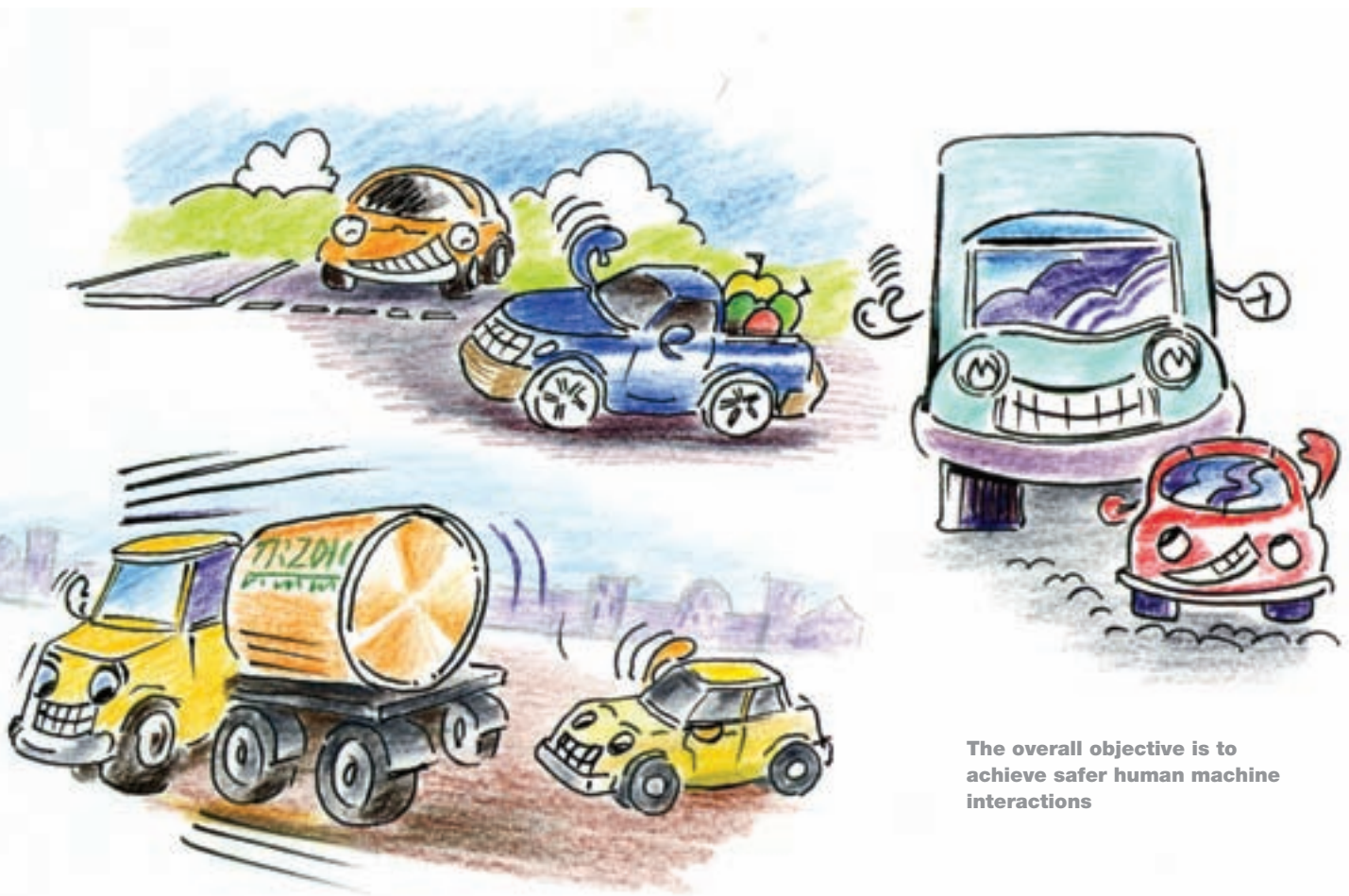


Into the field



Peter Rochford

The overall objective is to achieve safer human machine interactions

Ariane Brusselmann, Gianfranco Burzio and Aria Etemad set the scene for Europe's bid to supply missing links between research and markets

Car and truck fleets are currently being got ready for the first pan-European field operational tests (FOTs) of active in-vehicle safety systems. The euroFOT integrated project (IP), part of an €14 million EC ICT programme aimed at improving traffic safety and efficiency, will see over 1500 equipped vehicles driving on the roads of France, Germany, Italy and Sweden during 2009-10. The parallel TeleFOT IP will be device-oriented.

Within euroFOT, four specially set-up vehicle management centres will run trials of available systems. Major marques including Ford, Daimler/Mercedes, BMW, MAN, Renault, Volvo, Volkswagen/Audi and Fiat/Lancia are among 28 organisations, also

including automotive suppliers, universities and research institutes, coming together to test near-market advanced driver assistance systems (ADAS) in real traffic conditions.

These include both longitudinal control functions – forward collision warning, adaptive cruise control and speed limiting; and lateral ones – blind-spot monitoring, lane departure warning and impairment warning. euroFOT will also test more advanced applications, eg safe human machine interaction (safeHMI), fuel efficiency advice and new-generation curve speed warning.

Preparatory steps, including setting up data management procedures, are already under way following a common methodology developed within the Field opERational teSt

support Action (FESTA) project, the first phase of new European FOT Initiative.

Test vehicles will be equipped with data loggers, varying from simple CAN-bus to complex video units, to monitoring drivers' behaviour and how they adapt, vehicle dynamics and system acceptance in all traffic conditions. Subjective data will also be collected by means of questionnaires to get feedback from the driver on the system tested.

In addition to comprehensive technical assessments of active systems' performance and capability, the trial results will create better understanding of how drivers handle and interact with them. They will also offer an important opportunity to raise consumer awareness of what technology is available and

so encourage market introduction.

Once the trials are complete, we expect analysis of both objective and subjective data to give significant support to the decision-making necessary for the deployment of mature ADAS systems across Europe. The time for such deployment is ripe. The positive impact of ADAS systems on traffic safety and efficiency is already widely recognised. Several studies have demonstrated that people value the enhancements offered, once they know and understand them.

The EC programme acknowledges that recent decades have seen a large number of ICT-based transport applications successfully developed and demonstrated in collaborative research projects throughout Europe. While their positive impact on traffic safety and efficiency are now widely accepted, however, market penetration still lags behind – mainly due to lack of awareness of their societal benefits.

Currently, only limited amounts of data are available on their real-life operation in ordinary traffic. There is a growing need for answers to key questions such as: How do drivers use them? What are the short- and long-term effects? How can systems' performance be further improved?

Previous experience in Europe, US, and Japan has shown that large-scale FOTs are an excellent way of raising awareness of, assessing the quality and acceptance of, collecting real data on, and enhancing take-up of, ICT solutions. Their results have helped business leaders make informed decisions on market introduction; and policy makers to establish the necessary policy framework.

Japan now includes FOTs as an integral element in R&D programmes. European examples include a Netherlands FOT of lane departure warning systems for trucks; while perhaps the most prominent technology tested so far is intelligent speed adaptation (ISA), with trials in Belgium, Denmark, France, the Netherlands, Sweden and the UK (mostly with national government funding).

Previous European FOTs have, however, largely operated at national level and typically been confined to controlled conditions – reflecting both availability of equipment and restrictions on operating experimental equipment in real traffic conditions. There is now growing recognition of the need for larger-scale activity within a common European framework.

FOT-Net

A major step in this direction is the ERTICO-led FOT-Net support action, funded by the EC DG Information Society and Media under the 7th Framework R&D Programme (FP7). This is bringing together national, European and international FOT organisers on a single, strategic networking platform

FESTA

FESTA has already produced a comprehensive handbook giving essential guidance on implementing FOTs. It has defined a common methodology for planning, running and evaluating them at European-level, to enable them to meet key EC objectives; ie:

- Validating the effectiveness of ICT-based systems and functions for safer, cleaner and more efficient transport in a real environment;
- Analysing driver behaviour and user acceptance of systems;
- Analysing and assessing the impact of intelligent safety and efficiency functions using real data;
- Improving awareness of ITS potential and creating socioeconomic acceptance;
- Obtaining technical data for system design and product development;
- Ensuring transferability of results to overall European and global conditions. Ensuring robustness of results; and
- Allowing as much as possible, the comparison of results between different FOTs.

It also aims to pave the way for standardisation of key elements of FOTs, to aid cross-FOT comparisons (while acknowledging that traffic parameters in different European countries can vary substantially).

designed to spread, and feed in, the common FESTA methodology.

The FOT-Net platform is encouraging debate on key issues needing close attention; eg:

- Legal aspects (intellectual property rights, obtaining approvals from relevant authorities);
- Startup and planning (overall staging, milestones, allowance for problems and delays; piloting and testing, organisation of vehicle fleets);
- Equipment (vehicle integration, specification of data logging equipment, installation, electrical and road testing);
- Users, consumer relations and marketing (user specification, recruitment and group handling, research sponsor and media relations, end-of-project seminars);
- Data handling (database design, data storage, export for analysis, weighting and aggregation, statistical analysis, significance testing);
- Assessment and policy making support (assessment of socio-economic impacts beyond technical aspects, provision of stakeholder information); and
- Next generation FOTs (cooperative systems testing integration of information between vehicles and (roadside) infrastructure equipment).

Interested stakeholders are invited to join the platform www.fot-net.eu.

TeleFOT

The TeleFOT IP aims to assess the impacts of aftermarket and nomadic devices installed in vehicles for driver support and other potential applications, and increase awareness of their traffic safety potential. Almost nothing is currently known about such impacts (not least on transport overall).

Explosive market penetration of portable navigators and 3G smartphones has created ideal conditions for the project, which covers two broad areas: safety; and economic and fuel-efficient driving.

TeleFOT will assess impacts in terms of usability; behaviour and incidents; safety; green driving and efficiency. Possible negative impacts being investigated include smartphones not being originally being designed for in-vehicle use; and issues with the safe placement and dashboard positioning of navigation devices.

The project will research how traffic information provided by retrofitted devices affects eg drivers' speed behaviour and reactions to driving situations including traffic congestion and incidents. It also aims to speed up the penetration of systems able to 'see' beyond drivers' fields of vision in conditions demanding good situational awareness.

Specifically, it aims to offer opportunities for testing the impacts of functions that future cooperative driving systems will provide once their development challenges are solved over the next years. Aftermarket and nomadic devices have, in fact, already been providing alternatives to some important cooperative driving and ADAS functions for a number of years.

It will additionally look at the functionality of the automatic eCall emergency concept; and the potential for locating large groups of cars as a traffic control method.

TeleFOT is running large-scale tests in three regional European 'communities' – Northern (Finland, Sweden); Central (Germany, UK and potentially one other country); and Southern (Greece, Italy, Spain). Short- and long-term tests with large numbers of vehicles will lead into more detailed tests with limited numbers of subjects and specific exercises, eg crash tests.

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