HAVEit

Highly automated vehicles for intelligent transport

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The future of driving

Deliverable D54.2: Active Green Driving: Components installed, working and tested

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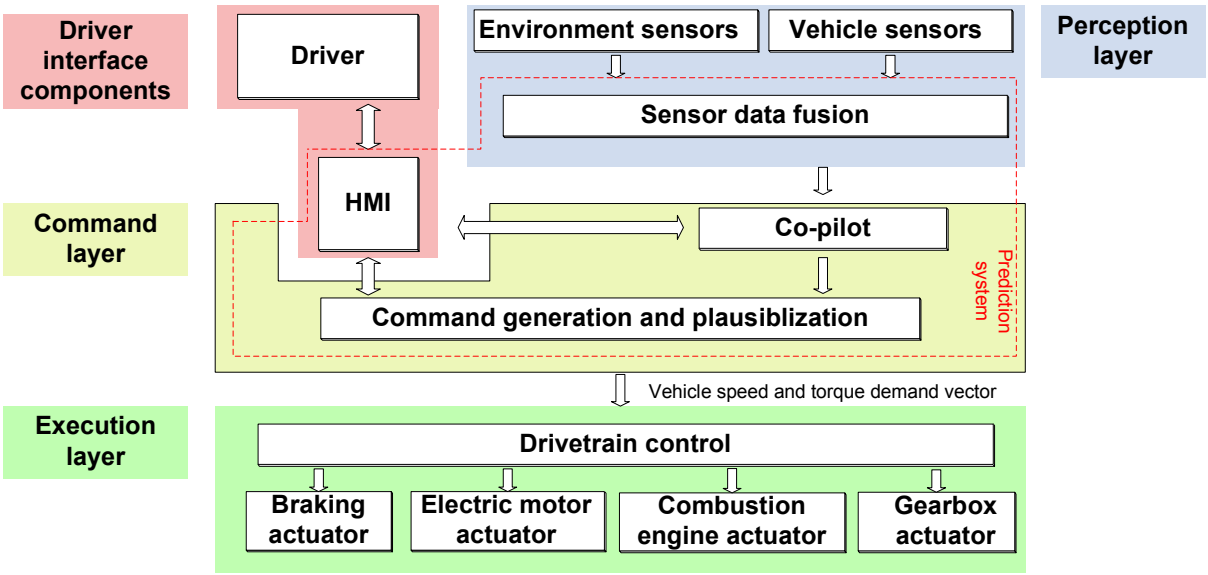
Executive summary

The overall objective of the HAVEit project is to develop technical systems and solutions that improve automotive safety and efficiency. In WP5400, Volvo Technology contributes to the overall objective by developing a fuel-consumption efficiency focused application: Active Green Driving (AGD).

In the Active Green Driving application information obtained by environment perception sensors installed on the test vehicle is used to predict the future driving environment and to optimize the energy management control strategy for reducing the fuel consumption. The prediction horizon is also used to coach the driver for driving in a more fuel efficient way. The AGD test vehicle is build to demonstrate the functionalities of the energy manager and the driver coaching to illustrate how the driver is well supported in his/her aims to reduce fuel consumption.

The main objective of WP5400 during project periods M22 – M28 was to activate, interlink and test all installed components in the Volvo 7700 demonstrator city bus. This document summarizes the components installed on the WP5400 vehicle. Based on the common HAVEit architecture, described in deliverable D12.1 [2], this document also describes the components of the AGD demo vehicle in the perception layer, command layer, execution layer and the driver interface components which are necessary to demonstrate the AGD functions (overview below):



- **Perception layer components**
  - Environment sensors (which are described in deliverable D54.1 [1])
  - Vehicle sensors
  - Sensor data fusion
- **Command layer components**
  - Co-Pilot module
  - Command generation and plausibilization

- **Execution layer components**
  - Drivetrain control
  - Braking actuator
  - Electric motor actuator
  - Combustion engine actuator
  - Gearbox actuator
- **Driver interface components**
  - Pedal interface (brake pedal and active force feedback acceleration pedal)
  - Driver display interface (driver coaching display)

In summary, the installation, activation and integration work for all required components of the AGD demo vehicle have been completed. The installation and integration of the required components has been tested by running the complete system in the target scenarios for the AGD application. All preliminary hardware tests show successful results except for the V2V communication where the status of the delivered hardware still is uncertain. During the coming months the V2V devices will be further developed.

The next step of the project will focus on the development, implementation and integration of the Active Green Driving application as well as improving the performances of current existing sensors.

References

[1] D54.1 “Sensors installed in vehicle (1st SW version)“, HAVEit deliverable, 2009

[2] D12.1 ”Architecture“, HAVEit deliverable, 2009