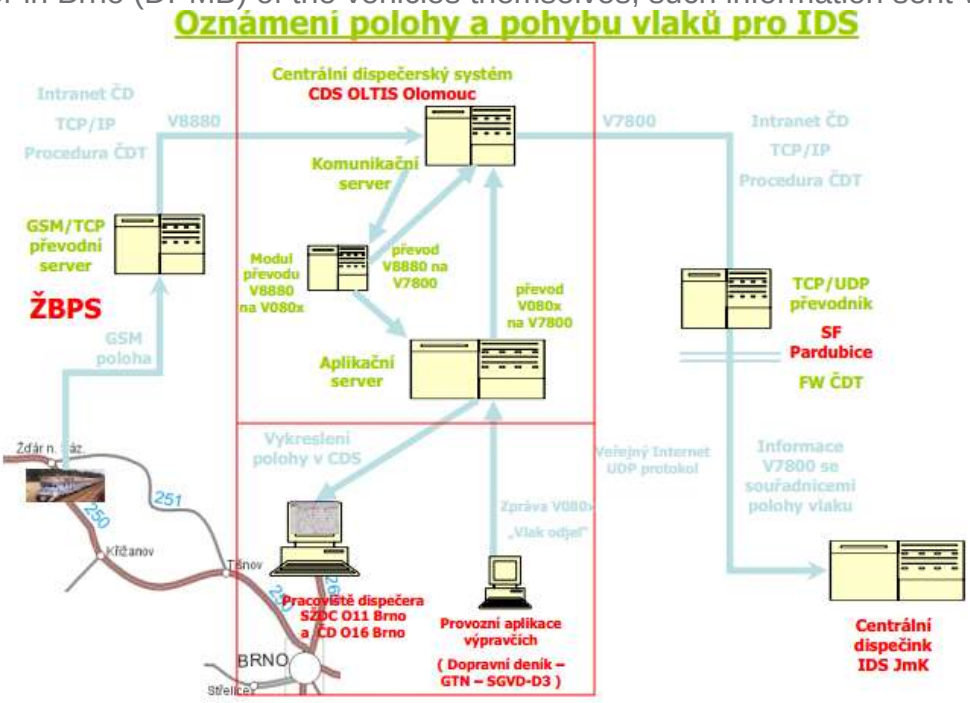
First Stage (03-07/2005) - Implementation of tenders for suppliers Central dispatching.
Second Stage (08-12/2005) - Implementation of tenders for suppliers Central dispatching, in this phase was implemented Central dispatching equipment and furniture necessary technology, further establishing a dedicated software for central control room; began equipping vehicles carriers tracking device on the vehicle and built high-speed data link control center IDS JMK and dispatching IDS JMK.
Third Stage (01-12/2006) - Trial operation control center with focus on testing and debugging software and on clarifying the rules of communication between the central dispatching IDS JMK and dispatching of individual carriers.
Operation: Since 2006, the standard operation of a CED IDS JMK.

ICT/Infrastructures needed

Vehicle positioning from GPS: in information systems for rail traffic management understood the train position information from GPS rather as complementary. For traffic management in the IDS JMK but rather a key figure (due to frequent Following links not only at stations occupied by the dispatcher, but also stops).
All vehicles buses, regional transport are therefore equipped with terminal MSP for Mobile tracking, Public transport operator of Brno city(DPMB) vehicles are equipped with other devices. This terminal is the headquarters for communication with the driver's control center: in addition to the automatic position reports to the control center of the GPS are also on this device in the opposite direction of the transmitted information and instructions to various dispatching, inter alia, the connections and the associated delays waiting. Furthermore, the driver can, if necessary, transmit the selected predefined messages, such as notification of the expected delay, excessive frequency of passengers, requests for telephone connection etc.
The central dispatching of KORDIS JMK transmits position information on the vehicle to management information system (RIS) which is central dispatching of Public Transport Operator in Brno (DPMB) of the vehicles themselves, such information sent via radio.
Vehicle positioning from GPS: in information systems for rail traffic management understood the train position information from GPS rather as complementary. For traffic management in the IDS JMK but rather a key figure (due to frequent Following links not only at stations occupied by the dispatcher, but also stops).
All vehicles buses, regional transport are therefore equipped with terminal MSP for Mobile tracking, Public transport operator of Brno city(DPMB) vehicles are equipped with other devices. This terminal is the headquarters for communication with the driver's

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

control center: in addition to the automatic position reports to the control center of the GPS are also on this device in the opposite direction of the transmitted information and instructions to various dispatching, inter alia, the connections and the associated delays waiting. Furthermore, the driver can, if necessary, transmit the selected predefined messages, such as notification of the expected delay, excessive frequency of passengers, requests for telephone connection etc.
The central dispatching of KORDIS JMK transmits position information on the vehicle to management information system (RIS) which is central dispatching of Public Transport Operator in Brno (DPMB) of the vehicles themselves, such information sent via radio.



Regional transport vehicles are equipped with terminal MSP for Mobile tracking - responsible IDS JMK.

Human Resources

In the dispatching, there parallel work three dispatchers (out of peak hours only one dispatcher) plus a head person:

- one dispatcher controls operation of ca 590 buses and their connections with trains and Brno city transportation;
- another one dispatcher cares on travelers questions and supports the control in the time of higher operation.

Supporting Mechanism

Awareness/Information Campaigns

Workshops with stakeholders and public operators, Internet.

Partnerships/Key Supporting Stakeholders

Project was very intensively supported mainly by the regional political representatives.

Results

Expected vs Actual Benefits

Expected benefits: to establish and operate the central dispatch centre for the integrated multimodal regional transport.
Actual benefits: established, being operated and geographical service area extended to the maximum on the regional level; new linked services created (i.e. real time timetables for smartphones), planned (i.e. personal timetables creation available) and considered.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Quantitative Results Achieved

- CED includes information on positioning on about 1300 vehicles incl. ca 100 trains;
- Daily more than 130 phone calls;
- Daily over 30.000 connections ensured.

Qualitative Results Achieved

- Reliable operation of the dispatch centre achieved;
- Gradually more transport operators reliably included;
- Reliability of linked services achieved (as timetables vs. real time departures monitoring).

Key Considerations

Lessons Learned

Positive experience:

- Connection the Central Dispatching IDS JMK with the dispatching of Czech Railways;
- Realization of Central dispatching IDS JMK as a role model for other IDS in the Czech Republic;
- The verification that the implementation of the central control room IDS JMK achieve more accurate operation times and improved communications links;
- Positive attitude of Czech Railways, which set the rules for the transmission of the position information of vehicles;
- HW is reliable without the need of repairs.

Negative experiences:

- Occasional breaking the agreed terms for some suppliers;
- Lack of discipline drivers and carriers. Incorrect data pattern of the required data;
- SW system does not match, especially velocity, current needs;
- Faults conjunction with one of the operators, lack of data services.

Primary Obstacles

Goals of PT policy to be set up at the side of the self-governing regions.
Willingness of various actors to cooperate.

Critical Success Factors

As a critical factor during the implementation of the central control room IDS JMK appeared time and material delays in the approval process with the partner of Czech Railways.
Another problematic point was the cooperation with mobile operators, especially in terms of data transfer functionality.

Transferability Considerations

- Legislation support necessary.
- Harmonization of data formats necessary.
- Political demand for establishing the dispatch centre as multimodal necessary.
- Financial instruments for investment costs very welcome.
- Operational costs to be considered.

Up-scaling Considerations

What are we heading:

- Automatic generation of network and stops at the position of vehicles;
- Evaluation of lines, connections, and vehicle position deviations without driver input;
- Improvement of management continuity, particularly information about the arrival of connections to the node for a follow-up joint;
- Automatic monitoring of anomalies in the system;

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- Improvement and process automation ELP;
- Stabilization and system backup.

Creating a universal interface for communication with similar systems in other regions.

Contact

KORDIS JMK, a.s.
Ing. Kvetoslav Havlik
khavlik@kordis-jmk.cz
+420 543 426 655

3.2.24. GP_24: REAL TIME PASSENGER INFORMATION SYSTEM

Text of this GP is provided by Transport Research Centre (CDV)

Good Practice' ID	24
City/Region/Country	Central Bohemia region/ Czech Republic
Prepared by	Transport Research Centre (CDV)

General information

Description

In 2004, the Prague Public Transport Co. Ltd. (Prague Integrated Transport, PIT; Pražská integrovaná doprava, PID), which is responsible for operation of public transport in Prague, joined the CONNECT project.

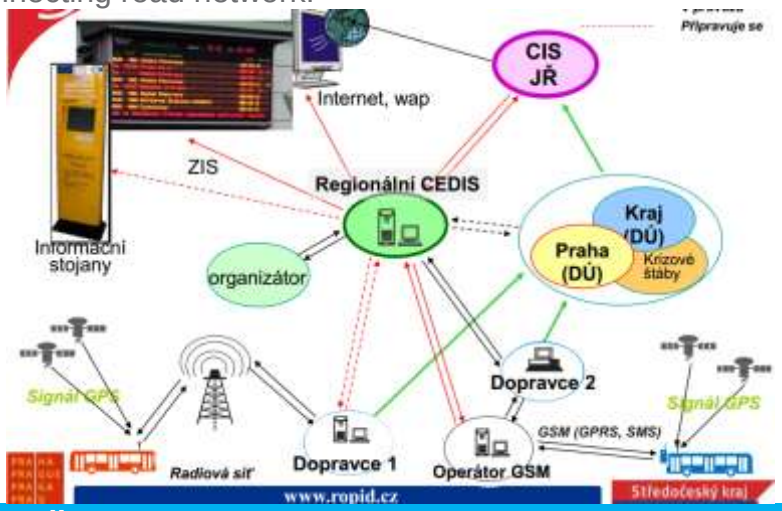
The main goal was to enhance quality of provided information and ensure availability of the information for the blind and visually handicapped while using the public transport. The programme followed the first attempts for development of information systems on the stops and already well-established standard of installations of receivers for the blind and visually handicapped in PIT vehicles and also development of information kiosks.

A pilot project has been realized in Prague and its neighbouring areas of interest operated by ROPID company (Regional Organiser of Prague Integrated Transport).

The project was planned in three phases, the first of which started in 2004 and the third one finished in 2009.

Backround and Context

Fostering urban/interurban interfaces to ensure fluent traffic flows between the high level and the connecting road network.



Policy design details

Policy Design Steps and Timing

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

The project was in line with the strategic plans for the development of the public transport in the City of Prague.
Project start date: 2004.
Completion date: 2009.

Actors Involved

Key partners of the project were these stakeholders:
1)City of Prague
Receiver of the CED project
As an ordering party of the regional PT
2)ROPID
Partner in the project
3)CHAPS – software development of MPVnet system (vehicle movement monitoring)
4)APEX – hardware equipment, the acoustic system for visually handicapped and provision of on-board units and information kiosks.

Decision Making Process

When implementing the project decision roles were set as follows:

- City of Prague: financial issues;
- ROPID: technical issues.

Implementation details

Implementation Steps and Timing

First Stage (05/2004 – 12/2005)
In this phase was implemented:

- three large LED information panels provide information about the operation of public transport and allowing the acoustic output activated personal driver blind;
- installation and trial run of five security information stands, allowing passengers to obtain information about timetables of all PT lines, including the search for connection. Information stands are located at Metro stations adjacent terminals outside the regular service, they replaced racks that were not of audible output.

Second Stage (01-12/2006 – 03/2007)
At this stage of this project, mainly to test individual functions and knowledge-based adaptation of the programs:

- In a trial run remote administration table;
- The development of dual transmitter VPN-D, operating in two frequency bands.

Third Stage (04/2007 – 03/2009)
This stage was mainly focused on the adjustment of certain processes and software according to the knowledge of the test operation:

- Developing web applications for the evaluation of data obtained from monitoring traffic in real-time;
- Preparation and testing of basic outputs of vehicle tracking in real time;
- Testing dual transmitter VPN-D, operating in two frequency bands.

ICT/Infrastructures needed

Further development of MPVNET system for the Internet enables universal use and is available almost anywhere.
Based on the findings of the verification operation was due to data reliability assessment of delays moved from vehicle to the center.
The scoring system delay is linked to the nationwide system of timetables (CIS), which allows for any future expansion of public line transport.
Processing of basic outputs from MPVNET.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

Conducted further testing Information panels with remote administration, including the involvement of the coordinating control center, which can transmit up to date information on each bus stop facilities.
A dual transmitter was developed and tested for visually disabled persons in order to meet European standards. Based on the verification operation, it is preparing its presentation and addition of micro GPS that will automatically link the geographic location of the user switch (the radio frequency 86.79 and 433.95 MHz).
Centralized information system in real time.

Supporting Mechanism

Partnerships/Key Supporting Stakeholders

Project was very intensively supported mainly by the regional political representatives.

Results

Expected vs Actual Benefits

Information panels and kiosks in operation.
Further development of MPVNET in the Internet environment ensures universal use and makes it available at almost any place where the Internet connection is provided. The system has been designed as opened, with optional integration of other systems from different transport organisers.
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.

Quantitative Results Achieved

Currently, more than 250 vehicles have been equipped with the system in a particular area and further development regarding display tables in compliance with new technologies and their availability has been running. A great effort was put into interface accessibility of the whole system during its designing. Special emphasis was laid on information system for visually handicapped travelers, which was designed and installed according to existing European standards and regulations.

Qualitative Results Achieved

Reducing the travel time of road users by providing them accurate, timely and relevant information as well as by providing cross-border services (e.g. RDS-TMC, web-base services).

Key Considerations

Lessons Learned

Positive experience:

- The system has been designed as opened, with optional integration of other systems from different transport organisers;
- 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.

Primary Obstacles

Goals of PT policy to be set up at the side of the self-governing regions.
Willingness of various actors to cooperate.

Critical Success Factors

Willingness to set up the system.
Financial resources available.

Transferability Considerations

- Legislation support necessary;
- Harmonization of data formats necessary;
- Political demand for establishing;

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- Financial instruments for investment costs very welcome;
- Operational costs to be considered.

Up-scaling Considerations

Standardized information system based on common platforms for future interoperability with other European countries.

Contact

CDV: Zuzana Švédová, *zuzana.svedova@cdv.cz*
ROPID: Jan Šimůnek, *simunek@ropid.mepnet.cz*

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

3.2.25. GP_25: MULTIMODAL INTEGRATED TRANSPORT

Text of this GP is provided by Transport Research Centre (CDV)

Good Practice' ID	25
City/Region/Country	Prague and Central Bohemia region/ Czech Republic
Prepared by	Transport Research Centre (CDV)

General information

Description

Prague Integrated Transport, PIT (Pražská integrovaná doprava - PID), is a modern integrated mass transport system established according to a European Union recommendation as a communal transport federation. It is developing gradually on the territory of the capital city of Prague and on the territory of Central Bohemia with vital transport relationships to the capital city. Integrated transport has been established with the goal of ensuring high-quality transport services to the territory 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.

Backround and Context

Fostering urban/interurban interfaces to ensure fluent traffic flows between the high level and the connecting road network.

Policy design details

Policy Design Steps and Timing

In general, it is necessary to consider following factors during the phase of integrated transport system creation and its area definition:

- Geographical relations;
- Characteristics of public transport in operation;
- Extent of offered public transport;
- Quality and price of the offered public transport services;
- Functional area distribution in the region;
- Mutual relations of individual functional areas;
- Integrity of the region;
- Natural tendency for spatial catchments;
- Economic relations and interests.

Actors Involved

Key partners of the project were these stakeholders:

1)City of Prague

Receiver of the CED project

As an ordering party of the regional PT

2)ROPID

Organisator of Integrated Transport System

3)Central Bohemia Region

Decision Making Process

When implementing the project, decision roles were set as follows:

- City of Prague: financial issues;
- ROPID: technical issues.

Implementation details

Implementation Steps and Timing

Regional Council in Resolution No. 51-11/2005/RK of 25 May 2005 has recommended opening negotiations with representatives of the City of Prague for the progressive unification of the Tariffs of Central Bohemia and Prague Integrated Transport.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

In 2004, the PID served in nearly 300 communities and included 150 suburban bus lines.

ICT/Infrastructures needed

Development of the MPVNET system for the Internet enables universal use and is available almost anywhere.

The vehicles (buses of PID except buses of DP) are equipped with RCA (Radio adapter) or modem, which contains both the GPS module and a SIM card for data transfer. RCA (or modem) is connected with the board computer in a vehicle. The board computer sends information about the GPS location, reason of sending the message, vehicle number, line number, traffic channel number, tour and additional data based on pre-defined parameters. The messages are sent on the basis of the following: bus stop notification, line/channel change, starting (the lowest speed exceeding, 10 km/h predefined), moved distance exceeding (it varies from 200 m to 2 km), the highest defined speed exceeding (c. 80 km/h), time passed since the last report (2 min.), entering the station, exiting the station. These messages are sufficient to show the trajectory of the vehicle and provide the connection with the time table.

The dispatcher enters every day the dispatch schedule, so, the system knows which vehicle is deployed on what line and channel/circle. The data from vehicle are sent to the defined IP address via GPRS by a public mobile net. On the server, the messages from vehicles are connected with timetables (the timetables in National Information System on Timetables CIS JR are crucial).

Employees of ROPID (checking the timetables compliance, finding the records and evidence to solve the complaints), employees of transport-union of Central Bohemia Regional Authority and MHMP have an access to the Internet application MPVnet, where the processed data are displayed (the MPVnet is provided by CHAPS). This application is available also to the councils and municipalities; they can find out the performance within the frame of their register. As a matter of course, carriers have an access to this application too.

Only dispatchers and selected employees of ROPID have an access to the local application MPVDesktop. MPVDesktop provides an access to the code list of vehicles, circles´ catalogue, operative changes in dispatch (Real Dispatch) and dispatch overview.

Supporting Mechanism

Awareness/Information Campaigns

Web page, workshops.

Partnerships/Key Supporting Stakeholders

Project was very intensively supported, mainly by the regional political representatives.

Results

Expected vs Actual Benefits

Service of the MPVNET being reliably continuously provided.

Further development of MPVNET expected.

System for delay evaluation is connected to the National Time-table System (Celostátní systém o jízdních řádech - CIS JŘ) which enables further extension for a regular public transport.

Quantitative Results Achieved

All official information related to the Prague´s public transport is covered by the web portal www.dpp.cz. As stated in the introductive part, static journey planner generates any public transport connection by taking into the consideration all PT modes of the public transport and moreover provides also separated PT schedules for selected PT line or stop point.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

More than a million passengers uses the Prague´s public transport system a day. The official information about the average visit of the portal is not available, but according to the logged number of visits in the searching part of the portal the quantity is estimated to exceed 50 000 visits a day.

Qualitative Results Achieved

Quality standards of Prague Integrated Transport (PID) provides consistent level of quality services which are based on european standard (EN 13816). Standards have been set according to the identified key needs of passengers.

- Fulfilment of mileage
- Capacity of vehicles
- Barrier-free vehicles
- Barrier-free stop points and stations
- Ticketing option in vehicles – selling, validation
- Ticketing option on stops, stations
- Information for travellers on stops, stations, vehicles
- Multimodal shift option
- Staff behavior
- Comfort and tidiness of vehicles
- Vehicle age
- Risk situations

Key Considerations

Lessons Learned

Positive experience with the MPVNET operation.

Primary Obstacles

Information about capacity of routes.

Critical Success Factors

Financial aspects.

Transferability Considerations

- Legislation support necessary;
- Harmonization of data formats necessary;
- Political demand for establishing;
- Financial instruments for investment costs very welcome;
- Operational costs to be considered.

Up-scaling Considerations

Provision of travel information towards blind persons.

Contact

CDV: Zuzana Švédová, *zuzana.svedova@cdv.cz*
ROPID: Jan Šimůnek, *simunek@ropid.mepnet.cz*

3.2.26. GP_26: UNIFIED INTERMODAL CARGO SERVICE

Text of this GP is provided by Latvian Transport Development and Education Association (LaTDEA)

Good Practice' ID	26
City/Region/Country	Rigas region/ Latvia
Prepared by	Latvian Transport Development and Education Association (LaTDEA)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

General information

Description

LDz Cargo Ltd., a subsidiary company of SJSC «Latvijas dzelzceļš» (in English «Latvian Railways») provides freight carriage by rail. APOVS is automated system for operative 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 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.

Access to the central data base is provided with data teleprocessing system, which allows clients to connect with the mainframe computer, to receive notifications and to send responses, to process information and real-time dialogue.

Client can receive information on operations with the freight wagon. Information on dislocation of freight wagons is received from railways of Latvia, Lithuania, Estonia, Belarus, Ukraine, Moldavia, Kazakhstan, Uzbekistan, Kirghizia and Russia (except Far East and Transbaikal region). The results of tracking are offered to clients twice a day, using e-mail or telephone. Client receives the following information on each wagon: index of the train; station were the last operation with the train was carried out; railway of dislocation; date and time of the operation; type of the operation; weight of freight; code of freight; code of freight receiver; terminal of the wagon.

Five times a day client receives information on operations with freight private wagons on Latvian, Lithuanian and Estonian railways. Inventory of controlled wagons can be corrected each month.

Client receives information on the expected freight arrival in terminal (VCOS): location of wagons in Latvia and Russia. The system allows client to track the movement of its wagons in the territory of Latvian, Lithuanian, Estonian railways, and on the railways of CIS countries.

After entering into a contract, the client is registered in database, and the client receives a password, which allows him to access the wagon tracking. Information in database is updated every two hours.

Client receives information on kilometrage of private wagons, as well as on the repairs to be carried out.

Backround and Context

Latvijas dzelzceļš (LDz) was reclassified according to the requirements of the European Union, resulting in gradual establishment of a concern with five subsidiaries. Each of the companies has its own management and governance system which is closely connected to the parent company as far as strategic decisions are concerned, yet retains autonomy in branch-specific decision making, budget planning and management.

In Latvia, LDz oversees 1884.2 km of rail lines, 729 bridges, 6126 rail carriages, 209 locomotives, 152 stations (70 of those open for freight operations) and 557 level crossings.

LDz Cargo Ltd. – domestic and international freight transport, loading and unloading, storage, warehousing and international passenger services.

LDz Cargo Logistika Ltd. a subsidiary of LDz Cargo Ltd. – works on organisation of new traffic flows and promotes rail freight services between the European and Asian countries.

Indicators (2011):

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- Freight turnover (million tonnes-km) – 21340;
- Total carried freight (thousand tonnes) – 59385;
- Train-kilometres of freight traffic (thousand) – 12631;
- Railway stations with freight activites – 70;
- Freight wagon fleet available total – 6126;
- Basic activities personal – 11665.

Freight diesel locomotives:

- 2TE10 type – 23 units;
- M62, 2M62 type – 102 units.

Policy design details

Policy Design Steps and Timing

Regularly introduced in legislative amendments to the following documents:

- Railway law;
- Railway transport law;
- Rules of transportation of dangerous goods;
- State Joint Stock Company "Latvian Railway" principal service policy;
- Railway principal service policies available;
- Amendments to the principal service policies available;
- Freight harmonized nomenclature.

Actors Involved

The communications policy of LDz is closely linked to the company's business strategy and objectives. The company carries out internal and external communication using a single communications platform. Importance of maintaining constant communication in international business environment, cooperation, integration of company perspective, strategic future visions and development into nationwide conception and processes, active participation in the development of EU regulatory norms governing and addressing creation of a single European rail environment and development of mechanisms for continuous information exchange flow within the company employing almost 12,000 employees are among the core development values of LDz.

Decision Making Process

The decision making process is divided into three parts:

- On-line Analysis Level (minutes → few hours) - which is a group of professionals (database administrators, operators and managers);
- Decisions Support Level (day → few weeks) – which is a group of middle management specialist;
- Strategic Level of Management (week → few months) - headed by the executive director.

Implementation details

Implementation Steps and Timing

The railway in Latvia originated in the early 19th century. At the time, Latvia was the most distant section of Tsarist Russia's railway lines. Subsequently it became a state company of the Republic of Latvia, then a part of the Baltic railways during Soviet rule and has been the railway company of independent Latvia. From 2005 to 2007, the activities of LDz were reclassified according to the requirements of the European Union, resulting in gradual establishment of a concern with five subsidiaries. Each of the companies has its own management and governance system which is closely connected to the parent company as far as strategic decisions are concerned, yet retains autonomy in branch-specific decision making, budget planning and management.

ICT/Infrastructures needed

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Today, each country has its own, different railway communication and management system, which complicates and adds extra cost to international train traffic. According to the European Union system interoperability requirements, any changes in the EU Member States rail systems must be result in mutually compatible and accessible systems.

Preparation works for implementation of electronic empty private carriage declaration system in Latvia took place during 2011 in collaboration with Russian Railways.

LDz manages expansive and varied infrastructure including rail tracks, engineering structures, rail traffic management systems, rail telecommunications network, radio communication, power supply and contact lines. LDz is in charge of maintaining the infrastructure in a good technical condition, timely repairs and upgrades to ensure uninterrupted and safe train traffic.

Human Resources

In 2011, LDz employed 11,660 persons in 528 different positions.

- LDz Cargo Ltd. employed 2,637 persons;
- LDz Cargo Loģistika Ltd. employed 4 persons.

The most widely represented professions in LDz:

- Track fitters: 8.34%;
- Diesel locomotives operators and operator assistants: 7,09%;
- Station attendants: 4,47%;
- Rolling stock mechanics: 3,95%;
- Carriage inspectors (repairers): 3,70%.

Monitoring Procedures

Monitoring is divided into several parts:

- Upkeep of container and wagon data base according 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.

All parts are automated and occur in the form indicators and of alerts individual operators. Access to the central data base is provided with data teleprocessing system.

Supporting Mechanism

Awareness/Information Campaigns

LDz constantly maintains and provides information about the concern on the company website and in informative and promotion publications about the concern, its activities and current events, gets involved and participates in strategically important international and national rail unions and task forces. LDz cooperates with local and foreign media, maintains active presence on social networks and ensures information circulation within the company with daily updates to the company intranet concerning the latest current events in the industry and in the concern. The newspaper “Latvijas dzelzceļnieks” is published once a week. The company organises regular joint events for the employees: collective cleanups, sports games, participation in national amateur sporting events and celebration of national holidays and dates important to the concern.

Partnerships/Key Supporting Stakeholders

Most of the strategic coorperation takes place with Russian, Belarus, Ukraine and other Eurasian and central Asian countries that amount to nearly 95% of the volume of goods carried on Latvian railways. These countries also have the same track gauge as Latvia - 1520 mm.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Results

Expected vs Actual Benefits

A record amount of freight was carried in 2011 – almost 60 million tons. This ranks Latvia as the fourth busiest rail freight carrier in Europe after Germany, Poland and the Czech Republic.

Quantitative Results Achieved

Measured by track loading (tons carried per track km), LDz with 28.1 million ton/km is in the third place behind major European railways – Germany and Poland, where the figures are 84.9 and 28.2 ton/km respectively.

LDz is a long-term leader in freight transport volumes in the Baltic States. The amount of freight carried in Lithuania in 2011 was 52.3 million tons and in Estonia 30.5 million tons.

Qualitative Results Achieved

According to the strategic goals of LDz and the company mission, this leading position has been achieved with hard, focused and consistent work. An increase of 20% in freight volume was achieved in 2011 compared with 2010. It is a more positive trend than in Europe as a whole, where, according to the consolidated statistics of the Community of European Railway (CER), the average growth of rail freight volume in 2011 was 4%.

Key Considerations

Lessons Learned

Pursuant to the company mission and vision, the amount of freight carried grows with each year: a record 60 million tonnes were carried in 2011, continuing to increase the concern's contribution to the national economy and maximising the use of the company resources.

Primary Obstacles

Today, each country has its own, different railway communication and management system, which complicates and adds extra cost to international train traffic. According to the European Union system interoperability requirements, any changes in the EU Member States rail systems must be result in mutually compatible and accessible systems.

Critical Success Factors

Over the years of professional business, LDz has formulated and is adhering to the values of the company that have helped consolidate and create a company nucleus and at the same time serve as a point of reference and the key principle in contacts with cooperation partners, in business environment, participation in numerous professional rail organisations and also in the daily activities of the company employees.

Transferability Considerations

- To ensure rail infrastructure throughput capacity according to medium-term demand (by 2015) of up to 85 million tons per year;
- To ensure competitive rates of rail infrastructure service charges;
- To ensure the level of rail infrastructure services according to the carrier's expectations.

By achieving these goals, LDz will not only stimulate the Latvian economy, but also contribute to the regional development, that will undoubtedly benefit other European countries as well.

Up-scaling Considerations

- Skţirotava stationsorting hill renovations. The project cost is LVL 27.3 million.
- Construction of the second trackin the Skrīveri–Krustpils section. The total project cost is EUR 93,412,308.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- Track renovation in the RailBaltica corridor. RailBaltica Stage renovation costs are LVL 43.5 million.

Contact
Latvian Railway
Vasilijs Demidovs
Vasilijs.Demidovs@ldz.lv

3.2.27. GP_27: INTERCHANGE PRÍNCIPE PÍO

Text of this GP is provided by Latvian Transport Development and Education Association (LaTDEA)

Good Practice' ID	27
City/Region/Country	Madrid/ Spain
Prepared by	Latvian Transport Development and Education Association (LaTDEA)

General information

Description

Príncipe Pío is one of the most important interchanges in Madrid, as it offers connections between all forms of public transport: metro, suburban railways and city and suburban buses. The operations carried out in 1995 brought Metro Lines 6 and 10 inside the historic station building, thus significantly improving connections with the commuter rail network and the Metro branch line running to Ópera. 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, and has also made significant improvements in the day-to-day lives of over 60,000 travelers who use suburban buses and the Metro every day.

The new interchange terminal is built on two levels, each one of which has 14 bus platforms arranged around a central waiting area. Access for users is through two pavilions located above the current Station patio. On the first level, there is a connection with the Metro and bus access is by Paseo de la Florida. On the second level, access to the interchange terminal is through a tunnel that connects with the M-30, the internal orbital road of Madrid city, providing an easy and quick connection to the A-5 road.

Backround and Context

The "Construction Project for the Principe Pio transport interchange station" was presented in January 2005 by the joint venture consisting of the companies EST-EYCO and BB&J Consult S.A, at the request of the Madrid City Council.

The transportation interchange is divided into two levels, each of which has 15 bus bays arranged around a central area of passengers.

Policy design details

Policy Design Steps and Timing

1997: Madrid General Plan for Urban Distribution,

April 7, 2004: the Madrid Transport Authority signed an agreement with the Madrid City Council and the Regional Government Madrid to establish its commitment to arrange public tendering of the construction, operation and maintenance activities.

Actors Involved

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Customer: Madrid City Council;
Executros: the joint venture consisting of the companies EST-EYCO and BB&J Consult S.A.

Decision Making Process

Regional Government (Madrid Regional Transport Board).

Implementation details

Implementation Steps and Timing

Six phases were planned for executing the work:

PHASE 1

First traffic was diverted, making available two lanes (each 3.50m-wide) from the Glorieta de San Vicente to Ermita de Antonio de la Florida, and two lanes in the opposite directions, with construction carried out in the free space between the two directions, and between the Shopping Centre and the central diversion.
The main parts of the station's foundations were built during this phase.

PHASE 2

This phase consisted of executing the screen wall and the piles that were created in the previous phase through the diversion of traffic at the edge of the transport interchange station next to Calle Mozart.
Work continued on the flooring of the station's top floor of during this period.

PHASE 3

During this phase there was interference with traffic as a result of trucks entering and leaving the site to remove rubble from the excavation work.

PHASE 4

Once the excavation had been completed, the slab for leve-1 was executed. During this phase there was interference with traffic as a result of trucks entering and leaving the site to remove rubble from the excavation work.

PHASE 5

With the slab for level-1 completed, work began on excavating level-2. Once this excavation had been completed, work was carried out on the drainage and sanitation, and then on the flooring, itself. During this phase there was interference with traffic as a result of trucks entering and leaving the site to remove rubble from the excavation work.

PHASE 6

Repositioning of surface features and construction of the entrance hall for the transport interchange station.

ICT/Infrastructures needed

Disabled passengers support.
The signs and information in the transport interchange station give visual information, and the information is displayed in higher relief in Braille, all of which have specific functions, and are of a size that is intended to serve largest number of passengers.
The Braille and high relief signs are set up through the bus bays giving information about the bay number, the bus line number and the destination. There is also Braille information in elevators fulfilling the accessibility regulation as well as vinyl stickers with Braille text located on the under side of the handrails of the stairs indicating the exits, the levels and the bus bays to which they lead.

Human Resources

Not available.

Monitoring Procedures

Evaluation was done on the final stage, when interchange was done.

Supporting Mechanism

Awareness/Information Campaigns

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

Were campaigns for promotion in the metro.

Partnerships/Key Supporting Stakeholders

Initiative from government.

Results

Expected vs Actual Benefits

Actual benefits are better than expected.

Key Considerations

Lessons Learned

Critically assess the PT policy measure implementation and define the key lessons that can be learnt from the process as a whole.

Primary Obstacles

Technical difficulties.

Critical Success Factors

Political wish.

Social positive effect.

Transferability Considerations

The problem should be understood. You need to do projects that are vital for human.

Up-scaling Considerations

Count every detail carefully. Do modeling.

3.2.28. GP_28: INTEGRATED SYSTEM OF SELLING AND RESERVING TICKETS

Text of this GP is provided by Latvian Transport Development and Education Association (LaTDEA)

Good Practice' ID	28
City/Region/Country	Riga/ Latvia
Prepared by	Latvian Transport Development and Education Association (LaTDEA)

General information

Description

Riga International Coach Terminal is located in the Center of Riga city. It gives opportunity for all passengers to travel around Latvia and whole Europe. Riga coach terminal use integrated system for tickets purchase and trip management on the bases of Information system (IS) „Baltic Lines". The structure of IS is formed by ten modules with the continuous inter-exchange of information flows. Organization of the outward and inward information flows of the IS provides necessary connection between the users of the system and other ISs, such as bookkeeping accounting in the IS Microsoft Dynamics, selling tickets at www.bezrindas.lv and other.

The IS (program) of ticket sale and run registration includes:

- Coach route schedule and operational information on changes;
- Coach traffic information – arrival and departure time, location on platforms, delays, etc.;
- System of ticket reservation and sell, including:
    - Route planning, using services of many carriers and means of transports (multimodal and intermodal principles of transportations);
    - Different ways of payments and communications (cashless settlements with credit card, payments through Internet, using mobile telephone).

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- Connection with other services (urban transport, luggage transportation, hotel services, etc.,);
- Development (improvement) of control system and coach station services process;
- Communication among dispatcher service, ticket sale and information service;
- 24/7/365 service.

Backround and Context

IS of ticket sales and coach travel registration “BalticLines” is innovative IS which consists of wide connection network throughout all territory of Latvia. “BalticLines” is a powerful business tool for effective expansion of: variety of ticket sales; speed and effectiveness of huge data analysis; high level of service for passengers.

Ticket sales on “BalticLines” were introduced in Riga on 1st of March, 2003 by JSC “Riga International Coach Terminal” and are being used by 33 bus stations in Latvia today.

Policy design details

Policy Design Steps and Timing

IS was ordered by JSC “Riga International Coach Terminal”, who was the main supporter and financial provider of the project.

Technical developer and introducer was „Baltijas Transporta Informācija BTI” Ltd. (BTI).

Associated working group was created by RSA and BTI, in order to create technical specification of the system. In compliance with technical tasks, during next 6 months BTI developed IS of ticket sales and coach travel registration “BalticLines”. During next 2 months IS was tested for all kinds of faults and imperfections. Simultaneous personnel training and data migration from old systems was taking place during those months. Actual introduction time of IS for RSA cashiers and dispatchers was very short - no longer than 2 days. Faults and imperfections that occurred were corrected during the following month. IS is still being continuously improved.

Actors Involved

1)JSC “Riga International Coach Terminal”(RSA) registered in the Company Register of Republic of Latvia in October 6, 1997, registration Nr 40003361404, Client.

RSA is the largest service point of passenger coaches in Baltic states:

• number of bus and coach trips operated in 2012: 145,241;

• number of passengers serviced in 2012: 2,123,691;

RSA has an established and certified quality management system – according to the requirements of ISO 9001:2008 standards.

2)„Baltijas Transporta Informācija BTI” Ltd. (BTI), System developer and maintainer.

BTI was founded in February 2003. BTI installs systems of automated ticket sales and systems of bus and coach trip tracking on the basis of “BalticLines” IS that provides

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

automatization of ticket sales, as well as bus and coach trip control and tracking in real time.
3)Transport and Telecommunication Institute (TTI). Founded in 1999, Consultant.
TTI is a higher education institution, which is accredited in Latvia for unlimited period of time. The constitution of the university has been approved by the Latvian Cabinet of Ministers. The institute is accredited by several international organizations. Graduates receive state approved diplomas, which are recognized by all countries in the world.
In 2005 European Commission in Brussels gave TTI the rights to issue „Diploma Supplement" – a document certifying that the higher education institution is in compliance with European quality in the academic and professional programs.
In 2008 TTI received an international certificate ISO 9001:2000 for the management system's compliance to the international quality standard ISO 9001.
TTI has been included in the International Civil Aviation Organization directory (ICAO).
4)State Ltd "Autotransporta direkcija" (AD), Consultant.
AD is a unified state policy implementer in the field of licensing international transport and commercial road transport businesses in Latvia. AD main objectives are to promote development of transportation and to increase competitiveness capacity amongst carriers. Future objective is to ensure the administration of public function in the field of road transportation in the country.

Decision Making Process

Mostly were involved people who have responsibility and for whole project 5 people were planning all processes:

- Technical Part;
- The economic part;
- Legal part;
- Development and administration.

Implementation details

Implementation Steps and Timing

Preintroduction preparation period engaged for 2 months, during which data migration was prepared and workers were trained.
By the March 1st, 2003 ticket sales and coach travel registration IS "BalticLines" was introduced in Riga International Bus Station completely, without any transition period.
During next 6 years IS was introduced to 32 more bus stations across Latvia.

ICT/Infrastructures needed

"Baltijas Transporta Informācija BTI" Ltd. (BTI) was responsible for introduction and operation of IS.

- Total cost of development and introduction of IS – 100,000 LVL;
- Necessary infrastructure improvements for introduction and operation of IS:
    - Broadband internet connections,
    - Two servers for new applications,
    - Licensing of Oracle databases,
    - Cash desk workstations,
    - Ticket printers.

Human Resources

Firstly 5 people worked for the project. Now team consists 4 employees that operate the system.

Monitoring Procedures

Monitoring is going all time.

Supporting Mechanism

Awareness/Information Campaigns

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

There are information campaigns and seminars for promoting the new system.

Partnerships/Key Supporting Stakeholders

Huge influence made JSC "Riga International Coach Terminal" because they are customers of the "BalticLines" system.

Results

Expected vs Actual Benefits

Actual results are better than expected.

Quantitative Results Achieved

- IS "BalticLines" is being used by 33 bus stations across country;
- 3,921,368 passengers serviced during year 2012;
- 938,584 trips serviced during year 2012;
- 92,674 tickets sold over internet during year 2012.

Qualitative Results Achieved

- Management system has been created and certified at "Rīgas starptautiskā autoosta" Plc. – according to ISO 9001:2008 standard;
- Passenger service level improved.

Key Considerations

Lessons Learned

The biggest challenge yet is to achieve an absolute accordance with and adoption to ever changing laws and regulations.

Primary Obstacles

- Huge number of regulations to adopt with;
- Mutability of laws;
- Technical execution of IS in accordance to regulation changes.

Critical Success Factors

- Quick adaptation to laws and regulations;
- Economical and transportation policy of the state.

Transferability Considerations

Legal base.

Organization of PT (ratification, etc.).

Up-scaling Considerations

No technical problems according to the system.

Contact

„Baltijas transporta informācija BTI" Ltd.
Pēteris Gavars
Peteris.Gavars@rtu.lv
„Rīgas starptautiskā autoosta" Plc.
Juris Pēpulis
Juris.Pepulis@autoosta.lv

3.2.29. GP_29: ATLAS PUBLIC TRANSPORT TICKETING SYSTEM IN RIGA

Text of this GP is provided by Latvian Transport Development and Education Association (LaTDEA)

Good Practice' ID	29
City/Region/Country	Riga/ Latvia
Prepared by	Latvian Transport Development and Education Association (LaTDEA)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

General information

Description

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 both fare payment systems, the previous one and also the new electronic system.

E-ticket allows passengers to save time on buying tickets, solves the problem of the availability of paper tickets in retail trade, and requires no cash. A ticket loaded to an e-ticket is valid for 12 months from the moment of its purchase, except when the tariff of the ticket type changes or the ticket type is cancelled and Riga municipal company "Rīgas satiksme" sets a transition period for the validity of the ticket type. Electronic validators are located in public transport vehicles – buses, trolleybuses and trams and register passengers paying for the trip.

E-ticket is a universal electronic ticket enabling the use of the most up-to-date and convenient means of payment for public transport services. E-ticket uses Atlas Public Transport Ticketing System. Atlas systems and services are used by over 1,000 municipal, regional and national operators to run more than 150,000 pieces of equipment, including:

- Automated ticket vending machines,
- Validators,
- Booking office machines,
- Portable inspector terminals,
- Access gates.

Atlas equipment enables 50 million passengers per day to use buses, trolleybuses, tramways and trains. And Atlas tailor-made solutions allow central management of equipment across different modes of transportation.

Backround and Context

E-ticket is a universal electronic ticket enabling the use of the most up-to-date and convenient means of payment for public transport services. In Riga public transport e-tickets 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 both fare payment systems, the previous one and also the new electronic system.

Policy design details

Policy Design Steps and Timing

For realization of this project was created an enterprise that provides the necessary funding and provides a solution.

The main advantage of such an agreement is to provide funding for the implementation of the system with little or no involvement of municipal or state funds for the purpose of generating income and investment of similar projects in different countries.

"BOT" agreement: BOT = Build, Operate and Transfer. Thus, a joint venture of Rigas Satiksme and won the competition of the company, the purpose of which is:

1. Create: to obtain and implement the system;
2. Management: support and management system for 12 years, including the management and control of production of electronic tickets and smart cards, information and awareness of passengers the convenience of an electronic ticket (advertising campaigns, a clearinghouse);
3. Transmission: at the end of the period "BOT" agreement system goes into possession of "Rigas Satiksme".

Actors Involved

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

1. "Rīgas Satiksme" is a Riga municipal limited liability company founded on February 20, 2003. Customer.

The company provides public transport services in Riga, offers various types of transport for rent, as well as operates Riga municipal parking lots.
"Rīgas satiksme" provides the following services:

- tram service (258 trams, 9 tram routes);
- trolleybus service (302 trolleybuses, 19 trolleybus routes);
- bus service (441 buses, 53 bus routes);
- parking services (4860 parking lots).

The company has implemented and maintains an integrated management system, which fully meets the requirements of ISO 9001:2008 and OHSAS 18001:2007 standards and should be evaluated as efficient.

2. "Rigas Karte" - investor and operator.

Company that consists partly of Rigas Satiksme and partly of Xerox (France company). They work under "BOT" agreement.

Decision Making Process

Mostly were involved people who have responsibility and for whole project 4 people were planning all processes:

- The choice of strategy;
- Technical Part;
- The economic part;
- Legal part.

Implementation details

Implementation Steps and Timing

In Riga public transport e-tickets were fully introduced on May 1, 2009. During the transition period of March-April 2009 passengers could use both fare payment systems, the previous one and also the new electronic system. BOT agreement is for 12 years.
Rigas Satiksme was key actor and Rigas Karte:

- The choice of strategy;
- Technical Part;
- The economic part;
- Legal part.

ICT/Infrastructures needed

Rigas Karte is responsible for implementation and operation the system.
Systems cost is 11 mil.lats.
Machines for selling tickets.
Mostly changes were made on transport, not on infrastructure.

Human Resources

Firstly 4 people worked for the project. Now team consists of 8 workers that operate system and about 50 people who work exactly with devices (validators, ticket machines etc.).

Monitoring Procedures

Monitoring is going all time. And it shows better results than expected previously from the system.

Supporting Mechanism

Awareness/Information Campaigns

There are information campaigns for promoting new way of payment. For example web site and information in PT.

Partnerships/Key Supporting Stakeholders

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

The huge influence made politics because only they can influence on decisions. No less important is the influence of Rigas Satiksme who understood that the project is important and vital for Riga. But the use of BOT agreement was vital for the project.

Results

Expected vs Actual Benefits

Actual results are better than expected.

Quantitative Results Achieved

A lot of people have personalized e-tickets. That shows that people every day use new system:

- 50% of Riga inhabitants have a personalized e-talons smartcard,
- 90% of Riga inhabitants have used e-talons,
- 500 000+ trips registered on peak days,
- 66% of passengers use a smartcard,
- 30% a smart ticket,
- 4%buy their (paper) tickets to the driver.

Key Considerations

Lessons Learned

Important is that only political influence can make results for this project. And now it is also dependent from political wishes.

Primary Obstacles

1. Some technical related to the specifics of a particular fleet basic and very sensitive.
2. The process of personalizing cards (data collection).
3. Public relations:
    a. Advertising campaign;
    b. Make sure that the cover all social groups (pensioners, disabled, etc.).
4. Organizational issues.

Critical Success Factors

1. BOT agreement.
2. Political wish.
3. Positive attitude of inhabitants of Riga.

Transferability Considerations

Legal base.

Organization of PT (ratification, etc.).

Up-scaling Considerations

The main factors atr the tariffs for PT, political decisions.

No technical problems according to the system.

Contact

Rigas Karte
Vladimirs Elsters
Vladimirs@rigaskarte.lv

3.2.30. GP_30: INTERACTIVE PASSENGER SERVICE IN TRAIN TRAFFIC

Text of this GP is provided by Latvian Transport Development and Education Association (LaTDEA)

Good Practice' ID	30
City/Region/Country	Rigas region/ Latvia
Prepared by	Latvian Transport Development and Education Association (LaTDEA)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

General information

Description

Interactive complex solutions services for railway passengers are implemented on the base of infrastructure and IT solutions. Services are intended for multi-purpose auditorium and consider the basic requests of passengers in Latvia. To satisfy the needs of passengers the interactive information systems have been created. These systems allow passengers to manage and plan the trip, needed resources, and to determine the level of comfort in their travels. Using interactive IS, passengers can in real time determine the schedule of the train and find the main indexes of the route, such as duration and distance of the route, tickets prices, discounts, etc. For the convenience of purchasing tickets the multi-alternative solutions are offered, among them: buying tickets via Internet and mobile phone (SMS). To increase the level of comfort and security the additional important functions are offered, such as seats reservation in the wagons, usage of wireless Internet, carriage the bulky luggage (such as bicycles), as well as usage of special equipment for passengers with special needs.

November 24, 2009: the joint-stock company «Pasažieru vilciens» (in English "Passenger Train") received an international certificate of quality management system ISO 9001:2008, which confirms that the control system meets the requirements of the enterprise.

The Quality Management System of the Information Technology Center (ITC) of the joint-stock company «Latvijas dzelzceļš» (in English "Latvian Railway") was re-certified in 2010 (the ISO 9001:2008 is valid from 23 July 2010 to 22 July 2013).

Backround and Context

The joint-stock company «Pasažieru vilciens» (in English "Passenger Train") established in 2001. From 2005 to 2007, the activities of «Latvijas dzelzceļš» were reclassified according to the requirements of the European Union, resulting in gradual establishment of a concern with five subsidiaries. Each of the companies has its own management and governance system which is closely connected to the parent company as far as strategic decisions are concerned, yet retains autonomy in branch-specific decision making, budget planning and management. From October 2008, the joint-stock company «Pasažieru vilciens» is an independent state-owned company. November 24, 2009: the joint-stock company «Pasažieru vilciens» received an international certificate of quality management system ISO 9001:2008, which confirms that the control system meets the requirements of the enterprise.

Services are intended for multi-purpose auditorium and consider the basic requests of passengers in Latvia. Passenger can use 10 routes (4 electro-train routes and 6 diesel-train routes).

Company have 24 electro-trains with total 164 wagons, and 16 diesel-trains with total 74 wagons.

3 electro-trains and 2 diesel-trains have wireless Internet and 6 electro-trains and 4 diesel-trains have special equipment for passengers with special needs.

Across the country there are 101 cash points where you can buy a ticket.

Policy design details

Policy Design Steps and Timing

Regularly introduced in legislative amendments to the following documents:

- Railway law,
- Railway transport law,
- PT service law.

Regularly conducted Research on preferences and satisfaction of passengers service: http://www.pv.lv/lv/par_uznemumu/pasazieru_apmierinatibas_petijums_2010/

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

http://www.pv.lv/images/userfiles/faili/petijums/2011/bsa_prezentacija.pdf
http://www.pv.lv/images/userfiles/faili/petijums/2011/ba_petijums_2011.pdf
http://www.pv.lv/images/userfiles/faili/petijums/2012/2012_ba_petijums.pdf

Actors Involved

The joint-stock company «Pasažieru vilciens» (in English "Passenger Train") established in 2001. Company provides passenger internal transportation in Latvia. Services are intended for multi-purpose auditorium and consider the basic requests of passengers in Latvia. Passenger can use 10 routes (4 electro-train routes and 6 diesel-train routes). Company have 24 electro-trains with total 164 wagons, and 16 diesel-trains with total 74 wagons.

The company «Pasažieru vilciens» cooperates with the joint-stock company «Latvijas dzelzceļš» (in English "Latvian Railway") which carries infrastructure support. It also includes the Information Technology Center, which in turn provides IT services and solutions.

The Quality Management System of the Information Technology Center (ITC) of the joint-stock company «Latvijas dzelzceļš» (in English "Latvian Railway") was re-certified in 2010 (the ISO 9001:2008 is valid from 23 July 2010 to 22 July 2013).

The company also cooperates with information service, such as 1188 to provide information about the schedule.

The company «Pasažieru vilciens» cooperates with CityCredit Ltd company, which provides SMS ticket buying by service (https://www.mobilly.lv). Mobilly is a payment system, which allows to make payments by text message or in the internet. The aim of Mobilly is to structure a payment system, which permits all mobile phone users to make and receive payments by their mobile phones anywhere the mobile communication is accessible.

Decision Making Process

The decision making process is divided into three parts:

- On-line Analysis Level (minutes → few hours) - which is a group of professionals (database administrators, operators and managers);
- Decisions Support Level (a day → few weeks) – which is a group of middle management specialist;
- Strategic Level of Management (a month → few years) - headed by the executive director.

Implementation details

Implementation Steps and Timing

Prior to 1999, information on passenger traffic formed from daily reports on all cash registers. By 1999, the modernization of cash register devices has been executed, supplying flash memory that records and transmits daily report about passenger traffic to the main IS "Express" for further processing. In 2005 and 2006, the company «Pasažieru vilciens» have received the new IS, which subsequently successfully implemented and used to this day. This system centrally collects information from 150 cash registers in online mode.

ICT/Infrastructures needed

Own development system collects information from 150 cash registers in a single system in online mode.

Own development system to prepare interactive schedule used temporal model.

Recognising the importance and value of up-to-date railway infrastructure and the opportunity to promote the competitiveness of the company in the railway sector, in 2011 the company initiated the preparation and financial adjustment of project

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

application for European Cohesion Fund to receive funding for implementation of the GSM-R system across the entire Latvian railway system.
«Latvijas dzelzceļš» manages expansive and varied infrastructure including rail tracks, engineering structures, rail traffic management systems, rail telecommunications network, radio communication, power supply and contact lines. «Latvijas dzelzceļš» is in charge of maintaining the infrastructure in a good technical condition, timely repairs and upgrades to ensure uninterrupted and safe train traffic.
«Latvijas dzelzceļš» is in charge of maintenance of train traffic management systems, rail telecommunications network, radio communication, hot bearing control system, power supply and contact lines and other equipment according to the railway technical Maintenance regulations.

Human Resources

To provide rail passengers service in Latvia, the company employs 962 people in 2011:

- 8% of the administrators,
- 19% of a team of railway,
- 26% Katheer,
- 34% conductors-controllers,
- 12% of other specialty.

Monitoring Procedures

Monitoring is divided into several parts:

- monitoring the working infrastructure solutions;
- monitoring the working IT solutions.

Both parts are automated and occur in the form indicators and of alerts individual operators.
Uses a reliable and tested monitoring and prevention system that has been developed over decades and is continuously being updated and concerns all aspects of railway operation.

Supporting Mechanism

Awareness/Information Campaigns

Promotes safety and environmental transport, as well as its comparative speed of the other modes of transport, as well as company pricing policies. Advertising is broadcast on TV, as well as a large settlement posted ads.

Partnerships/Key Supporting Stakeholders

The government is interested in turning the company «Pasažieru vilciens» profitable enterprise, as well as to organize an effective passenger transportation within the country and also using friendly transport by environmental.

Results

Expected vs Actual Benefits

The company «Pasažieru vilciens», after separation from the company «Latvijas dzelzceļš», rationalizes government resources, but for a small turnover of passengers can not reach the level of profitable.

Quantitative Results Achieved

100% of the personification and determine the route, as well as determine the user's portrait.

Qualitative Results Achieved

Through regular surveys, determining the effectiveness of the company, quality of services and accounting requirements of the users.

Key Considerations

Lessons Learned

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

For the implementation of new automated systems, you need to clearly define all the elements with the integration of complex systems, as well as the process of supporting IS.

Primary Obstacles

A large number of heterogeneous systems from a lot of outsources companies and losses of the company.

Critical Success Factors

The development of online sales and the introduction of a single electronic ticket.
Introduce regular of express-trains on all routes.
To improve the existing rolling stock (internet, bicycle racks, magazines, etc.).
Improve access/exit trains for passengers with special needs.
To develop and promote the movement of trains and tourist infrastructure.
To promote and attract cyclists to use the trains.
Introduce Internet sales.
Implement electronic information screens at the overload stations.
First class wagons installation.

Transferability Considerations

Application of the results of research conducted the company «Latvijas dzelzceļš» in other transportation companies in Europe.

Up-scaling Considerations

Tariffs for PT and political decisions.

Contact

Latvian Railway
Vasilijs Demidovs
Vasilijs.Demidovs@ldz.lv
Passenger Train
Head of Passenger Transportation Department
Māris Tračums
maris.tracums@pv.ldz.lv

3.2.31. GP_31: PREMIER ROUTE BUS CORRIDOR NETWORK

Text of this GP is provided by Reading Borough Council (RBC)

Good Practice' ID	31
City/Region/Country	UK
Prepared by	Reading Borough Council (RBC)

General information

Description

Significant upgrade to 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, 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 addition bus shelters and accessible kerbing to complement the low floor buses.

In addition, the provision of Real Time Passenger Information (RTPI) displays at stops and on buses from 2002 and the provision of contactless smartcard ticketing from 2004 combined to form a comprehensive package of improvements.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

The Premier Route network includes over 100 buses and 350 bus stops covering the ten major bus corridors in Reading. The core elements of the network were implemented between 2004 and 2008.

Backround and Context

Reading is a unitary authority and one of the most significant major population and employment centres in the South East of England. Reading benefits from its close proximity to London and Heathrow Airport and the urban area is at the centre of the largest travel to work area in the Thames Valley. Over 20 million bus trips are made throughout Reading every year and the Borough has one of the highest levels of bus trips per capita in the UK outside of London.

In 2002 Reading Borough Council made a public commitment, in a new document called '*Horizons – A New Vision for Transport in Reading*', to provide a significantly improved public transport system for Reading, following a consultation with residents to understand their main concerns with the existing bus provision in Reading.

This led to the development of the Premier Route network concept, which was implemented throughout the Reading urban area, predominantly between 2004 and 2008. The objectives of the Premier Route network were to improve bus service reliability, increased capacity and frequency, timetable stability, improved passenger facilities and information.

Key elements of the Premier Route network included a complete rebranding of bus services in Reading, 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 addition bus shelters, accessible kerbing to complement the low floor buses and provision of Real Time Passenger Information (RTPI) displays at stops and on buses.

In addition, the introduction of smart ticketing for local services in 2004, and its subsequent upgrade to ITSO compatibility in 2010, delivered substantial improvements to passengers alongside the core package of Premier Route improvements.

Development of the Premier Route network has been led by Reading Borough Council, working in partnership with Reading Buses (the operator of over 80% of bus services in the Reading urban area). The network was also implemented in cooperation with neighboring authorities, Wokingham Borough Council and West Berkshire Council, and other local bus operators to ensure the benefits of the Premier Route network have been delivered throughout the Reading urban area.

The Premier Route network includes over 100 branded buses and over 350 bus stops covering the ten major bus corridors in Reading. The RTPI system includes over 200 display screens at stops throughout the network.

Policy design details

Policy Design Steps and Timing

The main policy design steps for the Premier Route network include:

- The provision of a significantly improved local bus network, including provision of an RTPI system, has been a core part of Reading's transport strategy, as outlined in Local Transport Plans from 2001 to the latest plan covering the period 2012-2026.
- In 2002 Reading Borough Council made a public commitment, in a new document called '*Horizons – A New Vision for Transport in Reading*', to provide a significantly improved public transport system based on the Premier Route principles. This commitment was made following a consultation with residents to understand their main concerns with the existing bus provision in Reading.

Actors Involved

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

The main parities involved in development of the Premier Route network are:

- Reading Borough Council (lead local authority);
- Reading Buses (main bus operator);
- Best Impressions (marketing company);
- Art Design Direct (marketing company);
- Connexionz (supplier of the RTPI system).

Decision Making Process

The implementation of the Premier Route network was enabled through the decision making process formed by the Reading Urban Area Package (RUAP) agreement between Reading Borough Council, Wokingham Borough Council and West Berkshire Council, and its ability to secure funding from central government for elements of the system.

Implementation details

Implementation Steps and Timing

Implementation of the Premier Route bus network was phased as set out below:

- Introduction of the original RTPI system in 2002, which enabled RTPI provision to be extended in line with the roll out of the Premier Route network.
- Provision of contactless smartcard ticketing for use on local bus services in 2004.
- Launch of Premier Route 17 (purple), the first Premier Route, serving the east and west of Reading, in October 2004.
- Introduction of Premier Routes 4, 5 and 6 (mint green), serving the south of Reading, in March 2005.
- Completion of Premier Route 9 (red), serving the south of Reading including the Royal Berkshire Hospital, in July 2005.
- In spring 2006, Premier Routes 23 & 24 (pink) serving Caversham to the north of Reading, Premier Routes 25 & 26 (yellow) serving the south west of Reading, and Premier Route 37 (light blue) were all introduced.
- The provision of bus priority at some signal junctions through the RTPI and UTMC systems has been trialed from 2006 onwards.
- In February 2007, Premier Route 37 was replaced with Premier Routes 15 & 16 (light blue) to provide a higher level of service for areas in the west of Reading.
- The network was largely completed in February 2008 with the introduction of Premier Routes 20 & 21 (claret), 31, 33 & 35 (royal blue) and 63 & 64 (orange).
- Premier Route 17 was extended to run 24 hours a day, 7 days a week from May 2008, which included the introduction of new more environmentally friendly vehicle, thus allowing the existing buses to be used to increase capacity on the other Premier Routes once rebranded.
- Upgrade to the smartcard ticketing system to ensure ITSO compatibility in 2010.
- Further Premier Routes introduced in April 2011 in association with the complete reorganisation of bus routes in central Reading and changed access to allow Reading Station to be rebuilt in a multi-million pound scheme coordinated by Reading and Network Rail.
- The provision of real-time rail data on on-bus display screens on routes approaching Reading Station, introduced in 2012.

ICT/Infrastructures needed

ICT is fundamental to the operation of the RTPI system, from the GPS based vehicle tracking system to the central server software which calculates arrival time predictions. In addition, ICT is used to provide information from the RTPI system more widely, including the ability for virtual RTPI displays to be used on local travel information websites and to be communicated to mobile phones.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ICT is required to operate the back office systems for the contactless smartcards used on Premier Route services. This includes the product security to enable ITSO compatible ticketing.

In addition to the ICT infrastructure identified above, other infrastructure required for the Premier Route network includes fully accessible vehicles and associated kerbing at stops, RTPI display screens at stops and on buses, bus shelters and poles, including bus stops being moved and bus lanes introduced.

Human Resources

A substantial level of resource has been allocated to the development of the Premier Route network; principally by Reading Borough Council and Reading Buses and to a lesser extend other local bus operators and neighboring local authorities.

Monitoring Procedures

Monitoring of the success of the Premier Route network is undertaken through the reporting of targets and indicators included within Reading's Local Transport Plan, particularly with regarding to bus service punctuality and customer satisfaction.

In addition, real-time monitoring of performance of bus services is undertaken by Reading Buses, other local bus operators and by Reading Borough Council within its UTMC centre.

Supporting Mechanism

Awareness/Information Campaigns

A significant improvement to the level of awareness and information relating to local bus services was a fundamental principle behind the Premier Route network concept. A key element to raising awareness of the Premier Route services is the branding of individual bus routes, creating an impression on passengers and moving away from the dull maroon and beige image associated with the previous vehicles.

The public launch of the first Premier Route included attendance from a Central Government Minister and significant interest from the local press. Launches of subsequent routes and associated press releases have raised awareness of the improved bus services on offer. In addition, a significant level of information regarding the Premier Route network was provided to residents through the Horizons publicity and other local authority and bus company initiatives.

Following the completion of the Premier Route network the provision of up to date passenger information is critical for its ongoing success. This is provided through the RTPI displays, regularly updated network maps and service timetables, and the availability of information at travel information kiosks and on local travel information websites.

Partnerships/Key Supporting Stakeholders

The critical partnership to the success of the Premier Route network was between Reading Borough Council and Reading Buses. In addition, the Reading Urban Area Package (RUAP) agreement between Reading Borough Council, Wokingham Borough Council and West Berkshire Council enabled the benefits of the network to be rolled out throughout the Reading urban area.

Results

Expected vs Actual Benefits

Overall the expected benefits from the Premier Route network have been realised, including benefits relating to improvements to bus journey times, punctuality, reliability and passenger satisfaction.

Quantitative Results Achieved

Quantitative results achieved through the implementation of the Premier Route network include:

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

- An increase in patronage of 10% for local buses services originating in the Reading Borough Council area between 2003/04 and 2007/08;
- An increase in bus service reliability from 75% in 2003/04 to 84% in 2008/09;
- A substantial increase in the level of customer satisfaction with local bus services, from 56% in 2003/04 to 74% in 2007/08;
- The introduction of higher capacity vehicles on the most popular corridors, either to replace or supplement existing vehicles, due to increased demand across the network;
- Significant improvement in emissions regime as each new Premier Route was launched with new buses to meet the latest EU standards.

Qualitative Results Achieved

Qualitative results achieved through the introduction of the Premier Route network include a substantial improvement in the quality of bus service provision, particularly the level and quality of information provided to the passengers.

Key Considerations

Lessons Learned

The main lessons learnt from the project include:

- The importance of building an association between passengers and their local bus service, which has principally been achieved through the branding of individual corridors with vivid colours.
- The importance of presenting bus information from the perspective of the passenger rather than operational requirements. For instance the ability to find the service you require through a list of destinations rather than service numbers.
- The Premier Route concept had to be owned by the partner bus company or else route branding can be diluted by wrong buses being used on each route. Reading Buses as lead partner has been highly disciplined in its use of the branded buses, but other buses running into Reading from outside have been less so.

Primary Obstacles

The primary obstacles to the success of the project include:

- The time and costs associated with producing individual local information display boards for every stop, which resulted in a change of approach to focus on the core bus service information.
- The competing requirements between the need to review and amend service details and timetable with the desire for stability in the network to ensure customer confidence.
- Political limitations to the desire for additional bus priority to avoid ongoing susceptibility to traffic congestion issues.

Critical Success Factors

The key factors which were critical to the success of the project include:

- The branding of bus corridors with vivid colours to create an association between passengers and their local bus service and to update the image of bus services.
- The holistic approach to corridor improvements which ensures a step change in the service provided to passengers after the launch of each Premier Route.
- The importance of effective partnership working between local authorities and bus operators to achieve common objectives.

Transferability Considerations

The knowledge gaining from the implementation of the Premier Route network in Reading can be transferred to other areas. The transfer of ICT elements, including the RTPI and UTMC systems, is enabled through the use of standard protocols and the

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

forums established by RTIG and UDG. Smart ticketing compatability is promoted in the UK through the ITSO specification.

Up-scaling Considerations

The Premier Route Network has been extended on a corridor by corridor basis, from the launch of the first Premier Route in October 2004 to the completion of the network in February 2008.

Further branding has been applied to other Reading Buses and Reading Borough Council sponsored services such as Community Link, Fasttrack park & ride and Greenwave business park services.

Contact

Stephen Wise, Senior Transport Planner, Reading Borough Council

3.2.32. GP_32: GESTIONE INFORMATA MOBILITA' – G.I.M.

Text of this GP is provided by Province of Ferrara (PoF)

Good Practice' ID	32
City/Region/Country	Province of Ferrara – Emilia Romagna Region - Italy
Prepared by	Province of Ferrara (PoF)

General information

Description

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.

The management of the information related to mobility is going to be centralized - a mobility central unit is going to be set up at Regional Level with important connections with the Provincial Level. This centralized system should help the harmonization of mobility information and its use. In this way a big amount of data related to traffic among different cities of the region will be managed at regional level in order to develop common policies and technologies.

Backround and Context

Since 2009 many Italian provinces and cities together with some Italian regions have worked on ITS applications.

Province of Ferrara is setting up in its territory some infrastructural measures useful to increase the ICT on Public Transport through a GIM National Project.

Actually at regional level there is an important tool related the ITS on transport which is the Regional Travel Planner and a new fare system "Mi Muovo" Ticketing.

The GIM project foreseen the installation of AVM systems in each bus in the Emilia-Romagna region, and the consequent installation of electronic signs at bus stops.

The infrastructural measures that GIM is setting up can increase the quality of the information to the PT users, in fact, as an example many information can allow to update the travel planner in order to became a dynamic system with real time information to the users.

An other important result linked to the GIM infrastructural measures is to increase efficiency and attractiveness of PT.

All the system will be installed within the 2013.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Policy design details

Policy Design Steps and Timing

Since 2006, Italy government has introduced ICT on Public Transports through specific rules, and the Emilia Romagna Region (RER) started to work on its own Regional Transport Plan introducing the necessity to apply ICT on PT. The National Department of Regional Affairs develop the ELISA project that was focused on ICT in the public administrations and consequently on ITS on PT.

After some years also Province of Ferrara joined the GIM Project and Travel Planner Applications.

Actors Involved

National Government, Emilia Romagna Region, Marche Region, Lombardia Region, and 13 Italian provinces,LPT Companies, Public Transport Agencies, Urban services and suburban services.

Decision Making Process

The decision making Process was a long and complex process shared among all the actor involved.

Implementation details

ICT/Infrastructures needed

-Regional (Emilia Romagna) Central Office of InfoMobility (COIM) interconnected with local/provincial offices;

-Automatic Vehicle Monitoring (AVM) on 329 buses in the Province of Ferrara Territory

-electronic sings at buses stop in the Ferrara

-Variable Message Panel

Human Resources

Employees of all provincial and regional transport and mobility offices – 5 people were involved from the Province of Ferrara

Supporting Mechanism

Awareness/Information Campaigns

- Internet
- Newsletter

Results

Expected vs Actual Benefits

Expected Results:

- Improving the usability and effectiveness of the PT;
- Centralized management of information relating to public-private mobility;
- Monitoring of the fleets of public transport;
- Increasing the infrastructures from technological point of view (AVM, ITS);
- Real-time dissemination of information relating to the service of PT and traffic conditions;
- Interconnection among Urban PT and Sub-Urban PT;
- Development of modal split.

Actual Benefits: reaching all the expected results, actually it is not possible to quantify I benefice anche perche le misure infrastructural measures because all the process is ongoing.

Quantitative Results Achieved

The Province of Ferrara is managing in its territory 329 Busses per 10 millions of Km/year, in the Emilia Romagna Region there are 3.200 Busses and 250 millions of passengers/years with 112,5 millions of Km/year. During 2011 more than 16000 “Mi Muovo” seasonal tickets were used.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

All these numbers shows the importance of improving the PT usability and effectiveness.

Key Considerations

Lessons Learned

The process concerning the installation of all the infrastructure is longer than the expected.

Critical Success Factors

The key factors which were critical to the success of the project include:

The branding of bus corridors with vivid colours to create an association between passengers and their local bus service and to update the image of bus services.

The holistic approach to corridor improvements which ensures a step change in the service provided to passengers after the launch of each Premier Route.

The importance of effective partnership working between local authorities and bus operators to achieve common objectives.

Transferability Considerations

The measure consist in the implementation of an infrastructure so it has to be considered as hard measure. The implementation is going to be implemented and the Province of Ferrara is monitoring all the activities. The process can be transferred also in other territorial contexts but a strong commitment from the PA is needed. Updated on results of this measure can be expected in early 2014.

Contact

Ing. Dario Vinciguerra - Province of Ferrara – Mobility Office - +390532299944 – dario.vinciguerra@provincia.fe.it

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

4. COMPARATIVE ASSESSMENT OF GOOD PRACTICES AND CHOICE OF THE BETTER PRACTICES

4.1. OVERVIEW

Comparative assessment of Good Practices and choice of the better one is realized by using methodology of comparative analysis of GP considered in section 2.2.

The results of the first two stages of GP assessment "Study of Good Practices Descriptions and Questionnaires Completed by POLITE Partners" and "Good Practices Classification Based on Functional Purpose" are presented in Sections 3.2 and 2.2, correspondingly. The next stages of comparative analysis of GP are considered below.

The comparative assessment and choice of Good Practices is carried out separately for each group of GP. This approach fulfils the evaluation of the efficiency of Good practices in different groups with the account of the groups' specifics by the use of the AHP method.

4.2. COMPARATIVE ASSESSMENT OF GOOD PRACTICES IN THE GROUP "PUBLIC TRANSPORT PAYMENT SYSTEMS"

4.2.1. DESCRIPTION OF THE GROUP "PUBLIC TRANSPORT PAYMENT SYSTEMS".

The group contains five practices for assessment presented in the Table 4.1.

Table 4.1. Description of GP

No	Name of Partner	Description of Good Practice
9	PoF	**SMS ticketing service** *Flanders, Belgium, GP (Questioner)* De Lijn is the Flemish bus and tram company. They presented 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.
20	ILIM	**Advanced PT Ticketing (SkyCash),** *Warszawa, Poland, BP(Questioner)* SkyCash is independent telecommunication operator universal system of mobile payments, providing the simplicity and speed of transfer to the highest safety standards. SkyCash works on any GSM network and on any phone with Internet access. *Transferability Considerations:* SkyCash is the system offered on the open market. It is possible to buy and implement the system in every public transport organisation, after *the appropriate* translation.
22	CDV	**Integrated public transport system and smart ticketing** *Ostrava and Silesian-Moravian region, Czech Republic, GP (Site visit)* CED dispatching centre is a part of the regional integrated multimodal PT system. The main CED aim is to ensure operational issues, to transfer information on real time transportation status towards information centres, to ensure transportation organizing. *Transferability Considerations:* • Legislation support is necessary • Political demand for establishing the Integrated public transport system • Financial instruments for investment costs are welcome

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

		• Operational *costs* to be considered
28	LaTDEA	**Integrated system of selling and reserving tickets** *Riga, Latvia, GP (Questioner)* Riga International Coach Terminal is located in the Center of Riga city. It gives opportunity for all passengers to travel around Latvia and whole Europe. Riga coach terminal uses integrated system for tickets purchase and trip management on the base of IS „Baltic Lines". The structure of IS is formed by ten modules with the continuous inter-exchange of information flows. Organization of the outward and inward information flows of the IS provides necessary connection between the users of the system and other IS, such as bookkeeping accounting in the IS Navision Attain, selling tickets online – bezrindas.lv and other. *Transferability Considerations:* Legal base. Organization *of* PT (ratification, etc.)
29	LaTDEA	**Atlas Public Transport Ticketing System in Riga** *Riga, Latvia, GP (Questioner)* 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 the both fare payment systems – the previous one and also the new electronic system.

The quantities of sub-measures in each measure of Good Practices are shown on Figure 4.1. All the practices are covering the measure No 10 "Advanced PT Ticketing". Practice No 22 covers all measures, but practice No 9 covers only one measure.

Figure 4.1. Measures in the Good Practices

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

4.2.2. DETERMINATION OF OBJECTIVES PRIORITIES FOR THE GROUP OF GOOD PRACTICES.

The weights of objectives for the group "Public Transport Payment Systems" estimated by experts are presented in Table 4.2.

Table 4.2. Paired comparison matrix for objectives and results of priority vector calculation for the group "Public Transport Payment Systems"

Groups of measures	Improving city attractiveness	Improving PT services	Improving PT efficiency	Increasing the PT mode share	Decrease congestion	Emissions and pollution reduction	Priority vector (weights)
Improving city attractiveness	1	1/3	1/7	1/5	3	5	**0,0794**
Improving PT services	3	1	1/3	1	5	7	**0,1985**
Improving PT efficiency	7	3	1	3	7	9	**0,4368**
Increasing the PT mode share	5	1	1/3	1	5	7	**0,2162**
Decrease congestion	1/3	1/5	1/7	1/5	1	1	**0,0387**
Emissions and pollution reduction	1/5	1/7	1/9	1/7	1	1	**0,0304**

4.2.3. CALCULATION OF INDICES CHARACTERIZING GOOD PRACTICES EFFICIENCY

The results of calculation of the criteria of each Good Practice's measures efficiency $P_k, k = 1,2,...,10$ (the degree of all objectives covering by each measure with number k) using formulas (1) and (2) (see Section 2.2.) are presented in the Table 4.3.

Table 4.3. The criteria of each Good Practice's measures efficiency, $P_k, k = 1,2,...,10$

GP No	PT Legislation and regulation	PT reorganization into multimodal system	Cooperation among administrations	ITS technical standardization for interoperability	Infrastructural measures	Innovative ICT for PT	Modelling tools and measures	PT traffic management measures	PT information measures	Advanced PT ticketing
9	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,47
20	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,25
22	0,66	0,89	0,72	0,71	0,60	0,85	0,81	0,52	0,53	0,85
28	0,50	0,57	0,43	0,43	0,51	0,67	0,45	0,46	0,55	0,64
29	0,37	0,39	0,00	0,00	0,00	0,40	0,34	0,38	0,00	0,85

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

4.2.4. COMPARATIVE ANALYSIS OF GOOD PRACTICES AND CHOICE OF THE BETTER ONE FOR THE GROUP "PUBLIC TRANSPORT PAYMENT SYSTEMS".

Paired comparison matrix for groups of measures (an upper level) estimated by experts and results of priority vector calculation are shown in Table 4.4.

Table 4.4. Paired comparison matrix for groups of measures and results of priority vector calculation: GP group "Public Transport Payment Systems"

Groups of measures	Organization and legislation	Infrastructural actions	Information actions	Modelling	Priority vector (weights)
Organization and legislation	**1**	1/5	1/7	1	**0,0685**
Infrastructural actions	5	**1**	1/3	5	**0,2830**
Information actions	7	3	**1**	7	**0,5800**
Modelling	1	1/5	1/7	**1**	**0,0685**

Consistency ratio 3,77%

Paired comparison matrices estimated by experts and results of priority vectors calculation for measures of the each group of measures are presented in Tables 4.5 - 4.7.

Table 4.5. Paired comparison matrix and priority vector for measures of the group "Organization and Legislation": GP group "Public Transport Payment Systems"

Measures	PT Legislation and regulation	PT reorganization into multimodal system	Cooperation among administrations	Priority vector (weights)
PT Legislation and regulation	1	1/5	1/7	**0,0719**
PT reorganization into multimodal system	5	1	1/3	**0,2790**
Cooperation among administrations	7	3	1	**0,6491**

Table 4.6. Paired comparison matrix and priority vector for measures of the group "Infrastructural Actions": GP group "Public Transport Payment Systems"

Measures	ITS technical standardization for interoperability	Infrastructural measures	Innovative ICT for PT	Priority vector (weights)
ITS technical standardization for interoperability	1	5	3	**0,6586**
Infrastructural measures	1/5	1	1	**0,1562**
Innovative ICT for PT	1/3	1	1	**0,1852**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Table 4.7. Paired comparison matrix and priority vector for measures of the group "Information Actions": GP group "Public Transport Payment Systems"

Measures	PT traffic management measures	PT information measures	Advanced PT ticketing	Priority vector (weights)
PT traffic management measures.	1	1/7	1/9	**0,0592**
PT information measures	7	1	1	**0,4507**
Advanced PT ticketing	9	1	1	**0,4901**

The paired comparison of Good Practices with numbers i and j for the measure with number k is determined by index: $\delta_K = P_K^{(i)} - P_K^{(j)}$. The values of paired comparison criterion are determined for the scale 1-9 using the value of index δ_K according the Table 4.8.

Table 4.8. The scale for criterion of measure calculation in the paired comparison of Good Practices

Difference $\delta_K = P_K^{(i)} - P_K^{(j)}$	Value of criterion of the measure with greater coefficient of efficiency $P_K^{(i)}$	Value of criterion of the measure with smaller coefficient of efficiency $P_K^{(j)}$
$\delta_K < 0{,}1$	1	1
$0{,}1 \le \delta_K < 0{,}2$	2	1/2
$0{,}2 \le \delta_K < 0{,}3$	3	1/3
$0{,}3 \le \delta_K < 0{,}4$	4	1/4
$0{,}4 \le \delta_K < 0{,}5$	5	1/5
$0{,}5 \le \delta_K < 0{,}6$	6	1/6
$0{,}6 \le \delta_K < 0{,}7$	7	1/7
$0{,}7 \le \delta_K < 0{,}8$	8	1/8
$\delta_K \ge 0{,}8$	9	1/9

Taking into account the values of P_K presented in Table 2 and scale from Table 7 the paired comparisons of Good Practices for each measure were executed and the appropriate priority vectors were calculated (see Tables 4.9 - 4.18).

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Measures' group "Organization and Legislation"

Table 4.9. Matrix of measure "PT Legislation and Regulation" evaluations

GP No	9	20	22	28	29	Priority vector
9	1	1	1/7	1/5	1/4	**0,0533**
20	1	1	1/7	1/5	1/4	**0,0533**
22	7	7	1	2	3	**0,4464**
28	5	5	1/2	1	2	**0,2727**
29	4	4	1/3	1/2	1	**0,1743**

Table 4.10. Matrix of measure "PT Reorganization into Multimodal System" evaluations

GP No	9	20	22	28	29	Priority vector
9	1	1	1/9	1/6	1/4	**0,0429**
20	1	1	1/9	1/6	1/4	**0,0429**
22	9	9	1	4	5	**0,5516**
28	6	6	1/4	1	2	**0,2243**
29	4	4	1/5	1/2	1	**0,1382**

Table 4.11. Matrix of measure "Cooperation among Administrations" evaluations

GP No	9	20	22	28	29	Priority vector
9	1	1	1/8	1/5	1	**0,0607**
20	1	1	1/8	1/5	1	**0,0607**
22	8	8	1	3	8	**0,5504**
28	5	5	1/3	1	5	**0,2675**
29	1	1	1/8	1/5	1	**0,0607**

Measures' group "Infrastructural Actions"

Table 4.12. Matrix of measure "ITS Technical Standardization for Interoperability" evaluations

GP No	9	20	22	28	29	Priority vector
9	1	1	1/8	1/5	1	**0,0607**
20	1	1	1/8	1/5	1	**0,0607**
22	8	8	1	3	8	**0,5504**
28	5	5	1/3	1	5	**0,2675**
29	1	1	1/8	1/5	1	**0,0607**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Table 4.13. Matrix of measure "Infrastructural Measures" evaluations

GP No	9	20	22	28	29	Priority vector
9	1	1	1/7	1/6	1	**0,0626**
20	1	1	1/7	1/6	1	**0,0626**
22	7	7	1	1	7	**0,4249**
28	6	6	1	1	6	**0,3873**
29	1	1	1/7	1/6	1	**0,0626**

Table 4.14. Matrix of measure "Innovative ICT for PT" evaluations

GP No	9	20	22	28	29	Priority vector
9	1	1	1/9	1/7	1/4	**0,0421**
20	1	1	1/9	1/7	1/4	**0,0421**
22	9	9	1	2	5	**0,4860**
28	7	7	1/2	1	3	**0,3007**
29	4	4	1/5	1/3	1	**0,1290**

Measures' group "Modelling"

Table 4.15. Matrix of measure "Modelling Tools and Measures" evaluations

GP No	9	20	22	28	29	Priority vector
9	1	1	1/9	1/5	1/4	**0,0451**
20	1	1	1/9	1/5	1/4	**0,0451**
22	9	9	1	4	5	**0,5587**
28	5	5	1/4	1	2	**0,2112**
29	4	4	1/5	1/2	1	**0,1400**

Measures' group "Information actions"

Table 4.16. Matrix of measure "PT Traffic Management Measures" evaluations

GP No	9	20	22	28	29	Priority vector
9	1	1	1/6	1/5	1/4	**0,0587**
20	1	1	1/6	1/5	1/4	**0,0587**
22	6	6	1	1	2	**0,3597**
28	5	5	1	1	1	**0,2911**
29	4	4	1/2	1	1	**0,2318**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Table 4.17. Matrix of measure "PT Information Measures" evaluations

GP No	9	20	22	28	29	Priority vector
9	1	1	1/6	1/6	1	**0,0667**
20	1	1	1/6	1/6	1	**0,0667**
22	6	6	1	1	6	**0,4000**
28	6	6	1	1	6	**0,4000**
29	1	1	1/6	1/6	1	**0,0667**

Table 4.18. Matrix of measure "Advanced PT Ticketing" evaluations

GP No	9	20	22	28	29	Priority vector
9	1	3	1/4	1/2	1/4	**0,0925**
20	1/3	1	1/7	1/4	1/7	**0,0415**
22	4	7	1	3	1	**0,3604**
28	2	4	1/3	1	0,33333	**0,1451**
29	4	7	1	3	1	**0,3604**

Results of evaluations for the group of practices "Public Transport Payment Systems"

Proceeding from the received evaluations of the criteria priority vectors of two levels of the hierarchy (Tables 4.2 – 4.7, Tables 4.9 – 4.18), we calculate the final matrix of the evaluations of the global priority vector for the suggested Good Practices shown in Table 4.19 and on Figures 4.2 and 4.3.

Table 4.19. Results of evaluations for the group of practices "Public Transport Payment Systems"

	Organization and legislation	Infrastructural actions	Information actions	Modelling	Priority vector
Weights / GP No	**0,0685**	**0,2830**	**0,5800**	**0,0685**	
9	0,0552	0,0575	0,0789	0,0451	**0,0689**
20	0,0552	0,0575	0,0539	0,0451	**0,0544**
22	0,5433	0,5189	0,3782	0,5587	**0,4417**
28	0,2558	0,2924	0,2686	0,2112	**0,2706**
29	0,0905	0,0736	0,2204	0,1400	**0,1645**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

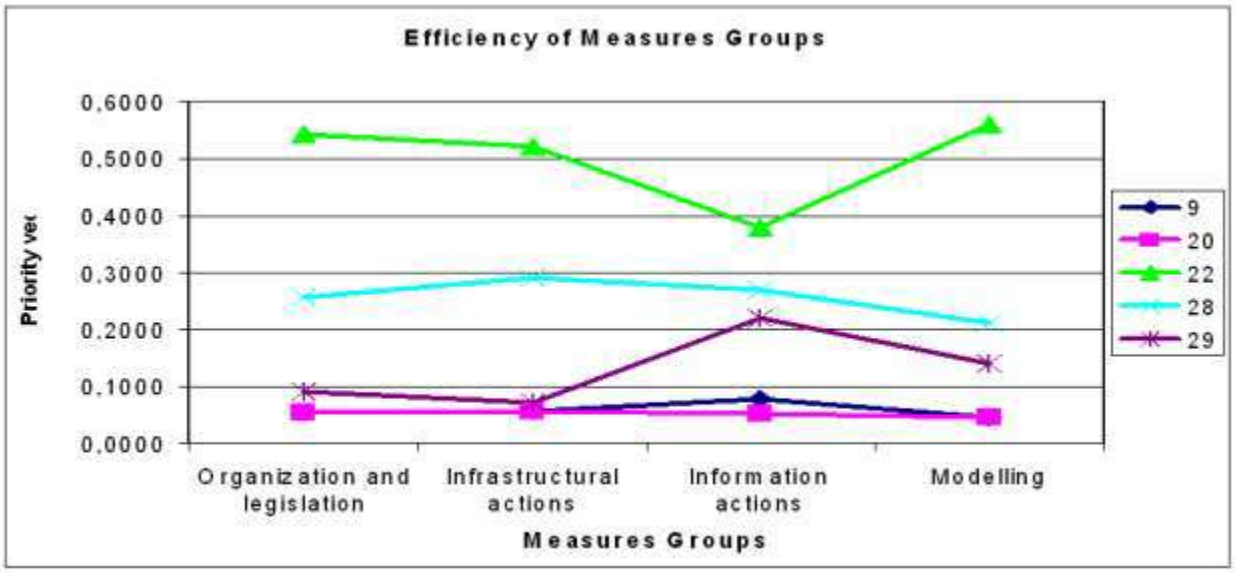


Figure 4.2. The efficiency of measures' groups of Good Practices

Figure 4.3. The efficiency of Good Practices

The results of the evaluations allow the Good Practices to be arranged in the order of their efficiency, and show their difference in the given set of criteria.
Good Practice No 22 "Integrated Public Transport System and Smart Ticketing (CDV)" has the highest value of priority 0,4417 and will be selected as the better one from considered five practices. This practice has the highest values of priorities vectors for all groups of measures. Practice No 29 takes the second place, and practice No 28 is on the third place.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

4.2. COMPARATIVE ASSESSMENT OF GOOD PRACTICES IN THE GROUP "PUBLIC TRANSPORT PRIORITY SYSTEMS" (ANNEX NR 5)

4.2.1. DESCRIPTION OF THE GROUP "PUBLIC TRANSPORT PRIORITY SYSTEMS".

The group contains four Good Practices presented in the Table 4.20.

Table 4.20. Description of Good Practice

Nr	Name of Partner	Description of Good Practice
5	CRA	**Traveller Information / Mobilitami** *Marche / Ancona and Senigallia, Italy, TS (Site visit)* Mobilitami is the Sustainable Transport Community - a virtual place for exchange information between demand and supply where innovative ways of travelling, environmentally friendly, meet – or contribute to satisfy- all kind of users requirements, reducing traffic jams and travelling time. A technological and innovative platform able to match sustainable mobility demand and supply within the regional territory.
12	RBC	**Real Time Passenger Information System, Bus Priority at Signals, Public Transport mobile apps, City Access Control. Smart Card** *Cambridgeshire County Council, UK, GP(Questioner)* Cambridge Bus way is the implementation of a 16mile/25km guided bus way 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. The scheme uses guided buses along the length of the scheme. There are a range of technologies to assist in the scheme and to make the scheme as attractive and efficient as possible. These include the following technologies, on bus CCTV, smart ticketing, real time passenger system information, traffic signal priority, passenger WIFI.
13	RBC	**Bus Lane Enforcement** *Reading Borough Council, UK, GP(Questioner)* 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, taxi's, emergency vehicles and cyclists but not private hire vehicles.
15	RBC	**Real Time Passenger Information System, Bus Priority at Signals, Disability Accessibility** *City and County of Swansea, Wales, UK, GP (Questioner)* The City and County of Swansea has introduced an urban transit bus scheme in partnership with First Group. Swansea has implemented a range of infrastructure measures that have been supported by information and bus priority measures to maximise the benefits of the schemes. 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 quantities of submeasures in each measure of Good Practices are shown in Figure 4.4. All practices are covering the measure number 6 „Innovative ICT for PT". Good Practice No 15 covers 7 measures, but practice No 9 covers only one measure. Measure No 2 "PT reorganization into multimodal system" is not covered by considered practices.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Figure 4.4. Measures in the Good Practices

4.2.2. DETERMINATION OF OBJECTIVES PRIORITIES FOR THE GROUP OF GOOD PRACTICES.

The weights of objectives for the group "Public Transport Priority Systems" estimated by experts are presented in Table 4.21.

Table 4.21. Paired comparison matrix for objectives and results of priority vector calculation for the group "Public Transport Priority Systems"

Groups of measures	Improving city attractiveness	Improving PT services	Improving PT efficiency	Increasing the PT mode share	Decrease congestion	Emissions and pollution reduction	Priority vector (weights)
Improving city attractiveness	1	1/5	1/5	1/3	1/3	3	**0,0512**
Improving PT services	5	1	1/3	5	7	9	**0,2986**
Improving PT efficiency	5	3	1	5	7	9	**0,4307**
Increasing the PT mode share	3	1/5	1/5	1	5	7	**0,1335**
Decrease congestion	3	1/7	1/7	1/5	1	3	**0,0606**
Emissions and pollution reduction	1/3	1/9	1/9	1/7	1/3	1	**0,0253**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

4.2.3. CALCULATION OF INDICES CHARACTERIZING GOOD PRACTICES EFFICIENCY

The results of calculation of the criteria of each GP measures efficiency $P_k, k = 1,2,...,10$ (the degree of objectives covering by each measure with number k) using formulas (1) and (2) (see Section 2.2) are presented in the Table 4.22.

Table 4.22. The criteria of each GP measures efficiency $P_k, k = 1,2,...,10$

GP Nr Partner	PT Legislation and regulation	PT reorganization into multimodal system	Cooperation among administrations	ITS technical standardization for interoperability	Infrastructural measures	Innovative ICT for PT	Modelling tools and measures	PT traffic management measures	PT information measures	Advanced PT ticketing
5	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00
12	0,45	0,00	0,00	0,00	0,00	0,56	0,45	0,67	0,45	0,67
13	0,54	0,00	0,69	0,77	0,00	0,46	0,00	0,46	0,00	0,00
15	0,00	0,00	0,53	0,43	0,51	0,26	0,45	0,43	0,11	0,00
5	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00

4.2.4. COMPARATIVE ANALYSIS OF GOOD PRACTICES AND CHOICE OF THE BETTER ONE FOR THE GROUP "PUBLIC TRANSPORT PRIORITY SYSTEMS".

Paired comparison matrix for groups of measures (an upper level) estimated by experts and results of priority vector calculation are sown in Table 4.23.

Table 4.23. Paired comparison matrix for groups of measures and results of priority vector calculation: GP group "Public Transport Priority Systems"

Groups of measures	Organization and legislation	Infrastructural actions	Information actions	Modelling	Priority vector (weights)
Organization and legislation	**1**	1/9	1	1/9	**0,0500**
Infrastructural actions	9	**1**	9	1	**0,4500**
Information actions	1	1/9	**1**	1/9	**0,0500**
Modelling	9	1	9	**1**	**0,4500**

Paired comparison matrices estimated by experts and results of priority vectors calculation for measures of the each group are presented in Tables 4.24 – 4.27.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Table 4.24. Paired comparison matrix and priority vector for measures of the group "Organization and Legislation": GP group "Public Transport Priority Systems"

Measures	PT Legislation and regulation	PT reorganization into multimodal system	Cooperation among administrations	Priority vector (weights)
PT Legislation and regulation	1	1/3	3	**0,2808**
PT reorganization into multimodal system	3	1	3	**0,5842**
Cooperation among administrations	1/3	1/3	1	**0,1350**

Table 4.25. Paired comparison matrix and priority vector for measures of the group "Infrastructural actions": GP group "Public Transport Priority Systems"

Measures	ITS technical standardization for interoperability	Infrastructural measures	Innovative ICT for PT	Priority vector (weights)
ITS technical standardization for interoperability	1	1/3	1/5	**0,1047**
Infrastructural measures	3	1	1/3	**0,2583**
Innovative ICT for PT	5	3	1	**0,6370**

Table 4.26. Paired comparison matrix and priority vector for measures of the group "Information actions": GP group "Public Transport Priority Systems"

Measures	PT traffic management measures.	PT information measures	Advanced PT ticketing	Priority vector (weights)
PT traffic management measures.	1	9	9	**0,8182**
PT information measures	1/9	1	1	**0,0909**
Advanced PT ticketing	1/9	1	1	**0,0909**

Taking into account the values of P_K presented in Table 4.21 and scale from Table 4.8 the paired comparisons of GP for each measure were executed and the appropriate priority vectors were calculated (see Annex 5).
Proceeding from the received evaluations of the criteria priority vectors of two levels of the hierarchy (see Table 4.21 – 4.26, and Table A5.1 – A5.10 in Annex 5), we calculate the final matrix of the evaluations of the global priority vector for the suggested GP shown in Table 4.27 and on Figures 4.5 and 4.6.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Table 4.27. Results of evaluations for the group of practices "Public Transport Priority Systems"

	Organization and legislation	Infrastructural actions	Information actions	Modelling	Priority vector
Weights / GP No	**0,0500**	**0,4500**	**0,0500**	**0,4500**	
5	0,1760	0,4471	0,0627	0,0833	**0,2506**
12	0,2677	0,1529	0,5485	0,4167	**0,2971**
13	0,3436	0,1684	0,1941	0,0833	**0,1402**
15	0,2127	0,2316	0,1947	0,4167	**0,3121**

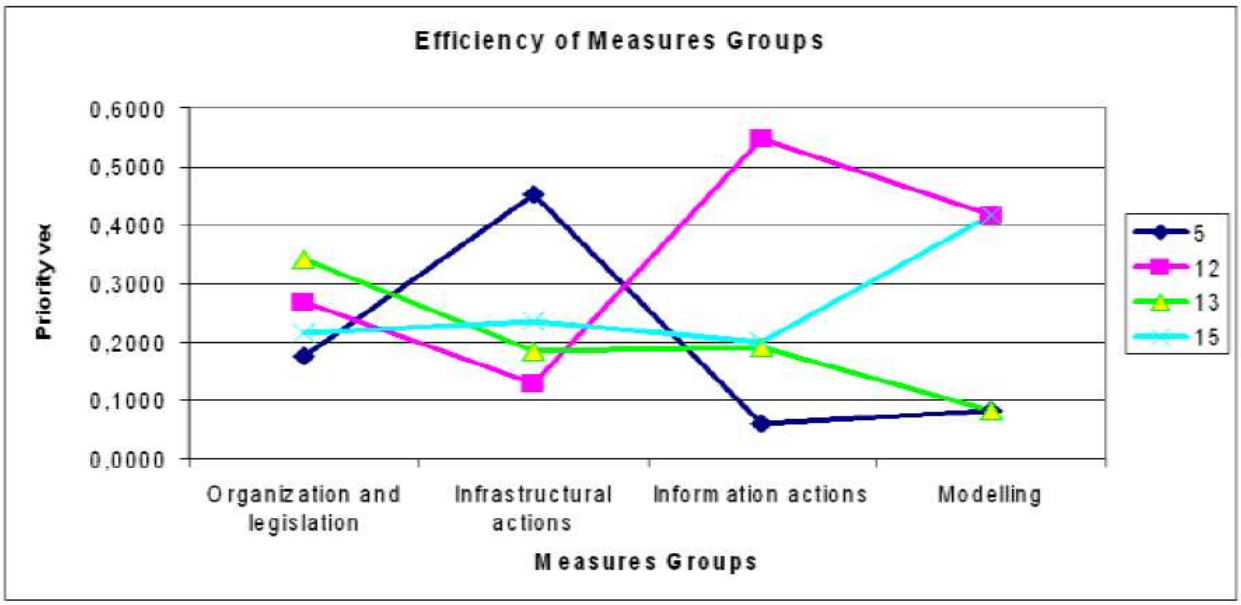


Figure 4.5. The efficiency of measures' groups of GP

The results of the evaluations allow the Good Practices to be arranged in the order of their efficiency, and show their difference in the given set of criteria.
Good Practice No 15 "Real Time Passenger Information System, Bus Priority at Signals, Disability Accessibility (RBC)" has the highest value of priority 0,3121 and will be selected as the better one from considered four practices.
Practice No 12 has good assessment results 0,2971 too; it is greater than the nearest GP competitors for the criteria "Information actions" by 0,3538, and takes the first place together with GP No 15 in the group "Modelling".
GP No 5 is on the third place, but it is the winner in the group of criteria "Infrastructural action" with high result 0,4471.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

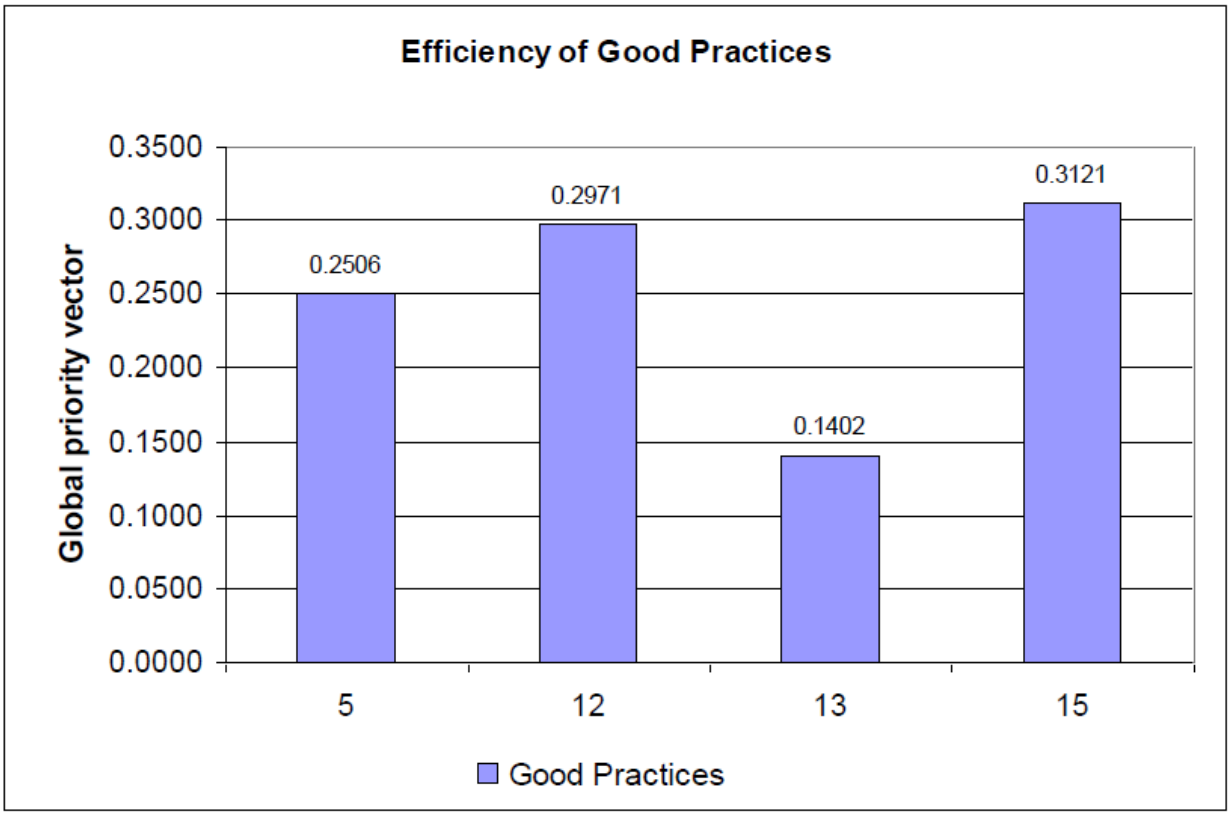


Figure 4.6. The efficiency of Good Practices

4.3. COMPARATIVE ASSESSMENT OF GOOD PRACTICES IN THE GROUP "PUBLIC TRANSPORT INTERCHANGES" (ANNEX NR 6)

4.3.1. DESCRIPTION OF THE GROUP "PUBLIC TRANSPORT INTERCHANGES".

The group contains six Good Practices presented in the Table 4.28.

Table 4.28. Description of Good Practice

No	Name of Partner	Description of Good Practice
1	CRA	**Traffic monitoring and management : Floating Car Data (FCD) as traffic sensors. Result of S.I.MO.NE Project** *Piemonte / Torino, Italy, TS (Questioner)* The use of FCD as sensors in monitoring traffic in real time required the study and development of: • A new scalable architecture able to link several fcd providers with local mobility control centre; • New protocol able to deal with all data related the mobility management; • New functions able to aggregate and normalize different FCD format coming from different providers; • New algorithms to integrate FCD data in already available traffic models; • New functions to publish data coming from local mobility control centre.
2	CRA	**Stimer/Mi Muovo Project - Mobility Integrated Fare System in RER (Emilia-Romagna Region) buses, trains and bike sharing** *Emilia Romagna Region (RER), Italy, TS (Site Visit)*

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

		Stimer is the mobility integrated fare system based on an integrated ticket for local and regional public transport and on the RER fare zoning and a innovative technological management system. The fare integration is made possible through the chip card “MI MUOVO (I Move)”.
3	CRA	**Multi-channel Information system on mobility at regional scale** *Campania, Italy, TS (Questioner)* The Service Centre "Moving" acquires, processes and distributes information about the entire mobility system of the Campania Region. The particular characteristics of the service are: completeness of the information related to the entire regional system of mobility, and the "intercanalità", namely the dissemination of all media from the data and information received and processed by the center.
23	CDV	**Public Transport dispatching under KORDIS integrator/organizer: CED** *Brno and South Moravian Region, Czech Republic, TS (Site Visit)* CED dispatching centre is a part of the regional integrated multimodal PT system. The main CED aim is to ensure operational issues, to transfer information on real time transportation status towards information centres, to ensure transportation organizing during traffic closures etc.
25	CDV	**Multimodal Integrated Transport** *Prague, Czech Republic, TS (Questioner)* Prague Integrated Transport, PIT (Pražská integrovaná doprava - PID), is a modern integrated mass transport system established according to a European Union recommendation as a communal transport federation. It is developing gradually on the territory of the capital city of Prague and on the territory of Central Bohemia with vital transport relationships to the capital city. Integrated transport has been established with the goal of ensuring high-quality transport services to the territory 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.
27	LaTDEA	**Interchange Príncipe Pío** *Madrid, Spain, TS (Questioner)* Príncipe Pío is one of the most important interchanges in Madrid, as it offers connections between all forms of public transport: metro, suburban railways and city and suburban buses. The operations carried out in 1995 brought Metro Lines 6 and 10 inside the historic station building, thus significantly improving connections with the commuter rail network and the Metro branch line running to Ópera. 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, and has also made significant improvements in the day-to-day lives of over 60,000 travelers who use suburban buses and the Metro every day.

The quantities of submeasures in each measure of Good Practices are shown on Figure 4.7. All practices are covering the measure No 2 „PT Reorganization into Multimodal System”. Practices No 1, No 23 and No 25 cover all measures.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

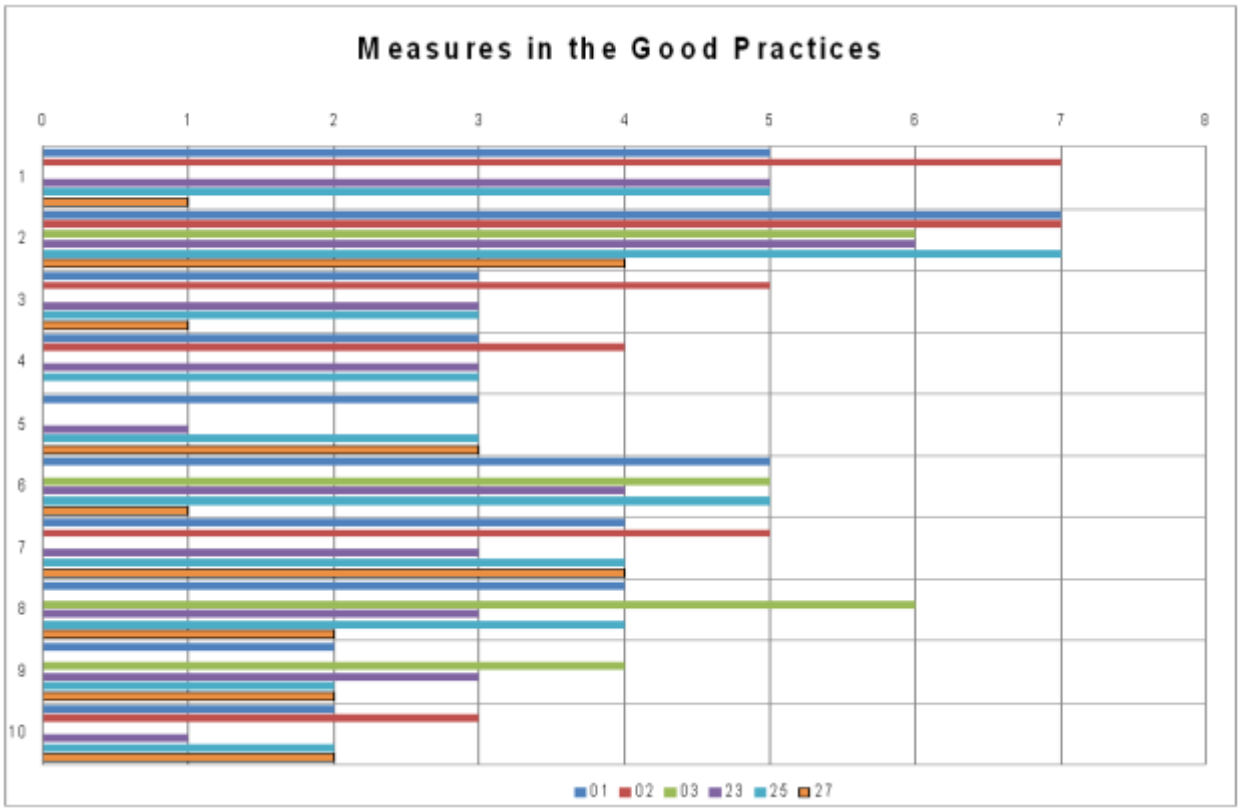


Figure 4.7. Measures in the Good Practices

4.3.2. DETERMINATION OF OBJECTIVES PRIORITIES FOR THE GROUP OF GOOD PRACTICES.

The weights of objectives for the group "Public Transport Interchanges" estimated by experts are presented in Table 4.29.

Table 4.29. Paired comparison matrix for objectives and results of priority vector calculation for the group "Public Transport Interchanges"

Groups of measures	Improving city attractiveness	Improving PT services	Improving PT efficiency	Increasing the PT mode share	Decrease congestion	Emissions and pollution reduction	Priority vector (weights)
Improving city attractiveness	1	1/3	1/3	1/3	7	9	**0,1256**
Improving PT services	3	1	3	1/3	7	9	**0,2613**
Improving PT efficiency	3	1/3	1	1/3	7	9	**0,1812**
Increasing the PT mode share	3	3	3	1	7	9	**0,3769**
Decrease congestion	1/7	1/7	1/7	1/7	1	1	**0,0298**
Emissions and pollution reduction	1/9	1/9	1/9	1/9	1	1	**0,0252**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

4.3.3. CALCULATION OF INDICES CHARACTERIZING GOOD PRACTICES EFFICIENCY

The results of calculation of the criteria of each GP measures efficiency $P_k, k = 1,2,...,10$ (the degree of objectives covering by each measure with number k) using formulas (1) and (2) (see Section 2.2) are presented in the Table 4.30.

Table 4.30. The criteria of each GP measures efficiency $P_k, k = 1,2,...,10$

GP No	PT Legislation and regulation	PT reorganization into multimodal system	Cooperation among administrations	ITS technical standardization for interoperability	Infrastructural measures	Innovative ICT for PT	Modelling tools and measures	PT traffic management measures	PT information measures	Advanced PT ticketing
1	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00
2	0,78	0,85	0,88	0,44	0,00	0,00	0,39	0,00	0,00	0,82
3	0,00	0,37	0,00	0,00	0,00	0,41	0,00	0,37	0,36	0,00
23	0,65	0,65	0,33	0,15	0,13	0,39	0,33	0,29	0,39	0,22
25	0,59	0,85	0,71	0,68	0,59	0,82	0,77	0,36	0,51	0,61
27	0,22	0,65	0,13	0,00	0,49	0,44	0,67	0,51	0,55	0,20

4.3.4. COMPARATIVE ANALYSIS OF GOOD PRACTICES AND CHOICE OF THE BETTER ONE FOR THE GROUP "PUBLIC TRANSPORT INTERCHANGES".

Paired comparison matrix for groups of measures (an upper level) estimated by experts and results of priority vector calculation are shown in Table 4.31.

Table 4.31. Paired comparison matrix for groups of measures and results of priority vector calculation: GP group "Public Transport Interchanges"

Groups of measures	Organization and legislation	Infrastructural actions	Information actions	Modelling	Priority vector (weights)
Organization and legislation	**1**	1/3	1/9	1/7	**0,0417**
Infrastructural actions	3	**1**	1/5	1/3	**0,1034**
Information actions	9	5	**1**	7	**0,6514**
Modelling	7	3	1/7	**1**	**0,2035**

Paired comparison matrices estimated by experts and results of priority vectors calculation for measures of the each group are presented in Tables 4.32 – 4.35.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Table 4.32. Paired comparison matrix and priority vector for measures of the group "Organization and legislation": GP group "Public Transport Interchanges"

Measures	PT Legislation and regulation	PT reorganization into multimodal system	Cooperation among administrations	Priority vector (weights)
PT Legislation and regulation	1	1/7	1	**0,1111**
PT reorganization into multimodal system	7	1	7	**0,7778**
Cooperation among administrations	1	1/7	1	**0,1111**

Table 4.33. Paired comparison matrix and priority vector for measures of the group "Infrastructural Actions":GP group "Public Transport Interchanges"

Measures	ITS technical standardization for interoperability	Infrastructural measures	Innovative ICT for PT	Priority vector (weights)
ITS technical standardization for interoperability	1	5	3	**0,6370**
Infrastructural measures	1/5	1	1/3	**0,1047**
Innovative ICT for PT	1/3	3	1	**0,2583**

Table 4.34. Paired comparison matrix and priority vector for measures of the group "Information Actions": GP group "Public Transport Interchanges"

Measures	PT traffic management measures.	PT information measures	Advanced PT ticketing	Priority vector (weights)
PT traffic management measures.	1	1/5	1/7	**0,0719**
PT information measures	5	1	1/3	**0,2790**
Advanced PT ticketing	7	3	1	**0,6491**

Taking into account the values of P_K presented in Table 4.30 and the scale from Table 4.8 the paired comparisons of GP for each measure were executed and the appropriate priority vectors were calculated (see Annex 6).

Proceeding from the received evaluations of the criteria priority vectors of two levels of the hierarchy (see Tables 4.29 – 4.34, and Tables A6.1 – A6.10 in Annex 6), we calculate the final matrix of the evaluations of the global priority vector for the suggested GP shown in Table 4.35 and on Figures 4.8 and 4.9.

Table 4.35. Results of evaluations for GP of the group "Public Transport Interchanges"

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

	Organization and legislation	Infrastructural actions	Information actions	Modelling	Priority vector
Weights / GP No	**0,0417**	**0,1034**	**0,6514**	**0,2035**	
1	0,0266	0,1562	0,0413	0,0364	**0,0516**
2	0,3317	0,1729	0,3320	0,1186	**0,2721**
3	0,0559	0,0622	0,0838	0,0364	**0,0708**
23	0,1644	0,0927	0,1141	0,1089	**0,1129**
25	0,2987	0,4241	0,2734	0,3725	**0,3102**
27	0,1227	0,0918	0,1554	0,3272	**0,1824**

The results of the evaluations allow the Good Practices to be arranged in the order of their efficiency, and show their difference in the given set of criteria.
Good Practice No 25 “Multimodal Integrated Transport (CDV)” has the highest value of priority 0,3102 and will be selected as the better one from considered six practices.
Practice No 2 has high assessment result 0,2721 too. This practice has the highest values of priorities vectors for two groups of measures: “Organization and legislation“ and “Information actions”.

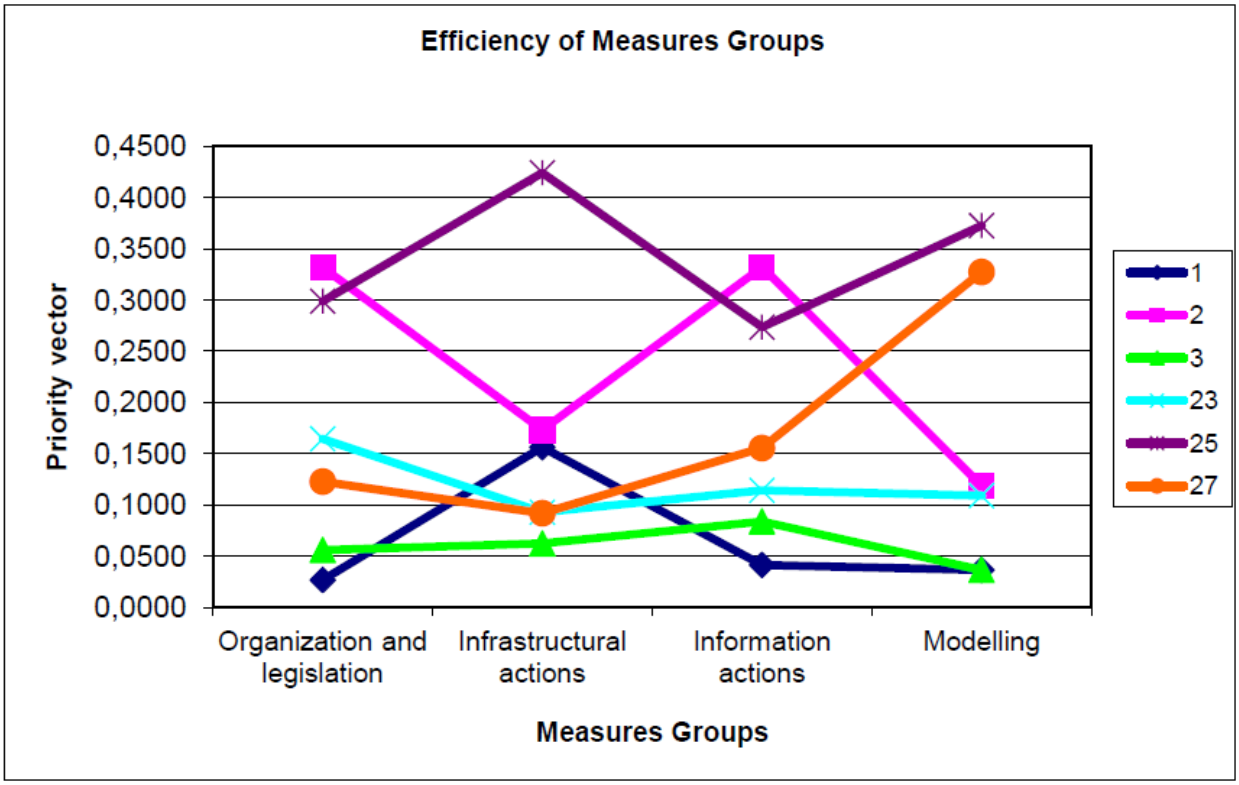


Figure 4.8. The efficiency of measures’ groups of Good Practices

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

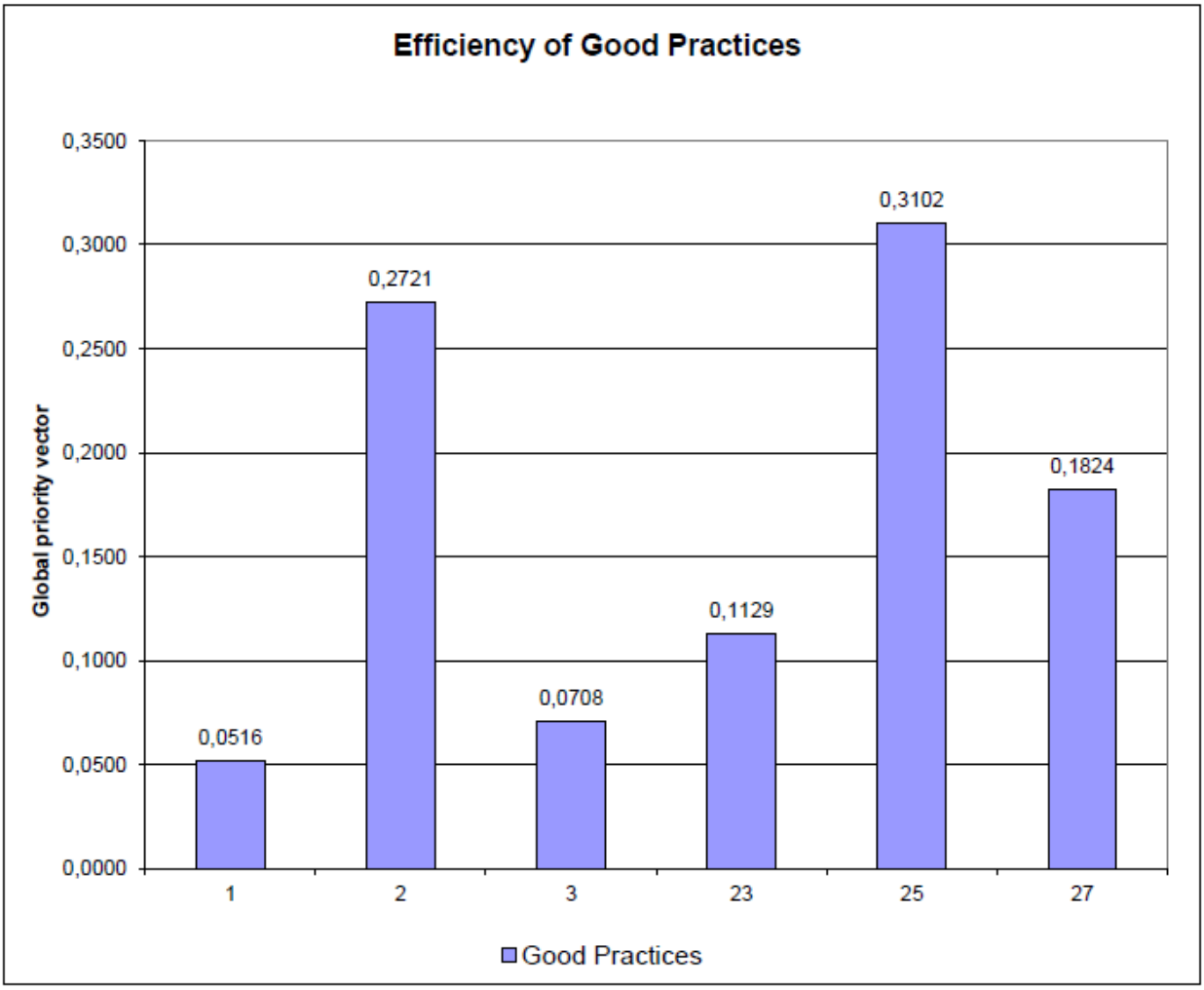


Figure 4.9. The efficiency of Good Practices

4.4. COMPARATIVE ASSESSMENT OF GOOD PRACTICES IN THE GROUP "PUBLIC TRANSPORT FLEET MANAGEMENT SYSTEMS" (ANNEX NR 7)

4.4.1. DESCRIPTION OF THE GROUP "PUBLIC TRANSPORT FLEET MANAGEMENT SYSTEMS".

The group contains six Good Practices presented in the Table 4.36.

Table 4.36. Description of Good Practice

No	Name of Partner	Description of Good Practice
4	CRA	**Sustainable Mobility Plan (SMP) in Santander** *Santander, Spain, TS (Questioner)* In this questionnaire we describe the general guidelines about our Mobility plan in Santander City. This plan has been developed during the last five years and tackles several aspects related to the public transport improvement. In some cases the adopted measures involve new technologies but in other cases they are political decisions or good practices in the management process.
6	PoF	**Traffic Management** *Verona, Italy, GP (Site Visit)* The Municipality of Verona aims and strategies on mobility management are focused on:

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

		• reducing pollutant emissions, • optimizing travel time of public and private transports, • improving the quality of PT services through the reduction of management costs, • improving the commercial bus speed. Commercial bus speed is a key factor in the operation of public transport systems as it represents a direct measure of the quality of service provided to users • diffusion of traffic information through web (newsletter and social network), • promotion of alternative mobility (bike-sharing). The approach of Verona Municipality keeps in consideration the ICT approach as a main point.
8	PoF	**Traffic Management during big events** *Perugia, Italy, GP (Questioner)* City of Perugia has been working on mobility issues since 70s years taking in consideration its particular historical and touristic vocation. They created a suburban parking system with connections to the city centre. During last years the connection between parking areas and the city centre was implemented thanks the Minimetrò system.
10	PoF	**Mobility and traffic management in firms** *Valjevo, Serbia, GP (- - -)* During the rush hour, streets in the city centre are overcrowded. It is also difficult to find a parking spot for a private vehicle. The city is expanding in several directions, and commuting to and from work is beginning to become a big problem for workers. Many companies, public and private, have undertaken initiatives to solve this problem. A team of experts analyzed 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.
19	ILIM	**Demand responsive transport** *Krakow, Poland, TS (Questioner)* In order to better customize PT offer to citizens' needs the city of Krakow has introduced and tested a new demand responsive transport service in a chosen area of three districts. The DRT service in Krakow is the first flexible PT service on the national scale. The implementation of the service was based on the technology and know-how transfer.
26	LaTDEA	**Unified intermodal cargo service** *Rigas region, Latvia, TS (Questioner)* The service is offered to carriers only. Component parts of APOVS are the following: upkeep of container and wagon data base according 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.

The quantities of submeasures in each measure of Good Practices are shown on Figure 4.10. All practices are covering the measure No 2 „PT Reorganization into Multimodal System". Practice No 4 covers 9 measures, but practices No 8 and No 10 cover only two measures.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Figure 4.10. Measures in the Good Practices

4.4.2. DETERMINATION OF OBJECTIVES PRIORITIES FOR THE GROUP OF GOOD PRACTICES.

The weights of objectives for the group “Public Transport Fleet Management Systems” estimated by experts are presented in Table 4.37.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Table 4.37. Paired comparison matrix for objectives and results of priority vector calculation for the group "Public Transport Fleet Management Systems"

Groups of measures	Improving city attractiveness	Improving PT services	Improving PT efficiency	Increasing the PT mode share	Decrease congestion	Emissions and pollution reduction	Priority vector (weights)
Improving city attractiveness	1	1/7	1/9	1/3	1	1	**0,0406**
Improving PT services	7	1	1/5	5	7	7	**0,2573**
Improving PT efficiency	9	5	1	7	9	9	**0,5277**
Increasing the PT mode share	3	1/5	1/7	1	3	3	**0,0931**
Decrease congestion	1	1/7	1/9	1/3	1	1	**0,0406**
Emissions and pollution reduction	1	1/7	1/9	1/3	1	1	**0,0406**

4.4.3. CALCULATION OF INDICES CHARACTERIZING GOOD PRACTICES EFFICIENCY

The results of calculation of the criteria of each GP measures efficiency $P_k, k = 1,2,...,10$ (the degree of objectives covering by each measure with number k) using formulas (1) and (2) (see Section 2.2) are presented in the Table 4.38.

Table 4.38. The criteria of each GP measures efficiency $P_k, k = 1,2,...,10$

GP No	PT Legislation and regulation	PT reorganization into multimodal system	Cooperation among administrations	ITS technical standardization for interoperability	Infrastructural measures	Innovative ICT for PT	Modelling tools and measures	PT traffic management measures	PT information measures	Advanced PT ticketing
4	0,89	0,98	0,90	0,00	1,00	1,00	0,96	1,00	0,99	0,92
6	0,52	0,46	0,00	0,08	0,67	0,03	0,00	0,07	0,47	0,00
8	0,00	0,58	0,00	0,00	0,60	0,00	0,00	0,00	0,00	0,00
10	0,00	0,55	0,00	0,00	0,00	0,00	0,00	0,48	0,00	0,00
19	0,00	0,58	0,39	0,00	0,00	0,49	0,13	0,39	0,26	0,00
26	0,46	0,56	0,41	0,00	0,00	0,49	0,41	0,43	0,39	0,00

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

4.4.4. COMPARATIVE ANALYSIS OF GOOD PRACTICES AND CHOICE OF THE BETTER ONE FOR THE GROUP "PUBLIC TRANSPORT FLEET MANAGEMENT SYSTEMS".

Paired comparison matrix for groups of measures (an upper level) estimated by experts and results of priority vector calculation are shown in Table 4.39.

Table 4.39. Paired comparison matrix for groups of measures and results of priority vector calculation: GP group "Public Transport Fleet Management Systems"

Groups of measures	Organization and legislation	Infrastructural actions	Information actions	Modelling	Priority vector (weights)
Organization and legislation	**1**	1/9	1	1/7	**0,0550**
Infrastructural actions	9	**1**	7	3	**0,5748**
Information actions	1	1/7	**1**	1/7	**0,0586**
Modelling	7	1/3	7	**1**	**0,3116**

Paired comparison matrices estimated by experts and results of priority vectors calculation for measures of the each group are presented in Tables 4.40 – 4.43.

Table 4.40. Paired comparison matrix and priority vector for measures of the group "Organization and legislation": GP group "Public Transport Fleet Management Systems"

Measures	PT Legislation and regulation	PT reorganization into multimodal system	Cooperation among administrations	Priority vector (weights)
PT Legislation and regulation	1	1	1/7	**0,1111**
PT reorganization into multimodal system	1	1	1/7	**0,1111**
Cooperation among administrations	7	7	1	**0,7778**

Table 4.41. Paired comparison matrix and priority vector for measures of the group "Infrastructural Actions":GP group "Public Transport Fleet Management Systems"

Measures	ITS technical standardization for interoperability	Infrastructural measures	Innovative ICT for PT	Priority vector (weights)
ITS technical standardization for interoperability	1	1	1	**0,3333**
Infrastructural measures	1	1	1	**0,3333**
Innovative ICT for PT	1	1	1	**0,3333**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Table 4.42. Paired comparison matrix and priority vector for measures of the group "Information Actions": GP group "Public Transport Fleet Management Systems"

Measures	PT traffic management measures.	PT information measures	Advanced PT ticketing	Priority vector (weights)
PT traffic management measures.	1	3	7	**0,6330**
PT information measures	1/3	1	7	**0,3043**
Advanced PT ticketing	1/7	1/7	1	**0,0627**

Taking into account the values of P_K presented in Table 4.38 and the scale from Table 4.8 the paired comparisons of practices for each measure were executed, and the appropriate priority vectors were calculated (see Annex 7).

Proceeding from the received evaluations of the criteria priority vectors of two levels of the hierarchy (see Tables 4.37 – 4.42, and Tables A7.1 – A7.10 in Annex 7), we calculate the final matrix of the evaluations of the global priority vector for the suggested GP shown in Table 4.43 and on Figures 4.11 and 4.12.

Table 4.43. Results of evaluations for GP of the group "Public Transport Fleet Management Systems"

	Organization and legislation	Infrastructural actions	Information actions	Modelling	Priority vector
Weights / GP No	**0,0550**	**0,5748**	**0,0586**	**0,3116**	
4	0,5331	0,3975	0,5589	0,5799	**0,4713**
6	0,0633	0,1396	0,0742	0,0470	**0,1027**
8	0,0509	0,1344	0,0368	0,0470	**0,0968**
10	0,0491	0,0816	0,0997	0,0470	**0,0701**
19	0,1353	0,1234	0,1044	0,0812	**0,1098**
26	0,1683	0,1234	0,1259	0,1981	**0,1493**

The results of the evaluations allow the Good Practices to be arranged in the order of their efficiency, and show their difference in the given set of criteria.

Good Practice No 4 "Sustainable Mobility Plan (SMP) in Santander (CRA)" has the highest value of priority 0,4713 and will be selected as the better one from considered six practices.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

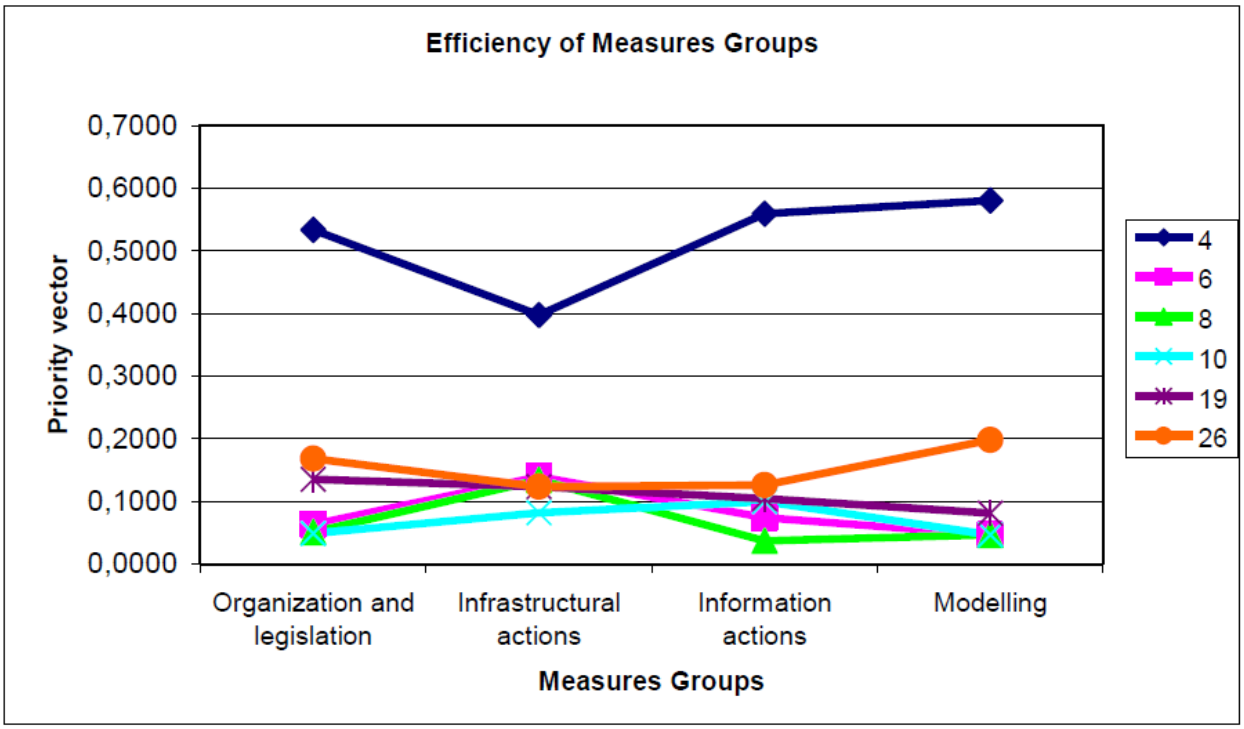


Figure 4.11. The efficiency of measures' groups of Good Practices

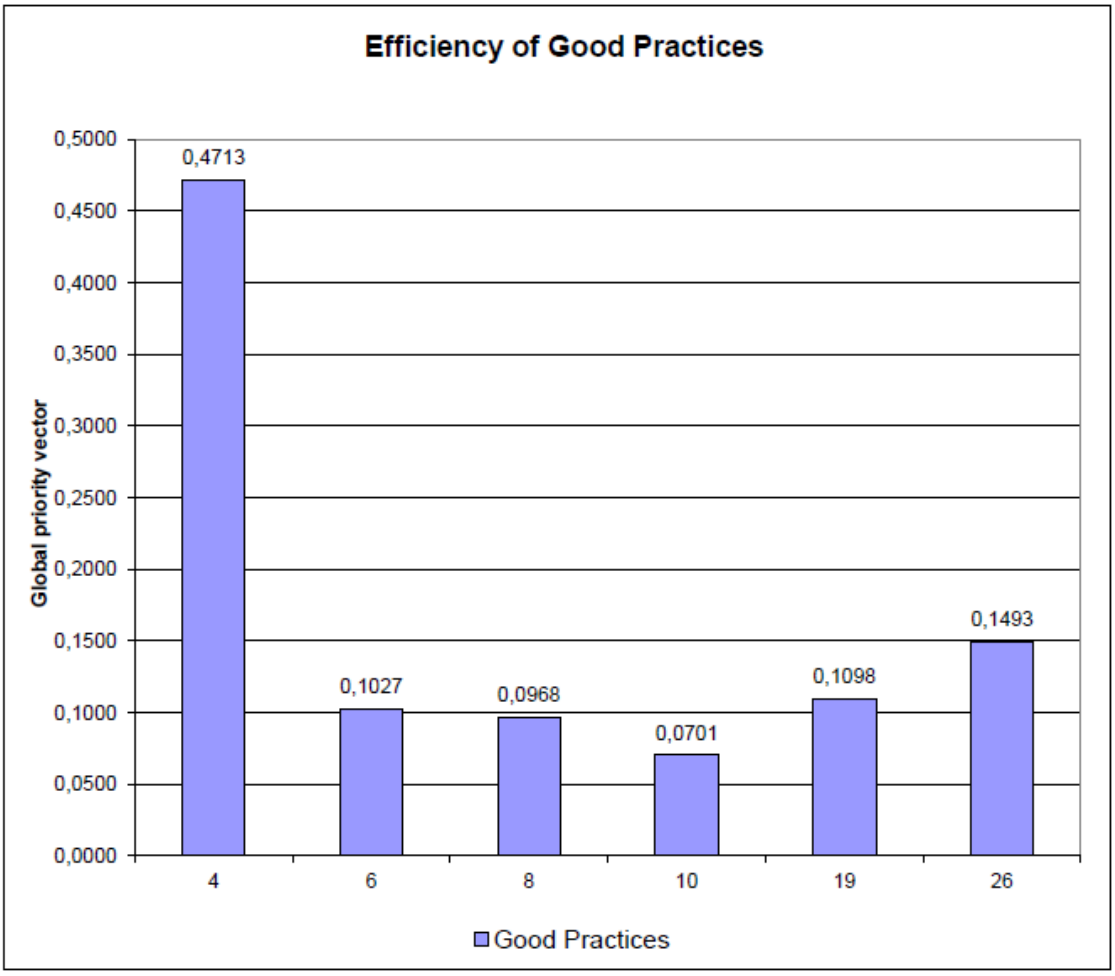


Figure 4.12. The efficiency of Good Practices

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

4.5. COMPARATIVE ASSESSMENT OF GOOD PRACTICES IN THE GROUP "PUBLIC TRANSPORT AND / OR MULTIMODAL INFORMATION SYSTEMS" (ANNEX NR 8)

4.5.1. DESCRIPTION OF THE GROUP "PUBLIC TRANSPORT AND / OR MULTIMODAL INFORMATION SYSTEMS".

The group contains eleven Good Practices presented in the Table 4.44.

Table 4.44. Description of Good Practice

No	Name of Partner	Description of Good Practice
7	PoF	**Intermodal infomobility platform and SMS ticketing** *Genova / Liguria, Italy, GP (Questioner)* In Genova it is possible to appreciate a lot of measures relate to the mobility. • Clean high-mobility corridors • Integrated mobility strategy for trade fairs • Establishing the Mobility Forum • Agency for on-demand transport and other mobility services • Integrated mobility initiatives for the San Martino Hospital • Enlarging the goods distribution scheme • Integrated access control and road charging scheme • Transition towards a clean vehicle fleet • Sustainable mobility marketing and eco-points • Creating an intermodal info-mobility platform • Decision support for environmental impact assessment of traffic planning • Introducing a bus lane control system • Expanding the car-sharing service • Monitoring centre for road safety and accident prevention In Genova, the Mobility Agency promotes SMS ticketing system that together with the intermodal infomobility platform are the two interesting measures for that city.
11	RBC	**Open Public Transport Data** *Transport for London (TfL), UK, GP (Site Visit)* TfL have opened up their public transport data sources to the public. This has enabled 3rd party mobile application developers to use the data to provide a variety of real time traveller information apps (iphone, android, blackberry, mobile windows) for the bus, rail and underground services in London.
14	RBC	**Real Time Information System & Bus Priority at Signals** *Greater Bristol, UK, GP (Questioner)* 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.
16	ILIM	**Mobile travel information** *Aalborg, Danmark, TS (Site Visit)* Although significant emphasis is put on securing quality of public transport in Aalborg, delays do still occur, and sometimes passengers report feeling

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

		uncertain if the bus is delayed, or if they themselves have arrived too late at the bus stop. Uncertainty about planned and actual departure times and the location of bus stops are some of the barriers that discourage potential passengers from using public transport. The availability of Real Time Passenger Information prior to getting on a bus and on board information (via screens, ARCHIMEDES measure 69) is expected to lower these barriers and give the traveller "peace of mind". At the same time the systems contribute to improving the image of public transport as a modern means of transport and thereby helping public transport to appear as an attractive alternative to car use. In this measure, a mobile portal for public transport has been developed, including a set of Location Based Services (LBS) for mobile phones (based on the mobile phone' GPS).
17	ILIM	**On-board bus travel information** *Aalborg, Danmark, TS (Site Visit)* 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 on delays and connections, and access to the same kind on information prior to entering the bus (via mobile phones ARCHIMEDES measure 68) is expected to lower these barriers and give the traveller "peace of mind".
18	ILIM	**Real Time Passenger Information System** *Bern, Switzerland, TS (Questioner)* Bern is the city where more than one operators are in a service of passengers . Bernmobil is city operator, conducting the transport mainly by trams, but some lines, like connection with airport, use buses. Postbus Bern is operator, covering its lines bigger part of Swizerland, where Bern is one of the transfer centres. Postbus offers the service for commuters living in suburban areas or passenger travelling on longer distances. RBS is the local and city trains and operator, managing, among the others, the lines of Bern S-bahn. MOOLINER is the option for night transport in Bern and towns around. Consolidation of information from 4 different operators was aim of the Glue Software Engineering AG, which have taken on the task of joint information system for local commuters preparation. This way MEZI (Mobile real-time information system) was created and four different companies, supplying transport services to commuters, have been connected with one real time passenger information system.
21	CDV	**Multimodal Journey planner for the Czech Republic** *Czech Republic and Slovakia, TS (Questioner)* Europe's best multimodal planner 2012 in the EU's First Smart Mobility Challenge competition, awarded by ERTICO (for Internet links see Bibliography). 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.
24	CDV	**Real Time Passenger Information System** *Prague, Czech Republic, TS (Questioner)* The main goal was to enhance quality of provided information and ensure availability of the information for the blind and visually handicapped while

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

		using the public transport. The programme followed the first attempts for development of information systems on the stops and already well-established standard of installations of receivers for the blind and visually handicapped in PIT vehicles and also development of information kiosks.
30	LaTDEA	**Interactive passenger service in train traffic** *Rigas region, Latvia, TS (Site Visit)* Interactive complex solutions services for railway passengers are implemented on the base of infrastructure and IT solutions. Services are intended for multi-purpose auditorium and consider the basic requests of passengers in Latvia. To satisfy the needs of passengers the interactive information systems have been created. These systems allow passengers to manage and plan the trip, needed resources, and to determine the level of comfort in their travels. Using interactive IS, passengers can in real time determine the schedule of the train and find the main indexes of the route, such as duration and distance of the route, tickets prices, discounts, etc. For the convenience of purchasing tickets the multi-alternative solutions are offered, among them: buying tickets via Internet and mobile phone (SMS). To increase the level of comfort and security the additional important functions are offered, such as seats reservation in the wagons, usage of wireless Internet, carriage the bulky luggage (such as bicycles), as well as usage of special equipment for passengers with special needs.
31	RBC	**Premier Route Bus Corridor Network** *Reading Borough Council, UK, GP (Questioner)* Significant upgrade to 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, 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 addition bus shelters and accessible kerbing to complement the low floor buses.
32	PoF	**G.I.M. Project** *Emilia Romagna Region / Ferrara, Italy, GP (Questioner)* 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.

The quantities of submeasures in each measure of Good Practices are shown on Figure 4.13. All practices are covering the measure No 9 „PT information measures". GP No 30 covers all 10 measures, and GP No 14 covers 9 measures.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

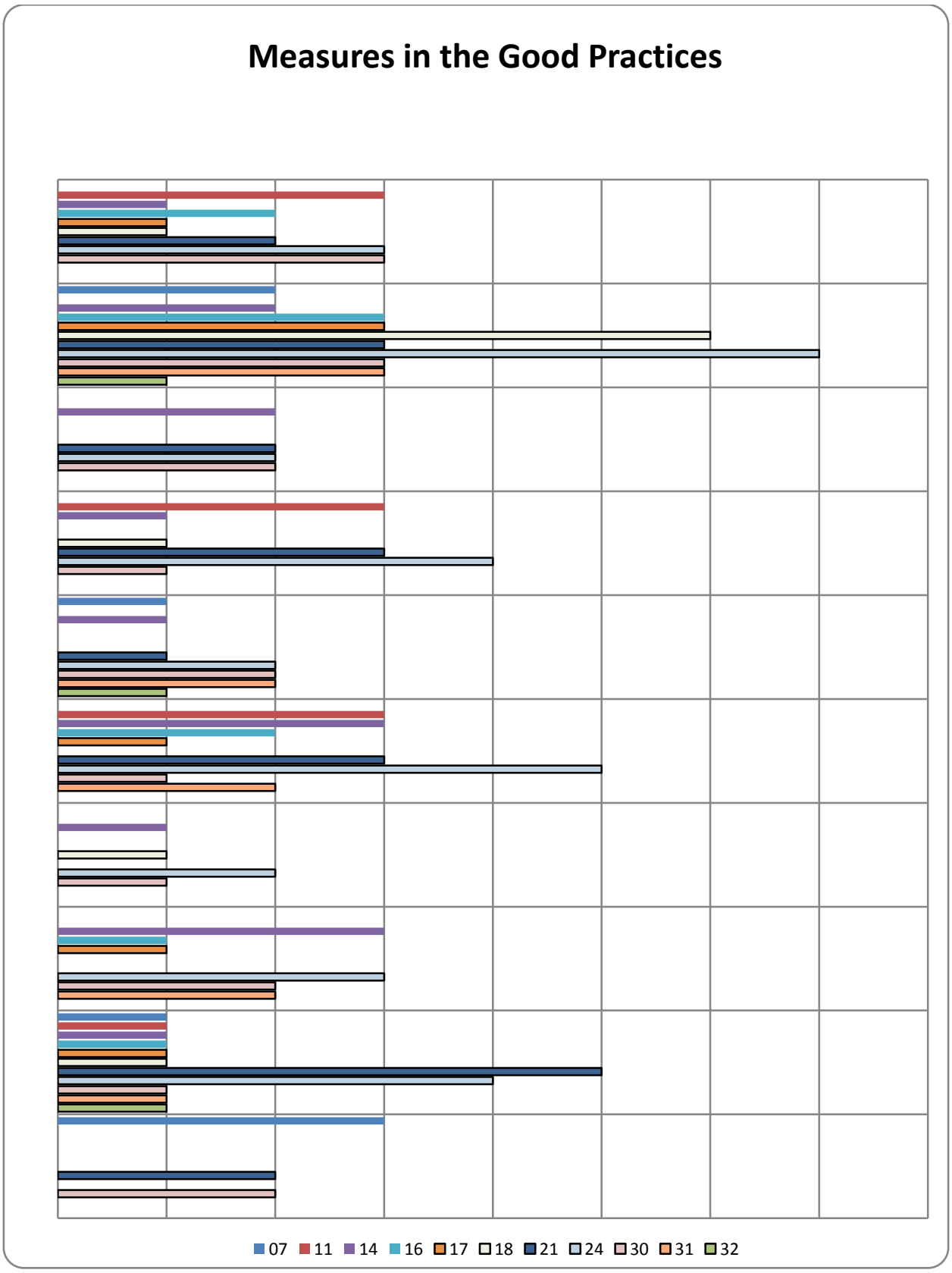


Figure 4.13. Measures in the Good Practices

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

4.5.2. DETERMINATION OF OBJECTIVES PRIORITIES FOR THE GROUP OF GOOD PRACTICES.

The weights of objectives for the group "Public Transport and / or Multimodal Information Systems" estimated by experts are presented in Table 4.45.

Table 4.45. Paired comparison matrix for objectives and results of priority vector calculation for the group "Public Transport and / or Multimodal Information Systems"

Groups of measures	Improving city attractiveness	Improving PT services	Improving PT efficiency	Increasing the PT mode share	Decrease congestion	Emissions and pollution reduction	Priority vector (weights)
Improving city attractiveness	1	1/7	1/9	1	5	3	**0,0766**
Improving PT services	7	1	1/5	5	7	9	**0,2686**
Improving PT efficiency	9	5	1	7	7	9	**0,5065**
Increasing the PT mode share	1	1/5	1/7	1	3	5	**0,0845**
Decrease congestion	1/5	1/7	1/7	1/3	1	3	**0,0389**
Emissions and pollution reduction	1/3	1/9	1/9	1/5	1/3	1	**0,0248**

4.5.3. CALCULATION OF INDICES CHARACTERIZING GOOD PRACTICES EFFICIENCY

The results of calculation of the criteria of each GP measures efficiency $P_k, k = 1,2,...,10$ (the degree of objectives covering by each measure with number k) using formulas (1) and (2) (see Section 2.2) are presented in the Table 4.46.

Table 4.46. The criteria of each GP measures efficiency $P_k, k = 1,2,...,10$

GP No	PT Legislation and regulation	PT reorganization into multimodal system	Cooperation among administrations	ITS technical standardization for interoperability	Infrastructural measures	Innovative ICT for PT	Modelling tools and measures	PT traffic management measures	PT information measures	Advanced PT ticketing
7	0,00	0,52	0,00	0,00	0,07	0,00	0,00	0,00	0,09	0,66
11	0,10	0,00	0,00	0,12	0,00	0,11	0,00	0,00	0,07	0,00
14	0,43	0,50	0,54	0,43	0,43	0,64	0,43	0,57	0,43	0,00
16	0,47	0,62	0,00	0,00	0,00	0,59	0,00	0,47	0,47	0,00
17	0,47	0,62	0,00	0,00	0,00	0,47	0,00	0,47	0,47	0,00
18	0,21	0,39	0,00	0,21	0,00	0,00	0,19	0,00	0,21	0,00
21	0,50	0,57	0,53	0,72	0,21	0,64	0,00	0,00	0,91	0,70
24	0,57	0,89	0,57	0,75	0,55	0,86	0,54	0,57	0,75	0,00
30	0,47	0,47	0,53	0,25	0,16	0,39	0,25	0,43	0,39	0,64
31	0,00	0,60	0,00	0,00	0,54	0,56	0,00	0,52	0,45	0,00
32	0,00	0,43	0,00	0,00	0,43	0,00	0,00	0,00	0,43	0,00

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

4.5.4. COMPARATIVE ANALYSIS OF GOOD PRACTICES AND THE SELECTION OF THE BETTER PRACTICE FOR THE GROUP "PUBLIC TRANSPORT AND / OR MULTIMODAL INFORMATION SYSTEMS".

Paired comparison matrix for groups of measures (an upper level) estimated by experts and results of priority vector calculation are shown in Table 4.47.

Table 4.47. Paired comparison matrix for groups of measures and results of priority vector calculation: GP group "Public Transport and / or Multimodal Information Systems"

Groups of measures	Organization and legislation	Infrastructural actions	Information actions	Modelling	Priority vector (weights)
Organization and legislation	**1**	1/7	1/9	1/3	**0,0490**
Infrastructural actions	7	**1**	1/3	1	**0,2245**
Information actions	9	3	**1**	3	**0,5449**
Modelling	3	1	1/3	**1**	**0,1816**

Paired comparison matrices estimated by experts and results of priority vectors calculation for measures of the each group are presented in Tables 4.48 – 4.51.

Table 4.48. Paired comparison matrix and priority vector for measures of the group "Organization and legislation": GP group "Public Transport and / or Multimodal Information Systems"

Measures	PT Legislation and regulation	PT reorganization into multimodal system	Cooperation among administrations	Priority vector (weights)
PT Legislation and regulation	1	1/3	1/5	**0,1047**
PT reorganization into multimodal system	3	1	1/3	**0,2583**
Cooperation among administrations	5	3	1	**0,6370**

Table 4.49. Paired comparison matrix and priority vector for measures of the group "Infrastructural Actions": GP group "Public Transport and / or Multimodal Information Systems"

Measures	ITS technical standardization for interoperability	Infrastructural measures	Innovative ICT for PT	Priority vector (weights)
ITS technical standardization for interoperability	1	1	1	**0,3333**
Infrastructural measures	1	1	1	**0,3333**
Innovative ICT for PT	1	1	1	**0,3333**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Table 4.50. Paired comparison matrix and priority vector for measures of the group "Information Actions": GP group "Public Transport and / or Multimodal Information Systems"

Measures	PT traffic management measures.	PT information measures	Advanced PT ticketing	Priority vector (weights)
PT traffic management measures.	1	1/7	1	**0,1111**
PT information measures	7	1	7	**0,7778**
Advanced PT ticketing	1	1/7	1	**0,1111**

Taking into account the values of P_K presented in Table 4.46 and the scale from Table 4.8 the paired comparisons of GP for each measure were executed and the appropriate priority vectors were calculated (see Annex 8).

Proceeding from the received evaluations of the criteria priority vectors of two levels of the hierarchy (see Tables 4.45 – 4.50, and Tables A8.1 – A8.10 in Annex 8), we calculate the final matrix of the evaluations of the global priority vector for the suggested GP shown in Table 4.43 and on Figures 4.15 and 4.16.

Table 4.51. Results of evaluations for GP of the group "Public Transport and / or Multimodal Information Systems"

	Organization and legislation	Infrastructural actions	Information actions	Modelling	Priority vector
Weights / GP No	**0,0490**	**0,2245**	**0,5449**	**0,1816**	
7	0,0416	0,0272	0,0449	0,0428	**0,0404**
11	0,0274	0,0350	0,0219	0,0428	**0,0289**
14	0,1551	0,1365	0,0785	0,2112	**0,1194**
16	0,0638	0,0596	0,0734	0,0428	**0,0643**
17	0,0638	0,0459	0,0734	0,0428	**0,0612**
18	0,0375	0,0375	0,0299	0,0851	**0,0420**
21	0,1608	0,1565	0,2665	0,0428	**0,1960**
24	0,2105	0,2566	0,1848	0,2866	**0,2206**
30	0,1532	0,0629	0,0903	0,1174	**0,0921**
31	0,0484	0,1187	0,0750	0,0428	**0,0777**
32	0,0379	0,0636	0,0614	0,0428	**0,0574**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

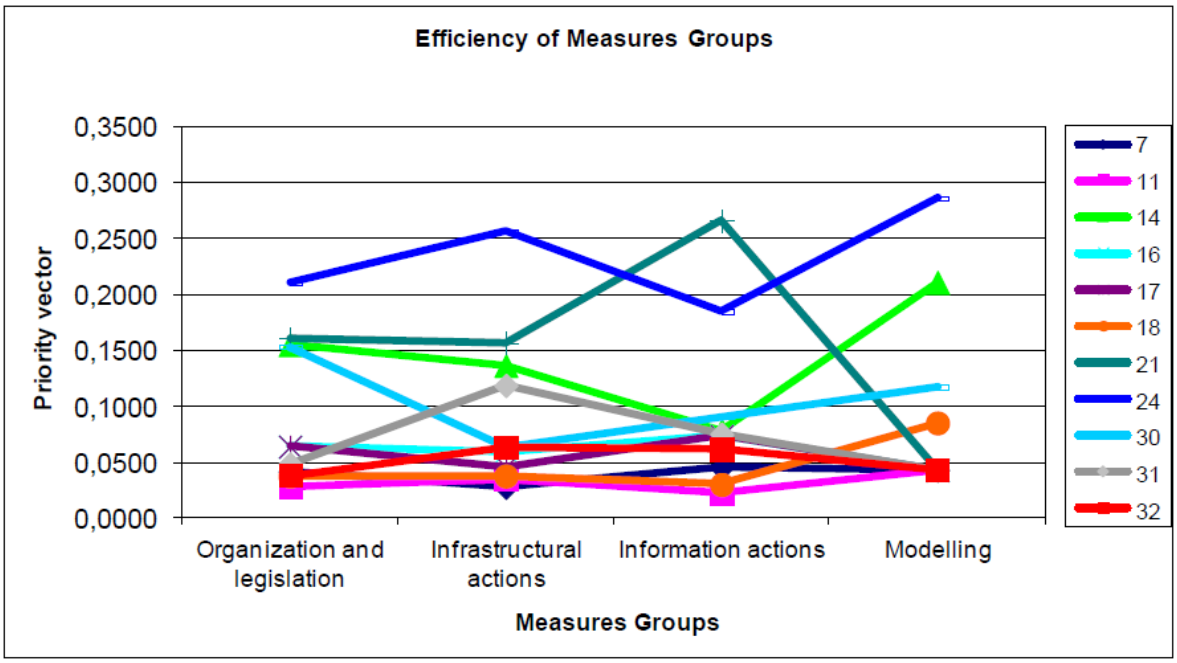


Figure 4.14. The efficiency of Measures' groups of Good Practices

The results of the evaluations allow the GP to be arranged in the order of their efficiency, and show their difference in the given set of criteria.
GP No 24 "Real Time Passenger Information System (CDV)" has the highest value of priority 0,2206 and will be selected as the better one from considered eleven practices. Practice Nr 21 has good assessment results 0,1960 too and is on the second place; it has the best result for the criteria "Information actions".

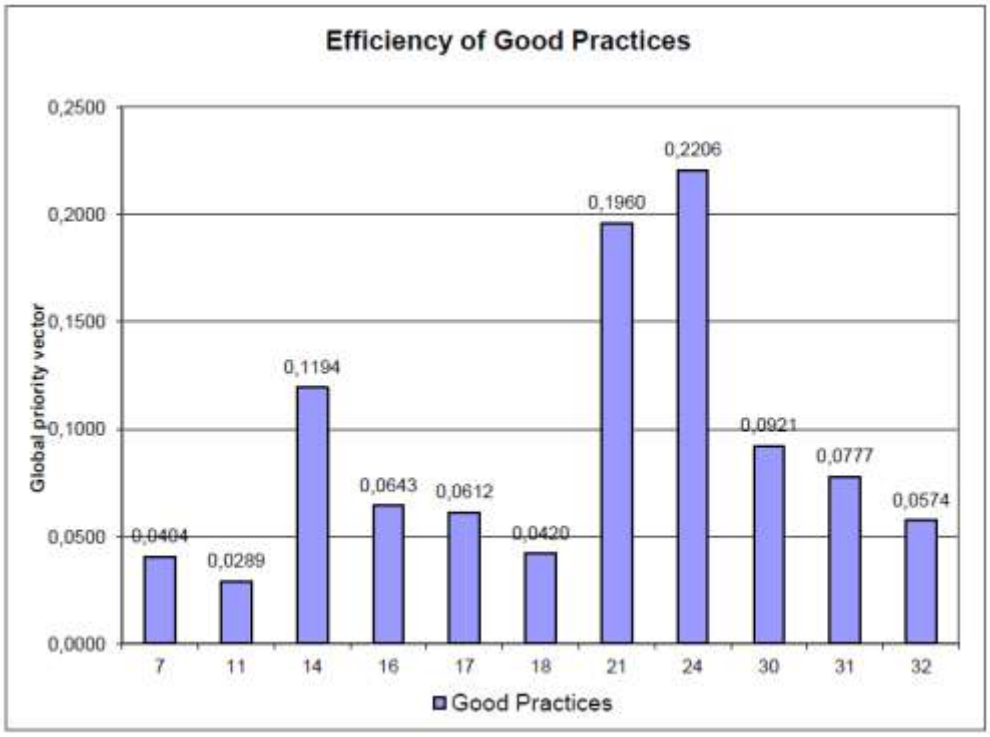


Figure 4.15. The efficiency of Good Practices

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

4.6. SUMMARY

The results of comparative assessment of GP considered in previous Sections 4.2 – 4.6 are summarized in the Table 4.52.

Table 4.52. Practices which have the highest values of global priority vectors in the GP groups

Name of group	Place in the group	Good Practice	City/Region, Country	Name of Partner	Description of GP, pages
Public Transport Payment Systems	1-st	No 22. "Integrated Public Transport System and Smart Ticketing"	Ostrava and Silesian-Moravian region, Czech Republic	CDV	105
	2-nd	No 28. "Integrated system of selling and reserving tickets"	Riga, Latvia	LaTDEA	126
Public Transport Priority Systems	1-st	No 15. "Real Time Passenger Information System, Bus Priority at Signals, Disability Accessibility"	City and County of Swansea, Wales, United Kingdom	RBC	78
	2-nd	No 12. "Real Time Passenger Information System, Bus Priority at Signals, Public Transport mobile apps, City Access Control. Smart Card"	Cambridgeshire County Council, United Kingdom	RBC	65
Public Transport Interchanges	1-st	No 25. "Multimodal Integrated Transport"	Prague, Czech Republic	CDV	116
	2-nd	No 2. "Stimer/Mi Muovo Project - Mobility Integrated Fare System in RER (Emilia-Romagna Region) buses, trains and bike sharing"	Emilia Romagna Region (RER), Italy	CRA	33
Public Transport Fleet Management Systems *	1-st	No 4. "Sustainable Mobility Plan (SMP) in Santander"	Santander, Spain	CRA	40
Public Transport and / or Multimodal Information Systems	1-st	No 24. "Real Time Passenger Information System"	Prague, Czech Republic	CDV	113
	2-nd	No 21. "Multimodal Journey planner for the Czech Republic"	Czech Republic and Slovakia	CDV	102

* In the group "PT Fleet Management Systems" there is only one leader, since distance between the first and the second places is significant.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

References

1. Bretschneider, S., F. J. Marc-Aurele, and J. Wu. 2005. “Best Practices” Research: A Methodological Guide for the Perplexed. Journal of Public Administration Research and Theory 15 (2): 307–323.
2. Overman, E. S., and K. J. Boyd. 1994. Best Practice Research and Postbureaucratic Reform. Journal of Public Administration Research and Theory 4 (1): 67–84.
3. “Best Practices.” Encyclopedia of Management. 6th ed. Detroit: Gale, 2009. 40–41. Gale Virtual Reference Library.
4. Saaty T.L. (2001) Decision Making for Leaders: The Analytic Hierarchy Process for Decisions in a Complex World, New Edition 2001 (Analytic Hierarchy Process Series, Vol. 2), RWS Publications.
5. Arnošt Veselý. Theory and Methodology of Best Practice Research: A Critical Review of the Current State. Central European Journal of Public Policy. Vol. 5, № 2, December 2011. pp 98–117. ISSN 1802-4866
6. Encyclopedia of Small Business, 3rd ed. Vol. 1. Detroit: Gale, 2007
7. INTERREG IVC, www.interreg4c.eu
8. Activity 3.1A Report “Definition of Infomobility Policy Themes for Exchange” (14.09.2012)
9. Activity 3.1B Report “Joint Methodology for Good Practices Search and Exchange” (06.10.2012)
10. Activity 3.2A Report “Definition of Infomobility Policy Themes for Exchange” (21.01.2013)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ANNEXES

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

Annex 1

1. PT LEGISLATION AND REGULATION (Directives, Acts, other mandatory rules, Advisory, Enforcement etc.)	**Access regulations** (Access Control and Limited Traffic Area: limited traffic area gates; transits/day processed by the centre; temporary pedestrian area)
	Measures and requirements towards data providers (measures and requirements on PT data providers for pan-European services)
	Static data availability (legislation on providing static data by transport operators, as mandatory activities)
	Real time data availability (measures assuring real time data provision from the side of transport operators for specified authorized users)
	Rules of public procurements for ICT services (legislation, regulation, requirements specification etc. - content and form)
	Harmonisation of regulations (at different administrative levels and bodies - best practices)
	Financial rules (public/private resources use, their regulations, legislation, incentives - best practices)

2. PT OPERATION REORGANIZATION INTO MULTIMODAL SYSTEM	**New organization measures** (real time information content, form, ways of access etc.)
	Re-organization measures (measures for improving data quality, re-organizing data flows, connections assurance etc.)
	Infomobility organization (access to schedules of various modes, centralized/decentralized information provider(s), incidents, dispatcher, depot)
	PT services optimization (improving efficiency, level of service etc.)
	Organization of service providers and subproviders PT outsourcing on infomobility background (infomobility solutions in case of cooperation with outsourcing companies)
	Interlinks to other modes for multimodal travellers (multimodal infomobility incl. transfers in nodes or multimodal stops)
	Implementation of PT integration (physical and information fragmented transport integration of various transport and service providers into one integrated multimodal system with the regional organizer's role, based on the railway connections and optimisation of other modes, unique tickets, tarifs and rules, assuring connection of journeys)

3. COOPERATION AMONG ADMINISTRATIONS	**PT policies** (cooperation on policies development, as exchanging of information on PT regulations, best practices, round tables etc.)
	PT operation harmonization (cooperation in infomobility among various bodies for optimization and higher efficiency)
	Public procurement forms (harmonization of rules among various procuring bodies and procurers)
	Incentives and subventions (for hierarchization a harmonization, for smart ticketing)
	Correlation and planning of resources (in order to rationalise the regional system of PT)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

4. ITS TECHNICAL STANDARDIZATION FOR INTEROPERABILITY	**Data elements and messages harmonization** (formating to reach interoperability for panEuropean services, accordingly to CEN, ISO etc. technical standards)
	Processing (authorization, verification, security, archivation)
	Interoperability tools (interfaces, modular solutions, open environment)
	Required concordance with technical standards (part of a public procurement, certification procedures for concordance, legislation/rules etc.)

5. INFRASTRUCTURAL MEASURES	**Multimodal nodes** (PT modes, taxi, bicycling etc., incl. localized/classified stops and other services)
	PT and parking facilities links (implementing dynamic Parking Guidance Signs and Improving ICT systems on Public Transport and Park-and-Ride Sites)
	Large facilities areas (infomobility for big events)
	Intersections with PT preference at traffic lights (PT and traffic management with ability of dynamic control towards specific vehicles)
	Disabled passengers support (infomobility for blind passengers, for wheelchair users etc.)
	Tools for the identification of passenger vs. freight vehicles (PT lanes, Weigh in Motion, AVM, etc....)

6. INNOVATIVE ICT FOR PT	**Technologies for infrastructure** (road side equipment, stops and nodes equipment, control centres, PT depots etc.)
	Technologies for vehicles (i.e. on-vehicle technologies for drivers, dispatchers, passengers)
	Communication technologies (communication for connecting information entities and/or systems, and people as end users)
	Data storage technologies (internally and externally available for defined users incl. third parties as ITS designers: web available, cloud tools etc.)
	Solutions idenpendent on technologies (data and messages formating, open interface etc.)

7. MODELLING TOOLS & MEASURES	**Goals setting up** (for what, why and when to use a model/simulation)
	Financing of the modelling (resources types and volume, returnability etc.)
	Modelling tools (development models for optimizing PT performance i.e. analyses for transport flows mapping, PT processes simulation tools etc.)
	Data acquisition and analysis (data feed and update into the modelling tools, data type, form and quality analysis...)
	Modelling PT and other flows for solutions definition (PT simulation specific particularities, interactivity with other transport flows, finding gaps, results analyses)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B

8. PT & TRAFFIC MANAGEMENT MEASURES	**Traffic monitoring** (data from floating cars/SIM cards etc., data from automatic intensity and velocity detection at the infrastructure side, etc.)
	PT monitoring ways (data from on board equipments, SIM cards etc.)
	PT operation management systems & technologies (management centres at transport providers side)
	PT and traffic control (control centres, cooperation among centres: intersection dynamic control, PT priority at intersections etc.)
	Access control (Access Control and Limited Traffic Area: limited traffic area gates; transits/day processed by the centre; temporary pedestrian area)
	Mobility monitoring (citizens flows mapping: individual transport, public transport, pedestrians, bikers, parking...)
	Identification of passenger vs. freight vehicles for managing specific traffic flows (Weigh in Motion, AVM, etc...)

9. PT INFORMATION MEASURES	**Static and real time data/information** (centralised/decentralised, linking of data providers, schedules, stops etc.)
	Multimodal PT planner implementation (journeys, connections etc. - availability of PT data for commuters and other users)
	Advisory or statutory information (tarifs, enforcement etc.)
	GIS mapping (linking GIS map levels with public transport services localization)
	Big events and incidents management (incl. measures for other exceptions.)

10. ADVANCED PT TICKETING	**Electronic payment ways** (as PT ticketing, integrated ticketing, smart phones, multi-use smart cards with included bike-hire or non-transport services payment etc.)
	Travellers counting, journeys and connections utilization and optimization (e-ticketing as data source)
	Incentive schemes (smartcard points as benefits for reduced fare, certain free service, subvention towards other services etc.)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Annex 2

SITE VISIT QUESTIONNAIRE

Notes for Completion

This questionnaire comprises two main parts:

1) The written text boxes for the main input of information associated with the good practice. These enable the more detailed explanation of the list of key measures which are set out in:

2) The Table of Measures. This is a tick box table which enables the scope of the good practice measure to be understood and the relevant sub headings within this table should be used to help complete the written text boxes and the written text should explain the answers on the table. The numbers in brackets (3) in the written text boxes reference the relevant Measure Heading in the Table of Measures. Please note that the response should not be restricted by the Table of Measures and that all relevant information should be provided.

The questionnaire should be completed for each Good Practice where:

1) A Good Practice is a system or service which is seen as a clearly separate, e.g. a Real Time Passenger Information System, A smart ticketing system, Bus priority at signals, a web and mobile traveller information system etc.
2) A Good Practice site could provide one or more Good Practices and in this case the questionnaire should be filled out separately for each one.
3) Each Good Practice questionnaire is expected to cover a range of sub measures in the Table of Measures.

A Good Practice is defined as:

"an initiative (eg methodologies, projects, processes and techniques) undertaken in one of the programme's thematic priorities which has already proved successful and which has the potential to be transferred to a different geographic area. Proved successful is where the good practice has already provided tangible and measurable results in achieving a specific objective."

The purpose of this information is to be published in a Good Practice Guide focused on the application of ICT in better public transport which will be available for authorities to refer to across Europe. Your valuable input is much appreciated to ensure that we can provide real value to those who read the guide.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

SITE VISIT QUESTIONNAIRE

GENERAL

Region / City	
Country	
Measure / System	*Eg Real Time Passenger Information System, Bus Priority at Signals, Public Transport mobile apps, Hybrid Buses, City Access Control. [please delete when you input]*
Description	*Max 1000 words overview of measure – details of technologies deployed etc are covered further below.* *Eg If it was a Real Time Passenger Information System it would outline the functional capability of the system (eg GPS based vehicle tracking, description of information shown at bus stop signs, back office, etc). [please delete when you input]*

Information on the Site Visit

Scope	*Scope of the visit*
Place	*Place of meeting*
Time	
Duration	
Plan	*Agenda of the day*
Participants	*Participants and their roles*
Tools	*Tools used to explain or show the good practice*
Live	*Report in case the partners was able to test or see the good practice under live operation*
Material	*Material media or not media collected and interesting to share*

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

SITE VISIT QUESTIONNAIRE

Interviewee information

Name / Surname	
Title	
Organisation	*Please include department and all the details including the name of the responsible person and its role (e.g.: Director, etc…)*
Address	*Street name and number, zip code, town and country*
Phone number	*Office or mobile*
E-mail	
FAX	
Other	*e.g.: skype contact*

Point of view of the interviewee

Overview of why the interviewee considers the project interesting and what he would expect from the envisaged outcomes

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

SITE VISIT QUESTIONNAIRE

Interests and next steps

The interviewer asks the interviewee if he is interested to follow the project activities and results? If Yes, then he is requested to express his interest for:

Subscribing to the POLITE Newsletter	*Yes / No*	-
Receiving specific information	*Yes / No (if yes which)*	-
Participation to GPRT	*Yes / No*	*Speaker / Audience*
Participation to Training Workshop	*Yes / No*	*Speaker / Audience*
Participation to JPE	*Yes / No*	*Speaker / Audience*
Participation to Joint local dissemination event	*Yes / No*	*Speaker / Audience*
Intermediate open workshop	*Yes / No*	*Speaker / Audience*
Final conference	*Yes / No*	*Speaker / Audience*
Invite POLITE to conference or workshop	*Yes / No*	-

(note: the partners evaluate the necessity to invite or not the administration)

Type of Measure / Field of Application (please tick all that apply)

(note: these are the main sub measures in the Table of Measures)

O	1. PT Legislation and Regulation	O	2. PT Operational Reorganisation into Multimodal Measure	O	3. Cooperation among administrations
O	4. ITS Technical Standardisation for Interoperability	O	5. Infrastructure Measures	O	6. Innovative ICT for PT
O	7. Modelling Tools and Measures	O	8. PT and Traffic Management Measures	O	9. PT Information Measures
O	10. Advanced PT Ticketing				

Background and Context

Overview of when it was implemented, how it integrates or coordinates with other systems in the city, the size of the system eg 200 buses fitted, 20 RTPI signs at bus stops, etc, any further stages of implementation, etc. [please delete when you input]

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

SITE VISIT QUESTIONNAIRE

Supporting Information

Depending on the type of measure it may be useful to include photograph's, location plans, system / architecture diagrams, etc. Digital images should be of as high a quality as possible for reproduction. Please only provide information which is not subject to copyright and which you would be happy to see published [please delete when you input]

Primary Policy Objectives (please tick all that apply)

O	Improving City attractiveness	O	Improving PT services	O	Improving PT efficiency
O	Increasing the PT mode share	O	Decreasing congestion	O	Emissions and pollution reduction

Further Description / Other Primary Policy Objectives

Eg Improving PT services may relate to a specific corridor improvement objective which could include other non-PT measures. [please delete when you input]

Policy Design Steps and Timing

Outline the key policies including timings that assisted in the delivery of the PT measure

Actors Involved

List the parties that have been involved in the measure and their role within the process. This should attempt to capture all administrative, supplier and implementation parties and identify the promoting bodies.

Minimum information should include:

1) *the name of the party,*
2) *a brief description of the party,*
3) *a brief description of their role in the project,*
4) *the main reasons for engaging with the actor, ie systems integrator, statutory consultee, delivery partner etc.*

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

SITE VISIT QUESTIONNAIRE

Cooperation amongst Administrations (3)

Provide an overview of any cooperation amongst administrations such as cooperation in policy, procurement rules, harmonization of systems etc to enable or improve the delivery of the Measure.

Public Transport Legislation and Regulation (1)

Describe any Directives, Acts, other mandatory rules, Advisory guidelines etc which were relevant to the measure.

Design Steps

Provide an overview of the design steps undertaken. Include approximate timeline, a brief description of the steps, which Actors were involved in each step and any key milestones .

Innovation in Scheme Design / Evaluation

Please outline any innovative measures used in the design and evaluation of the scheme. Examples could include Microsimulation modeling (7), financial modeling etc.

Decision Making Process

Outline the decision making process. Include approximate timeline, a brief description of the steps, which Actors were involved in each step and any key milestones .

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

SITE VISIT QUESTIONNAIRE

IMPLEMENTATION DETAIL

Implementation Steps and Timing

Outline the key stages that were undertaken in the project. Include approximate timeline, a brief description of the steps, which Actors were involved in each step and any key milestones .

ICT Required

Define the ICT elements of the best practice measure (6, 8, 9,10). Include the name of the ICT application, a description, which actor(s) is/ are responsible for its implementation / operation, approximate cost (if able to be separated)

Infrastructure Required (5)

Define any infrastructure elements of the best practice measure (5). Include the name of the measure, a description, which actor(s) is/ are responsible for its implementation / operation, approximate cost (if able to be separated)

PT Operation and Reorganisation Undertaken (2)

Describe any reorganisation which was relevant to the delivery of the measure. Examples of reorganisation measures include measures for improving data quality, improved management of PT schedules, improving service efficiency etc

Other Measures

Define any other good practice measures which are relevant to the overall measure but do not specifically fit within the ICT or infrastructure measure. Include the name of the measure, a description, which actor(s) is/ are responsible for its implementation / operation, approximate cost (if able to be separated)

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

SITE VISIT QUESTIONNAIRE

Specifications and Standards (4)

Define the main ICT specifications and standards used and their application within this measure and any interoperability with other systems outside of this measure which lead to the decision as to which standards to apply. Also identify any areas where the lack of interoperability standards has impacted on the ability to optimize the efficiency of the measure.

Human Resources

Define the number of staff and source of the staff that have been working on the best practice project. Also identify level of external resource, such as design consultants, required to deliver the project (ideally provide in terms of time (person months) but value of works could be an alternative). Include both the effort required to set up the project and any ongoing effort in the operation.

Enforcement Scheme

Describe any supporting enforcement required for the operation of the measure.

Monitoring Procedures

Describe any monitoring that has been undertaken to evaluate the policy. Please outline at which stage(s) in the project the monitoring has been undertaken.

SUPPORT MECHANISMS

Awareness/Information Campaigns

Describe the methods that have been used to promote the policy. This should include campaigns at both practitioner and users levels

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

SITE VISIT QUESTIONNAIRE

Incentive Programmes / Financial Instruments

Outline any key incentives that have been used to encourage the success of the policy.

Partnerships/Key Supporting Stakeholders

Detail and define individual roles of any partners/Stakeholders that have been aided in the successful delivery of the policy.

Other Policies

Describe any other policies which have had an influence on the delivery of this measure.

Results

Expected vs Actual Benefits

Report the main benefits of the PT policy was expected to delivery during the planning stage and desctibe how the actual benefits compare.

Quantitative Results Achieved

Report the main quantitative findings that the policy measure has been able to achieve.

Qualitative Results Achieved

Report the main qualitative findings that the policy measure has been able to achieve

Lessons Learned

Critically assess the PT policy measure implementation and define the key lessons that can be learnt from the process as a whole.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

SITE VISIT QUESTIONNAIRE

Primary Obstacles

Please describe the main obstacles that you experienced throughout the whole life cycle of the PT measure project. This can include any aspect of the project from administration through to technical delivery issues.

Critical Success Factors

Please list and describe the key factors which you believe were critical to the success of the project.

Transferability Considerations

Outline any key aspects of the project that should be considered when considering transferring the good practice to other public bodies within the country of the good practice or to public bodies across Europe.

Up-scaling Considerations

If your project was to be increased in scale then please outline the key factors that would affect a wider scale role out.

Contact

Please provide a contact name and contact details that we can publish in the Good Practice Guide for contact by interested parties.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

Annex 3

GOOD PRACTICE QUESTIONNAIRE

Notes for Completion

This questionnaire comprises two main parts:

1) The written text boxes for the main input of information associated with the good practice. These enable the more detailed explanation of the list of key measures which are set out in:

2) The Table of Measures. This is a tick box table which enables the scope of the good practice measure to be understood and the relevant sub headings within this table should be used to help complete the written text boxes and the written text should explain the answers on the table. The numbers in brackets (3) in the written text boxes reference the relevant Measure Heading in the Table of Measures. Please note that the response should not be restricted by the Table of Measures and that all relevant information should be provided.

The questionnaire should be completed for each Good Practice where:

1) A Good Practice is a system or service which is seen as a clearly separate, e.g. a Real Time Passenger Information System, A smart ticketing system, Bus priority at signals, a web and mobile traveller information system etc.
2) A Good Practice site could provide one or more Good Practices and in this case the questionnaire should be filled out separately for each one.
3) Each Good Practice questionnaire is expected to cover a range of sub measures in the Table of Measures.

A Good Practice is defined as:

"an initiative (eg methodologies, projects, processes and techniques) undertaken in one of the programme's thematic priorities which has already proved successful and which has the potential to be transferred to a different geographic area. Proved successful is where the good practice has already provided tangible and measurable results in achieving a specific objective."

The purpose of this information is to be published in a Good Practice Guide focused on the application of ICT in better public transport which will be available for authorities to refer to across Europe. Your valuable input is much appreciated to ensure that we can provide real value to those who read the guide.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

GOOD PRACTICE QUESTIONNAIRE

GENERAL

Region / City	
Country	
Measure / System	*Eg Real Time Passenger Information System, Bus Priority at Signals, Public Transport mobile apps, Hybrid Buses, City Access Control. [please delete when you input]*
Description	*Max 1000 words overview of measure – details of technologies deployed etc are covered further below.* *Eg If it was a Real Time Passenger Information System it would outline the functional capability of the system (eg GPS based vehicle tracking, description of information shown at bus stop signs, back office, etc). [please delete when you input]*

Type of Measure / Field of Application (please tick all that apply)

(note: these are the main sub measures in the Table of Measures)

O	1. PT Legislation and Regulation	O	2. PT Operational Reorganisation into Multimodal Measure	O	3. Cooperation among administrations
O	4. ITS Technical Standardisation for Interoperability	O	5. Infrastructure Measures	O	6. Innovative ICT for PT
O	7. Modelling Tools and Measures	O	8. PT and Traffic Management Measures	O	9. PT Information Measures
O	10. Advanced PT Ticketing				

Background and Context

Overview of when it was implemented, how it integrates or coordinates with other systems in the city, the size of the system eg 200 buses fitted, 20 RTPI signs at bus stops, etc, any further stages of implementation, etc. [please delete when you input]

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

GOOD PRACTICE QUESTIONNAIRE

Supporting Information

Depending on the type of measure and the availability of information please supply relevant supporting information including: digital photographs, videos and other multimedia information; location plans; system / architecture diagrams; etc.

Digital images and video should be of as high a quality as possible for reproduction. Please only provide information which is not subject to copyright and which you would be happy to see published.

Please list the supporting information supplied in this box. [please delete when you input]

Data Sources and Bibliography

Please provide a list of data sources used in responding to this questionnaire and also provide a bibliography of any relevant published materials relevant to this questionnaire [please delete when you input]

Primary Policy Objectives (please tick all that apply)

O	Improving City attractiveness	O	Improving PT services	O	Improving PT efficiency
O	Increasing the PT mode share	O	Decreasing congestion	O	Emissions and pollution reduction

Further Description / Other Primary Policy Objectives

Eg Improving PT services may relate to a specific corridor improvement objective which could include other non-PT measures. [please delete when you input]

Policy Design Steps and Timing

Outline the key policies including timings that assisted in the delivery of the PT measure

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

GOOD PRACTICE QUESTIONNAIRE

Actors Involved

List the parties that have been involved in the measure and their role within the process. This should attempt to capture all administrative, supplier and implementation parties and identify the promoting bodies.

Minimum information should include:

1) *the name of the party,*
2) *a brief description of the party,*
3) *a brief description of their role in the project,*
4) *the main reasons for engaging with the actor, ie systems integrator, statutory consultee, delivery partner etc.*

Cooperation amongst Administrations (3)

Provide an overview of any cooperation amongst administrations such as cooperation in policy, procurement rules, harmonization of systems etc to enable or improve the delivery of the Measure.

Public Transport Legislation and Regulation (1)

Describe any Directives, Acts, other mandatory rules, Advisory guidelines etc which were relevant to the measure.

Design Steps

Provide an overview of the design steps undertaken. Include approximate timeline, a brief description of the steps, which Actors were involved in each step and any key milestones .

Innovation in Scheme Design / Evaluation

Please outline any innovative measures used in the design and evaluation of the scheme. Examples could include Microsimulation modeling (7), financial modeling etc.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

GOOD PRACTICE QUESTIONNAIRE

Decision Making Process

Outline the decision making process. Include approximate timeline, a brief description of the steps, which Actors were involved in each step and any key milestones .

IMPLEMENTATION DETAIL

Implementation Steps and Timing

Outline the key stages that were undertaken in the project. Include approximate timeline, a brief description of the steps, which Actors were involved in each step and any key milestones .

ICT Required

Define the ICT elements of the best practice measure (6, 8, 9, 10). Include the name of the ICT application, a description, which actor(s) is/ are responsible for its implementation / operation, approximate cost (if able to be separated)

Infrastructure Required (5)

Define any infrastructure elements of the best practice measure (5). Include the name of the measure, a description, which actor(s) is/ are responsible for its implementation / operation, approximate cost (if able to be separated)

PT Operation and Reorganisation Undertaken (2)

Describe any reorganisation which was relevant to the delivery of the measure. Examples of reorganisation measures include measures for improving data quality, improved management of PT schedules, improving service efficiency etc

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

GOOD PRACTICE QUESTIONNAIRE

Other Measures

Define any other good practice measures which are relevant to the overall measure but do not specifically fit within the ICT or infrastructure measure. Include the name of the measure, a description, which actor(s) is/ are responsible for its implementation / operation, approximate cost (if able to be separated)

Specifications and Standards (4)

Define the main ICT specifications and standards used and their application within this measure and any interoperability with other systems outside of this measure which lead to the decision as to which standards to apply. Also identify any areas where the lack of interoperability standards has impacted on the ability to optimize the efficiency of the measure.

Human Resources

Define the number of staff and source of the staff that have been working on the best practice project. Also identify level of external resource, such as design consultants, required to deliver the project (ideally provide in terms of time (person months) but value of works could be an alternative). Include both the effort required to set up the project and any ongoing effort in the operation.

Enforcement Scheme

Describe any supporting enforcement required for the operation of the measure.

Monitoring Procedures

Describe any monitoring that has been undertaken to evaluate the policy. Please outline at which stage(s) in the project the monitoring has been undertaken.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

GOOD PRACTICE QUESTIONNAIRE

SUPPORT MECHANISMS

Awareness/Information Campaigns

Describe the methods that have been used to promote the policy. This should include campaigns at both practitioner and users levels

Incentive Programmes / Financial Instruments

Outline any key incentives that have been used to encourage the success of the policy.

Partnerships/Key Supporting Stakeholders

Detail and define individual roles of any partners/Stakeholders that have been aided in the successful delivery of the policy.

Other Policies

Describe any other policies which have had an influence on the delivery of this measure.

Results

Expected vs Actual Benefits

Report the main benefits of the PT policy was expected to delivery during the planning stage and describe how the actual benefits compare.

Quantitative Results Achieved

Report the main quantitative findings that the policy measure has been able to achieve.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

GOOD PRACTICE QUESTIONNAIRE

Qualitative Results Achieved

Report the main qualitative findings that the policy measure has been able to achieve

Lessons Learned

Critically assess the PT policy measure implementation and define the key lessons that can be learnt from the process as a whole.

Primary Obstacles

Please describe the main obstacles that you experienced throughout the whole life cycle of the PT measure project. This can include any aspect of the project from administration through to technical delivery issues.

Critical Success Factors

Please list and describe the key factors which you believe were critical to the success of the project.

Transferability Considerations

Outline any key aspects of the project that should be considered when considering transferring the good practice to other public bodies within the country of the good practice or to public bodies across Europe.

Up-scaling Considerations

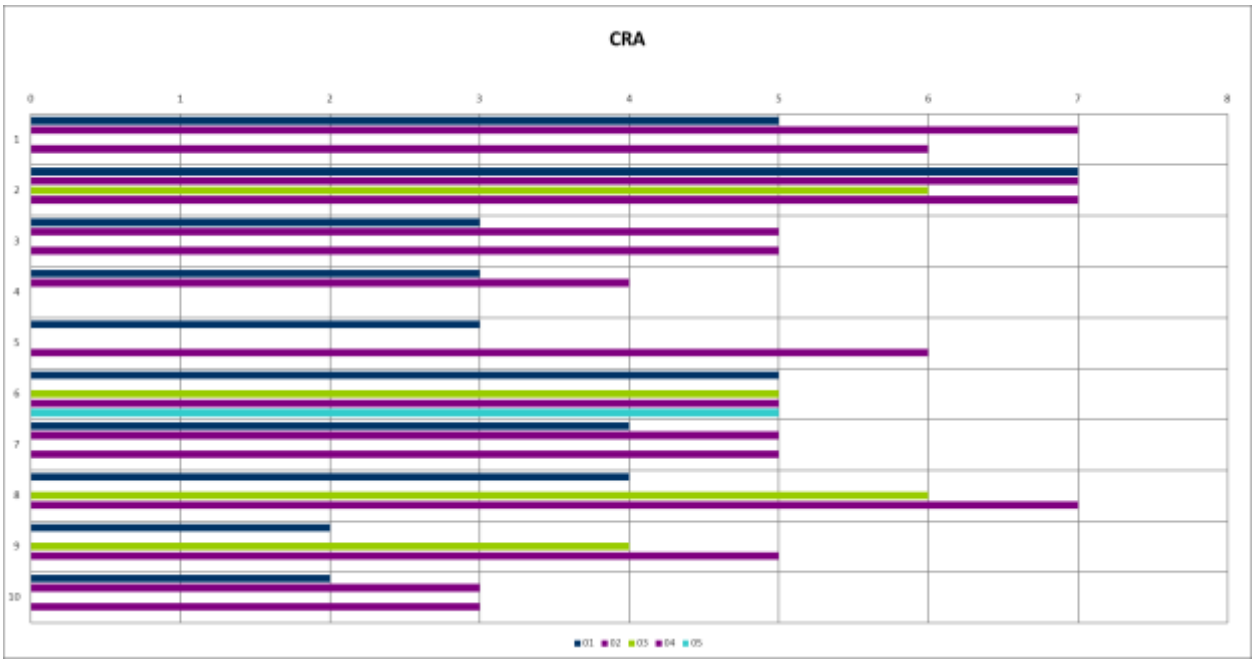
If your project was to be increased in scale then please outline the key factors that would affect a wider scale role out.

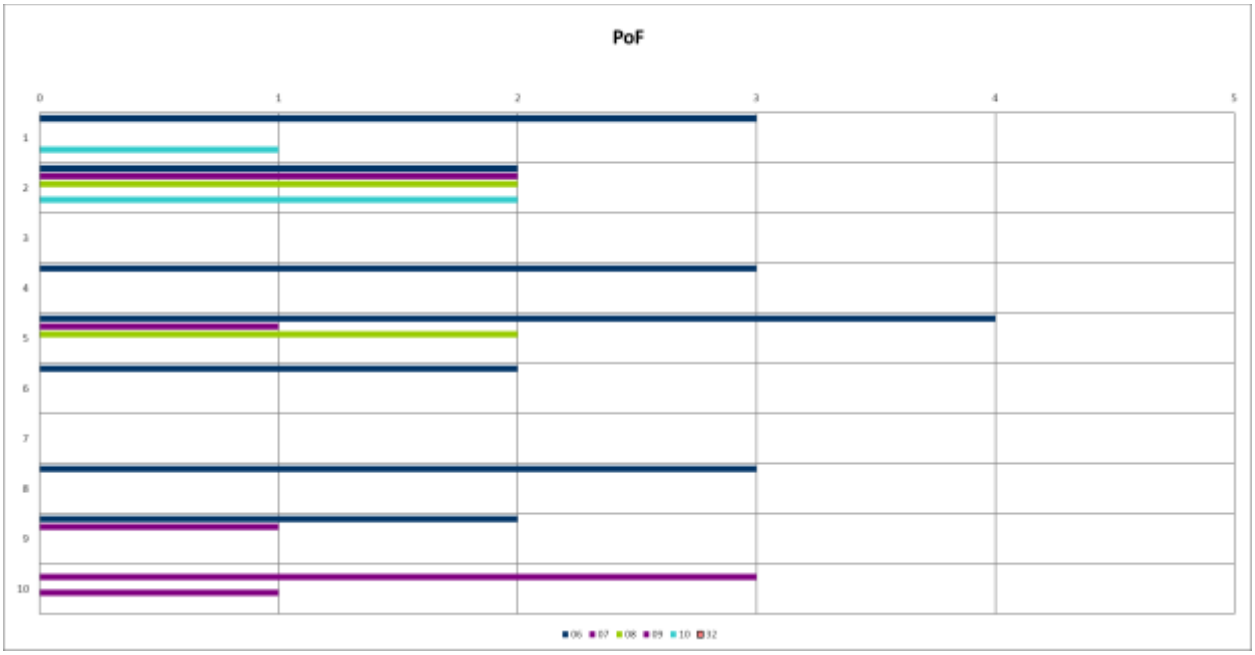
Contact

Please provide a contact name and contact details that we can publish in the Good Practice Guide for contact by interested parties.

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

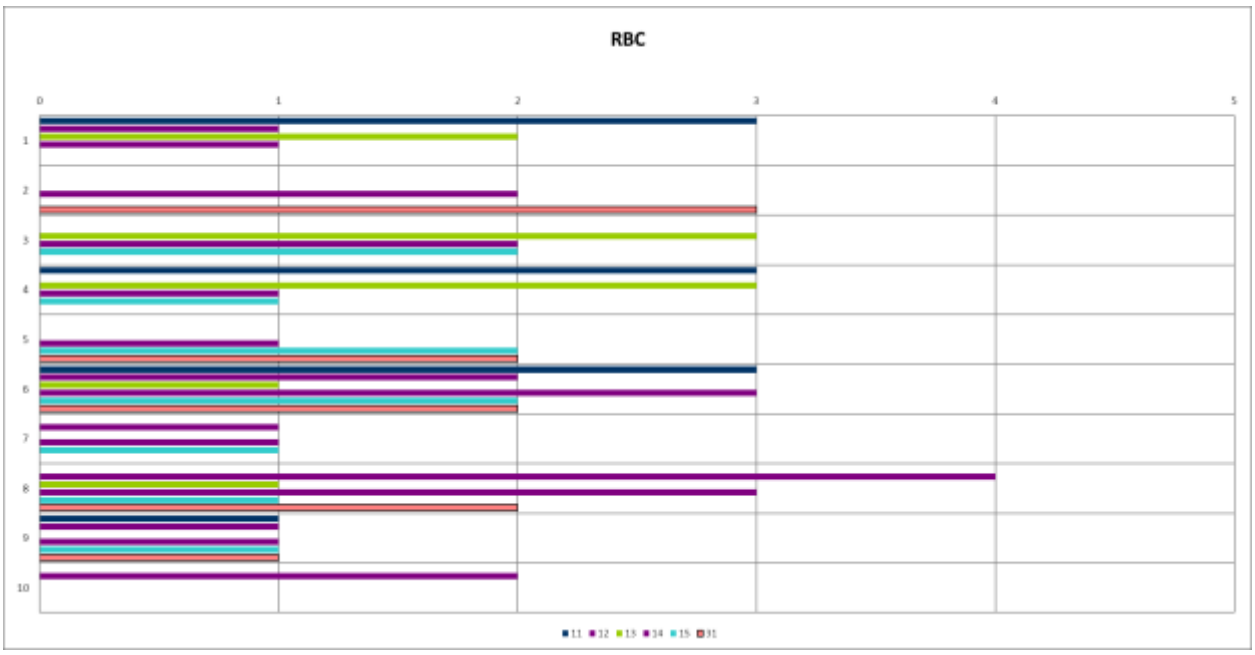
Annex 4

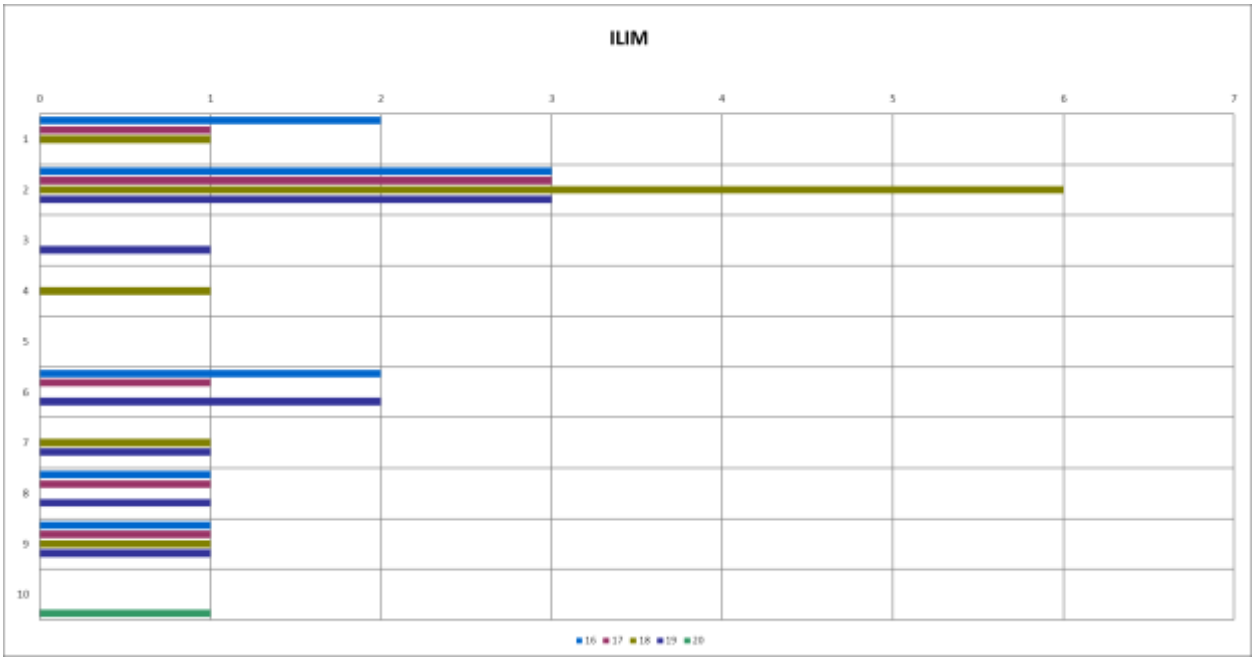




This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

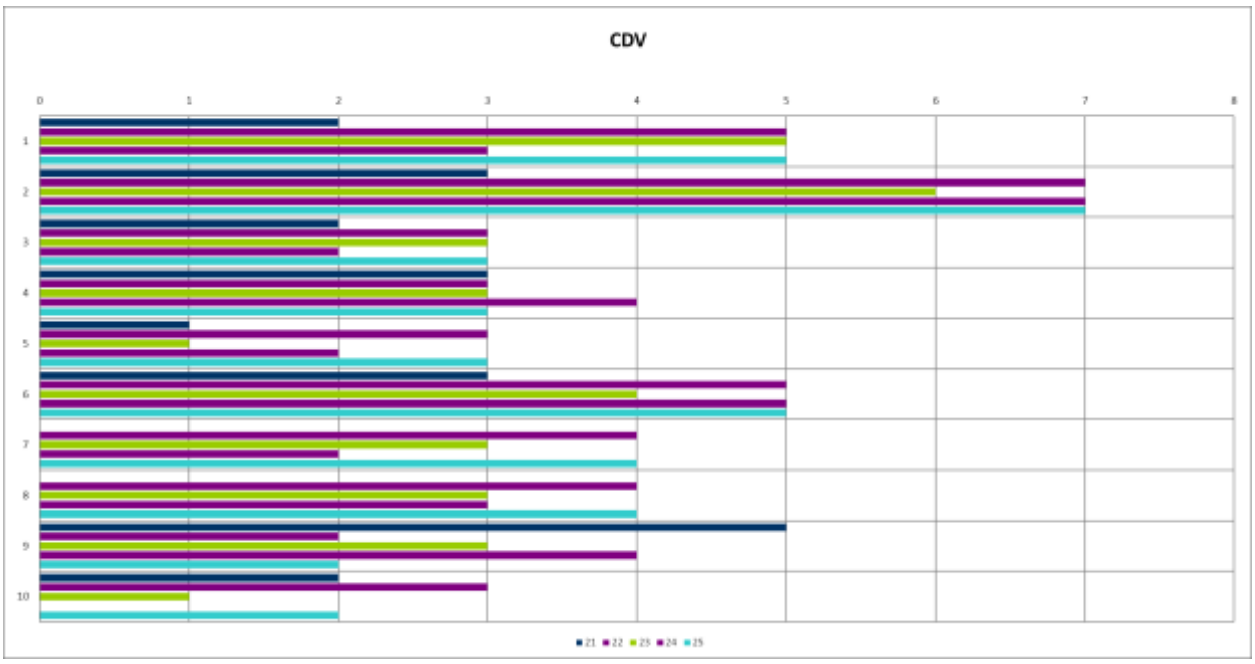
ACTIVITY 3.2B

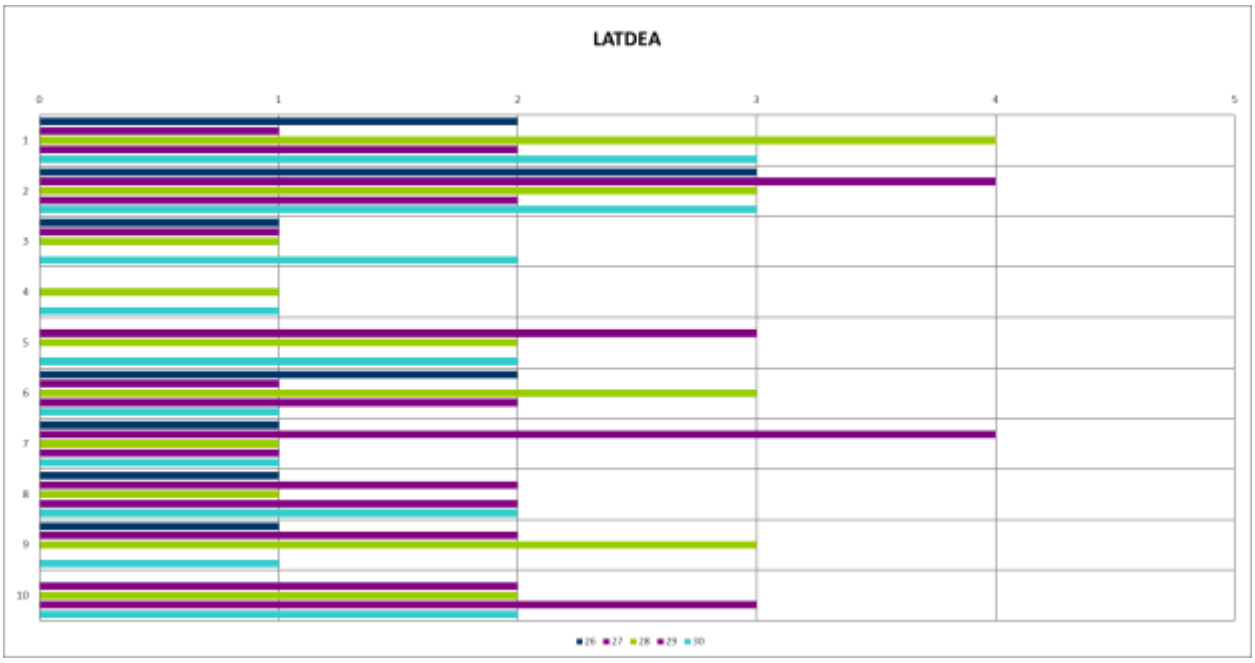




This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ACTIVITY 3.2B





This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ANNEX 5

Comparative Assessment of Good Practices in the group “Public Transport Priority Systems”:
The paired comparison of good practices for each measure and appropriate priority vectors calculations

A5.1.Measures’ group “Organization and Legislation”

Table A5.1. Matrix of measure “PT Legislation and Regulation” evaluations

Good Practice No	5	12	13	15	Priority vector
5	1	1/5	1/6	1	**0,0771**
12	5	1	1	5	**0,4036**
13	6	1	1	6	**0,4421**
15	1	1/5	1/6	1	**0,0771**

Table A5.2. Matrix of measure “PT Reorganization into Multimodal System” evaluations

Good Practice No	5	12	13	15	Priority vector
5	1	1	1	1	**0,2500**
12	1	1	1	1	**0,2500**
13	1	1	1	1	**0,2500**
15	1	1	1	1	**0,2500**

Table A5.3. Matrix of measure “Cooperation among Administrations” evaluations

Good Practice No	5	12	13	15	Priority vector
5	1	1	1/7	1/6	**0,0656**
12	1	1	1/7	1/6	**0,0656**
13	7	7	1	2	**0,5251**
15	6	6	1/2	1	**0,3438**

A5.2.Measures’ group “Infrastructural Actions”

Table A5.4. Matrix of measure “ITS Technical Standardization for Interoperability” evaluations

Good Practice No	5	12	13	15	Priority vector
5	1	1	1/8	1/5	**0,0624**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

12	1	1	1/8	1/5	**0,0624**
13	8	8	1	4	**0,6273**
15	5	5	1/4	1	**0,2480**

Table A5.5. Matrix of measure “Infrastructural Measures” evaluations

Good Practice No	5	12	13	15	Priority vector
5	1	1	1	1/6	**0,1111**
12	1	1	1	1/6	**0,1111**
13	1	1	1	1/6	**0,1111**
15	6	6	6	1	**0,6667**

Table A5.6. Matrix of measure “Innovative ICT for PT” evaluations

Good Practice No	5	12	13	15	Priority vector
5	1	5	6	8	**0,6560**
12	1/5	1	1	3	**0,1467**
13	1/6	1	1	3	**0,1401**
15	1/8	1/3	1/3	1	**0,0572**

A5.3.Measures’ group “Modelling”

Table A5.7. Matrix of measure “Modelling Tools and Measures” evaluations

Good Practice No	5	12	13	15	Priority vector
5	1	1/5	1	1/5	**0,0833**
12	5	1	5	1	**0,4167**
13	1	1/5	1	1/5	**0,0833**
15	5	1	5	1	**0,4167**

A5.4.Measures’ group “Information Actions”

Table A5.8. Matrix of measure “PT Traffic Management Measures” evaluations

Good Practice No	5	12	13	15	Priority vector
5	1	1/7	1/5	1/5	**0,0513**
12	7	1	3	3	**0,5252**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

13	5	1/3	1	1	**0,2118**
15	5	1/3	1	1	**0,2118**

Table A5.9. Matrix of measure “PT Information Measures” evaluations

Good Practice No	5	12	13	15	Priority vector
5	1	1/5	1	1/2	**0,1064**
12	5	1	5	4	**0,5981**
13	1	1/5	1	1/2	**0,1064**
15	2	1/4	2	1	**0,1891**

Table A5.10. Matrix of measure “Advanced PT Ticketing” evaluations

Good Practice No	5	12	13	15	Priority vector
5	1	1/7	1	1	**0,1000**
12	7	1	7	7	**0,7000**
13	1	1/7	1	1	**0,1000**
15	1	1/7	1	1	**0,1000**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ANNEX 6

Comparative Assessment of Good Practices in the group "Public Transport Interchanges":
The paired comparison of good practices for each measure and appropriate priority vectors calculations

A6.1.Measures' group "Organization and Legislation"

Table A6.1. Matrix of measure "PT Legislation and Regulation" evaluations

Good Practice No	1	2	3	23	25	27	Priority vector
1	1	1/8	1	1/7	1/6	1/3	**0,0353**
2	8	1	8	2	2	6	**0,3797**
3	1	1/8	1	1/7	1/6	1/3	**0,0353**
23	7	1/2	7	1	1	5	**0,2491**
25	6	1/2	6	1	1	4	**0,2280**
27	3	1/6	3	1/5	1/4	1	**0,0726**

Table A6.2. Matrix of measure "PT Reorganization into Multimodal System" evaluations

Good Practice No	1	2	3	23	25	27	Priority vector
1	1	1/9	1/4	1/7	1/9	1/7	**0,0241**
2	9	1	5	2	1	3	**0,3076**
3	4	1/5	1	1/3	1/5	1/3	**0,0618**
23	7	1/2	3	1	1/2	1	**0,1595**
25	9	1	5	2	1	3	**0,3076**
27	7	1/3	3	1	1/3	1	**0,1393**

Table A6.3. Matrix of measure "Cooperation among Administrations" evaluations

Good Practice No	1	2	3	23	25	27	Priority vector
1	1	1/9	1	1/4	1/8	1/2	**0,0352**
2	9	1	9	6	2	8	**0,4522**
3	1	1/9	1	1/4	1/8	1/2	**0,0352**
23	4	1/6	4	1	1/4	3	**0,1140**
25	8	1/2	8	4	1	6	**0,3074**
27	2	1/8	2	1/3	1/6	1	**0,0559**

A6.2.Measures' group "Infrastructural Actions"

Table A6.4. Matrix of measure "ITS Technical Standardization for Interoperability" evaluations

Good Practice No	1	2	3	23	25	27	Priority vector
1	1	1/5	1	1/2	1/7	1	**0,0555**
2	5	1	5	3	1/3	5	**0,2521**
3	1	1/5	1	1/2	1/7	1	**0,0555**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

23	2	1/3	2	1	1/6	2	**0,0985**
25	7	3	7	6	1	7	**0,4828**
27	1	1/5	1	1/2	1/7	1	**0,0555**

Table A6.5. Matrix of measure “Infrastructural Measures” evaluations

Good Practice No	1	2	3	23	25	27	Priority vector
1	1	1	1	1/2	1/6	1/5	**0,0602**
2	1	1	1	1/2	1/6	1/5	**0,0602**
3	1	1	1	1/2	1/6	1/5	**0,0602**
23	2	2	2	1	1/5	0,25	**0,1022**
25	6	6	6	5	1	1	**0,3816**
27	5	5	5	4	1	1	**0,3356**

Table A6.6. Matrix of measure “Innovative ICT for PT” evaluations

Good Practice No	1	2	3	23	25	27	Priority vector
1	1	10	6	7	2	6	**0,4435**
2	0	1	1/5	1/4	1/9	1/5	**0,0235**
3	1/6	5	1	1	1/5	1	**0,0795**
23	1/7	4	1	1	1/5	1	**0,0746**
25	1/2	9	5	5	1	4	**0,2965**
27	1/6	5	1	1	1/4	1	**0,0825**

A6.3.Measures’ group “Modelling”

Table A6.7. Matrix of measure “Modelling Tools and Measures” evaluations

Good Practice No	1	2	3	23	25	27	Priority vector
1	1	1/4	1	1/4	1/8	1/7	**0,0364**
2	4	1	4	1	1/4	1/3	**0,1186**
3	1	1/4	1	1/4	1/8	1/7	**0,0364**
23	4	1	4	1	1/5	0,25	**0,1089**
25	8	4	8	5	1	1	**0,3725**
27	7	3	7	4	1	1	**0,3272**

A6.4.Measures’ group “Information actions”

Table A6.8. Matrix of measure “PT Traffic Management Measures” evaluations

Good Practice No	1	2	3	23	25	27	Priority vector
1	1	1	1/4	1/3	1/4	1/6	**0,0515**
2	1	1	1/4	1/3	1/4	1/6	**0,0515**
3	4	4	1	1	1	1/2	**0,1871**
23	3	3	1	1	1	1/3	**0,1589**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

25	4	4	1	1	1	1/2	**0,1871**
27	6	6	2	3	2	1	**0,3638**

Table A6.9. Matrix of measure “PT Information Measures” evaluations

Good Practice No	1	2	3	23	25	27	Priority vector
1	1	1	1/4	1/4	1/6	1/6	**0,0445**
2	1	1	1/4	1/4	1/6	1/6	**0,0445**
3	4	4	1	1	1/2	1/2	**0,1617**
23	4	4	1	1	1/2	0,5	**0,1617**
25	6	6	2	2	1	1	**0,2938**
27	6	6	2	2	1	1	**0,2938**

Table A6.10. Matrix of measure “Advanced PT Ticketing” evaluations

Good Practice No	1	2	3	23	25	27	Priority vector
1	1	1/9	1	1/3	1/7	1/2	**0,0389**
2	9	1	9	6	3	7	**0,4866**
3	1	1/9	1	1/3	1/7	1/2	**0,0389**
23	3	1/6	3	1	1/4	1	**0,0887**
25	7	1/3	7	4	1	5	**0,2742**
27	2	1/7	2	1	1/5	1	**0,0728**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ANNEX 7

Comparative Assessment of Good Practices in the group "Public Transport Fleet Management Systems":
The paired comparison of good practices for each measure and appropriate priority vectors calculations

A7.1.Measures' group "Organization and Legislation"

Table A7.1. Matrix of measure "PT Legislation and Regulation" evaluations

Good Practice No	4	6	8	10	19	26	Priority vector
4	1	4	9	9	9	5	**0,5055**
6	1/4	1	6	6	6	1	**0,1989**
8	1/9	1/6	1	1	1	1/5	**0,0402**
10	1/9	1/6	1	1	1	1/5	**0,0402**
19	1/9	1/6	1	1	1	1/5	**0,0402**
26	1/5	1	5	5	5	1	**0,1749**

Table A7.2. Matrix of measure "PT Reorganization into Multimodal System" evaluations

Good Practice No	4	6	8	10	19	26	Priority vector
4	1	6	4	5	5	5	**0,4936**
6	1/6	1	1/2	1	1/2	1/2	**0,0682**
8	1/4	2	1	1	1	1	**0,1158**
10	1/5	1	1	1	1	1	**0,0994**
19	1/5	2	1	1	1	1	**0,1116**
26	1/5	2	1	1	1	1	**0,1116**

Table A7.3. Matrix of measure "Cooperation among Administrations" evaluations

Good Practice No	4	6	8	10	19	26	Priority vector
4	1	9	9	9	6	5	**0,5427**
6	1/9	1	1	1	1/4	1/5	**0,0432**
8	1/9	1	1	1	1/4	1/5	**0,0432**
10	1/9	1	1	1	1/4	1/5	**0,0432**
19	1/6	4	4	4	1	1	**0,1523**
26	1/5	5	5	5	1	1	**0,1755**

A7.2.Measures' group "Infrastructural Actions"

Table A7.4. Matrix of measure "ITS Technical Standardization for Interoperability" evaluations

Good Practice No	4	6	8	10	19	26	Priority vector
4	1	1	1	1	1	1	**0,1667**
6	1	1	1	1	1	1	**0,1667**
8	1	1	1	1	1	1	**0,1667**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

10	1	1	1	1	1	1	**0,1667**
19	1	1	1	1	1	1	**0,1667**
26	1	1	1	1	1	1	**0,1667**

Table A7.5. Matrix of measure “Infrastructural Measures” evaluations

Good Practice No	4	6	8	10	19	26	Priority vector
4	1	4	4	9	9	9	**0,4800**
6	1/4	1	1	7	7	7	**0,2116**
8	1/4	1	1	6	6	6	**0,1959**
10	1/9	1/7	1/6	1	1	1	**0,0375**
19	1/9	1/7	1/6	1	1	1	**0,0375**
26	1/9	1/7	1/6	1	1	1	**0,0375**

Table A7.6. Matrix of measure “Innovative ICT for PT” evaluations

Good Practice No	4	6	8	10	19	26	Priority vector
4	1	9	9	9	6	6	**0,5459**
6	1/9	1	1	1	1/5	1/5	**0,0406**
8	1/9	1	1	1	1/5	1/5	**0,0406**
10	1/9	1	1	1	1/5	1/5	**0,0406**
19	1/6	5	5	5	1	1	**0,1661**
26	1/6	5	5	5	1	1	**0,1661**

A7.3.Measures’ group “Modelling”

Table A7.7. Matrix of measure “Modelling Tools and Measures” evaluations

Good Practice No	4	6	8	10	19	26	Priority vector
4	1	9	9	9	9	6	**0,5799**
6	1/9	1	1	1	1/2	1/5	**0,0470**
8	1/9	1	1	1	1/2	1/5	**0,0470**
10	1/9	1	1	1	1/2	1/5	**0,0470**
19	1/9	2	2	2	1	1/3	**0,0812**
26	1/6	5	5	5	3	1	**0,1981**

A7.4.Measures’ group “Information actions”

Table A7.8. Matrix of measure “PT Traffic Management Measures” evaluations

Good Practice No	4	6	8	10	19	26	Priority vector
4	1	9	9	6	7	6	**0,5490**
6	1/9	1	1	1/5	1/4	1/4	**0,0351**
8	1/9	1	1	1/5	1/4	1/5	**0,0338**
10	1/6	5	5	1	1	1	**0,1332**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

19	1/7	4	4	1	1	1	**0,1205**
26	1/6	4	5	1	1	1	**0,1284**

Table A7.9. Matrix of measure “PT Information Measures” evaluations

Good Practice No	4	6	8	10	19	26	Priority vector
4	1	6	9	9	8	7	**0,5623**
6	1/6	1	5	5	3	1	**0,1562**
8	1/9	1/5	1	1	1/3	1/4	**0,0359**
10	1/9	1/5	1	1	1/3	1/4	**0,0359**
19	1/8	1/3	3	3	1	1/2	**0,0776**
26	1/7	1	4	4	2	1	**0,1321**

Table A7.10. Matrix of measure “Advanced PT Ticketing” evaluations

Good Practice No	4	6	8	10	19	26	Priority vector
4	1	9	9	9	9	9	**0,6429**
6	1/9	1	1	1	1	1	**0,0714**
8	1/9	1	1	1	1	1	**0,0714**
10	1/9	1	1	1	1	1	**0,0714**
19	1/9	1	1	1	1	1	**0,0714**
26	1/9	1	1	1	1	1	**0,0714**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

ANNEX 8

Comparative Assessment of Good Practices in the group “Public Transport and / or Multimodal Information Systems”:
The paired comparison of good practices for each measure and appropriate priority vectors calculations

A8.1.Measures’ group “Organization and Legislation”

Table A8.1. Matrix of measure “PT Legislation and Regulation” evaluations

Good Practice No	7	11	14	16	17	18	21	24	30	31	32	Priority vector
7	1	1	1/5	1/5	1/5	1/3	1/6	1/6	1/5	1	1	**0,0254**
11	1	1	1/4	1/4	1/4	1/2	1/5	1/5	1/4	1	1	**0,0296**
14	5	4	1	1	1	3	1	1/2	1	5	5	**0,1276**
16	5	4	1	1	1	3	1	1	1	5	5	**0,1359**
17	5	4	1	1	1	3	1	1	1	5	5	**0,1359**
18	3	2	1/3	1/3	1/3	1	1/3	1/4	1/3	3	3	**0,0537**
21	6	5	1	1	1	3	1	1	1	6	6	**0,1457**
24	6	5	2	1	1	4	1	1	1	6	6	**0,1593**
30	5	4	1	1	1	3	1	1	1	5	5	**0,1359**
31	1	1	1/5	1/5	1/5	1/3	1/6	1/6	1/5	1	1	**0,0254**
32	1	1	1/5	1/5	1/5	1/3	1/6	1/6	1/5	1	1	**0,0254**

Table A8.2. Matrix of measure “PT Reorganization into Multimodal System” evaluations

Good Practice No	7	11	14	16	17	18	21	24	30	31	32	Priority vector
7	1	6	1	1/2	1/2	2	1	1/4	1	1	1	**0,0713**
11	1/6	1	1/6	1/7	1/7	1/4	1/6	1/9	1/5	1/6	1/5	**0,0144**
14	1	6	1			2	1	1/4	1	1	1	**0,0713**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

				1/2	1/2							
16	2	7	2	1	1	3	1	1/3	2	1	2	**0,1124**
17	2	7	2	1	1	3	1	1/3	2	1	2	**0,1124**
18	1/2	4	1/2	1/3	1/3	1	1/2	1/5	1	1/3	1	**0,0440**
21	1	6	1	1	1	2	1	1/4	1	1	2	**0,0861**
24	4	9	4	3	3	5	4	1	5	3	5	**0,2730**
30	1	5	1	1/2	1/2	1	1	1/5	1	1/2	1	**0,0606**
31	1	6	1	1	1	3	1	1/3	2	1	2	**0,0977**
32	1	5	1	1/2	1/2	1	1/2	1/5	1	1/2	1	**0,0569**

Table A8.3. Matrix of measure “Cooperation among Administrations” evaluations

Good Practice No	7	11	14	16	17	18	21	24	30	31	32	Priority vector
7	1	1	1/6	1	1	1	1/6	1/6	1/6	1	1	**0,0323**
11	1	1	1/6	1	1	1	1/6	1/6	1/6	1	1	**0,0323**
14	6	6	1	6	6	6	1	1	1	6	6	**0,1935**
16	1	1	1/6	1	1	1	1/6	1/6	1/6	1	1	**0,0323**
17	1	1	1/6	1	1	1	1/6	1/6	1/6	1	1	**0,0323**
18	1	1	1/6	1	1	1	1/6	1/6	1/6	1	1	**0,0323**
21	6	6	1	6	6	6	1	1	1	6	6	**0,1935**
24	6	6	1	6	6	6	1	1	1	6	6	**0,1935**
30	6	6	1	6	6	6	1	1	1	6	6	**0,1935**
31	1	1	1/6	1	1	1	1/6	1/6	1/6	1	1	**0,0323**
32	1	1	1/6	1	1	1	1/6	1/6	1/6	1	1	**0,0323**

A8.2.Measures’ group “Infrastructural Actions”

Table A8.4. Matrix of measure “ITS Technical Standardization for Interoperability” evaluations

Good Practice No	7	11	14	16	17	18	21	24	30	31	32	Priority vector
7	1	1/2	1/5	1	1	1/3	1/8	1/8	1/3	1	1	**0,0268**
11	2	1	1/4	2	2	1	1/6	1/7	1/2	2	2	**0,0476**
14	5	4	1	5	5	3	1/3	1/4	2	5	5	**0,1305**
16	1	1/2	1/5	1	1	1/3	1/8	1/8	1/3	1	1	**0,0268**
17	1	1/2		1	1			1/8		1	1	**0,0268**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

			1/5			1/3	1/8		1/3			
18	3	1	1/3	3	3	1	1/6	1/6	1	3	3	**0,0634**
21	8	6	3	8	8	6	1	1	5	8	8	**0,2687**
24	8	7	4	8	8	6	1	1	6	8	8	**0,2844**
30	3	2	1/2	3	3	1	1/5	1/6	1	3	3	**0,0713**
31	1	1/2	1/5	1	1	1/3	1/8	1/8	1/3	1	1	**0,0268**
32	1	1/2	1/5	1	1	1/3	1/8	1/8	1/3	1	1	**0,0268**

Table A8.5. Matrix of measure “Infrastructural Measures” evaluations

Good Practice No	7	11	14	16	17	18	21	24	30	31	32	Priority vector
7	1	1	1/4	1	1	1	1/2	1/5	1	1/5	1/4	**0,0361**
11	1	1	1/5	1	1	1	1/3	1/6	1/2	1/6	1/5	**0,0304**
14	4	5	1	5	5	5	3	1/2	3	1/2	1	**0,1455**
16	1	1	1/5	1	1	1	1/3	1/6	1/2	1/6	1/5	**0,0304**
17	1	1	1/5	1	1	1	1/3	1/6	1/2	1/6	1/5	**0,0304**
18	1	1	1/5	1	1	1	1/3	1/6	1/2	1/6	1/5	**0,0304**
21	2	3	1/3	3	3	3	1	1/4	1	1/4	1/3	**0,0671**
24	5	6	2	6	6	6	4	1	4	1	2	**0,2150**
30	1	2	1/3	2	2	2	1	1/4	1	1/4	1/3	**0,0543**
31	5	6	2	6	6	6	4	1	4	1	2	**0,2150**
32	4	5	1	5	5	5	3	1/2	3	1/2	1	**0,1455**

Table A8.6. Matrix of measure “Innovative ICT for PT” evaluations

Good Practice No	7	11	14	16	17	18	21	24	30	31	32	Priority vector
7	1	1/2	1/7	1/6	1/5	1	1/7	1/9	1/4	1/6	1	**0,0186**
11	2	1	1/6	1/5	1/4	2	1/6	1/8	1/3	1/5	2	**0,0270**
14	7	6	1	1	2	7	1	1/3	3	1	7	**0,1337**
16	6	5	1	1	2	6	1	1/3	2	1	6	**0,1216**
17	5	4	1/2	1/2	1	5	1/2	1/4	1	1	5	**0,0806**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

18	1	1/2	1/7	1/6	1/5	1	1/7	1/9	1/4	1/6	1	**0,0186**
21	7	6	1	1	2	7	1	1/3	3	1	7	**0,1337**
24	9	8	3	3	4	9	3	1	5	3	9	**0,2703**
30	4	3	1/3	1/2	1	4	1/3	1/5	1	1/2	4	**0,0631**
31	6	5	1	1	1	6	1	1/3	2	1	6	**0,1141**
32	1	1/2	1/7	1/6	1/5	1	1/7	1/9	1/4	1/6	1	**0,0186**

A8.3.Measures' group "Modelling"

Table A8.7. Matrix of measure "Modelling Tools and Measures" evaluations

Good Practice No	7	11	14	16	17	18	21	24	30	31	32	Priority vector
7	1	1	1/5	1	1	1/2	1	1/6	1/3	1	1	**0,0428**
11	1	1	1/5	1	1	1/2	1	1/6	1/3	1	1	**0,0428**
14	5	5	1	5	5	3	5	1/2	2	5	5	**0,2112**
16	1	1	1/5	1	1	1/2	1	1/6	1/3	1	1	**0,0428**
17	1	1	1/5	1	1	1/2	1	1/6	1/3	1	1	**0,0428**
18	2	2	1/3	2	2	1	2	1/4	1	2	2	**0,0851**
21	1	1	1/5	1	1	1/2	1	1/6	1/3	1	1	**0,0428**
24	6	6	2	6	6	4	6	1	3	6	6	**0,2866**
30	3	3	1/2	3	3	1	3	1/3	1	3	3	**0,1174**
31	1	1	1/5	1	1	1/2	1	1/6	1/3	1	1	**0,0428**
32	1	1	1/5	1	1	1/2	1	1/6	1/3	1	1	**0,0428**

A8.4.Measures' group "Information actions"

Table A8.8. Matrix of measure "PT Traffic Management Measures" evaluations

Good Practice No	7	11	14	16	17	18	21	24	30	31	32	Priority vector
7	1	1	1/6	1/5	1/5	1	1	1/6	1/5	1/6	1	**0,0260**
11	1	1	1/6	1/5	1/5	1	1	1/6	1/5	1/6	1	**0,0260**
14	6	6	1	2	2	6	6	1	2	1	6	**0,1796**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

16	5	5	1/2	1	1	5	5	1/2	1	1	5	**0,1206**
17	5	5	1/2	1	1	5	5	1/2	1	1	5	**0,1206**
18	1	1	1/6	1/5	1/5	1	1	1/6	1/5	1/6	1	**0,0260**
21	1	1	1/6	1/5	1/5	1	1	1/6	1/5	1/6	1	**0,0260**
24	6	6	1	2	2	6	6	1	2	1	6	**0,1796**
30	5	5	1/2	1	1	5	5	1/2	1	1	5	**0,1206**
31	6	6	1	1	1	6	6	1	1	1	6	**0,1487**
32	1	1	1/6	1/5	1/5	1	1	1/6	1/5	1/6	1	**0,0260**

Table A8.9. Matrix of measure “PT Information Measures” evaluations

Good Practice No	7	11	14	16	17	18	21	24	30	31	32	Priority vector
7	1	1	1/4	1/4	1/4	1/2	1/9	1/7	1/3	1/4	1/4	**0,0202**
11	1	1	1/4	1/4	1/4	1/2	1/9	1/7	1/4	1/4	1/4	**0,0197**
14	4	4	1	1	1	3	1/5	1/4	1	1	1	**0,0705**
16	4	4	1	1	1	3	1/5	1/3	1	1	1	**0,0724**
17	4	4	1	1	1	3	1/5	1/3	1	1	1	**0,0724**
18	2	2	1/3	1/3	1/3	1	1/7	1/6	1/2	1/3	1/3	**0,0300**
21	9	9	5	5	5	7	1	2	6	5	5	**0,3018**
24	7	7	4	3	3	6	1/2	1	4	4	4	**0,2071**
30	3	4	1	1	1	2	1/6	1/4	1	1	1	**0,0651**
31	4	4	1	1	1	3	1/5	1/4	1	1	1	**0,0705**
32	4	4	1	1	1	3	1/5	1/4	1	1	1	**0,0705**

Table A8.10. Matrix of measure “Advanced PT Ticketing” evaluations

Good Practice No	7	11	14	16	17	18	21	24	30	31	32	Priority vector
7	1	7	7	7	7	7	1	7	1	7	7	**0,2363**
11	1/7	1	1	1	1	1	1/8	1	1/7	1	1	**0,0334**
14	1/7	1	1	1	1	1	1/8	1	1/7	1	1	**0,0334**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme

16	1/7	1	1	1	1	1	1/8	1	1/7	1	1	**0,0334**
17	1/7	1	1	1	1	1	1/8	1	1/7	1	1	**0,0334**
18	1/7	1	1	1	1	1	1/8	1	1/7	1	1	**0,0334**
21	1	8	8	8	8	8	1	8	1	8	8	**0,2605**
24	1/7	1	1	1	1	1	1/8	1	1/7	1	1	**0,0334**
30	1	7	7	7	7	7	1	7	1	7	7	**0,2363**
31	1/7	1	1	1	1	1	1/8	1	1/7	1	1	**0,0334**
32	1/7	1	1	1	1	1	1/8	1	1/7	1	1	**0,0334**

This project is co-financed by the ERDF and made possible by the INTERREG IVC programme