

DRAFT REPORT

Special interest group on Advanced Emergency Braking System for Heavy Duty Vehicles

25 - 27 January 2021
WebEx meeting (25 -26 January)
MS-TEAMS meeting (27 January)

Attendance

Adam Christoph HNV	Jost Graziella (ETSC)	Puurunen Juhani Finland
ANDRE Aymeric	Kodaka Kenji (JAMA)	(Vieras)
Boersma, Jan Sybren	Kojima Toru / NTSEL	Rieg Andreas
Broeders Johan	Kuhn Thomas (Knorr- Bremse)	Rieg, Andreas (005)
DAMON Pierre Marie	Lefevre, Henri	Sander, Daniel
Enomoto Hidehiko	MAULER Christian (CNH Industrial)	Schaedler, Olaf (uia80544)
Fontaine Olivier	MINARINI Fabrizio (JRC- ISPRA)	Schaefer Roland (Ford)
Främmunds Henrik	MinSeok Kim	Seiniger, Patrick
Garczorz, Thomas	Miyake Yasuhisa	Shiomi, Yukihiro/塩見 幸広
Gourie Gabriel	NTSEL/JAPAN	Staudacher Elmar
Heim, Volker (ECM)	Newton Peter	(CVO/ENS)
Hirose Toshiya	Oriol Flix	Taku Yoshikawa
Hjertvik Geir Jonny	OZ Yasemin	Taro Tokai
Hoppe Isabelle (BMVI, Germany)	Ozcinar Fatih (Konuk)	Teyssier Pierre
Ihara Toru (NTSEL/JAPAN)	Papamichail Theofanis	Van Impe Marc
Ilsar Uri		Woolsgrove Ceri ECF
Japan-NAONO (MLIT)		yoshikawa,

1. Welcome and Introduction

2. Approval of the agenda

Document: AEBS-HDV-SP-02-01 (Chair)

S was keen to mention the large animals per document AEBS-15-04 (S) Large Animals
F informed that F data are existing about Railway crossing accidentology.
Toll barriers: no data from France are currently on the table.

NL informed that accident at roadworks are collected by RDW. The Dutch representative committed to present rough results during the meeting.

OICA proposed a summary of the progress of work at VRU-Proxi.

3. Confirmation of last report

Document: AEBS-HDV-SP-01-06 (Secretary)

AEBS-HDV-SP-01-06— (Secretary) the notes of the meeting were adopted with no change.

4. Discussion about traffic accident data

Document: AEBS-HDV-SP-02-09 (Japan)
 AEBS-HDV-SP-02-08 (OICA/CLEPA)
 AEBS-HDV-SP-02-02 (France)
 AEBS-HDV-SP-02-03 (Germany)
 AEBS-HDV-SP-02-05 (CLEPA)
 AEBS-HDV-SP-02-06 (OICA/CLEPA)

AEBS-HDV-SP-02-09 (Japan):

- OICA: late notice. Difficult to digest so much data so fast. Probably the proper question is to check which technology (AEBS/MOIS/BSIS) is relevant for which scenario, then identify what is relevant for this group on AEBS
- Difficult to find the proper data, yet reducing the fatalities is highly important.
- Chair: what about motorcycles in the data of slide 3?
- J: only bicycles are addressed in the J figures. Of course motorcycles are important in J.
- Chair: meaning of “backward direction”?
- J: forward and backward are compared to the direction of movement of the ego vehicle.

AEBS-HDV-SP-02-08 (OICA/CLEPA):

- The purpose of the document was to comment and “challenge” the J data. Some of the questions are answered by the document AEBS-HDV-SP-02-09. Example: among the AEBS fatalities, how many could be addressed by the highway AEBS of UN R131? The key is to select what scenario/technology is relevant within our group, i.e. not relevant to AEBS high speed (>50kph?) and not relevant to VRU-Proxi (<10kph).
- MLIT: targets of MOIS and BSIS are different from AEBS. Slide 3 shows that fatal accidents are more vs. cyclists and pedestrians than vs. the C2C.

Conclusion:

- A portion of accidents are relevant to AEBS-VRU
- Details to be further investigated

AEBS-HDV-SP-02-02 (France):

- In France, about 2 accident per year with fatalities or seriously injured persons.
- CLEPA: is the problem “detecting the closed barriers”? F: correct, slide 3
- OICA: seems that AEBS can be efficient only when the barrier is closed. Misuse of the barrier by the driver cannot be avoided by the AEBS.
- Chair: only relevant scenarios are those where the barrier is closed and the driver does not try to circumvent. Question to the group is the French data relevant (low number in 15 years)?
- N: difficult to identify the barriers in the different countries. Some fjords are protected by a barrier, we cannot rely on AEBS to protect the driver.

Conclusion:

- 1 accident in 15 years is a low occurrence; seems the scenario is not relevant
- Group to make a decision later in the meeting (see in item 5 below)

AEBS-HDV-SP-02-03 (Germany):

- CLEPA: analysis focuses on HDVs vs. cars and not HDVs vs. VRUs. Correct? Yes
- D: position is that the regulation must be improved with regard to vehicles
- CLEPA: Slide 7: which year? Answer: 2000 to 2020. The data are those where UN R131 is applied. No discrimination per vehicle category. Regions of Dresden and Hannover. 127 cases were selected after the different filters.
- NL: in the conclusion, there is mention of maintenance and “broken-down vehicles”. Answer: no number, but this could be a point to address.
- OICA: is there a distinction in the study about the “weight” of the HCVs (heavy/middle/light)? Answer: most accidents are caused by N2N3. M2M3 are relatively rare. Hence need to focus on N2N3. According to CLEPA analysis, N3 vehicles are the most important.

AEBS-HDV-SP-02-05 (CLEPA):

Chair:

- need to know whether stationary vehicles are vs. N2 or N3 vehicles. A: OK for tomorrow.
- What about the level of severity? A: accidents with personal injuries (slide 2)
- J: requested discussing not only AEBS, other accidents as well. Data seems similar in J vs. D. A: Look at Slide 12: the number of accidents is indicated.

Conclusion: need to really check on which scenario the group must focus.

AEBS-HDV-SP-02-06 (OICA/CLEPA)

- OICA: the different parties provided data on different scenarios. The presentation seeks to extract the data from the different presentation/ types of accidents, etc.
- CLEPA: Slide 2 is a summary of the CLEPA figures in Germany. OICA: Slide 4 is an attempt to extract the relevant data and make them speak.
- J: cannot support OICA's conclusion to prioritize V2V. Seems the slide 4 includes all accidents, while we should prioritize the accidents with fatalities (severe accidents). In addition, if 2-step approach, then the V2VRU would arrive too late. J needs V2VRU asap.
- ECF (European Cyclists' Federation): cycling and walking is increasing in very large numbers. Potentially from outside urban areas into urban areas to relieve vehicle congestion. Therefore cycling/walking numbers will probably increase dramatically over the next few years. And of course truck traffic will also increase. Therefore, exposure and interaction of cyclists/trucks will increase.

5. Conclusion of accident data and structure of draft regulation

Document: AEBS-HDV-SP-02-04 (OICA/CLEPA)
 AEBS-HDV-SP-02-07 (OICA/CLEPA)
 AEBS-HDV-SP-02-02-add1 (F)
 AEBS-HDV-SP-02-10 (NL)
 AEBS-HDV-SP-02-05 (CLEPA)

AEBS-HDV-SP-02-04 (OICA/CLEPA):

Technical presentation with the aim to show the status (C2C vs. HDV2C/P/B)

J:

1. P17: the situation is not particular to the HDVs, also light vehicles have the problem
2. P18: some HDVs have already AEBS city since 2017. Hence experience exists.
3. Nov 2021: Nov 2021 is a target to provide a regulatory text, hence EIF would be mid-2022 at the earliest.
4. Understand there is a challenge, yet necessity is very high.

Chair: intermediate conclusion should also mention the expected performance level.

Railway crossing:

F: insisted that railroad crossing are taken into account for HDV and light vehicle.

Conclusion: IWG to ask guidance to GRVA as to whether this should be addressed. Item in [] in the terms of reference.

F furthermore presented the document AEBS-HDV-SP-02-02-add1 (F) Railway crossing accidents_EN_Compl that confirms the need for France to address railway crossing. If the criterion is the number of lives that can be saved, then the figures are relevant.

Chair: interested in the technical possibilities with current AEBS. Otherwise, the infrastructural markers can be of some help on this scenario.

Conclusion: item to be linked to the markers in the terms of reference.

Big animals:

TBD tomorrow

Roadworks

NL: presented the document AEBS-HDV-SP-02-10 (incidents and fatalities at roadworks)

- CLEPA: what are the categories of vehicles in the figures? Answer: no discrimination in the figures, seems to be mainly HDV related. The European statistics are not precise enough to have a clear picture. The figures are low but the NL is a small country.
- OICA: total of accidents dramatically decreased between 2005 and 2019. Answer: the priorities changed in the NL in 2010, this explains the decrease. No answer for the period before; probably not related to AEBS. As from 2016, there is an effect of AEBS but difficult to assess.
- Chair: 2 side problems:
 - o AEBS R131 does not mandate collision avoidance on stationary targets, and
 - o the roadwork equipment is probably not detected as a relevant object by the AEBS since AEBS is designed to detect vehicles.
- Debate on the targets in the UN R131: possibility to define a new target more representative of the roadwork equipment.
- ISO is currently working on the definition of new stationary targets, yet mostly focusing on “valet parking” applications. However, the AEBS-HDV IWG could approach ISO on the problem of the representative object.
- Chair: Seems Industry is not against developing a new marker
- OICA: no opposition but this is subject to a technical assessment, let's look 1st on what is feasible. CLEPA/OICA committed to come back on this at next meeting.
- CLEPA: one thing is to improve the possibility to recognize service vehicles, barriers etc by adding radar reflective stickers/objects. The other thing is a (very) early warning for road construction/service car: this could be an item to be discussed in groups dealing with communication car2infrastructure or similar.
- Chair: terms of reference: IWG to identify the possibility of portable markers (e.g. on a cone) that trigger AEBS intervention. This marker could be used for roadwork vehicles and stationary equipment.
- NL: welcomed such proposal in the terms of reference. The road authorities are eager to act on work area safety. Hence having such objects would be welcome.
- Chair: which vehicles would be aimed?
- N: referred to a situation where the AEBS could not detect the target. Movie presented by NL during 2018 Nov IWG.
- Chair: if the idea is to address a marker generating a reaction different to an emergency braking (e.g. warning only), then it goes beyond the IWG-AEBS frame. Then need for guidance from GRVA.
- OICA: supported the approach: there is a need for assessment of the technical feasibility. Assess the benefits and the risks (malicious use to “enjoy” the automatic generation of emergency braking).

Conclusion:

- IWG to look on the possibility of means that trigger system intervention in work areas. This means could be used for roadwork vehicles and stationary equipment.
- Check the categories in stake (matrix of vehicle categories vs. AEBS types).
- IWG to make a decision at next meeting, after investigation by interested parties.

CLEPA: the group should now discuss the vehicles categories in question.

CLEPA presented AEBS-HDV-SP-02-05 (CLEPA) Accident_Analysis.

- Seems the vehicles of highest interest are N3, N2 then M3 (M2 have too low figures).
- NL: thanked CLEPA for such in-depth analysis
- Chair: no opposition for AEBS VRU on N2N3 categories
- Chair: what about highway AEBS (>60kph)
- The CLEPA analysis does not go in the details of this scenario for these speeds.
- ETSC: committed to investigate figures on M2 since the CLEPA analysis shows that M2 are not relevant. Pay attention that the figures do not include M1 (covered by R152)

Conclusion:

- ETSC to investigate figures on M2

AEBS-HDV-SP-02-07 (OICA/CLEPA)

Proposal for a tool to the group.

- Chair: need to make a decision on the structure we want to give to UN R131
- Chair: requested to add the document reference in the headings
- NL: supported the document as a help since one of the objectives of the group is to align UN R131 on UN R152 where possible.

- Chair: proposed to use the document for identifying where the structure differs and where we could face problems.
- J: R131 have the test requirements in Annex 3.
- OICA: about strategy: the group can make fast changes, then change the structure, or do both simultaneously.
- OICA: I am not sure about this interpretation, but fine with clarifying that "braking to avoid collision do have priority on warning"; but interpretation of current requirement is not the point here in this group. But we can be clear in the main target that we should try to avoid the collision, and not waiting for the end of the warning to start braking.
- Chair: about skeleton document: document AEBS-HDV-SP-02-07 is helpful. But need to have the document references in there.

6. Discussion for TOR of the IWG on AEBS for HDV

Document: Proposal for ToR for the IWG on AEBS (AEBS-HDV-SP-01-07)
AEBS-HDV-SP-02-11 & r1 (CLEPA-OICA) Comments on Improved draft TORs

The group reviewed the terms of reference per documents AEBS-HDV-SP-01-07 & Rev.1

- Inclusion of a paragraph on markers
- Timeframe:
 - o D understands the challenge of Nov.21 but needs a date as a target.
 - o J: supported Nov.21 with a possibility to extend the target date during the group discussion.
 - o The chair proposed to add a note in the report on the possibility to extend the date.
 - o OICA proposed a well-established roadmap to get no surprise in the IWG. OICA questioned the meaning of "November 2021": official proposal for Feb 22? OICA also presented the document AEBS-HDV-SP-02-11.

The VRU-Proxi Secretary summarized the scope of that IWG:

- Scope < 10 kph
- Warning and information systems only (no active safety)

A presentation will be provided at next meeting.

ETSC:

AEB for buses. TfL may present a state of play at next meeting. Chair pointed out the concerns as described in the summary. Yet UK may be interested in proposing buses AEB. For ETSC it is too soon to exclude bus AEB. Conclusion: buses to be reviewed at next meeting.

S and N informed having new data available.

Industry presented the document AEBS-HDV-SP-02-11-r1 (CLEPA-OICA) Comments on Improved draft terms of reference.

J: recalled avoid misunderstanding that Nov 21 is date of technical text delivery. Hence date of Nov.21 is not unrealistic. At least the IWG should try to reach the target.

ECA: supported J. Too early to move away the cyclists from the roadmap. Brussels sees 200% increase in cyclists, there will for sure be an increase of cyclists in the future.

CLEPA: at Industry preparation, and seeing the expert's experience, have a strong doubt that the Nov21 date is feasible. Yet we can make a try, do our best, but nobody can promise we will succeed. Keen that the regulatory text be of good quality.

D: keen to keep the timeline of Nov21. Need to keep a balance between ambitious goals and high-quality technical text. As J: let's start working and see where we achieve.

N: not sure Nov 21 is feasible. This is a complex topic and the delegate was sceptical of the time frame, small reservation.

UK: Nov21 is only the technical text delivery date.

NL: 2-step approach seems realistic.

Chair: attempt for a compromise.

- Technical requirements for Nov 21
- Refinements and administrative text later.

OICA:

- Conform to the Industry proposal
- Yet not only a regulatory text. Also the necessity for Industry to confirm the feasibility of the proposals, in particular for V2B since the systems do not exist. There are a couple of systems existing for C2P, but V2B is a challenge. There is no prototypes nor simulation tools for making C2B tests. A regulatory text is feasible, but realistic requirements is a challenge.

Chair: have 3 possible ways forward:

1. No change
2. Nov21 in []
3. Technical text 1st, then administrative text.

CLEPA: please do not forget the technical content must be relevant, this is a real challenge. Ignoring this is wishful thinking.

Chair: the R152 IWG learned how to reduce the technical options to a performance requirement based on accepted key criteria.

OICA: stressed the other lesson: the group decided not to work on all scenarios in parallel, rather to successively address C2C, C2P then C2B. We also used the test data from EuroNCAP: the C2B discussions were postponed until the EuroNCAP data are available.

J: proposed other option: Nov 21 with a compromise statement “the IWG will reconsider the target date in Nov 21”. In addition, V2P and V2B exist in some vehicle on the market from 2017. Please OICA check among your members.

Chair proposal:

- Nov 21 full text (V2C, V2P, V2B)
- Target to be reconsidered before GRVA of Sept21.

D: need to have internal consultations. Favours ambitious target but need to check the proposal. We are currently starting to regulate the AVs while they are only starting.

Chair: will explain at GRVA the reason why we think the target has to be reconsidered in September

CLEPA: AVs requirements will be “if fitted”, this makes a big difference.

OICA: AEBS-HDV will run the same problem as the AEBSM1N1 where we finally decided to have a stepwise approach. A stepwise approach is what we did in the ACSF IWG (PCs first, HCVs second), in R152 (pedestrian first, bicycle second), in VRU proxi etc. and this is what we do now here with railway crossing or service vehicles. This is also what GRVA ALKS TF is doing now when prioritizing PCs vs HCVs on Automatic lane change (following an industry proposal).

Review of the terms of reference:

- Option 1 seems not a reasonable proposal
- Option 3 from Norway
- J supports Option 4
- Suggested to present both O3 and O4 to GRVA.

Conclusion:

- Options 3 and 4 to be tabled at GRVA:
- Option 3 Technical text 1st in Nov21 (V2C, V2P, V2B), then administrative text (Feb22 or Sept22)
- Option 4 Nov 21 full text (V2C, V2P, V2B), then target to be reconsidered before GRVA of Sept21

OICA: administrative text means for example how many different series of amendments (e.g. 01 for increased C2V performance, 02 for C2P, 03 for C2B, 04 for railway crossing), how many of these series will live in parallel and have to be maintained in the future etc.

The group agreed that railroad crossings are included into 2b unless France challenges this.

OICA: N2<7.5T have a different behaviour with regard to LPS/LPB. Industry keen to discuss the possibility for the manufacturer to chose to which regulation the approval should be requested, depending on which category of vehicle the ego vehicle is derived. In UN R131 the separation is on the type of braking system technology (hydraulic vs. pneumatic)

Chair: look at the terms of reference, paragraph 2d. the problem is known in there.

OICA: look at the UN R13 vs. UN R13H for N1. There are good reasons for having that possibility (option for the manufacturer to ask approval via one or the other regulation).

Regulatory approach: 1 regulation vs. 2 regulations.

All parties supported having the new provisions into the renewed UN R131.

Structure of the regulation.

The chair welcomed the document AEBS-HDV-SP-02-07-Rev.1 from Industry. The chair proposed for the next meetings, that the UN R152 be taken as a basis since the regulation is much more advanced on the way to treat the ADAS. In this case, the chairs would prepare a skeleton document based on the centre column of the document. We could even simply amend UN R152 (scope extension).

OICA: look at what the structure should look like at the end of the day. The UN R152 is shaped for PCs, UN R131 A3 is also reflecting the complexity of the HDVs' case. In addition, adding the HDVs into UN R152 would be an administrative burden.

Chair: proposed to use the centre column for showing the text at its final status. UN R152 would then be the base for the skeleton document.

Conclusion:

- UN R152 as a basis for the skeleton document
- Chairs to prepare it for next meeting, according also to the outcomes of GRVA-09 (February 2021)
- Industry to scrutinize the main items of interest to HDVs

7. Other business

8. Next step

The chairs shared their understanding of the roadmap.

They proposed to hold series of 3-day/3-hour meetings every [month].