

# ITS Radar International

ITS Radar International Ad Hoc Report:  
ITS World Congress, Stockholm - 21st to 25th September 2009

October 2009

## CLIENT PROJECT REPORT

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### CLIENT PROJECT REPORT 555

#### ITS RADAR INTERNATIONAL AD HOC REPORT: ITS WORLD CONGRESS, STOCKHOLM - 21ST TO 25TH SEPTEMBER 2009

Version: Final

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**Client:** Network Services Highways Agency  
(Graham Seaton)

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## ITS Radar International Ad Hoc Report: ITS World Congress

### Stockholm (21st to 25th September 2009)

## Summary

Date:	12 October 2009	Report initiator	David McGuigan
Version:	Final	Compiled by:	Sandeep Bairwa
Report area:	Relevance to the Highways Agency of projects presented at the ITS World Congress.		
Summary:	<p>This document identifies 50 papers relevant to the Highways Agency that were presented at the 16<sup>th</sup> World Congress and Exhibition on Intelligent Transportation Systems and Services held in Stockholm.</p> <p>The 16<sup>th</sup> World Congress and Exhibition on Intelligent Transportation Systems and Services presented work on the latest developments, policies and practices in the ITS industry from all over the world. The event encouraged presentations on ITS deployment throughout Europe and implementation of research results into operational systems and services with a view to providing benefits for transport and traffic managers, road users and other travellers.</p> <p>Key topics included: climate change and transport, smart freight, cooperative vehicle infrastructure systems, sustainable transport, alternative fuels, and for the first time covered all modes of transport. With many parallel sessions and an extensive exhibition and numerous meetings organised on the fringes of the Congress, understanding the real messages and the potential impact is a real challenge.</p>		
Instructions:	<p>The Papers Index is a table of papers from the congress that were of relevance to the Highways Agency. The table contains the paper title, a short description and a categorisation against key types of ITS. In the left column is the paper reference. This links to the papers abstract - press the 'Ctrl' key and left click the mouse on the reference to move to the abstract later in the document.</p> <p>The Paper Extracts section contains full referential details of the papers listed in the index, along with their abstracts. In some cases, the original abstracts have been edited to clarify their content.</p> <p>To obtain papers from the ITS World Congress, HA staff should contact: <a href="mailto:ben.catchesides@highways.gsi.gov.uk">ben.catchesides@highways.gsi.gov.uk</a> (tel: 0117 372 6064). Alternatively, copies of the congress CD, which includes all of the papers listed here, are available to purchase from the congress <a href="#">web site</a>.</p>		

## Papers Index

Reference	Paper Title	Subject	Relevance to the HA	County of Origin	European Policy	European Research	Pilots	Technologies	Standards	Location Positioning
<a href="#">TS035 – 3369</a>	Spatio-temporal search algorithm and weather impact integration for travel time prediction based on motorway toll data	Travel planning	The paper presents the results of the route planning tool development project (French regional Project, TPTEO) on the Rhone Alps motorway network.	France		✓				
<a href="#">TS057 – 3221</a>	ROSATTE: incremental updates of road safety attributes databases, a motorways operator point of view	Travel guidance	The paper details the objectives, first results and ongoing work of the ROSATTE European project which intends to define common road safety data formats and set data exchange mechanisms between road network operators and map providers.	France		✓		✓		✓
<a href="#">TS105 – 3419</a>	Managed motorways: a change in policy equals a reduction in carbon	Motorway management	The paper presents the potential reduction in carbon footprint with the application of hard shoulder running on motorways during congestion. The analysis shows a reduction of 850,000 tonnes of carbon over a carriageway length of 546km.	UK		✓				
<a href="#">TS105 – 3504</a>	M42 Active Traffic Management pilot, initial results from hard shoulder running under 60mph speed limit	Motorway management	The results of the Active Traffic Management (ATM) project on M42 are evaluated. The results suggest an improvement in journey times but with a speed limit of 60 mph, no increase in throughput is observed compared with a speed limit of 50 mph.	UK		✓	✓			
<a href="#">TS105 – 3689</a>	Temporary hard shoulder use in Hesse – effects on traffic flow and road safety	Motorway management	The paper examines effects of temporary usage of the hard shoulder lane. The results suggest increased road capacity and no changes to road safety.	Germany		✓				
<a href="#">TS105 – 3805</a>	Robust hard shoulder monitoring: Theory and application of the HASMOS system	Motorway management	The paper presents architecture and results of the HASMOS hard shoulder detection system. The results include the trial performed on M42 on behalf of the Highways Agency.	UK		✓	✓	✓		
<a href="#">TS114 – 3319</a>	Improvements to ramp metering system in England: VISSIM modelling of improvements	Motorway management	The paper describes the improvements over the currently implemented ramp metering equipment in England.	UK		✓				
<a href="#">TS114 – 3320</a>	Improvements to ramp metering system in England: detailed description of algorithm development	Motorway management	The paper describes benefits realised from an algorithm developed for ramp metering sites in England. The key results include reduction in calibration effort, improvement in system performance and implementation on motorway junctions.	UK		✓				

# ITS Radar International Ad Hoc Report

Reference	Paper Title	Subject	Relevance to the HA	Country of Origin	European Policy	European Research	Pilots	Technologies	Standards	Location Positioning
<a href="#">TS115 - 3128</a>	Truck parking reservation at German highways	Motorway management	The paper presents the implementation and pilot phase of the Truck Parking Reservation System: "Highway Park", started in Germany in 2008. The high demand for parking spaces required by trucks at and near highways is addressed in this paper.	Germany	✓	✓	✓			
<a href="#">IS04 – 2970</a>	Narrow time headway and its impact on reducing the speed enforcement camera effectiveness	Incident detection / alerts	This paper describes a new tool for controlling speed and time headway in parallel to reduce accidents.	Iran				✓		
<a href="#">IS04 – 3455</a>	Safety Tutor: nationwide effective speed enforcement infrastructure	Traffic monitoring	The paper describes the innovative and sophisticated motorway speed enforcement system implemented progressively on the Italian toll motorway network. The Safety Tutor is a part of an integrated enforcement system which allows the detection of violations along the national high speed road facilities.	Italy		✓		✓		
<a href="#">IS04 – 3636</a>	Automatic time-over-distance speed checks: Impacts on driving behaviour and traffic safety	Traffic monitoring	The paper describes the initial work on implementation of automatic time-over-distance checks to study the effects on driving behaviour and traffic safety in the Swiss environment. Data evaluation is currently in progress.	Switzerland		✓	✓			
<a href="#">IS28 – 3427</a>	Running lane detection system and a driving support system for merging onto and exiting from expressway	Vehicle safety systems	The paper describes a running lane detection system which has been developed to enable vehicles to support drivers merging and leaving expressways.	Japan			✓	✓		✓
<a href="#">IS30 – 3305</a>	Post-deployment benefits from Auckland's active Ramp Signalling System	Traffic monitoring	The paper describes the Ramp Signalling project installed by the New Zealand Transport Agency in 2007/08 to study safety, efficiency and reliability, customer satisfaction, and the effects on the non-motorway arterial network. The key benefits of the system are discussed such as optimisation of ramp signals.	New Zealand				✓		
<a href="#">IS30 – 3385</a>	The procurement of ITS projects in New Zealand	Motorway management	This paper focuses on procurement of services required in conjunction with the roll out of ramp signalling across the whole of the urban motorway network of Auckland.	New Zealand					✓	
<a href="#">IS31 – 3764</a>	Evaluation of recommended variable speed limits for motorway traffic control: The case of E4 in Stockholm	Motorway management	This paper evaluates the impact of recommended versus mandatory Variable Speed Limit (VSL) on the E4 motorway in Stockholm using micro-simulation. The paper aims to evaluate the impact of the level of driver compliance to VSL.	Sweden		✓				
<a href="#">IS32 – 3381</a>	Managing traffic in real time – goals and outcomes from the Auckland motorway ramp signalling project	Motorway management	This paper describes the planning, design, construction and initial outcomes of the Auckland ramp signalling project.	New Zealand				✓		

# ITS Radar International Ad Hoc Report

Reference	Paper Title	Subject	Relevance to the HA	Country of Origin	European Policy	European Research	Pilots	Technologies	Standards	Location Positioning
<a href="#">IS33 – 3333</a>	Using probe vehicle speed data to assess the accuracy and reliability of the traffic monitoring stations on freeways	Traffic monitoring	The paper evaluates the accuracy and reliability of data gathered in Traffic Monitoring Stations through loop detectors on freeways.	USA					✓	✓
<a href="#">IS34 – 3062</a>	The M25 IDM project – Network management on the London orbital motorway	Motorway management	The paper presents a review of the Integrated Demand Management project on M25 orbital motorway. The project results promote reliable journey times and better informed travellers across the road network.	UK		✓				
<a href="#">IS34 – 3269</a>	An integrated simulation system study for automated truck lane on intercity expressways	Automated enforcement	The paper present simulations for the implementation of the Automated Truck Lane (ATL) to cope with some problems caused by increasing freight transportation demand. It includes simulation test results for intercity expressways.	Japan					✓	
<a href="#">TS007 – 3719</a>	Testing Anti-accident systems: a large scale field operational test in the Netherlands	Anti-Accident Systems	The paper presents the details of the organisational process and outcomes from the large scale Field Operational Test (FOT) undertaken during 2008 and 2009 on over 2400 commercial vehicles. The FOT has led to some promising results regarding use of 'Anti-Accident Systems' (AAS) in practice. The results are briefly discussed and the paper concludes with a list of relevant learning points for future projects.	Netherlands		✓				
<a href="#">TS008 – 3936</a>	iROAD – cooperative road infrastructure systems for driver support	Anti-Accident Systems	This paper discusses the design and implementation of cooperative road infrastructure systems, which use an intelligent road surface.	Sweden		✓				
<a href="#">TS008 – 4035</a>	Development of energy-saving automatic driving support technology for advanced ITS	In-Vehicle systems	The paper presents the development of a trial of automatic driving technology to investigate the energy saving effects.	Japan			✓	✓		
<a href="#">TS008 -3384</a>	Cooperative Adaptive Cruise Control: Field testing of driver use and acceptance	In-Vehicle systems	The paper describes the results of a field test in which the behaviour of naïve drivers was observed while they were driving a commercially available Adaptive Cruise Control (ACC) system and a prototype Cooperative ACC (CACC) system.	USA				✓		
<a href="#">TS008 – 3345</a>	Towards advanced information extraction in cooperative driving support systems	In-Vehicle systems	In this paper, a novel information extraction approach is presented as a part of a cooperative driving support system (I-WAY). Fusion of geo-referenced information is used to improve the quality of information, exploiting events interrelationships.	Greece		✓				
<a href="#">TS008 – 3183</a>	Vehicle positioning for cooperative systems – the SAFESPOT approach	In-Vehicle systems	The paper describes the European integrated project for accurate and reliable vehicle positioning. It presents the main components of this development including landmark-based positioning using cameras or laser scanners, infrastructure-based UWB-positioning (Ultra-wideband), and communication based relative positioning. The integration of these technologies as well as evaluation results are presented and discussed.	Germany		✓				✓

# ITS Radar International Ad Hoc Report

Reference	Paper Title	Subject	Relevance to the HA	Country of Origin	European Policy	European Research	Pilots	Technologies	Standards	Location Positioning
<a href="#">TS008 – 3138</a>	A DSSS onboard unit for 2008/2009 field operation test	In-vehicle	The paper presents a new cooperative Driving Safety Support System (DSSS) based on a previous developed system.	Japan				✓		
<a href="#">TS010 – 3005</a>	Open-loop and closed loop control for ramp metering in traffic flow	Traffic monitoring	The paper presents a local ramp metering control system to reduce congestion and minimise Total Time Spent (TTS).	France		✓				
<a href="#">TS010 – 3089</a>	Coordinated ramp metering: A case study with the HERO algorithm	Traffic monitoring	The paper presents a simulation experiment on a coordinated ramp metering system to suggest improvements for future implementations.	Netherlands		✓				
<a href="#">TS015 - 3755</a>	Scenario-based planning of traffic management strategies	Traffic management	This paper presents a prototype tool for traffic management planning tasks. The tool follows the concept of scenario evaluation and provides an integrated system for scenario management, demand modelling, strategy simulation and analysis.	Germany		✓				
<a href="#">TS040 – 2879</a>	Traffic Counts – New methods of traffic counting in North Rhine-Westphalia	Traffic management	The paper presents the new methods implemented to cover the 2010 traffic census in Germany which promise future advancements in the field of automated traffic counts.	Germany				✓	✓	
<a href="#">TS040 – 3693</a>	Intelligent Roads - INTRO	Traffic management	The paper describes the INTRO project which aims to demonstrate how safety, road capacity, road operation and maintenance problems can be improved or simplified by the use of existing infrastructure.	Sweden		✓			✓	
<a href="#">TS040 – 3970</a>	Vehicle dynamic mobility models (M-Models) subsidiary of vehicle movement energy transfer to pavement	Traffic management	The paper describes the Smart Pavement Material (SPM) standalone equipment for road monitoring that can be embedded in the pavements as intelligent highway infrastructure.	USA				✓		
<a href="#">TS069 – 3158</a>	A real-time speed limit sign detection and recognition system	Traffic management	The paper presents a real-time speed limit sign detection and recognition system.	China				✓		
<a href="#">TS069 – 3493</a>	Improvement of traffic flow by preview speed control using ITS communication systems	Traffic management	This paper proposes a preview speed control system for suppression of shockwave propagation to prevent traffic congestion.	Japan				✓		

Reference	Paper Title	Subject	Relevance to the HA	Country of Origin	European Policy	European Research	Pilots	Technologies	Standards	Location Positioning
<a href="#">TS069 – 3673</a>	Traffic data extraction for road safety improvement	Traffic management	This paper demonstrates the benefit of scanning perception systems, especially scanning radars, for vehicle detection in ITS applications.	France				✓	✓	
<a href="#">TS072 – 3388</a>	Forward collision risk assessment method for individual adaptation of braking assistance system	In-vehicle system	This paper proposes an individual adaptation algorithm for forward collision avoidance with braking assistance system.	Japan				✓	✓	
<a href="#">TS072 – 3716</a>	Location based dynamic content delivery for intelligent transportation: In-vehicle signage	In-vehicle signage	This paper describes the delivery of location based dynamic content to wirelessly connected units like OBE(On Board Equipment) in cars, mobile phones, hand held devices and internet applications, and how such services can be provided in the vehicle and telematics space.	USA						✓
<a href="#">TS077 – 4111</a>	A case study about the traffic prediction under accidents using dynamic traffic simulation on Tokyo metropolitan expressway	Traffic management	The paper presents a case study of traffic prediction using dynamic traffic simulation including a route choice model on the Tokyo Metropolitan Expressway (MEX).	Japan				✓		
<a href="#">TS082 – 3098</a>	The new Tomei Expressway project creates new road to the future	Traffic management	The paper shows the plan for the new expressway project, including ITS technologies to connect major metropolitan areas of Tokyo.	Japan				✓	✓	
<a href="#">TS082 – 3916</a>	Migrating autonomous vehicle capabilities from the laboratory to the highway	In-vehicle system	Southwest Research Institute (SwRI®) established a US\$5 million internal research and development program. The institute is developing a full scale intelligent vehicle platform to be used for advanced engineering driver assist applications development. The paper discusses deploying these advanced technologies in vehicles using low cost computers and sensors.	USA				✓		
<a href="#">TS082 – 3556</a>	Safety impacts of I-V cooperative systems	Traffic management	COOPERS is one of the three European Integrated Projects which focus on development, testing and evaluation of cooperative systems for improving safety on motorways. This paper describes the field test implemented for the study of safety impacts of COOPERS in-vehicle information services.	UK		✓			✓	
<a href="#">TS088 – 2933</a>	Active safety in road vehicles – developing testing and evaluation methods for ICT-based safety systems	In-vehicle system	This paper presents the details of performance testing programs in place for active safety systems in vehicles.	Sweden		✓			✓	
<a href="#">TS088 – 3092</a>	Driver acceptance of alerts in the pre -crash phase of intersection incidents	In-vehicle system	This paper evaluates an empirical approach used to measure the extent to which drivers are in favour of the alerts raised by an active safety system for intersection accidents.	Sweden		✓				

Reference	Paper Title	Subject	Relevance to the HA	County of Origin	European Policy	European Research	Pilots	Technologies	Standards	Location Positioning
<a href="#">TS089 – 3851</a>	Implementation and evaluation of an adaptive CCTV display system for incident detection for the Highways Agency	Traffic management	This paper describes the implementation of an adaptive CCTV Automatic Incident Detection (AID) system which mitigates the high occurrences of false alarms.	UK		✓		✓		
<a href="#">TS090 – 2907</a>	An estimation method of congestion length using pulse data of vehicle detector	Traffic management	This paper describes a method to estimate congestion length using pulse data from vehicle detectors which is to be implemented in various locations in Tokyo.	Japan				✓		
<a href="#">TS092 – 3403</a>	EUROFOT : European large-scale Field Operational Test on active safety systems	Traffic management	This paper presents the details and the first year results of the assessment program for advanced active safety systems in cars and trucks, based on Field Operational Tests (FOT) with normal drivers in ordinary traffic.	Germany		✓		✓		
<a href="#">TS116 – 3244</a>	Road status sensors – a comparison of active and passive sensors	Traffic management	This paper describes the output of a passive and an active sensor when the sensor has been contaminated with common chemicals that can be present on the road surface such as oil, alcohol and glycol. The results indicate that only intelligent active sensors can reliably detect freezing points on the road surface.	Sweden		✓		✓	✓	
<a href="#">TS112 – 3771</a>	Reflections on cooperative urban applications – Truly cooperative	In vehicle system	The paper outlines the results of the cooperative technology implemented at the Helmond test site in the Netherlands.	Netherlands		✓		✓		
<a href="#">TS112 – 3217</a>	Evaluation of advanced cruise-assist highway systems for safety based on verification tests	In vehicle system	This paper presents an overview of evaluation methods employed to study the Advanced Cruise-assist Highway System (AHS) using examples of the proving tests and Field Operational Tests (FOT).	Japan				✓		

## Papers Extracts

Paper Reference	Extract
TS035 – 3369	<p>Nour-Eddin El Faouzi, Salim Bouzebda, Romain Billot, “<i>Spatio-Temporal Search Algorithm and Weather Impact Integration for Travel Time Prediction Based on Motorway Toll Data</i>”, ITS World Congress</p> <p>This paper reports results of the French regional project (TPTEO), aiming at developing and implementing a route planner tool and travel time prediction system on the Rhone Alps motorway network managed by the AREA Company. One of the main features of this project is the use of toll collection data (TCD) to derive speed and travel time. This data source is becoming more and more available on motorway facilities in real time. It provides an efficient way not only to estimate and predict travel time but also to deal with Origin-Destination (OD) matrices and find trends in traffic. Based on the previous analyses on weather effect quantification, the prediction algorithm is designed to account for the weather impact. The promising results pave the way for developing weather responsive advanced traffic management and road traffic information systems.</p> <p style="text-align: right;"><a href="#">back</a></p>
TS057 -3221	<p>Franck Petit, Camille Delorme, Ramdane Mahiou, “<i>ROSATTE: Incremental Updates Of Road Safety Attributes Databases a Motorway Operator Point of View</i>”, ITS World Congress</p> <p>Accurate and up-to-date safety related road attributes are needed for various ITS applications, but the situation throughout Europe is very heterogeneous in this regard. This paper details the objectives of the ROSATTE European project, which intends to define common road safety data formats and set up exchange mechanisms between road network operators and map providers. The first results and the ongoing work are described. The paper also presents the specific point of view of French motorway companies represented by ASFA in the ROSATTE consortium. Two of them, COFIROUTE and APRR-AREA, offer a test site that is also described here.</p> <p style="text-align: right;"><a href="#">back</a></p>
TS105 – 3419	<p>Aidan Holt, John Conquest, “<i>Managed Motorways: A Change in Policy Equals a Reduction in Carbon</i>”, ITS World Congress</p> <p>There has been a significant shift in policy on how motorway capacity is to be increased in England. The successful implementation and operation of a trial which dynamically utilises the hard shoulder as a running lane during periods of congestion has led to this shift in Government policy. 546km of new hard shoulder running is expected to be implemented or be in construction by 2015. This paper focuses on the potential reduction in carbon footprint resulting from this policy change, comparing the CO<sub>2</sub> cost of implementing hard shoulder running against widening over the same length. Analysis has indicated that this alternative intervention could result in a reduction of 850,000 tonnes of carbon over a carriageway length of 546km.</p> <p style="text-align: right;"><a href="#">back</a></p>

<p>TS105 – 3504</p>	<p>B. Sultan, R. Meekums, J. Ogawa, S. Self and P. Unwin, "<i>M42 Active Traffic Management Pilot Initial Results from Hard Shoulder Running under 60mph Speed Limit</i>", ITS World Congress</p> <p>The Active Traffic Management (ATM) project on the M42 near the City of Birmingham was the first pilot project in the UK to dynamically use the hard shoulder together with variable mandatory speed limits during periods of peak demand. When ATM was first introduced in 2006, the maximum permitted speed limit during hard shoulder running was 50mph (HSR50). However, in March 2008 a new algorithm was introduced which increased the maximum allowed speed limit to 60mph during hard shoulder running (HSR60). As a first trial, HSR60 was implemented on one link, junctions 4 to 3A [J4-J3A] with the plan to roll it out on other links of the M42-ATM section. The impact of HSR60 on traffic operation over the link between [J4-J3A] was assessed against HSR50 over a period of six weeks. The results have shown that HSR60 reduced the average journey time by 8% and increased the speed by an average of 5.4 mph. However, no evidence was found to suggest that HSR60 increases throughput when compared with HSR50.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS105 –3689</p>	<p>Dr. Justin Geistefeldt, "<i>Temporary Hard Shoulder Use in Hesse – Effects On Traffic Flow and Road Safety</i>", ITS World Congress</p> <p>Temporary hard shoulder use is an effective measure to increase the capacity of frequently congested motorway sections. In the German State of Hesse, this measure is successfully applied on heavily trafficked sections of the motorways A3 and A5. The paper examines the effects of temporary hard shoulder use on traffic flow and road safety. It is shown that the capacity of a three-lane carriageway is increased by 20%-25% if the hard shoulder is used as an additional lane. The analysis of accident data shows that temporary hard shoulder use does not affect road safety.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS105 – 3805</p>	<p>D Hudson, K James, "<i>Robust Hard Shoulder Monitoring: Theory and Application of the Hasmos System</i>", ITS World Congress</p> <p>The Highways Agency (HA) began a pilot scheme in September 2006 to investigate the benefits of Active Traffic Management (ATM) on the M42. One aspect of this work involves the opening of the hard shoulder as a running lane at peak periods. Given the success of this pilot and the motivation to improve journey times throughout the network, the HA now plans to roll-out similar schemes as part of its Managed Motorway Programme to a number of new locations. In order to facilitate this, a system of monitoring the hard shoulder is required. It is especially important that operators are aware of any stationary vehicle, pedestrian or significant debris on the hard shoulder prior to opening it for use as a running lane. In the current pilot this has been achieved by manual observation of CCTV cameras however in the future it is envisaged that the efficiency of this process can be improved with the aid of a hard shoulder monitoring system. With this requirement in mind, the HA has been engaged in a number of research activities related to assessing both detector technologies and the systems and algorithms required to make best use of these. A hard shoulder detection system, entitled HASMOS, is described here which encapsulates a range of research performed by the HA in terms of hard shoulder event detection algorithms, detector data pre-processing and detector interfacing. In this paper the architecture and algorithms which make up HASMOS are described. Results are also presented from a recent radar based trial on the M42 conducted on behalf of the Highways Agency. Five scanning FMCW radars were deployed for this work and the performance of HASMOS monitored over a period of two months.</p> <p style="text-align: right;"><a href="#">back</a></p>

<p>TS114 – 3319</p>	<p>Jill Hayden, Roger Higginson, Matthew Hall, Sukhvinder Ubhi, <i>"Improvements to Ramp Metering System in England: VISSIM Modelling of Improvements"</i>, ITS World Congress</p> <p>The Highways Agency has installed ramp metering at over 80 sites in England, with evaluation results showing an average 13% reduction in journey times. Despite the success of the existing system, some potential improvements have been identified. Due to the complexity of the algorithms, the improvements were modelled using the micro-simulation package VISSIM.</p> <p>This paper describes the method and results of the modelling. The modelling exercise has shown that all the algorithms have worked as expected. It has also shown that all the algorithms designed could provide additional performance benefits over the existing system.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS114 – 3320</p>	<p>Roger Higginson, Jill Hayden, Thomas Charton, Sukhvinder Ubhi, <i>"Improvements to Ramp Metering System in England: Detailed Description of Algorithm Development"</i>, ITS World Congress</p> <p>The ramp metering system is deployed at over 80 sites throughout the Highways Agency's network. The operational sites have been assessed and it has been shown that ramp metering reduces journey times through congested junctions by an average of 13% across all sites evaluated. Experience gained during the installation, calibration and operation of the first thirty sites highlighted the potential for greater benefits to be realised through further algorithm development to:</p> <ul style="list-style-type: none"> <li>• reduce calibration effort;</li> <li>• improve system performance; and</li> <li>• allow ramp metering techniques to be used on motorway to motorway junctions.</li> </ul> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS115 - 3128</p>	<p>Dirk Ortmann, <i>"Truck parking reservation at German highways"</i>, ITS World Congress</p> <p>In Germany and in most other countries in Europe there is a great demand for truck parking space at or near the highways. But the demand is much higher than the supply: In Germany 70,000 truck drivers fight every night for one of the 40,000 truck parking spaces. To manage this problem and to give the driver the opportunity to solve his problem the first and independent Truck Parking Reservation System "Highway Park" started in November 2008 in Germany. The paper describes the development, implementation and pilot phase of this system.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>IS04 – 2970</p>	<p>Dr. Masoud Tabibi, <i>"Narrow Time Headway and its Impact on reducing the Speed Enforcement Camera effectiveness"</i>, ITS World Congress</p> <p>Speed enforcement tools have been recognized as an effective tool in reducing the number and severity of accidents, globally. This paper aims to assess how factors like narrow time headways while driving might affect this rule somehow. Such a conclusion might lead to a new generation of ITS tools by which road managers could control several factors simultaneously. This paper addresses a new tool developed in RMTO of Iran by which the Iranian authority, including the Ministry of Transport and the Road Police of Iran are able to control speed and time headway in parallel to ensure the reduction of accident rates along the Iranian national road network.</p> <p style="text-align: right;"><a href="#">back</a></p>

<p>IS04 – 3455</p>	<p>Chiara Falsi, "<i>Safety Tutor: Nationwide Effective Speed Enforcement</i>", ITS World Congress</p> <p>An innovative speed enforcement system has been developed by Autostrade per l'Italia and progressively deployed along the Italian toll motorway network. The national Traffic Police operates the system, scheme and processes, including the validation and issuing of speed tickets. The enforcement system is based on the measurement of the average speed of vehicles travelling along a road section. Speed control is accomplished through sets of installations that make use of existing roadside infrastructure for investment optimisation purposes. Safety Tutor is part of an integrated enforcement system which allows the detection of violations along the national high speed road facilities.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>IS04 – 3636</p>	<p>Thorsten Koy, Simon Benz, "<i>Automatic Time-Over Distance Speed Checks: Impacts on Driving Behaviour and Traffic Safety</i>", ITS World Congress</p> <p>For the automatic enforcement of speed-limits, several alternative technologies exist. Speed checks which measure the actual speed at specific points are commonly implemented in most countries in the world. In recent years, automatic time-over-distance checks have been introduced in several countries, which measure the average speed of a vehicle over a defined section. In Europe, time-over-distance systems already exist in Italy, in Austria, in Holland as well as in the UK. In Switzerland, legislation has been adapted recently in order to make it possible to introduce them on Swiss roads.</p> <p>The Swiss Federal Roads Office is planning to introduce three pilot installations to study the effects on driving behaviour and traffic safety in the Swiss environment. The study will take into account the analysis of the other installations in Europe, but the situation in Switzerland requires additional studies, because:</p> <ul style="list-style-type: none"> <li>• the Swiss installation will include a picture capturing device which will enable drivers to be identified,</li> <li>• the density of classic automatic speed checks is relatively high,</li> <li>• the focus shall be on the comparison of the effects of speeds checks over a distance and the effects of speed checks on the spot.</li> </ul> <p>The aim of the planned pilot tests in Switzerland is to analyse the development of the speed behaviour within, before and after the controlled stretch. This includes the assessment of the percentage of speeders, the impact on traffic safety, the effects on driving behaviour, the effect on traffic flow and the acceptance of these measures with politicians and road users.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>IS28 – 3427</p>	<p>Masatoshi TAKAHARA, Koichi HARA, "<i>A Running Lane Detection System and a Driving Support System for Merging onto and Exiting from Expressways</i>", ITS World Congress</p> <p>This paper presents a running-lane-detection system with an image-recognition technology for a car navigation system, and an application for a driving support system. We have developed a running-lane-detection system with an image-recognition technology for car navigation systems. The system enables the car navigation system to provide information for a more advanced driving support application. So, in this paper, we present an application of this system that supports drivers when merging onto or exiting from expressways.</p> <p style="text-align: right;"><a href="#">back</a></p>

<p>IS30 – 3305</p>	<p>Peter McCombs, Leon Wee, Matthew Ensor, Stephen Hewett, <i>"Post-Deployment Benefits from Auckland's Active Ramp Signalling System"</i>, ITS World Congress</p> <p>The NZ\$22 million first stage of the Ramp Signalling project was installed by the New Zealand Transport Agency in 2007/08. It includes ramp signals on 35 ramps on the Auckland Motorway and uses the new SCATS Ramp Metering System (SRMS) algorithms developed by the New South Wales Road &amp; Traffic Authority in Sydney as part of the SCATS traffic signal control system. There were 7 key goals and associated targets agreed for the system covering the areas of safety, efficiency and reliability, customer satisfaction, and the effects on the non-motorway arterial network. This paper describes the results of the analysis of initial data which shows the key benefits of the system so far, and discusses where improvements are planned which will be of relevance to all agencies looking to deploy or optimise such technology. The paper concludes by confirming that information from SRMS sensors and ARTIS can be used to optimise the ramp signals for both the motorway and adjacent SCATS signal controlled arterial network.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>IS30 – 3385</p>	<p>Martin Leak, Terry Brown, <i>"The Procurement of ITS Projects in New Zealand"</i>, ITS World Congress</p> <p>Implementation is well advanced on the roll out of ramp signalling across the whole of the urban motorway network of Auckland. This is an extension of the ATMS initially launched in 1999. Auckland is a region with a population of 1.3M. The urban motorway network is only 120km long but has an average daily trip demand of about 900,000 movements across 50 interchanges. Ramp signalling is proposed for all onramps and for some motorway to motorway links. The paper places emphasis on the procurement of the services required to implement ITS based projects using external resources.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>IS31 – 3764</p>	<p>Albania Nissan, Haris N. Koutsopoulos, <i>"Evaluation of Recommended Variable Speed Limits for Motorway Traffic Control: The Case of E4 in Stockholm"</i>, ITS World Congress</p> <p>Variable Speed Limits (VSL) is a form of motorway control introduced to improve the operations of freeway facilities under congested conditions. This paper evaluates the impact of VSL on the E4 motorway in Stockholm using micro-simulation. The test site is heavily congested and includes an integrated Motorway Control System with advisory VSL and Automatic Incident Detection (AID) logic. Experience indicates that the impacts of VSL on traffic condition and safety might be higher if the displayed VSL were mandatory. The objective of the study is to assess the impact of the level of driver compliance to VSL recommended speed, using micro-simulation.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>IS32 – 3381</p>	<p>Vincent Lin, Peter McCombs, Leon Wee, <i>"Managing Traffic in Real Time – Goals and Outcomes from the Auckland Motorway Ramp Signalling Project"</i>, ITS World Congress</p> <p>This paper describes the planning, design, construction and initial outcomes of the Auckland ramp signalling project. This project, currently being undertaken by NZ Transport Agency, is aimed at enabling real time management of the entire Auckland motorway network. The planning and delivery of this project is a major undertaking across all 190km of the motorway network, and involves installation of signals on all motorway on-ramps together with a full communications system supporting the associated extensive signage, detectors, cameras, and traveller information systems. Where needed, the project also includes geometric changes to motorway on-ramps to achieve the required operational storage and acceleration tapers. Priority bypass lanes are provided at selected sites to encourage increased vehicle occupancy and where truck and public transport volumes are high. A number of off-ramps are also being improved to match the expected increases in throughput.</p> <p style="text-align: right;"><a href="#">back</a></p>

<p>IS33 – 3333</p>	<p>Piyali Chaudhuri, Aleksandar Stevanovic, Jelka Stevanovic, Peter T. Martin, <i>“Using Probe Vehicle Speed Data to Assess the Accuracy and Reliability of the Traffic Monitoring Stations on Freeways”</i>, ITS World Congress</p> <p>Freeway performance measures are extracted from Traffic Monitoring Stations which gather traffic volume and speed data. Reported freeway speeds are usually aggregated over a period of 20 or 30-second or 1, 5, or 15-minute by traffic agencies. This paper evaluates how various aggregation intervals impact accuracy and reliability of the reported freeway loop detector speeds and determines the optimal aggregation interval. The study compares speeds collected by probe vehicles equipped with Global Positioning System versus aggregated detector speeds. Results indicate the need to archive 20-second detector data in addition to current 15-minute data archiving by the Utah Department of Transportation.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>IS34 – 3062</p>	<p>Robin Burnett, Gwyn Drake, <i>“Implementation of the M25 IDM Project Network Management on an Orbital Motorway”</i>, ITS World Congress</p> <p>A review of the Integrated Demand Management project on the M25 orbital motorway, providing a mechanism to lock in the benefits created from additional capacity delivered by a widening programme. It promotes reliable journey times and better informed travellers across the road network comprising the M25 motorway plus its stubs, tails and immediately adjacent local roads.</p> <p>This paper shares the experiences of strategy generation; focussing on Access Control as the primary management tool and the novel approach of joint road network management between national and local highway authorities. Conclusions include the need for early and continuous stakeholder involvement.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>IS34 – 3269</p>	<p>Xun Sun, Tomio Miwa, Toshiyuki Yamamoto, Takayuki Morikawa, <i>“An Integrated Simulation System Study for Automated Truck Lane on Intercity Expressways”</i>, ITS World Congress</p> <p>Automated truck lane (ATL) is one of desirable solutions to cope with some problems caused by increasing freight transportation demand. In order to estimate the operational performance precisely, ATL system should be analyzed under large traffic networks. This paper proposes an integrated microscopic-mesosopic simulation system framework for this study.</p> <p>Fundamental experiments of one segment of ATL show that performance of ATL is the best among the alternative strategies. Finally, simulation experiments on intercity expressways show the benefit from the application of ATL and change in traffic volume under large traffic networks.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS007 - 3719</p>	<p>Bas van Bree, Marcel Michon, <i>“Testing Anti Accident System: a Large-Scale Field Operational Test in the Netherlands”</i>, ITS World Congress</p> <p>In 2008 and 2009 a large scale Field Operational Test has taken place in the Netherlands testing Anti Accident Systems (AAS) on over 2,400 commercial vehicles. The size of the trial and the numerous stakeholders and participants has lead to a complex organisational scheme necessary to achieve a successful format. This paper goes into the details of organisational processes of the FOT. The FOT has led to some promising results regarding use of AAS in practice. The results are briefly discussed and the paper concludes with a list of relevant learning points for future projects.</p> <p style="text-align: right;"><a href="#">back</a></p>

<p>TS008 – 3936</p>	<p>Wolfgang Birk, Evgeny Osipov and Jens Eliasson, <i>“iROAD – Cooperative Road Infrastructure Systems for Driver Support”</i>, ITS World Congress</p> <p>This paper discusses the design and implementation of cooperative road infrastructure systems which use an intelligent road surface. Using an overtaking assist feature as an example it is shown how such a feature can be designed and implemented on a road infrastructure and integrated with drivers and passengers using IP Multimedia Subsystem (IMS). The feasibility of this feature is assessed from a functional and communication perspective. Moreover, first results from real-life tests on the Swedish highway E4 are presented which provide the basis for the next research and development steps.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS008 – 4035</p>	<p>Ryoichi Shimizu, Yoshiaki Tsuda, Satoshi Shimizu, Hisao Sone and Tadashi Ozawa, <i>“Development of Energy-Saving Automatic Driving Support Technology for Advanced ITS”</i>, ITS World Congress</p> <p>Effective energy-saving ITS technology is currently attracting attention. This paper is focused on platooning technology for transportation efficiency improvement and automatic driving / eco-driving technology for traffic jam reduction using inter vehicle communication (C2C-Communication). The automatic driving vehicle uses highly precise three-dimensional electronic road map data. In this article, we report about the development. We generated the highly precise location information of the vehicle in real time with GPS data, inertial measurement unit (IMU) data and a highly precise vehicle speed pulse which is generated by the vehicle odometer. In addition, we developed a real-time MMS (Mobile Mapping System) device which extracts ambient landmark data from highly precise three-dimensional electronic road map data, with the location information for the vehicle. The results from the real-time MMS device are used in the engine control unit (ECU) of the automatic driving vehicle.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS008 -3384</p>	<p>Steven E. Shladover, Christopher Nowakowski, Delphine Cody, Jessica O’Connell, <i>“Cooperative Adaptive Cruise Control: Field Testing of Driver use and Acceptance”</i>, ITS World Congress</p> <p>This paper describes the results of a field test in which the behaviour of naïve drivers was observed while they were driving a commercially available adaptive cruise control (ACC) system and a prototype cooperative ACC (CACC) system. The CACC enabled enhanced responsiveness of vehicle control and shorter time gaps than the ACC. The drivers’ choices of time gap and whether or not to use the ACC and CACC were recorded while they were driving their normal commute trips, and their subjective reactions were captured via questionnaire. The results have significant implications for the effects of CACC on traffic.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS008 – 3345</p>	<p>G. Rigas, P. Bougia, Y. Goletsis and D.I. Fotiadis, <i>“Towards Advanced Information Extraction in Cooperative Driving Support Systems”</i>, ITS World Congress</p> <p>In this paper, a novel information extraction approach is presented as a part of a cooperative driving support system (I-WAY). The key features of the proposed solution are i) a geo-reference events representation and merging with respect to geo-areas of interest ii) the efficient management of information for which confidence in its accuracy is low through geo-referenced information fusion and the extraction of advanced information which has a high confidence level, exploiting events interrelationships. The events interrelationships are represented as a Bayesian network constructed upon expert knowledge and statistical data. The new information produced is forwarded to the driver and to the vehicle’s telematics platform for communication to other vehicles.</p> <p style="text-align: right;"><a href="#">back</a></p>

TS008 – 3183	<p>Robin Schubert, Norman Mattern, Florian Ahlers, Marius Schlingelhof, and Daniel Westhoff, "<i>Vehicle Positioning for Cooperative Systems – The SAFESPOT Approach</i>", ITS World Congress</p> <p>Accurate and reliable vehicle positioning is a crucial enabling technology for cooperative transportation systems – especially for safety-related applications. However, technologies which comply with the necessary requirements are not available yet. Thus, a new architecture for this problem has been developed in the European integrated project SAFESPOT. The main components of this development will be presented in this paper, including landmark-based positioning using cameras or laser scanners, infrastructure-based UWB-positioning (Ultra-wideband), and communication based relative positioning. Furthermore, the integration of these technologies as well as evaluation results will be presented and discussed.</p> <p style="text-align: right;"><a href="#">back</a></p>
TS008 – 3138	<p>Takashi Maeda, Shigeki Morita, Hisashi Sugawara, Masahiko Katayama, Masahiko Ikawa, Yoshiaki Tsuda, Nobuyoshi Asanuma and Yuriko Ino, "<i>A DSSS on Board Unit for 2008/2009 Field Operation Tests</i>", ITS World Congress</p> <p>We developed a practical vehicle-infrastructure cooperative driving safety support systems (DSSS) based on the system we developed in 2007. The new DSSS on-board unit can receive DSSS standard data and handle multiple services based on the received data. We have developed this unit effectively by modular software design and simulation based development.</p> <p style="text-align: right;"><a href="#">back</a></p>
TS010 – 3005	<p>Boumediene Kamel, Amar Benasser, Daniel Jolly, "<i>Open-Loop and Closed-Loop Control for Ramp Metering in Traffic Flow</i>", ITS World Congress</p> <p>In this article, we define a local ramp metering control system. The aim of this control concept is to reduce congestion and so improve the total time spent by vehicles in the network.</p> <p>For this purpose, the density of the segment where the on-ramp is connected is kept below a target density, unless the queue at the on-ramp becomes too long. The traffic flow model used is the usual Metanet model. We compare our 'ramp metering' controller's efficiency and applicability to the 'no-control' case and the traditional ALINEA based controller.</p> <p style="text-align: right;"><a href="#">back</a></p>
TS010 – 3089	<p>Yufei Yuan, Jos Vrancken, Winnie Daamen, Serge Hoogendoorn, "<i>Coordinated Ramp Metering: A case study with the HERO algorithm</i>", ITS World Congress</p> <p>Coordination of ramp metering systems on entry ramps close to each other is likely to improve the effectiveness of ramp metering in postponing congestion on freeways. This paper describes a simulation experiment in coordinating ramp metering systems on part of the belt road of Amsterdam. The algorithm applied is based on the HERO algorithm, adapted to the Dutch installed base of ramp metering systems. The results show significant improvements over uncoordinated ramp metering, with good prospects for further improvements when some of the current limitations of the installed base will be overcome.</p> <p style="text-align: right;"><a href="#">back</a></p>

<p>TS015 - 3755</p>	<p>Peter Möhl, Christiane Theis, Arnd Vogel, Peter Vortisch, <i>“Scenario-Based Planning of Traffic Management Strategies”</i>, ITS World Congress</p> <p>The increasing importance of traffic management raises the need for new tools suited for planning and evaluation of dynamic traffic control strategies. Exceptional situations such as incidents or major public events are challenges for traffic management planning which require dedicated preparation. This paper presents a prototype tool for traffic management planning tasks. The tool follows the concept of scenario evaluation and provides an integrated system for scenario management, demand modelling, strategy simulation and analysis. It can operate on large networks and thereby allows an assessment of the effects of incidents and traffic control measures on entire urban areas.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS040 – 2879</p>	<p>Thorsten Kathmann, <i>“Traffic Counts - New Methods of Traffic Counting in North Rhinewestphalia”</i>, ITS World Congress</p> <p>In Germany the federal states are getting ready for a major traffic census in 2010. Normally this would be a manual census. However, some states, including North Rhine-Westphalia and Baden-Wuerttemberg, are developing new automatic concepts. As numerous roads have high traffic volumes, special care has to be taken when selecting the system. Based on the results of a former study, new detectors were trialed for use on interstate ramps and high-volume roads. The results show a great potential and led to the decision to go ahead with the automation of the next set of road traffic censuses.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS040 – 3693</p>	<p>Leif Sjögren, <i>“Intelligent roads – INTRO”</i>, ITS World Congress</p> <p>The increasing number of accidents and the needs for greater comfort and capacity on the European road network impose new demands on the road infrastructure. The INTRO (Intelligent Roads) project aims at demonstrating how safety, road capacity, road operation and maintenance problems can be improved or simplified by the use of existing and future sensor, communication and processing technologies in a harmonised way, to create and add “intelligence” to road networks. INTRO is financed from the 6th Framework Programme of the European Commission (Directorate-General for Research) and conducted by ten partners. The project started in March 2005 and ended in February 2008.</p> <p style="text-align: right;"><a href="#">back</a></p>

TS040 – 3970	<p>Hassan R Homami, David Crouse, Nadereh Moini, George Moglia, Jr., “<i>Vehicle Dynamic Mobility Models (M-Models) Subsidiary of Vehicle Movement Energy Transfer to Pavement</i>”, ITS World Congress</p> <p>Transportation agencies are spending considerable resources on monitoring the status of roadways in many ways. Roadway monitoring is quite often done with low-tech and costly methods. Recently more sophisticated approaches have been implemented to achieve the future highway operational needs. Smart Pavement Material (SPM) is a stand-alone micro node device that can be embedded in the pavement as intelligent highway infrastructure. Therefore, SPM needs to operate for a long life time with a reliable operational and real time communication capability. The SPM will host multi-purpose highway sensors and a micro low power wireless mesh communication station. The SPM will be equipped with its own on-chip micro-power generator unit to maintain the SPM node operation without an external power or internal battery power source. The SPM nodes will be widely distributed along the highway with distances of 2'- 4' apart. The SPM operational concept is based on its pavement sensors, which collect the information on traffic and pavement conditions and provide a communication carrier along the road for transferring the information along the SPM network. SPM network includes the large scale SPM nodes and the external node such as a fixed roadway field station or travelling vehicles. SPM will have several major applications such as pavement management and maintenance systems, advanced traffic control and monitoring system and vehicle to vehicle communication systems. Under SPM feasibility the system components have been investigated and conceptual planning was conducted. As part of that study, it was specified that an in-chip power generator will be the main components for SPM operation and product ability. The study recognized the main energy resource is vehicle mobility energy transferring to pavement. SPM will convert that energy to electricity. This study shows that transferring energy on the highway network can be source for SPM power micro generator and a power generation of 50 -100 <math>\mu</math>W is feasible.</p> <p style="text-align: right;"><a href="#">back</a></p>
TS069 – 3158	<p>Chunyu Zhang, Lei Cai, Qi Wang, Mianshu Chen, “<i>A Real-Time Speed Limit Sign Detection and Recognition System</i>”, ITS World Congress</p> <p>This paper presents a real-time speed limit sign detection and recognition system. In the detection framework, only shape information was used. Firstly, the ‘canny edge’ algorithm based on surround suppression was utilized. Secondly, a new contour extraction method based on topologic structure was proposed to obtain clearer contours. Finally, the ‘Adaboost’ algorithm was applied to get rid of negative candidate regions. In the recognition framework, a Fisher Discriminant Analysis (FDA) Bayesian rule was used to classify and validate candidate images. Extensive experimental results show that our system has achieved a detection rate and recognition rate of over 90% with a processing speed of 20-25 fps.</p> <p style="text-align: right;"><a href="#">back</a></p>
TS069 – 3493	<p>Shin Kato, Naohisa Hashimoto, Sadayuki Tsugawa, “<i>Improvement of Traffic Flow by Preview Speed Control using ITS Communication Systems</i>”, ITS World Congress</p> <p>This paper proposes a preview speed control system for suppression of the shockwave propagation to prevent traffic congestion using an ITS communication system which transmits the speed or acceleration information from a downstream vehicle or infrastructure to upstream vehicles. The simulation studies show the improvement in traffic flow from the proposed system even when a small proportion of vehicles are equipped with the communication system.</p> <p style="text-align: right;"><a href="#">back</a></p>

TS069 – 3673	<p>Flavien Hervé SOMDA, Hervé Cormerais, “<i>Traffic Data Extraction for Road Safety Improvement</i>”, ITS World Congress</p> <p>This paper demonstrates the benefit of scanning perception systems especially scanning radars on vehicle detection in ITS applications. Theoretical results prove that the distance over which detection can take place can be drastically improved and traffic scenarios can be recognized with the use of scanning systems. A higher detection distance enables suitable anticipative actions in the vehicle control systems to avoid car accidents.</p> <p style="text-align: right;"><a href="#">back</a></p>
TS072 – 3388	<p>Pongsathorn Raksincharoensak, Masumi Nakaoka<sup>1</sup> and Masao Nagai, “<i>Forward Collision Risk Assessment Method for Individual Adaptation of Braking Assistance System</i>”, ITS World Congress</p> <p>Recent advances in information technology in automobile systems have led to the possibility of driver assistance systems’ parameters being adapted to each individual driver and specific driving circumstances. This paper addresses a method of forward collision risk assessment based on using a real-world naturalistic driving database for designing an advanced braking assistance system with an individual adaptation algorithm. The risk assessment is used for a driving characteristics diagnosis system, which leads to the design of headway control assistance and braking assistance systems. The algorithm is proposed as a comparison of current and normal driving behaviour, which is extracted from long-term running data from the experiments. In the ‘car following’ state, the forward collision threat is used as an index of hazard potential. Finally, the discrimination of high speed driving and the usual driving in real-world urban road situations is carried out in test drives using an experimental vehicle.</p> <p style="text-align: right;"><a href="#">back</a></p>
TS072 – 3716	<p>Shanthan R Toodi, Vivek Sundararaman, Jeremy Wolstan, “<i>Location Based Dynamic Content Delivery for Intelligent Transportation: In-Vehicle Signage</i>”, ITS World Congress</p> <p>Traditional location based services have been widely popular for distributing commercial services information in the telecommunications industry, primarily to devices such as mobile phones. Utility of this technology in the field of transportation to increase safety has been limited to date. The goal of this paper is to generate a renewed interest in servicing location based dynamic content to wirelessly connected units like OBE(On Board Equipment) in cars, mobile phones, hand held devices and internet applications, and how such services can be promoted for use in the vehicle and telematics space. This paper showcases the Proof of Concept (POC) work done for Vehicle Infrastructure Integration (VII) (now known as SmartDriveSM) Initiative in Detroit throughout 2006 and 2007, and work done in conjunction with New York State and New York City for demonstration at the 15th World Congress on Intelligent Transportation Systems in November 2008.</p> <p style="text-align: right;"><a href="#">back</a></p>
TS077 – 4111	<p>Keiko MUNAKATA, Yuji TAMURA, Hiroshi WARITA, Tomoyoshi SHIROISHI, “<i>A Case Study about the Traffic Prediction under Accidents using Dynamic Traffic Simulation on Tokyo Metropolitan Expressway</i>”, ITS World Congress</p> <p>The aim of this study is to report on the case study of traffic prediction using the dynamic traffic simulation including a route choice model on the Tokyo Metropolitan Expressway (MEX). Due to recent high demand for accurate travel time information by drivers, MEX has been developing a dynamic traffic simulation model. MEX provides instantaneous travel time by various types of Variable Message Signs (VMS), and the accuracy of instantaneous travel time information is relatively high in general traffic conditions. However, in case of accidents, its accuracy goes down significantly. In this paper, an outline of the dynamic traffic simulation is presented, and case studies on MEX are shown. The results show that this dynamic traffic simulation is useful for the MEX network, even though it requires more verification.</p> <p style="text-align: right;"><a href="#">back</a></p>

<p>TS082 – 3098</p>	<p>Yasuo Inokuma, Akifumi Shintaku, <i>"The New Tomei Expressway Project Creates New Road to the Future"</i>, ITS World Congress</p> <p>The New Tomei Expressway, along with the New Meishin expressway, will connect the three major metropolitan areas of Tokyo, Nagoya, Osaka in Japan; its length will be approximately 330km long. The construction of the New Tomei Expressway is carried out vigorously. We are planning to conduct field tests of developing technologies, such as the latest ITS technologies and technologies from various other fields on the Sizuoka section of the New Tomei Expressway in 2009-2010. Various public demonstrations will be provided, such as an ITS on-board unit providing effective safety information and operation of the truck platooning.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS082 – 3916</p>	<p>Steven W. Dellenback, Ryan D. Lamm , <i>"Migrating Autonomous Vehicle Capabilities from the Laboratory to the Highway"</i>, ITS World Congress</p> <p>In late 2006, Southwest Research Institute (SwRI®) established a US\$5 million internal research and development program, called the Southwest Safe Transport Initiative (SSTI), to improve safety in urban traffic environments. SSTI is charged with developing new sensor, computing, and mobile technologies to augment vehicle platforms and provide computer vehicle control capabilities. Through SSTI, the Institute is fusing the latest technology from multiple industries to meet the challenges associated with computer control of cars, trucks, and tractors. Through the fusion of technologies and design methodologies from multiple industries such as aerospace electronics, intelligent transportation systems, cognitive multi-agent systems, machine vision, engineering dynamics, hardware/software-in-the-loop simulation, large-scale multi-function robotics, and safety and reliability systems, SwRI is developing a full-scale intelligent vehicle platform to be used for advanced engineering driver assist applications development. At the 2008 World Congress in New York City, the SSTI vehicle was demonstrated along 11th Avenue along with the intelligent vehicle from Stanford University. Along with these types of demonstrations and the successes of the DARPA Grand and Urban Challenges, it is time to evaluate how these advanced technologies can be deployed to production vehicles to improve vehicle safety. This paper discusses how these advanced technologies can be deployed in vehicles using low cost computers and sensors.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS082 – 3556</p>	<p>Jinan Piao, Mike McDonald, <i>"Safety Impacts of I-V Cooperative Systems"</i>, ITS World Congress</p> <p>COOPERS is one of the three European Integrated Projects which focus on development, testing and evaluation of cooperative systems for improving safety and mobility. In COOPERS project, several services have been defined for demonstration including hazard warning, variable speed limits, and dynamic route guidance. This paper explains how COOPERS field tests are designed for evaluating safety impacts of COOPERS in-vehicle information services.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS088 – 2933</p>	<p>Jan Jacobson, Jacques Hérard and Henrik Eriksson, <i>"Active Safety in Road Vehicles - Developing Testing and Evaluation Methods for ICT-Based Safety Systems"</i>, ITS World Congress</p> <p>Active safety systems will further increase the safety of all road vehicles. Testing and evaluation methods are needed to confirm the performance of new systems in a way which lets the benefits be easily understood by the buyer of the vehicle. Test and evaluation methods must be developed based on relevant traffic scenarios. Physical testing on the test track in specific scenarios is expected to be the core of the performance testing. But also laboratory tests and design reviews are being developed. Safety indicators will be obtained using well specified test procedures.</p> <p style="text-align: right;"><a href="#">back</a></p>

<p>TS088 – 3092</p>	<p>Kip Smith, Jan-Erik Källhammer, Arne Nåbo, “<i>Driver Acceptance of Alerts in the Pre-crash Phase of Intersection Incidents</i>”, ITS World Congress</p> <p>The purpose of this paper is to document the utility of a novel empirical approach to quantifying the relative level with which drivers are likely to welcome an alert from an active safety system. We discuss an experiment that applies this approach and show how the level of acceptance varies across traffic situations and driver point of view. The results reveal that both point-of-view and encroachment direction should be considered when designing active safety systems that would alert drivers to impending encroachment incidents.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS089 – 3851</p>	<p>Mark Austin, Martin Brock, Edwin Carter, Frances Metcalfe, Liz Orme, “<i>Implementation and Evaluation of an Adaptive CCTV Display System For Incident Detection for The Highways Agency</i>” , ITS World Congress</p> <p>Adaptive CCTV Display aims to allow operators to detect incidents more effectively using existing CCTV cameras. Alerts from CCTV automatic incident detection (AID) systems are combined with other live and historic data to identify sections of the road network where incidents may have occurred. Images of these discrete sections of road are then displayed to operators. Using AID on existing PTZ (pan-tilt-zoom) cameras typically gives an unacceptably high false-alarm rate. This is mitigated by probabilistic data-fusion and an effective but unobtrusive display. A prototype system has allowed operators to detect incidents on average 3 minutes faster than without the system.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS090 – 2907</p>	<p>Yukihiro Iwata, Kazuhide Takizawa and Yasuhiro Saito, “<i>An Estimation Method of Congestion Length Using Pulse Data Of Vehicle Detector</i>” , ITS World Congress</p> <p>This paper introduces an estimation method for congestion length using pulse data from vehicle detectors. The Tokyo Metropolitan Police Department (MPD) has developed its traffic control method to relieve traffic congestion. Highly accurate estimation of traffic demand is one of the important factors for its development. The MPD uses vehicle detectors to measure traffic demand and estimates congestion length based on the degree of congestion. But this method can’t measure it precisely. Therefore, the MPD has introduced a method of detecting the tail of queues using pulse data from ultrasonic vehicle detectors to estimate congestion length precisely.</p> <p style="text-align: right;"><a href="#">back</a></p>
<p>TS092 – 3403</p>	<p>Giancarlo Alessandretti, Angelos Amditis, Aria Etemad, Christoph Kessler, “<i>EUROFOT: European Large-Scale Field Operational Test on Active Safety Systems</i>”, ITS World Congress</p> <p>The European project “euroFOT” is developing a large scale assessment program for advanced active safety systems in cars and trucks, based on Field Operational Tests with normal drivers in ordinary traffic. The experiments will provide insight into system performance and driver behaviour, as well as the socio-economic impact, particularly on road safety and traffic efficiency. This paper, after presenting the objectives of the project, outlines on-going activities and some major results for the first year. The topics include research questions, experimental design, test operation and data analysis. Coordination with parallel initiatives is also discussed for this new class of experiments.</p> <p style="text-align: right;"><a href="#">back</a></p>

TS116 – 3244	<p>Patrik Jonsson, “<i>Road Status Sensors; a Comparison of Active and Passive Sensors</i>”, ITS World Congress</p> <p>Knowledge of the road status and specifically knowledge of the freezing point of the road surface fluid is crucial in order to perform effective and environmentally safe road maintenance. Road status sensors installed in the road can be passive conductivity sensors or active freezing point sensors. In this paper the output from a passive and an active sensor has been studied when the sensors has been contaminated with common chemicals that can be present on the road surface such as oil, alcohol and glycol. The results indicated that only intelligent active sensors reliably can detect freezing points on the road surface.</p> <p style="text-align: right;"><a href="#">back</a></p>
TS112 – 3771	<p>Jaap Vreeswijk, “<i>Reflections on Cooperative Urban Applications: Truly Cooperative</i>”, ITS World Congress</p> <p>Busy urban areas are characterized by highly dynamic and complex mobility patterns. In oversaturated traffic conditions mobility tends to shift to immobility while traffic safety and the environment suffer. New cooperative technology (vehicle-to-vehicle and vehicle-to-infrastructure communication), developed in the European research project CVIS, enables innovative systems and services to improve the overall traffic conditions. In 2009 cooperative systems will already go beyond research and are being tested and demonstrated in real-life traffic at various locations throughout Europe. This paper outlines the results from the Netherlands- Helmond test site, reflects the achievements so far and explains how cooperative technology becomes truly cooperative.</p> <p style="text-align: right;"><a href="#">back</a></p>
TS112 – 3217	<p>Hideto Hatakenaka, Koichi Sakai, Hideyuki Kanoshima, Miho Asano, Akio Hosaka, Hiroyuki Mizutani, “<i>Evaluation of Advanced Cruise-Assist Highway Systems for Safety based on Verification Tests</i>”, ITS World Congress</p> <p>A Field Operational Test (FOT) of Advanced Cruise- Assist Highway Systems (AHS) using vehicle-highway communication has been under way since 2007 in Japan. For AHS deployment, the effectiveness of AHS must be quantitatively clarified. However, due to difficulty in data observation of accidents and human errors, methods to qualitatively evaluate effectiveness of safety have not yet been established. This paper introduces an overview of evaluation methods conducted so far, by taking examples of the proving tests and FOT. The evaluation indices include acceptability to users in addition to the verification of system functions. Finally appropriate viewpoints and issues for quantitative evaluation are discussed.</p> <p style="text-align: right;"><a href="#">back</a></p>