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COMMUNICATION FROM THE COMMISSION

Action Plan for the Deployment of Intelligent Transport Systems in Europe

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1. **INTRODUCTION**

The renewed Lisbon agenda on growth and jobs[1] aims at delivering stronger, lasting growth and creating more and better jobs. Furthermore, the mid-term review of the 2001 White Paper[2] stresses the key role of innovation in ensuring sustainable, efficient and competitive mobility in Europe.

Against this background several major challenges have to be overcome for Europe's transport system to play its full role in satisfying the mobility needs of the European economy and society:

– Road traffic congestion is estimated to affect 10 % of the road network, and yearly costs amount to 0.9-1.5 % of the EU GDP.[3]

– Road transport accounts for 72 % of all transport-related CO_2 emissions, which increased by 32 % (1990-2005).[4]

– Whilst road fatalities are in regression (-24 % since 2000 in EU27) their number (42 953 fatalities in 2006) is still 6 000 above the intended target of a 50 % reduction in fatalities in the period 2001-2010.[5]

These challenges are even more pressing with forecasted growth rates of 50 % for freight transport and 35 % for passenger transport in the period from 2000 to 2020.[6]

The main policy objectives arising from these challenges are for transport and travel to become:

• cleaner,

• more efficient, including energy efficient[7],

• safer and more secure.

It is however clear, that conventional approaches such as the development of new infrastructure, will not give the necessary results on the timescales required by the magnitude of these challenges. Innovative solutions are clearly needed if we are to

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[1]   COM (2005) 24
[2]   COM(2006) 314
[3]   CEMT/ITF(2007): Congestion, a Global Challenge: The Extent of and Outlook for Congestion in Inland, Maritime and Air Transport
[4]   DG TREN(2008): Energy and Transport in Figures 2007/08
[5]   Cf. footnote 4
[6]   Cf. footnote 2
[7]   COM(2006) 545

achieve the rapid progress demanded by the urgency of the problems at hand. It is high time for Intelligent Transport Systems to play their due role in enabling tangible results to emerge.

2. INTELLIGENT TRANSPORT SYSTEMS

"Intelligent Transport Systems" mean applying Information and Communication Technologies (ICT) to transport. These applications are being developed for different transport modes and for interaction between them (including interchange hubs).

In air transport, SESAR[8] will be the framework for the implementation of a new generation of air traffic management. Inland waterways are introducing River Information Services (RIS) to manage waterway utilisation and the transport of freight. The railway network is gradually introducing the European Rail Traffic Management System (ERTMS) and Telematics Applications for Freight (TAF-TSI). Shipping has introduced SafeSeaNet and Vessel Traffic Monitoring and Information Systems (VTMIS) and is progressing towards an Automatic Identification System (AIS) and Long-Range Identification and Tracking (LRIT). Examples of Intelligent Transport Systems applications in road transport include urban and motorway traffic management and control systems, electronic toll collection and route navigation. But until now there has been no similar coherent European framework for interconnection between road and the other transport modes.

3. SCOPE

This Action Plan aims to accelerate and coordinate the deployment of Intelligent Transport Systems (ITS) in road transport, including interfaces with other transport modes.

The Action Plan outlines six priority areas for action. For each area a set of specific actions and a clear timetable are identified. Fulfilling them by setting a framework to define procedures and specification will call for the mobilisation of Member States and other stakeholders.

Finally, this Action Plan will help to combine the resources and instruments available to deliver a substantial added value for the European Union.

4. WHY A EUROPEAN APPROACH FOR ITS?

ITS can create clear benefits in terms of transport efficiency, sustainability, safety and security, whilst contributing to the EU Internal Market and competitiveness objectives.

In Europe, there have been a number of activities in this domain since the 1980s. These activities have traditionally focused, albeit often in an uncoordinated and fragmented manner, on specific areas such as clean and energy-efficient transport,

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[8] SESAR: Single European Sky Air Traffic Management Research

road congestion, traffic management, road safety, security of commercial transport operations or urban mobility.

Despite these developments, some issues need to be addressed from a European perspective to avoid the emergence of a patchwork of ITS applications and services: geographical continuity, interoperability of services and systems and standardisation. They should facilitate pan-European applications, secure accurate and reliable real-time data and an adequate coverage of all travelling modes.

4.1. Greening of transport

ITS applications have an essential role to play in the greening of transport[9].

Differentiated charging of vehicles by Electronic Toll Collection systems for circulating on certain routes is a way to influence traffic demand.

ITS applications for journey planning, dynamic in-vehicle navigation and eco-driving support also contribute to congestion relief, to greener mobility and to less energy consumption.

The "Green transport corridors"[10] are an EU initiative to promote the concept of integrated freight transport, with transport modes complementing each other to enable more environmentally friendly alternatives for long-distance transport between logistics hubs. Reliance on advanced ITS technology is essential for achieving this goal.

4.2. Improving transport efficiency

Production and distribution of goods rely on efficient and cost-effective multi-modal logistic chains to organise their transport across the EU and beyond, especially when just-in-time requirements are at stake. ITS tools constitute a core enabler for the management of such logistic chains, notably in maintaining a paperless information trail in the management of the physical flow of goods (eFreight).

Real-time Traffic and Travel Information (RTTI) services, more and more combined with satellite navigation, are now being offered from both public and private sources to facilitate mobility.

In many parts of Europe ITS are already underpinning effective inter-urban and urban traffic management, fostering modal interchange at major hubs and transfer points.

In the longer term, cooperative systems based on vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I) and infrastructure-to-infrastructure (I2I) communication and exchange of information and, when appropriate, a GNSS[11] positioning and time, will demonstrate their full potential.

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[9]   COM(2008) 433 — Communication on Greening Transport
[10]   COM(2007) 607
[11]   Global Navigation Satellite System

4.3. Improving road safety and security

Research and initial deployment have shown the great potential for improving road safety of Driver Assistance Systems such as Electronic Stability Control (ESC), Adaptive Cruise Control (ACC), Lateral Support (lane departure warning and lane change assistant), Collision Warning and Emergency Braking Systems and other applications such as eCall (emergency call), driver hypo-vigilance systems, "speed alert" and "alcohol-lock". ESC and eCall alone[12] could save up to 6 500 lives per year in the EU if fully deployed.

Better use should be made of the newest active safety systems and advanced driver assistance systems with proven benefits in terms of in-vehicle safety for the vehicle occupants and other road users (including vulnerable road users). The European Statement of Principles on the Human Machine Interface (HMI)[13] should be extended to allow for the proliferation of nomadic devices.

Navigation and tracking and tracing systems can help in providing remote in-route monitoring of vehicles and cargo, e.g. for the transport of dangerous goods or living animals. They can guide truck drivers to secure parking areas, help to comply with existing regulations on driving times and rest periods, and should support a new generation of the digital tachograph.

4.4. The EU added value in ITS deployment

The potential of ITS can only be realised if its deployment in Europe is transformed from the limited and fragmented implementation that is observed today into an EU-wide one. In this respect, the removal of existing barriers to ITS deployment will be pivotal. The EU has a clear role to play in creating the right framework conditions for accelerated and coordinated deployment of ITS: the policy priorities, the choice of generic ITS components to be shared or re-used, and agreement on a clear timetable.

Common European action can directly contribute to:

- addressing the complexity of ITS deployment, with the large number of stakeholders involved and the need to ensure synchronisation both geographically and between the various partners

- supporting the market penetration of advanced mobility services for the citizens, whilst promoting public transport alternatives to private car use

- enabling the generation of scale-effects for a more cost-effective, faster and less risky deployment of ITS

- accelerating the current pace of ITS deployment in road transport, and assuring the continuity of services throughout the Community

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[12]   COM(2007) 541
[13]   C(2008)1742

- enhancing the leading role of the European ITS industry in worldwide markets by fostering the supply of innovative products and services to vehicle manufacturers, transport operators, logistics providers and users

To achieve these goals, the EU can make use of several instruments: financial support, standardisation initiatives, legislative and non-legislative measures.

5. CONSULTATIONS

This Action Plan was prepared on the basis of input provided by wide consultation of stakeholders. The input was collected via a fourfold approach: (i) interviews with high-level stakeholders from the private and public sector; (ii) workshops; (iii) an internet questionnaire; (iv) targeted discussions in existing stakeholder forums.

The interviews identified some principal needs. ITS deployment should be policy-led and responsibilities need to be clearly identified including the role for public-private cooperation. For stakeholder coordination, a high-level cross-sector group is necessary. Most consulted stakeholders think that the European Union should take more responsibility for further deployment of ITS.

Traffic management, congestion relief on freight corridors and in cities, promotion of co-modality, in-vehicle safety systems, real time traffic and travel information and an open in-vehicle platform to integrate applications were among the priority issues identified.

6. PRIORITY AREAS FOR ACTION AND RELATED MEASURES

The six priority areas suggested build on input from public and private stakeholders and assume that ITS applications to be deployed in the short-to-medium term should be mature, sufficiently interoperable, and able to create a catalytic effect across Europe.

The Action Plan draws on a series of ongoing European Commission initiatives such as the Action Plan on Freight Transport Logistics[14], the Action Plan on Urban Mobility[15], Galileo deployment[16], the Greening Transport Package[17], the i2010 initiative on Intelligent Cars[18], eSafety[19], the 7th Framework Programme for Research and Technological Development[20], eCall[21], European Technology Platforms[22] and their strategic research agendas, CARS 21[23].

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[14] COM(2007) 607
[15] To be adopted in December 2008
[16] http://ec.europa.eu/dgs/energy_transport/galileo
[17] COM(2008) 433
[18] COM(2007) 541
[19] www.esafetysupport.org
[20] http://cordis.europa.eu/fp7
[21] www.esafetysupport.org/en/ecall_toolbox
[22] http://cordis.europa.eu/technology-platforms
[23] COM(2007)22

The activities described here do not repeat or duplicate existing work but rather complement it, maximising synergies and focussing on outstanding priority issues in a concerted manner.

6.1. **Action Area 1: Optimal use of road, traffic and travel data**

Many state-of-the-art ITS applications rely on an accurate knowledge of both the characteristics of the road network and the traffic regulations applicable (e.g. one-way streets and speed limits). Whilst in the past the bulk of this knowledge was provided by authorities, there is a trend towards the utilisation of commercial sources. Where road safety is at stake it is essential that this information is validated and made available to all players on a fair and equitable basis, in view of ensuring a safe and orderly management of traffic. This applies, in particular, to digital mapping, including its inherent processes for data collection, validation and timely updating.

Similar considerations apply to the provision of (real-time) traffic and travel information services. Specific issues include the notion of "universal traffic messages", i.e. the type of messages to be provided free of charge to all road users as a public information service, the consistency of the information between the various sources, and the need to comply with prescriptions imposed by network management operations.

The following actions are proposed:

	Action	Target date
1.1	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	2010
1.2	Optimisation of the collection and provision of **road data** and traffic circulation plans, traffic regulations and recommended routes (in particular for heavy goods vehicles)	2012
1.3	Definition of procedures for ensuring the availability of accurate public data for **digital maps** and their timely	2011

		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.	
	1.4	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)	2012
	1.5	Promotion of the development of national **multimodal** door-to-door **journey planners**, taking due account of public transport alternatives, and their interconnection across Europe	2009 to 2012

6.2. **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. In this respect, seamless and dynamic traffic and transport management are beneficial for long-distance and urban freight transport and at the same time improve co-modality.

ITS technologies are essential for the introduction of eFreight[24], whereby "en route" information on the location and condition of transported goods (especially dangerous goods and live animals) is made available on-line in a secure way. This concept can be extended to encompass other supply-chain activities such as the exchange of content-related data for regulatory or commercial purposes, using innovative technologies such as radio frequency identification (RFID)[25] and building on applications of the EGNOS/Galileo satellite positioning system. In the future this may lead to a concept of "Intelligent Cargo", meaning that goods become self-, context- and location-aware as well as connected to a wide range of information services.

Charging vehicles to use certain routes or areas is increasingly based on a variety of parameters such as vehicle dimensions, emission levels, distance travelled or time of day. ITS solutions making use of satellite positioning and mobile communications offer new opportunities for implementing such types of infrastructure access and charging.

The following actions are proposed:

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[24] COM(2007) 607: Communication from the Commission — Freight Transport Logistics Action Plan
[25] COM(2007) 96

		Action	Target Date
2.1	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, traffic management and travel planning, and, in particular, event and emergency planning	2011
2.2	Identification of ITS services to be deployed in support of freight transport (**eFreight**) 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 RFID and EGNOS/Galileo-based location devices	2010
2.3	Support for the wider deployment of an updated multi-modal **European ITS Framework architecture** for intelligent transport systems 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	2010
2.4	Implementation of the interoperability of **electronic road toll** systems[26]	2012/2014

6.3. 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 the scale of their deployment. Issues that require additional attention include designing a safe Human Machine Interface (HMI) (using the work done on the "European Statement of Principles"), integrating nomadic devices[27] and ensuring the safety of vulnerable road users (such as the elderly). Efforts to promote best practices in these areas are therefore crucial to address these issues.

Transport systems may also be under security threats. Transport security, especially the need to protect travellers and transport workers and to secure transport facilities

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[26]   Directive 2004/52/EC

[27]   Nomadic devices are pieces of communication and information equipment that can be brought inside the vehicle by the driver to be used while driving: mobile phone, navigation system, pocket PC, etc.

and assets, must be taken into account without jeopardising efficient and effective transport operations.

The following actions are proposed:

	Action	**Target Date**
3.1	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	2009 to 2014
3.2	Support the Implementation Platform for the harmonised introduction of pan-European **eCall**[28], including awareness campaigns, upgrading Public Service Access Points' infrastructures and an assessment of the need for regulation.	2009
3.3	Development of a regulatory framework on a safe on-board **Human-Machine-Interface** and the integration of nomadic devices, building on the European Statement of Principle[29] on safe and efficient in-vehicle information and communication systems	2010
3.4	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**	2014
3.5	Development of appropriate measures including best practice guidelines on **secure parking places** for trucks and commercial vehicles and on telematics-controlled parking and reservation systems	2010

6.4. **Action Area 4: Integration of the vehicle into the transport infrastructure**

The use of ITS components or systems is stipulated in several existing or planned legal acts and voluntary agreements applicable to commercial or private vehicles. Examples include the provisions on the transport of dangerous goods and live animals, digital tachograph[30], electronic toll collection and eCall. So far most of these acts and agreements have evolved independently of each other, so there has been little synergy even when needs are the same.

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[28] COM(2005) 431, COM(2003) 542
[29] C(2006) 7125
[30] Regulation (EC) 2135/98

A streamlining and integration of these applications within a coherent, open-system architecture could yield better efficiency and usability, reduced costs and enhanced extensibility, enabling a "plug and play" integration of future new or upgraded applications such as those in nomadic devices and those utilising GNSS services for advanced positioning and timing. This open system architecture would be embodied in an open in-vehicle platform, guaranteeing interoperability/interconnection with infrastructure systems and facilities. With this modular approach, additional functionalities could be integrated later for in-vehicle safety and safe HMI, personal mobility, logistics support and access to multimodal information and possibly electronic vehicle identification.

This platform should be introduced in commercial vehicles first. Positive feedback from these applications would help speed up the uptake of integrated ITS applications in private vehicles, therefore stimulating a Europe-wide market for original and after-market in-vehicle products and services.

The development of cooperative systems, based on an exchange of information and communication between vehicles and with the road infrastructure, is also progressing rapidly, and needs to be further promoted.

The following actions are proposed:

	Action	Target Date
4.1	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.	2011
4.2	Development and evaluation of **cooperative systems** in view of the definition of a harmonised approach; assessment of deployment strategies, including investments in intelligent infrastructure	2010-2013
4.3	Definition of specifications for infrastructure-to-infrastructure (I2I), vehicle-to-infrastructure (V2I) and vehicle-to-vehicle (V2V) communication in co-operative systems	2010 (I2I) 2011 (V2I) 2013 (V2V)
4.4	Definition of a **mandate for the European Standardisation Organisations** to develop harmonised standards for ITS implementation, in particular regarding cooperative systems.	2009-2014

6.5.   Action Area 5: Data security and protection, and liability issues

The handling of data (notably personal and financial data) in ITS applications raises a number of issues, as citizens' data protection rights are at stake. At the same time,

data integrity, confidentiality and availability must be ensured for all parties involved, especially citizens. Finally, the use of ITS applications creates additional requirements in terms of liability. These issues can be a major barrier to wide market penetration of some ITS services if citizens' rights are not shown to be fully protected.

The following actions are proposed:

	Action	**Target Date**
5.1	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 Community legislation.	2011
5.2	Address the **liability** issues pertaining to the use of ITS applications and notably in-vehicle safety systems	2011

6.6. Action Area 6: European ITS cooperation and coordination

Coordinated deployment of ITS in the EU calls for intensive and effective cooperation between all parties involved at European level, ideally leading to rapprochement on deployment requirements, better synchronisation of deployment activities and avoidance of national and proprietary silo solutions that constitute barriers to European integration.

Dissemination of the best available knowledge as to the costs and benefits of ITS projects from a full life-cycle perspective and feedback on relevant experience are needed to support informed investment decisions by public authorities across Europe. To make EU-wide deployment a reality, agreements on common assessment methods and uniform tools for decision support are therefore crucial.

Such coordinated deployment of ITS throughout Europe also requires greater involvement of cities and regional authorities, notably at urban and at inter-urban level. Guidance and technical support should be provided to facilitate and underpin consensus building and decision-making processes.

Finally, the implementation of the measures in this Action Plan will call for an adequate governance structure. Member States should aim at reaching agreement on a common ITS agenda and on methods to proceed from plans to coordinated implementation, for example by way of concerted investments or harmonisation initiatives.

The following actions are proposed:

	Action	Target Date
6.1	Proposal for a legal framework for European **coordination** on the Europe-wide deployment of ITS	2008
6.2	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	2011
6.3	Development of **guidelines** for the public **funding** from both EU (e.g. TEN-T and Structural Funds) and national sources of ITS facilities and services based on an assessment of their economic, social and operational value	2010
6.4	Set-up of a specific **ITS collaboration platform** between Member States and regional/local governments to promote ITS initiatives in the area of **urban mobility**	2010

7. **LOOKING AHEAD**

This Action Plan proposes an approach for a coherent and faster deployment of ITS across Europe, building on policy objectives. The priority areas of action and the enabling measures outlined above are designed to fulfil this goal. By integrating and complementing the various activities supported in the past at EU and national level, the approach will fully benefit from ongoing work and successful deployment of applications and services that have emerged. Such a blend will provide the best framework for a significant contribution of ITS to the achievement of more sustainable mobility in Europe.

While serving the short-to-medium term perspective in its effort to foster ITS deployment in the EU, this Action Plan aims at building a long-term vision clearly defining the role of ITS in tomorrow's transport system in Europe.

The European Commission will report on the progress in the implementation of this Action Plan in 2012. This report will also review and, if necessary, extend the priority areas as well as the scope of the actions.

This Communication is accompanied by a proposal for a Directive on a framework for the coordination of the deployment of ITS.