ECTRI INPUT

"EC Stakeholders meeting on vehicle technologies to enhance road safety"

March 8th, 2013

The European Conference of Transport Research Institutes (ECTRI) is an international non-profit association that was officially founded in April 2003. It is the first attempt to unite the forces of the foremost multimodal transport research centres across Europe and to thereby promote the excellence of European transport research.
Today, it includes 26 major transport research institutes or universities from 19 European countries. Together, they account for more than 4,000 European scientific and research staff in the field of transport. ECTRI as the leading European research association for sustainable and multimodal mobility is committed to provide the scientifically based competence, knowledge and advice to move towards a green, safe, efficient, and inclusive transport for people and goods.

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ECTRI launched its Thematic Groups (TGs) in September 2007 as a mean to facilitate exchanges among ECTRI researchers interested in similar research fields and in order to promote joint initiatives and positions. One of the groups is the Thematic Group on Transport Safety (TG-Safety). The group consists of 27 experts from 15 Transport Research Institutes and Universities representing 14 countries. Most of the institutes are working in the field of road safety, railway safety, nautical safety, safety management and safety culture and some are also involved in aviation safety. Members are: AIT, CDV, CERTH, DVS, Fraunhofer, LNEC, IFSTTAR, ITS, KTI, TØI, TRL, UPM, UVEG, VTI, and VTT.

TG-SAFETY wants to play an active role in the development of high qualified and innovative knowledge on transport safety by bringing in their expertise on safety issues in different European countries, their scientific knowledge on integrated safety policies and research issues and their experience in safety research for the different transport modes: roads, waterways, railways and aviation.

TG-SAFETY has attentively read the discussion paper accompanying the Stakeholders meeting on vehicle technologies to enhance road safety to take place March 8th, 2013; and would like to provide a first set of inputs to the questions raised.

1. ***Policy context: Should the use of Intelligent Transport Systems, in particular driver assistance technologies be promoted as a tool to reduce the number of road accidents?***
   Despite significant progress during the past years, road accidents are still a serious societal problem. Some technologies that are available in the market today and other technologies under development can tackle the human factor as a cause for road accidents. Stakeholders will be invited to discuss their views on the contribution of these technologies to the European Union target of halving the number of road fatalities by 2020.

Better driver assistance systems and even automated driving are one of the most promising approaches to further increase traffic safety. However, this will not be fully implemented by 2020.

Systems to prevent crashes in relation to human factors could be assisting systems or safety systems, both aims to reduce the number of crashes. So far there is a lack of evaluation of those systems contribution in terms of crash reduction. This holds true for assisting technologies like lane departure systems, adaptive cruise control, traffic jam assist, frontal collision warning, sleepiness/distraction detection systems, blind spot detection, system that is normally activated by the driver. But it also holds true for safety technologies that is activated by the vehicle, like collision mitigation avoidance system or active braking. However, the most promising systems may be those that prevent critical situations at all. Systems that assist the drivers to avoid for example unintentional lane departures or getting too close behind a vehicle in front may most truly contribute to increased safety.

In the future the driving task will be more and more automated. Also in such situations the driver needs to be there to take over the control in specific situation or at least when the automated situation is terminated. This will be a demanding issue since it is more or less impossible to just sit and monitor with a high degree of awareness in case something happens. Even though this is a limitation with such systems the future view is that automated driving may contribute to an increased safety in the long term. The humans are still the major contributor to mistakes that leads to crashes and the technic will reduce this.

Another important perspective to consider is effects on the macroscopic level. Issues like how systems can be string-stable (so that errors do not propagate in a queue of cars) might not be a problem from the perspective of a single driver, but could be a disaster on a macroscopic scale. Such effects can be reduced by vehicle – to –vehicle communication.

2. ***Technology context: What is the potential of Intelligent Transport Systems, in particular driver assistance technologies, to reduce the number of road accidents? Which are the most effective technologies now available and what is the progress expected in the short and medium term? What is their cost-effectiveness?***
   Various technologies are available to assist the driver that can prevent accidents where human error or distraction is the main factor. Quantifying their effectiveness and the cost of their deployment is essential to decide which technologies should be promoted. Stakeholders will be invited to share their views on the safety potential of the available technologies and on the future technologies expected to result from the research and development work currently under way.

The number of crashes caused by human errors due to driver impairments as distraction, sleepiness, etc…, is very difficult to estimate. Several attempts have been made, different methodologies have been tried, but still it is difficult. A distracted driver is mostly not aware of being distracted and there are no precise ways of measuring either distraction or sleepiness. A sleepy driver is aware of sleepiness but cannot foresee the sleep onset. Big initiatives with Field Operational Tests have been conducted but still there are major problems to estimate the prevalence but also to identify the baseline that is needed in order to identify the risk or the effect. Assisting technologies consist of the detection and the warning. For some system like distraction or sleepiness detection there is reason to believe that it is not so important that the detection is accurate on the level of seconds since at least the sleepy driver already knows about the sleepiness. Instead the most important part is the warning. The warning do not only assist the driver at the moment, it also provide the driver with an increased awareness of the lack of performance in the long run, a sort of long term knowledge. There is a potential that such system "educate" the driver by giving him/her feedback of the performance.

3. ***Regulatory context: Which are the most adequate measures to promote the deployment of those technologies that are effective to reduce the number of road accidents?***
   The deployment of cost-effective technologies should be promoted to ensure that their safety potential can be fully utilized. The discussion should focus on how this can be achieved, what are the steps to be taken, the timeline and the role of each actor: European Union, Member States and stakeholders.

It is important that the drivers are educated about the systems. They need to know how to use them, why they are important and what the idea is with the systems. This is especially essential when it comes to the assisting systems. There may be a risk that those systems are misused and contribute to for example extended time driven before stopping.

Measures to promote such technologies could be:

- Training of candidate licence holders, by experiencing critical situations in video recorded scenarios when driving a car with and without a technology. Also familiarization with the systems in real life driving courses.
- Informative campaigns for last grade school students about the benefits and hazards of the use of the driver assisting technologies
- Campaign programs dedicated to professional drivers and fleet owners (public sector drivers, emergency units, transport companies, etc)

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