THE ROLE OF THE DRIVER IN THE INTRODUCTION OF NEW TECHNOLOGIES IN VEHICLES

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The introduction of some of the driving aids that are integrated or will be integrated in vehicles allow ease the task of driving, making it more comfortable and safe, providing more information, anticipating to dangerous situations, advising the driver on the most appropriate actions, etc. However, in the design of these systems, the system interaction with the user must be taken into account. The driver must receive warnings intuitively without adding extra cognitive workload. In this presentation, some design principles for these interfaces are presented and they are specified in a study on a sample of drivers that identify the most appropriate user interface for an inappropriate speed warning system. This work has been developed in the project AVESE – Real time warning of safe speed considering vehicle type and road characteristics using smartphones (SPIP2014-01452), whose aim was to develop a cloud platform able of retrieving safety information for road vehicles using the smartphones of the driving as in vehicle communication node and Human Machine Interface (HMI), specifically designed for rural roads.

This system has been designed and refined using the user (driver) as center of design. This means that the design of the HMI has been performed using usability and accessibility criteria in order to maximize its functionality, and tested with simulators and real vehicles with more than 40 people. The results of the final tuned system shows that with the configuration and aspect of the HMI the system cause a minimum interference with the driving task and the mental load, maintaining at the same time the warning information flow in order to prevent accidents.

Even it can be contradictory, the human factor influence in the design of the technological systems of the vehicles is higher as higher is the level of automation of the vehicles. The extreme is the autonomous vehicle field. Then, two main use cases are detected where the influence of the humans (drivers?) is capital. The manual autonomous transition, to solve situations that the autonomous cannot deal and the control must be passed to the human. The second, the integration of the autonomous vehicle in shared traffic, where autonomous and human-driven vehicles share the same infrastructure, forcing the autonomous vehicles to behave in a human-like way with non-autonomous vehicles.

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- Postgraduate training.

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