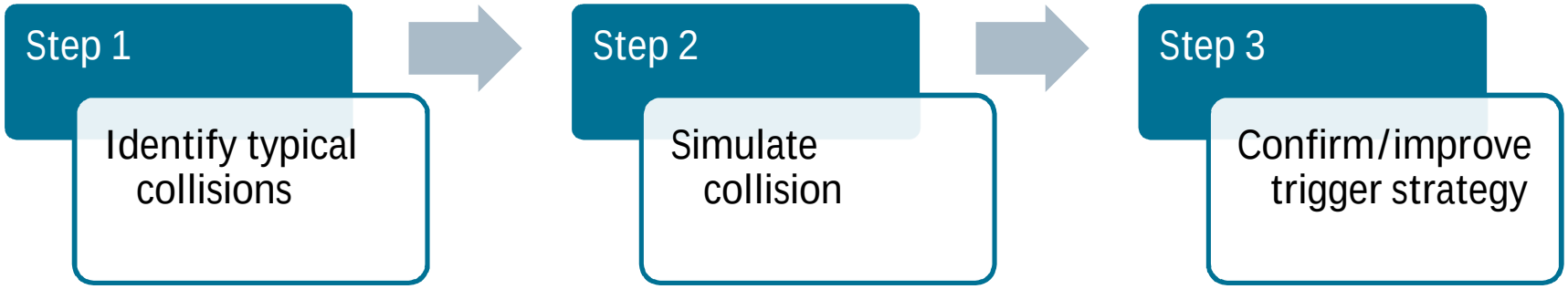
Federal Ministry
for Digital
and Transport

Stimulus: EDR HDV Approach

2024-10-22

EDR HDV three step approach for typeapproval



Step 1: Identify typical collisions

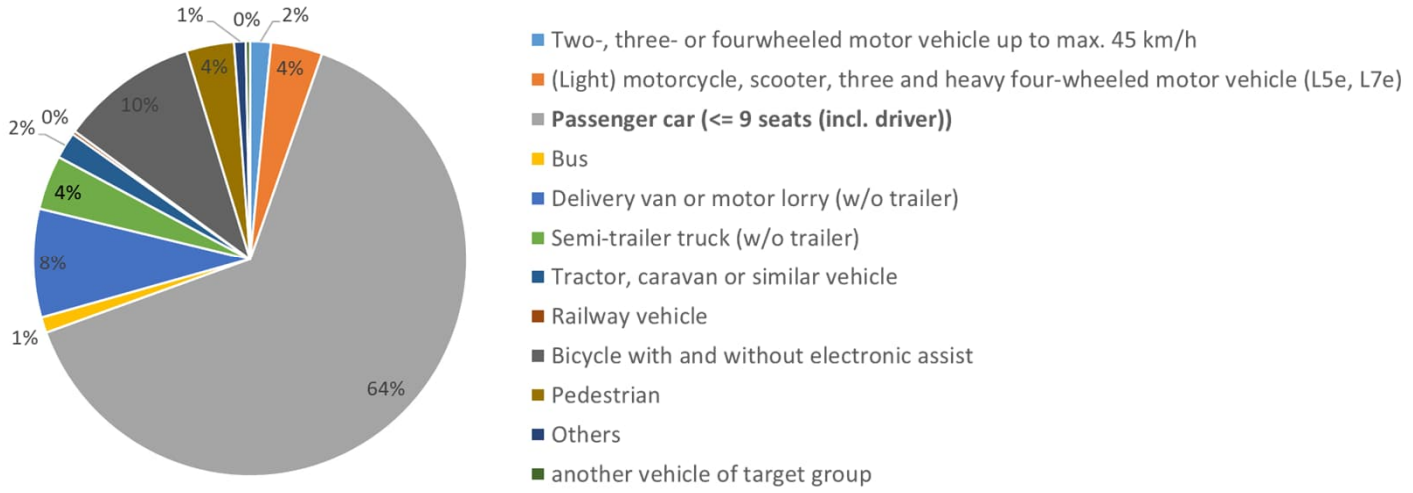
- Identify ‘typical collisions’ related to the vehicle for approval using accident statistics related to the region of homologation
- Process of identifying ‘typical collisions’ is up to the manufacturer, but should be supported by a Technical Service
- Set of [three?] typical collisions relevant to the delta-v trigger threshold

Step 1: Identify typical collisions
Example with German Data – Filter Data

Filter Criteria for data from 2019 to 2022

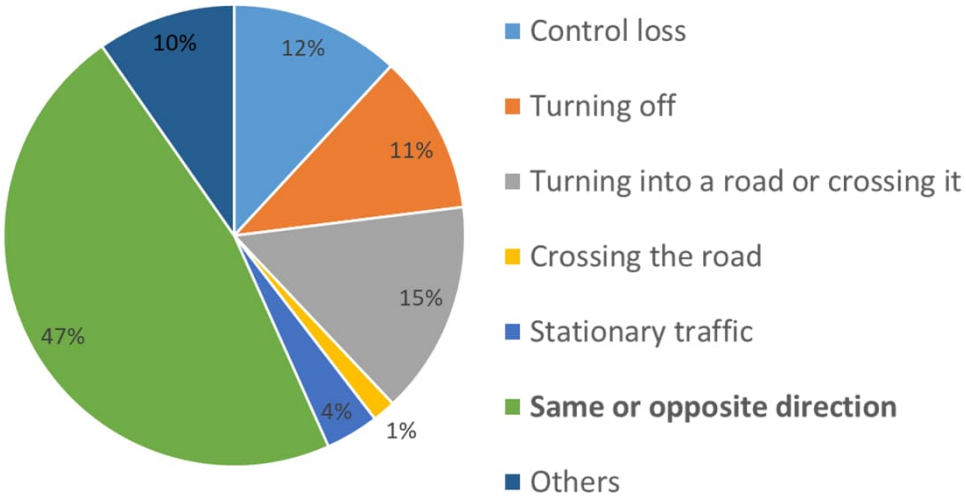
- Accidents with personal injury (~severe accidents irrespective of the amount of material damage)
- Crashes of buses and goods road transport vehicles registered in Germany with permissible gross vehicle weight of 8-12 tonnes (here: “target group”)
  - Includes buses and coaches with more than 9 seats including driver's seat, coaches, buses and school buses
  - Includes trucks with a tanker bed without a trailer, trucks with a gross weight over 3.5 tonnes with and without a trailer, tractor units, other tractors (including with tankers) and trucks with special bodies

Step 1: Identify typical collisions
Example with German Data – Results (1)



Typically, the other party is a passenger car

Step 1: Identify typical collisions
Example with German Data Results (2)

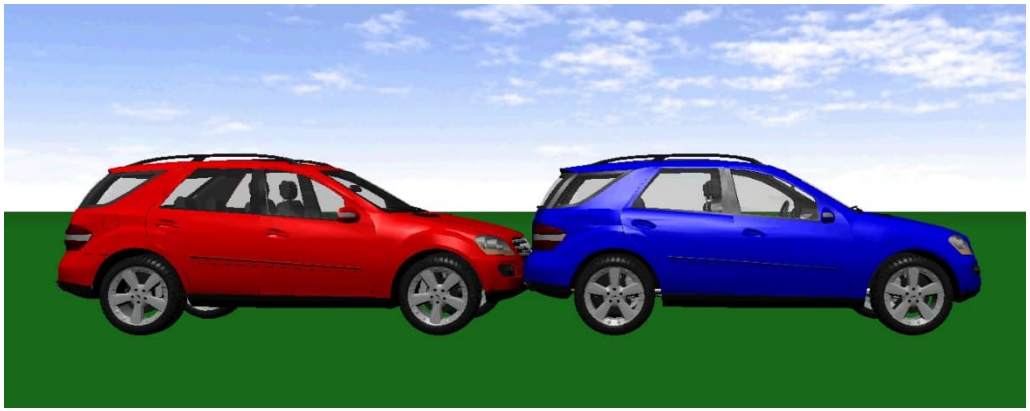


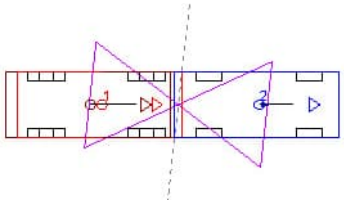
Typically, both parties move in opposite or same direction

Step 2: Simulate collisions

- Simulate typical collisions using widely available crash reconstruction software (e.g., PC Crash or Virtual Crash)
- No Finite Element simulations or real crash tests required (but could also be presented!)
- Vehicle in crash reconstruction software should be modified as possible to represent vehicle up for approval

Step 2: Simulate collisions
Example cases





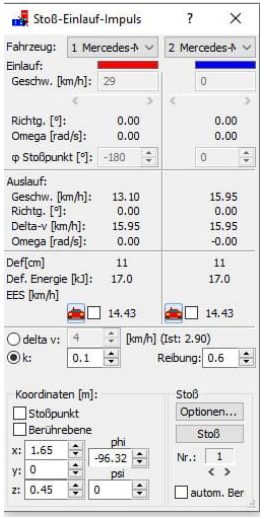
Here 4 cases are simulated:

1. Ego vehicle and impacted vehicle are the same, original mass 2,1 t
2. Ego with 8 t
3. Ego with 10 t
4. Ego with 12 t

Other collision variables held constant, for example impact speed of 30 km/h

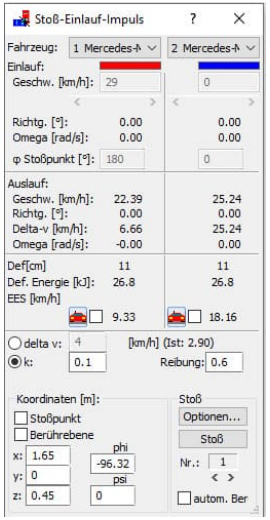
Step 2: Simulate collisions
Example results

Case 1: Ego 2,1 t



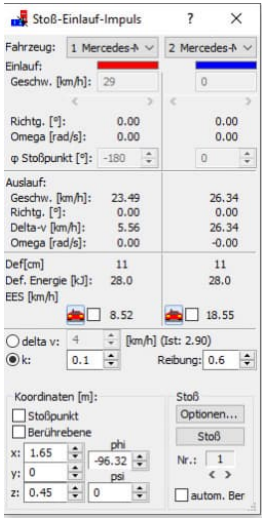
dv = 15,95 km/h

Case 2: Ego 8 t



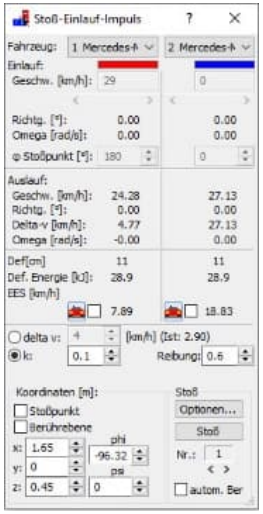
dv = 6,66 km/h

Case 3: Ego 10 t



dv = 5,56 km/h

Case 4: Ego 12 t



dv = 4,77 km/h

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Step 3: Confirm/improve trigger strategy

- In this case the triggering strategy for the EDR would have to be adjusted if the EDR was set to trigger at 8 km/h
- Other strategy than speed reduction could be used
- Strategy choice and rationale up to the manufacturer, but should be supported by a Technical Service

Thank you for your attention.

Contact details

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