

ITS Radar Ad Hoc Report: ITS World Congress London (9th-12th October 2006)

Report no:	5	Report initiator	Steve Tarry
Date:	26 th October 2006	Compiled by:	James Perrott
Report area:	Relevance of projects presented to the Highways Agency		
Categories and level of relevance :	Traffic Control Centres	Some relevance	
	Traffic management technology	Very relevant	
	Pilots	Some relevance	
	Driver behaviour	Very relevant	
	Modelling	Some relevance	
	Traffic and travel Information	Very relevant	
	Technology solutions	Some relevance	
	Enforcement	Some relevance	
	Standards and policy	Very relevant	
	Monitoring	Very relevant	
	Safety	Very relevant	
	European developments	Some relevance	
Transferability to Highways Agency :	Meets Policy Objectives	Yes	
	Cost/Benefits Information	Some availability	
	Development status	Policy through to Pilots	
	Innovative	Yes	
	UK legal issues	Possible Institutional, Legal and Privacy Issues	
Summary:	Limited evaluation results were presented. There were numerous theoretical, simulation and policy-based studies focussing of issues involved in moving from demonstrations and small scale trials to wide-spread deployment. However there were cross jurisdictional and interoperability issues that were raised and some approaches to dealing with institutional problems offered.		

Introduction

This document summarises some of the papers presented at the ITS World Congress of particular relevance to topic areas being 'monitored' by the ITS Radar Team. An overview of the relevant papers, the country of origin for the 'project', the relevance of the work to the HA and the topic areas they are associated with are presented, in Table 1.1.

Extracts from the papers are included as an Appendix. Links are provided between Table 1.1 and the appropriate extract, via the paper reference number. Links are also provided back to Table 1.1, again via the paper reference number.

Attention is drawn to the 'Relevance to the HA' comments alongside each project overview in Table 1.1.

Copies of the complete abstract for each paper presented can be made available, if required.

ITS Radar Ad-hoc Report: ITS World Congress ~ London, October 2006 - Papers of Particular Relevance to the HA

Table 1.1

Paper Reference	Subject	Overview (Summary Extracts From Papers Appended)	Country of Origin	Relevance to the HA	Relevant Topic Areas														
					Traffic Control Centres	Traffic Management Technology	Pilots	Driver Behaviour	Tolling	Modelling	Traffic and Travel Information	Freight and Fleet Management	Technology Solutions	GPS / satellites	Enforcement	Standards and Policy	Monitoring	Safety	European Developments
1007	Snow Deposition	A simulation test of a snow deposition model and comparison of scenarios	Austria	High						✓								✓	
1001	Informed Behaviour	An overview over the current concerns about driver reaction to information	UK	Moderate	✓	✓		✓			✓					✓			
1044	Intelligent transport systems and police enforcement	An overview of ITS systems and how they can play a part in enforcement	Australia	High		✓							✓		✓				
1057	HOT Lane Innovation	A description of HOT (high occupancy toll) innovation in Minnesota	USA	High		✓	✓	✓							✓				
1068	Use of Variable speed limits at intersections	A study into speed reductions and anticipated safety benefits accorded by implementation of VSL at junctions	Sweden	High		✓	✓	✓							✓			✓	✓
1075	Mobile Information Broadcast	Protocols standards and uses of traffic information broadcasts	Germany	High							✓		✓						✓

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1090	Managing Technological Innovation In Intelligent Transportation System Communications Infrastructures	Talks about development processes and decisions required for ITS development	USA	Moderate			✓						✓			✓			
1103	Introducing Egnos And Galileo In Its For Freight Transport: The European M-Trade Project	Assesses the effect of satellite technology on the freight industry	Italy	High					✓				✓						✓
1110	Vision On Its Within Sustainable Safety Based Policy In The Netherlands	An overview of the benefits provided to safety on the road network	Netherlands	High		✓		✓			✓		✓					✓	✓
1121	Using Spatially Encoded Video For Highway Operation, Event Management And Maintenance	Use of video technology in management and maintenance of a motorway network	France	High		✓											✓		
1127	Prevention And Management Of Ghost Driver Incidents On Motorways	Paper on the French experience of drivers driving the wrong way down the road	France	Moderate		✓		✓	✓				✓		✓			✓	✓
1164	The Network ATM Supervisory Subsystem (NASS) As A Control Room Support Tool	A discussion of NASS and its progress through development	UK	Internal	✓	✓	✓			✓			✓				✓		

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1306	Examining capacity increasing measures with the DYNAMIQ Model	Simulating traffic management on Urban Motorway	Switzerland	High		✓				✓							✓		✓
1498	Dynamic Diversion Plan Generation For Use With Road Network Modelling Tools	Real time flexible diversion planning	UK	Internal	✓	✓	✓			✓							✓		
1542	Creating A Strategy For The Expansion Of The National Driver Information And Control System, Traffic Scotland (Formerly NADICS)	Scotland's ITS Strategy and deployment.	UK	High	✓	✓					✓					✓	✓		✓
1706	Travel Time Prediction Using Probe-Car Data	Ongoing use of floating vehicle data in journey time predictions	Japan	Moderate						✓									
1833	What's In A Business Case For An ITS Application Facilitator?	How to evaluate the benefits of an ITS facilitator	UK	Moderate												✓			
1839	Motorway Emergency Lane Use For Public Transport	A French System for using hard shoulder running for public transport services	France	High		✓	✓								✓				✓
1882	A systematic approach to measuring the quality of RDS TMC services	A quality assessment of TMC services and the establishment of a quality standard	UK	High							✓					✓		✓	

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2011	Intelligent Highway Surveillance System With Speed Control And Vehicle Identification	Speed enforcement and traffic monitoring on one of Romania's Busiest roads	Romania	Moderate											✓		✓		✓
2100	Influence Of Variable Speed Limit And Driver Information System On Key Traffic Flow Parameters On A German Autobahn	Presents findings of an empirical analysis that has evaluated the impacts of a variable speed limit (VSL) and driver information system on key traffic flow parameters on a German autobahn	USA/Germany	Moderate		✓									✓				
2146	Effects of AHS for Safety in Curve Section	A look at the value of providing information to drivers on congestion on dangerous bends on roads	Japan	Moderate				✓					✓				✓	✓	
2227	Privacy And Distance Based Charging For All Vehicles On All Roads	A review of privacy issues associated with distance based road user charging	Netherlands	Moderate												✓			✓
2241	Addressing UK Government Concerns About Robust Vehicle Identification	Definition and use of EVI (Electronic Vehicle Identification) concept	UK	High											✓	✓			
2252	Trends In TMC Operations & Maintenance	A look at ongoing work and changes in use of American Traffic Management Centres	USA	Moderate	✓														

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1006	Traffic Officer Service Technologies	Review of needs and administration of Highways Agency Traffic Officers	UK	Internal									✓		✓	✓		✓	
1178	Customers First: The Contribution Made By England's National Traffic Control Centre	The function and performance of the National Traffic Control Centre	UK	Internal	✓						✓		✓				✓		
1377	The Implementation And Benefits Of Pfi To The Delivery Of "Intelligent Transport System" Projects	The installation and use of a fibre optic network	UK	Internal									✓			✓			
1517	The Evaluation of Dynamic Road Marking for White Line Replication	A study into use of dynamic road markings in place of white lines	UK	Internal				✓					✓					✓	
1649	Highways Agency Traffic Information System - The Systematic Collection And Analysis Of Traffic Flow And Congestion Information	A look at different types of journey time data and how they can be combined	UK	Internal	✓	✓					✓		✓				✓		
1452	Highways Agency Active Traffic Management: Initial Driver Reactions To Its Implementation On The M42	Outline of initial driver reaction to Active Traffic Management on the M42 motorway.	UK	Internal		✓	✓						✓						

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1126	A Flexible Approach To Motorway Control	Review of experience of Active traffic Management and of ramp metering	UK	Internal		✓								✓						
1170	Active Traffic Management Interim Results Of The Before And After Monitoring Project	Overview of results from 6 months of monitoring of 3 lane variable speed limits, and initial results from 4 lane VSL	UK	Internal		✓		✓						✓		✓		✓	✓	
1922	Low Cost CCTV	Management of the interurban road network through CCTV networks	UK	Internal	✓	✓										✓	✓			

Appendix – Summary Extracts From Papers

Paper Reference	Extract
1007	<p>Investigation Of Snow Deposition On Infrastructural Architecture Due To Crosswinds Using Numerical Simulation Tools <i>Wolfgang Payer(1), Markus Trenker(2)</i> 1) arsenal research, Austria, Giefinggasse 2, A-1210 Vienna, Phone: +43 (0) 50 550 – 6603, e-mail: wolfgang.payer@arsenal.ac.at 2) arsenal research, Austria, Giefinggasse 2, A-1210 Vienna, Phone: +43 (0) 50 550 – 6328, e-mail: markus.trenker@arsenal.ac.at</p>
Return to Table 1.1	<p>In northern regions infrastructural architecture often faces the problem of snow deposits due to crosswinds. In this study efforts have been made to implement models of build-up of snow particles into a commercial simulation tool. Numerical simulations are carried out on the topographic model of a highway, exposed to severe crosswinds. The Lagrange based model is using the characteristics of a certain kind of snow. Particle tracks, velocities as well as concentrations of the accumulation along the road are visualized. Efficiency of planting vegetation beside the highway is investigated to allow the assessment of road maintenance measures.</p>
1001	<p>Informed Behavior <i>Dr Nabil Abou-Rahme(1), Dominic Paulo(2)</i> 1) Mouchel Parkman, KT22 7GZ, UK. T: + 44 (0) 1372 365 600 nabil.abou-rahme@mouchelparkman.com 2) Mouchel Parkman, KT22 7GZ, UK. T: + 44 (0) 1372 365 600 dominic.paulo@mouchelparkman.com</p>
Return to Table 1.1	<p>Travel information is making a difference to travel behavior. Informed travel is a continuing objective for government transport policy, but factors influencing behavior must be considered carefully in today's information rich environment. This paper explores the relationship between information and driver behavior using current examples, and seeks to understand how one affects the other. Information needs to be presented in an intuitive framework if policy objectives and outcomes are to be achieved over time. The paper also considers where emphasis should be placed in future, concluding that this is neither technology nor psychology but a pragmatic application of both.</p>
1044	<p>Intelligent Transport Systems And Police Enforcement <i>Kristie Young and Michael Regan</i> Monash University Accident Research Centre, Building 70, Monash University Victoria, 3800, Australia.</p>
Return to Table 1.1	<p>Police enforcement of Road Rules and Regulations involves a wide range of complex tasks, many of which demand the use by Police of modern technologies (e.g., fixed and mobile speed detection devices). The aim of this project was to identify and define, from first principles, ITS and telematics technologies which have significant potential to enhance the effectiveness and efficiency of Police enforcement activities in Australia. This paper describes the aims, methods and preliminary outcomes of the project: how ITS can help prevent and enforce road rules.</p>

Paper Reference	Extract
1057	<p>High Occupancy Toll Lane Innovations: I-394 Mnpass <i>Marthand Nookala(1), Randy Halvorson(2), Kenneth Buckeye(3), John Doan(4)</i> 1) Assistant County Administrator, Public Works - Hennepin County A-2303 Government Center, Minneapolis, MN 55487 612.348.4306 <i>marthand.nookala@co.hennepin.mn.us</i> 2) Director, Program Management Division - Minnesota Department of Transportation 395 John Ireland Blvd, MS 120, St. Paul, MN 55155 (651) 296-1344 <i>randy.halvorson@dot.state.mn.us</i> 3) Value Pricing Program Manager, Minnesota Department of Transportation 395 John Ireland Blvd, MS 440, St. Paul, MN 55155 (651) 296-1606 <i>kenneth.buckeye@dot.state.mn.us</i> 4) MnPASS Program Director, Minnesota Department of Transportation 1500 West County Road B2, MS 725, St. Paul, MN 55113 (651) 634-5309 <i>john.doan@dot.state.mn.us</i></p>
Return to Table 1.1	<p>In May 2005, the Minnesota Department of Transportation (Mn/DOT) implemented the state's first optional toll lane project called "I-394 MnPASS" in the Minneapolis-St. Paul metropolitan area. This project converts the high occupancy vehicle (HOV) lanes on I-394 into high occupancy toll (HOT) lanes, allowing solo drivers to pay an electronic fee to bypass congestion. The lanes remain open at no charge to HOV use, which includes transit riders, car pools and motorcyclists. I-394 MnPASS is the first tolling project which applies dynamic pricing on a facility directly adjacent to general purpose lanes separated only by a double-white stripe buffer. Several additional innovations were introduced to reduce project development time and costs, to improve operations, and to enhance enforcement. This gives rise to a positive evaluation of the scheme.</p>
1068	<p>Variable speed limits at intersections <i>Gunnar Lind, Ph D</i> <i>Movea Trafikkonsult AB</i> <i>Hammarby Fabriksväg 25, SE-120 33 Stockholm, Sweden</i> <i>Phone: +46 705 822708, e-mail: gunnar.lind@movea.se</i> <i>Mohsen Towliat, Ph D</i> <i>Swedish Road Administration Consulting Service</i> <i>Agneslundsv 14, S-212 15 Malmö, Sweden</i> <i>Phone: +46 40 287949, e-mail: mohsen.towliat@vv.se</i> <i>Helena Svensson, Ph D</i> <i>Swedish Road Administration Consulting Service</i> <i>Agneslundsv 14, S-212 15 Malmö, Sweden</i> <i>Phone: +46 40 287991, e-mail: helena-m.svensson@vv.se</i></p>
Return to Table 1.1	<p>The principal aims of this paper are to study car driver's different behaviour and experiences and to calculate socio-economic effects of variable speed limits when introducing variable speed limits at rural intersections. Variable speed limits were implemented at six rural intersections in Sweden to increase traffic safety and improve observance of speed limits. Evaluation shows very positive effects on car drivers' speed behaviour and socio-economic benefits. Due to the expensive technical system with automatic detection the result from the socio-economic analysis however shows a negative benefit/cost ratio at many of the sites. A parallel study has therefore been carried out to find ways to reduce both investment and operating costs.</p>

Paper Reference	Extract
1075	<p>Mobile Information Broadcast</p> <p><i>Martin Dreher</i></p> <p><i>Bayerische Medien Technik (BMT) GmbH, Pfälzer-Wald-Str. 32, D-81539 Munich, Germany, Phone: +49 89 45115110, Email: martin.dreher@bmt-online.de</i></p> <p><i>Return to Table 1.1</i></p> <p>A short introduction into the broadcast of TPEG transport and travel information taking other methods into account is presented in this paper. Then the main features of the TPEG technology are presented. The major part provides an overview of previous and current TPEG services. Starting with Bavarian and German services international services are presented as well. The TPEG services are described, i.e. which data are transmitted, how they are transmitted and who offers the services</p>
1090	<p>Managing Technological Innovation In Intelligent Transportation System Communications Infrastructures</p> <p><i>Ryan D. Lamm, Group Leader</i></p> <p><i>Network Communications and Infrastructure Group</i></p> <p><i>Intelligent Transportation Systems Department</i></p> <p><i>Automation and Data Systems Division</i></p> <p><i>Southwest Research Institute®</i></p> <p><i>6220 Culebra Road</i></p> <p><i>San Antonio, Texas USA 78238-5166</i></p> <p><i>1.210.522.5350 Telephone</i></p> <p><i>1.210.522.3396 Fax</i></p> <p><i>rlamm@swri.org</i></p> <p><i>http://www.nci.swri.org</i></p> <p><i>Return to Table 1.1</i></p> <p>Intelligent Transportation Systems (ITS) have unique deployment characteristics that affect the way and timing that new and emerging technology should be integrated. It is important for ITS managers to understand the effects of dominant design, disruptive technology, innovation, standards, and industry trends on product, technology, and system lifecycles. Industry and related examples are provided to illustrate the importance of technology management as it pertains to ITS communications infrastructures. Under this context, considerations are discussed for deploying a new or upgrading an existing infrastructure.</p>

Paper Reference	Extract
1103	<p>Introducing EGNOS And Galileo In Its For Freight Transport: The European M-Trade Project</p> <p><i>Antonella Di Fazio (1)</i> <i>Olga Landolfi, Leonardo Domanico (2)</i> 1) Telespazio <i>Via Tiburtina 965 - 00156 Rome (Italy)</i> <i>Phone: +39 06 40796329</i> <i>Fax: +39 06 40999333</i> <i>E-mail: antonella_difazio@telespazio.it</i></p> <p>2) TTS Italia - Italian ITS Association <i>Via di Priscilla 101 - 00199 Rome</i> <i>Phone: +39 06 862258206</i> <i>Fax: +39 06 86202358</i> <i>E-mail: ttsitalia@ttsitalia.it</i></p>
Return to Table 1.1	<p>M-TRADE is a project, co-funded by Galileo Joint Undertaking (GJU) in the frame of a 2nd call 6th Framework Programme contract, addressing the introduction and deployment of EGNOS / Galileo technology and applications in the freight multimodality transport User Community. M-TRADE identifies and implements an end-to-end ITS “solution”, providing services reflecting user needs and operative requirements and maximising the exploitation of Galileo / EGNOS benefits:</p> <ul style="list-style-type: none"> • Terminal remote asset localisation • Freight tracking & tracing. <p>This paper is aimed at presenting the main results of the project after one year, and its real-life on-going demonstrations and trials.</p>
1121	<p>Using Spatially Encoded Video For Highway Operation, Event Management And Maintenance</p> <p><i>Jérôme Ferré</i> <i>SAPN</i> <i>Echangeur des Essarts - B.P. 7</i> <i>76530 Grand-Couronne, France</i> <i>tel: +33 2 35 18 39 76</i> <i>j.ferre@sapn.fr</i> <i>www.sapn.fr</i></p> <p><i>David Kamnitzer</i> <i>IBI Group</i> <i>31 bis rue Victor Massé</i> <i>75009 Paris, France</i> <i>tel: +33 6 86 77 43 94</i> <i>dkamnitzer@ibigroup.com</i> <i>www.ibigroup.com</i> <i>www.routemapper.net</i></p>
Return to Table 1.1	<p>The French motorway company SAPN has invested in geo-referenced video to provide staff with access to video images of the highway network. The spatial quality of the images allows the video to be interfaced with a map display and with location referencing systems used by the SAPN.</p> <p>This article describes how the power of combined imagery and positioning within a single application has helped SAPN to improve the efficiency and quality of its operation, management and maintenance of the highway network.</p>

Paper Reference	Extract
1127	<p>Prevention And Management Of Ghost Driver Incidents On Motorways <i>Pierre VICEDO</i> <i>Deputy Director General</i> <i>Autoroutes et Tunnel du Mont-Blanc</i> <i>1440, Route de Cluses 74 138 Bonneville Cedex – France</i> <i>Tel 00 33 4 50 25 20 01</i> <i>@mail : pierre.vicedo@atmb.net</i></p>
<i>Return to Table 1.1</i>	<p>Ghost driver incidents are a concern for French motorway companies. Ghost drivers are those drivers who drive on the wrong carriageway. The accidents caused are generally of the frontal collision type. Ghost driver incidents are often deliberate violations. They are performed by elderly drivers who have lost their way and are not familiar with motorway infrastructure or its rules of use or results from behaviour caused by alcohol or drugs. Motorway operators have undertaken the prevention and management of this hazard (geometry, signalling). They are effective but insufficient. The eradication of the phenomenon can only be considered with the development of embedded systems and ITS applications.</p>
1164	<p>The Network ATM Supervisory Subsystem (NASS) As A Control Room Support Tool <i>Susan Gillard(1), John Lewis(2), Alan Cowan(3), Tim Lovell(4), Wayne Flint(5), Neal Harwood(6),</i> <i>1) WSP, UK. Colston 33, Bristol. +44(0)117930 6151. Susan.Gillard@wspgroup.com</i> <i>2) Highways Agency, UK.</i> <i>3) WSP, UK.</i> <i>4) Systems Engineering and Assessment Ltd. (SEA), UK</i> <i>5) Information Processing Ltd. (IPL), UK</i> <i>6) Transport Research Laboratory (TRL), UK</i></p>
<i>Return to Table 1.1</i>	<p>The NASS is a software tool to assist in the management and control of the motorway network, it is envisaged that it will become an Operator “decision support” tool. The primary objective of this subsystem is to predict and then reduce motorway congestion and improve safety by means of pro-active operation of control systems, such as message signs, ramp metering and controlled motorways through predictive real-time traffic modelling. NASS provides added value to existing tactical control systems and those that are still in development by predicting the overall effect of deploying combinations of systems and roadside settings.</p>

Paper Reference	Extract
1306	<p>Examining capacity increasing measures with the DYNAMEQ Model <i>Examining capacity increasing measures with the DYNAMEQ Model (equilibrium dynamic traffic assignment)</i> <i>Technical paper for the ITS World Congress London 2006</i> <i>Simon Kettner, Project Manager</i> <i>Rapp Trans Ltd</i> <i>Hochstrasse 100, CH-4018 Basel, Switzerland</i> <i>Tel: +41 61 335 77 77 - Fax: +41 61 335 77 00 e-mail: simon.kettner@rapp.ch</i> <i>www.rapp.ch</i></p>
Return to Table 1.1	<p>The paper shows, how the new equilibrium dynamic traffic assignment model DYNAMEQ was successfully applied for in a study which examined an urban motorway in the city of Basel and a system of adjacent intersections. The traffic in this region is already quite dense and it will increase far above average due to several new urban developments. The goal of the study was to find measures to increase the capacity of the road network. In the short term, there will be mostly traffic management solutions. In the long term, there are also new infrastructures that need to be evaluated. Due to the complex network and the congested traffic conditions, the evaluation of the measures had to be done using a dynamic model. DYNAMEQ was the model chosen. With this new model, it was possible to simulate an extensive part of the city traffic network with reasonable computation times. The modelling work has proved that the chosen measures lead to an acceptable traffic flow for the next 20 years.</p>
1498	<p>Dynamic Diversion Plan Generation For Use With Road Network Modelling Tools <i>Simon Wilson(1), Jennie Boyd(2), George Lunt(3), Neal Harwood(4), 1,3,4) TRL Limited, Crowthorne House, Nine Mile Ride, Wokingham, Berkshire, RG40 3GA, United Kingdom, swilson@trl.co.uk</i> <i>2) Highways Agency, Temple Quay House, Temple Quay, Bristol, BS1 6HA, United Kingdom</i></p>
Return to Table 1.1	<p>Currently, diversion plans used in UK traffic management systems are fixed and agreed by a stakeholder group. The process of deciding fixed diversion plans involves much debate which can make the process lengthy and expensive, both in the initial build process, and for maintenance in response to network changes. This paper describes the design and initial testing of an automatic diversion plan generation system, capable of generating plans in real time in response to network incidents, based on a set of pre-agreed rules. The deployment of this system in traffic control centres is expected to eliminate the need for maintaining fixed diversion plan libraries, and to make more efficient use of the UK road network.</p>

Paper Reference	Extract
1542	<p>Creating A Strategy For The Expansion Of The National Driver Information And Control System, Traffic Scotland (Formerly NADICS) <i>Roy Brannen(1), Allan Hill(2), Catherine Cross(3)</i> 1) Head of Network Operations, Transport Scotland, UK, <i>roy.brannen@transportscotland.gsi.gov.uk</i> 2) Traffic Scotland Manager, Transport Scotland, UK, <i>allan.hill@transportscotland.gsi.gov.uk</i> 3) Principal Consultant, Technology Services, Mouchel Parkman, M2 5JB, UK. T: + 44 (0) 161 838 6106, <i>catherine.cross@mouchelparkman.com</i></p>
Return to Table 1.1	<p>The Scottish Intelligent Transport System, Traffic Scotland (formerly NADICS), monitors the trunk road network and provides real time driver information. It forms a key element in Transport Scotland's strategy to develop its transport network, supporting a smart, successful Scotland. The system manages the movement of vehicles, freight and people on a national, multiple classification trunk road network. To enhance and expand the system, a strategy has been developed providing a flexible tool for determining the most appropriate ITS infrastructure on each classification of trunk road. Furthermore a matrix has been developed determining the priority of infrastructure implementation.</p>
1706	<p>Travel Time Prediction Using Probe-Car Data <i>Takashi Fujita(1), Enjian Yao(1), Yasuhiro Sugisaki(2), Jun-ichi Takeuchi(3), Kozue Hirabayashi(2), Takayuki Nakata(4),</i> 1) ITS Business Promotion Center, NEC Corporation, 1-7-5, Siba, Minato-Ku, Tokyo, Japan <i>TEL +81-3-3798-0364, FAX +81-3-3798-7426, E-mail t-fujita@dg.jp.nec.com</i> 2) NEC Soft Ltd., Japan 3) Kyushu University, Japan 4) NEC Corporation, Japan</p>
Return to Table 1.1	<p>Travel time prediction is very important to the development of Advanced Traveler Information System (ATIS) and other ITS applications such as route guidance system and traffic flow management. In this paper, a comprehensive approach including short-term, medium-term, and long-term travel time predictions based on the link travel time data collected by probe vehicle system is proposed. The suitable models for these three types of prediction and the conditions for the models' application are also identified respectively. Finally, the performance of the proposed approach is examined with the Automated Vehicle Identification (AVI) data, and the accuracy and the practicability are identified successfully.</p>
1833	<p>What's In A Business Case For An ITS Application Facilitator? <i>CJ Duffy(1), TI Woodward(2)</i> 1) Systems Engineering & Assessment Ltd, SEA House, PO Box 800, Fishponds, Bristol BS16 1SU UK Tel: +44 (0) 1373 852170 E-mail <i>chris.duffy@sea.co.uk</i> 2) Systems Engineering & Assessment Ltd, UK</p>
Return to Table 1.1	<p>Constructing a business case for an ITS application is, in principle, a straight forward exercise. For a facilitator of ITS applications, business case development is less clear since the facilitator does not provide direct benefits, relying on the applications it facilitates to deliver benefits. This paper outlines a bespoke approach to the consideration of business cases for facilitators of ITS applications on-board vehicles. The key to this approach is the actual identification of the type of benefits accrued and their relative assessments. The approach is exemplified by reference to a recent ITS project where such a business case was developed</p>

Paper Reference	Extract
1839	<p>Motorway Emergency Lane Use For Public Transport</p> <p>1) Fabien DREVETON <i>ISIS, ITS Expert</i> 78 rue de la villette 69425 LYON CEDEX FRANCE Tél : +33 603 841 503 Email : f.dreveton@isis.tm.fr</p> <p>2) Roland DOLLET DDE 38 from French Road Ministry 17 bd Joseph VALLIER 38100 GRENOBLE Tél : +33 438 123 138 Email : roland.dollet@equipement.gouv.fr</p>
<i>Return to Table 1.1</i>	<p>This paper details the experimental active traffic management system on the A48 motorway in France. When operational measures alone are not sufficient to cope with congestion, the hard shoulder (emergency lane), widened to 3.5 metres and restructured to allow for traffic use, becomes available for use by emergency service vehicles and authorised scheduled buses. Installations are of a permanent nature (width, colour of road surface, sign and a variety of ITS equipment). Maximum speed on this additional lane, when brought into use for buses, is limited between 20 and 50 km/h, depending on the speed of the general traffic.</p>
1882	<p>A systematic approach to measuring the quality of RDS TMC services</p> <p>Andrew Hart <i>Secured By Design Ltd</i> The Old Brewery The Stocks Cosgrove MK19 7JD +44 (0) 1908 305 101 andrewhart@sbd.co.uk</p>
<i>Return to Table 1.1</i>	<p>This paper provides a systematic methodology for measuring the quality of RDS TMC services. RDS TMC has reinforced its position as the only feasible solution for pan-European dynamic route guidance in the short-medium term, and the market is now showing signs of maturity with competing services becoming established in an increasing number of countries. With this increasing level of maturity has come a shift of focus from coverage expansion to quality improvement. However, measuring the quality of traffic information continues to be a difficult task, as it requires a highly dynamic monitoring of traffic conditions such as extent, effect and cause. With the demand for RDS TMC increasing rapidly alongside both embedded and portable navigation sales, there are considerable commercial benefits to be obtained from quantifying the quality of RDS TMC services. This paper presents SBD's systematic approach for the large-scale comparison of RDS TMC messages to the real-world situation, while additionally taking into account the process by which individual service providers implement the RDS TMC standard.</p>

Paper Reference	Extract
2011	Intelligent Highway Surveillance System With Speed Control And Vehicle Identification
<i>Return Table 1.1</i>	to This paper presents the concept and the implementation solution for the integrated highway traffic surveillance system with speed radar embedded. This concept has already been implemented for one of the busiest routes in Romania and the results are very good, increasing safety and security on highway. The system is also used as an experimental system for statistics and automatic vehicle identification and check. The technical solution is based on video cameras and radar sensors connected on a high reliability data network, operated by the Police, using three different dispatching centres located along the way.
2100	Influence Of Variable Speed Limit And Driver Information System On Key Traffic Flow Parameters On A German Autobahn <i>Valentin STAN (Ph.D.s. Eng.)</i> <i>Research scientist, ITS Romania</i> <i>Associate Professor, University Politehnica Bucharest</i> <i>valentin.stan@iqinvent.ro</i>
<i>Return Table 1.1</i>	to This paper examines key freeway capacity parameters for an 18-kilometer segment of a German autobahn that contains a surveillance system and a variable speed limit and congestion level information system using overhead variable message signs located on gantries. This paper includes an analysis of the relationships between vehicle flow, density, and speed surrounding an active bottleneck. The relationships between key traffic flow parameters have been based on reproducible traffic features observed on multiple days. Further, the speed/flow relation for various proportions of heavy vehicles is investigated and results are presented.
2146	Effects of AHS for Safety in Curve Section <i>Harutoshi Yamada*, Setsuo Hirai*, Hideto Hatakenaka*, Takayuki Hirasawa*, Isao Yamazaki*, Hiroyuki Mizutani**</i> <i>* Intelligent Transport System Division, National Institute for Land and Infrastructure Management, Ministry of Land, Infrastructure and Transport (e-mail: hirai-s2xp@nilim.go.jp)</i> <i>** Practical System Promotion Department, Advanced Cruise-Assist Highway Research Association (AHSRA)</i>
<i>Return Table 1.1</i>	to The National Institute for Land and Infrastructure Management (NILIM) and the Advanced Cruise-Assist Highway System Research Association (AHSRA) have been promoting R&D for the Advanced Cruise-Assist Highway Systems (AHS). Metropolitan Expressway #4, Shinjuku Line, Sangubashi area is one of the locations for the AHS field tests on actual roadways that have been underway since the beginning of the 2002 financial year. The objective of the pilot program, implemented in the Sangubashi area from March-May 2005, was to reduce rear-end collisions, side collisions and decrease dangerous conditions under which near misses occur by providing information to regular vehicles through the already widespread use of devices installed in cars. The results verified effective accident reduction and improvement in vehicle behaviour, illustrating the effectiveness of the AHS service. 1 We initiated an additional, long-term pilot study in September 2005 and are evaluating long-term effectiveness. This paper discusses the results of verification of the long-term effectiveness Vehicle- Highway System services obtained from the pilot study.

Paper Reference	Extract
2227	<p>Privacy And Distance Based Charging For All Vehicles On All Roads <i>Stefan Eisses¹, Wiebren de Jonge² and Vincent Habers³</i> 1. Rapp Trans NL – Get ID B.V., P.O Box 2976, 1000 CZ Amsterdam, The Netherlands, Phone +31 6 45696864, stefan@getid.nl 2. Vrije Universiteit and Tip Systems B.V., The Netherlands, wiebren@cs.vu.nl 3. Rapp Trans NL – Get ID B.V., The Netherlands, vincent@getid.nl</p>
Return to Table 1.1	<p>Privacy concerns for a distance-based charge for all motor vehicles on all roads are of a more serious nature than for existing implementations of electronic tolling or congestion charging systems. Privacy legislation favours On-Board Aggregation over Central Aggregation solutions. As the impact of either concept on costs, risks and other aspects is not sufficiently clear yet, both types of options still have to be kept open and investigated further.</p>
2241	<p>Addressing UK Government Concerns About Robust Vehicle Identification <i>Simon Smith, Managing Consultant, and Simon Duke, Principal Consultant, PA Consulting Group, Cambridge Technology Centre, Melbourn, SG8 6DP, United Kingdom. Tel : +44 (0) 1763 261222, Fax : +44 (0) 1763 267588, Email : simon.smith@paconsulting.com and simon.duke@paconsulting.com</i></p>
Return to Table 1.1	<p>Readers will gain an appreciation of both the UK case for Electronic Vehicle Identification (EVI) and an approach to quantifying the benefits of deploying telematics that facilitates good communication between policy makers, technologists and implementers.</p>
2252	<p>Trends In TMC Operations & Maintenance <i>Dr. Robert Edelstein, P.E., PTOE</i> DMJM Harris / AECOM, USA 13450 West Sunrise Boulevard, Suite 200, Sunrise, Florida 33323 Phone: (954) 745-7260 Email: robert.edelstein@dmjmharris.com</p>
Return to Table 1.1	<p>This paper shares trends in operating and maintaining (O&M) Transportation Management Centres (TMC) within the United States. These trends are focused on improving the effectiveness of intelligent transportation system (ITS) investments in terms of traffic management, incident management, traveller information and emergency management. Such trends include the following: performance measures; outsourcing; partnerships; centre-to-centre interfaces; staff development; public / private partnerships; automation of O&M processes; and integration of ITS and Electronic Toll Collection system operations. Best practices are shared based on O&M experiences within Florida, Virginia and Rhode Island. The paper closes with a discussion of future directions in the industry.</p>
1006	<p>Traffic Officer Service Technologies I J CHALMERS RCC TECHNOLOGY TEAM LEADER HIGHWAYS AGENCY, UNITED KINGDOM TELEPHONE : 0117 3728979 EMAIL: i-chalmers@highways.gsi.gov.uk</p>
Return to Table 1.1	<p>This paper reports on the technology solutions that have been introduced by the Highways Agency in order to meet the needs of its Traffic Officer service. It gives an outline of the process followed to ensure user requirements were identified, scope creep avoided and budgets met. It describes the Key Assumptions made by the Highways Agency and the technological solutions adopted to meet those user needs. It shows the programme for the deployment of these solutions covering initial service, full service and full capability together with the migration of 31 Police Control Offices (PCO's) into the Highways Agency's 7 Regional Control Centres (RCC's). It reports the Lesson's learnt by the Highways Agency and outlines plans for the future.</p>

Paper Reference	Extract
1178	<p>Customers First: The Contribution Made By England's National Traffic Control Centre</p> <p><i>Gary Stockbridge BSc CEng MICE MIHT Group Manager, Information Directorate Highways Agency 5 Broadway Broad Street Birmingham B15 1BL England</i></p>
Return to Table 1.1	<p>The services provided by the Highways Agency's National Traffic Control Centre are key to satisfying the objectives of providing better information to travellers and ensuring more reliable journeys. This paper describes the context within which the control centre has been delivered; the means by which it collects data on conditions on England's motorway and all-purpose trunk road network; how that data is analysed; and the means by which information is disseminated to the general public. These services are providing the catalyst for the development of traffic information delivery tools by the Agency and private sector information providers.</p>
1377	<p>The Implementation And Benefits Of PFI To The Delivery Of "Intelligent Transport System" Projects</p> <p><i>David Threlfall(1), Departments Agent Phil Graham(2), Deputy Project Leader 1) Hyder Consulting, 5/F The Pithay, All Saints Street, Bristol BS1 2NL Tel:+44 (0)7775 935285 e-mail: david.threlfall@hyderconsulting.com 2) Highways Agency, 2 The Square, Temple Quay, Bristol BS1 6HA Tel:+44 (0)117 3728938 e-mail: phil.graham@highways.gsi.gov.uk</i></p>
Return to Table 1.1	<p>The "National Roads Telecommunications Services" (NRTS) Project is a 10½ year deal to outsource provision of telecommunications services to support ITS on England's strategic road network. This paper addresses the lessons learnt of implementing a PPP/PFI tender. The aim of the deal was to amalgamate twenty eight bespoke analogue or bespoke digital circuits into a single "State of the Art" digital system capable of increased resilience. This would result in improved connectivity to the National and Regional Control Centres using internet protocols. Allowing the Agency to become an effective Network Operator.</p>

Paper Reference	Extract
1517	<p>The Evaluation of Dynamic Road Marking for White Line Replication</p> <p><i>Jennie Boyd, BEng (Hons), MIET(1).</i></p> <p><i>Dene Percy, BEng (Hons), MIET, AMIHT(2).</i></p> <p><i>Kerry Lambton, BEng (Hons), MSc, MIET, MIHT(3).</i></p> <p><i>Amanda-Jayne Wilson MEng, MIET(4).</i></p> <p>1) <i>Project Sponsor, Highways Agency, Bristol, email: jennie.boyd@highways.gsi.gov.uk</i></p> <p>2) <i>Principal Engineer, WSP ITS, Bristol, tel: 0117 930 2072, email: dene.percy@wspgroup.com</i></p> <p>3) <i>Engineer, WSP ITS, Newcastle, tel: 0191 233 4227, email: kerry.lambton@wspgroup.com</i></p> <p>4) <i>Engineer, WSP ITS, Bristol, tel: 0117 930 2016, email: amanda.wilson@wspgroup.com</i></p> <p>Return to Table 1.1</p> <p>The principal objective of this study is to evaluate Dynamic Road Marking (DRM) technologies suitable for the replication of white lines. These technologies can be used to actively adapt the road layout in response to varying traffic conditions and therefore have the potential to increase road capacity, thus reducing congestion. Working in partnership with the Department for Transport (DfT), DRM manufacturers and their agents, the Highways Agency are carrying out a controlled evaluation (both test track and laboratory) of three DRM technologies in order to establish clear performance, application and implementation guidance. The evaluation of the DRM technologies is being assessed under the following performance criteria: Optical, Environmental, Installation and Maintenance, User Acceptance/Perception and Control. This paper presents the progress of the evaluation to date and identifies a positive way forward for the potential application and implementation of DRM technologies</p>
1649	<p>Highways Agency Traffic Information System - The Systematic Collection And Analysis Of Traffic Flow And Congestion Information</p> <p><i>David Pearce(1), Barbara Frith(2)</i></p> <p>1) <i>Highways Agency, City Tower, Manchester, M14BE, UK, +44 (0)161 930 5672 David.Pearce@Highways.gsi.gov.uk</i></p> <p>2) <i>TRL Ltd, UK</i></p> <p>Return to Table 1.1</p> <p>The Highways Agency Traffic Information System (HATRIS) holds journey times and traffic flows for each link of the network of motorways and major "A" roads in England managed by the Highways Agency. The data is held for every 15-minutes of the year and is obtained by combining data of three different types - inductive loops, automatic number plate recognition cameras, and GPS tracked vehicles.</p> <p>This paper describes the different sources of data in more detail, how the data is collected and processed, and how it is used to support performance management and to provide information to road users</p>

Paper Reference	Extract
1452	<p>Highways Agency Active Traffic Management: Initial Driver Reactions To Its Implementation On The M42</p> <p><i>Robert Stewart, Highways Agency, MIET, Travel & Traffic Systems Group, Zone 2/15E, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6HA, United Kingdom, +44 (0)117 372 8665, robert.stewart@highways.gsi.gov.uk</i></p> <p><i>Mike Freeman, Transport & Travel Research Ltd, MAPM, Arundel House, 6 Portland Square, Bristol, BS2 8RR, United Kingdom, +44 (0) 117 907 6520, mike.freeman@ttr-ltd.com</i></p> <p><i>Neil Taylor, Transport & Travel Research Ltd, 39 Stoney Street, Nottingham, NG1 1LX, United Kingdom, +44 (0) 115 941 1141, neil.taylor@ttr-ltd.com</i></p> <p><i>Davina Fereday, Transport & Travel Research Ltd, The Bourse Centre, Suite 107, 47 Timber Bush, Leith, Edinburgh, EH6 6QH, United Kingdom, +44 (0) 131 555 7562, davina.fereday@ttr-ltd.com</i></p> <p>The Active Traffic Management (ATM) system being piloted on the M42 aims to tackle congestion, providing safer travel, better information and smarter roads. This paper outlines some preliminary results of a study that has focused on the initial driver reaction to ATM to provide the Agency with early feedback from their customers using the ATM system. The results have identified important issues that will inform the potential deployment of ATM on other areas of the HA network.</p>
1126 Return to Table 1.1	<p>A Flexible Approach To Motorway Control</p> <p><i>Brian Harbord¹, Joanna White², Keith McCabe³, Andy Riley⁴, Steve Tarry⁵</i></p> <p><i>1. The Highways Agency, UK, +44 (0) 117 372 5, E-mail: brian.harbord@highways.gsi.gov.uk</i></p> <p><i>2. The Highways Agency, UK, +44 (0) 117 372 6327, E-mail: joanna.white@highways.gsi.gov.uk</i></p> <p><i>3. Atkins, UK, +44 (0) 113 205 1245, Email: keith.mccabe@atkinsglobal.com, Address: The Old Brewery, High Court, The Calls, Leeds, West-Yorkshire, LS2 7ES, England</i></p> <p><i>4. Atkins, UK, +44 (0) 113 205 1200, Email: andy.riley@atkinsglobal.com</i></p> <p><i>5. Faber Maunsell, UK, +44 (0) 121 262 1904, Email: Steve.Tarry@Fabermaunsell.com</i></p> <p>This paper describes recent work undertaken by the UK Highways Agency to consolidate the experience gained from the implementation of Controlled Motorway and Ramp Metering Schemes, in addition to the innovative Active Traffic Management Pilot Scheme. A flexible approach to motorway control is described that can address a particular problem at a specific location at a given time via combined and coherent use of available traffic control measures based on Intelligent Transport Systems (ITS). The form of control will be based on the available physical infrastructure (e.g. gantry or post mounted signals) used in different ways at different times. The traffic problem may change over time, which requires flexibility in the control algorithms to cope with changing circumstances.</p>

Paper Reference	Extract
1170 <i>Return to Table 1.1</i>	<p>Active Traffic Management Interim Results Of The Before And After Monitoring Project</p> <p><i>Mr Robert Meekums, Dr Joanna White</i></p> <p><i>1. Mott MacDonald, England, Stoneham Place, Stoneham Lane, Southampton, Hampshire, ENGLAND, SO50 9NW, bob.meekums@mottmac.com Tel: +44 (0)2380628730, Fax: +44 (0)2380628801</i></p> <p><i>2. Highways Agency, England</i></p> <p>This paper gives an update on the progress of the monitoring and evaluation task being undertaken by Mott MacDonald on behalf of the English Highways Agency. This paper includes interim results of the analysis for 3 lane mandatory Variable Speed Limits. Further analysis is currently ongoing and once 4 lane mandatory Variable Speed Limits has been launched a similar analysis and reporting process will be undertaken.</p>
1922 <i>Return to Table 1.1</i>	<p>Low Cost CCTV</p> <p><i>Mark Sharp¹, Steve Helliwell²</i></p> <p><i>1. Highways Agency, Temple Quays House, 2 The Square, Temple Quays, Bristol BS1 6HA, UK. Mark.Sharp@highways.gsi.gov.uk</i></p> <p><i>2*. Atkins, The Old Brewery, The Calls, High Court, Leeds, LS2 7ES, UK Steve.Helliwell@atkinsglobal.com</i></p> <p>Closed Circuit TeleVision (CCTV) systems are a useful tool for managing the interurban highway network. They allow control room operators to provide appropriate response to incidents and events on the highway. CCTV infrastructure in the interurban environment has been expensive to provide adequate coverage of the whole network. This paper seeks to address this by investigating the possibilities of reducing the cost of implementing individual sites. The paper is based on work undertaken for the UK Highways Agency to improve the business case for CCTV. The output is guidance on how to identify and implement CCTV at lower cost.</p>