European Research on Human Factors of Automated Vehicles

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European Projects with HF Element (VRA Wiki)
HUMAN CAN CONTROL VEHICLE (SAE2/3/4)

HUMAN CAN NOT CONTROL VEHICLE (SAE 4/5)
The Driver
*Some* of the main human factors challenges

NOT JUST ABOUT USER ACCEPTANCE

*Designing with the user in mind* (and preferably engaged in the process)

- Mode confusion
- Reduced situation awareness
- Long term effects - training and skills loss
- Age, ability and cultural differences
- Trust versus complacency, etc.

**Adequate time to resume control?**
• Is it about Reaction Time/ Take over time?  
or QUALITY of the take over?
• 5 secs----------→ 45 secs
• Does quick take over mean crash avoidance?
• How much warning do drivers need?
• Are there individual/environmental differences?
• Is take over the same as action?
No Crash (N=54)

Crash (N=19)

Louw T; et al, (2016).
General workflow in SP3

- State of Art
- Research Questions
- Experiments
- HF-recommendations
- Demo-vehicles

Demo vehicle owners

“D3.3 - Final functional HF recommendations”
The Driver
Questionnaires (N=664)

- Most important: *has it detected me?*
- Least important: speed of travel

Focus Group

- Direction of travel not obvious
- Not sure who had priority
- Would prefer demarcations
- Not sure if the vehicle can identify hazards?
- Suggested use of horns and lights for detection and communication
- Better for tourists than commuters
- Sound: Lack of engine noise a problem for its localisation, especially for the visually impaired
Main Research Needs

• For Level 2/3 in particular: How do we ensure driver knows their responsibility and is prepared and able to resume control? Is driver monitoring a useful option?

• How will the AV/its user and other road users communicate with each other in mixed traffic?

• We need lots of demonstrations and hands-on experience

• How do we as researchers keep up with the technology?