

Deliverable D1.8 //

Demonstrator vehicles

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*Automated Driving Applications and
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1 Summary

This document presents the eight demonstrator vehicles built in the AdaptIVe project. The demonstrator vehicles implement automated driving along the requirement engineering and design work carried out and documented in the previous -deliverables D1.6 (Initial system specification) and D1.7 (System architecture and updated system specification). The presentation is an elaboration of statement milestone M1.4 (Demonstrator vehicles equipped), outlining details on the finalized demonstrators' installations. This document describes what has been built and guides the reader to a visit of each demonstrator, pointing out installation of project specific sensors and communication and processing units as well as functionality developed within AdaptIVe.

Besides presenting all demonstrators, this document discusses common topics relevant for the design of safe automatic driving.

- Introduction to perception. It is argued that the notion of uncertainty is a vital part of the perception layer which is critical to achieve robustness of automatic control.
- V2V communication. As a complement to D1.7, a comprehensive introduction to V2V leads to a new high level protocol for V2V called EPM - related to perception. The purpose is to increase the penetration rate of automation functionalities by the idea of collective perception, realizing V2V capabilities which are absent in conventional vehicles.
- Redundancy concept. The cost efficient redundancy pattern duo duplex introduced in D1.7 is further discussed here with respect to implementation into the demonstrators. The concept involves a Minimum Risk Manoeuvre.
- Control concept. Commonalities for control strategies of the use cases Minimum Risk Manoeuvre, Stop & Go driving, and Lane change are defined and discussed.
- Human factors recommendations. Recent updates of recommendations for driver integration with automation functionality carried out in SP3 are included in this document on demonstrators.

This deliverable marks the end of the design and implementation phase within AdaptIVe and, based on the demonstrators, a shift to iterative improvement and evaluation of the created technology. The document is accompanied by a delivery of the demonstrator vehicles with installation of equipment, in companion with milestone M1.4.