HADRIAN - Holistic approach for driver role integration and automation allocation of European mobility needs

Scientific Responsible
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The HADRIAN project represents a human-centered revolution in the definition of driver roles in automated driving (AD) that starts with human mobility needs within the larger framework of European future mobility visions in the areas of shared, individual, and freight mobility. Holistic driving system solutions are conceptualized based on realistic arrangements of vehicle and infrastructure capabilities matched with human capabilities to achieve safe, acceptable, and trustworthy use of AD functionality and transitions between AD levels. The HADRIAN project focuses on the utility of dynamically adjusting (fluid) human machine interfaces (HMI) that take environmental and driver conditions into account to provide adaptive signals, information, or transfer authority that the driver needs to safely transition between AD levels. For this fluid HMI (f-HMI), real-time driver status models, novel sensor and information fusion methods & algorithms, as well as decision logic algorithms for contextually sensitive interventions and information offerings will be developed. A (fluid) tutoring system will provide a step-wise training of the driver and enable calibrated levels of trust. The HADRIAN project aims to increase the safety of AD level transitions by 85 % compared to traditional, non-adaptive HMIs, and achieve acceptability of 95%. Nineteen human participant studies, covering a broad range of driver demographic and cultural factors, will explore and evaluate f-HMI concepts and driver monitoring methods in driving simulators and field demonstrations. Field demonstrations will be performed using the full range from light to larger passenger vehicles and freight vehicles/trucks (L, M, and N class). Eventually, the HADRIAN demonstrators and effectiveness metrics will be translated into guidelines and recommendations for OEMs world-wide for human-systems integration of safe, acceptable and trustworthy AD technologies and functionalities.