Vehicle automation is linked to various benefits such as an increase in fuel and transport efficiency, as well as an increase in driving comfort. Automation also comes with a variety of downsides e.g. loss of situation awareness, loss of skills as well as inappropriate trust levels regarding system functionality. Drawbacks differ between automation levels. As highly-automated driving (level 3) requires the driver to take over the driving task in critical situations within a limited period of time, the need for an appropriate human-machine interface (HMI) arises. To foster adequate and efficient human-machine interaction, this contribution presents a user-centered, iterative approach for HMI design for highly-automated truck driving. An expert workshop was conducted to develop first ideas and HMI sketches. Workshop results were combined with scientific findings regarding HMI design for highly-automated car driving. Based on those findings, a paper prototype was created and evaluated with experts, using an approach of mixed qualitative methods (heuristic evaluation, thinking aloud). The outcome was implemented to the HMI concept. In a third step, the HMI was conceptualized as video prototype enabling a more detailed evaluation. Again, experts were asked to assess the HMI using
qualitative (thinking aloud) and quantitative methods (questionnaires). The result represents a
video prototype showing a HMI strategy for highly-automated driving, aiming at fostering a
successful human-machine interaction. Relevant issues such as drivers’ informational needs,
situation awareness and trust were explicitly considered during HMI design. Next steps comprise
HMI implementation and user evaluation in a driving simulator to let users experience the HMI in a
semi-real driving context.

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