Project Final Report //

Reporting period: Jan 2014 - Jun 2017

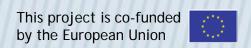|	
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Name, title and organisation of the scientific representative of the project's coordinator	Aria Etemad Email: aria.etemad@volkswagen.de Tel: +49-5361-9-13654 Volkswagen Group Research
Project website address	http://adaptive-ip.eu/

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Automated Driving Applications and
Technologies for Intelligent Vehicles

Document information //

AUTHORS

Aria Etemad, VW
Sarah Metzner, EICT
Henrike Inhülsen, EICT
Bert Hildebrandt, EICT
Tatiana Wark, EICT
Giancarlo Alessandretti, ALC
Andreas Knapp, DAI
Emma Johansson, VTEC
Mikael Söderman, VTEC
Christoph Kessler, FORD
Luisa Andreone, CRF
Jens Langenberg, VW
Adrian Zlocki, IKA
Christian Rösener, IKA

Version and history chart //

VERSION	DATE	COMMENT
0.1	20.06.2017	First draft
0.2	26.06.2017	Sections 1.5, 2.1, 2.2 added
0.3	24.07.2017	Section 1.1 added, publications list updated
0.4	28.08.2017	Sections 1.4.1, 1.4.2 added
0.5	05.09.2017	Section 3 updated
0.6	18.09.2017	Section 3 updated
1.0	12.10.2017	Final check

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1 Final publishable summary report

1.1 Executive summary

During 42 months ending in June 2017, 28 partners from all over Europe collaborated in the large-scale project AdaptIVe to advance the performance of automated driving systems for cars and trucks. Taking automation to higher levels, the results of AdaptIVe support the goals of making driving safer and more comfortable, and of reducing congestion and fuel consumption.

The key result from the project is the development of several automated functions implemented into eight demonstrator vehicles - seven passenger cars and one truck. In parallel, the project investigated other important domains, as synthetically described in the following.

1. In the area of legal aspects, partners conducted an analysis on several legal topics like "civil liability", "regulatory law", "data protection" and the "rules of approval". As a result, obstacles in the path towards the implementation of automated driving were identified, with a view on possible future trends. The project also investigated the appropriate terminology and classification of automation levels.

2. The activity on Human-Vehicle Integration provided insight into driver behaviour when exposed to new situations regarding an automated system. After defining suitable use cases, the project performed several experiments (mostly based on driving simulators) to address key research questions. The topics under examination included: driver in and out of the loop, driver state, secondary tasks, and changes between automation levels, shared control, and HMI. The results allowed to establish a set of design guidelines, and were also applied to the implementations in the demonstrator vehicles.

3. The application development concerned three basic situations: (i) closed-distance scenarios, with a focus on the reconstruction of the environment; (ii) urban scenarios, dealing with the complexity of traffic; and (iii) highway scenarios, addressing a full range of continuously operating functions, up to 130 km/h. The development of the demonstrator vehicles led to advances in many domains. To name just a few: a common architecture, perception, communication protocols, fail-safe solutions, and a minimum-risk manoeuvre able to bring the vehicle to a safe stop.

4. The work on evaluation started by developing a framework of methodologies, taking into account the new requirements connected to automated driving. The study considered a technical assessment, a user-related assessment and the interactions with other vehicles. Moreover, efforts were devoted to an impact analysis using simulation, with a focus on safety and energy efficiency. The evaluation showed that the automated system provides a control capability and variability that is very similar to human behaviour. The simulations of accident

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scenarios demonstrated a good safety potential. The assessment of environmental impacts indicated that the travel time almost can be maintained while a reduction of energy demand due to acceleration behaviour. Areas requiring improvement were identified.

In summary, automated driving remains a field open to further developments, and a complete coherent picture will be clarified in the coming years, not forgetting applications for freight delivery. The results obtained in AdaptIVe provide an industrially oriented point of view, with relevant clues regarding all the key areas. A suitable route towards automation will require a close cooperation between all the stakeholders, as well as public understanding of the potentialities and limitations of automated vehicles. The project partners believe that legal issues will remain in the international scene for the coming years, especially regarding the needed steps for liability, type approval and data security.

1.2 Project overview and objectives

The objective of AdaptIVe is to develop and demonstrate new functionalities provided by partially-automated and highly-automated vehicles. These applications cover different speed regimes and driving scenarios and aim at improving safety, energy efficiency, dependability and user-acceptance of automated driving. In order to meet this general objective, AdaptIVe considered seven major tasks:

1. Extend the range of possible situations for the application of automated driving
    - Focus on supervised automated driving in highway scenarios, urban-traffic and close-range manoeuvres.

2. Enhance the perception and communication capabilities
    - Implement features regarding the sensor platform, communication to other vehicles or to the infrastructure.
    - Improve safety in potentially dangerous situations by cooperative manoeuvres.

3. Develop solutions for cooperative control addressing driver needs
    - Ensure continuous interaction between human and automation.
    - Obtain and evaluate guidelines for implementation.

4. Design and demonstrate resilient behaviour for the applications
    - Develop fail-safe architecture and an automated function to bring the vehicle on a halt.
    - Implement support functions according to the infrastructure and driver capabilities.

5. Improve the safety and adaptability of automated driving
    - Integrate solutions for driver status monitoring.

6. Develop and apply specific evaluation methods
    - Develop new methods for the technical and the user-related assessments.

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- Evolve new methods for the analysis of safety and environmental impacts at European level.

7. Provide guidelines on legal aspects
    - Analyse the legal framework for an introduction of partially and highly automated system into the market.
    - Establish requirements for the safety validation and specifying qualifications for system availability.

1.3 Results achieved

The results achieved are described in the Deliverable D1.0 (Final Project Results), chapter 12.2.

1.4 Potential impact

1.4.1 Main dissemination activities of AdaptIVe

Over the 42-month duration of AdaptIVe, the partners disseminated effectively and widely the AdaptIVe concept as well as the overall outcomes of the project. The dissemination efforts have been performed in accordance to the AdaptIVe Dissemination Plan (D1.3), which was developed at the first project year and updated periodically to maximise the project impact to relevant communities and selected target groups.

Project dissemination channels and materials

A variety of dissemination channels and means were identified at the Dissemination Plan and used during the project runtime. At the beginning of the project, a comprehensive project design was created, assuring a consistent and high quality appearance of the project. This included a project logo, brand colours, fonts, key visuals and illustrations. For a coherent appearance all partners had templates available for presentations, posters and reporting. Also a project standard presentation was generated and continually updated.

A number of promotional printed materials were created based to the AdaptIVe brand and distributed on different occasions. A project brochure summarised the main objectives and expected impacts of the project, and served as an extended calling card for the project. Two project factsheets - EU and general - gave an overview of the project facts. Also, roll-up posters were available. Furthermore, a number of give-aways such as stickers, pens, writing blocks and USB memory sticks were prepared.

Beside printed material, a project video was released and distributed through project website, AdaptIVe Youtube, https://www.youtube.com/watch?v=L0IHSq5HkSQ, and Vimeo, https://vimeo.com/174184830, channels. The video shows what makes the project unique and highlights the research achievements. It was displayed in several industry events such as

European Council for Automotive R&D (EUCAR) annual Reception and Conference and the first European conference 'Connected and Automated Driving' (EUCAD) as well as AdaptIVe Final Event.

Technical dissemination of the results

Scientific publications and presentations are the main channels for sharing the knowledge and research findings among the experts. AdaptIVe partners made a great effort in disseminating the project technical results and thus in shaping the research field. The project succeeded in publishing four articles in scientific journals and two in books. Furthermore, two journal articles are being under review. Resulting from the conference papers, overall 38 papers were published in conference proceedings.

Partners were represented during the major international and national academic and industry events, such as the ITS World and European Congress, the TRA, Automated Vehicle Symposium, IEEE Intelligent Vehicles Symposium and Intelligent Transportation Systems Conference, giving in total 102 presentations and presenting four posters in the course of the project. In addition, four Special Interest Sessions presented the project progress and outputs in more detail.

AdaptIVe also collaborated with a number of other projects and initiatives. Examples include AutoNet2030, VRA, CARTRE/SCOUT, CityMobil2 and Trilateral Working Group on Automation. Cooperation included jointly organised workshops, webinars, special sessions and discussions.

Overall, the technical dissemination gave the project widespread reputation within the scientific and stakeholder communities, ensuring that the project results will be taken up.

Main Events

AdaptIVe events provided an excellent opportunity to discuss on legal and technical aspects of the project with the main stakeholder groups and to promote the project final results. Over the course of the project, two project workshops were organised: Workshop on Legal Aspect of Automated Driving in Paris on September 17, 2015 and AdaptIVe Technical Workshop "Developing Automated Driving" in Athens on April 21 and 22, 2016. At the Technical Workshop the latest developments in sensor technologies and advanced sensor fusion, automated driving applications and human factors were presented and discussed. The Legal Aspect Workshop, in turn, outlined the challenges and solutions for legal questions related to automated driving.

Finally, during the AdaptIVe Final Event // Driving Automation, held in Aachen, Germany, on 28 and 29 June 2017, the project main findings were presented and demonstrated. More than 250 experts from 20 countries all over the world joined the event. The event offered automated driving demonstrations in and around Aachen, a dedicated conference and an exhibition showing 54 project posters and 13 videos. Additional event material and give-aways, such as event

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brochure, conference bags, writing pads, neck cushions and umbrellas were produced and distributed for the participants. The event report, including links to the agenda, press release, media reports and presentations, is available on project website: https://www.adaptive-ip.eu/index.php/reader/Final_Event_held.html.

1.4.2 Exploitation of results

1.4.2.1 Methodological approach

The exploitation of the project's results was a key objective within AdaptIVe. In order to study the deployment potential of the project's outcomes, a holistic and integrated methodological approach was developed, starting with exploitation activities at the very beginning of the project. The research was made up of an in-depth analysis of *main challenges*, *key drivers*, and *implications for a market introduction* of automated driving functions. Based on these findings, *exploitation plans specific to stakeholder groups* and *deployment trends* for automated driving – explicitly focussing on market demands – were elaborated and discussed to finally come up with a *roadmap for market introduction* for the automated driving functions developed in AdaptIVe.

The AdaptIVe exploitation approach was essentially comprised of five main building blocks:

1. Survey on legal aspects

2. Partner survey on technical aspects

3. Expert survey on main challenges for market introduction of AD functions

4. Partner survey on deployment strategies

5. Expert panel on deployment trends and perspectives for AD functions

In addition to the project's exploitation activities, the partners significantly contributed to various research initiatives, working groups, and discussions rounds at the European and national levels on deployment challenges for automated driving (e.g. ERTRAC Roadmap on Automated Driving, 2015; 2017).

1.4.2.2 Results

This section provides a brief overview of the main results. A detailed discussion of the results and explanation of the methodological approach applied in the project is given in D 1.0 Final Report.

Key challenges and main drivers for market implementation

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A major issue of the analysis was the question concerning major challenges for a successful market implementation of AD functions in Europe. Different challenge areas were identified based on the cross-survey analysis and regrouped into seven challenge clusters. These clusters reflect a variety of different challenges that in many aspects have been addressed and researched within the AdaptIVe project.

Important drivers and key decisions (orange boxes in Figure 1) needed for the realization of highly automated driving were identified for each cluster (blue boxes):

Functionality and safety of the system	Validation procedures and testing requirements	Human factors/HMI
R&D to improve technology, system reliability	Standard methods, pilots	Training how to 'drive' automated cars

Road infrastructure and mixed traffic	Data security	Legal aspects
Investments, pilots on public roads	Secure data management	Harmonize legislation, legal framework

Social and customer acceptance
Demonstrations, customer experiences

Figure 1: Challenge clusters and drivers for market implementation

Deployment trends and strategies for AD functions – The technological perspective

The development of deployment perspectives and strategies for the project's results was a key objective within AdaptIVe. The stakeholder groups involved in the project – automotive manufacturers, automotive suppliers, research providers and academic partners –established unique deployment patterns that are summarized in Chapter 2.2 (*Exploitable foreground and plans for exploitation*).

The market view

In addition to the more technology-oriented discussion of major exploitable results the exploitation activities within the project also considered market-related issues and customer demands. This took the specific form of a dedicated expert panel that was held at the final stage of the project when most of the results were available, where the market potential of the AD functions developed and tested in AdaptIVe was discussed. The discussion touched upon the issues of new business models and mobility concepts for AD systems and explicitly raised questions about customer needs and user acceptance.

A major part of the market analysis was the development of *roadmaps* for market introduction for the technical functions developed in the project. These roadmaps that are also presented in D1.0 Final Report refer to the three main traffic scenarios applied in AdaptIVe – highways, urban environment, and close distance.

Outlook

The analysis of the deployment challenges for automated driving systems and the elaboration of implications for a broad application of the technology in Europe have shown there is still a need for great efforts in research, but also with regard to societal, political, and legal aspects, in order to find suitable solutions. To pave the way to automated driving, the European automotive community will address these issues and join forces in L3Pilot. The project starting in September 2017 will be the largest initiative on testing and piloting L3 and L4 functions in Europe. More than one hundred automated vehicles will drive on public roads across Europe, additionally providing the opportunity for about one thousand users to experience automated driving in real traffic situations.

1.5 Project website and contacts

1.5.1 Project website

The AdaptIVe website www.adaptive-ip.eu was set online on July 22nd, 2014, as the main channel of communication. During the project lifetime, the website was updated with 51 news articles, including several articles on the WP progress and status. Besides, 8 project newsletters were published. All public deliverables as well as summaries of restricted deliverables, project information material and a list of presentations and papers are made available for downloading: https://adaptive-ip.eu/index.php/deliverables_papers.html. All together the website counted 25.633 visits. Project activities and news were also communicated to relevant stakeholders through social media channels: AdaptIVe twitter and LinkedIN account.

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Contacts:

Project Coordinator

Aria Etemad

Volkswagen Group Research
Hermann-Münch-Str. 1
38440 Wolfsburg
Germany
aria.etemad@volkswagen.de

Dissemination Manager

Sarah Metzner

EICT GmbH
Torgauer Str. 12-15
10829 Berlin
Germany
sarah.metzner@eict.de

2 Use and dissemination of foreground

2.1 Section A (public)

2.1.1 Publications

Title of article	Main author, other authors	Title of the periodical or the series	Number, date or frequency	Publisher	Place of publication	Year of publication	Open access provided?
Papers published in journals							
On Curve Negotiation: From Driver Support to Automation	Bosetti, P. (UNITN), Da Lio, M.(UNITN), Saroldi, A. (CRF)	IEEE Transactions on Intelligent Transportation Systems	Volume: PP, Issue: 99	IEEE	IEEE Xplore	2015	Yes
Were they in the loop during automated driving? Links between visual attention and crash potential	Louw T. (LEEDS), Madigan, R. (LEEDS), Carsten, O. (LEEDS), Merat, N. (LEEDS)	Injury Prevention	Published Online First: 21 September 2016	BMJ Publishing Group	Online First	2016	Yes
Traffic coordination at road intersections: autonomous decision-making algorithms using model-based heuristics	de Campos, G. R. (DEIB, Politecnico di Milano), Falcone, P. (CHAL), Hult, R. (CHAL), Wymeersch, H. (CHAL), Sjöberg, J. (CHAL)	IEEE Intelligent Transportation Systems Magazine	Volume: 9, Issue: 1, Spring 2017, Pages 8-12.	IEEE		2017	Yes
Are you in the loop? Using gaze dispersion to understand driver visual attention during resumption of control from automation.	Louw, T. (LEEDS), Merat, N. (LEEDS)	Transportation Research Part C: Emerging Technologies	Volume: 76, March 2017, pages 35-50	ELSEVIER		2017	Yes
Longitudinal Jerk Estimation of Driver Intentions for Intelligent Vehicle Applications	Bisoffi, A. (UNITN), Biral, F.(UNITN), Da Lio, M. (UNITN), Zaccarian, L. (UNITN)	IEEE/ASME Transactions on Mechatronics	Under review	IEEE			Yes

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Coming Back into the Loop: Drivers' Perceptual-Motor Performance in Critical Events in Automated Driving	Louw, T. (LEEDS), Markkula, G. (LEEDS), Boer, E. (LEEDS), Madigan, R.(LEEDS), Carsten, O. (LEEDS), Merat, N (LEEDS)	Accident Analysis & Prevention	Under review	ELSEVIER			No
Articles in books							
Technical Evaluation and Impact Assessment of Automated Driving.	Fahrenkrog, F. (ika), Rösener, C. (ika), Zlocki, A. (FKA), Eckstein, L. (ika)	Meyer, G. & Beiker, S. (Eds.): Road vehicle automation 3.		Springer	Switzerland	2016	No
AdaptIVe: Automated Driving Applications and Technologies for Intelligent Vehicles	Etemad, A. (VW)	Watzenig, D. & Horn, M. (Eds.): Automated Driving: Safer and More Efficient Future Driving		Springer	Switzerland	2016	No
Papers published in conference proceedings							
Autonomous Maneuvering with Radars	*Hahn, M. (DAI), Dickmann, J. (DAI)*	IWPC-Workshop: Towards Autonomous Vehicles: Active Safety, Perception and Connectivity, May 2014, Detroit, USA	Workshop date: 13 May, 2014	IWPC	IWPC Research Library	2014	No
Challenges on the way towards automated driving – Development, human factors and evaluation	Zlocki, A. (FKA), Fahrenkrog, F. (ika), Josten, J. (ika) Eckstein, L. (ika)	FISITA World Automotive Congress, Maastricht, Netherlands	Conference date: 02 – 06 June, 2014			2014	No
Evaluation methodology for supervised automated driving including impact analysis on safety and environment	Zlocki, A. (FKA), Fahrenkrog, F. (ika), Eckstein, L. (ika)	TRBs Third Annual Workshop on Road Vehicle Automation, San Francisco, USA	Workshop date: 14 – 18 July, 2014			2014	No

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From Driving Assistance Systems to Automated Driving: A Robust Approach based on the Subsumption Architecture	Da Lio, M. (UNITN) Saroldi, A. (CRF) Andreone, L. (CRF)	Proceedings of the 21st ITS World Congress, Detroit, Michigan	Conference date: 7 – 11 September, 2014.	ITS America		2014	No
Effective Evaluation of ADAS and Automated Driving	Zlocki, A. (FKA), Fahrenkrog, F. (ika), Eckstein, L. (ika)	12th International Symposium on Advanced Vehicle Control, Tokyo, Tokyo University of Agriculture and Technology. AVEC '14	Conference date: September 22 - 26, 2014	Tokyo University of Agriculture and Technology		2014	No
Automated Driving Applications and Technologies for Intelligent Vehicles – AdaptIVe	Knapp, A. (DAI) Fahrenkrog, F. (ika), Zlocki, A. (FKA)	Proceedings of the 23rd Aachen Colloquium Automobile and Engine Technology 2014, Aachen, Germany	Conference date: 6 – 8 October, 2014	Institute of Combustion Engines and Institute for Automotive Engineering. RWTH Aachen University		2014	No
Combined Longitudinal and Lateral Control Design for String Stable Vehicle Platooning within a Designated Lane	Kianfar, R. (CHAL), Ali, M. (VCC), Falcone, P. (CHAL), Fredriksson, J.(CHAL)	Proceedings of the 17th International IEEE Conference on Intelligent Transportation Systems (ITSC)	Date Added to IEEE Xplore: 20 November 2014	IEEE	IEEE Xplore	2014	Yes
Engaging with Highly Automated Driving: To Be Or Not To Be In The Loop?	Louw,T. (LEEDS) Merat, N. (LEEDS) Jamson, H. (LEEDS)	Proceedings of the 8th International Driving Symposium on Human Factors in Driver Assessment, Training and Vehicle Design, Snowbird, Utah, USA	Conference date: 23 – 25 June, 2015			2015	Yes
Detection of arbitrarily rotated parked cars based on radar sensors	Lombacher, J. (DAI), Hahn, M. (DAI), Dickmann, J. (DAI), Wöhler, C. (TU Dortmund)	Proceedings of the 16th International Radar Symposium (IRS)	Date Added to IEEE Xplore: 27 August 2015	IEEE	IEEE Xplore	2015	No

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Please Takeover! An Analysis and Strategy for a Driver Take Over Request During Autonomous Driving	Bahram, M. (BMW), Aeberhard, M. (BMW), Wollherr, D. (BMW)	Proceedings of the Intelligent Vehicles Symposium (IV)	Date Added to IEEE Xplore: 27 August 2015	IEEE	IEEE Xplore	2015	No
Interaction design for communicating system state and capabilities during automated highway driving	Larsson, P. (VTEC), Johansson, E. (VTEC), Söderman, M. (VTEC), Thompson, D. (VTEC)	Procedia Manufacturing	Volume: 3, Issue: 6th International Conference on Applied Human Factors and Ergonomics (AHFE 2015) and the Affiliated Conferences, AHFE 2015	ELSEVIER	ScienceDirect	2015	Yes
Connected Vehicles for Automated Functions: from Enhanced Perception to Negotiated Manoeuvres	Visintainer, F. (CRF), Darin, M. (CRF), Saroldi, A. (CRF), Andreone, L. (CRF), Da Lio, M. (UNITN)	Proceedings of the 22nd ITS World Congress, Bordeaux, France	Conference date: 5 – 10 October, 2015.	ERTICO – ITS Europe		2015	No
Traffic safety at intersections: a priority based approach for cooperative collision avoidance	de Campos, G. R. (DEIB, Politecnico di Milano), Falcone, P.(CHAL), Sjöberg, J. (CHAL)	Proceedings of the 3rd International Symposium on Future Active Safety Technology Towards zero traffic accidents, 2015	Conference date: 9 -11 September, 2015.			2015	Yes
Longitudinal Jerk Estimation for Identification of Driver Intention	Bisoffi, A. (UNITN), Biral, F.(UNITN), Da Lio, M. (UNITN), Zaccarian, L. (UNITN)	Proceedings of the 18th International IEEE Conference on Intelligent Transportation Systems - ITSC 2015	Date Added to IEEE Xplore: 02 November 2015	IEEE	IEEE Xplore	2015	Yes
Ambient light based interaction concept for an integrative driver assistance system - a driving stimulator study	Dziennus, M. (DLR), Kelsch, J. (DLR), Schieben, A. (DLR)	Proceedings of the Human Factors and Ergonomics Society Europe Chapter 2015 Annual Conference	HFES conference publication series (ISSN 2333-4959)	Human Factors and Ergonomics Society		2015	Yes

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Driver Inattention During Vehicle Automation: How Does Driver Engagement Affect Resumption Of Control?	Louw, T. (LEEDS), Kountouriotis, G. (LEEDS), Carsten, O. (LEEDS), Merat, N. (LEEDS)	Proceedings of the 4th International Conference on Driver Distraction and Inattention (DDI2015), Sydney	Publication Date: November 2015	ARRB Group		2015	Yes
Convex modeling of conflict resolution at traffic intersections	Murgovski, N. (CHAL), de Campos G. R. (CHAL), Sjöberg, J. (CHAL)	Proceedings of the 54th IEEE Conference on Decision and Control	Date Added to IEEE Xplore: 11 February 2016	IEEE	IEEE Xplore	2015	Yes
Impact Assessment Methods for Automated Driving with regards to Road Safety	Zlocki, A. (FKA), Fahrenkrog, F. (ika), Eckstein, L. (ika)	2nd International VDI Conference Safety Systems, Düsseldorf, Germany	Conference date: 29 – 30 June, 2016			2016	No
FSCD and BASD: Robust Landmark Detection and Description on Radar-Based Grids	Rapp, M. (Uni Ulm), Dietmayer, K. (Uni Ulm), Hahn, M (DAI), Schuster, F. (DAI), Lombacher, J. (DAI), Dickmann, J. (DAI)	Proceedings of the IEEE MTT-S International Conference on Microwaves for Intelligent Mobility (ICMIM)	Date Added to IEEE Xplore: 08 August 2016	IEEE	IEEE Xplore	2016	No
Interesting Areas in Radar Gridmaps for Vehicle Self-Localization	Werber, K. (DAI), Klappstein, J (DAI), Dickmann, J. (DAI), Waldschmidt, C. (Uni Ulm)	Proceedings of the IEEE MTT-S International Conference on Microwaves for Intelligent Mobility (ICMIM)	Date Added to IEEE Xplore: 08 August 2016	IEEE	IEEE Xplore	2016	No
Potential of Radar for Static Object Classification using Deep Learning Methods	Lombacher, J. (DAI), Hahn, M. (DAI), Dickmann, J. (DAI), Wöhler, C. (TU Dortmund)	Proceedings of the IEEE MTT-S International Conference on Microwaves for Intelligent Mobility (ICMIM)	Date Added to IEEE Xplore: 08 August 2016	IEEE	IEEE Xplore	2016	No

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Adaptive forward collision warning algorithm for automotive applications	Hosseini, S. M. (CHAL), Murgovski, N. (CHAL), de Campos, G. R. (CHAL), Sjöberg, J.(CHAL)	Proceedings of the 2016 American Control Conference (ACC)	Date Added to IEEE Xplore: 01 August 2016	IEEE	IEEE Xplore	2016	Yes
Environmental Impact Assessment of Automated Driving	Fahrenkrog, F. (ika), Rösener, C. (ika), Klaudt, S. (ika), Zlocki, A. (FKA) Eckstein, L. (ika)	23rd ITS World Congress, Melbourne, Australia	Conference date: 10 – 14 October 2016	ITS Australia		2016	No
Ambient Light - An integrative, LED based interaction concept for different levels of automation	Dziennus, M. (DLR), Kelsch, J. (DLR), Schieben, A. (DLR)	32. VDI/VW-Gemeinschaftstagung	Conference Date: 08 – 09 November 2016	VDI Verlag GmbH	VDI-Berichte 2288	2016	No
A Novel Target-Height Estimation Approach Using Radar-Wave Multipath Propagation for Automotive Applications	Laribi, A. (DAI), Hahn, M. (DAI), Dickmann, J. (DAI), Waldschmidt, C. (Uni Ulm)	U.R.S.I. Landesausschuss in der Bundesrepublik Deutschland e.V. Kleinheubacher Tagung, Miltenberg, Germany	Conference date: 26 – 28 September, 2016	U.R.S.I.		2016	No
Temporal vs. spatial formulation of autonomous overtaking algorithms	Karlsson, J. (CHAL), Murgovski, N. (CHAL), Sjöberg, J. (CHAL)	Proceedings of the IEEE 19th International Conference on Intelligent Transportation Systems (ITSC)	Date Added to IEEE Xplore: 26 December 2016	IEEE	IEEE Xplore	2016	No
Centralized MPC for Autonomous Intersection Crossing	Riegger, L. (CHAL) Carlander, M. (CHAL), Lidander, N. (CHAL), Murgovski, N. (CHAL), Sjöberg, J. (CHAL)	Proceedings of the IEEE 19th International Conference on Intelligent Transportation Systems (ITSC)	Date Added to IEEE Xplore: 26 December 2016	IEEE	IEEE Xplore	2016	Yes

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A Scenario-Based Assessment Approach for Automated Driving by Using Time Series Classification of Human-Driving Behaviour	Rösener, C. (ika), Fahrenkrog, F. (ika), Uhlig, A. (RTWH), Eckstein, L. (ika)	Proceedings of the IEEE 19th International Conference on Intelligent Transportation Systems (ITSC)	Date Added to IEEE *Xplore*: 26 December 2016	IEEE	IEEE Xplore	2016	No
A Systematic Approach Based on STPA for Developing a Dependable Architecture for Fully Automated Driving	Abdulkhaleq, A. (Uni Stuttgart), Lammering, D. (CONTIA), Wagner, S. (Uni Stuttgart), Röder, J. (CONTIA), Balbierer, N. (CONTIA), Ramsauer, L. (CONTIA), Raste, T. (CONTIT), Boehmert, H. (CONTIT)	Procedia Engineering	Volume 179, 2017, Pages 41–51, 4th European STAMP Workshop 2016, ESW 2016, 13-15 September 2016, Zurich, Switzerland	ELSEVIER	ScienceDirect	2017	Yes
Real-Time Radar SLAM	Schoen, M. (DAI), Horn, M. (DAI), Hahn, M. (DAI), Dickmann, J. (DAI)	Uni-DAS 11. Workshop Fahrerassistenzsysteme und automatisiertes Fahren, FAS 2017, Walting, Germany	Conference date: 29 -31 March, 2017	Uni-DAS e. V		2017	Yes
Vertical digital beamforming versus multipath height finding	Laribi, A. (DAI), Hahn, M. (DAI), Dickmann, J. (DAI), Waldschmidt, C. (Uni Ulm)	Proceedings of the International Conference on Microwaves for Intelligent Mobility (ICMIM)	Date Added to IEEE Xplore: 04 May 2017	IEEE	IEEE Xplore	2017	No
Object classification in radar using ensemble methods	Lombacher, J. (DAI), Hahn, M. (DAI), Dickmann, J. (DAI). Wöhler, C. (TU Dortmund)	Proceedings of the International Conference on Microwaves for Intelligent Mobility (ICMIM)	Date Added to IEEE Xplore: 04 May 2017	IEEE	IEEE Xplore	2017	No

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A Comprehensive Evaluation Approach for Highly Automated Driving	Rösener, C. (ika) Fahrenkrog, F. (BMW) Wang, L. (BMW) Varhélyi, A. (LUND) de Gelder, E. (TNO) Dufils, J.(TNO) Niesen, S. (BAST) Tango, F. (CRF) Zlocki, A. (FKA)	Proceedings of the 25th Enhanced Safety of Vehicles 2017, Detroit, U.S.A., 05.06.2017 - 08.06.2017	Conference date: 05 – 08 June, 2017	NHTSA		2017	No
A-Priori map information and path planning for automated valet parking (upcoming)	Klaudt, S. (ika), Zlocki, A. (FKA), Eckstein, L. (ika)	IEEE Intelligent Vehicles Symposium, Redondo Beach, CA, USA, 11 – 14 June, 2017	Conference date: 11 - 14 June, 2017	IEEE	IEEE Xplore	2017	No
Assessment of Automated Driving Systems Using Real-Life Scenarios (upcoming)	de Gelder, E. (TNO), Paardekooper, J-P. (TNO)	IEEE Intelligent Vehicles Symposium, Redondo Beach, CA, USA, 11 – 14 June, 2017	Conference date: 11 - 14 June, 2017	IEEE	IEEE Xplore	2017	No
Semantic Radar Grids (upcoming)	Lombacher, J. (DAI), Laudt, K. (DAI), Hahn, M. (DAI), Dickmann, J. (DAI), Wöhler, C. (TU Dortmund)	IEEE Intelligent Vehicles Symposium, Redondo Beach, CA, USA, 11 – 14 June, 2017	Conference date: 11 - 14 June, 2017	IEEE	IEEE Xplore	2017	No
Map information, path planning and vehicle control for an automated valet-parking system (upcoming)	Klaudt, S. (ika), Zlocki, A. (FKA), Eckstein, L. (ika)	12th ITS European Congress, Strasbourg, France, 19 – 22 June, 2017	Conference date: 19 – 22 June, 2017	ERTICO – ITS Europe		2017	No
A Performance Comparison of RELAX and MODE for Multipath Height Finding (upcoming)	Laribi, A. (DAI), Hahn, M. (DAI), Dickmann, J. (DAI), Waldschmidt, C. (Uni Ulm)	International Radar Symposium 2017 (IRS 2017), Prague, Czech Republic	Conference date: 28 – 30 June, 2017	the German Institute of Navigation (DGON) and the University of Defence		2017	No

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A New Height-Estimation Method Using FMCW Radar Doppler Beam Sharpening (upcoming)	Laribi, A. (DAI), Hahn, M. (DAI), Dickmann, J. (DAI), Waldschmidt, C. (Uni Ulm)	European Signal Processing Conference 2017 (EUSIPCO 2017), Kos island, Greece	Conference date: 28 August – 2 September, 2017	EURASIP		2017	No
Mapping and Evaluation for GPS Restricted Environments Used for Automated Parking Applications (upcoming)	Drakoulis, R. (ICCS), Bolovinou, A. (ICCS), Tsogas, M. (ICCS), Amditis, A. (ICCS)	Transport Research Arena (TRA) 2018, Vienna, Austria, 16-19 April 2018	Conference date: 16 – 19 April, 2018	TRA		2018	No
Others							
Decision Making for Automated Vehicles in Merging Situations - Using Partially Observable Markov Decision Processes	Nilsson, M. (CHAL)	Master's thesis in Systems Control and Mechatronics, Chalmers University of Technology, Sweden	ISSN 99-2747920-4; EX054/2014, 2014	Chalmers University		2014	Yes

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2.1.2 Dissemination activities

Type (presentations, exhibitions, technical paper, posters)	Involved partners	Title / scope	Location	Date	Other information
Presentation	ICCS	Transportation Research Board 93rd Annual Meeting	Washington, D.C.	12-16.01.2014	
Presentation	VW	Autonomous Driving 2014 conference	Berlin, Germany	27-28.02.2014	General project presentation
Poster	Ford	Vehicle Interaction Summit	Stuttgart, Germany	02.04.2014	
Presentation	Angelos Amditis, ICCS	Workshop on the EU legal framework to certify automated road transport systems in urban areas (CityMobil2)	Athens, Greece	05.05.2014	
Presentation	Andreas Knapp, DAI Aria Etemad, VW	VRA Workshop and Automation WG with Trilateral WG	Brussels, Belgium	07-08.05.2014	
Technical paper		European conference on Human Centred Design for Intelligent Transport Systems	Vienna, Austria	05-06.06.2014	
Special Interest Session (SIS 37) 'AdaptIVe - Challenges of Automated Driving Presentations	Aria Etemad, VW Lali Ghosh, DEL Angelos Amditis, ICCS Felix Fahrenkrog, IKA Katharina Wiedemann, UNIW	10th ITS European Congress	Helsinki, Finland	16-19.06.2014	
Presentation	Stefan Wolter, FORD	CAR HMi concepts & systems 2014	Berlin, Germany	26-27.06.2014	
Poster presentation	Adrian Zlocki, IKA	July meeting of Transportation Research Board (TRB)			
Presentation	Amditis Angelos, ICCS	Automated Vehicles Symposium 2014	California, USA	15-18.07.2014	
Technical paper	Stefan Wolter, FORD	Tagung Mensch & Computer 2014	Munich, Germany	31.08.-03.09.2014	Use Case Design for AdaptIVe

AdaptIVe

Type (presentations, exhibitions, technical paper, posters)	Involved partners	Title / scope	Location	Date	Other information
	Johann Kelsch, DLR				
Technical paper	Mauro Da Lio, UNITN Andrea Saroldi , CRF Luisa Andreone, CRF	21st ITS World Congress	Detroit, USA	07-11.09.2014	'From driving assistance systems to automated driving: a robust approach based on the subsumption architecture'
Presentation	Felix Fahrenkrog, IKA	21st ITS World Congress	Detroit, USA	07-11.09.2014	presentation on evaluation results and approaches for the projects interactIVe and AdaptIVe (TS21 Traffic Safety Applications)
'Towards Automation Deployment' (SIS50) Presentations	Angelos Amditis, ICCS Luisa Andreone, CRF Aria Etemad, VW Arne Bartels, VW	21st ITS World Congress	Detroit, USA	07-11.09.2014	'General/AdaptIVe evaluation methodologies' (SIS74 Towards Deployment of Automated Vehicles – Requirements for Road Testing)
Presentation	Natasha Merat, University of Leeds	21st ITS World Congress	Detroit, USA	07-11.09.2014	
Presentation	Andreas Knapp, DAIFelix Fahrenkrog, IKA	23. Aachener Kolloquium Fahrzeug- und Motorentechnik	Aachen, Germany	06-08.10.2014	
Article for proceedings	Jens Langenberg, VW Arne Bartels, VW	30. VDI/VW-Gemeinschaftstagung Fahrerassistenzsysteme	Wolfsburg, Germany	14-15.10.2014	

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Type (presentations, exhibitions, technical paper, posters)	Involved partners	Title / scope	Location	Date	Other information
	Aria Etemad, VW				
Presentation	Jens Langenberg, VW	30. VDI/VW-Gemeinschaftstagung Fahrerassistenzsysteme	Wolfsburg, Germany	14-15.10.2014	
Presentation	Stefan Wolter, Ford	International workshop: "Smart technologies for improving driver behavior: Technological, psychological, and ethical perspectives"; Eindhoven University of Technology	Eindhoven, the Netherlands	30-31.10.2014	
Presentation	Panagiotis Lytrivis, ICCS	VRA Workshop	Brussels, Belgium	06.11.2014	
Presentation	Felix Fahrenkrog, IKA	SIP adus Workshop on Connected and Automated Driving Systems	Tokyo, Japan	17-18.11.2014	
Presentation	VW, ICCS	AdaptIVe Overview and Automated Functions for Highway Driving	Transportation Research Board 94th Annual Meeting, Washington, D.C.	11-15.01.15	
Poster	LEEDS /SP3	Human factors of vehicle automation: Preliminary insights from the AdaptIVe project	Transportation Research Board 94th Annual Meeting, Washington, D.C.	11-15.01.15	
Presentation	IKA, FKA	Evaluation and Sign-off Methodology for Automated Vehicles Based on Relevant Driving Situations	Transportation Research Board 94th Annual Meeting, Washington, D.C.	11-15.01.15	
Presentation	ICCS	From Advanced Active Safety Systems to Automated Systems: From interactIVe to AdaptIVe and beyond	VRA Webinar, Brussels, Belgium	06.02.15	
Legal Tutorial, Use of foreground	UNIW	Legal Aspects of Autonomous Driving	Automotive Tech.AD Berlin 2015- The Road towards Autonomous Driving, Berlin, Germany	26-27.02.15	
Presentation	CRF	About Automated Driving Functions, Scenarios & Challenges	The ERTRAC 2015 Annual conference,	03.03.15	

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Type (presentations, exhibitions, technical paper, posters)	Involved partners	Title / scope	Location	Date	Other information
			Brussels, Belgium		
Presentation	UNIW	Regulatory Needs for Vehicle and Road Automation - Project AdaptIVe	VRA workshop on Regulatory Needs for Vehicle and Road Automation, Brussels, Belgium	23.03.15	
Panel discussion	VW	How will autonomous cars and the internet of things affect future mobility?	"Berlin Future Mobility" Meetup, Berlin, Germany	24.03.15	
Participation to workshop /Liaison	ALC, ICCS	Discussion during CityMobil2 Workshop	CityMobil2: Workshop - Socio-economic impact of road automation, La Rochelle, France	30-31.03.15	
Participation to Workshop/ Presentation	VW, LEEDS	Discussion during EU-US Symposium	EU-US Symposium on "Road Vehicle Automation", Washington, D.C., USA	14-15.04.15	
Presentation	VW	An Introduction to Automated Driving	ITS conference 2015: A Digital Strategy for Mobility: from Capacity to Connectivity, Brussels, Belgium	24.04.15	
Presentation	IKA	Challenges and Concepts towards Automated Driving	11th International Nanotechnology Conference on Communication and Cooperation (INC11), Fukuoka, Japan	11-13.05.15	
Presentation	FORD	HMI Testing Methods	Autonomous Vehicle Test & Development Symposium, Stuttgart, Germany	16-18.06.15	
Technical paper	DAI	Detection of Arbitrary Rotated Parked Cars Based on Radar Sensors	International Radar Symposium IRS 2015,	24-26.06.15	

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Type (presentations, exhibitions, technical paper, posters)	Involved partners	Title / scope	Location	Date	Other information
			Dresden Germany		
Technical paper	BMW	Please Takeover! An Analysis and Strategy For a Driver Take Over Request During Autonomous Driving	IV2015 IEEE Intelligent Vehicles Symposium, Coex, Seoul, Korea	28.06-01.07.15	
Plenary presentation	DAI	Legal Issues Addressed in the EU AdaptIVe Project	Automated Vehicles Symposium 2015, Ann Arbor, USA	21-23.07.15	
Presentation and panel discussion	IKA	AdaptIVe - Evaluation / Automated Vehicle Verification	Automated Vehicles Symposium 2015, Ann Arbor, USA	21-23.07.15	
Poster	LEEDS	Response to a Critical Situation During Automated Driving: Can We Take Drivers Out of the Loop?	Automated Vehicles Symposium 2015, Ann Arbor, USA	21-23.07.15	
Presentation	DLR	Joint driver-automation system design: Gradual action-oriented ambient stimuli	6th International Conference on Applied Human Factors and Ergonomics (AHFE) 2015, Las Vegas, Nevada, USA	26-30.7.2015	
Paper presentation	WIVW	Driver's monitoring behaviour and interaction with non-driving related tasks during driving on different automation levels	6th International Conference on Applied Human Factors and Ergonomics (AHFE) 2015, Las Vegas, Nevada, USA	26-30.7.15	
Paper presentation	VTEC	Interaction design for communicating system state and capabilities during automated highway driving	6th International Conference on Applied Human Factors and Ergonomics (AHFE) 2015, Las Vegas, Nevada, USA	26-30.7.15	Paper in Proceedings
Presentation	DLR	Joint driver-automation system design: Gradual action-oriented ambient stimuli	6th International Conference on Applied Human Factors and Ergonomics (AHFE) 2015, Las Vegas, Nevada, USA	26-30.7.15	
Technical paper	CHAL	Traffic safety at intersections: a priority based approach for cooperative collision	Future Active Safety Technology Towards zero	09-11.09.15	Paper in Proceedings

Type (presentations, exhibitions, technical paper, posters)	Involved partners	Title / scope	Location	Date	Other information
		avoidance	traffic accidents: Fast-zero 2015, Gothenburg, Sweden		
Technical paper	UNITN	Longitudinal Jerk Estimation for Identification of Driver Intention	18th International IEEE Conference on Intelligent Transportation Systems - ITSC 2015, Las Palmas de Gran Canaria, Spain	15-18.9.15	
Presentation	VW	AdaptIVe: Automated driving applications and technologies for intelligent vehicles	AUTOCONTACT 2015, Graz, Austria	29-30.09.15	
Presentation	BMW		ROScon 2015 Hamburg, Germany	03-04.10.15	
Presentation	VW	AdaptIVe: Automated driving applications and technologies for intelligent vehicles	24. Aachener Kolloquium Fahrzeug- und Motorentechnik, Aachen, Germany	05.07.10.15	
Special Interest Session	VW (org.), Speakers: IKA, DAI,UNIW,CRF	SIS31 - International perspectives on road vehicle automation	22nd ITS World Congress, Bordeaux , France	05-09.10.15	
Special Interest Session	ICCS (org.), Speakers: VW	SIS19 - An integrated approach towards automated transport systems	22nd ITS World Congress, Bordeaux , France	05.09.10.15	
Technical paper	CRF, UNITN	Connected Vehicles for Automated Functions: from Enhanced Perception to Negotiated Manoeuvres	22nd ITS World Congress, Bordeaux, France	05-09.10.15	
Presentation	DLR /SP3	Human-Vehicle Integration in EU-AdaptIVe	22nd ITS World Congress, Bordeaux, France	05-09.10.15	
Paper presentation	DLR	Ambient light based interaction concept for an integrative driver assistance system	HFES 2015 Europe Annual Meeting, Groningen, the Netherlands	14-16.10.15	Will be published in proceedings
Presentation	LEEDS	An Overview of European Activities in Human Factors and Vehicle Automation	2nd SIP-adus Workshop on Connected and Automated Driving Systems,	27-29.10.15	

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Type (presentations, exhibitions, technical paper, posters)	Involved partners	Title / scope	Location	Date	Other information
			Tokyo, Japan		
Presentation	LEEDS	Exploring the Transition of Control: Understanding Driver-Automation Interaction	2nd SIP-adus Workshop on Connected and Automated Driving Systems, Tokyo, Japan	27-29.10.15	
AdaptIVe booth	VW, CRF, EICT	Motorway demonstrator presented Moderation of discussion groups	EUCAR Annual Reception & Conference, Brussels, Belgium	04.11.15	
Paper Presentation	LEEDS	Driver Inattention During Vehicle Automation: How Does Driver Engagement Affect Resumption Of Control?	4th International Conference on Driver Distraction and Inattention, Sydney, Australia	09-11.11.15	Will be published in proceedings
Participation	LEEDS	Presentation of AdaptIVe	Driverless Technology Conference and Exhibition 2015, London, UK	23.11.15	
Technical Paper	CHAL	Convex modelling of conflict resolution at traffic intersections	The 54th IEEE Conference on Decision and Control, Osaka, Japan	15.-18.12.15	Paper in proceedings
Exhibition booth	ICCS		Hellenic Intelligent Transport Systems – conference, Athens, Greece	15.-16.12.15	Dissemination material distributed at the exhibition booth
Discussion, working group activity	ICCS	Trilateral Working Group meetings	Transportation Research Board (TRB) 95th Annual Meeting Washington, D.C.	10.-14.01.2016	
Participation in Workshop	REN		FOT-Net Data Workshop: A common methodology for automation FOTs and pilots Leeds, UK	03.-04.02.2016	

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Type (presentations, exhibitions, technical paper, posters)	Involved partners	Title / scope	Location	Date	Other information
Presentation	CONTIA	Architectural design	PREEvision User Day Germany, GER	18.03.2016	
Newsletter	IKA	Update on AdaptIVe	VRA newsletter	March 2016	
Presentation	VTEC, LEEDS	Overview of SP3 activities in HF Auto -project General Assembly	HF Auto General Assembly	April 2016	
Presentation	ICCS		6th European Transport Research Conference – Moving Forward: Innovative Solutions for Tomorrow's Mobility Warsaw, PL	18-21.04.2016	
Presentation	FORD	Evaluation of a Smartphone App for Parking Automation	Autonomous Vehicle Test & Development Symposium Stuttgart, GER	31.05.2016	
Presentation	OPEL	Public presentation with reference to AdaptIVe, highlighting deliverable D2.1 System Classification	SafetyWeek Aschaffenburg, Aschaffenburg, Germany	10.-12.05.2016	
Technical Paper	DAI	Potential of Radar for Static Object Classification using Deep Learning Methods	The Second International Conference on Microwaves for Intelligent Mobility, San Diego, California, USA	19.-20.05.2016	
Paper presentation	FORD	Evaluation of a smartphone app for parking automation	Autonomous Vehicle Test & Development Symposium 2016, Stuttgart, German	31.05.-02.06.2016	
Participation to Final Conference/ Liaison	EICT	Discussion during Final Conference	Citymobil2 Final Conference, San Sebastián, Spain	01.-02.06.2016	

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Type (presentations, exhibitions, technical paper, posters)	Involved partners	Title / scope	Location	Date	Other information
Project Dissemination Session	VW (org.) ICCS (mod.) Speakers: LEEDS, DAI, CRF, UNIW	PR08: European efforts on automated driving: findings from ongoing research	11th ITS European Congress, Glasgow, Scotland	06.-09.06.2016	
Participation to event/ Liaison	VW	AdaptIVe dissemination material distributed	ERTRAC-EUCAR Innovation Demonstration Day Brussels, Belgium	14.06.2016	
Technical Paper	CHAL	AdaptIVe forward collision warning algorithm for automotive applications	The 2016 American Control Conference, Boston, USA	06.-08.07.2016	
Presentation	ICCS	European Activities on Connected and Automated Driving; the Present and Beyond - The ADAPTIVE and AUTONET2030 Use Cases	Automated Vehicles Symposium 2016, San Francisco, USA	19.-21.07.2016	
Presentation	DLR	Human factors recommendations for highly automated driving in the EU project AdaptIVe	Automated Vehicles Symposium 2016, San Francisco, USA	19.21.07.2016	
Presentation	LEEDS	A Methodology for Inducing the Out of the Loop Phenomenon in Highly Automated Driving	International Conference for Traffic and Transport Psychology - ICTTP 2016, Brisbane, Australia	02.-05.08.2016	
Presentation	LEEDS	Using a Comparative Time Window Analysis of Gaze to Understand Driver Visual Attention During Resumption of Control from Automation	International Conference for Traffic and Transport Psychology - ICTTP 2016, Brisbane, Australia	02.-05.08.2016	
Paper presentation	CONTIA	A Systematic Approach Based on STPA for Developing a Dependable Architecture for Fully Automated Driving	4th European STAMP Workshop Zürich, Switzerland	13.-15.09.2016	
Presentation	VTEC	Project presentation focusing on SP3 topics.	Transport Safety Research Policy Cluster - Human Factors and Behaviour	14.09.2016	

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Type (presentations, exhibitions, technical paper, posters)	Involved partners	Title / scope	Location	Date	Other information
			Workshop Brussels, Belgium		
Participation on panel discussion	VW	Panel discussion on 'Connected and Automated Driving'	Digital Assembly 2016 Bratislava, Slovakia	28.-29.09.2016	
Paper presentation	IKA RWTH Aachen University	A Scenario-Based Assessment Approach for Automated Driving by Using Time Series Classification of Human-Driving Behaviour	IEEE Intelligent Transportation Systems Conference ITSC 2016 Rio de Janeiro, Brasil	01.-04.11.2016	
Paper presentation	Ford IKA	User Evaluation of Human-Machine Interface Concepts for Remote Parking Aid	Aachener Colloquium Aachen, Germany	10.-12.10.2016	
Paper presentation	FKA IKA	Environmental Impact Assessment of Automated Driving	23rd ITS World Congress Melbourne, Australia	10.-14.10.2016	
Special session	ICCS	SIS 47 Automated Transport Systems: How far are we?	23rd ITS World Congress Melbourne, Australia	10.-14.10.2016	
Presentation /Liaison	VTEC	The AdaptIVe project	Autonet2030 Final Workshop Sandhult, Sweden	27.10.2016	
Paper presentation	LEEDS	Were they in the loop during automated driving? Links between visual attention and crash potential	HFES 2016 Europe Annual Meeting Prague, Czech Republic	26.-28.10.2016	
Project booth & Group discussions	VW	AdaptIVe booth with the project video, poster, and information material. Partners contributed to groups discussions on perspectives on automated driving.	EUCAR Annual Reception & Conference Brussels, Belgium	08.-09.11.2016	

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Type (presentations, exhibitions, technical paper, posters)	Involved partners	Title / scope	Location	Date	Other information
Presentation	VTEC	HUMAN FACTORS IN VEHICLE AUTOMATION- Activities in the European project AdaptIVe	3rd SIP-adus Workshop on Connected and Automated Driving Systems 2016 Tokyo, Japan	15.-17.11.2016	
Presentation	VW	AdaptIVe: Automated driving applications and technologies for intelligent vehicles	3rd SIP-adus Workshop on Connected and Automated Driving Systems 2016 Tokyo, Japan	15.-17.11.2016	
Presentation	DEL	EU Project AdaptIVe: Demonstrating Automated Functions on a European Level	SAE 2016 From ADAS to Automated Driving Symposium Munich, Germany	29.11.-01.12.2016	

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2.2 Section B: *exploitable foreground and plans for exploitation*

Type of Exploitable Foreground1	Description of exploitable foreground	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	Exploitable product(s) or measure(s)	Sector(s) of application2	Timetable, commercial or any other use	Patents or other IPR exploitation (licences)	Owner & Other Beneficiary(s) involved
General advancement of knowledge	Parking spot detection	No	N/A	Free parking spot detection	R&D	2018	-	-
General advancement of knowledge	Trajectory planning	Yes	N/A	Trajectory planning for parking manoeuvre	R&D	2019	-	-
Demonstrator	Tangible realization of a system	No	N/A	Demonstrator that looks like a series car to experience functionality	R&D	2017 (end of project)	-	-
General advancement of knowledge	Simulation tools	Partly confidential	-	Simulation tool for investigating traffic safety impacts of technologies. Results also contribute to OpenPASS simulation framework	R&D	2018-19 (OpenPASS)	-	-
General advancement of knowledge	System classification	No	N/A	System classification for AD technologies	R&D	2017	-	-

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[19] A drop down list allows choosing the type of foreground: General advancement of knowledge, Commercial exploitation of R&D results, Exploitation of R&D results via standards, exploitation of results through EU policies, exploitation of results through (social) innovation.

[2] A drop down list allows choosing the type sector (NACE nomenclature) : http://ec.europa.eu/competition/mergers/cases/index/nace_all.html

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Type of Exploitable Foreground1	Description of exploitable foreground	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	Exploitable product(s) or measure(s)	Sector(s) of application2	Timetable, commercial or any other use	Patents or other IPR exploitation (licences)	Owner & Other Beneficiary(s) involved
General advancement of knowledge	Common understand-ding / know-ledge base	No	-	Overview of legal situation, challenges, barriers on ADAS and AD technologies	R&D, legal aspects	2017	-	-
General advancement of knowledge	Overview / knowledge base	Yes	N/A	Overview of challenges of safe-guarding automated technologies; outline of requirements for future Code of Practice on AD technologies	R&D	2017	-	-
General advancement of knowledge	HMI concept	No	N/A	HMI concept for vehicle automation for commercial vehicles (trucks)	R&D	>2017	-	-
General advancement of knowledge	Classifica-tion scheme	Yes	N/A	Classification scheme and methodologies for series development if AD functions	R&D	-	-	-
General advancement of knowledge	Radar development	Yes	N/A	Radar tracking development for stationary targets to extend functionality of close distance parking	R&D	-	-	-
General	Sensor	Yes	N/A	Signal processing	R&D	-	-	-

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Type of Exploitable Foreground1	Description of exploitable foreground	Confidential Click on YES/NO	Foreseen embargo date dd/mm/y yyy	Exploitable product(s) or measure(s)	Sector(s) of application2	Timetable, commercial or any other use	Patents or other IPR exploitation (licences)	Owner & Other Beneficiary(s) involved
advancement of knowledge	development			development for next generation sensors				
General advancement of knowledge	Analysis of technical system limits for AD fucntionali-ties	No	None	Advancement of knowledge on system limits of current sensors, fusion techniques, actuators with focus on highway scenarios and definition of requirements for designing AD functions to preserve safety	R&D (design, validation)	-	-	-
Exploitation of R&D results via standards	Functional safety analysis	No	-	Functional safety architecture design pattern to be used as library pattern architecture design of functional safety critical systems	R&D (architecture, design)	-	-	-
General advancement of knowledge	Design recommenda tions	No	None	Catalogue of recommendations and strategies for HMI design concepts for supervised AD use cases, functions	R&D (design)	2017/18 (input to standardizatio n bodies)	-	-
General advancement of knowledge	Design recommenda tions	Yes	N/A	Advancement of knowledge about effects of AD on	R&D (design)	2018-19 (publications)	-	-

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Type of Exploitable Foreground1	Description of exploitable foreground	Confidential Click on YES/NO	Foreseen embargo date dd/mm/y yyy	Exploitable product(s) or measure(s)	Sector(s) of application2	Timetable, commercial or any other use	Patents or other IPR exploitation (licences)	Owner & Other Beneficiary(s) involved
				driver's behaviour and mental models, (interactions with non-driving related tasks), in take-over situations and in case of system failure				
General advancement of knowledge	Software system development	Yes	N/A	Artificial driving agent for different levels of automation	R&D	-	-	-
General advancement of knowledge and commercial exploitation of R&D results	Assessments for automotive applications	No (general framework) Yes (specific application)	End of project	Framework for in-traffic assessment of AD functions	R&D, automotive	2018	-	-
General advancement of knowledge	Methodology for impact assessment	No	-	New methodology for impact assessment of AD functions	R&D	>2021	-	-
General advancement of knowledge	Mapping evaluation methodology	No	-	Mapping evaluation methodology for simultaneous localization and mapping vehicle algorithms in GPS-restricted environments	R&D	2017 (End of project)	-	-
General advancement of	Construction of digital	-	-	Custom OpenStreetMap (OSM) elements for	R&D		-	-

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Type of Exploitable Foreground1	Description of exploitable foreground	Confidential Click on YES/NO	Foreseen embargo date dd/mm/y yyy	Exploitable product(s) or measure(s)	Sector(s) of application2	Timetable, commercial or any other use	Patents or other IPR exploitation (licences)	Owner & Other Beneficiary(s) involved
knowledge	map			parking areas				
General advancement of knowledge	Glossary, clarification of legal issues	No	None	Glossary of legal terms for higher AD functions to provide legal security	R&D, legal aspects	-	-	-
General advancement of knowledge	Analysis of product liability	-	-	Analysis of product liability issues for AD functions; relevant changes and discussion of possible solutions	R&D, legal aspects	-	-	-
General advancement of knowledge	Data security, data privacy	-	-	Clear understanding of how AVs will be influenced by needs of data privacy/security	R&D, legal aspects	-	-	-
General advancement of knowledge	Road traffic law / regulatory law	-	-	Analysis of contradictions of various EU Member States' road traffic laws; comparative analysis of markets, measures to be taken by legislators to make AD possible	R&D, legal aspects	-	-	-

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Due to the large number of exploitable results of the AdaptIVe project a further detailed explanation of each exploitable foreground would go beyond the scope of this report. A comprehensive description of deployment trends and strategies for AD functions – including major exploitable results – is provided in the Final Report of the project (Deliverable D1.0: Final project results, chapter 11 Deployment Perspective for Automated Driving).

3 Report on societal implications

A	General Information *(completed automatically when **Grant Agreement number** is entered.*
Grant Agreement Number:	610428
Title of Project:	AdaptIVe - Automated Driving Applications and Technologies for Intelligent Vehicles
Name and Title of Coordinator:	Hr. Aria Etemad

B   Ethics

1. Did your project undergo an Ethics Review (and/or Screening)? • If Yes: have you described the progress of compliance with the relevant Ethics Review/Screening Requirements in the frame of the periodic/final project reports? Special Reminder: the progress of compliance with the Ethics Review/Screening Requirements should be described in the Period/Final Project Reports under the Section 3.2.2 *'Work Progress and Achievements'*	No
2. Please indicate whether your project involved any of the following issues (tick box) :	No
RESEARCH ON HUMANS	
• Did the project involve children?	No
• Did the project involve patients?	No
• Did the project involve persons not able to give consent?	No
• Did the project involve adult healthy volunteers?	No
• Did the project involve Human genetic material?	No
• Did the project involve Human biological samples?	No
• Did the project involve Human data collection?	No
RESEARCH ON HUMAN EMBRYO/FOETUS	
• Did the project involve Human Embryos?	No
• Did the project involve Human Foetal Tissue / Cells?	No
• Did the project involve Human Embryonic Stem Cells (hESCs)?	No
• Did the project on human Embryonic Stem Cells involve cells in culture?	No
• Did the project on human Embryonic Stem Cells involve the derivation of cells from Embryos?	No
PRIVACY	
• Did the project involve processing of genetic information or personal data (eg. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?	No
• Did the project involve tracking the location or observation of people?	No
RESEARCH ON ANIMALS	
• Did the project involve research on animals?	No
• Were those animals transgenic small laboratory animals?	No
• Were those animals transgenic farm animals?	No
• Were those animals cloned farm animals?	No
• Were those animals non-human primates?	No
RESEARCH INVOLVING DEVELOPING COUNTRIES	
• Did the project involve the use of local resources (genetic, animal, plant etc)?	No
• Was the project of benefit to local community (capacity building, access to healthcare, education etc)?	No
DUAL USE	
• Research having direct military use	No
• Research having the potential for terrorist abuse	No

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C	Workforce Statistics

3.   Workforce statistics for the project: Please indicate in the table below the number of people who worked on the project (on a headcount basis).

Type of Position	Number of Women	Number of Men
Scientific Coordinator	0	1
Sup-project leaders	2	5
Experienced researchers (i.e. PhD holders)	10	26
PhD Students	8	18
Other		

4. How many additional researchers (in companies and universities) were recruited specifically for this project?	15
Of which, indicate the number of men:	9

D	Gender Aspects									
5.	**Did you carry out specific Gender Equality Actions under the project?**							X O		Yes No

6. Which of the following actions did you carry out and how effective were they?

				Not at all effective				Very effective	
	❏	Design and implement an equal opportunity policy		O	O	O	O	O	
	❏	Set targets to achieve a gender balance in the workforce		O	O	O	O	O	
	❏	Organise conferences and workshops on gender		O	O	O	O	O	
	❏	Actions to improve work-life balance		O	O	O	O	O	
	X	Other:	Gender Equality Actions were carried out by the individual partner organisations (i.e. girls day)						

7. Was there a gender dimension associated with the research content – i.e. wherever people were the focus of the research as, for example, consumers, users, patients or in trials, was the issue of gender considered and addressed?

	X	Yes- please specify For experiments in driving simulators female proportion of test persons was considered.
	O	No

E	Synergies with Science Education

8. Did your project involve working with students and/or school pupils (e.g. open days, participation in science festivals and events, prizes/competitions or joint projects)?

	X	Yes- please specify Master and PhD theses in project context
	O	No

9. Did the project generate any science education material (e.g. kits, websites, explanatory booklets, DVDs)?

	X	Yes- please specify Scientific publications, general brochure and explanatory video, journal publications etc.
	O	No

F	Interdisciplinarity

10. Which disciplines (see list below) are involved in your project?

	X	Main discipline[3]: natural sciences, engineering and technology, social sciences		
	O	Associated discipline[3]:	O	Associated discipline[3]:

G	Engaging with Civil society and policy makers			
11a	**Did your project engage with societal actors beyond the research community?** *(if 'No', go to Question 14)*		X O	Yes No

11b If yes, did you engage with citizens (citizens' panels / juries) or organised civil society (NGOs, patients' groups etc.)?

	O	No

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[3] Insert number from list below (Frascati Manual).

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	O	Yes- in determining what research should be performed
	O	Yes - in implementing the research
	X	Yes, in communicating /disseminating / using the results of the project

11c	**In doing so, did your project involve actors whose role is mainly to organise the dialogue with citizens and organised civil society (e.g. professional mediator; communication company, science museums)?**	O	Yes
		X	No

12. Did you engage with government / public bodies or policy makers (including international organisations)

	O	No
	C	Yes- in framing the research agenda
	X	Yes - in implementing the research agenda
	X	Yes, in communicating /disseminating / using the results of the project

13a Will the project generate outputs (expertise or scientific advice) which could be used by policy makers?

	O	Yes – as a **primary** objective (please indicate areas below- multiple answers possible)
	X	Yes – as a **secondary** objective (please indicate areas below - multiple answer possible)
	O	No

13b If Yes, in which fields?

Agriculture Audiovisual and Media Budget Competition Consumers Culture Customs Development Economic and Monetary Affairs Education, Training, Youth Employment and Social Affairs	Energy Enlargement Enterprise Environment External Relations External Trade Fisheries and Maritime Affairs Food Safety Foreign and Security Policy Fraud Humanitarian aid	Human rights Information Society Institutional affairs Internal Market Justice, freedom and security Public Health Regional Policy Research and Innovation Space Taxation X Transport

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13c	If Yes, at which level?		
	O	Local / regional levels	
	O	National level	
	X	European level	
	O	International level	

H   Use and dissemination

14.	**How many Articles were published/accepted for publication in peer-reviewed journals?**	5
To how many of these is open access[4] provided?		1
How many of these are published in open access journals?		1
How many of these are published in open repositories?		1
To how many of these is open access not provided?		4
Please check all applicable reasons for not providing open access:		
❑ publisher's licensing agreement would not permit publishing in a repository ❑ no suitable repository available ❑ no suitable open access journal available x no funds available to publish in an open access journal ❑ lack of time and resources ❑ lack of information on open access ❑ other[5]: ……………		

15.	**How many new patent applications ('priority filings') have been made?** *("Technologically unique": multiple applications for the same invention in different jurisdictions should be counted as just one application of grant).*		0
16.	**Indicate how many of the following Intellectual Property Rights were applied for (give number in each box).**	Trademark	0
		Registered design	0
		Other	0
17.	**How many spin-off companies were created / are planned as a direct result of the project?**		0
	Indicate the approximate number of additional jobs in these companies:		

18.	Please indicate whether your project has a potential impact on employment, in comparison with the situation before your project:			
	❑	Increase in employment, or	❑	In small & medium-sized enterprises
	❑	Safeguard employment, or	❑	In large companies
	❑	Decrease in employment,	❑	None of the above / not relevant to the project
	X	Difficult to estimate / not possible to quantify		

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[4] Open Access is defined as free of charge access for anyone via Internet.

[5] For instance: classification for security project.

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19.	For your project partnership please estimate the employment effect resulting directly from your participation in Full Time Equivalent (*FTE = one person working fulltime for a year*) jobs:	*Indicate figure:*
	Difficult to estimate / not possible to quantify	X

I   Media and Communication to the general public

20.	As part of the project, were any of the beneficiaries professionals in communication or media relations?			
		X	Yes	O	No

21.	As part of the project, have any beneficiaries received professional media / communication training / advice to improve communication with the general public?			
		X	Yes	O	No

22	Which of the following have been used to communicate information about your project to the general public, or have resulted from your project?

X	Press Release	X	Coverage in specialist press
X	Media briefing	X	Coverage in general (non-specialist) press
X	TV coverage / report	X	Coverage in national press
X	Radio coverage / report	X	Coverage in international press
X	Brochures /posters / flyers	X	Website for the general public / internet
X	DVD /Film /Multimedia	X	Event targeting general public (festival, conference, exhibition, science café)

23	In which languages are the information products for the general public produced?

X	Language of the coordinator	X	English
X	Other language(s)		

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4 Final report on the distribution of the European Union financial contribution

(P3 cost claims have not be approved by the EC, yet)

No.	Name of beneficiary	Final amount of EU contribution per beneficiary in Euros
1	VW	
2	BMW	
3	BMWFT	
4	CRF	
5	DAI	
6	OPEL	
7	PSA	
8	REN	
9	VCC	
10	VTEC	
10a	VTC	
11	FORD	
12	BOSCH	
13	CONTIT	
14	DEL	
15	CONTIA	
16	BAST	
17	DLR	
18	ICCS	
19	TNO	
20	CTAG	
21	CHAL	
22	IKA	
22a	FKA	
23	LEEDS	
24	LUND	
25	UNITN	
26	UNIW	
27	WIVW	
28	ALC	
29	EICT	
Total		

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