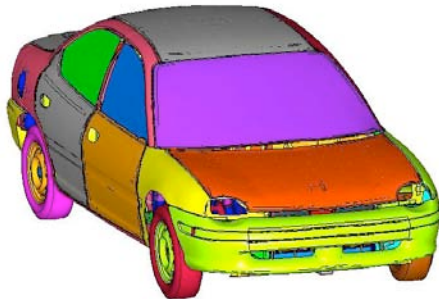
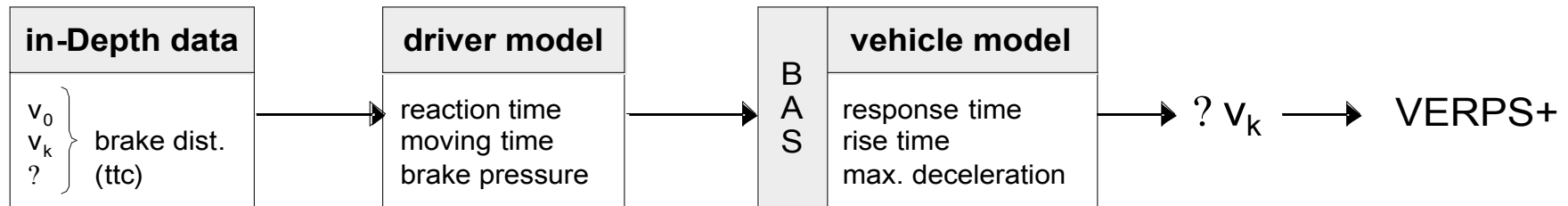


Requirement Engineering for Active Safety Pedestrian Protection Systems based on Accident Research

- Research Objectives:
 - Assessment of active and passive safety measures for pedestrian protection regarding their real-life safety benefit
 - Derive sensor specifications for active pedestrian protection systems



Knowledge required



- Pedestrian Accident situations
- Driver Behaviour
- Vehicle Behaviour
- Injury Risk
- In-Depth accident data (e.g. GDV, MH Hanover or GIDAS data)
- Driving and braking tests (e.g. 100 subjects in TUB tests)
- Vehicle handling model (e.g. nonlinear singletrack model)
- VERPS+ - Index for prospective assessment or In-Depth accident data for retrospective assessment

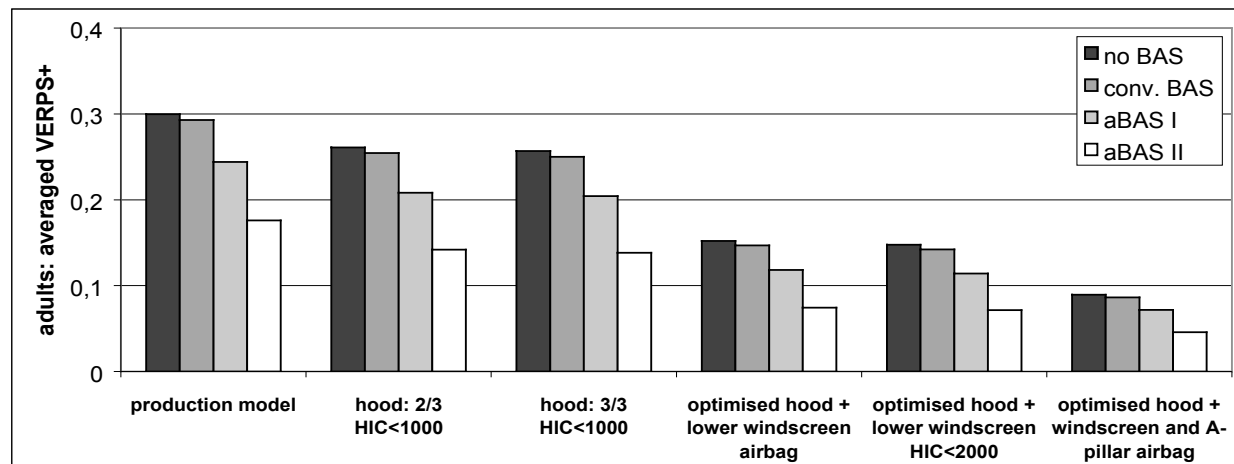
Results

- **BAS Design:**

- Intelligent BAS can be deployed earlier and more reliable in real life accident situations
- Keeping the driver in the loop is no problem for good pedestrian protection performance
- „slight“ autonomous action can obtain additional safety benefits

- **Safety benefits:**

- Intelligent brake assist strategies using environmental sensors can avoid up to 30% of all pedestrian accidents
- Average Collision speeds are reduced up to 16 km/h
- Risk of severe head injuries can be reduced up to 80%, when combining active and passive safety features



Results

- Sensor Specifications:
 - Must be capable of urban traffic scenarios
 - Range of 20m covers 90% of all pedestrian accident situations
 - Including drivers braking characteristics
 - Pedestrian classification performance is not necessary but helpful
 - Classification task can remain at the driver in some cases

