PROJECT

EVALUE

Testing and Evaluation Methods for ICT-based Safety Systems

Funding: European (7th RTD Framework Programme)

Duration: Jan 2008 - Dec 2010

Status: Complete with results

Total project cost: €3,809,378

EU contribution: €2,349,982

Call for proposal: FP7-ICT-2007-1

CORDIS RCN : 85242

Background & policy context:

Active safety systems are massively implemented into new vehicle generations and offer a high potential in decreasing road accidents. While testing and rating of passive vehicle safety are based on established and accepted methods and programmes, these are unavailable for active vehicle safety today. Thus it is difficult to assess the performance of those systems for industry, legislation and further stakeholders. In particular, the end customer cannot judge the active safety of different vehicles based on easy-to-understand ratings as they are offered by different NCAP programmes. This leads to a relatively low awareness of active safety systems and can hinder a higher market penetration.

Going forward to accident free traffic, evaluation and standardised testing methods of ICT-based safety systems are essential. The main focus of the proposed research project is to define objective evaluation and testing methods for ICT-based safety systems.

Objectives:

The project was based on safety systems used in today's vehicles and investigated the future upcoming ICT-based systems. It set out to identify evaluation and testing methods, especially for active safety systems, with respect to the user needs, the environment and economic aspects.

The presence of standardised test and evaluation methods allowed the assessment of a vehicle's overall safety performance with respect to the ICT-based safety systems. This possibility increased the public awareness of the benefit that ICT-based safety systems have on road safety. Widespread awareness of ICT-based safety systems' performance will lead to a higher degree of acceptance for such systems and thus to increased market penetration and ultimately to a reduction of road fatalities.

Methodology:

Based on accident statistics, relevant scenarios have been derived that represent the majority of accidents in which active safety systems could possibly mitigate the outcome. A vehicle was assessed by applying the procedures. Those shall be recognisable also by the end customer as critical situations that can happen at any time. One example is approaching suddenly congesting traffic or a similar, non-moving obstacle. The benefit of active safety systems (e.g. by automatic braking in this case) will thus be even more clear. Assessing the active safety of vehicles includes the interaction with the environment/infra-structure and driver actions. For both testing the vehicle as a whole and the systems in detail, relevant scenarios have been found and defined.

Parent Programmes:

FP7-ICT - Information and Communication Technologies

Institute type: Public institution

Institute name: European Commission

Funding type: Public (EU)

Lead Organisation:

Rheinisch-Westfaelische Technische Hochschule Aachen

Address:
Templergraben
52062 Aachen
Germany

Organisation Website:
http://www.rwth-aachen.de

EU Contribution: €423,002

Partner Organisations:

Volvo Bus Corporation

Address:
Fästningsvägen 1
40508 Gothenburg
Sweden

Organisation Website:
http://www.volvo.com/bus/global/en-gb/home_new.htm

EU Contribution: €236,200

Centro Ricerche Fiat - Societa Consortile Per Azioni

Address:
Strada Torino, 50
10043 ORBASSANO (TO)
Italy

Organisation Website:
http://www.crf.it

EU Contribution: €214,200

Sick Ag

Address:
Erwin Sick Strasse
79183 Waldkirch
Germany

Organisation Website:
http://www.sick.com

EU Contribution: €93,344

Rise Research Institutes Of Sweden Ab

Address:
Scheelevägen 27
22370 Lund
Sweden

EU Contribution: €420,584

Statens Geotekniska Institut

Address:
Olaus Magnus Vag 35
58193 Linkoping
Sweden

Organisation Website:
http://www.vti.se

EU Contribution: €302,503

Idiada Automotive Technology Sa

Address:
L Albornar
43710 Santa Oliva
Spain

EU Contribution: €328,300

Ibeo Automobile Sensor Gmbh

Address:
Merkurring 20
22143 Hamburg
Germany

EU Contribution: €151,156

Fundación Robotiker

Address:
Parque Tecnológico, edif. 202 s/n
48170 Zamudio
Spain

Organisation Website:
http://www.robotiker-tecnalia.com

EU Contribution: €180,693

Technologies:

Safety systems
Technologies to improve road safety

Development phase: Research/Invention

Key Results:

The main results of the project are the protocols for inspection and physical testing of vehicles with respect to their active safety performance in longitudinal, lateral and stability-related functionality. Besides these protocols, to which certain limitations apply before they can be utilised for actual application, much experience, mainly with respect to physical testing, has been gained while applying the draft protocols.

- Inspection Protocols
  By inspection of the subject vehicle, important aspects such as the functionality of the different safety systems on board including any limitations as described in the documentation, the Human Machine Interface (HMI) used for warning and information of the driver, environmental conditions applying for the test as well as efforts made by the manufacturer in terms of functional safety are investigated and documented. The inspection protocols define a systematic and comprehensive analysis in order to identify and determine the capability of the vehicle. Most parts of the

inspection are done studying the documentation and interviewing the manufacturer, but other parts of the work might be done investigating the vehicle.

- Physical Testing Protocols
  In the core of performance testing as proposed by the eVALUE project stands physical testing of the subject vehicle. The purpose of this type of test is to assess the overall performance of the vehicle rather than testing one particular ICT-based safety system under different scenarios, i.e. specific real driving situations, which are relevant regarding the functionality of the considered safety systems. In order to do so, a differentiation between longitudinal, lateral and stability-related functionality was followed. It both reflected the different levels of driver support as well as supported the development within different expert groups. It is imaginable that a similar differentiation can be made in a later implemented test programme since it seems understandable also for the customer. This however depends on the organisation to implement the procedures.

Strategy targets

An efficient and integrated mobility system: Acting on transport safety: saving thousands of lives

Readiness

While some procedures are ready for implementation, some others require additional work out of the scope of the project.

Documents:
Final report (Final report)

STRIA Roadmaps: Cooperative, connected and automated transport

Transport mode: Road transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Safety/Security

Geo-spatial type: Other