Under the Integrated Vehicle Based Safety Systems (IVBSS) programme, the US Department of Transportation (US DOT) and the University of Michigan Transportation Research Institute (UMTRI) initiated a Field Operational Test in 2009 which has recently been concluded. Several industrial partners, freight and fleet companies took part and tested vehicles equipped with an integrated suite of advanced driver alert and vehicle control technologies.

UMTRI, as programme manager, tested and evaluated a new, integrated crash warning system for commercial trucks and passenger cars. The programme collected and analysed data on system performance as well as driver interaction and feedback in real-world operating conditions. The final report for the commercial truck test will be released soon.

Could you clarify the organisation, stakeholders and government perspective regarding this field test?

Jack Ference: The IVBSS programme is a cooperative agreement between the US DOT and UMTRI. The US DOT team includes the NHTSA, the Research and Innovative Technology Administration — specifically, its Intelligent Transportation Systems Joint Program Office and the Volpe National Transportation Systems Center — and the Federal Motor Carrier Safety Administration.

Jim Sayer: The UMTRI led team working on the light-vehicle platform includes Visteon Corporation, Honda R&D Americas, and Takata Corporation. The heavy-truck platform partners are Eaton Corporation, International Truck and Engine Corporation, Takata Corporation, Conway Freight, and Battelle. The involvement of industrial partners was considered critical, given their technical knowledge of and ultimate ability to deploy systems into the vehicle fleet.

Which systems were tested and on which scale?

Jim Sayer: Three crash warning subsystems were integrated into both light vehicles (passenger cars) and heavy trucks (Class 8 commercial tractors): forward crash warning, lateral drift warning, and lane-change/merge crash warning. The light-vehicle platform also included a curve-speed warning subsystem.
**Feedback on FESTA**

An important objective of FOT-Net is to gather feedback on the FESTA methodology from the different FOTs. A survey revealed that most of the respondents found the FESTA handbook useful and user friendly, while there is a need for further improvement and detailing on specific topics.

In a special workshop held in Leeds on 14 June, the methodology was discussed by different FOT representatives. Special attention was paid to topics coming from the FOT-Net seminars: baselines, hypotheses prioritisation, incident definition and scaling up of results. Some cross-cutting issues are the evaluation of multiple systems and functions and their interactions, the stakeholder analysis and approach in different stages of a FOT, and the way in which iteration in the design of a FOT should be handled.

A dedicated FOT-Net report due for the end of 2010, will include the issues identified and suggestions for improvement and extension.

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**FESTA methodology & seminars**

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**FOT-Net seminar in Israel**

On 22-23 June, a FOT-Net seminar was organised in Herzlia, Israel, upon invitation of ITS Israel, a FOT-Net associated partner, and in collaboration with ILTAM. The objective of this seminar was to make Israeli traffic and transport experts acquainted with the FESTA methodology and the European work on FOTs, and to strengthen the relations between FOT-Net and Israel.

The seminar covered various topics, including the FESTA methodology, research questions, hypotheses and performance indicators, data acquisition and management, study design, real-life experiences from FOTs, stakeholder analysis, scaling up of the results, and simulation. In dealing with these issues, the seminar combined plenary presentations and interactive working sessions.

Around 25 participants from Israel from different stakeholder groups attended the seminar. The participants contributed very actively, and discussions in the small groups were animated.

Presentations and report are available for download on [www.fot-net.eu](http://www.fot-net.eu).

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**Evaluation of cooperative systems FOTs – Feedback from the FOT-Net seminar**

FOT-Net organised a seminar on the evaluation of cooperative systems FOTs on 24 March in Amsterdam, in conjunction with Intertraffic and the Cooperative Mobility Showcase and Conference.

Jim Misener from the University of California shared his US experience, discussing cooperative mobility from the infrastructure point of view, while Ilja Radusch from the Fraunhofer Institute in Berlin provided a European perspective, presenting the PRE-DRIVE project on Car-2-X communication.

Participants worked in groups on evaluation issues related to the interaction between drivers, in-vehicle and roadside systems. Research questions, hypotheses, and data to be collected were defined. Marco Dozza (Chalmers) helped to raise issues related to the penetration of equipped vehicles and roadside equipment, while Martijn van Noort (TNO) facilitated the discussion on how to scale up results of evaluations and provide recommendations for stakeholders.

Conclusions of the day included that evaluation of cooperative systems FOTs is quite complex, many factors need to be taken into account, and the penetration rate is a major issue. The FESTA methodology can in principle be applied, although tools and procedures may be different.

Presentations and the full report are available on [www.fot-net.eu](http://www.fot-net.eu).
There were two field tests, one with the heavy trucks and one with the passenger cars. The heavy truck field test was conducted using 10 tractors and 18 drivers from Con-way Freight, collecting naturalistic data for 10 months and more than 600,000 miles. The passenger car field test was conducted using 16 four-door sedans and 108 lay drivers, collecting naturalistic data for 12 months and more than 200,000 miles. Each vehicle was instrumented to capture detailed data on the driving environment, driver behaviour, warning system activity, and vehicle kinematics.

**The final results will be published soon. Can you already reveal some key findings?**

Jack Ference: The first key finding is that both commercial and lay drivers are generally accepting of integrated crash warning systems – even prototype systems that still have a few kinks to be worked out. Drivers consistently state that the integrated system made them more aware of the traffic environment, particularly the vehicles around them. Drivers have also stated that they thought that the integrated system would increase their driving safety.

Jim Sayer: Having reviewed the videos from when warnings were presented, UMTRI has identified at least three crashes that appear to have been prevented by the integrated crash warning system. Commercial truck drivers liked the lane departure warning component the most, whereas the lay drivers liked the blind spot monitoring component of the lane change/merge warning system best.

While we have completed analyses of the heavy truck data, we are still analysing the data from the passenger car test. From the heavy truck data we did not find any consistent evidence that drivers over-relied on warnings from the integrated system, at least not as it relates to increased involvement in secondary tasks (talking on the phone, eating, etc.). When the integrated system was on, as compared to a baseline period, commercial drivers did a better job at maintaining the position in the centre of the lane. There was also an increase in following distances observed, but it was too small to be of practical significance. Perhaps of greatest interest is that truck drivers had faster reaction times to the onset of the brakes when there was a forward conflict when the integrated system was on.

**What measures will be taken to ensure wider take-up and acceptance? Are fleet and freight companies ready to implement these systems on a permanent basis?**

Jack Ference: NHTSA has been encouraging deployment of advanced safety technologies by recognising them through its consumer information programme, the New Car Assessment Programme (NCAP) for light vehicles. Currently, there are three confirmation tests for forward collision warning and lane departure warning systems. If they can demonstrate they have passed, manufacturers will be able to list that their vehicle is equipped with these systems. As part of this new programme, being introduced in 2011, we plan significant outreach, partnerships, and publicity for these systems. The Agency is also looking into the next technology to be added to the NCAP programme.

History has shown that consumer information programmes are an effective tool in promoting safety advances. For example, the NCAP Rollover rating programme superseded the significant increase and ultimate requirement for Electronic Stability Control. We believe that beneficial advanced technologies will follow a similar path. The Agency’s plan for encouraging advanced safety systems for heavy trucks is under development.

*More information and reports:*

www.nhtsa.gov/Research/
Crash+Avoidance/Integrated+Vehicle-Based+Safety+Systems+(IVBSS)

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**In the spotlight (cont...)**

**Next FOT-Net seminar: Data analysis and impact assessment**

On 5 October 2010 a FOT-Net seminar will be organised in London on Data Analysis, Impact Assessment and Cost-Benefit Analysis (CBA). The seminar provides answers to the following questions:

- how to carry out data analysis, impact assessment and CBA according to the FESTA methodology;
- in what way can (behavioural) models enrich FOT data;
- how to ensure harmonised – subjective and objective – data coming from different sources (different test sites, sensors, manufacturers, etc.);
- how to deal with combinations of functions or systems (learning effects, interaction effects);
- what to do with differences between impacts on a societal versus stakeholders level;
- what are do’s and don’ts, what lessons are learned from past projects?

The day will be highly interactive with exercises, cases, and discussion.

Registration and more information: www.fot-net.eu

When: 5 October 2010
Where: London, UK
News from FOT projects

The FOT projects carried out around the world represent an invaluable source of scientific data. FOT-Net promotes and facilitates the exchange of knowledge. In this section we report regularly about objectives and results of ongoing FOTs.

**euroFOT Operations underway**

**euroFOT**

Bringing intelligent vehicles to the road

EuroFOT, an important European FOT on Active Safety Systems is assessing the performance and impact of eight Advanced Driver Assistance Systems (ADAS). After the preparation phase, the operational phase has recently kicked off in four countries. Vehicle Operation Centres across Europe have launched or are about to launch the vehicles that will drive and gather valuable data for the study.

In Sweden, 100 vehicles from Volvo Cars are now running with various ADAS systems. In the UK and the Netherlands, Volvo Trucks has introduced 30 vehicles with ADAS functions and data loggers, as well as 50 vehicles with Fuel Efficiency Advisor.

In Germany, Ford has equipped 2 cars with the Lane Departure Warning System. Volkswagen is actively recruiting fleets willing to take part in the field test, and at MAN Trucks 46 vehicles have hit the road recently, while another 34 are currently secured for production. Daimler has recently launched 15 cars with head-up display and BMW will be bringing in another 15 cars with this system. euroFOT is also welcoming a new German partner, as Audi has confirmed its interest in taking part in the initiative.

In France, 5 high-level equipped vehicles are ready, while driver acquisition with Renault’s marketing support is underway. Italy sees 154 FIAT cars with Lane Departure Warning on the road (LDW) and 46 so-called “control vehicles” without LDW.

The euroFOT project has recently been promoted on the euroNews TV channel, you can watch the video at [www.euronews.net/2010/07/14/eu-project-looks-to-make-the-roads-safer/](http://www.euronews.net/2010/07/14/eu-project-looks-to-make-the-roads-safer/)

Further information: [www.eurofot-ip.eu](http://www.eurofot-ip.eu)

**TeleFOT: The importance of feedback**

TeleFOT Test Sites are working towards the start-up of the actual field tests. During the final steps before their launch, important feedback is being gathered from pilot tests undertaken at a small number of sites, such as the Valladolid test site in Spain, the test site in Greece and the Oulu test site in Finland.

The results from these pilot studies will be useful for process verification and allow fine-tuning of the test tools. The pilots are also extremely important for determining the feasibility and suitability of large-scale testing, since the whole FOT process has been reproduced on a limited scale, including test conditions, tools, questionnaires and support line.

The tests revealed the importance of briefing sessions with drivers, to clarify doubts, fears, etc. The need to pay attention to the given instructions was also emphasised, since this could influence the drivers’ behaviour during the trials. The support line during the trials proved to be an essential tool to ensure close contact with users, maintain their motivation and involvement, and gather their feedback, which is of paramount importance to understand some of the results. It is therefore strongly recommended to provide for such support in every FOT.

Currently, the Valladolid test site is analysing the data coming from the pilot tests in order to refine the design and prepare for the deployment of the large-scale tests that will be launched after summer.

In the coming months, valuable feedback from TeleFOT Stakeholders is also expected through the Second General Stakeholder Forum and the local FOT workshops that will be organised. The overall aim of these will be to provide input and advice to the TeleFOT Consortium, to support dissemination and exploitation of project results, as well as to foster the debate on other TeleFOT issues.

More information: petri.mononen@vtt.fi, [www.telefot.eu](http://www.telefot.eu)
PROLOGUE: Towards a large-scale Naturalistic Driving study

The EU funded project PROLOGUE assesses the feasibility and usefulness of a large-scale European naturalistic driving study and develops the scientific and organisational basis for it. PROLOGUE started in August 2009 and will end in July 2011.

Over the past decades, substantial road safety improvements have been made. However, it becomes more and more difficult to move forward at the same pace. A new generation of measures is needed, underpinned by new research methods. This is where naturalistic driving studies come in.

Typically, in a naturalistic driving study, passenger cars are equipped with devices that for a substantial duration continuously monitor various aspects of driving behaviour, including information about vehicle movements, the driver, and the direct environment. This provides insight into the interrelationship between driver, vehicle, road and other traffic in normal and conflict situations and in actual crashes. Whereas road safety is the main motive, the project also looks at environmental issues and issues related to traffic management.

For a large-scale study to be feasible, its results need to be useful for as many stakeholders as possible, including car industry, insurance companies, driver training and certification organisations, road authorities and governments. Therefore, a series of six regional workshops will be organised in Austria, Greece, Netherlands, Norway, Spain and UK. Exact dates will be announced soon on www.prologue-eu.eu.

Spanish SISCOGA FOT kicking off

The Spanish FOT on cooperative Systems, SISCOGA (SIStemas COoperativos GAlicia), is about to kick off! Covering more than 60 km of roads in the north-west of Spain and making use of 20 fully-equipped vehicles, this FOT will run for 1 year and will look into the safety and efficiency benefits of a range of cooperative systems, including:

- accident / traffic jam information
- road works information
- floating car data
- adverse weather conditions information
- variable speed limits
- alternative routing
- merge assistant

The FESTA methodology will be applied and its influence on cooperative systems will be analysed, thus gaining important experience. Equipment will include 5.9 GHz state-of-the-art Road Side Units (RSUs) and On Board Units (OBUs), and the HMI will be nomadic-device based. The testing area includes both motorways and city entrances / exits.

The project is managed by CTAG (Centro Tecnológico de Automoción de Galicia) and has the support of the DGT (Dirección General de Tráfico), through its Traffic Management Centre in Galicia, which provides remote stations, meteo information, variable message signs, surveillance cameras and inductive looping in the whole area.

Results will be available at the end of 2011.

More information: david.sanchez@ctag.com
Dutch ‘Spitsmijden’
FOT: Incentives for avoiding ‘peak hours’ in traffic

The Province of Noord-Brabant together with the City region of Eindhoven (SRE) is carrying out a FOT in the cities of ‘s-Hertogenbosch and Eindhoven, using GPS-based tolling and travel information, and aiming at keeping these two cities accessible for traffic in the future. The pilot starts after summer and will grow to approximately 3,000 voluntary participants.

The car owners receive a maximum budget of €100 per month. Each time they enter the city during peak hour, an amount is deducted from this budget. Furthermore, participants get a route navigation planner with automatic access to information services, such as traffic and parking information and prices of travel alternatives, to help them make more conscious travel choices. These information services are novel and not yet available on the market. An example is ‘iSi’, which stands for Intelligent Speed Information, and aims to increase safety near schools. Drivers’ navigation systems give a warning when they are approaching a school where children are around, which allows them to adjust their speed. Most innovative information services, such as real-time parking information, public transport information and real-time traffic information make use of databases of third parties.

At the end of the field test, information will have been gathered on how price and information incentives influence travel behaviour.

More information: Y.vanVelthoven-aarts@sre.nl

US SafeTrip-21: Enhanced mobility and road safety

SafeTrip-21, ‘Safe and Efficient Travel through Innovation and Partnerships for the 21st Century’, explores the application of ITS that transfer information on traffic and travel options to and from vehicles in order to reduce congestion and increase safety, mobility, efficiency, and convenience.

“We’re integrating existing technologies to show that we can measurably improve safety and transportation system efficiency or mobility,” says Paul Brubaker of the Research and Innovative Technology Administration (RITA) within the US Department of Transportation. “SafeTrip-21 is designed to demonstrate that through better use of information, navigation, communications, technologies, and protocols, we can make a measurable impact.”

Mobile Millennium, the first project within SafeTrip-21, takes advantage of progress in smart mobile phone technology. Drivers with GPS-equipped phones can obtain their vehicle speed at a given location, providing them with real-time traffic conditions and travel times. The project collects data from the California Bay Area and the Interstate 80 and US-50 corridors between San Francisco and Lake Tahoe. This will lead to a product and large-scale deployment in other regions. The private sector has the ability to rapidly deploy the product once approved.

SafeTrip 21 claims to embody the largest multi-modal ITS test in the world and one of the largest tests of traffic probe data ever undertaken. It seeks to expose public, decision makers and stakeholders to the benefits of Vehicle Infrastructure Integration (VII) concepts in real-world travel settings. Once deployed, the technologies are expected to improve travellers’ quality of life by providing real-time information.

Initiated two years ago, SafeTrip-21 is currently running and receives $12.4 million funds from public and private sector partners. As programme initiator, RITA cooperates with the California Department of Transportation (Caltrans). Other partners include the Metropolitan Transportation Commission, the University of California-Berkeley’s California Partners for Advanced Transit and Highways (PATH), the California Center for Innovative Transportation, Nokia, Inc., NAVTEQ, Santa Clara Valley Transportation Authority, and Nissan.

More information: www.rita.dot.gov
For a FOT to be successful, cooperation between a whole range of stakeholders is primordial. As managers of transport infrastructure, cities play a crucial role in testing and deploying new technologies which impact on the way vehicles operate on their roads. An increasing number of them are looking at the potential of ITS to help them achieve their policy goals. FOT-Net asked three pioneers, Helmond (NL), Frankfurt (DE) and Trondheim (NO), about what is driving them to play a forerunner role in ITS related pilots and FOTs.

Trondheim has an ambitious green transport policy and feels that if its goals are to be reached, new technology is needed. That’s why the city wants to be a forerunner in developing new technologies and hosting FOT activities. The Trondheim ITS cluster, including all relevant stakeholders, is crucial for their success. The fully equipped Trondheim CVIS test site resulted from this cooperation, and will continue to be in real-life testing of cooperative systems, with a priority for public and freight transport applications.

Cooperative systems on Japanese roads

The main driver for cities to sign up to pilot and field tests lies with the ambitious policy targets they have set themselves. Helmond’s mobility plan ‘Helmond Mobiel 2015’ stipulates a better use of existing infrastructure as a major objective, which in turn should allow them to fulfil their policy objectives on reducing congestion and improving accessibility, air quality and road safety. It is clear to Helmond that new technologies have to play a crucial role in this respect. To this end, Helmond is positioning itself more and more as test site for cooperative systems. After its involvement in CVIS, the city plays a role in the Dutch SPITS Platform for Intelligent Traffic Systems and is getting ready to host the future DRIVE C2X FOT on vehicular communication technology.

Also Frankfurt’s transport policy includes ensuring the best use of the city’s road network as a major goal, as they expect this to lead to reduced infrastructure expenses, happy road users and strengthened economic power. Furthermore, Frankfurt’s interest is to drive forward the standardisation process for road traffic control systems within the Open Communication Interface for Road Traffic Control Systems City Association. They consider both goals only to be achievable by testing the latest developments on site. They therefore chose to be involved in the German simCT FOT, where they are in particular testing tools to optimise network control and signal controllers.

As the first step of this strategic plan, ITS Israel is now working on the establishment of the Israeli Field Operational Support Centre, with the following actions taken so far:

- ITS Israel joined FOT-Net as an associated partner;
- an Israeli FOT working group was established in cooperation with ILTAM;
- a FOT-Net seminar was conducted in June 2010;
- a scale up activity was initiated to tailor the eIMPACT-eSafety effectiveness assessment to the Israel transportation environment.

ITS Israel is seeking further cooperation with FOT-Net and other ITS stakeholders to develop the required know-how and procedures to support cooperation between national and pan-European agencies responsible for ITS deployment.

More information: eran@its-israel.org, www.its-israel.org
Third International FOT-Net Workshop
25 October 2010 – before the Opening Ceremony of the ITS World Congress in Busan
More information: page 2

ITS World Congress in Busan
The 17th ITS World Congress, organised under the theme “Ubiquitous Society with ITS”, will take place in Busan, South Korea’s second-largest city, from 25-29 October 2010.
The following Special Sessions on FOTs will take place:
• An International Perspective on FOTs for Nomadic Devices in Vehicles (SS 11, Tuesday, 26 October, 16:00 – 17:30)
• Cooperative Systems: Will Field Operational Tests Show Us the Deployment Path? (SS 49, Thursday, 28 October, 16:00 – 17:30)
• Intelligent Vehicle Field Operational Tests around the World (SS 61, Friday, 29 October, 09:00 – 10:30)
More information: www.itsworldcongress.kr/default.asp

Integrated Vehicle-Based Safety Systems – IVBSS Programme Public Meeting
20 October, Ypsilanti, Michigan

Next FOT-Net Seminar: Data Analysis and Impact Assessment
5 October 2010, London
More information: page 3

Fourth Stakeholder Workshop and Seminar on FESTA methodology
1-2 December 2010, Brussels
SAVE THE DATE!
More information to follow soon

FOT Wiki – the online catalogue of FOTs
The Wiki intends to be a resource for anyone interested in field operational tests, their organisation, their set up and their results. The Wiki is a living resource, fed by FOT stakeholders.
Share your FOT knowledge with the FOT community! Updating the Wiki is quick and easy!

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Coordinator
Maxime Flament, ERTICO – ITS Europe, m.flament@mail.ertico.com

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