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"Active and Passive Car Safety - An Integrated Approach to Reducing Accidents"

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Seul le texte prononcé fait foi
Es gilt das gesprochene Wort

Airbag 2002 - 6th International Symposium on Sophisticated Car Occupant Safety Systems

Karlsruhe, 4th December 2002

Ladies and Gentlemen,

I would like to thank the Fraunhofer Institute for inviting me to speak at this symposium on a subject that affects us all every time we travel.

Mobility: a key factor in our modern society

In our modern society we depend on mobility and travel.

The automobile makes the biggest contribution to the mobility of individuals. It is estimated that some 80% of all travel is currently being done by car. The number of cars in the EU is increasing. Between the years 1970 and 2000, they almost trebled from about 60 million to just under 175 million. This trend now seems to be slowing down, yet the number of private cars in the EU is still rising by more than 3 million every year.

And the growth in passenger-kilometres is even steeper, as people are using their cars more often and for longer journeys. And road transport is set to remain the predominant transport mode in the coming years, due to the flexibility that travelling by road provides.

Mobility is also necessary for industrial competitiveness. Modern ways to organise production and distribution demand frequent and timely deliveries.

Mobility: The Challenges

However, mobility has a price, with regard to the environment, sustainability and safety. In the year 2000, road accidents killed over 40 000 people in the 15 Member States of the European Union and injured almost 2 million.

The forthcoming enlargement of the EU will also have an impact on mobility. In the candidate countries the number of vehicles is increasing and in general their network of roads is less developed than in the present European Union. An enlarged Union will face even higher numbers of accidents unless we take the necessary action. It will require actions from all stakeholders to reduce the accident level.

The Actions

During the last decade, the European Commission, Member States and the automotive industry have been actively involved in improving road safety through both accident prevention and injury reduction.

Most of the accident prevention measures have focused on the driver. This is because it is known that the largest proportion of accidents is due to human factors.

Several technical measures have been introduced to prevent accidents like the widespread application of anti-locking brake systems (ABS), and more recently the introduction of electronic stability programs (ESP).

Measures to reduce the consequences of an accident have primarily been focused on the vehicle, through improved passive safety such as crashworthiness in lateral and frontal impact, seatbelts and the increasing use of airbags. Technological progress has improved the crashworthiness of vehicles through the use of improved materials and the introduction of new advanced design processes providing better structural integrity. In addition we have seen a continuous improvement of the road network and elimination of many so-called "black spots".

The Achievements

These combined actions have contributed to a reduction in the number of fatalities on European roads even though the volumes of traffic have increased. The number of injuries has also increased. However this increase is still not as rapid as the increase in vehicle numbers and passenger-kilometres, and the total number of accidents taking place remains roughly the same.

The goal of the White Paper: 50% reduction of road fatalities

In September last year, we presented the White Paper on European Transport policy for 2010, where it set a very ambitious target for road safety: A 50% reduction of road fatalities by 2010. If this is to be achieved it would bring the number of deaths per year down to about 20 000, and simultaneously bring down the number of accidents and injuries.

An ambitious reduction of the level of fatalities cannot be expected to be achieved solely by improvements to motor vehicles. Further improvements in the infrastructure and traffic control are also needed. In this respect, local and national road authorities will bear a large burden of responsibility.

We will, for our part be seeking to promote the use of new technologies to improve road safety. Our basic opinion is that substantial achievements can be made through an extended usage of information and communications technologies. We will work closely with the automotive industry to this effect.

Our White Paper indicates some areas where new development in car technology could have a significant role to play in the future, for example, mandatory seatbelt reminders, smart restraint systems, accident data recorder (otherwise known as black boxes), the introduction of ISOFIX anchorage's, and safer car fronts.

We are at the moment preparing a Road Safety Action Plan and will expand on many of the ideas and objectives that are set out in the White Paper regarding the ways to improve road safety and to reduce the number of accidents and casualties.

Technical Developments

The balance has shifted over the years between passive safety systems and active safety systems. When vehicles were first invented, there were no safety systems, except for brakes and steering. It was only in the 1960s that we really started to see the introduction of passive safety measures.

Active safety systems too have taken steps forward with developments in the braking systems, such as the introduction of the anti-lock braking systems (ABS).

Many active and passive safety systems have, of course, only become possible as a consequence of the availability of reliable electronics.

However, a few years ago, even with the advent of electronic control systems, we had reached the situation where the contribution of conventional active and passive safety measures appeared to be reaching their limits.

As I said, the number of fatalities has decreased, but the number of injuries has increased. We have had, to some extent, a 'shift'. This is of course a positive step forward. It has reduced the pain and grief among those affected, both victims and families.

Now we have to go forward, not only reducing the fatalities further but also reducing the number of accidents. Reducing accidents means that we have to take preventive and active measures to avoid collisions. New technologies, particularly in the field of sensors and communications, have become available that have a potential to substantially reduce the accident level.

Vehicle systems are being developed which have sensors that look beyond the vehicle, and communicate with other vehicles and the infrastructure, to prevent accidents and to interact with the passive safety systems, to optimise the protection offered by them in the case of an accident being inevitable. Such systems, which are called Intelligent Integrated Safety Systems, have the potential to greatly reduce the number of accidents and fatalities on European roads.

Improved road safety through the use of new technologies: The potential

The development of appropriate sensors, actuators and processors, has already permitted widespread implementation of autonomous in-vehicle systems with potential safety effects, such as airbags. Other systems like ABS and electronic stability programmes can help the driver to maintain control of the vehicle even when he has exceeded its 'normal' limits of handling.

At the moment we are at the beginning of the development and deployment of intelligent integrated safety systems. These systems will take into account not just the driver and the vehicle, but also the environment around the vehicle. Co-operative systems will enable essential safety information to be exchanged between the vehicle and other vehicles, and the infrastructure.

By receiving information from outside of the vehicle, the systems will be able to assess the risk of an accident happening. They then can warn the driver so that he or she can take appropriate action, or they can initiate appropriate action autonomously. If an accident becomes unavoidable the systems could use that same information to optimise the passive safety systems in order to minimise the risk of injury. Finally, once the accident has occurred the system can also automatically summon assistance, indicating the location and possible severity.

The Limitations

However, we shall not believe that these new developments can be brought immediately into the market place in sufficient quantities. The automotive industry is facing several challenges as a consequence of the down-turn in the world economy coupled with, amongst other things, increasing environmental demands and, in particular, the requirements of increased road safety.

Rapid technological changes and developments are an additional challenge. But they are also an opportunity to provide further improvement to vehicles, to increase its added value, to decrease the potentially harmful environmental effects of traffic, and, most importantly, to improve the levels of safety provided to a mobile population.

Towards a European Strategy on Integrated Road Safety Systems

It is clear that a European Strategy and Vision is required to better exploit the market opportunities and the economic potential of Intelligent Vehicles and Integrated Road Safety Systems while achieving, at the same time, safer mobility for Europe.

In April this year we had a so-called eSafety High-Level meeting, which had participants from the automotive industries, equipment suppliers, telecommunications and service industries, European Commission and other public authorities, including infrastructure operators.

This meeting discussed the European strategy, and established a Working Group to report on the state of the art and make recommendations on the further development, deployment and use of Intelligent Integrated Road Safety Systems. This report was presented to the 2nd meeting of the eSafety High-Level just three weeks ago, and received their full support.

The information and recommendations of the report will be used by the Commission in preparing a Communication to the European Parliament and Council, entitled "Information and Communications Technologies for Intelligent Vehicles". We expect to adopt this Communication early next year. We want to use this Communication to propose measures which will improve the competitiveness of the automotive industry, and simultaneously contribute towards improved road safety in Europe.

A few of the recommendations from the Final Report of the eSafety Working Group which may be of particular interest to you concern:

- Improving accident causation data, so that the benefits of the different systems being developed can be assessed;
- Encouraging the further development of standards to ensure the interoperability of systems;
- Removing the restrictions on the use of 24 GHz for ultra-wide band short range radar, so that many of the safety systems being developed today can be brought to the market;
- Encouraging the introduction of E-112 and the development of automatic emergency calling (e-Call) in the event of an accident, which could be triggered by the activation of the airbag, for example;
- Creating an eSafety Forum.

As regards the eSafety Forum, this will have the role of monitoring and promoting the implementation of the recommendations from the report, and supporting the development, deployment and use of intelligent integrated road safety systems. The Forum will be open to participation of all stakeholders, who subscribe to its objectives and want to contribute.

Towards large-scale deployment of intelligent integrated safety systems

The European research and development projects and those undertaken by industry have already demonstrated the potential contribution to safety of the introduction of intelligent integrated road safety systems. However we have to admit to ourselves that to realise the full benefits, the new systems have to be widely deployed in the marketplace. That is a key element. It is only when a significant number of vehicles on the road are fitted with these advanced technologies that we will achieve a critical 'system effect'.

Unfortunately in many cases there is still a large gap between technology development and its deployment at a reasonable cost. However we can find trust in the fact that both production based on information technology and the production of cars are characterised by the pronounced effects of economies of scale. We can therefore expect unit costs to be brought down to levels that make it sensible to install the new technology applications also on smaller cars.

In addition one can expect that, if it would become necessary, the consumers would accept certain price increases in cars if they can see direct safety benefits. Having said that one should not forget that the consumer willingness to pay is also dependent on appropriate information so that they, the consumers, can reliably assess the potential benefits.

Only in this way will the availability of safety systems become an argument for sale.

Wherever possible, we seek to avoid introducing legislation, as these new technologies are moving so fast that in most cases legislation would be too restrictive and soon become obsolete. Increasingly, we are looking to work in partnership with industry and Member States to promote best practice, co-operation and innovation.

Pedestrian Protection

This is why, in the case of pedestrian safety, I have supported the idea of a voluntary commitment by the automotive industry. This represents an innovative alternative to legislation. Although the commitment is primarily concerned with the design of vehicle fronts so as to reduce the fatalities and injuries to pedestrians, when struck by a vehicles, it also introduces requirements for anti-lock braking systems, and a commitment by the industry to progressively introduce advanced active safety systems.

Both the European Parliament and the Council have supported the content of the commitment, although it has been agreed that it should be placed within a regulatory framework. We are currently drafting a suitable directive that should be submitted to the European Parliament and the Council soon.

The requirements for pedestrian safety are being introduced in two stages, and the industry is investigating ways of satisfying the requirements. One of the suggested ways is the possible use a 'smart' bonnet catch mechanism that pops the bonnet up when the car perceives that a pedestrian is about to be struck and thus provide extra space between the bonnet and the hard components underneath.

In addition, it has also been suggested that external airbags could be used to provide additional protections. Both of these safety developments would require sensors that were always able to differentiate between a person and other kinds of obstacles. The pedestrian protection is a completely new field and the new requirements have to be integrated in the development process for car models right from the beginning. Measures have already been taken to achieve this integration.

The Commission's Role - Research

The EU has played a leading role in research in telematics and Intelligent Transport Systems since 1988. Under the Fourth Framework Programme for Research we had the Telematics Application Programme.

The current Information Society Technologies (IST) programme, under the Fifth Framework Programme, builds on the success and results of the previous Telematics programme. The IST programme is continuing research in technologies and applications systems aimed at safer, cleaner and more efficient transport, with research focussing on intelligent safety and Advanced Driver Assistance Systems and supporting technologies. The Intelligent Vehicle cluster of the IST Programme has over 40 projects, with a total budget of over 150 million € and a Community contribution of over 80 million €.

The Sixth Framework Programme for 2002-2006 offers new funding opportunities for Intelligent Integrated Safety. The new instrument of Integrated Projects, which is designed to generate the knowledge required to address major societal challenges, will be especially suitable for research in this area. Integrated Projects are intended to build a critical mass of activities and resources needed for achieving ambitious, clearly defined scientific and technological objectives.

An Integrated Approach to Safety

I would like to conclude by underlining the need for a more integrated approach to road safety where different systems or actions will address the pre-crash phase, the crash phase and the post-crash phase.

This will ultimately require an integrated approach that takes into account the driver, the vehicle, and the road infrastructure in improving road safety. An approach where active and passive safety measures, traffic regulations, information technologies and innovations must all play a significant role.

We hope that the automotive industry will play a leading role. However, other stakeholders such as national governments, European institutions, infrastructure providers, technology providers, consumer organisations and insurance companies all have a role to play. The eSafety Forum that I mentioned before, would be the natural platform for all the stakeholders to work together on this integrated approach to road safety.

We are ready to look also into other necessary actions, and to consult all stakeholders in order to find the best balance between different priorities. We need a realistic approach with a balance between technology and economics.

Road safety is naturally a global issue. Vehicles are designed for global markets and the road safety records are similar in all industrial countries. Therefore it is important to extend the collaboration to countries outside the EU boundaries.

International collaboration should be pursued in research and development, awareness, and especially user acceptance, security and impact assessment of the new technologies for safety, as well as the establishment of international standards.

However, taking initiatives together with the European industry will also create a competitive edge in integrated car safety - a concept that I am convinced will also be in demand in foreign markets in the future.

Thank you for your attention.