



Making Europe's roads safer for everyone



“Efficient and safe transport is essential to keep Europe’s economy on the move and so that European citizens can remain mobile. We cannot reach these goals without research, development and deployment of Information and Communication Technologies (ICT). Europe has concentrated its deployment efforts so far on a full roll out by 2010 of “eCall” – the automatic system to alert emergency services that a car has crashed. This is a practical demonstration of the power of ICT to save thousands of lives. And the Intelligent Car Initiative, which I launched in February 2006 as part of the wider i2010 Strategy for the European Information Society, is now widening its scope.

Europe’s efforts towards safer roads have a recognised brand name: eSafety. But there is a long way to go before our roads are really safe. That is why under Intelligent Car we will reinforce our work with the eSafety Forum in further targeted deployment of promising safety applications such as electronic stability control system and blind spot monitoring.

We are strengthening our research efforts not just on safer but also cleaner transport through significant extra funding for ICT and transport research both directly and indirectly through support for R&D on the underlying technologies needed for the automotive ICT such as embedded systems, photonics, nanoelectronics, time triggered software and so on. We will also be undertaking user awareness actions and working with public authorities to overcome legal and administrative barriers to the intelligent cars, as well as buses and trucks as part of an intelligent transport infrastructure.

Intelligent Car will significantly contribute towards safer, cleaner and smarter mobility to make Europe’s roads safer and its transport more efficient!”



Viviane Reding

Member of the European Commission – Responsible for Information Society and Media

“In recent years, in-car safety systems have greatly improved the chances of surviving an accident, but 40,000 people still die on Europe’s roads each year.

More attention now needs to be given to deploying systems that can actually prevent accidents from happening. However, if they are to fulfil their potential, intelligent safety systems need more than just the input of engineers and scientists. In many cases the technology already exists. Now we need European decision-makers and opinion-leaders to facilitate the framework conditions in which these systems can be deployed.”



Monica Sundström

Chairman of ERTICO – ITS Europe

“Our prime objective is to contribute to a near-zero or low accident society. A great part of the €20 billion automotive investments in R&D are, therefore, devoted to safety-related projects. The vehicle, however, is only one cornerstone of an accident-free society. Improvements in road infrastructure, adequate control and enforcement, education and training of drivers, in particular the younger drivers, are essential as well.”



Ivan Hodac

Secretary General of ACEA – European Automobile Manufacturers Association



Moving towards a crash-free future

Road safety has gradually improved in the EU as the crashworthiness of vehicles has increased and passive safety systems such as airbags and seatbelts have become more common and effective, greatly improving the chances of surviving an accident. However, in 2005, 41,000 people were killed and 1.7 million were severely injured in the 1.3 million accidents that occurred on Europe's roads.

The Intelligent Car Initiative is an attempt to move towards a new reality, one in which cars don't crash and traffic congestion is drastically reduced. As part of the i2010 Strategy to boost Europe's digital economy, the Intelligent Car initiative is working to find common solutions to Europe's mobility problems and improve the take-up of intelligent vehicle systems based on information and communication technologies (ICT), so-called eSafety systems.

The Intelligent Car Initiative has three main objectives: Firstly, with the help of the eSafety Forum – the driving force behind European efforts on eSafety – it will coordinate and promote the work of road transport stakeholders. Secondly, it will support ICT-based research and development in the area of smarter, safer and cleaner mobility, as well as facilitating the take-up and use of research results. Thirdly, it will create awareness of ICT-based transport solutions among consumers and decision-makers in order to stimulate user demand.



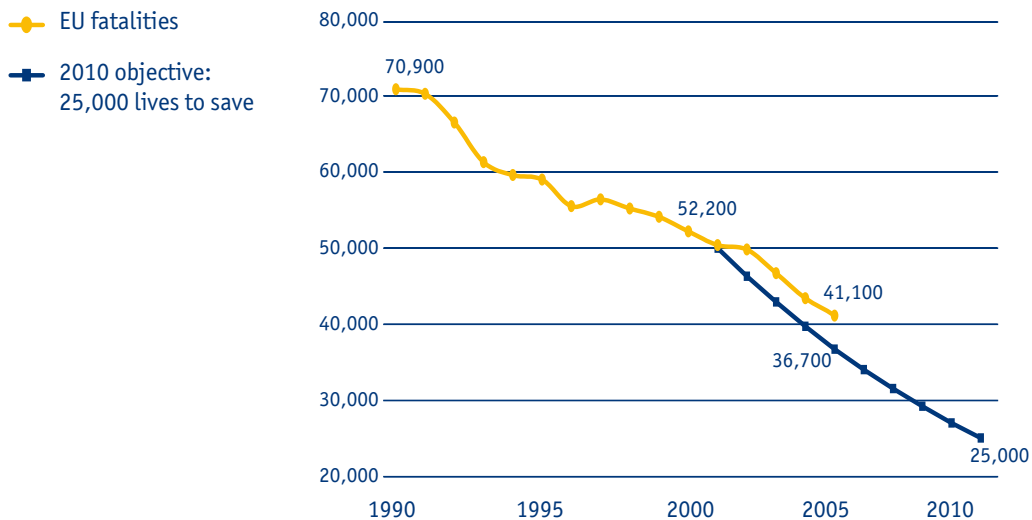
Supporting the driver, preventing accidents

Europe's grim road accident statistics compelled the European Commission in 2001 to set a target of halving the number of road deaths in Europe by 2010. To achieve this ambitious goal, ensuring optimal protection in the event of a crash will not be enough. More has to be done to prevent the accident from occurring in the first place.

Life-saving assistance

More than 90% of all accidents involve human error in what is all too often a tragic mismatch between driver behaviour and situation complexity. It is clear that the driver needs more assistance. By decreasing the driver's workload, detecting dangers and providing support in hazardous situations, eSafety systems can provide this assistance.

The eSafety Forum's Implementation Road Map Working Group has looked into the life-saving potential of existing eSafety technologies, identifying those systems that have the greatest accident reduction impact in the short term. Priorities have been developed for both vehicle-based systems and infrastructure-related systems.



Source: CARE (EU road accidents database) or national publications
European Commission / Directorate General Energy and Transport



Priority vehicle-based systems:

- **Electronic Stability Control**
Helps to stabilise the vehicle and prevent skidding when cornering through active brake intervention on one or more wheels and intelligent engine torque management.
- **Blind spot monitoring**
Either provides better vision into the blind spot area or uses warning signals to alert the driver to obstacles in this area.
- **Adaptive headlights**
Ensures optimum illumination of the lane in bends, directing the headlight into the bend as soon as the vehicle begins cornering.
- **Obstacle and Collision Warning**
Detects obstacles and gives warnings when collision is imminent.
- **Lane departure warning**
Gives an acoustic, visual or haptic warning to the driver in order to avoid leaving the lane unintentionally.

Priority infrastructure-related systems:

- **eCall**
When an accident occurs, the eCall device will establish a 112 emergency call to the nearest emergency rescue centre giving the precise location of the incident. The call can either be triggered automatically when the car senses a major impact, or manually by pushing a button.
- **Extended environmental information**
The in-vehicle equipment detects the location of the car and other potentially safety-related information from the vehicle's sensors and systems for instance in the field of visibility, weather or friction, and sends the information to a central system or to other vehicles.
- **Real-time traffic and travel information**
By warning drivers of congestion, incidents, adverse weather and road conditions and allowing them to find alternative routes or otherwise change their travel plans, traffic information services improve traffic flow and help drivers avoid potentially hazardous situations.
- **Dynamic traffic management**
The systems are used to increase the safety and flow of traffic in cases of disturbance caused by incidents, congestion and adverse weather by controlling and informing traffic via Variable Message Signs and possibly via in-vehicle devices.
- **Local danger warnings**
The systems warn drivers either via roadside Variable Message Signs or in-vehicle devices of local safety problems caused by incidents, congestion, adverse weather, pedestrians, animals, obstacles, etc.
- **Speed alert**
The system alerts the driver with audio, visual and/or haptic feedback when the speed exceeds the locally valid legal speed limit.



Working together to make Europe's roads safer

The eSafety Forum is a joint public-private platform bringing together over 150 active members representing all road safety stakeholders. The Forum's general objective is to support the development, deployment and use of eSafety systems.

The eSafety Forum Steering Group, co-chaired by the European Commission, ERTICO - ITS Europe and ACEA, defines the Forum's work programme and oversees the various Working Groups that have been set up to address key eSafety issues.

Real-time traffic and travel information for 80% of all European journeys

By 2010, the RTTI Working Group wants 80% of the trips made in Europe to be covered by state-of-the-art real-time traffic and weather information services. By enabling drivers to anticipate disruptions and delays and thereby avoid them, real-time traffic and travel information could help reduce both accidents and congestion.

Spreading the word

eSafety systems save lives, but the public needs to know they exist in order to ask for them. Intelligent cars need intelligent buyers, so the User Outreach Working Group has looked into how the benefits of these technologies can be communicated in the best way to the consumer. As a result, numerous publicity activities will be launched in the coming years. eSafetyAware!, a recently established communications platform, will spearhead these activities.



In total, 13 eSafety Forum Working Groups have been set up so far:

- Accident Causation Data*
- Digital Maps*
- eCall Driving Group*
- Heavy-Duty Vehicles*
- Human Machine Interaction (HMI)*
- ICT for Clean Mobility
- Implementation Road Maps
- International Cooperation
- Real-Time Traffic and Travel Information (RTTI)
- Research and Technological Development (RTD)
- Service-oriented Architectures
- Communications
- User Outreach*

**Working Groups which have concluded their activities*



Safe integration of nomadic devices

The in-vehicle use of mobile phones, personal digital assistants and other portable devices is increasing rapidly. These technologies could be important tools in improving road safety. However, their safety benefits may be significantly reduced or cancelled out altogether if they are not well designed, controlled and installed. In 2005, the Human Machine Interaction (HMI) Working Group published detailed recommendations on how this can best be achieved. On the basis of this report the Commission will issue a new version of the European Statement of Principles (ESoP) on HMI.

Improving road safety with digital maps

Digital maps can include updated safety information. This information may complement vehicle speed and position sensors such as lasers and video cameras, which have limited range, to extend the driver horizon at least 500 to 1000 metres ahead. In this way, drivers can be alerted to what is coming after the next road curve or intersection. To encourage such use of digital maps in vehicle safety applications, the Digital Maps Working Group has proposed a cooperation model for the public and private sector to produce, maintain, certify and distribute eSafety attributes for digital map databases.

Developing tomorrow's vehicles

In order to achieve the European Commission's 2001 goal of halving the number of accidents on Europe's roads by 2010, a sustained research effort is needed. The Research and Technological Development Working Group contributes to the planning of European-level research in the field of safe, efficient and clean mobility by identifying future research needs. In November 2006, the group published its recommendations for what it estimates should be the research priorities in the 7th Framework Programme.

Electronic Stability Control – the greatest road safety innovation since the safety belt

Skidding is the main cause of traffic accidents involving serious injury or death.

The anti-skidding technology Electronic Stability Control (ESC) could help prevent a large number of these accidents. Research carried out both by industry and independent sources in Europe, Japan and the US estimates that a 30 - 40% reduction in single car crashes could be achieved if all cars had the system installed. ESC has consequently been hailed as the most promising eSafety technology on the market, with some dubbing it “the greatest road safety innovation since the safety belt”.

ESC senses when the driver loses control and automatically applies braking pressure to individual wheels to help stabilise the vehicle and avoid skidding.

Correcting oversteer



When the rear wheels lose grip and slide out and the vehicle turns more than intended, ESC applies the outside front brake to keep the vehicle on track.

Correcting understeer



When the front wheels lose grip and slide out and the vehicle turns less than intended, ESC applies the inside rear brake to avoid skidding.

However, the frustrating situation today is that not enough people know about ESC. eSafetyAware!, a new communications platform, will therefore launch a pan-European information campaign in 2007 to ensure that vehicle buyers understand why it makes sense to choose ESC.

**Safety
Aware!**

Help! I'm a car and I've crashed!

eCall is a pan-European in-vehicle emergency call system which will help emergency services reach the scene of an accident much more quickly.

When fully deployed, eCall technology could save an estimated 2,500 lives every year. That is one life saved every four hours!

When an accident occurs, the eCall device will establish an emergency call to the nearest emergency rescue center using the single European emergency number 112. The call can either be triggered automatically when the car senses a major impact, or manually by pushing a button. This enables the vehicle occupants to communicate with the trained emergency centre operator. At the same time, essential data about the accident is transmitted – including time, precise location and vehicle identification. Armed with such crucial data, rescue services can reach the accident scene twice as quickly. This could mean the difference between life and death for the accident victims.

eCall is a top priority in European eSafety policy, and the European Commission is cooperating with the European Parliament, Industry and Member States to ensure the full-scale roll-out of the technology across Europe by 2010.





Making it happen on a national level

European Member States are well aware of the enormous potential of eSafety technologies to reduce traffic accidents, and are actively working to develop and implement such systems at a national level.

eCall is a priority for many Member States, with the deadline for the pan-European introduction of the in-vehicle emergency call set for 2010. Numerous studies and tests have been carried out and the results are encouraging. A 2006 Austrian project tested the communication parameters and the organisational structure necessary for the introduction of an efficient eCall service, looking into the reliability of communication transmission and positioning as well as user acceptance for pricing. A Finnish study using fatal accident data from 2001-2002 confirmed that eCall can save 5-10% of the lives lost on the roads. Finland has also had an online public eCall test service up and running since 2005.

Dutch test shows 8% reduction in accidents with intelligent vehicles

A field test of intelligent vehicles carried out in 2006 by the Dutch Ministry of Transport, Public Works and Water Management, showed that the large-scale use of intelligent vehicles can cut accidents by up to 8%. Test vehicles were equipped with systems to maintain a safe speed and keep a safe distance (Adaptive Cruise Control) and prevent unintentional lane departures (Lane Departure Warning). The test also showed that driver behaviour improves due to the use of these systems.



Looking to the future

Research into eSafety Systems has already brought great results. With these systems, we can bring a new reality to drivers in which they will enjoy improved navigation, guidance and emergency call systems based on precise knowledge of their vehicle's position. Various driver assistance systems will enable vehicles to automatically follow a vehicle ahead at a safe distance, stay in a lane, respond to a speed limit transmitted electronically from the roadside and stop for obstacles such as pedestrians. Sensory interfaces using hearing, touch and vision will make the operation of these systems easier and safer.

However, despite their potential, most of these eSafety systems are not yet on the market. There are many reasons for this slow take-up. Legal and institutional barriers, the competitive situation of the automotive sector, the perceived high cost of eSafety systems and poor knowledge of their benefits and the consequent lack of consumer demand all contribute.

To help encourage the large-scale roll out of such life-saving technologies, European public authorities have a particular role in ensuring interoperability and harmonising technical solutions through a comprehensive European approach. Further action in research and development is also needed to build upon the major investments in intelligent vehicle technologies made under previous European Research Programmes. Additionally, a targeted effort is required to ensure that intelligent road infrastructures are built that can 'talk' to intelligent vehicles, paving the way for a co-operative systems revolution in road transport.



The eSafety Initiative



European Commission website:

http://europa.eu.int/information_society/programmes/esafety/index_en.htm

E-mail: INFSO-esafety@ec.europa.eu



eSafety Support is a European Commission funded project assisting the eSafety initiative in its goal of reducing the number of fatal road accidents in Europe.

The project's main tasks are to stimulate and monitor the activities, progress and results generated by the eSafety initiative. It offers assistance to the eSafety Forum and its Working Groups, keeps all stakeholders up-to-date on eSafety progress and findings, and promotes the benefits of Intelligent Vehicle Safety Systems to the general public.

Visit www.esafetysupport.org

or contact info@esafetysupport.org for more information