



Road transport is an essential part of society but the burden of traffic crashes, congestion, and pollution is enormous. Automated driving has the potential to resolve these problems. Several vehicles already automate longitudinal and lateral control but still require a capable driver to monitor the automation (SAE level 2). Car makers already announce the next automation levels (SAE levels 3&4) allowing drivers to take their eyes off the road and engage in other activities. In SAE level 3 the driver is still expected to be able to resume control appropriately in a reasonable time frame. In SAE level 4, vehicles will transition to minimal risk when drivers fail to resume manual control.

Challenges

- How can we ensure a safe evolution of Automated Vehicles towards a future where manual driving is the exception?
- How can we ensure a safe interaction of Automated Vehicles with all kinds of other road users?
- Can we sufficiently understand the human interaction with automation to propose systematic approaches for design and verification?

Statements

- Continuous driver monitoring is needed (also in SAE4)
- Countermeasures against skill degradation are required
- Adaptability of the HMI to current user capability and preferences is required
- The intentions of the surrounding road users vehicles have to be estimated

Research Needs

- Study how humans interact with automated vehicles in several scenarios, focus on urban areas.
- Conceptualise new interaction means for automated vehicles (eHMI), especially with surrounding traffic participants
- Work towards harmonized HF/HMI design and test procedures to be included in consumer and legal test procedures

Expected Impact

- Ensure a safe and acceptable introduction of automation on public roads
- Enable a drastic reduction of fatalities and injuries
- Improve mobility for different user groups

