

Intelligent Transport Systems (ITS)

The policy framework for the roads sector



Foreword



‘Transport that works for everyone’ is a key priority for Government and the main aim of the Department for Transport.

Technology, and Intelligent Transport Systems specifically, already form an important part of our delivery plans for future transport. By helping road users to travel more safely, on less congested roads, and on better public transport services with improved information services, ITS brings economic, environmental and social benefits in many ways.

But there are challenges to be met if we want to extract the best from the potential that ITS offers. This Framework explains how ITS supports our transport systems and the travelling experience. It also sets out the main issues that need addressing and describes the actions that this Department is taking both to provide the policy framework, and to support and facilitate the economic, legal and administrative climate for widespread ITS deployment that benefits all road users.

This Framework emphasises the fundamental need for greater co-ordination at several levels – policy, administrative and technical. ITS deployment has tended to focus in the past on the particular needs of an individual purchaser or technical provider. This approach is not the most productive and can lead to confusion, unnecessary costs for road users and a less smooth journey. This Department is committed to delivering seamless, efficient transport across the UK. DfT is leading the drive for a more joined-up approach, both as a major client for ITS and in our role to facilitate and encourage others.

The Department clearly has many roles to fulfil in making best use of ITS to give road users the high quality transport systems and services they have the right to expect. But it cannot reap the full benefits by itself. A partnership approach is vital. We will work even more closely with others in Government – both national and local – as well as with industry suppliers and service providers, professionals in the industry, research and academic sectors, and with road users.

This Framework provides an essential baseline and is relevant to all of us. I very much welcome its publication.

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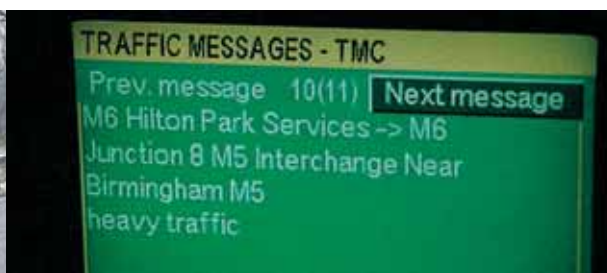
Dr Stephen Ladyman



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Section 1: Introduction

What this Framework does

- 1) This Framework responds directly to feedback from ITS stakeholders in both the public and private sectors who have asked DfT to provide a sectoral picture.
- 2) For the first time, this Framework specifically sets out the role of Intelligent Transport Systems (ITS in the remainder of the document) in supporting delivery of Government road transport objectives. It includes cross-modal technological initiatives to provide traveller information and advanced ticketing.
- 3) The Framework sets out a number of strategic actions that DfT has taken and will take. DfT cannot deliver benefits through ITS on its own. So this document highlights how Government is taking a co-ordinated approach and the need for collaboration among all those with the potential to benefit from ITS deployment.

What are Intelligent Transport Systems?

Combinations of information processing, maps, databases, communications and real-time data from a range of sensors, to produce solutions that enable:

- infrastructure owners and operators to improve the quality, safety and management of transport networks;
- individual travellers, drivers, hauliers, transport operators and authorities to make better informed, more 'intelligent' journey decisions;
- network operators and 'third party' service providers to supply advanced information services, increasingly on a multi-modal basis, to all types of traveller; and
- road users to drive safer, 'smarter' vehicles.



Who should read this Framework

4) Anyone with an interest in understanding how ITS can help improve transport delivery and who wants to optimise their own contribution will find this Framework useful.

There are five main audience groups:

- central, devolved and local government policy makers, local transport planners and the police;
- those that procure or commission ITS solutions;
- ITS industry and operators – those providing services, equipment, vehicles, and their supply chains;
- research organisations, professional institutions and academia; and
- organisations representing road users and the travelling public.

How DfT will use this Framework

5) This Framework forms a basis for DfT to work closely with the five audience groups to identify, make and sustain best use of ITS. It provides a focus for early action. It identifies a step change in the way DfT seeks to bring ITS development and deployment together in a transparent and integrated way for road users and travellers.

How this Framework is structured

6) This Framework document summarises the overall policy context and identifies seven policy themes where ITS can play a central role in delivering benefits and improvements (Section 2). Section 3 sets out DfT's own role in developing and deploying ITS and how it works with other Government Departments in this area.

7) Each policy theme is described in detail including to set out the ITS potential, main issues that DfT wants to address and the strategic actions it is taking (Sections 4–10). Section 11 focuses on co-ordination across the themes. Section 12 pulls the various strands together and presents an action plan of early milestones.



Section 2: The Transport Policy Objectives

Government transport objectives

1) The Government's aim for land transport, as set out in the *Future of Transport: a network for 2030 White Paper*¹, is to deliver 'transport that works for everyone'. To focus its contribution to achieving that aim, DfT has 26 objectives in its Departmental Business Plan², including internal management objectives. The 26 objectives are listed in Appendix A. They capture the detailed work of DfT, reflecting the four core DfT objectives described in the Public Service Agreement (PSA) that includes targets linked to individual Government Department spending priorities.

Summary of DfT PSA core objectives

- I. Support the economy through the provision of efficient and reliable inter-regional transport systems;
- II. Deliver improvements to the accessibility, punctuality and reliability of local and regional transport systems;
- III. Balance the need to travel with the need to improve quality of life by improving safety and respecting the environment; and
- IV. Improve cost-effectiveness.

The main Government roads policy documents

2) The key Government strategic policy context for road transport relevant to ITS is summarised in five main documents as follows:

- The 2004 *Future of Transport White Paper* sets out the Government's strategy for land transport. It is built around three key themes: sustained investment over time, improvements in transport management, and planning ahead. It predicts a 40% increase in road traffic by 2025 over 2000 figures. It specifically identifies the need for road networks that are enhanced by better management, including through exploiting the potential of new technology to manage the network and inform travellers. The White Paper identifies the role of new technologies to reduce the risk of accidents and support environmental protection objectives. It also sets out the Government's plans for encouraging sustainable freight transport and identifies the role of new technologies as part of that agenda.



- The separate *Road Pricing Feasibility Study*³ published alongside the White Paper examines how a new system of charging for road use could help make better use of road capacity. The Government's Response to the Transport Select Committee's Report, *Road Pricing: the next steps*⁴ addresses the twenty-one recommendations made by the Transport Select Committee in its March 2005 document. The Government response confirms its leading role in the debate on road pricing, to incorporate the earlier work on a Lorry Road User Charging scheme and to take forward a combination of actions to build political and public consensus. The Secretary of State for Transport set out his thinking on road pricing in a speech to the Institute of Public Policy Research on 26 October 2005.
- *Managing Our Roads*⁵ sets out the challenges over the next 20 to 30 years in providing opportunities to travel, as the economy grows, while taking into account impacts on the environment.
- *Tomorrow's roads – safer for everyone: the first three year review*⁶ considers progress towards the Government's road safety targets, which include a 40% reduction in people killed or seriously injured in road accidents by 2010 compared to the 1994–98 baseline. *Tomorrow's roads* also looks beyond 2010 and identifies the major potential for technological advances to make roads even safer for drivers, pedestrians and other users.

A wider perspective

- 3) At a broader level, a joint DfT/HM Treasury Eddington study is exploring the long-term impact, beyond 2015, of transport decisions on the UK's productivity, stability and growth. Other Government White Papers and policy documents contribute to the over-arching policy context for this ITS Framework. These include *Securing the Future*⁷ on sustainable development, the 2000 Urban White Paper *Our towns and cities: the future*⁸ and the Government's ten-year Science and Innovation Investment Framework⁹, published in July 2004, reaffirmed the commitment to support businesses investing in new and emerging technologies; this resulted in the creation of DTI's Technology Programme¹⁰.

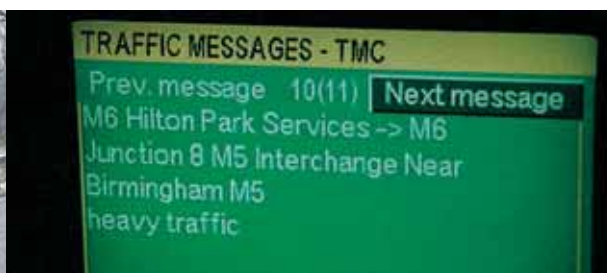


4) DTI's *Innovation Report – Competing in the Global Economy: the Innovation Challenge*¹¹ looks at the contribution that innovation can make to driving up UK productivity and to achieving a vision of the UK as a key knowledge hub in the global economy. The *Roads Policing Strategy*¹², jointly agreed by ACPO, DfT and the Home Office sets roads policing in the context of overall police work. Major Government initiatives such as the Office of Science and Technology Foresight Programme¹³ are also relevant. Foresight aims to increase UK exploitation of science either by identifying potential opportunities for the economy or society from new science and technologies, or by considering how future science and technologies could address key future challenges for society.

The key DfT PSA targets relevant to this ITS policy framework

PSA Targets (last updated 2005)

- By 2007–2008, make journeys more reliable on the strategic road network.
- By 2010–2011, the ten largest urban areas will meet the congestion targets set in their Local Transport Plan relating to movement on main roads into city centres.
- Reduce the number of people killed or seriously injured in Great Britain in road accidents by 40%, the number of children killed or seriously injured by 50%, by 2010 compared with the average for 1994–1998, tackling the significantly higher incidence in disadvantaged communities and a 10% reduction in the slight casualty rate against the same timescales.
- By 2010 increase the use of public transport (bus and light rail) by more than 12% in England compared with 2000 levels, with growth in every region.
- Improve air quality by meeting the Air Quality Strategy targets for carbon monoxide, lead, nitrogen dioxide, particles, sulphur dioxide, benzene and 1,3 butadiene (responsibility for delivering this target is shared with DEFRA).
- Reduce greenhouse gas emissions to 12.5% below 1990 levels in line with our Kyoto commitment and move towards a 20% reduction in carbon dioxide emissions below 1990 levels by 2010 (responsibility for delivering this target is shared with DEFRA and DTI).



The European context

- 5) UK Government transport policies reflect the ambitions set out in the European Commission's own White Paper *Transport policy for 2010: time to decide*¹⁴. European transport policy similarly highlights road safety, network management and tackling congestion alongside sustainable mobility and economic policies more generally. The EC has published an ITS vision and policy¹⁵ which puts underpinning technology-related initiatives at the heart of the policy agenda. The vision includes the drive to implement Galileo under the eEurope banner as a complementary global positioning system to sit alongside existing GPS systems and encourage greater deployment of GNSS technologies that use location referencing to support many ITS services.
- 6) eEurope¹⁶ also provides an additional policy context for advanced ticketing and vehicle-related ITS (the eSafety initiative). In addition, the Trans-European Road Network aims to unlock barriers and encourage more effective cross-border transport. It supports demonstrations of harmonised ITS deployment through its Multi-annual Indicative Programme. Other funding is available through the European Framework research programmes.

Seven transport policy themes for ITS

- 7) Government policies and DfT targets highlight the role that technology generally – and ITS specifically – has to play in helping to deliver transport that works for everyone now and in the future.
- 8) This Framework identifies seven discrete policy themes where ITS applications can (and often already do) play a pivotal role for road transport and travellers. Each theme is discussed in a separate section in the remainder of this document.



Seven ITS Policy Themes

Theme one (section 4) Improving road network management, including road pricing.

Theme two (section 5) Improving road safety, by reducing collisions, casualties and deaths.

Theme three (section 6) Better travel and traveller information, helping to match supply and demand by providing better information so that travellers can make informed choices on when and how to travel.

Theme four (section 7) Better public transport on the roads, supporting more reliable, more accessible, safer and more efficient services.

Theme five (section 8) Supporting the efficiency of the road freight industry.

Theme six (section 9) Reducing negative environmental impacts.

Theme seven (section 10) Supporting security, crime reduction and emergency planning measures.

Bringing the ITS policy picture together

- 9) The presentational separation of policy themes helps to make this Framework easier to read and shows the breadth of ITS relevance. But the true potential of ITS rests in its ability to deliver against several individual policy themes at the same time and support cost-effectiveness and efficiency as a result.
- 10) Section 11 highlights the value of greater co-ordination, convergence and interoperability of ITS development and deployment – both technically and administratively. It sets out actions that DfT will take in close collaboration with others and Section 12 sets out some of the key milestones and specific actions for DfT over the next eighteen months.



Section 3: A Varied Role for DfT

- 1) This Framework identifies specific actions that DfT is taking to support ITS development and delivery in each policy theme and across the themes in an integrated way. The actions reflect the breadth of DfT's own role, which is set out in the box below.

To help make best use of ITS in transport, DfT will:

- **facilitate, encourage and lead a co-ordinated approach** to deploying ITS at policy, technical and organisational levels. Section 11 deals with this in detail;
- **lead by example, as a major procurer of ITS** technologies and services, including through direct management of the strategic road network, demonstrations and trials;
- **facilitate and encourage the take-up of proven ITS technologies**, for example by securing the availability of key databases, pump-priming deployment and more general dissemination of best practice and other guidance;
- **encourage appropriate standards** as an important enabling mechanism to achieve interoperability of technological solutions for seamless journeys, continuity and inter-facing of information provision, and consequential management of geographically and institutionally broad-based deployment;
- **promote innovation** by researching the potential of new ITS technologies, supporting DTI-led activities, and by monitoring state of the art technologies to identify and understand the policy delivery potential they may offer;
- **promote and enable better regulation**. Government is committed to achieving better regulation, both from the perspective of tackling existing regulatory barriers and ensuring new ones are not introduced. International and UK regulatory frameworks govern only parts of ITS, such as the EC Directive on interoperability of electronic fee collection and national rules about providing in-vehicle driver information services;
- **influence** the policy agenda at local and international levels by using UK knowledge and expertise;
- **learn from international experience** and apply that knowledge across its activities. There are many sources of international experience in addition to deployed ITS. Examples include the European Framework research programmes, industry and government demonstrations, the EC policy development process, ERTICO, PIARC, IBEC and other fora;

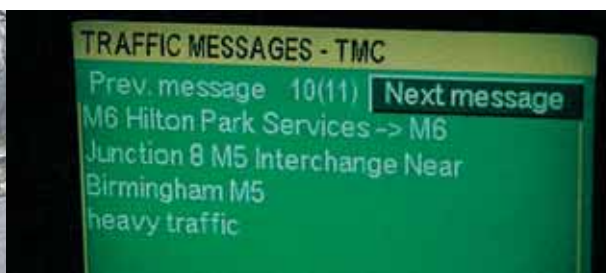


- ***work in partnership.*** This is key to success at every level. Working in partnership can be formal (for example when procuring ITS technologies, carrying out research or consulting on regulatory changes). Informal collaboration, including networking activities such as through ITS UK, is equally important. Both help to identify barriers and concerns, improve understanding and generate opportunities. The stakeholders are many and varied and include all of the audience groups for this Framework; and
- through all of the above, help to ***foster an economically successful UK ITS industry and support UK economic growth.***

- 2) All aspects of DfT's role are relevant to *each* of the individual policy themes and to Section 11 that focuses on co-ordination. This Framework highlights tangible initiatives and actions that go beyond the routine functions of the Department such as influencing the policy agenda, monitoring state of the art technologies and networking.
- 3) DfT cannot deliver the full potential of ITS by itself and many of the actions in this Framework involve close working with others from the five main audience groups, as later Sections show. The Framework is intended to help others to put their own roles into a wider context and encourage them to optimise their own contributions.

Cross-Government working

- 4) The box above highlights the importance of working in partnership. This Framework focuses on what DfT (and its Agencies) are doing as the lead Government Department for delivering transport objectives. But DfT works very closely with several other Departments, the devolved administrations and local government.
- 5) DTI is a key Government partner in the development of ITS, committed to maximising the contribution of the science and technology fields to the UK's economic development – and the quality of our lives. DTI is responsible both for UK Science Policy (through the Office of Science and Technology), and for promoting the development and use of technology by industry. Its Technology Strategy Board identifies priority areas for industrial technology growth and ITS is providing a strong focus in the transport field. DfT works with DTI at many levels, including supporting its ITS Centre of Excellence, innovITS, its technology and Foresight programmes and as a partner in delivering the London ITS World Congress 2006.



- 6) DfT works closely with other Government Departments on ITS, for example by contributing to the Home Office 2004 publication *Implications for Policing: Intelligent Transport Systems*¹⁷ and regular participation in the ACPO ITS Committee. ODPM has the lead on emergency services provision and the two Departments work together with DTI on the eSafety agenda described in Section 5. DEFRA have a key interest in the environmental benefits that ITS could bring. DfT works closely with HMT on its PSA target delivery. HMT also has a particular role in national road pricing policy development. Cabinet Office's e-Government Unit, ODPM and the Department for Education and Skills all help to provide an added dimension, particularly to the work on advanced ticketing and smart cards through their potential for supporting multi-functional services.
- 7) DfT maintains close contact with the devolved administrations on their ITS work. The Welsh Assembly Government published its *5 Year Programme for ITS Implementation*¹⁸ in Spring 2002. In Northern Ireland, the Roads Service, an Executive Agency of the Department for Regional Development is responsible for the management of all roads. *Intelligent Transport Systems in Northern Ireland: The Next 10 Years 2003–2012*¹⁹ reflects the strategy for rolling out ITS solutions across NI over the next decade. The Scottish Executive set out the vision for Scotland's transport in the June 2004 White Paper: *Scotland's Transport Future*²⁰. The Executive is committed to ensuring that transport makes the best use of the latest ITS technologies to ensure that its networks are safe, reliable and operate as efficiently as possible. As part of this, the Executive are progressing their strategy for the further development of the National Driver Information and Control System (NADICS) as a fundamental part of the overall vision.
- 8) At regional level, DfT maintains links on ITS with the Government Offices and more directly with local authorities who are key implementers of the technologies.



Section 4: Improved Road Network Management

Policy Context

“As we become better off, we will want to travel more, and to travel further. And because we live on a crowded island, congestion is set to grow as well. This is bad for the economy and causes delays and frustration to motorists. We know we cannot build our way out of the problem, so we need to use modern technology to help cut congestion.”

Alistair Darling, Secretary of State for Transport, Road Pricing speech to the Institute of Public Policy Research 26 October 2005²¹

- 1) Congestion is an increasing problem across the world. It is partly a consequence of increasing economic prosperity as more people have jobs, and more people travel further. Congestion wastes time, causes unpleasant driving conditions and pollution. A major impact is that it causes journey times to be unpredictable and this uncertainty can lead to travellers allowing unnecessarily for exceptional delays in their journey planning. The European Commission identifies congestion²² as a major barrier to mobility.
- 2) *The Future of Transport White Paper* (together with the more recent *Managing Our Roads* document) acknowledges that most roads function well most of the time. But both highlight a need for improving safety, effective delivery of more road capacity where appropriate, better management of the roads that we have, providing information to allow travellers to make better choices about when and how to travel, and development of practical new ways to pay for road use. Delays may be caused by volume of traffic, road works or accidents and incidents such as broken down vehicles or abnormal load movements. It is often these latter unanticipated delays that cause the most problems. The PSA targets for DfT in this area are listed in Section 2.



How ITS contributes

3) New technology can help tackle congestion and improve network management.

ITS in particular:

- provides the tools and techniques to measure congestion;
- provides systems to manage the existing road network better through in-vehicle systems and the infrastructure;
- supports delivery of real-time traffic and traveller information (discussed in Section 6);
- provides the means to implement road pricing; and
- increases capacity of the existing road network.

4) The Government is leading a debate to develop road pricing. It is committed to undertaking the work needed to make choices about whether road pricing would be beneficial, and in what form, taking account of effectiveness, fairness, value for money and other relevant factors. ITS can provide the means to deliver road pricing and to ensure end-to-end interoperability of individual systems. Local authorities have the powers to introduce local congestion charging schemes and are already being encouraged to propose pilots of innovative solutions through the Transport Innovation Fund. DfT is also running the major technical research programme DIRECTS that includes trials of end-to-end systems in collaboration with Leeds Council.

5) Active and co-ordinated management of large area networks is a key step in tackling congestion. ITS can help – and already does. For example, the National Traffic Control Centre (NTCC) and Regional Control Centres (RCC) are key supporting tools providing ITS-enabled information services that bring together all the national and local network management authorities. They gather real time information on road network conditions from a communications network, which includes Regional Control Centres, and data from the Travel Information Highway²³, cameras, weather stations and information from the Police and Traffic Officers. The data collected is being made widely available to support network management and travel information services.

6) A National Audit Office report on the Highways Agency published in November 2004²⁴ identifies opportunities where the HA could make better use of ITS technologies in delivering its network operator functions.



- 7) At the local level, the Urban Traffic Management and Control (UTMC) initiative for urban traffic management builds on the extensive use of SCOOT, local Traffic Control Centres and traffic signal phasing measures. At both local and national levels, Variable Message Signs inform travellers and ITS can help promote modal shift through better information provision.
- 8) Also at the local level, the Government's *Full Guidance on Local Transport Plans: Second Edition*²⁵ identifies the potential that ITS has to supporting local traffic needs and encourages its deployment. The main Guidance is complemented by *Understanding the benefits and costs of ITS: a toolkit approach*²⁶ that aims to increase the level of knowledge on ITS tools among decision makers and practitioners about how technologies may assist in achieving a broad set of policy objectives. Several professional and informal networking fora are helping to spread best practice and experience, including the UTMC Development Group and ITS UK Local Authority interest group.
- 9) The *Traffic Management Act 2004*²⁷ places new legislative requirements on local authorities that can be supported through ITS. Part 2 of the Act places a network management duty²⁸ on local authorities to keep traffic flowing, taking account of their other duties and responsibilities, and to co-operate with other authorities to the same end. The Act places a responsibility on authorities to examine how they operate their networks. ITS for traffic monitoring, control and management, as well as for the provision of information to travellers, will play an increasingly important role if authorities are to fulfil their duties effectively and efficiently.

A European dimension

- 10) The European Commission Trans-European Road Network aims to unlock the barriers to and encourage more effective cross-border transport. It offers opportunities for ITS deployment to enable inter-operable and accessible service provision on the strategic road network and into urban areas. The Multi-annual Indicative Programme provides funding for Euro-regional ITS demonstration projects under the Tempo banner²⁹ and the UK participates actively. A more recent development has been the introduction of an EC Directive on the interoperability of electronic fee collection³⁰ that is due to take effect from 2009.



Key ITS issues for DfT in tackling congestion are to:

- take a broad view of the benefits and impacts ITS can bring to network management, looking beyond tackling congestion to include safety, environmental and other areas;
- facilitate joined up network management among urban and inter-urban road operators so that the road network as a whole operates efficiently and performance management is closely monitored. A national ITS technical framework is needed to ensure the interfaces between individual systems and services;
- make best use of ITS to tackle congestion by making better use of existing road capacity and in the context of road pricing;
- provide the right environment for local road and public transport operators to make best use of ITS for network management and demand responsive public transport purposes; and
- utilise effectively the resources of Transport Direct and the National and Regional Traffic Control Centres in providing statistical information about congestion to a wide range of internal and external stakeholders.

Actions

11) Government will use ITS to help tackle congestion. Specifically, DfT will:

- a) join up the road pricing policy development process with ongoing work to ensure the national and international interoperability of road user charging systems, and to examine the detailed technical issues about how national road pricing might be introduced and enforced. The DIRECTS research programme provides the national technical focus for this together with UK participation in the Comité Télépéage³¹ and international standards development;
- b) use the Transport Innovation Fund as a pump-priming mechanism to encourage local highway authorities to come forward with innovative solutions to tackle congestion problems in their local areas including demand management measures based on pricing;



- c) take forward work to study and, if appropriate to develop, a Vehicle Information Framework (VIF) that brings together the principles of electronic vehicle identification and universal on-board units to create a framework for tackling congestion through road pricing. A VIF might include other features such as on-board diagnostics, emergency call and crash data recorders that could also bring safety and efficiency benefits. It could also support road freight efficiency;
- d) take forward design work to deliver a UK ITS technical framework (or systems architecture) incorporating standards where needed, and to do so in close partnership with local and national road operators, industry and other stakeholders. This will provide the necessary interfaces to ensure that individually deployed solutions are compatible with neighbouring systems and services and will embrace as appropriate the National and Regional Traffic Control Centres and Roads Information framework now being developed;
- e) develop a Roads Information Framework intended to provide a 'virtual filing cabinet' to bring together roads-related data and make analysis of it more accessible to network managers, decision makers and others who can derive benefit from its facilities;
- f) encourage deployment of proven ITS network management technologies including by providing local highway authorities with good practice ITS information. Specifically, build on the toolkit guidance with further evaluation support and encourage information sharing of case studies;
- g) make best use of ITS to help monitor and measure traffic levels, leading by example on the strategic road network and publishing results; and
- h) research, trial and evaluate future strategic approaches to network management that consider the needs of all road users. Current examples include consideration of Co-operative Vehicle Highway Systems, the Active Traffic Management trial on the Highway Agency's M42 and the UTMC demonstrator projects. Other initiatives include DTI's centre of excellence innovITS, the Euro-regional projects and plans to explore how Transport Direct might develop additional services that could further exploit the data gathered.



Network Management: Illustrating how Actions map on to DfT Roles

DfT Role ▶	Facilitate, encourage and lead a co-ordinated approach	Lead by example as major procurer of ITS	Facilitate and encourage the take-up of proven ITS technologies	Encourage appropriate standards	Promote innovation	Promote and enable better regulation	Influence the policy agenda	Learn from international experience	Work in partnership	Foster economically successful UK ITS industry
Action ▼										
a. Join up road pricing policy development to ensure national and international inter-operability.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
b. Transport Innovation Fund.	✓		✓		✓		✓	✓	✓	✓
c. Consider developing Vehicle Information Framework.	✓		✓	✓	✓	✓	✓	✓	✓	✓
d. UK ITS technical framework.	✓	✓	✓	✓			✓	✓	✓	✓
e. Roads Information Framework.	✓	✓	✓	✓	✓		✓		✓	✓
f. Deployment of ITS network management technologies by local authorities.	✓		✓		✓		✓	✓	✓	✓
g. ITS to help monitor/measure traffic levels.	✓	✓	✓				✓	✓	✓	✓
h. R&D Strategic approaches to network management.	✓	✓	✓		✓		✓	✓	✓	✓



Section 5: Improving Road Safety

Policy Context

- 1) The UK and Europe have adopted challenging road casualty reduction targets. The headline target for the UK is to reduce the number of people killed or seriously injured in Great Britain in road accidents by 40% and similarly the number of children by 50% by 2010 compared with the average for 1994–8. The European Commission target is to reduce by half the number of road fatalities by 2010 compared with a figure of 41000 deaths in 2000.

How ITS contributes

- 2) New technology provides an opportunity to increase the safety of drivers, vehicle occupants, and other road users including the more physically vulnerable sectors of society. ITS in particular supports the improving road safety agenda in three main ways:
 - network management techniques that help to tackle congestion described in Section 4 also provide safety benefits and vice versa;
 - camera technology linked to back-office systems support enforcement of road traffic legislation, including through safety cameras and CCTV, and also help enable prompt remedial action in the event of an accident; and
 - in-vehicle ITS developments offer additional safety features to drivers, and there is potential for greater co-operation between vehicles and the road infrastructure to support safety and other objectives.
- 3) In-vehicle ITS technologies fall into three broad categories known as Advanced Driver Assistance Systems:
 - a) technologies that *support* drivers by giving warnings and providing information. Dynamic route guidance systems that forewarn of real-time traffic conditions are reaching the mass market. Another example available in some countries is a system that advises the driver of the legal speed limit for the current stretch of road through a visual or audible display;
 - b) technologies that *assist* the driver and allow them to hand over specific elements of vehicle control – Intelligent Speed Adaptation systems can operate in this way as in the DfT funded trials being led by the University of Leeds and MIRA; and



- c) technologies that can actually over-ride the driver and take *control*, particularly in emergency situations – for example, collision avoidance systems that prevent vehicles from driving too closely together; and lane departure warning systems that use sensors to keep a vehicle inside its lane.
- 4) Some of these technologies are already available though several only in top-of-range vehicles; others are near-market developments. Systems that could over-ride driver action are generally more advanced versions of support and assist technologies, tend to be in the research phase and would usually require a much higher level of co-operation between vehicles and highway infrastructure. DTI's *Foresight Vehicle Technology Roadmap*³² anticipates that more advanced solutions will reach the market progressively from around 2020. The lead-in times are considerable and it is difficult to predict their rate of market penetration and development given industry concerns over issues of liability. It is clear, however, that the more advanced and automated solutions are likely to contribute significantly to future Government targets for road safety. The Home Office and Police are working with the insurance industry to explore the potential benefits and implications of electronic vehicle immobilisation and remote stopping. In parallel, a number of insurance companies are exploring the potential of in-vehicle ITS devices to assess driver behaviour, aid risk assessment and inform annual premium rates more generally.

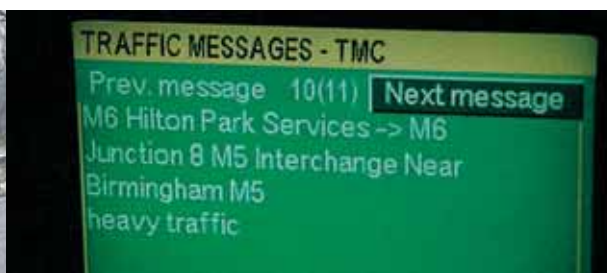
An international dimension

- 5) Internationally, the European Commission's CARS21 initiative aims to boost European motor industry competitiveness, and technological advances are part of the overall debate. The EC has initiated the eSafety programme³³ of activity based on in-vehicle ITS that includes a global liaison group and is focusing on Human Machine Interface, in-vehicle emergency call services and real-time traffic and traveller information. The EC is also encouraging research through the IST Framework Programmes and its High Level Group on Road Safety provides a focus for the policy development process. At a broader level, the UNECE has set up an ITS working group under the WP29 technical regulation organisation that sets the frameworks and parameters for type approval legislation and the Vehicle Infrastructure Integration initiative in the USA is providing a further research focus.



Key ITS issues for DfT in delivering improved road safety are to:

- take a broad view of the benefits and impacts ITS can bring to road safety from a vehicle and network management perspective, and to include congestion, environmental and other areas;
- make best use of ITS to support road safety on the strategic road network;
- encourage local highway authorities to factor in the road safety potential from ITS as part of their overall approach to meeting local transport needs;
- influence international development of in-vehicle ITS technologies. Most development and deployment is by individual industries or companies for commercial reasons and at an international level. Much currently falls outside the scope of vehicle type approval legislation and of construction and use regulations. There is consequently no universally agreed and sector-wide guidance. The eSafety programme provides an important European focus in this area, and the UNECE ITS working group an international one. The extent to which DfT can influence the agenda in this area of ITS is largely dependent on its standing in the international arena;
- understand the impacts of Advanced Driver Assistance Systems and other in-vehicle ITS that can improve safety and support vulnerable road users, but which can also change driver behaviour and may be distracting. The overall balance between what is a benefit and what is a distraction is not clearly understood and there is no systematic approach being taken to evaluating the impacts (both good and bad) across the wide variety of technologies;
- encourage development of appropriate international standards for Human Machine Interface (HMI) of in-vehicle technologies, and to move towards clear agreement on what is 'safe' as opposed to 'A is safer than B'; and
- understand and respond to driver expectations and concerns over ITS technology deployment in vehicles, including through driver training and consumer guidance.



Actions

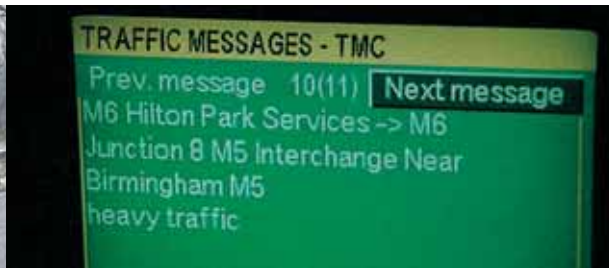
6) Government will use ITS to support road safety. Specifically, DfT will:

- a) continue to research and trial specific emerging and new technologies to understand their potential impact on road users, road safety and the wider impacts on congestion and the environment. Examples include intelligent speed adaptation, co-operative vehicle highway systems and systems that support vulnerable road users;
- b) ensure that work on a Vehicle Information Framework (mentioned in Section 4 above) embraces the safety potential from a combination of applications, particularly in terms of on-board diagnostics and crash data recorders whose benefits are not principally related to congestion;
- c) where new technologies demonstrate clear benefits, consider ways to facilitate entry to market. In relation to intelligent speed adaptation, DfT is developing its thinking on how a reliable database initially of road speed limit information might be provided and maintained which could be made available to in-vehicle service providers. As part of that consideration, DfT is exploring what its own role might be;
- d) encourage deployment of proven ITS network management technologies that bring safety benefits by providing local highway authorities with good practice ITS information. Specifically and as described in Section 4 above, build on the CD toolkit with further evaluation guidance and encourage information sharing of case studies; and
- e) continue to participate in promoting good practice for in-vehicle ITS technologies that minimise driver distraction and ensure safety, by participating in the European and Global initiatives, international standards and disseminating UK best practice guidance to manufacturers.



Road Safety: Illustrating how Actions map on to DfT Roles

DfT Role ▶	Facilitate, encourage and lead a co-ordinated approach	Lead by example as major procurer of ITS	Facilitate and encourage the take-up of proven ITS technologies	Encourage appropriate standards	Promote innovation	Promote and enable better regulation	Influence the policy agenda	Learn from international experience	Work in partnership	Foster economically successful UK ITS industry
Action ▼										
a. Research emerging and new technologies and potential impact on road safety.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
b. Ensure potential safety benefits are fully embraced in Vehicle Information Framework work.	✓		✓	✓	✓	✓	✓	✓	✓	✓
c. Consider ways to facilitate entry to market of proven new technologies.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
d. Encourage deployment of proven ITS solutions that bring safety benefits via good practice ITS information.	✓		✓		✓		✓	✓	✓	✓
e. Provide guidance to encourage manufacturers to design and deploy in-vehicle ITS technologies that minimise driver distraction.	✓		✓	✓	✓	✓	✓	✓	✓	✓



Section 6: Better Travel and Traveller Information

Policy Context

- 1) The *Future of Transport* White Paper envisages a road network that enables people to make informed choices about when and how to travel. Using new technology to keep people informed both before and during their journey is a central feature in the overall road strategy and provides an essential additional tool to help deliver better network productivity and improved safety. Travellers typically want information about:
 - the current state of the network based on real-time information across all transport modes;
 - where congestion is and any special conditions (such as weather or incidents); and
 - the options for travel and who provides what services.
- 2) The European Commission has set a specific target that 50% of Europe's major towns and cities should be provided with traffic and travel services by 2010³⁴. In the UK, the provision of traffic and traveller information contributes to congestion reduction targets.

How ITS contributes

- 3) Pre-trip information has traditionally been available to the travelling public through radio and television services. An accurate, reliable and relevant flow of information to travellers during a journey is equally important. The advent of the Internet created opportunities for public and private sector web-based journey planning and information services that are now maturing into real-time information sources in a way that could provide broader information, for example about accessibility issues to support vulnerable travellers.
- 4) The ITS media used are variously in-vehicle, portable, internet and roadside based and include:
 - Floating Vehicle Data that is a useful mechanism to judge the rate of traffic flow and provides an ITS basis for some businesses to provide real-time and targeted information to drivers via the in-vehicle Radio Data Service – Traffic Message Channel (RDS-TMC);
 - advanced systems that take account of real-time traffic conditions in giving visual and/or audible in-vehicle route guidance to drivers;



- mobile telecommunications companies offer real-time services to subscribers, which provide benefits to the travelling public, although legislation is in place about mobile phone use whilst driving to safeguard road safety;
 - information provided at the roadside through Variable Message Signs that gives network operators an essential tool for real-time, visual messages which can be purely informative, advisory, or mandatory in nature;
 - advanced signage that can inform drivers of parking availability on a real-time basis;
 - the Highways Agency website that enables users to see current road traffic conditions such as road traffic incidents, road works and congestion on the strategic road network; and
 - real-time rail information that is available via the internet and mobile telephones.
- 5) More recent ITS information service developments bring together pre-trip planning with on-trip information. A major initiative is Transport Direct³⁵ which is being led by DfT with key participation by other government sectors and industry. The vision is a comprehensive, easy-to-use multi-modal travel information and ticketing service that brings together private and public modes of transport. It is a world first that in the long-term will provide travellers with integrated, real-time information and through-ticketing. Public transport schedule information, detailed road maps and historical congestion data sit behind a web portal launched in 2004, and allow the road journeys offered to take account of typical congestion at the time of travel, presenting this visually on a map as well as including alternative routes for the journey where appropriate. Future expansion is planned to deliver Transport Direct via mobile phones, digital TV and roadside kiosks.
- 6) The Real Time Information Group³⁶ established in 2000 with DfT support provides a focus for those involved in bus real-time information services. Several local authorities are using the public/private forum to help develop and implement state of the art systems that typically combine real-time bus information at bus stops, web-based journey planning services and SMS text messaging services.



7) Section 4 above shows how the Highways Agency NTCC (and RCC) already uses information services as an integral part of the Agency's management of the strategic road network. It provides information to drivers directly and also through other service providers, including by supplying media organisations and broadcasters with a continuous feed of information for traffic bulletins. Drivers can access the services direct through the Highways Agency Information Line (HAIL), web-based and driver information services via the media.

A European dimension

8) A European Commission Recommendation on Road Traffic and Traveller Information³⁷ encouraged member states to facilitate the market, which has largely been taken forward in terms of RDS-TMC where the UK was an early adopter. The EC eSafety initiative continues to explore ways of further market deployment.

Key ITS issues for DfT in delivering better travel and traveller information are to:

- take a broad view in putting travel and traveller information within a wider policy delivery context;
- ensure comprehensive, co-ordinated and user-friendly information exists on the options for travel and who provides what services;
- facilitate the provision of and provide accurate, timely and relevant information to travellers so that they can make informed choices about travel mode and time and as part of the contribution to tackling congestion and enabling more efficient and less stressful journeys; and
- encourage continuous improvement in information provision to make it more accurate, more accessible, more specific and timely, and more joined up by making better use of ITS.



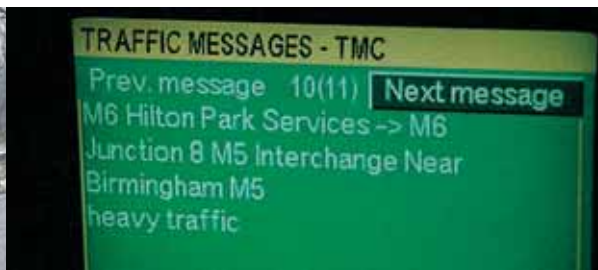
Actions

9) Government will use ITS to support traffic and traveller information. Specifically, DfT will:

- a) ensure a joined up approach to traveller information service provision – in terms both of multi-modal information and of different road operators’ responsibilities – through the continued development and implementation of Transport Direct and its associated research;
- b) support development of inter-operable standards for integration of traveller information systems (for example provided through the Travel Information Highway; international agreements including Datex protocols; and participation in Euro-regional projects described in Section 4); and
- c) lead by example in using proven ITS technology to provide travel and traveller information that meets the needs of the population as a whole.

Travel And Traveller Information: Illustrating how Actions map on to DfT Roles

DfT Role ▶	Facilitate, encourage and lead a co-ordinated approach	Lead by example as major procurer of ITS	Facilitate and encourage the take-up of proven ITS technologies	Encourage appropriate standards	Promote innovation	Promote and enable better regulation	Influence the policy agenda	Learn from international experience	Work in partnership	Foster economically successful UK ITS industry
Action ▼										
a. Ensure a joined up approach to traveller information service provision.	✓	✓	✓	✓	✓		✓	✓	✓	✓
b. Support development of inter-operable standards.	✓		✓	✓	✓			✓	✓	✓
c. Use proven ITS technology to provide travel and traveller information.	✓	✓	✓				✓	✓	✓	✓



Section 7: Better Public Transport on the Roads

Policy Context

- 1) The *Future of Transport* White Paper identifies buses as the main form of public transport. This ITS Framework is not intended to cover air, rail or local tram services although in the latter case ITS can help manage different modes of transport using the road space through signal phasing and lane control measures. Section 6 of this ITS Policy Framework has set out the ITS context for travel and traveller information at a broader level and summarised strategic issues and actions for DfT. Many of those measures will help to support delivery of better public transport systems, including bus services as part of the provision of multi-modal journey planning and on-trip information.

‘Nearly two thirds of all public transport journeys in England are by bus. We need bus networks that provide flexible and convenient services tailored to local needs, offering a reliable way to travel to and from jobs, schools, shops and other services. This is crucial for people without access to a car and providing genuine choice for those who do. Buses are a powerful tool in tackling the problems caused by congestion, allowing more people to make the same journey while generating less traffic. Buses are flexible too – they can be deployed quickly in response to changing demand. And unlike rail or metro systems, buses do not require substantial infrastructure so can rapidly boost the supply of public transport.’

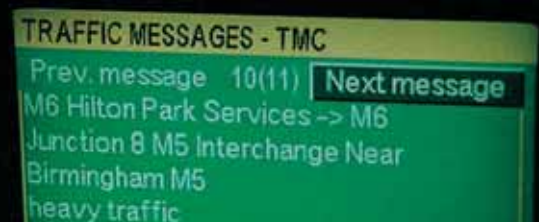
Future of Transport: a network for 2030 July 2004

How ITS can contribute

- 2) ITS technologies can help provide better and more inclusive public transport to users through improved reliability and accessibility; to operators through efficiency gains; and to both users and operators in terms of cost-effectiveness and affordability of service provision.
- 3) Several ITS measures are used to support reliability and efficiency of bus services, including:
- Automated Vehicle Location (AVL) technologies that bring fleet management benefits to operators;



- AVL that enables local highway authorities and bus operators to work closely together to give buses priority at traffic controls;
 - roadside and in-vehicle camera technology to enforce bus lanes and to help protect the safety of passengers;
 - using real-time information equipment (now fitted to 40 per cent of the English national fleet) to underpin deployment of waiting time information at bus stops or via mobile phones; and
 - optically guided buses that use ITS to position vehicles properly at bus stops to allow disabled access.
- 4) The *Future of Transport* White Paper encourages seamless travel that brings together measures to tackle congestion, provide better public transport and bring other benefits. And it highlights the need for demand responsive bus services, particularly in rural areas.
- 5) The Integrated Transport Smartcard Organisation published standards in 2004 that provide the framework for seamless ticketing and payment services among individual bus operators and across transport modes. Prepared by industry with DfT support, the benefits can be described from two main perspectives:
- a more simple, user-friendly and cost-effective ticketing process for bus travellers who will be able to purchase a single ticket for an entire journey irrespective of operator; and
 - opportunities for operators to provide more efficient and seamless services that will be attractive to users and offer cost-effective benefits in terms of operating costs over time.



A European dimension

- 6) The eEurope agenda provides a policy backdrop for advanced ticketing. There is also active international development of standardisation.

Key ITS issues for DfT in better public transport (roads) provision are to:

- take a broad view of how ITS-enabled public transport provision can and might further complement wider Government policies;
- help overcome the barrier to increased public transport use that arises from a lack of consumer-friendly ticketing practices between modes and between ticketing authorities. ITS is helping to overcome that barrier through the development of seamless ticketing based on smart card technology but this is unlikely to happen without Government support;
- provide better information at point of use for public transport travellers specifically and using ITS to monitor service predictability and responding to demand. This complements the provision of real-time and accessible information to travellers using public transport systems highlighted earlier in the context of Transport Direct;
- deploy ITS to best effect in public transport provision, and in particular exploiting its full potential in responding to delivering a broad spectrum of local transport and transport user needs; and
- broaden understanding among public transport providers of the potential operational cost benefits offered by ITS beyond provision of traveller information and ticketing options.



Actions

7) Government will use ITS to support better public transport on the roads.

Specifically, DfT will:

- a) facilitate development of common public transport smart card solutions for through-ticketing, based on inter-operable standards and demonstrations;
- b) encourage bus operators to provide real-time information systems both to support Transport Direct and to deliver better service to customers at point of use through operational good practice; and
- c) encourage bus operators and local authorities to make best use of ITS as part of their overall Local Transport Plans and in providing innovative solutions and, particularly in rural areas, demand responsive services.

Public Transport (Roads): Illustrating how Actions map on to DfT Roles

DfT Role ▶	Facilitate, encourage and lead a co-ordinated approach	Lead by example as major procurer of ITS	Facilitate and encourage the take-up of proven ITS technologies	Encourage appropriate standards	Promote innovation	Promote and enable better regulation	Influence the policy agenda	Learn from international experience	Work in partnership	Foster economically successful UK ITS industry
Action ▼										
a. Facilitate development of common ticketing solutions.	✓		✓	✓	✓		✓	✓	✓	✓
b. Encourage real-time information systems.	✓		✓		✓		✓	✓	✓	✓
c. Encourage bus operators and local authorities to make best use of ITS to provide innovative solutions including demand responsive services.	✓		✓		✓		✓	✓	✓	✓



Section 8: A More Efficient Road Freight Industry

Policy Context

- 1) An efficient road freight industry is essential to the UK economy and UK prosperity. Economic growth increases demand for goods which need to be moved freely, reliably and efficiently, with an increasing demand for Just-in-Time delivery, while minimising the impact on safety, congestion, the environment and other transport users. Government is not responsible for providing a freight transport service directly but DfT has a role in creating the conditions for an efficient industry that minimises its potential negative impacts. *The Future of Transport White Paper* sets this context out more fully. An efficient road freight industry is also an important aim in Europe.

How ITS can contribute

- 2) New technologies and ITS help support an efficient road freight industry in two respects:
- freight transport benefits from many of the measures described earlier in this ITS policy framework; and
 - the industry can improve its own efficiency by adopting ITS technologies.
- 3) In particular, efficiency in road freight logistics can be supported through in-vehicle systems that offer route guidance and by scheduling tools that enable better fleet and driver management. Satellite tracking and Radio Frequency Identification chips that provide information on the location of the vehicle or cargo are becoming more common, and could be a useful weapon in combating load theft. DfT has published a *Telematics Guide*³⁸ on the wide variety of technologies on the market under the Transport Energy Best Practice Programme, with the aim of helping businesses understand the potential and make informed decisions on investment.

A European dimension

- 4) The European Directive³⁹ on digital tachographs, once implemented, will use ITS-related technology to ensure the security of the recording of a driver's duty periods. ITS solutions such as those that link to On-Board Diagnostic systems or the CANBUS can offer other compliance monitoring benefits, and this is an area that VOSA are currently exploring.



- 5) The European Commission is exploring the feasibility of a Universal On-Board Unit that might combine on-board systems providing road user charging, vehicle identification, digital tachographs, freight management, e-safety and added value services. A key driver for this work is to avoid unnecessary cost and to optimise safety, network management, economic and enforcement benefits. Whilst the scope of this Commission initiative is not limited to freight vehicles, the developments for this sector described above make it a key focus.
- 6) More broadly, and at an international level, opportunities may arise in the longer term for a more global logistics approach to minimise and better target freight movements.

Key ITS issues for DfT in supporting road freight industry efficiency are to:

- take a broad view and factor in impacts on the road freight industry efficiency as part of decisions on implementing ITS measures taken principally to support safety, network management, congestion and information reasons at a road network level;
- work closely with the road freight industry and its supply chain, including through the Road Haulage Forum, to exploit the best value from new technologies that can help improve efficiency and bring wider benefits;
- influence European policy developments to support UK objectives including for road freight industry efficiency; and
- support development and implementation of road freight-related legislation so that they might embrace ITS technologies.



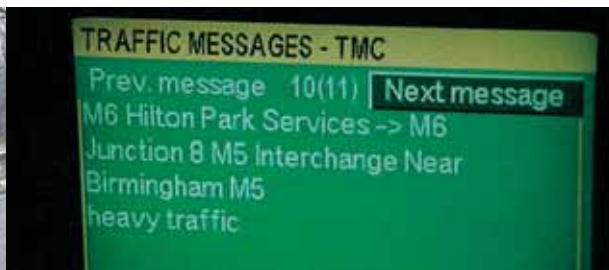
Actions

- 7) Government will encourage ITS to help support efficiency in the freight industry. In particular DfT will:
- a) promote best practice including through the Transport Energy Best Practice programme;
 - b) explore with industry the benefits, costs and feasibility of interoperability and commonality between in-vehicle units including the development of standards and other international developments; and
 - c) continue to explore the benefits that ITS solutions such as those that link to On-Board Diagnostic systems, can offer to compliance monitoring, within the overall context of the Vehicle Information Framework mentioned earlier.



Road freight industry: Illustrating how Actions map on to DfT Roles

DfT Role ▶										
Action ▼	Facilitate, encourage and lead a co-ordinated approach	Lead by example as major procurer of ITS	Facilitate and encourage the take-up of proven ITS technologies	Encourage appropriate standards	Promote innovation	Promote and enable better regulation	Influence the policy agenda	Learn from international experience	Work in partnership	Foster economically successful UK ITS industry
a. Transport Energy Best Practice programme (R&D and best practice).	✓		✓	✓	✓	✓	✓	✓	✓	✓
b. With industry investigate interoperability and commonality between in-vehicle units, including the development of standards.	✓		✓		✓		✓	✓	✓	✓
c. Within the context of a Vehicle Information Framework explore the benefits linked to On-Board Diagnostic systems, in relation to compliance monitoring.	✓		✓	✓	✓		✓	✓	✓	✓



Section 9: Reducing Negative Environmental Impacts

Policy Context

'We have one of the richest and most diverse natural and built environments in the world. It makes a significant contribution in its own right to our national economy and to our quality of life. However, the negative impacts of transport on the environment affect all of us.'

Future of Transport: a network for 2030 July 2004

- 1) *The Future of Transport* White Paper, which also reflects European environmental concerns also, makes it clear that dealing with the environmental pressures caused by the increasing demand for travel means striking the right balance between our environmental, economic, and social objectives now, and into the future. The environmental burden from transport is considerable and can be broken down into four main areas:
- local air quality can be compromised and climate change worsened by vehicle emissions;
 - noise pollution from vehicles themselves and the noise generated from the road surface can be unwelcome;
 - at a broader level, there is an obvious environmental impact from the construction and maintenance of the road network itself; and
 - environmental impacts arise from the process of manufacturing, maintaining and disposing of materials associated with road transport (the vehicles and their components, the service provision infrastructure and the road infrastructure itself).



How ITS can contribute

2) Many of the measures described in earlier sections of this ITS Framework clearly can also have a direct or indirect effect on the environment. In particular, vehicle technology plays an essential role in minimising emissions pollution. ITS that can increase capacity of the existing road network can also help to minimise the environmental impacts of road construction. ITS also has clear potential to contribute positively to both air quality and wider environment sustainability objectives in several ways, including:

- using ITS to manage the existing road network to best effect can help minimise the environmental burden of major new road infrastructure;
- improved network management techniques that use ITS to smooth traffic flow help to reduce vehicle emissions;
- ITS used by the road freight sector is helping to improve efficiency with consequential environmental benefits; and
- future in-vehicle advanced ITS technologies such as automated close following (platooning), Intelligent Speed Adaptation or on-board diagnostics might offer significant environmental benefits particularly in terms of fuel efficiency which helps to reduce carbon emissions and local air pollutants.

A European dimension

3) Environmental factors and opportunities associated with ITS at the European level tend to be taken into account at the broader policy level.

Key ITS issues for DfT in reducing negative environmental impacts are to:

- take a broad view and ensure environmental impacts are identified and addressed as part of the overall policy implementation decision process; and
- encourage industry and the supply chain generally to bring forward ITS technologies that minimise their environmental impacts throughout their life cycle.



Actions

- 4) The Government will consider how ITS supports environmental policies. Specifically, DfT will:
 - a) identify environmental factors when researching the potential of new ITS technologies in supporting delivery of DfT objectives; and
 - b) make sure that the continued work to raise awareness among highway authorities gives appropriate focus to environmental issues.

Environmental: Illustrating how Actions map on to DfT Roles										
DfT Role ▶	Foster economically successful UK ITS industry	Work in partnership	Learn from international experience	Influence the policy agenda	Promote and enable better regulation	Promote innovation	Encourage appropriate standards	Facilitate and encourage the take-up of proven ITS technologies	Lead by example as major procurer of ITS	Facilitate, encourage and lead a co-ordinated approach
Action ▼										
a. Identify environmental factors when researching the potential of new ITS technologies in supporting delivery of DfT objectives.	✓	✓		✓		✓			✓	✓
b. Make sure that the continued work to raise awareness among highway authorities specifically gives appropriate focus to environmental issues.	✓			✓	✓	✓		✓		



Section 10: Security, Crime Reduction and Emergency Planning

Policy Context

- 1) Security is likely to remain a major factor in the development of transport systems for the foreseeable future and an appropriate balance is needed to manage risks to an acceptable level in a way that does not place unreasonable costs on operators or the travelling public. Whilst the UK has some of the most mature transport security regimes in the world, with well-developed legislation and systems, the *Future of Transport White Paper* explains considerable enhancements and additional effort are being made.
- 2) The Home Office 2004 publication *Implications for Policing: Intelligent Transport Systems*⁴⁰ is the third document aimed at raising awareness among the police about the potential ITS offers to support crime reduction and emergency planning – both in terms of roads policing and more broadly as an intelligence tool.

How ITS can contribute

- 3) ITS can contribute positively to crime reduction in its broadest sense in several ways, including:
 - CCTV and ANPR technologies on the road network, and CCTV at bus stops and in buses, provide valuable tools to support enforcement authorities and act as deterrents against infringements of the law, and are a useful intelligence gathering tool;
 - perimeter security measures can be enhanced by ITS access control systems;
 - enforcement authorities recognise the potential that certain existing in-vehicle equipment has for facilitating their activities, such as being able to trace stolen vehicles through satellite-based tracking services that drivers can subscribe to;
 - future developments are under research, particularly by the Home Office Scientific Development Branch and Association of Chief Police Officers, including into remote vehicle stopping and electronic immobilisation; and
 - electronic vehicle or cargo identification could also offer opportunities for better location referencing to minimise perceived risks, such as in the carriage of dangerous goods by road.



- 4) Major incidents and events – whether security-related or others such as natural disasters and major crowd events – require appropriate emergency planning strategies to ensure that people and vehicles are moved safely, easily and promptly. ITS technologies that are resilient to the effect of an incident can support these strategies by facilitating access control and enabling joined-up services across authorities.
- 5) There is a third major strand to the security debate for ITS. Integrity and resilience is an important issue at device and system level. This is the case for reasons of data protection and privacy but also in terms of a much wider issue of unauthorised tampering whether for criminal and malicious intent or through erosion of materials and interfaces.

An international dimension

- 6) At an international level, ITS supports and enables cross-border enforcement and compliance, emergency planning for example in tunnel safety and generally in international standardisation.

Key ITS issues for DfT in supporting security and emergency planning are to:

- take a broad view in appreciating the security, crime reduction and emergency planning impacts associated with ITS deployment more generally;
- ensure that the full security risks associated with ITS deployment are identified and addressed early in the development process, which raises challenges in terms of the openness of the debate;
- encourage local and enforcement authorities to exploit ITS in reducing vehicle and other crime and in drawing up emergency strategic plans as part of their broader remits; and
- maintain awareness of state of the art ITS technologies that have the potential to strengthen UK transport security further and carry out feasibility research where appropriate.

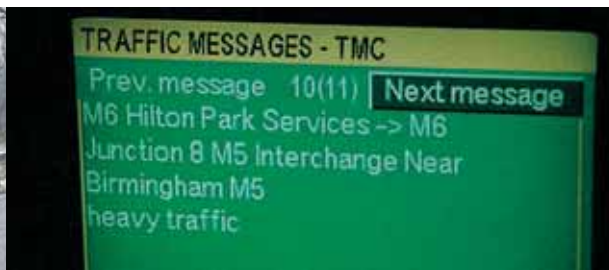


Actions

7) DfT’s strategic approach in this area is to:

- a) factor security and crime reduction considerations into ITS policy development particularly in terms of data, privacy and access implications and how these issues are perceived by road users and travellers;
- b) participate in standards development activities in a way that focuses on security issues as part of the overall process; and
- c) encourage deployment of proven ITS technologies by local and enforcement authorities for crime reduction, security and emergency planning purposes.

Security crime reduction and emergency planning: Illustrating how Actions map on to DfT Roles										
DfT Role ▶	Foster economically successful UK ITS industry	Work in partnership	Learn from international experience	Influence the policy agenda	Promote and enable better regulation	Promote innovation	Encourage appropriate standards	Facilitate and encourage the take-up of proven ITS technologies	Lead by example as major procurer of ITS	Facilitate, encourage and lead a co-ordinated approach
Action ▼										
a. Factor security considerations into ITS policy development.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
b. Ensure through participation that security is given due consideration in standards development activities.	✓		✓	✓	✓	✓	✓	✓		✓
c. Encourage deployment of proven ITS technologies by authorities for emergency planning purposes.	✓	✓	✓	✓	✓					✓



Section 11: Strength through Co-ordination, Compatibility and interoperability

Policy context

- 1) The *Future of Transport* White Paper envisages ‘transport that works for everyone’. An individual using the UK transport system has the right to expect a safe, seamless, efficient, comfortable, accessible and reliable journey. This is true whether a journey involves one or more transport modes and irrespective of the number of individual service providers.

How ITS can contribute

- 2) Sections 4 to 10 consider seven policy delivery themes where ITS has an important role to play. ITS has the potential to contribute significantly to a vision of a joined-up and seamless transport system. Yet early ITS development and deployment tended to be led either by individual policy objectives, individual stakeholder need, or particular technological developments.
- 3) ITS has been defined earlier as combinations of information processing, maps, databases, communications and real-time data from a range of sensors, to produce solutions that enable:
- infrastructure owners and operators to improve the quality, safety and management of transport networks;
 - individual travellers, drivers, hauliers, transport operators and authorities to make better informed, more ‘intelligent’ journey decisions;
 - network operators and ‘third party’ service providers to supply advanced information services, increasingly multi-modal, to all types of traveller; and
 - road users to drive safer, ‘smarter’ vehicles.
- 4) The underpinning features of ITS technologies provide the tools and mechanisms that can overcome geographical, administrative, organisational, and technical barriers. For example, efficiencies are possible through more co-ordinated deployment – in terms of speed and accessibility of service provision, reliability and accuracy, cost of deployment and associated resourcing. Enhanced service delivery is possible because of the potential for greater data and information sharing.



What Government means by ITS co-ordination

Without co-ordination, the impact of any ITS deployment intended to enable ‘transport that works for everyone’ will be significantly reduced. Co-ordination can be policy-based, administrative, financial or technical. It can occur at various, often inter-woven, levels including:

- a co-ordinated vision of what is trying to be achieved – exploiting the synergies between individual policy drivers and ensuring that all stakeholders understand the results being aimed for;
- co-ordinated and shared implementation plans among sectoral stakeholders – such as neighbouring national and local highway authorities combining their resources to procure and manage ITS deployment;
- co-ordinating an ITS technical framework at a national level so that individually procured solutions can interface effectively, sharing data and information in a way that ensures seamless service delivery;
- co-ordinating efforts over time so that existing legacy systems can converge with ITS deployments based on newer and more universal standards; and
- co-ordinating technical developments so that systems and services are inter-operable, durable and exploit the opportunities for multi-functional combinations.

5) Government believes that these and other benefits realisable can contribute directly and significantly to the aim of better transport for everyone and of seamless transport from the road user or traveller’s perspective. Major policy initiatives surrounding national road pricing, network management and road safety among others are increasingly putting ITS at the heart of the delivery solutions. Ensuring that the pace of either policy or technology development does not lose sight of the added value that could be derived from a joined up approach is a major challenge for Government and the other key audience groups for this Framework. Yet each group stands to gain.



Co-ordination is the real key to success

Co-ordination can bring positive and significant results for each of the five main audience groups for this Framework:

- central, devolved and local government policy makers and local transport planners can communicate and deliver their objectives better;
- ITS procurers can have more confidence that the systems and services they procure will be fit for purpose and able to interface effectively, and make more cost-effective purchasing decisions;
- by sharing the goals of its clients and understanding the rationale for co-ordinated approaches, the ITS industry and operators can respond by delivering reliable, relevant, sustainable, targeted and cost-effective solutions, supported by their professional institutions;
- research organisations, industry and academia can better focus their efforts in furthering ITS development and deployment within an overall context; and
- in short, ‘transport that works for everyone’ can become a reality.

6) There are already examples of how co-ordination is helping. Whilst the following is not an exhaustive list it shows the variety of activity and stakeholders.

- the DfT DIRECTS research and demonstration programme specifically addresses interoperability of road charging systems – ensuring deployment can be based on the principles of co-ordination;
- the DTI ITS Centre of Excellence innovITS has been set up with the active participation of the SMMT, ITS UK, DfT and the mobile telecommunications Virtual Centre of Excellence. Its aim is to facilitate demonstrators of near-market ITS solutions based on partnership approaches;
- DfT encourages individual local authorities to develop their Local Transport Plans in close co-operation with their neighbours and to make best use of ITS;
- the smart card programme has worked with industry professionals and other Government Departments to address competitive procurement issues;



- the Roads Information Framework being driven by DfT and bringing together devolved administrations and local authorities will enable co-ordination of data on congestion and road use;
- a concordat between the RTIG, Travel Information Highway and UDG establishes closer working among three related initiatives in a way that shares knowledge and future development and makes the link with central Government and ITS UK;
- the Active Traffic Management trial by the Highways Agency co-ordinates a mix of ITS solutions to measure their value in delivering a range of policy objectives;
- the DfT study into co-operative vehicle highway systems identifies opportunities to realise benefits through greater integration of in-vehicle and road infrastructure ITS solutions; and
- the Foresight Vehicle Programme brings together UK resources and expertise to create components and systems for the vehicles of the future, with the aim of developing, demonstrating and promoting technology for vehicles, which will be available to the mass market by 2020. DfT is a member of the external Advisory Panel.

A European dimension

7) The European Commission promotes co-ordinated ITS deployment across member states, principally through its Trans-European Road Network documentation, and eSafety initiative mentioned above. It also promotes interoperable and pan-European services and public-private partnership approaches. Initiatives such as the EC Directive on the interoperability of electronic fee collection and International ITS Standards Steering Group are clear examples of a European commitment to increasing an integrated approach.



Key ITS co-ordination issues for Government are to:

- identify and tackle barriers to better co-ordination of ITS deployment, including financial, legislative, administrative, organisational, geographical and expertise barriers;
- identify how DfT can support and facilitate better co-ordination at its broadest level, take action and work together with the five main audience groups;
- identify and communicate the risks of not adopting a co-ordinated approach, technologically, financially and administratively;
- build on the strong cross-Government working relationships to understand, demonstrate and disseminate the value of a joined-up approach including to road users and travellers; and
- manage a co-ordinated policy development process internally and with other stakeholders that makes best use of ITS and achieves balance with the pace of technology change.

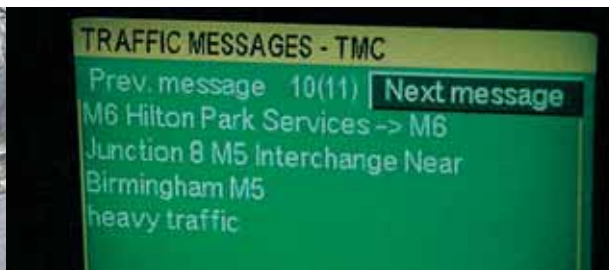
Actions

- 8) Government will approach ITS in a co-ordinated way to encourage deployment. Specifically, DfT will use the full breadth of its role as described in Section 3. And it will:
- a) use this Framework as a basis for awareness raising and for further ITS deployment based on co-ordinated approaches;
 - b) deliver in partnership with others a national ITS technical framework (as described in Section 4);
 - c) develop, through its Highways Agency, a Roads Information Framework (as described in Section 4);
 - d) encourage highway authorities to take a broad view of the benefits ITS can bring (as first mentioned in Section 4); and
 - e) develop a Vehicle Information Framework (as first mentioned in Section 3).



Co-ordination: Illustrating how Actions map on to DfT Roles

DfT Role ▶	Foster economically successful UK ITS industry	Work in partnership	Learn from international experience	Influence the policy agenda	Promote and enable better regulation	Promote innovation	Encourage appropriate standards	Facilitate and encourage the take-up of proven ITS technologies	Lead by example as major procurer of ITS	Facilitate, encourage and lead a co-ordinated approach
Action ▼										
a. Use this Framework as a basis for awareness raising and for further ITS deployment based on co-ordinated approaches.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
b. Deliver a national ITS technical framework.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
c. Develop a Roads Information Framework.	✓	✓	✓	✓		✓	✓	✓	✓	✓
d. Encourage highway authorities to take a broad view of the benefits ITS can bring.	✓		✓	✓	✓	✓	✓	✓	✓	✓
e. Develop a Vehicle Information Framework.	✓		✓	✓	✓	✓	✓	✓	✓	✓



Section 12: Pulling it all Together

- 1) This section sets out some of the key milestones and actions for DfT over the next eighteen months against each of the roles identified for DfT in Section 3 above. It purposely does not repeat every action from Sections 4 to 11, all of which will be progressed over the same timeframe.

Facilitating, encouraging and leading a co-ordinated approach

- 2) Section 11 sets out the value of more co-ordination in ITS development and deployment and shows how DfT will take a leading role. Actions range from those aiming to bring a more shared vision and integration of policy goals to supporting and furthering technical interoperability and convergence.

Early key milestones:

- widespread dissemination of this Framework;
- developing the concept of a Vehicle Information Framework during 2006;
- delivery of a national ITS technical framework in 2007;
- taking forward work on Co-operative Vehicle Highway Systems;
- supplementing in 2006 the CD toolkit guidance that helps highway authorities identify ITS solutions for joined up policy delivery.

Leading by example – DfT as procuring client for ITS

- 3) DfT is a major procurer of ITS. It will use this ITS Framework to provide an over-arching context for its own ITS deployment including for statistical measurement purposes as mentioned in Section 4, through its Highways Agency for network management and in making best use of Transport Direct.



Early Milestones:

- HA will roll-out associated Regional Control Centres to support service provision through the National Traffic Control Centre by 2006;
- HA will complete development of its outline Roads Information Framework and by 2006;
- HA will evaluate the trial of Active Traffic Management on the M42 that began in 2004; and
- DfT will continue to develop the Transport Direct portal and roll out further phases of deployment during 2005 and beyond.

Facilitating and encouraging take up of proven technologies

- 4) Government will use this ITS Framework as the basis for facilitating the emergence and encouraging the take up of proven technologies. Many of the activities will rely on close partnering with a wide group of stakeholders from each of the five target audience groups for the Framework document. In particular, DfT will:
 - a) monitor and review the relevant UK legal frameworks as appropriate, identifying problems and barriers, and ensuring that they are dealt with, in order to enable ITS to support delivery of its road transport objectives. And it will seek to influence the European and international legislative framework with the same intention;
 - b) support innovITS, that will showcase deployment of innovative and near-market ITS solutions through a programme of demonstrations based on industry partnerships and stakeholder engagement;
 - c) support broader DTI initiatives to promote industry and encourage innovation in technologies that support road transport; and to support the Technology Programme including by participating in relevant research and other projects including the Foresight Intelligent Infrastructure Study that is exploring how science and technology may be used to ensure robust, safe and sustainable infrastructure over a 50-year time horizon; and
 - d) work in partnership with the ITS community to deliver a UK ITS technical framework (or 'systems architecture') to ensure that the key Departmental initiatives mentioned in this policy framework document can easily exchange data and information.



- 5) DfT will take a varied approach to raising awareness and facilitating deployment, including through the provision of good practice guidance (for example through the Transport Energy Efficiency Best Practice programme and information to local authorities) and by supporting demonstrations and trials as part of its research programmes.
- 6) DfT will explore the feasibility of key databases to enable industry providers to develop and offer priority ITS applications – and facilitate their availability where appropriate.
- 7) DfT will consider future options for funding, and will pump-prime and otherwise act as prime facilitator in selected strategic initiatives such as smart card deployment schemes.

Early Milestones:

- DfT will develop an appropriate level of systems architecture to provide a high-level and updateable ITS technical framework to enable integrated ITS deployment. This work will commence in early 2006 and complete in 2007;
- DfT will take forward its consideration of the merits of a national database of road speed limits during 2006;
- DfT will complete its review of its licensing regime for operators of certain in-vehicle route guidance systems and consult on any changes during 2006;
- DfT will pump-prime innovative solutions at the local level through Transport Innovation Funds from 2008;
- DfT is working with local highway authorities to develop and publish in 2006 stronger evaluation techniques for ITS, building on the current CD toolkit;
- DfT will use its New Horizons research programme to encourage greater understanding on the handling and analysis of large transport related datasets;
- DfT will support DTI in its technology strategy programme development; and
- DfT is reviewing the extent of ITS inclusion in forthcoming Local Transport Plans and will consider future options.

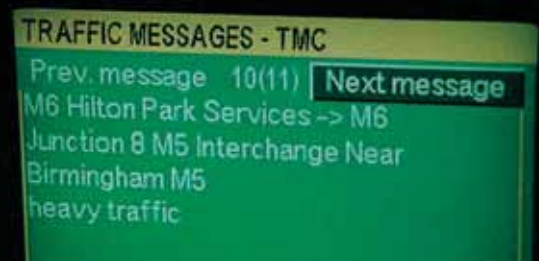


Encouraging appropriate standards

- 8) DfT will use this ITS Framework as a basis for its priorities in standards development work. It will continue to encourage the general development and adoption of standards that focus on ITS interoperability to support delivery of network management, safety, travel and traveller information, freight industry efficiency, environmental and security objectives. It will do so at the national level where that is most appropriate, for example in the case of smart cards. And at the international level where that is more appropriate, for example in the case of road user charging, HMI safety standards, information data exchange and Electronic Vehicle Identification.
- 9) DfT will seek to ensure that legislation, both national and international, takes the most appropriate approach to any standards.
- 10) DfT will explore ways to strengthen its interface with the British Standards Institute on ITS standards activity, building on the ITS standardisation framework document produced by the International ITS Standards Steering Group in November 2004 under DfT Chairmanship.

Early Milestones:

- DfT will prioritise its standards activity based on this ITS Framework and monitor progress against standards development by 2006;
- DfT will continue to chair the International ITS Standards Steering Group;
- DfT will seek to review the role of ITS standards in procurement procedures;
- DfT will put in place a more strategic interface and relationship with BSI based on its strategic priorities; and
- DfT will continue its direct support of standards in key ITS deployment and development areas.



Promoting Innovation – Researching new technologies

11) DfT will continue to research ITS opportunities, particularly those that might bring cross-cutting benefits to address the areas highlighted in this policy framework document. Maintaining a ‘technology watch’ function to keep abreast with potential new opportunities will be an essential element in this. Also, DfT will maintain effective links with Research Councils and other Government Departments, particularly DTI, to extract maximum value from research opportunities.

Early Milestones:

- The DIRECTS on-road trials of road user charging technologies includes user trials to inform the wider research programme and decisions on national road pricing;
- DfT will review the recommendations of its a major study into the feasibility of co-operative vehicle highway systems that could use ITS to deliver combined network management and safety benefits as part of a long term strategic approach to road transport. Part of the review process is to determine the scope and purpose of any demonstrations that might be progressed. This will include links with other initiatives such as innovITS and also EC Framework Programme research;
- DfT is using the outputs from UK and ongoing European research to help form its policy approach to deploying Electronic Vehicle Identification as part of a broader consideration of single on-board units within a Vehicle Information Framework concept. Some minor trials on electronically chipped number plates will be carried out by DVLA as part of measures to improve number plate security;
- DfT will provide input to the DTI’s Technology Strategy to enable the development of ITS relevant calls for R,D&D; and
- VOSA will continue to explore with industry partners the potential for continual telematic compliance as a possible alternative to regular physical vehicle checks.



Promoting Better Regulation

12) Promoting better regulation is a Government priority and whilst the majority of ITS deployment is voluntary, several legislative requirements are due to be implemented and others are under review. A key challenge in this area is to balance the legislative framework against fast-paced technology development.

Early Milestones:

- DfT will begin the process of creating national legislation in 2005/6 to enable the EC Directive on interoperability of electronic fee collection to be implemented from 2009;
- DfT will take the necessary steps to implement the Digital Tachograph directive;
- DfT will participate in the Response 3 European project exploring legal issues surrounding ITS deployment; and
- DfT will complete the review of the Road Traffic (Driver Licensing and Information Systems) Act 1989 and consult on any changes during 2006.

Influencing the policy agenda

- 13) DfT will continue to influence the policy agenda on an ongoing basis by:
- a) maintaining close links with the European Commission and UNECE on all policy developments relating to ITS;
 - b) participating in the International ITS Standards Steering Group that inputs to European policy direction;
 - c) working closely with other UK Government Departments including DTI and the Home Office; and
 - d) working closely with the Devolved Administrations and local authorities.



Learn from international experience

- 14) DfT recognises the knowledge to be gained from international experience. As this is an ongoing process, no early milestones need to be identified. But DfT will:
- a) remain active among international networking fora including ERTICO, extracting knowledge that can support Government policy delivery;
 - b) continue to look for opportunities to partner internationally in research and other projects and learn from the process;
 - c) maintain its international profile to ensure opportunities to learn from international experience are available; and
 - d) keep in close touch with the European Commission and UNECE.

Working in partnership

DfT cannot take forward this ITS Framework and the actions it contains on its own. Everyone within the five main audience groups needs to recognise its own role and the opportunities it can embrace.

DfT will continue to work closely with many representative organisations – some of which are mentioned explicitly in earlier sections. And it will encourage greater partnership with and among individual organisations including through research and as a major client for and facilitator of ITS deployment.



Industry success

15) DfT will help to foster an economically successful ITS industry through the various actions in this ITS Framework – industry is a key beneficiary in the provision of a better transport system across the UK. DfT will continue to work closely with DTI as a key Government partner. Particular areas of collaboration are highlighted earlier in this ITS Framework and include the Technology Programme and its further strategic development and participation in the ITS Centre of Excellence innovITS. More broadly, in hosting the ITS World Congress in London in 2006 jointly with ITS UK, DTI and Transport for London, DfT is helping to provide showcase opportunities to strengthen the UK industry both at home and abroad.

Next Steps

16) DfT will make significant progress in several strands of its ITS strategic policy development over the next eighteen months. The specific milestones included in this final section are deliberately short-term and delivery focused. Responsibility for delivering them fall across several parts of DfT (and its Agencies). The ITS policy co-ordination team will monitor progress generally and review this framework regularly.

What will success look like?

ITS is essentially a set of delivery mechanisms that contribute to a broader agenda of achieving transport that works for everyone.

Success can and will be measured at individual action level as part of the project management processes that Government uses (for example in evaluating a trial or gathering anecdotal feedback on the usage of guidance material).

But the headline success measurements for ITS development and deployment will be a combination of:

- a greater understanding of the value of ITS to supporting better transport and sustainability;
- a stronger UK ITS industry (with its broadest meaning); and
- achievement of Government targets and objectives.

The ITS World Congress to be held in London in 2006 will give an opportunity to showcase achievement and success along the way, and a further opportunity will be presented when the Olympic Games comes to London in 2012.

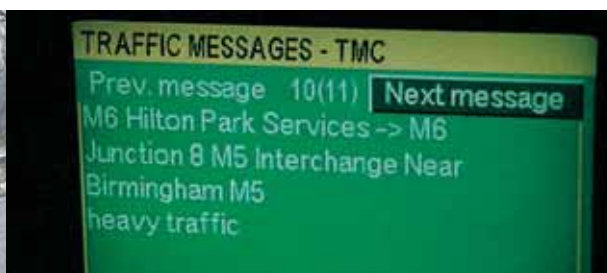


Endnotes

- 1 CM6234 published 20 July 2004 ISBN 0101623429
- 2 DfT Business Plan published 4 July 2005: Delivering better transport: priorities for 2005–6 to 2007–8
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- 15 http://europa.eu.int/comm/transport/themes/network/english/its/html/vision_policy.html
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- 21 http://www.dft.gov.uk/stellent/groups/dft_roads/documents/page/dft_roads_6101
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- 26 Product code 45RVD02310 CD Guidance published February 2005.
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- 28 Traffic Management Act 2004 Network Management Duty Guidance November 2004 (Product code TINF972)



- 29 http://europa.eu.int/comm/transport/themes/network/english/its/html/its_activities.html
- 30 Directive 2004/52/EC of the European Parliament and of the Council of 29 April 2004 on the interoperability of electronic road toll systems in the Community
- 31 A committee formed of Member States to review and vote on key issues relating to the implementation of the European Toll Service (see end note 30)
- 32 version 2.0 published 2004: ISBN 0-900685-51-4
- 33 http://www.europa.eu.int/information_society_activities/esafety/index_en.htm
- 34 See end note 14
- 35 <http://www.transportdirect.info>
- 36 <http://www.rtig.org.uk>
- 37 EC Recommendation 2001/551/EC – 4 July 2001
- 38 published 2003: Good Practice Guide 341 http://www.transportenergy.org.uk/best_practice
- 39 Council Regulation (EC) No 2135/98 of 24 September 1998
- 40 See end note 17



Appendix A

Summary of DfT Business plan objectives (does not include detail of aviation, rail or maritime objectives)	Contributes towards PSA objectives
<p>Summary of DfT Business plan objectives (does not include detail of aviation, rail or maritime objectives)</p> <p>1 Improve effectiveness and efficiency:</p> <ul style="list-style-type: none"> ■ 5 discrete objectives aimed at improving DfT efficiency; improving strategic planning and human resource management; achieving Government objectives internationally; and maintaining high corporate level standards with external stakeholders. <p>2 Making better use of the existing network (strategic roads and logistics):</p> <ul style="list-style-type: none"> ■ Improve the day to day management and utilisation of the existing strategic (national) road network; and ■ Improve the sustainability of the logistics sector. <p>3 Improve rail industry performance and structures</p> <ul style="list-style-type: none"> ■ 2 objectives. <p>4 Ensure investment in new capacity is well targeted and delivers value for money:</p> <ul style="list-style-type: none"> ■ Ensure the cost-effective delivery of major investment projects; ■ Ensure the cost-effective delivery of the agreed targeted; programme of improvements to the strategic (national) road network; and ■ 2 additional objectives for aviation and shipping and ports. <p>5 Improve the safety, security and accessibility of transport:</p> <ul style="list-style-type: none"> ■ Keep on track towards the DfT 2010 road safety PSA target and develop DfT's strategy for future improvement; ■ Maintain and improve transport security and resilience; ■ Improve accessibility and inclusion; and ■ Additional objective on rail, maritime and aviation safety. 	<p>All</p> <p>I</p> <p>I, III</p> <p>I, III, IV</p> <p>I, II, IV</p> <p>I, IV</p> <p>I, III</p> <p>III</p> <p>III</p> <p>III</p> <p>III</p>



Summary of DfT Business plan objectives (does not include detail of aviation, rail or maritime objectives)	Contributes towards PSA objectives
<p>6 Deliver improved driver and vehicle services:</p> <ul style="list-style-type: none"> ■ Deliver improved driver and vehicle services to customers; ■ Improve compliance with road safety, environmental and related standards; and ■ Improve value for money across the DVO Group. <p>7 Minimise the impact of transport on the environment:</p> <ul style="list-style-type: none"> ■ Deliver the joint PSA target for climate change and develop the Department's strategy for future improvement; ■ Deliver the joint PSA target for air quality. <p>8 Promote smarter and sustainable transport choices:</p> <ul style="list-style-type: none"> ■ Develop a detailed plan to deliver the Government's 30 year strategy for addressing the growing demand for transport; ■ Develop pathfinding proposals, in partnership with leading local authorities, which demonstrate new ways to deliver effective transport; and ■ Deliver the DfT PSA target for bus and light rail use. <p>9 Influence and support wider planning decisions:</p> <ul style="list-style-type: none"> ■ Ensure that transport planning both supports and influences plans for productivity and regeneration, so that potential pressures on transport networks are addressed in the most effective way. 	<p>III, IV III, IV IV</p> <p>III III</p> <p>I, II I, II</p> <p>II II</p>



Appendix B

List of Abbreviations

ACPO	Association of Chief Police Officers
ANPR	Automatic Number Plate Recognition
AVL	Automated Vehicle Location
BSI	British Standards Institute
CANBUS	Controlled Area Network
CCTV	Closed Circuit Television
DEFRA	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DIRECTS	Demonstration of Interoperable Road User End-to-end Charging and Telematics Systems
DTI	Department for Trade and Industry
DVLA	Driver and Vehicle Licensing Agency
EC	European Commission
ERTICO	European public-private sector membership organisation for ITS
Galileo	the European contribution to the Global Navigation Satellite System.
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HA	Highways Agency
HAIL	Highways Agency Information Line
HMI	Human Machine Interface
IBEC	International Benefits and Evaluation Committee
InnovITS	DTI Centre of Excellence for ITS
IPPR	Institute of Public Policy Research



List of Abbreviations

IST	Information Society Technologies
ITS	Intelligent Transport Systems
ITSSG	International ITS Standards Steering Group
ITS UK	UK public-private sector membership organisation for ITS
MIRA	Motor Industry Research Association
NTCC	National Traffic Control Centre
ODPM	Office of the Deputy Prime Minister
PIARC	World Road Association
PSA	Public Service Agreement
RCC	Regional Control Centres
RDS-TMC	Radio Data Service – Traffic Message Channel
RTIG	Real-Time Information Group
RUC	Road User Charging
SCOOT	Split Cycle Offset Optimisation Technique
SMMT	The Society of Motor Manufacturers and Traders Ltd
SMS	Short Message Service
TIH	Travel Information Highway
UDG	UTMC Development Group
UNECE	United Nations Economic Commission for Europe
UTMC	Urban Traffic Management and Control
VIF	Vehicle Information Framework
VOSA	Vehicle and Operator Services Agency
WP29	Working Party 29, the automotive focus of the UNECE

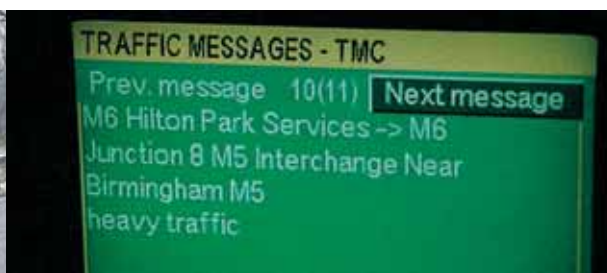


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