Connected Automated Transport And Logistics Yielding SustainabiliTy (CATALYST)
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Logistics companies face challenges regarding shorter delivery times, shortage of drivers, safety, traffic congestion, and environmental concerns. Following the trends in digitalisation and changes in the transportation system (e.g., autonomous vehicles, platooning, super ecocombi trailers), logistics hubs need to adjust and transform their yards into smart yards. These smart yards could utilize connected automated transport to improve their operational efficiency, land and equipment utilisation, and environmental footprint. In addition, these smart yards could improve the processes of other logistics service providers by supporting trailer swapping and truck platooning operations. We plan to create a simulation framework for smart yards applicable to different logistics companies. Through simulation studies, we will assess the viability of pre-parking areas, implement planning algorithms for the control of automated vehicles at the yards, assess various degrees of autonomous transport adoption (traditional, mixed and fully) inside and around the yards, compare centralized and distributed decision-support systems, and test these logistics systems under different future scenarios. Regarding connected automated transport, we plan to conduct simulation studies to analyse the efficiency of different technologies (e.g., platooning) and support real-life testing, as well as generating road data for the development of future policies by land authorities.