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Interview with Prof. Oliver Carsten, University of Leeds, on the new ecoDriver project

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ERTICO: The University of Leeds is leading a new EC-funded project called ecoDriver. What is this project about?

Oliver Carsten: The project focuses on how to improve feedback to drivers on energy consumption in driving. We are covering a wide range of vehicles - mass-market cars, executive cars, trucks and buses as well as a variety of fuel systems - internal combustion engine, hybrid and full electric. The major research is on two aspects of feedback. First of all, we are looking at the interaction between the vehicle and the driver: what is the best way to inform the driver about how to improve energy efficiency? Should we be using continuous visual displays as a lot of current vehicles do or should we be directly intervening by giving the driver haptic signals on the accelerator pedal, for example varying pedal stiffness or vibrating the pedal? Is there a role for auditory messages? Do we advise the driver based on momentary performance or on performance over a certain time period?



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Secondly, we are seeking to enhance the quality of the feedback by implementing our own "calculation engine" to compare actual energy consumption with optimal energy consumption for the current road and conditions. Thus gives us a kind of sub-optimality index, telling us how much better a driver could do in the circumstances. Those two elements - the ecoDriver front-end as seen or felt by the driver and the ecoDriver calculator - give us the overall ecoDriver system. This system will be implementable both as original equipment and as software for nomadic devices.

ERTICO: In what way does ecoDriver differ from already existing driver assistance systems? What is the added value?

Oliver Carsten: Almost all driver assistance systems so far have focused on enhancing driver comfort and safety. Typical examples are Adaptive Cruise Control, Forward Collision Warning and Lane Departure Warning. Those systems are intended to make driving less stressful and safer. The potential of driver assistance systems to deliver energy savings and environmental benefits has not been really exploited. The enhancement of safety will continue to be a major concern and ADAS will I am sure continue to deliver here. Indeed, in designing the ecoDriver systems, we will do our very best to ensure that there are no negative side-effects of system use on safety. But the impact of transport on the environment is a growing concern both for society and for individuals. In addition, by saving energy we also directly reduce the cost of driving which is important both for individuals and for fleets. Finally, if we can improve energy efficiency, we can make alternative means of propulsion, such as hybrid and electric power, more practical and attractive. So both the individual and society as a whole can benefit.

ERTICO: Can you tell us about the technology behind it? What makes it more "accurate" and "intuitive" than existing devices?

Oliver Carsten: As I already indicated, we are working on two fronts. We are developing both our own calculation of energy consumption and a method to benchmark current energy use against optimal energy use. In terms of the optimum, we will be considering a wide range of factors such as road geometry, traffic conditions and the weather. There is no point in advising a driver to go faster when the vehicle is held up by congestion and we should not advise the driver to change to a higher gear on a steep downgrade. So we intend both to be accurate and to be sensitive to the prevailing situation.

In terms of feedback, we know rather little at the moment about what is effective. We may be telling the driver that he or she is performing badly or well - for example with pictures of leaves on the dashboard - but we are not telling drivers how to improve their performance. And we are generally not giving feedback directly to the main device that drivers use to demand energy use, namely the accelerator pedal. There is also a tendency for the effectiveness of current support systems to wear off rather quickly. We want to ensure that our feedback has durable impact.

ERTICO: In your press release, you are making the bold statement that ecoDriver products could be on the market within five years, i.e. not long after the project end. What makes you so sure about this?

Oliver Carsten: Among our project partners we have three of the world's leading vehicle manufacturers - BMW and Fiat as car producers and Daimler as a truck producer. We also have companies involved in nomadic and mobile devices. Those companies are very keen to learn from the ecoDriver research how best to optimise energy consumption and how to present the driver with feedback. One can anticipate that, if we are successful



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in our research, there will be a very rapid influence on products both as original equipment and as aftermarket devices.

ERTICO: Are you an eco-driver?

Oliver Carsten: Probably not nearly as much as I could be. Yes, I do try not to accelerate too hard and to keep to the speed limit. But my car does not provide me with any feedback on my current performance in terms of energy consumption nor on how I could improve that performance. In the absence of such feedback it is very hard to know in any kind of detail how I should change my driving style both in general and from moment to moment.

For more information, please contact:

Prof. Oliver Carsten
University of Leeds
Institute for Transport Studies
o.m.j.carsten@its.leeds.ac.uk
Phone: +44 113 343 5348
<http://www.its.leeds.ac.uk/>

[Read the Press Release of the launch of ecoDriver here](#)

