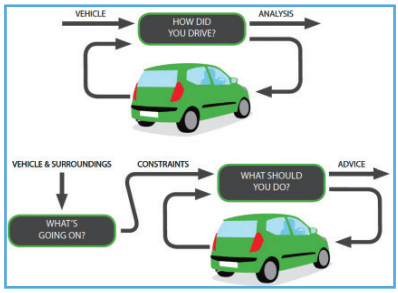
ecoDriver

Supporting the driver in conserving energy and reducing emissions

MOTIVATION AND OBJECTIVES



The ecoDriver project addresses the human element in promoting "green" driving, as driver behaviour is a critical element in energy efficiency. The focus of the project is on driver interaction with the vehicle and optimised feedback strategies (including HMI – Human-Machine Interface) to ensure user acceptance and compliance. It addresses technical aspects in the vehicle-environment-driver loop across a range of vehicles and powertrains. The target is a sustained 20% reduction in energy use in fitted vehicles.

The main innovative aspects of the project are to:

- Optimise feedback for nomadic devices and built-in systems and compare their effectiveness,
- Tailor feedback to driving style and traffic conditions,
- Minimise any side-effects of eco-driving support in terms of driver distraction and safety,
- Use real-time fuel use calculators to ensure the most accurate feedback.

PROJECT PLAN AND MILESTONES

The five technical Sub-Projects are:

SP1 provided information on driver styles, vehicles, fleets, and system state-of-the-art.
SP2 provided the functions for real-time assessment of energy use and emissions.
SP3 undertook extensive real-world trials in seven countries.
SP4 is developing HMI assessment tools to evaluate the data emerging from SP3, as well as monitoring user feedback and acceptance.
SP5 is predicting future impact and cost-benefit analyses of various systems and scenarios; also identifying barriers to deployment, providing policy-makers with information on incentives and regulations to promote adoption.

Current deliverables from each SP are available on the project's website.
The project ends in March 2016 with a Final Event in Stuttgart.

TECHNICAL APPROACH

Both integrated and nomadic ecoDriver applications have been developed. These applications contain two important parts: the Energy Threshold Interpreter and the Driver Feedback Interface. The Energy Threshold Interpreter determines the best energy efficiency that could be achieved at a given moment, considering both the fixed conditions that cannot be influenced (e.g., road type, traffic density, weather, the vehicle engine and the weight of the vehicle) through the Vehicle Energy & Environment Estimator and the semi-fixed conditions (driving styles) through the Driving Style Estimator.

The difference between the optimal energy consumption and the real energy consumption is fed back to the driver through the HMI.

ACHIEVEMENTS

Powertrain models to accurately estimate CO_2 emissions have been derived and validated. Models of the vehicles taking part in the field trials have been developed and integrated in several eco-driving algorithms (suitable for PCs, smartphones, nomadic devices and for integrated dashboards), which have all been fine-tuned using simulations.

The central prototype developed and built by the project is called the Full ecoDriver System. Three variations of this were then adapted and integrated by CRF and BMW (for cars) and Daimler (in a truck). TomTom developed an aftermarket system aimed at fleet operators (which is now commercially available) and IFSTTAR led the development of a Smartphone-based version.

Field trials in the Netherlands, Sweden, UK, Germany, Italy, Spain and France have been carried out, involving 30 cars, 26 goods vehicles and 10 buses, together with 180 drivers.

Budget	12.7 M€	**Funding**	10.7 M€
Duration	54 months	**Start**	October 2011
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Partners	BMW, Daimler, CRF, TNO, VTI, CTAG, TomTom, IKA, IFSTTAR, ERTICO, Simotion		
Website	www.ecodriver-project.eu		