

# Human centred design for informative and assistive technology in transport

---

Annie Pauzié<sup>1</sup> & Anabela Simões<sup>2</sup>  
<sup>1</sup>INRETS/LESCOT, Bron, France  
<sup>2</sup>ISEC, Lisboa, Portugal

## Abstract

Information and communication technology offers functions to support the driver by informing about forthcoming critical events, specific weather conditions, distance to the vehicle ahead, directions to follow, speed to respect, functions that support human perception and decision taking. Other functions can take actions to control the vehicle, electronic assistance compensating the shortcomings of human reaction and functional abilities. Informative systems require additional attention from the driver, and the benefit of using available information has to be balanced with potential interference. For automation technologies, assistance systems bring the problem of task assignment between human and machine, as well as the choice of logic used for the management of this control sharing; substitution or co-operation.

In new systems specific care should be devoted to human factors, to avoid misconception of the designers and misuse by the driver. Challenge is to take into account the heterogeneity of functions, of systems, and of driver functional abilities. European research projects concerned with the development of innovative functions, adaptative interface, design guidelines and integrated methodologies are presented.

## Introduction

Information and Communication Technology (ICT) in the vehicle allows the development of *informative* functions (i.e., In-Vehicle Information Systems or IVIS) that support the driver. Information can be about forthcoming critical events, specific weather conditions, distance to a vehicle ahead, directions to follow, or maximum speed to respect, all functions that support human perception and decision taking. On the other hand, *assistive* functions (i.e., Advanced Driver Assistance Systems or ADAS) can take actions to control the vehicle, compensating the shortcomings of human reaction and functional abilities. Implementation of these electronic functions leads to an increased complexity of the Human/Machine Interaction inside the vehicle, a real challenge in terms of human factors and ergonomics. Indeed, these functions can induce deep modifications of the driving task at the operational, tactical or strategical level (Michon, 1985).