Emergency Steering Function (ESF)
Industry proposal

Background:

During the 8th meeting of ACSF informal group in Stockholm, it was decided that all functions to „assist the avoidance of a collision" should be excluded from the scope of CSF. The agreement in the group was to create a new definition for „Emergency Steering Functions (ESF)" and define new specific requirements. At GRRF-82 of September 2016, this work was agreed to be done within the frame of the second step of the ACSF informal group, targeting an adoption at GRRF 83rd session of January 2017.

Objectives:

- Define ESF.
- Specify requirements and tests, beyond Annex 6 to R79.
- Prevent ESF from being type approved as CSF or ACSF B1.
- Prevent ESF from being misused as an ACSF.

Basic principles:

- ESF is defined under ADASS umbrella, on the same level as CSF or ACSF.
- ESF assists the avoidance of a collision [in emergency situation]
- ESF can be implemented as a standalone function on the vehicle, or be coupled with other CSF and/or ACSF function(s).

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 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 a collision with e.g.:

**   i.   another vehicle driving on an adjacent lane, during a lane change manoeuver initiated by the driver;**

**   ii.   another vehicle in an adjacent lane**

**   a.   drifting towards the path of the vehicle and/or**

**   b.   into which path the subject vehicle is drifting.**

**   iii.   an obstacle obstructing the path of the subject vehicle or when the obstruction of the vehicle's path is deemed imminent.**

Insert a new paragraph 5.1.6.3. to read:

5.1.6.3   **Provisions for ESF systems**
Any vehicle fitted with an ESF complying with the definition of paragraph 2. of this regulation shall meet the following requirements.

5.1.6.3.1.   The ESF shall only intervene in case a risk of an imminent collision is detected.

5.1.6.3.2.   An automatically initiated ESF intervention (i.e. not initiated by the driver) shall not lead the vehicle to cross a lane marking. However, if the ESF intervention is initiated by a driver action on the steering control, the vehicle may cross the lane marking.

5.1.6.3.3.   Every intervention of ESF shall be indicated to the driver with an optical and an acoustic warning. In the case of an avoidance manoeuver initiated by the driver, the ESF intervention may be indicated by one warning only, either optical or acoustic.

5.1.6.3.4.   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. This requirement shall be tested in accordance with the relevant vehicle test specified in Annex 8 of this Regulation.

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

5.1.6.3.8.   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;**
- **The conditions under which the system is active, e.g. the vehicle speed range V_{smax} , V_{smin}.**