

# Self-explaining and forgiving roads to improve traffic safety

---

Karel Brookhuis<sup>1</sup>, Dick de Waard<sup>1</sup>, Vincent Marchau<sup>1</sup>,  
Marion Wiethoff<sup>1</sup>, Leonie Walta<sup>1</sup> & Angelos Bekiaris<sup>2</sup>

<sup>1</sup>*Delft University of Technology, Department of Transport Policy & Logistics,  
Delft, the Netherlands*

<sup>2</sup>*Centre for Research and Technology Hellas, Thessaloniki, Greece*

## Abstract

The annual cost of the road accidents amounts to at least 160 billion Euros and intolerable human suffering. Motor vehicle occupants are the largest part of this suffering, i.e. 57% of total European Union (EU) road deaths. Whilst the traffic system as a whole is least safe for vulnerable road users, car occupants run the largest risk in terms of fatal or serious accidents. Studies on effectiveness of casualty reduction measures demonstrated that the largest reduction is expected from vehicle crash protection (15%), measures against driving-while-intoxicated are second with 11%, while road safety engineering measures will result in a reduction of 6.5%. Due to the high cost of such measures, infrastructure improvements are not expected to significantly contribute to a major reduction of road fatalities. However, a suitable combination of new technologies with existing infrastructure, or with limited improvements of it, may lead to much more cost-effective solutions and may become the catalyst towards achieving the EU goal of halving the number of road accidents in 2010.

The EU project In-Safety aims to use intelligent, intuitive and cost-efficient combinations of new technologies and traditional infrastructure best practice applications, to enhance the forgiving and self-explanatory nature of roads, by a number of approaches. For instance, assessing the potential and cost-effectiveness of combined use of new technologies and innovative HMI concepts, developing new simulation models, risk analysis tools, and training tools for road, traffic management and information centre (TMIC) and tunnel operators, harmonising signing and personalising information, and issuing priority implementation scenarios.

## Introduction

Notwithstanding the undeniable and fortunate decrease in crashes, deaths and injured in European traffic, still the costs in terms of human suffering and economic loss are unacceptable (not yet down to zero). No less undeniable, and