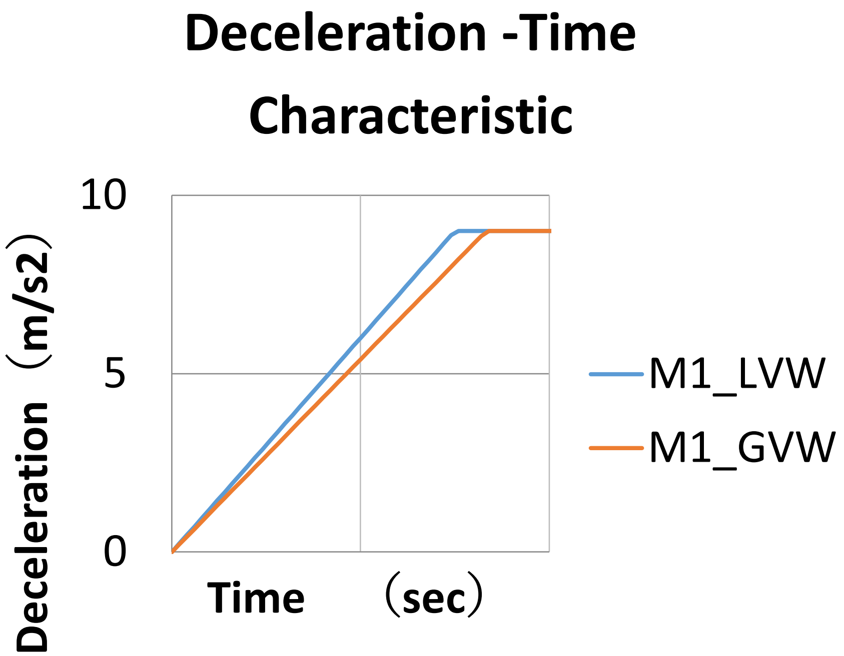
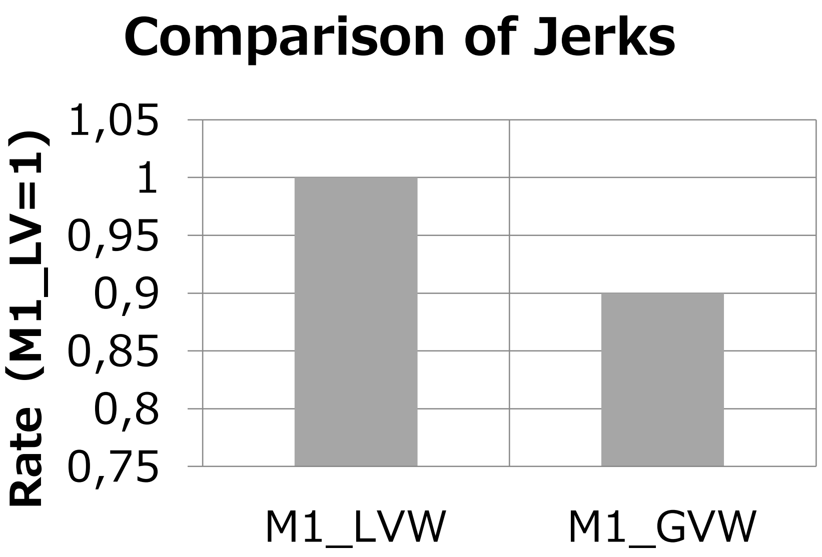
Change in performance requirements for laden vehicles:

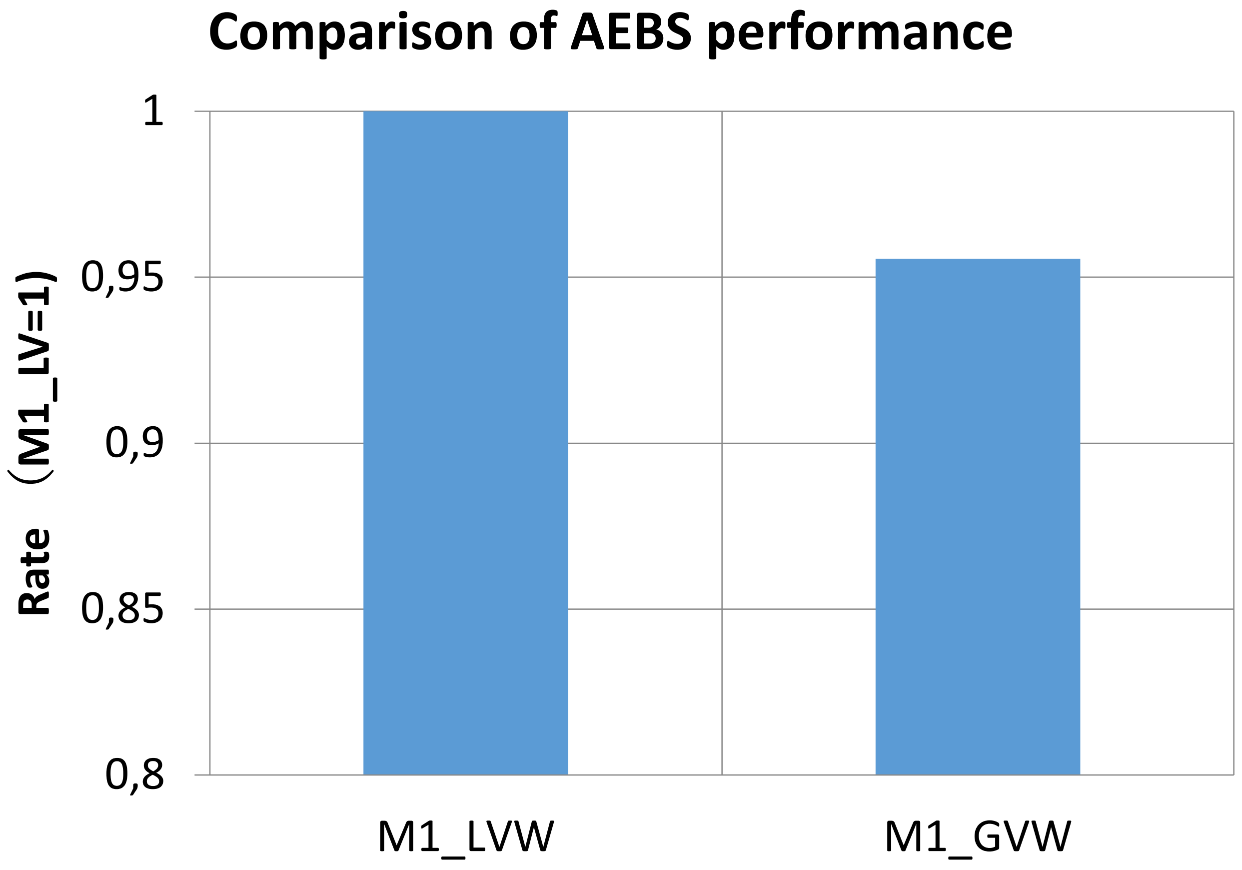




Reason for performance difference between LVW and GVW

- LVW has better deceleration performance than GVW.

Change in performance requirements for laden vehicles:



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Change in performance requirements for laden vehicles:

For M1 Category vehicles

- LVW : 9m/s² + 0,6s — 42km/h avoidance
- GVW : 9m/s² + 0,66s — 40km/h avoidance

For N1 Category vehicles

- LVW : 9m/s² + 0,6s — 42km/h avoidance
- GVW : 9m/s² + 0,73s — 38km/h avoidance

Industry will seek clarification for AEBS 07 for values used to calculate N1 revised performance

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Lateral offset of the subject vehicle

Test procedure should define a tolerance for lateral offset of +/- 0.1m.

0.5m proposed by CPs equals approximate lateral offset of 75%. Such a test has only recently been prescribed in EuroNCAP 2018 test protocol for Car to Car AEB. And should therefore not be defined in regulation yet as real world experience is too low.

Combined Test tolerances in CCRm test at +/-0.1m for subject vehicle and target vehicle. This can lead to a lateral offset of 0.2m, this should be sufficient to cover those cases that fall outside of the tolerance defined in the CCRs of +/-0.1m

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address the topic “change of the situation”

This could help us with regard to latency, object movement modelling, because it makes it clear: the system is free to react as fast as possible to a de-escalated situation in the real world.

5.1.1.

Any vehicle fitted with an AEBS complying with the definition of Paragraph 2.1. above shall meet the performance requirements contained in Paragraphs 5.1. to 5.6.2. of this Regulation and shall be equipped with an anti-lock braking function in accordance with the performance requirements of Annex 6 to Regulation No.13-H 01 Series of amendments for vehicles of Category M1 and N1 or of Annex 13 to Regulation No. 13 11 Series of amendments for vehicles Category N1.

„ Collision warning and emergency braking may be aborted on decision of the system, if it detects a very low probability of a collision. e.g. the situation de-escalates caused by changed movements of the other road user (“target”) like vehicle starts accelerating or a crossing pedestrian stops, etc.)”

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Self Check

5.1.4.1.2. Any non-electrical failure conditions (e.g. sensor misalignment) shall be detected **before** ~~after a driving time of~~ [300] seconds **of driving in a normal urban environment**.

- Related to distance travelled and the object/environment.
- Under normal driving conditions. Counter does not necessarily start directly after the ignition cycle.
- Difficult / impossible to detect failure conditions if driving off road or without other road users. e.g. Australian outback.
- Should be under 'general' not 'warning' requirements

Self Check

Alignment Methods

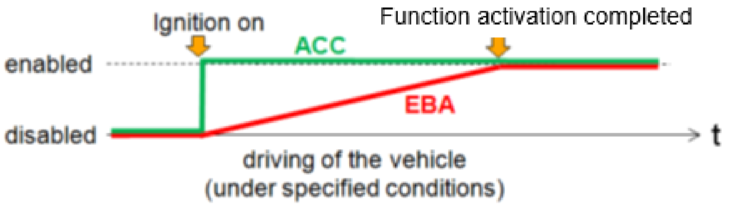
Misalignment Monitoring – function activation (safety distance)

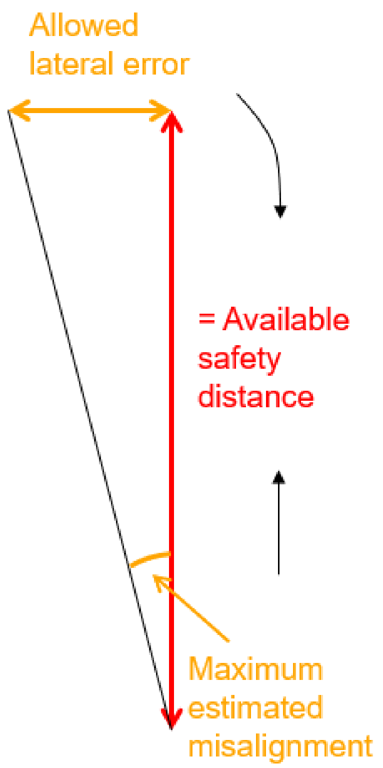
Comfort Function (ACC)

- any function not rated as safety relevant is available from start without limitations

Safety Function (EBA)

- Safety relevant functions limited to objects detected within the longitudinal „safety distance"
- safety distance is defined as that distance where the maximal expected lateral error exceeds a defined limit
- at start the safety distance is 0m
- Safety distance increases, depending on the maximal expected misalignment





Performance requirements

5.2.1.4.

Systems should not deactivate or drastically change the control strategy in other road conditions.

Replaced by

Systems shall meet the performance requirements contained in 5.2.1.1. and 5.2.1.3 of this Regulation over a wide range of road and typical environmental conditions encountered within the territory of the Contacting Parties.

Inspired by UNECE R140 5.1.1

5.2.1.3. Speed

And to amend

The system shall be active at least within the vehicle speed range between 10 km/h and 60 km/h ~~and at all vehicle load conditions~~, unless manually deactivated as per Paragraph 5.4.

Test Procedure tolerances

- Speed of subject vehicle (GPS-speed) Test speed + 1.0 km/h
- Speed of target vehicle (GPS-speed) Test speed ± 1.0 km/h
- Lateral deviation from test path for subject vehicle 0 ± 0.10 m
- Lateral deviation from test path for target vehicle 0 ± 0.10 m
- Yaw velocity of subject vehicle 0 ± 1.0 °/s
- Yaw velocity of target vehicle 0 ± [1.0] °/s

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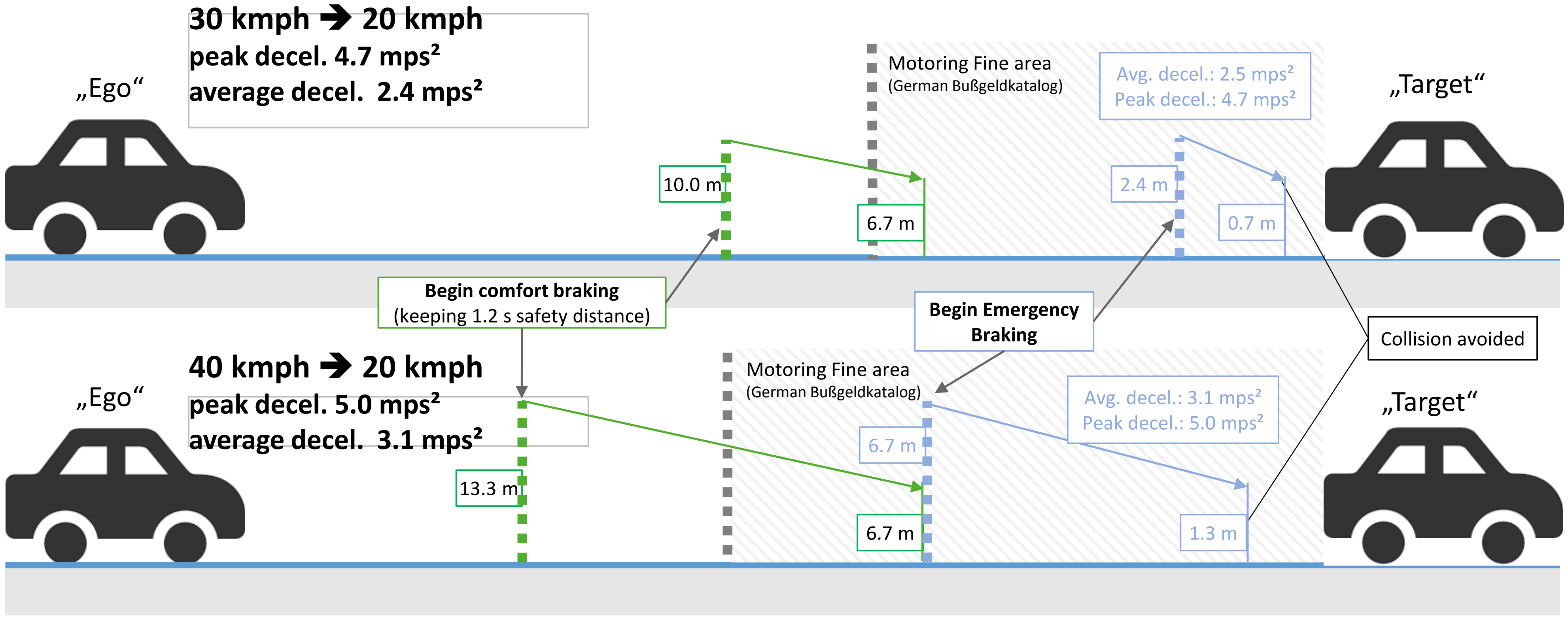
Average Braking Demand

CCRm-Scenarios: today in the market, not convenient



Nevertheless <u>those AEB are **not considered convenient**</u> – not only because of the level of the deceleration, but because of **<u>starting and ending distance of the braking phase</u>** itself.

In order to reach the demanded deceleration values the AEBS

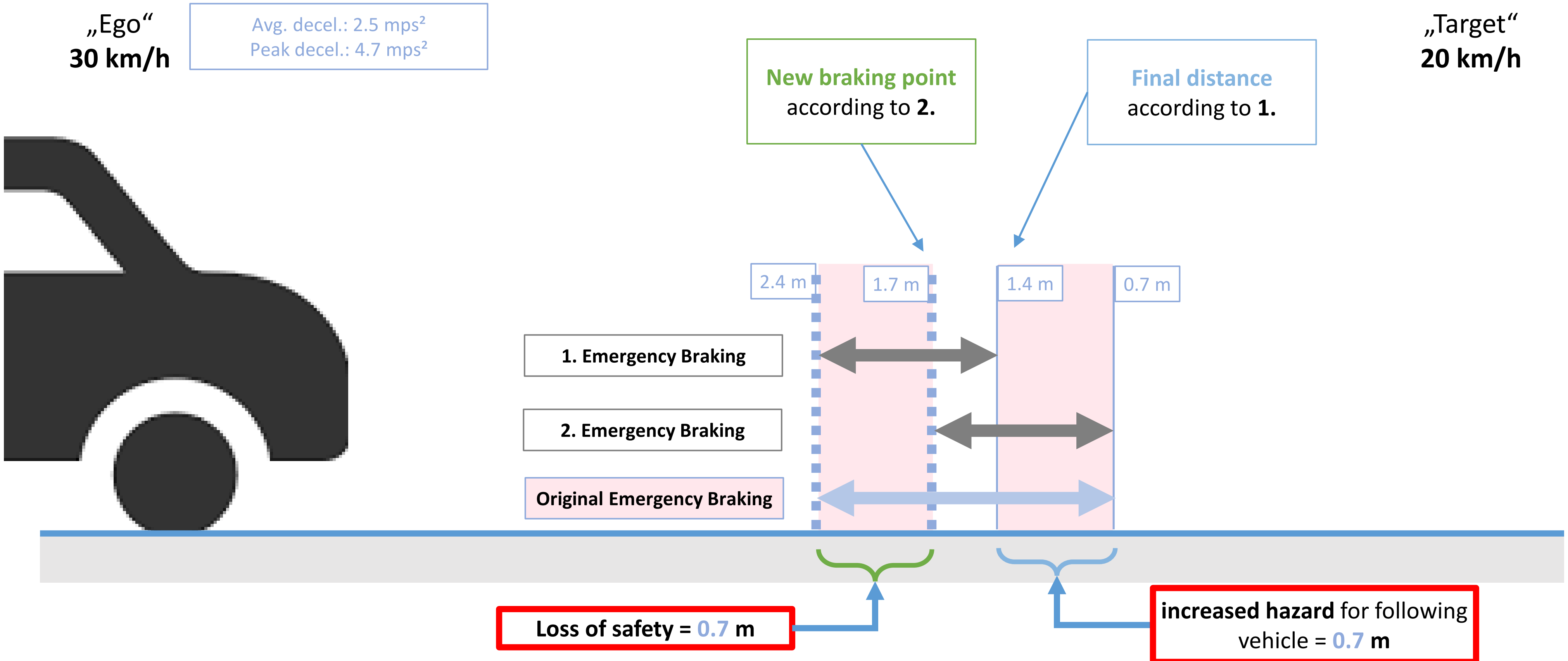
- has to **brake later** (= <u>loss of safety</u> in case of wet street, changing conditions e.g. braking target, …) **or**
- will **stop** the vehicle **in greater distance** to the target (=<u>no acceptance</u> of the customer)

AEB IWG 06 – Industry Input (Day 2)

Average Braking Demand   CCRm-Scenarios: today in the market, not convenient

Impact of demanded average deceleration (-3.8 m/s²) on emergency braking in lower speed range.

1. Keeping todays begin of emergency braking phase
2. Passing todays emergency braking point in order to keep todays final distance to target



Average Braking Demand

CCRm-Scenarios: today in the market, not convenient

Impact of demanded average deceleration (-3.8 m/s²) on emergency braking in lower speed range.

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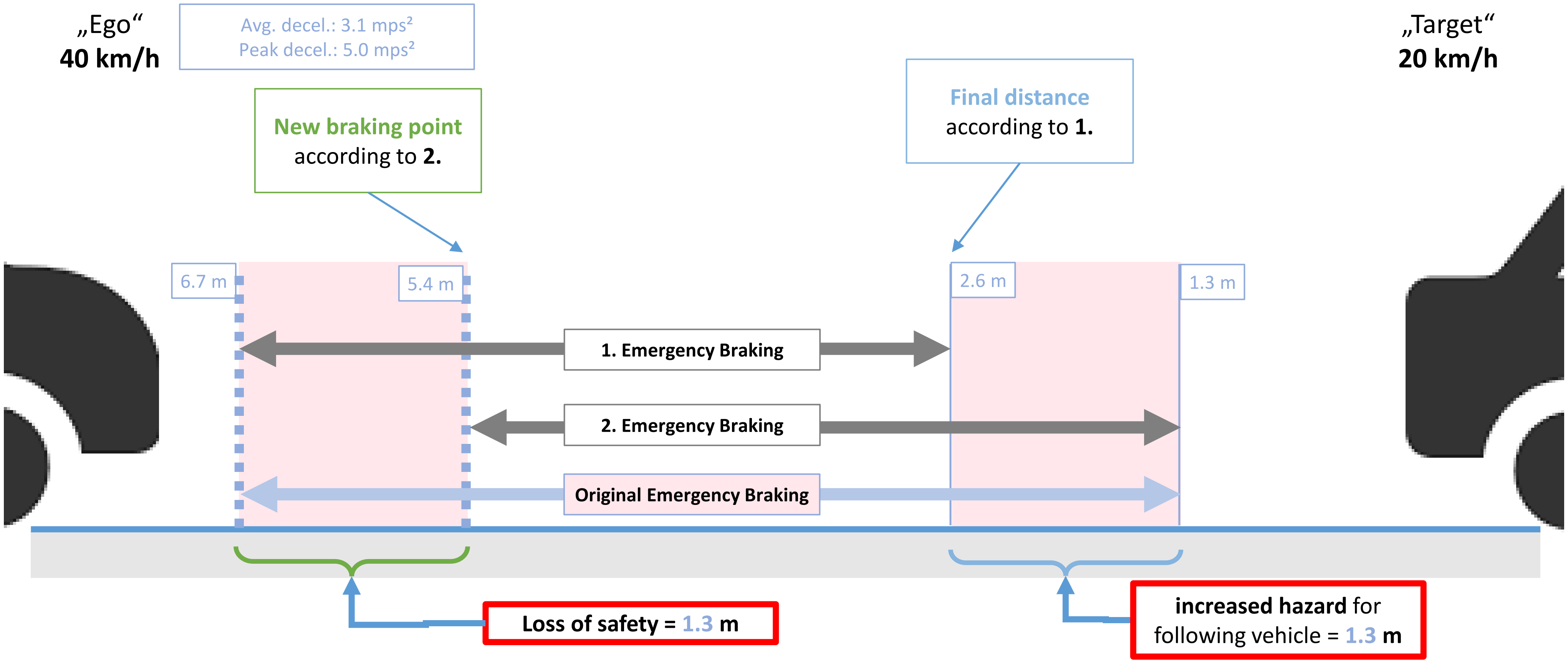

No Pedestrian impact without reducing subject vehicle speed to zero.

5.2.1.4 .....

Due to the nature of the test scenario, a vehicle may avoid a collision with a crossing target without reaching the minimum speed reduction defined in the tables above.