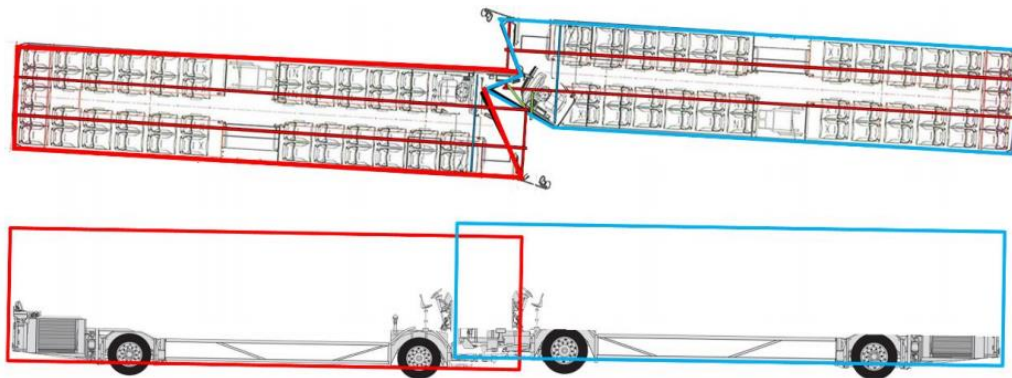


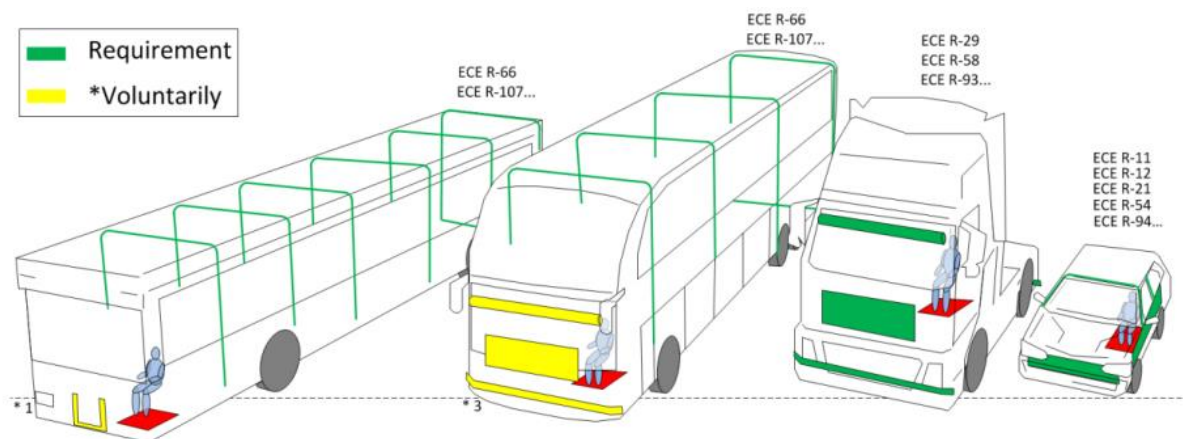
Stronger collision protection for buses: Change of ECE-66 and ECE-R107

A head-on collision between two class II buses occurred in Norway in November 2017. The Volvo 8700 buses, 2009-models, fulfilled ECE-regulations. The drivers' cabins of both buses were severely deformed, even though the collision happened with respective speeds of 33 and 34 km/h at the time of impact. The front of each bus penetrated the other by about one meter. One driver was killed instantly, the other was critically injured in the accident. Illustration of accident between the Volvo-buses, [page 10 in AIBN-report](#):



The Accident Investigation Board of Norway (AIBN) concludes that the extent of the accident was affected by low collision safety. [Their report](#) documents the need for stronger collision protection for buses. This includes both the drivers' cabin and at the front of the bus. There was also a similar accident with fatal outcome in Finland in 2015 and another accident between a class III bus and a goods vehicle in Norway in 2014. The ECE-requirements for protection are less stringent for buses than for cars and trucks.

Illustration of collision protection requirements for various vehicle groups:



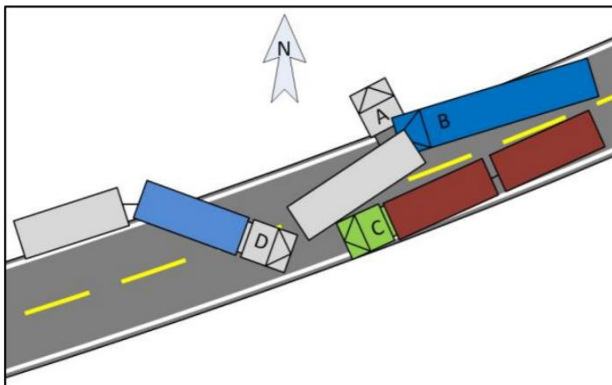
Suggestions:

- Improvement of collision protection at drivers' cabin for buses of class I, II and III.
- Improvement of collision protection in the front of the bus, minimum as for trucks (most important for class II and III buses).

Changes in ECE-66 and ECE-R107 will include all manufacturers, requiring all to implement satisfactory technical solutions, with the greatest effect to prevent fatal outcomes in future head-on collisions. The bus driver and the truck driver should have equally safe workplaces.

Changing the ECE-regulations? Statistical basis and examples

- In 2007, the Working Party on General Safety (GRSG) received a report from an international expert team on the importance of crash protection for bus drivers (GRSG, 2007). Based on the accident statistics from several countries for the period 1978–1999 and on approximately 3,000 accidents involving buses, the working group concluded that frontal collisions were the most prominent accident type. The working group stated that GRSG/GRSP should gradually implement front collision protection in more regulations.
- Head-on collision between express coach and passenger car, Finland, 4 July 2015. Conclusion from Safety Investigation Authority of Finland: “The Finnish Transport Safety Agency should propose an amendment to the E regulations to the United Nations Economic Commission for Europe's (UNECE) World Forum for Harmonization of Vehicle Regulations (WP.29) regarding the reinforcement of the front structure of heavy vehicles and the protection of their steering equipment in the event of a collision.”
- Example of collision between a bus and a goods vehicle in Norway February 2014 (illustration from investigation [report](#)):



- Example of collision between a car and a bus in Norway September 2019 (Volkswagen Up! and Volvo 8900):

