HAVEit

Highly automated vehicles for intelligent transport

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The future of driving.

Deliverable D31.2
Co-driver command vector available (2^{nd} version)

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Authors

Name	Company
Benoit Vanholme	LCPC
Sébastien Glaser	LCPC
Salim Hima	LCPC
Lydie Nouvelière	LCPC
Gerald Temme	DLR
Christian Löper	DLR
Frank Flemisch	DLR
George Thomaidis	ICCS
Christina Kotsiourou	ICCS
Katia Pagle	ICCS
Paulo Resende	INRIA
Fawzi Nashashibi	INRIA

Project Managers

Alfred Hoess
Continental Automotive GmbH
Siemensstrasse 12
93055 Regensburg, Germany
Phone +49 941 790-5786
Telefax +49 941 790 99 5786
E-mail: Alfred.Hoess-EXT@continental-corporation.com

Holger Zeng
Continental Automotive GmbH
Siemensstrasse 12
93055 Regensburg, Germany
Phone +49 941 790 92330
Fax. +49 941 790 99 92330
E-mail: holger.zeng@continental-corporation.com

Project Co-ordinator

Reiner Hoeger
Continental Automotive GmbH
Siemensstrasse 12
93055 Regensburg, Germany
Phone +49 941 790 3673
Fax +49 941 790 99 3673
E-mail reiner.hoeger@continental-corporation.com

Executive summary

The overall objective of the HAVEit project is to develop technical systems and solutions that improve automotive safety and efficiency using an adapted automated driving on roads. INRIA, LCPC and DLR contribute to the overall objective by developing the co-pilot system in collaboration with the following partners: ICCS as data fusion provider and IBEO as a sensor provider.

The co-pilot (WP3100 in the HAVEit project structure) is fundamentally intended to support the driver by identifying the current driving situation and providing a recommendation of the action to be done next. The resulting action is a manoeuvre that has to be executed by the driver or by the vehicle controllers in a highly automated mode. There is also an evaluation whether the present situation can be mastered by the technical system or not.

Hence, the co-pilot is a piece of software that integrates several algorithms computing the safe manoeuvres to perform and the optimal trajectories to realize those manoeuvres.

This document summarizes the co-pilot's architecture and describes the corresponding WP3100 algorithms. A technical description of the co-pilot system is also included as well as the algorithms used to generate safe and optimized trajectories. The selected trajectory is then used by the *Command generation and validation* sub-system (WP3300) in order to generate the command vector used by the vehicle controller to realize the feasible trajectory.

This report is the second version of the deliverable dedicated to the Co-driver command vector available (D31.2). The first version of this deliverable (D31.1) was delivered in May 2009.

This new, consortium confidential version is attempting to describe the evolution of the system since then.

The trajectory calculation and command generation and validation systems were completely developed and integrated in the Joint System simulation tool and on the FASCar demonstrator (see deliverable D41.1). The description of the other co-system algorithms developed by the SP3000 team is available in deliverable D33.4 [15]. Some additional, more powerful algorithms are currently being C-coded and will be integrated during the next SP3000 integration week in the beginning of 2010.

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[16] HAVEit Deliverable D33.5: “Algorithm (C-code, 2nd version), available for partners”. June 2010.