

INTERSAFE-2

Cooperative Intersection Safety



The general objectives of INTERSAFE-2 are to develop and demonstrate a Cooperative Intersection Safety System (CISS) capable of significantly improving traffic safety at intersections.

At a Glance

Projects coordinator

Ibeo Automobile Sensor GmbH

Partners:

BMW Forschung und Technik GmbH, Institut für Kraftfahrwesen Aachen, Institut National de Recherche en Informatique et en Automatique, NEC Europe Ltd. Network Laboratories, Signalbau Huber, TRW Ltd trading as Conekt, Technical University of Cluj-Napoca, Volvo Technology, VTT Technical Research Centre of Finland, Volkswagen AG

Duration:

36 month (June '08 – Mai '11)

Total cost:

6,502,279 €

Total funding:

3,857,986 €

Programme:

FP7 ICT Call2: ICT for co-operative systems

Further information:

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Abstract

Today, many of the so-called 'black spots' have been eliminated from the road networks. However, intersections can still be regarded as black spots that is locations with an increased accident probability. Depending on the region and country, 30% to 60% of all accidents causing injury and up to one third of fatalities occur at intersections. This is due mainly to the fact that accident scenarios at intersections are among the most complex ones, since different categories of road users with crossing trajectories interact in these limited areas.

Objectives

The INTERSAFE-2 project aims to develop and demonstrate a Cooperative Intersection Safety System (CISS) capable of significantly reducing injury and fatal accidents at intersections.

Vehicles equipped with communication devices and on-board sensor systems will cooperate with the road-side infrastructure to build a comprehensive system that contributes to the EU's target to reduce road fatalities by 50% and the "zero accident" vision. The system will also lead to a significant improvement in traffic fluidity and thus help reduce fuel consumption in urban areas. By networking state-of-the-art technologies for sensors, infrastructure systems, communications, digital map contents and new accurate positioning techniques, INTERSAFE-2 aims to bring Intersection Safety Systems much closer to market introduction.

System description

The novel CISS combines warning and intervention functions to be demonstrated on three vehicles: two passenger cars and a heavy goods vehicle. Furthermore, a simulator is used for additional R&D.



Figure 1: BMW and VW demonstrator passenger cars



Figure 2: VTEC demonstrator truck



Figure 3: BMW driving simulator

Both functions use novel cooperative scenario interpretation and risk assessment algorithms.

Fusion of data from the cooperative sensors is based on:

- state-of-the-art and advanced on-board sensors for object recognition and relative localisation,
- a standard navigation map and information supplied over a communication link from
 - other road users via V2V, if the other vehicle is so equipped
 - infrastructure sensors and traffic lights via V2I, if the infrastructure is so equipped

to observe the complex intersection environment.

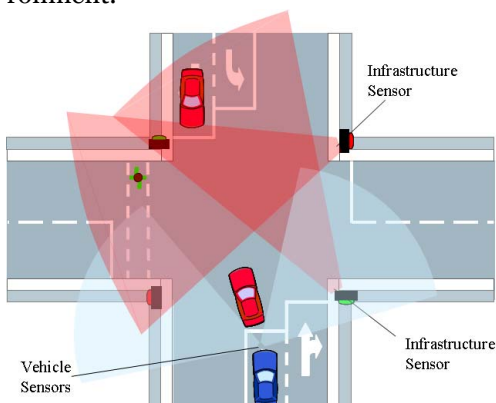


Figure 4: The INTERSAFE-2 system

Impact

INTERSAFE-2 has different impacts on traffic safety and on the deployment of V2X communication in ITS.

Impact on traffic safety

As a result, the deployment of the INTERSAFE-2 system would decrease by 80% the number of injuries and fatalities caused by accidents at intersections. With regard to all traffic accidents, a reduction of up to 40% in injuries and up to 20% in fatalities could be achieved.

Impact on communication

The use of V2X communication for CISS at a small number of equipped intersections would boost the overall market penetration of communication devices in vehicles, since the benefit for those who buy first could be experienced at every equipped intersection.

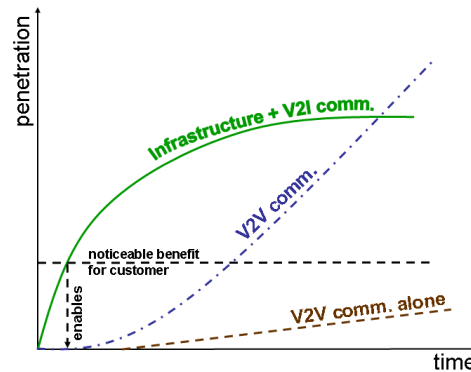


Figure 5: Boost of V2V communication penetration rate

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