



REIMERT SJÖBLOM

HGV AND PASSENGER VEHICLE CONFLICTS - HISTORY AND PHILOSOPHY

Introduction

- **Scania**

- Founded 1891 in Sweden
- One of the larger HGV OEMs in the world
- Part of TRATON group
 - Scania
 - MAN
 - Navistar
 - VW in South America



- Reimert Sjöblom, Expert Engineer Passive Safety, Property Manager Passive Safety



Passive Safety Philosophy

- Reduce the effects of accidents involving Scania vehicles, equality in traffic safety for road users
 - Passenger vehicle occupants in focus
- Internal targets surpasses legislation to achieve real traffic safety
- UN Sustainable Development Goals
 - *SDG target 3.6: By 2030 halve the number of global deaths and injuries from road traffic accidents*



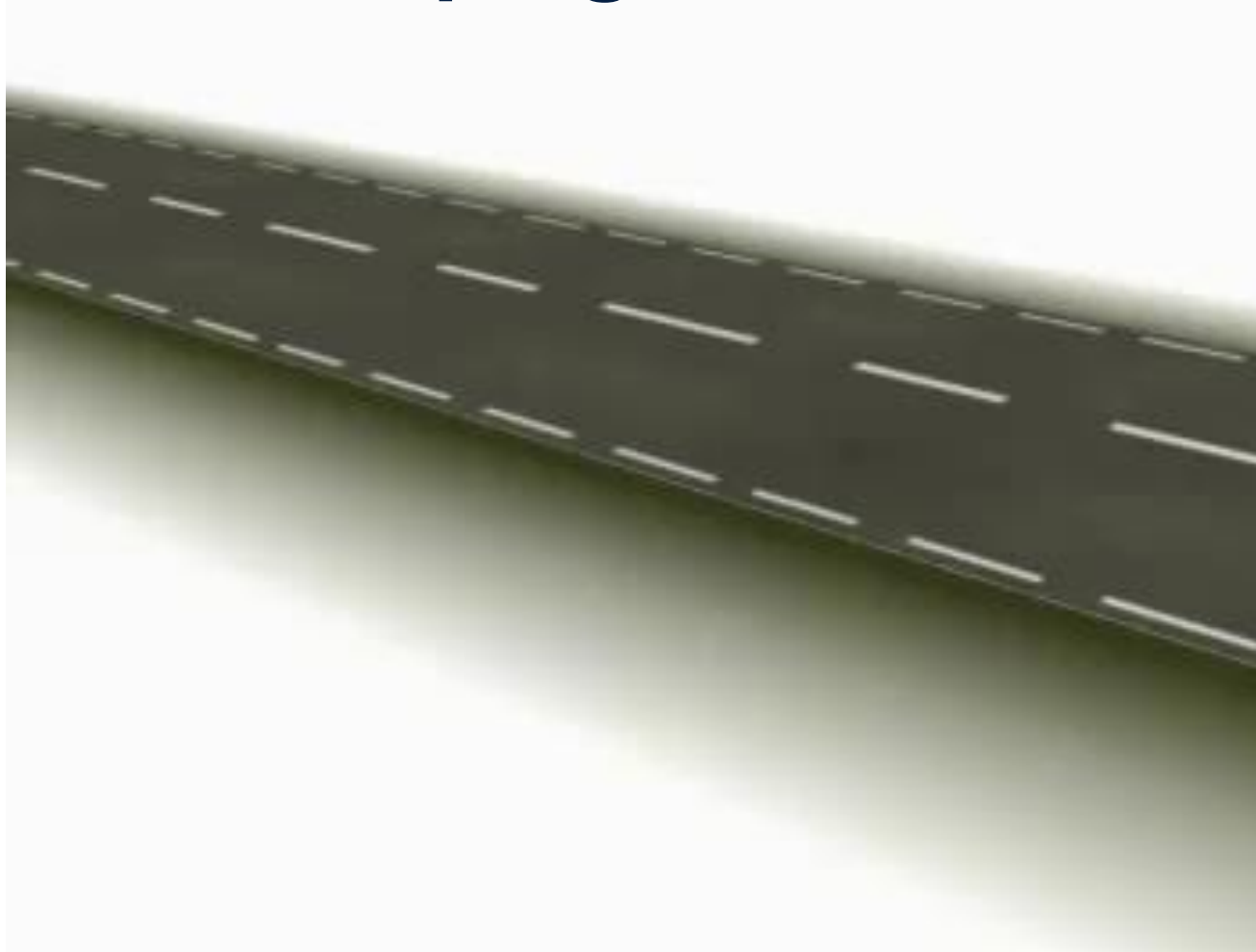
History

- Tests dating back at least to the late 80's or early 90's
 - Accident type early recognised as a large contributor of casualties in accidents involving HGVs





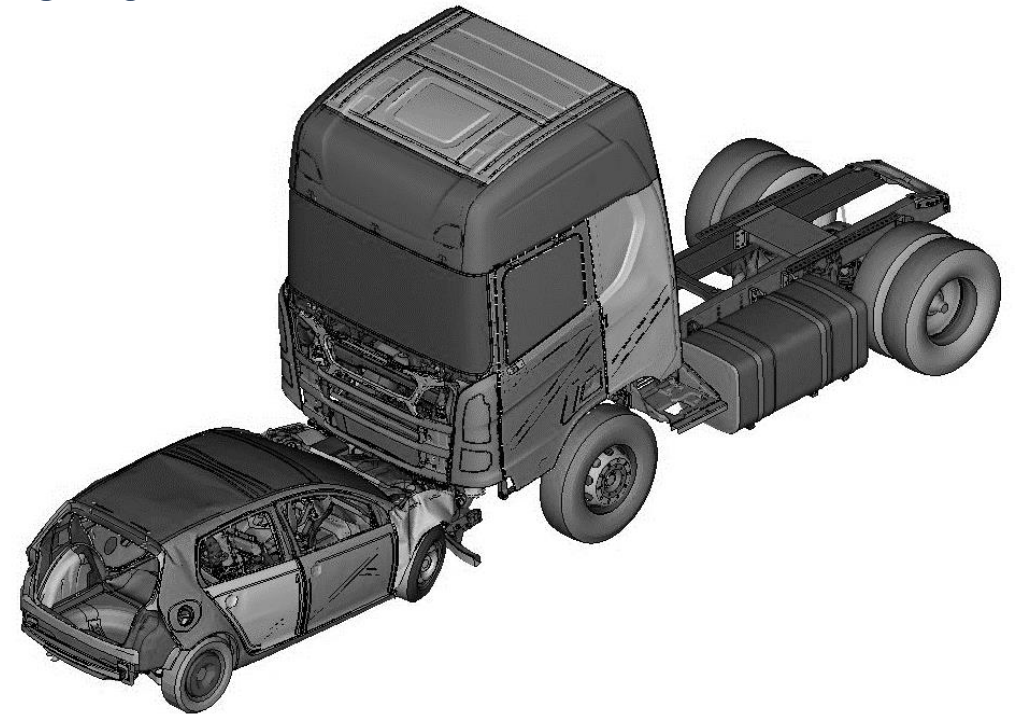
Scania 2003 Campaign Towards Legislation





Scenarios

- Using accident statistics to set the scenario
- Frontal accident most frequent
- Robustness of the system important
 - Several different speed levels
 - Several different overlaps, angles etc
- Failsafe behaviour



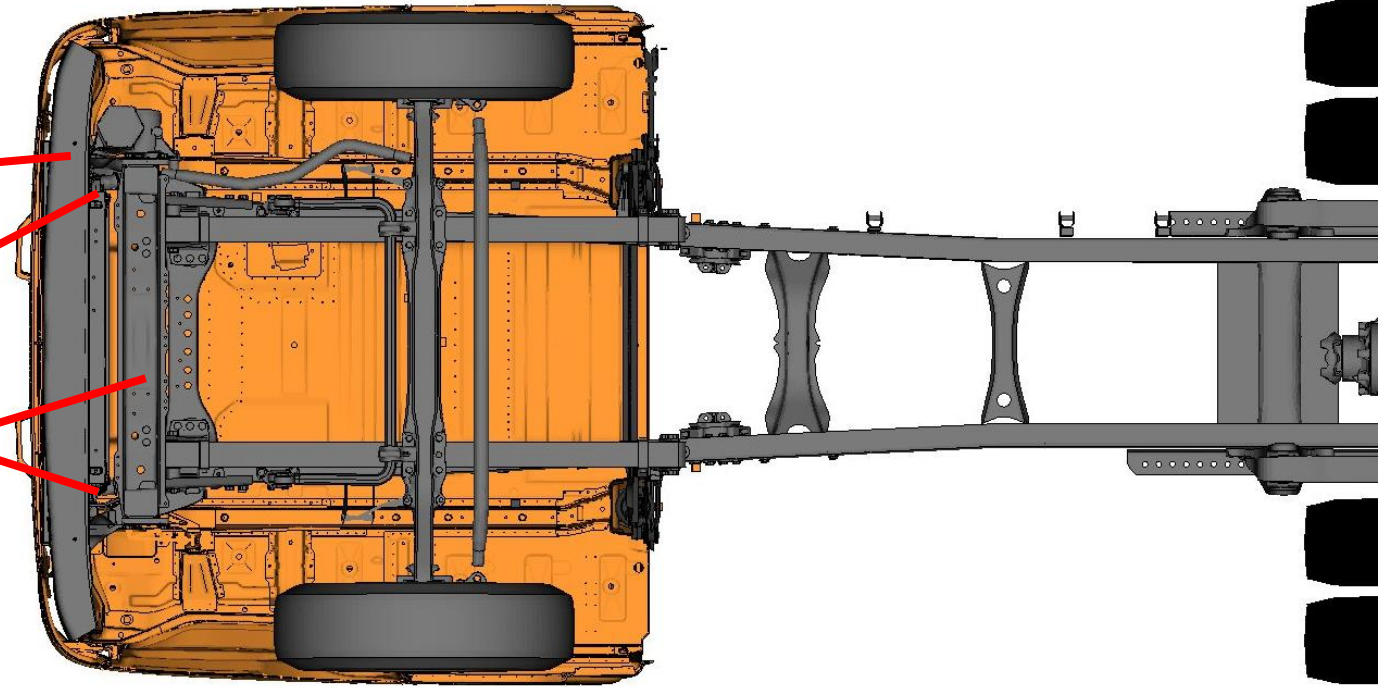
Basic System Design

- Forward Underrun Protection

- Beam “bumper”

- Energy absorbing elements

- Backup structure



- Current product has a rather short deformation zone due to legislation



Evaluation

- HGV
 - Should not overrun the passenger vehicle
 - Do not let the passenger vehicle in too far under the HGV
 - The FUP –system should behave robust
 - No catastrophic collapse
 - Trigger the passenger vehicle crumple zone first
 - Gives the possibility to handle as much energy as possible and increased range of opponent vehicles
 - Steering should be intact on the HGV
 - Important to give the driver a possibility to mitigate further damage or injury
- Passenger vehicle
 - Engaging of the deformation/crumple zone
 - No significant intrusion in the passenger compartment
 - Injury evaluation of the ATDs (Anthropomorphic Test Devices) Euro NCAP protocol



Possibilities and Challenges

- Roughly 200-400 mm realistic to use as deformation zone on the HGV within new legislation
 - Turning radius limitations
 - Commercial vehicle and situation
 - Limitations in payload – front axle load etc
- How to handle a large range of passenger vehicles – equality in traffic safety
 - Front stiffness and characteristics
 - Mass
- Compatibility
 - HGV, geometric – height etc
 - Passenger vehicle
 - Not built for high-speed conflicts with HGVs
 - Euro NCAP MPDB barrier test will, to some extent conform passenger vehicle characteristics