DRAFT REPORT

GRRF Ad-hoc Meeting

Lane Keeping Assistance System (LKAS)
Automatically Commanded Steering Function (ACSF)
Remote Controlled Parking Assistance System (RCP)

23-24 October 2014
OICA offices
4 rue de Berri
75008 Paris

0. Election of Chairman and Secretary

The new delegates introduced themselves.
Chair: Mr. Gunneriusson (S) and Mr. Hirose (J)
Secretary: Mr. Fontaine (OICA)

1. Welcome and Introduction – Chairman

a. Short summary of last GRRF

The Chair summarized the debates that took place at the 78th session of GRRF. GRRF agreed that the two subjects of LKAS and ACSF should be part of the discussions within this adhoc group.

- LKAS: still some few elements to be finalized.
- ACSF: it may happen that GRRF proposes that the group becomes a regular “informal group”.
- RCPS (Remote Control Parking system): J keen to add guidelines.

Status of the group: adhoc vs. informal. Some input are expected from the WP29 session of November. OICA supported that the question of an informal group will be raised as the subjects can extend to lots of different technologies.

b. Purpose and tentative Time line of this ad-hoc group

i. LKAS and ACSF.

The group agreed to limit its work to the steering function (lateral control of the vehicle).
NL found that LKAS does not need an informal group because it is rather a matter of clarification of the current situation (lots of such products are already on the market). However, ACSF is a rather big step in technology and challenges, hence an informal group may be more appropriate.

ii. Vienna Convention and ITS informal group

A debate took place on the necessity to take into account the revised version of the Vienna Connvention. Yet, it was recalled that the Vienna convention is not yet ratified and it would not be wise to make premature decision.
J informed that ITS informal group at WP29 is producing draft Terms of Reference on automated vehicles:

- 1st step limited to “driver in the loop”,
- 2nd step extedned to “driver out of the loop”.

It will hence be a step by step approach, compatible with the approach proposed for the ad-hoc group.
The Chair recalled that some ideas in the frame of TTIP (Transatlantic Trade and Investment Partnership) appeared in favour of a possible GTR related to autonomous vehicle.

iii. Levels of automation

OICA clarified that Industry has currently no intention to discuss self-driving vehicles (autonomous vehicles), rather focusing on automated vehicles, i.e. discontinuous and continuous control. Only these vehicles can be regulated within UN R79.
The group convened that autonomous vehicles are not in the scope of the adhoc group:

- It was suggested that some definitions are updated in the regulation, such that they are not in contradiction with the comon understanding of autonomous driving.
- In addition, “driver in the loop” is key to the discussions, as well as monitoring of the driving task by the driver.
- Definitions of CSF and ACSF include the wording “primary control” (see paragraph 2.3.4. od UN R79) and such wording may be source of confusion. OICA was keen to limit the discussions to the technical part, i.e. not touching items like e.g. legal aspects or driver’s behaviour. Thus, it was suggested that the group limit its work by assuming that the driver is present and monitoring the main driving tasks. OICA then clarified the difference between level 2 and level 3:
    - in level 2, the driver is assumed to be always and continuously in control and monitoring the driving tasks, while
    - in level 3, the driver is not, i.e. he may be temporarily performing another task, while assumed to be always capable of resuming control.
- CLEPA suggested to open the scope further to “level 3” such that the Industry target of introducing automated vehicles within the decade be achieved.
- The European Commission was open that the driver be out of the loop as long as the vehicle “is aware” that the driver is not in the loop.

OICA stressed that amendments to UN R79 could permit to pave the way toward amendments to national legal system in order to permit vehicle and use per level 3.
CLEPA showed a presentation:

- “the system of the future”, which shows a combination of existing systems, slightly improved (see document LKAS-02-06).

- Under the system manufacturer point of view, level 2 can be limited to the compliation of existing systems, functionning as failsafe systems, i.e. in case of failure, the driver takes control.
- However, for level 3, the systems must be re-designed such that in case of fail, the systems enters into a degraded mode. Because of this need for re-design, addressing level 3 in necessary ASAP.

It was suggested that the group limit its debates to level 2 at least temporarily, and see during the discussions what can be related to level 3.
NL supported to limit the group to level 2 for the time being.
Yet it was clarified by CLEPA that the Industry target is to achieve provisions for level 3.
OICA pointed out that the assumption of driver's awareness per level 2 cannot be guaranteed by the manufacturer, hence additional safeguards per level 3 makes sense in the perspective of safety.
The European Commission pointed out that the results of the group should not last too much because that could prevent Industry from transitional period. Further development, beyond level 2, could be run in parallel, and provide results later. As UN R79 is mandatory in the EU.

The Chair summarized that

- Driver in the loop as a 1st step
- Other levels as a 2nd step
- Timeline for LKAS according to the table Annex 1, i.e. official document to be tabled by the adhoc group at 79th session of GRRF in February 2015.

2. LKAS

GRRF-78-05, GRRF-78-11, CLEPA comments (LKAS-02-03), LKAS-02-04, J input (LKAS-02-02)

J presented document LKAS-02-02 as the results of the discussions that took place at GRRF-78, where the Chair requested wording improvements, and the status of the system as "ready to intervene".
NL questioned the case when the system is intervening then the markings disappear, hence the LKAS turns to switched-off status. NL was of the opinion that, in that case, the LKAS should continue warning after it is turned into switched-off status.
CLEPA recalled that the group agreed that the driver is assumed to be monitoring the driving tasks.
OICA presented the OICA input amending GRRF-78-11. This document was amended by the group as follows (changes can be found in document LKAS-02-04):
Paragraph 5.1.6.2.:

- The European Commission challenged a reference to paragraph 5.1.1., as unnecessary as paragraph 5.1.1.should anyway be fulfilled. The expert nevertheless found the original text clearer than the OICA proposal.
- A debate took place on the wording "fade out in a progressive manner":
    - Redundant hence confusing statement (repetition of paragraph 5.1.1.)
    - No time or moment figure available from Industry

    - As the technology is still rather immature for being regulated, J found that general requirements should be preferred to precise figures
    - Yet the OICA proposal refers to figures currently existing in UN R79
    - The system is not designed to work in tight curves, rather in “highway conditions”.
- J could support the proposal from OICA; yet the expert wanted to ensure whether the Technical Services could assess the system under such wording.

Conclusion paragraph 5.1.6.2.: the group agreed on a final wording (see LKAS-02-04 sent to the group as ECE-TRANS-WP29-GRRF-2015-XXe (LKAS adhoc group) R79 draft LKAS V1).

Paragraph 5.1.6.5.:
NL challenged the wording “in primary control”.
A debate took place on this wording:

- NL keen that the system does not become automatically commanded steering sold as an LKAS, hence suggested that the system gives up control after some time (as requested by the J guidelines).
- The system can ensure that the driver IS in the loop, yet cannot ensure that the driver IS NOT in the loop; even when all the phisionomical characteristics of the driver are monitored by the system, it cannot guarantee the that the driver is attentive. The driver can have the hands on the steering wheel, be attentive and nevertheless be detected as inattentive because providing no input to the wheel.
- J informed that the J guidelines do leave the door open to future detection technology. J is keen not to prevent any future technology.
- OICA raised the case of a system detecting driver’s drowsiness w/o driver’s hands surveillance, e.g. by monitoring the number of LKAS interventions. Some systems use the intervention as a part of the warning and of the detection. OICA was keen that such basic systems are not prohibited.
- Limited duration of LKAS operation was challenged:
    - Would jeopardise sophisticated systems
    - Would not prevent from misuse
    - Current manual steering system also do not prevent the driver to leave the steering wheel
    - The nature of the function is that is is non continuous, but is designed to function with no time limit.

J proposed to accept the SDG original text, because the proposal from OICA could not make unanimity.

- Question about whether the key critrerion is the misuse or the driver’s inattention.
    - Manufacturers: the target is to address misuse and overreliance generated by the system, rather than monitoring driver’s attention in all situations. The latter would be a much wider scope than only LKAS. OICA was of the opinion that the group should focus on the effect of LKAS only.
    - Contracting Parties: driver’s inattention (a regulation never prevents foolish drivers from having strange behaviours)

NL and the representative of the European Commission proposed the following wording:

"*5.1.6.5. The system Lane Keeping Assistance System shall have at least 1 type of means to detect driver attention e.g. by sensing the driver's hands on the steering wheel. When the system is available and detects inattention of the driver, it shall give an effective warning, which shall be at least two means out of optical, acoustic and appropriate haptic, until the driver is attentive again*."

OICA and CLEPA challenged this wording as it would generate a lot of unwanted alarms in the vehicles. The wording would lead to a detection system, i.e. covering a far more extended scope than LKAS.

After subsequent discussions, the group arrived to the following conclusion:

- Process:
  - Secretary to send to Contracting Parties and Industry OICA approach text with the 3 options
  - All to answer with their preferred option to Secretariat before 15 November 2014
  - Secretariat to table official document to GRRF-79 as an official document with the 3 options
  - Final decision to be done by the group at its next meeeting on 16-17 December at the European Commission.

3. ACSF

J presented the document LKAS-02-05, proposing amendments to GRRF-78-14 for introduction of ACSF provsions into UN R79.

a. <u>Presentation of ACSF (OICA/CLEPA)</u>

Construction site assist system (Video presentation per LKAS-02-06): Driver assist system which supports the driver in order to centre the lane path. Possibility of making the driver aware of system intervention before and during the intervention.
The Chair informed that some road authoritties do not like center lane assist systems because they concentrate the trafic in the centre of the lanes, hence that part of the road surface would be faster damaged.
The European Commission welcomed LKAS-02-05 as automatic driving is a subject that is currently discussed at EU level, yet found that the subject goes a bit beyond the usual Type Approval regulations.
CLEPA also welcomed the document
OICA presented a short PPT presentation on lane changing maneuvre on highways. The driver must voluntarily activate the system.
OICA supported CLEPA, and supported opening UN R79 to this technology.
NL found the document a good starting point but found necessary to get more precise requirements.
J pointed out that the requirements can be different according to the systems. The expert recalled that the aim is to maintain road safety via an "if fitted" regulation. He acknowledged that this proposal mainly provides design requirements.

The Chair, as S representative, found it a good start: lane keeping and lane changing system.
J found lane changing assist a very important system and was keen to put the necessary resources to provide the relevant requirements, primarily focusing on

highway situation. The expert wondered whether such system, in particular for emergency lane change, are covered by the Vienna Convention.
OICA made the comparison with ESP, where the driver must provide an input, but the system intervenes only when the driver cannot anymore master the situation.
Concerning the text, OICA found the structure improved compared to the document presented at GRRF-78, e.g. regarding the modified definition of Automatically Commanded Steering Function
The secretary pointed out that there is a need to open the regulation for permitting the Industry to start designing the technology.
CLEPA found the proposal wise as restricted to certain use cases, and the expert was of the opinion that the regulation could evolve in the future with the evolution of the technology.
OICA informed that regins do not have the limitation of 10km/h and that there is a need that the UN region can take profit of the new technologies. The expert voiced that UNECE should not be left behind, but should rather open up to such new technologies, with appropriate requirements to ensure safety.

The group went through LKAS-02-03 document.
Paragraph 5.1.6.2.4. (b):

- The group convened that the transient from auto mode to manual mode is a key to the system safety. As there is a need for a certain time, J found the 2 seconds a minimum. There is a need also to find a consensus wording avoiding different interpretations. Yet the different situations should be taken into account, and there is no guarantee that the system can predict the future such in advance.
- There was a debate about the origin of the 2-second value, in comparison of the limits adopted at AEBS. Some experts indeed feared that the 2-seconds requirement is too demanding.
- Other case: degraded mode
- Sub-paragraph (b) in J approach was clarified: it addresses both fault and non-fault conditions; while (b) in CLEPA approach only addresses non-fault conditions (fault conditions are addressed in sub-paragraph (c)).

Paragraph 5.1.6.2.4. (c):

- Agreed that the CLEPA proposal addresses the fault conditions

Paragraph 5.5.2.

- OICA informed having very much challenges with regard to PTI and OBD, and suggested that this PTI item is extracted from AEBS up-to-date regulation.
- J was keen to explain a proposal for OBD.
- NL supported a text aligned on that of AEBS, having no connector, rather a simple warning lamp. The delegate insisted that PTI should remain a quick and simple check.
- CLEPA challenged as well the Japanese approach: no standardized connector, data, protocols, etc.
- The European Commission informed about high probability that the EU requires an OBD-X (safety related OBD)

J presented LKAS-02-06 on OBD:

- The delegate from J informed that the document is a pilot project for assessing the possibility of OBD for safety systems.
- OICA had the following comments:

  - Misunderstanding in what is OBD: OBD is not necessarily an electronic interface readable by a scan-tool. This is the technical solution chosen for emission systems, where the history and background is different from safety systems. OBD is primarily a system which has the capability of detecting malfunctions and to communicate them off-board. The definition in OBD GTR clarifies what is OBD.
  - The safety systems currently in the vehicles do fulfil most of the OBD requirements (e.g. the system has the capability of detecting malfunctions and indicating their occurrence by means of an alert system…).Safety regulations have followed a different route compared to emission system regulations (e.g. fault detection and warning to driver is required “since forever” for safety systems. This approach is consolidated by the CEL Annex, which does not exists for emissions).
  - OBD is a subject wider than LKAS/ACSF, hence should be discussed at another level
  - Do not confuse roadworthiness (safety at PTI) vs. repair and maintenance at service station.
    - E.g. the EBS contains 1100 failure codes
    - Only the effect of the faiures on the performance of the system is important for safety, not the root cause of the failure
    - The root cause of the failure is important only to repair the vehicle
  - OBD provisions cannot be copy/pasted from emissions as emissions are one system while safety systems are maybe 15 or 20 systems or functions, with different variants for every manufacturers… Thus the emission approcah is not relevant for safety systems. It would generate huge costs for industry, without clear benefits.
  - Data are protected by private life data protection as they own to the vehicle driver.
  - The expert warned about the danger of actuating the equipment for the sake of PTI as this can damage some safety devices.
  - Anti-tempering: when all codes and protocoles are freely available, then hakers have easier access to the manufacturers internal safety systems. From this standpoint, current UNECE requirements are securing the confidentiality of vehicle manufacturers measures to protect against simple unauthorized modification (e.g. 5.5.2.1 in UN R79).
- The Chair recalled about the never ending discussions being held with OBD for emissions.
- The European Commission
  - informed that they are looking to the possibility to mandate OBDX for safety systems, in the frame of roadworthiness. The expert from the European Commission was of the opinion that there is no need to check at PTI that the vehicle systems which are optional have to correctly function (example of the wiper).
  - Was keen that OBD be discussed in depth within this informal group.
- J was keen that the driver can maintain the vehicle/system by himself, hence the need to make the data and protocols available. He found unfair

that the dealer has access to the data, and not the owner. Yet the owner can buy the necessary equipment.
- OICA reminded repair and maintenance is a topic which is separate and not linked to safety or roadworthiness of the vehicle.
- The Chair cited the recitals (17) of the EU directive 2014/45. (note: recitals in EU directives are not requirements).
- NL stated that OBD should not be used for checking safety system at PTI. The tell-tale should illuminate when there is a direct danger, no need for OBD in this perspective. PTI should remain a simple check.

Conclusion:
- European Commission to provide input on this item for next meeting
- Item to remain in agenda.
- Strong reluctance from Industry.

4. Remote Controlled Parking system

Discussion of GRRF-78-22

J introduced the document. Request to introduce recommendation for the smooth introduction of remote control parking systems in the market.
OICA recalled having commented this RCPS at GRRF-78. The expert recalled the comments made by the GRRF Chair at the GRRF 78th session (request for guidance at WP29 session of Nov 2014) and mainly questioned the legal status of the RE3: while these are recommendation, the wording pproposed by Japan makes them mandatory (“shall”). J informed that GRRF-78-22 will become official for next session of GRRF.

CLEPA questioned the work at the ITS informal group, about the proposed draft Terms of Reference

5. Next steps and list of action items

GRRF-LKAS-3: 16-17 December 2014 at the European Commission in Brussels starting at 10:00 am the 1st day and finishing at 4:00 pm the 2nd day.

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