

Transport Research Knowledge Centre

INFORMATION AND AWARENESS THEMATIC RESEARCH SUMMARY

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**European Commission
DG Energy and Transport**

**Transport Research
Knowledge Centre**

**Thematic Research
Summary**

Information and Awareness

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Foreword

This paper has been produced as part of the activities of the TRKC (Transport Research Knowledge Centre) project of the Sixth Framework Programme, priority thematic area “Sustainable Development, Global Change and Ecosystems”.

The aim of TRKC, as its predecessor project EXTR@Web, is to collect, structure, analyse and disseminate transport research results. It covers EU-supported research as well as key research activities at the national level in the European Research Area (ERA) and selected global programmes. The main dissemination tool used by TRKC is the web portal at www.transport-research.info.

The approach to dissemination of results of research projects adopted by the TRKC team includes the following three levels of analysis:

- Project Analysis, which provides, project by project, information on research background, objectives, results, technical and policy implications;
- **Thematic Analysis**, which pools findings of research projects according to a classification scheme based on thirty themes, fixed for the project life time; the product of this analysis activity is the set of **Thematic Research Summaries (TRS)**; the present document belongs to this set;
- Policy Analysis, which pools findings of research projects according to combinations of themes based on ad-hoc policy priorities which are agreed with DGTREN of the European Commission and a representative group of research users.

This Thematic Research Summary deals with Information and Awareness. The aim is to provide the reader with a synthesis of results of completed European projects related to the theme of Information and Awareness. The paper is intended for policy makers at the European, national and local levels, as well as any interested reader from other stakeholders and from the academic and research communities.

Disclaimer and acknowledgement

The TRKC team is fully responsible for the content of this paper. The content of this paper does not represent the official viewpoint of the European Commission and has not been approved by the coordinators of the research projects reviewed.

The authors would like to thank Dr Paul Firmin from ITS, University of Leeds for undertaking an external peer review of this paper.

Executive Summary

This Thematic Research Summary on Information and Awareness aims to provide the reader with a synthesis of results of completed European research projects related to that theme. It consists of two main parts. The first part includes a brief overview of the scope of the theme and summarises the main policy developments at EU level relevant to the theme. The second part contains a synthesis of the main findings and policy implications from research projects and identifies the implications for further research. The research projects for which the synthesis is provided are European (EU-funded and national) projects that are completed and with results publicly available. The EU projects included in this paper have been funded by the Fifth and the Sixth Framework Programmes. Projects that had been reviewed in the related paper produced within the predecessor project EXTR@Web are only briefly summarised in the background section for each sub-theme.

The range of possible measures that come under the heading of “Information and Awareness” involve making improvements to the information available to transport users and operators, to make them more aware of the implications of their use and operation of the transport system and thus to support transport policy objectives. Some measures are traditional fixed information systems; others draw on real time applications of information technology. The information helps travellers make more informed decisions about how, when, where and whether to travel.

The White Paper on European transport policy and its Mid-term Review acknowledge the importance of information and awareness in European transport policy as key to the success of intermodal transport systems and the efficiency and safety of movement of goods and people. A key policy target highlighted in these documents is to ensure mobility for all citizens of the European Union by provision of timely and accurate information.

Road traffic congestion, transport-related CO₂ emissions and road fatalities have been identified as major challenges that Europe’s transport system needs to overcome in order to fulfil its role in satisfying the mobility needs of the European economy and society. These challenges are even more pressing with forecasted growth rates of 50% for freight transport and 35% for passenger transport by 2020. The main policy objectives arising from these challenges are for transport and travel to become cleaner, more efficient (including energy efficient) and safer and more secure. Conventional approaches such as the development of new infrastructure will not give the necessary results on the timescales required by the magnitude of these challenges. Innovative solutions are therefore clearly needed.

Information and Communication Technologies (ICT) will therefore continue to be a major driver of economic and social modernisation and to contribute to the achievement of the objectives of the Lisbon Strategy for growth and jobs. The new technologies that will be brought to market in the future will gradually provide a raft of new services to citizens and also allow improved real-time management of traffic movements as well as provide tracking and tracing of flows and cargoes for improved environmental and security purposes. Additionally there will be obvious benefits to transport operators and clients, since the new systems will provide public administration with rapid and detailed information on infrastructure and maintenance needs. Furthermore, new technologies will provide new and more comfortable services to passengers, increase safety and security and reduce the environmental impacts.

The review of the policy documents has shown that applications of Information and Communication Technologies (ICT) to transport are being developed for different transport modes and for interaction between them. However, the lack of a coherent European framework for interconnection between road and the other transport modes has been identified as a major gap that needs to be filled.

Five sub-themes are considered in the synthesis of the findings from research projects.

The first sub-theme relates to **Direction Signing and Variable Message Signs** where a reasonable amount of research is currently in progress, but results on most of these projects are not yet available. This sub-theme includes information on how Variable Message Signs (VMS) are used for direction signing, traffic management and incident control.

The second sub-theme is concerned with **Real Time Driver Information Systems** and includes information on the use of GPS (Global Positioning System), GIS (Geographic Information Systems) and the internet on providing private passenger and public transport users with up-to-the-minute real time information on routes and journey times and services. In particular, many of the projects conducted within this theme are concerned with creating methodologies in which travel and route information can be integrated across the various modes.

Sub-theme three is concerned with **Public Transport and Passenger Information Systems** and deals specifically with one project which investigated the suitability of a spatial navigation system for blind and partially sighted people, to encourage more use of public transport by this group of disabled people.

Within the next sub-theme, research into **Awareness Campaigns and Transport Training Tools** is reported. Information here is provided on the most effective methods

and models by which publicity and travel information and awareness campaigns can be implemented with comprehensive guidelines on how to ensure that such campaigns are effective and successful. The use of computerised simulations as a means of training drivers and pedestrians is also included within this third sub-theme.

The final sub-theme within this TRS reviews research into **Fleet and Freight Information Systems** which consists of information on support tools for ships and railways as well as travel information systems for ferries and long distance fleet drivers.

The implications of research findings for policymaking and future research activities have also been considered. The following areas which could potentially offer new business opportunities or where further research is needed are:

- the use of VMS for publicity and travel awareness campaigns;
- the use of travel information and route guidance systems for disabled passengers;
- the feasibility of developing and validating mobile technologies which would promote the arrangement and selection of multi- and trans-modal trips;
- new business opportunities in the info-mobility market for auto-manufacturers as well as mobile service/applications/content providers;
- the need for a common and harmonised driver training and assessment procedure for Europe.



GPRS	General Packet Radio Services
GPS	Global Positioning System
GRIP	Graphical Route Information Panel
GUI	Graphical User Interface
HA	Highways Agency (UK)
HMI	Human Machine Interface
IHT	Institute of Highways & Transportation (UK)
IM	Information Manager
ISA	Intelligent Speed Adaptation
IT	Information Technology
ITS	Intelligent Transport System(s)
IVIS	In-Vehicle Information System
IVU	In-Vehicle Unit
LBS	Location Based Services
LTP	Local Transport Plan
LSP	Logistic Service Provider
MFC	Multi-function Console
OBU	On-board Unit
OLIS	Own Language Information Service
PGI	Parking Guidance & Information
RCC	Rail Cargo Company
RCO	Railway Cargo Operator
RDS-TMC	Radio Data System – Traffic Message Channel
RIS	River Information Services (or System)
RTD	Research and Technical Development
RTPI	Real-Time Passenger Information



SSC	Ship-Shore Communication
STI	School Travel Initiative
STP	School Travel Plan
TCC	Traffic Control Centre
TCM	Technical Condition Monitoring
TOC	Train Operating Company
TIM	Technical Incident Message
TPS	Trip Planning System
TRKC	Transport Research Knowledge Centre; TRKC website at www.transport-research.info
TSM	Tracking System Module
TSP	Transport Service Provider
UK	United Kingdom
UMTS	Universal Mobile Telecommunications System
VMS	Variable Message Sign(s)
WAP	Wireless Application Protocol
WRA	Weather and Routing Advice
XML	Extensible Mark-up Language



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1. Introduction

This paper is the first version of the Thematic Research Summary (TRS) on Information and Awareness produced within the TRKC project. It provides a structured review of the research relating to information and awareness, carried out in European transport research projects. “Information and Awareness” is one of the thirty themes in the classification scheme adopted by the TRKC project. The full scheme is shown in the table below.

Table 1. The classification scheme adopted in TRKC

<i>Sectors</i>
<ul style="list-style-type: none"> • passenger transport • freight transport
<i>Geographic</i>
<ul style="list-style-type: none"> • urban transport • rural transport • regional transport • long-distance transport • EU accession issues
<i>Modes</i>
<ul style="list-style-type: none"> • air transport • rail transport • road transport including walking and cycling • waterborne transport • innovative modes • intermodal freight transport
<i>Sustainability policy objectives</i>
<ul style="list-style-type: none"> • economic aspects • efficiency • equity and accessibility • environmental aspects • user aspects • safety and security
<i>Tools</i>
<ul style="list-style-type: none"> • decision support tools • financing tools • information and awareness • infrastructure provision including TENs • integration and policy development • Intelligent Transport Systems ITS • regulation/deregulation • land-use planning • transport management • pricing and taxation • vehicle technology

The categories in the classification scheme shown in the above table have been adopted to enable comprehensive searching for project information available through the TRKC portal, and to ensure comprehensive coverage of research results and appropriate policy analysis in the Thematic Research Summaries (TRSs). Definitions for each category (which is also a theme in its own right) can be found on the TRKC website available at http://www.transport-research.info/web/projects/transport_themes.cfm.

In the predecessor project EXTR@Web, TRSs were produced for 28 of the 30 themes (the reduced number of TRSs resulting from merging of some themes into a single TRS). The TRKC project has produced first versions of TRSs for a sub-set of themes for which a critical mass of results from projects is available by January 2009. The preparation of final versions of TRSs for the full set of themes is planned by the end of the TRKC project in June 2010.

The thematic research summary produced in the predecessor project EXTR@Web (EXTR@Web, 2006) had reviewed research from European projects belonging to the Fourth and Fifth Framework Programmes (FP4 and FP5) and national projects. The present paper adds new projects to the analysis that have reported since that paper, including various European projects from FP5 and the Sixth Framework Programme (FP6).

The research reviewed in this paper does not represent the whole range of research dealing with information and awareness carried out in the European Research Area (ERA). The paper focuses on research from those projects which have made documentation on results available to the TRKC team after the issue of the EXTR@Web paper (EXTR@Web, 2006). A summary of the research reported on in the EXTR@Web paper is also included to make the reader aware of a wider range of research relevant to the theme.

The paper is organised as follows. Section 2 includes a brief analysis of the scope of the theme. Section 3 provides an overview of the relevant policy developments at EU level, explaining at the same time why the theme is important from a policy viewpoint. The sources for this section are principally European Commission documents which have set the policy agenda such as white papers, green papers and communications.

Section 4 reports on the results from research projects. The section is structured according to sub-themes to make the broad area of research which has dealt with information and awareness aspects more manageable.

The following five sub-themes have been considered:

- Sub-theme 1: Direction signing and variable message signs;

3. Policy context

3.1 European policy objectives related to the theme of “Information and Awareness”

The White Paper “European transport policy for 2010: time to decide” and the “Mid-term Review of the European Commission’s 2001 White Paper on Transport” acknowledge the importance of information and awareness in European transport policy as key to the success of inter-modal transport systems and the efficiency and safety of movement of goods and people (CEC, 2001; CEC, 2006a). A key policy target highlighted in these documents is to ensure mobility for all citizens of the European Union by provision of timely and accurate information.

The Mid-term review of the European Commission's White Paper on Transport Policy also suggests that innovation will play a significant part in making road transport more sustainable (i.e. safe, efficient, clean and seamless), in particular by applying information and communication technologies. The provision of information for travellers and operators, to make them aware of travel options, progress and performance, and hazardous conditions, is therefore an essential ingredient for the development of sustainable and efficient mobility.

Information and Communication Technologies (ICT) continue to be a major driver of economic and social modernisation and to contribute to the achievement of the objectives of the Lisbon Strategy for growth and jobs (CEC, 2008a; CEC, 2008b). The mid-term review of the Transport White Paper acknowledges the importance of research and investment into ICT and observes that transport is fast becoming a high-technology industry, making research and innovation critical to its further development. Amongst the most promising priority research areas are intelligent transport systems, involving communication, navigation and automation (CEC, 2006a).

The new technologies that will be brought to market in the future will gradually provide a wide range of new services to citizens and also allow improved real-time management of traffic movements as well as provide tracking and tracing of flows and cargoes for improved environmental and security purposes. Additionally there will be obvious benefits to transport operators and clients, since the new systems will provide public administration with rapid and detailed information on infrastructure and maintenance needs (CEC, 2006a). Furthermore, new technologies will provide new and more comfortable services to passengers, increase safety and security and reduce the environmental impacts (CEC, 2009).

Road traffic congestion, transport-related CO₂ emissions and road fatalities have been identified as major challenges that Europe's transport system needs to overcome in order to fulfil its role in satisfying the mobility needs of the European economy and society (CEC, 2008c). These challenges are even more pressing with forecasted growth rates of 50% for freight transport and 35% for passenger transport by 2020 (CEC, 2006a). The main policy objectives arising from these challenges are for transport and travel to become cleaner, more efficient (including energy efficient) and safer and more secure (CEC, 2008c). Conventional approaches such as the development of new infrastructure will not give the necessary results on the timescales required by the magnitude of these challenges. Innovative solutions are therefore clearly needed.

The 'Action Plan for the Deployment of Intelligent Transport Systems in Europe' provides examples of applications of Information and Communication Technologies (ICT) to transport that are being developed for different transport modes and for interaction between them. Such applications include:

- SESAR, which will be the framework for the implementation of a new generation of air traffic management.
- River Information Services (RIS) to manage waterway utilisation and the movement of freight.
- the European Rail Traffic Management System (ERTMS) and Telematics Applications for Freight (TAF-TSI).
- Shipping has introduced SafeSeaNet and Vessel Traffic Monitoring and Information Systems (VTMIS) and is progressing towards an Automatic Identification System (AIS) and Long-Range Identification and Tracking (LRIT).
- Examples of Intelligent Transport Systems applications in road transport which are related to information services include urban and motorway traffic information and route navigation services by various fixed and mobile media, pre-trip planning and dynamic warning signs.

However, the lack of a coherent European framework for interconnection between road and the other transport modes has been identified as a major gap that needs to be filled (CEC, 2008c).

3.2 Policy issues related to different types of information systems

Road Based Traffic Information Systems

The trans-European network, which includes roads and motorways, is an ideal candidate for the deployment of intelligent transport systems. This also includes traffic management systems and information, positioning and navigation systems and services, to operate the infrastructure to the best effect. The main goal being advocated is for 50% of Europe's major towns and cities to be provided with traffic and travel information services and for

Awareness Campaigns

Travel awareness campaigns to raise awareness of travel options need to be developed to encourage the travelling public to consider alternative forms of transport and the best ways to travel. Such campaigns may be specifically targeted to an individual's travel circumstances for a particular journey or set of daily journeys; or be more generally aimed at the travelling public in general. In addition safety awareness campaigns are also important for consideration, such as drink driving and speeding behaviour, as well as campaigns and educational materials aimed at children and young people, in order to reduce the number of fatalities on the roads in Europe. Road works safety campaigns also heighten the awareness of safety issues of construction workers working within the vicinity of dangerous sites close to speeding traffic. Campaigns may also promote passenger security in other areas of transport, for example awareness of passenger procedures at airports or security messages at railway and other public transport terminals. The Intelligent Car Initiative aims at creating awareness of ICT based solutions for intelligent cars in order to raise drivers' and policy makers' knowledge about the potential of intelligent vehicle systems, stimulate user's demand and create socio-economic acceptance (CEC, 2006b).

Users' Needs for Information

Travellers have a real need of improved travel condition and services information, to help them make better informed choices about mode, time and route of travel. In terms of improving inter-modality for people, the quality of service and information given to users needs to be improved overall throughout the EU member states. Research into users' needs is therefore of key importance to realising this goal. Systems for the dissemination of 'personal' travel information via mobile communications devices whilst on the move will be in greater demand and this information will need to be multi-mode and journey specific and also user-definable. Research into the provision of information of this kind with a very high degree of individuality offers new challenges, since it is highly detailed and will require a high level of acquisition, quality and maintenance to gain user acceptance.

4. Research findings

4.1 Introduction

The research which is synthesised in this paper is reported according to five sub-themes.

The first sub-theme relates to **Direction Signing and Variable Message Signs** where a reasonable amount of research is currently in progress, but results on most of these projects are not yet available. This sub-theme includes information on how Variable Message Signs are used for direction signing, traffic management and incident control.

The second sub-theme is concerned with **Real Time Driver Information Systems** and includes information on the use of GPS, GIS and the internet on providing private passenger and public transport users with up-to-the-minute real time information on routes and journey times. In particular, many of the projects conducted within this theme are concerned with creating methodologies in which travel and route information can be integrated across the various modes.

The next sub-theme in this section is concerned with **Public Transport and Passenger Information Systems** and deals specifically with one project which investigated the suitability of a spatial navigation system for blind and partially sighted people, to encourage more use of public transport by this group of disabled people.

Sub-theme four is concerned with **Awareness Campaigns and Transport Training Tools**. Information here is provided on the most effective methods and models by which publicity, travel information and awareness campaigns can be implemented with comprehensive guidelines on how to ensure that such campaigns are effective and successful. The use of computerised simulations as a means of training drivers and pedestrians is also included within this third sub-theme.

The final sub-theme within this TRS reviews research into **Fleet and Freight Information Systems** which consists of information on support tools for ships and railways as well as travel information systems for ferries and long distance fleet drivers.

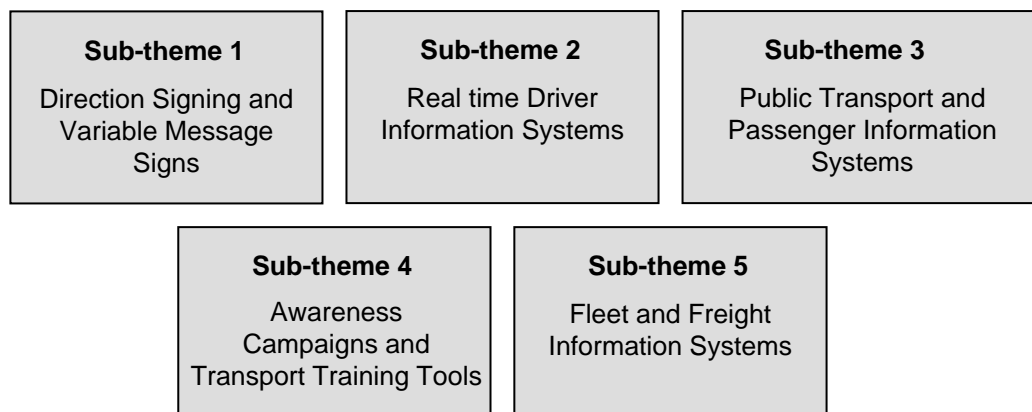


Table 2. EU-funded projects relevant to the theme

Sub-theme	Contributing projects
1. Direction signing and variable message signs	<p><u>Projects covered in this paper:</u> TROPIC II, The effectiveness of safety campaign VMS messages: A driving simulator study, Euro-Regional projects (e.g. STREETWISE and the cross-project action Mare Nostrum VMS)</p> <p><u>Projects covered in the EXTR@Web paper:</u> TRAVEL-GUIDE</p>
2. Real-time driver information systems	<p><u>Projects covered in this paper:</u> COMPOSE, DIAMOND, TRANS-3, TRANSCOM, INTRO</p> <p><u>Projects covered in the EXTR@Web paper:</u> TRAVEL-GUIDE; UG340; Concept for the integration of an information system for public information on the traffic conditions on state roads</p>
3. Public transport and passenger information systems	<p><u>Projects covered in this paper:</u> FRAMSYN, COMPOSE, DIAMOND, TRANS-3, TRANSCOM</p> <p><u>Projects covered in the EXTR@Web paper:</u> E1; MATKA.FI; UG395; UG423I; An assessment of the effects and cost-effectiveness of a public transport journey planner</p>
4. Awareness campaigns and transport training tools	<p><u>Projects covered in this paper:</u> S214G, INPHORM, TRAINER, CAMPARIE,</p> <p><u>Projects covered in the EXTR@Web paper:</u></p>

	UG354; Review of research on school travel
5. Fleet and freight information systems	<p><u>Projects covered in this paper:</u> DSS-DC, CROBIT, Incentives for increased rail punctuality, Euro-Regional projects (e.g. STREETWISE), FREIGHTWISE.</p> <p><u>Projects covered in the EXTR@Web paper:</u> FIRE; F-MAN</p>

The research projects listed under each of the five sub-themes are shown in the Annex to this paper. Hyperlinks to project websites (if available) are also included.

4.2 Sub-theme 1: Direction Signing and Variable Message Signs

4.2.1 Background

Although a sufficient number of projects have been funded in this area since the last Thematic Research Summary was produced in 2006, unfortunately, the results of most of these projects were not accessible to TRKC at the time of writing this document, with results available for one European and one National project funded by the U.K. Highways Agency.

The Thematic Research Summary on this theme, prepared for the EXTR@Web project, summarises the results of the TRAVEL-GUIDE project, which provided comprehensive design guidelines on pre-trip, and on-trip presented information. With respect to on-trip information, guidelines on the design of VMS which would ensure their safe use by drivers were provided by this project.

4.2.2 Research objectives

The main objectives of the “Euro-Regional” ITS study and deployment projects, which included the STREETWISE project, were to increase road safety and reduce congestion, whilst also improving services to travelling customers. As well as conducting research on real-time information systems for fleet drivers, one of the aims of this family of projects was to deal with traffic management across the Trans-European Road Network (TERN). In this respect, the projects’ objectives were to use Variable Message Signs to provide information to drivers, in an attempt to provide proactive traffic management and journey times. A horizontal study action across the different Euro-Regional projects (now part of the EasyWay project (EasyWay, 2009) called Mare Nostrum VMS, researched best

practice in harmonising message structures on VMS across Europe. (TIS Expert Group, 2007 and EasyWay, 2009)

Also on the theme of Variable Message Signs, a study sponsored by the UK Highways Agency sought to establish whether the use of VMS “safety campaign messages” such as ‘Don’t Drive Tired’ reduced drivers’ sensitivity towards Tactical Incident Message (TIMs) which warned drivers of an impending incident or accident in the road. Using a motion based driving simulator, this study examined whether the content and number of safety campaign messages had any effect on driver behaviour towards TIMs (Jamson, A.H. and Merat, N., 2007).

4.2.3 Research results

The Euro-Regional projects have been successful at providing efficient traffic and incident management through the Trans-European Road Network’s control and information centres. This is clearly beneficial in allowing better traffic management, reducing congestion and increasing road safety within the European road network. The STREETWISE Euro-Regional project, for example, studied and implemented traffic information by VMS in the UK and Ireland, including data sharing between different national and regional traffic control centres. Research into user acceptance of VMS deployment in Scotland under the STREETWISE project found that VMS were generally considered trustworthy, useful and timely. The awareness of the VMS was high at 83% (95% for professional drivers). 89% of those who saw the VMS usually took notice and action based on the message. This percentage reduced when the VMS conflicted with another source. (TIS Expert Group, 2007).

The Mare Nostrum action within the Euro-Regional projects (current phase in continuation under EasyWay), was originally a pilot corridor from Seville to Trieste (involving Spain, France and Italy), but now includes several other EU Member States. This project has already undertaken user surveys in four countries demonstrating different levels of comprehension of VMS signs according to the structure and language of the message and use of pictograms. Concerning language issues, acceptance levels of text are high (about 80%) amongst respondents driving within their own country, but very low (<30%) among foreign drivers. Abstract alphanumeric signs (e.g. a pictogram depicting congestion or an accident followed by text such as “= 15 KM” or “KM 34 – KM 40” or the name of a location) have a medium level of comprehension (about 50%), with this lying in between text-based messages in the respondent’s own language and those in a foreign language (TIS Expert Group, 2007).

Results on the effect of Safety Campaign Messages on driver behaviour seemed to suggest that these message themselves were not especially beneficial, in that drivers did

not significantly modify their driving style purely on the advice of the messages. However, witnessing the odd VMS carrying such a message appeared to improve driver alertness to the context of the VMS and consequently response to a TIM became more timely under these conditions. Yet, if the frequency of Safety Campaign Messages was overly high, drivers became jaded with the VMS content and their ability to act appropriately to a TIM degraded.

4.2.4 Policy implications

VMS deployment has been at a different rate in different parts of Europe due to historical and organisational factors. Countries like France, Italy and Spain, where most motorways are operated by toll companies, have had a high level of VMS deployment for some time now, as it is considered an expected level of service to toll-paying users. Aspects such as real-time travel time information on VMS have also been pioneered in these countries. Other countries, such as Germany, consider VMS as a traffic management and control tool rather than a traveller information service; hence signs give instructions, speed limits, etc but not “comfort” information. However an increasing number of countries in northern Europe, notably the Netherlands, the UK, Ireland and Sweden, are deploying regular VMS along motorways as a traveller information “comfort/user service” facility. In particular, the penetration of VMS messages is higher than any other media (e.g. radio, RDS-TMC, pre-trip planning software). Therefore, despite the increasing incidence of on-board driver information systems, VMS are still considered important in most countries in order to relay important information to all road users, and not just those with specific on-board equipment.

The implementation of too many VMS signs containing information irrelevant to the road conditions and driving tasks may well reduce drivers’ sensitivity to more important tactical messages displayed on these systems. Care and consideration should therefore be taken when considering the use of VMS for publicity and travel awareness campaigns. The study in Scotland, conducted as part of STREETWISE, concluded that although the provision of information by VMS was well received, user acceptance and trust could be improved further if it is ensured that the information is up to date, accurate and shows delay length.

4.3 Sub-theme 2: Real-Time Driver Information Systems

4.3.1 Background

The EXTR@Web Thematic Research Summary on the theme of Information and Awareness included the results of three projects which contributed to the sub-theme of real-time driver information systems. One project, also mentioned briefly in section 4.2.1

multi-modal travel, including trip selection, payment, localisation, access and real time assistance and route guidance. Please note that this project is also relevant to the “Personal and other travel information services” subtheme, outlined in section 4.4.

The Euro-Regional projects, in particular STREETWISE and VIKING, are also relevant to this sub-theme, as well as all other sub-themes reported in this Thematic Research Summary, as one of their main objectives was the delivery of intermodal travel information to both public and private transport users.

The main aim of the INTRO project was to improve road infrastructure management, safety and user services using innovative combinations of existing data capture technologies. However, one work package was dedicated to the development of traffic and safety monitoring techniques, including use of data fusion to assist network operation.

Finally, the technical feasibility of developing a mobile terminal to provide comprehensive and integrated information on a wide ranging set of information mobility services was the main objective of the COMPOSE project.

4.3.3 Research results

Research has shown that there is a good business and scientific case for the development of technologies which are capable of combining DAB with GSM and GPS systems and that this approach is both cost efficient and easily implementable (DIAMOND). Using DAB, multimedia ITS services can be delivered to end users, and terminal manufacturers are now able to build real applications running on real terminals, with such platforms. One small shortfall of the DIAMOND project was that it was not capable of supporting XML information, although recommendations are provided on how this can be achieved in the future.

The development of a comprehensive web-based traffic and travel information tool was achieved by the TRANS-3 project, which was implemented specifically for the Basel region of Switzerland (www.transbasel.com). This website provides integrated information and guidance on travel and route planning which combines personal (own car, pedestrian, bicycle) and multi-modal (combination of modes) transport. This system also provides detailed real time information about available car parking spaces as well as up to date information about the status of local motorway traffic. The results of this project concluded that whilst the integration of dynamic data for multimodal travel is technically feasible, at present, the provision of such real time information can be patchy, due to the lack of supply of or possession of such data by a large number of travel operators. Since the results of this project are continuously shared with third parties, it is hoped that such

multimodal real time travel information and assistance can be implemented throughout the European community.

Research on real time driver information systems has also demonstrated the feasibility of using mobile communication devices such as cellular telephones, General Packet Radio Services (GPRS), Personal UMTS (Universal Mobile Telecommunications System), Bluetooth technology, SWAP and Ethernet wireless devices for accessing up to the minute, real time traffic and travel information routes and services (TRASCOM). Specifically, this project demonstrated the possibility of using such devices for accessing information on multimodal travel routes and services.

Among other research activities, the Intelligent Roads (INTRO) project looked at traffic and safety monitoring issues for road network management. Pro-active traffic management relies on up-to-date information about the state of the road network. More accurate estimation and prediction of road traffic conditions utilising all data sources is becoming essential to reduce congestion and increase traffic safety. Travel time estimation was one area of work, which quantifies traffic condition in a way that is easy to understand and prompts users to utilise the alternatives in case of congestion, thus contributing to greater network efficiency. INTRO advanced the state-of-the-art for travel time information (based mainly on fixed sensors) by using data from probe vehicles (floating car data – FCD), data from urban road networks and data from toll stations on French motorways.

At present, incident detections take place after the occurrence of an incident. It would be more useful to detect the traffic risks on the network prior to an accident. INTRO therefore investigated the possibilities of indicators to measure traffic risk and then to inform the drivers about the risk and to manage the traffic risk. The data input for this detection comes from both fixed and mobile sensors. Two types of safety indicator were developed, the individual braking time risk and the platoon braking time risk.

European research within this sub-theme has also allowed the supply of a comprehensive set of info-mobility services, including information on weather forecasts, news and sport, as well as pre and on-trip information such as route guidance, up to the minute traffic information and points of interest presented through one single service terminal (COMPOSE Demonstrator).

4.3.4 Policy implications

The DIAMOND project demonstrated the feasibility of using the DAB network for the distribution of ITS services to users. Since these services can be inexpensive, regulators should provide future implementation of appropriate additional frequencies.

The results of the TRANS-3 project are available on the project website and available to interested parties as it is hoped that this website can become an instrument of public policy for regional transportation and planning purposes. Feedback is also encouraged from those using the system. The hope of the project has been that, through public-private-partnerships, this system can be implemented more widely by increasing the information available on its database.

Implications from the INTRO project are that there are many possibilities to exploit road and traffic data from existing sources without the need for expensive new technology, in particular through the fusion of data from different sources. This can help traffic managers and network operators and also enable better information (in terms of types of information, its range, accuracy and timeliness) to be provided to the end user, in order to improve traffic flow and lessen the chances of accidents due to “surprise” effects (such as sudden changes in road geometry, road surface, weather conditions or traffic conditions). Reliable and timely data is the key to effective road traffic management and this project which developed some innovative concepts based on existing technology should be followed up with larger scale tests. A key area not looked at is that of business case aspects: who pays for improved information, the road operator or the driver? If it is the latter, then there is a risk that increased safety may only be available for those willing to pay more by having in car monitoring and display equipment – on the other hand widespread application of systems and services will ensure that the price falls.

The COMPOSE project aimed to analyse and promote the potentially enormous infomobility market and business opportunity to auto-manufacturers as well as mobile service/applications/content providers by analysing, developing, demonstrating and disseminating the following value added services: 3D/4D virtual mobility pre- and on-trip, enhanced location-based services (route guidance, emergency and personal security services, traffic information, etc.) and individualised information packages.

4.4 Sub-theme 3: Public Transport and Passenger Information Systems

4.4.1 Background

In total, five projects were summarised in the previous version of this TRS within the sub-theme of Public Transport and Passenger Information Systems. The aim of most of these projects was to investigate the feasibility of implementing various public and passenger route guidance and information systems, although one project in particular investigated the access and use of public transport by disabled passengers in the UK.

Most of the projects relating to this sub-theme have already been summarised in section 4.3 under the sub-theme ‘Real Time Driver Information Systems’ (e.g. TRANS-3 and

TRANSCOM), which included many projects that related to the integration of travel across various modes, including public transport. Therefore, only one project which was primarily and only concerned with the use of public transport by blind and visually impaired passengers is reviewed in this section. The impetus for developing such a guidance system stems partly from a move by the Swedish government to make public transport more accessible to disabled people by 2010.

4.4.2 Research objectives

The objective of the Swedish project FRAMSYN was to assess the feasibility of using a spatial guidance system for navigation and real time public transport information by blind and visually impaired public transport users. The prototype, which included a small wearable computer incorporating GPS, DGPS, digital compass, GIS and speech recognition and synthesis programmes, was tested on 13 visually impaired participants in the Swedish cities of Framtidsdalen and Borlänge.

4.4.3 Research results

Preliminary results seem to suggest the success of such a guidance system which observed clear benefits of using the system by the sample of participants. One main finding from the project was that this system was used more effectively by the blind participants who relied completely on the guidance system, compared to partially sighted subjects who were sometimes found to be in conflict with the system, unable to choose between the guidance given and their own perception of the situation. A positive outcome of the system was that participants felt safer in strange environments with the system, than without it. An important consideration for such systems is that the information they provide should be succinct and relevant to the situation, for instance avoiding frequent presentation of information about time to destination at the expense of real time navigation.

4.4.4 Policy implications

The Swedish government aims to make public transport more accessible to disabled people by 2010. However, travel and real time route guidance is currently problematic for blind and visually impaired passengers as most of the data presented by these travel information and route guidance systems are displayed visually. Whilst the prototype created by the FRAMSYN project cannot replace more traditional navigation systems such as white canes and guide dogs, it can be used as a complementary tool for navigation. The wider implementation of such systems is therefore of huge benefit to this group of transport users.

4.5 Sub-theme 4: Awareness Campaigns and Transport Training Tools

4.5.1 Background

The research outlined in the previous version of this document, prepared for the EXTR@Web project was based on two UK-funded projects, both of which looked specifically at the success of school travel plans (STPs). Funded by the Scottish Government and managed by the Scottish School Advisory Group, one of these projects provided a comprehensive review of the factors influencing choice of travel to schools, as well as a review of the school travel initiatives implemented both within the UK and internationally.

Since the publication of the last TRS on this sub-theme in Information and Awareness, a number of projects related to this sub-theme have been funded by both national governments and the EU. However, at the time of writing this document, results of many of these projects were not yet available. These include: MAX, Road Safety Education and Awareness Campaigns, Good Practice in Reducing Serious/Fatal Accidents in Local Authority Areas, Risk Assessment & Risk Taking Amongst Motorcyclists, ECODRIVEN - European Campaign on Improving Driving Behaviour, Energy Efficiency and Traffic Safety, CAST - Campaigns and Awareness-raising Strategies in Traffic Safety and FOOLSSPEED - Evaluation of a Theory-based Advertising Campaign to Reduce Speeding.

Some of the research relevant to this sub-theme has attempted to increase the travelling public's awareness through the use of computerised training tools. The objectives and results of two of these projects, providing training to drivers and pedestrians respectively, are summarised below.

4.5.2 Research objectives

The objectives of two of the projects conducted within this sub-theme were to provide a comprehensive review of, mainly European, research conducted on the use and application of travel awareness, publicity and information campaigns. The aim of both projects (CAMPARIE, INPHORM) was then to provide comprehensive guidelines on the best model for developing such campaigns in the future.

The feasibility of using computer based platforms to train pedestrians and drivers was the aim of the research projects S214G and TRAINER. The objectives of the TRAINER programme of research, which included a wide ranging set of tools and resources, was to provide extensive training and advice to learner drivers and those in high-risk groups. Particular attention was given to training which involved risk awareness and an attempt

was made to provide support tools for assessing and increasing cognitive skills in this group of drivers. A novel approach to this project was its objectives to provide training on the use of emerging vehicle based technologies and Advanced Driver Assistance Systems (ADAS). Following an extensive programme of research, using both static and semi dynamic driving simulators, TRAINER's aim was to provide recommendations and best practice guidelines for the adoption of a common European driver training and assessment framework.

Using computing simulations for training was also the aim of the S214G project, which aimed to improve the road behaviour of a group of 5-11 year old pedestrians. In particular, the aim of this project was to evaluate the value of simulation training in addressing particular aspects of pedestrian road awareness by simulating scenarios which trained children in improving their behaviour within four main areas: (i) safe place finding, (ii) roadside search, (iii) gap timing; and (iv) perceptions of others' intentions. Seventy five children from two areas of Glasgow, in Scotland, were recruited for this study. One main aim of the study was to actively encourage participants to make their own decisions, rather than follow a set of rules provided by the programme or trainers.

4.5.3 Research results

A comprehensive review of the transport information and publicity campaigns available across European countries was used to provide succinct guidelines on the most effective method with which to create, implement and disseminate future public awareness campaigns. Using this information, public authorities, public transport operators and various transport related groups across Europe are now able to plan and implement more successful travel and publicity campaigns (INPHORM).

In total, 120 such campaigns were considered by INPHORM, and results showed that some of the most effective campaigns were those which involved partnerships between stakeholders, for instance between transport operators, local authorities and site owners. Campaigns were also thought to be particularly successful if they targeted a specific audience, such as a group of schools or specific neighbourhoods. Such initiatives were found to be particularly successful during 'times of change' which for instance involved relocation of businesses to a new site, or the erection of new housing developments. This project concluded that a campaign would be successful if it was provided with adequate support throughout its lifetime and that a campaign is more likely to be effective if it is accompanied by evidence of success, which would in turn encourage both political and financial support.

A similar approach to the INPHORM project was taken by a related project; CAMPARIE, which developed a software-based tool to provide a summary of public transport

campaigns, which were then used to draw out guidelines on the best model to be used by public authorities and practitioners. A review of six transport related campaigns across Dormagen (Germany), Leeds, Madrid, Nantes, Thessaloniki and Torino demonstrated that such initiatives are most successful if they are related to more than one policy measure. The value of effective communication is also highlighted by this project, which also suggests that for best results, campaigns should be disseminated repeatedly and on regular intervals within a time period. Targeting campaigns to specific groups is also highlighted as a means of ensuring the success of these public awareness initiatives.

An interactive multimedia training tool containing 49 scenarios has been created within the TRAINER project, which also used both static and semi-dynamic driving simulators for driver training. Research involved gathering information on the training guidelines and tools used by 24 European countries, and included interviews with driving instructors and driving assessment experts, as well as a comprehensive literature review and accident analysis of generic data. This project consisted of a prolific dissemination programme, including an international workshop, as well as various forms of publicity material, journal publications and a CD-ROM which contained an extensive compendium of the various driver training methodologies and curricula available across the 24 European countries. An invaluable result from this project was the identification of major gaps in this research theme, with a recommendation of the areas in the novice drivers' training programme deserving further improvement across Europe. The project provides a proposal for a new driver training programme, based on best practice and design guidelines.

The use of computer simulation training programmes to encourage safe decision making by young pedestrians has shown such systems to be very effective in increasing young pedestrians' safe place finding, roadside search, gap timing; and perceptions of others' intentions (S214G). Results showed that children trained by this simulation software were found to be significantly safer pedestrians, compared to their untrained peers.

4.5.4 Policy implications

The TRAINER project significantly contributed to the promotion of traffic safety in the EU. Apart from the reduction of accidents by novice drivers, they will be able to gain driving experience while using the multimedia tool and the driving simulators developed by TRAINER. The work towards identifying the needs of pre-and post-training of professional drivers (bus, truck, taxi, etc.), and the development of related training scenarios has also addressed EU initiatives on traffic safety.

Tackling the human factors issues associated with vehicle control systems, such as the operation of ADAS operated by novice drivers will be greatly facilitated by the automatic capture of driver's errors and analysis within the normative driver behaviour database.

TRAINER has proposed guidelines for driving assessment and training procedures to EC authorities with the aim to establish a common and harmonised driver training and assessment procedure for Europe.

It has been recommended to evaluate drivers who underwent training courses using the TRAINER tools on a long-term basis which would allow for further improvements to the tools and the overall training procedure.

The computer-based training led to substantial improvements in both roadside behaviour and children's understanding in all four skills dealt with, and in all three age groups, with the sole exception of the 6-year-olds on safe places. Even here the safe places training had a positive impact on roadside search performance. The broad pattern of improvements indicates that none of the skills was too difficult for younger children or too easy for older children. There are also cumulative benefits for children working through the whole package in the order employed here. There were other non road safety benefits emerging from this work. Of particular note is the finding that training improved the verbal skills of older children from the higher accident, lower SES (socio-economic sector), area. There are two important caveats. First the results do not amount to evidence that computer-based training could act as a complete substitute for roadside training. There are signs that for younger children in particular, a combination of the two would be preferable. Secondly, the success of the computer-based training is not separable from the adult-group interaction that took place, i.e. how effective it would be if used by individuals has not been tested.

4.6 Sub-theme 5: Fleet and Freight Information Systems

4.6.1 Background

The EXTR@Web project on this sub-theme reports the results of two projects which were both related to the Railway industry. One project developed an information system which provided data on international freight transport to Rail Cargo Companies, Transport Service Providers and Logistics Service Providers. The aim of the second project in this sub-theme was to provide Rail Cargo Operator fleet managers with information on how to best control and enhance the productivity of their wagons.

The research conducted within this sub-theme since the completion of the EXTR@Web project is mostly concerned with providing tools and systems which maximise capacity and increasing reliability of fleet and freight systems, with one project in particular assessing the value of incentives for increasing punctuality in the rail sector. The results of a project

A more reliable and efficient service delivery within the rail industry has been achieved via a Cross Border IT support tool which allows the following features:

- Data exchange is facilitated and information is integrated via a state of the art message broker which allows individuals to use their own existing data;
- The system allows data quality enhancement through a centralised compliance checking;
- Alerts and their reporting are customised, based on user-specified parameters;
- Flexible reporting and query functions on the Consignment, Container, Wagon or Train levels;
- Enhanced Trip and Timetable Monitoring;
- Flexible, user-defined delivery systems: on-line interface, E-Mail, SMS, EDI or direct feed into the user's existing system;
- Enhanced information on delays, departures, waypoints, arrivals;
- ETA functionality.

The study on a Management Framework for Intelligent Intermodal Transport (FREIGHTWISE) showed that the complex nature of booking freight services can be reduced to just four roles and six messages. The roles and messages form a framework which has been named the "Freightwise Framework". This framework identified the four roles in intermodal transport as the Transport Service Provider, the Transport User, the Transportation Network Manager, and the Transport Regulator. The framework utilises six messages: Transport Service Description, Transport Execution Plan, Transport Execution Status, Transport Item Status, Transport Operation Status, and Network and Traffic Status. All the information that is necessary to publish, advertise, plan, book, execute and invoice an intermodal transport service is within these messages.

FREIGHTWISE also developed a reference architecture for freight transport management systems. This architecture covers a set of common definitions and solutions which provide simplified exchange of messages between partners in the intermodal chain, mechanisms for automating decisions, enabling technology for efficient exchange of scheduled information, integration of intermodal planning systems with the commercial environment, and interfaces to traffic management systems (e.g. for planning and incident management). This project is ongoing and by its end in April 2010, it will have provided a tool that allows Transport Users to search among the transport services published in a standard format by Transport Service Providers, and to combine them into transport chains.

A Decision Support Tool was created for the management and handling of ships which have been damaged or degraded due to (i) loss of propulsion (ii) damage to their manoeuvring systems (iii) flooding/damaged stability or (iv) sealoads/hull damage/structural integrity (DSS-DC).

To study the interaction between on board and on shore crew during emergency scenarios a number of such scenarios were created for a tanker and cruise ship with support from interviews with relevant crew members. A “Model for interaction and cooperation on board and on shore during emergencies” was then created as part of this support tool.

A review of tanker and cruise ship “Alarm mapping and alarm prioritization” was also achieved by this project by conducting a review of the types and number of alarms present during normal and emergency situations, as well as the processes used by crew to prioritise these alarms.

One main product of the DSS-DC was the creation of a ‘multi-function console’ (MFC) a stand alone, or integrated emergency and safety management system. The other systems created by this project included:

- Degraded manoeuvring and propulsion, which was a support tool attempting to automatically assess the extent of any disability in the ship by comparing the control signals and the actual manoeuvres.
- The Collision/Hull Damage (CHD) module which provided information on-board and on shore related to the ship’s strength in damaged or degraded condition.
- Intentional grounding (DIG) which provided onboard and ashore information on the consequences of the vessel being grounded or stranded at a given site.
- Technical condition monitoring (TCM), which provided an intuitive presentation of the present technical condition of a system (plant, ship, ship-system, etc).
- Weather and sea routing advice (WRA) and
- Ship-shore communication (SSC), the main aim of which was to reduce workload for the crew with communicative tasks in a degraded condition situation. A second aim of this system was to create a communication which was as efficient and as clear as possible.

Research on the use of incentives for rail punctuality suggests that rail organisations and stakeholders are in favour of an incentive model as a tool for increasing punctuality. However, results also showed that there was generally a lack of agreement between operators on the reasons for such delays, and that at present, a strong correlation does not exist between a particular incentive model and increased punctuality. Whilst incentives models were generally thought to be increasing punctuality, those interviewed thought that the fines associated with delays were currently too high (Incentives for increased rail punctuality).

The STREETWISE project has attempted to increase safety and reduce congestion by providing fleet drivers in Scotland with a Scottish national journey time programme. It has also been successful at installing traveller information kiosks for HGV drivers at strategic points in Scotland and on a ferry link with Northern Ireland. It has also been piloting an own-language information service (OLIS) ‘drive on the left’ warning sign for mainland

European drivers arriving in Scotland, triggered by automatic number plate recognition (ANPR)-based country-of-origin determination.

4.6.4 Policy implications

The design of systems such as CroBIT will allow railways to work more efficiently and competitively whilst tracking consignments more accurately. Cross border communication between Infrastructure Managers and Train Operating Companies across Europe will also be vastly improved, as the CroBIT system processes information delivered directly by participants. Up-to-date information is then retrieved on consignment, container, wagon or train level depending on the user's requirements. CroBIT is able to distribute its information automatically via predefined interfaces or via the CroBIT website. The aim is to provide total shipment visibility.

The simplification in booking proposed by FREIGHTWISE has implications for the management of intermodal freight in that, if the Freightwise Framework becomes a standard tool for managing intermodal transport (as is recommended by the project), the overall efficiency of intermodal transport; including transshipment and integrating facilities, will greatly improve. A standardisation process of the FREIGHTWISE systems under ISO Technical Committee 204 (Working Group 7: General fleet management and commercial freight) is foreseen.

Research suggests that further implementation of incentive models for increasing rail punctuality should be encouraged as rail operators' experience and impression of these was quite positive. One further suggestion for implementation is the creation of incentives for specific critical punctuality moments.

4.7 Implications for further research

This section summarises implications and recommendations for further research, based on some key outputs of the projects reviewed.

Research reported within the sub-theme of "Direction signing and variable message signs" suggested that the implementation of too many VMS signs containing information irrelevant to the road conditions and driving tasks may well reduce drivers' sensitivity to more important tactical messages displayed on these systems. The use of VMS for publicity and travel awareness campaigns should therefore be carefully considered and more thoroughly researched.

Further research on the use of travel information and route guidance systems for disabled passengers is needed. Although research reported in this paper has shown that such systems cannot replace more traditional navigation systems such as white canes and guide dogs, it can be used as a complementary tool for navigation and can therefore increase the mobility of disabled people.

A number of projects investigated the feasibility of developing and validating mobile technologies which would promote the arrangement and selection of multi- and trans-modal trips involving cars, buses, trains and bicycles to reduce congestion and promote more environmentally friendly travel. Research results have shown that whilst the integration of dynamic data for multimodal travel is technically feasible, at present, the provision of such real time information can be patchy, due to the lack of supply of or possession of such data by a large number of travel operators. It is therefore hoped that such multimodal real time travel information and assistance can be implemented throughout the European community.

Research has identified new business opportunities in the potentially enormous info-mobility market for auto-manufacturers as well as mobile service/applications/content providers by analysing, developing, demonstrating and disseminating the following value added services: 3D/4D virtual mobility pre- and on-trip, enhanced location-based services (route guidance, emergency and personal security services, traffic information, etc.) and individualised information packages.

The need for a common and harmonised driver training and assessment procedure for Europe has been identified by research. Guidelines for driving assessment and training procedures have been proposed to EC authorities with the aim of establishing such a framework. It has been recommended to evaluate drivers who underwent training courses using the TRAINER tools on a long-term basis which would allow for further improvements to the tools and the overall training procedure.

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TRANS-3, 'Multimodal Travel Information Service for Trinational Regional Transport', Fifth Framework Programme Research Project.

TRAVEL-GUIDE, 'Traveller and traffic information systems: Guidelines for the enhancement of integrated information provision services, Fifth Framework Programme Research Project.

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UG340, 'Design Guidelines for In-Vehicle Information Systems Producers', Research Project under the 'Department for Transport - Transport Technology and Standards' research programme, United Kingdom. www.dft.gov.uk/rmd/project.asp?intProjectID=9284

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ViKING www.viking.ten-t.com

Annex: List of projects by sub-theme

Sub-theme 1: Direction signing and variable message signs				
Project acronym	Project title	Programme	Project website	Coverage
EasyWay	EasyWay	Euro-regional	http://www.easyway-its.eu/1/	
STREETWISE	Seamless Travel Environment for Efficient Transport in the Western Isles of Europe	MIP - MAP - Multi-annual Indicative Programme (MIP), Multi Annual Programme (MAP)	www.streetwise-info.org	This paper
TRAVEL-GUIDE	Traveller and traffic information systems: Guidelines for the enhancement of integrated information provision services	FP5 - GROWTH - KA2 - Sustainable Mobility and Intermodality	N/A	Covered in EXTR@Web paper
TROPIC II	Traffic Optimisation by the Integration of Information and Control	FP4 - TRANSPORT RTD - Transport Research and Technological Development	N/A	This paper

Sub-theme 2: Real-time driver information systems				
Project acronym	Project title	Programme	Project website	Coverage
COMPOSE	Composition Of Mobile Pre-trip On-trip Services	FP5 - IST - KA1 - Systems and services for the citizens	www.galileo.cs.telespazio.it/compose	This paper
DIAMOND	Delivery of ITS Applications through Multimedia Over Networks Using DAB	FP5 - IST - KA1 - Systems and services for the citizens	www.ertico.com/en/activities/completed_projects/factsheet	This paper

Sub-theme 2: Real-time driver information systems				
Project acronym	Project title	Programme	Project website	Coverage
			s/diamond.htm	
FREIGHTWISE	Management Framework for Intelligent Intermodal Transport	FP6 priority thematic area "Sustainable Development, Global Change and Ecosystems",	www.freightwise.info	This paper
INTRO	Intelligent Roads	FP6	http://intro.fehrl.org	This paper
TRANS-3	Multimodal Travel Information Service for Trinational Regional Transport	FP5 - IST - KA1 - Systems and services for the citizens	N/A	This paper
TRAVEL-GUIDE	Traveller and traffic information systems: Guidelines for the enhancement of integrated information provision services	FP5 - GROWTH - KA2 - Sustainable Mobility and Intermodality	N/A	Covered in EXTR@Web paper
UG340	Design Guidelines for In-Vehicle Information Systems Producers	DfT - Transport Technology and Standards - Department for Transport - Transport Technology and Standards (United Kingdom)	www.dft.gov.uk/rmd/project.asp?intProjectID=9284	Covered in EXTR@Web paper
-	Concept for the integration of an information system for public information on the traffic conditions on state roads	National project – Slovenia	N/A	Covered in EXTR@Web paper
VIKING	-	Euro-regional project	http://www.ew-viking.com/	This paper

Sub-theme 3: Public transport and passenger information systems				
Project acronym	Project title	Programme	Project website	Coverage
COMPOSE	Composition Of Mobile Pre-trip On-trip Services	FP5 - IST - KA1 - Systems and services for the citizens	www.galileo.cs.telespazio.it/compose	This paper
DIAMOND	Delivery of ITS Applications through Multimedia Over Networks Using DAB	FP5 - IST - KA1 - Systems and services for the citizens	www.ertico.com/en/activities/completed_projects/factsheets/diamond.htm	This paper
E1 (NRP41)	Integrated Client Information in Public Transport	National (Switzerland): NRP 41 - Transport and Environment (internal research plan)	www.nfp41.ch	Covered in EXTR@Web paper
FRAMSYN	IT-based real time information guidance-system for the visually impaired	National (Sweden): BV - The Swedish National Rail Administration research and development programme 2000-2005		This paper
MATKA.FI	Journey.fi Public Transport Portal	National (Finland): HEILI - The passenger information programme		Covered in EXTR@Web paper
TRANS-3	Multimodal Travel Information Service for Trinational Regional Transport	FP5 - IST - KA1 - Systems and services for the citizens	N/A	This paper
UG395	Attitudes of Disabled People to Public Transport	National (UK): DfT - Strategy Economics and Mobility - Department for Transport - Strategy Economics and Mobility		Covered in EXTR@Web paper
UG423I	Bus Real-time Information - Business Case Research	National (UK): DfT - Strategy Economics and Mobility -	www.dft.gov.uk/rmd/project.asp?intProjectID=10279	Covered in EXTR@Web

Sub-theme 3: Public transport and passenger information systems				
Project acronym	Project title	Programme	Project website	Coverage
		Department for Transport - Strategy Economics and Mobility		paper
-	An assessment of the effects and cost-effectiveness of a public transport journey planner	National (Finland): FITS R&D Programme on ITS Infrastructure and Services 2001-2004		Covered in EXTR@Web paper

Sub-theme 4: Awareness campaigns and transport training tools				
Project acronym	Project title	Programme	Project website	Coverage
CAMPARIE	Campaigns for Awareness Using Media and Publicity to Assess Responses of Individuals in Europe	FP4 - TRANSPORT RTD - Transport Research and Technological Development	www.ivv-aachen.de/camparie/camparie.htm	This paper
INPHORM	Information and Publicity Helping the Objective of Reducing Motorised Mobility	FP4 - TRANSPORT RTD - Transport Research and Technological Development	home.wmin.ac.uk/transport	This paper
S214G	Computer-Based Child Pedestrian Training	National (UK): DFT - ROAD SAFETY RESEARCH PROGRAMME - Department for Transport: Road Safety Research Programme	www.dft.gov.uk/pgr/roadsafety/research/rsrc/archive/roadsafetyresearchcompendium4722?page=3	This paper
TRAINER	System for Driver Training and Assessment using Interactive Evaluation Tools and Reliable	FP5 - GROWTH - KA2 - Sustainable Mobility and Intermodality	www.trainer.iao.fraunhofer.de	This paper

Sub-theme 4: Awareness campaigns and transport training tools				
Project acronym	Project title	Programme	Project website	Coverage
	Methodologies			
UG354	Levels of activity relating to school travel plans and initiatives (2001)	National (UK): DfT - Local Transport and Regional - Department for Transport - Local Transport and Regional	www.dft.gov.uk/rmd/project.asp?intProjectID=9244	Covered in EXTR@Web paper
-	Review of research on school travel	National (UK): Scottish Executive	N/A	Covered in EXTR@Web paper

Sub-theme 5: Fleet and freight information systems				
Project acronym	Project title	Programme	Project website	Coverage
CROBIT	Cross-Border Information Technology	FP5 - GROWTH - KA2 - Sustainable Mobility and Intermodality	www.crobit.org	This paper
DSS-DC	Decision Support System for Ships in Degraded Condition	FP6-SUSTDEV-2 - Sustainable Surface Transport		This paper
FIRE	Freight Information in the Railway Environment	FP4 - TRANSPORT RTD - Transport Research and Technological Development		Covered in EXTR@Web paper
F-MAN	Rail Car Asset Management	FP5 - IST - KA1 - Systems and services for the citizens		Covered in EXTR@Web paper
STREETWISE	Seamless Travel Environment for Efficient Transport in the Western	MIP - MAP - Multi-annual Indicative Programme (MIP),	www.streetwise-info.org	This paper

Sub-theme 5: Fleet and freight information systems				
Project acronym	Project title	Programme	Project website	Coverage
	Isles of Europe	Multi Annual Programme (MAP)		
-	Incentives for increased rail punctuality	National (Sweden): The Swedish National Rail Administration research and development programme 2000-2005		This paper

Note: This Annex focuses on those projects for which “Information and Awareness” is the primary theme of the research. A much wider set of research projects, EU-funded and national, which have considered information and awareness to a greater or lesser extent, can be viewed online by entering “information and awareness” into the “advanced search” functionality available on the TRKC portal www.transport-research.info.