

A European fast lane towards Vision Zero: draft amendment to the regulation of type-approval requirements

Explanatory memorandum

The proposed [new regulation of type-approval requirements \(EC, May 2018\)](#) is superb legislative work and a huge step forward for road safety. But it is, by far, not as powerful as it could be, due to regulatory procedures that the EC needs to follow. The propositions and the required [impact assessment](#) are based on studies which preceded the 'deep learning' AI big bang, the widespread availability of secure OTA, the arrival of cm-level positioning at low costs, crowdsourced high definition maps, extremely power efficient AI computing hardware, a wide array of affordable and reliable cameras and sensors and, last but not least, reliable and low-latency mobile communication.

In fact, reality has already surpassed some proposed safety targets. Entry-level cars such as the 2017 VW Polo are offering pedestrian AEB, whereas in the draft it will be mandatory for new vehicles only in 2026, more than 8 years after low cost availability. The regulatory approach of looking at the past to make decisions for the future is thus fundamentally flawed. **Regulation should look through the windscreen instead of the rearview mirror.**

The European Parliament, luckily, is not bound to extremely well-documented but also very limiting impact assessments. The EP has the [unique opportunity](#) to make the regulation a cornerstone of the **ambition to reach near 0 road deaths by 2030 in ambitious European urban regions, and EU-wide in 2040.**

There are at least two requisites to achieve this dream of 'zero crashes'.

The first requisite is that there should be only omni-sensing, intelligent and responsible vehicles on European roads, driving themselves or acting as a 'guardian angel'. These vehicles will prevent anyone, including drunk drivers or terrorists, from putting the life of a EU citizen in danger by driving irresponsibly.

The second requisite is accurate positioning and reliable low-latency communication (e.g. about position and heading) between every possible conflicting road user. If we can believe the 5G Automotive Association, this 'total knowledge' scenario will become possible around 2030, as LTE-V2X equipped smartphones can have full penetration.

As I document in detail in the [discussion paper supporting this proposal](#), the technical equipment required for Vision Zero driving will be available at societal extremely cost effective prices (BCR ~ 10) at the time the regulation comes into effect (beginning of 2022). It is, **however, only by creating a regulation-based level playing field** that Europe can maximise the full potential of this technology. As it takes about 15 years to replace the vehicles doing 90% of the European motorized kms, **we need to make every vehicle that rolls out the factory as future-proof as possible. This is only possible by innovative and generic regulation. Upcoming regulation should therefore embrace the extremely powerful concept of upgradability. This is the only way to make sure that all new regulated vehicles are 'Vision Zero ready' and that we make a smooth and fast transition towards a Vision Zero society in a cost-effective way.**

The following amendment to the new general safety regulation would therefore allow Europe to reach its ambitions on road safety and life quality much sooner than anticipated.

Proposal of amendment:

Article XX

Generic requirements to ensure vehicles are future-proof and Vision Zero ready

1. In addition to the other requirements of this Regulation, as of [PO: Please insert the date of application of this Regulation], for refusal to grant EU type-approval, and, 24 months thereafter, for the prohibition of the registration of vehicles¹, as well as the placing on the market and entry into service of components and separate technical units,

every vehicle of classes M and N, should have the potential of Vision Zero driving (which includes 'guardian' mode). For this, the vehicle either

(A)
<ol style="list-style-type: none">1) is equipped with a sensing system capable of supporting Vision Zero driving, with 360° perception for effective pedestrian and cyclist detection;2) has a robust central processing unit powerful enough for Vision Zero driving; this computer has full control of the sensing system, the remote communication device(s), the vehicle control (steering, accelerating and braking), the infotainment system, the displays and (un)locking of all the doors;3) supports secure OTA: the software responsible for vehicle sensing and control can be remotely updated over the air by the manufacturer such that all active safety technologies can be kept up-to-date with new software advances, services, protocols and legislation;4) has a communication device supporting direct and indirect reliable low-latency communication with all other road users (thus supporting communication with smartphones);5) has localisation equipment, which, possibly in combination with connected HD maps, provides reliable cm level accuracy in every urban environment;6) (in case of a vehicle with human driver) has an advanced driver monitoring system, a microphone, a speaker and a generic central display for communicating with the driver;7) is amongst other, capable of advanced ISA (where a safe speed is defined in function of real time circumstances); location and individual vehicle dependent speed monitoring or locking; prevention of dooring of cyclists
or (B)
can be upgraded (retrofitted), at no cost for the owner, with the active safety features for Vision Zero driving described in (A), at a service center, at most three years after sale.

2. The Commission will adopt delegated acts in accordance with Article 12 to define exactly what 'Vision Zero' driving encompasses. It will lay down requirements relating to the systems and other items listed in paragraph 1 of this Article, and lay down detailed rules concerning the specific test procedures and technical requirements for the type-approval of vehicles with regard to those requirements.

¹ For example, if a final regulation is approved by member states and the EP in January 2019, all new models can only be approved after January 2022 if they respect this regulation, and all new vehicles should be future-proof as of January 2024.