



Vehicle-to-Vulnerable road user cooperative  
communication and sensing technologies to improve transport safety

## D1.1 – Project Presentation


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<b>Project details</b>	
Project contract number:	FP6-2004-IST-4 – 027014
Project acronym:	<b>WATCH-OVER</b>
Project name:	Vehicle-to-Vulnerable roAd user cooperaTive communication and sensing teCHnologies to imprOVE transpoRt safety
Key action, Action line:	2.4.12 - eSafety Co-operative System for Road Transport
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Project logo	

<b>List of participants</b>	
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Piaggio & C. S.p.A.	IT
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## **Project abstract**

The WATCH-OVER project aims to avoid road accidents that involve vulnerable users such as pedestrians, cyclists and motorcyclists. This topic is in line with the ambitious goal to reduce road fatalities by 50%, as stated in the White Paper on European Transport Policy for 2010.

The project carries out R&D activities with the aim to design and develop a cooperative system for the prevention of accidents involving vulnerable road users in urban and extra-urban areas. System concept is based on interactions between an in-vehicle module and users' devices.

It foresees the development of a cooperative system integrating low cost communication technologies, as an extension to autonomous sensor based systems, in combination, if feasible, with localisation technologies, to cover the most critical situations.

## **Project objectives**

The core of the system is the interaction between an on-board module and a user module, which exploits innovative wireless short range communication technologies (as an extension to vehicle autonomous systems). The cooperative low cost platform extends the actual coverage of the state of the art technologies and will be open to integrate localization technologies.

The main functionalities supplied by the WATCH-OVER on-board platform are real-time detection of pedestrians, cyclists, motorcyclists equipped with the WATCH-OVER module, calculation of the relative positioning of the user vs. drivers (relative motion analysis), detection of dangerous situations (external scenario reconstruction, filtering specific situations), appropriate warning to the driver, providing information only in really dangerous situations. The vulnerable road user module promptly answers to the vehicle's stimulus, delivering its identification and self-localization parameters, it gives feedbacks to the road user with an appropriate HMI (visual or acoustic warnings).

## **Description of work**

The WATCH-OVER project will examine user requirements and will identify a set of specific scenarios. A specific WP will analyse the most appropriate RF and image processing technologies for their integration in the WATCH-OVER platform. Communication modules will be adapted and tested and an enhanced CMOS camera will be designed and developed for VRU detection. During technologies selection and implementation phase there will be a strong effort to minimise cost impact and maximise technical performances related to the specific context of use. By means of on road tests and of simulation activities, the platform will be installed and tested in demonstrators to evaluate system effectiveness and usability. Dissemination of results and exploitation strategy will support the project activities.

## **Milestones**

The main achievements of the project will be assessed in the following major milestones:

- user requirements and scenarios identification
- selection and adaptation of camera sensor and communication technology for the detection and positioning of vulnerable road users
- system architecture specification, development of system components
- integration of WATCH-OVER cooperative system and test and validation of users' acceptance and overall system
- analysis of cost/benefit analysis and guidelines and recommendations for stakeholders