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**European Commission Consultation on the  
European Road Safety Action Plan 2011-2020**

Statement of Robert Bosch GmbH

**NOT FOR PUBLICATION**

**Contact information**

For a more in-depth discussion on aspects raised in this paper or in case of a need for clarification, please do not hesitate to contact:

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## **1) Introduction**

20 November 2009

Page 2 of 5

- In 2008, Robert Bosch GmbH spent **12.3% of its automotive division turnover** on research and development. A large share of this R&D spending is focused on improvements in the areas of energy efficiency, environmental and safety performance of vehicles.
- As a result of this R&D focus, the same year Bosch was first in the patent ranking of the **European Patent Office** as far as automotive technology is concerned.
- Based on this research and with a view to the current political and public discussion on the future of transport, Bosch is confident that **technologies are and will become available to significantly improve the performance of transport** in terms of the different pillars of sustainability.
- Robert Bosch GmbH has signed the European Commission's "**European Road Safety Charter**" and in 2008 received the **eSafety Award** in the category "Industry & Technology".
- For the present consultation, Bosch would like to make the following **qualitative statements** and is looking forward to enter into a **more detailed, technical and quantitative discussion with the Commission services** on these subjects.
- Please note that this input is therefore **NOT FOR PUBLICATION**.

**New Road Safety Action Programme 2011-2020**

- The **European Union's overall goal** should be to have the **safest roads** of the world. A Vision Zero approach that does not tolerate serious injuries and fatalities as normal requires identifying potential improvements in all elements of transport.
  - The focus should be put on the use of existing and upcoming technologies as well as transport design, including infrastructure enhancements.
- One key condition for a successful road safety strategy is the setting of **ambitious targets**. The 2001 White Paper's objective of halving road casualties in road transport has been very powerful and has motivated all stakeholders to trigger effective actions. Although the objective probably may not be reached, it asks for renewed and even stronger efforts.
  - The first element should be the **reduction of fatalities** with an ambitious but realistic long-term target: at least 40% by a 10 years term seems appropriate.
  - Secondly, there should be a specific target to **reduce the number of injuries**. Severe injuries can terribly affect the life of survivors. Furthermore the economic cost for society of these severe injuries is also particularly high. Setting this target has to include the development of a standard to collect the necessary data.
  - Specific attention has to be paid for **vulnerable road users**. Especially concerning children and younger road users a specific approach has to be developed, and the impacts of an ageing society have to be considered.
  - Still a crucial concern is the high rate of **motorcycle fatalities**. As stated e.g. by ETSC, in 2006 at least 6.200 Powered Two Wheeler (PTW) riders were killed in road collisions in the EU 25 representing 16 % of the total number of road deaths while accounting for only 2 % of the total kilometres driven (ETSC, 2008).
- **Vehicle safety systems** have been proven to be particularly successful in the last decades in reducing casualties on European roads. **Crash avoidance technologies** are increasingly taking centre stage and their importance will continue to grow in the future as the focus shifts from the current crash protection to crash prevention.
- **Analysing accidents** is the first step in developing new policy measures as well as new safety systems able to reduce road casualties. Future research and standardisation work in respect to gathering data has to be done. The early launch and support of innovative research programs, well before a wider proliferation of any specific technology, could anticipate the safety potential, give guidance to the industry and allow for a timely market deployment.



- **Infrastructure investments** have to meet higher requirements, not only to enable ITS applications but also for promoting modern In-vehicle-systems (e.g. Road Sign Recognition, Lane Departure Warning).
- **Common technical standards** and regulatory solutions should be developed where this brings the greatest benefit in a timely cost-efficient manner.
- **Loss of vehicle control, or skidding**, has been demonstrated to be a dominant risk factor in the pre-crash phase. An international analysis of the causes of accidents indicates that at least 20 percent resulting in injury are related to skidding of the vehicle in the pre-crash phase, and in the case of fatal accidents this figure rises to 40 percent. **ESC** is a prime example of how crash avoidance systems can greatly reduce casualties. Launched to the market in 1995, numerous effectiveness studies made in the US, Japan, Australia, France, Sweden and the UK by car manufacturers, research institutes and road safety authorities, proved its outstanding live-saving potential. The effectiveness of ESC is undisputed. An impact analysis at a European level shows that 4 000 lives could be saved each year and 100 000 injuries could be avoided on European roads if all cars were to be equipped with ESC.
- **Future advanced driver assistance technologies** will use the potential of radars, cameras, and other sensors to monitor the vehicle's surroundings. As an example, technologies to avoid rear-end collisions have a high accident avoidance potential. In Europe approximately 16 % of accidents with personal injuries are rear-end collisions where a vehicle 'A' rear-ended the vehicle 'B' driving in front. Advanced Emergency Braking System (AEB), a modular advanced crash avoidance technology based on ESC and surround radar, have already started to enter the market and we see increased evidence that support its effectiveness in the avoidance of rear-end collisions. The German In-depth Accident Study GIDAS 2005/2006 indicates that 31 % of drivers do not apply the brakes before the rear-end collision, 49 % do apply the brakes but only partially and too late and 20 % do apply the brakes to allow for maximum braking pressure, but they do so too late. A Bosch benefit analysis presented at the recent ESV (Enhanced Safety Vehicle) Conference in Germany in June 2009, calculates that:
  - **Predictive Collision Warning (PCW)** - part of AEB – could avoid 38 % of all rear-end crashes with casualties by warning the drivers who do not brake to brake, and by warning those drivers who do brake (but still have a collision) to brake earlier.
  - **Predictive Emergency Braking Assist** – the non-autonomous part of AEB that includes PCW – could increase this benefit to 55 % of all rear-end crashes with casualties by providing optimal braking boost and allowing for target braking to drivers who brake too hesitantly.
  - **Automatic Emergency Braking** could finally avoid 72 % of all rear-end crashes with casualties.



- As with regard to the **safety of motorcycles**, ABS is proven to be a promising technology, particularly justified in terms of projected benefits. In an emergency situation, motorcyclists tend to be reluctant to apply full force to the brakes, particularly to the front brake, because of the fear to lock the wheel. This results in braking that is not adequate to avoid the impact. Braking too hard and locking a wheel, on the other side, creates an inherently unstable situation with the danger of overturning. ABS has been developed to solve this dilemma: the system allows the rider to apply the brakes fully in an emergency without fear of wheel lock and the braking distance to be reduced.
  - The effectiveness of motorcycle ABS to avoid or mitigate serious and fatal accidents under real driving conditions has been analysed and proven in several European and international studies. A recent study by TRL for the European Commission shows an ABS long-term benefit to cost ratio of 4.2-5.6 in accident avoidance (TRL 2009). The study by the German Federal Highway Research Institute (BAST) shows that a 100 percent installation of a motorcycle ABS for all motorcycles above 50cc could avoid approximately 12 percent of both fatal accidents and accidents with serious injuries. (BAST 2008). A more recent study by the Swedish Road Administration in 2009 confirms an effectiveness of motorcycle ABS of 38 percent on all crashes with casualties and 48 percent on all severe and fatal crashes.
- **Intelligent Transport Systems** will play a key role in future road safety improvements, more and more combining In-vehicle-technologies and Car2X-communication.