

**Draft report of the 5th Session
GRSG informal group on
awareness of Vulnerable Road Users proximity
in low speed manoeuvres (VRU-Proxi)**

- Date: 20-22 March 2018
- Time: Started at 1:30 pm the 1st day and finished at 4:00 pm the last day
- Venue: European Commission
Breydel Building (Meeting Room 12/A)
45 Avenue d'Auderghem
1040 Brussels
- Chairs: Mr. Matsui (Japan) and Mr. Broertjes (EC)
- Secretary: Mr. Broeders (OICA)

Meeting started with a welcome by Mr. Broertjes (chair) from DG-Grow (European Commission).

1. Adoption of the agenda

Document: VRU-Proxi-05-01 (Chair)

The agenda was adopted with no change.

2. Adoption of the reports of the 2nd, 3rd and 4th session (Japan)

Documents: VRU-Proxi-02-13 (chairs)

VRU-Proxi-03-07 (chairs)

VRU-Proxi-04-04 (chairs)

The reports of the 2nd, 3rd and 4th session were adopted without changes.

The chair recapitulated the minutes of the 4th meeting in Tokyo (Japan). The low price, simplicity and effectiveness of rear mounted mirror systems were expressed although it was indicated as well that the driver still has to look and judge the situation around the vehicle. The demonstration of rear mounted mirrors located at the top rear edge of the vehicle (inside or outside) was highlighted as a potential effective solution.

3. Change of OICA Secretary for the IWG VRU-Proxi

The chair announced and welcomed Mr. Broeders as the new OICA Secretary for the IWG VRU-Proxi. Mr. Broeders introduced himself and thanked Mr. Fontaine and the group for their confidence.

4. Outcomes of the last session of GRSG (113th session, October 2017)

Document: ECE/TRANS/WP.29/GRSG/92

OICA has presented the outcome of the last session of the GRSG in the 4th meeting. OICA recalled this report and mentioned the confirmation of adoption of the 4-steps approach in the WP29 official report including timing proposals (not frozen yet).

The chair mentioned confirmation in GSRG of the target completion dates:

- Forward motion BSIS : 2018
- Reversing motion (camera or detection systems) : 2019
- Forward motion from standstill (taking off) (camera or detection) : 2020
- Direct vision : 2021

5. Forward motion Vehicle turning - Blind Spot Information System

Documents: VRU-Proxi-05-05
 VRU-Proxi-05-06
 VRU-Proxi-05-07
 VRU-Proxi-05-08
 VRU-Proxi-05-10
 VRU-Proxi-05-11

Due to the absence of the taskforce delegate from Germany (gently apologized due to illness) the secretary showed a presentation from Germany with the OICA proposal for simplification of the test cases of BSIS (deletion of curves) and the feedback from Germany on this proposal.

The group reviewed the latest version of the regulatory text drafting for the BSIS (VRU-Proxi-05-06) thoroughly line by line and achieved a common agreement on the text up to chapter 6. The following issues were discussed:

- The representative of Mobileye presented VRU-Proxi-05-10 containing general comments on the scope and HMI of BSIS and a presentation of information versus warning in real-life testing with a VRU detection system (camera-based) at left, front and right side of the vehicle in the West Coast Metro Area. Concerns were mentioned especially with regard to the need for detection of VRUs at the driver-side (as supported by Alert data and Japanese accidentology). CLEPA raised concerns on performance in bad weather conditions; a suggestion was made to implement these conditions in the regulation.
- The representative of Mobileye suggested to add a warning layer on top of the information signal as the proposed indications might be disregarded by the driver due to influx of information (as supported by Alert data). The secretary explained that only information signal is proposed in BSIS document for regulation as this is supposed to be not annoying for the driver but the signal will inform the driver especially in situations where the presence of a cyclist is not expected. Additional warnings (e.g. audible or haptic) are not prohibited as long as the BSIS requirements are not violated. The chair mentioned a possible stepped approach for switching off driver assistance systems by the driver: first rather easily switch-off the audible or haptic warning signal but visual information signal shall be maintained, secondly the information signal may be switched-off more or less extreme conditions. After key cycle or when the driving conditions changes the system shall be activated again (automatically).
- The representative of Mobileye suggested to implement also an “earliest point of information” to avoid information that is generated too early which may lead to annoying and misunderstanding situations for the driver.
- The representative of Mobileye explained about experiments with camera based detection system on various vehicles (including trucks) as a pilot in Austria. Data may be available and presented upon data owner’s consent. The chair noted that he may be able to discuss and mediate this matter with the AT representative as part of EU based meetings on behalf of the EC.
- UK questioned the minimal lateral distance between outer side of vehicle and centerline of the bicycle. The minimal lateral distance has been discussed and a new minimum distance of 0.25m was proposed.
- The speed and distance range was discussed; the chair explained that in case of exceeding the defined boundaries the performance of the system should gradually decrease instead of abruptly (this needs to be specified very clearly).

- OICA pointed that in the 1958 agreement of UNECE it was stated that regulations shall only be developed if they are technically and economically feasible and adapted to technical progress. The chair asked whether there are systems available that fulfil the BSIS requirements. Feedback from the group was that there are (prototype-) systems available that nearly meet the requirements. The chair asked the industry and suppliers to collect real-life data with existing (or prototype-) systems on trucks preferably in dense areas to get confidence in the technical feasibility (**action OICA / CLEPA**).
- UK and NL raised concerns on the effectiveness of the BSIS and lack of confidence that this BSIS will have an added value for the driver in avoiding accidents. The chair asked if an effectiveness study can be done. Israel will look if driver evaluations can be derived from the operational tests at the West Coast (see VRU-Proxi-05-11) and the pilot test in Austria (**action Mobileye**).
- OICA asked the CPs what way of adoption of this regulation (mandatory or not) is preferred and in which time frame. Not all parties are on same level; some parties do not want to make it mandatory or only on a “nice-to-have” basis as long as there is no evidence for the added value (avoiding collisions) and the performance in extreme weather conditions. Germany mentioned that GSRG has asked Germany to establish a regulation for this as manufacturers are currently developing it and regulation might force manufacturers and suppliers to put more focus and effort on these developments. The chair mentioned that harmonization on UN level is preferred and target date for this measure in the GSR update is end of 2021.

The agreed regulatory text drafting will be shared with Germany with the request to finalize the agreement of the remaining part of the document with the Taskforce before the next VRU-Proxi session in June in Sweden.

The chair expressed the objective of having a working document ready by July 2018 taking into account a 3-month period prior to the GSRG session in October 2018.

6. Evaluation of Pedestrian and Cyclist Warning Systems for Trucks

Document: VRU-Proxi-05-12 (Canada)

Canada presented an update on the research on Evaluation of Pedestrian and Cyclist Warning Systems for Trucks: Track and Field Operational Tests.

- On the track 10 different VRU-truck collision scenarios were tested. A 2-staged warning with a preliminary yellow visual information which escalates to a crash imminent red visual and auditory warning proved to be more beneficial as the preliminary information gives the driver more opportunity to respond.
- For the Field Operational Testing 14 trucks in 5 cities across Canada are currently being equipped with detection systems. The performance of the systems and driver acceptance will be measured under real world operations from April 2018 to April 2019.
- In past research different backing aids have been tested; system responses were relatively slow and systems did not prevent collisions with unexpected obstacles. Drivers tended to use mirrors less and made fewer glances to areas around the vehicle after extensive use of sensor- or camera-based backing aids.

An update of the track tests results and the status of the Field Operational Tests could probably be presented in the next 6th VRU-Proxi Session in June (Sweden) (**action: Canada**).

7. Reversing motion

Documents: VRU-Proxi-04-03 (Japan)
VRU-Proxi-05-03 (Japan)

VRU-Proxi-05-02 (Japan)

Japan presented VRU-Proxi-05-03 with study on devices for presenting rear-vision aid information and their effectiveness in supporting the driver.

- Effectiveness for both camera and ultrasonic sensors seems to be high under these test conditions and with this population of drivers although concerns were raised as this might not be representative as the drivers are more aware or are pre-informed on what could happen in the experiment.
- Results from an earlier study showed that a combination of both camera and ultrasonic sensors might cause confusion or over-expectation for the driver.
- Without additional device a small child was in none of the test cases detected by the driver as it could not be noticed in the mirror views. The adults were visible for the driver and in most of the cases (94%) detected.
- The way of informing and/or warning the driver (audible, visual, use of tell-tales) has influence on the effectiveness of the systems. The group concluded that comprehensibility of HMI is very important and should be harmonized.

Japan presented VRU-Proxi-05-02 which includes a proposal for a protocol for sonar-based reversing detection systems (as amendment to Regulation No. 46).

- A remark was made that differentiation from R46 is preferred as the R46 regulation is related to indirect vision devices and not to detection systems. The chair said that this is still open and that the proposal should be flexible so it can be used as a stand-alone regulation as well.
- As the proposal is focused on requirements for sonar systems the chair mentioned that the regulation is preferred to be technology neutral as this might not be applicable to other systems and technologies.
- Trailers were not included in this proposal. According to the chair this has not been decided yet and will depend on accident statistics. T&E indicated to be in favour of detection systems on trailers as well.

The chair proposed to perform a reality check on the experiments and proposed protocol and suggested that moving obstacles should be used as well. Furthermore the chair asked to the group what the important and significant steps are that need to be taken on reversing detection in order to construct a proposal before April 2019 (for discussion in next meeting in June). The chair also clearly expressed the preference for technology independent and performance based requirements in the regulation.

Japan announced that an updated proposal for VRU-Proxi-02-03 Class VIII field of Vision will be presented in the next meeting in June (**action: Japan**).

8. Accidentology

Document: VRU-Proxi-05-09 (OICA)

OICA presented an update of the accidentology data analysis including data from NL which was added later.

- OICA requests for more data as the numbers of fatalities on national level are small and provide no fundamental basis for drawing conclusions. It was proposed and agreed to extend the analysis by including serious injuries (KSI numbers: Killed or Seriously Injured) in order to improve the representation and to prioritize the most important and relevant accident types.
- A question was raised on the high number of accidents on driver side in Japan, no clear answer but could be caused by collisions with overtaking or oncoming cyclists on driver side.

- Differences found in definition of low speed as this varies from 20 km/h (Japan) up to 51 km/h (NL). Information of impact speed is often not available and/or reliable in accident reports. Japan proposed to focus on speed up to 20 km/h with no objections from the group. In later discussions the group agreed to target for a speed range up to 30 km/h in the proposed regulation for the BSIS.
- Some unclear numbers in the accidentology presentation in the 4th session (VRU-Proxi-04-06) were discussed. Agreed that these number need to be checked and corrected for next meeting (**action: OICA**).

The chair asked all members to provide more data. All members will check if more data can be collected and send to the secretary (OICA) for next meeting (**action: all**).

9. Status and developments of detection and vision technologies

CLEPA mentioned that there is no presentation or demonstration available. The table that was presented in the 2nd meeting in London was the start for the discussion and is still the basis. As cost information is confidential this cannot be shared.

The chair asked CLEPA and OICA whether it is possible to demonstrate and/or present different technologies and think about test procedures. CLEPA mentioned that most members are working on pedestrian & cyclist detection systems as development of automated driving. CLEPA will check if this can be shown in the next meeting. (**action: CLEPA**)

10. Forward motion Vehicle driving straight or taking off from standstill

The objective 4 (a) of the revised terms of reference: “Vehicle driving straight or taking off from standstill: 118th session of GRSG (April 2020) e.g. CMS or detection system” has not been discussed in this VRU-Proxi session.

11. Direct Vision

Regarding the objective 4 (c) of the revised terms of reference: “Direct vision: 120th session of GRSG (April 2021)” the chair mentioned that Transport for London is working/finalizing the Direct Vision Standard (DVS). Transport for London will present the status and implementation plan of the DVS in the next 6th VRU-Proxi Session in June (Sweden) (**action: EC/TfL**)

12. State of play of close-proximity vision and detection rulemaking in the contracting parties

Document: VRU-Proxi-05-04 (FR)

FR presented a document focussing on the two areas of vision and detection, notably how the structure of existing regulations could be amended and/or introduced into a new regulation. It was agreed that the experts would reflect on possible ways forward and to discuss and decide on the options during one of the next sessions.

The European Commission has explained the progress of work of the revision of the General Safety Regulation in Europe.

- “All” possible technologies have been assessed with stakeholders
- Feasibility and the cost-effectiveness were investigated resulting in a short list of measures
- An in-depth cost benefit analysis was performed for the measures on the short list
- Measures which share technologies have been clustered (effectiveness and costs)
- Measures with same effect have been clustered (to avoid double counting effectiveness)
- Proposed measures will be presented to European Parliament and Member States in spring 2018
- Implementation date by 2021 for majority of measures (for new vehicle types), however reality

checks might lead to earlier or later implementation dates.

TfL announced to present the status and implementation plan of the TfL – Direct Vision Standard DVS in the next 6th VRU-Proxi Session in June (Sweden).

13. Next meetings:

- 6th meeting (confirmed) : 19-21 June 2018 in AstaZero Test Track Göteborg/Borås, Sweden
- 7th meeting : [25-27 September 2018 in Stuttgart, Germany, exact location TBD]

The chair proposed to start the June session on the 19th of June in the morning, thus three full-day meeting. Therefore an arrival at the 18th of June might be needed. Details are being worked out with AstaZero in terms of logistics and information.

14. Any Other Item

No other topics discussed.