Modeling Individual Drivers and **Driver Groups with HEE**

WP1 – Driver Modeling & Simulation

Bertram Wortelen, Sebastian Feuerstack

1. *Objectives*



Modeling human operators is a difficult task due to the complexity and variability of human behavior. Using cognitive models for analyzing human-machine interfaces in very early design phases is a reasonable approach, but is only applied in academic settings. The required expertise is a big obstacle. Our objective is (1) to identify a modeling process that allows drivers with **no HF background** to model their own **monitoring** behavior and distribution of attention and (2) to develop a tool that supports this process.



2. Procedure

- > Overtaking scenario on motorways
- > 2 sessions (randomized order)
 - > Driving in driving simulator
 - > Modelling attention distribution with Human Efficiency Evaluator



- **3. Experiment Design** > 20 participants
- > 3 maneuver phases
 - > Changing to left lane
 - > Overtaking
 - > Changing to right lane

- > HEE usage was explained with a **15 minute video tutorial**
- >Categorization of information sources (IS) by three experts



Participant in driving simulator

4. Result

> All participants were able to use the HEE after the 15 minute tutorial > Information sources with clear borders were marked very consistently > Definition of road ahead varies strongly

> Model parameters varied strongly across participants





- >46-82 maneuvers per participants
- > Dependent variable: Percentage dwell time to information sources (IS)
- 5. Conclusion
- > All participants were able to use the HEE after the 15 minute tutorial
- > The inter-subject variability might be reduced by more

Web: http://www.uni-oldenburg.de/cse/