



Felix Fahrenkrog
Institut für Kraftfahrzeuge
RWTH Aachen University

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Adapt|Ve

*Automated Driving Applications and
Technologies for Intelligent Vehicles*

Impact Assessment in Adapt|Ve

Workshop on Connected and Automated Driving Systems



// Content

- AdaptIVe
- Safety Impact Assessment



// Adaptive Facts

Budget: EUR 25 Million
European Commission: EUR 14,3 Million

Duration: 42 months (January 2014 - June 2017)

Coordinator: Aria Etemad, Volkswagen Group Research

8 Countries: France, Germany, Greece, Italy, Spain, Sweden. The Netherlands, United Kingdom



// AdaptIVe Project Overview

Widespread application of automated driving to improve road safety and address inefficiency in traffic flow whilst mitigating the environmental impact of road traffic //

Legal issues,
terminology



Strategies for human-vehicle
integration



New evaluation methods,
impact assessment



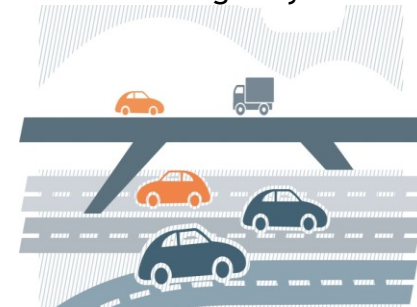
Automated driving close
distance manoeuvring



Automated driving in
urban environment



Automated driving
on highway



// Demonstrators



Parking assistance,
garage, special areas,
multi-level garage,
Stop & go

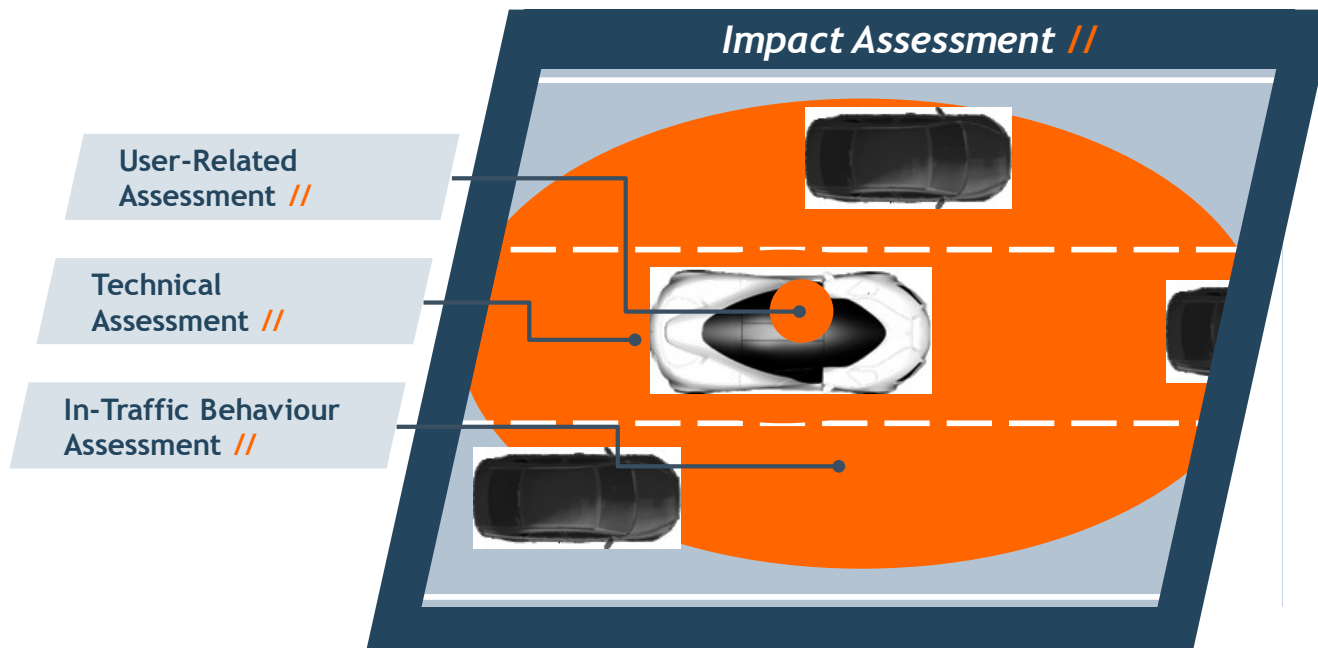
City cruise, City chauffeur,
Supervised city control

Enter & exit highway,
following lane, lane-
change, filter-in,
overtaking, danger spot
intervention, Stop & go

Safe stop

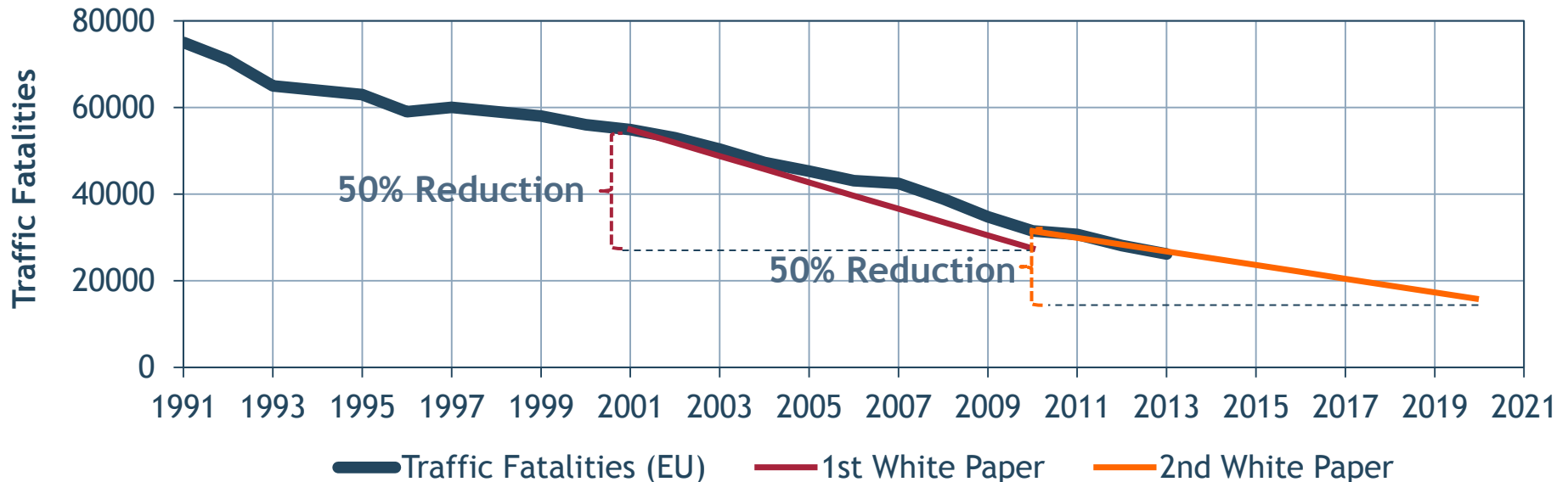
// AdaptIVe SP „Evaluation“

- Main objectives:
 - Development of an evaluation framework for automate driving functions
 - Methodology for impact analysis of automated driving applications
 - Safety and environmental impact assessment
- Partners:
 - ika, BMW, CRF, BAST, TNO, CTAG, Lund



// Safety Impact Assessment

Traffic Safety in EU



- Causes of Accidents¹



- Research Question: How many accidents can be prevented by automated driving applications?

1: Source: GIDAS Database

// Safety Impact Assessment Evaluation Approach

- Classical approach for ADAS
 - Field of application
 - Identify possibly affected accidents, but no detailed analysis of effects
 - Accident re-simulation
 - Reconstruct and re-simulate real accidents under consideration of the system
 - Field test / data
 - Investigate system behaviour in real traffic
- Need for harmonization of methodologies! (harmonization group pre-crash evaluation)
- Open issues for the impact assessment of automated driving applications
 - Today's accident data do not consider collisions of automated vehicles
 - Automated driving function operate already before a critical situation occurs → Re-simulation of accidents gets more difficult
 - Interaction with other road users (automated / non-automated) → mixed traffic
- Need for research!

// Safety Impact Assessment AdaptIVe Approach

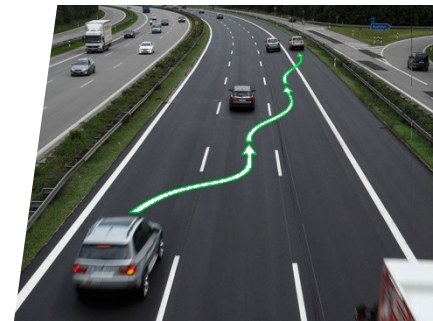
Safety impact assessment in AdaptIVe is a two steps approach

1. Identify relevant critical situations

- Focus on accident and other (relevant) driving situations
 - Use of microscope traffic simulation
- Which situation reduce the risk of an accident? Which situation increase the risk of an accidents?
 - Is there a change in the distribution of accident?
 - Transition of control situations (system → driver)

2. Investigate the relevant critical situation in detail

- Approach could be similar to re-simulation approach
- Input data from other assessment (technical, user-related, in-traffic assessment) are taken into account



Source: <http://files.coloribus.com>, www.7-forum.com, ika



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Felix Fahrenkrog
Institut für Kraftfahrzeuge,
RWTH Aachen University
fahrenkrog@ika.rwth-aachen.de

Thank you.

