

Intelligent Transport Systems in action



Directorate-General
for Mobility
and Transport



- ACTION PLAN AND LEGAL FRAMEWORK FOR THE DEPLOYMENT OF INTELLIGENT TRANSPORT SYSTEMS (ITS) IN EUROPE

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Foreword



Innovation is essential for sustainable, efficient and competitive mobility in Europe. By harnessing state-of-the-art information and communication services and technologies, Intelligent Transport Systems (ITS) can make a significant contribution to the EU's efforts to pursue its broader goals for transport for the decades ahead. Supporting the EU's new Roadmap to a Single European Transport Area unveiled on 28 March 2011, ITS have a big part to play in building a truly integrated and user-friendly transport system, while making road transport — along with the other modes — cleaner, more environmentally friendly, more efficient, safer and more secure.

However, there have been significant barriers to the effective deployment of ITS across Europe, with a lack of standardisation, of interoperability between modes and countries and of cross-border continuity of services hindering broader ITS uptake and market penetration. For ITS to fulfil their potential, their deployment in Europe needs to be accelerated in a coordinated way and common specifications and standards should be set. Especially in an area where many countries and actors are involved, establishing a Europe-wide coordination framework is crucial — and, with the ITS Action Plan and the ITS Directive, the EU has been busy putting in place just such a framework for ITS for the road and its links to the other modes.

I believe this makes investment decisions safer, helps to unlock service innovation potential and ensures that transport can continue to deliver its core role for a thriving European economy — in a user-oriented, safe and environmentally-friendly way.

A handwritten signature in blue ink, which appears to read 'Siim Kallas'. The signature is stylized and fluid, with a long horizontal stroke at the end.

Siim Kallas

Vice-President of the European Commission



Intelligent Transport Systems — the smart move

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An excellent transport system is vital for a high quality of life, making places accessible and bringing people and goods together. Realising a competitive and sustainable transport system for Europe's citizens and businesses is at the core of the European transport policy.

Today, transport policy is at a crossroads. Oil will become scarcer in future decades. There is a need drastically to reduce greenhouse gas emissions. And coping with congestion by widely extending road infrastructure is often not a valid option. The new White Paper on a Roadmap to a Single European Transport Area takes on the challenge of promoting independence from oil and creating modern infrastructure and multimodal mobility assisted by smart management and information systems. A transport system can be considered as smart if it is capable of dealing with new situations — such as concerning safety, traffic congestion, obstacles or modal integration — by linking all sources of data to produce valuable information for transport users and operators.

The potential of Intelligent Transport Systems (ITS) to help realise broader transport policy goals lies in their wide variety of applications in the different modes of transport, for both passengers and freight. This is the case not least in road transport, where ITS applications include — to name just a few — electronic tolling, dynamic traffic management (including variable speed limits, parking guidance and

reservation, and real-time navigation support), real-time information and other driver-assistance systems like electronic stability control and lane-departure warning systems. ITS can also make it easier to link the various transport modes, for example by means of integrated multimodal trip planners or tracking services for co-modal freight transport.

Such smart transport solutions are already applied across the EU — but in a fragmented manner, in mono-modal instances, in geographically isolated domains, and incompletely. Although the ITS industry is highly innovative and competitive, the use made of scarce public and private resources remains inefficient.

On a European level, cooperation is increasing with a view to achieving a common framework for the coordinated use of ITS that allows for EU-wide and continuous services for the user. The progress made under the two main policy and legal instruments designed for this task — the ITS Action Plan from December 2008 and the ITS Directive (2010/40/EU) from July 2010 — is summarised in this brochure.

The policy framework for ITS deployment — the ITS Directive and Action Plan

The European Union has launched major initiatives to overcome the slow and fragmented uptake and deployment of ITS in road transport.

The European Commission's ITS Action Plan and — in the form of the ITS Directive — dedicated EU legislation on ITS together constitute a concerted policy framework to boost ITS across Europe. With these two complementary elements in place, the roadmap is now clearly set and the tools are available to bring ITS deployment into a new era where integrated, interoperable systems and seamless transport services become the norm for Europe's road transport system.



Introducing the EU directive on ITS

The ITS Directive represents the first EU-wide legislative basis for the coordinated deployment of ITS for the road. The directive is thus an important instrument for ITS implementation, backing up the measures foreseen in the ITS Action Plan (see page 5) with a set of enforceable legal provisions and helping to accelerate the deployment of innovative transport technologies. The directive aims to establish interoperable and seamless ITS services and promote harmonisation while leaving EU Member States the freedom to decide which systems to invest in. It sets out priorities and principles for ITS deployment — but it does not oblige Member States to deploy IT systems or services on their territory.

► ITS DIRECTIVE — MINI FACT-FILE

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Full name: Directive 2010/40/EU of the European Parliament and of the Council on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport

Date of adoption: 7 July 2010

Date of entry into force: 26 August 2010

Deadline for transposition by Member States:
27 February 2012

► FURTHER INFORMATION :

> http://ec.europa.eu/transport/its/road/action_plan/action_plan_en.htm



Specifications

Under the ITS Directive, the European Commission is to adopt — within seven years of the directive's entry into force — binding specifications to address the compatibility, interoperability and continuity of ITS solutions across the EU. The specifications will cover functional, technical, organisational and service-provision issues in a number of areas. The first priorities are traffic and travel information, the eCall emergency system and intelligent truck parking. The Working Programme C(2011) 289 (see below) sets the timeline for preparing these specifications. The specifications adopted under the directive would need to be respected whenever ITS were deployed in EU Member States. In preparing the specifications, the Commission will consult experts and take into account the advice of all stakeholders — considering the existing standards when appropriate and conducting an impact assessment with cost-benefit analysis.

Assisting bodies

The Commission will be assisted by two bodies in the implementation of the ITS Directive: the European ITS Committee and the ITS Advisory Group. The task of the

European ITS Committee, composed of representatives of the EU Member States, is to give advice on the work programme, standardisation mandates and on the adoption of possible guidelines or non-binding recommendations. Meanwhile, the ITS Advisory Group — bringing together representatives of stakeholders such as industry, service-providers and associations of users — supports the Commission on the technical and business aspects of ITS deployment. The two bodies will also be able to give useful input for the preparation of the specifications foreseen under the directive.

Programme

The adoption on 15 February 2011 of Working Programme C(2011) 289 was the first concrete milestone stemming from the directive. The working programme describes the specific objectives and gives a first timetable until 2015 for the implementation of the directive (see also page 28).



Mapping the way ahead — the ITS Action Plan

The European Commission's ITS Action Plan is working to accelerate and coordinate the deployment of ITS in road transport, including interfaces with other transport modes. The action plan was adopted after much preparatory work and a long consultation with stakeholders. Its main focus is to ensure the compatibility and interoperability of systems, to facilitate the continuity of ITS services, and to do so through coordinated and concerted action at EU level. Not only should this help to speed up the deployment of ITS, it should also make road transport more sustainable and — last but not least — boost the EU's ITS industry.

Measures

The ITS Action Plan contains a wide range of measures intended to mobilise industry, the EU Member States, infrastructure- and service-providers and other stakeholders. Grouped into six priority action areas (see pages 6 and 7 for an overview), the plan comprises 24 specific actions (see pages 8–31) with target dates for completion spanning the years 2009–14.

Implementation

The implementation of the ITS Action Plan represents a joint effort by several European Commission services, coordinated by the Directorate-General for Mobility and Transport with the direct and active collaboration of four other directorates-general (DGs) of the Commission: the Information Society and Media DG, the Research and Innovation DG, the Enterprise and Industry DG and the Climate Action DG. The plan is also implemented in close cooperation with ITS stakeholders, as seen for example in the staging of various workshops on action plan topics. Work on the plan has proceeded apace with several preparatory studies launched in early 2010 and — as documented over the following pages — ongoing progress being made across the action areas.



► ITS ACTION PLAN — MINI FACT-FILE

5

Full name: Action Plan for the Deployment of Intelligent Transport Systems in Europe

Document reference: Communication from the European Commission (COM(2008) 886).

Date of adoption: 16 December 2008



► FURTHER INFORMATION:

> http://ec.europa.eu/transport/its/road/action_plan/action_plan_en.htm



6 The six action areas — an overview

pages 8–12

► **Action area 1:** Optimal use of road, traffic and travel data

Many ITS applications rely on an accurate knowledge of the road network and of traffic regulations like one-way streets and speed limits. Whilst in the past the bulk of this knowledge was provided by the authorities, today commercial sources are becoming increasingly important. Relevant information should be validated and made available to all players on a fair and equitable basis in order to support the safe and orderly management of traffic. This notably concerns both digital mapping and the provision of (real-time) traffic and travel information services. Optimal use of data will also facilitate multimodal journey planning.

pages 13–16

► **Action area 2:** Continuity of traffic and freight management ITS services on European transport corridors and in conurbations

The need to accommodate rising traffic volumes, notably on the major European transport corridors and in conurbations, while promoting environmental sustainability and energy efficiency, calls for innovative transport and traffic management solutions. Seamless and dynamic transport and traffic management enables optimal use of existing capacity, fosters co-modality and is beneficial for both long-distance and urban freight transport. ITS technologies also offer new possibilities for infrastructure access/use charging schemes and turn out to be essential for 'e-Freight'.



pages 17–21

► **Action area 3: Road safety and security**

ITS-based road safety and security applications have proved their effectiveness, but the overall benefit for society depends on their wider deployment. At the same time, some safety-related issues require additional attention: safe design and use of human–machine interfaces; integrating ‘nomadic devices’; ensuring the safety of vulnerable road users such as the elderly; and providing services for safe and secure truck parking. Another challenge is to achieve the full-scale roll-out of the ‘eCall’ in-vehicle emergency call system. Meanwhile the security of transport systems must be taken into account without jeopardising efficient and effective transport operations.

pages 22–25

► **Action area 4: Integration of the vehicle into the transport infrastructure**

The streamlining and integration of ITS applications within a coherent, open-system design could improve efficiency and usability, reduce costs and enable the ‘plug-and-play’ integration of new or upgraded applications. This open system architecture would be embodied — initially in commercial vehicles — in an open in-vehicle platform, guaranteeing interoperability/interconnection with infrastructure systems and facilities. Furthermore, cooperative systems — based on exchange of information and communication between vehicles and with the road infrastructure — are also developing rapidly and should be further promoted.

pages 26–27

► **Action area 5: Data security and protection, and liability issues**

The handling of data — notably personal and financial — in ITS applications raises a number of issues as citizens’ data-protection rights are at stake. Data integrity and confidentiality must be ensured for all parties involved, especially citizens. The provision and use of ITS applications also create additional requirements in terms of liability. These issues could be a major barrier to the wider market penetration of some ITS services if citizens’ rights are not shown to be fully protected.

pages 28–31

► **Action area 6: European ITS cooperation and coordination**

Coordinated deployment of ITS in the EU calls for intensive cooperation at European level between all parties involved as well as an adequate governance structure and legal framework. To make EU-wide deployment a reality, agreements on common assessment methods and uniform tools for decision support are crucial, and EU Member States should aim to establish a common ITS agenda and methods for concerted implementation. Coordinated deployment also requires greater involvement of cities and regional authorities — guidance and technical support should be provided to facilitate consensus-building and effective decision-making.



► ACTION 1.1

Real-time traffic and travel information

8

Definition of procedures for the provision of EU-wide real-time traffic and travel information services, addressing notably the following aspects:

- provision of traffic information services by the private sector
- provision of traffic regulation data by the transport authorities
- guaranteed access by public authorities to safety-related information collected by private companies
- guaranteed access by private companies to relevant public data

► THE CHALLENGE

Traffic and travel information services allow Europeans to make well-informed decisions both before and during their journeys. Given advances in data-collection technology and with growing demand for more precise and real-time information, the need for more — and better — data is increasing all the time. Yet differences between national policies on traveller information and information markets across Europe persist. A key issue is to define the roles of the public and private sectors as well as rules for cooperation on data exchange, content and service provision.

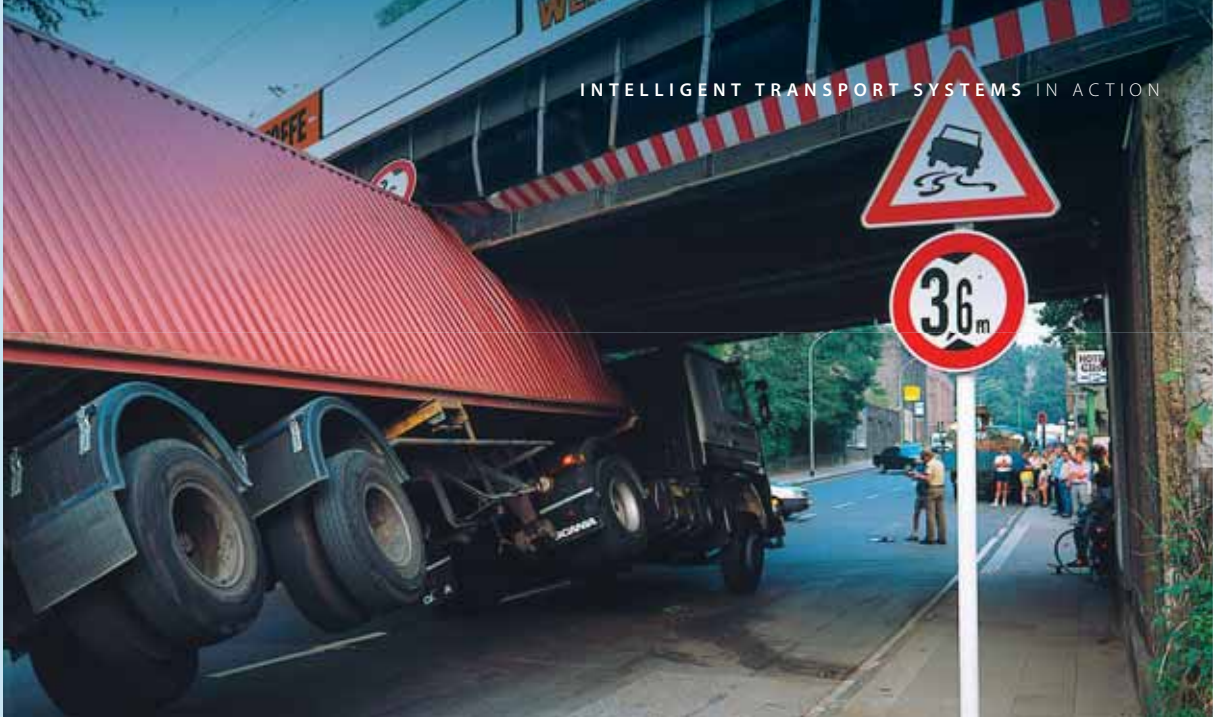
► AIMS:

- > make private, especially safety-related, traffic information available to public authorities
- > ensure fair and transparent access to public traffic- and travel-related data

- > promote public-private cooperation to improve traffic and travel information
- > increase data quality and improve multimodal cooperation
- > encourage (cross-border) data exchange

► TASKS AND ACHIEVEMENTS

The European Commission in 2011 completed a study on traffic and travel data access, with a view to analysing the status quo in the EU and producing draft policy options. Specifications and procedures should be established for: the use of public data; data availability, formats, exchange, and (cross-border) procedures; and legal issues (contracts, agreements, licences, liability). Harmonisation should make it easier to develop Europe-wide traffic and travel information services.



ACTION 1.2

Optimised collection and provision of road, traffic and travel data

Optimisation of the collection and provision of road data and traffic circulation plans, traffic regulations and recommended routes (in particular for heavy goods vehicles)

THE CHALLENGE

Accurate road data is needed for in-car navigation devices as well as for travel planners and all kinds of traffic-management applications. However, data shortcomings are restricting the ability of in-car systems to consider traffic-management plans or routes established by the road authorities. Rules in EU countries on the collection of road and traffic-regulation data have been uneven and often completely lacking. There has also been a lack of standards regarding the attributes to be used for recording traffic regulations and traffic circulation plans or recommended routes for heavy goods vehicles.

AIMS:

- > establish common minimum requirements, attributes and data formats for the collection of road data and traffic-regulation data in all EU Member States
- > establish common minimum requirements and standards regarding the timely and coordinated updating of this data in all EU Member States
- > establish common minimum requirements, attributes and data formats for recommended routes, in particular for heavy goods vehicles

TASKS AND ACHIEVEMENTS

Building on the results of the actions on real-time traffic and travel information (Action 1.1) and on the availability of accurate public data for digital maps (Action 1.3), the European Commission will launch a study to analyse the status quo concerning road-data collection and the provision and reuse of traffic circulation plans, traffic regulations and recommended routes in the EU. Looking to define minimum rules, procedures and specifications in this area, the Commission will support cooperation between road authorities in the Member States and stakeholders and will consider policy options for implementing measures including legal and/or non-legal instruments.

>> Today many EU Member States have no nationally binding rules, procedures or specifications regarding the provision, quality, format or updating of traffic management-related road data.



▶ ACTION 1.3

Availability of accurate public data for digital maps

10

Definition of procedures for ensuring the availability of accurate public data for digital maps and their timely updating through cooperation between the relevant public bodies and digital map providers, taking into account the results and recommendations of the eSafety Digital Maps Working Group

▶ THE CHALLENGE

Intelligent digital maps are a basic requirement for a whole range of ITS tools. The problem has been that the road data needed to produce them is not always available, accurate or reliable, with a lack of rules for timely updates. This hinders Europe-wide interoperability and the development of advanced — including safety-related — ITS technologies. The challenge is to ensure easy access to the digital road databases maintained by thousands of European road authorities in a standardised, non-discriminatory and transparent way.

▶ AIMS:

- > identify common minimum requirements of road data for use in digital maps in the EU
- > define procedures for ensuring fair, simple and transparent access to this road data for digital map providers

- > identify common minimum requirements regarding the timely updating of digital maps by digital map providers

▶ TASKS AND ACHIEVEMENTS

A detailed assessment of the state-of-the-art concerning road-data collection for digital maps, and of the technical and standardisation needs, is ongoing. Building notably on the work conducted by several research projects (such as Rosatte — <http://www.ertico.com/about-rosatte>) and taking into account the Inspire directive (<http://inspire.jrc.ec.europa.eu>) and existing or planned national and European spatial data infrastructures, the ongoing study will try to provide orientation(s) regarding how a future system could be designed to ensure timely data dissemination.

>> For further information on the topic of availability of accurate public data for digital maps: http://ec.europa.eu/transport/its/road/action_plan/public_data_en.htm



▶ ACTION 1.4

Traffic safety information services

Definition of specifications for data and procedures for the free provision of minimum universal traffic information services (including definition of the repository of messages to be provided)

11

▶ THE CHALLENGE

Especially where road safety is at stake it is important that traffic and travel information is made available to all players on a fair and equal basis. This brings in the notion of 'universal traffic messages' — traffic information that should be provided free of charge to all road users. Currently, information about safety-related traffic incidents is delivered most often by radio and as a public service, but in recent years private services have increasingly been entering the traffic-information market in conjunction with real-time navigation or location-based services. The ITS Action Plan is looking to develop free minimum information across the EU, improving road safety by providing wider and easier access to safety-related information such as danger warnings for objects on the road and scenes of accidents. High-quality, EU-wide information services that include free components could also represent an appealing model for public-private partnership.

▶ AIMS:

- > define the scope of safety-related services
- > develop suitable organisational models
- > ensure that free safety-related information is available for all road users
- > harmonise a Europe-wide free minimum service

▶ TASKS AND ACHIEVEMENTS

The European Commission finished in 2011 a first study on a possible free minimum traffic information service in order to examine the status quo across the EU and to consider what might be the most appropriate instruments for EU action. Specifications for a Europe-wide service should be elaborated under the ITS Directive.



▶ ACTION 1.5

Promotion of multimodal journey planners

12

Promotion of the development of national multimodal door-to-door journey planners, taking due account of public transport alternatives, and their interconnection across Europe

▶ THE CHALLENGE

Multimodal journey planners provide seamless information for several modes of transport, based on a strong backbone of rail and public transport and including car, non-motorised modes and potentially air and ferries too. Using them to get from A to B — typically on the web — can save people time and money, and it may also help to promote sustainable modes of transport and competition between modes. However, while numerous national platforms have been created, only limited attempts have been made to build a door-to-door multimodal travel information system for the cross-border European traveller.

▶ AIMS:

- > consolidate travel information into new or improved national journey planners in such a way that they can be connected
- > address issues of data availability, data sharing (formats) and data quality
- > move from national systems to a true European door-to-door information system and multimodal journey planner

▶ TASKS AND ACHIEVEMENTS

The ITS Directive foresees the development of functional, technical, organisational and service-provision specifications for EU-wide multimodal travel information services. A study was launched to support the European Commission's work towards a European multimodal journey planner and to prepare the elaboration of the specifications. Meanwhile, a website is to be set up giving an overview of and links to existing multimodal journey planners. The ITS action on promotion of multimodal journey planners is a common action with the Commission's Action Plan on Urban Mobility.

>> 'Why can't I yet plan or book my journey through Europe — switching between several modes — in one go and online?' — European Commission Vice-President and Commissioner for Mobility and Transport Siim Kallas, ITS Conference, 22 June 2010.



▶ ACTION 2.1

Continuity of ITS services

Definition of a set of common procedures and specifications to ensure the continuity of ITS services for passenger and freight in transport corridors and in urban/interurban regions — this work should include benchmarking and standardisation on door-to-door information flows, interfaces between the transport modes, traffic management and travel planning, and, in particular, event and emergency planning

13

▶ THE CHALLENGE

Achieving the seamless functioning of ITS for passengers and freight across the EU means tackling a range of issues related to the interoperability of systems and the continuity of ITS-related traffic-management and freight-management services across borders, operators, networks and different modes of transport. Key areas for investigation include pan-European consistency in the use of variable message signs, the interconnection of (road) traffic management centres, and co-modal transport planning and traffic-management strategies.

▶ AIMS:

- > roll out EU-wide and interoperable ITS services ensuring seamless support to the road user
- > foster cooperation and facilitate the electronic exchange of traffic data and information across borders, regions and urban/interurban interfaces enabling door-to-door and truly multimodal travel planning

- > realise standardised information flows between the relevant traffic centres and different stakeholders and promote best practices in deployment and operation of ITS services

▶ TASKS AND ACHIEVEMENTS

A study was initiated by the European Commission examining key issues and priorities for European action to ensure EU-wide continuity of ITS services. In order to define the minimum requirements for a truly European service, three traffic-management services — dynamic lane management, variable speed limits and transport-related event-planning and road incident-management operations — were to be screened. The current conditions for continuous and interoperable deployment will be assessed as well as their potential for an EU-wide roll-out.



▶ ACTION 2.2

e-Freight

14

Identification of ITS services to be deployed in support of freight transport (e-Freight) and development of appropriate measures to progress from concept to realisation — Particular attention will be given to applications for goods tracking and tracing using state-of-the-art technologies such as radio frequency identification and EGNOS- or Galileo-based location devices

▶ THE CHALLENGE

ITS technologies are essential for the introduction of e-Freight, envisioning a system in which 'en route' information on the location and condition of transported goods is made available online — and paper-free — in a secure way. In the future this may lead to a concept of 'intelligent cargo' where goods become self-, context- and location-aware as well as connected to a wide range of information services.

▶ AIMS:

- > simplify pan-European freight flows
- > develop secure ways of making supply-chain and 'en route' information available online to customs, other regulatory authorities and businesses
- > develop practical ways of using positioning and communication technologies
- > improve interoperability of computer applications used by different stakeholders
- > develop a standard framework for freight information exchange covering all transport modes and all stakeholders

▶ TASKS AND ACHIEVEMENTS

The relevant European Commission services have ensured close coordination of the 'e-Freight' (see box) and other research projects (DiSCwise, Euridice, Freightwise, Integrity, Rising, Smart-CM, Smartfreight) relating to smart logistics, resulting in a commonly agreed framework for information and communication technologies in transport logistics. The framework is based on the intelligent cargo concept and supports the e-Freight action of the ITS Action Plan.

>> The 'e-Freight' project (2010–13) brings together some 30 partners from 14 EU Member States and Norway to address the development, validation and demonstration of innovative e-Freight capabilities for co-modal transport:

<http://www.efreightproject.eu>



► ACTION 2.3

ITS framework architecture

Support for the wider deployment of an updated multimodal European ITS framework architecture for ITS and definition of an ITS framework architecture for urban transport mobility, including an integrated approach for travel planning, transport demand, traffic management, emergency management, road pricing and the use of parking and public transport facilities

► THE CHALLENGE

Like other highly complex systems, integrated ITS applications need a strategic framework — or 'system architecture' — as a basis for choices concerning their design and deployment, as well as for investment decisions. An ITS architecture needs to cover technical aspects plus the related organisational, legal and business issues. The ability to integrate systems in this way greatly increases their potential. However, despite the research efforts that have been made towards building a European ITS architecture (notably through the KAREN and FRAME projects — <http://www.frame-online.net>), only a limited number of EU Member State administrations have developed or are using an ITS architecture to deploy IT systems and services. In addition, the interoperability, continuity of services, multimodality and urban aspects of ITS architecture have generally been overlooked, and need to be duly addressed.

► AIMS:

- > define, adopt and support the deployment of a multimodal European ITS framework architecture, based notably on the FRAME model and the results of the E-FRAME project (2008–11)
- > derive a version of the multimodal European ITS framework architecture targeting urban transport mobility, and focusing on the required interfaces

► TASKS AND ACHIEVEMENTS

The E-FRAME project has been reviewing the current FRAME architecture with a view to extending it to include cooperative systems. Final results were expected to be available in June 2011. The results of E-FRAME were to be analysed along with those of the study on continuity of services (see also page 13), which partly addresses the use of the FRAME architecture. Building on the results of the KAREN, FRAME and E-FRAME projects, the European Commission will launch (by the end of summer 2011) a study to derive the appropriate multimodal ITS framework architecture, covering urban aspects as well.



▶ ACTION 2.4

Electronic road tolling

16 Implementation of the interoperability of electronic road toll systems (Directive 2004/52/EC)

▶ THE CHALLENGE

ITS solutions making use of satellite positioning and mobile communications offer new opportunities for infrastructure access and charging systems. Interoperability between systems is needed so that road users can circulate throughout the EU without having to be concerned by charging procedures changing from one country or region to another and without having to install specific equipment to access different charging zones. Directive 2004/52/EC lays down the conditions for the interoperability of electronic road toll systems in the EU and foresees a European Electronic Toll Service (EETS), by which road users subscribe to a single contract with an EETS provider in order to pay the charges related to any charging scheme requiring onboard equipment.

▶ AIMS:

- > further promote and monitor the implementation and roll-out of the European Electronic Toll Service and thus:
 - > enable road users to pay tolls easily throughout the whole of the EU thanks to one subscription contract with one service provider and one single onboard unit
 - > facilitate the generalisation of free-flow (barrier-free) tolling, including across borders

▶ TASKS AND ACHIEVEMENTS

The European Commission decision on the definition of EETS and its technical elements entered into force in October 2009. Subsequently, EETS was to be available within three years for vehicles above 3.5 tonnes and/or allowed to carry more than nine passengers (including the driver) — and within five years for all types of vehicle. The Commission carried out a 'mid-term review' 18 months after the entry into force of the decision. In view of the mid-term review, a consultation of professional stakeholders and the EU Member States was carried out in the period December 2010 to February 2011. Preliminary results showed that operational specifications and procedures (such as service level agreements, EETS domain statements, etc.) needed to be further detailed and that toll service providers must finalise their business case. Work on EETS implementation has made further progress with, for example, the guide for the application of Directive 2004/52/EC and of the decision on EETS definition having been finalised by a working group of the Toll Committee of EU Member State representatives. Moreover, important communication standards between the various EETS stakeholders were adopted.



▶ ACTION 3.1

Promotion of advanced driver assistance systems and safety-related ITS

17

Promotion of deployment of advanced driver assistance systems and safety- and security-related ITS systems, including their installation in new vehicles (via type approval) and, if relevant, their retrofitting in used ones

▶ THE CHALLENGE

Both research and initial deployment have shown the great potential to improve road safety of advanced driver assistance systems (ADAS) such as electronic stability control, adaptive cruise control, lateral support (lane-departure warning and lane-change assistance), collision warning and emergency braking systems as well as other applications including eCall (emergency call — see page 18), driver hypo-vigilance systems, 'speed alert' and 'alcohol-lock'. Electronic stability control and eCall alone could save up to 5 000 lives every year in the EU if fully deployed. It is clear, though, that the full potential of such systems will only be realised with their large-scale deployment in vehicles. Better use should be made of the newest active safety systems and of ADAS with proven benefits in terms of the safety of vehicle occupants and other road users.

▶ AIMS:

- > introduce advanced emergency braking systems (AEBS) and lane departure warning systems (LDWS) in heavy-duty vehicles: make the installation of AEBS and LDWS in heavy-duty vehicles mandatory in the EU through type approval as from 1 November 2013

for new vehicle types and from 1 November 2015 for new vehicles

- > assess the technical/operational maturity of ADAS and safety- and security-related ITS systems, and further promote the more developed/advanced ones

▶ TASKS AND ACHIEVEMENTS

The European Commission will promote the adoption within the United Nations Economic Commission for Europe (Working Party 29) of a regulation on AEBS and LDWS for heavy-duty vehicles. Relevant EU implementing measures would be taken under Regulation (EC) No 661/2009 concerning type-approval requirements for the general safety of motor vehicles. Meanwhile, a study will be carried out to assess ADAS and other safety-related technologies.

>> **The eSafety initiative is working for a quicker development and increased use of smart road safety and eco-driving technologies:**

http://ec.europa.eu/information_society/activities/esafety/index_en.htm

<http://www.icarsupport.eu>



► ACTION 3.2

eCall

18

Support the implementation platform for the harmonised introduction of pan-European eCall, including awareness campaigns, upgrading Public Safety Answering Points' infrastructures and an assessment of the need for regulation

► THE CHALLENGE

Despite its potential to save lives and mitigate the injuries of those involved in car accidents — and despite the availability of common European standards and the willingness of most stakeholders — the 'eCall' in-vehicle emergency call system is yet to be widely deployed in Europe. The initial target date for eCall roll-out was 2009, but progress has been slow. Further measures are needed to encourage concerted action by all stakeholders — including vehicle and equipment manufacturers, mobile network operators and EU Member States — and to facilitate the deployment of a Europe-wide eCall service.

► AIMS:

- > equip all new type-approved vehicles with eCall devices
- > upgrade Public Safety Answering Points (PSAPs) to enable them to handle eCalls
- > achieve the full-scale roll-out of eCall throughout Europe

► TASKS AND ACHIEVEMENTS

The European Commission issued in August 2009 a communication, 'eCall: time for deployment', foreseeing a range of further actions: support to the European eCall Implementation Platform (EeIP); awareness campaigns; pre-deployment pilot schemes; and possible regulatory measures. Commission services later finalised an eCall impact assessment to help decide on the best way forward towards eCall deployment, and pilot project HeERO (Harmonised eCall European Pilot, 2011–13, <http://www.heero-pilot.eu>) started on 1 January 2011. Meanwhile the EeIP, as the coordination body bringing together representatives of the relevant stakeholder associations and of national platforms, meets at regular intervals to discuss technical details and practicalities. In addition, the Commission is to prepare: recommendations on mobile communications (implementation of eCall flag in mobile networks); specifications for PSAPs, under the ITS Directive; and measures to mandate the introduction of eCall in vehicles via existing type-approval legislation.

>> More than 70 % of citizens responding to a Eurobarometer survey in Europe said they would like to have eCall installed in their next car.



▶ ACTION 3.3

Safe onboard human–machine interfaces

Development of a regulatory framework on a safe onboard human–machine interface and the integration of nomadic devices, building on the European statement of principles on safe and efficient in-vehicle information and communication systems

19

▶ THE CHALLENGE

There is a growing trend for more and more information, communication and entertainment systems to be present in our cars. This includes devices that are traditionally built into the car, such as radios and CD players, as well as — increasingly — portable devices that are brought in, such as mobile phones and portable navigation systems, the so-called ‘nomadic’ devices. It is important that such systems be used safely while driving, not allowing the driver to become distracted or overloaded by different devices and information sources. This calls for appropriate human–machine interfaces as the means by which drivers interact with their vehicle, and for the safe integration of nomadic devices into the car environment.

▶ AIMS:

- > define the required measures for the safe use and operation while driving of in-built and nomadic information, communication and navigation equipment and for the safe interaction of nomadic devices with the driver, between themselves and with the in-built car systems

- > define required measures for the safe mounting of nomadic devices in cars
- > facilitate the safe integration of information and communication services and functionalities such as those related to traffic and travel information

▶ TASKS AND ACHIEVEMENTS

A European Commission study produced in 2010 a detailed analysis of the regulatory situation in the EU Member States regarding nomadic devices and their use in vehicles. The Commission is considering a possible update and revision of the existing recommendation on safe and efficient in-vehicle information and communication systems — the European statement of principles — and is looking potentially to develop a set of regulatory measures to facilitate the implementation of the principles.



▶ ACTION 3.4

Vulnerable road users

20

Development of appropriate measures including best-practice guidelines concerning the impact of ITS applications and services on the safety and comfort of vulnerable road users

▶ THE CHALLENGE

Vulnerable road users are defined in the ITS Directive as ‘non-motorised road users, such as pedestrians and cyclists as well as motor-cyclists and persons with disabilities or reduced mobility and orientation’. While this encompasses a quite broad range of categories, all of them have at least one thing in common: they are disproportionately represented in statistics on injuries and road traffic casualties. Intelligent Transport Systems may be able to help, yet the impact of ITS applications and services on vulnerable road users has not been well known or documented. Indeed, though there is increasing interest in defining and reporting ITS impacts and benefits, the vulnerable road users — the very people who need the most support — seem to have been left out. The main challenge is therefore to identify, and in a second stage prioritise, those ITS applications and services that can have the most significant impact on the various categories of vulnerable road users.

▶ AIMS:

- > identify significant sub-groups of vulnerable road users and the most relevant ITS applications/services

- > assess (positive/negative) impacts of ITS applications and services on the safety and comfort of vulnerable road users, and if possible quantify these impacts
- > prioritise among ITS applications and services, and detail concrete measures to enhance positive impacts or to limit/mitigate identified negative effects
- > propose, develop and detail targeted European action

▶ TASKS AND ACHIEVEMENTS

The European Commission launched in 2011 a study related to the impact of ITS on the safety and comfort of vulnerable road users, to be complemented by a stakeholder consultation. More in-depth research about safety impacts, possible countermeasures and safe human-machine interfaces was also planned. Based on the outcome of this work, and if appropriate or required, specifications may be elaborated under the ITS Directive.



► ACTION 3.5

Services for safe and secure truck parking places

Development of appropriate measures including best-practice guidelines on secure parking places for trucks and commercial vehicles and on telematic-controlled parking and reservation systems

21

► THE CHALLENGE

The constant growth of heavy goods transport will place a tremendous extra load on the trans-European road network. Suitable truck parking places are already scarce, and driving-time restrictions sometimes force drivers to stop at unsafe places like hard shoulders or entrances to parking areas. Intelligent solutions for secure truck parking areas can help to ease the situation. Parking occupancy must be managed more efficiently, and more information about the availability of parking spaces must be provided.

► AIMS:

- > synchronise past and ongoing activities in the field of intelligent truck parking
- > optimise the use of the existing parking infrastructure
- > provide cross-border, seamless and consistent information and forecasts on available parking places to truck drivers, hauliers and service providers
- > offer the possibility of reserving parking spaces, pre- and in-trip
- > build a European network of intelligent, secure truck parking areas

► TASKS AND ACHIEVEMENTS

The European Commission finalised in 2011 a study on information and reservation systems for secure parking places, notably addressing the barriers and the possibilities for a business case for reservation services. In addition, the EasyWay project (<http://www.easyway-its.eu>) worked on a deployment strategy for intelligent truck parking, developing guidelines to promote a harmonised and coordinated pan-European approach on information provision and optimal management of truck parking areas. Building on this work, specifications related to intelligent truck parking should also be elaborated, under the ITS Directive.

>> 'On German highways alone, there are 50 % more trucks parked than available parking spaces: this is a current deficit of 14 000 parking spaces.'

Source: ADAC: <http://www.adac.de/infotestrat/tests/strassen/labeltest/default.aspx?tabid=tab4>



▶ ACTION 4.1

Open in-vehicle platform

22

Adoption of an open in-vehicle platform architecture for the provision of ITS services and applications, including standard interfaces — the outcome of this activity would then be submitted to the relevant standardisation bodies

▶ THE CHALLENGE

Many different organisations in the EU, both in the public and private sectors, have an interest in deploying ITS services involving in-vehicle equipment. Recent years have seen the introduction of new legal requirements for the deployment of a number of major pan-European applications, and the use of ITS components or systems is stipulated in several existing or planned legal acts and voluntary agreements. However, deployment has been hampered by significant implementation barriers, and progress has been disappointing overall. As part of the ITS Action Plan, the European Commission is therefore exploring further measures to facilitate the more rapid deployment of multiple applications within the vehicle, by addressing the issues associated with in-vehicle ITS architecture.

▶ AIMS:

- > make it easier to provide/buy consumer-oriented applications — such as infotainment, navigation and payment — and to fit these in any vehicle regardless of type or model

- > enable the same platform to host 'regulated' applications — such as the digital tachograph and (see page 16) the European Electronic Toll Service — in compliance with the relevant legislation
- > offer new applications such as driver assistance, in-vehicle safety applications, electronic vehicle identification
- > use the platform to cater also for vehicle-to-vehicle and vehicle-to-infrastructure communication

▶ TASKS AND ACHIEVEMENTS

A study launched by the European Commission on an open in-vehicle platform architecture was completed in December 2010. The results were to be analysed with a view to deciding on the way forward, prospectively leading to the preparation of a potential new mandate for standardisation.



▶ ACTION 4.2

Cooperative systems

Development and evaluation of cooperative systems in view of the definition of a harmonised approach; assessment of deployment strategies, including investments in intelligent infrastructure

▶ THE CHALLENGE

Stand-alone driver assistance can help drivers control their vehicle and thus can have positive effects in terms of safety and traffic efficiency. However, the benefits could be increased if individual vehicles were able to communicate with each other and with the road infrastructure. Also, vehicles can nowadays function as sensors to report traffic, road and weather conditions to be used for high-quality information services. Enabling precisely this sort of interaction, this is where so-called 'cooperative systems' come into play. The ITS Action Plan looks to further promote their development.

▶ AIMS:

- > assess further the impacts of cooperative systems, notably on the road infrastructure
- > support the development of safety-related and energy efficiency-promoting cooperative applications, including tests and pilots in real traffic conditions
- > promote the standardisation of cooperative systems
- > make further progress on international cooperation with the United States and Japan on cooperative system research

▶ TASKS AND ACHIEVEMENTS

Several EU-funded research projects on cooperative systems — notably Coopers, CVIS and Safespot — have delivered promising results. Under real traffic conditions, the three aforementioned projects jointly demonstrated their achievements to hundreds of IT and traffic experts in and around Amsterdam at the end of March 2010. Roadworks' warning, wrong-way-driver alert and protection of vulnerable road users were among the applications on show. Follow-on projects, field operational tests, work on standardisation, an impact assessment study (including cost-benefit analysis) and international cooperation on research aspects will all be among the activities taking work forward on cooperative systems.

>> **Coopers (Cooperative Systems for Intelligent Road Safety):** <http://www.coopers-ip.eu>

>> **CVIS (Cooperative Vehicle-Infrastructure Systems):** <http://www.cvisproject.org>

>> **Safespot (Cooperative vehicles and road infrastructure for road safety):**
<http://www.safespot-eu.org>



▶ ACTION 4.3

I2I, V2I, V2V communication

24

Definition of specifications for infrastructure-to-infrastructure (I2I), vehicle-to-infrastructure (V2I) and vehicle-to-vehicle (V2V) communication in cooperative systems

▶ THE CHALLENGE

In view of the rapid progress in the development of cooperative systems (see page 23) — enabling an exchange of information and communication between vehicles and with the road infrastructure — several communication protocols are being developed or have been defined and need to be taken into account as part of the effort to promote such systems.

▶ AIMS:

- > support and monitor the work of ETSI (the European Telecommunications Standards Institute — <http://www.etsi.org>) and CEN (the European Committee for Standardisation — <http://www.cen.eu>) for, respectively, cooperative systems and DATEX II (data exchange for traffic management and travel information) specifications
- > finalise the adoption of required specifications for I2I, V2I and V2V communications for cooperative systems
- > promote the use of standardised specifications among stakeholders

▶ TASKS AND ACHIEVEMENTS

For I2I, DATEX II was fine-tuned under the EasyWay project (<http://www.easyway-its.eu>) before being transmitted to CEN for standardisation work. For V2I and V2V, ETSI adopted the European Communications Architecture for Cooperative Systems as ETSI standard ETSI EN 302 665 V1.1.1, ultimately with a view to finalising the whole suite of standards for communications of cooperative systems within ETSI.

>> The DATEX standard was originally designed and developed as a traffic and travel data exchange mechanism by a European task force set up to standardise the interface between traffic control and information centres. With the upgraded DATEX II 2.0 specifications it has become the reference for applications requiring access to dynamic traffic- and travel-related information in Europe:

<http://www.datex2.eu>



ACTION 4.4

Standardisation mandate

Definition of a mandate for the European standardisation organisations to develop harmonised standards for ITS implementation, in particular regarding cooperative systems

25

THE CHALLENGE

Standardisation is a priority area for the European Commission in the ITS Action Plan in order to achieve Europe-wide cooperation and coordination of ITS systems. Working in conjunction with European standardisation bodies, the setting of voluntary industry standards and common technical specifications helps tackle barriers to ITS implementation, promoting harmonisation and interoperability. It also allows stakeholders to concentrate their energy where it really matters — the efficient invention and production of goods and services.

AIMS:

- > identify and use a standardised list of safety-related traffic events ('universal traffic messages')
- > use standardised information flows or traffic interfaces between the relevant traffic information/control centres and different stakeholders

- > define a standardisation process for the adoption of an open in-vehicle platform architecture
- > pursue European standardisation activities for cooperative systems

TASKS AND ACHIEVEMENTS

Much progress has been achieved by the European standardisation organisations. In line with the priorities of the 2009 and 2010 ICT standardisation work programmes, CEN (the European Committee for Standardisation — <http://www.cen.eu>) and ETSI (the European Telecommunications Standards Institute — <http://www.etsi.org>) continued their work notably on eCall (see page 18) and on electronic tolling systems (see page 16). In addition, the European Commission issued a new specific mandate on cooperative systems (see page 23) to which CEN and ETSI jointly responded, coordinating their actions through the existing Standardisation ITS Steering Group.



▶ ACTION 5.1

Data security and data protection

26

Assess the security and personal data protection aspects related to the handling of data in ITS applications and services and propose measures in full compliance with EU legislation

▶ THE CHALLENGE

Despite the many potential benefits of Intelligent Transport Systems, the associated increase in vehicle/infrastructure electronics and communications raises security and privacy issues which, if left unaddressed, could jeopardise the wider deployment of ITS. For example, location-based services may — in combining location information and personal data — have possible implications for personal privacy. There may also be security vulnerabilities in electronics and communications systems. ITS technologies must ensure the integrity, confidentiality and secure handling of data, including personal and financial details, and show that citizens' rights are fully protected.

▶ AIMS:

- > assess the importance of data protection and privacy aspects in the areas and actions of the ITS Action Plan
- > evaluate which potential measures could be undertaken and make recommendations for further action

▶ TASKS AND ACHIEVEMENTS

The eSecurity Working Group of the eSafety Forum submitted an interesting contribution that forms the basis of a further study launched in 2011, addressing the specific data-security and data-protection issues related to ITS applications and services. Meanwhile, a number of EU-backed research projects have carried out work relevant to the topic, such as Preciosa (Privacy Enabled Capability in Cooperative Systems and Safety Applications) and Sevecom (Secure Vehicular Communication). Having kicked off in early 2011, the project Preserve (Preparing Secure Vehicle-to-X Communication Systems, 2011–14) is now addressing this topic as well.

>> eSecurity Working Group:

http://www.esafetysupport.org/en/esafety_activities/esafety_working_groups/esecurity.htm

>> Preciosa: <http://www.preciosa-project.org>

>> Preserve: <http://www.preserve-project.eu>

>> Sevecom: <http://www.sevecom.org>

▶ ACTION 5.2

Liability

Address the liability issues pertaining to the use of ITS applications and notably in-vehicle safety systems

▶ THE CHALLENGE

Liability issues raised by the provision or use of ITS applications represent another potential barrier to the wider market penetration of some Intelligent Transport Systems. Liability issues have notably hampered the market introduction of intelligent integrated safety systems, with legal questions regarding product/manufacture liability and driver responsibility. For advanced driver assistance systems, for instance, the liability risks may be highly complex — the term ‘defective product’ is used in the EU product liability directive not only in a technical sense but is also linked to human factors including system requirements such as dependability, controllability, comprehensibility, predictability and misuse resistance, which in turn brings in human-machine-interaction safety issues.

▶ AIMS:

- > identify the ITS applications for which liability constraints or issues are the most probable and examine how to address them
- > produce specific recommendations/guidelines on ITS-related liability issues and propose specific measures

▶ TASKS AND ACHIEVEMENTS

Building on the results of research projects and experience of liability in other domains, the European Commission is to launch (2011) a study to identify the major liability issues that need to be addressed in the context of deployment of ITS applications and services.



▶ ACTION 6.1

Legal framework: Directive 2010/40/EU

28

Proposal for a legal framework for European coordination on the Europe-wide deployment of ITS

▶ THE CHALLENGE

The deployment of ITS in road transport has been much slower than in other modes of transport, and ITS services have often been deployed on a fragmented basis. Voluntary agreements and standardisation have failed to deliver significant progress in terms of the deployment and use of such systems. Complementing the ITS Action Plan and other initiatives that foster a concerted EU-wide approach, the ITS Directive — Directive 2010/40/EU (see also pages 3 and 4) — provides the legal framework for the implementation of the actions required to achieve an effective and coordinated deployment and use of ITS.

▶ AIMS:

- > adopt a legal framework for the deployment of ITS in Europe — achieved (Directive 2010/40/EU was adopted on 7 July 2010 and entered into force on 26 August 2010)
- > implement Directive 2010/40/EU, including primarily the adoption of specifications firstly for six priority actions:
 - > EU-wide multimodal travel information services
 - > EU-wide real-time traffic information services
 - > road safety-related minimum universal traffic information, free of charge to users

- > interoperable EU-wide eCall
- > information services for safe and secure parking for trucks and commercial vehicles
- > reservation services for safe and secure parking for trucks and commercial vehicles

▶ TASKS AND ACHIEVEMENTS

Along with the adoption of the ITS Directive, the European ITS Committee (composed of representatives of the EU Member States) was established and a working programme for the implementation of the directive was adopted. An ITS Advisory Group was created in 2011. All preparatory actions/studies related to the adoption of the specifications for the six priority actions were launched in 2011, with a view to the adoption of specifications in 2012, 2013 and 2014. In addition, the European Commission organises an annual ITS conference to report on progress.

>> A major initiative that contributes to the coordination of ITS deployment is EasyWay, a project for EU-wide ITS deployment on the Trans-European Road Network:
<http://www.easyway-its.eu>


 The logo features a dark grey rounded rectangle on the left containing a yellow right-pointing triangle and the letters 'ITS' in white. To the right of this rectangle, the word 'TOOLKIT' is written in a large, bold, dark grey sans-serif font. Below 'TOOLKIT', the word '2DECIDE' is written in a smaller, dark grey sans-serif font.

► ACTION 6.2

A knowledge tool for decision-makers

Development of a decision-support toolkit for investment decisions in ITS applications and services — This should include a quantified evaluation of the economic, social, financial and operational impact and cover aspects such as user acceptance, life-cycle cost–benefit as well as the identification and evaluation of best practice for facilities' procurement and deployment

29

► THE CHALLENGE

The lack of easy and efficient access to knowledge about the benefits and costs of ITS applications and services, and about experiences and evaluations of ITS implementation, is recognised as a key reason for slow investment. Decision-making for ITS deployment on the urban, regional and national level has been slow and uncoordinated. But help is at hand in the form of a new web-based decision-support toolkit that will make it easier to find relevant and up-to-date ITS-related information. The European ITS Toolkit will be a key address when looking for consolidated knowledge about Intelligent Transport Systems, offering a single entry point for better ITS decision-making.

► AIMS:

- > build a decision-support system for transport authorities as well as road and public transport operators
- > provide easy access to knowledge on Intelligent Transport Systems
- > support EU ITS policy goals and national ITS strategies

► TASKS AND ACHIEVEMENTS

The European ITS Toolkit is developed by the EU project '2DECIDE — Toolkit for sustainable decision-making in ITS deployment' (October 2009 to September 2011 — <http://www.2decide.eu>). A first, beta version was released for demonstration and testing in April 2011, with a view to the finished toolkit being made available in October 2011 (<http://www.its-toolkit.eu>). Main outputs are service summaries ranked by relevance, case studies and evaluation reports.



▶ ACTION 6.3

Funding ITS

30

Development of guidelines for the public funding from both EU (e.g. trans-European transport network (TEN-T) and Structural Funds) and national sources of ITS facilities and services based on an assessment of their economic, social and operational value

▶ THE CHALLENGE

Investment decisions are typically based on awareness and understanding of possible options, steered by perceptions of benefits versus costs. For decision-makers to be able to give full consideration to ITS, they must understand the pros and cons of ITS and be aware that ITS make it possible to do more than simply add more 'hard' infrastructure to the transport network. Developing this awareness and understanding will help to cement ITS as a valid option for mobility-related problem-solving, which should in turn help to boost ITS funding, investment and deployment.

▶ AIMS:

- > know more about policies and schemes already in place to fund ITS
- > define a minimum framework to have ITS correctly considered when it comes to solving mobility- and traffic-related problems

- > look, potentially, to have applicable mechanisms to fund ITS harmonised Europe-wide

▶ TASKS AND ACHIEVEMENTS

The ITS Action Plan sets out in the first instance to analyse existing (non-EU/non-EU level) policies and practices regarding the frameworks, procedures and rules in place in relation to public funding of ITS and ITS-related activities. Supported by a study commissioned by the European Commission, work on this action should lead towards the identification of a common minimum framework and to best practices that look to ensure the correct positioning and consideration of ITS in mobility-related decision-making processes.



► ACTION 6.4

Expert Group on Urban ITS

Set-up of a specific ITS collaboration platform to promote ITS initiatives in the area of urban mobility

► THE CHALLENGE

Intelligent Transport Systems can do much to support urban policy goals in areas such as travel information, traffic- and demand-management, smart ticketing and urban logistics. Indeed, the potential of ITS to make an impact on issues like congestion, safety and carbon emissions is at its greatest in urban areas. But urban mobility is a complex animal, and the fact that responsibilities are spread among many different stakeholders can make coordination and consensus difficult to achieve. Technical solutions exist — the main barriers to further ITS deployment in cities are rather organisational, institutional or financial.

► AIMS:

- > set up an Expert Group on Urban ITS as a collaboration platform to promote ITS initiatives in the area of urban mobility and in particular to:
 - > facilitate practical dialogue between public and private stakeholders
 - > promote the use of ITS in urban areas while fostering interoperability and continuity of services
 - > identify and exchange best practice — including organisational and financing structures — for key applications of urban ITS (traffic and travel information, smart payment systems, traffic management, urban logistics)

- > elaborate guidelines for the key applications
- > identify needs for further European standardisation

► TASKS AND ACHIEVEMENTS

The Expert Group on Urban ITS was established and met for the first time on 8 December 2010, consisting of 25 members — drawn from local and regional authorities, public transport operators, industry and service providers. With an initial two-year mandate, the group was tasked with producing practical guidance for urban ITS decision-makers covering passenger and freight and different modes of transport. The group will meet around three times per year. The European Commission's action plans on both ITS and urban mobility include complementary activity on ITS for urban areas.

>> Expert Group on Urban ITS in the European Commission's Register of Expert Groups:

<http://ec.europa.eu/transparency/regexpert/detailGroup.cfm?groupID=2520>

>> European Commission's Action Plan on Urban Mobility:

http://ec.europa.eu/transport/urban/urban_mobility/action_plan_en.htm



For further information

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- ▶ **THE EUROPEAN COMMISSION'S DIRECTORATE-GENERAL FOR MOBILITY AND TRANSPORT:**

http://ec.europa.eu/dgs/transport/index_en.htm

- ▶ **MOBILITY AND TRANSPORT DG WEBPAGE ON INTELLIGENT TRANSPORT SYSTEMS:**

http://ec.europa.eu/transport/its/index_en.htm

- ▶ **ITS ACTION PLAN AND DIRECTIVE:**

http://ec.europa.eu/transport/its/road/action_plan/action_plan_en.htm

- ▶ **ITS FLYER 'INTELLIGENT TRANSPORT SYSTEMS — A SMART MOVE FOR EUROPE' (2009):**

http://ec.europa.eu/transport/publications/doc/2009_its_factsheet_en.pdf

- ▶ **THE EUROPEAN COMMISSION'S INTELLIGENT CAR INITIATIVE:**

http://ec.europa.eu/information_society/activities/intelligentcar/index_en.htm

<http://www.icarsupport.eu>

- ▶ **EASYWAY — EUROPE-WIDE ITS DEPLOYMENT ON THE TRANS-EUROPEAN ROAD NETWORK:**

<http://www.easyway-its.eu>

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