

## TRA 2008 Conference

# eVALUE – *Testing and Evaluation Methods for ICT-based Safety Systems*

Ljubljana, 24 April 2008

Dipl.-Ing. Adrian Zlocki  
Institut für Kraftfahrwesen – RWTH Aachen



The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 215607.

This publication solely reflects the author's views. The European Community is not liable for any use that may be made of the information contained herein.

## Project Overview

- **Budget**

- Overall budget: 3,760,442 €
- EC funding: 2,349,982 €

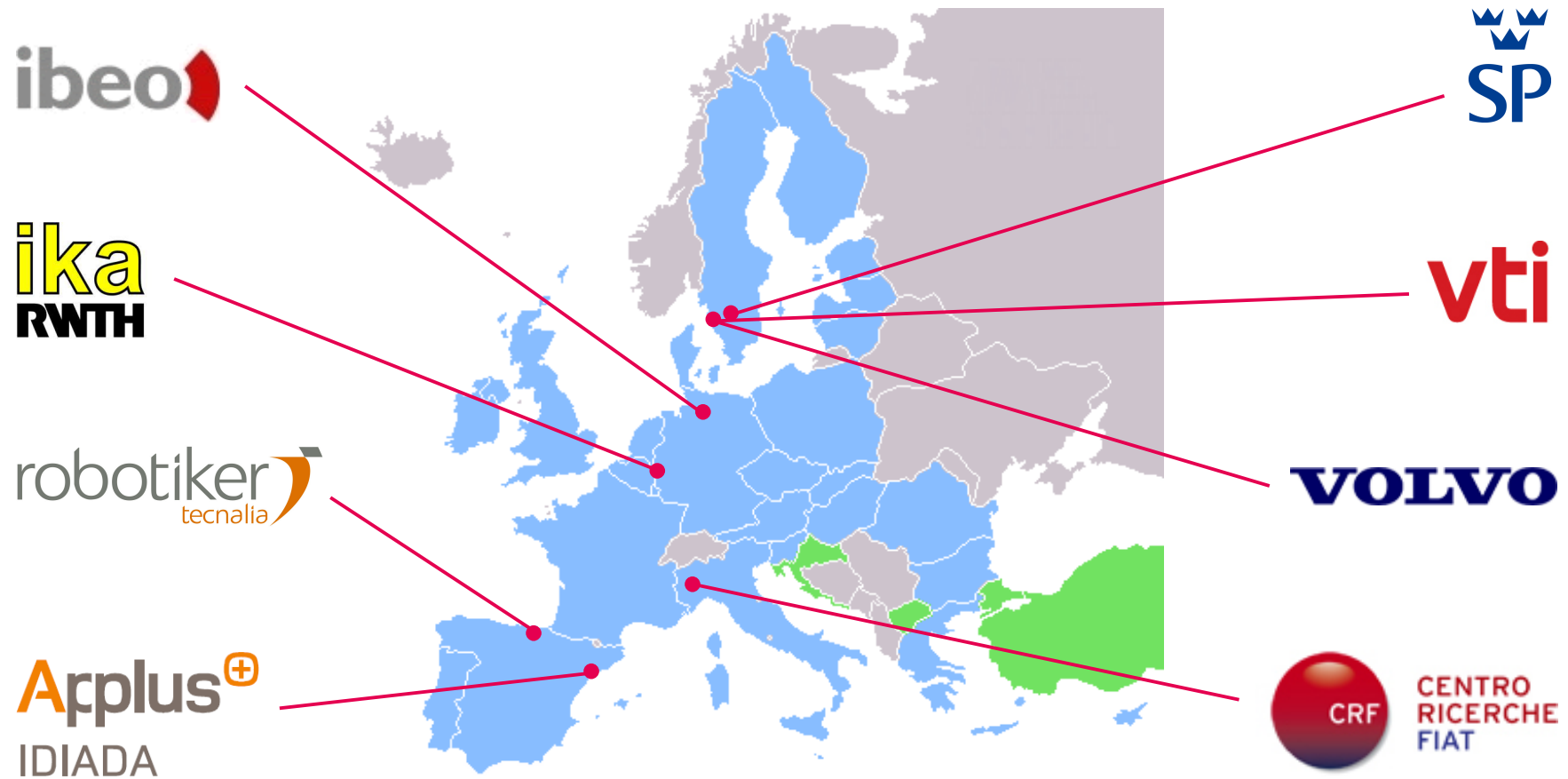
- **Duration**

- Start: 1 January 2008
- End: 31 December 2010

- **Consortium**

- Coordinator: Micha Lesemann, IKA RWTH Aachen University
- Partners: SP Sweden, VTI, VTEC, IDIADA, Tecnalía Robotiker, IBEO, CRF

# Project Overview



## Overall Objectives of the Project

To develop testing and evaluation methods for ICT-based safety systems.

*AND thereby*

To increase public perception and customer acceptance of ICT-based safety systems.

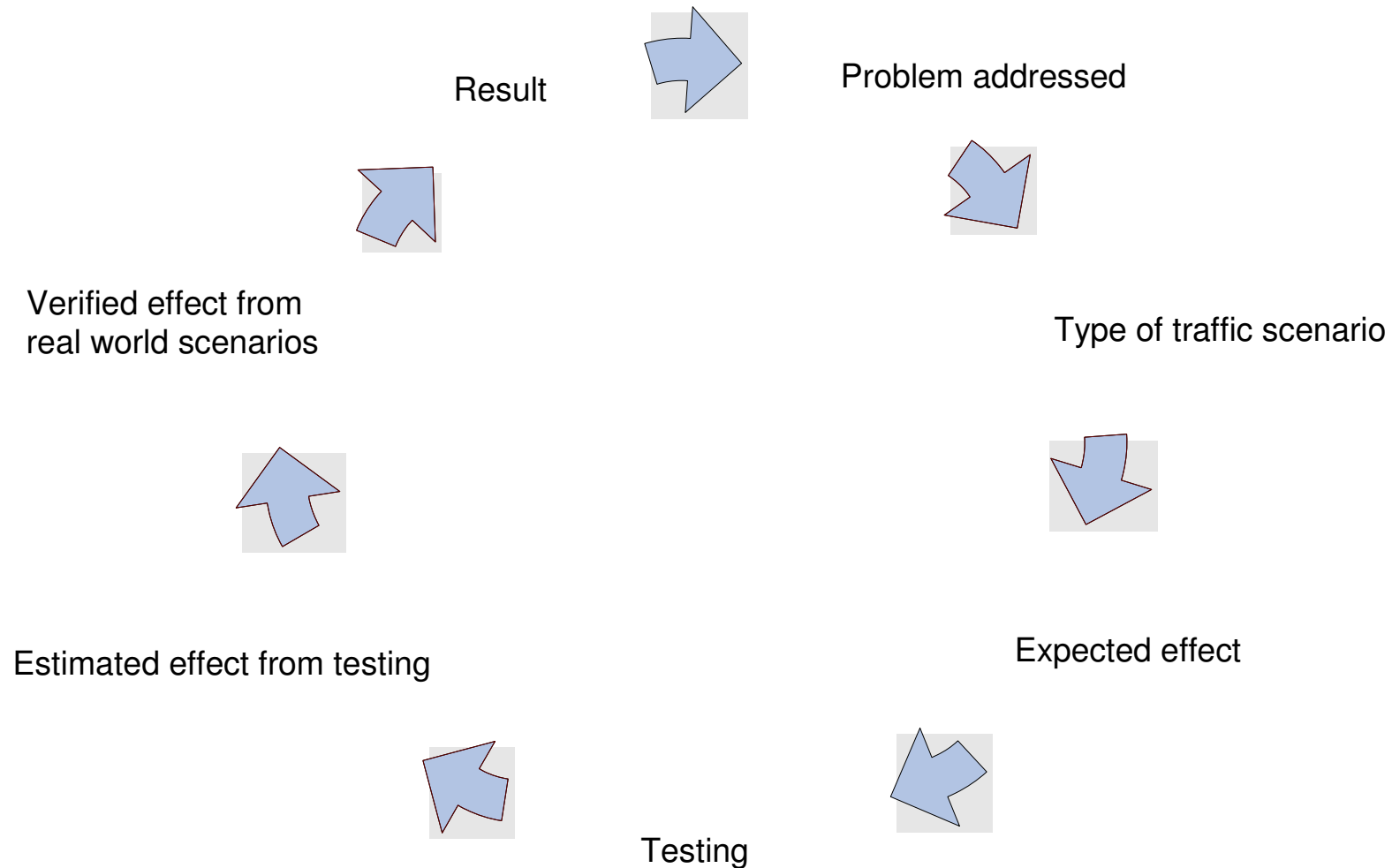
To support development of ICT-based safety systems at vehicle OEMs and suppliers.

## Results of the ASTE Study

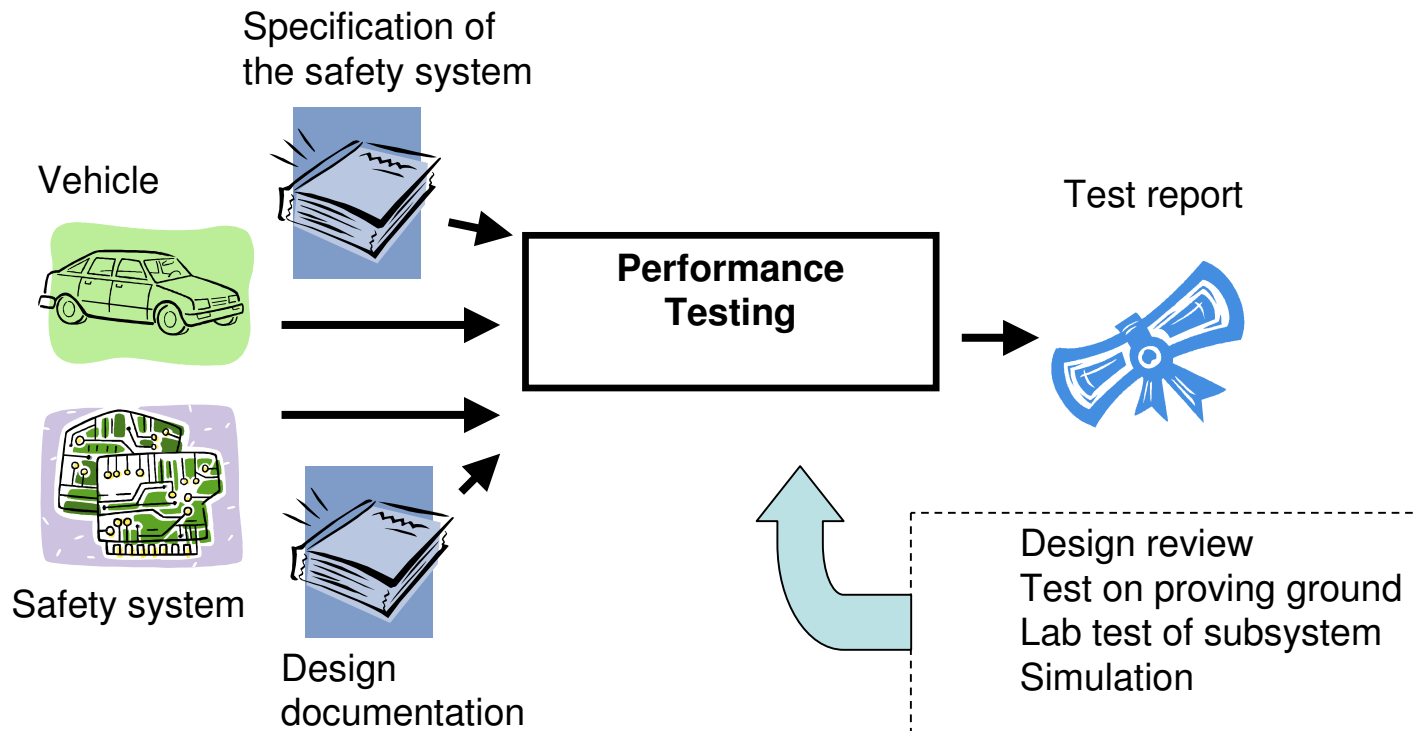
- **ASTE - a feasibility study for setting up of a performance testing programme for ICT based safety systems for road transport**
- Aims of the ASTE study
  - Feasibility of setting up an independent performance and conformance testing programme for IVSS
  - Needed methods and principles for V&V of ICT-based safety systems
  - Consensus on the proposed principle
- ASTE partners:
  - Lindholmen Science Park
  - Volvo Car Corporation
  - Volvo Technology
  - SP
  - VTI Swedish National Road and Transport Research Institute

A STUDY ON	
FEASIBILITY OF THE SETTING UP A PERFORMANCE TESTING PROGRAMME FOR ICT BASED SAFETY SYSTEMS FOR ROAD TRANSPORT 2006	
<u>TENDER SPECIFICATIONS</u>	
Part 1:	Technical description
Part 2:	Administrative details
Annex I:	Administrative Identification Form
Annex II:	Financial Identification Form
Annex III:	Exclusion Criteria & Non Conflict of Interests Form

# Overall Approach and Methodology

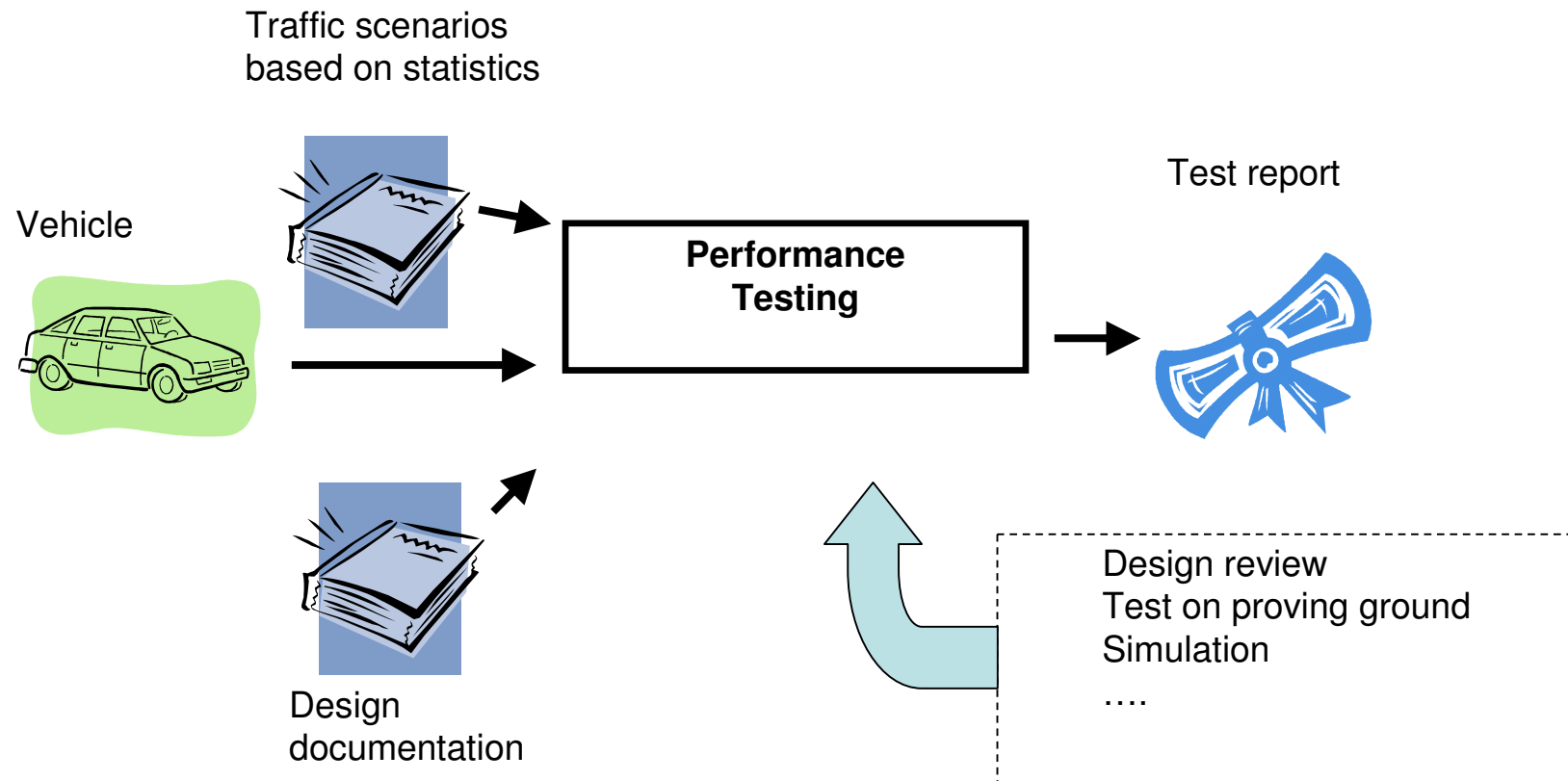


# System-based performance Testing



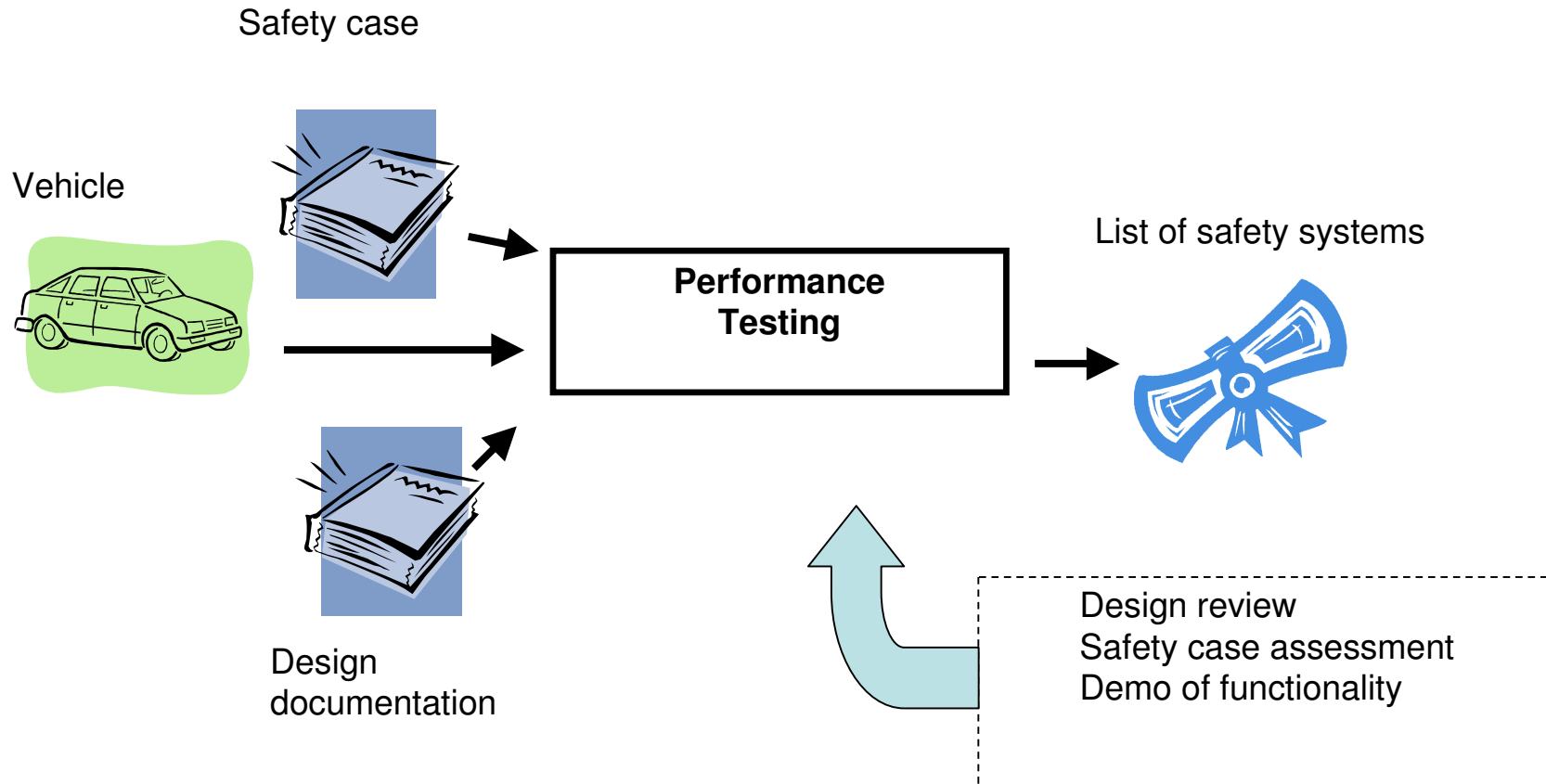
- Test cases derived from specific system capabilities and mapped to traffic scenarios
- Performance of different systems with similar functions but with different layout and technology (by clustering systems)
- As a first step, development of minimum requirements would be required

# Scenario-based performance Testing



- Test cases derived from traffic scenarios
- Testing on vehicle level- with vehicle as "black box"
- A limited amount of representative test scenarios are needed to be defined? Possible?

# Document-based performance Testing

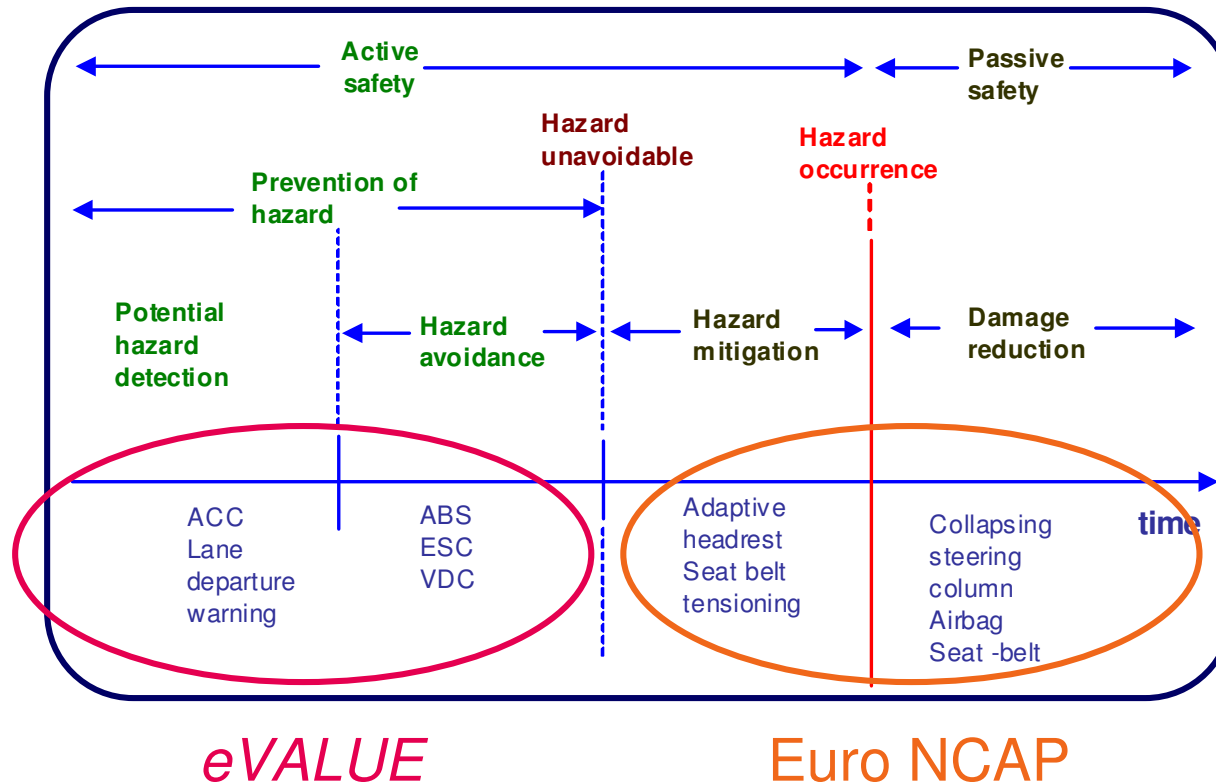


- Used as complement to physical testing
- In particular valuable for e.g.HMI testing?

## Conclusions of the ASTE Study

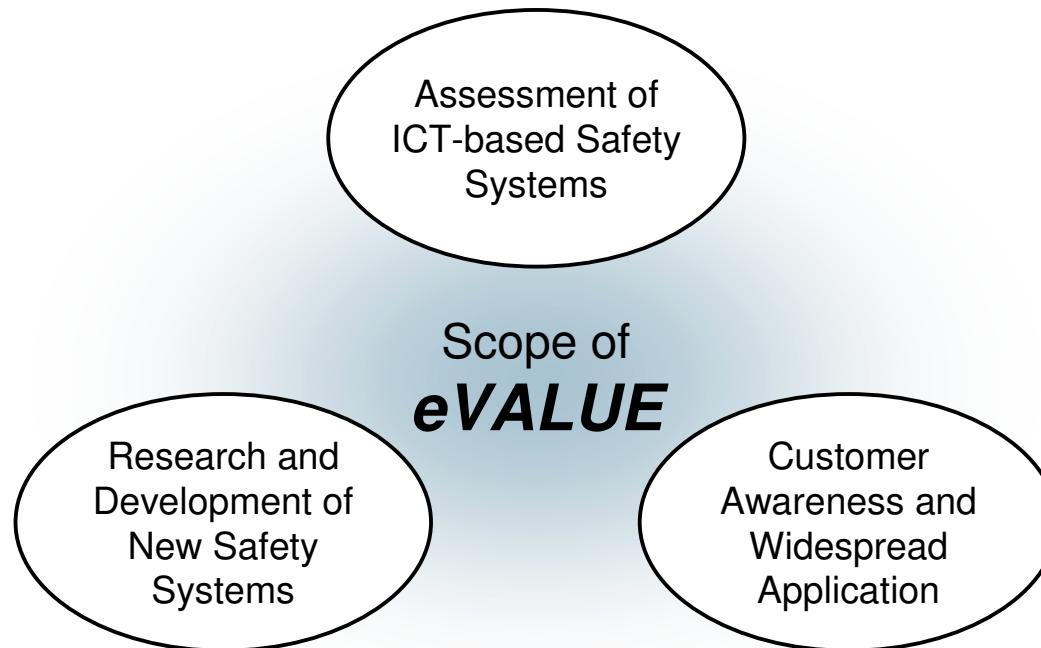
- Performance testing is technically and economically feasible
- Vehicle active safety performance shall be tested in traffic scenarios
- The performance test results must be possible to communicate in a very simple way
- Consensus between different stakeholders will be possible

# Overall Objectives of eVALUE



**eVALUE** has a similar goal like Euro NCAP, namely the objective and easy-to-understand assessment of safety systems.

## Overall Objectives of the Project



*eVALUE* takes all concerned interest groups into account.

## Major Achievements of the Project

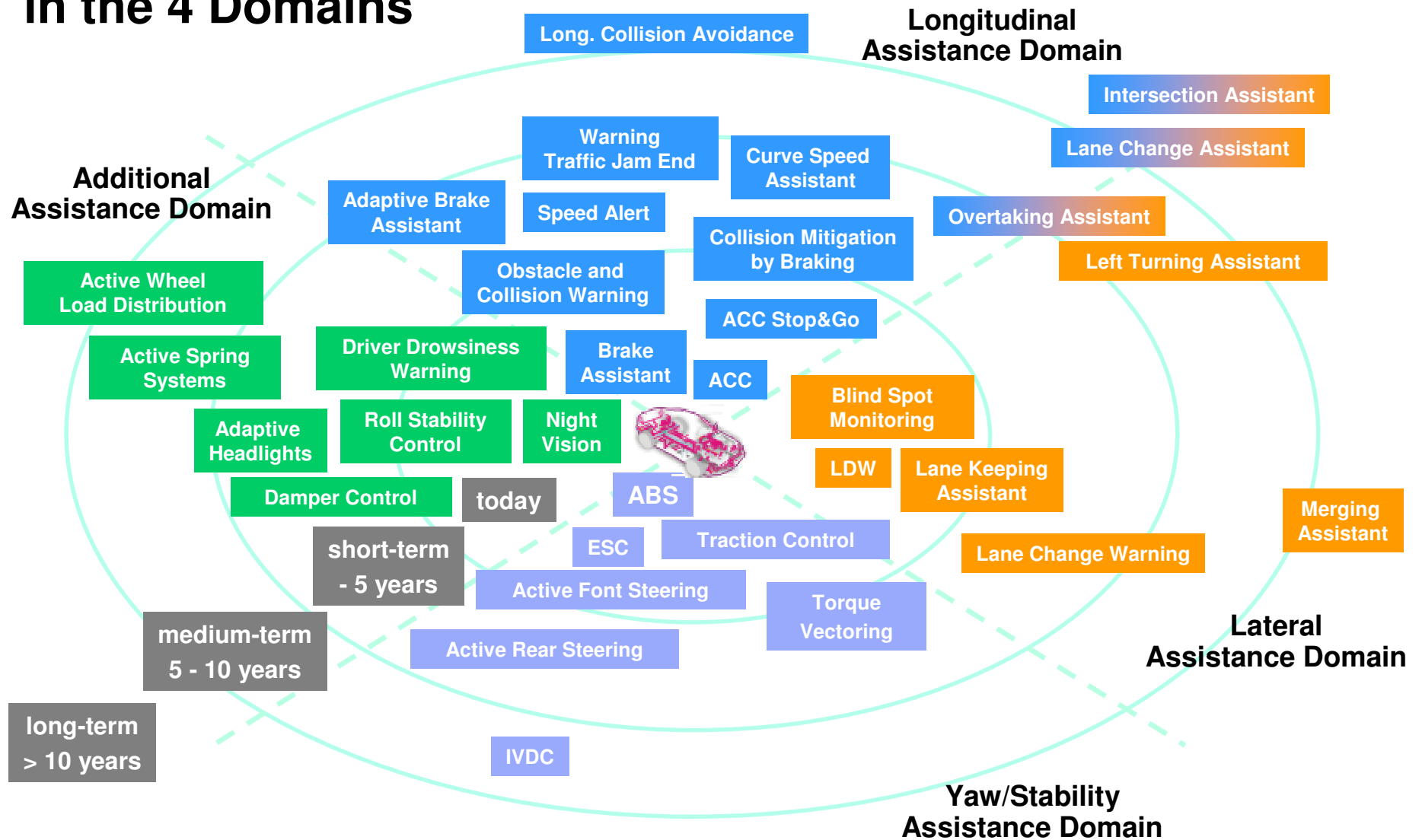
- **What we will do:**

- Define objective evaluation and testing methods and performance criteria
- Build a de-facto standard
- Regard current and upcoming active safety systems
- Consider system interaction and system integration
- Physical testing, supported by simulation
- Communication with key stakeholders like OEMs, suppliers, national authorities, customer organisations, ISO working groups etc.
- Raise public awareness for the topic, e.g. by easy-to-understand benchmarks

- **What we will not do:**

- Direct standardisation of testing
- Define fail/pass criteria for the developed test methods

# Roadmap – Time Horizon for safety relevant ICT-Systems in the 4 Domains

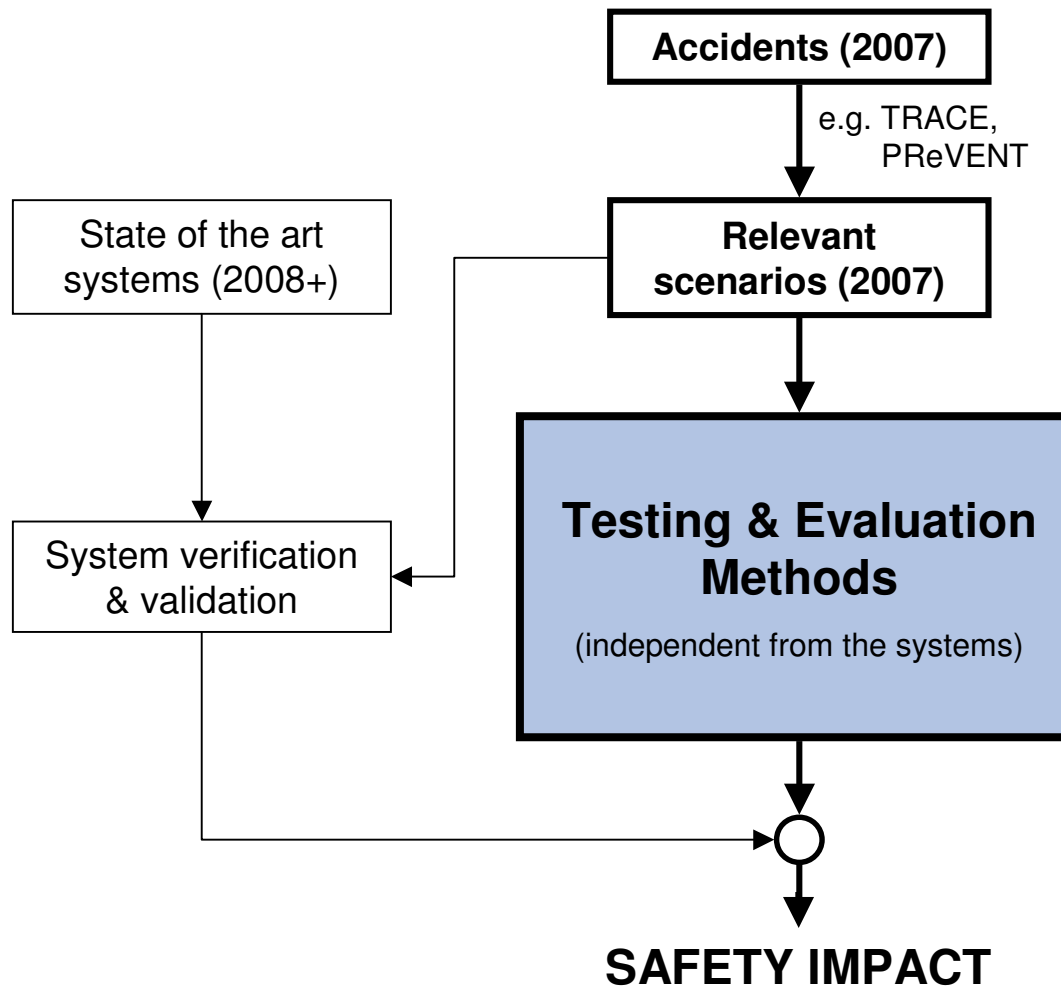


## Scope of eVALUE - Chosen Systems

- Systems for automotive preventive safety systems, address at least one domain and available on the market with penetration rates of >50.000 vehicles
- System Cluster 1 (longitudinal assistance)
  - ACC
  - Forward Collision Warning
  - Collision Mitigation, by braking
- System Cluster 2 (lateral assistance):
  - Blind Spot Detection
  - Lane Departure Warning
  - Lane Keeping Assistant
- System Cluster 3 (yaw/stability assistance):
  - ABS
  - ESC
- System Cluster 4 (additional assistance):
  - Not defined at this stage (ICT-based systems becoming available during project duration)

# eVALUE Testing & Evaluation Methods

## General Approach



## Contact

Dipl.-Ing. Adrian Zlocki

Institut für Kraftfahrwesen Aachen – RWTH Aachen University  
Steinbachstr. 7  
52074 Aachen (Germany)

Phone +49-241-80-25616

Fax +49-241-80-22147

E-mail [zlocki@ika.rwth-aachen.de](mailto:zlocki@ika.rwth-aachen.de)

Internet [www.ika.rwth-aachen.de](http://www.ika.rwth-aachen.de)

***Thank you  
for your attention!***

[www.evaluate-project.eu](http://www.evaluate-project.eu)