SAFESPOT INTEGRATED PROJECT - IST-4-026963-IP

DELIVERABLE

SP5 – COSSIB– Cooperative Safety Systems Infrastructure Based

Specifications for the Road Departure Application

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EXECUTIVE SUMMARY

Road departure and lane departure represent a significant amount of accidents, in particular in rural roads (they are 30-40% of the total), and motorways (20%), while in urban areas they are just the 10%. These figures are result of the previous work package analysis (Needs and Requirements) and serve as motivation for the Road Departure application specifications presented in this deliverable.

A number of systems have been developed by car manufacturers and road operators in order to reduce the number of accidents. These systems range from the on-vehicle Lane Warning Systems based on cameras able to detect the road lanes, to the noisy strips at the side of the motorways that are typically available in foggy areas.

To the best of our knowledge, SAFESPOT is the first project that addresses the road departure problem through vehicle-infrastructure cooperation. Infrastructure support poses advantages, since it allows monitoring and managing also non-equipped vehicle. However, it poses also challenges (difficulty in recognizing a road-departure situation) and constraints (specially, the cost due to the deployment of short-range Wave access points).

The Road Departure (RDep) application specified in this deliverable relies on the innovative concept of Safe Drive Map (SDM). Information about the environmental and road conditions define the boundaries on the dynamic parameters of the different vehicles in order for them to drive safely through the area covered by the infrastructure. The SDM is the set of data (vehicular, environmental and about the road condition) and related rules that define classes of vehicle behaviours ranging from safe driving to potential risk of road departure.

The specifications presented in this deliverable deal with a number of challenging aspects that will be faced in the next implementation phase. These aspects include efficiency in the preparation of accurate SDMs, real time road departure detection based on infrastructure sensors, prediction capabilities and warning provision methodologies.

The deliverable combines text description of the concepts and operational procedures and UML diagrams for the modules to be implemented in software during the subsequent work package.