Plenary Session One

Presentation 2

Driver Assistance Systems – Status Quo and Future Impact on PTI

Preliminary Findings of the vFSS-Group

Frank Leimbach

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2013 CITA Conference

15-17th May, Seville, Spain

CITA 2013 theme “Strategies for Benefiting Roadworthiness ”

Driver Assistance Systems – Status Quo and Future Impact on PTI

Preliminary Findings of the vFSS-Group

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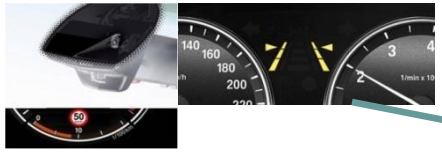
State of the art



Lane departure warning

Speed-Limit-Info

Head-Up Display

Lane change assistance

Adaptive headlight

Rear camera

Top-View

Side View

Night Vision with pedestrian detection

Active speed limiter with Stop&Go, collision warning and soft braking function

Nomenclature and Members

vFSS – Advanced Forward-Looking Safety Systems

Focus: M1-Vehicles

Background

The aim of the Working Group is the development of test procedures for driver assistance systems (in particular advanced emergency braking systems) in order to ensure a **robust assessment** of such systems.

Focus on **traffic accident priorities** by means of an evaluation of the effectiveness in real world accidents, with the aim of reducing the number of road traffic casualties.

Ensure transparency with respect to legal requirements and consumer protection initiatives, incorporating harmonisation principles and accounting for related trade offs.

Determination of a **harmonised methodology** for effective evaluation.

Incorporation of conclusions into P-Safe and Euro NCAP working groups in a first step. Establishment of strategic alliances within other NCAP markets.

3 work packages:

Pedestrian safety ⟷ **Accident analyses** ⟷ **Longitudinal traffic safety systems**

vFSS Group Workpackages

vFSS
Advanced Forward-Looking Safety Systems

Coordination

WP1 Accident Analyses

- Worldwide monitoring of activities (e.g. Beyond NCAP, AEB-Group)
- Accident research
- Effective range analysis for pedestrian safety systems
- Effective range analysis for longitudinal traffic safety systems
- Accident scenario definition contributing to casualty reduction and injury mitigation
- Derivation of scenarios contributing to material damage reduction
- Development of an assessment scale for material damage weighting and personal damage (fatally injured/severely injured) weighting related to M1-vehicles

WP2 Pedestrian Safety

- Evaluation of the technical feasibility defined in WP1
- Assessment of system limits
- Generation and collection of pedestrian safety testing methods

WP3 Longitudinal Traffic Safety Systems

- Evaluation of the technical feasibility defined in WP1
- Assessment of system limits
- Generation and collection of longitudinal traffic safety systems testing methods

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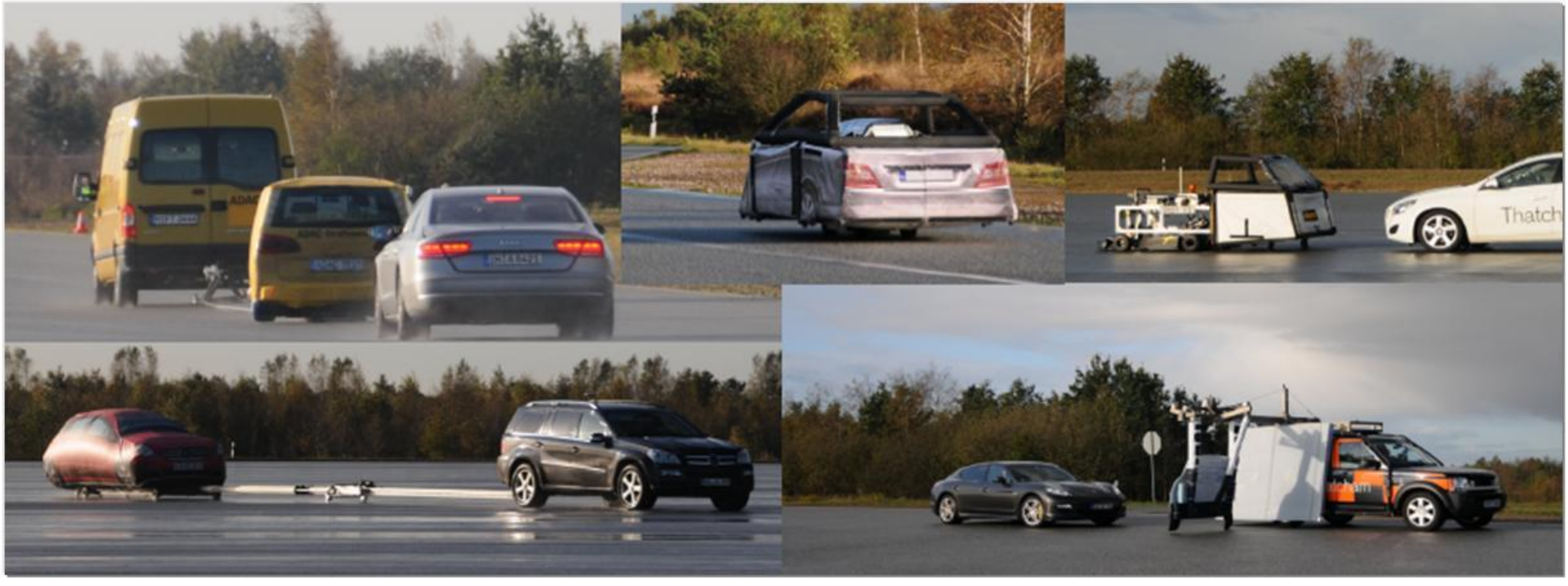
Longitudinal Traffic Safety Systems

WP3 Longitudinal Traffic Safety Systems



Test Procedure and Target Evaluation

WP3 Longitudinal Traffic Safety Systems - Target

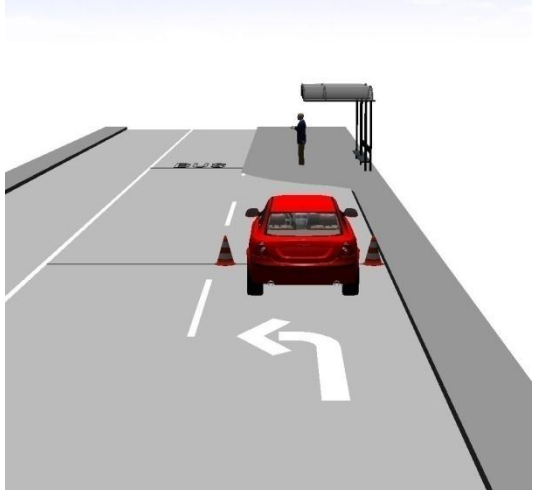
Background and History of Test Procedure Development

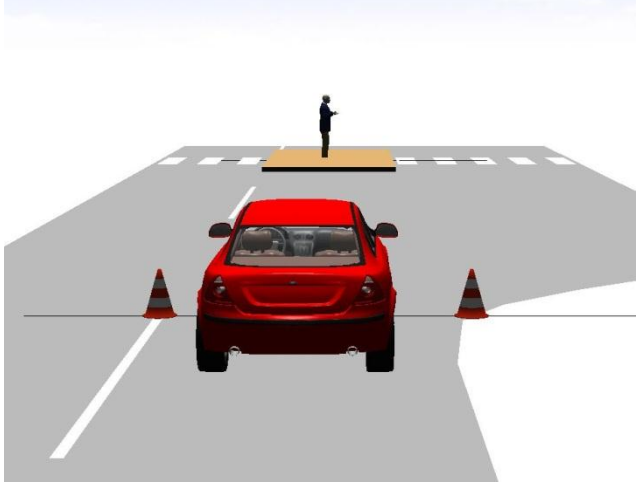
Overall Focus of vFSS-working group 3 :

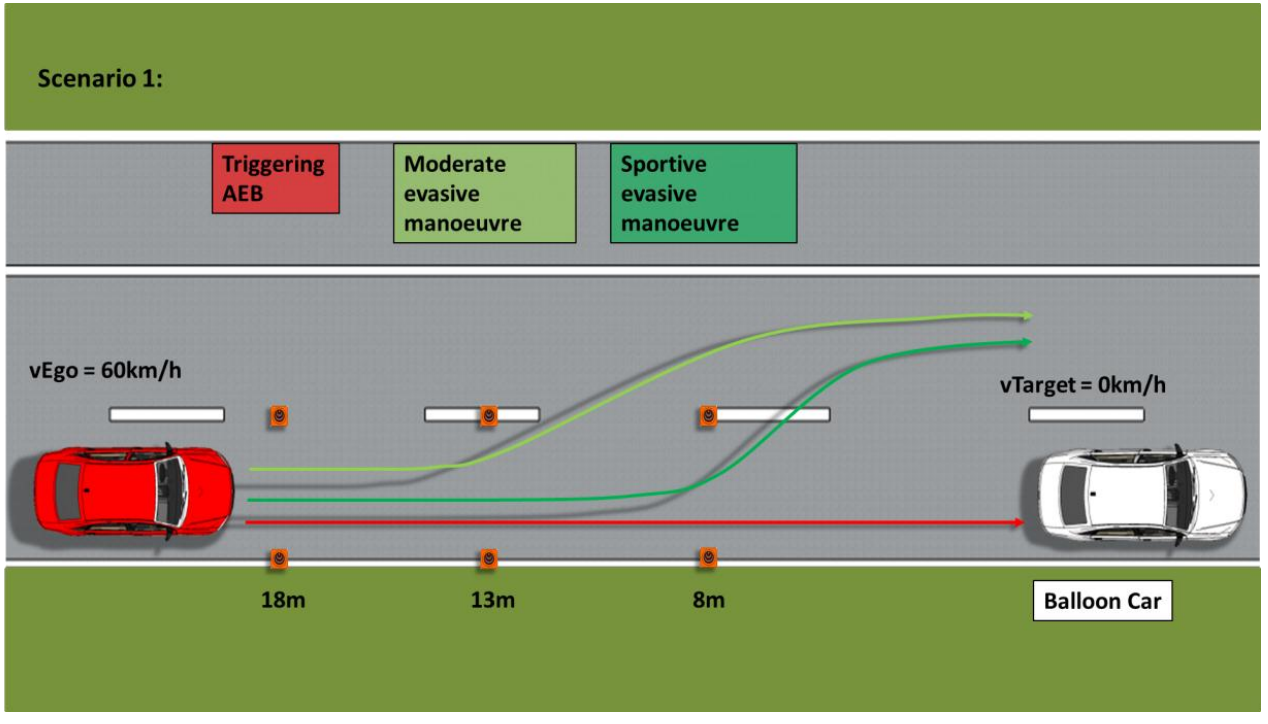
- longitudinal crash scenarios
- Development requirements for crash-targets
- Development of test-procedures for autonomous and adaptive braking systems

Test Procedure Development

Braking or steering







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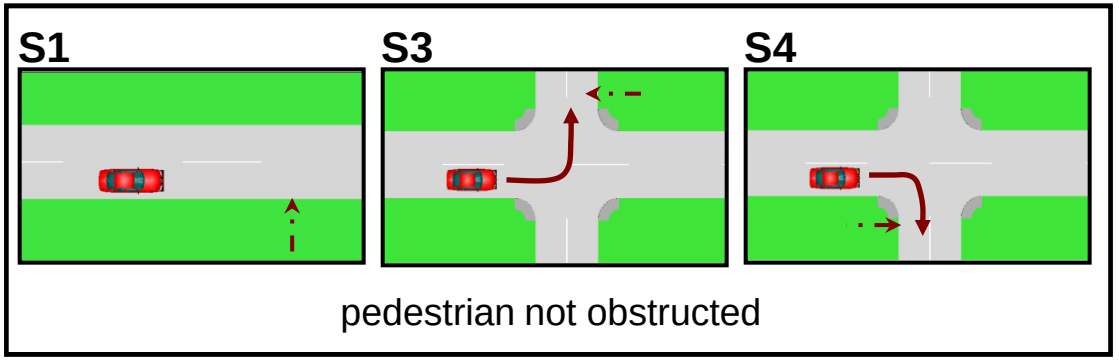
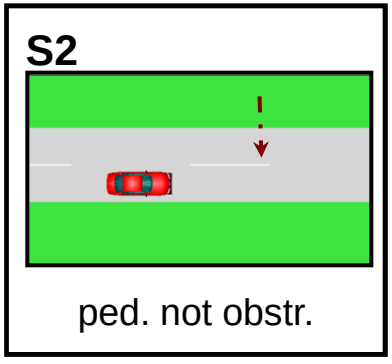
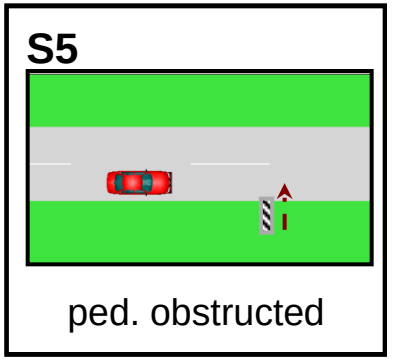
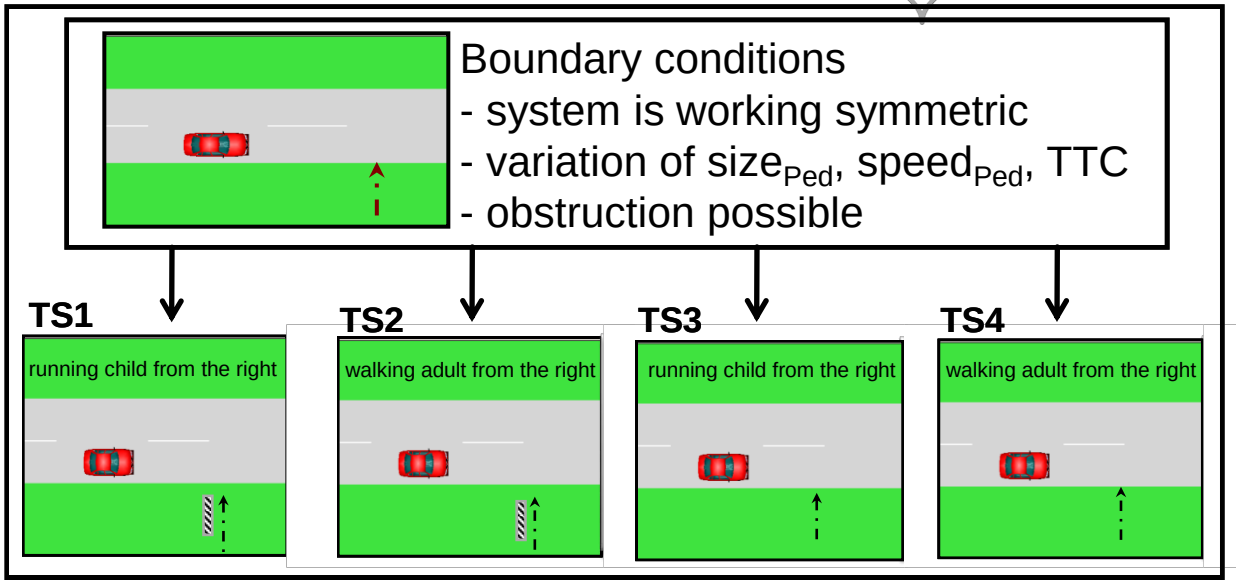
Pedestrian Safety

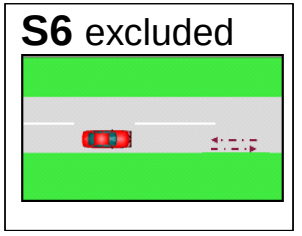
Transferring accident scenarios to test scenarios











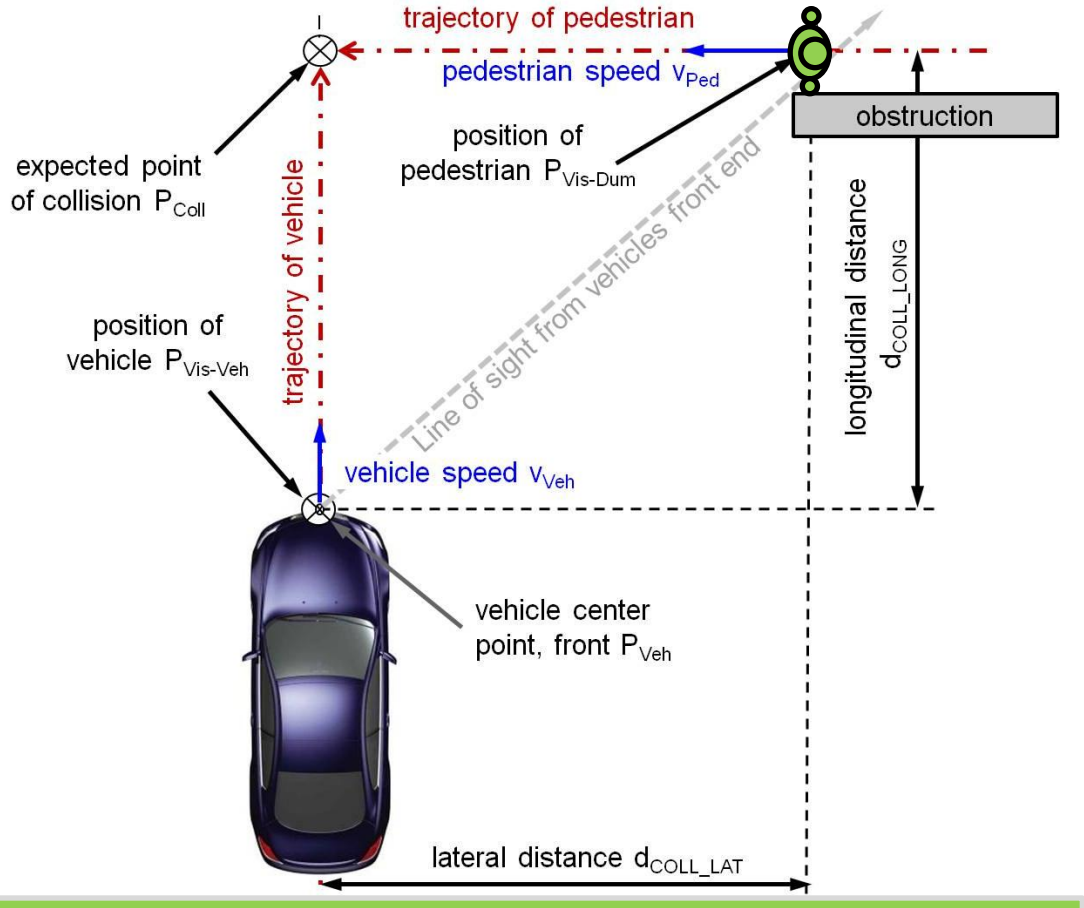
Easy to detect

High speed
(> 70 km/h)

S – Accident Scenario

TS – Test Scenario

Transformation to Laboratory Test



Ideally the tests should be performed contactless to avoid damage of sensor systems

Principle

- moving vehicle
- moving dummy target
- perpendicular moving directions
- continuous velocity measuring for vehicle and dummy target

Relevant values

- vehicle velocity at point of first visibility of the dummy target (P_{Vis_Veh})
- vehicle velocity at the collision point (P_{Coll})
- vehicle's speed reduction is the relevant value to assess the system performance

Testing

- 4 different test scenarios
- 10 test cycles for each scenario

Possible Test Rig

Interlink with EC-Projects

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ASSESS
ASSESSMENT OF VEHICLE SAFETY SYSTEMS

Assessment of Integrated Vehicle Safety Systems for improved vehicle safety

HUMANETICS Innovative Solutions

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Technik fürs Leben

TNO | Knowledge for business

DAIMLER

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Interlink with EC-Projects

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BOSCH
Technik fürs Leben

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Federal Highway Research Institute

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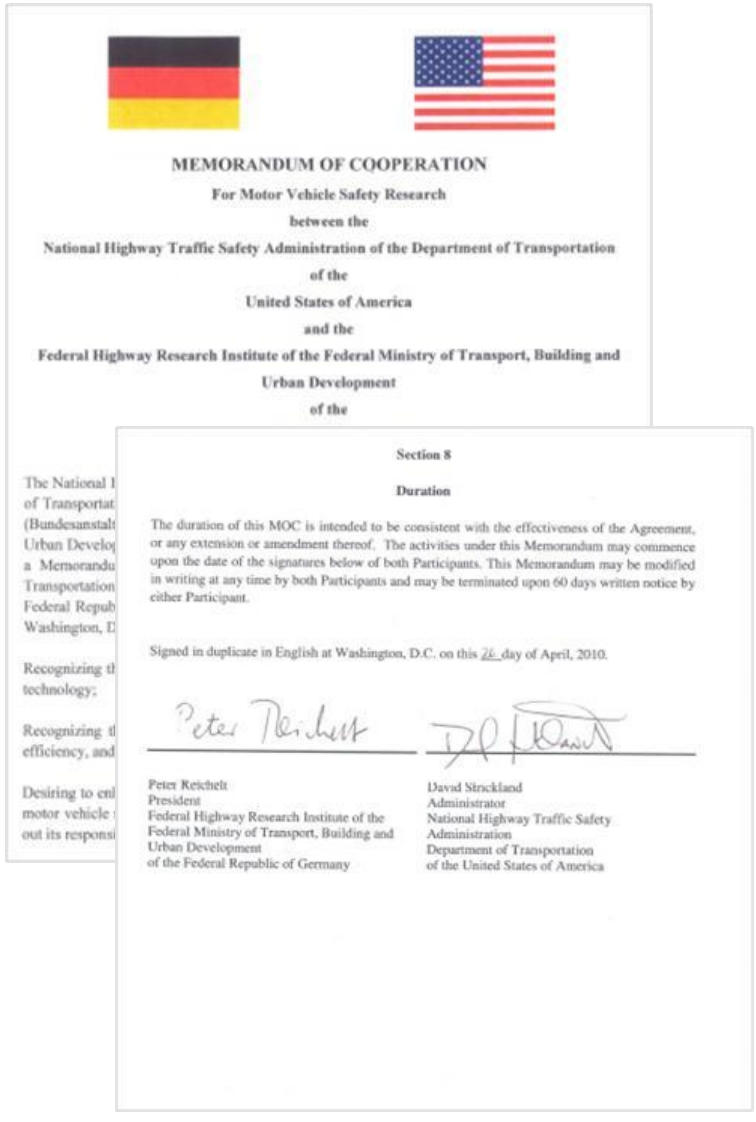
International Alliance

Memorandum of Cooperation NHTSA-BASt

Signed 26 April 2010



MEMORANDUM OF COOPERATION

For Motor Vehicle Safety Research

between the

National Highway Traffic Safety Administration of the Department of Transportation

of the

United States of America

and the

Federal Highway Research Institute of the Federal Ministry of Transport, Building and Urban Development

of the

Section 8

Duration

The duration of this MOC is intended to be consistent with the effectiveness of the Agreement, or any extension or amendment thereof. The activities under this Memorandum may commence upon the date of the signatures below of both Participants. This Memorandum may be modified in writing at any time by both Participants and may be terminated upon 60 days written notice by either Participant.

Signed in duplicate in English at Washington, D.C. on this 26 day of April, 2010.

Peter Reichelt
President
Federal Highway Research Institute of the Federal Ministry of Transport, Building and Urban Development
of the Federal Republic of Germany

David Strickland
Administrator
National Highway Traffic Safety Administration
Department of Transportation
of the United States of America

Impact on PTI

- Safety must be kept on an appropriate level
- Therefore ensure that vehicles on the roads are maintained to a high degree of technical roadworthiness
- Increasingly complex and dynamic functionality of vehicle systems
- Critical safety systems that only operate when the vehicle is in motion such as ESC or AEBs
- Real testing of safety systems within PTI not feasible (time & costs)

Requirements

- Procedure: VIN specific safety system data delivered by OEM
- Fitment test of safety system
- Functional test based on OBD system data

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Thank you very much for your attention

Plaza de España, Seville, Spain

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