ROAD INFRASTRUCTURE FOR AUTOMATED DRIVING

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Automated driving functions need a high market penetration to show positive effects on overall traffic…
Vehicle’s perception
Extended horizon using road infrastructure data

Available infrastructure data:
- HD camera detection
- Traffic sensors
- Radar data
- Environmental data
- Traffic management data
- Short-range ITS-G5 communication
Implementation of a digital and physical infrastructure to support validation of ADAS functionalities

Motorway A2 (Lassnitzhöhe – Graz Ost)

Cooperation with ALP.Lab
Sensor equipment on the test track

Digital infrastructure

- Environment sensors
- Radar sensor
- Video detection
- Traffic data recording
- ICT Infrastructure, fiber glass network
- HD video cameras with detection
- Traffic sensors with single entry (cross section related)
- Radar sensors (track related)
- Cloud solutions for infrastructure data
- 3D Model and HD map of the motorway
Hybrid communication
Save and efficient traffic control of mixed traffic

ITS-G5 / 802.11p
Close range up to 1km
comprehensive
complementary

Traffic Management
Head Office

Conventional Vehicle

Roadside Units

C-ITS services developed:
- Road work warning
- In-Vehicle Signage
- Incidents
- Sample Vehicle Data

First considerations about expanded services to support AD functions

4G, 5G
Mobil connectivity

Cloud Services

Reliability all the way.
Using infrastructure data for enhanced and prescient perception and alignment with vehicle’s sensor system

**Ground truth data of traffic flow**

- Information about the environmental traffic flow and surrounding vehicle types and vehicle velocities
- Providing information about velocity limits and VMS signage
- Providing road layout

**Warning of incidents (e.g. end of a traffic jam)**

- Safety critical warnings can be provided via VMS and C-ITS communication
Traffic control and guidance of mixed traffic

Road INFRAstructure ready for MIXed vehicle traffic flows

- Providing roadworks warning and in-vehicle signage of speed limit
- Guiding connected and automated vehicles through the roadworks layout via C-ITS message containing roadwork layer information, speed limits, awareness information, etc. and visual elements
Possible extension of physical infrastructure

• Infrastructure elements can support the reliability of sensors of automated vehicles
  ❖ For a better recognition of traffic signs
  ❖ Lane markings with improved reflectivity at darkness and adverse weather conditions
  ❖ Landmarks to relocate and calibrate the vehicle’s positioning