Impact Assessment in AdaptIVe

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

18/11/2014
Workshop on Connected and Automated Driving Systems
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 automatic 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 Accidents
  - Human Error > 90%
  - Others

- 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!

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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