81st GRRF session
French views on ACSF

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Options for a specific regulation approach on combined systems

A combined system approach?
Overarching the « longitudinal » + « lateral » + « field of vision » + other UN-ECE regulations involved

Based on use cases?
Adressing relevant speed + infrastructure operating environments (park, low speed during eg traffic jam, high speed on motorway)

Based on a reference taxonomy of drivers’ attitudes (link to SAE levels)?

Allowing tests of critical failures, based on a reference risk analysis / matrix

Independent of technologies (on vision + location + communication)
But, possibly, based on a reference indicative level of data quality / precision
ACSF Terms of Reference

The informal group shall review the requirements and limitations associated with Automatically Commanded Steering Function technology (ACSF) as defined in Regulation No. 79. It shall prepare a draft regulatory proposal regarding advances in control system technology and the transport opportunities provided by the Vienna and Geneva Conventions.
Definition ACSF

"Automatically commanded steering function" means the function within a complex electronic control system where actuation of the steering system can result from automatic evaluation of signals initiated on-board the vehicle, possibly in conjunction with passive infrastructure features, to generate continuous control action in order to assist the driver in following a particular path, in low speed manœuvreuring or parking operations.
Reminder

• The group will focus on systems for vehicles of categories N and M (See ToR)
• REG 130 (LDWS) and REG 131 (AEBS) currently apply to N2-N3 and M2-M3 categories
• REG 46 and REG 125 deal with forward and reward indirect vision and currently apply to N and M categories
French proposal ACSF-04-03 (1)

- Modify REG 79 only to authorise activation of the steering system through continuous control action for the management of the sole lateral movement of the vehicle in:
  - Category A ACSF means, a function that operates at a speed no greater than 10 km/h to assist the driver, on demand, in low speed lateral manoeuvring or parking operations.
  - Category B ACSF means a function which is initiated/activated by the driver and which keeps the vehicle within its lane by influencing the lateral movement of the vehicle.
  - Category C ACSF means, a function which can perform a single lateral manoeuvre (e.g. lane change) when commanded by the driver.
Other **single** functions than lateral

- Include in REG 131 provisions for AEBS, [ACC], needed for forward longitudinal management
- Include in REG 125 and REG 46 provisions for forward and reward indirect vision
- Include in REG 48 provisions for automated activation of lightning devices
- Etc…
For **combined** systems including lateral and longitudinal management, discernment of the environment, monitoring of driver availability, create new regulations with different requirement levels based on use cases:

– Park Assist or Valet Parking
– Traffic Jam Assist or Traffic Jam Pilot
– Highway Assist or Highway Pilot
Principle

Combined system

Longitudinal

Lateral
R79

Field of vision
R125 + R46

FCW  AEB R131  ESC R13-H  ACC  CC  ACSF-A  ACSF-B  ACSFC  ACSF-D  ACSF-E
  Forward  Reward  Lateral
Park assist #1

Single Function (ACSF-A)

The vehicle has delegation to steer. The driver must continue to discern the environment, accelerate, shift gears and brake.
Lane Keeping Assist

Single Function (ACSF-B)
The vehicle has delegation to maintain in lane
The driver must continue to accelerate, shift gears and brake

Longitudinal

Lateral

Field of vision
R125 + R46

FCW
AEB R131
ESC R13-H
ACC
CC
ACSF-A R79
ACSF-B R79
ACSF-C R79
ACSF-D
ACSF-E
Forward
Reward
Lateral
Lane Change Assist

Single Function (ACSF-C)
The vehicle has delegation to steer. The driver must continue to discern the environment, accelerate, shift gears and brake.
Park assist #2

Combined Function

The vehicle has delegation to discern the environment, steer, accelerate, shift gears and brake

Longitudinal  Lateral  Field of vision
FCW  AEB R131  ESC R13-H  ACC  CC  ACSF-A R79  ACSF-B R79  ACSF-C R79  ACSF-D  ACSF-E  Forward  Reward  Lateral
Traffic Jam Assist

Combined Function

The vehicle has delegation to discern the environment, maintain in lane, change lane, accelerate, shift gears and brake.

Longitudinal

FCW  AEB R131  ESC R13-H  ACC  CC  ACSF-A R79

Lateral

AEB R79  ACSF-B R79  ACSF-C R79  ACSF-D  ACSF-E  Field of vision  R125 + R46

Forward  Reward  Lateral
Highway Assist

Combined Function
The vehicle has delegation to discern the environment, steer, accelerate, shift gears and brake

Longitudinal
Lateral
Field of vision
R125 + R46

FCW  AEB R131  ESC R13-H  ACC  CC  ACSF-A R79  ACSF-B R79  ACSF-C R79  ACSF-D  ACSF-E  Forward  Reward  Lateral
Thanks for your attention