

# **DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

## **IBM-LITERATURE SURVEY**

### **SIGNS WITH SMART CONNECTIVITY FOR BETTER ROAD SAFETY**

#### **[1]The acceptance and road safety, ethical, legal, social and Economic implications of automated vehicles**

Main Authors: Annika Johnsen (IfeS), Niklas Strand (VTI), Jan Andersson (VTI), Christopher Patten (VTI), Clemens Kraetsch (IfeS), Johanna Takman (VTI)

This deliverable summarizes the findings of an extensive literature review on the acceptance, behavioural intentions, road safety, as well as ethical, legal, social (ELSI) and economic considerations in the scope of vehicle automation. The theoretical fundamentals and relevant findings of recent public opinion research regarding user acceptance of automation are presented. Also the view of organised stakeholders is taken into account. Regarding road safety there is a potential for increased road safety but drivers tend to pick up non-related driving tasks instead. These problems are due to several traditional HMI concerns. In the future autonomous cars must make decisions that touch on ethical issues that have not yet been sufficiently and transparently discussed. Although in many countries legislation is now reacting to the new technology, many aspects – like liability and privacy / data protection – are not yet regulated by law. Automated vehicles promise to have several clear benefits that might change the entire transport system. The positive externalities that come from the technological advantages of automated vehicles might be

outweighed by the negative externalities coming from the potential increases in travelling by private vehicles

**Drawbacks:**

Error in algorithm may leads to false detection of signs

## **[2]Effects of Anger and Display Urgency on Takeover Performance in Semi-automated Vehicles**

Authors : Harsh Shangavi, Yiqi shang, Myounghoon jeon

As semi-automated vehicles get to have the ability to drive them-selves, it is important to explore drivers' affective states which may influence takeover performance and to design optimized control transition displays to warn drivers to take control back from the vehicles. The present study investigated the influence of anger on drivers' takeover reaction time and quality, with varying urgency of auditory takeover request displays. Using a driving simulator, 36 participants experienced takeover scenarios in a semi-automated vehicle with a secondary task (game). Higher frequency and more repetitions of the auditory displays led to faster take overreaction times, but there was no difference between angry and neutral drivers. For takeover quality, angry drivers drove faster, took longer to change lanes and had lower steering wheel angles than neutral drivers, which made riskier driving. Results are discussed with the necessity of affect research and display design guidelines in automated vehicles.

**Drawback:** Advanced innovation may use with great concern, otherwise leads to the exploitation of clean and renewable energy sources.