Cooperative systems for future automated road transport and traffic management in urban areas

Automated road transport in urban areas will be dependent on adequate connectivity and information exchange between highly automated driving systems in vehicles and the road infrastructure.
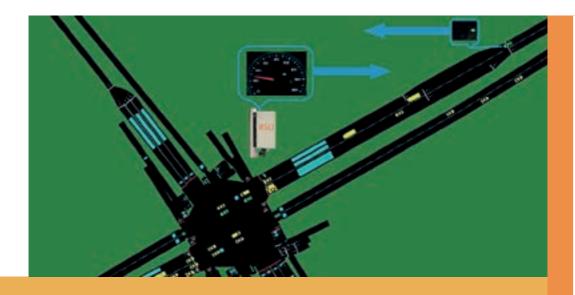
The research especially addresses the challenges of cooperative systems for future road transport and traffic management in urban areas.

The EU funded Managing Automated Vehicles Enhances Network project (MAVEN, EC Grant No. 690727) presented a unique opportunity to research automated driving in an urban environment. The impact of interaction with the environment can be much larger in an urban environment than a motorway. The first main result is the open simulation architecture. Since the current availability of automated vehicles for testing and evaluation is very low, a simulation model is required to conduct research on the topic. The core architecture element in an urban environment is the traffic light controller, which uses identical software in simulation as in the real world. For automated vehicles, modelling is more complex, as sensors do not work.

Therefore, a special model was needed. To ensure maximum impact to the research community, this model was released with the open source micro-simulation package SUMO. The second result answers the question what benefit automated vehicles can bring for traffic efficiency.

The developed signal negotiation algorithm uses route and sensor information to improve the traffic control for all traffic participants. Sending back detailed speed and lane advice reduces the need for stopping and reacceleration, reducing pollutant emissions. Lastly, the project ensures maximum impact by organizing interactive stakeholder workshops •