Submitted by the Co-Chairs of the IWG on ACSF

Informal document **GRVA-01-37**
1st GRVA session, 25-28 September 2018,
Agenda item 6(d)

Status of the Informal Working Group on ACSF

Summary of ACSF IWG Meetings – 17th, 18th and 19th Session

Report of GRRF 86

- ECE/TRANS/WP.29/GRRF/86 (extract):

  47. GRRF agreed that the **Category B2 shall be considered in the context of SAE level 3 or 4 as a first priority**. **GRRF reviewed in detail the presentation and provided recommendations to the IWG on ACSF on the basis of GRRF-86-20-Rev.1 as reflected in GRRF-86-36**. Noting the ambitious deadline for the group and the number of tasks, GRRF's recommendations included among others the establishment of tasks forces that would work through Web Conferencing in order to make progress before the next session of the IWG on ACSF scheduled in April 2018. GRRF also identified bodies that could develop provisions on transversal issues, not necessarily in the remit of GRRF under the current mandate.

GRRF focus: ACSF of Category B2 as "SAE Level 3"

Given the short deadline:

GRRF proposes to cluster items and assign them to some task forces

(Items 4, 8, 9, 10 may already be / could be handled by other groups)

1. General considerations / establish the limits of the system – GRRF
2. Operational design domain (ODD)
3. Dynamic driving tasks
   a. Dynamic control of the vehicle
   b. Manual override
   c. Transition procedure (and period), linked to driver monitoring
4. System reliability ("Annex 6" + testing + redundancy considerations)
   Focal point: United Kingdom
5. Minimal risk maneuver (once limits of system are established)
6. Information to the driver
7. Driver availability recognition / Driver monitoring
8. Recording of information / DSSA – (Consult WP.29)
9. Cyber-security – Focal point: TF on CS/OTA
10. Periodical technical inspection (PTI) – Focal point: Sweden

Schedule of IWG on ACSF

- 17th session of ACSF IWG was held from 11th to 13th in April 2018 in Ivry-sur-Seine (FR)

- 18th session of ACSF IWG was held from 6th to 8th in June 2018 in Den Haag (NL)

- 19th session of ACSF IWG was held from 5th to 7th in September 2018 in Paris (FR)

- 20th ACSF IWG is planned from 7th to 9th in November 2018 in UK

- 21th ACSF IWG is planned in the week of 14th January (place T.B.D.)

Main discussion points

1. General considerations

2. Operational Design Domain: now referred to as "General System Classification" in ACSF IWG

- There were discussions that automated driving systems shall cope with all conditions, such as environmental conditions, road conditions, traffic law. This expectation is seen as a general requirement.
- There was an opinion that common conditions, under which automated driving systems shall operate without transitioning control back to the driver, should be stipulated.
- There was a proposal to classify automated driving systems. Automated lane keeping functions are part of this classification.
- Possible definition of classes was proposed.
  - Classes based on the use cases (Highway, Interurban, Urban, Parking)
  - Classes based on the functions (lane-keeping with longitudinal control and lane change, lane-keeping with longitudinal control)
  - Classes based on the speed range [km/h] (e.g. 0-130, 0-60, 60-130)
- Those above are still under discussions.

3. Dynamic driving tasks – Dynamic control of the vehicle

- Fundamental concept of dynamic control of the vehicle was agreed.
  - The activated system shall cope with all dynamic driving tasks with any situation, or shall otherwise transition to the driver offering sufficient lead time.
  - The activated system shall keep the vehicle inside its lane of travel and ensure that the vehicle does not cross any lane marking.
  - The activated system shall control the longitudinal speed of the vehicle, and shall adapt the vehicle speed to infrastructural and environmental conditions (e.g. narrow curve radii, heavy rain).

3. Dynamic driving tasks – Manual override

- Main discussion points on manual override (still under discussion)
- A steering input of the driver shall **deactivate the system**.
- A braking demand by the driver shall have priority over the longitudinal control function of the system.
- An acceleration demand by the driver may have priority over the longitudinal control of the system. However, such a demand shall not cause the speed of the vehicle to exceed the operational speed as determined in accordance with this regulation.

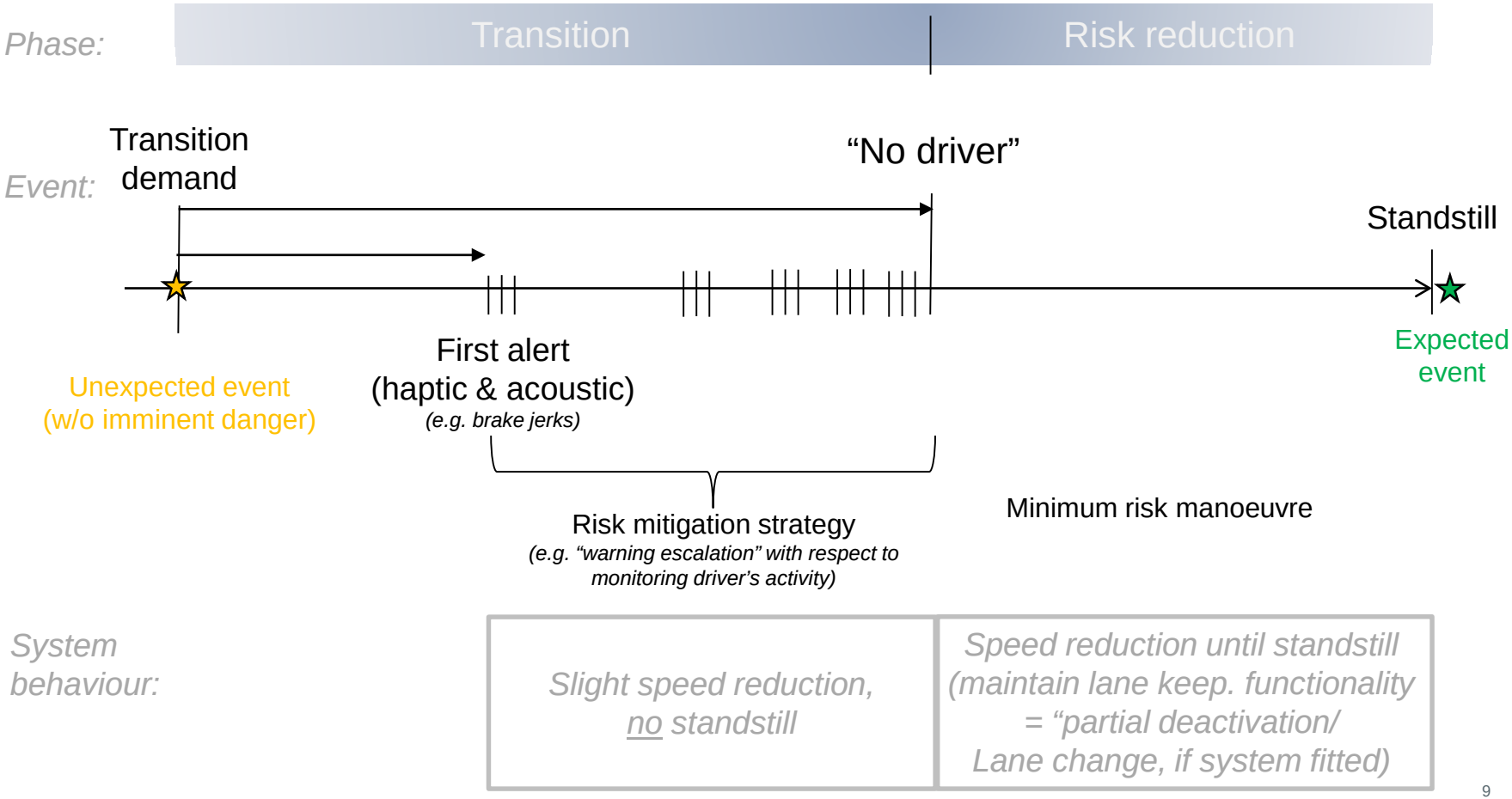
3. Dynamic driving tasks – Transition procedure

- Regarding the transition from the automated driving system to the driver, several researches were presented.

- ACSF-16-08 - Rev.1 “Take Over Request for Level 3_systems” from OICA
- ACSF-17-07 “Results of the Study on Transition for level 3 Automated Driving system” from Japan
- ACSF-18-08 “Results of the Study on Transition for level 3 Automated Driving system” from France
- ACSF-18-09 “Take-over time comparison by Demographics, Behavior, and Warning strength” from Korea

3. Dynamic driving tasks – Transition procedure
5. Minimal Risk Manoeuvre

- Basic concept of system behavior was agreed.



6. Information to the driver

- Basic concept was discussed, and more detailed requirements are still under discussion.

- the system status “active” by at least an optical signal,
- any failure of the system by at least an optical signal,
- transition [demand / period] by an optical signal and either an acoustic or a haptic signal,
- minimum risk manoeuvre by an optical signal and either an acoustic or a haptic signal and
- emergency manoeuvre by an optical signal and either an acoustic or a haptic signal.

7. Driver availability recognition / Driver monitoring

- Basic concept was discussed, and more detailed requirements are still under discussion.

- Driver not present in the driver seat
- Driver not available to take over the driving task

- Industry introduced the current technology of monitoring driver's eye gaze and eye lid movement by using the interior camera (ACSF-19-04).

Amendment of UN-Reg. No. 79 or New Regulation?

- ACSF IWG recognizes that an automated lane keeping system with its high level of automation is not an assisted, but an automated driving function. Whereas UN-R79 doesn't apply to a system with which "the driver will not necessary be in primary control of the vehicle" as defined in para. 2.3.3. of UN-R79.

- ACSF IWG recognizes that UN-R79 is dedicated to "Uniform provisions concerning the approval of vehicles with regard to steering equipment".

- ACSF IWG at its last meeting briefly discussed and reviewed a draft proposal for possible structure of a new UN Regulation for automated driving systems.

- ACSF IWG recommend to establish new regulation rather than to amend UN-R79 to integrate the automated lane keeping system as an "automatically commanded steering function" (ACSF of Category B2).

ACSF IWG seeks guidance from GRVA

IWG ACSF Terms of Reference - Update

- ACSF IWG prepared proposal for amendment of Terms of Reference.

"7. And then the target completion date for the IWG work on automated lane keeping function on highway ~~[on ACSF Category B2 and on further consideration whether ACSF Category C2 is necessary]~~ shall be the second ~~eighty- eighth~~ session of GRVA in January ~~GRRF in February~~ 2019.

8. The IWG will make recommendations as to whether the requirements for automated lane keeping technology could be introduced as a further amendment to UN Regulation 79 or should be introduced in a new UN Regulation. The final decision on regulatory proposals remains with WP.29 and the Contracting Parties."

Summary

- ACSF IWG discussed all items raised at the previous session of GRRF (except those handled by other groups).
- Amendment of ToR is presented for the consideration by GRVA.
- ACSF IWG seeks guidance from GRVA on the future direction of ACSF IWG, including whether to establish a new regulation or to amend UN-R 79 for the automated lane keeping system.