

PROJECT

VEGAS

Assessment of traffic through automated driving Highways and expressways

Bewertung des Verkehrsgeschehens durch automatisiertes Fahren auf Autobahnen und Schnellstraßen

Funding: National (Austria)

Duration: Jul 2016 - Sep 2017

Status: Complete



Objectives:

VEGAS looks at the capacity impact on the ASFINAG motorway network generated by automated driving for SAE-levels 2-4. Personal transport by cars and freight transport by trucks are considered. The following questions will be addressed for different market penetration and SAE level:

- Change in travel speeds
- Change of network density and link capacity
- Adaption between automated and conventional vehicles especially in incident cases such as congestion and accident
- Impact of automated driving on capacity of interchanges and entries with subordinate at-grade junctions
- Macroscopic evaluation of shorter breaks at rest-areas

The tasks will be answered by real-world tests, simulation studies and network analysis. Assuming, that all legal issues of automated driving at level 4 and 5 are solved, headways between automated vehicles on motorways will shrink. Since automated vehicles can adopt speed differences better than human drivers, they will accept shorter gaps at motorway mergers and entries. Car following parameters and lane changing gaps for SAE level 2 and 3 will be generated by existing and additional test drives with equipped vehicles by the project team. For SAE level 4 assumptions based on literature values will be done supported by test drives with the FTG-driving simulator at TU Graz. SAE level 5 will not be considered in VEGAS. The car-following parameters (in particular speed dependent gaps) and lateral movements (lane changing dependent on gap and speed differences) will be developed for SAE level 2- 4 and validated using the FTG driving simulator.

The project team has extensive validation data for conventional car trajectories. A microscopic traffic flow network will be set up in VISSIM using real world network elements of ASFINAG including different number of lanes and motorway exit/entries. The validated car-following models for each automated vehicle level will be generated using an extended Car2X-interface. Multiple simulation runs with different levels of market penetration will be conducted with varying travel demand. The macroscopic key performance indicators density, capacity and mean speed will be analysed and forecasted for the overall ASFINAG network.

Parent Programmes:

[MOTF - Mobility of the Future](#)

Institute type: Public institution

Institute name: FFG - Die Österreichische Forschungsförderungsgesellschaft

Funding type: Public (national/regional/local)

Other programmes: Mobilität der Zukunft - VIF 2015

Lead Organisation:

Technische Universität Graz Institut Für Elektrische Sensorsysteme

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Partner Organisations:**Kompetenzzentrum - Das Virtuelle Fahrzeug Forschungsgesellschaft M.b.H.****Address:**

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Organisation Website:

<http://www.v2c2.at>

Technologies:

Connected and automated vehicles
Modelling and design of cooperative car systems

Development phase: Validation

STRIA Roadmaps: Cooperative, connected and automated transport

Transport policies: Other specified

Geo-spatial type: Infrastructure Node