

**Emergency Steering Function (ESF)**  
**Industry proposal**  
**Consolidated document after 12<sup>th</sup> session**

NL-comments

Par. 2.3.4.3, 5.1.6.3.1. and 5.1.6.3.2.

*In bold blue text between the existing text*

**Draft Proposal:**

*Paragraph 2.3.4., amend to read:*

- 2.3.4. "Advanced Driver Assistance Steering System" means a system, additional to the main steering system, that provides assistance to the driver in steering the vehicle but in which the driver remains at all times in primary control of the vehicle. It comprises one or ~~both~~ **more** of the following functions:
- 2.3.4.1. "Automatically commanded steering function (ACSF)" means [...]
- 2.3.4.2. "Corrective steering function (CSF)" means [...]

*Insert a new paragraph 2.3.4.3. to read:*

- 2.3.4.3 "Emergency Steering Function (ESF)" means a control function which can automatically detect a potential collision and activate the vehicle steering system, to steer the vehicle with the purpose of avoiding or mitigating a collision.**

**within an electronic control system whereby, for a limited duration, changes to the steering angle of one or more wheels [may] result from the automatic evaluation of signals initiated on-board the vehicle, in order to assist the driver in avoiding or mitigating a collision with:**

- i. another vehicle driving/\* in an adjacent lane,
  - a. drifting towards the path of the subject vehicle and/or,**
  - b. into which path the subject vehicle is drifting and/or,**
  - c. into which lane the driver initiates a lane change manoeuver.****
- ii. an obstacle obstructing the path of the subject vehicle or when the obstruction of the subject vehicle's path is deemed imminent.**

**ESF shall cover one or several use cases from the list above.**

*/\* the vehicle may be driving in the same or the opposite direction as the subject vehicle.*

**NL-proposal:**

- 2.3.4.3 "Emergency Steering Function (ESF)" means a control function which can automatically detect a potential/imminent collision and activate the vehicle's steering system to steer the vehicle with the purpose of avoiding or mitigating a collision.**

**Justification:** *This definition is based upon the definitions for AEBS (R131). The aim of ESF is the same as that of AEBS: avoiding a collision.*

*Insert a new paragraph 5.1.6.3. to read:*

- 5.1.6.3 Provisions for ESF  
Any ESF shall fulfil the following requirements.**
- 5.1.6.3.1. ESF shall only start an intervention in case a risk of a collision is detected.**

NL proposal par 5.1.6.3.1, ...3.3. and ...3.4:

When the ESF has detected [an imminent / the possibility of a] collision with other traffic or objects an optical and acoustic warning shall be given. Subsequent to the warning there shall be an emergency steering phase having the purpose of avoiding the collision.

The emergency steering phase shall not start before a TTC equal or less than [2,0] seconds.

[The warning may be given at the latest when the emergency braking phase starts.]

*Justification:* With this text the paragraphs 5.1.6.3.1, ...3.3. and ...3.4 are combined into one paragraph.

*To prevent overreliance ESF should not start before the latest point of steer. That is very short before a collision. In that way the driver will not get used to the steering by the ESF and will not rely on it. Above that such an ESF is not comfortable. We should any how prevent that an ESF could be misused as a comfort system. Therefore we need a value for TTC. Anyhow the ESF-systems must take TTC into account to be able to determine the moment when to start intervening. With the re-introduction of TTC we can be more liberal with regard to the kind of steering actions which the ESF performs. TTC assures that ESF is a real emergency system. The remaining requirements are related to the fact that ESF-actions shall not endanger other road users.*

5.1.6.3.2. An automatic avoidance manoeuvre initiated by an ESF shall not lead the vehicle to cross a lane marking unless the target is to come back into the original lane for avoiding a collision.

Any vehicle fitted with ESF shall be equipped with means to detect lane markings and to monitor the driving environment.

The system shall monitor the driving environment at any time the ESF is active, with the aim not to endanger other road users.

NL comment: add “with the aim not to endanger other road users” to last sentence of par. ....3.2.

*Justification:* The aim of the monitoring should be mentioned to assure that the actions of the ESF-system don't cause accidents which would not happen without the ESF.

~~5.1.6.3.3. Any intervention of ESF shall be indicated to the driver with an optical and an acoustic warning.~~

~~[5.1.6.3.4. When a risk of collision has been detected by the system, an optical and an acoustic warning shall be provided at the latest when the intervention starts. The same warning(s) as in paragraph 5.1.6.3.3 may be used.]~~

NL comment: par 5.1.6.3.3 and ...3.4. integrated in proposed par. 5.1.6.3.1.

5.1.6.3.5. A system failure shall be indicated to the driver with an optical signal. [However, when the system is manually deactivated, the indication of failure mode may be suppressed.]

5.1.6.3.6. The steering control effort necessary to override the directional control provided by the system shall not exceed [50 N].

5.1.6.3.7 The ESF shall be subject to the requirements of Annex 6.

**5.1.6.3.8** The vehicle shall be tested in accordance with the relevant vehicle tests specified in Annex 8 of this Regulation.

**5.1.6.3.9.** System information data

The following data shall be provided together with the documentation package required in Annex 6 of this regulation to the Technical Service at the time of type approval:

- Use case(s) where ESF is designed to operate (among the use cases i.a, i.b, i.c and ii. specified in the ESF definition);
- The conditions under which the system is active, e.g. the vehicle speed range  $V_{smax}$  ,  $V_{smin}$ .
- How ESF detects a risk of a collision.
- [ How to deactivate/reactivate the function ]