ITS United Kingdom

Better transport through technology

Report on Major UK Intelligent Transport System Implementations for Initial National Report Under the EU ITS Directive

The UK has been at the forefront of the development and implementation of Intelligent Transport Systems (ITS) going back as far as the late 1970s

It follows that in 2011 the UK has many ITS implementations ranging from nationwide systems such as the Transport Direct information portal, to small scale local Urban Traffic Control (UTC) schemes, both public and private.

The list below is of current major examples under Priority Areas 1-4 of the ITS Directive. A complete list of local authority, Highways Agency, police and private sector ITS use under the four Priority Areas would run to several hundred pages. Research projects have also been excluded since we believe that in the context of the Initial National Report, actual implementations are required rather than research which may or may not reach implementation. Such projects may well be included in future reports when the focus moves to the future ITS plans of Member States.

Priority Areas:

1. Optimal use of road, traffic and travel data

Overview – The collection, processing and use of data to enable travellers and goods to move around the UK safely and efficiently is mainstream in the UK and has been for over a decade. Information systems for public transport users, and information, route and parking guidance systems for drivers are available for almost all services and routes, provided by both the public and private sectors, for example via RDS-Traffic Message Channel (TMC). Highways authorities and fleet managers use data to operate their networks efficiently.

2. Continuity of traffic and freight management ITS services

Overview – National/large regional control centres and information providers such as the English NTCC, Scottish NADICS, and Welsh Traffic Wales, provide ITS services to ensure continuity over large areas. UK developed specifications such as UTMC, are in wide use throughout the country to enable interoperability of systems across administrative boundaries.

3. ITS Road Safety and security applications

Overview - Road safety has been a key UK transport policy priority since the 1970s and the UK has been in the lead internationally in using ITS such as camera enforcement systems to drive down casualties. During the 2000s the innovative point to point speed enforcement systems developed in the UK began to be implemented and have proved very effective. Camera and ANPR systems are in very wide use in the UK to ensure safety and security in transport. It is probable that the UK is at the forefront of technological developsments in this area within the EU.

4. Linking the vehicle with the transport infrastructure

Overview - CVHS has so far not been a priority in UK transport policy and there is no UK equivalent of ambitious research projects such as the US Intellidrive. However, there are some implementations of RDS-TMC and satellite navigation systems enjoy a very high take up rate among both private and commercial drivers.

1. Optimal Use of Road, Traffic and Travel Data

Name	**Transport Direct**
Start date	2004 to date
Objectives	Transport Direct is a Department for Transport portal service, announced in 'Transport 2010 – The 10-Year Plan', which has been developed in close co-operation with local authorities, transport operators and technology providers. Its aims are to provide a comprehensive, easy-to-use, multi-modal travel information and ticketing service for any journey within the United Kingdom.
Resources	Trafficlink (Live Travel News Data Supply)
Lead stakeholders	UK Department for Transport

Name	**BBC Online**
Start date	2002 to date
Objectives	The BBC provide a cross-platform multimodal travel news service that delivers a unified information picture of travel in the UK across radio (local and national), TV, online (mobile and www) and text service (analogue Ceefax and "Red Button" digital text.
Resources	Trafficlink (Live Travel News Data Supply)
Lead stakeholders	BBC

Name	**Trafficlink Ltd**
Start date	Founded 1996; Acquired by ITIS Holdings PLC 2007
Objectives	Trafficlink are the UK's leading provider of real time traffic and travel information to broadcasters, business and government, providing over 42 million people with journey information. Trafficlink operate a journalistic transport information gathering service and bring over twelve years of technical and journalistic expertise and information source relationships to provide data services of unrivalled detail, accuracy and suitability. To support these operations Trafficlink produce a dataset of structured traffic incident information covering the entire UK road network and public transport infrastructure. This data is created and managed by Trafficlink's dedicated editorial control room staff in six locations nationwide, using a wide variety of data sources to ensure optimal timeliness and accuracy of data. Trafficlink's broadcast travel journalists provide over 12,000 voiced radio bulletins direct to the listening public each week on behalf of its clients, and provide the UK's only current in-vision traffic television bulletins.
Resources	Six UK locations utilising 150 staff and providing 24-hour data collection and distribution and broadcast services.
Lead stakeholders	Key customers : BBC, Transport Direct, 95% of UK independent radio market

Name	**ITIS Holdings PLC**
Start date	Founded 1997
Objectives	ITIS is the UK's leading supplier of traffic and travel information. We have developed TrafficScience, to allow us to deliver valuable traffic information to a wide variety of business and private users. ITIS Holdings plc was founded in 1997. The growth of the company's UK business has been driven by major contracts with motor manufacturers, government agencies and cellular networks. Significant acquisitions, of Estimotion Inc. in 2003 and Trafficlink in 2007, have extended the range of applications that ITIS can address. ITIS pioneered the use of Floating Vehicle Data from cellular phone networks (CFVD) and GPS devices (GFVD). We combine that source data with journalistic and fixed-sensor data. Sophisticated analysis within TrafficScience then delivers real-time and historic traffic information that is rich in detail, is extremely accurate, and can be used in the widest possible variety of applications. Floating Vehicle Data (FVD) allows for more extensive geographic coverage, at a much lower cost, than traditional fixed sensor technology.
Resources	ITIS has built up a strong patent portfolio that supports our development of TrafficScience. We protect our intellectual property through a number of patent families. ITIS GFVD collects movement data from over 100,000 vehicles on UK roads.
Lead stakeholders	Key customers : The ITIS RDS-TMC service informs 2 million motorists through partners including BMW, Aston Martin, Fiat, Ford, Honda, Jaguar / Land Rover, Mercedes, Mitsubishi, Nissan, Porsche, Renault, Subaru, Toyota, Volvo, Tom-Tom and Meo.

Name	**Trafficmaster Ltd**
Start date	Founded: 1988, Listed on UK Stock Exchange: 1994, Acquired by Vector Capital: 2010
Objectives	**Business Areas:** Fleet Tracking, Stolen Vehicle Tracking, Off-Board Navigation, and Provision of Real-Time Traffic Information. **Milestones:** Business Founded 1988; M25 traffic data collection 1990, Flotation 1994; All UK Motorways covered 1994; First commercial traffic products launched 1995; First OEM traffic products with BMW and Vauxhall 1996; First location aware GSM product with O2 1997; UK Trunk roads covered 1998; Trackstar Stolen Vehicle Tracking service launched 1999; Acquired leading US Fleet Management business Teletrac 2001; Smartnav Off-Board Navigation Service launched 2002; RDS TMC Traffic Service launched in UK 2004; Pay-As-You-Drive Insurance programme launched with Norwich Union 2006; Fleet Director (Teletrac Fleet Management product) launched in UK 2007; Acquired Eurowatch pan European Stolen Vehicle Tracking Service 2008; Acquired FMS Fleet Management operation in USA 2009; Business Acquired by Vector Capital 2010. **Resources:** 5200 Traffic Flow Monitoring Sensors, 130,000 active US vehicles equipped with Teletrac Fleet Tracking devices, 110,000 active UK Vehicles fitted with Trackstar, Smartnav or Fleet Director devices. Over 4 million active Traffic customers in UK.
Lead stakeholders	• Fleet Operators (including Ryder Logistics and Sainsury's); • Vehicle Manufacturers, (including BMW, Jaguar, Land Rover, Volkswagen Audi Group, Citroen); • PND Providers, (including Garmin), smartphone providers (including Nokia) and UK Government.

Name	**Elgin – Electronic Local Government Information Network**
Start date	2006 to date
Objectives	Elgin is an award winning website (http://www.elgin.gov.uk) providing an up-to-date map of roadworks and related information. The system is based on the Empress Specification, a framework for seamless e-Government services presented in such a way that the citizen need not be aware of the many organisations supplying the services. As well as publishing roadworks information to the public Elgin also enables Traffic Managers and others to coordinate streetworks activities across local authority boundaries. It is currently the only widely available solution that addresses this Traffic Management Act requirement. Users are offered map and text-based ways of accessing the information. The Elgin map displays streetworks accurately over a fully interactive "intelligent" vector map based on high resolution Ordnance Survey MasterMap (TM). The Elgin website is compliant with e-GIF & AA accessibility legislation. Participating authorities' streetworks systems automatically connect to Elgin on a daily basis to keep the streetworks data current. XML web services supporting both DATEX2 and SDEP data feeds allow registered organisations to request data from Elgin to present on their own websites. Other developments in the pipeline include the ability to display other traffic and highways related information such as diversionary routes. Legislative drivers: e-Government Priority Outcome G14 and the Traffic Management Act require Local Highway Authorities to :- 1. Make streetworks information publicly available via a web-based GIS map 2. Coordinate streetworks management across boundaries with neighbouring authorities
Lead stakeholders	Elgin is a shared service with 33 local authorities participating across the east midlands and southeast of England, though this number is expected to double over the coming year. The National Traffic Control Centre (NTCC) and Transport for London (TfL) are exploring ways of exchanging data with Elgin, making it an important information hub within the national data infrastructure.

Name	**MOVA (Microprocessor Optimised Vehicle Actuation)**
Start date	Mid-1980s
Objectives	Designed by TRL, MOVA is now a very well established strategy for the control of traffic light signals at isolated junctions – i.e. junctions that are uncoordinated with any neighbouring signals. It can also be used at stand-alone pedestrian crossing, i.e. Puffin and Pelicans. Currently the UK is thought to have at least 3000 sites equipped with MOVA with each year seeing at least another 300 installations. Although designed for isolated junctions, a number of linked schemes have also been installed. MOVA is designed to cater for the full range of traffic conditions, from very low flows through to a junction that is overloaded. For the major part of the range - before congestion occurs, MOVA operates in a delay minimising mode; if any approach becomes overloaded, the system switches to a capacity maximising procedure. MOVA is also able to operate at a wide range of junctions, from the very simple 'shuttle-working', to large, multi-phase multi-lane sites. MOVA is updated regularly and there has been a new issue in 2011. www.trlsoftware.co.uk/ProductContent.aspx?ID=9
Lead stakeholders	TRL, UK Local Authorities and Highways Agency

A selection of the most advanced Local Authority ITS implementations in this area:

Name	**Lancashire – Preston (UTMC Case Study & CIVITAS – SUCCESS Project)**
Objectives	They operate a Mott MacDonald Common Data Management System (CDMF) system and they have been pulling event information from the NTCC since November 07. Since April 2009 they have been receiving NTCC DATEX II data to Lancashire's common database. This data includes Journey Time information and VMS sign messages as well as incidents, accidents and road work information. Lancashire County Council has also developed an electronic notification of Tactical Diversion route activation, automatically triggering UTMC strategies including passing information on to Lancashire's public web sites: http://www.transportforlancashire.com
Lead stakeholders	Lancashire County Council and Preston City Council

Name	Leicester City and County Council
Objectives	Long standing traffic and travel information provider and former member of the MATTISSE consortium (see page 14), still maintaining a system to system link. Leicester utilise a Mott MacDonald CDMF system.
Lead stakeholders	Leicestershire County Council and Leicester City Council

Name	Norfolk County Council and Norwich City Council
Objectives	Norfolk utilise a Mott MacDonald CDMF system primarily driving a car park system. They have a system to system link with the NTCC and take information from this link.
Lead stakeholders	Norfolk County Council and Norwich City Council

Name	Nottingham City & Nottinghamshire County Council
Objectives	Nottingham has launched a revised Travelwise service. They have a partnership working arrangement between Nottingham City council, Nottingham County Council and the Highways Agency. http://www.itsnottingham.info
Lead stakeholders	Nottingham City & Nottinghamshire County Council

Name	Reading Borough Council
Objectives	A long standing UTMC practitioner utilising a Siemens Comet System and are currently working on a freight routing pilot project with John Lewis. They have also placed traffic and travel information services onto PDAs and smartphones.
Lead stakeholders	Reading Borough Council

Name	Sheffield City Council (South Yorkshire UTMC Case Study)
Objectives	Sheffield City Council have completed the second phase of South Yorkshire ITS Project (syITS), thanks to £11.6m of European funding, and are moving onto the third phase which makes use of the infrastructure created by the first two phases. The first South Yorkshire Local Transport Plan (LTP) recognised the need to implement coordinated ITS in South Yorkshire, and proposed the development of a strategy to take this forward. With the help of funding from Yorkshire Forward an ITS strategy for South Yorkshire was prepared. Implementation of the strategy to provide a South Yorkshire Intelligent Transport System forms an integral part of the second LTP, covering the period 2006-2011, this will be taken forward in the third LTP. The first phase of syITS included work begun under the first LTP, particularly the bus priority work already carried out to improve public transport routes and the traffic management and calming work undertaken to improve network operation and minimise adverse traffic impacts. The second phase of syITS has used ERDF Objective 1 funding to establish an ITS Control Centre for the South Yorkshire sub-region, based on development of the existing Sheffield Urban Traffic Control (UTC) Centre; introduced ANPR journey time monitoring of the operation of the strategic highway network in South Yorkshire; improved the capacity of major junctions to assist economic regeneration; provided improved priority for public transport at major intersections; and provided improved information about traffic conditions for travellers throughout South Yorkshire. The next phase of syITS is using LTP funding to extend the geographical coverage of the ITS facilities. Sheffield County Council will make use of the greatly expanded monitoring information to recognise abnormal conditions in real time, introduce control strategies to mitigate the effects, and inform travellers so that they can make intelligent decisions about the route, time and mode of their journeys. This monitoring will make use of information from the wider area around South Yorkshire, and will provide information about conditions in the sub-region to neighbouring authorities. This exchange of data will make use of the Travel Information Highway (TIH) principles and equipment following the UTMC specifications.
Lead stakeholders	Sheffield City Council

Name	**Warwickshire County Council**
Objectives	Stratford has an international profile due to its associations with Shakespeare and the Royal Shakespeare Company, but is also well-known for its traffic congestion. The UTMC approach uses new technology to provide travellers to Stratford, both before and during their trip, with information about the best routes to follow and parking availability at any particular time. Conditions are constantly monitored so that information is entirely up to date. Pre-trip information is available on the Web, and in-trip information is provided by a series of variable message signs, as well as by radio and in-car navigation systems. Traffic signals and CCTV cameras are also controlled by the system to reduce congestion and pollution, give priority to buses and improve the flow of traffic, especially when there are incidents or peak traffic surges.
Lead stakeholders	Warwickshire County Council

Name	**West Sussex County Council Travel Information Control Centre (TICC)**
Start date	2006
Objectives	The TICC, located in County Hall, Chichester, opened in April 2006. Its purpose is to bring together a variety of traffic related systems into a dedicated operating environment. This increases their ability to efficiently manage the use of the highway network and provide reliable traffic and travel information to the travelling public. Mott MacDonald CDMF enables the integration and management of data from various technologies.
Lead stakeholders	West Sussex County Council

Name	York City Council (UTMC Case Study)
Objectives	The UTMC29 York project provided the first phase of the implementation of the City of York Traffic Congestion System (TCMS) that will be rolled out over a five year period to cover the entire City. TCMS, which aims to provide York with sustainable transport solutions, draws together the various tools of air quality monitoring and modeling, pollution reduction, dynamic messaging and route guidance, traffic management and control, Park & Ride promotion. The City of York has a widely used Envitia CUTLAS UTMC system, which provides services such as Variable Message System (VMS) control, car park counting / car park guidance, a dynamic website, feeds to drive on-street displays, traffic counting, UTC links etc. At present they make use of TIH feeds by using RTIG-XML to receive bus real time data into the CDB.
Lead stakeholders	York City Council

Name	Devon County Council Traffic Management
Objectives	Devon County Council have an operational Datex II link and are able to integrate VMS, traffic counters, journey-time information, road works and incidents from the NTCC into their Envitia CUTLAS UTMC system so that motorway and trunk road data can be viewed seamlessly with information from their own network. Devon County Council also have their own 115 camera ANPR journey-time system, car park guidance system, real-time traffic counters, Urban Traffic Control, over 25 strategic message signs all integrated within their Envitia CUTLAS UTMC system and are starting to develop strategies to maximise the potential of UTMC for Devon including: • Journey-times on sign • Management of Taw Bridge in windy conditions • Warning of ice in freezing conditions • Advising of delays on the network • Developing real-time travel information on its web-site
Lead stakeholders	Devon County Council

Name	Kent County Council Traffic Management
Objectives	Kent County Council have access to NTCC data via Datex II system feeds. They utilise an Envitia CUTLAS UTMC system. Link to Transport Direct & HA website is already present.
Lead stakeholders	Kent County Council

2. Continuity of Traffic and Freight Management ITS Services

Name	**Managed Motorways**
Start date	2008 - trial phase, 2011 - start of implementation
Objectives	Eleven Managed Motorway schemes will start work over the next four years. Ten of these will include hard shoulder running - providing additional capacity of around 210 lane miles in total during busy periods. Managed Motorways use a range of innovative technologies and operational systems to actively control traffic. Features such as variable mandatory speed limits and opening up the hard shoulder to traffic at peak times improve traffic flow and reduce congestion, whilst delivering safer journeys. These schemes will deliver vital investment across the strategic road network, driving economic growth and boosting the UK economy. They will also provide much-needed additional capacity - easing congestion and making journey times more reliable for road users, including hauliers. For every pound invested on these schemes on average £7 of benefits to the economy will be produced with some delivering even higher returns The Highways Agency will (subject to statutory processes, where needed) start work on: • M62 J25 to J30 Managed Motorway with hard shoulder running, West Yorkshire - between October 2011 and December 2011; and • M4 J19 to J20 & M5 J15 to J17 Managed Motorways with hard shoulder running, Bristol - between January 2012 and March 2012. Start work on eight schemes in 2013/14 or 2014/15: • M25 J5 to J6/J7 Managed Motorway with hard shoulder running, Kent to Surrey • M25 J23 to J27 Managed Motorway with hard shoulder running, Hertfordshire to Essex; • M1 J28 to J31 Managed Motorway with hard shoulder running, Derbyshire; • A556 Knutsford to Bowdon improvement scheme, south of Manchester (important freight link); • M60 J8 to J12 Managed Motorway with hard shoulder running, Manchester; • M60 J12 to J15 (Lane Gain) Managed Motorway, Manchester; • M62 J18 to J20 Managed Motorway with hard shoulder running, Manchester; and • M1 J39 to J42 Managed Motorway with hard shoulder running, Wakefield. Key findings from research show that accidents have more than halved since hard shoulder running was introduced on 10.5 miles of M42 (J3a to J7), to the east of Birmingham; with journey times improved between the M40 J16, near Lapworth, and M6 J5, near Birmingham.
Lead stakeholders	UK Highways Agency

Name	**Ramp Metering – Phases 1 and 2**
Start date	2006
Objectives	Ramp metering (usually a basic traffic light or a two-section signal (red and green only, no yellow) light together with a signal controller) regulates the flow of traffic entering motorways/dual carriageways according to prevailing traffic conditions. Ramp metering systems have proved to be successful in decreasing traffic and improving driver safety and are claimed to reduce congestion (increase speed and volume) on busy roads by reducing demand and by breaking up platoons of cars. Ramp metering has been introduced widely in England - Phase 1 involved the implementation of approximately 30 sites and was completed by 2008. Phase 2 followed and as of March 2011 there are 88 Ramp Metering sites on the 4,500 miles of strategic highways operated and maintained by the HA.
Lead stakeholders	Highways Agency

Name	**SCOOT (Split Cycle Offset Optimisation Technique)**
Objectives	SCOOT is the world's leading adaptive traffic control system. It coordinates the operation of all the traffic signals in an area to give good progression to vehicles through the network. Whilst coordinating all the signals, it responds intelligently and continuously as traffic flow changes and fluctuates throughout the day. It removes the dependence of less sophisticated systems on signal plans, which have to be expensively updated. There are 111 SCOOT licenses in the UK, but some of these are held by counties and therefore include more than one town or city deployment. SCOOT is updated regularly and there has been a new release in 2011. www.scoot-utc.com
Lead stakeholders	TRL, Transport for London, Peek and Siemens

Name	**Urban Traffic Management and Control (UTMC)**
Start date	1999 to date
Objectives	Specifications to achieve interoperability for traffic management systems within local authorities and cross border. See individual examples of implementations in previous section.
Lead stakeholders	UK Department for Transport, UK Highways Agency

Name	Travel Information Highway (TIH)
Start date	2001 to date
Objectives	Specifications to enable information sharing between the various systems in use on the UK's trunk road network.
Lead stakeholders	UK Highways Agency

Name	HALOGEN Information Services
Objectives	HALOGEN is the central service for logging operational data from Highways Agency Traffic Management System's (HATMS). Each motorway signal, sign or telephone equipment records every setting, state change and fault as data logged to the HALOGEN system. HALOGEN provides a secure storage of HATMS logs, a centralised log enquiry and reporting facility, timely information on HATMS Logging System Status, and delivery channels of historic and real-time information derived from the received Logs. Real-time information is delivered from HALOGEN following TIH principles as Over-The-Air- Provisioning (OTAP), DATEX II and CORBA Notification. Service Area covered: Highways Agency core network of Motorway and Trunk Roads in England. Information Available: • Message Sign Device Setting: Setting requests for Variable Message Signs • Device Setting - Setting requests for other types of device, including matrix sign signals • Device Setting Request: Setting requests for devices connected to Stand Alone Controllers • Device Status Entry: Status messages received from a device • Link Monitor Entries: Link monitor status • Logging System Status: State of the logging systems connected to Halogen. • Active Message Sign: Derived state of Message Sign devices that are reported as being "in use" or active. • Active Signal: Derived state of Signal devices that are reported as being "in use" or active. • Active Fault -NMCS device faults. Derived from Fault Detection and Fault Clearance logs • SFS Traffic Event: Calculated service which synthesizes traffic events based upon patterns of motorway matrix signal settings
Lead stakeholders	Highways Agency

Name	**MATTISSE**
Start date	1998 / to date
Objectives	MATTISSE is a novel system, originally conceived and developed by a consortium of eight Midlands Local Authorities: Birmingham, Coventry, Dudley, Leicester, Sandwell, Solihull, Walsall and Wolverhampton. It integrates systems of operators such as Police Control Centres, Urban Traffic Control Centres, Local Authorities and Public Transport Operators to provide fully integrated traffic and travel information. MATTISSE successfully manages accurate, real-time information in a comprehensive manner and broadcasts this information extensively around the Midlands
Lead stakeholders	West Midlands local authorities

Name	**West Midlands UTC Major Transport Scheme**
Start date	2008 – 2014
Objectives	Joint traffic management across the major urban region of the West Midlands, involving a number of local highways authorities.
Resources	£26.6M
Lead stakeholders	West Midlands Authorities, Department for Transport

Name	**NADICS**
Objectives	The Scottish traffic control and information service, operated by Transport Scotland.
Lead stakeholders	Scottish Parliament

Name	**Traffic Wales**
Objectives	The Welsh traffic control system and public information service.
Lead stakeholders	Welsh Assembly Government

Name	**NTCC / NTIS**
Start Date / Duration	1991 – 2011
Objectives	Live traffic data for the English motorway and trunk roads network. The data types available from the Highways Agency's National Traffic Control Centre can be viewed on the Traffic England public website or Atlas Pro website. **Service Area covered:** most motorways and major trunk roads in England. Level of Service: 24 hours, 7 days per week **Information Available:** Traffic Events, both planned and unplanned, that have an effect on the network of more that 15 minutes. Also provided are Variable Message Sign and Matrix Signal settings and speeds, flows and journey times. National Guidance Framework 2004 & 2007; Detailed Local Operational Agreements (DLOAs) formed with LHA & Operational Stakeholders.
Resources	10 year £130M PFI contract
Stakeholder(s)	Highways Agency

Name	**AGMA (Association of Greater Manchester Authorities)**
Start date	2007
Objectives	AGMA (Manchester UTC) has been pulling information from the NTCC since the beginning of 2007 and utilise a Mott MacDonald CDMF system. Once all of the districts have signed up to their traffic information protocol (only Oldham now outstanding out of 10 authorities) and the districts staff have been trained to input roadworks information and the quality of the information is good then it will be pushed to NTCC via the Manchester UTC CDB.
Lead stakeholders	AGMA consists of; Bury MBC, Bolton MBC, Oldham MBC, Manchester CC, Rochdale MBC, Salford CC, Stockport MBC, Tameside MBC, Trafford MBC and Wigan MBC.

3. ITS Road Safety and Security Applications

Name	**ANPR as A Crime Reduction/Counter-Terrorism Technology Project Laser (previously Project Spectrum)**
Start date	2005
Objectives	Automatic Number Plate Recognition (ANPR) systematically records vehicle number plates and then stores them at the National or ANPR Data Centre enabling advanced versatile automated data mining software to trawl through the vast amounts of data collected, finding patterns and meaning in the data. Data mining can be used on the records of previous sightings to build up intelligence of a vehicle's movements on the road network or can be used to find cloned vehicles by searching the database. The National ANPR Data Centre stores all ANPR data feed from the various police and civic CCTV networks in the UK. The National ANPR Data Centre was set up to store 50 million number plate 'reads' per day to be expanded to 100 million 'reads' per day within a couple of years. The time, date and place of each vehicle sighting will be stored for five years. At the present 50 million clocks a day, over 18 billion ANPR records would be recorded every year.
Lead stakeholders	Home Office and Association of Chief Police Officers

Name	**A77 SPECS Average Speed Camera System**
Start date	July 2005
Objectives	A77 SPECS - System installed as part of a coordinated road safety plan for the road between Bogend Toll, north of Ayr and Ardwell Bay, south of Girvan. Proof that there has been a marked change in driver behaviour on the road, with a massive drop recorded in the number of vehicles exceeding the speed limits. There is also a significant reduction in personal injury crashes, particularly for those involving fatal and serious injuries. (Strathclyde Safety Camera Partnership)
Resources	£775,000
Lead stakeholders	A77 Safety Group – A partnership dedicated to reducing fatalities and accidents on this busy trunk road - Transport Scotland, Amey, Strathclyde Police, South Ayrshire Council, Strathclyde Safety Camera Partnership and West Sound.

Name	**A14 - Permanent Casualty Reduction Scheme**
Start date	2001
Objectives	A14 Cambridge to Huntingdon– To reduce the large number of collisions and casualties on the A14 (a key strategic route between the Midlands and East Anglia) through the installation of eight fixed 'spot speed' camera sites in 2001. However to address ongoing public concerns about safety along the route, the Highways Agency decided to install average speed enforcement cameras (SPECS) between Spittals Interchange and Girton; a 22km control section. Analysis of the two year post installation data shows that Killed and Seriously Injured collisions have dropped by 68%, which equates to an average annual saving to the economy of £4.3m. The scheme was awarded a Prince Michael International Road Safety Award and the Chartered Institute of Highways & Transportation 'Best Road Safety Scheme' award for the significant improvements delivered. In addition, anecdotal evidence suggests that journey time reliability has improved; providing smoother flows, reduced close following, less aggressive driving and better fuel consumption.
Lead stakeholders	Highways Agency

Name	**Speed and Weight Limit Enforcement on Tower Bridge, London**
Start date	2004
Objectives	A unique combined speed and weight enforcement system, supplied and installed by Vysionics ITS Ltd, has been successfully enforcing the 20mph speed limit and 18 tonne weight limit on Tower Bridge since 2004. The installation of the SPECS average speed enforcement system, alongside an ANPR-equipped vehicle classification and weight enforcement system has resulted in a ground-breaking bridge protection solution on one of Britain's most recognisable landmarks.
Lead stakeholders	Transport for London

Name	**Permanent Casualty Reduction Scheme A616 South Yorkshire**
Objectives	The A616 Stocksbridge Bypass Trans-Pennine Route is a key feeder road to the M1. Opened in 1988, this rural road had a significant casualty history that the Highways Agency (HA) decided to address with a number of road safety measures including an 11km SPECS monitored Speed Control Zone along the length of the Stocksbridge Bypass. The number of Killed or Seriously Injured casualties has dropped by 82% since the SPECS cameras were installed.
Lead stakeholders	Highways Agency

Name	Permanent Casualty Reduction Scheme Northamptonshire
Start date	2001
Objectives	Northamptonshire has been operating the SPECS average speed enforcement system since 2001, as one of the first 'Safety Camera Partnerships' to implement average speed enforcement technology. The SPECS systems are used to reduce casualties and improve traffic flow on the A43 & A428, two of the county's Red-Routes.
Lead stakeholders	Northamptonshire Police, Highways Agency

Name	Permanent Casualty Reduction Scheme - A127 Essex
Start date	2009
Objectives	The section of the A127 between Wickford and Southend-On-Sea in Essex is a dual two-lane carriageway just over 10km in length, which links London to Southend-On-Sea. Prior to the implementation of the scheme, the study area had a high number of Personal Injury Collisions and a high number of Killed or Seriously Injured (KSI) collisions, including four fatal collisions in three years. In the first 17 months since installation, KSI casualty figures have fallen by 54% and there have been no fatal collisions since the introduction of the average speed cameras.
Lead stakeholders	Essex Police, Highways Agency

Name	Permanent Casualty Reduction Scheme – A14 Cambridge to Huntingdon
Start date	2001
Objectives	The A14 is the key strategic route between the Midlands and East Anglia. There were a large number of collisions and casualties on the route, even after the installation of eight fixed 'spot speed' camera sites in 2001. To address ongoing public concerns about safety along the route, the Highways Agency decided to install average speed enforcement cameras (SPECS) between Spittals Interchange and Girton; a 22km control section. The Scheme resulted in a 69% reduction in KSI collisions and was awarded a Prince Michael International Road Safety Award and the Chartered Institute of Highways & Transportation 'Best Road Safety Scheme' award, for the significant improvements delivered.
Lead stakeholders	Highways Agency

4. Linking the Vehicle With the Transport Infrastructure

Name	**Use by Roads Authorities of Floating Vehicle Data from Google, ITIS, Tom Tom and Trafficmaster**
Start date	
Objectives	Using FVD for traffic management purposes including predictive management
Resources	See sections above on individual data providers (Trafficmaster Ltd and ITIS Holdings PLC)
Lead stakeholders	Various highways authorities including Highways Agency

Name	**RDS-TMC Sat Navs and Tom Tom HD Traffic Services**
Start date	
Objectives	Information and guidance for drivers
Resources	See sections above on individual data providers (Trafficmaster Ltd and ITIS Holdings PLC)
Lead stakeholders	Various satnav providers