

Annex 1

Minutes of the EV Workshop on V2X: Electric Vehicle Charging, Communication and Infrastructure

30 August 2023 12:00 pm – 3:00 pm (CEST)

I. Attendance

1. The workshop was held virtually on 30 August 2023. It was chaired by the Co-Chair of the IWG on ITS Mr. D. Kay (United Kingdom of Great Britain and Northern Ireland). It was attended by experts from 10 contracting parties (Australia, Canada, China, Finland, Japan, Korea, the Netherlands, Sweden, United Kingdom of Great Britain and Northern Ireland (UK) and United States of America (USA)), as well as experts from 1 International Organisation (ITU) and 9 Non-Governmental Organisations (AAPC, AVERE, CharIN, CLEPA, ETRTO, ETSI, IMMA, OICA and SAE International)

II. Background

2. At its 85th session in February 2023, the ITC requested WP.29 to make proposals on possible future activities on regulatory tools for harmonised communication between vehicles and electrical vehicle supply equipment (EVSE), taking into consideration already existing related standards and / or protocols (ECE/TRANS/328, para. 70).

3. In response to the request from the ITC, WP.29 tasked the IWG on ITS with this topic. The IWG on ITS established a task force to address vehicular communication and the ITC request in particular (ECE/TRANS/WP.29/1171, paras. 26, 27, 36, 37, 38).

4. The Task Force on Vehicular Communications decided to organise (VCTF-03-02, para. 18) a dedicated workshop to explore the potential benefits from communication between vehicles and EVSE, and to facilitate an open dialogue to explore the questions, “Is regulatory or other harmonisation activity by WP.29 considered necessary in this area?” and if so, “What areas should be prioritised?”.

III. Exchange of views on V2X and electric vehicle charging

5. The expert from OICA presented industry’s views on regulated communication. He informed the participants that industry was heavily involved in standardisation of V2X issues and that it was of the opinion that this was sufficient for the time being. He highlighted several challenges to be addressed by a standard or a regulation, including the diversity of charging methods, differences in the structure of electric power systems from country to country, the need for safe, reliable and precise (dis)charging, data management and privacy. He stated that industry is expecting a timeline of two to three years until vehicle-to-grid (V2G) and vehicle-to-home (V2H) would be widespread on the market and recommended, that the need for regulation should be examined at the end of this period.

6. The expert from the USA, Co-Chair of the IWG on ITS, agreed with OICA that it was premature to decide if a regulation was needed or not. She asked him for clarification on what the comprehensive standardisation expected by industry entailed and involved.

7. The expert from OICA clarified, that industry needed more time until technology is mature enough to identify the challenges and be able to learn from best practices before having

a clear view on the need for a regulation and if so, what it should cover. He detailed that several standards were being developed, that would support the development of the technology, but that two to three years would be necessary to learn and identify the potential need for regulation.

8. The expert from ETSI informed the participants that a detailed regulation on alternative fuels infrastructure was coming in place in the European Union, referring to standards and also indicating which ones were still missing.

9. The expert from CharIN recalled their position at the EU Sustainable Transport Forum to move ahead with mandating standards (such as ISO 15118) in the European Union, as a level of certainty was needed to facilitate trade through specific standards that have been proven already. He urged to look at the possibilities of having a regulation.

10. The expert from the Netherlands stressed the importance of first identifying the need and the reasons for a regulation. The expert from the UK, Co-Chair of the IWG on ITS, agreed.

11. The expert from AVERE highlighted reasons to deploy V2X, the current state of play of V2X, its market situation, business models starting to appear for V2G and information on EU pilot projects on V2X. He presented key considerations, incentives of consumers, charging point operators, EV original equipment manufacturers (OEMs) and EVSE OEMs. He provided future considerations beyond standardisation and recommended engagement with grid side experts. He stressed that the work on standardisation should not wait until technology is more mature.

12. The expert from the UK, Co-chair of the IWG on ITS, asked how much the standard ISO 15118 covers to date. The expert from AVERE responded that it covers pure battery vehicles, plugin hybrid electric vehicles, enables bidirectional energy transfer and all the applications to allow secure and grid friendly charging of EVs.

13. The expert from CharIN informed the participants about CharIN, being a global association with more than 300 members across continents that is dedicated to the establishment of a universal and standardised charging system for EVs of all types. He recalled that his association welcomed the work undertaken by the European Commission on a uniform approach to standards and governance at EU level in that field. He stressed the need for regulatory harmonisation at international level, including to facilitate global trade and technology roll-out and to increase the level of certainty for industry and consumers. He informed participants about the standard ISO 15118. He explained its provision on the digital layer, roaming, plug and charge and data exchange. He provided additional items for regulatory consideration, e.g., pre-cabling to avoid retro fitting and grid codes. He stressed the need for interoperability.

14. The expert from the USA asked the expert from CharIN if there are any specific safety issues related to automotive that he had come across that WP.29 should address. The expert from CharIN stated that the main aspect for the way forward was testing with regard to data security and safety of the system.

15. The expert from ITU asked how much of the communication from the vehicle to the charging point was wireless and how much wired. He also asked how many of the standards would be on the charging infrastructure side and on the vehicle side. The expert from CharIN replied that the vast majority was wired. He expressed his point of view that regulation on the vehicle side seemed to be more mature than regulation on the charging infrastructure side.

16. The expert from OICA asked if there were any regulatory considerations on payment systems that might affect vehicle manufacturers. The expert from CharIN responded that the review of the payment service directive was currently focused on the payment service providers.

17. The expert from the UK, Co-Chair of the IWG on ITS, asked if there were any studies showing the environmental benefits of vehicle-to-infrastructure (V2I) communication. The

expert from Innovate UK replied that there were benefits, but it was not clear how to measure them, as measuring methods were not standardised internationally yet.

18. The expert from Innovate UK presented the work done in the UK on V2X energy progress since 2018, providing an overview of smart charging benefits and highlighting the energy flexibility potential of EVs, among others. She presented the UK V2G Programme (2018-2022) and its results, V2G findings and the UK's V2X Innovation Programme (2022-2025). She highlighted several aspects that were needed to facilitate the rollout of V2X energy flexibility, including among others, standards for communication between EVSE and flexibility service providers, interoperability across a smart ecosystem, cyber security and the need for consistent data access between EV and EVSE models to encourage and facilitate smart charging and V2X.

19. The expert from ITU asked if more data and analysis needs to be provided from the vehicle side or from the infrastructure side. The expert from Innovate UK answered that providing data on the battery health status would be valuable to improve consumer understanding and facilitate the acceptance of the technology.

20. The participants agreed to provide information on the discussion to the Working Party on Passive Safety (GRSP) to show the interest for making data on the battery and its capabilities available.

21. The expert from UK further highlighted the activities in California, where a bill was going through its senate to require that EVs sold within California from a future date have bi-directional charging capability. *This bill was subsequently not passed.*

22. The expert from China presented the current status of EV charging communication and cybersecurity standards in China. She informed the participants that the number of EVs and EV charging infrastructure has been increasing in recent years, reaching 16.2 million EVs and 6.928 million EVSE in July 2023. She presented the direct current (DC) charging system in China which uses digital communication to transmit information between the EV and the charging equipment, using CAN bus communication. She informed the participants that in 2022, China released the cyber security standard for EV charging systems, including technical requirements and test methods for cybersecurity of EVs and providing information about the requirements, covering security of hardware, software, data and communication for EV charging.

23. While concluding, the workshop briefly addressed the cyber security dimension of EV charging.

24. The expert from AVERE, in the context of the cyber security aspect of the discussion, stated that he was not in favour of having only one protocol that covers everything, as it would increase cyber risks for the grid. The expert from the UK, Co-Chair of the IWG on ITS, clarified that it is likely this aspect would be addressed with higher-level requirements that still allow different solutions and thereby maintain robustness.

25. The expert from Japan, Co-Chair of the IWG on ITS, raised the question if UN Regulation No. 155 on Cybersecurity needed to be amended to cover cybersecurity between the vehicle and its charging infrastructure. The expert from OICA suggested to move this question forward to the Task Force on Cybersecurity and Over the Air (CS/OTA) issues, under the Working Party on Automated/Autonomous and Connected Vehicles (GRVA).

IV. Conclusion

26. The expert from the UK, Co-Chair of the IWG on ITS, summarised the different views expressed and suggested, as intense activities were ongoing in the area at the moment, to hold further forums like the workshop to bring everyone together at regular intervals for the next two to three years.

27. The expert from ITU highlighted the importance of including WP.29 experts on battery technology in future discussions, as there was a need for information sharing on battery capabilities, materials, impact of bidirectional charging, etc.

28. The experts from Japan, the USA and OICA supported the proposal. The expert from the USA suggested to have further discussions in the IWG on ITS, being conscious about the volume of meetings, and potentially invite speakers from WP.5 and the Working Party on Pollution and Energy (GRPE) to get updates on their related work.
