

**Draft minutes of the 4<sup>th</sup> Session  
GRSG informal group on  
awareness of Vulnerable Road Users proximity  
in low speed manoeuvres (VRU-Proxi)**

Dates: 21-22 November 2017  
Venue: JASIC offices  
Tokyo - JAPAN  
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Attendance:

Katsumi NAWATA-san (JASIC-Toyota)  
Kunihiko KUMITA-san (JASIC Director)  
Yutaka ATAGI-san (JAMA-Isuzu)  
Erez ASHKENAZI (Mobileye Japan - Expert)  
Chair: Yasuhiro MATSUI-san (NTSEL-Japan)  
Jörg SCHRUHL (OICA-VW)  
Yumiko MINURA-san (JASIC-Japan)  
Chair: Peter BROERTJES (European Commission)  
Bernd JOHN (CLEPA – Brigade electronics)  
Yonosuke MIKI-san (JASIC-NISSAN)  
Simon HSU (VSCC-Taiwan)  
Pavel STANKOV (NAMI-Russian Federation)  
Stanislas PETEL (CLEPA-Autoliv)  
Fabrice HERVELEU (UTAC-France)  
Gerald ECKERT (OICA-VW)  
Tetsuya SAITO-san (MLIT-Japan)  
By phone for agenda item 6 & 7:  
Patrick SEINIGER (BAST-Germany)  
Olivier FONTAINE (OICA)  
In addition on the 2<sup>nd</sup> day:  
Masayuki SHIMIZU-san (JABIA)  
Hitoshi OKAMOTO-san (JASIC-Shinmeyma)  
Takuro HASHIMOTO-san (JASIC-Honda)

Introduction by Kumita-san, welcoming the group on JASIC behalf; safety issues are important. Matsui-san thanks JASIC for welcoming the group and participants for their coming to Japan. EC: This session is oriented on passenger cars, reversing motion. There is still open discussion on technology, we need to be technology neutral and achieve the goal of avoiding running over pedestrians.

**1. Adoption of the agenda**

Document: VRU-Proxi-04-02 (J-European Commission)  
Adopted

### **3. Adoption of the reports of the 2<sup>nd</sup> and 3<sup>rd</sup> sessions**

Documents: VRU-Proxi-02-13 (chairs)  
VRU-Proxi-03-07 (chairs)

No comment was received. The adoption of the reports of the 2<sup>nd</sup> and 3<sup>rd</sup> meetings was postponed to 5<sup>th</sup> meeting (EC, March 2018) due to the limited number of participants in the 4<sup>th</sup> meeting.

### **4. Outcomes of the last session of GRSG (113<sup>th</sup> session, October 2017)**

Document: WP29/GRSG/92 (soon available)

OICA reports the discussions at GRSG 113<sup>th</sup> session, based on meeting notes (no official report available yet), about VRU-Proxi IWG status after 3 meetings:

“VRU-Proxi IWG Secretary presented the outcomes of the three first sessions:

4 steps approach from 2018 up to 2021, but still timing is not frozen.

Scope will depend on each topic, based on accidentology data, OICA being the pilot for data collection.

The question of introducing approval of components will be dealt by CLEPA.

The IWG calls for data from the Contracting Parties (see GSRG-113-27 document), with a deadline for the return on November 10<sup>th</sup>.

OICA supports the report and stresses the call for feedback from CPs.

BSIS proposal should be presented (as an informal document at least) for next GRSG session, with an adoption target in October 2018 session.

Germany supported the idea of having the adoption as soon as possible.

GRSG-113-14 was presented in details, reflecting the changes adopted by the group for the ToR, including BSIS in VRU-Proxi group and the new schedule.

Conclusion: GRSG adopted the new ToR, and included it into the report of GRSG session to WP29 November 2017 session for its endorsement.”

WP29 official report should confirm the adoption in the next days.

Chair thanks OICA for the presentation of the ToR at GRSG 113<sup>th</sup> session.

### **5. State of play of close-proximity vision rulemaking in the contracting parties**

The European Commission might present the progress of work of the GSR Phase 2 in Europe. The UK might wish to present the advancement of the TfL – Direct Vision Standard DVS).

EC presents GRSP-60-21e – EC document, dated December 2016 (as in VRU-Proxi 1<sup>st</sup> meeting) with updates. This is a very large approach in Europe on possible new regulations, broader than just automotive regulation. EC needs a new set of measures to decrease fatalities again.

A few weeks ago a European Parliament resolution supporting the EC report on safety was adopted with huge majority. Integrated approach, including driver training and infrastructure enhancement in addition to car safety improvement. EC was asked to move fast, 1<sup>st</sup> quarter of 2018.

The impact assessment is almost finished. Calculations are done, but we need new assumptions on introduction dates to give time to industry (3 years rule in general). Rules of cost benefit will apply. Some items will drop because of their lack of effectiveness.

When adoption is decided the regulation goes to the Council and the Parliament. Council can introduce changes, relaxing things sometimes. Parliament might do the opposite.

EC's guess is that adoption will be quick and that, as industry (ACEA) is supporting the work, will be concluded fast. This will have an impact on the IWG group as the VRU scope is within EC work list.

UTAC: There are 2 measures based on direct vision and rear detection, with different timings, how do you combine them?

EC: Commission will come with a proposal. Dates could shift a little. There will be broad requirements and no detail. EC will be authorized to make the detailed rules afterwards.

We have 2 choices: Work at UN level or EC level. We prefer working at UN level, EU could work on parallel, as a back-up, for securing the timing. We are happy to work with the Russian Federation, Taiwan and all other CP in this IWG.

## 6. Reversing motion

Documents: GRSG-110-10 (J)  
VRU-Proxi-02-09 (OICA)  
VRU-Proxi-02-13 (OICA) Accident data - rear collision PC-LCV against pedestrians in France  
VRU-Proxi-02-03 (J) Class VIII FIELD OF VISION  
VRU-Proxi-01-07-Rev.1 (OICA)  
VRU-Proxi-04-03 (J) Draft Technical Requirements on Sonars  
VRU-Proxi-04-05 VW video presentation

J might provide additional information with regard to the benefits of the existing mirrors in Japan, and might organize a demonstration of existing vehicles.

The group may wish to further investigate the conclusions of the document VRU-Proxi-01-07-Rev.1 (rear-view camera + sensors would be not much more efficient compared to rear-view camera only).

OICA/CLEPA might table a relevant testing protocol on the basis of a technology neutral solution.

The group is expected to make progress toward their objective 4 (b) of the revised terms of reference: Reversing motion (e.g. Camera Monitoring Systems (CMS) or detection system): 116th session of GRSG (April 2019).

### Presentation of VRU-Proxi 04-03

JASIC starts with the recall of VRU-02-03 presentation:

At the time it was not clear how to test the compliance of close proximity detection with a sonar. The proposal aims at providing a solution.

Summary of the JASIC proposal as described in VRU-Proxi 04-03: Creation of a field of detection, with combination of means to achieve the detection.

There will be a physical presentation tomorrow of how Japanese mirrors can sometimes achieve the detection with a mirror. Reminder: Any solution is acceptable: direct, indirect, camera, sonar.

Remark: Area design comes from JNCAP studies. Object is a 1m pole of 30cm diameter, reflecting a 5 years old child.

Area is different from FMVSS 111, a detailed justification will be presented for the next session, at the request of the chair.

Document is divided in 2 parts: Ideas to develop technical requirements and proposal for technical requirements.

The text uses a reference to ISO 17386 (MALSO-assistance for parking), but ISO must be

modified to be adapted to VRU detection:

- Latency detection procedure (target coming from above is unrealistic)
- Minimum coverage ratio to cover a VRU size (bigger than a 75mm pole)
- Vertical range requirement

EC raises questions on the size of a leg compared to a 75mm pole and the 1m height.

Legs come generally by 2

In Japan regulation a child under 5 must be carefully cared → 1m. This is what is expected to be detected at the front, and we must be consistent between front and rear. A compromise must be set.

EC considers that young children may escape to their parents that this is a possible scenario, and hence 80cm is not a bad scenario.

OICA: To be discussed with experts, considered as a basis for discussion.

EC is it feasible to have a different sound when detecting a “living creature” detected rather than a physical thing?

Nissan: This is under evaluation.

Toyota: Camera systems are evaluated. A presentation could be done for next session.

OICA: NHTSA and NZ studies had “unknown performance”, including HMI.

VW presents a video (VRU-Proxi-04-05) for discussion setting:

3 kinds of information are used: sound, image and colour.

Mute is possible (during the cycle), but under condition.

FMVSS prohibits some of these features (overlay on the screen)

Size of display may be discussed

UTAC overlays are discussed in UN-R 46 to move to an allowance of permanent overlays (under condition, too).

EC agrees that regulation should not block “added value performance”, but without allowing “anything”.

OICA: Regulation must focus on what is necessary to achieve the safety goal set by the group. Of course added value must be kept possible.

JASIC: What is shown on the video is compatible with JASIC proposal.

Question to be discussed: What is the material of the object to be detected? For vision the answer is not of importance, but for sonar it has.

NAMI: What about night time detection? Is there a specific protocol? Reverse lamps performance may vary a lot.

EC: In principle we have a reversing lamp and there are requirements on reversing lamps.

CLEPA: If you see a 1m pole at 3,5m then you will see much farther at ground level. It is not necessary to see the whole pole, part of it is enough.

EC considered this subject to be an open discussion.

Reversing speed models by ISO. Experimental results of speed approach led to a simplified model. This is a basis for the request for response time. No link with detection area. No particular change request on this topics, although this is a simulation for parking, not reversing in a pathway. The scenario VRU-Proxi wants to deal with has its importance.

UTAC: Regulation 125 uses cylinders for direct front vision check.

JASIC: Current Japanese proposal is limited to rear detection, although we are interested in all-around vision, as presented at GRSG but with no support.

EC: We could use such a procedure for front vision when truck is moving off.

VW: We already see what is in front of trucks (with mirrors) we need to detect the danger for such scenario. There is a risk of mixing things.

EC: Right. We want to alarm and inform. And avoid false alarms that could annoy the driver. We have feedback from blind spot warning and LDWS! This is a very good question that we will not be able to solve in the next 2 days.

VW: We made huge efforts to see things, so far, and now we discuss on a sensor to detect an obstacle. We also have to consider dynamic testing versus static testing (as for visibility). Starting from what will be requested, the necessary technology may differ.

#### Demonstration of rear view devices

2 vehicles are presented: Honda Nbox + Infinity Q50 (Skyline).

Honda vehicle is equipped with 2 sorts of rear view mirrors (1 outside and 1 inside) for the vision of obstacles (here a child manikin with a yellow cap), and with 2 internal mirrors allowing to have an image of what is beside the vehicle on the opposite to driver side.







Infinity vehicle is equipped with a camera + detection system providing a bird-view image to driver, enhanced with coloured warnings when an object is close to the car.



Feedback from the participants:

EC: Surprised it was quite visible, but image is much distorted. Safety need is fulfilled, with a cheap solution.

JASIC: It is more difficult to see in cloudy weather. This solution is adapted to Kei-cars because of their shape (vertical tailgate).

EC: Camera have their drawbacks, too.

VW: Such solutions are available on trucks. But we are speaking of optimizing awareness of driver. Adding another mirror is perhaps not appropriate. We have other technologies.

UTAC: We must not be design restrictive and focus on the field of “vision” we want to analyse. Detection is a new approach, a new stand-alone regulation with new requirements. We can optimize existing requirements. For example, extend the scope of direct vision.

EC: For trucks we have the appropriate mirrors, but it not enough. For the rear we have nothing. Do we want 2 steps?

UTAC: We can manage the requirements for each category, introduce “if fitted” requirements.

EC: May detection replace vision?

UTAC: Depends on the category.

CLEPA: Each solution has a cost, to be considered.

EC: We have to decide what we want, for us it's not entirely clear now. At the beginning we had the FMVSS 111 as a reference, with a field of view. But contrary to US approach it can be achieved with indirect vision. And to be technology neutral a parking sensor was considered, but human behaviour could lead to going too far only with a sound system as this is how traditional parking

aid beeping works; it keeps on beeping to indicate distance from object, unless it gives an indication of human presence, where one would possibly be prompted to stop immediately.

UTAC: Target of the group is to cover all areas around the vehicle and include 2 approaches: implement existing regulations and create a detection system (sonar first and image as second step). A reversing camera would be enough.

JASIC: Driver has the responsibility of the safety. But there is some “holes” in R46. We want to provide basic information at 360° to driver, and at least some at the rear. Assistance systems are welcome in addition to basic information. Detection may substitute to visibility in some cases.

NAMI: Agrees with UTAC position. Simple detection systems may provide useful information to the driver. Both systems, detection and viewing are useful and have their drawbacks. Combination is acceptable. Mirrors are simple and cheap for simple cars. They provide basic solutions. Poor condition of roads, weather conditions and night time may unable sophisticated systems. Parking assistance becomes popular, cameras are expensive.



CLEPA: Technology is progressing in costs and new technologies arrive on the market. We must be technology neutral to avoid changing regulation each time a technology arrives, and keep performance in mind.

EC: When autonomous vehicle arrive, viewing the target is no longer necessary.

OICA: How far would the group like to go, on the 360° monitoring of the car surround? Based on the accidentology data we have the information to decide, now.

UTAC supports the question. For example M1 in forward motion is an important scenario, we could do something for it.

EC: We will go for AEB for pedestrians for that scenario. For trucks we have an AEB (for vehicle in front detection) dispersion in the fleet on going to a sufficiently high level still taking to around 2025, and we do not wish to upgrade it too quickly; we can work on detection before. Vision is not so good on trucks, we can improve it, too.

EC: Harmonization of requirements is also a target, and a stand-alone regulation could permit CP to choose to require it or not.

UTAC: New series of amendments in R46 could solve the question when needing to improve indirect vision.

EC recalls its vision for rearward motion scenario, and ask if there is an agreement on it: Mirrors or Rear View Camera or Detection systems that warns is a VRU is present.

OICA: To our knowledge, a 100% reliable system distinguishing a human being from another obstacle does not exist, so far, but our system suppliers probably better know, as they are the one who develop such systems.

Mobileye confirms that 100% detection does not exist, but a lower % is achievable.

OICA: A simple detection system is better than nothing, and being too ambitious on the performance can lead to long term discussions and developments, leading to introduction delay. A several steps approach on detection performances could be discussed, with several series of amendments of regulation.

Mobileye explains that the technology exists in form of camera system, but that the relevant scenario must be defined in order to 'teach' the technology. A crawling child or seated one are not of the same difficulty. Not a cheap solution. A demonstration may be set for next session.

CLEPA: All technologies must be considered with their pros and cons, limitations and limits.

EC: Forward motion could be interested by such possibilities.

EC recalls that the proposed direction is: have a view, or in case a detection is provided a distinction for human being.

OICA states its position: several step approach, enhancing performance and allowing competition between technologies.

EC suggests that detection of movement could be used as a trigger for 'human activity' in the blind spot, is it possible with detection systems?

OICA: CLEPA is in the best position to answer this. We suggest building a benchmark of existing systems to define whether one of them gives satisfaction, or not. Basic movement detection might be a good way to move forward.

EC: A benchmark is a good idea.

Mobileye: We come back to the scenario(s) that we want to solve.

OICA: What is the process to define these scenarios?

EC suggests this topic is debated in a group led by Equipment Manufacturers with Car manufacturers getting involved.

CLEPA doubts on their ability to define the scenarios.

OICA: Perhaps could we propose scenarios to the group and the group decides.

Brigade-E: How the driver should be alerted?

EC: Image or signal. I assume that a different signal between object and VRU will be enough.

Nissan: We are experimenting HMI in different scenarios. Ex: confined area, open space.

VW: Sonar systems is able to what is on the path of driving. Why is it necessary to distinguish?

OICA considers that the trust the driver has in the system is of 1<sup>st</sup> importance. A reliable sensor system must be considered. Hence the benchmark. Regulation must take care that different technologies may remain in competition.

EC would like CLEPA to provide it, although OEMs have the hand on HMI. What is the best in class solution? Ranking of costs would be appreciated.



OICA will provide an input.

EC asked to document whether Mobileye is a CLEPA member or not.

Japan: Minimum requirements are to see part of the pole, as a first quick step. And it could be a step by step approach.

EC: Is it necessary to do it in steps for the field of vision?

JASIC: Part of the 1m pole allows mirrors where the whole pole means camera.

EC: Yes, seeing half a child is enough. It is not sure seeing the whole child is necessary (or justified in cost effectiveness).

OICA supports a 1 step approach for field of vision. Unless the goal is too ambitious. This does not apply to “information” systems, for which the performance can evolve.

EC: Is it possible to have rear view systems on trucks?

Shinmeywa: A camera is difficult to install a camera on a tipping truck. It must be installed under the tipping surface, so when tipping nothing can be seen.

EC: Tipping action shall not be considered as a normal road action. Where do you locate it?

Shinmeywa: At the registration plate location.

OICA: Take maintenance and system protection into consideration, we suggest.

EC: When is really impossible?

Shinmeywa: On very special vehicles.

EC: What is the percentage of trucks equipped with camera?

JASIC: On boxed trucks, 80%. On special vehicles they are not equipped in general. Nor on trailers (because of the connection with tractor). Tractors+trailers do not come into cities in Japan.

See pictures illustrating the discussion on annexes 1a to 1c.

CP should also think about the regulatory approach: stand-alone regulation, regulations changes, etc.

EC will approach Korea to know their interest in the topic.

OICA had a talk with Korea at GRSG to get accidentology data, but has no feedback since.

Japan recalls that there will be a meeting led by BAST, early December, at BAST location, with a line by line review of the BSIS regulation proposal of Germany. Participation to the task force would be highly appreciated.

EC invites Mobileye to join the task force.

## **7. Accidentology**

Document: GRSG-113-27 (OICA on behalf of VRU-Proxi)

France and OICA might present accident data from UK, D, F, J, ROK, NL, others.

The group is expected to be made aware of the accidentology in some contracting parties, and to get a clearer vision of the highest accident occurrences, with the purpose of making sound scientific decisions about the group’s priorities and test protocols.

OICA presents VRU-Proxi-04-06

The contributions received so far are from: Belgium, Canada, Finland, France, Germany, Hungary, Japan, Latvia, Poland, Russian Federation, and Spain. OICA received some other contributions afterwards, and will include them in an updated presentation for next VRU-Proxi meeting. From the given figures, only fatalities were considered for the synthesis. « Other impacts » and « other vehicle categories » figures has been discarded as well, as they could not bring information on the scenarios. In the end figures are comparable and focused on VRU-Proxi scenarios.

### **MAIN TRENDS SO FAR FOR CYCLISTS – LOW SPEED ACCIDENTS**

- **M1 and N3 are the main contributors for cyclist fatalities**
- **M2 and M3 are minor contributors**
  
- **Most cyclists are killed when the opposite vehicle is moving forward and straight**
- **Cyclists are often killed when the opposite vehicle is moving forward and turn opposite to driver side**
- **Cyclists killed when the opposite vehicle is moving backwards are not common (see peculiarities)**

### **MAIN TRENDS SO FAR FOR PEDESTRIANS – LOW SPEED ACCIDENTS**

- **M1 is the main contributor for pedestrian fatalities**
- **N2-N3 are altogether a danger for pedestrians**
- **M2 and M3 are minor contributors**
  
- **Pedestrians are often killed when the opposite vehicle is moving forward and straight**
- **Pedestrians are often killed when the opposite vehicle is moving forward and turning**
- **Pedestrians are quite often killed when the opposite vehicle is moving backwards**

(See Document for more detailed conclusions)

Japan informs that in Japan traffic law, when a M3 is reversing, it must be guided from outside; this would explain the very low number of M3 backing accidents.

BAST informed of a meeting to come, with NL and UK, to get more detailed data on BSIS accidentology. France informed that all available data had already been given to OICA. OICA will welcome the outcome of these discussions, in order, if possible, to introduce them in our analysis.

EC would like other CP to participate to the infrastructure analysis (distance between cyclist and vehicles), even if it does not come from accidentology data.

Chair asked Taiwan to provide data (OICA to send the matrix). Taiwan will do its best.

For information bicycle sharing system in Paris (Velib') appeared in 2007, so 2011 statistics may already reflect the new cycling level in France.

BSIS scenario may be found in France: all cyclist killed in TODS scenario are by N3 and N2. To be noted that cyclist killed in TDS scenario are only by M1.

It would be of interest to compare accidentology figures with categories distribution figures.

Kei-Trucks in Japan are N1. They are generally considered as less safe vehicles, but rather for its occupants.

## 8. BSIS

Document: ECE/TRANS/WP.29/GRSG/2017/11 (D)

D will update the group about the progress of work  
(Phone call from BAST at 14:00 on Tuesday)

BAST: A group has been set and a meeting should be organised with a 1<sup>st</sup> meeting by Webex early December. Doodle to come next week.

19 members: Industry (CLEPA (6) OICA (6) + Mobileye), contracting parties (NL, TfL ...)

The target is to have an informal document presented at GRSG April 2018 session.

BAST has some side contact with several CP for setting appropriate accident data.

Industry is expected to give feedback on the testing method, by end January.

OICA expects these side contacts will not prevent the CP providing general accidentology data to OICA for the IWG general task.

### Conclusion of the meeting:

**For next meeting, the following actions have been identified:**

- **Contact Korea to know their interest in VRU-Proxi debate, if any → Action: EC**
- **Accidentology data analysis update with latest information → Action: OICA**
- **Demonstration of what a camera system may achieve, and its cost → Action: Mobileye**
- **Benchmark of existing systems → Action: CLEPA+OICA**
- **Give an indication to Chair of who will come, before end December → Action: All**
- **Send comments on the reports of this meeting, and the previous, for adoption at 5<sup>th</sup> meeting → Action: All**
- **Confirm OICA secretariat name → Action: OICA**
- **Confirm location of 6<sup>th</sup> meeting at Asta Zero, and organise a demonstration of their capabilities → Action: EC**

A special thank is given to JASIC for having hosted this session.

## 9. Next meetings:

- 5<sup>th</sup> meeting: **20-22 March 2018** in Brussels (European Commission)
  - i. Time: Starting at 1:30 pm the 1<sup>st</sup> day, finishing at ca 4:00 pm the last day.
  - ii. Venue: European Commission premises (details in near future)

- 6<sup>th</sup> meeting: [26-27] June 2018 in [Sweden-Sandhult by Asta Zero proving ground], still to be confirmed before 5<sup>th</sup> meeting. A demonstration of their capabilities and on-going work on active safety technologies is expected.

#### **10. Any Other Item**

Johan Broeders (DAF trucks) could take over the secretary of the group, on OICA behalf, to be confirmed before next session.