

# Usability and ergonomic evaluation of in-car multifunctional systems: a tool for Human-Factors professionals

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## Abstract

During the last years the automotive industry has shown a remarkable tendency to position multifunctional navigation systems in cars. This trend, added on the increase of the number of other safety and comfort devices in the vehicle, raises a number of ergonomic questions. To guarantee safety, it is instrumental to understand what are the ergonomics and usability features of these devices and subsequently, driver's performance in using them. As a matter of fact, in applied research field, it is not always feasible for times and costs reasons to have users testing devices in experimental settings. In order to give human factors professional the possibility to collect useful indications on different systems, a tool has been created. The tool collects different ergonomic and usability guidelines that support ergonomists in describing each system taking into account, for example, input devices typology, output devices characteristics, interaction strategies conveyed by the system, time needed to complete different tasks. The tool has to be considered as a qualitative instrument, useful to collect data and indications. Since it can be applied in an easy and quick way, it may help Human Factors professional in identifying particular strengths and weaknesses of a system before performing different evaluations. Moreover, it can be useful during the initial design phase of a new system, to avoid gross usability problems.

## Introduction

The continuous growth of multi-functional on-board systems in cars gives rise to the need, for Human Factors professionals, to have tools available for the evaluation of a large amount of different systems in a quick way. As a matter of fact, ergonomic and usability aspects of such systems need to be evaluated in order to be able to rank different systems and to appreciate collected data by their strengths and weaknesses.

It is also interesting, for Human Factors professionals involved in product development, to have the possibility to compare different systems on the same