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Working Party on Automated/Autonomous and Connected Vehicles

Eleventh session

Geneva, 27 September - 1 October 2021

Report of the Working Party on Automated/Autonomous and Connected Vehicles on its eleventh session

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I. Attendance

1. The Working Party on Automated/Autonomous and Connected Vehicles (GRVA) met from 27 September to 1 October 2021 online, hosted in Geneva. The meeting was chaired by Mr. R. Damm (Germany). Accredited experts from the following countries participated in the work, following Rule 1 of the Rules of Procedure of the World Forum for Harmonization of Vehicle Regulations (WP.29) (TRANS/WP.29/690/Rev.2): Australia, Austria, Brazil, Canada, China, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Hungary, India, Italy, Japan, Lithuania, Luxembourg, , the Netherlands, Norway, Poland, Republic of Korea, Romania, Russian Federation, Serbia, South Africa, Spain, Sweden, Switzerland, the United Kingdom of Great Britain and Northern Ireland (UK) and the United States of America (USA). Experts from the European Commission (EC) also participated.

2. Experts from the following non-governmental organizations (NGOs) and international organizations participated: the American Automotive Policy Council (AAPC), AUTOSAR, European Association for Electric Mobility (AVERE), European Agricultural Machinery Organization (CEMA), International Motor Vehicle Inspection Committee (CITA), European Association of Automotive Suppliers (CLEPA/MEMA/JAPIA), European Garage Equipment Association (EGEA), European Tyre and Rim Manufacturer Association (ETRMA), European Transport Safety Council (ETSC), European Association of Internal Combustion Engine Manufacturers (EUROMOT), Federation Internationale des Grossistes, Importateurs et Exportateurs en Fournitures Automobiles (FIGIEFA), Federation of European Manufacturers of Friction Materials (FEMFM), International Automobile Federation (FIA), International Federation of Automotive Distributors (FIGIEFA), Fahrzeugsystemdaten GmbH (FSD), International Motorcycle Manufacturers Association (IMMA), International Motor Vehicle Inspection Committee (CITA), International Road transport Union (IRU), International Organization for Standardization (ISO), International Telecommunication Union (ITU), International Organization of Motor Vehicle Manufacturers (OICA), SAE International, Securing America's Future Energy (SAFE), Self-Driving Coalition for Safer Streets and World Bicycle Industry Association (WBIA).

3. The Chair opened the meeting by mentioning the new Coronavirus 2019 outbreak context, the reason why the meeting was conducted in a hybrid format, with most of the delegations attending online.

II. Adoption of the agenda (agenda item 1)

Documentation: ECE/TRANS/WP.29/GRVA/2021/19 and Add.1
Informal documents GRVA-11-01, GRVA-11-02/Rev.1 and
GRVA-11-12

4. GRVA considered the provisional agenda prepared for this session (ECE/TRANS/WP.29/GRVA/2021/19 and Add.1). GRVA adopted it without modification, as reproduced in GRVA-11-02/Rev.1, a version that included the reference to all informal documents received before the session started. (All informal documents submitted are listed in Annex I of this report. Annex II provides the list of Informal Working Groups (IWG) reporting to GRVA.)

5. GRVA also agreed on the running order for the session (GRVA-11-01) and noted the technical information contained in GRVA-11-12 for connecting remotely to this hybrid session.

III. Highlights of the June 2021 session of WP.29 (agenda item 2)

Documentation: (ECE/TRANS/WP.29/1159)
Informal document GRVA-11-10

6. The Secretary presented GRVA-11-10 with some highlights of the WP.29 session in June 2021 having relevance for GRVA. He referred to the session report ECE/TRANS/WP.29/1159 for more details. GRVA noted the report from the secretariat.

IV. Artificial Intelligence in vehicles (agenda item 3)

Documentation: Informal documents GRVA-11-03, GRVA-11-30 and GRVA-11-38

7. The Secretary presented GRVA-11-30, summarizing GRVA-11-03, the document requested by GRVA at its tenth session. He explained that the document was summarizing the deliberations of GRVA, so far, on Artificial Intelligence (AI) in the context of vehicle regulations. He added that the document contained the list of statements made by the delegations on this topic. He continued that the document proposed possibilities, in terms of committees, to further discuss this topic and also in terms of documentation, on how to take stoke of the statements received so far. He went through the text of a draft guidance document drafted on the basis of the positions expressed. He asked for comments and input.

8. The expert from France welcomed the document. He stated that such document was necessary. He promised to provide input after the session to the secretariat.

9. The expert from FIA welcomed developments in the field of AI. He welcomed that GRVA took care of it but he noted that most AI were based on interactions with human beings. He wondered how GRVA should consider the involvement of humans in this context. GRVA invited the expert from FIA to provide input on this aspect at the next session, if desired.

10. The expert from Germany welcomed the document as an excellent summary. She added that the document was under review by the experts and that she would send comments to the secretariat.

11. The expert from UK highlighted that AI could have relevance for other WP.29 subsidiary bodies as AI could also impact e.g. emissions.

12. The expert from the USA sought for clarifications about the purpose of this exercise, and what would be delivered, a note, some reporting to WP.29, or a guidance document.

13. The expert from SAE International stressed that discussions in this area needs to stand with proper definitions.

14. The expert from Canada agreed with the expert from SAE International and stressed the importance of definitions before guidance is contemplated.

15. The expert from the Russian Federation advised, on definitions, to first focus on AI as a software that is implemented in an Automated Driving System (ADS), with specific features, affecting safety.

16. The expert from France suggested that a first output under this agenda item should be an information for WP.29 so that WP.29 can then decide on the outcome that should be delivered.

17. GRVA agreed that AI have applications beyond ADAS and ADS and that this should be reported to WP.29.

18. GRVA welcomed the informal document prepared by the secretariat and invited experts to provide input for the preparation of a revised version.

19. The expert from France introduced GRVA-11-38 with details about the “Grand Défi” Program on “Trustworthy & Industrial AI” taking place in its country. He detailed the three pillars of the programme: the technological pillar, the norm pillar and the applications conformity assessment pillar. He explained the activities under the technological pillar, he provided details on the project called PRISSMA, a first platform on New Autonomous Mobility under the applications conformity assessment Pillar (primarily focusing on distribution droids and shuttle buses without safety drivers) and he described the activities of the French standardization body (ANFNOR), aimed at setting up a standardization road map

(and priorities) and international cooperation, to promote common vision on standardization for AI at EU and international levels.

V. Automated/autonomous and connected vehicles (agenda item 4)

A. Deliverables of the Informal Working Group on Functional Requirements for Automated and Autonomous Vehicles

Documentation: Informal documents GRVA-11-24 and GRVA-11-25

20. The expert from the United States of America, Co-Chair of the IWG on Functional Requirements for Automated and Autonomous Vehicles (FRAV), presented the informal group's status report (GRVA-11-25). He referred to a consolidation of FRAV working documents (GRVA-11-24) that presented current elements of the FRAV discussions. He explained that GRVA-11-24 reflected work in progress, including elements still under review, that this document followed the FRAV framework for safety requirements covering all ADS configurations, intended uses, and limitations on use (such as Operational Design Domain (ODD) constraints). He continued that the framework was based on manufacturer descriptions of each ADS with provisions to ensure uniformity and measurable/verifiable ODD specifications. He detailed that the safety requirements were structured for application to each ADS based on the manufacturer description and that FRAV was pursuing an approach (a) to user safety based on the roles users may play during a given trip (e.g., passenger, fallback user, driver) and (b) to ADS interactions with other road users based on detection of object properties that enable object recognition and classification at a level sufficient to determine the appropriate response(s). He reported that FRAV was first developing safety requirements at a general level and anticipated working in parallel with the IWG on Validation Method for Automated Driving (VMAD) to develop technical specifications for these requirements. He highlighted the close relationship between performance requirements and the scenarios used to assess performance (i.e., the requirements ensure safe ADS navigation of the nominal and safety-critical traffic scenarios developed by VMAD) and in this regard, the increasing FRAV collaboration with VMAD (as expected). He mentioned the corresponding three workstreams on the performance of the Dynamic Driving Task (DDT), interactions with other road users, lighting and the new workstream related to data collection together with the IWG on Data Storage System for Automated Driving (DSSAD)/Event Data Recorder (EDR). He reported that FRAV had sent initial recommendations to the EDR/DSSAD informal group on data collection for ADS as requested, and that FRAV expected to provide further input, including examples for applying its recommendations. He concluded by mentioning that this work on data collection may also be relevant to the VMAD work on ADS in-service monitoring and reporting.

21. The expert from the United Kingdom of Great Britain and Northern Ireland asked whether means to increase transparency on the workstreams could be identified. He explained that there were many meetings, that were difficult to follow.

22. The expert from the United States of America answered that the group was carefully addressing this point, making sure that the workstreams would not work aside of FRAV. He explained that the workstreams were informal and dynamic, to address specific technical details, and that their work was fully discussed in plenary FRAV sessions.

B. Deliverables of the Informal Working Group on Validation Methods for Automated Driving

Documentation: Informal document GRVA-11-37

23. The expert from Canada, Co-Chair of the IWG on VMAD, presented the progress report of the group (GRVA-11-37). He recalled the purpose of the ongoing activities and the corresponding deliverables expected from the group. He also recalled the structure of the New Assessment/Test Method (NATM) – Master document. He detailed the activities

accomplished by the four VMAD subgroups. He concluded his report by summarizing the three main points the presentation: (a) substantial work has been accomplished on the second iteration of NATM; (b) the draft second iteration of the NATM Master Document would be submitted for consideration at the twelfth session of GRVA; and (c) FRAV and VMAD agreed to select a few concrete test cases to work on and to foster the existing synchronization between the two groups.

24. Several experts asked for clarifications about the envisaged dates for the document submission. It was clarified that the group expected to submit the document before end of October 2021, if possible as a complete and consolidated document.

C. Deliverables of the Informal Working Group on Event Data Recorder / Data Storage Systems for Automated Driving

Documentation: Informal document GRVA-11-31

25. The expert from the United States of America, Co-Chair of the IWG on EDR/DSSAD, informed GRVA on the achievements of the group so far as well as on the progress made on the current projects regarding EDR and DSSAD (GRVA-11-31). She explained the proposed DSSAD work plan, focusing on the inventory of best ADS storage practices and the activities on DSSAD performance elements for ADS, in coordination with FRAV and VMAD. She detailed the schedule of meetings for the group until the next session of GRVA.

D. UN Regulation on Automated Lane Keeping System

Documentation: (ECE/TRANS/WP.29/2021/143)
ECE/TRANS/WP.29/GRVA/2021/30
ECE/TRANS/WP.29/GRVA/2021/31
(ECE/TRANS/WP.29/GRVA/2020/32
ECE/TRANS/WP.29/GRVA/2020/33
ECE/TRANS/WP.29/GRVA/2021/2
ECE/TRANS/WP.29/GRVA/2021/4)
Informal documents GRVA-11-08, GRVA-11-32 and GRVA-11-33

26. GRVA recalled the purpose of ECE/TRANS/WP.29/2021/143 and the agreement to reconfirm its content at this session. GRVA reviewed GRVA-11-08, jointly developed by the IWG on DSSAD/EDR and the Special Interest Group on UN Regulation No. 157, with an amendment proposal to the official document. GRVA requested the secretariat to submit the amendments to World Forum for Harmonization of Vehicle Regulations (WP.29) and the Administrative Committee of the 1958 Agreement (AC.1), for consideration at their November 2021 sessions.

27. The expert from the United States of America required clarification about the procedure in that case. The secretariat explained the administrative constraints in such as case and agreed to expedite the preparation of documents in line with relevant rules.

28. The expert from the United Kingdom of Great Britain and Northern Ireland introduced the report of the Special Interest Group (SIG) on UN Regulation No. 157, provided in GRVA-11-32. He explained the progress made by the group on the provisions developments related to higher speeds for ALKS concerning: (i) following distances (in line with traffic rules), (ii) smooth and anticipatory driving that avoids inducing string instability in traffic, (iii) strategies to mitigate collisions with wrong way drivers and pedestrians, forward detection ranges along with control strategies to adapt speed if braking performance and/or detection range is impaired and (iv) new performance model introduced for reference. He mentioned the open points still under consideration.

29. GRVA clarified that no decision would be taken at this session, GRVA reviewed the long list of proposals and reference documents under this agenda item and requested the secretariat to remove outdated documents from the agenda for the next session.

30. The expert from the United Kingdom of Great Britain and Northern Ireland introduced GRVA-11-33 (amendment proposal by the SIG to raise the specified ALKS maximum speed up to 130 km/h), upon request from the expert of France.

E. Other business

Documentation: Informal documents GRVA-11-04, GRVA-11-13, GRVA-11-14, GRVA-11-34 and GRVA-11-36

31. The experts from the Self-Driving Coalition for Safer Streets introduced GRVA-11-34, with a presentation of the coalition, its missions and activities, in line with the recommendation of WP.29 (see ECE/TRANS/WP.29/1159, para. 21).

32. The expert from ISO introduced GRVA-11-13, presenting the activities of the ISO working group developing publicly available specification concerning safety and artificial intelligence for road vehicles. GRVA noted the link with the activities under agenda item 3 and agreed to receive updates at a next session.

33. The expert from ISO introduced GRVA-11-14, providing an overview and guidance of the steps for developing and validating an automated vehicle equipped with a safe automated driving system, considering safety-by-design, verification and validation methods for automated driving as well as cyber security. GRVA also welcomed future updates at next sessions.

34. The expert from ISO introduced GRVA-11-36, providing an update on the activities of ISO on the Safety of the Intended Functionality (SOTIF). He recalled the purpose of these activities, he explained the status of the standard drafting, completing ISO 26262 on functional safety. He detailed how the SOTIF standard currently being developed could support automated vehicles regulations.

VI. Connected vehicles (agenda item 5)

A. Cyber security and data protection

Documentation: ECE/TRANS/WP.29/GRVA/2021/20
ECE/TRANS/WP.29/GRVA/2021/21
Informal documents GRVA-11-05 and GRVA-11-18

35. The expert from the United Kingdom of Great Britain and Northern Ireland, Co-Chair of the IWG on Cyber Security and Over-the-Air issues (CS/OTA), reported on the activities of the group (GRVA-11-05).

36. He introduced ECE/TRANS/WP.29/GRVA/2021/20, with recommendations on uniform provisions concerning cyber security and software updates, suitable for the purpose of the Contracting Parties of the 1998 and 1958 Agreements. He explained that no UN Global Technical Regulation was envisaged because of the difficulty to define acceptance criteria, which would depend on how a vehicle is equipped. He stated that these recommendations, covering cyber security and software updates and permitting the use of Regulation No. X Software Identification Number (RxSWIN), can be followed and adapted to national circumstances.

37. He reported on the activities of the group concerning the review of the request by the expert from CEMA to remove vehicle categories S, T and T from the scope of UN Regulation No. 156. He explained, that following a technical discussion, the group confirmed that vehicles of these categories were using Over-the-air Software updates and that the scope of UN Regulation No. 156 was fine. He suggested that the scope of UN Regulation No. 155 could be expanded to vehicles of Categories S, R and T as both regulations went hand in hand.

38. He also reported on group's activities on ECE/TRANS/WP.29/GRVA/2021/20 following a request for clarification on the transition clauses specified in paragraphs 7.3.1.

and 7.3.4. with regards to the extension of type approvals first issued before 1 July 2024 and applied for such extension after that date. He explained that the group developed amendments to (a) the UN Regulation No. 155 (Cyber Security and Cyber Security Management System, and (b) the respective Interpretation Documents for UN Regulation No. 155 (ECE/TRANS/WP.29/2021/59), in order to clarify under which circumstances extensions were possible and which additional information was expected to be provided by the vehicle manufacturer applying for approval.

39. The expert from Canada stated the world of cyber security was very active including on vulnerability assessment tools. He mentioned existing services as suitable mitigation tools. He highlighted that Canada published Transport Canada's Vehicle Cyber Security Strategy as well as Canada's vehicle cyber security guidance. He stated that the work of the IWG was not completed.

40. The expert from the United Kingdom of Great Britain and Northern Ireland, Co-Chair of the group, acknowledged that the world of cyber security was evolving, and that regulations and other activities, as those mentioned above, were going hand in hand.

41. The expert from the United States of America proposed that ECE/TRANS/WP.29/GRVA/2021/20 should be kept at GRVA level for the time being.

42. The expert from the European Commission recalled that the document was mandated by the Framework Document on Automated Vehicles and wondered why it should not be transmitted to WP.29.

43. The Secretary of the IWG explained that some elements were missing in the document and that he would try to provide a corrected version as soon as possible.

44. GRVA agreed that there was no urgency and agreed to consider a revised document at its January 2022 session.

45. GRVA adopted ECE/TRANS/WP.29/GRVA/2021/21 and requested the secretariat to submit it to WP.29 as supplement to UN Regulation No. 155 (for consideration and vote by AC.1 in March 2022) and as amendment to the Interpretation document for UN Regulation No. 155 (also for consideration and vote by WP.29 in March 2022).

46. The expert from Japan, co-organizer of the workshop on the implementation on UN Regulation No. 155 that took place on 8 July 2021, introduced GRVA-11-18, explaining the purpose of the workshop and reporting on the outcomes of this workshop.

47. The expert from France announced that their Approval Authority was going to issue a Cyber Security Management System Certificate of Conformity. GRVA clarified that the activities performed under the workshop on the implementation of UN Regulation should not stop Contracting Parties to issue type approvals.

48. GRVA agreed that the secretariat together with National Traffic Safety and Environment Laboratory (Japan) organize further workshops on the implementation of UN Regulation No. 155.

49. The expert from Germany asked whether the group was having plans for updating the annexes of the Regulation.

50. GRVA noted that the mandate of the IWG was running until November 2022 and discussed the inclusion of vehicles of Categories S, R and T in the scope of UN Regulation No. 155 and the corresponding timeline as well as the question raised by Germany (para. 49).

51. The expert from Japan suggested that the review of the Regulation would be needed at some point and inquired whether a regular IWG meeting would be needed for the time being.

52. The expert from the European Commission stated that there was no emergency to include vehicles categories S, R and T in UN Regulation No. 155 and that he did not have views on the timeline.

53. The expert from CEMA supported a discussion concerning the vehicles categories S, R and T of UN Regulations Nos. 155 and 156.

54. The secretariat asked whether GRVA would wish to discuss the deletion of the Categories R, S and T from the scope of UN Regulation No. 156. The expert from UK supported that the categories S, R and T would remain in UN Regulation No. 156. He explained that the question was about UN Regulation No. 155. He added that the implementation of the Regulation was a matter of relevance for the Contracting Parties. He supported a discussion on UN Regulation No. 155.

55. The expert from Finland suggested that the categories would belong to the scope of both regulations but that there was no hurry to insert them.

56. GRVA agreed to resume consideration at its twelfth session regarding the scopes of UN Regulations Nos. 155 and 156 with regards to Categories R, S and T.

B. Software updates and over-the-air issues

57. GRVA dealt with this agenda item together with agenda item 5(a).

C. Data and vehicle communications

Documentation Informal document GRVA-11-15

58. The expert from FSD presented GRVA-11-15 (also on behalf of CITA). He recalled the existing regulatory activities on remote access to in-vehicle data within the Motor Vehicles Working Group of the European Commission and within GRVA. He described the current situation with regard to remote access to in-vehicle data and explored, in the case GRVA would be willing to deal with this item, the implications of relying on ISO 20077 (extended vehicle), which only allows data transfer via Business to Business (B2B) transactions. He highlighted that such system would not be appropriate for sovereign use cases, including Market Surveillance Activities and Periodic Technical Inspections. He advocated for a trust centre to be developed that would manage access to in-vehicle data. He based his explanation on an example (DSSAD) and highlighted the importance of the separation of duties in that context and the importance for authorities to get access to these data.

59. The expert from AAPC noted that this matter was touching on EDR/DSSAD. He raised the question: who owns the data? He suggested that access to data would be best managed at regional level. He noted that courts had the right to ask for data.

60. The expert from FIA mentioned that the CITA/FSD presentation was close to what FIA presented at previous sessions.

61. The expert from Norway thanked CITA/FSD for the informative presentation.

62. The expert from Germany asked what was the role and the place of the citizens in the model presented.

63. The expert from FSD answered that the consumers were recognized, and that consent could be managed, being a part of the trust centre role. He answered to the comment from AAPC that the model presented was referring, as an example, to DSSAD but that it was not exclusive. He explained that the trust centre would be a governance tool and that other examples could have been chosen, such as in-service monitoring. He stressed the importance of a trusted storage that is needed for courts as well as all other stakeholders, including authorities and citizens. He also recognized the value of the concept presented by FIA.

64. The expert from FIGIEFA supported the approach presented. She noted the diverging technical aspect but the converging overall goals. She stated that the discussions should continue, also at regional level with the European Commission Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW). Their technical expert mentioned that the technical approach would not be sufficient; both “write” and “read” access and further clarification could be discussed at the European level.

65. The experts from CLEPA and OICA promised to review the presentation in detail and to send comments.

66. GRVA invited the Chair and the secretariat to approach the Committee on the Coordination of Work (WP.29/AC.2). GRVA agreed to resume consideration of this agenda item at its next session to discuss the role of GRVA. GRVA noted that the IWG on EDR/DSSAD could perform a first review of the topic presented by CITA (related to EDR/DSSAD) at one of its next sessions, as time allows.

D. Other business

67. No document was submitted under this agenda item.

VII. Advanced Driver Assistance Systems and UN Regulation No. 79 (agenda item 6)

A. Advanced Driver Assistance Systems

Documentation: Informal documents GRVA-11-16

68. The expert from the Russian Federation, Co-Chair of the Task Force on Advanced Driver Assistance System (ADAS), introduced GRVA-11-16, with a status report of the activities performed by the group. He detailed the activities under the two workstreams on the review of amendment proposals to UN Regulation No. 79 and on the drafting of a new Regulation. He explained that the group was envisaging to develop a new UN Regulation on Dynamic Control Assistance Systems (DCAS), as a subset of ADAS, with a structure derived from the one of UN Regulation No. 157 and incorporating outcomes from the IWG on VMAD concerning audits and tests (including virtual testing). He confirmed that the draft was addressing both the DCAS performance and DCAS interactions with human drivers.

69. The expert from Finland mentioned the excellent work of the group, but was not sure whether the new UN Regulation should address DCAS or ADAS, as the name DCAS could suggest it would also address higher level of automation, as the word “driver” was missing in DCAS. He also raised the importance to involve the Global Forum for Road Traffic Safety (WP.1). The position was also supported by the experts from Sweden and Denmark.

70. The expert from the Russian Federation, Co-Chair of the IWG on ADAS, clarified that the levels of automation envisaged were assistance levels according to the definitions provided in ECE/TRANS/WP.29/1040 and that the group was developing an approval framework for systems around the driver, which would be useful to industry and would clarify the assistance that can be given to drivers.

B. UN Regulation No. 79 (Steering equipment)

Documentation: (ECE/TRANS/WP.29/GRVA/2021/7
ECE/TRANS/WP.29/GRVA/2021/8
ECE/TRANS/WP.29/GRVA/2021/9
ECE/TRANS/WP.29/GRVA/2021/10
ECE/TRANS/WP.29/GRVA/2021/11)
Informal documents GRVA-11-17 and GRVA-11-43

71. GRVA adopted ECE/TRANS/WP.29/GRVA/2021/8, as amended by GRVA-11-17 (reproduced in Annex III), and requested the secretariat to submit it, as draft supplements for the 02, 03 and 04 series of amendments to UN Regulation No. 79, to WP.29 and AC.1 for consideration and vote at their March 2022 sessions.

72. GRVA noted that the review of ECE/TRANS/WP.29/GRVA/2021/9, ECE/TRANS/WP.29/GRVA/2021/10 and ECE/TRANS/WP.29/GRVA/2021/11 by the Task Force on ADAS was still ongoing. The expert from AVERE withdrew ECE/TRANS/WP.29/2021/7.

73. GRVA noted that some inaccuracies were detected by the secretariat in the recent amendment to UN Regulation No. 79, as noted in GRVA-11-43, and agreed to consider a corrigendum or a supplement at its next session.

C. Other business

74. No document was submitted under this agenda item.

VIII. Advanced Emergency Braking System (agenda item 7)

Documentation: ECE/TRANS/WP.29/GRVA/2021/22
ECE/TRANS/WP.29/GRVA/2021/23
Informal documents GRVA-11-07, GRVA-11-20,
GRVA-11-27 and GRVA-11-40

75. The expert from Japan, Co-Chair of the IWG on Advanced Emergency Braking System (AEBS) for M₁ and N₁, reported (GRVA-11-20) on the activities of the IWG since the May 2021 session of GRVA. He explained that the group wanted to gather experience during the next two years, including on simulation, before submitting amendment proposals addressing tests via simulation.

76. He mentioned that the group produced GRVA-11-07 proposing amendments to the OICA proposal ECE/TRANS/WP.29/GRVA/2021/22.

77. The expert from Japan, Head of Delegation, proposed minor amendments to the proposal. The expert from Canada proposed clarifications with more accurate references to standards mentioned in the document.

78. GRVA adopted ECE/TRANS/WP.29/GRVA/2021/22, as amended by GRVA-11-40 (reproduced in Annex IV), and requested the secretariat to submit it, as draft supplements for the 00, 01 and 02 series of amendments to UN Regulation No. 152, to WP.29 and AC.1 for consideration and vote at their March 2022 sessions.

79. The expert from OICA introduced ECE/TRANS/WP.29/GRVA/2021/23, proposing similar amendments, relevant to the 02 series of amendments.

80. GRVA adopted ECE/TRANS/WP.29/GRVA/2021/23 and requested the secretariat to submit it as draft supplements for the 02 series of amendments to UN Regulation No. 152 to WP.29 and AC.1 for consideration and vote at their March 2022 sessions.

81. GRVA noted the status report of the IWG on AEBS for Heavy Vehicles (GRVA-11-27). GRVA provided guidance, upon request by the group, on the deactivation related provisions, and suggested their alignment with those in UN Regulation No. 152.

82. GRVA noted the second question regarding the interpretation of the test conditions. GRVA invited the Special Interest Group (SIG) on Regulation No. 157 and the Task Force on ADAS to check it, at a future occasion, and agreed to discuss it back at the next GRVA session.

IX. UN Regulations Nos. 13, 13-H, 139 and 140 and UN GTR No. 8 (agenda item 8)

A. Electronic Stability Control

Documentation: ECE/TRANS/WP.29/GRVA/2020/34
(ECE/TRANS/WP.29/2020/99)
Informal document GRVA-11-41

83. The expert from Korea, technical sponsor to the amendment to UN GTR No. 8 (see ECE/TRANS/WP.29/2020/99), recalled the purpose of ECE/TRANS/WP.29/GRVA/2020/34 (as amended by GRVA-09-36), a revised proposal for amendment to UN

GTR No. 8 aimed at accommodating new types of steering equipment, low gear systems, not being able to reach the 270 degrees request in the sine with dwell test.

84. GRVA noted the oral report from the expert from the Republic of Korea on their consultations with Canada and OICA regarding the amendment proposal to UN GTR No. 8.

85. The expert from Canada provided oral comments on the amendment proposal to the GTR, that the secretariat reproduced in GRVA-11-41.

86. GRVA agreed to resume consideration of this item at its next session.

B. Electromechanical Brakes

Documentation: ECE/TRANS/WP.29/GRVA/2021/24

87. The expert from CLEPA briefly introduced ECE/TRANS/WP.29/GRVA/2020/24. He explained that his organization invited GRVA participants to participate in an informal meeting that took place before the GRVA session and that CLEPA received some suggestions and comments from Contracting Parties that his members wanted to address.

88. GRVA agreed to review a revised proposal at its next session.

C. Clarifications

Documentation: ECE/TRANS/WP.29/GRVA/2021/25
Informal documents GRVA-11-06, GRVA-11-39 and GRVA-11-42

89. The expert from OICA introduced ECE/TRANS/WP.29/GRVA/2021/25, an amendment proposal to the electric parking brake provisions in UN Regulation No. 13 already discussed at the previous session. He justified that a new series of amendments was necessary as the proposal would impact the design of vehicles and would therefore need to provide lead time.

90. The expert from Germany confirmed that his previous comments regarding buses were addressed by the proposal tabled at this session.

91. GRVA adopted ECE/TRANS/WP.29/GRVA/2021/25 (without square brackets) and requested the secretariat to submit it as draft 12 series of amendments to UN Regulation No. 13 to WP.29 and AC.1 for consideration and vote at their March 2022 sessions.

92. The expert from CLEPA introduced GRVA-11-06 with an amendment proposal aimed to resolve problems with installation of stronger spring brake actuators in trailers to realize higher deceleration in the case of emergency braking caused by a cut of the supply line between towing vehicle and trailer. GRVA requested the secretariat to distribute GRVA-11-06 with an official symbol at the next session.

93. The expert from OICA introduced GRVA-11-42, an amendment proposal to clarify the warning actuation requirements in case the parking braking system would be automatically requested to apply the parking brake. GRVA requested the secretariat to distribute GRVA-11-42 with an official symbol at the next session.

94. The expert from OICA introduced GRVA-11-39, proposing amendments to ECE/TRANS/WP.29/2021/73, recently adopted by WP.29 and AC.1. GRVA noted that the official document, currently notified by the Office of Legal Affairs to the Contracting Parties, could not be amended at this stage. GRVA requested the secretariat to distribute GRVA-11-39 as an amendment proposal to UN Regulation No. 13 with an official symbol at the next session.

X. Motorcycle braking (agenda item 9)

A. UN Global Technical Regulation No. 3

Documentation: Informal document GRVA-11-29

95. The expert from Italy informed GRVA (GRVA-11-29) of their intention to submit a proposal for amendments to UN GTR No. 3 at the next session of Executive Committee of the 1998 Agreement (AC.3) that would propose to adapt UN GTR No. 3 to technical and standardization progress, introducing provisions for the activation of the stop lamp under regenerative braking and updating the references to ASTM standards to enable the use of the new ASTM standard reference test tyre F2493 for the measurement of the Peak Braking Coefficient (PBC). He asked for comments on that proposal. The expert from Canada explained that, in their view some further work would be needed, for example, on the definition proposed in para. 2.25. and other small items.

B. UN Regulation No. 78

Documentation: ECE/TRANS/WP.29/GRVA/2021/26
ECE/TRANS/WP.29/GRVA/2021/27
Informal document GRVA-11-22

96. The expert from IMMA introduced GRVA-11-22, modifying ECE/TRANS/WP.29/GRVA/2021/26, with amendments to the stop lamp activation criteria. He proposed that GRVA would harmonise stop lamp activation thresholds for regenerative braking in UN Regulation No. 78 with new provisions in UN Regulation No. 13-H.

97. The expert from Japan stated that the proposal can be supported. He noted however that automatically commanded braking was not considered in the current text of UN Regulation No. 78. He added that, if automatically commanded braking would be introduced in UN Regulation No. 78, then consistency between UN Regulation No. 78 and UN Regulation No. 13-H would be needed.

98. The expert from IMMA also presented ECE/TRANS/WP.29/GRVA/2021/27, proposing reference updates to standards that were recently revised.

99. GRVA adopted ECE/TRANS/WP.29/GRVA/2021/26 as amended by GRVA-11-22 (as reproduced in Annex V) and ECE/TRANS/WP.29/GRVA/2021/27. GRVA requested the secretariat to submit them as draft supplement to UN Regulation No. 78 to WP.29 and AC.1 for consideration and vote at their March 2022 sessions.

XI. UN Regulation No. 90 (agenda item 10)

Documentation: ECE/TRANS/WP.29/GRVA/2021/28
ECE/TRANS/WP.29/GRVA/2021/29
Informal document GRVA-11-35

100. The expert from Italy presented GRVA-11-35, introducing ECE/TRANS/WP.29/GRVA/2021/28 and ECE/TRANS/WP.29/GRVA/2021/29. He explained that Annex 15 was leading to a high number of groups to be tested and therefore was inducing an overproportioned test workload due to the grouping criteria.

101. GRVA adopted ECE/TRANS/WP.29/GRVA/2021/28 and requested the secretariat to submit it as draft supplement to UN Regulation No. 90 to WP.29 and AC.1 for consideration and vote at their March 2022 sessions.

102. The expert from the United Kingdom of Great Britain and Northern Ireland questioned the relevance of the amendments proposed in Table 1 in ECE/TRANS/WP.29/GRVA/2021/29. The expert from Italy volunteered to provide more details for review at the next session.

103. GRVA agreed to resume discussion on ECE/TRANS/WP.29/GRVA/2021/29 at its twelfth session.

XII. Exchange of views on guidelines and relevant national activities (agenda item 11)

Documentation: Informal documents GRVA-11-19, GRVA-11-21 and GRVA-11-23

104. The expert from France introduced GRVA-11-23, providing an overview of the French Decree on automated vehicles' conditions of use and automated road transport systems' commissioning. He explained that the decree covered automation levels up to fully automated systems, provided that there are under supervision of a person in charge of remote intervention and are deployed on predefined paths or zones. He continued that the decree contained definitions such as the one for Automated Road Transport System (ARTS) and general safety provisions for these systems, as well as requirements for the driver or the person in charge of remote intervention and specify responsibility principles (including criminal liability) as set in ordinance 2021-443 dated 14 April 2021. The presentation received clarification questions from Japan about the scope of ARTS, including the system only or the system and the human, and about the handling of emergency vehicles.

105. The expert from Germany introduced GRVA-11-19, a presentation providing details on the regulatory act on Automated Driving Systems adopted in Germany in 2021. He detailed the variety of use cases covered, the infrastructure and ODD requirements, the technical requirements and the approval of the technology and authorization regarding the use to operate. The presentation received questions from the experts from China on the timeline, from Italy on the use of specific registration plates, and from France on potential definitions for autonomous shuttles. The expert from Germany highlighted that an ordinance was envisaged to clarify details.

106. The expert from China introduced GRVA-11-21 providing information about activities performed in China regarding their Framework of Automated Driving Standard System, providing details regarding Intelligent and Connected Vehicles and the related general technical requirements for automated driving systems, as well as proposals and suggestions derived from the experience gathered in China, for GRVA: (i) to consider dealing with the vehicle operating on both public road and limited areas, (ii) to promote the organic combination of FRAV and VMAD work results, (iii) to clarify the relationship between Automated Driving Systems and Advanced Driver Assistance System and (iv) to regulate other technologies or functions, such as on-board positioning system, as the basic function to serve the automated driving.

107. GRVA agreed that the Task Force on ADAS could develop a document clarifying the boundaries between ADS and ADAS. GRVA reflected on the suggestion (ii), noted above, and agreed that proposals could be made by the experts to the IWG on FRAV to consider not only motorway but also other use cases. GRVA noted the coordination efforts made by FRAV and VMAD. Concerning the suggestion (iv), GRVA recalled the preference to regulate the performance instead of the technology. The expert from International Telecommunication Union stated the merits of developing provisions for the assessment of positioning systems for ADS. GRVA recalled that any Contracting Party may submit a proposal for activities in any relevant area and agreed to discuss at its next session whether further items for regulation should be considered such as the performance of positioning technologies.

XIII. Revision 3 of the 1958 Agreement (agenda item 12)

A. Implementation of new provisions in Revision 3 to the 1958 Agreement

Documentation: Informal document GRVA-11-11

108. The expert from Germany introduced GRVA-11-11 on behalf of the IWG on The Database for the Exchange of Type-Approval Documentation (DETA). He referred to Schedule 5 in the Revision 3 of the 1958 Agreement that sets the grounds for the use of the feature called Unique Identifier (UI). He explained that the IWG on DETA was developing, on the basis of the activities of the Working Party on Lighting and Light-signalling (GRE), the “summary document” that could be stored in DETA to facilitate the use of UI. He clarified that the subsidiary bodies of WP.29 (GRs) would be in charge to define the content of the summary document. He recalled the importance of defining which Regulation would not allow the use of UI.

109. The expert from the Russian Federation suggested that OICA should provide guidance on which regulations should prohibit the use of UI.

110. GRVA requested the secretariat and the experts from OICA to prepare a document with the list of Regulations for which the use of Unique Identifier should not be allowed.

111. GRVA agreed to resume discussion on the proposed summary document at its next session.

B. International Whole Vehicle Type Approval

112. The Vice-Chair of GRVA clarified that there was no ongoing activity on International Whole Vehicle Type Approval that would require discussion during this session.

XIV. Human Rights considerations impacting GRVA activities (agenda item 13)

113. The Secretary recalled the context of this agenda item, triggered by a letter of the Secretary General of the Parliamentary Assembly of the Council of Europe, informing on their Resolution 2346, dated 27 October 2020. He also recalled the activities performed by WP.29, AC.2 and GRVA on this item, including the collection of relevant documents from the Contracting Parties and relevant organizations addressing the matter of Human Rights considerations impacting GRVA activities.

114. GRVA noted the reports received by the secretariat with regards to Automated/Autonomous and Connected Vehicles and their potential impact on human rights.

115. GRVA noted that an answer letter was in preparation. GRVA agreed to remove this item from its agenda for the time being.

XV. Election of Officers (Agenda item 14)

116. In compliance with Rule 37 of the Rules of Procedure (TRANS/WP.29/690 as amended), GRVA called for the election of officers.

117. Mr. R. Damm (Germany) was elected as Chair for the GRVA sessions in 2022. Ms. C. Chen (China) and Mr. T. Onoda (Japan) were elected as Vice-Chairs for the GRVA sessions in 2022.

XVI. Other business (agenda item 15)

A. List of priorities concerning GRVA activities

Documentation: Informal documents GRVA-11-09 and GRVA-11-28

118. GRVA reviewed GRVA-11-09, containing a copy of the draft document with the WP.29 Programme of Work for the year 2022.

119. GRVA reviewed GRVA-11-28 containing amendments to the row dedicated to ADAS activities in GRVA-11-09.

120. The expert from China, Vice-Chair of GRVA, suggested that clarifications were provided to avoid overlap between ADAS activities and FRAV activities. The experts from France and the United States of America supported it. GRVA addressed that comment under agenda item 11.

121. The expert from the United States of America requested that the text related to DSSAD and EDR was inserted in the document.

122. The expert from Japan requested that Japan was noted as initiator of the AEBS activities together with Germany.

123. The expert from the United Kingdom of Great Britain and Northern Ireland requested that the row with ALKS indicated June 2022 as deadline.

124. The expert from Germany supported it and suggested that the European Commission was also noted as initiator for the ALKS activities.

125. The Secretary suggested to align the mandate date of the IWG on Cyber Security and OTA issues with the agreed date at WP.29, November 2022.

126. GRVA requested the secretariat to provide these suggestions to the Secretary to WP.29.

B. Framework document on automated/autonomous vehicles (FDAV)

Documentation: (ECE/TRANS/WP.29/2021/151)

127. The secretariat reported on the WP.29 activities regarding the update of the Framework Document on automated/autonomous vehicles (FDAV) at the June 2021 session and the preparation of the official document for final confirmation in November 2021, by WP.29. GRVA reviewed ECE/TRANS/WP.29/2021/151 and confirmed that the square brackets in the row dedicated to the DSSAD activities could be removed.

C. Review of a proposal from the IWG on Periodic Technical Inspection

Documentation: (ECE/TRANS/WP.29/2021/148)

128. The Secretary recalled the purpose of ECE/TRANS/WP.29/2021/148, titled “Proposal for a Framework Document on Vehicle Whole-Life Compliance”, which was circulated to all WP.29 subsidiary bodies (see ECE/TRANS/WP.29/1159, para. 112).

129. The expert from OICA asked for clarifications about the purpose of the document. He mentioned that the document was going beyond Periodic Technical Inspection. He explained that it was overlapping with activities being otherwise developed by GRVA, such as performance requirements for sensor range over lifetime. He stated that some definitions would require further review.

130. The expert from the United Kingdom of Great Britain and Northern Ireland also sought guidance about the purpose of the document.

131. The expert from the Russian Federation clarified that the document was a declaration. He detailed that the Figure 1 was providing clarifications on the purpose of the document, containing phases of a vehicle, compliance assessment elements and a mixture of legal frameworks and responsibilities.

132. The expert from Germany stated that more time was needed to review the document.

133. GRVA noted that some definitions should be reviewed and agreed that the document should be revised to indicate its purpose and the proposal it brings to the international level and WP.29 as well as the impact that it is intended to have on GRs. GRVA agreed to reconsider the document at its January 2022 session.

D. Implementation of the Inland Transport Committee strategy 2020-2030

Documentation: (ECE/TRANS/2021/3)

134. The Secretary recalled the adoption of the Inland Transport Committee strategy 2020-2030 and the context of the implementation monitoring (ECE/TRANS/2021/3). He invited delegations to provide comments.

E. Arrangement of meetings

135. The Secretary recalled the ambition of GRVA to organize meetings outside of Geneva in 2022. He noted the pandemic evolution and the small likelihood that such meetings can be organized.

136. GRVA agreed to envisage meetings outside of Geneva in 2023.

F. Any other business

Documentation: Informal document GRVA-11-26

137. The Secretary presented GRVA-11-26, a publication (brochure) that UNECE would publish within the next months, dealing to technological developments and governmental responses at international level, related to ADAS and ADS. The expert from France asked whether the publication could be also published in French.

138. GRVA welcomed the draft publication of UNECE “all you need to know about Automated Vehicles” and agreed that delegations should send comments until 15 October 2021.

139. The Chair informed GRVA that he had been invited to attend the WP.1 session in the week before. He explained that the Chair of WP.1 invited GRVA to consider the organization of a joint event with WP.1 in 2022, to engage the road safety community to share views and experience on the recent rapid technological advancements. He also explained that WP.1 commented on the excessive speed of delivery of GRVA. He reported that he explained the step-by-step approach chosen by GRVA, based on the knowledge of its expert groups and that he stated that it was not a suitable approach for GRVA to wait e.g. for five years and then observe how technology develops in the field.

140. The secretariat explained that the work of GRVA was among the items addressed at UNECE, which had the best media coverage¹.

141. The expert from the United States of America mentioned that WP.1 could learn from the work performed by GRVA. She explained that, instead of a public event, a technical exchange fostering a better mutual understanding. She suggested, if a public event would be organized, that the event would include a technical part and then as public part. The expert from Canada supported this position. He proposed to first clarify the purpose and deliverables of a joint session. The expert from France supported this position. The expert from the Russian Federation suggested technical items for exchange with WP.1. He stressed the inconsistency in terminology between the two groups and the need to address it. The expert from OICA also supported the need to clarify the purpose and the meaning of public event.

142. Upon request, the Secretary recalled the activities of the Executive Task Force on three items, including definitions. He mentioned that the Task Force did not convene since 2019. He mentioned the proposal from the expert from Canada (ECE/TRANS/WP.1/2020/3) to foster collaboration between WP.1 and WP.29, endorsed by GRVA and WP.29. He explained that, in his view, the participation of the GRVA Chair at WP.1 was in line with the spirit of the document.

¹ The information unit of UNECE calculated that the media coverage of GRVA’s work during the summer 2022 accounted for 25 per cent of the UNECE media coverage (number of media clippings), which corresponded to two third of the reach of all articles detected by the unit, in terms of outreach.

143. GRVA reacted positively to the offer of WP.1 to organize a combined (public) session in 2022. GRVA agreed that the Chair would consult the Administrative Committee for the Coordination of Work (AC.2) and WP.29 before answering to WP.1.

Annex I

[English only]

List of informal documents (GRVA-11-...) considered during the session

<i>No.</i>	<i>(Author) Title</i>	<i>Follow-up</i>
1	(Chair) Running order of the eleventh session	B
2	(Secretariat) Updated and consolidated agenda for the 11th GRVA session (incl. informal documents received until 27 September 2021 4.30pm)	A
3	(Secretariat) Artificial Intelligence and Vehicle Regulations	C
4	(ISO) Copy of ISO/DIS 21448:2021 provided by the ISO secretariat	B
5	(CS/OTA) Report on the work of the IWG on cyber security and over-the-air updates	B
6	(CLEPA) Proposal for Supplement 19 to the 11 series of amendments to UN Regulation No. 13 (Heavy vehicle braking)	B
7	(AEBS for M ₁ /N ₁) Proposal for amendments to ECE/TRANS/WP.29/GRVA/2021/22	B
8	(EDR/DSSAD - UNR.157) Proposal to amend GRVA-10-36 (ECE/TRANS/WP.29/2021/143)	A
9	(WP.29/AC.2) Draft Programme of Work document for 2022	B
9r1	(Secretariat) GRVA input on the draft WP.29 Programme of Work for 2022 (based on draft ECE/TRANS/WP.29/2022/1)	A
10	(Secretariat) Highlights from the (hybrid) June 2021 session of WP.29 /AC.1 /AC.2 /AC.3 /AC.4	B
11	(IWG on DETA) Proposal for a DETA extension to improve the use of the UNIQUE IDENTIFIER for UN Regulations	B
12	(Secretariat) Virtual meeting participation guidelines and information	B
13	(ISO) ISO PAS 8800 Road Vehicles - Safety and Artificial Intelligence	B
14	(ISO) ISO TS 5083 Road Vehicles - Safety for automated driving systems - design verification and validation	B
15	(CITA/FSD) Remote access to in-vehicle data - CITA's way forward	B
16	(TF on ADAS) Report of the TF on ADAS to the 11th GRVA	B
17	(TF on ADAS) Proposal for amendments to ECE/TRANS/WP.29/GRVA/2021/8	A
18	(NTSEL/UNECE) Questions and Answers/Comments in Session A derived from the Workshop on the implementation of UN Regulation No. 155 (8 July 2021)	B
19	(Germany) German Act Amending the Road Traffic Act and the Compulsory Insurance Act – Act on Autonomous Driving	B
20	(AEBS for M ₁ /N ₁) Report from the IWG on AEBS (M ₁ /N ₁)	B
21	(China) Introduction of China's automated driving standard system planning and proposal for GRVA	B
22	(IMMA) Proposal to amend ECE/TRANS/WP.29/GRVA/2021/26	A
23	(France) French Decree on automated vehicles' conditions of use and automated road transport systems' commissioning - overview	B
24	(FRAV) Consolidation of FRAV working papers	B
25	(FRAV) FRAV Status Report to the 11th GRVA session	B
26	(UNECE) Draft brochure titled "All you should know about Automated Vehicles, technical progress and regulatory activities"	B
27r1	(AEBS-HDV) Status and Outlook	B
28	(ADAS) Proposal for amendments to GRVA-11-09	B

<i>No.</i>	<i>(Author) Title</i>	<i>Follow-up</i>
29	(Italy) Proposal for Amendment 4 to Global Technical Regulation No. 3 (Motorcycle braking)	B
30	(Secretariat) Presentation introducing GRVA-11-03	B
31	(EDR/DSSAD) Progress report	B
32	(SIG R157) Update from the Special Interest Group on UN Regulation No. 157	B
33	(SIG R157) Proposal to amend ECE/TRANS/WP.29/GRVA/2021/31	B
34	(SDC4SS) Presentation of the Self driving coalition for safer streets	B
35	(Italy) Proposal for a revision of UN Regulation No. 90	B
36	(ISO) The Safety of the Intended Function	B
37	(VMAD) Status report of the IWG on VMAD*	B
38	(France) Grand Défi Program on “Trustworthy & Industrial AI”	B
39	(CLEPA/OICA) Proposal for amendments to ECE/TRANS/WP.29/2021/73	B
40	(Secretariat) Proposal for amendments to UN Regulation No. 152 based on ECE/TRANS/WP.29/GRVA/2021/22 and GRVA-11-07	A
41	(Secretariat) Reproduction of the proposal to amend GRVA-09-36 by Canada	B
42	(CLEPA/OICA) Proposal to amend UN Regulation No. 13 (Heavy vehicle braking)	B
43	(OICA) Inaccuracies in UN Regulation No. 79	B

Notes:

Administrative follow-up, for the secretariat, with the informal documents:

A Adopted, submitted to WP.29 for consideration at its March 2021 session;

B Consideration completed.

C Revised version to be prepared by the secretariat.

Annex II

List of Informal Working Groups reporting to GRVA (as of October 2021)

<i>Informal Working Group</i>	<i>Chair/Co-Chairs</i>	<i>Country</i>	<i>Mandate until</i>
Functional Requirements for Automated and Autonomous Vehicles (FRAV)	Ms. C. Chen ¹ Mr. R. Damm ¹ Mr. E. Wondimneh ¹	China Germany USA	July 2022
Validation Method for Automated Driving (VMAD)	Mr. I. Sow ¹ Mr. T. Onoda ¹ Mr. P. Striekwold ¹	Canada Japan Netherlands	July 2022
Cyber Security and Over-The-Air software updates (CS/OTA)	Mr. T. Niikuni ¹ Mr. D. Handley ¹ Ms. M. Versailles ¹	Japan UK USA	November 2022
Event Data Recorder / Data Storage System for Automated Driving (EDR/DSSAD)	Mr. T. Guiting ¹ Mr. T. Tokai ¹ Mrs. J. Doherty ¹	Netherlands Japan USA	June 2024
Advanced Emergency Braking Systems (AEBS) for M ₁ and N ₁	Mr. A. Lagrange ¹ Mr. T. Hirose ¹	EC Japan	February 2022
Advanced Emergency Braking Systems (AEBS) for heavy vehicles	Mr. P. Seiniger ¹ Mr. T. Hirose ¹	Germany Japan	February 2022

¹ IWG Co-Chairs

² The mandate dates are being reviewed by WP.29 in the review process of the Framework Document on Automated Vehicles

Annex III

Adopted amendments to ECE/TRANS/WP.29/GRVA/2021/8

Adopted on the basis of GRVA-11-17 (see para. 72)

Paragraph 5.6.2.2.3., amend to read:

“5.6.2.2.3. When the system reaches its boundary conditions set out in paragraph 5.6.2.3.1.1. of this Regulation (e.g. the specified maximum lateral acceleration $a_{y_{\text{max}}}$) and both in the absence of any driver input to the steering control and when any front tyre of the vehicle starts to cross the lane marking, the system shall avoid sudden loss of steering support by continuing to provide assistance to the extent possible as outlined in the safety concept of the vehicle manufacturer and shall clearly inform the driver about this system status by an optical warning signal and additionally by an acoustic or haptic warning signal.

For vehicles ... UN Regulation No. 130.”

Annex IV

Adopted amendments to ECE/TRANS/WP.29/GRVA/2021/22

Adopted on the basis of GRVA-11-40 (see para. 78)

Paragraph 2.13., amend to read (including re-numbering of former Footnote 3):

“2.13. “Dry road *affording good adhesion*” means a road with a **sufficient** nominal² Peak Braking Coefficient (PBC) ~~of 0.9~~ that would permit:

- (a) A mean fully developed deceleration of at least 9m/s^2 ; or
- (b) The design maximum deceleration of the relevant vehicle;
whichever is lower.

Footnote 2: renumber as Footnote 3

Footnote 3: renumber as Footnote 2

Paragraph 2.14., amend to read:

“2.14. “*Sufficient nominal Peak Braking Coefficient (PBC)*”: means a **road surface friction coefficient** ~~the measure of tyre to road surface friction based on the maximum deceleration of a rolling tyre.~~

- (a) **0.9**, when measured using the American Society for Testing and Materials (ASTM) of E1136-19 standard reference test tyre in accordance with ASTM Method E1337-19 at a speed of 40 mph
- (b) **1.017**, when measured using either:
 - (i) The American Society for Testing and Materials (ASTM) of F2493-20 standard reference test tyre in accordance with ASTM Method E1337-19 at a speed of 40 mph; or
 - (ii) The k-test method specified in Appendix 2 to Annex 6 of Regulation No. 13-H.”

Insert a new paragraph 2.18., to read:

“2.18. “The mean fully developed deceleration (d_m) shall be calculated as the deceleration averaged with respect to distance over the interval v_b to v_e , according to the following formula:

$$d_m = \frac{v_b^2 - v_e^2}{25.92(s_e - s_b)}$$

Where:

v_o = initial vehicle speed in km/h,

v_b = vehicle speed at 0.8 v_o in km/h,

v_e = vehicle speed at 0.1 v_o in km/h,

s_b = distance travelled between v_o and v_b in metres,

s_e = distance travelled between v_o and v_e in metres.

The speed and distance shall be determined using instrumentation having an accuracy of ± 1 per cent at the prescribed speed for the test. The d_m may be determined by other methods than the measurement of speed and distance; in this case, the accuracy of the d_m shall be within ± 3 per cent.”

Note: the paragraph numbers of definitions above may have to be corrected for the previous series of amendments.

Paragraph 5.2.1.4., amend to read:

“5.2.1.4. Speed reduction by braking demand

In absence of driver’s input which would lead to interruption according to paragraph 5.3.2., the AEBS shall be able to achieve a relative impact speed that is less or equal to the maximum relative impact speed as shown in the following table:

- (a) For collisions with unobstructed and constantly travelling or stationary targets;
- (b) On flat, horizontal and dry roads **affording good adhesion**;
- (c) In maximum mass and mass in running order conditions;
- (d) In situations where the vehicle longitudinal centre planes are displaced by not more than 0.2 m;
- (e) In ambient illumination conditions of at least 1000 Lux without blinding of the sensors (e.g. direct blinding sunlight);
- (f) In absence of weather conditions affecting the dynamic performance of the vehicle (e.g. no storm, not below 0°C); and
- (g) When driving straight with no curve, and not turning at an intersection.

It is recognised that ...”

Paragraph 5.2.2.4., amend to read:

“5.2.2.4. Speed reduction by braking demand

In absence of driver’s input which would lead to interruption according to paragraph 5.3.2., the AEBS shall be able to achieve an impact speed that is less or equal to the maximum relative impact speed as shown in the following table:

- (a) With unobstructed perpendicularly crossing pedestrians with a lateral speed component of not more than 5 km/h;
- (b) In unambiguous situations (e.g. not multiple pedestrians);
- (c) On flat, horizontal and dry roads **affording good adhesion**;
- (d) In maximum mass and mass in running order conditions;
- (e) In situations where the anticipated impact point is displaced by not more than 0.2 m compared to the vehicle longitudinal centre plane;
- (f) In ambient illumination conditions of at least 2000 Lux without blinding of the sensors (e.g. direct blinding sunlight).
- (g) In absence of weather conditions affecting the dynamic performance of the vehicle (e.g. no storm, not below 0°C) and
- (h) When driving straight with no curve, and not turning at an intersection.

It is recognised that ...”

Paragraph 6.1.1., amend to read (including the **re-numbering** of the footnote 3)

6. Test procedure

“6.1. Test Conditions

6.1.1. The test shall be performed on a flat, dry, concrete or asphalt, **road surface** affording good adhesion.

~~6.1.1.1. The road test surface shall have a nominal² peak braking coefficient (PBC) of 0.9, unless otherwise specified, when measured using either:~~

6.1.1.2. ~~The American Society for Testing and Materials (ASTM) E1136 standard reference test tyre, in accordance with ASTM Method E1337-90, at a speed of 40 mph; or~~

6.1.1.3. ~~The k test method specified in Appendix 2 to Annex 6 of Regulation No. 13 H.~~

6.1.1.4. ~~The test surface has a consistent slope between level and 1 per cent.”~~

Paragraph 6.3.1., amend to read:

“6.3.1. The target used for the vehicle detection tests shall be a regular high-volume series production passenger car of Category M₁ ~~AA saloon~~ or alternatively a "soft target" representative of ~~such~~ a **passenger** vehicle in terms of its identification characteristics applicable to the sensor system of the AEBS under test according to ~~ISO 19206-3:2020~~ **ISO 19206-3:2021**. The reference point for the location of the vehicle shall be the most rearward point on the centreline of the vehicle.”

Annex V

Adopted amendments to ECE/TRANS/WP.29/GRVA/2021/26

Adopted on the basis of GRVA-11-22 (see para. 99)

Paragraphs 2.31. to 2.32., renumber to read:

- "2.31. *"Braking Signal"* means a logic signal indicating when illumination of the stop lamp is required or allowed as specified in paragraph 5.1.17. of this Regulation.
- 2.32. *"Electric Regenerative Braking System"* means a braking system which, during deceleration, provides for the conversion of vehicle kinetic energy into electrical energy and is not part of the service braking system.
- ~~2.31.~~33. *"Disable the antilock brake system"* means to put the system into a state where it will no longer fulfil the technical requirements in paragraph 9. of Annex 3 to this Regulation."

Paragraph 5.1.17.2., amend to read:

- "5.1.17.2. In addition, in case of vehicles ~~powered solely by electric powertrain~~ equipped with electric regenerative braking systems ~~as defined in paragraph 2.32. of this Regulation~~, which produces a retarding force upon release of the accelerator control, the braking signal shall be generated also according to the following provisions ⁴:

<i>Vehicle deceleration by regenerative braking</i>	<i>Signal generation</i>
$\leq 0.7 \text{ m/s}^2$	The signal shall not be generated
$\gt 0.7 \text{ m/s}^2$ and $\leq 1.3 \text{ m/s}^2$	The signal may be generated
$> 1.3 \text{ m/s}^2$	The signal shall be generated

~~In all cases the signal shall be de-activated at the latest when the deceleration has fallen below 0.7 m/s^2 .*~~

~~* At the time of type approval, compliance with this requirement shall be confirmed by the vehicle manufacturer~~

~~Once generated, the signal shall be kept as long as a deceleration demand persists. However, the signal may be suppressed at standstill.~~

An appropriate measure (e.g. switch-of-hysteresis, averaging, time delay) shall be implemented in order to avoid fast changes of the signal resulting in flickering of the stop lamps.

⁴ At the time of type approval, compliance with this requirement shall be confirmed by the vehicle manufacturer."

Insert new paragraph 5.1.17.3., to read:

- "5.1.17.3. **Once generated, the signal shall be kept as long as a deceleration demand by the electric regenerative braking persists. However, the signal may be suppressed at standstill.**

The signal shall not be generated when retardation is solely produced by the natural braking effect of the engine, air-/rolling resistance and/or road slope."