

# Testing and Safeguarding – Stand 20

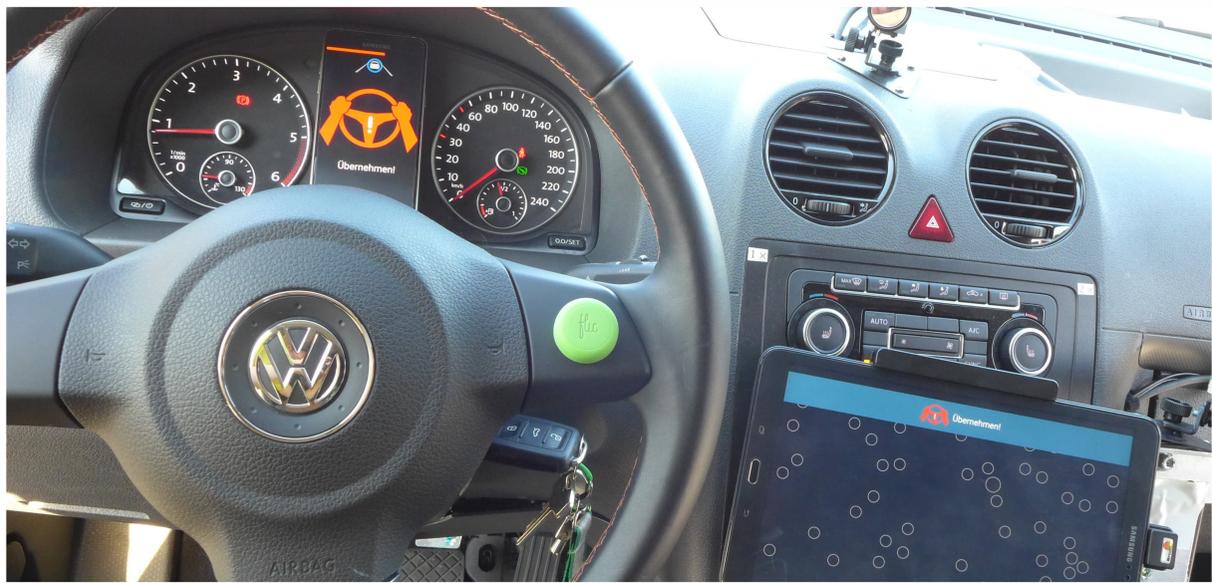
## WIZARD-OF-OZ-VEHICLE



## Testing of a highly-automated driving function in real traffic

### Impact of surrounding traffic on takeover performance

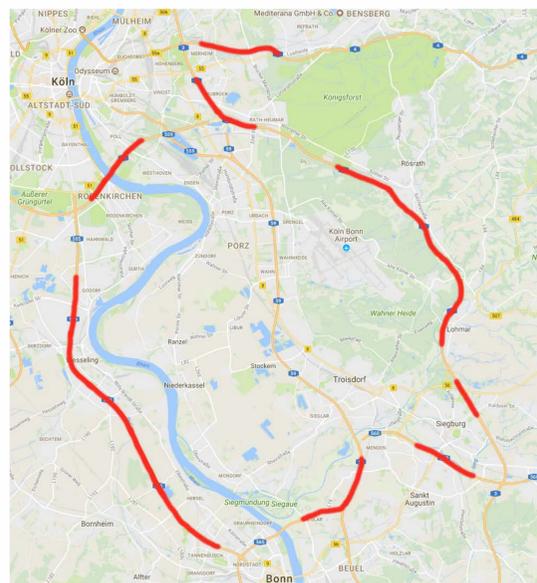
➔ The Federal Highway Research Institute (BAST) conducts on behalf of the Research Association for Automotive Technology (FAT e. V.) a department of the German Association of the Automotive Industry (VDA) a Wizard-of-Oz-test on public roads in order to investigate the human-machine interaction under realistic circumstances.



➔ The testing vehicle (VW Caddy) is equipped with a second driver seat in the back, which is used to simulate Level-3-automation. Numerous measuring systems capture driving data (such as distances, lane keeping, etc.), gaze direction of the subject and reaction times in order to evaluate the takeover performance of the subject.

A display between speedometer and rev counter keeps the subject informed about the system status and shows a takeover request when needed. The takeover request is also shown on the tablet PC on the central console which is used for the secondary task (Surrogate Reference Task – SuRT) for the subject to perform during the automated drive. With a button on the steering wheel the subject interacts with the system: On the one hand, she/he can request the completion of the automated drive, on the other hand, the subject can confirm to be ready to take over.

➔ The impact of the surrounding traffic is manipulated by different numbers of lanes and different traffic densities (estimated by driven velocity and traffic volume)



On overall 117 kilometers (73 miles), the testing route goes on different sections of motorways in the region of Cologne/Bonn and includes eight planned takeover situations. The longest part of automated driving is approx. 15 km (9 mi.) in length. The test is started with a warm-up phase for the subject to get familiar with the car; subsequently, a baseline measurement is conducted. Construction sites and road entries and exits are system limits and need to be driven through manually by the subject. In order to give the subject enough time to take over the driving task, the take-over request is shown approx. 3 km (2 mi.) before reaching a system limit.

