

Intelligent Transport Systems in the United Kingdom: Initial Report

As required by European Union Directive 2010/40/EU

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Contents

Introduction	5
European Priority Area I: Optimal Use of Road Traffic & Travel Data	
Transport Direct	7
Traffic Scotland: Web Service	9
Urban Traffic Management and Control (UTMC)	10
Highways Agency: Variable Message Sign (VMS)	12
Transport Scotland: Variable Message Sign Deployment.....	13
Northern Ireland Roads Service: Variable Mandatory Speed Limits & Variable Message Signs	14
Highways Agency: National Traffic Control Centre (NTCC).....	16
Highways Agency: National Traffic Information Service (NTIS)	17
Highways Agency: Managed Motorways	18
Northern Ireland Roads Service: Foyle Bridge Management System.....	19
Highways Agency: Public Access CCTV	20
Transport Scotland: Deployment of CCTV.....	21
Transport Scotland: Journey Time System Enhancements	22
Highways Agency: Use of the Internet Protocol (IP) in Roadside Telecommunications.....	24
Transport Scotland: System Architecture Improvements.....	24
European Priority Area II: Continuity of Traffic & Freight Management Services	
Smart & Integrated Ticketing	27
Real Time Information Group (RTIG).....	28
Freight Management & ITS Applications for Freight Transport Logistics (eFreight).....	29
Urban & European ITS Architectures.....	29
Transport Scotland: Extension of Weigh-in-Motion (WIM) Sensors for Automatic Traffic Counting Sites	30
Transport Scotland: Deployment of Automatic Number Plate Recognition (ANPR) for Network Monitoring	31
Northern Ireland Roads Service: Integrated Urban/Inter-Urban Systems – Integrated Network Management	33
European Priority Area III: ITS Road Safety and Security Applications	
eCall	35
Information Services for Safe & Secure Parking Places for Trucks & Commercial Vehicles.....	36
Reservation Services for Safe & Secure Parking Places for Trucks & Commercial Vehicles	36
Human-Machine-Interfaces, the Use of Nomadic Devices & the Security of In- Vehicle Communications	36

Bristol City Council & University of the West of England: Young Drivers & Social Marketing (Wheels, Skills & Thrills)	37
Lancashire County Council: Lancashire Intelligent Speed Adaptation.....	38
European Priority Area IV: Linking the Vehicle with the Transport Infrastructure	
Open In-Vehicle Platforms.....	40
Cooperative Systems.....	40
Glossary of Terms	41
Annex	
Intelligent Transport Systems (UK) – Major UK ITS Implementations	

Introduction

1. The following report is submitted by the UK Department for Transport (DfT) in accordance with Paragraph 1 of Article 17 of Directive 2010/40/EU which requires Member States (MS) to submit to the Commission by 27 August 2011 a report on their national activities and projects regarding the priority areas. The report is structured around the 4 Priority Areas identified by the ITS Directive and has been drafted in line with the Guidelines for Reporting by Member States, adopted by the European Commission on 13th July 2011.
2. As a world leader in Intelligent Transport Systems (ITS) the UK recognises the EU ITS Directive as an important opportunity to share skills and experience with fellow Member States, especially given the considerable investment the UK has already made in the development and deployment of ITS.
3. If the deployment of ITS is to be effective in ensuring the achievement of national policy objectives it is vital that Member States retain the final decision on whether and where to deploy systems. Technology is an important tool for policy development, but is a means to an end, not an end in its self. The UK therefore has no overarching strategy or architecture in relation to ITS, but has developed specific architectures to aid the development and deployment of systems targeted at achieving specific policy goals. Future technological developments will mean that ITS are increasingly capable of contributing across the board towards achieving transport policy objectives. It is therefore vital that Member States retain the final decision on whether and where to deploy systems to ensure that they are fully aligned with national policy objectives and make the best use of available resources.
4. In choosing to develop and deploy ITS in the UK DfT is clear that legislative and administrative burdens must be kept to an absolute minimum. The UK sees the role of National Governments as enabling and encouraging industry, incentivising and removing potential barriers so that the private sector can innovate and progress rapidly to deploy ITS where it best delivers the goals we all agree on. The future deployment of ITS must therefore be not only policy led but backed by rigorous cost-benefit analysis and sound business cases focussing on value for money and the effectiveness of the ITS applications concerned. This represents a clear and distinct move away from the previous top-down model.
5. Specifications and standards developed under the ITS Directive must also reflect the changed landscape in which we are now operating. Therefore, whilst standards can be helpful in supporting industry led innovation, it is

vital that they should not impose unnecessary and unfair burdens. Likewise, the development of new specifications and standards must seek to accommodate and build on the significant ITS infrastructure already deployed by Member States. In addition specifications and standards should be open, performance based, and non-proprietary, developed through existing bodies and in consultation with the ITS Industry, as is set out in Annex II of Directive 2010/40/EU.

6. Finally the UK considers that existing EU activities in the field of ITS such as the EU ITS Directive and Action Plan and the EasyWay Project are sufficient to ensure the successful deployment and interoperability of ITS across Europe. Further frameworks in the field of ITS are therefore unnecessary and would be a duplication of effort. Within existing frameworks common ground and differing objectives need to be recognised to ensure a fully joined up approach to ITS across all levels within the Union. This will be vital if the EU is to progress with the coordinated and interoperable deployment of ITS whilst minimising the economic and administrative burdens on Member States.

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European Priority Area I: Optimal Use of Road Traffic & Travel Data

Transport Direct

Overview

- 1.1** Transport Direct (TD) – door-to-door journey planning between over 30 million origins and destinations by all modes of transport across Great Britain. Set up to create better informed travellers and as a result enable better travel decisions to be made including choice of modes, mix of modes, time of travel and route of travel. Also, real-time information provided for most modes and comparative cost information across some trunk modes and driving. Environmental comparisons enabled between selected transport mode(s) and alternative travel modes.
- 1.2** Key stakeholders include UK Government, the Devolved Administrations in Scotland and Wales, all local authorities in Great Britain and all transport operators of registered services. Other stakeholders include the journey planning, geographic, academic and IT communities.
- 1.3** Launched in 2004 with successive functionality updates subsequently, outsourced Design Build Operate contract (with Atos Origin) runs until January 2013.
- 1.4** TD is funded by central Government (including Devolved Administrations) with a build cost of £40m and annual operational costs of £7m. Costs of most data gathering and maintenance and also modal and regional journey planning provided by local authorities and transport operators with access provided to the TD enquiry layer, generally without additional cost.

Results

- 1.5** Around 25 million unique sessions per annum including internet, mobile phone, smart phones, digital TV, kiosks and third party white labelled sites. Very high satisfaction levels (>90%) and indications of both modal change from car to public transport and also change in proposed route and time of travel, but not necessarily mode.
- 1.6** Spectator Journey Planner for London 2012 Games (launched August 2011) including new features such as provision of accessible routes (level access and/or assistance), planning to complex venues, travel demand management (matching demand to predicted supply of capacity – avoiding hot spots) and hosted in a cloud environment to give scalability and rapid response to demand fluctuations. Further functionality between July 2011

and Games Time to include real-time information, detailed park and ride and blue badge (accessible driving) plans and phase 2 of the accessible planner.

- 1.7 Note that the total UK travel information infrastructure, including National Rail, Traveline, car journey planning etc probably exceeds 1 billion requests per annum. It is largely interoperable with shared standards and protocols and is generally not mandated or regulated but is driven by market demand and the dynamics between co-operation and competition across and between modes.

Interoperability/Compatibility/Continuity

- 1.8 Fits well with multi-modal travel information priorities and also overlaps into travel and traffic information, digital mapping and urban mobility. Note that this also has resonance with INSPIRE Directive, ITS and Urban Mobility Action Plans.
- 1.9 Based on common standards and protocols such as NaPTAN, NPTG, Transxchange, SIRI and Journey Web, all of which are Transmodel compliant, enabling data to be shared and exchanged and also for systems to be able to request and respond to enquiries giving a federated travel information and journey planning architecture.
- 1.10 The system has been established to enable cross-working, initially with a series of bespoke interfaces respecting the existing systems but also allowing subsequent procurements to move to a common model of interfaces, improving operational efficiency and reducing cost. Increasingly the architecture takes account of non-transport interfaces and the requirements of protocols and standards such as telecoms, ICT and geo-spatial. There are also numerous APIs (Application Programming Interfaces) that are available and published, facilitating third party systems such as retail, tourism and other Government departments. There are many examples of such applications e.g. health appointments, National Trust properties, BBC news services.
- 1.11 The system is federated and therefore works across geographical and modal boundaries (covering 11 regional planners and all modes of transport). It also has the ability to merge local and trunk plans and to operate “buffer zones” where boundaries are complex in terms of geography and/or services. A demonstrator has been produced looking at International connectivity using the London – Paris corridor as the example and providing car/rail/coach and air options from centre to centre with the ability to add-on detailed end-legs at either end to produce door-to-door as well as cross boundary trunk journeys. This uses the basic TD functionality with incremental trunk planning and so is both technologically efficient and financially viable.

Traffic Scotland: Web Service

Overview

- 1.12** The Traffic Scotland Web Service provides real-time information about the Scottish road network to the travelling public. The purpose of the website is to help drivers make informed choices about the timing, routing and travel mode for current or future journeys. Traffic Scotland provides cross-border information in partnership with the Highways Agency, Network Operators and partners responsible for special events such as T-in-the-Park and the British Open Golf. The Traffic Scotland website is a constantly evolving tool encompassing the latest technological innovations and solutions to ensure delivery of robust, reliable and relevant information to European travellers.
- 1.13** Innovative applications have been highly cost effective. €200k – €250k annual investment during the 2007-2009 period has increased regular users from c30,000 (end 2006) to c180,000 (end 2009). All applications have been delivered within budget.
- 1.14** Extensive evaluation has been carried out through user surveys. 82% of respondents state that they have altered journeys and 24% have made long term changes to their travel habits as a result of information provided by Traffic Scotland.
- 1.15** Carbon calculator, live-eye-views, provision of data fusion journey time information, intermodal travel planning integration and future developments with new media were all at forefront of ITS development at the time of their integration with Traffic Scotland. The project continues to embrace originality through the use of new media applications.

Interoperability/Compatibility/Continuity

- Cross Border Information Provision – One of the first agencies to develop full functionality of data exchange through DATEX II allowing improved site functionality and cross border information provision;
- Direct integration of intermodal travel planner Traveline Scotland. Guidance and information for Park and Ride sites;
- Developing relationships with large event organisers such as T-in-the-Park and the British Open Golf to provide coordinated information and integrated access;
- Fusion of historic and live traffic data providing predictive journey time information;
- Integration of the real-time traffic information with the Twitter development platform so users can “follow” traffic events;
- Provision of interfaces allowing users to publish information on own web sites or similar applications. Includes RSS feeds for traffic information

and road works, a DATEX interface (used by Google) and traffic images interface for media and private users.

Urban Traffic Management and Control (UTMC)

Overview

- 1.16** The UTMC initiative was launched by the DfT in 1997 to help urban local authorities in the development of a more open approach to ITS in urban areas.
- 1.17** A first version of the UTMC technical specification was developed through a series of research projects and tested in four demonstrator projects starting in 2001. It is designed to ensure the inter-operability, regardless of their source, of a range of components used in traffic management systems and related applications. The UTMC Development Group (UDG) was set up in 2003 to oversee the future development of UTMC and promote its application. The specification has been continuously refined and expanded since then. It is used to some degree by at least 60 UK local highways authorities, the Highways Agency (HA) and the Northern Ireland Roads Service.
- 1.18** The Department continues to encourage local authorities to take up UTMC, for example through the Local Transport Plan process, the Traffic Management Act 2004, Network Management Duty Guidance and the recent White Paper 'Creating Growth, Cutting Carbon'.
- 1.19** The UTMC specification is now a sound and mature product. It was originally designed only with local highway authorities in mind, but the HA has now embraced its principles and is seeking to apply it to its own systems and to secure integration with local authority systems. The specification has already helped the UK market in compliant system components to expand and has opened up opportunities for users to 'mix and match' components from different suppliers.

Results

- 1.20** The launch of the specification facilitated a considerable expansion in the UK market in UTMC-compliant system components: in overall size, the number of users, the number of suppliers, and the range of products. Suppliers now include small, innovative firms specialising in particular components or sub-systems, as well as the major international players offering global solutions.
- 1.21** The specification has thus succeeded in creating opportunities for users to 'mix and match' components from a range of sources and to reduce their dependence on individual suppliers, opening up potential for substantial cost savings and performance improvements.

Interoperability/Compatibility/Continuity

- 1.22** The UTMC initiative was launched in 1997 leading to the development of an open and modular approach to the design and implementation of intelligent transport systems in the UK. This serves a range of policy purposes, such as congestion reduction, improving road safety, improving the speed and reliability of public transport services, and minimising emissions of air pollutants and greenhouse gases from traffic.
- 1.23** During its first three years a number of research projects funded by DfT were carried out to establish and validate the approach. These led to the preparation of a framework technical specification, compliance with which would ensure the inter-operability, regardless of their source, of a range of different components using a common database and communication protocols, such as traffic signal control systems, variable message signs, car parking availability information systems, CCTV, and air quality monitoring stations linking roadside equipment to traffic management centres.
- 1.24** In 2001, four full-scale demonstrator projects were mounted (in Preston, Reading, Stratford-upon-Avon and York) to consolidate the results of the earlier work. These too were mainly funded by DfT, but with some contributions from suppliers. In 2003 the UDG was set up, with continuing DfT funding, to oversee the future development of UTMC and promote its application.
- 1.25** Work has continued since then to refine and update the framework specification and to broaden its range so as to incorporate additional system components. Other UTMC products include an Objects Registry, providing format standards for data shared between UTMC system components or with external systems; a UTMC Product Register, a catalogue of products certified by their makers as UTMC-compliant; and a series of guidance notes for UTMC users. UDG has also run an Annual UTMC Conference and other special events and issues newsletters to promote awareness and encourage uptake of UTMC.
- 1.26** Use of UTMC-compliant systems is not mandatory for local highway authorities but, in England, has been strongly encouraged by DfT. Reports from major suppliers of common traffic management databases in 2009 indicated that over 60 UK local highways authorities (or, in metropolitan areas, groups of authorities), most of them in England, were making at least some use of UTMC-compliant components, together with the Highways Agency and the Northern Ireland Roads Service. Users are no longer confined to urban areas, and a re-naming of the initiative as 'universal' rather than 'urban' has been proposed.

Highways Agency: Variable Message Sign

Overview

- 1.27** Variable Message Signs (VMS) are located at key decision points on the motorway and trunk road network. They are used by the HA to help manage the network by providing advance warning to drivers of emergencies and incidents. VMS are also used to warn drivers of events that may cause delays in the future such as road works and major events.
- 1.28** There are currently around 2,800 VMS on the HA network. Of these 459 are located at key decision points around the network i.e. before major junctions such as the M5/M6 link.
- 1.29** Messages displayed on VMS are limited to those that help drivers complete their journey safely and efficiently. VMS cannot be used for advertising or any other unnecessary information.
- 1.30** There are a number of types of VMS in use on the Agency's network and they provide the capability to display a wide range of warnings, messages and other traffic information.
- 1.31** The HA is responsible for setting all the VMS on the strategic road network. Messages are set in one of three ways:
- Regional Control Centres (RCCs) - There are 7 RCCs which are responsible for the setting of tactical messages within their allocated region;
 - National Traffic Control Centre (NTCC) - This single control room is responsible for the strategic operation of the HA road network. This includes setting messages for long distance diversion routes and also campaign messages;
 - Automatic Signaling such as Motorway Incident Detection and Automated Signalling (MIDAS).
- 1.32** VMS are an essential requirement in allowing the HA to operate the network. Without VMS new initiatives such as Managed Motorways would not be possible.

Results

- 1.33** The exact benefit from the installation of VMS to help drivers avoid congestion has not been quantified. Original business cases expected a Benefit to Cost Ratio (BCR) of around 3 to 1 however recent research has shown that this benefit is probably lower.
- 1.34** The MIDAS solution has been shown to reduce rear end accidents by around 7% and this has resulted in a 13% reduction in serious injuries related to such incidents.

Interoperability/Compatibility/Continuity

- 1.35** The HA has installed and used VMS for a number of decades. These message boards have been used to warn drivers of queues ahead (MIDAS) and works by using sensors that automatically detect vehicle speeds ahead of the driver and warns of slow or stationary traffic ahead; give strategic diversion around congestion, warn of accidents or road closures; warn of future major events that will impact upon journeys; and to give travel times on VMS (a sign giving a distance between junctions and the average time taken to travel that route).
- 1.36** As a result of the installation of VMS drivers are able to divert around congestion, are given advance warnings of dangers ahead or are just given the reassurance that there is no congestion ahead.
- 1.37** The latest generation of VMS signs (MS4s) are capable of displaying pictograms. This assists speakers of other languages in understanding the advice/directions being delivered, enhancing seamless cross border journeys. The introduction of this capability was phased across all HA regions, the last one going live in 2010.

Transport Scotland: Variable Message Sign Deployment

Overview

- Transport Scotland continued its multi-year investment into VMS in line with the EasyWay work plan and Transport Scotland ITS Action Plan in 2007 and 2008.
- Developing the VMS coverage increased Transport Scotland's traffic management capability and the level of on trip information disseminated to the travelling public. Site selection and development and key implementations have been undertaken across the Scottish Trunk Road Network including Trans European Road Network (TERN) links.
- Developments in 2008 included the installation, for final inception during 2009, of 10 VMS in the Borders Region of Scotland. This enhanced the capability of Traffic Scotland operator control of the network. Furthermore, progression to Internet Protocol (IP) infrastructure allowed control from the existing Network Control Centre and enhanced this capability still further.
- Transport Scotland continued to infill gaps in the VMS network in Scotland to provide real time traffic management and guidance information for travellers and hauliers.
- The implementation of VMS at gaps in the network helped alleviate areas which suffered unnecessary delays and safety problems in line

with the EasyWay work plan by giving Traffic Scotland operators a higher concentration of Traffic Management services at an appropriate level.

- Approximately €5.1m investment during the 2007-2009 period.

Results

- Increased network efficiency in Scotland as VMS implementation contributes to network efficiency and therefore benefits the European network by reducing congestion and consequently road related emissions.
- Inclusion in the Mare Nostrum ES4 project and display of approved pictograms and text displays on signs helped improve continuity for the end user in Scotland and across Europe as a whole.

Interoperability/Compatibility/Continuity

1.38 Europe-Wide Traveller Information Services provide the European user with comprehensive local and inter-urban, regional and cross-border travel information with a co-modal perspective allowing for well-informed travel decisions, both pre-trip and on-trip, to be taken. Within STREETWISE the individual road authorities worked together to develop seamless cross border co-operation between counties to ensure accurate and reliable information is passed on to the end user. The participants worked together to provide information which is relevant to all transport modes, to encourage a more sustainable transport network.

1.39 Project activity focussed on:

- The provision of high quality, seamless information services to the European traveller on TERN, in their own language, through the deployment of real-time and predictive road information services with integrated interfaces to other modes of transport; e.g. the Own Language Information System being trialed at ports in Scotland;
- Offering co-modal information and services;
- Providing fast alert services and warning services on specific black spots of TERN;
- Applying harmonised VMS messages at a European level;

Northern Ireland Roads Service: Variable Mandatory Speed Limits & Variable Message Signs

Overview

1.40 The project includes the installation of Variable Mandatory Speed Limits (VMSL) on the M1-Westlink corridor to and from Belfast. The system

includes the installation of gantries, Advanced Motorway Indicators (AMIs), and MIDAS with the development of thresholds to allow automatic sign setting. VMS have been installed at various locations across the network to provide information to drivers.

1.41 The project objectives of the VMSL are to smooth the flow of traffic on the network to reduce delays, reduce journey times and journey time variability. The VMS have been installed to provide up to date information of delays on the network and journey time information between key locations.

1.42 Key milestone include:

- MIDAS installed and operational;
- Manual operation of VMSL;
- Development of automated VMSL operation;
- Develop VMS strategy;
- VMS installed.

1.43 Funded by the Northern Ireland Roads Service with EU support.

Results

- VMSL system operational under manual control. Congestion reduced;
- VMS installed and displaying driver information and journey times;
- VMSL operation under automatic start up using data from MIDAS detection system. It is anticipated that an assessment of the system will be undertaken to identify the results obtained;
- VMS assessment is planned to identify the benefits;
- Possible extension of scheme on M1.

Interoperability/Compatibility/Continuity

- MIDAS is used to identify when traffic is slow so that the back of a queue can be protected by the use of signals on the AMIs and VMS messages. Information from the system is transmitted to the COMET Traffic Management Information System and stored/used for other purposes;
- Standard MIDAS is used with a Control Office Base System (COBS) so that no modification is required;
- The VMSL system is on the M1-Westlink into/out of Belfast which links the motorway and urban networks. The system therefore controls the urban/interurban interface at this location. Park and Ride sites are also used (along with a dedicated bus lane on the hard shoulder) to enable modal shift.

Highways Agency: National Traffic Control Centre (NTCC)

Overview

- 1.44** The NTCC is the hub of the English motorway network and one of the key ways in which the HA is delivering its aims of "safe roads, reliable journeys and informed travellers."
- 1.45** The main objectives of the NTCC are:
- Providing accurate real-time traffic information to the public using a number of different methods;
 - Minimising the congestion caused by incidents, road works and events taking place near the motorway and trunk road network;
 - Providing information on diversions to help motorists avoid queues.
- 1.46** In order to achieve these objectives, the NTCC collects traffic data from CCTV cameras and on-road sensors. This is used together with the information supplied by Traffic Officers, Police Forces, Local Highway Authorities and Service Providers etc. This information is then processed, analysed and disseminated to the public in a number of different ways.

Results

- 1.47** With the replacement contract for the NTCC needing to be let a full benefit realisation review has taken place. The following benefits have been realised.
- 1.48** Overall the project has delivered a benefit ratio of roughly 2.4:1 (higher than expected from the original business case). Benefits were:
- Providing pre-trip information to drivers so that they avoid congestion;
 - Providing in-trip information to drivers so they avoid congestion;
 - Providing a single point of contact for HA stakeholders to obtain information on network state.

Interoperability/Compatibility/Continuity

- 1.49** The NTCC is a 10 year Private Finance Initiative (PFI) contract let on the 1st August 2001. The contract was to deliver better information to the driver via numerous information sources and strategically manage traffic on the HA network.
- 1.50** From the information collected the NTCC operators are able to identify events (either future or current), form strategies to manage traffic flows, set information signs to warn drivers or give diversion routes, inform partner organisations, advise the media and either through the media or directly with the public, inform travellers about conditions on the Highways Agency's network.

1.51 To meet these requirements the NTCC set up the following services:

- Traffic England – The HA's traffic information website which makes details of, delays, closures, road works and other information publically accessible. This was done to allow those undertaking journeys to use the site to help them plan future journeys, to avoid planned works (such as road works, planned closures etc) or check an imminent journey to verify current travel conditions;
- VMS – These can be set to warn travellers of planned future or current events, (roadwork's, planned closures or major events such as concerts, sporting events etc). VMS are set so travellers can avoid future congestion, divert around current incident or be warned about queues ahead;
- DATEX II – This service has been set up to allow partner organisations (for example local transport authorities, media organisations) access to the NTCC's data. DATEX II delivers a data feed which is transferred between Information and Communication Technologies (ICT) systems without the intervention of control room operators or staff at the receiving end. This allows data to be taken from the NTCC and added into partner organisation systems, which is then integrated with their own data. In terms of the media organisations this enables them to better inform the public. There are currently over 150 partners taking the DATEX II feed;
- Incident Information – Further services have been set up to allow direct liaison between media organisation reporting incidents and the NTCC. This allows media organisations the ability to obtain further incident details and report these to the public.

Highways Agency: National Traffic Information Service

Overview

1.52 The National Traffic information Service (NTIS) is the replacement contract for the current NTCC. The new contract is required to continue to deliver the outputs from the initial service, these being to;

- Provide accurate real-time traffic information to the public using a number of different methods;
- Minimise the congestion caused by incidents, road works and events taking place near the motorway and trunk road network;
- Provide information on diversions to help motorists avoid the queues.

1.53 Furthermore the new contract is required to deliver:

- The ability to report on network performance through accurate data collection and processing;
- The ability to measure the effectiveness of HA interventions;
- Improved road user satisfaction through provision of better information services to the public;
- Enabling more efficient operations through; (a) automated incident detection (b) system links to reduce manual processes (c) providing a single strategic overview of the network;
- A flexible solution that can be adapted to take advantage of more data and changes to operations, the organisation and new technologies delivered in-car (or through mobile devices).

Results

1.54 No results are currently available.

Interoperability/Compatibility/Continuity

1.55 The NTIS contract, taking over from the NTCC, has recently been let with a start date of 1st September 2011.

Highways Agency: Managed Motorways

Overview

1.56 The term “Managed Motorways” covers a number of interventions the UK is making on the strategic road network which utilise data collection and traffic management technologies to make better use of existing road space and add capacity where it is most urgently needed. This includes smoothing the flow of traffic using variable speed limits (e.g. on the M25) and dynamic use of the hard shoulder as a running lane at busy times (e.g. on the M42) to create a more managed, reliable network. Traffic loop detectors and CCTV cameras are used to monitor traffic flow and mandatory speed limits are setting accordingly, either by an automated system or by control centre operators. The most visible element of managed motorways is hard shoulder running. This involves directing drivers to use the hard shoulder during busy periods using signs above the carriageway and other variable message signage to provide information and direction to drivers along the managed motorway stretch.

Results

1.57 The pilot on the M42 of managed motorways was a real success; weekday journey time reliability improvements of 27% and in the first 12 months of the trial the personal injury accident rate more than halved.

- 1.58** Hard Shoulder Running (HSR) delivers most of the benefits of widening at a significantly lower cost and with fewer environmental impacts
- 1.59** Managed motorways provide improved value for money as costs per scheme are on average 40% lower than with traditional widening schemes. Widespread application would be safe and feasible with a 60mph speed limit.
- 1.60** Managed Motorways are currently being introduced:
- Between junctions 10 and 13 on the M1
 - Between junctions 8 and 10a on the M6.
- 1.61** In October 2010, the Secretary of State for Transport announced a significant strategic roads investment programme including 14 major schemes, 11 of which are managed motorways.

Northern Ireland Roads Service: Foyle Bridge Management System

Overview

- 1.62** This management system has been installed to inform drivers of; restrictions to high sided vehicles, high wind speeds, or the bridge being closed for safety reasons. The aim is to restrict the use of or enable the closure of the bridge as and when necessary to improve road safety.
- 1.63** Funded by the Northern Ireland Roads Service with EU support.
- 1.64** Key milestone include:
- Installation of VMS;
 - Installation of in-station equipment;
 - Automatic operation of system.

Results

- 1.65** The system is now installed and operational. In the future it is envisaged that the information will be fed back to the Traffic Information Control Centre (TICC). Possible future addition and enhancement of driver information signs.

Interoperability/Compatibility/Continuity

- 1.66** The system is automated with no operator intervention and is enabled for the warning of adverse weather conditions that affect driver's route choice.

Highways Agency: Public Access CCTV

Overview

- 1.67** The HA owns over 2000 Traffic Cameras and has been using them to assist with the management of traffic on the trunk road and motorway network in England for nearly 30 years.
- 1.68** The primary users of the traffic cameras are the HA's Regional and National Traffic Control Centre operators. The operators are able to move and zoom the cameras to monitor and manage congestion and incidents. The cameras give a bird's eye view of what is happening which helps the operator to decide on the support needed. The images are sent to the Highways Agency's Information Line (HAIL) which keeps the public informed.
- 1.69** The HA has developed policies and a technical interface that will allow stakeholders to view the images in a format suitable for their needs. An innovative partnering approach with media organisations and web hosts has been implemented, allowing nominated third parties or 'media partners' to access and disseminate still and live images to the public through their own traffic news bulletins and websites.
- 1.70** This approach has allowed the Agency to support businesses develop innovative solutions to make images available to the public via mobile phones, Sat Navs, and other technologies, meaning citizens are able view network conditions almost anywhere.

Results

- 1.71** In the last four years two benefit realisation reviews have taken place with the media partner's service. To meet the original BCR of 1.58 to 1 the service needed to serve out 425,000 images a month. Currently these partner organisations, on an average month, serve out over 2.6 million images and have seen peaks, during periods of severe weather, of over 40 million images a month.

Interoperability/Compatibility/Continuity

- 1.72** The project was delivered in 2007, combining technical delivery, with policy and procedures, to allow the HA images to be viewed by the public. Delivering a service which allowed organisations to store and forward images enabled innovative solutions to be developed, for example iPhone and Android apps.
- 1.73** The project was delivered to enable citizens to view images of the network so they could see travel conditions for themselves. In doing this those using these services are able, pre-trip to consider: whether to travel; to change route or mode of transport; or in-trip to divert onto a new route.

Transport Scotland: Deployment of CCTV

Overview

- CCTV cameras were installed at key trunk road locations on the M74, M73 and M8 in order to infill gaps in the network during 2007 – 2009. The additional information available enhanced the incident detection capability of the control centre, and helped reduce the impact of incidents on the network.
- Deployment of CCTV was progressed at weather stations during 2007 to improve the level of monitoring on the network primarily in more rural areas. Up to date CCTV images from these new locations have been made available on the Traffic Scotland website and relayed to the Traffic Control Centre via a new Mosaic Traffic Control System allowing multiple camera viewing at one time.
- Transport Scotland aims to increase monitoring capabilities and incident detection rates through further deployment of CCTV cameras on critical routes on the strategic trunk road network in line with the ITS Deployment Strategy. The primary objective of this project is therefore to deploy monitoring infrastructure for the collation of data and at an appropriate level on the Scottish TERN which is fit for purpose, and helps enable traffic control centres to exchange data.
- Approximately €820k investment during the 2007-2009 period.

Results

- 1.74** The deployment of CCTV to infill gaps in the network contributed to increasing monitoring across Europe and increased the level of information available to the traffic control centre.

Interoperability/Compatibility/Continuity

- 1.75** An efficiently connected ICT infrastructure is a prerequisite for the deployment of ITS services, providing the end user with relevant and high quality information from systems that monitor the road situation. A connected European ICT infrastructure will enable cross-border interoperability and continuity of services through the exchange of harmonised data.
- 1.76** The connected ICT Infrastructure consists of three dimensions:
- Systems for collection of data (monitoring systems);
 - Systems and protocols for communicating data (e.g. between Traffic Management Centres and to and from vehicles), and;
 - Issues relating to the quality of data (accuracy, timeliness).
- 1.77** The objective of this activity is to deploy monitoring infrastructure for the collation of data which is fit for purpose, and to enable traffic control centres to exchange data with the common aim of achieving an appropriate

level of service throughout TERN. Particular emphasis will be placed on congested, safety critical spots and weather critical sections of the network.

1.78 Project activity focussed on:

- Increasing data exchange between regional and national control centres;
- Infilling gaps in the network of European Traffic Management Centres;
- Identifying information needs for transport network information databases;
- Collecting the required data (deployment of travel time, traffic status, road weather and air quality monitoring throughout EasyWay);
- Providing the basis for coordinated action between different bodies active in traffic management, in response to events;

Transport Scotland: Journey Time System Enhancements

Overview

- This project included the extension and enhancement of the Journey Time System to fuse the M77 Automatic Number Plate Recognition (ANPR) system, NADICS (National Driver Information and Control System), TMU (Traffic Management Unit) journey times and Trafficmaster Passive Target Flow Measurement (PTFM) data. These were developed during the 2007 to 2009 period to provide real time journey time information to network operators allowing more efficient network management.
- A network management website and reporting facility for viewing current journey time conditions and interrogating historic data will also be developed. Primarily the fused journey time data will be provided to enhance the level of information available to Traffic Scotland operations staff giving them the ability to manage and monitor large parts of the Scottish trunk road network for the first time.
- The fused journey time data will also be used to provide route travel times to public users via the Traffic Scotland website. Due to restrictions placed on the use of Trafficmaster data only journey time data for the greater Glasgow area can be published on the public website.
- Following on from that Transport Scotland investigated the possibility for implementing a mobile journey time system at roadwork sites across the trunk road network.

- By providing a higher quality of information to network managers Transport Scotland aims to improve the efficiency and accuracy of strategic routing decisions and in turn reduce travel times and congestion on the network. The traveller will be more informed of the expected travel time by car when planning a journey and will be able to switch to more sustainable modes if the option is available, increasing travel choice and reducing travel times and congestion. This will help alleviate all sections of TERN that suffer unnecessary delays and safety problems.
- Approximately €320k investment during the 2007-2009 period.

Results

1.79 2007 (Jan 07 – Dec 07):

- Provision of real time journey time information to operators through the fusion of ANPR, TMU and PTMF data;
- Provision of real time journey time information to users via Traffic Scotland.

Interoperability/Compatibility/Continuity

1.80 2008 (Jan 08 – Dec 08) The following Priority 1 enhancements were completed and deployed in 2008:

- Integration of live traffic event data from the Traffic Scotland Traffic Management System (formerly NADICS);
- Inclusion of journey time delays; and
- Latest mapping interface, including support for overlapping icons.

1.81 Priority 2 enhancements focussed on refining existing functionality and improving the use of available data, the Priority 2 enhancements completed in 2008 included:

- Development of a journey time prediction algorithm;
- Enhanced reporting features;
- Expansion of route journey time and alert data; and
- Increased use of historic profile data.

1.82 Design and development of priority 3 enhancements, focusing on further expansion of the system and its interfaces to other Traffic Scotland systems, began in 2008 for the following:

- Dissemination of journey time data to the Traffic Scotland Traffic Management System (formerly NADICS); and
- Integration of a mobile journey time system, to be deployed at road works sites;

- In addition, the first implementation and study of effectiveness was completed in 2008.

Highways Agency: Use of the Internet Protocol (IP) in Roadside Telecommunications

Overview

- 1.83** The National Roads Telecommunications Service (NRTS) provides the telecommunications backbone that connects many thousands of roadside devices (emergency telephones, CCTV cameras, VMS etc.) alongside England's motorways to the HA's seven RCCs. This network is made up of fibre optic and copper cables that transmit data and voice signals between the devices and the RCCs. The service was procured in 2005 as a [£650m] 10 year Private Finance Initiative (PFI) including the upgrade of the previous telecommunications provision and ongoing management and improvement of the service.
- 1.84** Over recent years, a number of projects have been implemented under the NRTS PFI contract to enable use of the IP – an open, widely available, widely used, internationally interoperable communications protocol – to link roadside devices to RCCs. All new devices added to the HA network are fully IP capable and a project is currently underway to enable approximately 22,000 older non-IP devices to link to RCCs over an IP connection through use of an IP converter device.

Results

- 1.85** The use of IP enables a highly resilient, diversely routed, telecommunications network that can flex and expand to take advantage of developments in traffic management technologies and driver information provision in the future. An IP device may also be contacted remotely for maintenance purposes, reducing the need for visits to the roadside.

Transport Scotland: System Architecture Improvements

Overview

- The upgrade and development of the communications infrastructure across Scotland's trunk roads included the migration of the existing infrastructure towards a new network with IP connectivity;

- The IP network provides long term support to ensure continuity between the existing and future systems, future compatibility and future roll out of ITS in Scotland. Work done in 2007 included the outline designs for the IP network and the submission for design review. Work done in 2007 supported the ongoing relocation of the National Network Control Centre (NNCC) to the Integrated Transport Management Centre (ITMC) including the provisional move to the Interim Control Centre (ICC);
- Work undertaken in 2008 included the design of IP architecture for the key M74 and M8 TERN route. Compatibility testing of the new IP infrastructure including small scale deployments was also progressed;
- Work in 2009 included the deployment of more efficient communication hubs on the network and further implementation of fibre optic cabling to improve data transfer and produce a virtual ring for fast, secure information exchange to the control centre;
- Transport Scotland's key objectives for this project were to increase the efficiency and capacity of all aspects of information exchange on the TERN where the implementations have occurred by securing better information exchange between the network monitoring infrastructure and the network management and traveller information tools;
- Approximately €1.3m investment during the 2007-2009 period.

Results

- 1.86** Progression to an IP architecture enhanced the capability of Traffic Scotland to monitor, evaluate and manage the entire trunk road network and enhance the effectiveness of all ITS implementations. Improvements provide European added value by improving safety, reducing congestion and reducing emissions.

Interoperability/Compatibility/Continuity

- 1.87** An efficiently connected ICT Infrastructure is a prerequisite for the deployment of ITS services, providing the end user with relevant and high quality information from systems that monitor the road situation. A connected European ICT infrastructure will enable cross-border interoperability and continuity of services through the exchange of harmonised data.
- 1.88** The connected ICT Infrastructure consists of three dimensions:
- Systems for collection of data (monitoring systems);
 - Systems and protocols for communicating data (e.g. between Traffic Management Centres and to and from vehicles), and;
 - Issues relating to the quality of data (accuracy, timeliness).
- 1.89** The objective of this activity is to deploy monitoring infrastructure for the collation of data which is fit for purpose, and to enable traffic control centres to exchange data with the common aim of achieving an appropriate

level of service throughout TERN. Particular emphasis is placed on congested, safety critical spots and weather critical sections of the network.

1.90 Although monitoring infrastructure development do not directly contribute to the policy goals, traffic management and traveller information services could not be established without access to information regarding the network situation provided by monitoring systems.

1.91 Project activity focused on:

- Increasing data exchange between regional and national control centres;
- Infilling gaps in the network of European Traffic Management Centres;
- Identifying information needs for transport network information databases;
- Collecting the required data (deployment of travel time, traffic status, road weather and air quality monitoring throughout EasyWay);
- Providing the basis for coordinated action between different bodies active in traffic management, in response to events;
- Establishing a network for the exchange of traffic information, including design and implementation of the necessary information management tools in Traffic Management Centres.

European Priority Area II: Continuity of Traffic & Freight Management Services

Smart & Integrated Ticketing

Overview

2.1 The UK Government has made a commitment to deliver, with operators and public sector bodies, the infrastructure to enable most public transport journeys to be undertaken using smart ticketing technology by December 2014. The Department will achieve this by measures which include:

- Supporting and working with ITSO Ltd, which maintains the national open technical specification for smart ticketing;
- Supporting the ITSO on Prestige (IoP) project to enable passengers to travel into, within and across London using an ITSO smartcard by June 2013;
- Supporting authorities and operators to deliver smart and integrated ticketing schemes;
- Incentivising roll-out of smart ticketing technology on buses;
- Including smart ticketing commitments in rail franchise agreements;
- Supporting integration, innovation and interoperability, including through addressing competition issues/barriers;
- Monitoring how wider technological developments should influence our strategy.

Results

2.2 It is a statutory requirement that all concessionary travel passes in England are ITSO-compatible smartcards.

- Over 10 million of these have been issued to date. (These are used as flash passes in those areas that have not yet equipped their vehicles with smart readers);
- There are already a number of ITSO smart ticketing schemes in England: they are being rolled out or in development in all Passenger

Transport Executive areas and some other areas, including Cheshire, the South West, Nottingham and Leicester;

- Many operators are rolling out ITSO compliant infrastructure on their fleets, including some of the biggest national bus operators such as Stagecoach, Go Ahead and National Express. For example, Stagecoach has installed smart card technology on around 5000 of its buses operating in the UK and is in the process of going live for smart reading of national concessionary travel cards and commercial products;
- Stagecoach and Go-Ahead have recently launched a joint ticketing scheme in Oxford whereby they will accept each others' smart tickets;
- Five UK rail franchises have ITSO smart ticketing requirements. We seek greater integration between bus, rail and other modes;
- The Scottish and Welsh national smart ticketing schemes use the ITSO specification and all buses are equipped with ITSO-compliant ticketing machines. The use of the common ITSO specification across England, Wales and Scotland is a key step towards ensuring that schemes developed in different areas can work together.

Interoperability/Compatibility/Continuity

- 2.3** Integrating public transport in the UK with the rest of Europe has a number of issues associated with it, not least the physical barriers which separate our countries from others in the EU;
- 2.4** The UK Government and Devolved Administrations have invested heavily in the ITSO specification for smart ticketing, with national interoperability as our goal;
- 2.5** In 2010 the EU Interoperable Fare Management Project proved that the three leading EU ticketing specifications - ITSO (UK), Calypso Network Association (Belgium) and VDV (Germany) - could be supported on a single card;

The Real Time Information Group (RTIG)

- 2.6** In the UK the Real Time Information Group is a community group providing a focus for those involved in the bus Real Time Information (RTI) community. RTIG has a wide membership drawn from local authorities, bus operators and system suppliers. They aim to further the effective use of information and communication technology in the public transport sector by developing and disseminating standards, specifications and good practice.
- 2.7** RTIG was involved in the development of the GEN Service Interface for Real-time Information (SIRI), with RTIG's exchange protocol being one of the key source documents. Several major implementations have taken

place in the UK. RTIG has been involved in discussions on the CEN standard for the Identification of Fixed Objects in Passenger Transport (IFOPT) and the in-development standard NeTEx. Through an industry forum RTIG has guided the development of a national IFOPT profile which has been used in planning for Olympics 2012 travel information.

- 2.8** RTIG has developed a national standard for bus-to-roadside communications to achieve bus priority at traffic signals. This is now widely used, including across the whole of London's iBus fleet (over 8,000 buses). RTIG has also developed a digital over-air protocol for vehicle-to-centre messaging, focusing on vehicle identification and location. The first deployment of this is currently going live (Summer 2011).

Freight Management & ITS Applications for Freight Transport Logistics (eFreight)

Overview

- 2.9** The DfT has no project in this area. The use of ITS for the management of freight is regarded as a commercial decision to be taken forward by industry.

Interoperability/Compatibility/Continuity

- 2.10** Systems will be expected to meet any relevant standards for interoperability. However, it should be borne in mind that there are commercial and security considerations where freight shipments are concerned. Companies will not want their businesses to be compromised or their cargoes placed at risk of hijack through the possibility of ITS tracking systems being hacked.
- 2.11** There is a wide range of ITS systems commercially available in the UK and operators have freedom of choice to adopt the system best suited to their commercial needs. It will be important to ensure that any moves to introduce interoperability requirements take account of this and do not place limitations on freedom of choice or development.

Urban & European ITS Architectures

- 2.12** The UK has no overall ITS Architecture for the development and deployment of ITS. However the UK has developed specific architectures where deemed necessary to tackle individual policy problems. Examples

include; the ITSO Smart Ticketing Framework and the Urban Traffic Management and Control (UTMC) programme.

2.13 Please see the relevant section of this report for further details.

Transport Scotland: Extension of Weigh-in-Motion (WIM) Sensors for Automatic Traffic Counting Sites

Overview

- Weigh-in-Motion (WIM) technology for measuring the weight of moving Heavy Goods Vehicles (HGV) is used for monitoring pavement loadings. An initial network review was conducted to identify potential new and existing sites where WIM sensors can be installed on the Scottish TERN. Following this review the necessary site surveys and design work were undertaken to allow implementation to take place;
- Transport Scotland has installed and commissioned WIM sensors at the sites specially selected from the network review before calibration was undertaken. The installation took place in three phases during 2007 and 2008 (autumn 2007 / spring 2008 / autumn 2008);
- A number of sites were without a direct mains power supply. These sites are powered with solar and wind turbine generators to help Transport Scotland assist in its overarching objective “towards sustainable mobility” through pollution reduction;
- In 2009 further implementations were added to increase the coverage of WIM sites across Scotland;
- The implementation of WIM sensors on Scotland’s trunk road routes has assisted in the management of freight by identifying overweight vehicles in a more efficient manner than the traditional static weighing approach. This development has progressed Transport Scotland towards the objective of establishing appropriate freight management services for all major TERN corridors in line with the EasyWay Work plan;
- Approximately €1.2m investment during the 2007-2009 period.

Results

- Increased network control in Scotland through WIM implementation contributes to network efficiency and helped reduce the adverse impact of overweight HGVs by reducing such occurrences;
- Greater control of HGV loadings in Scotland impacted on neighbouring countries and TERN as a whole and improve the harmonisation of services across Europe;

Interoperability/Compatibility/Continuity

2.14 HGVs have experienced the strongest growth of all types of traffic on TERN. Indeed the expanding goods transport business and the cohesion of the European economy will sustain this growth over the coming decades. Therefore the freight industry is a key user class which can benefit from dedicated services to improve not only its own journey, but reduce the impact on other road users and the environment. The proposed services accommodated the growing flow of HGVs on TERN through capacity management and rerouting advice. This included supporting the transfer of goods transport from road to other modes through integrated information services and physical transfer hubs. Co-modality was achieved by facilitating the shift from one transport mode to another via the harmonisation of standards and the integration of the various transport modes into efficient logistics chains. EasyWay projects enhanced access to modal and inter-modal exchange points for the European freight community.

2.15 Project activity focussed on:

- Enhancing access to seamless, language independent traffic information on transit roads and information about traffic restrictions (limited heights, weights, speed, night ban, trailer ban hazardous goods) tolling facilities, parking areas, etc.;
- Providing information for informatics platforms for logistics centres interconnecting different modes /administrations /industries;
- Improvement of current services, such as parking place availability, security on rest areas along the major TERN corridors and dissemination of dedicated freight information through mobile devices (navigation systems);

Transport Scotland: Deployment of Automatic Number Plate Recognition (ANPR) for Network Monitoring

Overview

- In line with Transport Scotland's ITS implementation strategy, the roll out of ANPR cameras continued in the 2007 – 2009 period in order to provide end users with travel time data monitored in real time;
- Transport Scotland trialled an ANPR system on the M8 between Glasgow and Edinburgh to evaluate current ANPR equipment performance available and also establish preferred equipment site layouts;

- Scotland's National Transport Strategy, December 2006, emphasised the need for improved and reliable journey times on the road network. The introduction of the ANPR scheme provided a tool for Transport Scotland to monitor journey times on the network. This system was also used to measure the impact of network improvements and measure Key Performance Indicators including congestion, reliability and variability of journey times on the trunk road network;
- Approximately €690k investment during the 2007-2009 period.

Results

- Deployment of ANPR cameras on the M8 and A720;
- Calculation of journey times on M8 and A720 from newly implemented ANPR cameras; and
- Deployment on other key TERN routes;
- Selection and installation of a 6 Site trial system;
- Mobile ANPR system planned for use at road works to measure delay through road works.

Interoperability/Compatibility/Continuity

2.16 An efficiently connected ICT Infrastructure is a prerequisite for the deployment of ITS services, providing the end user with relevant and high quality information from systems that monitor the road situation. A connected European ICT infrastructure enabled cross-border interoperability and continuity of services through the exchange of harmonised data.

2.17 The connected ICT Infrastructure consists of three dimensions:

- Systems for collection of data (monitoring systems);
- Systems and protocols for communicating data (e.g. between TMC's and to and from vehicles), and;
- Issues relating to the quality of data (accuracy, timeliness).

2.18 The objective of this activity was to deploy monitoring infrastructure for the collation of data which is fit for purpose, and to enable traffic control centres to exchange data with the common aim of achieving an appropriate level of service throughout TERN. Particular emphasis was placed on congested, safety critical spots and weather critical sections of the network.

2.19 Projects/outcomes in this activity focussed on:

- Increasing data exchange between regional and national control centres;
- Infilling gaps in the network of European Traffic Management Centres;
- Identifying information needs for transport network information databases;

- Collecting the required data (deployment of travel time, traffic status, road weather and air quality monitoring throughout EasyWay);
- Providing the basis for co-coordinated action between different bodies active in traffic management, in response to events;

Northern Ireland Roads Service: Integrated Urban/Inter-Urban Systems – Integrated Network Management

Overview

2.20 The project has been developed over a number of years and includes:

- SCOOT (Split Cycle offset Optimisation Technique)
- COMET (Siemens Advanced Traffic Management and Information System)
- Web site
- Journey time information on VMS and the web site
- CCTV images on the web site
- VMS
- Traffic Information and Control Centre (TICC)
- Real Time Passenger Information (RTPI) for buses
- Bus priority

2.21 The objective of the project is to enable the control of various diverse systems for both the urban and interurban networks from one location. The systems provide information which is collected, collated and disseminated by a variety of means including the web site, VMS, AMIs, radio etc.

2.22 Funded by the Northern Ireland Roads Service with EU support.

Results

- COMET system installed and other systems integrated as part of the UTMC project. Links to motorway control system enabled allowing urban/interurban operability;
- Allows international cross border data transfer, by DATEX II, between Northern Ireland and Republic of Ireland;
- Further integration of systems could include weather monitoring, public transport information and data sharing with other Agencies;
- Additional cross border data exchange with GB and RoI.

Interoperability/Compatibility/Continuity

- Data exchange between the diverse systems is centralised.
- Information can be visualised on one platform.
- The systems provide information across all modes of transport and across the urban and interurban networks. They provide integrated network management.

European Priority Area III: ITS Road Safety and Security Applications

eCall

3.1 The DfT is supportive of technologies that improve road safety and have been proved to represent value for money through measuring benefits against the cost of their implementation. In the case of eCall the UK has not been able to establish a positive benefit to cost case for mandatory deployment.

3.2 Currently:

- The UK has a well developed and efficient emergency service chain;
- The UK has implemented a form of eCall involving private service providers;
- PSAP1 (Public Service Access Point) is close to being “eCall ready” for the pan-European system;

3.3 However:

- Mobile Network coverage has gaps which reduces the efficiency of both eCall and mobile 999 calls;
- Of the 220 PSAP2s only half fully use digital data and mapping;
- Further development and sophistication of the emergency service chain is foreseen.

3.4 As such the most realistic of the scenarios investigated showed that under the assumptions made (medium costs and medium benefits), the highest benefit to cost ratio achieved in the time frame analysed would be 1, which would only be achieved in 2030 if all new vehicles were equipped from 2014. A link to the UK eCall Report can be found below.

http://www.trl.co.uk/online_store/reports_publications/trl_reports/cat_intelligent_transport_systems/report_uk_ecall_impact_assessment.htm

3.5 While a voluntary approach to deployment, (offering consumers choice) could be acceptable we would only consider implementation if no negative impact on industry or on our existing emergency services was assured. The UK would oppose any proposals for the mandatory fitment of eCall to new vehicles.

Information Services for Safe & Secure Parking Places for Trucks & Commercial Vehicles

- 3.6** The DfT has no project in this area. However, it is currently considering a number of options for improving the quality, provision and use of truck stop facilities. These include dissemination of information about the location and quality of truck stops.
- 3.7** There is a wide range of ITS systems commercially available in the UK and operators have freedom of choice to adopt the system best suited to their commercial needs. It will be important to ensure that any moves to introduce interoperability requirements take account of this and do not place limitations on freedom of choice or development.

Reservation Services for Safe & Secure Parking Places for Trucks & Commercial Vehicles

- 3.8** The DfT has no project in this area. However, it is currently considering a number of options for improving the quality, provision and use of truck stop facilities. These include dissemination of information about the location and quality of truck stops.
- 3.9** There is a wide range of ITS systems commercially available in the UK and operators have freedom of choice to adopt the system best suited to their commercial needs. It will be important to ensure that any moves to introduce interoperability requirements take account of this and do not place limitations on freedom of choice or development.

Human-Machine-Interfaces, the Use of Nomadic Devices & the Security of In-Vehicle Communications

- 3.10** The UK Department for Transport supported the development of guiding principles on the essential safety aspects of the Human Machine Interface of In-Vehicle Information Systems (IVIS). This led to the publication of a European Commission Recommendation in 1999 of a Statement of principles on the ergonomic aspects of information systems, the latest version, published in 2008 is available at:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:216:0001:0042:EN:PDF>

- 3.11** We recently supported work to update a checklist to aid the assessment of IVIS products against EU guidelines. This information could be used by consumer groups to help identify and promote products which demonstrate best practice as set out in EU guidelines.

Bristol City Council & University of the West of England: Young Drivers & Social Marketing (Wheels, Skills & Thrills)

Overview

- 3.12** The project is a trial of new techniques to address aggressive and anti-social driving among young men from areas of social deprivation. These drivers have a significantly higher involvement in road collisions than any other group. The project aims to understand the factors which contribute to their driving behaviour and to develop a suite of interventions based upon these insights. These interventions include: identification of a key segment within the population most likely to be attracted to the project, co-creation of aspects of the intervention with members of the group, demonstration drives, coaching and assessment, and the use of black box In Vehicle Data Recorders (IVDR) to measure changes in driver behaviour.
- 3.13** The IVDR devices measured aggressive driving through the use of a GG “kite” model that recorded driving events measured as excessive braking or swerving. The model was created by experts from the Institute of Advanced Motorists (IAM).
- 3.14** The objectives of the project were to reduce the crash risk of the target group, to improve their attitudes towards driving and to encourage the take up of further driver training.
- 3.15** Key stakeholders are the West of England Road Safety Partnership, Bristol School of Social Marketing at the University of West of England, DfT who provided financial support through the Road Safety Partnership Grant, and Bristol Advanced Motorists who provided the “kite” parameters as well as the driver coaching and assessment elements.
- 3.16** The project started in April 2009 with a “blind” trial period where IVDR was installed but with no feedback for the driver. The final coaching and assessment sessions have now been completed, to be followed by a further 6 month period of blind data. The overall cost of the project will be approximately £80,000.

Results

- 3.17** At this stage, with the coaching and assessment process completed, the IVDR data shows a sharp and consistent drop in the number of red and amber aggressive driving events per hour, over the course of the project.

This data is supported by the driver assessment scores recorded at the beginning and end of the project, which confirm the overall picture of significant and consistent improvement in driving behaviour. The blind data, which is to be collected over the next few months, will indicate whether this change in behaviour is sustained.

- 3.18** A secondary objective was to promote take up of further training and, at this point, 25 of the drivers have signed up for the IAM “Skill for Life” course, an outcome far in excess of original expectations. The project has had many positive outcomes including improved employment opportunities and a general reduction in antisocial behaviour on the part of the participants. This is attributable to the socialisation of the group into a wider social context, for example the IAM Observers.

Interoperability/Compatibility/Continuity

- 3.19** IVDR data is recorded on a database which can be interrogated in relation to GPS data. This can be correlated with, for example, road casualty data to identify hot spots, comparing concentrations of red events with recorded casualties. It could be used to prioritise road engineering or maintenance works. The GPS element can incorporate speed limit mapping to monitor compliance. The IVDR data can be used in conjunction with software based fleet management programmes to identify problematic drivers, log collisions and near misses, etc. The tracker element of the device can be used to alert security departments to the location of stolen or missing vehicles.
- 3.20** The data is of a standard format (measurement of lateral and forward/reverse G forces). However, the parameters could be different to those of similar devices. Once the parameters are defined, it is possible to add other data modules onto the system – for example, the number of passengers in a vehicle. For fleet managers, if employees are given dallas keys, drivers can be identified and linked to individual performance.
- 3.21** As described above, compatibility with fleet management systems can allow integration with similar systems across the EU. GG data is a standard method for registering poor driving behaviour, but the parameters used may vary between different systems. With common parameters, it would be possible to compare driving standards across the EU.

Lancashire County Council: Lancashire Intelligent Speed Adaptation

Overview

- 3.22** This project deploys an advisory form of the Intelligent Speed Adaptation (ISA) system for Lancashire drivers. This is an innovative yet low-cost in-vehicle speed management system which involves an enhancement to standard satellite navigation systems to provide warnings when drivers are

speeding and when they are approaching historical accident spots. The system works even when navigation is not enabled. Updates to speed limits are pushed to the devices over a mobile phone network and the same network is used for data collection. The objectives are to evaluate the effectiveness of the advisory ISA system and to make digitised speed limit information available to the general public and to relevant stakeholders (map-makers, etc.) in ITS deployment across the UK. The key stakeholders in this project include the DfT, Lancashire County Council, Blackburn with Darwen and Blackpool Councils and the University of Leeds. This project started on 1 April 2009 and is scheduled to be completed on 31 October 2011. The digital speed limit map was completed in October 2009, and the ISA field trial was completed in March 2011. The major source of funding was provided by the DfT via the Road Safety Partnership Grant. Part of the funding was met by Lancashire County Council.

Results

- 3.23** The digitised speed limit database covering the whole of Lancashire (including the two Unitary Authorities of Blackburn with Darwen and Blackpool) is ready for use by key stakeholders in ITS deployment. An initial release of the digital speed limit database for the general public is being finalised.
- 3.24** The ISA field trial collected data on drivers' choice of speed from 404 cars and 19 buses. The data are being processed and analysed. The agreed final report will be submitted to the DfT in October 2011.

Interoperability/Compatibility/Continuity

- 3.25** The speed limit database is compiled in the shapefile format, which is a widely accepted format in the map industry. This will facilitate the adoption of the speed limit information by relevant stakeholders as well as future updates of the speed limit information. The vehicle speed data collected from the field trial are in ASCII format, which again is a widely accepted format in the industry.
- 3.26** ISA makes use of GPS signal and digitised speed limit information. Standard satellite navigation systems (either OEM (Original Equipment Manufacturer) or aftermarket products) have the potential to provide a platform for an advisory ISA system. ISA thus can be a standalone system or an integrated part of other types of driver assistance systems with very little modification.
- 3.27** Intelligent Speed Adaptation can be configured to receive real time information over a mobile phone network or other available wireless communication, which would facilitate delivery of dynamic speed and traffic management across a wide region.

European Priority Area IV: Linking the Vehicle with the Transport Infrastructure

Open In-Vehicle Platforms

Overview

- 4.1** The DfT has no project in this area. The development of ITS systems in the UK is a matter for the ITS industry.

Interoperability/Compatibility/Continuity

- 4.2** Systems will be expected to meet any relevant standards for interoperability. However, it should be borne in mind that there are commercial and security considerations where freight shipments are concerned. Companies will not want their businesses to be compromised or their cargoes placed at risk of hijack through the possibility of ITS tracking systems being hacked.
- 4.3** There is a wide range of ITS systems commercially available in the UK and operators have freedom of choice to adopt the system best suited to their commercial needs. It will be important to ensure that any moves to introduce interoperability requirements take account of this and do not place limitations on freedom of choice or development.

Cooperative Systems

- 4.4** The DfT believes further advances in in-vehicle technology could dramatically change the way information and safety features are provided to drivers, by enabling communications between vehicles and the road infrastructure. The HA is monitoring developments in these technologies and exploring how they might be facilitated on the strategic road network.
- 4.5** The HA held an industry day on 3rd March 2011 to explore with industry stakeholders what more is needed from government to help develop the market for in-vehicle cooperative systems. They are currently considering the responses. The HA are involved in EasyWay and CEDR (European Conference of Roads Directors) groups on cooperative systems, and was a partner in the European CVIS project that ran from 2006 to 2010, funded by the European Commission's Sixth Research Framework Programme (FP6).

Glossary of Terms

AMI	–	Advanced Motorway Indicators
ANPR	–	Automatic Number Plate Recognition
APIs	–	Application Programming Interfaces
BCR	–	Benefits to Cost Ratio
COBS	–	Control Office Base System
COMET	–	Siemens Advanced Traffic Management and Information System
DfT	–	Department for Transport
HA	–	Highways Agency
HAIL	–	Highways Agency Information Line
HGV	–	Heavy Goods Vehicles
HSR	–	Hard Shoulder Running
IAM	–	Institute of Advanced Motorists
ICC	–	Interim Control Centre
ICT	–	Information and Communication Technology
IFOPT	–	Identification of Fixed Objects in Passenger Transport
IoP	–	ITSO on Prestige
IP	–	Internet Protocol
ISA	–	Intelligent Speed Adaptation
ITMC	–	Integrated Transport Management Centre
ITS	–	Intelligent Transport Systems
IVDR	–	In-Vehicle Data Recorders
IVIS	–	In-Vehicle Information System
MIDAS	–	Motorway Incident Detection and Automated Signalling
MS	–	Member States
NADICS	–	National Driver Information and Control System
NNCC	–	National Network Control Centre
NRTS	–	National Roads Telecommunications Service
NTCC	–	National Traffic Control Centre
NTIS	–	National Traffic Information Service
OEM	–	Original Equipment Manufacturer
PFI	–	Private Finance Initiative
PSAP1	–	Public Service Access Point
PTFM	–	Passive Target Flow Measurement
RCC	–	Regional Control Centres
RTIG	–	Real Time Information Group
RTPI	–	Real Time Passenger Information
SCOOT	–	Split Cycle Offset Optimisation Technique
SIRI	–	Service Interface for Real-Time Information
TD	–	Transport Direct
TERN	–	Trans European Road Network
TICC	–	Traffic Information Control Centre
TMC	–	Traffic Message Channel
TMU	–	Traffic Management Unit
UDG	–	UTMC Development Group
UTMC	–	Urban Traffic Management and Control (UTMC)
VMS	–	Variable Message Sign
VMSL	–	Variable Mandatory Speed Limits
WIM	–	Weigh-in-Motion