Wizard-of-Oz Vehicle to Analyse Take-Over Time Demand

**VEHICLE FEATURES**
- Duplicated vehicle control devices to switch between two “driving agents”
- Availability of additional / reconfigurable HMI devices
- Driving monitoring system including eye-tracking

**BENEFIT**
- Ability to emulate all levels & designs of driving automation systems
- Research tool to study user experience and behavior in real world scenarios

**OBJECTIVES OF BOSCH STUDY**
- Analysis of user experience and behavior resulting from a Highway Pilot function (SAE Level 3) in real traffic
- Impact analysis of various non-driving related tasks and individual factors on take-over performance

**MAIN RESULTS**
- High acceptance of presented automation design
- All take-overs were easily controllable
- Increased take-over times due to motoric unavailability
- Rapid stabilization of vehicle control after transition to manual mode
- Large inter-individual differences
- Chosen Wizard-of-Oz approach successfully deployed

**MODELLING “DRIVER AVAILABILITY”**
- Driver availability defined as expected time demand in relation to available time budget
- Two computational models were developed:
  - Data-independent cognitive model (task analysis and scheduling)
  - Data-dependent statistical model (regression analysis of study data)