

IMPLEMENTATION ROAD MAPS FOR eSAFETY SYSTEMS TO IMPROVE ROAD SAFETY IN EUROPE

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INTRODUCTION

eSafety is a joint industry-public sector initiative aiming to reduce the number of accidents by using new intelligent vehicle safety systems and related infrastructure utilising ICT. The eSafety Forum is a joint platform of the road safety stakeholders promoting the implementation of the eSafety action plan. The Forum has created several Working Groups focusing on priority topics in the action plan. One of these is the Implementation Road Map Working Group (WG), which started its work in July 2003 and produced its final report two years later.

The Implementation Road Map WG was given the task of investigating how to promote the roll-out and deployment of vehicle- and infrastructure-based as well as co-operative systems in order to contribute to the overall goals of reducing road accident fatalities by 50% systems by 2010. The inclusion of both vehicle- and infrastructure-based systems caused special problems as there are the strong differences between both actors involved and the timelines for development and financial issues. Also the decision processes are quite different and especially problematic for truly co-operative systems. Hence, the WG involved actors from wide range of domains and especially from the car manufacturers and road authorities.

APPROACH

The work started with data collection about the eSafety systems, and continued with an assessment of them in a common framework. The framework considered the following aspects:

- Accidents / fatalities to be affected
- % change in accidents expected
- other side effects / comfort functions
- cost of in-vehicle systems
- cost for infrastructure systems (investments / maintenance)
- cost for information infrastructure (investment / maintenance)
- year of technical readiness
- year of implementation readiness
- user acceptance and willingness to pay
- year of implementation by regulation
- specific implementation issues
- estimation of cars equipped with at 2010 / 2020
- other actors involved for implementation

The work was carried out by different WG members compiling the information needed. The information on road infrastructure developments and vehicle fleet age distributions were collected from the Telematics Subgroup of the Conference of European Directors of Road (CEDR).

The potential safety effects of the systems were estimated based on research as well as expert assessments using German accident statistics and the European CARE accident data base. In order to calculate the actual impacts of the systems in 2010 and 2020, the forecasted market penetrations of new cars in 2005, 2010 and 2020 were used together with vehicle fleet age distributions from EU countries to estimate the penetration of systems in the whole vehicle fleets.

RESULTS

The assessment resulted in the identification of eleven priority eSafety systems. These were:

Vehicle-based systems	Infrastructure-related systems
ESP (Electronic Stability Program) Blind spot monitoring Adaptive head lights Obstacle & collision warning Lane departure warning	eCall Extended environmental information (X-FCI) RTTI (Real-time Travel and Traffic Information) Dynamic traffic management Local danger warning Speed Alert

Next it was discussed how to promote the deployment rate of these systems in future. There are also feasible differences between vehicle-based systems and more infrastructure / or mixed systems within the business case. Different incentives are likely to enhance the customer awareness for eSafety features. For each priority system, two market penetration forecasts were estimated, one based on "business as usual" conditions and the other based on incentives and other measures to promote the deployment of the system. After that, the penetration was estimated for the whole vehicle fleet in 2005, 2010 and 2020 and the safety impact of the system was estimated.

Below an example is given for lane departure warning systems. In a lane departure warning system, Warning given to the driver in order to avoid leaving the lane unintentionally. Video image processing is the most important technology. Warnings can be acoustic, visual or haptic.

Estimation of market penetration for new cars (in-vehicle systems)

Very high	80	- 100%
High	50	- 80%
Medium	20	- 50%
Low	5	- 20%
Very low	0	- 5%

Lane Departure Warning

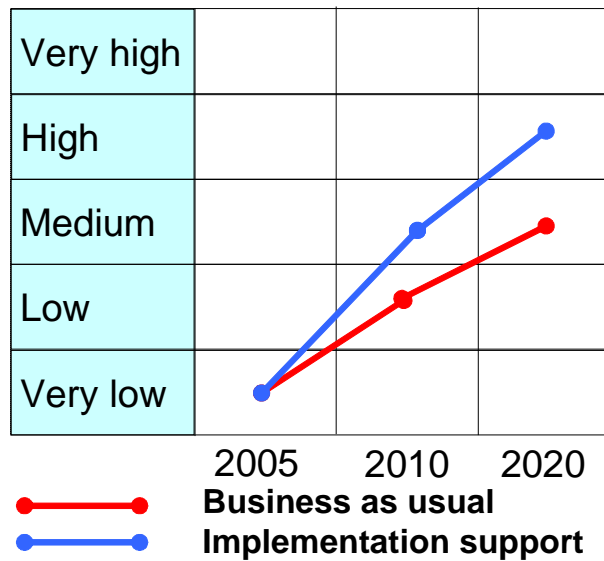


Figure 1. Estimation of market penetration of lane departure warning in new cars in 2005, 2010 and 2010 in two basic scenarios.

Table 1. Estimation of safety impacts of lane departure warning systems in the 25 EU member states in 2010 and 2020 in two basic scenarios.

LANE DEPARTURE WARNING	EU fleet equipped (%)	EU-25 annual fatalities	Fatalities reduced	
			lower (-3%)	higher (-10%)
Business as usual				
2010	4,1	37000	46	152
2020	19,9	28000	167	557
Implementation support				
2010	5,85		65	216
2020	36,3		305	1016
Systems installed before 2006				
2010	0,1		1	4
2020	0,02		0	1

Detailed implementation road maps were compiled for all priority systems describing the implementation issues and recommending actions to overcome the barriers to the implementation of the systems. Also general recommendations were given.

The implementation road map for each priority system was illustrated with the V model. Figure 2 shows an example for such for lane departure warning systems.

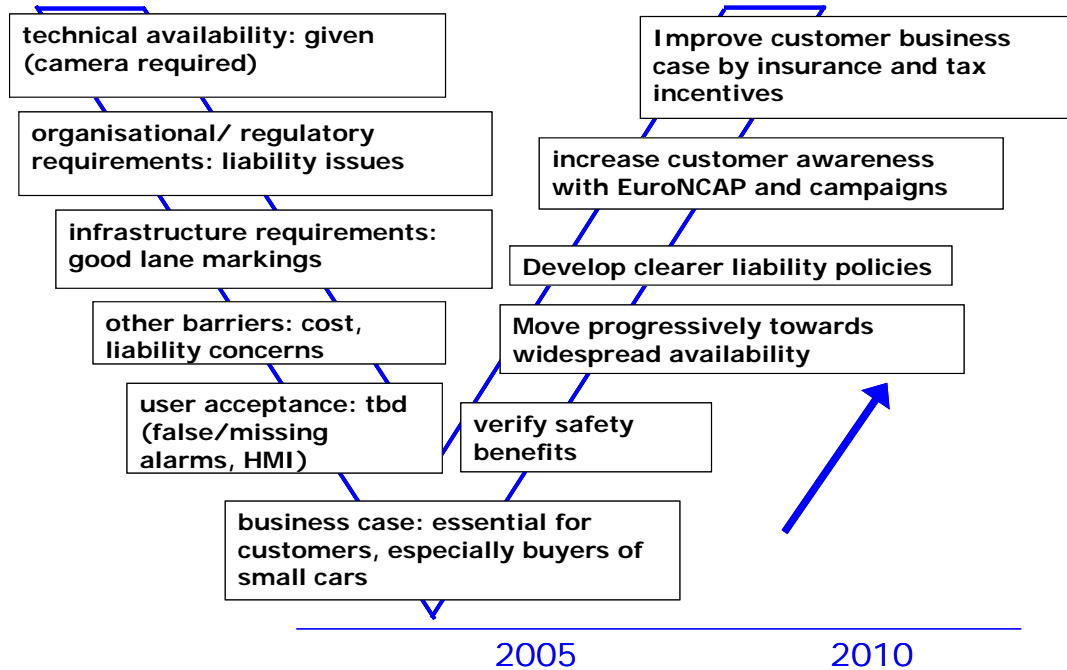


Figure 2. Implementation road map for lane departure warnings system.

The implementation road maps are to be reviewed and updated regularly in the future. The full report is available at the eScope internet site (www.eScope.info).

Reference

Final Report and Recommendations of the Implementation Road Map Working Group. eSafety Forum. Brussels 18 October 2005.