Measuring a technology's potential for innovative In-Vehicle Information Systems: an MCDM approach using a large set of alternatives

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ABSTRACT

Driving a car is a complex skill that includes the primary task of driving but also secondary tasks related with interacting with multiple systems in the car (e.g. infotainment). Current automobile industry trends, point towards maximizing the benefits of using more secondary task functions inside the car without affecting the primary task of the driver. Technologies for novel IVIS (In-Vehicle Information Systems) must satisfy different criteria since they should be innovative and pleasurable to use but also secure, feasible to implement and, at the same time, improve secondary task performance.

We report here a multi-criteria decision making approach for rank ordering a large set of existing human-machine interaction technologies. The decision problem was assessing their potential for innovative IVIS products. Alternatives were either available as commercial products or were still in their conceptual and prototype form, and included more than a hundred technologies; the list was diverse with nine different categories. We were interested in the properties of the best alternatives and examined the criteria tradeoffs in the top quartile.

Keywords: Multi-criteria decision making, In-Vehicle Information Systems, Human Factors, Automotive