ATLANTIC / e-Europe 2002

Recommendations on Framework Conditions for the Deployment of TTI Services in Europe

Deliverable D5.2

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- the authors of the 25 national reports on the status of TTI service implementation

- the authors of the 19 Good Practice case studies

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Disclaimer

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Guide to the reader

The authors would like to make the readers aware of a few basic issues, to be borne in mind when considering the recommendations of this deliverable:

- A heavy role is given in to the European Commission and the Member States. Although European and some national policies favour private sector initiative in the implementation of Traveller and Traffic Information services, it has become clear in ATLANTIC that the current policy framework does not yet fully support this approach. Therefore, the recommendations concentrate on the process of adopting an enabling framework for private sector participation.

- The focus of the recommendations is on Traveller and Traffic Information (TTI). We are aware that some of the recommended actions should be taken up in the wider context of Intelligent Transport Systems (ITS). However, we believe that TTI would be an area with a high integrative potential across levels and policy domains and a high relevance for users and policy makers; it could serve as a show case for improving the societal delivery process of Information Society Technologies.

- Achieving the balance between regulation, especially on the European level, and trusting in market forces, is difficult. Our approach has been to favour consensus-based processes which can still deliver a realistic compromise between the need of policy compliance and profitability.

The aim of this deliverable is to identify a process for successful implementation of telematics-based Traffic and Traveller Information (TTI) services in the EU and Central and East European (CEE) countries. A ready-made set of solutions should not be expected from this document.

However we believe to have correctly summarised the goals of the stakeholders in the area of Traveller and Traffic Information, and hope to have found a realistic set of feasible activities to be pursued further, and in commonality, by the various stakeholders from the commercial and policy areas.

ATLANTIC WP5 & WP6: Deliverables overview and relation

The deliverables in ATLANTIC workpackage 5 and 6 provide a structured overview of achievements, findings and conclusions. They equally reflect the methodological approach and the strategy for a targeted dissemination of results and recommendations. With respect to the extent of the information as analysed and documented, the following overview should facilitate orientation and reference for the reader (Table 0.1).

Focused documentation of results

Table 0.1: Overview and relation of WP5 & WP6 deliverables

Italics = high-quality printed edition

Rationale	No.	Title	Target Group(s)
Empirical Analysis	D5.0	TTI Implementation Status Analysis in Europe Vol.I: Approach and key findings Vol.II: National reports Vol.III: TTI service descriptions	All stakeholders of TTI service implementation in Europe
	D5.1	TTI service delivery in Europe - Good practice case studies and key actor interviews	European Commission
Stakeholder discussion	D6.2	Proceedings of expert meetings on TTI deployment in Europe	All stakeholders of TTI service implementation in Europe
	D6.6	Final Conference and proceedings	All stakeholders of TTI service implementation in Europe
Targeted recommendations	D5.2	Recommendations on framework conditions for the deployment of TTI services in Europe	European Commission, decision makers at national level, private sector, European networks and associations
	D6.4	*Practitioner's handbook for TTI service implementation*	*Practitioners of TTI service implementation in European cities and regions (public & private sector)*
Dissemination of results	D6.1	Powerpoint presentation on framework for TTI deployment and eEurope Transport objectives and recommendations for use at conferences and outreach events	All stakeholders of TTI service implementation in Europe
	D6.3	*Good Practice in TTI service implementation (glossy edition)*	*All stakeholders of TTI service implementation in Europe*
	D6.5	*Joint Country reports (glossy edition)*	*All stakeholders of TTI service implementation in Europe*

In order to improve the practical utility of reports and ease the problem of cross-referencing, all deliverables in workpackage 5 and 6 have been conceived as self-standing documents. Since the target groups partly differ, the objective was to provide any reader of the deliverables with all necessary components to comprehend the respective topic and scope without requiring a parallel consultation of reports. For this reason, some chapters have been included in more than one deliverable (Table 0.2).

Deliverables are self-standing documents

Table 0.2: Partial repetition of deliverable chapters

Chapter heading	Content	as contained in (chapter no.)
ATLANTIC objectives and approach	General introduction to the project (for readers not familiar with ATLANTIC)	D5.2 (1), D6.4 (1)
Objectives and vision for TTI service deployment	Present policy orientation and goals at European level	D5.2 (2), D6.4 (2)
State-of-the-art in TTI service deployment	Framework conditions, current status and trends for TTI service implementation in Europe	D5.0 (Vol.I, 2), D5.2 (3.1-3.3), D6.4 (3.1-3.3)
Conceptual frame for implementation	Results of empirical analysis and stakeholder discussions regarding service delivery models, framework conditions and stakeholder positions	D5.2 (4.1-4.3), D6.4 (4.1-4.3)

1 ATLANTIC objectives and approach

1.1 General objectives

ATLANTIC is a thematic network funded by the Directorate General Information Society of the European Commission. The aim of ATLANTIC has been to enhance discussion and knowledge exchange between researchers in the field of Intelligent Transport Systems (ITS) in the US, Canada and Europe. Through the web-based ATLANTIC electronic Forum[1] and international meetings, key individuals involved in ITS research and development have participated in a common benchmarking initiative. This concerns the coverage, content and results of ITS programmes in the participating countries on both sides of the Atlantic.

A particular focus within ATLANTIC has been the analysis of framework conditions required for a successful implementation of telematics-based Traffic and Traveller Information (TTI) services in the EU and Central and East European (CEE) countries. ATLANTIC has aimed to support the European Commission in defining a Community TTI policy through the collation and dissemination of current knowledge and good practice from leading examples of telematics-based TTI services.

Analysis of conditions for a successful implementation of TTI services

Therefore, the work on TTI services within the ATLANTIC project has been targeted at three overall goals:

- To generate a pool of expertise and know-how of TTI service implementation in cities and regions across Europe, analysing regulative frameworks for the information chain, feasible business models, new technological concepts and organisational structures in enabling the delivery of quality TTI.

- To help establish consensus amongst public and private stakeholders on their respective roles in TTI service provision.

- To provide recommendations for European, national and local policy decisions, taking into account the specific interests and objectives of public and private actors.

Knowledge base, stakeholder involvement and policy recommendations

1.2 Operational approach of ATLANTIC

The general objectives have structured the project workplan related to TTI. ATLANTIC has started with a broad information collection campaign across Europe and carried out general analyses as well as detailed case studies. The project has invited all principal actors and stakeholders in TTI service deployment to participate, facilitating the discussion and analysis of key issues between them. In logical order the different work steps undertaken have been:

Work steps and project methodology

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[1] www.atlan-tic.net

- reports on the state-of-the-art, current trends and obstacles in TTI service deployment in 25 European countries have been prepared by national experts and validated by government officials from the respective country. The reports include a total of 187 short descriptions of implemented TTI services based on a common format;[2]

- 45 individual interviews have been held with selected key stakeholders from the public and the private sector in Europe, in order to obtain a detailed insight into crucial issues of TTI service implementation;

- 19 good practice reference cases with particularly positive results in terms of policy compliance, service delivery efficiency and/or user benefits have been prepared, focusing on implementation frameworks and impacts;[3]

- 2 web-based discussion groups on TTI have been moderated, where experts and practitioners exchanged their views and insights on the topics identified;

- 5 Focus Group meetings have been held between April and December 2002 for the discussion of key topics in TTI service deployment, each involving 6-12 stakeholders from the public and the private sector from across Europe;

- 2 major TTI service stakeholder Fora have been organised in parallel to the POLIS annual conference and to the Smart Moving Conference, each involving over 100 participants;[4] and

- 3 final Validation Workshops have been held for the discussion of the ATLANTIC draft recommendations, each involving 6-12 stakeholders from the public and the private sector from across Europe.

All work steps have thus contributed to the final formulation of policy recommendations.[5] To improve their practical relevance and impact, these have been divided into two sets according to the respective target groups and implementation levels:

1. Recommendations on framework conditions for TTI service deployment in Europe, addressing the main stakeholder groups (this report)

2. Recommendations on TTI implementation in cities and regions, addressing practitioners at the local level (See ATLANTIC deliverable D.6.4)

ATLANTIC recommendations for TTI service deployment

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[2] See ATLANTIC D5.0 and D6.5

[3] See ATLANTIC D.5.1 and D6.3

[4] www.polis-online.org

[5] ATLANTIC Tasks 5.5, 6.2 – 6.5

Figure 1.1: Work steps within ATLANTIC: Creating practical knowledge for stakeholders and policy making.
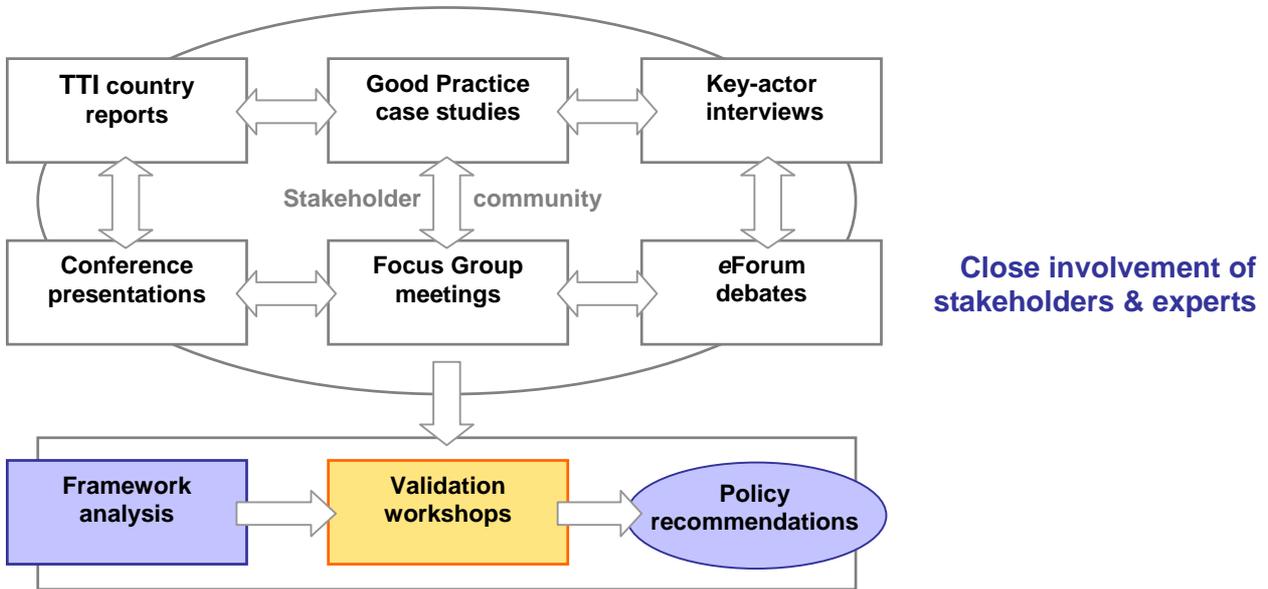
2 Objectives and vision for TTI service deployment

2.1 Policy objectives

Traffic and traveller information (TTI) services are a crucial component of intelligent transport systems (ITS). TTI services are designed to provide relevant information to passengers and freight carriers at the different stages of their journey (pre-, on-, post-trip) and via various delivery channels (phone, internet, VMS, RDS-TMC, etc.).

The development of TTI services addresses a number of interrelated European policy goals that can be divided into two major strands, namely:

1. Sustainable transport development

2. Competitiveness and cohesion

Regarding the first orientation, with its 2001 White Paper on transport policy for 2010 the European Commission defined four overall objectives for transport development:[6]

- Shifting the balance between transport modes

- Eliminating bottlenecks

- Placing users at the heart of transport policy

- Managing the globalisation of transport

2001 White Paper on transport policy

TTI services are expected to contribute to these aims as part of a broader transport development strategy, in particular if related to ITS applications. The policy objectives for TTI service deployment are thus embedded in those for Intelligent Transport Systems (ITS), namely to:

- improve the efficient use of existing infrastructures;

- advance transport safety;

- promote intermodality and modal shift; and

- improve traffic management & control.

Policy goals for ITS and TTI services

More specifically, Traffic & Traveller Information (TTI) services are expected to:

- serve (intermodal) pre-trip planning;

- provide (intermodal) on-trip orientation & guidance;

- facilitate ticketing and billing;

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[6] COM(2001) 370; Annex IV

- address logistics and services related to commuters, travellers, etc. and

- ensure continuity across spatial boundaries.

While empirical statements about impacts based on evaluation results cannot be made at this stage, it is expected that TTI services may influence decisions of travellers about using transport modes and travel routes, enabling multi-modal travel planning and routing in real-time.

TTI services can ensure continuity of information provision across borders, avoiding problems of understanding or interpretation (national legislation, language, icons). They may contribute to improve the efficiency of the transport system and increase transport safety.

Cross-sector policy goals could include, for example, the promotion of competitiveness of the city-region (e.g. the enhancement of IT image and business investment, development of tourism and leisure profile); the promotion of public services (e.g. improving the image of public transport services), or the advancement of social equity and inclusion. Moreover, TTI services can offer users convenient choices for buying value-added services (e.g. location based information).

The second orientation is implied in the strategic objective stated at the 2000 Lisbon summit for the EU to become "the world's most competitive and dynamic economy". This ambitious goal is closely linked to the deployment of information society technologies and the development of a "knowledge economy".

In order to accelerate the development of the information society in Europe and to ensure its potential is available for everybody, the European Council and the European Commission have launched the *e*-Europe 2002 initiative. In February 2002, the responsible EU ministers agreed to extend the *e*-Europe 2002 Action Plan to 2005.[7] The development and implementation of TTI services is linked to most priority areas that have been identified for *e*-Europe:

- implement the new framework for the delivery of electronic communication services;[8]

- build up high-speed communication infrastructures;

- encourage applications for *e*-Commerce, especially in the business-to-consumer sector;

- ensure social inclusion; and

- enhance public information procurement and *e*-Government;

- safeguard secure networks and data protection; and

TTI services can support intermodal traffic management, route planning and guidance across-borders …

… provide added value, improve the image and ensure social inclusion

2000 Lisbon Summit targets

e-Europe 2005: Develop the information society & ensure social inclusion

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[7] COM(2001) 140 final; COM(2002) 263 final

[8] COM(2001) 372 final

- improve mobile communications (3G networks, Galileo).

Stimulating effects for the economy and competitiveness may result in particular from the potentials of integrating TTI services with other services and products, and from the emergence of value-added service providers (VASP) combining multiple data sources to deliver tailored information to their customers. Furthermore, also image effects for cities and regions implementing TTI services play a decisive role ("location factor", "inward investment" issue).

Stimulating economic effects and location policy

2.2 European policy guidance on TTI

2.2.1 Commission Recommendation

Until now, the only EU policy document explicitly addressing TTI services is the Commission Recommendation on the development of a legal and business framework for the participation of the private sector in deploying TTI services, issued in July 2001.[9] This recommendation aim to enhance TTI service implementation by facilitating private sector involvement and developing an open market for TTI services. It suggests in particular the following key tasks for public authorities:

- provide and disseminate a regulatory framework for TTI services;

- adopt principles for access to public traffic data, the exchange of public and private data and the interconnection of transport databases (interadministrative);

- clarify the usage and requirements of proprietary traffic and travel data;

- ensure observance of road infrastructure hierarchies and traffic management strategies;

- create an enabling framework for public-private partnerships; and

- facilitate TTI services and reduce constraints.

2001 Commission Recommendation invites Member States to take action

The focus of the recommendation on facilitating private sector involvement in TTI service deployment provides not only the link between the general policy orientations at sustainable transport development and economic development, it also relates to policy efficiency and effectiveness in general.

Facilitate private sector involvement to achieve policy goals

In this respect, private sector involvement is expected to facilitate public administration tasks, reduce financial burdens on public budgets, improve the quality of services, allow more and faster realisations, and increase the transparency and acceptance of

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[9] C(2001) 1102 final

implementation projects, provided that an adequate policy frame is in place.

2.2.2 TTI related EU policies and initiatives

Apart from the above mentioned, there are a number of policies, programmes and initiatives of the European Union that have an important impact on the further deployment of TTI services.[10] The following examples illustrate the sectoral implications of TTI services:

A revision of the guidelines for the development of the trans-European Transport Networks (TEN-T) is currently under way.[11] While the initial version of the guidelines dating from 1996 already addressed the implementation of ITS, the revision is expected to make ITS a condition for transport infrastructure funding, thus providing a ground for the deployment of basic "infostructure".[12]

Revision of TEN-T guidelines

The implementation of tolling schemes for road user charging is subject to an EC proposal for a directive on this topic.[13] The proposal aims to ensure full interoperability between the different (and partly incompatible) current national systems by 2010. This directive will influence the availability of traffic data and the cross-border delivery of information services.

Proposal directive on road toll systems

In the domain of e-Safety for road transport a working group has been established by the European Commission and other stake-holders in 2001. In 2002 this group published its final recommendations, including the establishment of an e-Safety Forum as a joint platform for all stakeholders to promote and monitor the implementation of the recommendations.[14] For 2003, eight thematic sub-groups have been created, one of which is dealing with TTI. The sub-groups aim to elaborate recommendations and prepare consensus between the different players involved.

e-Safety Initiative

The guidelines for trans-European telecommunications networks (e-TEN) address interoperability, deployment of services and applications of common interest, improving access to all kinds of information and cross-border delivery as priorities, among others. Action line 1 of the e-TEN working programme includes TTI as part of public service procurement and a means to improve its effectiveness, efficiency and quality.[15]

e-TEN guidelines and programme

A considerable impact on TTI service development can also be expected from the launch of the Galileo initiative, providing a system for global satellite navigation in real-time. This system will

Galileo initiative

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[10] For a general overview see also:
http://europa.eu.int/comm/transport/themes/network/english/its/html/index.html

[11] http://europa.eu.int/comm/transport/themes/network/english/ten-t-en.html

[12] *ibid.* decision No.1692/96/EC and COM(2002) 0542 final

[13] http://europa.eu.int/comm/transport/themes/network/english/ten-t-en.html; cf. COM(2003) 132 final;

[14] http://europa.eu.int/information_society/programmes/esafety/index_en.htm

[15] http://europa.eu.int/information_society/programmes/eten/index_en.htm

enable a large number of ITS applications offering referencing and transmission for free and on a commercial basis (service guarantee).[16]

A new Memorandum of Understanding (MoU) is envisaged for DATEX, a standard for the exchange of traffic information widely used in Europe. It is maintained through a dedicated organisation and put up for CEN standardisation. The European Commission is financing a study to identify requirements for modifications of DATEX by 2004, in particular focusing on the availability of data for third parties (service providers). This study will form the basis for a cooperative discussion process involving all stakeholders.[17]

Revision of the DATEX MoU

TTI services are also addressed by the e-Content programme, a market oriented programme which aims to support the production, use and distribution of European digital content and to promote linguistic and cultural diversity on the global networks.[18] This includes the objective of using potentials for the exploitation of public sector information, and thus the development of (cross-border) TTI services. Since the current programme will finish in 2004, there are different options for a continuation, e.g. a split-up of the programme along the various sectors concerned (transport being one of them) or a concentration on common core themes that will have to be discussed.

e-Content programme continuity

Furthermore, also the creation of the European Research Area supported by the 6th framework programme (FP6), as well as the structural funds, accession funds and social inclusion policy respectively have important implications for the further deployment TTI services in Europe.

Further EU policy implications …

2.3   A vision: TTI service implementation in 2010

Promoting new applications and procedures requires a vision to guide development and provide the motivation for change.

Throughout the ATLANTIC project, the broad discussion with stakeholders has led to identify a common vision for the development of TTI services in Europe towards the horizon of 2010.[19] This vision describes a (desired) future status of TTI service implementation in reference to the establishment of a common policy framework, operational features, and the actually achieved service levels.

Vision based on stakeholder debate

This vision provides only a rough outlook on what could be achieved in the years to come, provided that all stakeholders cooperate closely and resolve their respective conflicts of interest. It represents however a benchmark that should guide all actions in

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[16] http://europa.eu.int/comm/dgs/energy_transport/galileo/index_en.htm

[17] http://www.datex.eu.org

[18] http://www.cordis.lu/econtent/

[19] This vision also reflects the results of the DG TREN TEN-T policy/ ITS expert group meeting of 27.6.2002

the field of TTI services. Starting from this perspective it assumes the Europe-wide availability of the following service features by 2010:

- An evolving common European TTI policy framework, relying on emerging public and commercial TTI services, offering the user a choice of service types.

- Europe-wide minimum service standards developed in response to user needs and based on national and cross-border demonstration projects that have been subject to consistent evaluation.

- Relevant data made available from integrated open data platforms that allow a free development of reliable and affordable user-oriented TTI services.

- All information for the user available from single access points, including a wide choice of delivery channels/devices, covering:

  - Personalised information for end-to-end journey planning (pre-trip, on-trip, any mode, intermodal, door-to-door).

  - Comprehensive information about travel- and service costs, integrating all necessary booking options.

  - Real-time journey support (journey options and user-friendly guidance pre- and on-trip).

  - Easy user interfaces, especially for people with a hearing disability or partially sighted, plus multi-language/ language independent support for commercial drivers, travellers and tourists

3 State-of-the-art in TTI service deployment

3.1 Framework conditions

The state-of-the-art regarding framework conditions in Europe shows a complex picture. We find a considerable variety of conditions for TTI service deployment in terms of institutional settings, policy frameworks and regulation, economic and infrastructural development, as well as cultural and cognitive patterns.

Wide variety of framework conditions

In order to identify the influence of framework conditions, the national status analysis reports prepared by ATLANTIC have been reviewed with respect to a limited number of framework parameters allowing only the values of "yes" / "no". This approach has been chosen to provide a rough but comprehensive and condensed overview of the status of framework conditions for TTI service deployment in Europe (Table 3.1). The selected parameters are:

Analysis of framework parameters

National policy

- Status of ITS in national transport policy as an established key element with a dedicated budget?

- Availability of an approved legal framework for the participation of the private sector in TTI service delivery?

- Availability of a national strategy for the deployment of ITS/TTI, addressing stakeholder roles and a general "road map" for implementation?

- Availability of evaluation guidelines for ITS/TTI for the (voluntary or obligatory) use by stakeholders?

- Financiation and realisation of national R&D projects for the deployment of ITS/TTI?

Data availability

- Free availability of public traffic data for service providers?

- Legal possibility for private sector parties to collect their own traffic data?

- Existence of currently operative private value added service providers (VASP's)?

Institutional frame

- Existence of a national "ITS Forum" (formal or informal) for the cooperation of public and private stakeholders?

- Existence of a formal national "ITS association"?

Table 3.1: Framework conditions and implementation levels of TTI services in Europe

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
country	PT	ES	IE	UK	FR	BE	NL	LU	DE	DK	IT	AT	SE	FI	GR	NO	CH	CZ	SI	PL	HU	SK	LI	RO	BU
ITS = key element of transport policy	yes	yes	no	yes	yes	yes (1)	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	yes (2)	yes	yes (2)	yes	no	yes	no	no
Legal framework for private sector	no	no	no	yes	yes	no	yes	no	yes	yes	yes	no	yes	yes	no	no	yes	no	no (3)	no	no	no	no	no	no
national ITS/TTI strategy	no	no	no	no	no	no	yes	no	yes	no	yes	no	yes	yes	no	yes	yes	yes (2)	yes	no	no (5)	no	no	no (6)	no
ITS/TTI evaluation guidelines	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
R&D projects for ITS deployment	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
ITS Forum (open cooperation)	no	no	no	no	no	no	no	no	yes	no	no	yes	no	no	no	no	no	no	no	no	no	no	no	no	no
ITS association	no	yes	no	yes	yes	no	yes	no	no	no	yes	no	yes	no	no	no	no	yes	no	yes	no	yes	no	yes	no
public data available for free	yes	yes	yes	yes	yes	yes	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
private data collection enabled	yes	yes	no	yes	yes	no	no	no	yes	no	yes	yes	no	no	yes	no	yes	no	no	no (4)		no			
private VASP's operating	no	yes	no	yes	yes	no	yes	no	yes	yes	yes	no	yes	yes	no	yes	yes	yes	yes	yes	yes		yes	yes	no
19 GPC's selected		1		3	2		2		1	1	1			1				2	1	3	1				

(1) Regional policy; (2) Not much emphasis on TTI; (3) Being considered in CORVETTE project; Possible in PPP projects; (5) But Information Society Strategy including TTI; (6) In development

The picture emerging on the basis of this analysis allows to draw some general conclusions. Concerning the implementation of the Commission Recommendation, only 9 out of 25 countries have approved a legal framework for the participation of the private sector so far. However, without consideration of the CEE region the ratio would read 9 out of 17 countries, which reflect the general divide across Europe.

9 of 25 countries have implemented the Commission Recommendation

The existence of catalysing organisations such as the 10 ITS associations (6 EU and 4 CEE) or the national Fora in Austria and Germany appear to favour the cooperation of stakeholders and the emergence of legal frameworks as well as a more strategic approach to ITS (strategic deployment plans).

Catalysing organisations favour legal frames and ITS strategies

Conversely, the correlation between the absence of legal frameworks and ITS strategies, and the absence of private VASP's operating is very high: none of the countries without private VASP's actually have either a legal frame or an ITS strategy. Also, the free availability of public traffic data appears to positively influence the emergence of VASP's without being a sufficient condition.

Private VASP's require clear framework conditions

Concerning the regulation of data availability, in most countries public traffic data is provided free of charge to service providers, thus fulfilling one of the basic requirements of the Commission Recommendation. However, so far only 9 countries have approved regulations that allow private sector parties to collect their own traffic data.

Different approaches to private data collection

Interestingly enough this does not always coincide with the existence of a legal framework for private sector participation, since four of these do not envisage private data collection. Apparently there are two different approaches to this topic: a) private data collection is integral part of a legal frame for private sector participation in TTI delivery, or b) the legal frame builds on exclusive (and well–established) *public* data collection and regulates participation of the private sector only for the later stages of the information chain.

Finally, important common features of the framework conditions for TTI service deployment in Europe are the realisation of R&D activities and demonstration projects in practically all countries, based on a great variation of financing models regarding the use of public and private funds, and the total absence of guidelines for the evaluation of ITS/TTI. While the first issue represents an important reference, the latter points to a serious gap in the general deployment process for ITS/TTI.

R&D activities - but no common evaluation guides

3.2 Implementation status

As a result of the variety of framework conditions, there is an equally wide array of TTI services available for commercial and individual users across Europe, offering multiple information content, features, and ways of user interaction. They comprise services free at the point of use, commercial pay-per-use services and less apparent forms of commercial service delivery (e.g. paid by transmission costs). Their coverage varies from pan-European to national, regional and local networks, as well as single mode, multimode and intermodal information.[20]

However, TTI service implementation in Europe is still far from the the vision of TTI described above. The overall quantitative and qualitative results of the TTI service deployment process have remained below expectations, although with considerable regional differences of achievement.[21]

Regarding relative levels of TTI service implementation from a geographical point of view, roughly speaking western and northern Europe show the highest diversity and penetration, followed by a slower take-up process in the southern periphery of Europe, and a substantially lower implementation level in central and eastern European countries.

In spite of all this diversity, some commonalities of general validity can be identified:

- basic TTI services for public transport (static timetables via phone or internet) and for motorways (traffic status in real-time via phone or internet) are becoming a common standard throughout Europe;

- more advanced services for public transport (e.g. next bus/tram/train in real-time; advice on service disruption, inter-modal journey planning) are available only in big cities and medium-sized towns, and for the railways (public & private operators). For private transport, more advanced services (e.g. real-time dynamic traffic responsive navigation; advisories in real-time on incidents on the driver's pre-specified route) are limited to private niche services; and

- only RDS/TMC (public & private) is becoming available Europe-wide.

Furthermore, it should be highlighted that:

- the level of integration and coordination across spatial levels, boundaries and transport modes remains low. Cross-border TTI services are only about to emerge with the help of R&D

Broad variety of TTI services available

TTI service deployment below expectation

Euro-regional differences

Common implementation features

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[20] See also: 25 National status reports and 187 short descriptions of TTI services in ATLANTIC D5.0, and TTI service taxonomy in ATLANTIC D1.1

[21] e.g. an initial goal of e-Europe 2002 was to have TTI services available in at least 50% of the larger European cities

(e.g. Euro-regional projects). In particular, there are still very few multi-modal and intermodal services available covering public and private transport;

- the discussion about and promotion of public-private partner-ship in TTI service delivery has not yet resulted in many joint-ventures and concessions to the private sector;

- most TTI services are free at the point of use - pay-services are the exception;

- so far only very few sustainable business cases have been verified for TTI service delivery, including sponsorship deals and bundling of TTI with other services; and

- for most travellers, broadcast travel news remains the primary means of obtaining TTI.

3.3 TTI service delivery models

The variety of available TTI services as outlined is based on many different delivery models regarding the roles of public and private parties and the organisation of the information supply chain. By analysing this variety, ATLANTIC has identified a simplified typology of models for TTI service delivery consisting of six basic types (Fig.3.1). Their characteristics can be outlined as follows:

- *fully public service* – all tasks undertaken by public authorities; essential for basic services with a high policy relevance (social inclusion, traffic management);

6 Basic TTI service delivery models

- *data pool model* – public data is pooled and offered to private VASP's; complex institutional and technical requirements (es-pecially when integrating also private data), but a strong driver for broad dissemination on multiple channels;

- *public seed funding* – provided for the start-up of services (esp. infrastructures); important in big cities and also for CEE coun-tries;

- *outsourcing of service tasks* – e.g. data collection, processing or transmission to private agencies; important for policy-driven services to maintain control but reduce financial risks;

- *risk sharing public-private venture* – so far only in the frame of R&D projects; creation of mutual trust and a stable alliances is key, but perspectives for risk sharing are uncertain; and

- *fully private service* – focusing utility and convenience for the (paying) user, while policy objectives may not be met or even counteracted; mainly for niche markets.

## Figure 3.1: Basic TTI service delivery models and public/private task divisions

data aquisition	→	data processing	→	information packaging	→	information transmission	→	support & billing

fully public service

data pool model

public seed funding

outsourcing of service tasks

risk sharing in joint commercial P-P venture

fully private service

Public / private task divisions
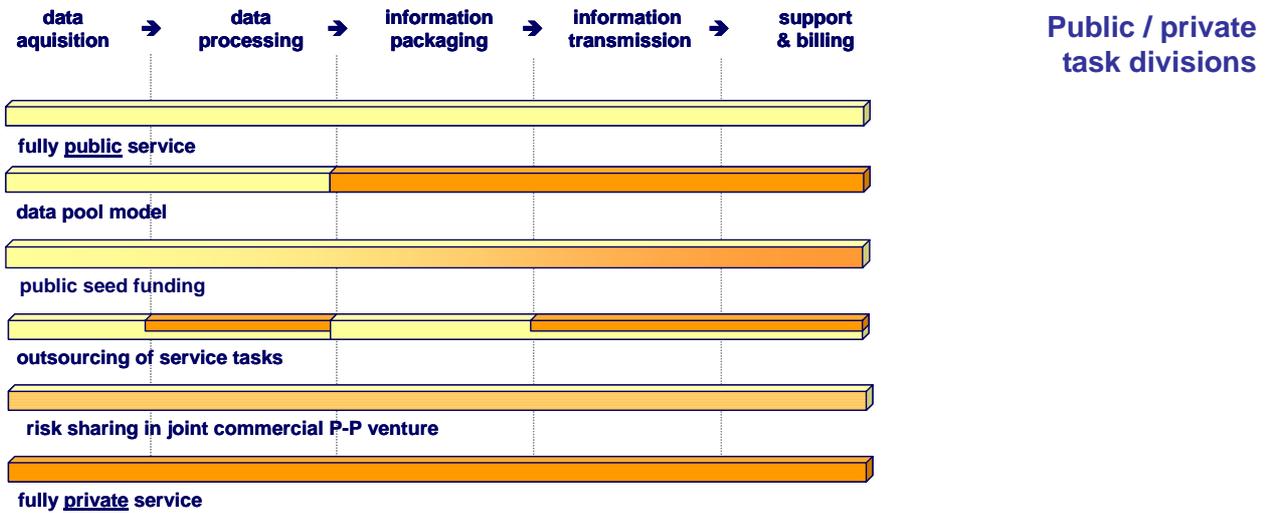
In practice, however, these models hardly ever appear in an isolated form. Within a specific country or region, TTI services are mostly in "clusters" that combine various or even all delivery models (Fig.3.2). The make-up of these clusters reflects the framework conditions in place, in particular the prevailing policy orientation and regulations concerning TTI services, but also the stage of market development.

"Clustered" delivery of TTI services

Figure 3.2: Examples of national/regional TTI service model clusters

data aquisition	→	data processing	→	information packaging	→	information transmission	→	support & billing

public data pool

task outsourcing

basic public services

TMC operation

private exploitation

private data collection

private niche services

R&D projects & partnerships

Clusters reflect framework conditions
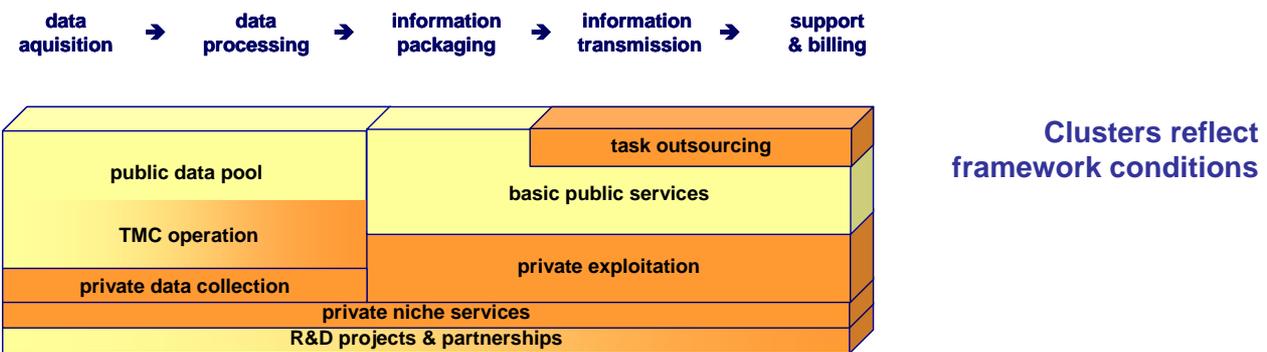
Example 1: West European urban regions

fragmented public data

basic public services

individual public data sources

private exploitation

few private data sources

Example 2: CEE country

3.4 Trends and drivers

With a view to the future development of TTI services in Europe, ATLANTIC has identified the following emerging trends and drivers that will have a significant impact.

3.4.1 Societal trends

Several basic development trends point towards an increasing demand for TTI services. The continued transport growth (business, leisure, cross-border) and traffic congestion create a general need for traffic information.

Growth and differentiation of demand expected

The deployment and penetration of IT applications (internet, mobile communications) will contribute to further lifestyle changes, making information availability – any place, any time – a basic necessity and expectation. These changes also have strong implications for corporate and individual image, which may influence the demand for services that support the desired "identities".

Furthermore, a specific demand growth can be expected through demographic change regarding the increasing share of elderly and disabled persons in society.

Apparently, information provision needs to become more and more individual to reflect these changes and allow the personalisation of contents, channels and delivery formats.

3.4.2 Institutional issues

The gradual emergence of national policies and regulations dealing with TTI services indicate a shift from a technology-driven to a policy-led, but also commercial approach to deployment. The need for the public sector to provide an unambiguous framework for private actors is becoming increasingly recognised. In particular, stronger guidance through EU policy e.g. in the form of a directive is often seen as a potential impetus by national actors. This view has been expressed by stakeholders from the public and the private sector in interviews and expert meetings. Especially stakeholders from CEE countries consider EU policy an important trigger for TTI deployment.

Emerging national policy frameworks

TTI service development supports a number of key public policy themes, namely traffic management and the need to cope with congestion, modal shift, transport safety, economic development, availability of e-infrastructures and services, as well as public sector data exploitation. Each of these policies can provide an important impetus to the deployment of TTI services.

Support by sectoral policies

The introduction of road tolling schemes by various countries will improve the availability of traffic data and facilitate the creation of new services. The road-tolling directive proposed by the European

Road tolling schemes and EU directive

Commission will enhance this trend and particularly pave the way for cross-border services.[22]

Last, but not least, R&D programmes and projects on TTI are providing an increasing stock of knowledge and experience, and bring together the stakeholders from the public and private sectors, but also from various countries and business sectors. Despite many initially disappointing outcomes, there is a growing mutual understanding of the respective interests and the requirements to make TTI service operation commercially and politically sustainable.

R&D improves stakeholder understanding

3.4.3 Market issues

TTI service delivery clearly forms a commercial interest of the private sector across all branches involved. It represents an attractive marketing tool as well as a developing market in itself.

Public and private interest

After the initial focus on developing B2C (business to consumer) services with relatively simple set-ups (which often failed to succeed), actors are increasingly oriented at more complex B2B (business to business) delivery models, involving several partners and creating opportunities for added value. .

TTI is more and more perceived as one element of a "service package" for public administrations, businesses or individual users, comprising traffic management, integrated ticketing or other services and products (retail, tourism, location-based).

From B2C to B2B and service packages

Also the use of TTI as a marketing tool is increasing, for instance to improve the image (business and/or location), support customer loyalty or to promote other services and products.

Furthermore, there is also a growing recognition of the need for a more precise differentiation of TTI service markets and target groups. Thus, a more "mature" TTI market seems to be emerging, characterised by strategic alliances between actors in transport, telecommunications and information publishing, with multifaceted service chains.

TTI as a marketing tool & differentiation of markets

On the infrastructure side especially toll motorway operators see the improvement of customer services as a priority issue in order to meet the expectations of their toll paying users. Moreover, vehicle manufacturers increasingly equip their products with IT accessories (e.g. navigation systems, emergency call) thus enhancing both data collection possibilities through the use of probe vehicle and floating car methods, as well as stimulating demand for TTI services.

Deployment of IT infrastructures

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[22] cf. http://europa.eu.int/comm/transport/themes/network/english/ten-t-en.html; COM(2003) 132 final

3.4.4 Technology issues

Technological change will further the development of TTI services. The use of the Internet is becoming more attractive as capacity and bandwidth are improving (ADSL, optic fibre, 3G and 4G mobile telecommunications). Competition between providers will contribute to lower prices and make the Internet accessible for everyone. At present user rates in the EU are still comparatively low so that there is considerable scope for improvement.

Furthermore, the broad availability of affordable mobile devices (phones, PDA, digital radio) - especially if equipped with broad bandwidth (UMTS) and geo-positioning technology - will facilitate the deployment of all kinds of location based services (LBS). This will partly depend on the pricing policies of network providers and device manufacturers. Apart from the new technologies, in particular the GSM short message service (SMS) has become a very popular low cost channel for mobile information provision (push and pull) with good prospects for further extension.

Floating vehicle data (e.g. tracking mobile phones) is likely to become an important complementary source of traffic data at low cost, in particular for urban areas. Its broad implementation is considered a key to overcome the problem of high investments for data collection infrastructures as basic condition for TTI service generation.

A particular impetus can be expected from the realisation of the EU initiative "Galileo". It will ensure future independence from GPS, improve the overall performance and enable the creation of new services through free positioning and options for guaranteed quality of data transmission.

Internet bandwidth, costs and penetration

Affordable new mobile devices

FVD to overcome data gaps & high costs

Geo-positioning with Galileo

3.5 Problems and barriers

3.5.1 Societal trends

As a general observation, relevant for TTI service development, it has become clear that the learning process of stakeholders involved in the planning and delivery of TTI services has been much slower than the process of technological innovation. This is a crucial aspect as it underlines the limited human capacities to cope with technological change and the need for flexible strategies and approaches, capable of adaptation to both human dimensions and new technologies.

In particular decision makers in the public sector have not become aware of TTI services sufficiently in order to reconsider their choices. The habitual orientation of infrastructure expansion to resolve traffic problems still remains a dominant feature throughout Europe and across all authority levels. To introduce ITS into everyday (transport) policy making processes and thinking therefore represents a key future challenge.

Learning process slower than technological innovation

Awareness and orientation of decision makers

Moreover, language and cultural barriers throughout Europe constitute a major difficulty for TTI service deployment. The effects of the globalisation process on national and regional cultural differences, as well as the enlargement of the EU, gives continuous relevance to this issue. Language and cultural barriers are not easy to overcome in any case, but for services dealing with information they represent a particular difficulty.

Language & cultural differences

3.5.2 Institutional issues

A major drawback for TTI service deployment consists in the often non-existent, unclear, or even impeding legislation and regulations. Concerning data ownership, data exchange, institutional responsibility, liability for the user and data privacy, the absence of clear regulatory references hampers the activity of public and private actors and favours ad hoc and arbitrary approaches or unique, exclusive arrangements.

Legislation and regulation deficits

The issue of low available funds and high implementation costs represents a problem of particular relevance for TTI services. Costly hardware and software developments have been, and are still required to implement TTI services. Restrictions on public expenditure are combined here with high investment risks and an IT market still not recovered from crisis. In addition, the public sector has to deal with the specific problem of limited human resources and the lack of qualified staff.

Low funds – high costs and risks

The organisational structures and practices of the institutions involved are another important problem. TTI services touch upon different policy domains (ICT, economic development, transport) and government levels, competencies and responsibilities (authorities, police, operators, providers). The privatisation and liberalisation of transport services and infrastructure further adds to this institutional complexity. However, TTI is lacking a strong "lobby" and thus becomes subject to friction between the institutions. Especially divide that is maintained between different transport modes has a very negative impact on the development of new services, as it conflicts with the promotion of intermodality as one of the key public policy goals.

Fragmented institutional structures & practice

For various reasons, public administrations and their employees are often not in a position to put "service for citizens" first, or take a pro-active approach to TTI service goals and priorities. Transcending the competencies and everyday-practice of the individual actors would also require more cooperation between administrations (horizontal and vertical), which is often seen as an undesirable complication for TTI. This situation is especially difficult to overcome if there is no obvious institutional or individual "champion" to promote TTI development.

No motivation of public administration & lack of "champions"

For TTI services which have been implemented, a professional quality management of data to ensure the delivery of reliable and valid information is mostly lacking. However, this represents an essential requirement and pre-condition for the development of services in the long-term.

Missing quality management

The public and private sector have a strong but (in some respects) conflicting interest in TTI services, which implies a substantial complication to the deployment process. TTI services are at the intersection between universal public services and business or commercially oriented added value services. On the one hand public authorities need to provide certain services for free at the point of use to better manage the transport systems, especially in difficult or crisis situations, and for safety and security reasons, or to ensure social inclusion.

Public / private interest conflicts

On the other hand value-added service providers (VASPs) are in business to attract paying customers by providing up-to-date travel information (trip planning, travel times, event warning, weather conditions, etc.) in a personalised way. As the boundary between free and commercial services is uncertain, there is an element of competition between both sectors. A public-private partnership for TTI service delivery remains a difficult objective to achieve.

Further rapid development of TTI is also hindered by continuing gaps in the knowledge base. For instance, an understanding of user needs and acceptance is still limited with regard to the variety and context of relevant factors. The effects and impacts of TTI services (especially in relation to key policy goals) are not well demonstrated.Evaluation results are rare or not comparable or transferrable. Also the understanding and awareness of feasible TTI service delivery and business models is not yet very deep.[23] This raises the important point that methods for assessment and evaluation of ITS investment are largely missing or are used only by a limited number of actors

Knowledge gaps

3.5.3   Technology issues

Technological change acts not only as a driver, it also introduces new risks. For TTI service deployment a key concern consists in making the "right" choices for technologies at all levels (data collection, data processing tools, data formats and exchange protocols, dissemination channels) without losing the flexibility for future adaptation. As the (so-far) unsuccessful deployment of WAP illustrates, difficult decisions have to be made e.g. regarding Floating Vehicle Data, dta exchange standards or the use of 3G mobile communications.

Technology risks

Furthermore, a common data and communications architecture, with standardised interfaces, is currently missing. This is not only the case for Europe as a whole, but in practice for many nation states. It's absence complicates the communication between traffic management centres and service providers and impedes the development of intermodal and cross-border TTI services.

Fragmented architechtures

Regarding data availability the present gaps of data coverage and incompatibilities between data sets represent important obstacles. Especially between different transport modes, between urban and

Missing data & exchange

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[23] ATLANTIC is actually one of the first R&D projects exploring this field in depth

inter-urban networks and across national borders, the lack of data and data exchange is highly critical.

At the end point of the information chain, it is especially the user friendliness of the human-machine interface (HMI) and the clarity of information presentation that influences TTI service development – so far negatively. Experience – e.g. with kiosks or WAP – underlines the importance of a user-oriented service and interface design.

Interface design deficits

3.5.4 Market issues

The market for TTI services is developing very slowly. At present user demand and willingness to pay are still fairly low due to a combination of low awareness and poor understanding of TTI on the one hand, and high expectations on the other. The small size of the market is also aggravated by the limited availability of TTI infrastructure and the means of delivery to the user i.e. new and affordable mobile devices or vehicles equipped with a "telematics box". Furthermore, much demand is concentrated in the urban agglomerations and along major transport corridors, whereas for rural areas there is no strong TTI service market.

Small market & slow development

Telecom operators could be important agents for the deployment of TTI services. However, the enormous investments for UMTS licences have put a brake on investment in TTI. The main focus on airtime selling does not, of itself, lead to the development of attractive (TTI) services, but has mainly resulted in the promotion of leisure applications. In addition, different operators are using different location referencing methods, thus complicating the provision of location-based services and roaming options.

Role of telecom operators unclear

4 Conceptual frame for implementation

4.1 Stakeholder positions

The most important aspect for the deployment of TTI services in Europe is the harmonisation between the positions of the principal stakeholder groups. Only if their motivations and interests can be brought into line, a successful development of new TTI services can be expected. Regardless the multiple differences between singular institutions or individuals concerned, three groups should be distinguished here (Table 3.2):

- In the first place, the actual users (corporate or individual) require TTI services oriented at their real needs. Expectations regarding service quality, reliability and availability (dissemination channels) are very high. The willingness to pay for services strongly depends on the actual and perceived utility of the service as well as on image factors. The accepted costs, however, do usually not correspond to the actual costs of service generation and delivery – a viewpoint favoured by traditionally free public service delivery.

**User groups:
Cost versus utility**

- The public sector aims to use TTI services as a multifaceted tool for various objectives and strategies, although these are often not made explicit. Depending on the authority level the genuinely public interests in TTI service development are justified with impacts in the areas of traffic management and modal shift, economic development, business location image and social inclusion. For this, the involvement of the private sector represents a declared objective to limit public expenditures and increase efficiency.

**Public sector:
Cost versus public
benefit**

- The private sector branches relevant for TTI service implementation share the objectives of marketing their products/services through TTI, entering a future growth market and/or developing a new profitable business area. In this, private actors heavily depend on the framework conditions established by the public sector, which are usually seen as an obstacle to the free market. On the other hand, differences between branch-specific interests imply equally differing orientations and priorities when it comes to define new TTI service delivery models, thus also requiring strategic agreements.

**Private sector:
Investment
versus profit**

Apparently, all three stakeholder groups mutually depend on each other for the development of TTI services. To establish the information chain, ensure policy compliance and value added creation, and to attract sufficient users requires a shared understanding of the described stakeholder positions and interrelations (Figure 3.3).

Table 4.1: Overview of stakeholder strategies and interests

| Stakeholder	Strategies & interests
User groups	
Travellers	information accuracy, non-transport content, seamless delivery, no cost (virtually), specific needs and requirements: elderly, disabled, young people, families, commuters, business travellers, tourists, etc.
Freight operators	fleet management, information accuracy, seamless delivery, long-term availability, least cost
Public authorities	
European Commission	interoperability, data availability, market development, transport policy
National ministries (IT, economy, transport), local/regional authorities	traffic management, modal shift, economic development, business location development, image improvement
Private sector	
Value added service providers (VASP)	data availability and quality; freedom of information re-packaging and service delivery, customised services, various business models
Transport operators	customer loyalty, modal preference, protection from performance control, data selling, (B2C)
Infrastructure operators	customer loyalty, modal preference, data selling, (B2A), (B2B)
Mobile network operators	air time selling, (B2C)
Vehicle manufacturers	customer loyalty, branding and marketing, competitive advantage (USP), regulation (HMI), premium services
System and software developers	data and interface standards, sophisticated applications, public sector dependence
Content providers	content-rich services, customised services, (B2A), (B2B)
Device manufacturers / OEM's	data and interface standards, regulation (HMI)

Figure 4.1: Stakeholder positions and interdependencies
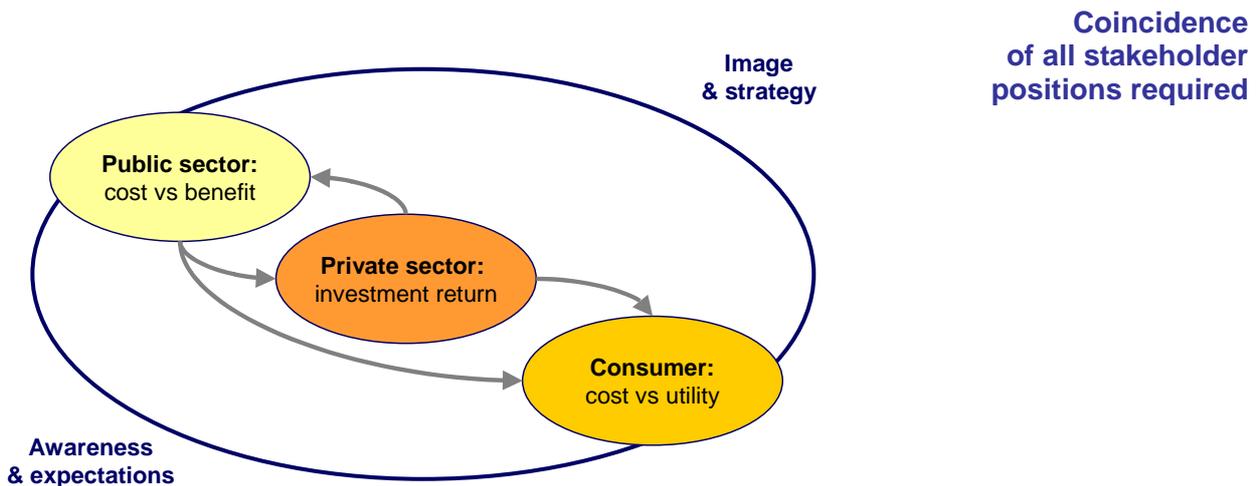
4.2 "Building blocks" of TTI service implementation

ATLANTIC has aimed to develop a more comprehensive view of the complex process of TTI service implementation, its basic conditions as well as the detail implications. Problems and obstacles, risks and potentials, possible approaches and solutions across all levels have been discussed with stakeholders from the public and the private sector throughout the project. The sectoral dimensions of implementing TTI services have been explored in their own right, and in respect of the interdependencies (Figure 4.2).

Sectoral implications of TTI services

Figure 4.2: Multi-sectoral dimensions of TTI service implementation
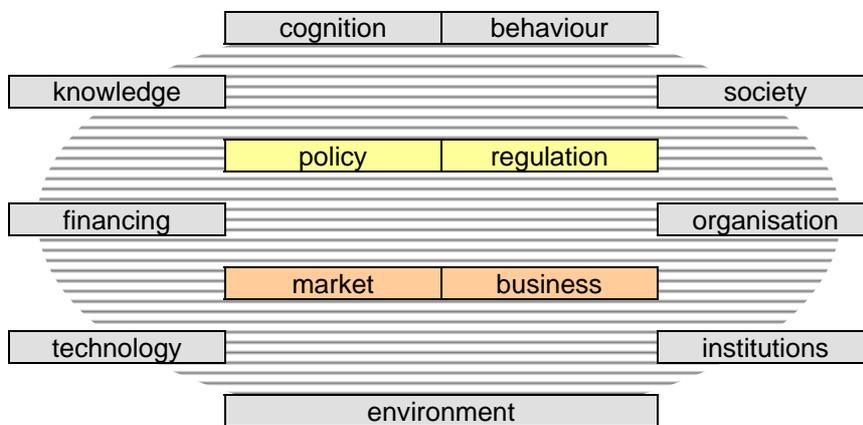
This analysis has led to suggest a simplified conceptual frame that highlights the reasoning of the key stakeholder groups (public sector, private sector, individual), the conditions of implementation and the characteristics of the respective service as mutually dependent "building blocks" (Figure 4.3).

This frame assumes that successful TTI service implementation largely depends on whether all stakeholders have answered the following four interdependent questions, not only for themselves but also for the other actors involved:

Four questions for implementation

- what level of service should be achieved - in terms of content, coverage, depth and quality, user interaction and product development? A precise description and analysis has to be developed;[24]

What level of service?

- what are the impacts that can be expected from the implementation of this service? From a public policy perspective this will require e.g. clarification of the different goals served by TTI, while also making explicit the benefits for users (corporate or individual);

What are the impacts?

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[24] cf. ATLANTIC D1.1 – TTI service taxonomy

- what justifies the required investments for service planning, roll-out of user terminals, infrastructure and organisation? Here the public sector, if it is to be active, has to demonstrate the public character of the expected benefits, while private actors will focus on profitability, revenue potential and strategic market perspectives; and

- What shapes the practical implementation of the service? This requires taking into account the general framework conditions (institutions, regulation, "IT culture", market development, available services, etc.), as well as the concrete options for setting up the service (partners, technologies, delivery models, etc.)

The suggested conceptual frame is not only relevant for practical implementation of TTI service; it is equally guidance for policy and strategy development. This means taking into account every "building block" and the related stakeholder calculations in order to provide an enabling framework for TTI service deployment.

Figure 4.3: TTI service "building blocks" to be considered and coordinated for successful service implementation:
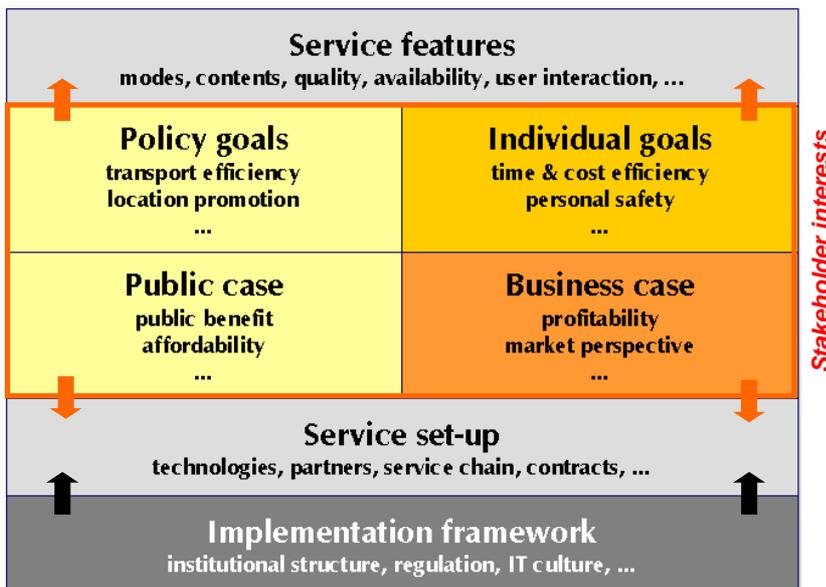
5 ATLANTIC recommendations

5.1 Goals and instruments for implementation

Through the discussions with stakeholders, the ATLANTIC project team has identified a number of overall goals for TTI service deployment that should guide action at all levels and across sectors. These goals appear to be the common ground on which all stakeholders are willing to cooperate. The suggested TTI service implementation process is therefore oriented at achieving the following overall goals:

Shared goals for TTI service implementation

G_1	Develop clear policy statements and a rationale for TTI service implementation.	I_1, I_2, I_3, I_8
G_2	Reach consensus between stakeholders on their respective roles.	I_3, I_4
G_3	Raise the profile of TTI in sectoral policies and programmes.	I_1, I_2
G_4	Expand the availability of data.	I_4, I_6, I_7
G_5	Improve the financial feasibility.	I_1, I_2, I_7
G_6	Enhance the coordination process on system architecture, interfaces and delivery practice.	I_3, I_6
G_7	Foster the development of intermodal content and services.	I_1, I_2, I_5, I_6
G_8	Increase the rate of successful take-ups and transitions from development to "business".	I_5, I_7, I_8
G_9	Develop a more entrepreneurial culture.	I_1, I_3, I_4
G_{10}	Aim for flexible and cooperative service developments.	I_3, I_4, I_5, I_8

For the practical achievement of these goals, eight corresponding instrumental areas have been identified that need to be used in principle. The detailing of the implementation process as goals and instruments aims to facilitate operationalisation and to provide a structured reference for the formulation of policies and the coordination of actions:

Instrumental areas for implementation

I_1	ITS/TTI policy	G_1, G_3, G_5, G_7, G_9
I_2	RTD and mainstream policies	G_1, G_3, G_5, G_7
I_3	Consensus support actions	$G_1, G_2, G_6, G_9, G_{10}$
I_4	Awareness raising and training measures	G_2, G_4, G_9, G_{10}
I_5	Benchmarking, good practice & delivery model development	G_7, G_8, G_{10}
I_6	Laws and (self-)regulation	G_4, G_6, G_7
I_7	Financial incentives	G_4, G_5, G_8
I_8	Evaluation and assessment	G_1, G_8, G_{10}

5.2 Towards an overall strategy for TTI service deployment in Europe

The ATLANTIC recommendations presented here outline an overall strategy for the deployment of TTI services in Europe. Ranging from basic framework conditions to concrete measures, the structure of the recommendations reflects the intended process of coordination between stakeholders and a gradual implementation across all levels.

Strategy for the deployment process

Due to the interdependence of measures and the different starting points for each country/region, this cannot be presented as a clear chronological programme; however it provides a focused overview of all actions and actors to be coordinated.

The ATLANTIC project team has formulated ten recommendations that are translated into 28 suggested concrete action items. Each recommendation is accompanied by a rationale and reference to the present status quo that explains the validity and relevance of the recommended measures.

Ten recommendations for coordinating actions & actors

If the responsibility to take action can be assigned to particular stakeholder groups, this is indicated explicitly to clarify the respective roles and tasks in the overall process, and to achieve high practical utility and significance. This is particularly important since all recommendations need a "driver" to actually become implemented. Responsibilities in this respect have been identified for both public and private sector organisations.

Roles and tasks of stakeholder groups

The order of the recommendations reflects that TTI service deployment requires to organise a process, starting with the most fundamental conditions and developing towards more specific arrangements. Despite this implicit hierarchy, *all ten* recommendations need to be fully taken into account as necessary components for a successful realisation of the suggested TTI service deployment strategy.

Necessary components of the deployment process

As the various issues discussed under the recommendations are closely interlinked, some slight overlaps between recommended actions under different headings could not be avoided.

The focus of the recommendations in this report is the European and national level of cooperation and decision making. Issues and recommendations of specific or exclusive importance for CEE countries are contained in Annex II. The local and regional level is addressed by specific recommendations published in a separate report (ATLANTIC deliverable D6.4 – Practitioner's handbook for TTI service implementation in European cities and regions).

Focus on European and national level

Finally, in order to have a significant impact it is of crucial impor-
tance to have (at least) these ten recommendations translated into
all offical languages of the EU and the accession countries.
Translation is the basic condition to ensure that stakeholders
throughout Europe can actually take the recommendations into
account. As this task exceeds the brief of the project, ATLANTIC
advises the European Commission to provide the required funds
and realise the translations as soon as possible.

**Translations into all
official languages
urgently required!**

The ATLANTIC project offers the following recommendations on
framework conditions that will be dealt with in detail below:

**ATLANTIC
recommendations
overview**

1. **Establish a European consensus building process for TTI
   service deployment.**

2. **Advance TTI policy formulation and promote mainstream-
   ing of TTI into sectoral policies.**

3. **Co-ordinate a policy-driven TTI service deployment
   strategy and planning process.**

4. **Create a knowledge base on TTI service impacts.**

5. **Develop common TTI service performance criteria.**

6. **Regulate data acquisition and exchange.**

7. **Define a "bottom line" for private and public TTI services.**

8. **Make public funds available by increasing the policy
   relevance of TTI.**

9. **Create awareness and provide training.**

10. **Promote TTI service benchmarking and Good Practice.**

Establish a European consensus building process for TTI service deployment.

This process should be based on the needs of leading actors and key stakeholders, focused on the mutual recognition of interests, the creation of commitment to Europe-wide TTI deployment and the common definition of targets & actions in the form of a Memorandum of Understanding.

1

Rationale

The prime objective of the EC Recommendation on TTI was to enhance and harmonize TTI service deployment by facilitating private sector involvement. This general goal has only been achieved to a limited degree. While private sector initiative has implemented important services in niche markets, some B2B and value-added services, a strategic approach is needed that avoids the shortcomings of the current practice, bringing base-line TTI deployment to the whole of Europe.

Most importantly, what remains unsolved is that the different interests of the three main stakeholder groups - public sector, private sector and users – are balanced against each other in order to achieve successful TTI service implementation.

Users expect high-quality service delivery, yet without having to pay up front for it. In turn, the public sector targets an (often diffuse) set of policy goals as the justification for developing TTI services but success depends on user acceptance and sometimes on additional private sector resources. Finally, the private sector seeks to achieve a return on investment by providing value-added services or using TTI as a marketing tool, depending on public policy and user's willingness to pay. In addition, decisions to invest or use new services are influenced by considerations of image and strategy.

A convergence of the stakeholder positions can only be achieved through a process of communication and exchange based on mutual trust. This requires a structured approach open for all stakeholders. Furthermore, the subsequent implementation of the achieved consensual measures also needs to be ensured by adequate instruments.

Interdependency between stakeholder groups

Actions

1.1 Create an independent central body as a driving force for TTI deployment in Europe.

There needs to be a "European TTI forum" or "standing conference" that acts as a catalyst, bringing stakeholders together, disseminating information and fostering the implementation process according to an overall schedule.

From the outset, the independence of this forum from existing organisations or institutions needs to be ensured to achieve a high level of credibility and trust by all stakeholders and to avaoid a biased process. It also needs to work closely with lead organisations involved in operating TTI services at the national level.

Without a central driver taking charge of TTI deployment at the European level, Member States and subsidiary authorities cannot be expected to

Responsibilities

European Commission
(*to initiate*)

All stakeholder groups to participate

know in detail the actions needed in the field of TTI. The forum will need to observe the principle of subsidiarity and work to overcome hindering frictions between European regulation and local implementation, and between sector interests.

The initiation of the "European TTI forum" will be a pre-condition and major instrument for implementing the policy recommendations of the ATLANTIC project. Intentionally, the remit of this forum has been limited to traffic- and traveller information rather than generally ITS in order to avoid overlap and "competition" with existing institutions, as well as to provide sufficient focus for an efficient delivery of its goals.

1.2 Ensure broad involvement of all stakeholders through representation and consultation.

European Commission

The "European TTI Forum" should be constituted by members of established networks and associations, representing user groups, public authorities, operators, industry and service providers. It should provide advice about stakeholder involvement at all authority levels and define criteria to ensure well-balanced participation.

The "European TTI Forum" should act as an independent "agent" of all its members' interests. However, it will need to focus on developing concrete guidance and facilitating coordination without limiting itself to a platform for the exchange of "ideas".

1.3 Coordinate parallel action at all authority levels through an integrative policy development process.

All stakeholder groups

The remit of the "European TTI Forum should be to develop a European Memorandum of Understanding (MoU), respecting the needs of the major stakeholder groups and identifying concrete targets and responsibilities. It should also agree on mechanisms for establishing progress against its targets.

The development process for the MoU should be based on the European Open Method of Coordination (OMC), which has been successfully applied in other policy fields e.g. since 1997 in developing a common European strategy for employment. Principles of the OMC are:

- involve all levels of government and representatives from all stakeholder groups;
- identify and build on examples of good practice (using the ATLANTIC results)
- define indicators to measure progress against common goals
- agree a common strategy, but require adaptation to the respective implementation levels (national, regional, local)

It is expected that the ATLANTIC recommendations will provide first input to this process. Its results should be concrete agreements on priority actions, respective responsibilities, and targets for TTI implementation in Europe.

The TTI forum will also have to decide on the most appropriate form of "ratification": Whether a Memorandum of Understanding on the European level would be realistic and sufficient, or whether multi-partite contracts. e.g. for specific pan-European services or for local/regional cross-border services should be considered as necessary. The institutions represented in the TTI forum should actively promote signing by their members.

Advance TTI policy formulation and promote mainstreaming of TTI into sectoral policies.

TTI service deployment requires dedicated policy formulation as well as emphasizing TTI service implementation in other European and national policy domains and programmes to foster a more coordinated and integrated approach.

2

Rationale

The goals associated with the implementation of TTI services by the public sector are often not sufficiently explicit or not clearly based on higher-level policy goals. This is an obstacle to integration across modes and administrative boundaries and prevents an assessment of how TTI can contribute to wider policy fields.

Neither at the national nor at the European level there is guidance on basic conditions, which would help to secure minimum service delivery levels for European travellers in the future, especially on the trans-European networks. Differences in TTI service delivery levels are very significant within the EU and will increase substantially after accession of the new Member States.

Furthermore, there is a lack of integration regarding policy domains concerned. Various policies, programmes and initiatives where TTI could have a direct impact or relevant implication are implemented in parallel. This involves not only missed opportunities for synergy between policies and programmes, but also efficiency losses or even counterproductive effects. Given the multiple objectives linked to TTI, cooperation and coordination need to be improved and TTI issues should be considered explicitly in other policy fields ("mainstreaming") and "intervention areas".

Actions

Responsibilities

2.1 Make public authorities aware of the wider policy relevance of TTI services and of the need to make TTI policy formulation a priority.

European Commission
Member States
Local/Regional Gov.

Public policies should be increasingly developed in an integrative process by involving a wider range of representatives – both in terms of hierarchies and sectoral fields. Provision of mobility-related information has potentially wide implications for society, but also requires wide cooperation in order to be successful in the long-term.

The aim of this process should be stronger integration of policies (as a general objective) and a better rooting of TTI in the overall goal set (as a specific objective). To initiate this process, the following domains and items need to be covered:

- *transport*: intermodality, traffic management, traffic safety;
- *social inclusion*: different user groups, spatial coverage, HMI;
- *information society technologies*: e-services, mobile communication, public data exploitation, data exchange ;
- *economic development*: structural change, competitiveness; and
- *research & development*: specific knowledge gaps.

2.2 Review European and national policies, programmes and funds across all sectors in the light of TTI integration.

<div align="right">European Commission
Member States</div>

As a starting point, the review should create awareness and highlight potential impacts and synergies with the following areas and a view to maximising the financial incentives for TTI roll-out:

European level:

- TEN guidelines
- Road tolling directive
- s-Safety Forum
- DATEX MoU
- Galileo initiative
- e-Europe 2005
- e-Content
- Structural funds (ERDF)
- Cohesion funds

- Accession funds (e.g. ISPA)
- Social inclusion, knowledge society
- Research and development (e.g. 6th Framework Programme)

National level:

- TTI relevant policies (see 2.1)
- specific regional initiatives

3

Co-ordinate a policy-driven TTI service deployment strategy and planning process.

TTI deployment strategies and plans should be developed at the national and the local/regional levels for the specific needs of the agencies and organisations concerned, and should be co-ordinated in a European road map.

Rationale

Making TTI an important element of public policy in the relevant domains represents a basic requirement. However, developing a strategy goes considerably beyond this initial step, and this is often not recognised. Very often, important actors are not sufficiently involved, the communication process is limited, actions and priorities are not identified and responsibilities remain unclear.

The implementation of TTI is affected by so many factors that it requires a strategy to pave the way from goal definition to practical realisation. Strategy development thus needs to be specified for all public sector agencies and organisations concerned with a view to the particular requirements of TTI service deployment.

Actions

Responsibilities

3.1 Propose a European "road map" for TTI service implementation.

European Commission & TTI Forum

Building on the principles of the European MoU on TTI, a more concrete and committing "implementation plan" or "road map" should be proposed by the EC in close co-operation with the TTI Forum. The road map should focus on the planning for services on the pan-European and Euro-regional level (e.g. cross-border services impacting on more than two countries) and most importantly definition of a strategic policy reference framework of the EU harmonising national / regional approaches.

All statements should define measurable parameters and attribute clear responsibilities. The overall schedule should envisage targets such as:

- Availability of national TTI action plans for all Member States by 2005.
- Establishment of a European network of intermodal national Traffic Information Centres by 2008.
- EU-wide coverage with basic multimodal TTI services by 2010.

3.2 Endorse TTI strategy development through public authorities.

European Commission
(*Member States*)
(*Local/Regional Gov.)*

Public authorities should be persuaded of the need to develop TTI strategies at the national, regional and local level, and the importance of ensuring broad stakeholder involvement. They should be supported in organising and carrying out these activities. This process should comprise the following work steps:

- identify actions and priorities;
- set development targets and stages of achievement;
- attribute clear responsibilities;
- agree an individual "road map" for implementation;
- develop a risk management approach (financial, technical, organisational, social and environmental); and
- carry out monitoring of the implementation process.

The full spectrum of recommended action on the service implementation level is presented in the ATLANTIC deliverable D6.4 - Practitioner's Handbook for TTI service implementation in European cities and regions.

Create a knowledge base on TTI service impacts.

Sponsor the development and wide application of standard evaluation and assessment methods for TTI applications to make costs and benefits transparent and comparable, and to create a solid basis for decision making.

4

Transferable results from ITS evaluation are not yet widely available. This is an obstacle to deployment. For many TTI applications, actual costs, and impacts have not been demonstrated so far, particularly the recurring costs attributable to maintaining a 24 hour, 7 day a week operation. Systematic evaluation and assessment must be done thoroughly and requires specialist expertise. Impacts must be assessed on a longer timescale than standard project life cycles usually permit.

One important reason for sponsoring evaluation and assessment at the European level is to develop a European database of TTI costs and benefits. Furthermore, the results from European and national R&D projects employ different evaluation methods with different priorities and methods. This makes orientation for stakeholders difficult and increases the risks of long-term investment decisions.

Most evaluation methods currently in use concentrate on economic and efficiencyaspects, (safety, travel time savings, journey time predictability) but neglect the social and environmental impacts, costs and benefits. The focus on short-term monetary input/output schemes also distracts from the assessment of the performance over time. This requires a reorientation and methodological developments towards multi-criteria analysis (qualitative as well as quantitative) that is useful for decision-makers.

Substantial differences exist between delivery models for TTI services across Europe and the roles of the public and private sector therein. The evaluation of ITS/TTI thus needs to adapt to the respective implementation context while maintaining transferability of results.

Actions

Responsibilities

4.1 Support an international think-tank for exchange on ITS evaluation, building on the IBEC group.

European Commission
Member States
IBEC group

The IBEC (International Benefits Evaluation and Cost - Cooperative Working Group) has been established through ATLANTIC, and is currently continued through financial support from the UK Department of Transport. It forms an excellent starting point to foster exchange and focus research on evaluation issues.

Its scope and membership sholuld be widened in order to include a wider professional representation (e.g. national and European evaluation societies) and their expertise on more mainstream policy evaluation methodologies and access to base line data held by various research and statistics institutions.

4.2 Establish a standard set of European evaluation methods and indicators for TTI.

European Commission
Member States
IBEC group

This method needs to address in particular:

- End-user requirements
- Intermodality performance
- Transport impacts (modal shift, congestion)
- Economic, social and environmental impacts, costs and benefits
- Relative monetary value of TTI (depending on context)
- Cost / benefit distribution among partners, depending on the service delivery model

Based on experiences, e.g. in RTD projects, a set of indicators and associated assessment tools should be agreed via the IBEC group. Methodology and data gaps should be identified as a first priority.

Users of evaluation results should be involved in order to ensure a high level of relevance for decision making.

4.3 Create a European ITS/TTI cost/benefit database and make evaluation results broadly available.

European Commission
IBEC group

Drawing on US experiences, the creation of a single portal that integrates all available materials should be envisaged ("www.its-cost-benefit.eu").

Beneficiaries of European and national public research funding should be contractually obliged to report key results in a common format for publication in the cost/benefit database.

An "institutional home" will have to be found for the ITS / TTI database, which ensures a high level of quality and independence.

Obviously, the scope of the cost/benefit database will need to reach beyond TTI, and cover the wider area of ITS. However, it should emphasise policy aspects and not restrict itself to technology assessment. Its mission should include to act as a trusted provider of factual information in support of (private and public) decision making.

Develop common TTI service performance criteria.

Define a multimodal and interoperable European ITS/TTI architecture and enhance the process of standardization towards open interfaces, data exchange and harmonised terminologies.

5

Rationale

Understandably, commercial operators and service providers are protecting their know-how and content through proprietary copyrights and exclusive data exchange arrangements. Equally, public operators feel urged to implement cost-efficiently and are often less concerned whether a system meets standards or facilitates data exchange beyond their own needs.

However, in contrast to the common assumption that free competition reuslts in a high number of services, the number of TTI services from which users can choose is limited – for many reasons – and there are numerous technical solutions, often disregarding agreed standards. This is even more surprising considering that major global ITS suppliers are based in the EU.

Neither the formalised process of standardisation nor less formal arrangements or RTD activities have resulted in performance-based system service "standards", clear requirements towards providers of how to meet policy needs (e.g. safety, incident responses, compliance with traffic management strategies), customer-focussed product development (especially of public services), or last not least active support of common European policy goals (e.g. intermodality, common service levels on the trans-European road network).

An even conceptual European TTI or ITS system architecture is not available, while some Member States have begun to develop their own concepts.The lack of commonly agreed compliance and performance criteria and terminologies has become a barrier to deployment and innovation.

Actions

Responsibilities

5.1 Define clear compliance criteria for TTI systems and services.

European Commission

As the issue of a European TTI system architecture is more appropriately addressed in the wider context of an IST architecture, a first specific step re. TTI would be to define the basic compliance criteria of TTI systems and services, ie. what should be the minimum requirements in terms of :

- Interoperability and data exchange
- Intermodality
- Future adaptability and innovation

5.2 Define performance requirements for a European multi-modal "TTI architecture" in dialogue with stakeholders.

The second step would then consist of defining the basic performance requirements of a future "European TTI architecture". As this issue cannot be dealt with in separation of a wider (future) discussion on a European IST system architecture, ATLANTIC recommends to focus on the most critical aspect in terms of TTI: how to arrange for multimodal information delivery and what should be the basic performance requirements.

Due to the very nature of multimodality these agreements need to be based on a broad involvement of stakeholders (incl. for example value-added service providers, end users, policy makers). Its institutional frame could be a "TTI architecture WG" of the TTI Forum.

As a specific topic also options for making stronger use of open source software should be addressed.

European Commission
Member States
Standardisation Com.
Industry
Operators
VASP's

5.3 Establish a common terminology for TTI (and ITS).

This should build on available results, e.g. from PIARC, UITP, and several EU-projects).

European Commission
Standardisation Com.

Regulate data acquisition and exchange

Provide a basic framework for data exchange practices and coopera-tion procedures across all levels and transport modes.

6

Rationale

Most traffic data in Europe is currently collected by the public sector. Private data collection is common only where infrastructure and/or transport operation have been privatised, with only a few large-scale exceptions. However, private data collection is needed to improve the quality and quantity of data and thereby enhance the creation of intermodal TTI services with relevant policy impacts and/or added value for users

Particular problems for data exchange reside in proprietary thinking or lack of awareness by administrations regarding public data as a resource. Private (and public) transport operators are often reluctant to provide data even if it were used by a third party to provide a TTI service for their users, because this could enable competitors or regulators to control their performance.

Data exchange across modes as well across borders is very limited overall. The content of the TTI recommendations regarding private data acquisition and exchange have not been met by at least six of the current Member States.

Actions

Responsibilities

6.1 Enable private sector data collection and provide model contracts for data collection and retrieval.

European Commission
Member States

With the exception of data and information where there is strong public interest in free and open data exchange (e.g. in emergency situations, security incidents and the like) data access should generally be regulated by market mechanisms only i.e. by the market value of the information. This does not imply making available public data free of any charge.

Where data exchange is required, it should conform to common formats and be quality assured for ease of interpretation Technically, data owners should be contractually obliged to make data accessible in the easiest way possible.

For data collection carried out by private organisations but wholly financed by public budgets, public sector data access has to be safeguarded contractually.

6.2 Ensure the preservation of end-user privacy for services using location referencing technology.

European Commission
Member States

With a view to emerging new location-based services (but also FVD), users should be given the choice to give up their privacy rights as part of the service agreement e.g. by selecting the degree of transmission of data they consider as "private". Whether this has to be done through a European directive or left to Member States is to be decided.

6.3 Include the obligation for data delivery in service contracts for public transport and infrastructure operators.

Member States
Local/Regional Authorities

The low availability of data especially from public transport operators is one important obstacle to the creation of multimodal TTI services. For services financed by the public sector, a contractual obligation to deliver data should be envisaged for all operators who participate in the scheme, defining a delivery schedule.

Service contracts should include concerning:

- Data quality (accuracy, timeliness, geographical coverage, location referencing, etc)
- Continuity of supply
- Liability (in case of delivery deficits or failure)

Define a "bottom line" for private and public TTI services.

Justify and define basic TTI service delivery levels for each country/region, and for each travel mode, clarifying in particular the responsibilities of the public and private sector and the information quality for the end-user.

7

Rationale

Throughout Europe there are enormous regional disparities in terms of TTI service delivery levels. What some countries/regions/cities consider a basic service, finance publicly and deliver for free, others may understand as a future pay-service option to be provided by private sector VASP's.

Many public TTI services are still provided "ad hoc", i.e. without an explicit policy statement, or targeted service levels. Also the degree to which the public sector is willing to fund and provide services itself usually remains unclear or subject to occasional unannounced changes.

This creates a situation where potential private serice suppliers would compete with free public services and often refrain from investment because they lack a clear and trustable starting point for setting up pay services.

Furthermore, coordination of TTI services across borders is a voluntary activity of public authorities. Private VASP's have no strong interest in cross-border delivery or basic services., but in personalised services that promise a return on investment. RDS/TMC is the only European cross-border service so far.

The private sector needs a stable definition of basic service delivery levels to identify market potential, estimate investment risks and develop a sustainable business model including cross-border delivery options. Unless there is a common understanding of tasks and responsibilities, public and private sector organisations perceive each other's activities as interferences in their domains.

Actions

Responsibilities

7.1   Define basic requirements for TTI service applications and impacts on key European public policies.

European Commission

In order to provide a clear reference framework for future (European) TTI services minimum requirements for contributing to European public policy goals should be defined regarding:

- Intermodality
- Transport safety (availability, accuracy, timeliness)
- Social inclusion (relative spatial coverage, delivery channels, HMI)
- Transnationality (language and icons)
- Transport safety and public security

7.2 Define the expected basic level of TTI service delivery for each country/region, based on a comprehensive inventory of existing services.	Member States Local/Regional Authorities

The basic service level is what the public sector is actually willing to pay for and provide to the general pubic as a free or at least subsidised service in order to meet policy goals. It may however be provided by the private sector by contract (e.g. by out-sourcing).

The concrete definition of what constitutes basic service levels needs to be reassessed periodically in response to societal and technological change.

7.3 Agree with the private sector the level of public TTI service provision which is free at the point of use.	Member States Local/Regional Authorities

While public TTI service delivery has to ensure basic coverage, it should not undermine commercial activity or impede service market development.

There should therefore be a self-obligation to keep basic service levels stable (e.g. for 3 or 5 years) in order to provide planning security especially for private TTI service providers.

Make public funds available by increasing the policy relevance of TTI.

Provide financial incentives for integrated planning and realisation of TTI services in support of transport policy goals and regional development objectives. Support could include physical infrastructures, systems development, formation of partnerships, take-up measures and transition to full-scale operation.

8

Rationale

At present, dedicated public funding for implementing TTI services is hardly available. Public funds often focus on the provision of "hard" infrastructures but fail to address the need for the integration of TTI. Public authorities willing to engage in the field are thus confronted with a problem of "declaring" their investments, while others are not motivated to consider integration.

Another financial drawback for TTI service implementation represents the transition to permanent operation. After having developed systems and services successfully, many R&D projects are not exploited or fail due to a lack of funds for this decisive phase. Partnerships established for the projects are abandoned if the financial responsibilities and business models remain unclear.

Furthermore, even successful examples of ITS/TTI implementations still mainly have a local or national impact as the transfer of knowledge and experiences, especially across borders, is currently supported at very low levels.

Actions

Responsibilities

8.1 Establish TTI as a tool for integration and efficiency increase in mainstream programmes

European Commission
Member States

TTI is an area potentially supporting various policy fields in a cost-efficient way, e.g. by reducing the required scale of infrastructure investments. It can also be used as a tool for sectoral policy integration.

Public funding practice should exploit these opportunities by calling on recipients in mainstream programmes (e.g. transport, information and communication technologies, regional & urban development, social inclusion, environment, and accession to the EU) to build TTI into their projects in terms of strategy, infrastructure (or "infrostructure"), provision of concrete services, or "soft" measures.

In the future, this could also become a pre-condition for receiving support for example from Structural Funds Programmes in areas of direct relevance.

8.2 Oblige recipients of public funds for TTI implementation to assess policy impacts.

European Commission
Member States

Based on the common TTI evaluation evluation Scheme (to be established), public spending should be justified by assessing the contribution to policy goals.

Its wider goal is to prevent the development of applications without relevant impacts and to leave room for private sector initiatives.

8.3 Concentrate public funds on large-scale demonstration projects to cover important gaps of available evaluation results.

European Commission
Member States

The formulation of new policies depends on the demonstration of transfer-able benefits. In areas where private investment does not (or not yet) take place (e.g. cross-border services), the financing of large, integrative pilot-projects is therefore required.

For instance, the Euro-regional projects represent a valuable experience here, but need to be extended to cover intermodality and social inclusion as key public policy goals. On the research side, Integrated Projects should be funded under FP 6 in this area.

8.4 Provide public funds for the transition from successful demon-stration to permanent operation, and for take-up projects.

European Commission
Member States

Exploitation of R&D is a highly critical issue for TTI implementation. It requires early consideration and careful planning as well as professional management to succeed. It needs to be envisaged explicitly for funding in order capitalizes on the investments made and the experiences gathered by the R&D projects.

Funding for take-up of proven innovative solutions should become a priority in FP6 and other funding instruments. This should include support for transition towards commercially sustainable operation of services.

Create awareness and provide training.

Carry out a Europe-wide awareness raising campaign on TTI services involving all stakeholders, and provide targeted training for key actors at all levels.

9

Rationale

In most regions of Europe stakeholders are not sufficiently or *not at all* aware of the possibilities, impacts, implications, and requirements of TTI services. While there is general interest in ITS applications for traffic management, the specific knowledge of TTI and the links to other policy fields remains at an unsatisfactorily low level. Symptomatically, the EC Recommendation on TTI is hardly known even by those that would need to implement and build on it.

Correspondingly, also the understanding of the framework conditions, set-up options, partnership arrangements, delivery and business models for TTI services is very low. This is problematic regarding decision makers in responsible positions as well as the staff of organisations involved (e.g. drivers, technicians). Especially in the accession countries these issues represent a fundamental obstacle to TTI service implementation.

Actions	**Responsibilities**

9.1 Carry out an awareness raising campaign on TTI to make stake-holders across Europe conscious of the potentials and risks.

European Commission
Member States
Networks

The campaign should involve and build on multipliers, e.g. all established networks to reach its audience. The European Commission should propose the content of the campaign and agree these with the Member States and the networks.

9.2 Devise targeted training on TTI for public authorities and ensure the integration of TTI into existing training programmes.

European Commission
Member States

A targeted training programme should be devised, addressing the specific requirements of:

- Different public authority levels (national, regional, local)
- Decision makers and staff

To this end, all available results from national and European R&D projects need to be drawn together to feed into the targeted training, and to provide input to other existing training programmes.

Promote TTI service benchmarking and Good Practice.

Publish guidelines for strategy development and implementation at the local/regional level. Collect and disseminate Good Practice references from across Europe.

10

Rationale

Despite of the general deployment deficits, there are many singular examples of Good Practice in TTI service implementation and delivery from all over Europe. However, the actors involved are hardly aware of each other and there is very little exchange between practitioners across national boundaries, and even within. This situation curbs the necessary learning process and makes it particularly difficult for beginners in TTI to get started and to avoid errors.

In addition, a structured guidance for the process of strategy development, TTI service implementation, as well as for the improvement of performance is currently missing. Especially at the local/regional level knowledge of complex implications and multiple implementation pitfalls will help to avoid common mistakes and will considerably increase the number, quality and efficiency of TTI services.

Actions   **Responsibilities**

10.1 Establish and disseminate a European database on Good Practice in TTI service implementation and delivery.

European Commission

The database should cover all transport modes and delivery models and be searchable by standardized keywords. Its main categories can be derived from the ATLANTIC TTI service taxonomy.

10.2 Promote the benchmarking of TTI service delivery practice all over Europe.

European Commission
Member States

The eEurope 2005 initiative should be re-established as the framework for this activity. General guidance on the concept of benchmarking TTI services has to be published. The benchmarking approach should focus on both quantitative parameters (service levels, efficiency) and qualitative parameters (process, integration).

10.3 Prepare and disseminate practioner's guidelines for the implementation of TTI service at the local/regional level.

European Commission
Member States

The guidelines should address all the different building blocks of TTI service implementation and present an indicative process that allows flexible application and adaptation to different contexts. The ATLANTIC practitioner's handbook could form an adequate starting point for this publication.

5.3 Overview of recommendations and actions

Recommendations   **Actions**

1 **Establish a European consensus building process for TTI service deployment.**

This process should be based on the needs of leading actors and key stakeholders, focused on the mutual recognition of interests, the creation of commitment to Europe-wide TTI deployment and the common definition of targets & actions in the form of a Memorandum of Understanding.

1.1 Create an independent central body as a driving force for TTI deployment in Europe.

1.2 Ensure broad involvement of all stakeholders through representation and consultation.

1.3 Coordinate parallel action at all authority levels through an integrative policy development process.

2 **Advance TTI policy formulation & promote mainstreaming of TTI into sectoral policies.**

TTI service deployment requires dedicated policy formulation as well as emphasizing TTI service implementation in other European and national policy domains and programmes to foster a more coordinated and integrated approach.

2.1 Make public authorities aware of the wider policy relevance of TTI services and of the need to make TTI policy formulation a priority.

2.2 Review European and national policies, programmes and funds across all sectors in the light of TTI integration.

3 **Co-ordinate a policy-driven TTI service deployment strategy and planning process.**

TTI deployment strategies and plans should be developed at the national and the local/regional levels for the specific needs of the agencies and organisations concerned, and should be co-ordinated in a European road map.

3.1 Propose a European "road map" for TTI service implementation.

3.2 Endorse TTI strategy development through public authorities.

4 **Create a knowledge base on TTI service impacts.**

Sponsor the development and wide application of standard evaluation and assessment methods for TTI applications to make costs and benefits transparent and comparable, and to create a solid basis for decision making.

4.1 Support an international think-tank for exchange on ITS evaluation, building on the IBEC group.

4.2 Establish a standard set of European evaluation methods and indicators for TTI.

4.3 Create a European ITS/TTI cost/benefit database and make evaluation results broadly available.

5 **Develop common TTI service performance criteria.**

Define a multimodal and interoperable European ITS/TTI architecture and enhance the process of standardization towards open interfaces, data exchange and harmonised terminologies.

5.1 Define clear compliance criteria for TTI systems and services.

5.2 Define performance requirements for a European multi-modal "TTI architecture" in dialogue with stakeholders.

5.3 Establish a common terminology for TTI (and ITS).

6 **Regulate data acquisition and exchange**

Provide a basic framework for data exchange practices and cooperation procedures across all levels and transport modes.

6.1 Enable private sector data collection and provide model contracts for data collection and retrieval.

6.2 Ensure the preservation of end-user privacy for services using location referencing technology.

6.3 Include the obligation for data delivery in service contracts for public transport and infrastructure operators.

7 **Define a "bottom line" for private and public TTI services.**

Justify and define basic TTI service delivery levels for each country/region, and for each travel mode, clarifying in particular the responsibilities of the public and private sector and the information quality for the end-user.

7.1 Define basic requirements for TTI service applications and impacts on key European public policies.

7.2 Define the expected basic level of TTI service delivery for each country/region, based on a comprehensive inventory of existing services.

7.3 Agree with the private sector the level of public TTI service provision which is free at the point of use.

8 **Make public funds available by increasing the policy relevance of TTI.**

Provide financial incentives for integrated planning and realisation of TTI services in support of transport policy goals and regional development objectives. Support could include physical infrastructures, systems development, formation of partnerships, take-up measures and transition to full-scale operation.

8.1 Establish TTI as a tool for integration and efficiency increase in mainstream programmes

8.2 Oblige recipients of public funds for TTI implementation to assess policy impacts.

8.3 Concentrate public funds on large-scale demonstration projects to cover important gaps of available evaluation results.

8.4 Provide public funds for the transition from successful demonstration to permanent operation, and for take-up projects.

9 **Create awareness and provide training.**

Carry out a Europe-wide awareness raising campaign on TTI services involving all stakeholders, and provide targeted training for key actors at all levels.

9.1 Carry out an awareness raising campaign on TTI to make stakeholders across Europe conscious of the potentials and risks.

9.2 Devise targeted training on TTI for public authorities and ensure the integration of TTI into existing training programmes.

10 **Promote TTI service benchmarking and Good Practice.**

Publish guidelines for strategy development and implementation at the local/regional level. Collect and disseminate Good Practice references from across Europe.

10.1 Establish and disseminate a European database on Good Practice in TTI service implementation and delivery.

10.2 Promote the benchmarking of TTI service delivery practice all over Europe.

10.3 Prepare and disseminate practioner's guidelines for the implementation of TTI service at the local/regional level.

6 Annex I

6.1   Excerpt from Commission Recommendation C(2001) 1102 final

Comission Recommendation on the development of a legal and business framework for the participation of the private sector in deploying TTI services - C(2001) 1102 final

Full version in all official EC languages at:
http://europa.eu.int/eur-lex/pri/en/oj/dat/2001/l_199/l_19920010724en00200022.pdf

1. Purpose and objective
Member States are invited to develop an appropriate legal and business framework for partici-pation of the private sector in deploying telematics-based traffic and Travel information (TTI) services in Europe.
The objective of that framework is to encourage the commercial deployment of added value services offered to travellers, along with the improvement of existing and planned public travel information sources such as broadcast and internet travel news and telephone enquiry lines.

2. Facilitation of European TTI services
Member States are invited to work together for establishing European TTI services by participat-ing in the work of the high level working party chaired by the Commission. The Member States should inform the Commission of any national initiatives, actions or intended measures in the area of TTI services and products.

3. Regulatory framework for TTI services
Member States should take steps to harmonise the requirements for TTI services at national, regional and local levels. To this end, Member States are invited to take the following actions:
(a) to publish and make available the requirements and applicable laws and regulations relating to public safety, traffic safety, transport and traffic management, privacy and personal data with which TTI service providers need to comply in providing their services, at national, regional and local level;
(b) to encourage the adoption of standard contracts and service level agreements by public authorities and public agencies for the supply of traffic and travel data of all modes of transport to commercial sector operators and users;
(c) to encourage the public authorities and public agencies who operate on-line traffic detection and monitoring equipment to make the data available in real time to all TTI service providers on equal terms;
(d) to promote public private partnerships in the provision of TTI services.

4. Proprietary traffic and travel data
In the interests of promoting the rapid development of European TTI services and products, and to encourage market competition and quality improvement in TTI services, Member States are invited to carry out the following actions:
(a) wherever possible, to encourage public authorities and public agencies to allow private operators of TTI services to install and maintain their own traffic monitoring equipment on public roads, operated on a proprietary basis;
(b) to develop, publish and make available, for the benefit of all TTI service operators, guide-

lines for safe installation, operation and maintenance of traffic monitoring equipment on public roads;

(c) to specify, publish and make available the requirements to be placed on TTI service providers to promptly notify the authorities of any data or information about emergencies and major traffic incidents they receive, in the interests of public safety;

(d) to adopt measures to ensure that public authorities and public agencies safeguard the commercial value of all proprietary traffic data and travel information supplied to them by private TTI service providers.

5. Observance of road infrastructure hierarchies and traffic management strategies

In the interests of ensuring that TTI products and services observe the recommended routes for through-traffic and discourage the use of unsuitable roads, Member States are invited to publish, with a view of informing TTI service providers and also the developers and publishers of navigation databases, the details of road hierarchies for through traffic for different classes of traffic as well as the existing local traffic management requirements and guidelines. Changes to the road hierarchies should be published promptly.

6. Facilitating TTI services

Member States are invited to ensure that TTI service providers have the freedom to develop and offer their services and products on a commercial basis. The only constraints to be imposed on them by public authorities and public agencies should be those relating to public safety, traffic safety, transport and traffic management and the protection of privacy and personal data as provided for by this Recommendation.

7. Reporting progress

Member States are invited to report progress in establishing the appropriate national framework for TTI services to the Commission within two years of the date of publication of this Recommendation in the Official Journal of the European Communities.

This Recommendation is addressed to the Member States.

6.2 Abbreviations

TTI	Traffic and Traveller Information
ITS	Intelligent Transport Systems
TIC	Traffic Information Center
RDS-TMC	Radio Data System -Traffic Message Channel
MS	Member States
VASP	Value Added Service Provider
B2A	Business-to-Administration
B2B	Business-to-Business
B2C	Business-to-Consumer
VMS	Variable Message Sign
HMI	Human Machine Interface
CEE	Central and Eastern Europe
VMS	Variable Message Sign
3G	3rd Generation Mobile Communications
TEN-T	Trans-European Transport Networks
e-TEN	Transeuropean Telecommunications Networks
MoU	Memorandum of Understanding
SMS	Short Messaging Service
GPS	Global Positioning System
WAP	Wireless Application Protocol
FVD	Floating Vehicle Data
USP	Unique Selling Point
OEM	Original Equipment Manufacturer
OMC	Open Method of Coordination

Annex II

Issues and recommendations for CEE countries

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5.8.2003

1.1 ATLANTIC CEE recommendations

The following recommendations summarize the key political, institutional, legal and technical issues for implementing TTI (Traffic and Travel Information Systems) in the Accession countries. Accession country research work has included 8 country reports from leading experts in accession countries, 10 interviews with public and private sector key players and two workshops in Prague in the course of 2002 and 2003 (see www.atlan-tic.net for documents)

All of the main European recommendations in both the ATLANTIC Recommendations on Framework Conditions (this document) and the ATLANTIC Practitioners handbook (deliverable D6.4) apply also to Accession countries and should be considered in parallel with the following recommendations. Yet, TTI service deployment in the CEE region requires a more tailored set of recommended actions that addresses the particular regional conditions and needs.

Therefore, this section develops the key issues and priorities for CEE countries in more detail and offers additional guidance on how to solve the particularly acute and specific problems that characterize many of these countries.

The following picture summarizes the framework and key issue areas of TTI development in accession countries.
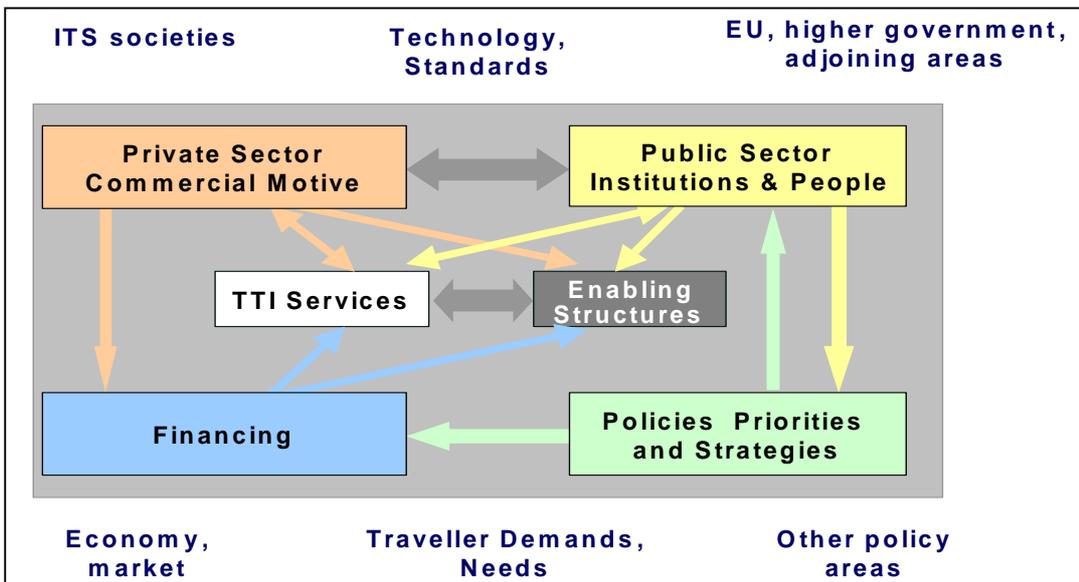
Outline Map Of Key Issue Areas

The recommendations are split into 4 sections:

- Developing policy, financing structures and infostructure which enables and drives the implementation of basic and higher quality TTI services

- Developing institutional structures and TTI service models which are effective in the regional conditions and ensure geographically integrated inter-modal TTI services

- Enabling and effectively regulating the Public-Private sector interface to ensure availability of TTI services with a range of quality and maximum out-reach and attractiveness to users, mainly in terms of price and media

- Developing co-ordination, awareness and adequate sources of technical and implementation know-how to effectively develop the TTI sector

A state of the art report summarising the state in selected accession countries is included in chapter 2 of this annex

References to the recommendations on framework conditions for the deployment of TTI services in Europe, and to the recommendations of the ATLANTIC practitioner's handbook (D6.4) are indicated respectively as follows:

N Recommendation no.N (framework conditions)

M Recommendation no.M (practitioner's handbook)

Develop policies, financing structures and infostructure which enable and drive the implementation of basic and higher quality TTI services.

1

Rationale

ITS is beginning to find its way into general policy documents and national research programmes but is still generally some way from being seriously embodied in strategies, implementation, legal and financing programmes. National policy is still also some way from being transferred to local policy and the practice of roads directorates for example

Worryingly, TTI for travellers rarely figures prominently within the ITS priorities and is often considered as peripheral to management and safety systems.

Low levels of resources and ambitious road-building plans often lead to direct funding competition between the "concrete" and "technology" camps with the result that technology is introduced ad-hoc and only in new road sections where funds have been allocated for "concrete".

Development of data collection and traffic management systems is a greater priority than TTI but even this still has trouble attracting sufficient investment funds. Automatic data collection infrastructure is far from being broadly in place for even a basic level information and centralised management systems relying on telematics equipment are generally restricted to larger cities. Given the lack of financial re-sources available in CEE countries, new low cost solutions to data collection are of great interest.

Ways have to be found to raise the priority and funding of ITS and TTI in accession countries as well as to lower the cost of implementation

Actions

Responsibilities

1.1 Encourage TTI and ITS policy and strategy formulation:
National (and by default executive directorates) and local authorities should be encouraged to declare their TTI objectives explicitly and as part of mainstream policy, maybe through an MoU developed in cooperation with all stakeholders and by the use of fiscal incentives (see next point).

EU, National authorities

2 **3**

1 **3**

1.2 Use EU and national funding levers to force ITS and TTI development:

Condition provision of EU (being considered) and/or national funds and/or allocate for example a fixed % of funds for national and regional road infrastructure construction projects to development of a *central* telematics based traffic management and traffic and travel information system on the basis of a clear and official policy and strategy

EU in TEN-T guidelines
National authorities

1

1.3. Link traffic management and TTI:

Conceptually, the understanding of TTI has to evolve from „luxury" to „necessity", i.e. TTI has to be considered as an integral part of transport services. Especially the „infostructure" concept could be employed to link traffic management infrastructures considered as necessary to TTI: This should be embodied in transport policy

EU, National authorities

1.4. Develop common evaluation schemes including TTI and ITS:

In order to provide a basis for justifying public sector investments and assessing risks : when evaluation becomes more standard, push for inclusion of evaluation categories suitable for ITS and TTI

EU, National authorities

4 **8**

3

1.5 Consider initial 100 % EU funding of pilot projects:

The necessary initial learning and appreciation building process for accession country local stakeholders might best be set off through 100% EU public seed funding for pilots. These funds might trigger national and local investment in a later stage, when first practical experiences have been gained.

EU in TEN-T guidelines,
National authorities

1.6 Produce success cases by building bottom-up:

In order not to create phantom TTI masterplans and cause frustration over unrealised or content empty schemes, implementation should start small and realistic but avoid overambition and show a credible balance between content and technology. This approach should be part of the ITS strategy

National authorities,
roads directorates and
local authorities

1.7 Utilise Euro-regional project opportunities: National Authorities and road directorates champions can use the post-accession new Euro-regional project opportunities (extending existing projects or creating new ones with EU partners) to push through ITS and TTI policy and funding programmes and gain funds. Need to join TEN committees, express requirements to EU people in charge of the rules and funding and develop relationships with neighbouring National Authorities and Roads directorates involved in existing projects such as CENTRICO in order to develop new project ideas in time for EU accession.

National authorities,
roads directorates
champions, public
transport operators

1.8 Develop common regional positions within CEE countries

through common strategic projects funded by EU TEN-T or FP6

National authorities,
ITS societies, EU

1 **2**

1.9 Gain public-sector influence in the development of floating vehicle data and 3G data sources

National authorities, ITS societies.

as these represent an important potential for efficient low-cost data collection. It could enable TTI service development without massive infrastructure investment. The public sector should look for ways to influence and control its development and data access in the interest of public TTI policy.

Develop effective institutional structures and TTI service models and ensure geographically integrated inter-modal TTI services.

2

Rationale

Know-how deficits, financial resource shortages and systemic recruitment barriers in the public sector indicate a general need to involve the private sector as much as possible in TTI service models all the way down and across the information chain from outsourcing or sub-contracting to more independent commercial exploitation of data

A generally low level of co-operation between public-sector institutes and organizations will inhibit the development of geographically integrated and inter-modal information systems.

There are particular cultural differences and mandate flexibility barriers between the police and civilian administrations responsible for traffic management, with the civilian side responsible for system concept often having little influence over the police controlled operational side.

Helpful institutional structures and sectoral divisions of responsibility are required to naturally improve co-operation, provide an institutional interface to the private sector and remove co-operation barriers

Actions

Responsibilities, references

2.1 Seriously consider the data pool model with the private sector having access to added-value information delivery as a minimum level of private sector access to the information chain. There is some public sector nervousness about private sector access to data collected by them. The data pool model with public sector data control seems, however, feasible in the current CEE climate once legal barriers have been overcome

National Authorities, local authorities.

6 8

2.2 Seriously consider wide use of the private sector further down and across the information chain as good regional experience has been had for example with the private sector even in the basic data processing and basic information delivery role with rights to resell data to added-value service providers. Outsourcing might be a key tool where more public sector control is required

National Authorities, local authorities.

6 8

2.3 Develop legal and regulatory framework for public-private interface (see recommendation set 3)

National Authorities, local authorities.

1 8

2

2.4 Integrate transport and geo-data responsibilities

where these are separated institutionally, and establish a common transport & geo-data pool (including technical data integration) for TTI service generation. Aim to cover all transport modes in order to facilitate intermodal service development.

National Authorities with roads director-ates + other executives, police, PT operators, local authorities.

`1`

2.5 In line with the above integration, develop central TICs, with intermodal remit and integrated geographical coverage

These might be built within existing executive bodies with some strategic supervising organisation including all stakeholders to guide the development process. Or a neutral, non-profit making TIC consortium of interested stakeholders might be set-up to build a bridge between the public and private sectors. Or a fully commercial TIC with some state ownership / operational grant and full data resale rights might be set-up with a fixed period licence.

National Authorities with roads director-ates + other executives, police, PT operators, local authorities.

`1`

2.6 Each country should make its own choice on the institutional structure of intermodal TICs based upon the existing institutional capability and flexibility to develop and operate such a service effectively. Other findings of ATLANTIC suggest that a non-profit making consortium of public and private sector players may be institutionally workable and feasible in many countries of the region and that a private sector operator might be a most effective solution if cultural resistance and legal barriers on data sharing can be overcome. Refer to actions 2.1, 2.2

National Authorities, local authorities

2.7 Develop necessary legislation for inter-institutional TTI co-ordination and co-operation, especially with police, for data collection, elaboration and transmission

National Authorities with roads director-ates, PT operators, local authorities.
.

Enable and regulate the Public-Private sector interface to ensure effective and efficient delivery of TTI services with a range of quality and with maximum outreach to travellers.

3

Rationale

The private sector generally has little access to public sector data and the whole legal and regulatory structure often provides barriers to commercial exploitation of any data that is made available.

There is also often a proprietary thinking on the side of the public-sector which considers the private sector as a rival or exploiter-for-profit rather than as a partner which can add value and contribute to policy aims.

If the private sector is to act as a strong partner in TTI development in adding value to data, then it needs reliable, transparent and affordable access to data of a consistent and adequate quality.

Actions

Responsibilities, references

3.1 Enable access to data from public & private (operating on behalf of public sector) organisations: The public sector has to overcome strong existing proprietary thinking and willingly share data with other public or private organisations. This also requires modification (written and unwritten) of public sector task definitions and responsibilities.

National, local authorities.

6

3.2 Remove restrictive legislation and ensure data owned by legal entities: for example change laws prohibiting commercial resale of public data by private sector for example, i.e. legally acknowledge the principle of added-value in data. Status of public sector data collection organisations should be revised if necessary to legal entities from budget units (or data collection responsibility transferred to legal entities – see 2.5) to make feasible commercial sales relationships with private sector.

National authorities

6

3.3 Introduce package of private-public sector interface guidelines, standard contracts and progressively legal basis:
for rules of data exchange, public policy protection, consistency of data quality, obligations (especially data provision obligations) and rights of both parties. Any legal package should be made flexible against changing user needs and market changes. A regular process of review and updating is required

National authorities

6

1 **8**

3.4. Meet other key requirements to enable/regulate the PP interface

National, local authorities

`1` `8`

o   Responsibilities made clear on ownership: who can use data/what for/quality etc
o   Public sector to clearly distinguish between the data it is willing to give freely and that which it will charge for
o   Public sector to clearly state its policy on its own (free) delivery of information to users
o   Data offered to private sector should not be prohibitively and inflexibly expensive. Public sector needs to understand the business case of VASPs and a fair deal on both sides must be perceived for public-private co-operation
o   Where possible avoid exclusive data deals with limited direct end-user media to ensure maximum outreach of data for policy reasons, make transparent policy on limits to deals with other service providers
o   Set general standards on data exchange eg DATEX
o   Privacy and policy interests should be safeguarded in all data sharing arrangements

Develop co-ordination and awareness, and develop/draw-on adequate sources of technical and implementation know-how to effectively develop the TTI sector.

4

Rationale

Staffing levels, know-how, initiative and awareness in the CEE public sector (including political level) in issues of ITS and especially TTI is still at a relatively low level at all levels of CEE organizations at national and local level.

Public institutions are often aware of this but can rarely afford to pay top professionals to manage the process. The technical know-how advantage of the private sector in this area can lead to imbalance and risk the negative impact of naturally self-interested commercial lobbies dominating the decision-making process

Ways have to be found to develop public-sector know-how and at the same time develop and tap external sources of expertise to ensure good concept decisions and operations management

Actions

Responsibilities, references

4.1 Support stakeholder consensus through forums
Linked common „forums" of different stakeholders at national and regional/local levels with clear objectives should be established. The task would consist in preparing a common ground for all stake-holders at the given level to move in the right direction („curling-approach"). National forums should address all the ATLANTIC recommendations, which require stakeholder consensus and should co-ordinate awareness building campaigns. Local and regional forums will tend to be more project orientated or concentrate on interpreting national guidance

Nat. authorities and other executive bodies, local authorities, ITS association, other key players

1 **2**

4.2. Create mandates and allocate human resources in public sector. Open ITS departments in National Authorities, larger executive bodies and large authorities with an inter-modal remit as key to all activity in telematics development . Create mandates for existing staff in other organisations. Nearly all the ATLANTIC recommendations require mandates and staff time in the responsible and co-operating organisations. They will be very difficult to imple-ment on a "hobby" basis of a few champions and enthusiasts. Ideally develop staff combining transport strategic and technology under-standing. Mandates should flexible to changes in environment, technology and changes in institutions

Nat. authorities, local authorities

4.3 Use initial spoon feeding where necessary for framework development– e.g. „ready" recommendations from ITS societies while consultancy market still weak.

ITS associations

4.4 Develop national public sector or (semi)-commercial agencies of ITS/TTI excellence with freedom to pay market rate to technical staff to use as a training, research, consultancy and project management pool for projects at national and local level. Can also tap research funding including. National Authorities to drive set-up, perhaps within research institute or outsourced private sector contract.

Nat. authorities, larger local authorities

4.5 Develop academic based ITS /TTI education courses for executive/operational professionals. There is a lack of practical know-how in the academic sector, however, so industry and international support is required to develop such programmes and transfer know-how to the sector. EU and National Authorities can drive through "research" and knowledge transfer programmes (including grant funded industry secondments to academia) as well as direct financing of academic material and course development.

EU, National authorities, universities, industry

6

4.6. Use more consultancy for conceptual development and thus actively develop a high quality consultancy market for ITS and TTI. Such consultants will ideally need a combination of foreign experience, local understanding and combined understanding of transport, legal, economic and technology issues until local consultancies mature sufficiently through experience of implementation. Place emphasis on knowledge transfer to public sector staff and not just external reliance

National authorities, executives, local authorities

4.7. ITS societies should consider developing a professional executive to be effective as a lobby and awareness building force - means higher fees, new sponsors. They may also need a stronger membership profile of the public sector and non-industrial sector if they are to assume a more central role in the development process. ITS societies have a key role in implementing awareness building.

ITS societies

1.2 Summary of TTI state of art in 6 CEE countries (BU, CZ, LI, PL, RO, SK) - *from 11.2002*

1 Institutional framework for TTI development and general state of implementation

1.1 General State of the Art – Framework and General Level of Development

1.1.1 Policy, programmes and institutions

National policies are gradually being aligned with EU transport policy, with the priorities of sustainable mobility and the information society slowly but steadily pushing the issue of TTI closer to the forefront of the political agenda.

EU project dissemination and CEE involvement in the standardisation process has made a significant impact on raising general awareness of ITS and TTI and is rapidly standardising the local industry.

Cross sectoral policy co-ordination (so important for sustainable mobility and information policy) is also a problem for many CEE governments, where EU information policy is not always translated into transport policy because of traditional rigid sectoral divisions.

The policy and institutional infrastructure for ITS development is emerging in CEE countries. This can be seen in the recent appearance of ITS associations (e.g. Poland, Slovakia, Romania, Czech Republic), the inclusion of ITS research projects in national research programmes and the development or imminent plan of ITS strategies and national architectures in a number of countries.

A CEE platform of ITS associations has formed under ERTICO and is even developing a EU funded project idea to co-ordinate ITS development in CEE countries. It seems that ITS associations can play a strong role in championing and lobbying for the planned progress of ITS in CEE countries, where expertise is often insufficient in the state administrations.

The level of ITS commitment is still, however, most commonly seen at a general policy level and not explicitly in terms of direct strategies, concrete plans and pilots. National financial commitment into ITS is still uncommon beyond the research level, although much of this research is currently aimed at co-ordinating and specifying future plans and pilots in the short to medium term.

Even within ITS development plans and reality, TTI is something of a poor partner. The concept of the information society is not strongly embedded in policy, thinking or investment priorities. In the view of many influential people in the profession, advanced information systems are something of a luxury when compared with the investment priorities into basic infrastructure and management systems. Advanced information systems are thus generally considered as things for the future.

Financing is considered a major problem. Public investment finances at all levels are very tight and without an increase in

priority for ITS generally and traveller information systems specifically, development of ITS infrastructure will be very slow.

At local level, transport policy varies greatly. Some cities have policies aligned with EU policy, some follow national policy, many have no explicit policy and some have great divergence between policy, programmes and reality. Generally speaking, the larger cities have the most advanced policies, most closely aligned to EU policy. Specific information society aims are, however, still most rare. Few cities have explicit ITS strategies or ITS development integrated into their transport policies.

1.1.2 Road sector

At national level, main roads are generally managed by some form of roads directorate, which is responsible for the development of core ITS systems including data collection for information systems and road-side information systems. Data collected on the roads is usually publicly owned

Basic Information

Roads directorates are usually aware of the potential for traveller information, but are far more focused on developing management and safety applications of ITS. This is of course a consequence of short-term priority to put the building blocks in place, their policy mandate and a natural professional engineering inclination to manage and capacitise the system rather than look after a "customer".

Some kind of national basic road travel information provision is, in fact, very common and information is often collected at radio stations from a number of traditional sources including national administrations, local traffic monitoring facilities (mainly in large cities), police and emergency services on road-works, accidents, weather conditions and general warnings of congestion. At least some of this information is now available on the internet (e.g. in Lithuania, Czech Republic and soon Romania) either through state run sites or third-party private information suppliers. The channel-ling of this information varies from country to country but often involves the national police in prominent positions.

Organised central travel information centres are not the norm.

Mobile phone companies are increasingly interested in selling this kind of information on SMS or WAP services.

Advanced Information

In any case, the detection and database infrastructure required for advanced TTI, is rarely in place for more than pilot sections. Most road directorates, though, are willing to support the development of advanced TTI in the future, if only as a data supplier to the private sector and many directly provide less dynamic information which they have available on websites

The first motorway management systems are being developed (e.g. Poland, Slovakia) and basic induction loop detection infra-

structure spaced at close intervals, which may be utilised for information systems, are becoming standard equipment on new motorway sections (this is the case in the Czech Republic for example). This will be significant as the motorway networks are expanded massively prior and post accession to the EU. In many countries, however, there are currently no management systems and just a few sets of induction detectors used for collection of data for statistics.

There are just a few examples of pilot more advanced real-time information systems at national level and these often for climate warnings in line with policy priorities. For example Lithuania and the Czech Republic are developing or planning extensive road climatic monitoring systems with public access to the information both at roadside and on the internet.

Information for freight transport are also quite common and often privately organised or organised by freight associations. Software for route optimisation and statistics on waits at national borders (although not generally in real-time) are often available.

At the local level, authorities are responsible for their own ITS and TTI systems. In terms of enabling infrastructure, induction loop detectors are common at traffic light junctions in larger cities and are now becoming standard at new junctions which nearly all use dynamic control. In the large cities, traffic management centres are common and use either camera aided manual control or some automated central co-ordination. Traffic lights city-wide are gradually being upgraded to enable network management. Therefore a base for information systems is certainly developing in many larger cities across CEE.

Information gleaned by local (police run) control centres is generally passed on to radio stations by telephone, fax or e-mail. There are generally no automated travel information communication protocols used, although local conventions have sprung up and become formalised in places (in the Czech Republic, urban congestion is measured on a scale of 1 to 5 – 5 being a crawl, and is judged visually by experienced control centre operators).

Local traveller information systems are generally at the level of radio news flashes based on the type of lower grade information described above although there is some systematic development of advanced dissemination systems in the area of VMS systems in Prague for example where a large pilot system is being developed in the Smichov area.

For the systematic development of more advanced national and local TTI, the policy and financial commitment to develop infrastructure and/or systems is still missing. In more advanced ITS countries such as the Czech Republic, Hungary and Slovenia, the policy commitment is not far away for national systems.

1.1.3   Public Transport Information

Organisation of public transport varies somewhat between CEE countries. General trends, however, are a distinction between regional transport, which is generally privatised, and urban public transport, where PT companies are often owned by local municipalities. Responsibility for traveller information systems varies, sometimes being the responsibility of authorities and sometimes the job of the PT company, though enabling management systems are generally considered to be the domain of the PT company.

This whole situation is complicated by financing regulation restrictions, which restrict investment within PT companies. The practical result is that often any "non-standard" investments including the required management systems must be effectively financed by authorities.

In public transport in many countries, there is a strong tradition of providing static timetable information through paper timetables at all stops and often over the telephone. PT companies often also provide good information about planned disruptions to service and basic data on services. This has been to a large extent transferred to the internet in cities and even at national level and is often merged with information on other PT modes and complementary tourist information for example.

The leaders in advanced information provision tend to be National Railway companies and Airlines, the railways by virtue of their size and centralised structure and the airline industry because of their international positioning. Real-time arrival data is commonly available for airlines on the Internet but for railways only on station platforms.

Advanced real-time information systems in local and regional transport are extremely rare with the exception of metro systems, although a number of larger cities have short or medium term plans to introduce such systems for their networks or at least at main central stations / transfer points. More but still few PT companies have AVL vehicle monitoring systems, especially where there are tram systems. Short-term prospects therefore are restricted to better dissemination of existing static information and through the internet/mobile phone and third-party suppliers.

1.1.4   Inter-modal information

There is little tradition or public-sector mechanisms in CEE for providing inter-modal or even multi-modal information in the sense of road and PT information combined. The rise in awareness of mobility centres may lead to a change in this situation, with Prague for example planning a mobility centre, which will be developed within the CIVITAS initiative. The situation within PT modes in somewhat better, with a few instances of static inter-modal information provision, such as the Czech National PT database with all regional and national connections by both rail and bus included.

Inter-modal information is closely linked to full integration of PT networks and progress is being made in this area in a number of countries, especially in the Czech Republic where a number of public and private integrated systems are emerging, underpinned by a legal framework and guidance for setting up integrated networks.

Delivering basic inter-modal information is mainly a question of national and local policy commitment, financial and legal commitment to central information centres and importantly developing a culture and platform for co-operation between operators both within and between modes. Co-operation is a problem in CEE countries where mutual trust and cooperation platforms between organisations are not in place.

1.1.5 Navigation systems

Low cost navigation systems (non-real time) are now emerging with 2 or three developed in the Czech Republic for example (hand held computer version for roads, inter-modal mobile phone system).

1.1.6 Ownership of data and legal/regulatory frameworks and full PPPs

Most traffic and travel data and equipment is generally property of the state / local administrations and is managed by the administrative organisation responsible for that road section / network. Data, where processed, is generally publicly available and can sometimes be obtained through the administrations often for free, but with frequent problems where there is a clear intention to sell the data on.

There are generally no legal or regulatory/contractual frameworks specifying a public sector obligation to collect and elaborate data of a certain scope and quality and specifying the rules of co-operation and data sharing between public and private sector. One exception exists in the Czech Republic, which guarantees the quality and existence of a national database of PT schedules.

There are few regulatory frameworks which might enable the development of TTI through the interest of PPPs which would provide private capital. Laws on public tenders are generally set-up for simple contract awards, so private sector involvement is generally enabled for straight contracting of system development or even system operations (although this is very often restricted by other legal obligations of police or state services for any „traffic management" activities).

In Poland and the Czech Republic, legislation is being adapted to allow for PPP funded new motorway build, which may well cover many of the requirements for ITS PPPs. Building and (maybe) operating ITS systems on the back of new build PPPs may well in fact be one good way to get modern ITS equipment and advanced

information systems up and running on the motorway networks. This, however, requires agreement on common architectures.

1.2 Role and prospects of the private sector

Current Prospects

The need for all types of public-private co-operation is certainly great because the private sector can fill such a hole in the know-how gap, which exists in the public sector.

The position of the private sector in more advanced TTI in CEE is mainly one of capable waiting actors. The many systems developers, dissemination media, communications network and motorists clubs are often interested in providing and developing basic or advanced information systems but only within an attractive business model.

Feasibility cases for private investment in TTI systems in CEE at the current time are not very convincing given the combination of outlay costs (necessary collection infrastructure) and the risks and barriers involved such as:

- ability to own and operate technical infrastructure on state network

- uncertain access to public data or own data collected on state infrastructure,

- clashes with existing traffic management units (police)

- low/inconsistent data quality,

- cultural and objective differences between public and private sector

- low ROI forecasts for any project involving significant capital investment (low willingness to pay)

- worries about effectiveness of legal recourse against the state and risks for financiers.

These factors imply that **the main role of the private sector for TTI in the near term** will be

- primarily to provide added value at the data processing and delivery end using mostly existing or cheap-to-procure data, with the possibility of straight outsourced system management services from the public sector as part of the system delivery package.

- low investment, less advanced traffic and travel information in an added-value way through various modes such as the inter-

net, CD-rom optimisation software, mobile phones and perhaps on-board navigation units if the data quality justifies it.

- to support mobile phone services with accepted payment mechanism

In fact most current private sector success stories are based around

- processing of and sale of static high quality intermodal PT information with mobile phone income key or they involve primarily advertising income (internet sites exploiting current information sources and the Polish Korkonet webcam urban road travel information system)

- indirect marketing gains for the sponsor (e.g. Czech information centre).

In the medium term, a stronger awareness and commitment from the state and local authorities (in terms of policy, financing, regulation and acceptance of the private sector as a partner) is required before any deeper private activity requiring public-private co-operation can start in earnest.

Future Prospects

Mobile communication companies will surely play a stronger and stronger role in the development and delivery of TTI services in CEE. The introduction of new generation mobile networks might introduce a real chance to even create quality travel data without large public sector involvement based on tracking „3G floating mobiles" in the traffic flow.

Automobile manufacturers may also gain a strong position if the penetration of navigation devices with GPS receivers reaches a high enough level (by no means certain in the next few years as the first CEE map systems are only now being developed). This may be used in urban environments to generate quality floating car travel information before cities have good information systems in place.

Such public sector "bypassing" might be significant in CEE countries, where there is a real risk that the public sector may not deliver the required data. These will of course will be a purely commercial business aimed at those who are willing to pay, with little sale of information to the public-sector and little deliberate policy orientation

2 TTI Services Implementation and research

2.1 State-of-the-art of TTI service implementation

The state-of the art in TTI services in terms of the most advanced services is described briefly below for a number of countries. More detail can be found in the individual reports.

Road sector

In Lithuania, a national internet service (www.lra.lt) provides basic information on the road network and provides near real-time meteorological conditions on over 20 monitoring sites across the country.

In Romania, a private internet transport portal (www.transportal.ro) run by the company TRANSINFO SA offers information mainly for the freight sector. It plans to extend services to include weather data and road conditions. There is a also a commercial GSM service which offers transport and weather information, although not in real-time.

In the Czech Republic a National TIC is run by the motorist club ABA

Prague is developing a travel information system using a number of VMS signs placed in the Smichov area. In addition there are a number of dynamic signs places signs indicating numbers of free parking spaces in key local car-parks. The VMS system currently offers mainly information on temperature and time but also on closures. Message entry is currently manual but it is planned to develop an automated system and extend the range of messages entered.

Prague is also planning to build a road TIC for the whole area, drawing on all manual and automatic data sources.

In Warsaw, an advertising financed internet web-cam system – KORKONET is available with corresponding SMS service.

On the Czech – German border, an information system based on VMS signs provides information on weather conditions and gives navigation information for freight traffic in the customs area.

The Czech car firm Skoda along with Teleatlas is developing an in-car route navigation system for the Czech Republic. The database should be ready by 2006. Download of updates will be available on the internet. The system will not be a real-time navigator at his stage.

In the Slovak Republic, a Motorway Information and Control System is being developed (currently 65 km around Trencin) and now for the 15 km of motorway in Bratislava.

is being developed. The architecture is state-of the art and is fully open to advanced TTI applications.

Public Transport and Intermodal Services

In Sofia, Bulgaria, a GPS based PT monitoring system, now in place, will soon provide real-time information for travellers at one pilot tram stop. Plans are made to develop the system further but financial restrictions are tight.

Prague is also planning to build a mobility centre.

In the Czech City of Zlin, a fully working real-time travel information system works for the urban PT system. All the key stops are equipped by panels displaying next arrival times for the bus lines. The system uses radio beacon technology and was developed by a local software company.

In the Czech Republic, a national inter-modal PT timetable database (buses and trains) is available including all national and regional lines and some urban services. The database is operated by a contracted private company and its quality (update and obligations of operators) is guaranteed by law.

In the Czech Republic, Eurotel, the mobile phone operator provides a walk-PT intermodal location search and navigation system for mobile phones

Warsaw is planning to roll out its full PT and roads telematics system in the next few years including substantial information elements

2.2 TTI research activities

Research activities are generally laying the ground-work for ITS development in general, although there are some more specific projects.

In the Slovakia, Poland, Czech Republic, Bucharest, Prague research is underway developing implementation frameworks for ITS including TTI. The approach varies, sometimes sticking to the Karen framework (Poland, Slovakia) and sometimes a slightly different approach: the Czech Republic for example is focusing on an inter-modal approach and will analyses cost-benefit issues and implement and evaluate a number of pilots under the project umbrella.

In the Czech Republic, a current research project is exploring the feasibility and implementation conditions for RDS-TMC. The result should be a concept for Czech implementation.

# 3 Service Delivery Models and the Current Situation in CEE

3.1 ATLANTIC Models

ATLANTIC has identified the following basic service delivery models in existence in Europe:

data aquisition	→	data processing	→	information packaging	→	information transmission	→	support & billing

fully public service

data pool model

public seed funding

outsourcing of service tasks

risk sharing in joint commercial P-P venture

fully private service
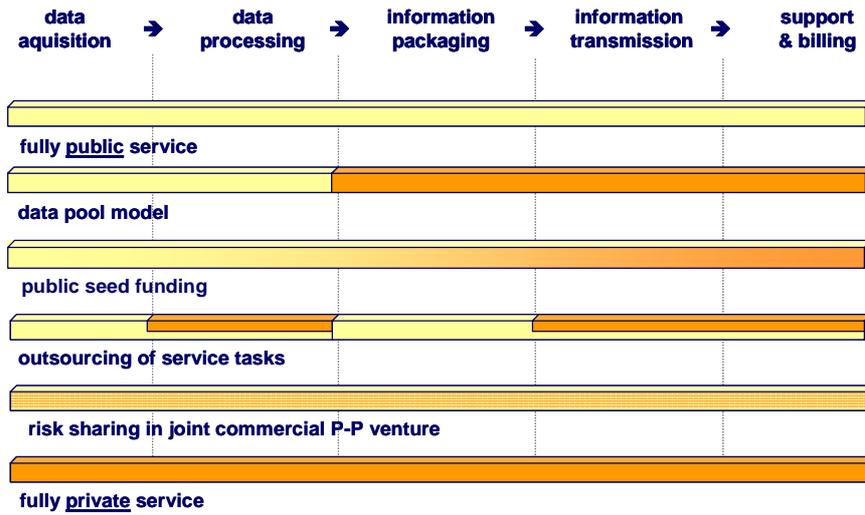
3.2 State in CEE

The following diagrams and text represents the situation in the most advanced CEE countries:

data aquisition	→	data processing	→	information packaging	→	information transmission	→	support & billing

fragmented public data

basic public services

individual public data sources

private exploitation

few private data sources
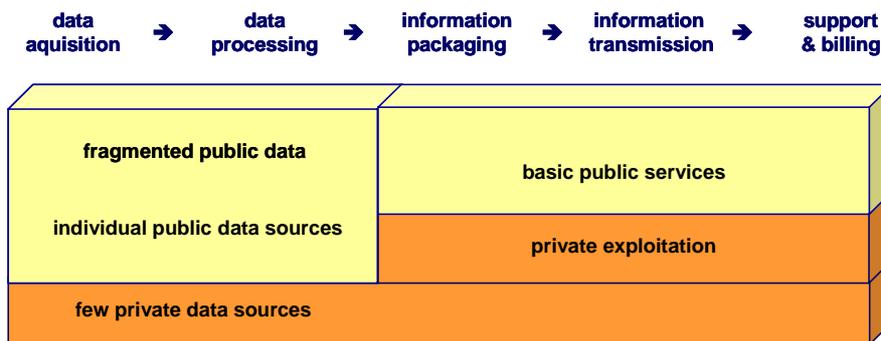
For the few applications that exist,

- mostly combinations of A and B can be observed

- with some private-private link ups between the data phase and delivery

- with very exceptional Fs and

the following characteristics apply

- some basic fragmented public data pools (roads directorates, police etc., some PT data pools)

- and many individual public data sources (PT companies etc.)

- a few private data sources (static maps etc, information sources for other private services)

- some low investment private exploitation (***including some data collation and processing*** but mainly media channels, advertising or marketing financed web sites, mobile phone services, navigator packages)

- some direct basic public services mainly on internet (roads info, PT schedule info)

4 Key actors in TTI development

The key actors sectors are as follows:

Public sector

: roads directorates, national railways, local authorities, national police, local owned local PT companies,

All of these actors are important owners of data, managers and development guiders of systems. Given the current legal set-up and cultural background in CEE, they are key to developing more advanced information systems, but suffer from a lack of own know-how, remits and restricted financial resources.

The Ministries of Transport and local authorities tend to be responsible for ITS and TTI strategy development and such are key players in the co-ordinated development of ITS and TTI.

Private sector

: systems developers, communications companies (especially mobile operators), added-value information service providers, system managers, consultants, automobile manufacturers.

All of these parties are active in ITS in different CEE countries, systems developers most actively with few examples of added-value information service providers and contracted system managers. Although the TTI provision market is hindered by a lack of policy and data and unattractive conditions for private capital

input, the private sector is clearly key in CEE countries for future development given its superior know-how. If current conditions persist, however, it will have a tendency to look for ways to provide quality information independently of the public sector as possible.

Associations and academic sector: freight associations, ITS societies, PT company, associations, universities.

Associations form an important group of enablers and organisers in CEE, some of whom have the resources to deliver information systems for their members and most importantly get involved in the national and local development process through lobbying and provision of advice to the public sector. Given the relative weakness of the CEE public sector in the ITS and TTI issue these groups are developing important positions.

The university influence varies quite significantly from country to country in CEE and depends upon the quality of links between universities and the private and state sector. This is one function of ITS societies (Czech Republic, Poland, Slovakia, Romania), which have arisen in a number of CEE countries and are lobbying hard and so far successfully for an ITS implementation framework at national and other levels.

As mentioned in section 1.1, the European ITS association ERTICO is also taking great interest in the CEE ITS scene and has formed a sub-group of CEE ITS societies and key Ministerial players within its national ITS platform. The group, which includes the Czech Republic, Slovenia, Hungary and Romania is trying to co-ordinate development strategies as much as possible with ERTICO acting as the steering force.

5 Key issues for TTI implementation

5.1 Drivers, trends and potentials

5.1.1 Institutional (public and private)

As implied in section 1.1, accession to the European Union is probably the single strongest institutional driver affecting the future development of ITS and TTI. The existence of EU IS and Transport policy, has given a strong impetus to the CEE public sector to include these issues in national and local policy, which is visible in practice at the current time. Access to EU project results (KAREN for example), professional exchange and foreign investment aimed in anticipation of entry to the EU have all strengthened the prospects of TTI delivery through know-how, awareness heightening and rapid implementation of standards

The recent emergence of CEE ITS societies and a number of strong ITS champions at Ministerial level in a number of countries is bringing a new quality to planning and co-ordinated development

of ITS. The rise of ITS societies is largely underpinned by a strong private sector looking for opportunities and a healthy ITS market.

The two factors above have lead to the first developments of national ITS strategies and national ITS architectures, which should greatly help drive the development process.

Very ambitious infrastructure construction plans prior and post accession combined with low public resources are leading to the search for private capital and tendering of BOT type contracts (this is already happening in the Czech Republic and Poland for example). With the rise of PPPs in CEE countries, modern ITS systems may be installed standardly as part of the works and importantly, legislation will be changed to allow private investors onto the road infrastructure both as owners and managers and enable tenders for true private, public partnership (not just sub-contracting).

In local transport, larger cities are driven by worsening congestion and pollution from car traffic and increasing numbers of cars (with fall in PT patronage) to improve their PT systems. Information is very often seen as an important tool in PT improvement. This has not yet lead to a great number of real-time information applications, but it is a constant pressure which will make itself shown within a few years once financial sources can be made available.

Key to development though in local and regional PT will be the progress of privatisation and the introduction of competition in local PT and the contractual frameworks that arise. With the emergence of strong local transport organisers and contracts with the authority and operators which give a stronger investment position, conditions could arise for the financing and development of advanced management and information systems. Privatisation of local transport is going on now in Bulgaria and Slovakia, but it is the introduction of the new EC directive which will no doubt prove decisive.

Inter-modal information is an issue, which is not so well addressed in CEE countries thus far. But here trends can be seen in static information in one or two countries, driven by EU policy on the need for inter-modality and integration, which is spurring the emergence of integrated PT networks.

1.1.1 Technological (data acquisition and service delivery).

Introduction of standard EU services such as RDS-TMC can be expected fairly soon (this is being developed in the Czech Republic) and will enrich TTI provision. Standardisation generally is driving the industry forward.

The ambitious motorway building plans mentioned above are and will be a strong driver of ITS development as motorway management centres and detection infrastructure is placed on the roads.

With the right architecture these will provide the first strong base and be open to development of TTI systems.

Cost pressure and gradual modernisation of PT fleets and management is leading in some cases to consideration of vehicle management systems which provide the base for real time information systems.

Methods of collecting data "off infrastructure" may prove key to development (especially if the public sector does not commit itself to partnerships for data collection and quality information provision). This may be in the form of GPS floating car data through on-board navigators if a decent penetration can be built up (driven by car manufactures) or through 3G floating mobile phone data (driven by the mobile phone industry).

The high penetration of mobile phones and complete mobile phone networks in CEE and the proven payment mechanism will surely make it a key tool for private travel information delivery be it static or real-time (the first services are emerging in CEE countries), especially with the emergence of 3G phones and services.

The internet is proving a popular place for transport information and will continue to play a key role for pre-trip information. It seems there is even a role for private sector portals (making income through advertising and other services), which accumulate existing data sources together. These are systems, which can be provided by user associations or commercial information providers.

5.2 Key obstacles to overcome

Major obstacles can be found in, policy, programme, technical, organisational, institutional, legal, human resources and financial matters, all of which are of course closely interrelated. Key points are expanded below.

For less advanced systems requiring collection and organisation of existing basic no telematics based data (e.g. simple TIC), problems are more organisational, legal and know-how based than financial.

5.2.1 Policy, Regulation and Legal

In terms of policy, ITS is beginning to find its way into national research priorities but is still a long way from being at the forefront of implementation and legal programmes. National policy is still also a long way from being transferred to local policy and the policy of roads directorates.

Worryingly, TTI rarely figures even figure prominently within the ITS priorities and is perhaps considered as peripheral to management and safety systems. This may be justifiable as an implementation priority, but it is important to design for TTI and thus any planning should also plan for and enable imminent TTI systems. This is so important that it needs to be expressed in policy terms.

5.2.2 Organisational Culture and Know-how

Know-how, initiative and awareness in the CEE public sector (including political level) in issues of ITS and especially TTI is still at a relatively low level at all levels of CEE organisations at national and local level.

Institutions are often aware of this but cannot afford to pay top professionals to manage the process. This has implications for an enhanced role of the private sector and ITS societies in policy forming and implementation with the inherent risks of commercial lobbies and hidden agenda influence attached to this.

The low culture of co-operation between public-sector institutes and organisations inhibits the development of inter-modal information systems. In an area such as integrating TTI, which requires co-operation of many actors, this can present a problem.

5.2.3 Basic Infrastructure and Financing

For more advanced TTI systems, the collection infrastructure is far from being in place. Development of management systems is a greater priority than TTI but this still has trouble attracting sufficient investment funds. Low levels of investment financing for ITS and TTI is a key issue which cannot be unravelled from policy priorities and funding mechanisms at the national and local level.

5.2.4 Barriers to the Private Sector

If the private sector is to act as a strong partner in TTI development, then it needs reliable access to good quality data and/or the power to strongly influence processing and ability to add to such data sources. This requires a policy, programme and financial commitment and a public sector cultural world-view and corresponding legal framework, which enables, safeguards and encourages private sector involvement. The current state in CEE is relatively negative (although there has been some progress in the last 2-3 years) in all these aspects and needs to be overcome.

5.3 Main Barriers Summary

Some of the key barriers can be summarised in the following table:

5.3.1 In the Public Sector

- lack of central management and data collection equipment (less for static data but certainly for real-time)

- lack of standardisation leads to high costs and incompatibility

- weak policy and higher management support for TTI stops funds being made available, little establishment support for ITS and especially TTI

- lack of know-how and initiative in ITS and TTI systems

- lack of clear rules for data sharing between public and private sector means obstruction of co-operation between data holders and information service providers.

- procurement rules prohibit simple financial entry into existing privately run public interest services

- wariness of private sector especially over profit motive and control over responsibility and policy orientation on use of information. Little understanding of private sector business model and real commercial value of travel information

- private transport information services not always considered as "public service" even when it is in public interest

- public transport companies cannot finance own vehicle management systems because of financing system restrictions

- lack of funding allocated for ITS and TTI development

- public sector worried about implications for safety and undermining of transport policy.

- priorities for international corridor construction supported by EU policy competes heavily for funds, especially for retrofitting of existing infrastructure. Leads to piecemeal fragmented ITS solutions on EU funded sections

- wishful thinking as regards private sector capital investment possibilities (other than as effective loans in PPP arrangement)

5.3.2 For the Private Sector

- fragmented data sources means expensive data collation

- legal barriers to outsourcing data collection, traffic manage-

ment and information delivery tasks

- refusal to engage in risky activities with require high investment and uncertain margins

- business case for self-financing TTI involving significant investment or operating costs in data collection and collation is generally even weaker in CEE than EU as value of peoples time is much lower

- little scope for major private sector own investment in quality real-time data collection and central data processing services because of high cost with regard to pay back

- lack of patience, belief in public sector culture or feeling of legal security, thus often prefer go-it alone solutions

- duplication of data collation efforts of information service providers from public sources leads to fragmentary solutions and excessive demands on public sector data holders

5.4 Solutions, Opportunities and Requirements for Development

Some key potentials are outlined in the following table:

5.4.1 Public Sector Opportunities

- change in legal status of public organisations can ease data sharing issues (PT companies and Roads Directorates for example)

- outsource data collection, processing and management to private sector

- institutionally support or initiate privately run/owned added-value data providers (TIC, inter-modal timetable provider etc.) by giving them official status, added-value data resale-rights, data provision obligations for public sector and standards etc.

- support information service providers by supporting a TIC with legal status and by creating rules for data sharing between budgetary units and commercial enterprises

- introduce regulations allowing partial and stable financial participation of state in privately run initiatives (if existing, without tender) which have public interest element and allow some cross-subsidisation of costs (marketing benefits

etc.)

- introduce regulations governing responsibilities of private sector

- financially support public interest added-value data providers where it is needed to develop the service or covering unsustainable operating costs

- EU can use funding levers to get central data collection, management and information systems in place – direct co-funding or conditional funding of infrastructure projects requiring central programme of management and information systems

- develop partnerships with private sector to develop alternative cheaper methods of traffic monitoring (3G monitoring, floating car etc.) and gain a stake in full public access to basic data coming out of system

5.4.2 Private Sector Strengths and Interests

- has the missing know-how

- can run systems efficiently and develop them at any level of the information chain (with the right overall business model)

- possibility for some private sector investment in own direct data collection where not too own-capital intensive (Korkonet web-site in Poland with cameras on junctions to web-site, helicopters of ABA in CR to supplement private TIC, CHAPs national PT database in CR)

- possibility for joint private sector investment in added value data provision (e.g. ABA TIC and CHAPs PT database in CR) to information service providers. Business model depends on operating and development cost of service. In Czech Rep, TIC is not directly self-financing (90 % financed mainly for now as marketing tool) but timetable database is.

- strong interest in providing information services when stable, quality data sources are available.

- web-site information services drawing on existing data can pay for themselves through advertising and are becoming common

- mobile phone operators already offer profitable WAP and SMS services which reach a large number of passengers when quality data sources are commercially available (e.g. timetables and travel news in CZ, Eurotel multimodal route finder for cars, PT and walking in CR for example) and is driving the quality of data from added value data providers

- new methods of traffic monitoring such as following the location of mobile phones (especially 3G and/or with integrated GPS) in cars or buses, may reduces costs of data collection to make such service commercially viable and bypass the need for the public sector to invest heavily in own data collection equipment