



SAFER SUCCESS STORY: System Safety through the Combination of HMI and Dependable Systems I and II

"The opportunity to recruit a PhD with unique knowledge in automated driving is a result of the SHADES project that provides Volvo Cars with key competence for the development of self-driving cars."

*Mikael Kjellgren, Manager,
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- Unique knowledge on drivers' ability to handle technical system failures

The aim was to benefit from SAFER's multi-disciplinary scope and combine research in HMI with research in dependable systems to increase system safety in vehicles and define the connections between behavioural science and dependable systems. The scope was later enlarged to encompass knowledge of the relation between drivers and vehicle automation.

Benefit to the project partners and impact on society:

- A novel method to assess the safety of transitions from automated to manual driving when vehicle automation fail
- Development of driving simulator methodology (design of experiment and measures such as 'point-of-no-return')
- Strategies to improve driver controllability in situations where technical failures occur
- Implications for design of driver HMI
- Further knowledge on the consequences of introducing driver assistance systems and automation in cars
- Enhanced knowledge of drivers' experiences of using assistance systems in everyday life
- Successful multi-disciplinary collaboration
- Strengthening of national competitiveness through collaboration; (industry/academia/institutes) and coordination of driving simulator equipment and methodology

Approach:

Recruit Ph.D. students with a human factors and an engineering background respectively; Make use of the broad competence base in institutes and academy; Carry out the project with a co-research approach (simultaneous and integrated rather than parallel activities); Apply a mixed methods approach to research activities; Secure involvement and input from industrial partners.

Measurable results:

- Two Ph.D.;
- Two master theses;
- A number of journal and conference papers;
- One invited book chapter;
- Several prominent presentations for national and international audiences, including academia as well as OEMs;
- VTI simulator software implemented in Chalmers' simulator.

Funding: 13,2 MSEK SAFER internal (cash and inkind)

Partners: AB Volvo, Chalmers, Saab Automobile, SP, Volvo Cars, VTI

Funders: SAFER

Period: 2008-2011; 2011-2014