

VIRTUAL VEHICLE Research GmbH

Program:
D-A-CH Cooperation
traffic infrastructure research in the context of mobility of the future

project length:
10/2020-09/2022



Einstellungen für die Simulationsdurchführung

Ebene 1 - Netzparametrierung

Ebene 2 - Fahrverhaltensbeeinflussung

Ebene 3 - Wettereinflüsse auf das Fahrverhalten

Ebene 4 - Signalisierte maximale Geschwindigkeiten

Ebene 5 - Anteil automatisierter Fahrzeuge am Gesamtverkehr

Ebene 6 - Schwerverkehrsanteil

Ebene 7 - Verkehrszufluss

Ebene 8 - Anteil Verkehrszufluss Hauptfahrbahn : On-/OffRamp

Ebene 9 - Simulationsparameter

Simulation starten

Fig 1. Modular, extensible Symul8 simulation platform

SYMUL8-PLATFORM FOR SIMULATION OF AUTOMATED DRIVING IN MIXED TRAFFIC SCENARIOS

TRAFFIC ENGINEERS AND POLICY MAKERS FACE THE CHALLENGE OF INCORPORATING AUTOMATED DRIVING INTO THEIR INFRASTRUCTURAL AND STRATEGIC TRAFFIC MANAGEMENT. IN THIS REGARD THE SYMUL8 SIMULATION PLATFORM WAS DEVELOPED AND CAN BE USED TO ASSESS FUTURE TRAFFIC REGULATIONS FOR AUTOMATED DRIVING.

While automakers around the globe are researching vehicle automation, traffic engineers are facing another challenge. How can automated vehicles be integrated into the existing traffic system and improve traffic efficiency without compromising traffic safety? Policy makers, in turn, must ask themselves the question: What legal framework must be created for automated driving in road traffic?

These and similar questions can be answered with the Symul8 simulation platform, which is based on two established simulation software products PTV VISSIM and SUMO. Within the research project Symul8, the specifications of a user-friendly simulation environment were defined after a

detailed requirements analysis. This resulted in the prototype of a simulation platform that takes into account the following parameter settings:

- different levels of automated driving
- different penetration rates of automated and non-automated vehicles in mixed traffic (share of conventional/automated vehicles)
- typical infrastructure segments of the high-level road network
- environmental and weather influences
- traffic composition (e.g., share of trucks, traffic volumes)

SUCCESS STORY



Effects and Impacts

The newly developed Symul8 simulation platform enables simulation-based analyses to be carried out, even without specialist knowledge of traffic simulation. This makes the topic accessible to a much broader field of experts.

Thus, in the early development phase of automated driving functions, different legal regulations as well as their effects can be analyzed in the simulation.

An example of an analysis result from Symul8 is shown on the right in Figure 2 in the time-space-speed diagram. Based on simulated data and specific automated driving functions, traffic engineers can evaluate the effects of different legal frameworks, traffic regulations, as well as infrastructure properties in an overall view.

Furthermore, the simulation platform has been implemented in an open manner for future enhancements. It is possible to revise individual components (e.g. implementation of driving functions) as soon as new findings from science and industry become available.

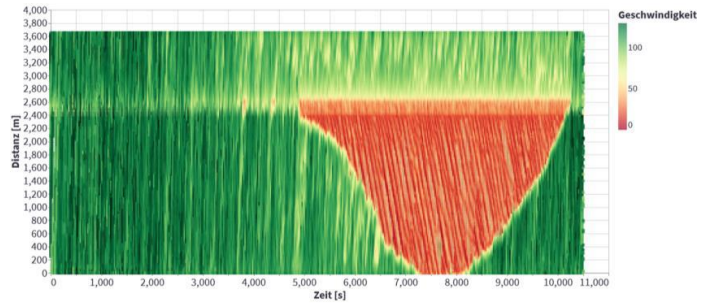


FIG 2. Time-Distance-Speed diagram as analysis result

Conclusion

The analyses carried out as examples in the project show that traffic efficiency is increasing, which means that travel times are decreasing as the proportion of automation increases. This presupposes that the technical maturity of the driving systems is given and that the appropriate legal framework conditions are set.

Project coordination (Story)

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Rapp Trans AG

Project partner

- Federal Ministry for Digital and Transport, Germany
- Federal Ministry for Climate Action, Austria
- Federal Roads Office, Switzerland

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