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Titel des Beitrags: The Impact of Non-Driving Related Tasks on Take-over Performance in Conditionally Automated Driving – A Review of the Empirical Evidence

Abstract: Conditional automated driving (CAD) systems (SAE level 3) will soon be introduced to the public market. This automation level is designed to take care of all aspects of the dynamic driving task in specific application areas and does not require the driver to continuously monitor the system performance. However, in contrast to higher levels of automation the “fallback-ready” user always has to be able to regain control if requested by the system. As CAD allows the driver to engage in non-driving-related tasks (NDRTs) past human factors research has looked at their effects on take-over time and quality especially in short-term take-over situations. In order to understand how take-over performance is impacted by different NDRTs, this paper summarizes and compares available results according to the NDRT’s impact on the sensoric, motoric and cognitive transition. In addition, aspects of arousal and motivation are considered. Due to the heterogeneity of the empirical work and the available data practically relevant effects can only be attested for NDRTs that cause severe discrepancies between the current driver state and the requirements of the take-over task, such as sensoric and motoric unavailability. The paper concludes by discussing methodological issues and recommending the development of standardized methods for the future.

Stichworte:
Conditional Automated Driving, Non-Driving Related Tasks, take-over performance, take-over time, driver state transition I

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