URBAN ITS EXPERT GROUP

BEST PRACTICE COLLECTION

OVERVIEW OF COLLECTED PROJECTS

December 2012

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1 Overview of collected projects

The collection of Best Practices offers an overview of the four key ITS applications (travel and traffic information, smart ticketing, traffic management and urban logistics). The Best Practices could address one or more key applications and be shared by different countries. Only English format inputs have been collected.

In total, 68 projects with complete documentation have been collected (form has been fully filled in). The following table shows the split of projects per key application (more than one area possible per project):

Category	Projects
Total Projects	68
Traffic and Travel Information (TTI)	36
Smart Ticketing (ST)	17
Traffic and Access Management (TM)	30
Urban Logistics (UL)	10

The following table gives an overview on the projects per country (some projects are allocated to several key areas and countries):

	Total	TTI	ST	TM	UL
AT	**2**	2			1
CH	**1**				1
DE	**23**	13	4	11	3
EL	**1**	1		1	1
ES	**3**	1	2		
EU	**4**	4			
FR	**7**	3	4	2	
IT	**2**	1		1	
NL	**12**	6	2	6	4
NO	**2**		1	1	
PL	**3**	1	2		
RO	**1**		1		
SE	**3**	3		3	
UK	**6**	3	1	5	

Urban ITS Best Practices divided by country and key application area

The following table shows the list of all fully collected projects and the key application they address.

D3	Country	Project Name	Traffic & Travel Information	Smart Ticketing	Traffic & Access Management	Urban Logistics
3.1	AT	Graphs Integration Platform for Austria	x			x
3.2	AT	Vienna - A Joint Traffic Information Project	x			
3.3	CH	Basel - MCH Logisticstool				x
3.4	DE	Düsseldorf – Dmotion, Cooperative Traffic Management in the Metropolitan Area of Düsseldorf	x		x	
3.5	DE	Munich - Tram and Bus Priority at Traffic Signal, “Green Waves”			x	
3.6	DE	Berlin - Inner City Logistic				x
3.7	DE	Berlin - Integrated real-time based Travel Information Services for Public Transport, VBB Berlin Brandenburg	x			
3.8	DE	Deutsche Bahn: Touch & Travel (NFC Pilot)	x	x		
3.9	DE	Stuttgart: Integrated Traffic Management Centre Focuses on Collaboration and Information Sharing			x	x
3.10	DE	Munich - Public Transport, Information Management System			x	
3.11	DE	Cologne - Intermodal Transport Control System for Public Transport	x		x	
3.12	DE	Leipzig - Public Transport Traffic Control and Passenger Information	x		x	
3.13	DE	Intermodal Transport Control Systems for Public Transport	x		x	
3.14	DE	RNV Real-Time Passenger Information (Rhein-Neckar-Verkehr)	x			
3.15	DE	Karlsruhe - Handy Ticket KVV		x		
3.16	DE	Implementation of ITCS for 250 light rail vehicles and 80 buses			x	
3.17	EU/DE	Provision of nationwide and European wide public transport journey planner system (DELFI & EU-SPIRIT)	x			
3.18	EU/DE	Integration of regional public transport routing information system within the public transport network of Nation- and European wide journey planner	x			
3.19	DE	Networking of Intermodal passenger travel information and Realtime in Public-Transport (itcs/RBL/FIS/ABF/RBL-Light etc.)	x		x	
3.20	DE	Stuttgart - RBL Light, Intermodal Transport Control System			x	
3.21	DE	Stuttgart – VVS HandyTicket		x		
3.22	DE	Stuttgart - Journey Planner (EFA)	x			

D3	Country	Project Name	Traffic & Travel Information	Smart Ticketing	Traffic & Access Management	Urban Logistics
3.23	DE	Dortmund – Public Transport, ITCS/RBL			x	
3.24	DE	Logistic V-Info, Professional Tour Planning Information	x			x
3.25	DE	Bremen – eTicketing / BOB Card		x		
3.26	EL	Online Portal for transport data/content management and transportation service provision	x		x	x
3.27	ES	Madrid - Contactless Card End of 2011- Integration of High Number Of Operators		x		
3.28	ES	Madrid – WiFi on Buses	x			
3.29	ES	Barcelona – Steps towards E-Ticketing		x		
3.30	EU	Europe-In-Time (Delivering Intelligent and Efficient Travel Management for European Cities)	x			
3.31	EU	European cross-border travel information network «EU-Spirit»	x			
3.32	FR	Lyon-Global Urban Ticketing		x		
3.33	FR	Lyon - Grand Lyon Urban Traffic Management System (CRITER)	x		x	
3.34	FR	Paris - Passautocar (Coach Parking Pass)		x	x	
3.35	FR	Toulouse-Electronic Ticketing System		x		
3.36	FR	Toulouse-Multimodal Traveller Information Centre	x			
3.37	FR	Paris – INFOMOBI Mail / SMS Service for PRMs	x			
3.38	FR	La Rochelle – Electronic Ticketing System		x		
3.39	IT/DE	SMART-WAY: Mobile public transport navigation	x			
3.40	IT	Bologna - SIRIO			x	
3.41	NL	Rotterdam – Park & Ride Pricing Strategy for Target Groups			x	
3.42	NL	Rotterdam - Truck Parking in Residential Areas				x
3.43	NL	Rotterdam-The Traffic Enterprise (De Verkeersonderneming)	x		x	x
3.44	NL	Urban Freight Energy Efficiency Pilot (Helmond Freilot)			x	x
3.45	NL	Rotterdam - Havenbedrijf (Port of Rotterdam Authority)	x		x	x
3.46	NL	Openbaar Vervoer Chipkaart (Public Transport Chipcard)		x		
3.47	NL	Spitsmijden, Avoiding Rush Hour			x	
3.48	NL	Brabant – Spitsmijden,Avoiding the Peak	x		x	
3.49	NL	Yellowbrick / Parkline		x		

D3	Country	Project Name	Traffic & Travel Information	Smart Ticketing	Traffic & Access Management	Urban Logistics
3.50	NL	Maintenance of Information Standards for Public Transportation BISON	x			
3.51	NL	Public Transport Information without frontiers GOVI	x			
3.52	NL	Enschede – Incentive Zone	x			
3.53	NO	Oslo - Economic Evaluation of an ITS-Based Toll Collection			x	
3.54	NO	Trondheim - Smart Card Ticketing: t-card		x		
3.55	PL/DE	Warsaw - Cross Border Travel Planner	x			
3.56	PL	Warsaw – Voice Portal	x			
3.57	PL	Warsaw - Tickets on Mobile Phones in SkyCash™ and mPay Systems Based on Specialized Applications		x		
3.58	PL	Lodz – Electronic Monthly Ticket		x		
3.59	RO	RATB Travel Card		x		
3.60	SE	Gothenburg - Motorway Control System	x		x	
3.61	SE	Gothenburg – ITS4 Mobility	x		x	
3.62	SE	Gothenburg – Attractive Travel Service	x		x	
3.63	UK	Urban Traffic Management & Control (UTMC) Open System Integration	x		x	
3.64	UK	London - Urban Road User Charging			x	
3.65	UK	Bristol - Environmental Road Pricing	x		x	
3.66	UK	London - Oyster Card		x		
3.67	UK	London - Low Emission Zone (LEZ)			x	
3.68	UK	Leicester - Traffic Information Service Database / Smart Ticketing	x		x	

2 Urban ITS Best Practice Template

URBAN ITS KEY APPLICATION	☐ Traffic & Travel Information ☐ Smart Ticketing ☐ Other:	☐ Traffic & Access Management ☐ Urban Logistics
TITLE		

1. GENERAL DESCRIPTION				
Problems to solve / Objectives	Issue(s) encountered: Objective(s) of the measure/service:			
Start of system/service				
Location	☐ single road/line	☐ city district	☐ whole city	☐ urban region
Transport mode(s) concerned	☐ public transport ☐ bicycles	☐ rail ☐ pedestrians	☐ road ☐ other:	☐ car-sharing
Implementing organisation				
System / service description				
Technologies				
Standards				

2. IMPLEMENTATION		
Partners involved	☐ Public authorities: ☐ Private stakeholders: ☐ Others:	
Organisational model	☐ ☐ Management body: ☐ Operating body: ☐ Financing body:	
Business model	☐ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:	
Investment costs	€:	
Operating costs	€ / year:	person / year:

3. RESULTS

Technical performance	
Implementation of Innovation	
Safety impacts	
Efficiency impacts	
Environmental impacts	
Socio-economic impacts	
Revenue generation	
User acceptance	

4. LESSONS LEARNT

Factors for success	
Obstacles	

5. MORE INFORMATION

Contact Person	Name: Function: Company: Email: Phone:
Web link (if existing)	

3 Urban ITS Best Practices Explanatory Note

Who collects Urban ITS Best Practices?

The collection of Urban Intelligent Transport Systems (ITS) Best Practices is an activity coordinated by the **Urban ITS Expert Group**, as part of its framework. This group has been set up in late 2010 by the Directorate General for Mobility and Transport (DG MOVE) of the European Commission, as part of the ITS Action Plan. The group is made of 25 experts form public and private organisations, directly connected and concerned with urban ITS issues.

Why collecting this information?

The first task of the Urban ITS Expert Group during its 24 months of activity is to identify and exchange best practices for the key applications of urban ITS. The objective is to support **cross-fertilisation** among stakeholders through the setting up of an **urban ITS database**. This database is to be filled in with success stories but also unsuccessful implementations.

This database will aim to target an audience of stakeholders responsible for the implementation of ITS systems and services in urban areas. The population comprises local authorities, public transport operators, service providers and to a certain extent decision-makers at a political level.

How this information will be used?

The information once collected will go through an editorial process to adapt and harmonise the layouts. The Commission foresees a **web-based version of this database** to ensure a large dissemination and the possibility to continually enhance the content. Personal details like detailed contact information will not be publicly available if so required.

How to complete the Best Practice template, what type of information is awaited?

The information to be provided in the Best Practices should be:

- **Quantitative rather than qualitative:** it should be based on concrete facts and figures
- **Comprehensive:** a maximum of sections of the template should be completed, if not all
- **Concise:** the final document should not exceed 5 pages, answers should be focused.

The template's structure includes 6 sections which should be completed as follow:

- **Best Practice classification**

URBAN ITS **KEY APPLICATION**	☐ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:	*Tick at least one box. The 4 items correspond to priority areas identified by the Expert Group.*
TITLE		*Title of Best Practice describing in 20 words maximum the ITS project.*

- **Description of the ITS services and systems concerned**

1. GENERAL DESCRIPTION		
Problems to solve / Objectives	Issue(s) encountered: Objective(s) of the measure/service:	*Transport issues requesting the implementation of such service or system.* *Quantitative and/or qualitative objectives targeted (reduction*

		of…)
Start of system/service		*Date of first operating*
Location	☐ single road/line ☐ city district	*Is the measure linear or spatial*
Transport mode(s) concerned	☐ public transport ☐ rail ☐ bicycles ☐ pedestrians	*Urban modes considered*
Implementing organisation		*Name and characteristic (public, private, other) of the implementer. Core of its normal activities.*
System / service description		*Description of service/system provided to users, its functions, basic reasoning.*
Technologies		*List of the main technologies in use to implement the service/system.*
Standards		*List of the main standards in use to implement the service/system.*

- **Description of the implementation scheme**

2. IMPLEMENTATION

Partners involved	☐ Public authorities: ☐ Private stakeholders: ☐ Others:	*List of all stakeholders directly involved in the running of the service/system.*
Organisational model	☐ Management body: ☐ Operating body: ☐ Financing body:	*List of all stakeholders directly involved under 3 sections: management/coordination, operating and financing.*
Business model	☐ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:	*Definition of the business model and identification of the amounts.*
Investment costs	€:	*Total investment before running the service/system.*
Operating costs	€ / year: person / year:	*Yearly cost for operating the service/system.*

- **Evaluation results, quantitative and qualitative outputs**

3. RESULTS

Technical performance		*Technical performance indicators.*
Implementation of Innovation		*Break-through, new technology, new organisation, new stakeholder, new solution, etc.*
Safety impacts		*Evaluation results (if available), quantitative rather than qualitative.*

Efficiency impacts		*Evaluation results (if available), quantitative rather than qualitative.*
Environmental impacts		*Evaluation results (if available), quantitative rather than qualitative.*
Socio-economic impacts		*Evaluation results (if available), quantitative rather than qualitative.*
Revenue generation		*Financial benefits or loss, unexpected financial impacts.*
User acceptance		*Users' feedback, impact on usage, incentive on use, etc.*

- **Cross-fertilisation in a summary**

4. LESSONS LEARNT

Factors for success		*Which crucial elements impacted so much the implementation that it made it successful, which elements/actors/process are key factors.*
Obstacles		*Which crucial elements impacted so much the implementation that it could make it a failure, which elements/actors/process are key factors.*

- **Contacts**

5. MORE INFORMATION

Contact Person	Name: Function: Company: Email: Phone:	*Details of the person in charge that may be contacted for further information.*
Web link (if existing)		*Website address.*

4 Urban ITS Best Practices Projects

4.1 AT - Graphs Integration Platform (GIP) for Austria

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☒ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Provide Austria with an intermodal, routable graph as the basis for traffic information, traffic management and traffic administration
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s)	☒ public transport ☒ road ☒ multi-modal ☒ other: pedestrian, bike, p+r, parking,…
Implementing organisation	Cooperation of ASFINAG, OeBB, States and Municipalities of Austria and Federal Ministry of Transportation (bmvit)
System / service description	Database and Software for Editing and Exchange of Graph Data in a decentralised manner
Technologies	Web-Services for Editing, ArcGIS-Rich-Client for special purposes
Standards	The GIP-Standard is going to created by the above organisations till end of 2011
Start of system/service	2008 in Vienna
2. IMPLEMENTATION	
Role model (tbc)	none
Partners involved	ASFINAG, OeBB, Vienna, Lower Austria, Burgenland, …, bmvit
Business model	Costs are divided between the partners and funded from their budgets. Subsidies from the Austrian Climate and Energy-Funds
3. RESULTS	
Technical performance	Vienna has replaced it’s former Graph by the new system
Safety impacts	none
Efficiency impacts	Is the basis for the data exchange within and between the transport authorities on behalf of cooperations, regulatory processes, permits and traffic information
Environmental impacts	Enables comprehensive monitoring of environmental footprint and fuel-consumption on real-world data instead of models, forecasts
Socio-economic impacts	Basis of the ITS-Vienna Region traffic situation forecast and dynamic intermodal router; shall become the basis of the Austrian accident database
Revenue generation	none
User acceptance	All states of Austria, the federal government and some of the municipalities are already using the system

4. LESSONS LEARNT	
Factors for success	Subsidies, technical expertise, technical excellence, reference implementation in the Vienna Region, free exchange of data
Obstacles	Mere amount of data necessary, large number of involved authorities
5. MORE INFORMATION	
Contact Person	Rainer Haselberger (Vienna), Hans Fiby (VOR)
Web link (if existing)	http://AnachB.at is based upon the GIP, http://www.kagis.ktn.gv.at/194378_DE-.pdf

4.2 AT - Vienna – A Joint Traffic Information Project

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Regional and intermodal traffic and travel information system run by the public transport association for the Vienna region (VOR GesmbH)
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s)	☒ public transport ☒ road ☒ multi-modal ☐ other: bike, pedestrian, p+r, take along bike, city-bike,…
Implementing organisation	VOR GesmbH, funded by the partner states
System / service description	Dynamic traffic situation forecast, dynamic intermodal router
Technologies	Transport models, intermodal graph with dynamic traffic information and information from transport authorities (e-Government)
Standards	DATEX2
Start of system/service	2008
2. IMPLEMENTATION	
Role model (tbc)	
Partners involved	City of Vienna, the states of Lower Austria and Burgenland and the VOR (Public transport association Vienna Region)
Business model	Public funds from the above mentioned states
3. RESULTS	
Technical performance	You find the results at http://AnachB.at
Safety impacts	none
Efficiency impacts	Modal shift, better informed passengers
Environmental impacts	Modal shift
Socio-economic impacts	Route guidance free of charge for all social groups
Revenue generation	none
User acceptance	➢ 1 Mio requests/month

4. LESSONS LEARNT	
Factors for success	Comprehensive intermodal and dynamic graph as the joint reference system for all data providers involved, data exchange for free from all partners, additional funds from research programs, expertise of the team
Obstacles	Quality of data, accuracy, timelyness, organising data exchange free of charge, complexity of forecast-models

5. MORE INFORMATION	
Contact Person	Hans Fiby (VOR), Rainer Haselberger (Vienna)
Web link (if existing)	http://AnachB.at

4.3 CH – Basel - MCH Logisticstool

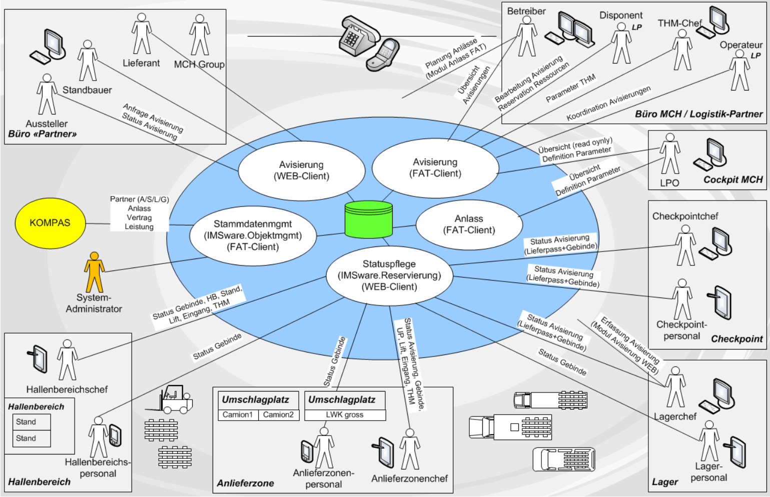
<table>
<tr><td>URBAN ITS
KEY APPLICATION</td><td>☐ Traffic & Travel Information
☐ Traffic & Access Management
☐ Smart Ticketing
☒ Urban Logistics
☐ Other:</td></tr>
<tr><td colspan="2">1. GENERAL DESCRIPTION</td></tr>
<tr><td>Problems to solve / Objectives</td><td>Background:
• Fairground (Messe Basel) in the middle of the city
• Construction of 3 exhibition halls in the period between 2011 to 2013
• Limited unloading points
Problems:
• Uncoordinated approaches to the transfer zones (unloading points)
• Poor coordination and inadequate arrangements between stand builder and carriers
• High transport peaks in the first set-up and dismantling days
• Difficult management of existing checkpoint
• New exhibition halls in 2013 with less lifts
Conclusion:
• Current condition needs optimisation, particularly in view of the logistical processes with commissioning of the new halls
Objectives:
• Transparent representation of the logistics processes on the premises
• Optimisation of logistics processes in all areas and phases (checkpoint, transfer zones, lifts, etc.)
• Improving traffic flow
• Optimisation of the unloading points
• Optimisation of the use of forklifts
• Partial change of delivery concept
• Optimal allocation of resources (personnel and transportation equipment)</td></tr>
<tr><td>Location</td><td>☐ single road/line ☒ city district ☐ whole city ☐ urban region
Messe Basel (Fair Basel)</td></tr>
<tr><td>Transport mode(s)</td><td>☐ public transport ☒ road ☐ multi-modal ☒ other: traffic on fairground (e.g. trucks, forklifts, etc.)</td></tr>
<tr><td>Implementing organisation</td><td>MCH – Messe Basel</td></tr>
<tr><td>System / service description</td><td>In connection with the adjustment and optimisation of logistics processes (partly due to construction of new exhibition halls in 2013) and the major trade fairs Swissbau and Baselworld, the MCH is planning to procure a resource management tool (referred to as logistics tool) for the checkpoint and the transfer zones of the Messe Basel.


Lieferpass
Partner: Aufbau AG
Halle: 1.0
Stand: A05
Zeitfenster CP: 27.03.2012 08:00-09:00
Zeitfenster UP: 10:00-10:30
Fahrzeugtyp: Lieferwagen
Fahrzeughöhe: <3.5m
MCHL11285409

Important steps of the logistics tool:
• Notification: no delivery pass means no accessibility, request for delivery pass via www.messe.ch, confirmation of request, sending of delivery pass and barcode
• Checkpoint (outside the fairground): check each truck on arrival time and delivery pass, check its cargo
• Transfer zone (unloading point): forklifts unload the truck, unloading time max. 30 minutes
• Stand: building up stand</td></tr>
</table>

Technologies	RFID / Barcode
Standards	
Start of system/service	Support the logistics processes through a logistics tool, phased introduction from 2012 onwards : • 2012: notification and control of vehicle movements and reservation of resources (lifts, unloading and transport equipment) • 2013: supplement to the collection of cargo/truck movements in the logistics tool (RFID/barcode)

2. IMPLEMENTATION

<table>
<tr><td>Role model (tbc)</td><td>Overall view on the different roles in the logistics tool:

</td></tr>
<tr><td>Partners involved</td><td>IC information company, Pratteln, Switzerland
Rapp Trans, Basel, Switzerland</td></tr>
<tr><td>Business model</td><td></td></tr>
</table>

3. RESULTS

Technical performance	System runs without any problems
Safety impacts	
Efficiency impacts	Traffic jams in the city and the neighbourhood of the fair facilities because of lorry deliveries from/to the exhibitions have been reduced dramatically.
Environmental impacts	
Socio-economic impacts	
Revenue generation	
User acceptance	The haulier appreciate the improved reliability in deliveries to/from the fair compounds.

4. LESSONS LEARNT

Factors for success	Involvement of stakeholders, detailed determination of functional requirements
Obstacles	

5. MORE INFORMATION	
Contact Person	Simon Benz Rapp Trans AG simon.benz@rapp.ch
Web link (if existing)	http://www.performed.ch/index.php?m=2&id=8&PHPSESSID=529ig5g56fgqhslrdisenqh067 http://www.messe.ch

4.4 DE - Düsseldorf – Dmotion, Cooperative Traffic Management in the Metropolitan Area of Düsseldorf

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
6. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Traffic Management, Traffic Guidance, Traffic Incident Management Objective(s) of the measure/service: ▪ To maximize the utilization of the regional and urban network capacities in case of incidents and congestions ▪ To coordinate strategy management between private actors and traffic management centres of public authorities
Start of system/service	2010
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☐ public transport ☐ rail ☒ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Authority of Düsseldorf, authority of Nordrhein Westfalen, Stadtwerke Düsseldorf, private service provider PTV,
System / service description	By establishing a data, information and strategy network between two public authorities and a private service provider, an enhanced traffic state analysis and a strategy management system will be provided. Road users will receive information on current traffic conditions and traffic management strategies via different media including dynamic routing advices via online navigation services.
Technologies	Information broadcast by internet, freetext display panels (variable message signs) and on-board navigation units in the whole network, measurement support by adaptive traffic light control in the city of Düsseldorf
Standards	Communications standards OCIT and OTS
7. IMPLEMENTATION	
Partners involved	☒ Public authorities: authorities of the city Düsseldorf and the county Nordrhein-Westfalen, ☒ Private stakeholders: private service provider PTV ☒ Others: municipal utility company of Düsseldorf
Organisational model	☐ Management body: see above ☐ Operating body: see above ☐ Financing body: public funded R&D-project
Business model	☒ Public investment: ☐ Private / commercial framework: ☒ Public-private partnership:

Investment costs	€: 12 Million €
Operating costs	€ / year: person / year:
8. RESULTS	
Technical performance	The evaluation of traffic conditions, the selection of appropriate strategies and the adjustment of coherent strategies between the centres of the city and the county are executed automatically.
Implementation of Innovation	
Safety impacts	
Efficiency impacts	
Environmental impacts	
Socio-economic impacts	
Revenue generation	
User acceptance	
9. LESSONS LEARNT	
Factors for success	Cooperation model between different authorities
Obstacles	
10. MORE INFORMATION	
Contact Person	Name: Mr. Heiko Böhme Company: Authority of Düsseldorf Email: Heiko.boehme@stadt.duesseldorf.de Phone: +49 2118993672
Web link (if existing)	www.dmotion.info

4.5 DE - Munich - Tram and Bus Priority at Traffic Signal, “Green Waves”

URBAN ITS **KEY APPLICATION**	☐ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: mitigation of individual drivers demand for ‘green waves’ with the necessity of maintaining schedule of public transports Objective(s) of the measure/service: keep fluidity of traffic flow and maintain public transport efficiency
Start of system/service	Since 1994 in Munich, implemented for all of the 10 Munich tram lines plus 4 bus lines.
Location	☐ single road/line ☐ city district ☒ whole city ☐ urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☒ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	
System / service description	A traffic control measure for public transport prioritisation: the system is speeding up public transport as well as obtaining advantages of green Waves (compensation and overall optimisation). The traffic control measure operates hierarchically with several different levels of prioritisation in the case that both trams and buses have to be taken into consideration. 240 prioritising traffic signal systems in Munich. Two tram lines at a main road section in Munich have been equipped with a public transport speedup within a Green Wave.
Technologies	
Standards	
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: ☐ Private stakeholders: ☐ Others:
Organisational model	☐ Management body: ☐ Operating body: ☐ Financing body:
Business model	☐ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€:
Operating costs	€ / year: person / year:

3. Results

Technical performance	Deployment of public transport speedup within a Green Wave for two tram lines at a main road section in Munich, with an average daily traffic volume of approximately 50.000 vehicles.
Implementation of Innovation	
Safety impacts	
Efficiency impacts	Travel efficiency: increase of travelling speed of private individual traffic in the Green Wave by 15%; traffic flow maintained. Public transport: reduction of the number of delayed trips by 38%
Environmental impacts	
Socio-economic impacts	Cost of Fleet utilisation (personnel and vehicle operating costs): - 4.200.000 €/year Saving estimated of 15% in operation costs for public transports.
Revenue generation	
User acceptance	

4. Lessons learnt

Factors for success	By providing an efficient tram prioritisation and increasing the travelling speed for private transport in the Green Wave, the traffic situation could get improved remarkably. In addition, further approaches for optimising the Green Wave were suggested.
Obstacles	

5. More Information

Contact Person	Source: TEC Traffic Engineering and Control, Hemming Group Ltd. London, issue 01/2007 ; Doll, C.; Listl, G. Function: Company: Email: Phone:
Web link (if existing)	

4.6 DE - Berlin - Inner City Logistics

URBAN ITS **KEY APPLICATION**	☐ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☒ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: impact of massive presence of lorries in inner city, poor use of logistic centres intending to dispatch freight to smaller vehicles Objective(s) of the measure/service: Increase and improve freight management and inter-modal transfer
Start of system/service	2002-2005
Location	☐ single road/line ☐ city district ☒ whole city ☐ urban region
Transport mode(s) concerned	☐ public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☒ other: Freight stakeholders
Implementing organisation	
System / service description	CIVITAS project "Inner City Logistics Centre" included: – Acceptance improvement of the newly established tri-modal logistic centre "Westhafen". – Promotion of and support to the introduction of CNGpowered distribution lorries by the haulage companies which handle the transport operations between the logistic centre and the freight recipients. – Telematics-based container tracking system (200 units) was intended to be applied by Zapf Umzüge GmbH for inter-modal freight transport from one of the two inner-city logistics centres.
Technologies	
Standards	
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: City of Berlin ☒ Private stakeholders: Freight transporter ☐ Others:
Organisational model	☐ Management body: ☐ Operating body: ☐ Financing body:
Business model	☐ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€:

Operating costs	€ / year: person / year:

3. Results

Technical performance	Reliability was confirmed in the test phase much to the satisfaction of the freight company. As of June 2005 the five prototypes have been operated largely free of maintenance needs ever since the test phase in February 2003. According to the freight operator the system with all its individual components proved successful in real operations. A conclusive assessment is not possible due to the limited number of prototypes.
Implementation of Innovation	
Safety impacts	
Efficiency impacts	
Environmental impacts	
Socio-economic impacts	
Revenue generation	
User acceptance	Tracking system (verification of a container's position on map) was positively assessed by the freight responsible personnel.

4. Lessons learnt

Factors for success	Economic efficiency: the main reason for the loading of containers onto rail is the reduction of costs. Planning security for the Treptow-Neukölln site. Berlin's local authorities must guarantee that the area as a whole remains available for the inner-city logistics centre and is not given over to other use. Major campaign to attract new customers. Improvement in combined transport. With the acquisition of new customers, overnight rail transport between all important German conurbations should gradually be established. Transparency of rail and ship transport: responsible employee can at any time determine online the precise location of a container, irrespective of whether transport is by lorry, ship or rail. Environment-orientated transport concept for the logistics sites. Preferential treatment for the environmentally friendly transport of goods in Berlin. Increasing and extending the motorway toll on heavy-duty vehicles.
Obstacles	Availability of inner-city loading facilities for transferring containers to rail. Offers for combined transport: regular combined-transport connections to all important conurbations are indispensable. The introduction of a motorway toll in Germany, which had been expected to stimulate a modal shift in favour of rail-bound transportation of goods, was considerably delayed.

5. More Information

Contact Person	Sources: (1) Integrated Transport Planning TU Berlin; Kracker E. ;Becker H.J.; Runge D. (2) Social Science Research Centre Berlin (WZB); Karl A.

	(3) Öko-Institut e.V.; Zimmer W.; Schmied M. (4) Centre for Technology and Society (CTS) TU Berlin; Schönberg M.
Web link (if existing)	

4.7 DE - Berlin - Integrated Real-Time based Travel Information Services for Public Transport, VBB Berlin Brandenburg

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: An actual and reliable traveller information is an important service for public transport users. Therefore the integrated realtime-based public transport information service in VBB's service area with around 40 public transport operators has being set up and is further developed. Objective(s) of the measure/service: Making the usage of public transport as easy and reliable as possible.
Start of system/service	Step-by-step since 2006
Location	☐ single road/line ☐ city district ☐ whole city X urban region
Transport mode(s) concerned	X public transport X rail ☐ road ☐ car-sharing X bicycles X pedestrians X other: flights
Implementing organisation	VBB Verkehrsverbund Berlin-Brandenburg GmbH (Public Transport Authority)
System / service description	VBB's travel planning system «VBB-Fahrinfo» contains integrated regional, national and international travel information as well as barriere-free information and realtime data. It serves as well as regional realtime data exchange platform for VBB and its operators. Public transport information is combined with pedestrians and bicycle information for the whole travel chain. Currently 12 transport operators act as suppliers of realtime data for traveller information and connection management between rail and busses.
Technologies	VBB's information service is available on the internet and for most mobile devices (iPhone, Android, Blackberry, JAVA and XHTML). VBB-Fahrinfo is connected in the German national network (DELFI) and the European information network EU-Spirit.
Standards	German VDV-Standards for Public Transport planning and operation
2. IMPLEMENTATION	
Partners involved	X Public authority: VBB X Private stakeholders: VBB's subcontractors X Others: Transport operators as suppliers of data and information needed
Organisational model	X Management body: VBB (Coordination, concept and contracting) X Operating body: VBB and VBB's subcontractors (HaCon Ingenieur-gesellschaft as system supplier and IVU Traffic Technologies for data integration and management). Public Transport operators through delivering the data and information needed. X Financing body: VBB's public stakeholder (German Lands Berlin and Brandenburg and municipal cities and districts) through financing VBB's activites.
Business model	X Public investment: ☐ Private / commercial framework:

	☐ Public-private partnership:
Investment costs	€:
Operating costs	€ / year: person / year:

3. IMPLEMENTATION

Partners involved	☐ Public authorities: ☒ Private stakeholders: ☐ Others:
Organisational model	☒ Management body: ☒ Operating body: ☒ Financing body:
Business model	☐ Public investment: ☒ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€:
Operating costs	€ / year: person / year:

4. RESULTS

Technical performance	
Implementation of Innovation	
Safety impacts	
Efficiency impacts	
Environmental impacts	
Socio-economic impacts	
Revenue generation	
User acceptance	

5. LESSONS LEARNT

Factors for success	
Obstacles	

6. MORE INFORMATION

Contact Person	Name: Function: Company: Email: Phone:
Web link (if existing)	

4.8 DE - Deutsche Bahn: Touch & Travel (NFC Pilot)

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☐ Traffic & Access Management ☒ Smart Ticketing ☐ Urban Logistics ☐ Other:			
1. GENERAL DESCRIPTION				
Problems to solve / Objectives	Issue(s) encountered: Customers of the public transport usually must buy a ticket before the trip. Therefore the customer must know the tariff to be applied, has to go to a ticket machine or ticket counter and needs money or credit card. Objective(s) of the measure/service: to simplify the access to the public transport and offering a continual chain of travel throughout Germany.			
Start of system/service	2008			
Location	☐ single road/line	☐ city district	☒ whole city	☒ urban region
Transport mode(s) concerned	☒ public transport ☐ bicycles	☒ rail ☐ pedestrians	☐ road ☐ other:	☐ car-sharing
Implementing organisation				
System / service description	After a singleton registration process, the customer could check in at the starting point and has to check out at his final destination for every trip only with his mobile. The check-in- and the check-out-process as well are supported by NFC-Tags, 2D-barcodes and GPS detection. This information and the location during the trip are collected by a backbone. With that data the backbone calculates the price for each taken trip. The customer doesn't need knowledge about the tariff because the system always calculates the suitable price of the trip automatically. Afterwards he gets the bill for taken trips monthly. During the registration process the customer has to give personal information and his consent to take part at a debiting procedure. Afterwards the application is being downloaded on his mobile. During the trip, a conductor can control the validity of the entitlement, which is stored at the mobile. He is doing that with an electronic device by using the NFC interface or reading a barcode representing the entitlement from the display of the mobile.			
Technologies				
Standards				
2. IMPLEMENTATION (No information available for VDV KA KG actually**)**				
Partners involved	☐ Public authorities: ☒ Private stakeholders: ATRON GmbH, Vodafone, Giesecke&Devrient, Samsung, NXP, Motorola, ☐ Others:			

Organisational model	☐ Management body: ☐ Operating body: ☐ Financing body:
Business model	☐ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€:
Operating costs	€ / year: person / year:
3. RESULTS	
Technical performance	The system had started with approximately 300 friendly users. After the first test period further developments has occurred. Since 2010 the system has become open for every interested customer. It can be used with NFC-mobiles from Samsung and Motorola and with the non-NFC-mobiles iPhone and each Android-platform. Actually Touch&Travel can be used in the Rhein-Main-Verkehrsverbund, in Berlin-Brandenburg and on each long distance route.
Implementation of Innovation	By using a NFC-mobile, the application consists of two parts: one part that is responsible for the MMI and is located in the unsecure part of the mobile. The other part is the user media of the VDV coreapplication. The user media manages the secure administration of entitlements between the customer device and the backbone as well as terminals. A trusted service management platform is able to transmit the VDV coreapplication after an authorized request to the NFC-mobile in a secure manner. For check-in and check-out the NFC-mobile has to read a passive NFC-tag - the mobile is in active mode. In case of controlling tickets, an electronic device in the hand of the conductor checks the validity of the entitlement after reading it from the user media. The mobile is in passive mode. To use both modes in one business process for such a complicated communication is remarkable.
Safety impacts	No information available for VDV KA KG actually
Efficiency impacts	No information available for VDV KA KG actually
Environmental impacts	No information available for VDV KA KG actually
Socio-economic impacts	No information available for VDV KA KG actually
Revenue generation	No information available for VDV KA KG actually
User acceptance	The customer likes the easy and fast access to the public transport and that the system could determine the cheapest price. He feels comfortable in having an overview about the taken trips monthly. He wants to have season tickets and special offers on Touch&Travel available too. Season tickets seems to be possible whereas special offers including reservation don't match to the concept of Touch&Travel.

4. LESSONS LEARNT

Factors for success	The technical challenges of Touch&Travel are very high. It was very helpful, to have very motivated and competent partners at the project. Obvious there are partners in the project with a high impact on standardisation, the necessary changes needs a very long time before it has an effect on customer products. Therefore it is important to do alternative steps in order to keep the positive things of Touch&Travel in mind until the needed technology is available.
Obstacles	For the full functionality of Touch&Travel with the highest level of security, NFC-mobiles with an implemented secure element have to be available. The NFC-mobiles must support passive and active mode and fulfil the requirements of the VDV coreapplication in order to transmit long command sequences. It still isn’t a mobile device for consumer market available, despite of the several announcements and it is even difficult, to get a prototype of a NFC-mobile device.

5. MORE INFORMATION

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4.9 DE - Stuttgart - Integrated Traffic Management Centre Focuses on Collaboration and Information Sharing

URBAN ITS **KEY APPLICATION**	☒ **Traffic & Travel Information** ☒ **Traffic & Access Management** ☐ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other:**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Concerted Traffic management and control in Stuttgart Objective(s) of the measure/service: Different authorities (road and planning authority, police, public transport) work together in a single TMC-Centre, in a cooperative way. Thus separate measures of different bodies are adjusted and harmonised to avoid contradicting impact on traffic.
Start of system/service	2006
Location	☐ single road/line ☐ city district ☒ whole city ☐ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☒ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☒ other: special mass events
Implementing organisation	Alliance of road and planning authority, police and public transport operator
System / service description	Traffic management system integrating different control, guidance and information systems with comprehensive tools influencing traffic dissemination and flow using road side infrastructure and internet and radio based traveller information services
Technologies	Traffic light system, park and guidance system, dynamic lane management, dynamic network control, VMS, digital video system
Standards	OCIT - Open communication interface for traffic control
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: police department, traffic and planning department, public transport authority ☐ Private stakeholders: ☐ Others:
Organisational model	☒ Management body: City authority ☒ Operating body: Working partnership (city authorities, police, public transport authorities) ☒ Financing body: city authority
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€:
Operating costs	€ / year: n/a person / year: 17

3. RESULTS

Technical performance	
Implementation of Innovation	Innovation is the mode of co-operation and collaboration of legally autonomous bodies based of common partner arrangement, signed by all partners
Safety impacts	No figures available (Timely and effective concerted traffic management serves to mitigate safety impacts. Quick and consistent traveller information contributes to safety, as well informed travellers adapt their driving behaviour to current conditions)
Efficiency impacts	No figures available (Main benefit in terms of network efficiency is the reduction of delays and travel time through the use of effective and timely control and information measures in case of major incidents)
Environmental impacts	No figures available (traffic mamnagement and traveller information contributed to the reduction in energy consumption with commensurate impacts on CO2 emissions.
Socio-economic impacts	no figures available (improvement of modal split is possible)
Revenue generation	no figures available
User acceptance	No figures available (acceptence of VMS up to 60 %)

4. LESSONS LEARNT

Factors for success	Cooperation and colaboration model of autonomous authorities, possibility of quick reaction caused of the immediate adjustment of measures based on a personal
Obstacles	Lacking cooperation model with the motorway road operators

5. MORE INFORMATION

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Web link (if existing)	

4.10 DE - Munich - Public Transport, Information Management System

URBAN ITS KEY APPLICATION	☐ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:			
1. GENERAL DESCRIPTION				
Problems to solve / Objectives	Issue(s) encountered: information management system for the distribution of realtime passanger information of several itcs in public transport environment Objective(s) of the measure/service: sharing realtime passanger information and system messages between several itcs systems			
Start of system/service	2006			
Location	☐ single road/line	☒ city district	☒ whole city	☐ urban region
Transport mode(s) concerned	☒ public transport ☐ bicycles	☐ rail ☐ pedestrians	☐ road ☐ other:	☐ car-sharing
Implementing organisation	Stadtwerke München GmbH, SWM, local public transport operator			
System / service description	realtime passinger information, information sharing system			
Technologies	internet protocol, xml, database, realtime information systems			
Standards	VDV 453 and VDV 454			
2. IMPLEMENTATION				
Partners involved	☒ Public authorities: City Munich ☐ Private stakeholders: ☒ Others: Public transport operators in Munich and other puplic transport authorities in bavaria/germany			
Organisational model	☒ Management body: SWM ☒ Operating body: SWM ☐ Financing body:			
Business model	☐ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:			
Investment costs	€: 5 Mill.€ + annual maintenace 0.3 Mill €			
Operating costs	€ / year:		person / year: 3	
3. RESULTS				
Technical performance	system is managing and distributing passanger realtime information for 5000 stops and four itcs systems and provides information for more than 500 different displays and internet platform			
Implementation of Innovation	2005			

Safety impacts	
Efficiency impacts	reducing interfaces between systems and reducing complexity. Efficient Use of different information channels e.g. passenger information displays
Environmental impacts	more and better information helps to use more public transport
Socio-economic impacts	very high; e. g. more than 50.000 users of the internet platform
Revenue generation	no direct revenue generation, better service generates more passengers
User acceptance	User PT Operator: itcs is needed for an efficient operation, USER Passenger: Passengers are asking for real time information and coordinated service

4. LESSONS LEARNT

Factors for success	professionals in the company, understanding the systems and the passanger/user
Obstacles	implementation of interfaces, handling mass data

5. MORE INFORMATION

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Web link (if existing)	

4.11 DE - Cologne - Intermodal Transport Control System for Public Transport

URBAN ITS **KEY APPLICATION**	☐ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: intermodal transport control system for public transport Objective(s) of the measure/service: Optimized transport services, Real Time Information, disturbance management, efficient use of infrastructure and vehicles, traffic signal priorisation, radio communication
Start of system/service	first itcs in 1970ies, new system with digital radio in 2003
Location	☐ single road/line ☐ city district ☒ whole city ☐ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Koelner Verkehrsbetriebe AG, KVB, local public transport operator
System / service description	Fleet management, coordinate transport services, real time passenger information, disturbance mangement, efficient use of infrastructur and vehicles, traffic signal priorisation, radio communication
Technologies	computer based traffic management system, real time information provision with passenger information displays, digital radio TETRA, etc.
Standards	VDV 300, VDV 730, VDV420, VDV 421, VDV 422, VDV 423, VDV 424, VDV 450, VDV 451, VDV 452, VDV 453, VDV 454, TETRA, TS 15531, etc.
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: City Cologne ☐ Private stakeholders: ☒ Others: Public Transport operators Cologne, Bonn, Public Transport Cooperation Rhein Sieg
Organisational model	☒ Management body: KVB ☒ Operating body: KVB ☐ Financing body:
Business model	☐ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 20 Mill.€ + annual maintenace 0.6 Mill €
Operating costs	€ / year: person / year: 15
3. RESULTS	
Technical performance	system controls 380 Light Rail + 320 Busses, 740 Real Time information devices, 2000 radio devices, availability rate 99,8 %,
Implementation of Innovation	

Safety impacts	train control system for light rail is seperated and an additional ITS
Efficiency impacts	use of traffic light influence reduces number of public transport vehicles, disturbance management generates coordinated use of vehicles
Environmental impacts	more public transport means less use of resources (fuel/energy, CO2 emission, space, etc.)
Socio-economic impacts	better public transport services will enhance the use of it, more passengers, 275 Mill. passengers a year, increase of 2% to 3% a year
Revenue generation	no direct revenue generation, better service generates more passengers
User acceptance	User PT Operator: itcs is needed for an efficient operation, USER Passenger: Passengers are asking for real time information and coordinated service

4. LESSONS LEARNT

Factors for success	
Obstacles	e. g. availability of frequencies for the digital radio,

5. MORE INFORMATION

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Web link (if existing)	

4.12 DE - Leipzig - Public Transport Traffic Control and Passenger Information

URBAN ITS **KEY APPLICATION**	☒ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: intermodal transport control system for public transport and passenger information Objective(s) of the measure/service: Optimized transport services, Real Time Information, disturbance management, efficient use of infrastructure and vehicles, traffic signal priorisation, radio communication, traffic statistic data, passenger counting
Start of system/service	first itcs in 1990, new system with digital radio will installed in 2012
Location	☐ single road/line ☐ city district ☒ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☒ pedestrians ☐ other:
Implementing organisation	Leipziger Verkehrsbetriebe LVB
System / service description	Fleet management, coordinate transport services, real time passenger information, disturbance mangement, efficient use of infrastructur and vehicles, traffic signal priorisation, radio communication,traffic statistic data, passenger counting
Technologies	computer based traffic management system, real time information provision with passenger information via displays in vehicles + stop points + smartphones + Twitter, analog radio and digital radio TETRA, etc.
Standards	VDV 300, VDV 730, VDV420, VDV 421, VDV 422, VDV 423, VDV 424, VDV 450, VDV 451, VDV 452, VDV 453, VDV 454, TETRA, TS 15531, etc.
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: Zweckverband Nahverkehr ☐ Private stakeholders: ☒ Others: Public Transport operators Leipzig and Halle area (about 18 operators), Public Transport Cooperation Mitteldeutscher Verkehrsverbund
Organisational model	☒ Management body: ☒ Operating body: ☐ Financing body:
Business model	☐ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 15 Mill.€ + annual maintenace 0.4 Mill €
Operating costs	€ / year: person / year: 15

3. RESULTS

Technical performance	system controls 400 TRAMS + 190 Busses, 240 Real Time information devices at stop points, about 1200 passenger information displays in vehicles, 680 radio devices, availability rate 99,8 %, 250 traffic light priorisation points
Implementation of Innovation	
Safety impacts	
Efficiency impacts	use of traffic light prioritiy reduces number of public transport vehicles, disturbance management generates coordinated use of vehicles
Environmental impacts	more public transport means less use of resources (fuel/energy, CO2 emission, space, etc.)
Socio-economic impacts	better public transport services will enhance the use of it, more passengers, 130 Mill. passengers a year, increase of 2% to 3% a year
Revenue generation	no direct revenue generation, better and more reliable service generates more passengers
User acceptance	User PT Operator: itcs is needed for an efficient operation, USER Passenger: Passengers are asking for real time information and coordinated service

4. LESSONS LEARNT

Factors for success	
Obstacles	costs for the system and reduction of funding

5. MORE INFORMATION

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4.13 DE - Intermodal Transport Control Systems for Public Transport

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: PT itcs - control & steering of several modes of public transport services, providing real time passenger information, assuring service connections, disturbance management, provision of communication channles for data exchange, etc. Objective(s) of the measure/service: Optimize transport services and make them efficient, Real Time Information, disturbance management, efficient use of infrastructure and vehicles, traffic signal priorisation, radio communication, traffic statistic data, passenger counting
Start of system/service	in the 1960´s first systems were installed in bigger cities in Germany, since the 1990's systems were enhanced for intermodality, systems are also installed now in cities and regions, PT-ITCS can be defined in 3 categories light, standard and advanced
Location	☐ single road/line ☐ city district ☒ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☒ pedestrians ☐ other:
Implementing organisation	PT-ITCS are installed by public transport operators and public transport cooperations
System / service description	Fleet management, coordinate transport services, real time passenger information, disturbance mangement, efficient use of infrastructur and vehicles, traffic signal priorisation, radio communication,traffic statistic data, passenger counting
Technologies	computer based traffic management system, real time information devices via displays (LCD,LED, TFT) in vehicles + stop points + other communication channels (smartphone, internet, ...), analog radio and digital radio, connection to traffic lights
Standards	VDV 300, VDV 730, VDV420, VDV 421, VDV 422, VDV 423, VDV 424, VDV 450, VDV 451, VDV 452, VDV 453, VDV 454, TETRA, TS 15531, etc.
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: ☐ Private stakeholders: ☒ Others:
Organisational model	☒ Management body: ☒ Operating body: ☐ Financing body:
Business model	☐ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€:
Operating costs	€ / year: person / year:

3. RESULTS

Technical performance	itcs is controlling all modes of public transport (Light Rail, TRAM, METRO, Bus, ferry, on demand services, etc.), availability rate at least 99,8 %, connection to traffic lights for the priorisation of public transport services
Implementation of Innovation	
Safety impacts	
Efficiency impacts	use of traffic light prioritiy reduces number of public transport vehicles, disturbance management generates coordinated use of vehicles and staff, connection assurance makes travel chains more reliable for passengers, etc.
Environmental impacts	better and reliable public transport services generating more use of public transport that means less use of resources (fuel/energy, CO2 emission, space, etc.)
Socio-economic impacts	better and reliable public transport services will enhance the use of it, increase of passengers arround 0,8% per year (in 2010 9.672 Billion travels in Germany)
Revenue generation	no direct revenue generation, better and more reliable service generates more passengers
User acceptance	User PT Operator: itcs is needed for an efficient operation, USER Passenger: Passengers are asking for real time information and reliable service

4. LESSONS LEARNT

Factors for success	
Obstacles	costs for the system and reduction of funding

5. MORE INFORMATION

- Contact Person	- Name: Dipl.-Ing. Berthold Radermacher - Function: section leader - Company: Association of German Transport Companies, VDV - Email: radermacher@vdv.de - Phone: +49 221 57979 141
- Web link (if existing)	- www.vdv.de

4.14 DE - RNV Real-Time Passenger Information (Rhein-Neckar-Verkehr)

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Provision of urban wide real time passenger information in public transport systems with standardized interfaces.
Start of system/service	10.09.2010
Location	☒ single road/line ☒ city district ☒ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	***RNV-*** Rhein-Neckar-Verkehr GmbH
System / service description	RNV Start.Info delivers real time passenger information directly to the passengers mobile phone while the prognosis of departure times is calculated directly by the ITCS: - provision of urban wide real time passenger information in public transport sector of the Rhine Neckar metropolitan region including information on disruptions and news - no connection information only departure times - especially made for bus and tram stops without stationary passenger information - supports all RNV lines
Technologies	Common (real time) public transport information system for mobile phones (iPhone, Android)
Standards	VDV454
2. IMPLEMENTATION	
Partners involved	☐ Public authorities: ☐ Private stakeholders: ☒ Others: The Agent factory (system provider, Jena, Germany)
Organisational model	☒ Management body: RNV Rhein-Neckar Verkehr ☒ Operating body: RNV Rhein-Neckar Verkehr ☒ Financing body: RNV Rhein-Neckar Verkehr
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€:
Operating costs	€ / year: person / year:
3. RESULTS	
Technical performance	1 Server
Implementation of Innovation	

Safety impacts	
Efficiency impacts	RNV wide dynamic passenger information system for mobile phones on base of very high quality data
Environmental impacts	more public transport means less use of resources (fuel/energy, CO2 emission, space, etc.)
Socio-economic impacts	
Revenue generation	
User acceptance	~ 30.000 downloads and 600.000 user requests in total (since 10.09.2010).

4. LESSONS LEARNT

Factors for success	- Maintanance of the platform by the system providers (RNV Start.Info and ITCS) is essential - A very high quality data is essential
Obstacles	

5. MORE INFORMATION

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Web link (if existing)	www.rnv-online.de

4.15 DE - Karlsruhe - Handy Ticket KVV

URBAN ITS KEY APPLICATION	☐ **Traffic & Travel Information** ☒ **Traffic & Access Management** ☒ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other:**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: enhancement of the distribution channels Objective(s) of the measure/service: distribution of tickets via mobile phone (Java, Android, Iphone)
Start of system/service	First steps in 2008, Rollout in 02/2010
Location	☐ single road/line ☐ city district x whole city x urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	VBK (public transport company), KVV (transport association), supply with public transport in the city of Karlsruhe and the neighbouring administrative districts
System / service description	With "Handy Ticket KVV" smartphone users can buy tickets (single or 24 h) for public transport. Possible with Java, Android and Iphone. Independent of mobile telephone system companies.
Technologies	Java, Android, Iphone
Standards	Privacy policy
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: VBK,KVV ☐ Private stakeholders: ☐ Others:
Organisational model	☒ Management body: VBK ☒ Operating body: VBK ☒ Financing body: VBK,KVV
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 60.000
Operating costs	€ / year: 24.000 person / year: 0,1
3. RESULTS	
Technical performance	Actual more than 7.500 tickets a month are sold, actual 1% of all tickets (single and 24 h)
Implementation of Innovation	Independence of mobile telephone system companies
Safety impacts	
Efficiency impacts	Cut the distribution costs under the regular distribution costs, aim should be reached next year

Environmental impacts	Less paper waste, less paper produced
Socio-economic impacts	
Revenue generation	Lower distribution costs cut the rise in prices for public transport tickets
User acceptance	Increase in use actual 6% per month

4. LESSONS LEARNT

Factors for success	the high number of smartphones sold in the last 2 years, usability
Obstacles	The registration has to be filled in online

5. MORE INFORMATION

Contact Person	Name: Bock, Benjamin Function: sales manager Company: VBK Email: Phone:
Web link (if existing)	http://www.kvv.de/fahrkarten/fahrkarten-verkauf/handy-ticket.html

4.16 DE - Implementation of ITCS for 250 Light Rail Vehicles and 80 Buses

URBAN ITS KEY APPLICATION	☐ **Traffic & Travel Information** ☒ **Traffic & Access Management** ☐ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other:**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: intermodal transport control system for public transport Objective(s) of the measure/service: optimized data supply and management, real time information, optimized dispatching of vehicles, radio communication
Start of system/service	First RBL in 2000, itcs system update in 2009
Location	☐ single road/line ☐ city district ☒ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	VBK and AVG, public transport companies, supply with public transport in the city of Karlsruhe and the neighbouring administrative districts
System / service description	coordinate transport services, real time passenger information, disturbance mangement, efficient use of infrastructur and vehicles
Technologies	computer based traffic management system, real time information provision with passenger information displays, data management via GSM/UMTS
Standards	VDV 300, VDV 410, VDV 160, etc.
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: City of Karlsruhe ☐ Private stakeholders: ☐ Others: KVV (Public Transport Cooperation Karlsruhe)
Organisational model	☒ Management body: VBK ☒ Operating body: VBK ☒ Financing body: VBK
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 4,5 Mio.
Operating costs	€ / year: 130.000 person / year: 3
3. RESULTS	
Technical performance	System controls 250 light rail vehicles + 80 buses, 130 real time information displays
Implementation of Innovation	
Safety impacts	Better disturbance management

Efficiency impacts	Coordinated use of vehicles and less delays
Environmental impacts	Increasing rate in Modal Split means less use of energy resources
Socio-economic impacts	Coordinated vehicles and well-informed passengers enhance the use of public transport, more than 180 mill. Passengers/year, increase of 9% in the last 5 years
Revenue generation	No direct revenue generation
User acceptance	Operator: work for the staff of the control station can be done faster and more efficient; Passenger: real time information creates confidence to the public transport system

4. LESSONS LEARNT

Factors for success	Integration of the light rail vehicles, which go out in the rural areas
Obstacles	Time for the installation into the light rail vehicles

5. MORE INFORMATION

Contact Person	Name: Messerschmidt, Ralf Function: operations manager Company: VBK Email: Phone:
Web link (if existing)	

4.17 DE - Provision of Nationwide and Europeanwide Public Transport Journey Planner System (DELFI & EU-SPIRIT)

URBAN ITS **KEY APPLICATION**	☒ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:			
1. GENERAL DESCRIPTION				
Problems to solve / Objectives	Provision of nationwide and European wide public transport journey planner system (address sharp / pedestrian information) with standardized interfaces using the DELFI and EU-SPIRIT platform			
Start of system/service	DELFI since 1999 and EU-Spirit 2011			
Location	☒ single road/line	☒ city district	☒ whole city	☒ urban region
Transport mode(s) concerned	☒ public transport	☒ rail	☐ road	☐ car-sharing
	☐ bicycles	☒ pedestrians	☐ other:	
Implementing organisation	The German states or organisations on behalf of the them and the public transport companies in this state			
System / service description	Interconnection of public transport routing system with other public transport journey planner systems of other German states via the interfaces of the DELFI Platform and Interconnection of public transport routing system with other public transport journey planner systems in Europe via the interfaces of the EU-Spirit Platform.			
Technologies	Common public transport routing systems			
Standards	VDV 300, VDV 730, VDV420, VDV 421, VDV 422, VDV 423, VDV 424, VDV 450, VDV 451, VDV 452, VDV 453, VDV 454, TETRA, TS 15531, etc.			
2. IMPLEMENTATION				
Partners involved	☒ Public authorities: Public transport operators and public transport cooperations, DELFI consortium and EU-SPIRIT consortium ☒ Private stakeholders: private railway companies ☒ Others: Mentz DV, HBT, HACON			
Organisational model	☒ Management body: DELFI Consortium and EU-Spirit Consortium ☒ Operating bodies: public transport companies, public transport cooperations and public authorities ☒ Financing body: German states			
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:			
Investment costs	€:			
Operating costs	€ / year:		person / year:	

3. RESULTS	
Technical performance	
Implementation of Innovation	Interconnection of journey planner systems, data management is still local and due to the local data management is the data quality and actually very high
Safety impacts	
Efficiency impacts	Nation/European wide journey planner information on base of very high quality data
Environmental impacts	more public transport means less use of resources (fuel/energy, CO2 emission, space, etc.)
Socio-economic impacts	
Revenue generation	
User acceptance	
4. LESSONS LEARNT	
Factors for success	Organisation of the platforms by the data providers and connected systems is essential
Obstacles	Financing of the platform organisation
5. MORE INFORMATION	
Contact Person	Name: Berthold Radermacher Function: section leader Company: Association of German Transport Companies Email: Radermacher@vdv.de Phone: +49 221 57979 141
Web link (if existing)	www.vdv.de

4.18 DE - Integration of Regional Public Transport Routing Information System within the Public Transport Network of Nation- and Europeanwide Journey Planner

URBAN ITS **KEY APPLICATION**	☒ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Integration of regional public transport routing information system within the public transport network of Nation- and European wide journey planner Objective(s) of the measure/service: Integration of regional public transport routing information within the of nationwide, europeanwide public transport routing information (address sharp, pedestrian information) based on the standardised interfaces using the DELFI and EU-Spirit platform.
Start of system/service	DELFI 1999, EU-SPIRIT 2011
Location	☐ single road/line ☒ city district ☒ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☐ road ☐ car-sharing ☐ bicycles ☒ pedestrians ☐ other:
Implementing organisation	VRR on behalf of Northrhine Westfalia and the public transport companies in NRW
System / service description	Interconnection of Public transport routing systems with other public transport routing system of other German states via the interfaces of DELFI platform and interconnection of Public transport routing systems with other public transport routing system in Europe via the interfaces of the EU-Spirit platform
Technologies	Common public journey planner and transport routing systems
Standards	VDV 452, DELFI, EU-Spirit
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: DELFI Consortium, EU-Spirit Consortium ☐ Private stakeholders: ☒ Others: Mentz DV, HBT, HaCon
Organisational model	☒ Management body: DELFI Consortium, EU-Spirit Consortium ☒ Operating body: public transport companies and authorities ☒ Financing body: German states
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€:
Operating costs	€ / year: person / year:
3. RESULTS	
Technical performance	2 high performance Server

Implementation of Innovation	Interconnection of journey planner system, data management is still local and dual to the local data management is the data quality and actuality very high
Safety impacts	
Efficiency impacts	Nation- / European Wide journey planner information based on very high quality data and actuality
Environmental impacts	
Socio-economic impacts	
Revenue generation	
User acceptance	ca. 20 million users requests per month the journey planner system from VRR region
4. LESSONS LEARNT	
Factors for success	Organisations of the platform by the data provider and connected systems is essential
Obstacles	Financing of the platform organisation
5. MORE INFORMATION	
Contact Person	Name: Sefa Tasdemir, Harald Gerstenberg Function: expert Company: VRR Email: Tasdemir@vrr.de Phone:
Web link (if existing)	http://www.delfi.de ; http://www.eu-spirit.com ; http://eu.efa.de

4.19 DE - Networking of Intermodal Passenger Travel Information and Real-Time in Public-Transport (ITCS/RBL/FIS/ABF/RBL-Light etc.)

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: interconnection of existing Systems (itcs/ RBL/ FIS/ ABF/ RBL-Light etc.) for Traffic&Travel Information and Traffic&Access Management Objective(s) of the measure/service: Optimized transport services, Real Time Information, disturbance management, efficient use of infrastructure and vehicles, traffic signal priorisation, radio communication
Start of system/service	central data hub for real-time data since 2006
Location	☒ single road/line ☒ city district ☒ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☒ road ☐ car-sharing ☒ bicycles ☒ pedestrians ☐ other:
Implementing organisation	Transportation companies in North Rhine-Westphalia region and VRR (e.g. Deutsche Bahn AG, private railway companies (Keolis, abellio,NWB, WFB, RegioBahn, PEG…), public transport companies (EVAG, WSW,SWN, SWK, HST, NVV, MVG, VES, STWMS, BGS…)
System / service description	The central data pool connects and distributes information about the services of all transport modes in one region, such as a mainline and local services of Deutsche Bahn, private railway companies, rapid transit, busses and tramways. Particularly at locations where different modes converge, such as interchange stations, the central data pool provides real-time data for passenger information systems. On the basis of this real-time data, up-to-the-minute information about the current travel situation is made available to passengers and gives them an overview of all intermodal connections.
Technologies	computer based traffic management system, real time information provision with passenger information displays, digital radio TETRA, etc.
Standards	VDV 300, VDV 730, VDV420, VDV 421, VDV 422, VDV 423, VDV 424, VDV 450, VDV 451, VDV 452, VDV 453, VDV 454, TETRA, TS 15531, etc.
2. IMPLEMENTATION	
Partners involved	X Public authorities: Deutsche Bahn AG, public transport companies (EVAG, WSW,SWN, SWK, HST, NVV, MVG, VES, STWMS, BGS…) X Private stakeholders: private railway companies (Keolis, abellio,NWB, WFB, RegioBahn, PEG…) ☒ Others: Funkwerk IT, Mentz DV, INIT, Trapeze, T-Systems, Interautomation, CSC, Lumino etc
Organisational model	☒ Management body: VRR ☒ Operating body: public transport companies, Deutsche Bahn AG, private railway companies ☒ Financing body: NRW, VRR

Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€:
Operating costs	€ / year: person / year:
3. RESULTS	
Technical performance	system controls 380 Light Rail + 320 Busses, 740 Real Time information devices, 2000 radio devices, availability rate 99,8 %,
Implementation of Innovation	New solution with central data pool
Safety impacts	
Efficiency impacts	improved customer information
Environmental impacts	more public transport means less use of resources (fuel/energy, CO2 emission, space, etc.)
Socio-economic impacts	• 25 cities • population: 8.1 million • 7.400 km² • Travellers per year: 1.1 billion • Travellers per day: 3.0 million • a balanced offering of trains and buses
Revenue generation	
User acceptance	Customers are satisfied
4. LESSONS LEARNT	
Factors for success	Public transport companies and customers are satisfied
Obstacles	old systems and implementation periods
5. MORE INFORMATION	
Contact Person	Name: Sefa Tasdemir, Harald Gerstenberg Function: expert Company: VRR Email: Tasdemir@vrr.de Phone:
Web link (if existing)	http://www.vrr.de ; http://efa.vrr.de

4.20 DE - Stuttgart - RBL Light, Intermodal Transport Control System

URBAN ITS KEY APPLICATION	☐ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: 07/2010 Objective(s) of the measure/service: 450,000 €
Start of system/service	11/2011
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Verkehrs- und Tarifverbund Stuttgart GmbH (VVS)
System / service description	Intermodal Transport Control System “light” for small medium-sized businesses depending a vehicle-monitoring and control system
Technologies	Data-Management, GPS-Positioning, Mobile Services
Standards	GPS, GSM, VDV 454
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: VVS ☒ Private stakeholders: Kappus-Reisen GmbH & Co KG, Omnibus Dannenmann GmbH, Württembergische Eisenbahn GmbH ☐ Others:
Organisational model	☒ Management body: VVS ☒ Operating body: VVS, transportation companies: Kappus-Reisen GmbH & Co KG, Omnibus Dannenmann GmbH, Württembergische Eisenbahn GmbH ☒ Financing body: VVS, Ministerum für Verkehr und Infrastruktur (MVI)
Business model	☐ Public investment: ☐ Private / commercial framework: ☒ Public-private partnership: vehicle Equipment is funded by transportation companies and MVI, all other parts are public investment
Investment costs	€: 326,000
Operating costs	€ / year: 8,000 person / year:
3. RESULTS	
Technical performance	Performing tests persist, accessibility is more than 95%
Implementation of Innovation	Vehicle tests by transportation companies, data quality tests by VVS and transportation companies
Safety impacts	
Efficiency impacts	The dispatcher at the transporting company can localise its vehicles at any time on screen and doesn’t need a mobile phone to connect the driver. Statistics for the planner help to make schedules which fit to the real

	journey-time
Environmental impacts	
Socio-economic impacts	
Revenue generation	N/A
User acceptance	Tests persist

4. LESSONS LEARNT

Factors for success	Involvement of all partners, early tests in live systems, fast partial success
Obstacles	Match interfaces,

5. MORE INFORMATION

Contact Person	Name: Anke Beckert Function: Realtime Information Systems Company: VVS Email: Beckert@vvs.de Phone: +49 711 6606-2121
Web link (if existing)	ww.vvs.de

4.21 DE - Stuttgart – VVS HandyTicket

URBAN ITS KEY APPLICATION	☐ Traffic & Travel Information ☐ Traffic & Access Management ☒ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Easier access to public transport by creating a ticketing system for mobile phones. Intermodal ticketing in other public transport-regions, implementation of ticketing system in mobile journey planning-tools. Objective(s) of the measure/service: Reduction of distribution expenses,
Start of system/service	1/2012
Location	☐ single road/line ☒ city district ☒ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Project team based in the SSB in cooperation with VVS. Implemation together with partners HanseCom and EOS Uptrade as partners.
System / service description	
Technologies	
Standards	
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: Stuttgarter Straßenbahnen AG (SSB) ☒ Private stakeholders: HanseCom, EOS Uptrade ☐ Others:
Organisational model	☒ Management body: SSB/VVS ☒ Operating body: HanseCom, EOS Uptrade ☐ Financing body:
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 150.000
Operating costs	€ / year: 5.000 person / year: 4
3. RESULTS	
Technical performance	
Implementation of Innovation	
Safety impacts	

Efficiency impacts	
Environmental impacts	
Socio-economic impacts	
Revenue generation	
User acceptance	
4. LESSONS LEARNT	
Factors for success	
Obstacles	
5. MORE INFORMATION	
Contact Person	Name: Function: Company: Email: Phone:
Web link (if existing)	

4.22 DE - Stuttgart - Journey Planner (EFA)

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: intermodal passenger information, travel alerts Objective(s) of the measure/service: common information about pt mobility
Start of system/service	1988
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☐ road ☐ car-sharing ☒ bicycles ☒ pedestrians ☐ other:
Implementing organisation	Verkehrs- und Tarifverbund Stuttgart GmbH (VVS)
System / service description	Intermodal journey planner, travel alerts
Technologies	DIVA / EFA System by Mentz Datenverarbeitung GmbH (mdv)
Standards	
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: ☐ Private stakeholders: ☐ Others:
Organisational model	☐ Management body: Verkehrs- und Tarifverbund Stuttgart GmbH (VVS) ☐ Operating body: Verkehrs- und Tarifverbund Stuttgart GmbH (VVS) ☐ Financing body: Verkehrs- und Tarifverbund Stuttgart GmbH (VVS)
Business model	☒ Public investment: Verkehrs- und Tarifverbund Stuttgart GmbH (VVS) ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 23 years of development, n/a
Operating costs	€ / year: n/a person / year: 3
3. RESULTS	
Technical performance	4 Live-Server, 99,5% accessibility
Implementation of Innovation	Realtime information
Safety impacts	Not relevant
Efficiency impacts	10 Million calculated trip requests per month

Environmental impacts	Enhancing green mobility, reduction of carbon dioxide emissions
Socio-economic impacts	n/a
Revenue generation	n/a
User acceptance	10 Million calculated trip requests per month, very high, increasing

4. LESSONS LEARNT

Factors for success	Technological development in collaboration with user and developer
Obstacles	none

5. MORE INFORMATION

Contact Person	Name: Volker Torlach Function: Project Manager EFA Company: Verkehrs- und Tarifverbund Stuttgart GmbH (VVS) Email: Torlach@vvs.de Phone: +49-711-6606-2120
Web link (if existing)	http://www2.vvs.de

4.23 DE - Dortmund – Public Transport, ITCS/RBL

URBAN ITS KEY APPLICATION	☐ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: intermodal transport control system for public transport Objective(s) of the measure/service: Optimized transport services, Real Time Information, disturbance management, efficient use of infrastructure and vehicles, traffic signal priorisation, TETRA, digital radio communication
Start of system/service	first itcs in 2010 (with TETRA digital radio)
Location	☐ single road/line ☐ city district ☒ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	T-Systems
System / service description	Fleet management, coordinate transport services, real time passenger information, disturbance mangement, efficient use of infrastructur and vehicles, traffic signal priorisation, radio communication
Technologies	computer based traffic management system, real time information provision with passenger information displays, digital radio TETRA, etc.
Standards	VDV 300, VDV 730, VDV420, VDV 421, VDV 422, VDV 423, VDV 424, VDV 450, VDV 451, VDV 452, VDV 453, VDV 454, TETRA, TS 15531, etc.
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: City: Dortmund, Bochum, Herne,Gelsenkirchen, Hattingen, Witten, Castrop-Rauxel, Herdecke ☐ Private stakeholders: ☒ Others: Public Transport operators: DSW21, BOGESTRA, HCR
Organisational model	☒ Management body: ☒ Operating body: ☐ Financing body:
Business model	☐ Public investment: ☒ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 18 Mill.€ + annual maintenace 0.5 Mill €
Operating costs	€ / year: appr. 1 Mill. person / year: 9

3. RESULTS	
Technical performance	system controls 570 Busses, 120 Real Time information devices,149 TETRA and 120 analog traffic controls, 840 TETRA radio devices, availability rate 99,95%,
Implementation of Innovation	
Safety impacts	Redundant servers
Efficiency impacts	use of traffic light influence reduces number of public transport vehicles, disturbance management generates coordinated use of vehicles
Environmental impacts	more public transport means less use of resources (fuel/energy, CO2 emission, space, etc.)
Socio-economic impacts	better public transport services will enhance the use of it, more passengers
Revenue generation	no direct revenue generation, better service generates more passengers
User acceptance	User PT Operator: itcs is needed for an efficient operation, USER Passenger: Passengers are asking for real time information and coordinated service
4. LESSONS LEARNT	
Factors for success	
Obstacles	availability of frequencies for the digital radio,
5. MORE INFORMATION	
Contact Person	Name: F.-J. Senf Function: Head of Information and Power Supply Department Company: DSW21 Email: f.senf@dsw21.de Phone: +49-231-955-4478
Web link (if existing)	www.dsw21.de

4.24 DE – Logistic V-Info, Professional Tour Planning System

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☒ Urban Logistics ☐ Other:			
1. GENERAL DESCRIPTION				
Problems to solve / Objectives	Issue(s) encountered: distribution services of goods in urban area facing traffic situation and delays Objective(s) of the measure/service: integration of traffic information on professional tour and logistics planning system			
Start of system/service				
Location	☐ single road/line	☐ city district	☐ whole city	☒ urban region
Transport mode(s) concerned	☐ public transport ☐ bicycles	☐ rail ☐ pedestrians	☒ road ☐ other:	☐ car-sharing
Implementing organisation	PTV + Schober Logistics			
System / service description	professional tour planning system interfacing with public traffic management centre			
Technologies				
Standards				
2. IMPLEMENTATION				
Partners involved	☐ Public authorities: ☒ Private stakeholders: LSP ☒ Others: Traffic management centre			
Organisational model	☐ Management body: ☐ Operating body: ☐ Financing body:			
Business model	☐ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:			
Investment costs	€:			
Operating costs	€ / year:		person / year:	
3. RESULTS				
Technical performance	stabile and usable for day to day business solution			
Implementation of Innovation	interfacing traffic information with tour planning system, routines for processing of traffic information with sufficient performance			
Safety impacts				

Efficiency impacts	better planned tours and more reliable tour plans
Environmental impacts	savings of driven km of about 5%
Socio-economic impacts	
Revenue generation	
User acceptance	positive
4. LESSONS LEARNT	
Factors for success	high performance processes and systems, innovative use of traffic information of different sources
Obstacles	availability of reliable traffic information
5. MORE INFORMATION	
Contact Person	Name: Function: Company: Email: Phone:
Web link (if existing)	www.logistik-vinfo.de

4.25 DE - Bremen – eTicketing / BOB Card

URBAN ITS **KEY APPLICATION**	☐ **Traffic & Travel Information** ☐ **Traffic & Access Management** ☒ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other:**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: supporting eTicketing (prepaid and post-paid) Objective(s) of the measure/service: to ease ticketing process for the user – special target group non-frequent PT users - // get away from cash in PT vehicles to reduce risks of assault etc. and to change from ticketing sales by drivers to ticketing machines
Start of system/service	2005
Location	☐ single road/line ☐ city district ☐ whole city x urban region
Transport mode(s) concerned	x public transport x rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Public Transport operator BSAG and regional PT cooperation VBN (Verkehrsverbund Bremen/Niedersachsen)
System / service description	There is a cooperation of today 38 PT operators in the region of Bremen (train, bus, and tram) offering one ticketing and information regime. Electronic ticketing in the Bremen region adds to the standard annual subscriptions, which still use paper cars. Tickets are checked on the spot. With eTicketing, especially non-frequent travellers are targeted. First, there was the introduction of a pre-paid ticketing (starting with a test phase in 2000) being the first and largest region-wide electronic ticketing system in Germany to date. The post-payment system BOB Card ("Bequem ohne Bargeld" / cashless and convenient) was introduced in 2005. Here you become a registered user and will get a direct-debit invoice for your travels – including a best-price option per day. The system is based on the chip of the bankcard that more or less every bank account holder has. Thus, it is a contact-based system. See also http://www.civitas-initiative.org/alt/measure_sheet.phtml?lan=en&id=285 (in English) and http://www.bob-ticket.de/index.php (in German)
Technologies	Underpinning both public transport and car sharing is the city's well-developed e-ticketing payment system, developed by a partnership consisting of INIT GmbH, Höft & Wessel, Smart Pay Systems and IRS Consult AG. The pre-paid Bremer Karte, which also allows electronic shopping, is based on the microchip-enabled general German Geldkarte (bankcard) following an agreement between the country's national umbrella banking and public transport associations. The card is not contactless, partly because of the security requirements that apply to financial transactions in Germany and partly for reasons of cost and reliability. This means that, on boarding a vehicle, the passenger has to use the onboard equipment to select the travel zone, indicate any concessions (for example, for children), insert the card and confirm the details. The transaction is then recorded on the card and the fare

	deducted. Inspectors carry out spot checks to guard against fraud.
Standards	http://www.geldkarte.de/_www/en/pub/geldkarte/geldkarte_users/additional_functions.php

2. IMPLEMENTATION

Partners involved	X Public authorities: regional and local transport authorities x Private stakeholders: banks, IT research x Others: Public Transport operators
Organisational model	x Management body: regional PT cooperation (VBN) x Operating body: regional PT cooperation (also as clearing institution) ☐ Financing body:
Business model	☐ Public investment: ☐ Private / commercial framework: x Public-private partnership: PT is partly publically operated (and financed) partly privately operated
Investment costs	€: n.a. (is meanwhile part of standard procedures and vehicle procurement etc at BSAG)
Operating costs	€ / year: n.a. person / year: n.a.

3. RESULTS

Technical performance	
Implementation of Innovation	
Safety impacts	
Efficiency impacts	Today there are about 80,000 customers of the BOB Card in the Bremen region.
Environmental impacts	
Socio-economic impacts	
Revenue generation	
User acceptance	

4. LESSONS LEARNT

Factors for success	
Obstacles	

5. MORE INFORMATION

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4.26 EL - Online Portal for Transport Data/Content Management and Transportation Services Provision

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☒ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Lack of well organized data in transport in Greece; online support to policy makers, transport planners and researchers Objective(s) of the measure/service: creation of critical information content concerning the operation of the basic transport fields; disposal of expert tools to be used by institutions and companies of the transport filed in order to support their own business, research or other activity; regular monitoring of the country's transport system; innovation promotion support in the field of transport
Start of system/service	2002
Location	☐ single road/line ☐ city district ☒ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☒ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Centre for Research and Technology Hellas/ Hellenic Institute of Transport
System / service description	Portal provides the following services: • Transports Observatory: This service aims at providing transport data to the Portal's users. This data constitute a valuable help for the users of scientific committees, researchers, as well as the citizens that seek for information related to the transport section. This service is also used for the Athens pilot application in VIAJEO. • Traffic Forecasting and Network Simulation: The service provides to the user the potential of fulfilling transport scenarios, activating transport applications that are hosted in HIT's headquarters infrastructure. • Scheduling and Freight Urban Routing: The service includes the procedures that allow the routing of vehicles and drivers in urban and suburban environments, not only for the passenger but also for the freight transport systems. Even though their function is differentiated for the passenger and the freight transport, routing's common logic enables their simultaneous analysis. • Info-mobility: This service is responsible for the discovery and the classification of solutions provided according to the users' applications for a travel determination and for the provision of information for traffic incidents and data. • Test Bed: This is a platform providing simultaneous hosting of multiple innovative systems for validation purposes. This service is available to non-commercial applications and can be operated with concurrent extracting of transportation data from the Portal.
Technologies	SQL Server 2005/2008 with Spatial Support, C#, ASP, .NET, GIS Server, ArcGIS, XML, CSS,
Standards	W3C Standards

2. IMPLEMENTATION	
Partners involved	☒ Public authorities: (G.S. of Development) ☒ Private stakeholders: (OTENET) ☒ Others: Research Institute (CERTH/HIT)
Organisational model	☒ Management body: (CERTH/HIT) ☒ Operating body: (CERTH/HIT) ☒ Financing body: (G.S. of Development)
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 1275039
Operating costs	€ / year: 10000 person / year: 6
3. RESULTS	
Technical performance	High end servers, clusters and other essential hardware equipment as well as custom and commercial computational software is used and maintained daily to support all the services, their reliability and performance.
Implementation of Innovation	Innovative products and services are developed every year using the tools and data of HIT PORTAL
Safety impacts	Road safety observatory is maintained and research on safety issues is implemented.
Efficiency impacts	30 new research products and services that have been use the tool and data of HITPORTAL have been developed
Environmental impacts	Environmental observatory is under construction and services for promoting the environmental friendly routes have already been developed.
Socio-economic impacts	The improvement of the traffic conditions, the road safety and the facilitation of the research on transportation are the main positive socio-economic impacts.
Revenue generation	HITPORTAL generate no revenues but only its maintenance costs.
User acceptance	2000 users on line or off line every year.
4. LESSONS LEARNT	
Factors for success	Giving an open platform with an easy access to the research community generates very productive cooperations and advanced new products.
Obstacles	Data collection mainly due to the difficult cooperation among all the relative public authorities.

5. MORE INFORMATION	
Contact Person	Name: Dr. E. Mitsakis, Mr. B. M. Vassilantonakis Function: Responsible for the operation of the Observatory Company: CERTH/HIT Email: emit@certh.gr, vbm@certh.gr Phone: +30 2310 498459, 2310498468
Web link (if existing)	www.komvos-imet.gr

4.27 ES - Madrid - Contactless Card End of 2011- Integration of High Number of Operators

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Lack of coordination among PT stakeholders, specially in crisis scenarios Objective(s) of the measure/service: Improving real time information between stakeholders. Knowlegde to decision makers
Start of system/service	2008
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Consorcio Regional Transportes de Madrid
System / service description	Multimodal Control Center
Technologies	Open systems based on web services
Standards	
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: ☐ Private stakeholders: ☐ Others:
Organisational model	☒ Management body: ☐ Operating body: ☐ Financing body:
Business model	☐ Public investment: ☐ Private / commercial framework: ☒ Public-private partnership:
Investment costs	€: 1.500.000
Operating costs	€ / year: 500.000 person / year: 9
3. RESULTS	
Technical performance	Real time tools and software platforms to integrate technological systems from different transport operators
Implementation of Innovation	New management tools and procedures that will improve PT information and coordination

Safety impacts	Real time information about disruptions and threats on PT
Efficiency impacts	Shorter times on communication and better information for decision makers in case of incidents on PT
Environmental impacts	those related with an increase in use of PT
Socio-economic impacts	Real time information for PT users in a multimodal approach
Revenue generation	Increasing attractiveness of PT
User acceptance	Increasing quality of PT system as a whole
4. LESSONS LEARNT	
Factors for success	Coordination, cooperation, action procedures
Obstacles	different level of technological development among PT operators
5. MORE INFORMATION	
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4.28 ES - Madrid – WiFi on Buses

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☒ Other: Added-Value Services to the passengers
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Legal Issues with Spanish Telecommunication Market Commission Objective(s) of the measure/service: Offer an added-value service to commuters, improving the travel experience.
Start of system/service	September - 2010
Location	☐ single road/line ☐ city district **X** whole city ☐ urban region
Transport mode(s) concerned	**X** public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Madrid Public Bus Transport Operator (EMT de Madrid)
System / service description	Internet access via WiFI is offered on-board to commuters. Users do not have to authenticate, due to the service is open and free. In order to comply with Spanish Telecommunication Market Commission requirements, the service is sponsored by a private company.
Technologies	HSPA communications for Internet Access WiFI communications for user access.
Standards	WiFI : IEEE 802.11b/g GPRS/UMTS/HSPA
2. IMPLEMENTATION	
Partners involved	**X** Public operator: EMT **X** Private stakeholders: ETRA/ IECISA/PLETTAC ☐ Others:
Organisational model	**X** Management body: EMT Madrid **X** Operating body: EMT Madrid **X** Financing body: Private Company
Business model	☐ Public investment: ☐ Private / commercial framework: **X** Public-private partnership: 250.000€/year
Investment costs	€: 1.000.000
Operating costs	€ / year:50.000 person / year: 1

3. RESULTS

Technical performance	EMT buses are provided with 3G communications with an onboard router, which has WiFI capabilities also. This router permits users to access Internet from their mobile handsets (smart phones, laptops, etc).Buses communicate with a Telecommunication Service Centre, which provides Internet access as well as traffic inspection functionalities (avoiding attacks from potential hackers and applying restriction access policies to web pages considered non-appropriate for a public internet access).
Implementation of Innovation	One of the first public bus operator company in the world providing free Internet access via WiFI to commuters.
Safety impacts	N/A
Efficiency impacts	N/A
Environmental impacts	N/A
Socio-economic impacts	Improving the travel experience. Use of Public Transport encouragement.
Revenue generation	The incomes received from the sponsor of the service are greater than the operating costs.
User acceptance	The usage of the service increases every month, reaching 395 thousand users a month.

4. LESSONS LEARNT

Factors for success	Existing technical infrastructure used for bus service operational purposes were used to offer and added-value service, so no many additional investments were needed. The public image of the bus transport service in the city of Madrid has been improved, and commuters admit to enjoy a better travel experience.
Obstacles	Spanish legislation does not permit to offer a telecommunication service for free by a public company, so a business model had to be defined.

5. MORE INFORMATION

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4.29 ES - ATM Barcelona – Steps towards E-Ticketing

URBAN ITS KEY APPLICATION	☐ Traffic & Travel Information ☐ Traffic & Access Management ☒ Smart Ticketing ☐ Urban Logistics ☐ Other:

1. GENERAL DESCRIPTION

Problems to solve / Objectives	Issue(s) encountered: Objective(s) of the measure/service: The project is totally based in existing ISO/EN standards, open interfaces, multi services-oriented support, etc.
Start of system/service	
Location	☐ single road/line ☐ city district ☐ whole city **X** urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	
System / service description	
Technologies	
Standards	

2. IMPLEMENTATION

Partners involved	☒Public authorities: ATM Barcelona and main public transport operators in the area ☐ Private stakeholders: ☐ Others:
Organisational model	☐ Management body: ☐ Operating body: ☐ Financing body:
Business model	☐ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€:
Operating costs	€ / year: person / year:

3. RESULTS

Technical performance	Not launched yet. All in prototypes and ready to the rollout
Implementation of Innovation	Clearly the main innnovation is the Portabillity of theTransport Application ((DESFIRE –all versions-, CIPURSE) and the NFC SIM-based and SE embedded)
Safety-security impacts	Created a security SAM (and HSM) (own deployment) to guarantee trust in the system (point to point). Interoperable Fare System compliant with ISO 24014 (IFM)
Efficiency impacts	Very high. Open system and standard compliant promotes vendor neutrality and cross-vendor system interoperability, giving much more flexibility in sourcing products and services to meet specific project requirements without compromising functionality. Future-proof of new enhancements provided the new comers are ISO compliant. It also promotes also a crossborder interoperability with other regions
Environmental impacts	Expected very positive to be.
Socio-economic impacts	Very positve to be. Expected an efficiency in deploying the system in real ground and benefits coming from third parties (new comers to the transport ecosystem)
Revenue generation	Expected to have
User acceptance	

4. LESSONS LEARNT

Factors for success	Maturity of technology available (ISO standards), total awareness of the importance of interoperability, technical skills and engineering facilities, prototyping of written specifications in order to overcome the challenges that written paper don't face
Obstacles	Complexity of technology, operations, black boxes

5. MORE INFORMATION

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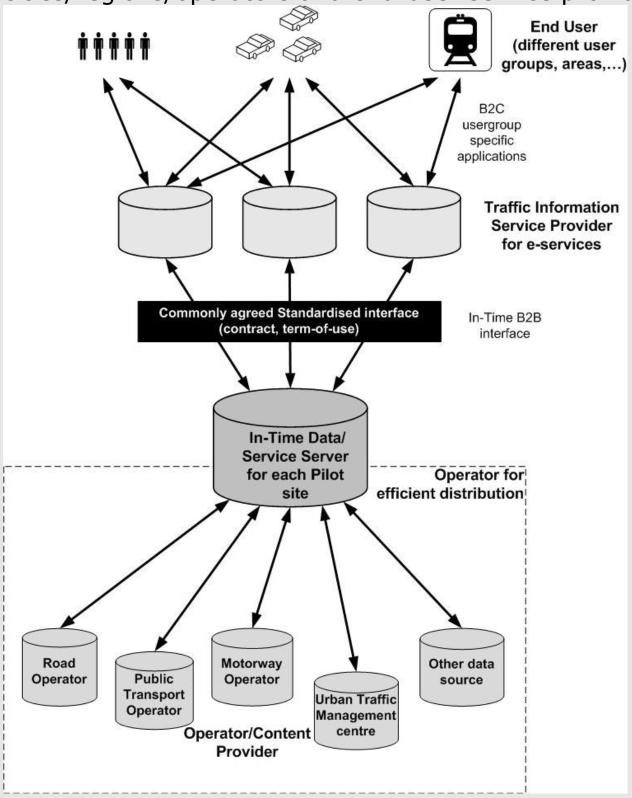
4.30 EU - Europe-In-Time (Delivering Intelligent and Efficient Travel Management for European Cities)

<table>
<tr><td>URBAN ITS
KEY APPLICATION</td><td>☒ Traffic & Travel Information
☐ Traffic & Access Management
☐ Smart Ticketing
☐ Urban Logistics
☐ Other:</td></tr>
<tr><td colspan="2">1. GENERAL DESCRIPTION</td></tr>
<tr><td>Problems to solve / Objectives</td><td>In-Time aims at drastic reductions in energy consumption in urban areas´ transport through the change of mobility behaviour of the single traveller by providing multimodal Real-time Traffic and Travel Information.</td></tr>
<tr><td>Location</td><td>☐ single road/line ☐ city district ☐ whole city ☒ urban region</td></tr>
<tr><td>Transport mode(s)</td><td>☐ public transport ☐ road ☒ multi-modal ☒ other:
covering all modes (incl. flight information)</td></tr>
<tr><td>Implementing organisation</td><td>As the system is implemented in several cities and regions (Florence and Tuscany Region, Munich and Bavaria, Brno and Southern Moravia, Vienna and Eastern Austria, Bucharest, Oslo) there is not ONE implementing organisation, but several local and regional ones. The main contribution and technical coordination of all implementing bodies is done by Softeco Sismat together with Mizar Automazione.</td></tr>
<tr><td>System / service description</td><td>The In-Time concept is based on the setup of a commonly agreed B2B Interface for the exchange of services and information between cities/regions/operators and end-user service providers.



B2C services are provided on-trip as well as pre-trip based on the End-User service provider requirements. In In-Time currently 4 different End-User service providers are offering intermodal door-to-door routing services based on Real Time information to the single citizen by supporting 3 different platforms (iPhone, Nokia, MS Windows mobile).</td></tr>
</table>

Technologies	Central part of the In-Time approach is the B2B Interface, which is called “Commonly Agreed Interface” (CAI). This CAI is a harmonized data model providing integration of contents in the different domains underlying multimodal services. The model finally adopted for In-Time is derived from the eMOTION data model which is based on reference ITS standards in the different sub-domains integrated in a single, coherent data model. Each of the different data models has its own modeling strengths with respect to specific aspects of relevance in the context of multimodal RTTI services. The key elements of the relevant models were selected and have been harmonised into a single, composed data model, following the general lines of the ISO 19100 series of Geographic Information Standards. The specifications of In-Time B2B services are largely based on the relevant open standards of geospatial information services, as defined by the Open Geospatial Consortium Data Services are based on the OGC Web Feature Service (WFS) definition and the Filter Encodings standard accompanying it. In specific cases (such as for environmental and weather data) Data Services may also be realised by means of the OGC Web Coverage Service (WCS). The selection of data entities (features) over the web is made by means of a query interface offered by WFS. Together with Data Services, Mapping Services are the most often used resources in the In-Time system. Exposing standard interfaces for the provision of maps, In-Time Mapping Services are defined on the basis of the OGC Web Map Service (WMS), the reference standard for web mapping open applications.
Standards	The In-Time CAI (Commonly agreed interface) is based in existing standards. Key standards include: DATEX II for Individual Traffic and a general traffic situation message model, Transmodel as the reference model for Public Transport base data, SIRI to describe public transport timetables and schedules, IFOPT to describe fixed infrastructure objects and features (e.g. multi-modal interchange points), TPEG used for descriptive location referencing (TPEG-Loc), Road Traffic Messages (TPEG-RTM), public transport information messages (TPEG-PTI) and parking facilities (TPEG-PKI).
Start of system/service	In January 2011 the public pilot phase was launched, which will last for one year at minimum
2. IMPLEMENTATION	
Role model (tbc)	
Partners involved	Arsenal Research (AIT), ASFINAG, ATAF, AustriaTech, Austro Control, Brimatech, Brnenske komunikace, ERTICO, Fluidtime, Geo Solutions, MemEx, micKS, Mizar Automazione, PTV, Sintef, Softeco Sismat, Swarco Futurit, TomTom, Telematix, Telmap, Universitatea Politehnica Bucaresti, VOR
Business model	Basically In-Time offers services for business users (B2B) and end users (B2C). In the case of B2B services, two payment forms can be distinguished, pay per use or a flat fee for a specified service (access to specific data, for a specific time period, etc.). The Traffic Information

	Service Provider has the benefit of accessing data in an easier way with defined interfaces, thus this party usually pays for In-Time services in this model. In case of B2C end user services, basic services will be provided for free by the city-authorities or public service providers, as it is in their interest to provide high quality information for travellers to promote public transport. In addition, premium services against a fee payable by the end user can be offered, such as push services and personalised services. On top, regional advertising completes the revenue model for In-Time. For the implementation of new traffic management technologies the costs will be mainly with public authorities and ppp-models. For the In-Time project life-cycle the B2B service as well as the B2C service will be offered for free to measure and assess the impact of the e-services. Later on the B2B Server access of the TISP via the harmonised standardised open interface needs to be fixed in a contract. It is expected that the TISP needs to pay for the data/service access.
3. RESULTS	
Technical performance	First results are expected by April 2011. Final results will be available by April 2012
Safety impacts	First results are expected by April 2011. Final results will be available by April 2012
Efficiency impacts	First results are expected by April 2011. Final results will be available by April 2012
Environmental impacts	Changes in the mobility behaviour (approx.. 3% modal shift) will decrease the negative impacts of road traffic on the environment. In this context the environment covers both, road network and natural environment: There will be less congestion along the road network, leading to enhanced traffic safety. In parallel the selection of the travel mode will be influenced by In-Time by supporting traffic management to disseminate current valid travel data and services. But a major impact will be on the natural environment by reducing pollutants and CO2 Emissions, particle emissions, noise, etc. First results are expected by April 2011. Final results will be available by April 2012
Socio-economic impacts	In-Time will also have a positive impact on new targets for efficiency and environmental friendliness in Europe’s transport sector through new mobility services. A very important impact should stem from the reduction of congestion and the resulting reduction of noise and air pollution. Asthma and other respiratory diseases have become a major issue over recent years, both among adults and children who live in polluted cities. A major part of this pollution is transport related. Any improvement in urban pollution would therefore be most welcome by sufferers and educated citizens. But also by all other citizens, noise and air pollution are regarded as one of the main drawbacks of "life in the metropolitan areas" and is one of the major reasons for urban sprawl and return to the countryside, a move which then generates even more traffic. If the installations promoted by

	In-Time only make a small contribution to reversing this trend, it will help in the preservation of the countryside, and therefore enhance everybody's quality of life. Furthermore, studies carried out for EC Directorate General V have shown that difficult journeys to work create stress, absenteeism and reduce productivity at work, and have a harmful impact on family life and social interaction. Again, improvements in the travel conditions and travel comfort for commuters will help to reduce such negative effects. First results are expected by April 2011. Final results will be available by April 2012
Revenue generation	First results are expected by April 2011. Final results will be available by April 2012
User acceptance	First results are expected by April 2011. Final results will be available by April 2012

4. Lessons learnt

Factors for success	As the pilot phase is on-going results can be expected latest by April 2012
Obstacles	As the pilot phase is on-going results can be expected latest by April 2012

5. More Information

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4.31 EU - European Cross Border Travel Information Network, "EU-Spirit"

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
TITLE	European cross-border travel information network «EU-Spirit»
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: An actual and reliable traveller information is an important service for public transport users – both on the national and international level. Therefore the European public transport information service EU-Spirit was set up within the 5th framework and has been in continuous operation since 2001. Objective(s) of the measure/service: Making the usage of public transport as easy and reliable as possible – especially for cross-border trips.
Start of system/service	European R&D project 1998 – 2001; Continuous operation since 2001
Location	☐ single road/line ☐ city district ☐ whole city X urban region X national and international
Transport mode(s) concerned	X public transport X rail (X) road ☐ car-sharing (X) bicycles X pedestrians X other: flights (ferries expected)
Implementing organisation	VBB Verkehrsverbund Berlin-Brandenburg GmbH (Public Transport Authority – coordination) plus all network partners
System / service description	EU-Spirit enables operators of local, regional and national travel planning systems to offer international information to their customers via their existing information system in the local language through the interconnection of existing travel planning systems independently from the system supplier or the functional level of service.
Technologies	The EU-Spirit network consists of special IT components for the interconnection of existing travel planners to make sure the interaction of the different systems (e. g. identification of origin and destination for the given request, omputing international travel information through the combination of part-information from the different travel planners).
Standards	EU-Spirit standard interface
2. IMPLEMENTATION	
Partners involved	X Public authorities: VBB and all travel planning service operators X Private stakeholders: Technical subcontractors / other service providers ☐ Others:
Organisational model	X Management body: VBB (Coordination9) X Operating body: All participating travel planners and technical. subcontractors (e. g. HaCon Ingenieurgesellschaft as system operator for the network architecture and long distance information systems. X Financing body: All participating travel planning operators through annual fees.
Business model	X Public investment: set up through R&D project X Annual fees payed by public travel plaaner operators ☐ Private / commercial framework:

	☐ Public-private partnership:
Investment costs	€:
Operating costs	€ / year: person / year:
3. RESULTS	
Technical performance	
Implementation of Innovation	Integrated system for the total area and national and international cooperation, usage of standardized moduls and interfaces
Safety impacts	
Efficiency impacts	
Environmental impacts	
Socio-economic impacts	
Revenue generation	
User acceptance	Around 60 Mio. information system requests per year in Berlin-Brandenburg
4. LESSONS LEARNT	
Factors for success	Integration, overall concept, usage of standard software and standard interfaces, public support and funding
Obstacles	Size and heterogeneous service area, number of parties involved
5. MORE INFORMATION	
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4.32 FR - Lyon- Global Urban Ticketing

URBAN ITS KEY APPLICATION	☐ Traffic & Travel Information ☐ Traffic & Access Management ☒ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: several transport services ➔ several tickets and systems, barriers for the users to combine different networks and services Objective(s) of the measure/service: ensure seamless ticketing service for the user on Lyon Region
Start of system/service	2005
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☐ road ☐ car-sharing ☒ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Region Rhône Alpes, Sytral (Lyon PT authority), Grand Lyon
System / service description	SmartCard (Oura!) supporting ticketing services for Lyon PT network, regional trains and Lyon free bike service
Technologies	Contact less Card
Standards	Existing smart ticketing standards
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: ☒ Private stakeholders: suppliers ☐ Others:
Organisational model	☐ Management body: ☐ Operating body: ☐ Financing body:
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: around 25 million Euros depending on the perimeter
Operating costs	€ / year: around 3 M€ person / year:
3. RESULTS	
Technical performance	Interoperability of bike sharing, rail and urban PT services and networks insured : one ticket for the users for the 3 services
Implementation of Innovation	
Safety impacts	N/A

Efficiency impacts	
Environmental impacts	
Socio-economic impacts	Public Transports are easier to use, and combination with bike sharing leads to real competitiveness of this multimodality compared to single car use.
Revenue generation	
User acceptance	High
4. LESSONS LEARNT	
Factors for success	Minimum impact on existing ticketing and vending schemes
Obstacles	Numerous actors and operators
5. MORE INFORMATION	
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Web link (if existing)	

4.33 FR - Lyon - Grand Lyon Urban Traffic Management System (CRITER)

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:			
1. GENERAL DESCRIPTION				
Problems to solve / Objectives	Issue(s) encountered: recurrent congestions, non fluidity of PT services, Objective(s) of the measure/service: 1) reduce PT travel time, 2) reduce congestion of road urban traffic			
Start of system/service	2000			
Location	☐ single road/line	☐ city district	☐ whole city	☒ urban region
Transport mode(s) concerned	☒ public transport	☐ rail	☒ road	☐ car-sharing
	☒ bicycles	☐ pedestrians	☐ other:	
Implementing organisation	Lyon City council			
System / service description	Intelligent Transport Service, combining real time detection (400 sensors) and real time management of traffic lights (1000 connected together) for PT priority, + green waves for traffic, this second objective coming AFTER the PT priorities at traffic lights. Management of single stretch, corridors and zones. Predefined scenarios, tools for local regulations as well as corridors or zone regulations.			
Technologies	Sensors + traffic lights automated controllers + software			
Standards				
2. IMPLEMENTATION				
Partners involved	☒ Public authorities: Grand Lyon ☒ Private stakeholders: suppliers and software development ☐ Others:			
Organisational model	☒ Management body: Grand Lyon ☒ Operating body: Grand Lyon + private partner (system designer) ☒ Financing body: Grand Lyon			
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:			
Investment costs	€: 6 M€			
Operating costs	€ / year: 600 k€		person / year: 5	
3. RESULTS				
Technical performance	Availability of the system very high Efficiency very high : gain of several minutes per PT lines (for each bus/tramways), reduction per half of daily traffic congestions			

Implementation of Innovation	Regularly improved: new sensors, new software development. Promising test and short term predictive traffic information.
Safety impacts	Non significant : in urban areas, average speed is around 20 km/h
Efficiency impacts	Enhancement of public transport reliability: respect of theoretical timing (with an average of 2 sec).
Environmental impacts	High reduction of CO2 see technical performance
Socio-economic impacts	Thanks to the technical performance of the system and its impact on efficiency, the transport has increased up to 5% on the concerned bus lines.
Revenue generation	None
User acceptance	High
4. LESSONS LEARNT	
Factors for success	Progressive implementation, learn by walking process, pragmatic approach of urban environment as road ITS is today mainly designed for interurban networks
Obstacles	Technology is today not really suited to urban environment and a lot of experimentations need t be performed before deployment. Lack of R&D on ITS in urban environment
5. MORE INFORMATION	
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4.34 FR - Paris - Passautocar (Coach Parking Pass)

URBAN ITS KEY APPLICATION	☐ Traffic & Travel Information ☒ Traffic & Access Management ☒ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Off-sites coach parking & Unprofitable business case for parking operators Objective(s) of the measure/service: Regain control over the management of parking by tourist coaches in the centre of Paris.
Start of system/service	2003
Location	☐ single road/line ☐ city district ☒ whole city ☐ urban region
Transport mode(s) concerned	☐ public transport ☐ rail ☒ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	
System / service description	The PassAutocar system for coach parking was introduced in Paris in June 2003 in order to regulate the parking, stopping and movements of coaches in the City of Paris and is based on a fixed fee for coach parking (daily pass). The Daily pass can either be purchased in advance via a website or at specific coach parks around the City. The pass is valid for a duration given in every on-street coach bay, central and peripheral coach parks without any needs of reservation. The system aims to optimise the usage of the 461 coach bays in Paris. The use of Passautocar is mandatory.
Technologies	Parking access control centralised and connected via Internet. Internet and database technologies. Smartphones, IVR (Interactive Voice Response) solutions.
Standards	
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: City of Paris ☒ Private stakeholders: Coach companies, Parking operators, Services Operator (Carte Blanche Conseil SAS) ☐ Others:
Organisational model	☒ Management body: City of Paris ☒ Operating body: Parking operators, City of Paris & Carte Blanche Conseil SAS ☒ Financing body: City of Paris
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:

Investment costs	Studies (EU co-financed) + System development.
Operating costs	System operation + manual control + administrative cost = Incomes ≈ 4 M€ person / year: ≈ 5
3. RESULTS	
Technical performance	Fully operational since 2003.
Implementation of Innovation	~ One every 3 years
Safety impacts	Reduce useless traffic and double-parking.
Efficiency impacts	Coach companies know where their vehicles actually are.
Environmental impacts	Reduce useless traffic and congestion.
Socio-economic impacts	It is aimed at reducing the negative and harmful effects on local inhabitants caused by traffic and vehicles stopping.
Revenue generation	Reduced Profits for the City of Paris. Viable business case for parking operators.
User acceptance	Complete from Parking Operators, Coach companies, Coach drivers,…
4. LESSONS LEARNT	
Factors for success	
Obstacles	Convincing all stakeholders. (➔ achieved with the performance of the system) Separation of enforcement and management actors.
5. MORE INFORMATION	
Contact Person	Name: Function: Company: Email: Sabine.Cantin@paris.fr Phone:
Web link (if existing)	http://pass.cbconseil.com/

4.35 FR - Toulouse – The Electronic Ticketing System

URBAN ITS **KEY APPLICATION**	☐ Traffic & Travel Information ☐ Traffic & Access Management ☒ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Integrating the different existing services and standards to make the system interoperable ; Former system obsolete. Objective(s) of the measure/service: Simplify the user experience; Control the evolution of fraud and delays; Enable flexibility in integrated fare policies; Ensure safe transactions
Start of system/service	2007
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☒ rail* ☐ road ☒ car-sharing* ☒ bicycles* ☐ pedestrians ☐ other: *: Rail, bicycle and car-sharing not under TISSEO-SMTC control.
Implementing organisation	Public Transport Authority of Toulouse (TISSEO-SMTC)
System / service description	Moving from magnetic tickets to contactless technology-based/e.ticketing solutions (Toulouse "Pastel" contactless smartcard), enabling customers to load several public transport contracts on their card.
Technologies	Toulouse has always been a pioneer in the development of innovative ticketing solutions and implementation of new public transport contracts, fares and products: from its magnetic based system in 1992 to E-Ticketing (and coming NFC solutions).
Standards	International: ISO14443. European: Calypso. Standardization efforts at international (physical and electrical properties of cards), European (interfaces and interoperability of standards) and national/local level have generated interoperability.
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: TISSEO-SMTC, the Greater Toulouse, the County Council, the Regional Council. ☒ Private stakeholders: Affiliated Computer Services (ACS) ☐ Others:
Organisational model	☒ Management body: ☐ Operating body: ☒ Financing body:
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 28 400 000
Operating costs	€ / year: 800 000 (including cards purchase) person / year:

3. RESULTS

Technical performance	New contactless and interoperable ticketing system (currently PT, regional rail/bus networks and very soon bike sharing and carsharing services) achieved through standardization. 99,9% reliability of assets and 99,7% reliability of statistical data.
Implementation of Innovation	System complete renewal over a 4 year period.
Safety impacts	Delays reduced ; Faster off loading and station egress ; Passenger fraud level decreased.
Efficiency impacts	Improved quality of service for the user ; More efficient passenger flow management in metro stations ; Increased attractiveness of public transport services.
Environmental impacts	Use of paper tickets in steady decrease (except for 10-travels tickets). Ticketing system and modal shift enhanced, lowering CO2 emissions.
Socio-economic impacts	Increased and eased mobility for daily travels (school, work and leisure).
Revenue generation	Difficult estimation due to newly implemented tariffs and evolution of the transport network (new infrastructures).
User acceptance	380 000 “Pastel” smart cards distributed among all public transport annual subscribers. Increased demande of Pastel smartcard (+10 points between 2009 and 2010).

4. LESSONS LEARNT

Factors for success	Cooperation between local institutions ; Positive image of smartcards.
Obstacles	Lack of leadership and decision-making ; Networks using different standards ; Impact of possible employees resistance to new technology.

5. MORE INFORMATION

Contact Person	Name: Régis LARVOR Function: E-Ticketing Project Manager Company: Tisséo-SMTC Email: regis.larvor@tisseo.fr Phone: +33 (0) 6 16 38 51 77
Web link (if existing)	

4.36 FR - Toulouse – Multimodal Traveller Information Centre

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
TITLE	Multimodal traveller information centre in Toulouse
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Multimodal information managed by different mobility stakeholders. Objective(s) of the measure/service: Create a common multimodal information service in Toulouse urban transport area.
Start of system/service	2010
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☒ road ☐ car-sharing ☒ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Public Transport Authority of Toulouse (TISSEO-SMTC)
System / service description	The multimodal traveller information platform in Toulouse centralizes public transport/road/bicycle data in the system. The service provides various services: journey planner, traffic and travel information and cartographic representations.
Technologies	Web service.
Standards	Neptune (theoritical offer), DATEX 2 (road information), SIRI (public transport information), XML (network information).
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: TISSEO-SMTC, Greater Toulouse, Regional Council, County Council, State (Traffic Management department), rail authority and operator, police authority. ☒ Private stakeholders: Public Transport Operator in Toulouse (Régie TISSEO). ☐ Others:
Organisational model	☒ ☐ Management body: ☐ Operating body: ☒ Financing body:
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: Total investment of 1 068 000 €, of which 10% supported by TISSEO-SMTC
Operating costs	€ / year: 350 000 person / year:
3. RESULTS	
Technical performance	Development of multimodal information.

Implementation of Innovation	Switching from content operator to service operator.
Safety impacts	
Efficiency impacts	Accepted to be an innovative tool increasing the attractiveness of public transport services.
Environmental impacts	Modal shift enhanced, lowering CO2 emissions.
Socio-economic impacts	Increased and eased mobility for daily travels (school, work and leisure).
Revenue generation	
User acceptance	Service to be accessible to the public in the near future.
4. LESSONS LEARNT	
Factors for success	Cooperation between mobility stakeholders.
Obstacles	Ongoing business model reflection ; Data property.
5. MORE INFORMATION	
Contact Person	Name: CLARIMON Olivier Function: Multimodal Information Project Manager Company: TISSEO-SMTC Email: olivier.clarimon@tisseo.fr Phone: +33 (0) 5 62 27 41 49
Web link (if existing)	

4.37 FR Paris – INFOMOBI Mail / SMS Service for PRMs

URBAN ITS **KEY APPLICATION**	☒ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Wheelchair users still do not take train because the elevators in stations are sometimes broken Objective(s) of the measure/service: Wheelchair user travel information SMS services
Start of system/service	2003 for the 1st vesion of web site, 2009 for the second version and the SMS service
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	STIF : the public authority of the Ile-de-France region
System / service description	Informations ans services for disabled people : wheelchairfriendly routes, specific maps, assistance during thre trip, information in real time of the availability of lifts at railway stations
Technologies	A web site with an input interface for transport operators, voice server, and hotline
Standards	
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: ☒ Private stakeholders: Regional train operators : SNCF and RATP ☐ Others:
Organisational model	☒ Management body: Daily escalators and lifts maintenance tour used for the SMS service ☒ Operating body: ☐ Financing body:
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 350 000 (entire web site without call center)
Operating costs	€ / year: 190 000 (data collect include in operators contracts) person / year:

3. RESULTS

Technical performance	Simple technical architecture
Implementation of Innovation	Each morning before the opening of stations to collect and to consolidate information in same electronic format from two different companies (SNCF and RATP) about 400 elevators in 160 stations
Safety impacts	
Efficiency impacts	Each morning before the opening of stations to collect and to consolidate information in same electronic format from two different companies (SNCF and RATP) about 400 elevators in 160 stations
Environmental impacts	
Socio-economic impacts	To develop specific assistance to reassure people with disabilities using public transport
Revenue generation	
User acceptance	The associations representing disabled people. In fact few disabled people use the service but they feel reassured of its existence and trafficking of this category of users increases proportionally to the development of network access

4. LESSONS LEARNT

Factors for success	To connect the new information service with the existin and to dispatch the maps and guides service through associations representing disabled people
Obstacles	To offer this service free of charge only to persons with disabilities

5. MORE INFORMATION

Contact Person	Name: Mathieu Barres Function: Project manager Company: STIF Email: mathieu.barres@stif.info Phone:
Web link (if existing)	www.infomobi.com

4.38 FR - La Rochelle – Electronic Ticketing System

URBAN ITS KEY APPLICATION	☐ **Traffic & Travel Information** ☐ **Traffic & Access Management** ☒ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other:**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Integrating the different existing services and standards to make the system interoperable between the 4 urban networks and the interurban network. Objective(s) of the measure/service: Simplify the user experience; development of intermodality in Charente-Maritime; Ensure safe transactions
Start of system/service	2002 (initial pilot) / 2005 (generalisation to the networks)
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region and department
Transport mode(s) concerned	☒ public transport ☒ rail* ☐ road ☒ car-sharing* ☒ bicycles* ☐ pedestrians ☐ other: boats, P+R
Implementing organisation	Sustainable Mobility Authority (*Syndicat Mixte de la Mobilité Durable*)
System / service description	Moving from papers tickets to magnetic tickets and contactless technology(pass'partout 17 card)-), enabling customers to load several public transport contracts on their card.
Technologies	Charente-Maritime has always been a pioneer in the development of innovative ticketing solutions and implementation of new public transport contracts, fares and products: smart ticketing, sale on internet (La Rochelle), and coming NFC solutions
Standards	Standard (system prénormatif): 1541. European: Calypso.
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: Conseil Général 17, CDA La Rochelle, CDA du Pays Rochefortais, CDA Royan Atlantique, CDC Pays Santon ☐ Private stakeholders: ☒ Others: transporteurs (5 networks)
Organisational model	☒ Management body: SYMOD, local transport authorities and operators ☐ Operating body: ☒ Financing body: local transport authorities and operators
Business model	☒ Public investment: Symod (acting as central buying service for ticketing systems for the local authorities) ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 3 045 593 (first stage)
Operating costs	€ / year: 39 000 € per year for 5 networks person / year:

3. RESULTS

Technical performance	New contactless and interoperable ticketing system .
Implementation of Innovation	Modernization of e.ticketing system foreseen in 2014 (study to be launched in 2012) notably on software.
Safety impacts	Passenger fraud level decreased.
Efficiency impacts	Improved quality of service for the bus ; Increased attractiveness of public transport services.
Environmental impacts	durée de vie carte à puce 4 ans, plusieurs contrats sur carte, donc moins d'impression titres magnétiques/puces et émission CO2
Socio-economic impacts	Increased and eased mobility for daily travels (school, work and leisure).
Revenue generation	Difficult estimation due to newly implemented tariffs and evolution of the transport network (new infrastructures).
User acceptance	A high level of satisfaction of the systems notably among the youngsters and students: 65% of students respondents replied that they were “very satisfied” and 32% “quite satisfied” with the access to different modes of transport using a unique smart card.

4. LESSONS LEARNT

Factors for success	Cooperation between local institutions ; Positive image of smartcards.
Obstacles	système non interopétable avec ferroviaire

5. MORE INFORMATION

Contact Person	Name: Laure MARTIN Function: Direction Company: SYMOD Email: direction@symod.org Phone: +33 5 46 50 48 05
Web link (if existing)	www.symod.org

4.39 IT/DE - SMART-WAY: Mobile Public Transport Navigation

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: information barrier to use public transport Objective(s) of the measure/service: never get lost in public transport networks
Start of system/service	Planned 07/2012
Location	☐ single road/line ☐ city district ☒ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Fraunhofer Institute for Transportation and Infrastructure IVI (server application and interfaces to public transport operators) the-agent-factory GmbH (mobile application)
System / service description	SMART-WAY is a real public transport navigation system based on mobile devices that give passengers the possibility to act as they are used to do with common navigation systems in their cars. Once entered the destination of their trip they will be able to get into a vehicle and to jump off/on as often as they like to. The system will always guide them to the destination, inform them about disturbances and, if possible guide them around. Passengers are no longer bound to a printout of the route. They may change and interrupt their trips as often as they want to.
Technologies	Mobile application: Android-App, OSM-droid Server technologies: XML web services, own Java services (Snap passenger, map-matching and other GIS services, state identification etc.), PostgreSQL, fast XML-translation, LBS, central schedule database
Standards	VDV implementations, usual timetable information system, REST-services, XML, SOAP, EDGE, UMTS, HSPA, SQL
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: Dresdner Verkehrsbetriebe AG (DVB), Gruppo Torinese Transporti (GTT) ☐ Private stakeholders: ☒ Others: EC/GSA
Organisational model	☒ Management body: Fraunhofer ☒ Operating body: transport authorities ☒ Financing body: EC/GSA
Business model	☒ Public investment: transport authorities ☒ Private / commercial framework: private entities, B2B partnerships ☐ Public-private partnership:
Investment costs	€: not yet defined
Operating costs	€ / year: not yet defined person / year: not yet defined

3. RESULTS	
Technical performance	
Implementation of Innovation	
Safety impacts	
Efficiency impacts	
Environmental impacts	
Socio-economic impacts	
Revenue generation	
User acceptance	
4. LESSONS LEARNT	
Factors for success	- Novelty of the solution - Success of car navigation system applied to the public transport - Increasing use of smart phones
Obstacles	- Inaccurate or not available data from transport operators - financing
5. MORE INFORMATION	
Contact Person	Name: Andreas Küster Function: Project Manager Company: Fraunhofer IVI Email: info@smart-way.mobi Phone: +49 351 4640-667
Web link (if existing)	www.smart-way.mobi

4.40 IT - Bologna – SIRIO, Access to Controlled Areas

URBAN ITS **KEY APPLICATION**	☐ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:			
1. GENERAL DESCRIPTION				
Problems to solve / Objectives	Issue(s) encountered: Traffic Calming Objective(s) of the measure/service: Calm car traffic in the down town city			
Start of system/service	2008			
Location	☐ single road/line	☒ city district	☐ whole city	☐ urban region
Transport mode(s) concerned	☒ public transport	☐ rail	☒ road	☐ car-sharing
	☐ bicycles	☐ pedestrians	☐ other:	
Implementing organisation	Kapsch Italia			
System / service description	Drivers who want to access the zone with their private cars need to hold an access permit. Whether or not a driver obtains a permit depends on his status (resident, taxi, handicapped person, etc.) on the type of vehicle (hybrid, etc.) or on special application (i.e. temporarily for hotel guests or short term access). All vehicle passages are enforced electronically.			
Technologies	ANPR, central systems			
Standards				
2. IMPLEMENTATION				
Partners involved	☒ Public authorities: Commune di Bologna ☐ Private stakeholders: ☐ Others:			
Organisational model	☐ Management body: ☒ Operating body: Commune di Bologna ☐ Financing body:			
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:			
Investment costs	€: ~1.4 mn			
Operating costs	€ / year: 200.000 operations, 220.000 maintenance person / year: 10			
3. RESULTS				
Technical performance	Average ANPR performance			
Implementation of Innovation	no			
Safety impacts	Reduction of absolute traffic count (-23%...-31%)			

Efficiency impacts	less parking pressure, less congestion, shorter travel times
Environmental impacts	Reduction of particle matter emissions (-47%)
Socio-economic impacts	
Revenue generation	€ ~28 mn per year from fines
User acceptance	The scheme is well accepted by the citizens
4. LESSONS LEARNT	
Factors for success	Real reduction of traffic, better perception of quality of life
Obstacles	Acceptance by merchants association, initial public funding
5. MORE INFORMATION	
Contact Person	Name: Carlo Michelacci Function: municipal official (sustainable mobility sector) Company: Bologna Municipality Email: carlo.michelacci@comune.bologna.it Phone: +39 051 2193390
Web link (if existing)	www.comune.bologna.it

4.41 NL - Rotterdam – Park & Ride Pricing Strategy for Target Groups

URBAN ITS KEY APPLICATION	☐ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: In the Rotterdam region, the P&R sites offer free parking for all users. The Rotterdam Alexander site is close to a metro/intercity train station and has 535 parking places. A lot of non PT-users make use of the P&R site to go shopping or working in the area instead of using the P&R for its main purpose. Due to this, it is possible that people, who do want to use the P&R for travelling with PT, cannot find a parking place. Objective(s) of the measure/service: The aim of this measure (pricing strategies for P&R) is to regulate the use of the P&R-site and ensure the availability of parking spaces for public transport (PT-) users at the P&R site "Rotterdam Alexander". The measure had also a number of internal objectives. Achieving these objectives was an important pre condition for the continuation of this measure. The objectives are: Achieving an average occupancy rate of 80% or more; The parking pressure in surrounding residential areas should increase with no more than 10%; The share of the non-target group should be less than 50%.
Start of system/service	The actual measure was implemented in May 2004.
Location	☐ single road/line ☒ city district ☐ whole city ☐ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☒ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☒ other: Park and Ride
Implementing organisation	The parking system was realised under supervision of the department for street supervision and parking enforcement of the city of Rotterdam.
System / service description	During the pilot phase (from 2004 to 2006), people who could show a public transport ticket (with correct stamp and date) would get a free parking ticket. People who could not show a ticket had to pay a parking tariff. Controllers who were present from 7:00 -20:00 checked the tickets. After the pilot phase, a pay-machine was used to recognise a legal public transport ticket with stamp or a public transport ticket without one.
Technologies	
Standards	
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: the city of Rotterdam ☐ Private stakeholders: ☐ Others:
Organisational model	☒ Management body: a central department (Stadstoezicht) of the city. ☒ Operating body: the city department Gemeentwerken is responsible for the maintenance of the area ☒ Financing body: central city development department of the municipality

Business model	☐ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	The total costs for the altered design of the P&R facility are estimated at approximately 200.000 Euros. These are only the costs for hardware and not for personnel budgets.
Operating costs	€ / year: person / year: The maintenance costs of the facility seem reasonably low although higher than in the previous situation especially since the technical system encountered some problems at the start of the implementation.

3. RESULTS

Technical performance	
Implementation of Innovation	
Safety impacts	
Efficiency impacts	The implementation of this measure clearly affected the use of the P&R site: after implementation the share of the dedicated target group (public transport users) increased considerably. Although several indicators were rated positive (ease of use, number of information sites), the impact on occupancy rates was still ambivalent. Even though the relative number of users from the target group (PT users) increased, the absolute number of users declined: the occupancy rates decreased from close to 100% to 65%. Because of this, and because the behaviour of the non target group is unclear, it was not possible to make final conclusion about modal shifts.
Environmental impacts	Changes in fuel efficiency and environmental impacts (emissions, noise) in this case relate to changes in modal split. As the study concluded there were not enough prove that a modal shift took place, these indicators are not affected.
Socio-economic impacts	
Revenue generation	
User acceptance	Before this measure was implemented a lot of users (44%) were less satisfied with the number of parking places. The **acceptance rating related to maintenance** of the site clearly showed improvement. In the pre-situation 44% of the users gave a positive value to this item. After the implementation of the measure this increased to 90%. The **satisfaction rating for safety** also increased, from 65% to 80%. Main reasons for this are the improved lighting and increased supervision. The **rating for the accessibility** slightly decreased (from 93% to 83%) but is still very high. **The electronic system** was rated less favourable (65% satisfactory) because of a number of technical failures that occurred.

4. LESSONS LEARNT

Factors for success	Although some barriers have been identified (e.g. property ownership), there were no major obstacles to implement this measure. The most relevant recommendation would come from the fact that measures of this kind affect many parameters. Therefore an extensive analysis and

	assessment is needed for several years to really understand the impact of these types of measures.
Obstacles	One of the main barriers was the **uncertainty about the ownership rights of this public area**. The city districts (Deelgemeenten) felt reluctant to taking up the ownership since this would also lead to additional efforts in relation to spatial planning plans as well as possible financial repercussions. Finally it was decided that the central city development department of the municipality would be owner and another central department (Stadstoezicht) would be responsible for control and management. The discussion about this issue caused some delay in reaching he milestones. Another barrier related to the previous, is the **question of maintenance** of the P&R area. After several months of discussion (and delays) it was finally decided that the city department Gemeentwerken is responsible for the maintenance of the area. There were also **objections raised by neighbours** leading to an additional barrier and delays. Another barrier was formed by the search for a **feasible technological solution**.
5. MORE INFORMATION	
Contact Person	Name: Uitzinger, J; Jan Saft, R.; Derijcke, E. Year of study/report: 2006 Function: Company: IVAM - University of Amsterdam BV Email: Phone:
Web link (if existing)	

4.42 NL - Rotterdam -. Truck Parking in Residential Areas

URBAN ITS **KEY APPLICATION**	☐ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☒ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: The reason behind the introduction of Truck Park Management is the need to **prevent parking of trucks in residential areas**. As the Rotterdam Fruitport is located in the immediate vicinity of a residential area, **many local truck drivers make use of this area to park their vehicles, especially in the weekends**. Therefore the residents of urban areas close to the port district face safety, noise and accessibility problems because of the parking of truck-combinations. Objective(s) of the measure/service: The main goals of the measure Truckpark Fruitport are **to better accommodate trucks and to better regulate the movement of lorries** from the highways to the port area. An additional expected outcome is that the measure is thought **to speed up the handling/ processing of orders**. The immediate objective of the measure was the expansion of the Truck Parking management concept with 20 new parking spaces. The ultimate objective is a **reduction of truck parking in the residential areas**.
Start of system/service	The first designs were made in 1997 and it took about 8 years to grow to the mature phase where it is now.
Location	☐ single road/line ☒ city district ☐ whole city ☐ urban region
Transport mode(s) concerned	☐ public transport ☐ rail ☒ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☒ other: Freight and truck parking
Implementing organisation	The **initiative** for the truck parking management was taken by the **Port of Rotterdam** (HavenbedrijfRotterdam N.V.). In the design phase there was no necessity for specific cooperation with other public or private bodies. In the **implementation phase** some cooperation was needed with both the municipality of **Rotterdam** and the **administrative area Delfshaven**. These bodies support the project with necessary permits. Furthermore throughout the project **the local police department** has been informed and asked for increasing parking control in the residential areas In the course of 2005 the **maintenance and management** of the truck parking area has been transferred to a **foundation** that has been founded amongst others for this purpose. The foundation is established by (a part of) the **participating companies in the Fruitport area**. The Port of Rotterdam will play an advisory role.
System / service description	– Extended parking area (the number of parking spaces increases from 40 to 60) – Improved facilities – Improved regulation and movement of lorries, thanks to a truck parking management system, including a traffic circulation plan and traffic guidance systems. – Signing of truck parking area; Special attention has been given to

	communication issues, especially to the truck drivers (EU and non-EU drivers) as main target group.
Technologies	
Standards	
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: municipality of Rotterdam, the administrative area Delfshaven, the local police department ☒ Private stakeholders: The Port of Rotterdam, the foundation responsible for the management and maintenance of the truck parking area, established by (a part of) the participating companies in the Fruitport area ☐ Others:
Organisational model	☒ Management body: the Fruitport foundation established by participating companies in the Fruitport area ☒ Operating body: The Port of Rotterdam and the Fruit foundation established by participating companies in the Fruitport area ☐ Financing body:
Business model	☐ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	Approximately 1 million €
Operating costs	€ / year: person / year:
3. RESULTS	
Technical performance	
Implementation of Innovation	
Safety impacts	
Efficiency impacts	
Environmental impacts	The decrease of parking movements in the residential areas has shifted peak noise burden from populated areas to less populated areas. The (difference in) peak noise levels have not been measured. Impacts on land use and other traffic related emissions are expected to be minimal.
Socio-economic impacts	
Revenue generation	Although a gate fee might possibly be introduced in the future, it is not expected that these revenues will compensate for all of the variable and maintenance costs.
User acceptance	The implementation of the Truckpark Fruitport has led to less parking movements in the surrounding areas. Therefore the conclusion has been made that citizens in these areas would have a positive attitude towards this measure, although the acceptance amongst citizens has not been surveyed. Clear communication to the main target group, the truck drivers, about the benefits of the measure is a necessity to reach the goals set.

4. LESSONS LEARNT

Factors for success	An evident success factor was the **clear separation of tasks between the stakeholders**. The Port of Rotterdam was only responsible for design and implementation. The Fruitport Foundation is responsible for maintenance and management of the truck parking area. This agreement both enhanced the positive attitude of Port of Rotterdam as did it enhance the acceptance and support of the companies in the Fruitport area. The acceptance for the project in the residential areas was ensured from the start but positively influenced by the **activities of the local authorities in parking control** and therewith stimulates truckdrivers to avoid the residential area. A factor that clearly can disturb the project is insufficient **communication** with and **encouragement** of the truckdrivers. Clear communication to the main target group, the truck drivers, about the benefits of the measure is a necessity to reach the goals set. An appropriate signing of the route to the truckparking area is necessary. Also the fees for the truck parking area should not be too high in order to avoid unwanted effects such as transfer of the initial problems to other areas.
Obstacles	The main barrier for this measure was the acceptance by truck drivers to use the Truckpark. It is essential to communicate with them and explain the benefits of the Truckpark in terms of safety, convenience and efficiency. Here the use of the Truckpark was stimulated and enforced by the companies that actually handle the cargo. There were no major other barriers from political/administrative, societal, economical, technical, or other factors. Transferability: It is expected that the uptake potential of this measure is **not very large**. The situation of a harbour area in close vicinity of residential areas is not common in Europe. On the other hand the uptake potential could grow if truckparking management proves to be suited for other areas as well, i.e. industrial zones in the vicinity of residential areas.

5. MORE INFORMATION

Contact Person	Name: Uitzinger, J; Jan Saft, R.; Derijcke, E., 2006 Function: Company: IVAM - University of Amsterdam BV Email: Phone:
Web link (if existing)	

4.43 NL - Rotterdam - The Traffic Enterprise (De Verkeersonderneming)

URBAN ITS KEY APPLICATION	☒ **Traffic & Travel Information** ☒ **Traffic & Access Management** ☐ **Smart Ticketing** ☒ **Urban Logistics** ☐ **Other:**
TITLE	De Verkeersonderneming (The Traffic Enterprise)
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	The main objective of De Verkeersonderneming is to keep the Port of Rotterdam and the A15-corridor accessible during the widening of the A15 highway and the construction work on the Maasvlakte. As a director, partner and initiator De Verkeersonderneming is the mediator in the network connecting employees, companies, authorities and other partners with one another. Concrete goals are to reduce the amount of vehicles on the A15 highway and reduce rush hour traffic by 20% through mobility management, and maximizing the capacity and flow on the A15 through traffic management. The goal for 2011 is to achieve a travel time of 38 minutes during rush hour along the A15 in 95% of cases (the average was 45 minutes).
Location	☐ single road/line ☒ city district ☐ whole city ☐ urban region
Transport mode(s)	☐ public transport ☐ road ☒ multi-modal ☐ other:
Implementing organisation	The Municipality of Rotterdam, Rotterdam Metropolitan Region, Ministry of Transport, Public Works and Watermanagement and Port of Rotterdam Authority
System / service description	De Verkeersonderneming focuses on a number of aspects to achieve the imposed objectives: - Availability of alternative transportation modes and increasing the visibility and practicality of these modes. - Stimulate the reduction of truck transportation by offering alternatives on waterways and rail. - Less hindrance by goods transportation and incidents during rush hour. - Adjusting road markings around the Botlektunnel - Improve incident management after accidents
Technologies	Traffic Management systems, Dynamic Route Information Panels.
Standards	Communication standards for traffic management systems and dynamic route information panels.
Start of system/service	2008
2. IMPLEMENTATION	
Role model (tbc)	The unique form of collaboration between the various governments represented by De Verkeersonderneming ensures their role as a stimulator for innovation and developments for traffic information, while not directly being the initiator.
Partners involved	Deltalinqs, municipality Spijkenisse, the Kamer van Koophandel, TLN, province of South Holland and the Police Rotterdam-Rijnmond.
Business model	Governmental collaboration

3. RESULTS	
Technical performance	
Safety impacts	De Verkeersonderneming has great interest in safely guiding the traffic through the large scale road- and construction works on the A15 and the Port of Rotterdam. Traffic management improves the safety level of the A15 highway through signage and warning systems.
Efficiency impacts	The collaboration between governmental layers and executive agencies improves communication efficiency between them and the various developers of applications for the end user, who will eventually benefit most from the congestion reduction.
Environmental impacts	Congestion reduction leads to improvements in air quality, though this is not directly the scope of the project.
Socio-economic impacts	The public relations image of construction works and the A15 corridor benefits from the improved connectivity and congestion reduction thanks to the stimuli offered to the applications market by De Verkeersonderneming.
Revenue generation	No direct revenue generation. Congestion reduction leads to less economic damage for road users.
User acceptance	The main success factor for user acceptance is congestion reduction which is achieved by the measures implemented by De Verkeersonderneming. They do not run user acceptance evaluations as the end user is not directly in the scope of De Verkeersonderneming rather than the developers of applications for the end users.
4. LESSONS LEARNT	
Factors for success	Strong communication and collaboration between De Verkeersonderneming, the various local and provincial governmental agencies and the executive agencies and constructors in charge of the roadworks.
Obstacles	Collaborative problems between the various partners and the executive organisation will cause the quality and quantity of travel information to decrease.
5. MORE INFORMATION	
Contact Person	De Verkeersonderneming, +31 10 402 69 03
Web link (if existing)	http://www.verkeersonderneming.nl/

4.44 NL – Urban Freight Energy Efficiency Pilot (Helmond Freilot)

URBAN ITS KEY APPLICATION	☐ **Traffic & Travel Information** ☒ **Traffic & Access Management** ☐ **Smart Ticketing** ☒ **Urban Logistics** ☒ **Other: Driving support / speed limitations**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	The FREILOT service aims to increase energy efficiency drastically in road goods transport in urban areas through a holistic treatment of traffic management, fleet management, the delivery vehicle and the driver, and demonstrate in four linked pilot projects that up to 25% reduction of fuel consumption in urban areas is feasible. The second important objective is to widely disseminate and share the pilot results with all relevant stakeholders so that the FREILOT service can become a truly pan-European solution for energy efficient, holistic and integrated goods transport in urban areas. The third objective is to increase the involvement of fleet operators, cities and other stakeholders in the scheme. Smooth driving behaviour, optimised planning and routing combine with smooth heavy vehicle targeted traffic control can contribute to achieve higher fuel efficiency, less pollution, higher driver comfort and more efficient use of infrastructure.
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s)	☐ public transport ☒ road ☐ multi-modal ☐ other:
Implementing organisation	The Freilot Consortium supported by the European Commission, Ertico
System / service description	The traffic management element of FREILOT will optimise the traffic control system to reduce heavy vehicle fuel consumption. The fuel consumption of a motor vehicle is determined by its speed and acceleration. In urban areas speed is of lesser importance while acceleration, due to many stop-go cycles or slowing at intersections and roundabouts, is the main factor responsible for high fuel consumption. Optimising traffic control for maximum fuel efficiency would aim to minimise congestion and vehicle stops at signal-controlled intersections and roundabouts. To achieve this goal several innovative measures are implemented to locally improve coordination and avoid heavy goods vehicle stops through selective detection (by size or by vehicle/fleet identity) and priority at individual signalised intersections. Vehicle - Acceleration limiter and adaptive speed limiter This feature limits vehicle acceleration in order to reduce excessive fuel consumption. In typical stop-start urban traffic, full acceleration of a truck from a stop light up to cruising speed can contribute around one-third of its total fuel consumption. The acceleration limiter concept is aimed at those vehicles that need to perform many speed changes, such as urban delivery trucks, for which it can significantly reduce consumption due to excessive acceleration. The technology for acceleration limiter is mature today and there is strong interest to validate a system with good balance between comfort,

	fuel savings, driver acceptance and time for delivery. The FREILOT integrated service allows for the optimisation of a traffic control system according to the presence of goods vehicles equipped with an acceleration/speed limiter, so that these vehicles – even if taking more time to achieve cruising speed – would arrive at the next signal in time to receive a green light. Driver - Enhanced "green driving" support The FREILOT service provides direct support for an economic driving style. The eco-driving function supports the driver to optimise the vehicle's fuel economy through his/her acceleration, braking and gear-changing behaviour. While driving, continuous information on accelerator position, instant consumption, average consumption and a general performance rating on eco driving level is provided to the driver. If one of the parameters has very low performance the driver receives a message requesting him to improve his behaviour in terms of fuel consumption. The eco-driving support service is not only a technical matter but is very much oriented at the driver behaviour, and at the driver's ability to receive and integrate the advice given. Fleet management - Real-time loading/delivery space booking Each time a driver has to deliver goods, he needs either a private space or a delivery area to park his vehicle; the latter one is the most convenient place to park, since has very little impact on traffic efficiency and is the safest place to leave the vehicle for other users and for the driver himself. When there are no such spaces available, because a driver already use it, or cars are illegally parked on them the drivers mainly use double lane stops. Unfortunately such stops have negative impacts on traffic flow, environment (by increasing CO2 emissions) and on safety. Giving the driver the ability of booking a delivery space before he reaches his delivery point will: • increase the number of stops made on delivery areas, and decrease the number of double lane stops; • reduce all negative impacts due to double lane stops, as listed above; • reduce driver stress, optimise delivery time operations, and significantly improve drivers work conditions. If the vehicle is out of schedule the operator could reassign a new delivery space according to the new time schedule in order to keep the delivery area available for the other users. This measure will optimize the routs for each vehicle, reduce the kilometres and number of stops that each vehicle performs.
Technologies	Traffic light management, speed assessment and limiting devices, delivery space booking.
Standards	Various depending on type of service
Start of system/service	Helmond – October 2010

2. IMPLEMENTATION

Role model (tbc)	Data control: Moviloc, Micronav Professional, Flotsanet, GPS/Galileo Fleet management products: GMV, Micronav, Fagor Electronica, Cenoclap Simulator manufacturers: Autosim, Prosolvia Clarus Delivery space booking: Bookings Tracker

Partners involved	In Helmond: - The Municipality of Helmond - The Helmond Fire Brigade - Van den Broek Logistics - Ambulance services Helmond - Peek Traffic - Volvo – Renault - Ertico
Business model	PPS
3. RESULTS	
Technical performance	The pilot is currently being undertaken and will be concluded in october 2011. Technical performance can best be addressed after this date.
Safety impacts	In addition the parking booking functionality of the FREILOT service should reduce negative impacts of double lane stops, improve work and safety conditions while delivery operations for drivers, especially in urban areas.
Efficiency impacts	By implementing acceleration/speed limiters and eco-driving support in their vehicles, fleet operators benefit from increased energy efficiency (lower fuel consumption) and from having priority at intersections on certain roads or during certain times of day, as well as better operational efficiency and reliability thanks to the delivery space booking service.
Environmental impacts	Every city that would update their traffic management system to support selective priority for eligible goods vehicle will benefit from the possibility to “steer” goods traffic towards preferred roads or preferred times of the day (e.g. early hours in the morning), through an incentive-scheme. Overall, it is expected that cities will benefit from lower fuel consumption, CO2 emissions reduction, better control of traffic flow leading to a better environment and air quality.
Socio-economic impacts	Drivers benefit from having priority at certain intersections and the support to become a more eco-friendly driver by adapting their driving style to use less acceleration and speed. Adopting an eco-friendly driving style leads to less stress for the driver and reduced risk of accidents.
Revenue generation	Transportation companies benefit from reduced fuel consumption and more reliable logistics leading to cost reductions.
User acceptance	The pilot is currently being undertaken and will be concluded in October 2011. User acceptance can best be addressed after this date.
4. LESSONS LEARNT	
Factors for success	A drastic improvement of the energy efficiency and sustainability of goods transport in urban areas can only be achieved if a holistic approach, involving all relevant stakeholders, is taken. If the focus is put only on one aspect like improvement of vehicle technology, the optimal benefits may never be reached.
Obstacles	The project needs to be able to prove the successfulness of the aforementioned efficiency impacts to justify costs and further implementation
5. MORE INFORMATION	
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4.45 NL - Rotterdam - Havenbedrijf (Port of Rotterdam Authority)

URBAN ITS KEY APPLICATION	☒ **Traffic & Travel Information** ☒ **Traffic & Access Management** ☐ **Smart Ticketing** ☒ **Urban Logistics** ☐ **Other:**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	The aim of the Port of Rotterdam Authority is to enhance the port of Rotterdam's competitive position as a logistics hub and world-class industrial complex. They manage, operate and develop the Rotterdam port and industrial area. And therefore, they invest in the development of the existing port area, new port sites (Maasvlakte 2), public infrastructure and the handling of shipping. Together with their partners they aim towards a multipurpose, sustainable, safe and attractive port that meets the high demands of society.
Location	☐ single road/line ☒ city district ☐ whole city ☐ urban region
Transport mode(s)	☐ public transport ☐ road ☒ multi-modal ☐ other:
Implementing organisation	The Port of Rotterdam Authority is an autonomous company with two shareholders, the municipality of Rotterdam and the Dutch state. Although publicly owned it is run like a commercial company.
System / service description	The most visible and important service being implemented by the Port of Rotterdam authority is the Roportis (Realtime Online Port Of Rotterdam Traffic Information System) online tool for traffic information. It is an integrated tool using four different methods to collect traffic data. Based on this traffic information various traffic management scenarios are formulated to guarantee good traffic flow, prioritize traffic and offer a strategic framework for routes and deviations. A regional desk can implement any of 8 traffic management scenarios based on triggers given by the traffic data collection tools.
Technologies	Traffic data collection through road-embedded nodes, VERI, WIM and Bluetooth
Standards	
Start of system/service	2010
2. IMPLEMENTATION	
Role model (tbc)	
Partners involved	IT&T (developer of Roportis tool)
Business model	Governmental collaboration
3. RESULTS	
Technical performance	Roportis.com has been online since the start of the service and functioning successfully.
Safety impacts	Improved traffic management has allowed dangerous situations on the road network to be solved more efficiently, allowing better communications between the various organisations responsible for the network.

Efficiency impacts	Improved traffic flow has increased the Port's accessibility and connectivity, allowing shipments and deliveries to be more precise.
Environmental impacts	Congestion reduction and improved traffic flow reduce vehicle emissions and fuel consumption. Neighbourhoods around the port areas profit from the improved air quality.
Socio-economic impacts	The Port of Rotterdam Authority can boast better accessibility for the companies shipping in the port, increasing the value of port services and overall image. Residential areas around the port profit from the environmental improvements.
Revenue generation	No direct revenue is generated from the aforementioned applications, but companies do profit from the improved accessibility and traffic flows around the harbour.
User acceptance	Improving traffic flows in areas of heavy traffic and industry can always rely on support from frequent users as time margins and delivery reliability is increased.

4. Lessons learnt

Factors for success	Accurate and reliable traffic information, good communication between involved traffic management parties, good communication to the end users regarding traffic and road status.
Obstacles	The cooperation between the various governmental layers, the port authority and the road network supervisors has to be solid in order to achieve the criteria for success.

5. More Information

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4.46 NL - Openbaar Vervoer Chipkaart (Public Transport Chipcard)

URBAN ITS **KEY APPLICATION**	☐ **Traffic & Travel Information** ☐ **Traffic & Access Management** ☒ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other:**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	The objective is the creation of a single nationwide electronic payment method for all public transportation modalities. The transportation card will replace all paper tickets by 2012, making it possible to travel with a single electronic payment system on all buses, trams, metros, ferries and trains.
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s)	☒ public transport ☐ road ☐ multi-modal ☐ other:
Implementing organisation	Ministry of Infrastucture and the Environment
System / service description	An electronic card has been deployed, allowing passengers to charge the card with credit on the internet or through charging units in stations and on (some) buses. The card must be 'swiped' on an electronic unit upon entering the transportation modality, be it a bus, tram or on the platforms in train station to allow 'checking-in'. Upon arrival at the destination, the card is once again 'swiped' to signal the passenger is checking out. Transportation authorities can check the status of the passengers' cards with an electronic reading device.
Technologies	Electronic travel registration and payment through chipcards and charging/checking units.
Standards	
Start of system/service	Large scale pilot projects started in 2004, implementation in a number of provinces in 2008, nationwide implementation in 2011.
2. IMPLEMENTATION	
Role model (tbc)	'Tripperpas', pilot project in Groningen (2001,2002), 'Oyster card', Londen (2003)
Partners involved	The five main public transportation companies GVB, HTM, NS en RET joined together to from Trans Link Systems (TLS) (Connexxion was also a partner until 2010) and united with other mobility companies forms Mobis.
Business model	PPP
3. RESULTS	
Technical performance	A variety of start-up problems were found during the implementation of pilot projects with the OV-chipcard. Privacy issues concerning travel- and payment information and the so-called 'hacking' of the card (making it relatively easy for people to travel for free) were serious issues that have been addressed during the initial implementation.
Safety impacts	Less cash payments are made in public transport, making drivers less subjects of crime.
Efficiency impacts	Creating a single payment system and travel card offers great advantages for consumers and transportation companies. Consumers can avoid having to buy different tickets and have a single entity to deal with for questions and problems with the transportation card. Transportation

	companies can save on personnel and administrative costs as ticket controls and sales can be automated.
Environmental impacts	With the (future) disappearance of paper tickets, production costs and environmental impact is reduced.
Socio-economic impacts	Implementing a new single payment method for all public transport has required an adjustment in the perception of all users. In the long run, ease of payment can stimulate the use public transportation. Adjustments to tariffs, promotions or incentives can be implemented more easily in order to adjust consumer behaviour.
Revenue generation	Revenue structures by transport companies are more flexible as the price per kilometre can be defined with more precision by built-in GPS- or location systems. Whether public transport company revenue has effectively increased because of the OV-chipcard is unknown.
User acceptance	Upon introduction the OV-chipcard was criticized, especially regarding the high tariffs that were charged for people who forgot to 'check-out' of the system and technical defects which occurred in the initial stages of implementation. The final stage of introduction, meaning the disappearance of paper tickets and the OV-chipcard becoming the only transport ticket available, will make it possible to further assess user acceptance.
4. LESSONS LEARNT	
Factors for success	Long term acceptance is created by high reliability and evident user-friendliness, both factors having been problematic upon introduction of the card. There is also a certain period of social adjustment to such a new large scale introduction which has to be bridged before the actual success can be assessed.
Obstacles	Technical failures and privacy concerns can negatively influence the general opinion and politics behind the OV-chipcard, endangering the final steps of introduction and creating tensions between the TLS partners and the responsible governmental institutions. Privacy and hacking issues have arisen, leaving space for improvements and adjustments to the further development of the system.
5. MORE INFORMATION	
Contact Person	Trans Link Systems +31 (0)900-0980
Web link (if existing)	http://www.ov-chipkaart.nl/

4.47 NL - Spitsmijden, Avoiding Rush Hour

URBAN ITS KEY APPLICATION	☐ **Traffic & Travel Information** ☒ **Traffic & Access Management** ☐ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other: Mobility Management**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Decongestion of preselected highway segments through financial incentives to utilize alternative mobility methods
Location	☒ single road/line ☐ city district ☐ whole city ☐ urban region
Transport mode(s)	☐ public transport ☐ road ☒ multi-modal ☐ other:
Implementing organisation	Rijkswaterstaat (The National Public Works and Water Management Department), Nederlandse Spoorwegen (Dutch Railways)
System / service description	Four pilot programmes were conducted from 2006 to 2009, rewarding car users who avoided rush hour traffic on preselected highway segments. A preselected test group was given 4 euro for each rush hour they avoided by utilizing public transportation or adjusting their workday to avoid congestion delays.
Technologies	Car detection and recognition technologies
Standards	
Start of system/service	2006
2. IMPLEMENTATION	
Role model (tbc)	
Partners involved	Bereik!, Ars Traffic & Transport Technology, Rabobank, Vrije Universiteit Amsterdam, Universiteit Utrecht, Technische Universiteit Delft, OC Mobility Coaching, Dutch Railways, RDW
Business model	PPS
3. RESULTS	
Technical performance	There were some issues with faulty car recognition or payment issues which were expected to arise in the initial stages of the project. The problems were tackled during the duration of the pilot(s).
Safety impacts	No noticeable safety impacts were perceived as the number of participants was relatively low.
Efficiency impacts	Most users chose to adjust their departure times to avoid the rush-hours in the morning and afternoon, while a smaller percentage chose to work at home more often or change their transportation modality (to public transport or bicycle).
Environmental impacts	The pilot was carried out under a small amount of people making the environmental impact reduction negligible.
Socio-economic impacts	Participants were stimulated to think about their daily travel routines and to consider working at home or changing their mode of travel. Such a consideration has proven to have a strong impact on new ways of perceiving how to organize a working day.
Revenue generation	No direct revenue was generated as participants were only rewarded and could not be taxed once their reward credit was depleted.

User acceptance	The way alternative travel information was presented was an important element in the users' decision to change their habitual routine. Participants have been found to use only part of the available information and discard other types.

4. LESSONS LEARNT

Factors for success	More volume needed in order to define impact on congestion reduction.
Obstacles	Fraud can undermine the reliability and image of the system, as well as a great reduction in congestion can cause more people to take the car as traffic flow is restored and travel times become more reliable.

5. MORE INFORMATION

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4.48 NL - Brabant – Spitsmijden, Avoiding the Peak

URBAN ITS **KEY APPLICATION**	☒ **Traffic & Travel Information** ☒ **Traffic & Access Management** ☐ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other: Mobility Management**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	This rush-hour avoidance trial, known in Dutch as *Spitsmijden in Brabant*, is designed to discover what can induce drivers to choose not to drive in or out of urban centres at peak times. We are learning about the impact of rewards and information on drivers' travel behaviour. This knowledge should allow us to build solutions to future accessibility problems in the urban centres of Noord-Brabant province and the Netherlands in general.
Location	☐ single road/line ☒ city district ☐ whole city ☐ urban region
Transport mode(s)	☐ public transport ☐ road ☒ multi-modal ☐ other:
Implementing organisation	Noord-Brabant provincial authority and the Eindhoven Regional Partnership (SRE)
System / service description	Participants in the project receive a monetary reward of up to € 100 a month if they avoid Eindhoven or 's-Hertogenbosch at peak times. To support their decision-making they receive up-to-date information via an innovative system. Peak hours: • morning: 07.30-09.30, Monday to Friday • evening: 15.30-13.30, Monday to Friday Target areas: • 's-Hertogenbosch: centre, Paleiskwartier Noord, Onderwijsboulevard • Eindhoven: centre (the entire area within the ring road) Reward: • Participants will receive a fixed sum of money each month, which can rise to as much as € 100. Every time they drive during peak hours, € 2.50 or € 1.25 (in the case of participants who live close to the target area) will be deducted. The idea is that those who change their behaviour will be rewarded for doing so. Participants who do not change their travel behaviour will receive nothing. • Participants will also be given a travel computer, the TravelStar, which gives them the latest information on roadworks, schools in the vicinity, and parking. Research has shown that if travellers can consider all the alternatives (including the costs) beforehand, they make more conscious choices.
Technologies	Satellite navigation through on-board unit, multi-modal travel and traffic information through handheld device.
Standards	
Start of system/service	October 2010 – April 2012
2. IMPLEMENTATION	
Role model (tbc)	Comparable projects: Spitsmijden A12, Spitsmijden Gouda-Den Haag, Spitsmijden in het OV, SLIM Prijzen Arnhem/Nijmegen, Spitsscoren Rotterdam. These projects offer the same incentive as Spitsmijden in Brabant, with the exception that Spitsmijden in Brabant has focused on offering valid travel alternatives through dynamic and thorough travel/traffic information on a handheld device named Travelstar

Partners involved	‘s-Hertogenbosch and Eindhoven city councils, the Ministry of Infrastructure and the Environment, and the members of the Mobility Management Platform, National Data Warehouse for Traffic Information (NDW)
Business model	Governmental collaboration
3. RESULTS	
Technical performance	The technical performance of the TravelStar device was sufficient, even though there were complaints of incomplete or insufficient information and questions were raised on the usefulness of an extra device compared to the integration of a system or app in navigation units or smartphones.
Safety impacts	- The TravelStar handheld device is programmed to warn participants when a school is approached during start- or ending hours of a school day. A warning is given to adjust the car speed accordingly, improving the traffic safety around schools. - By participants users to avoid road works through alternative travel modes or routes, road workers’ safety was improved.
Efficiency impacts	Most users chose to adjust their departure times to avoid the rush-hours in the morning and afternoon, while a smaller percentage chose to work at home more often or change their transportation modality (to public transport or bicycle).
Environmental impacts	The pilot was carried out under a small amount of people (1600 participants), making the environmental impact reduction negligible.
Socio-economic impacts	Participants were stimulated to think about their daily travel routines and to consider working at home or changing their mode of travel. Such a consideration has proven to have a strong impact on new ways of perceiving how to organize a working day.
Revenue generation	No direct revenue was generated as participants were only rewarded and could not be taxed once their reward credit was depleted.
User acceptance	The way alternative travel information was presented was an important element in the users’ decision to change their habitual routine. Participants have been found to use only part of the available information and discard other types.
4. LESSONS LEARNT	
Factors for success	- Up-to-date and dynamic traffic, public transport and roadwork information increase the relevance and practicality of the alternative travel solution. - Due to the small amount of participants congestion reduction was negligible, but the project has demonstrated that large scale implementation of the Spitsmijden concept could work to achieve congestion reduction.
Obstacles	- Accurate and dependable travel information are key elements to ensure reliability and efficacy of the system. - Costs/benefits analyses have to prove the systems’ efficiency and feasibility in a large scale implementation.

5. MORE INFORMATION

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4.49 NL - Yellowbrick / Parkline

URBAN ITS KEY APPLICATION	☐ **Traffic & Travel Information** ☐ **Traffic & Access Management** ☒ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other:**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Enable and improve mobile parking payment methods for on-street parking.
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s)	☐ public transport ☒ road ☐ multi-modal ☐ other:
Implementing organisation	Yellowbrick, Parkline
System / service description	These two commercial service provider initiatives offer a mobile parking payment service, enabling consumers to confirm their parking spot by calling a number, texting a parking code of the location or using a smartphone app upon arrival and departure from their parking spot. Users pay their parking fees through a monthly invoice.
Technologies	Mobile registration of parking duration. Parking enforcers scan barcodes on cars to retrieve payment or permit status.
Standards	Communication standards with regional parking registration database (RDW), which includes license plate numbers of permit owners.
Start of system/service	2006 (Yellowbrick)
2. IMPLEMENTATION	
Role model (tbc)	Mobile parking systems have been developed globally by commercial parties in the last decade.
Partners involved	25 Dutch municipalities (Yellowbrick), 33 Dutch Municipalities (Parkline)
Business model	PPS
3. RESULTS	
Technical performance	Scanning technologies have been improving, allowing more efficiency and accuracy for the recognition of license plate numbers by parking enforcers.
Safety impacts	The mobile payment method results in less cash payments being made at on-street parking machines, making them less prone to crime and vandalism.
Efficiency impacts	Users can accurately time and pay for their parking, limiting payment excesses which on-street parking is prone to.
Environmental impacts	No paper tickets required, payment and processing are fully digitalized.
Socio-economic impacts	More flexibility, time- and cost efficiency for parking service users can be gained through mobile payment. Yet, due to the theoretically easy implementation of the system, consumer groups are afraid municipalities will reduce the number of free parking spaces as an extra source of income.
Revenue generation	The service providers require a one-time subscription fee of 10 euro, a monthly subscription of 2,50 euro (Parkline) or 2,40 euro (Yellowbrick) and a fee for each time the service is used of 0,15 euro (Parkline).

	Yellowbrick offers the option to choose between a monthly subscription of 2,40 euro or a 0,30 euro fee for every time the service is used.
User acceptance	Frequent public parking (business) users have a number of advantages, the service providers claiming a 15% reduction in parking fee excess payments and increased user-friendliness. Service growth is steady yet not explosive. Concerns have been raised about privacy issues, as parking registration means the whereabouts of a person can be traced back in time.
4. LESSONS LEARNT	
Factors for success	The foreseen nationwide availability of the service is expected to stimulate user growth and popularity, as users will be able to park exclusively using the mobile parking payment methods.
Obstacles	The remaining municipalities which have not adhered to the service could obstruct the ambitious nationwide coverage, resulting in less user-friendliness. Conditions and arrangements between the service providers and the municipalities can differ, with risks of modification of business cases and revenue generation models.
5. MORE INFORMATION	
Contact Person	Robert-Jan Staartjes (Waysis > Yellowbrick) r.staartjes@waysis.com Marius Koerselman (Parkmobile > Parkline) marius@parkmobile.com
Web link (if existing)	http://www.yellowbrick.nl/, http://www.parkline.nl

4.50 NL - Maintenance of Information Standards for Public Transportation BISON

URBAN ITS **KEY APPLICATION**	☒ **Traffic & Travel Information** ☐ **Traffic & Access Management** ☐ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other:**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Standardisation of IT communication and data exchange for public transport travel information. Objective(s) of the measure/service: To develop and deploy standards that the industry can use to distribute public transport travel information in an efficient and harmonised way.
Start of system/service	2008
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Platform Bison (secretarial work done by Connekt – ITS Netherlands)
System / service description	The Bison Platform (Beheer Informatie Standaarden OV Nederland) has the task to define, maintain, harmonise and guard all standards that facilitate information exchange within public transportation. Bison acts as a knowledge platform to define IT-policy and intentions for concessions. Bison is the result of decision by the National Mobility Deliberation (NMB) – that is why provinces, city regions, national governments, infrastructure administrators, transportation companies, market parties and traveller groups are represented in the platform. Bison is facilitated by Connekt / ITS Netherlands The activities of the Bison Platform are: - the development and maintenance of information standards that are applied to trustworthy and consistent information exchange between stakeholders in the public transportation sector. - researching, judging, controlling and modifying these standards. - stimulating the continuity and market function applied to information exchange within public transportation. - advising on information exchange within public transportation, especially dynamic travel information. - aiming to achieve collaboration and/or integration with European and international standards. The relation to other partners is as follows: other projects or agencies like GOVI, 9292, SABIMOS, Drechtsteden and Zuid-Holland realise travel information on the street or on the internet. To do this, they use the Bison standards, guaranteeing that the information is transparent and uniform and can be exchanged between different parties. Within Bison the 'language' that is used to communicate about public transport processes is defined. The scope of Bison is for all public transportation: buses, trams, metros, trains and ferries.
Technologies	
Standards	Since the start in september 2008, Bison has defined 6 standards, including one for planned and real-time travel information at stops,

	schedule and mutations. An accurate list and description of these standards can be found at: http://bison.connekt.nl/standaarden/ With this, the travel information component of the project for vehicles was completed in 2009. In 2010, the development was focussed on realising information exchange with and over the rail network, stops (accessibility and administration) and tariffs.
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: Regio Utrecht, DIVV Amsterdam, Interprovinciaal Overleg, Rijkswaterstaat, OV-Bureau Groningen Drenthe, Prorail, Provincie Flevoland, Provincie Friesland, Provincie Gelderland, Provincie Limburg, Provincie Noord-Brabant, Provincie Noord-Holland, Provincie Overijssel, Provincie Utrecht, Provincie Zeeland, Provincie Zuid-Holland, Schiphol Group, Samenwerkingsverband Regio Eindhoven, Stadsgewest Haaglanden, Stadsregio Amsterdam, Stadsregio Arnhem Nijmegen, Stadsregio Rotterdam, Regio Twente, SKVV, Vereniging van Nederlandse gemeenten (VNG). ☒ Private stakeholders: ARS T&TT, Astim Telematica, Bostec, Collis, Ferranti, HP, InTraffic, Keypoint, Logica, NEA, Peek, Prodata Systems, Siemens, Strukton, Surtronic, Technolution, Twynstra Gudde, Vialis ☒ Others: Transportation companies: Arriva, Connexxion, GVB, HTM, NS, 9292, RET, Syntus, Trans Link Systems, Veolia Transport, ANWB, Rover
Organisational model	☒ Management body: President Platform BISON: Chris de Vries (Provincie Noord-Holland) Treasurer: Paul Potters (Connekt) Secretary: Martijn van Aartrijk (Connekt) CAB (Change Advisory Board) President: Klaas Steffens (Arriva) ☒ Operating body: Change Advisory Board & Strategic Committee
Business model	☐ Public investment: ☐ Private / commercial framework: ☒ Public-private partnership:
Investment costs	The project is mostly funded by the partners that offer their personnel and resources without charge. Therefore, a precise cost definition is not possible
Operating costs	See investment costs
3. RESULTS	
Technical performance	The standards that have been developed are functioning according to their specifications and the progress is satisfactory.
Implementation of Innovation	The standards are being used by all partners and agencies involved, making the implementation a successful one.
Safety impacts	None
Efficiency impacts	As a result of the standards defined in Bison, travellers have very accurate public transport travel, departure and arrival time estimates, making public transport more dependable.
Environmental impacts	Increased reliability of public transport is expected to increase its use, thus having a positive environmental impact, though no studies have yet been held to show the effects.
Socio-economic impacts	Information can be easily interchanged, making it possible to inform the end-user in a more efficient and complete way. This will hopefully increase the modal share for public transportation.
Revenue generation	No direct revenue generation involved

User acceptance	Users do not directly deal with the standards that are compiled in Bison, though they do reap the benefits of being better informed.
4. LESSONS LEARNT	
Factors for success	All parties must acknowledge the return of investment in the development of standardised sets of information and the benefits of such a project. Collaboration and flexibility are required to bring together this vast amount of partners.
Obstacles	Technical problems can be a serious obstacle, as the information exchange is enriched or enlarged making the need for standards more complicated. Partnership collaboration is essential to make speedy and strong decisions on developments and standards to adopt in the future.
5. MORE INFORMATION	
Contact Person	Name: Martijn van Aartrijk Function: Secretary Company: Connekt / ITS Netherlands Email: bison@connekt.nl Phone:
Web link (if existing)	http://bison.connekt.nl/

4.51 NL - Public Transport Information without Frontiers GOVI

URBAN ITS **KEY APPLICATION**	☒ **Traffic & Travel Information** ☐ **Traffic & Access Management** ☐ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other:**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Travel time and service information from public transport companies used to come from the single companies, making the usefulness of information very limited. Objective(s) of the measure/service: To bundle travel time and service information from all transportation companies in a single database, facilitating intermodal travel exchange between different public transport companies.
Start of system/service	2006
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	GOVI Projectgroup
System / service description	In various places in the Netherlands, up-to-date travel information is available. This information is often limited to the routes of a single transport company. The traveller wants to see integrated information about the transport services of different companies. GOVI makes this possible. The GOVI project (Grenzeloze Openbaar Vervoer Informatie = Public Transport Information without frontiers) is a joint project involving several government authorities. The primary objective is to integrate dynamic travel information from every modality and transport company and to make that information available in a standard way to organizations and to subsequently present the information to the traveller. This leads to independence from transport operators and Dynamic Passenger Information System (DRIS) suppliers and allows the government/road owners to take control of the development and management of this dynamic information system. North Holland province and Alkmaar City council took the initiative in 2006 to develop a pilot DRIS-system for Alkmaar city council based on standardised Transmodel data exchange. Soon thereafter City-region of Amsterdam joined the project. In 2007 and 2008, a large number of authorities joined the North Holland initiative and national consensus was created. And so the GOVI project became reality. GOVI provides the following services for her partners: • *Distribution of public transport travel information:* receiving, processing and sending of the messages. • *Monitoring the travel informationchain:* ensuring that the whole supply chain keeps on running. • *Reporting on the performance of the transport operator*. • *Quality of public transport travel information:* monitoring and improving the quality of the travel information.

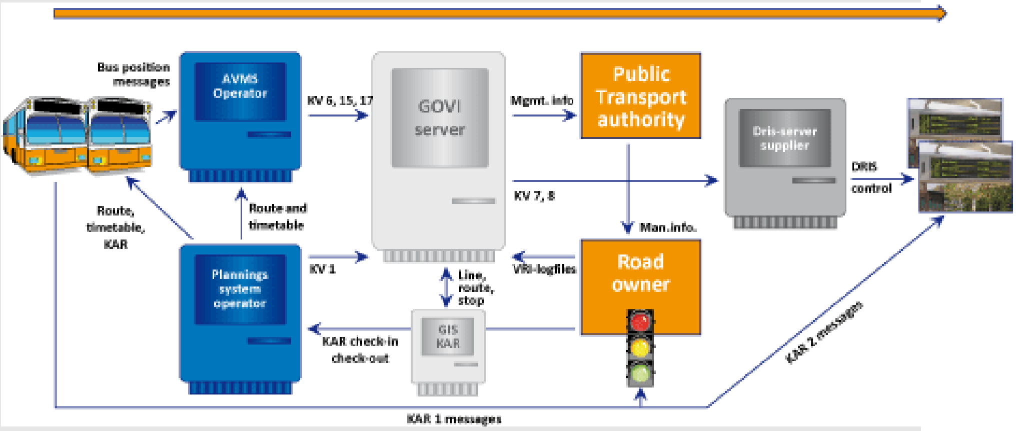
Technologies

Architecture

The heart of the GOVI system is a central database where data from all the connected public transport operators is gathered. The underlying system follows the position of all the busses, so that the waiting time is always up-to-date. In addition, the traveller is informed by announcements about serious disruptions in service. The information removes a significant disadvantage of travelling with public transport (compared with using the car), and that uncertainty about the travel time.

Within the project, national integration software is developed, to which both transport operators and dataconsumers are connected. Data exchange between all the concerned parties is based on standard TMI NL 8.0 interfaces. These interfaces are defined and managed by the BISON organisation. BISON has no direct involvement in the implementation or management of the DRIS systems. One of the most important contributors for proposals to the Transmodel standard is the GOVI project. See http://bison.connekt.nl

GOVI Information supply chain



Within the information chain, data exchange takes place according to agreed standard interfaces.

The transport companies provide GOVI with the following data:

- Interface 1 (KV 1), the planned timetable and the route/stop information for a certain period.
- Interface 6 (KV 6), the messages from the vehicles. In these messages, each vehicle reports at least once a minute the actual position and the punctuality.
- Interface 15 (KV 15), free text messages. These are used to inform the passengers in case of disruptions.
- Interface 17 (KV 17), short-term deviations on the planning during the operational day. The interface is used to communicate actions in the operational timetable by the central traffic controllers, for example cancellation or shortening of yourneys or route-diversions.

GOVI provides the following to DRIS-suppliers:

- Interface 7 (KV 7), the daily timetable per stop pole. These are sent every day for the next few days ahead.

	- Interface 8 (KV 8), the dynamic, up-to-date times per stop based on messages received from the vehicles. **KAR (Short-distance Radio)** KAR is a technique for wireless information exchange from vehicles to traffic light controllers (VRI's) and intelligent bus-stops. This information is used to get priority at intersections and to remove information regarding the quick passing of a vehicle.
Standards	TMI 8.0
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: Provincie Noord-Holland, Stadsregio Amsterdam, Provincie Noord-Brabant, Provincie Flevoland, Provincie Utrecht, Bestuur Regio Utrecht, Provincie Zeeland, OV Bureau Groningen/Drenthe, Provincie Overijssel, Stadsregio Eindhoven, Stadsgewest Haaglanden
Organisational model	☒ Management body: Operational guidance group composed of representatives from provincial authorities. ☒ Operating body: working group composed of members from various provinces ☒ Financing body: Provinces, supported by the management body.
Business model	☐ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	The project is mostly funded by the partners that offer their personnel and resources without charge. Therefore, a precise cost definition is not possible
Operating costs	See investment costs
3. RESULTS	
Technical performance	GOVI has been fully functional in a large number of provinces. Continuous progress is being made to develop better standards and provide travellers with more accurate information
Implementation of Innovation	Collecting all the data in a single location is an innovative and cheaper way to make data exchange possible. The standards used for this data exchange have been harmonised, making it possible for all parties delivering and collecting data to readily use the database.
Safety impacts	None
Efficiency impacts	Travellers information services can use the GOVI database to receive accurate real-time information on the status of transport services, including departure times and delays. This makes the use of public transport more reliable and travel planning easier. Gathering all the information from different transport authorities to a single database makes implementation and data exchange much more efficient.
Environmental impacts	None

Socio-economic impacts	Public transportation is more attractive to use, as information services provide accurate public transport status. As the use of public transportation increases, road use and congestion can be tackled.
Revenue generation	Transportation authorities and other GOVI partners provide funding for the project, and receive their investment back through the possibility to develop traveller information services.
User acceptance	Even though GOVI does not provide information directly to travellers, the possibility
4. LESSONS LEARNT	
Factors for success	Good collaboration and communication between partners on standards, costs and operation. Information service providers have to actively use the information to inform travellers.
Obstacles	Insufficient applications built on the information, not being able to justify the operational costs if the information does not reach travellers.
5. MORE INFORMATION	
Contact Person	Name: Gertjan Kamerik Function: Delegated projectmanager Company: GOVI Email: meldpunt@govi.nu Phone: +31 (0)8 55 00 60 59
Web link (if existing)	www.govi.nu

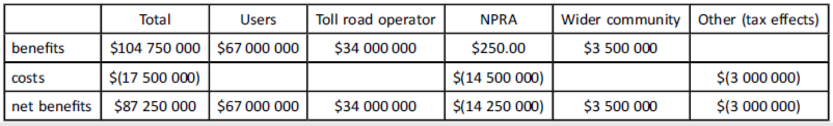
4.52 NL - Enschede – Incentive Zone

URBAN ITS KEY APPLICATION	☒ **Traffic & Travel Information** ☐ **Traffic & Access Management** ☐ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other:**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Congestion during peak hours Objective(s) of the measure/service: Reduction of the number of car trips in peak periods of 5%
Start of system/service	Estimated Q3/Q4 2012
Location	☐ single road/line ☒ city district ☐ whole city ☐ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☒ road ☒ car-sharing ☒ bicycles ☒ pedestrians ☐ other:
Implementing organisation	Municipality of Enschede (local government) together with One Big Agency (OBA; communication company), Universiteit Twente (university) and another, currently unknown, exploiter.
System / service description	The system uses personal mobility detection on a mobile phone to monitor personal mobility behaviour. With this information and road-side sensors, providing actual traffic information, incentives are given to people that aim at changing their mobility behaviour to more sustainable modes and hence at reducing car mileage in the system. Incentives can be issued by both the municipality as other (third) parties. In addition a web portal is developed that gives more detailed mobility information.
Technologies	Personal Mobility Monitoring Automatic Mode Detection Road-side traffic sensors Personalised incentives Web portal
Standards	Maps: OpenStreetMap Consent: Oauth Web: JSON, REST
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: Municipality of Enschede ☒ Private stakeholders: OBA, tbd, 3rd parties ☒ Others: Universiteit Twente
Organisational model	☒ Management body: Combined project team with representation of all parties ☒ Operating body: Exploiting party ☒ Financing body: Municipality of Enschede (subsidised by Region Twente) and exploiting party
Business model	☐ Public investment: ☐ Private / commercial framework: ☒ Public-private partnership: Amounts unknown
Investment costs	€:

Operating costs	€ / year: person / year:
3. RESULTS	
Technical performance	
Implementation of Innovation	
Safety impacts	
Efficiency impacts	
Environmental impacts	
Socio-economic impacts	
Revenue generation	
User acceptance	
4. LESSONS LEARNT	
Factors for success	
Obstacles	a. Because of the innovative character of the project and the unceartainties accompanied by that fact, the tendering procedure has been a long and explorative process. b. Specifying technical components is difficult (with relation to assessment) in inovative projects.
5. MORE INFORMATION	
Contact Person	Name: Marcel Meeuwissen Function: Senior Policy Advisor Company: Municipality of Enschede Email: m.meeuwissen@enschede.nl Phone: (+)31 53 481 5168/+31 6 128 99 583
Web link (if existing)	PM

4.53 NO - Oslo - Economic Evaluation of an ITS-Based Toll Collection

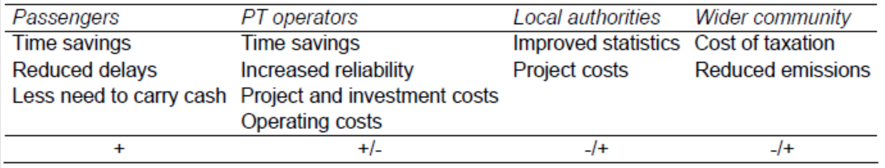
URBAN ITS **KEY APPLICATION**	☐ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: mix use of toll cordon (ETC plus manual); operational costs Objective(s) of the measure/service: – Customer-friendly approach – Time saving for users – Reduction of noise and pollution – Improvement of city landscape – Reduction of costs associated with operating tolls – Economic assessment of an ITS implementation
Start of system/service	1990, full ITS since 2008
Location	☐ single road/line ☐ city district ☒ whole city ☐ urban region
Transport mode(s) concerned	☐ public transport ☐ rail ☒ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Norwegian Public Road Administration
System / service description	City of Oslo: Electronic Toll Collection based on 19 toll stations. 260.000 vehicles/day 20% discount on toll for OBUs holders No variation of toll
Technologies	On-Board Units: AutoPass tags based on DSRC (provider Tecsidel) Licence-plate recognition for vehicles not equipped with OBUs Payment invoices sent to car owners; payments possible at gas stations and by SMS.
Standards	DSRC 5.8 GHz Optical Character Recognition (OCR)
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: Norwegian Public Road Administration ☐ Private stakeholders: ☐ Others:
Organisational model	☐ Management body: ☐ Operating body: ☐ Financing body:
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	$17.5 million

<table>
<tr><td>Operating costs</td><td>€ / year: 12.5 % of annual revenues, $0.30 per vehicle, $16.5 million in 2010
person / year:</td></tr>
<tr><td colspan="2">3. RESULTS</td></tr>
<tr><td>Technical performance</td><td>Interoperable with Norwegian and Scandinavian toll schemes</td></tr>
<tr><td>Implementation of Innovation</td><td></td></tr>
<tr><td>Safety impacts</td><td>Reduced risks of accident due to free flow
Reduction in the rate of fatal accidents, accidents with serious injuries and secondary accidents</td></tr>
<tr><td>Efficiency impacts</td><td>Time saving for end users due to reduced congestion at toll points
Reduction in travel time, travel time variability, travel time delay, vehicle operating costs</td></tr>
<tr><td>Environmental impacts</td><td>Reduced noises and greenhouse emissions due to faster movement of vehicles: reduction of fuel consumption of 35% compared to manual tolling.</td></tr>
<tr><td>Socio-economic impacts</td><td>Reduced travel time, reduced pollution, reduced risks of accidents, improved city streetscape.

<table>
<tr><th></th><th>Total</th><th>Users</th><th>Toll road operator</th><th>NPRA</th><th>Wider community</th><th>Other (tax effects)</th></tr>
<tr><td>benefits</td><td>$104 750 000</td><td>$67 000 000</td><td>$34 000 000</td><td>$250.00</td><td>$3 500 000</td><td></td></tr>
<tr><td>costs</td><td>$(17 500 000)</td><td></td><td></td><td>$(14 500 000)</td><td></td><td>$(3 000 000)</td></tr>
<tr><td>net benefits</td><td>$87 250 000</td><td>$67 000 000</td><td>$34 000 000</td><td>$(14 250 000)</td><td>$3 500 000</td><td>$(3 000 000)</td></tr>
</table>
</td></tr>
<tr><td>Revenue generation</td><td>Benefit-cost ratio: 4.90 (each $1 invested generates $5.90)
300 M$ per year
40% of the revenue is used for public transport investment and operations.</td></tr>
<tr><td>User acceptance</td><td>Reduction of annual penalty charge notices, due to extended period for payment
Enhanced traffic flow
Improved streetscape</td></tr>
<tr><td colspan="2">4. LESSONS LEARNT</td></tr>
<tr><td>Factors for success</td><td>Positive impacts on users (traffic flow, fuel consumption) as well as on the wider community, High benefit rate</td></tr>
<tr><td>Obstacles</td><td></td></tr>
<tr><td colspan="2">5. MORE INFORMATION</td></tr>
<tr><td>Contact Person</td><td>Name: J. Odeck, M. Welde, “Economic evaluation of intelligent transportation system strategies: the case of Oslo toll cordon”.
Function:
Company: Norwegian Public Road Administration
Email: james.odeck@vegvesen.no
Phone:</td></tr>
<tr><td>Web link (if existing)</td><td>www.autopass.no</td></tr>
</table>

4.54 NO - Trondheim - Smart Card Ticketing: t-card

URBAN ITS KEY APPLICATION	☐ Traffic & Travel Information ☐ Traffic & Access Management ☒ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Objective(s) of the measure/service: ease and increase use of public transports
Start of system/service	June 2008
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Sør-Trøndelag county, including the city of Trondheim
System / service description	Fully interoperable electronic smart card system: – Region wide scheme – Card operating in buses, trams and regional coaches; trains not concerned – 425.000 people concerned – 17 million trips per year – 5 to 25% discount for t:card users – Payment by cash still available
Technologies	
Standards	
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: 2 counties, 10 public transport operators ☐ Private stakeholders: ☐ Others:
Organisational model	☒ Management body: AtB public transit authority ☒ Operating body: Buses Team Trafikk, tenderer ☒ Financing body: Sør-Trøndelag county
Business model	☒ Public investment: In 2009, ⅔ of the costs of public transport operations in Trondheim were covered by ticket revenues ,the remaining ⅓ is covered by local authority subsidies. ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 1.875 M€
Operating costs	€ / year: 850 k€ person / year: Single cash fare: 3.75 €

3. RESULTS

<table>
<tr><td>Technical performance</td><td></td></tr>
<tr><td>Implementation of Innovation</td><td></td></tr>
<tr><td>Safety impacts</td><td>Non-monetised solution, avoids cash carrying</td></tr>
<tr><td>Efficiency impacts</td><td>Reduced time for boarding and paying estimated to 6.8 seconds per passenger
Increase bus route reliability and reduce delays.
The system generates accurate statistic data supporting the improvement of transport systems.
Evaluation of an average 10% reduction on travel time leading to a potential passenger growth of 3 to 7%.</td></tr>
<tr><td>Environmental impacts</td><td></td></tr>
<tr><td>Socio-economic impacts</td><td><u>Positive impacts:</u> increase public transport reliability, reduced need for carrying cash

<table>
<tr><th><i>Passengers</i></th><th><i>PT operators</i></th><th><i>Local authorities</i></th><th><i>Wider community</i></th></tr>
<tr><td>Time savings
Reduced delays
Less need to carry cash</td><td>Time savings
Increased reliability
Project and investment costs
Operating costs</td><td>Improved statistics
Project costs</td><td>Cost of taxation
Reduced emissions</td></tr>
<tr><td>+</td><td>+/-</td><td>-/+</td><td>-/+</td></tr>
</table>
<u>Measured benefits:</u> time saving for passengers and bus company.
The smart card ticketing system in Trondheim is profitable from a socio economic point of view, with a net present value of 16 M€ and a benefit cost ratio of 1.5 (meaning that 1€ spent generates benefits of 2.5€).</td></tr>
<tr><td>Revenue generation</td><td></td></tr>
<tr><td>User acceptance</td><td>After 2 years of operation the t:card is used to pay 90% of the trips</td></tr>
</table>

4. LESSONS LEARNT

Factors for success	Generation of socio economic benefit. Next step: getting rid of cash payments (increase social benefits and decrease operating costs; avoids any risks of robbery in buses).
Obstacles	Complex system to set up and implement: started in the early 1990, postponed several time before final implementation

5. MORE INFORMATION

Contact Person	Name: Morten Welde; ref: “Smart card ticketing in Trondheim deliver substantial benefits to society” Function: Company: Norwegian Public Roads Administration Email: Phone:
Web link (if existing)	www.atb.no

4.55 PL/DE - Warsaw - Cross Border Travel Planner

URBAN ITS **KEY APPLICATION**	☒ **Traffic & Travel Information** ☐ **Traffic & Access Management** ☐ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other:**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Too many data sources when planning a cross-border journey Objective(s) of the measure/service: Seamless passenger information between WAW and BER
Start of system/service	2010
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☒ other:
Implementing organisation	Public Transport Authority in Warsaw VBB - Verkehrsverbund Berlin - Brandenburg GmbH
System / service description	
Technologies	A programme of HaCon GmbH (Hannover, Germany), programme name: HAFAS
Standards	
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: ZTM Warsaw, VBB Berlin, EU Interreg IVC Programme ☒ Private stakeholders: Hacon ☐ Others:
Organisational model	☒ Management body: ZTM Warsaw, VBB Berlin ☒ Operating body: Hacon ☒ Financing body: EU Interreg IVC
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 50’000
Operating costs	€ / year: no data yet person / year:

3. RESULTS	
Technical performance	including a new planner into a ZTM Warsaw website
Implementation of Innovation	First cross-border door-to-door travel planner
Safety impacts	no direct impact
Efficiency impacts	increase of PT use efficiency expected
Environmental impacts	no direct impact
Socio-economic impacts	Providing reliable and accurate information regarding planned journey
Revenue generation	no direct impact
User acceptance	good users' opinion
4. LESSONS LEARNT	
Factors for success	Information on all stages of travel regardless of transport means used☐
Obstacles	difficulties with access to railway timetable database☐
5. MORE INFORMATION	
Contact Person	Name: Tamas Dombi Function: Specialist - department for Transport Development Company: Public Transport Authority in Warsaw Email: t.dombi@ztm.waw.pl Phone:
Web link (if existing)	http://wyszukiwarka.ztm.waw.pl

4.56 PL - Warsaw – Voice Portal

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☐ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Objective(s) of the measure/service:
Start of system/service	20th October 2008
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Primespeech, Warsaw Transport Authority (ZTM)
System / service description	Telephone dialog system
Technologies	IVR (Interactive Voice Response), ASR (Automatic Speech Recognition), TTS (Text-To-Speech)
Standards	
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: ☐ Private stakeholders: ☐ Others:
Organisational model	☐ Management body: ☐ Operating body: Warsaw Transport Authority (ZTM) ☒ Financing body: Warsaw Transport Authority (ZTM)
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€:
Operating costs	€ / year: 25’000 person / year:
3. RESULTS	
Technical performance	Provides information for 12 callers simultaneously. Connects up to 4 operators simultaneously.
Implementation of Innovation	One of two public transport call centres that use speech recognition and speech synthesis to provide fully automatic information about timetables, fare reductions, ticket prices, news. Voice portal allows also to file complaints.
Safety impacts	none

Efficiency impacts	Reduces operator overhead and customer waiting time.
Environmental impacts	none
Socio-economic impacts	none
Revenue generation	Voice portal allowed to expand call centre from 3 to 12 channels/lines without the need to hire new agents.
User acceptance	Very good acceptance for young people such as students. Elderly people prefer to talk to agents.

4. LESSONS LEARNT

Factors for success	Intuitive voice portal dialog design
Obstacles	Speech recognition and speech understanding technologies still have many limitations.

5. MORE INFORMATION

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4.57 PL - Warsaw - Tickets on Mobile Phones in SkyCash™ and mPay Systems based on Specialized Applications

URBAN ITS KEY APPLICATION	☐ **Traffic & Travel Information** ☐ **Traffic & Access Management** ☒ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other:**

1. GENERAL DESCRIPTION

Problems to solve / Objectives	Issue(s) encountered: Objective(s) of the measure/service: Implementation of new fares technology in urban area
Start of system/service	2008
Location	☐ single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Urban Transport Authority co-operators: mPay SA, the Polish Mint SA, Project Parking Sp. z o. o.
System / service description	Implementation of mobile payments system for the passage using mobile phone
Technologies	The use of mobile payment systems: mPay, SkyCash, moBilet using the GSM network
Standards	GSM-SMS, GPRS

2. IMPLEMENTATION

Partners involved	☐ Public authorities: ☒ Private stakeholders: Pay SA, the Polish Mint SA, Project Parking Sp. z o. o. ☐ Others:
Organisational model	☒ Management body: Urban Transport Authority ☒ Operating body: Pay SA, the Polish Mint SA, Project Parking Sp. z o. o. ☒ Financing body: Pay SA, the Polish Mint SA, Project Parking Sp. z o. o.
Business model	☐ Public investment: no ☒ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: Urban Transport Authority is not liable for any costs of investment
Operating costs	€ / year: Urban Transport Authority pays only a commission depending on sales volume person / year:

3. RESULTS

Technical performance	Mobile payments system developped by private partners.
Implementation of Innovation	Warsaw fare system data input into operators' sofware

Safety impacts	A high level of transaction security
Efficiency impacts	Increase of productivity of sales
Environmental impacts	no negative impact
Socio-economic impacts	Positive impact on customer service / customer satisfaction increase
Revenue generation	Urban Transport Authority pays only a commission depending on sales volume. Increase of revenue after system implementation.
User acceptance	The form of mobile payments has a high acceptance of passengers (specially young) using mobile phones
4. LESSONS LEARNT	
Factors for success	Mobile payment systems, GSM, widespread use of mobile phones
Obstacles	Lack of mobile phones operating systems standardization
5. MORE INFORMATION	
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4.58 PL - Lodz – Electronic Monthly Ticket

URBAN ITS KEY APPLICATION	☐ Traffic & Travel Information ☐ Traffic & Access Management ☒ Smart Ticketing ☐ Urban Logistics ☐ Other:			
1. GENERAL DESCRIPTION				
Problems to solve / Objectives	Issue(s) encountered: the system has been introduced in the framework of modernization or urban transport. Its introduction has caused some problems, including difficulty in managing the system by the employees that have never had contact with modern IT tools (e.g. people over 50). There was a need for explanation of the principles of the operation of the system, in order for clients to understand them and change their habits Objective(s) of the measure/service: introduction of the 'intelligent ticket' in the urban communication In Lodz; increase of quantity and availability of point of sales; make it possible to purchase tickets online; enhance durability of the card and comfort of its usage; introduce the possibility to remake the electronic season ticket registered by name in case of losing it by the owner or being stolen; improvement of the security; putting the system of sale and control of the tickets under greater control; improvement of the settlement between the carrier and the city; acquisition of new data concerning the commute			
Start of system/service	Beginning of implementation: XII 2010; full implementation XI 2011			
Location	☐ single road/line	☐ city district	☐ whole city	☒ urban region
Transport mode(s) concerned	☒ public transport ☐ bicycles	☐ rail ☐ pedestrians	☐ road ☐ other:	☐ car-sharing
Implementing organisation	Urban Public Transport limited liability company (MPK Lodz)			
System / service description	Change of the distribution system of the tickets from traditional (paper) into electronic.			
Technologies	NFC proximity card technology			
Standards	card complies with ISO/IEC 14443A standard, transmission of coded data by www service, certification.			
2. IMPLEMENTATION				
Partners involved	☒ Public authorities: Company MPK-Łódź on behalf of community Łódź ☐ Private stakeholders: ☐ Others:			
Organisational model	☒ Management body: MPK-Łódź llt ☒ Operating body: MPK-Łódź llt ☒ Financing body: MPK-Łódź llt			
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:			
Investment costs	€: 250 050 (according to the Exchange rate 1 €= 4,25 zł)			

Operating costs	€ / year: 62,5 thousand. (average over 4 years); person / year: ok. 0,09 euro (737 000 inhabitants)
3. RESULTS	
Technical performance	Possibility of issuing up to 800 cards during 8 working hours
Implementation of Innovation	Change of the season ticket from traditional into electronic one, possibility of acquisition of additional data concerning the commute - adjusting the supply, purchase online
Safety impacts	According to the accepted standards ISO/IEC 14443A, improvement of the security, putting the system of sale and control of the ticket under greater control, improvement of the settlement between the carrier and the city
Efficiency impacts	The card can be used also for storing other applications, or as a substitution for many documents
Environmental impacts	Purchase of the ticket online, phasing out paper tickets, one card instead of many
Socio-economic impacts	Possibility of introduction of other applications e.g. parking fee collection, integration with systems working on the basis of Mifare
Revenue generation	Too early to fully asses the result
User acceptance	In general the system has been accepted by users in a positive manner
4. LESSONS LEARNT	
Factors for success	It is neceassary to plan long time for implementation
Obstacles	The next challenge is the extension of the card coding system
5. MORE INFORMATION	
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4.59 RO– RATB Travel Card

URBAN ITS **KEY APPLICATION**	☐ **Traffic & Travel Information** ☐ **Traffic & Access Management** ☒ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other:**
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Improve the efficiency of public transport. Objective(s) of the measure/service: Increase the public transport attractiveness, by introducing fare integration and a flexible fare policy, making use of contactless card technology.
Start of system/service	2006
Location	☐ single road/line ☐ city district x whole city ☐ urban region
Transport mode(s) concerned	x public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	RATB, METROREX
System / service description	The implementation of the Automatic Ticketing System was intended to integrate the public transport services at city level, following to assure a flexible fare policy, in accordance with the passengers' needs. As a start, the integration was made between the biggest public transport operators: METROREX (underground) and RATB (trams, buses and trolleybuses). The system allows future integration with 6 more operators. Through the implementation of the new system, the passengers have the possibility to use the first contactless smart card, which allow them to travel in both networks. The contactless smart cards replaced the paper travel passes and tickets and they can be found in two formats: customized and non- customized. - The "ACTIV" type card is customized, unique (a person can have only one ACTIVE type card) and designated to constant/permanent customers. On this card can be toped up passes for RATB and METROREX and it can be used as well as electronic purse. The "electronic purse" is a facility of "ACTIV" type card that consist in possibility to top up with an amount between 2,6RON and 50RON, which can be used for paying individual or group trips. - The "MULTIPLU" type card is non-customized and addresses occasional travellers (2 to 10 trips, 1 day pass). This type of card can be used only for RATB and it cannot be recharged. - The third type of card is the card for fine which is issued to fraudulent travellers after paying the fine and is valid till getting off the vehicle. The system has as well a "Black list" facility which is a procedure for sending and record to all the validating devices in the system (RATB and METROREX) of IDs of stolen or lost card. The facility becomes active next day after the card has been reported as lost or stolen. The cards can be top up at sales point, at ATM and on-line using the RATB webpage. The cards must be validated when getting in the public transport mean.

Technologies	MIFARE
Standards	ISO14443
2. IMPLEMENTATION	
Partners involved	X Public authorities: ☐ Private stakeholders: ☐ Others: public transport operators RATB and METROREX
Organisational model	☐ Management body: PARSONS BRINCKERHOFF Ltd. – S.C. Metroul S.A. Consortium ☐ Operating body: RATB, METROREX ☐ Financing body: European Investment Bank, Bucharest Municipality
Business model	x Public investment: Bucharest Municipality ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 12.000.000
Operating costs	€ / year: 260.000 person / year: subcontracting for maintenance (UTI Retail Solutions SRL)
3. RESULTS	
Technical performance	- 1,877,019 «Activ» smart cards in use (January 2012) - 984,072 «Multiplu» cards used
Implementation of Innovation	- Diversification of the offer by introduction of contactless disposable (not rechargeable) cards addressed to occasional travellers (2 to 10 trips, 1 day pass) since May, 2011. - Top-up online and at ATM's - New alternative for trip payment by using a dual card: bank card and contactless smart card, (can be use for both for RATB and METROREX) with automatic top-up option.
Safety impacts	-
Efficiency impacts	Operation optimization based on demand evaluation
Environmental impacts	Reduce the waste by renouncing paper tickets/passes
Socio-economic impacts	- Reduce the fraud by eliminating fake travel passes/tickets - Reduce the costs for paper and for printing passes/tickets - Use a single card for the city public transport - Optimisation of operational costs
Revenue generation	Fraud reduction
User acceptance	Public survey and consultation before implementation The number of cards in use raised constantly since the introduction of the system (December 2006)
4. LESSONS LEARNT	

Factors for success	- Develop the technical specifications in accordance with the transport policies and local conditions - Analyse the possibility of fare integration with more public transport operators (local, regional) - Develop a market study - Develop a proper marketing campaign for the new products - Carry out a pilot project first, do not introduce the system at large scale - Think long-term, act short-term - Make it user friendly and easy to maintain
Obstacles	Cut-off the budget which postpone the introduction of different facilities

5. MORE INFORMATION

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4.60 SE - Gothenburg - Motorway Control System

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: urban traffic management issues, traffic congestions Objective(s) of the measure/service: enhancing network urban road capacity thanks to ITS services instead of investing on extra road infrastructure construction; implementation of multiple-tasks ITS system.
Start of system/service	2004
Location	☒ single road/line ☒ city district ☐ whole city ☐ urban region
Transport mode(s) concerned	☐ public transport ☐ rail ☒ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Swedish Transport Administration
System / service description	The system is implemented on main arterial roads in Gothenburg. It offers to users a set of ITS services: – Traffic management control – Incident detection – Queue detection – Incident warning – Variable speed limit
Technologies	MCS with radar detection based on MTM2 complemented with surveillance cameras for traffic management.
Standards	
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: Swedish Transport Administration ☐ Private stakeholders: ☐ Others:
Organisational model	☒ Management body: Swedish Transport Administration ☒ Operating body: Swedish Transport Administration ☒ Financing body: Swedish Transport Administration
Business model	☒ Public investment: Swedish Transport Administration ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 3,0 M (icl cost for design concrete portals (over priced))
Operating costs	€ / year: 45000 person / year:

3. RESULTS

Technical performance	The accessibility of the system during a evaluation period between 2003-2008 was 99,5 %.
Implementation of Innovation	Recently tested: traffic control related to air quality
Safety impacts	Measurements after two years of operation showed the accident ratio being reduced by 20 %. Due to a statistical too small basis, this result was deemed too high. The socio-economic impact calculations have instead used a reduction of 10 %, which is supported by international studies. The main safety impact is related to decrease in sudden breaking manoeuvres, a more harmonised flow resulting in a marginally improved traffic throughput as well as a reduction in speed difference between lanes.
Efficiency impacts	Travel time was shortened by 22 sec in northbound direction, respectively 32 sec in southbound direction. The measured section includes both Åbro-Kallebäck and Tingstadtunneln (12 km). In total this was a 5 % improvement of the travel time.
Environmental impacts	Due to the travel time improvement the carbon dioxide emissions have increased slightly. Nevertheless, the calculation model could not take into account the positive effects of the more homogenous traffic flow.
Socio-economic impacts	The socio-economic calculations resulted in a cost-benefit ratio of more than 10. Calculations were done for a 20 year period, and was comprising - a positive time consumption benefit of € 3,6 M/year, - a road safety benefit of € 0,2 M/year (based on 10 % reduction in the number of injury accidents) as well as - an environmental cost of € 0,26 M/year. The total investment and operational costs for the whole period was estimated to € 3,72 M.
Revenue generation	N/A
User acceptance	Fairly many drivers admit that VSL have increased their respect for speed limits – slightly more positive for those believing that the given speed limit complies with traffic situation. Many drivers feel the speed limit is lower than justified. Almost half of the drivers consider they are more attentive to other vehicles after introduction of VSL. For the section VSL Åbro-Kallebäck a first installation (first year) showed signs with recommended speed limit, which were replaced with signs showing regulatory speed. The attitude study showed that drivers did not understand the difference between these two types.

4. LESSONS LEARNT

Factors for success	The implementation of such ITS system and services can compete with traditional infrastructure construction: – Reduced investment due to the fact that new lanes were not built, but the hard shoulders were used instead. – Can be used for accident management where hard shoulders are used as an ordinary lane (after being upgraded from a construction point of view). – Ease of implementation (impacts on inhabitants, schedule) – VSL highly beneficial in situations where sudden speed drops often occur and where queues starts to build up Bu using a flexible system (full graphical signs), the system can be used for multiple functions. Future applications that may be discussed is buss priority, HGV priority etc.
Obstacles	Pedagogic information to the drivers about functioning of VSL systems need to be enhanced and widely distributed.

5. MORE INFORMATION

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4.61 SE - Gothenburg – ITS4 Mobility

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: urban traffic management issues, traffic congestions, Objective(s) of the measure/service: Providing real-time travel information for passengers as well as creating a real time management tool for transport authorities and the transport operators. It also provides statistics tools for performance follow up.
Start of system/service	2004
Location	X single road/line ☐ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Västtrafik - The City of Gothenburg Transport authority
System / service description	The system is implemented on all public transport (buses, trams, ferries) in Gothenburg. The system provides real time and forecast information as well as historic data for follow up. For the transport authorities and the transport operators the system provides; -Traffic monitoring -Traffic management -Incident and queue detection -Performance follow up For the passengers and the public; -On-board information: automatic voice and visual next stop and destination announcement. -At stop displays and in terminals and public places. Information on the web (as well as WAP, Apps for Android and Iphone)
Technologies	GSM/GPRS from the vehicles to the control centre, the messages to and from the vehicles are using UDP/IP and/or TCP/IP
Standards	
2. IMPLEMENTATION	
Partners involved	X Public authorities: Gothenburg public transport authority - Västtrafik ☒ Private stakeholders: The transport operators ☐ Others:
Organisational model	☐ Management body: Västtrafik ☐ Operating body: Västtrafik ☐ Financing body: Västtrafik

Business model	X Public investment: Västtrafik ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 5000 /vehicle + backoffice systems
Operating costs	€ / year: to define person / year:

3. RESULTS

Technical performance	The performance, of the system can be followed up within several areas of performance and for different stakeholders. The plan for Västtrafik is to follow up the performance of the operators mainly on punctuality on a monthly basis.
Implementation of Innovation	The system is integrated in all vehicles and the central system is integrated towards the traffic operators planning systems.
Safety impacts	The drivers of the vehicles have less manual work after the implementation of the system which has impacted the safety of the performance of the drivers. In case of an incident, the Automatic Vehicle Location (AVL) of the vehicle helps the operator to locate the vehicle.
Efficiency impacts	Real performance data is used as an input for better traffic management scheduling.
Environmental impacts	The statistics reports help the traffic operators as well as the transport authority of the city (Västtrafik) to analyse the traffic flow as well as optimizing the traffic scheduling.
Socio-economic impacts	The system is an important part of creating an attractive public transport within the area of Gothenburg. The demand for public transport has grown significant during the years of implementation of the system.
Revenue generation	
User acceptance	The drivers have embraced the system. It has eased their daily routines and it is an integrated technical support tool for their daily work. The passengers and the public have trust in the real time passenger information of the system. The operators are using the system as an integrated part of their traffic management systems.

4. LESSONS LEARNT

Factors for success	A step by step approach for the implementation in the vehicles as well as for implementing new functionality within the system.
Obstacles	Traffic data needs to be correct and it takes time and effort to improve the quality of the data.

5. MORE INFORMATION

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4.62 SE - Gothenburg – Attractive Travel Service

URBAN ITS **KEY APPLICATION**	☒ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Multi modal traffic and travel support for commuting: The concept Attractive Travel Service offer travelers along major commuting routes in the greater Gothenburg area support for more effective and sustainable transport. The concept is available before and during a journey. The purpose is to provide support for true multi modality (car, train, bus, tram, bike and walking) and thus a higher share of public transport travelling.
Start of system/service	2013
Location	☐single road/line ☒ city district ☐ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☒ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	A cooperation between Gotheburg Transport Authority, the Swedish Transport Administration and the regional public transport company and operator Västtrafik.
System / service description	2 of the 7 commuter routes into Gothenburg are used as pilot corridors for an attractive multimodal travel service. The corridors are equipped with real time information on car, bus, train and tram travelling. Information is provided on road side, at bus stops, train stations and on the web. On road side information signs travel times for different modes are presented, marketing the more sustainable mode of transport. A multi modal smart phone app has been created to support the traveler in planning a journey from an individual preference point of view. The service is also meant to be a support during a journey enabling the traveler to change modes according to the actual traffic situation.
Technologies	Input through data collection from detectors, GPS from trains and busses, as well as data from the traffic management centre. Information out through several media such as - Smart phones (https://market.android.com/details?id=se.goteborg.data.beta.vp.widget) - The web, www.trafiken.nu/goteborg - Parking guidance information and smart parking through dynamic message signs etc - Roadside dynamic message signs - Dynamic signs with real time information at bus and tram stops, train stations as well as shopping centres etc. - An application where employers can download tailor made information regarding the closest stop for public transport has also been created. This low cost application can be used on any computer screen.
Standards	
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: A cooperation between Gotheburg Transport Authority, the Swedish Transport Administration and the regionalpublic

	transport company and operator Västtrafik. ☐ Private stakeholders: ☐ Others:
Organisational model	☐ Management body: Göteborg Transport Authority, Swedish Trasnsport Administration and the public transport company Västtrafik. ☐ Operating body: Göteborg Transport Authority, Swedish Transport administration and the public transport company Västtrafik. ☐ Financing body: Göteborg Transport Authority, Swedish Transport administration and the public transport company Västtrafik.
Business model	X Public investment: Göteborg Transport Authority, Swedish Transport administration and the public transport company Västtrafik. ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: 305 000 (Mobile app) + €: 87 000 (individual messages) There are also already implemented signs that are used in the concept. Investments for these are not included in these figures.
Operating costs	€ / year: € 350 000
3. RESULTS	
Technical performance	Overall concept not yet fully implemented. Mobile application currently in demonstration phase.
Implementation of Innovation	-
Safety impacts	Greater public transport share can lead to some positive safety impact.
Efficiency impacts	- Multimodal real time traffic information leads to efficient travelling where the traveler can adjust their travel choices according to the current traffic situation.
Environmental impacts	- The overall concept is designed to market public transport and to make the public transport service more attractive. Increased public transport share leads to reduction in environmental impact.
Socio-economic impacts	A bacis cost benefit analysis has been made for the different applications involved in the concept.

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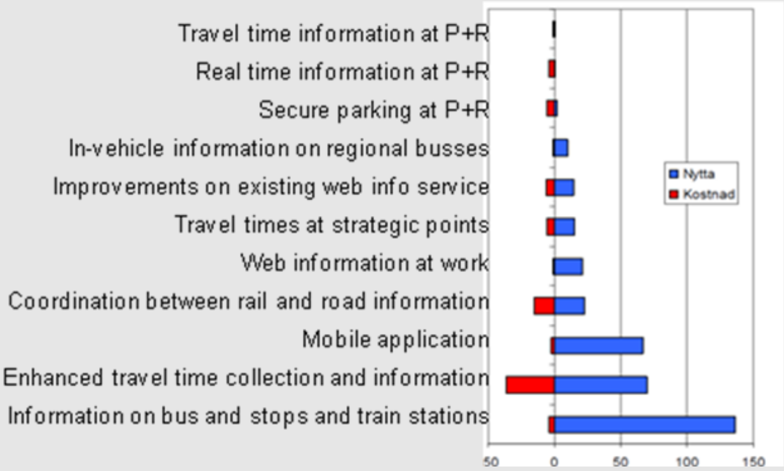

(cost in red, benefit in blue)

The service provides the opportunity for individual travel planning when and wherever. The service will be of greater benefit to those who are able to switch modes than for those who daily make the same trip. On the other hand the quality of traffic information will be raised for all modes.
Assumptions in the calculations:
☐ public transport passengers, about 200 000 - 50% are likely to use this service 5 times a month
☐ car travelers - about 200 000 - 10% are likely to use this service 5 times
per month
☐ Flexi travelers - about 200 000 - 80% are assumed to use the service five times per month
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<td>Revenue generation</td>
<td><i>N/A</i></td>
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<td>User acceptance</td>
<td>Simple planning and active travel support linked to the travelers personal preferences, through the own mobile phone; increase the possibility for the traveler to find the usability in the system.</td>
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<td colspan="2">4. LESSONS LEARNT</td>
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<td>Factors for success</td>
<td>The collection and quality assurance of the correct input is essential to provide good information to the traveler.

It is important that it is clear about who is responsible for different parts of the system as a management stage, in order to service the system to keep the best functionality.

All steps in the chain of information are for the traveler important that it works and operate fast to optimize the effect for the traveler.</td>
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<td>Obstacles</td>
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5. MORE INFORMATION

Contact Person	Name: Susanne Planath Function: Department Manager Company: Swedish Transport Administration Email: susanne.planath@trafikverket.se Phone: +46 31 635 222
Web link (if existing)	Beta version APP for Android: https://market.android.com/details?id=se.goteborg.data.beta.vp.widget Information in Swedish about the project: http://fudinfo.trafikverket.se/fudinfoexternwebb/pages/ProjektVisaNy.aspx?ProjektId=1105

4.63 UK - Urban Traffic Management & Control (UTMC) Open System Integration

URBAN ITS KEY APPLICATION	☒ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: i) Network management systems (eg traffic signals, Variable Message Signs, Real time passenger information etc) were all bespoke with 'buyer lock in' if systems needed to be expanded or upgraded. ii) Lack of interoperability of systems constrained the potential for systems to be used in combination to better manage the network and inform travellers. Objective(s) of the measure/service: To develop and maintain specifications and standards acceptable to the highway authorities and system suppliers to ensure interoperability between network management systems. In essence 'plug and play'. To develop a common database to enable data to be shared between the systems and to enable 'strategies' to be operated. Eg a change to signal timings, messages on VMS signs, diversion of bus services and live travel information could be an automated response to a single incident.
Start of system/service	4 demonstrator projects 2000-2004
Location	☐ single road/line ☒ city district ☒ whole city ☒ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☒ road ☐ car-sharing ☒ bicycles ☒ pedestrians ☐ other:
Implementing organisation	Department of Transport UK national government office
System / service description	Promotion of a common database for use by the traffic manager based around a set of common specifications and standards for all control centre and on street applications.
Technologies	Incorporates a wide range of network management technologies including urban traffic control systems for traffic signals, real time passenger information systems, variable message signs, automatic number plate recognition cameras, CCTV, traffic detection etc.
Standards	UTMC is a set of (national) standards and specifications to promote open standards and interoperability between systems.
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: UK Highway Authorities (HA (interurban trunk roads) are developing interfaces to UTMC. UTMC ☒ Private stakeholders: System suppliers ☐ Others: UTMC Development Group (UDG) is an organisation consisting of public and private sector members who support the ongoing maintenance and development of the UTMC standards.
Organisational model	☒ Management body: UTMC Ltd ☒ Operating body: UTMC Development Group (UDG) ☒ Financing body: Maintenance of UTMC systems and standards is part financed by central government through UTMC Ltd and part financed through membership of UDG.

	Implementation of UTMC systems is undertaken by highway authorities through public funding and / or through private developer funding contributions as part of a new development. Over 100 UK cities / regional authorities have implemented UTMC systems.
Business model	☒ Public investment: Development of the Systems and Standards was part of a Central Government funded trial. Now UTMC is regarded as a UK national standard with open standards promoting cost savings against legacy systems. ☒ Private / commercial framework: Suppliers have developed their systems to be UTMC compliant at their own cost. ☐ Public-private partnership:
Investment costs	€: 6million invested in the 6 year UTMC development programme. With transfer of lessons learnt public sector investment costs could be substantially lower with a new implementation of open systems and standards. Implementation costs of UTMC systems by the cities are comparable to the implementation of the individual systems where there is no integration, but without the benefits of integration. Where systems subsequently need to be either extended or upgrade UTMC systems provide cost savings as these latter stages can be competitively tendered.
Operating costs	<u>€ / year:</u> 80,000 per year to manage and maintain standards and specifications with further variable development costs to continue expanding open systems and interoperability as the market grows and changes with technology. <u>person / year:</u> 2 for management of systems and standards. Where UTMC systems are implemented operation costs are comparable to operating the same types of systems without the UTMC benefits although it is possible to make savings with UTMC. Stratford Upon Avon demonstrator trial showed approx 3,000 savings per annum.

3. RESULTS

Technical performance	
Implementation of Innovation	Development and the successful implementation of UTMC has encouraged innovation to make optimum use of the common database. UTMC has been adopted by highway authorities across the UK as the platform for future investment and development.
Safety impacts	UTMC does not directly improve safety but the UTMC platform enables more cost effective delivery of safety systems.
Efficiency impacts	UTMC enables authorities to make efficiency savings as follows: i) improved ability to manage the network with network efficiency savings (eg delays to vehicles). ii) improved communications cost savings with greater flexibility to use different communications and to share existing comms systems (eg fibre) iii) more efficient use of existing systems through getting added value from combining the information iv) UTMC has opened up competition resulting in more competition from suppliers and improved systems and services. v) removal of 'buyer tie in' to particular products enabling authorities to competitively tender extensions and upgrades to systems, ensuring best value.
Environmental impacts	UTMC enables traffic management systems to respond to environmental effects –eg integrating air quality management with traffic signal timings.

	Also more efficient network management systems with good travel information can reduce congestion, encourage more sustainable modes of travel and reduce carbon footprint.
Socio-economic impacts	UTMC helps authorities deliver an efficient multimodal network for the efficient movement of goods and people which is essential to economic growth
Revenue generation	n/a
User acceptance	The adoption of UTMC by network managers has been very positive with the implementation of over 100 systems across the UK.
4. LESSONS LEARNT	
Factors for success	Developing a working partnership between public sector and suppliers to develop systems and standards which are deliverable.
Obstacles	Technical integration Balancing standardisation between ensuring interoperability but without being over prescriptive and stifling development. Ensuring effective working partnership between public and private sectors
5. MORE INFORMATION	
Contact Person	Name: Simon Beasley Function: Network Manager Company: Reading Borough Council Email: simon.beasley@reading.gov.uk Phone: +44 1189390228
Web link (if existing)	http://www.utmc.uk.com/

4.64 UK - London: Urban Road User Charging

URBAN ITS KEY APPLICATION	☐ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Objective(s) of the measure/service: – Reduce congestion; – Make radical improvements to bus services; – Improve journey time reliability for car users; – Make the distribution of goods and services more efficient.
Start of system/service	Congestion Charging was introduced in Central London on 17th February 2003. The Western Extension was implemented on 19th February 2007.
Location	☐ single road/line ☒ city district ☐ whole city ☐ urban region
Transport mode(s) concerned	☐ public transport ☐ rail ☒ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Capita Group was responsible for certain operational aspects of the scheme until late 2009. The functions passed then to IBM.
System / service description	The central London Congestion Charging Zone covers a total area of approximately 42 square kilometres. The 'original' 2003 zone covers approximately 22 square kilometres and the Western Extension 2007covers a further 20 square kilometres. At a strategic level the London Congestion Charge is a traffic management scheme. Its clear intention is to control traffic flow in the Central area of London. Users pay a daily charge to enter the Charging Zone. They can then exit and enter as many times as they like during the day. The charge is operational between the hours of 07:00 and 18:00 Monday to Friday. This assumes payment in advance of travel. The charge was originally set at £5 (€6) per day which rose to £8 (€9.60) per day in July 2005.
Technologies	The system uses Closed Circuit Television (CCTV) and Automatic Number Plate Recognition (ANPR) technologies. The CCTV cameras record the vehicle registration (number plate) of all vehicles that enter the charging zone between 07:00 and 18:00, Monday to Friday. The ANPR technology converts the details captured in the image into text which can be compared to the database of valid payments, exemptions and discounts. The charge can be paid in a number of ways: via internet, by telephone - through a contact centre, in some retail outlets and petrol filling stations, at self-service machines located in major car parks, by post, and users can also register to pay the charge using their mobile phone - SMS text messaging.
Standards	
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: City of London, Cities of Westminster, Lambeth, Southwark, Camden, Islington, Hackney and Tower Hamlets, Kensington,

	Chelsea, Hammersmith, Fulham ☒ <u>Private stakeholders:</u> Capita Group and IBM after 2009 ☐ Others:
Organisational model	☐ Management body: ☒ <u>Operating body:</u> Capita Group and IBM after 2009 ☐ Financing body:
Business model	☒ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€:
Operating costs	€ / year: person / year:
3. RESULTS	
Technical performance	
Implementation of Innovation	
Safety impacts	
Efficiency impacts	<u>Traffic flow:</u> Following indicators observe the key percentage changes between 2002 (before URUC launched) and 2006 (after) in traffic entering the central London charging zone between 07:00 and 18:30. - Amount of traffic, all vehicles (passenger cars and trucks) : -16% - Amount of traffic, all potentially chargeable vehicles (passenger cars and trucks) : -30% - Amount of traffic, all non chargeable vehicles: +16% <u>Congestion:</u> - In 2002 traffic demand exceeds capacity during 2,3 min/km, while in 2005 it drops to 1,8 min/km (-22% in congestion between 2002 and 2005) - During 2006 congestion reduction fell to 8%, while in 2007 congestion returned to the levels experienced in 2002. This was not due to a rise in traffic levels, which remain relatively unchanged. It is thought the increase was caused by other factors, in particular a notable rise in the street works projects that have affected capacity on the road network and thus traffic flow. <u>Public Transport Efficiency:</u> Bus patronage up, reliability and journey time improved. Bus patronage figures for passengers entering Central London increased year on year between 1999 and 2002 – from approximately 70.000 passengers in 1999 to just below 88.000 passengers in 2002. There was a significant increase in 2003 to approximately 104.000 passengers and a further rise to 116.000 in 2004. Patronage stabilised at around 116,000 in

	2005 and 2006. The Underground has seen less of a significant impact on patronage since 2003. A recorded average of approximately 516,000 passengers exited stations in and around the central charging zone during the morning peak period in 2002. This rose to 523,000 in 2006 having been 498,000 in 2005.
Environmental impacts	It is challenging to attribute a direct impact of the Charging Scheme on changes in vehicle emissions and measured air quality. There have been a number of other factors which have had an impact on air quality: technology changes to vehicles and most recently the introduction of the London Low Emission Zone. However, the improvement in air quality – reducing emissions to air – has been due in part to less traffic moving within central London and that which remains in the area moving more efficiently. – Overall CO2 emissions change between 2002 and 2003: -16,4% – Overall NOx emissions change between 2002 and 2003: -13,4% – Overall PM10 emissions change between 2002 and 2003: -15,5%
Socio-economic impacts	
Revenue generation	TfL reported in 2007 that the scheme generated net revenues of approximately £123 million in 2006/07 which is being spent on improvements to transport across London, with an emphasis on improving bus services. 0.6775 Livre (GBP) = 1 Euro (EUR) in 2007 => revenue created = 182 millions/year
User acceptance	Support rose from 40% in 2002, to 50-60%(in 2006) a year after the implementation. Shortly after the scheme began, over 80% of respondents said they would accept charging if public transport improved

4. LESSONS LEARNT

Factors for success	The scheme had **political support at the national level** – as early as 1998. In March 2000 the ROCOL working group published **a feasibility report** that supported the introduction of an area-wide scheme. In May 2000 Ken Livingstone was elected Mayor of London – his manifesto included a commitment to consult on road user charging; in January 2001 a strategic plan for the delivery of congestion charging in Central London was presented to the Mayor and subsequently adopted. An **extensive public information campaign** helped to launch the scheme successfully
Obstacles	The key barriers to the scheme were strong oppositions prior to implementation. This included local authorities and some retailers. Fear of the unknown was perpetuated by the media who considered the idea flawed until Congestion Charging became operational. It is testament to the strong leadership of the Mayor of London and a dedicated team at TfL that the scheme was launched in 2003 despite a number of barriers;

5. MORE INFORMATION

Contact Person	Name: Function: Company: Transport for London and IBM Email: Phone:
Web link (if existing)	http://www.curacaoproject.eu/workfiles/files/deliverables year of study: 2009

4.65 UK - Bristol - Environmental Road Pricing

URBAN ITS **KEY APPLICATION**	☒ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Objective(s) of the measure/service: The overall objective of ELGAR within Bristol is to **test a variety of transport strategies to encourage a greater proportion of motorists to switch to using public transport,** thus achieving more acceptable levels of environmental pollution. The specific Environmental road pricing trial objective is more precisely to determine changes in passenger behaviour in response to the trial. In particular to quantify: the level of diversion to Park and Ride, the level of diversion to other modes (rail, bus, cycle, walk), the extent to which passengers are prepared to change route or change mode in response to tolls which are implemented on days with poor air quality, the proportion who would make a trip to an alternative out of town facility in order to avoid paying a toll, the proportion of trips which would not be made at all if road pricing were introduced. A further objective is to determine whether the environmental road pricing trial has influenced individuals' perceptions of the willingness of car drivers to accept road pricing , the likely effectiveness of road pricing in encouraging passengers to change mode or use Park and Ride, with or without a pollution episode
Start of system/service	
Location	☐ single road/line ☐ city district ☒ whole city ☐ urban region
Transport mode(s) concerned	☒ public transport ☐ rail ☒ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	
System / service description	ELGAR (Environmentally Led Guidance And Restraint) is the acronym assigned to the local demonstration being undertaken in Bristol as part of the larger European **CONCERT project**. **Phase 1:** Installation of 5 VMS signs informing drivers of times when pollution levels in Bristol city centre are high. Strategically placed signs encourage drivers to use Park & Ride as an alternative to driving into the centre. **Phase 2:** Improved bus priority measures. Real time bus information provided at a bus stop. And **an environmental road pricing trial**, in which a selection of volunteers were rewarded for switching to modes other than private car for their journeys into the city- the rewards being raised when pollution levels were advertised as high. This trail aimed to simulate the volunteers' likely reactions to being charged tolls for driving to the city centre.
Technologies	The environmental road pricing subsystem comprises in-vehicle units (IVUs), roadside equipment, environmental road pricing (ERP) controller , communications links
Standards	

2. IMPLEMENTATION

Partners involved	☐ Public authorities: ☐ Private stakeholders: ☐ Others:
Organisational model	☐ ☐ Management body: ☐ Operating body: ☐ Financing body:
Business model	☐ Public investment: ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€:
Operating costs	€ / year: person / year:

3. RESULTS

Technical performance	
Implementation of Innovation	
Safety impacts	
Efficiency impacts	– The different charging regimes tested had an impact on the overall number of car trips passing through the A4 corridor via the main charging site at Hicks Gate : the **number of daily car trips per person was 15.1% lower** when charge tariff was in force than in the period without road user charges. – **Use of both public transport (bus or train) and Park-and-Ride rose** (by 48% and 41% respectively) when the higher charge tariff was used. – The number of reported and/or monitored trips along the A4 trial corridor by alternative modes during the charging periods more than accounted for the measured 15.1% reduction in car trips. This suggests that **a high proportion of the car trip reduction was due to modal shift.** – The reported and monitored information on use of alternatives to driving into Bristol during the charged periods gave the following split: Park and Ride 46%; Bus 21%; Train 21%; Car share 7%; Cycle or walk 5%. – The trial data indicated a slight decrease in the proportion of those using the Park and Ride from 9.9% to 7.5% when the VMS displayed poor air quality messages.
Environmental impacts	
Socio-economic impacts	
Revenue generation	

User acceptance	Attitudes of the trial participants, comprising regular car drivers, towards their experiences of road pricing were explored. Some of the key findings from this survey: – Over half of the respondents thought that road pricing would be effective in encouraging people to use public transport rather than driving into Bristol. – Opinion was split on whether road pricing would have a positive or negative impact for the city of Bristol in general, with slightly more respondents citing negative impacts (such as impacts on businesses or shops) than positive impacts (such as reduced pollution and traffic congestion). – On a personal level the majority of respondents felt their own lifestyles would be negatively affected by road pricing, although a quarter of respondents could see ways in which their lives might be improved. – Of the people who said they had used public transport during the trial, around three quarters felt generally positive about the experience. – Over half of the respondents thought that the revenue from any future road pricing scheme should be spent on improving public transport. – Around a quarter of respondents said that no road user charge would be reasonable. This compared with over 80 % of respondents who felt that their lifestyles would be affected negatively by road pricing in Bristol.

4. LESSONS LEARNT

Factors for success	
Obstacles	

5. MORE INFORMATION

Contact Person	Name: Function: Company: Email: Phone:
Web link (if existing)	http://cordis.europa.eu/telematics/tap_transport/research/projects/concert.html Year of study/report: 2009

4.66 UK - London – Oyster Card

URBAN ITS **KEY APPLICATION**	☐ Traffic & Travel Information ☐ Traffic & Access Management ☒ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	Issue(s) encountered: Speed of gate throughput, loss of revenue Objective(s) of the measure/service: Safety, increased ridership/income
Start of system/service	2003
Location	☐ single road/line ☐ city district ☒ whole city ☐ urban region
Transport mode(s) concerned	☒ public transport ☒ rail ☐ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Transport for London
System / service description	Fare collection
Technologies	Contactless smartcard
Standards	ISO14443
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: Transport for London ☒ Private stakeholders: TranSys (Cubic, EDS (HP)) ☐ Others:
Organisational model	☒ Management body: ☒ Operating body: ☐ Financing body:
Business model	☐ Public investment: ☐ Private / commercial framework: ☒ Public-private partnership:
Investment costs	€: 200 million
Operating costs	€ / year: 100 million person / year: Year
3. RESULTS	
Technical performance	99.9% reliability of assets.
Implementation of Innovation	Delivered without significant fault over a 3 year period. Widely accepted to be an innovative scheme which has enhanced the attractiveness of public transport
Safety impacts	40 people a minute through gates compared with 20 for magnetic. Thus faster off loading and station egress

Efficiency impacts	Up to £50m p.a. revenue recovered
Environmental impacts	100k few paper tickets per day, solid state technology and less mechanical engineering demand.
Socio-economic impacts	Far greater access to public transport demonstrated by greater ridership where other options exist
Revenue generation	Estimated at 5% increase on £3 billion per year attributed to Oyster Pay As You Go
User acceptance	83% of all public transport trips on Oyster
4. LESSONS LEARNT	
Factors for success	Reliability and ease of use whilst achieving hitherto unparalleled levels of performance reliability
Obstacles	Integrating all forms of rail travel in London Keeping up with internet and mobile technologies as customer preferences change
5. MORE INFORMATION	
Contact Person	Name: Peter Lewis Function: Project Implementation Manager Company: Transport for London Email: peterlewis@bethere.co.uk Phone: +44 20 71262865
Web link (if existing)	www.tfl.gov.uk

4.67 UK - London - The Low Emission Zone (LEZ)

URBAN ITS **KEY APPLICATION**	☐ Traffic & Travel Information ☒ Traffic & Access Management ☐ Smart Ticketing ☐ Urban Logistics ☐ Other:
1. GENERAL DESCRIPTION	
Problems to solve / Objectives	**Issue(s) encountered:** London air quality has an adverse affect on public health with a 2008 study commissioned by the Greater London Authority showing that poor air quality contributed to over 4,000 deaths in London in that year . London does not currently comply with national and European air quality objectives for particulate matter. The EU have accepted the UK's plans for particulate matter reduction and granted an extension to the deadline for compliance with the EU air quality directive for PM to December 2011. The Low Emission Zone is key in reducing particulate matter to below legally mandated levels. **Objective(s) of the measure/service:** The Low Emission Zone (LEZ) aims to reduce air pollution in the capital by encouraging the oldest and dirtiest diesel vehicles driving in London to become cleaner by levying a substantial charge to non compliant vehicles driving within the LEZ. The Low Emission Zone has been in place since 2008 and has been very successful. Lorries, buses and coaches are required to limit pollution to a given level (Euro III for particulate matter) or pay a daily charge to drive in the capital. Nearly 100% of these vehicles driving in London now meet these standards. In 2008 the LEZ saved 28 tonnes of particulate matter from landing in London's air: equal to saving 127 million km driven by a Euro III Artic - that is160 return trips to the moon or approximately 677,000 times around the M25. However to ensure that London meets the required standard by the end of 2012, LEZ standards are changing on 3rd January 2012: experience form 2008 shows that the majority of operators take action to clean up their vehicle sin advance of LEZ standards coming into force so that the majority of the benefits from the new LEZ standard will be delivered in 2011. From January 2012 lorries, buses and coaches will need to meet a tighter standard (Euro IV for particulate matter) to drive in London without paying a daily charge. Also in January 2012 vans and minibuses will be affected for the first time and will need to meet a Euro 3 standards to drive in London without paying a daily charge. Only the oldest and dirtiest vehicles in this group (those over 10 years old) are targeted. The LEZ forms a part of the Mayoral Air Quality Strategy.
Start of system/service	Phase 1 – Feb 2008, Phase 2 – July 2008, Phase 3 – January 2012
Location	☐ single road/line ☐ city district ☒ whole city ☐ urban region
Transport mode(s) concerned	☐ public transport ☐ rail ☒ road ☐ car-sharing ☐ bicycles ☐ pedestrians ☐ other:
Implementing organisation	Transport for London - local government body responsible for transport in London
System / service description	Vehicles are required to meet certain emissions standards to drive within Greater London free of charge.

	For diesel lorries and specialist vehicles over 3.5 tonnes Gross Vehicle Weight (GVW); and buses and coaches over 5 tonnes (GVW) with more than 8 passenger seats the standard is currently Euro III for particulate matter rising to Euro IV for particulate matter from 3 rd January 2012. TfL estimate that about 75,000– that is some 35% of these vehicles driving in London – will need to take some action to meet the new standard. A Euro III rigid truck – which meets the current LEZ standard - produces 5 times the particulate matter of a Euro IV vehicle - which will meet the new standard in 2012. For diesel lorries and specialist vehicles between 1.205 tonnes unladen weight and 3.5 tonnes GVW; minibuses under 5 tonnes with more than 8 passenger seats ; and motorcaravans and ambulances between 2.5 and 3.5 tonnes GVW a Euro 3 standard for particulate matter will apply from 3 Janaury 2012. Vehicles bought before 1 January 2002 – so those over 10 years old in 2012 will not meet this standard. There are about 72,000 vehicles - around 12 % of these vehicles driving in London that will have to take some action as a result of LEZ. A 15 year old van produces 4 times the PM pollution of a 9 yr old (Euro 3) van Vehicles that do not meet the required standard and which travel into the LEZ must pay a daily charge (£200 for a lorry bus or coach or £100 for a larger van or minibus) or risk a penalty charge notice (£1,000 or £500 respectively). Daily charges are set high deliberately to encourage operators to clean up their vehicles rather than pay the daily charges. For all operators, there are a range of options to comply with the scheme: buying a new or newer vehicle, fitted an approved particulate matter filter , re-engining the vehicle or converting to gas with a spark ignition A summary of the environmental benefits is detailed below. Enforcement of the LEZ is through cameras placed throughout greater London. These identify vehicle registration number and check them against a database to determine if the vehicle is compliant, is exempt or has paid the fee. However TfL would much prefer operators to meet the required standard rather than pay a daily charge or risk a penalty charge. The first time a non-complaint vehicle is seen in the zone the registered keeper is issued with a warning notice rather than a penalty and is given 28 days during which no further action will be taken. This is keeping with the aim of the scheme which to improve aim quality and not to penalise vehicle operators.
Technologies	Operation ofthe scheme is sub-contracted to a number of suppliers. IBM runs IT systems and operations. Siemens run cameras which are used for enforcement. A database was created to enable enforcement of the scheme using information from Driver & Vehicle Licensing Agency (DVLA – the driver licensing body for all of Great Britian), the Society of Motor Manufacturers and Traders (SMMT – the motor manufacturing trade asssocition in the UK) & operator own registration data. Foreign registered vehicles are held to the same standards as UK registered vehicles and must register with TfL to show they meet the required standards (currently TfL has over 120,000 foreign registered vehicles on its database). If any operator believes the information held by TfL on their vehicle is incorrect they may provide suitable evidence via a registration and TfL will update their vehicle entry. Particulate filters sold in the UK are certified (by independent certification bodies appointed by TfL) against a strict technical standard to ensure they deliver the required reduction in particulate matter emissions on a given

	vehicle. Vehicles fitted with an approved filter are then tested and certified annually by VOSA : the UK Vehicle Operator and Service Agency which manages all vehicle certification in the UK. Information regarding vehicle certifications are passed directly to TfL to update the LEZ database. TfL recognises and accepts filter certifications from across Europe for foreign registered vehicles, enabling retrofitted vehicles to demonstrate that they meet the required emissions standards when then register with TfL. TfL provide information leaflets, a dedicated call-centre and operates a website (www.tfl.gov.uk/lezlondon) giving full information on the scheme including a vehicle compliance checker where GB operators can input their license plate number and find out how the LEZ affects them. Foreign registered operators can use the vehicle checker tool that will help them understand how the scheme affects their vehicle. The scheme leaflet and website are available in multiple European languages: any can be provided on demand. In addition the call centre offers a foreign language service. TfL has run an information campaign both in the UK and across Europe since January 2011 to inform operators of changes to the LEZ coming into force in January 2012.
Standards	For diesel lorries and specialist vehicles over 3.5 tonnes Gross Vehicle Weight (GVW); and buses and coaches over 5 tonnes (GVW) with more than 8 passenger seats the standard is currently Euro III for particulate matter rising to Euro IV for particulate matter from 3 rd January 2012 For diesel lorries and specialist vehicles between 1.205 tonnes unladen weight and 3.5 tonnes GVW; minibuses under 5 tonnes with more than 8 passenger seats ; and motorcaravans and ambulances between 2.5 and 3.5 tonnes GVW a Euro 3 standard for particulate matter will apply from 3 January 2012 All approved particulate matter are tested against rigorous technical standards to ensure they deliver the required reduction in particulate matter emissions from a given vehicle whilst setting ground breaking limitations on excess NO2 production. There are currently 13 approved suppliers of particulate filters in the UK from companies across Europe.
2. IMPLEMENTATION	
Partners involved	☒ Public authorities: Mayor of London, Greater London Authority, London Boroughs ☒ Private stakeholders: Service Providers (including IBM, Siemens, DVLA, VOSA) ☒ Others: Commercial vehicle operators affected by the LEZ zone
Organisational model	☐ ☐ Management body: The scheme was implemented and is run by Transport for London ☐ Operating body: TfL ☐ Financing body: TfL
Business model	☒ Public investment: The scheme was funded from TfL's core business plan. TfL derives funding from fare revenue, the Greater London Authority and central Government's Department for Transport ☐ Private / commercial framework: ☐ Public-private partnership:

Investment costs	2008 Introduction £40M. 2012 changes £8.6M
Operating costs	€ / year: £10m in FY 2009/10 person / year:
3. RESULTS	
Technical performance	The Low Emission Zone has been in place since 2008 and has been very successful. Lorries, buses and coaches are required to limit pollution to a given level (Euro III for particulate matter) or pay a daily charge to drive in the capital. Nearly 100% of these vehicles driving in London now meet these standards. In 2008 the LEZ saved 28 tonnes of particulate matter from landing in London's air: equal to saving 127 million km driven by a Euro III Artic - that is160 return trips to the moon or approximately 677,000 times around the M25.
Implementation of Innovation	From 3rd January 2012 lorries, buses and coaches will need to meet a tighter standard (Euro IV for particulate matter) to drive in London without paying a daily charge. Also from 3rd January 2012 vans and minibuses will be affected for the first time and will need to meet a Euro 3 standards to drive in London without paying a daily charge. Only the oldest and dirtiest vehicles in this group (those over 10 years old) are targeted.
Safety impacts	The LEZ has had no impact on vehicle volumes but has significantly reduced the pollution emitted by diesel vehicle driving in the city.
Efficiency impacts	N/A
Environmental impacts	LEZ reduces pollution at the road site – where the pollution is heaviest and targets the kind of pollution – fine particles - which are most hazardous to health. Savings from the LEZ in 2008: There has been a 28 tonne reduction in PM10. This corresponds to a 3.6% reduction in road traffic exhaust emissions and a 1.9% reduction in total road traffic emissions. PM2.5 has been reduced by 26 tonnes which corresponds to a 3.7% reduction in road traffic exhaust emissions and a 2.4% reduction in total road traffic emissions. Road trafic exhaust emissions of NOx have been reduced by 529 tonnes which corresponds to a 2% reduction The changes to the LEZ standards in 2012 are broadly expected to double the pollution reductions seen in 2008. The majority of the emissions savings are expected to be achieved in the lead-up to (as a result of early compliance with the emissions standards) and immediately following the implementation of the scheme.
Socio-economic impacts	Despite improvements in recent years, London's air quality is till a concern and still falls below the legally mandated standards. Air pollution affects the quality of life of a large number of Londoners, especially those with respiratory and cardiovascular conditions, children, the sick and the elderly. It is estimated that some 4,000 premature deaths occur each year due to poor air quality in London. Over the period 2008 to 2015, it's estimated the LEZ will deliver health benefits of up to £270M (EU methodology).

Revenue generation	The LEZ raises minimal revenue as almost 100 % of vehicles driving in the zone meet the required air quality standards rather than paying a daily charge or risking a fine. The scheme is designed to reduce pollution in the capital, rather than act as a source of revenue: any revenue generated is reinvested in London's public transport.
User acceptance	The current compliance rate for driving within the LEZ is almost 100%

4. LESSONS LEARNT

Factors for success	- Political will is a key to success, and the case to prioritise an environmental agenda must be made. The political actors are influenced by actors who lobby pro and contra. - Extensive consultation and stakeholder engagement is critical, enabling a scheme to be developed that the vehicle operators can implement without excessively punitive changes to their operations: it is especially important to give operators sufficient notice of upcoming changes. The LEZ seeks to balance the need to reduce pollution against the economic impact on local service such as the police and fire brigade, business, charities and community groups all of which operate affected vehicles. Detailed consultation is key to ensure the balance is struck fairly and effectively whilst delivering the required pollution reductions over time. The scheme has been significantly altered due to consultation in its life: most recently the inclusion of vans and minibuses was delayed by some 15 months to give operators more time to prepare in the context of a very difficult economic climate. - Operators must have options to retrofit their vehicles rather than replace: setting an age limit would very harshly penalize those operators least able to respond economically and increase compliance costs for the industry in general. Therefore extensive engagement with the abatement industry is critical. - Extensive communications campaigns enable compliance to be delivered via this route rather than by enforcement. This lessens significantly the impact on operators and ensures high compliance rates at go live. This has worked well in London to date.
Obstacles	Driving forces against the scheme are: - businesses & other organizations who experience increased costs due to the LEZ regulations. - Interest groups who are affected by the LEZ and lobby against inclusion. - The lack of uniform access to foreign registered vehicle keeper details has hampers scheme enforcement as it is not always possible to issue penalties to non-compliant vehicles registered outside the UK. However TfL employs a dedicated European debt collection agency and issues penalties wherever possible, to ensure foreign registered and UK registered operators are treated equally by the scheme

5. MORE INFORMATION

Contact Person	Name: Samantha Kennedy Function: Head of Strategy and Stakeholder Partnerships Company: Transport for London Email: samanthakennedy@tfl.gov.uk Phone: +44 (0) 20 3054 1579
Web link (if existing)	http://www.tfl.gov.uk/roadusers/lez/default.aspx

4.68 UK - Leicester - Traffic Information Service Database / Smart Ticketing

URBAN ITS **KEY APPLICATION**	☒ **Traffic & Travel Information** ☐ **Traffic & Access Management** ☒ **Smart Ticketing** ☐ **Urban Logistics** ☐ **Other:**

1. GENERAL DESCRIPTION				
Problems to solve / Objectives	Issue(s) encountered: Not implemented to expectations Objective(s) of the measure/service: Better integration with Common DB			
Start of system/service	09 / 11			
Location	☐ single road/line	☐ city district	X☐ whole city	☐ urban region
Transport mode(s) concerned	☒ public transport ☐ bicycles	☐ rail ☐ pedestrians	☒ road ☐ other:	☐ car-sharing
Implementing organisation	Leicester City Council			
System / service description	Upgrade to Traffic Information Service Common Database			
Technologies	Common Database and Application server			
Standards	Single UTMC adapter and SQL database			

2. IMPLEMENTATION	
Partners involved	☒ Public authorities: Leicestershire / Rutland ☐ Private stakeholders: ☐ Others:
Organisational model	☐ Management body: ☒ Operating body: ☐ Financing body:
Business model	☒ Public investment: £100K ☐ Private / commercial framework: ☐ Public-private partnership:
Investment costs	€: £100K
Operating costs	€ / year: £3K person / year: 2/1

3. RESULTS	
Technical performance	Integration of Strategy management / Asset Management / Fault management
Implementation of Innovation	User friendly reporting facility
Safety impacts	
Efficiency impacts	

Environmental impacts	Reduce congestion / delay
Socio-economic impacts	
Revenue generation	No -
User acceptance	Yes
4. LESSONS LEARNT	
Factors for success	Ask for delivery outcome in advance and demand regular meetings /updates
Obstacles	Goals and time scales changes
5. MORE INFORMATION	
Contact Person	Name: Jay Parmar Function: Traffic Management Company: Leicester City Council Email: Jayesh.Parmar2@Leicester.gov.uk Phone: 0116 2995669
Web link (if existing)	