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### Economic Commission for Europe

#### Inland Transport Committee

#### World Forum for Harmonization of Vehicle Regulations

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##### Development of an International Whole Vehicle Type Approval (IWVTA) system

### **Principles for ensuring comprehensive vehicle safety in an international procedure for type approval for whole automobiles**

#### **Transmitted by the Government of the Russian Federation\***

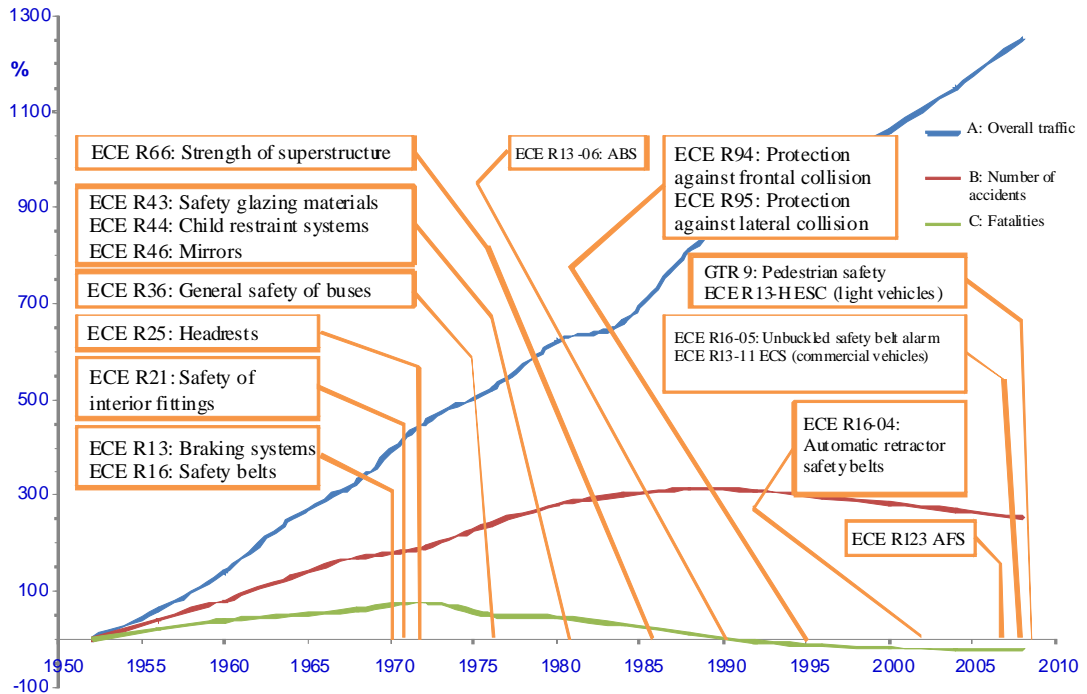
The text below was prepared by the representative of the Russian Federation to help draw up principles for the international whole vehicle type approval system. It is being transmitted for consideration to the World Forum for Harmonization of Vehicle Regulations (WP.29) and the informal working group on IWVTA.

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\* In accordance with the programme of work of the Inland Transport Committee for 2006–2010 (ECE/TRANS/166/Add.1, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance performance of vehicles. The present document is submitted in conformity with that mandate.

1. Because of the way the automobile industry has historically developed and the diversity of existing vehicle requirements, many countries now apply their own unique systems of official type approval or declaration of conformity with a set of legally established requirements. Typical examples are the type approval systems for whole vehicles in the European Union, the Russian Federation and the self-certification systems in the United States and Canada; while the nomenclature used for their requirements is quite similar, there are basic differences in procedure.
2. Globalization calls for simpler and more effective access to the markets of the various countries. The drawing up at WP.29, under the aegis of ECE, of a harmonized international whole vehicle type approval system will facilitate international harmonization of testing methods and administrative procedures, will make possible mutual recognition of conformity assessment results and will reduce costs for manufacturers.
3. The requirements established for the purposes of IWVTA should aim to reduce the risk of harm associated with the use of vehicles. This risk is understood to mean the probability that some previously defined undesirable outcomes may occur. While there is no way of directly measuring this risk, the greater the risk, the more dangerous (or less safe) the vehicle in question will be.
4. The following basic risks are associated with vehicle use:
  - (a) A biological risk owing to environmental pollution from the harmful substances contained in engine exhaust and the waste products produced during and after a vehicle's service life. Biological hazards also result from the noise pollution caused by vehicles. Unfortunately, this risk has a "delayed" effect on people and the environment as it manifests itself cumulatively;
  - (b) The risk of accidents. This is essentially a mechanical risk;
  - (c) A fire risk, as vehicles can burn;
  - (d) A risk of equipment and instrument failure owing to the effects of electromagnetic radiation from sources on the vehicles;
  - (e) An electrical risk owing to the possibility of injury from exposure to a current during use of vehicles (this relates first and foremost to electric vehicles and trolleybuses);
  - (f) Illegal use of vehicles, which obviously is associated with a risk of harm.
5. The greatest harm caused to society is related to the question of the mechanical safety of vehicles. This harm is represented by accident indices: the number of accidents or the number of fatalities or injuries. Generally, the reasons for an accident may be any combination of factors in the "driver-vehicle-road" system. Faults in vehicle construction are one factor that raises the risk of accidents. There is a mutual link between vehicle construction and the risk of harm; it may be established using indirect statistical indices of accident rates: the number of accident fatalities measured in relation to the vehicle fleet or to overall traffic.
6. An understanding of an accident as an event resulting from a driver's loss of the ability to control his or her vehicle is the basis for the design of active safety systems aimed at accident prevention. Construction measures aimed at mitigating the effects of accidents, in particular automobile body design and passive restraint systems, are based on research into the ability of humans to withstand injury.
7. The strategy for drawing up safety requirements pursued by the WP.29 World Forum consists in the effective implementation of measures to improve the safety of vehicles, reducing the number of accidents and their severity, despite growth in the automobile fleet and increases in overall traffic, as illustrated by the diagram below

(diagram 1). Since the inception of the work of WP.29, overall vehicle traffic has grown by many times, but this has not brought about a similar increase in accidents, and in the same period the accident fatality rate has even decreased, thanks to the introduction of new construction requirements for vehicle safety.



8. Vehicle safety is reflected in a vehicle's ability to prevent damage and thus reduce the risk of injury.

9. A schematic diagram showing how to ensure vehicle safety as a function of the risk of injury is presented in annex I.

10. Once the risks of injury and hazards related to vehicle use are assessed, a link can be established between them and those elements of vehicle construction that should be subject to safety requirements.

11. Such safety requirements must be objective and quantifiable. They must be neutral in respect of the technologies used. The results of their conformity verification tests and measurements must be reproducible.

12. ECE regulations are drawn up so as to meet these criteria. They can thus be used to assess conformity with IVWTA.

13. As for the list of mandatory requirements for IVWTA, the following must be taken into consideration.

14. In establishing mandatory vehicle construction safety requirements, our aim is that they should have an effect on the economy and on society, an effect that can be felt when the harm resulting from possible risks is reduced, i.e., a decline in the number of accidents, reduced severity of accidents and lesser hazards to human health, including those posed by environmental pollution.

15. Vehicle safety requirements must strike a balance of the public interests increasing the safety of both production and the economic interests of manufacturers. The manufacturers bear a social responsibility to try to produce vehicles that meet the latest safety requirements.

16. However, it must be borne in mind that meeting one or another set of safety requirements means taking measures for the design and implementation of new construction techniques capable of meeting such requirements, which raises production costs. The cost is borne at first by the manufacturer and is consequently transferred to the consumer.

17. Therefore, the list of mandatory safety requirements must respect the principle of minimum sufficiency.

18. On the whole, a comprehensive approach to drawing up the list of requirements in the IVWTA process should make it easier to reach a socially acceptable safety level with a generally high level of technology and vehicles that, in the long term, meet consumer demand. Such an approach should be based on the experience of regional and national systems for approval of conformity with safety requirements, and should include objective, reproducible testing methods and objective, mutually independent assessment criteria.

**Annex**

**Schematic diagram: Ensuring vehicle safety as a function of the risk of injury**

**Mechanical safety**

