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Feb 28-29	LinSig Version Two Computer Workshop
Mar 3	LinSig for Small Networks
Mar 4	Design of Signalled Roundabouts using LinSig
Mar 10-11	TRANSYT V12 Computer Workshop
Mar 12	TranEd2 Workshop for TRANSYT Users
Apr 22-23	Introduction to Traffic Signals
Apr 24	Geometric Traffic Signal Design
Apr 29-May 1	LinSig Version Two Computer Workshop
May 1	LinSig for Small Networks

### DERBY

Jan 14-15	Introduction to Traffic Signals
Jan 18	Design of Signalled Roundabouts using LinSig
Jan 28-29	LinSig Version Two Computer Workshop

### LEEDS

Mar 10-11	Introduction to Traffic Signals
Mar 12-14	LinSig Version Two Computer Workshop
Mar 14	LinSig for Small Networks

### CARDIFF

Apr 14-15	Introduction to Traffic Signals
Apr 16-17	LinSig Version Two Computer Workshop
Apr 18	LinSig for Small Networks

### BIRMINGHAM

May 6-8	MOVA Design & Implementation
May 6	Introduction to MOVA
May 9	Linked MOVA Design & Applications

### SCOTLAND - Central

May 12-16	Traffic Signal Design & LinSig Computer Workshop
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### BOURNEMOUTH - Wessex Hotel

July 7-11	Traffic Signal Design & LinSig Computer Workshop
July 21-24	Advanced Traffic Signal Design

Full details of course content and how courses  
can be combined are available on our website  
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# Intelligent systems for better mobility: **bringing to market**

**Rosalie Zobel** explores the new European research challenge of FOTs and says that the establishment of extensive field operational tests across Europe will be a key FP7 objective within ICT for Mobility.

It is now more than 20 years and four European research framework programmes (FPs) since European-level development of ICT (information and communication technologies) functions and systems for road transport began. The drivers for these developments were the need to reinforce the competitiveness of European industry; and contribute to the development and deployment of key EU policies in the area of safer and more efficient transport systems.

This period has seen many research and development projects being funded. In FP5, for example, the EC invested a total of €150 million through its IST programme in the two clusters of mobility and intelligent infrastructures, and the intelligent vehicle.

FP6, on the other hand, focused on three main priorities: onboard preventative safety systems, info-mobility services and co-operative systems. European funding for projects in these areas accounted for €160 million.

These projects have produced some very interesting and encouraging results, with great potential to contribute to solving the major transport challenges our society is facing. The PREVENT integrated project (IP) is a clear example.

Demonstrations have tested the technical and functional behaviour of the systems developed. But these have often been constrained by controlled conditions and a limited scale, due to both scarcity of equipment and restrictions on operating experimental systems in real traffic conditions.

This situation has created a real need for improved knowledge on several key questions that are crucial for faster market implementation of these systems. I'm referring to issues regarding the way drivers use intelligent systems, what their short and long term effects are, and how system performance could be further improved.

It is evident that clear answers to those questions will be very valuable not only to industry but also to policy makers and public authorities in their decision-making processes. We therefore believe that the time is now ripe to add an additional element to the research and development chain.

This consists of the analysis and assessment of selected ICT-based systems in a real environment, with regular drivers, and over a period that will allow the statistically-sound collection and processing of data. Within the ICT for Mobility strategic objective of FP7, we are therefore proposing to establish extensive field operational tests (FOTs) across Europe.

The main purpose is to validate the effectiveness of ICT-based systems and functions for safer, greener and more efficient transport in a real-life environment. Previous experience in the US and Japan has shown that FOTs are an excellent way to raise awareness, collect real data and enhance the take-up of ICT solutions.

The US has used FOTs for a relatively long time to evaluate the



**Nomadic device providing navigation services**

technical performance, user acceptance, and – recently also - the impact of intelligent vehicle (IV) safety systems. These FOTs have dealt with collision avoidance and road departure warning systems, transport of dangerous goods, adaptive cruise control, and tracking driver behaviour in ordinary driving situations.

Japanese vehicle manufacturers, before entering the overseas market, often use the home market as a large-scale FOT for early evaluation of new systems such as collision warning, drowsiness monitoring and vehicle-to-infrastructure communication-based services. FOTs are an integral part of the R&D chain that starts with system concept development and ends systematically with impact assessment analysis, through FOTs, of developed technologies and systems.

Large-scale tests of IV systems have so far been quite rare in Europe. The most noteworthy have dealt with speed alert and

adaptation systems, with the largest carried out in Sweden, the UK and the Netherlands (see pages 10-14). France, Finland and Belgium have also undertaken FOTs, but on a much smaller scale; while there has not so far been a pan-European FOT.

#### The intelligent car initiative

In February 2006 the EC adopted a communication on the intelligent car: Raising Awareness of ICT for Smarter, Safer and Cleaner Vehicles. This presents the Intelligent Car Initiative (ICI) as a policy framework for actions in these areas, its objective being to increase awareness on the vital contribution of ICT to the quality of life.

The ICI focuses on road vehicles and infrastructures and addresses safety and environmental challenges arising from increased road use. Among other key actions, the communication introduces, for the first time in Europe, the concept of the FOT as a tool for performing a large-scale assessment programme on the impact of ICTs.

Work on the intelligent car and eSafety is managed by the ICT for Transport unit in my Directorate. André Vits heads it, and is the mastermind behind the progress made in the last six years in the development and implementation of ICT systems for smarter, safer and greener mobility; as well as being responsible for the new challenge of FOTs

#### FOT objectives in FP7

FP7 is the EU's main instrument for funding scientific research and technological development over the period 2007-2013. FOTs will be among the major activities within ICT priority challenge 6: ICT for Mobility, Environmental Sustainability and Energy. The specific objective is to establish, through FP7 co-funded projects, a socio-economic assessment programme that is both comprehensive and technical. This programme, based on FOTs, is designed to:

- Validate the effectiveness of ICT-based systems and functions for safer, cleaner and more efficient transport in a real environment;
- Analyse driver behaviour and user acceptance of systems;
- Analyse and assess the impact of intelligent safety and efficiency functions, using real data;
- Improve awareness of ITS potential and create socio economic acceptance;
- Obtain technical data for system design and product development; and
- Ensure the transferability of FOT results to overall European and global contexts.

The deployment of ICT-based systems requires commitment by industry; but also investments in infrastructure, which are the responsibility of public authorities.

Any engagement from their side will be based on impact assessment studies, where cost/benefit analysis plays an important role. We believe that FOTs will provide the real operational data to carry out such assessments.

FOTs need to target mature, or close-to-market, systems that

can be made available in sufficiently large numbers. They need to be carried out at European level, with the necessary vehicle fleets and infrastructure and appropriate numbers of drivers, over sufficiently long periods to collect data that will ensure statistical value and scientifically-sound conclusions.

#### Deployment of FOTs

Now we have explained the concept, we need to define the way in which FOTs could be deployed in Europe. The most important factor is to ensure compatibility of data collected and analysis performed across Europe, interoperability of solutions, and a common methodological approach. We have therefore planned FOT deployment in successive phases.

**Phase 1: Ramping up.** This will define the basis for designing, running and evaluating FOTs at European level. It has already started, in FP7 Call 1, with the selection and funding of a support action which is analysing the structure, organisational issues, running conditions and assessment methodologies of FOTs in Europe.

The FESTA (Field Operational test support Action) project started in November 2007 with a short but intensive six-month duration and a fully EC-funded €1.4 million budget. It will produce a handbook of best practice for the design and implementation of FOTs, and its work will be the reference for future FOT-based IPs being launched in phases 2 and 3.

Use of the FESTA Handbook will, in particular, provide the confidence that FOT results on overall benefits are scientifically robust, in terms of both measured results and cost/benefit analysis. It will also give guidance on the format and type of behavioural measures to be considered when designing an FOT.

It will consider homogenous data acquisition systems and procedures, and suggest ways of optimising experimental measures, eg participant selection and experimental design, given practical constraints. FESTA will also deal with other aspects of FOT implementation, eg ethical and legal issues, and make recommendations on the functions to be tested.

Led by Centro Ricerche Fiat (Italy), it has a consortium of European and international experts with academic, vehicle manufacture and system supply backgrounds, strongly-committed to meet its objectives within the six-month timeframe.

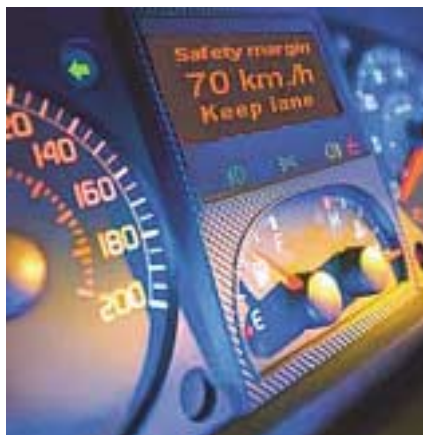
**Phase 2: Large-scale FOTs.** A few large-scale FOTs, carried out by IPs, will focus on mature technologies and systems resulting from previous EC-funded projects, or cover issues that are critical for market implementation. We have evaluated relevant project proposals resulting from FP7 Call 2,

which produced four large complementary responses.

Despite positive evaluations by the independent experts, only two will be funded, due to the limited funds available: EUROFOT and TELEFOT. The EUROFOT IP will assess the impact of advanced driver assistance and preventive safety functions in real traffic conditions.



Enhanced digital map for driver assistance (CVIS technology for eSafety support)



Safety margin assistance

It will test eight functions: forward collision warning and brake assist; adaptive cruise control; speed limiting; lane departure and impairment warning; blind-spot information; safe human-machine interaction (HMI); curve speed warning; and fuel efficiency advice. It will involve 1500 vehicles from 11 European car manufacturers over three years.

The TELEFOT IP, which will run for four years and involve 3000 drivers, will address problems of safe fixing and use of nomadic and after-market devices in vehicles. Functions being tested cover three broad areas: promotion of safe driving; economic driving; and a novel navigator-retrofitted eCall emergency alert system.

FOTs will assess their impact on the efficiency of the transport system, usability, driver behaviour and accident causation, safety and the environment. The main emphasis of the work is on speed and traffic information, road weather information and 'green driving' support.

We have also selected for funding a support action. The two-year FOTNET project will create a structure to support FOTs, with a view to networking European FOTs with national initiatives and projects ongoing in other world regions, and helping the EC to achieve an integrated approach to FOTs.

Its work will include establishing a networking platform, representing all public- and private-sector stakeholders; promoting adoption of FESTA results and a common methodology; creation of an FOT-portal to increase visibility of FOT activities; and, finally, disseminating FOT results among the general public to increase awareness of the potential of ITS.

These projects will now enter negotiation with the EC. They

will probably start work in the first quarter of 2008.

**Phase 3: Future calls.** This will build on the experience of the first two phases. Future FP7 calls are expected to cover further work on co-operative systems for safer and more efficient transport systems, which started as a result of FP6 Call 4.

It would also be of interest to start an FOT-based 'naturalistic driving' study to investigate accident causation. The issue of preventive safety and driver assistance will also continue to be covered, addressing more specific problem areas eg intersection safety or protection for pedestrians and other vulnerable road users.

I believe that FOTs are powerful tools in contributing to the objectives of the ICI, and to a future Europe where road accidents and fatalities are considerably reduced and mobility is more efficient and respectful of the environment. We have started this new stage in European R&D together with industry, the research community and the Member States, and I'm looking forward to working on these projects and achieving successful and useful outcomes.

**Rosalie Zobel is Director, EC Information Society and Media Directorate-General Components and Systems**

<http://ec.europa.eu/intelligentcar>

[http://europa.eu.int/information\\_society/programmes/esaf/ety/index\\_en.htm](http://europa.eu.int/information_society/programmes/esaf/ety/index_en.htm)

[www.festaproject.eu](http://www.festaproject.eu)

[www.prevent-ip.org](http://www.prevent-ip.org)

[www.crf.it](http://www.crf.it)



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