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**Economic Commission for Europe****Inland Transport Committee****Eighty-fourth session**

Geneva, 22-25 February 2022

Item 9 (d) of the provisional agenda

**Strategic questions of a horizontal and cross-sectoral  
policy or regulatory nature:****Intelligent transport systems****Status of the implementation of the ECE Road Map on  
Intelligent Transport Systems****Note by the secretariat\****Summary*

This document provides an overview of activities in 2021 implementing the actions of the revised ECE road map 2021–2025 on Intelligent Transport Systems (ITS), that was launched at the eighty-third session of the Inland Transport Committee (ITC).

The Committee is invited to **note** the important developments on ITS related to automated driving, smart shipping and cybersecurity.

The Committee is invited to **encourage** activities performed according to all actions defined in the revised ECE road map 2021–2025 on ITS.

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\* This document was scheduled for publication after the standard publication date owing to circumstances beyond the submitter's control.



## I. Background

1. This note presents the activities performed by ITC and its subsidiary bodies to implement the revised ECE road map 2021–2025 on ITS adopted by ITC at its February 2021 session. Despite of the COVID-19 related restrictions, that limited possibilities to meet in person, several significant activities could be performed to implement the newly adopted the 18 actions of the road map, reproduced in the annex.

## II. Activities in 2021

### A. Inland Transport Committee: ITS-related conclusions of the Committee's eighty-third session

*Documentation:* ECE/TRANS/304

2. The eighty-third session of ITC (hybrid, 23–26 February 2021) was opened with the high-level policy segment on “Back to a sustainable future: achieving resilient connectivity for post-COVID-19 sustained recovery and economic growth.” This high-level segment saw the participation of transport ministers from Africa, Asia, Europe, Latin America and the Middle East, as well as a keynote speech by the European Commissioner for Mobility and Transport. There were 440 participants from more than 83 countries, including 40 non-ECE ones, and the heads and high-level representatives of intergovernmental and non-governmental organizations as well as key inland transport stakeholders.

3. At the end of the meeting ministers and heads of delegations of contracting parties from Africa, Asia, Europe, Latin America and the Middle East adopted a Ministerial Resolution on “Enhancing resilient inland transport connectivity in emergency situations: An urgent call for concerted action”, that was subsequently endorsed by the Committee (ECE/TRANS/304, Annexes I and II).

4. The Committee adopted several critical decisions for the future of sustainable transport and mobility, as contained in ECE/TRANS/304. The most relevant for ITS include:

(a) Decision 27 noting with satisfaction that the ITS Road Map 2011–2020, which came to its conclusion in 2020, encouraged ITS activities linked to infrastructure and all transport modes and contributed to addressing ITS issues in an integrated approach;

(b) Decision 28 adopting the updated ITS Road Map for the period 2021-2025 (ECE/TRANS/2021/15) which was developed in line with the Committee's decision at its eighty-second session;

(c) Decision 47 welcoming the establishment by the World Forum for the Harmonization of Vehicle Regulations (WP.29) of the first set of UN Regulations on highly automated vehicles prepared by the Working Party on Automated/Autonomous and Connected Vehicles (GRVA).

*Road Map Actions addressed* (areas of primary focus are indicated in **bold**): *Actions 2, 3, 4, 5, 8, 12, 13, 14, 15, 16 and 18.*

### B. Working Parties

#### 1. Working Party on Inland Water Transport

5. Development of River Information Services (RIS), automated and autonomous navigation and smart shipping were among the key topics in the agenda of the Working Party on Inland Water Transport (SC.3) and its subsidiary body, the Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation (SC.3/WP.3) in 2021.

(a) *River Information Services*

6. In 2021, SC.3 and SC.3/WP.3 discussed possible updating of resolution No. 57, Guidelines and Recommendations for River Information Services, and resolution No. 58, Guidelines and Criteria for Vessel Traffic Services on Inland Waterways, based respectively on the RIS Guidelines of the World Association for Waterborne Transport Infrastructure (PIANC) edition 2019 and Recommendation V-120 “Vessel Traffic Services in Inland Waters” of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA). In relation to resolution No. 57, SC.3 confirmed the decision taken by SC.3/WP.3 at its fifty-eighth session to wait for the adoption of the PIANC RIS Guidelines edition 2022. From March to November 2021, SC.3 experts from the Russian Federation and Ukraine as well as the secretariat took part, on behalf of ECE in the IALA work on preparing the new IALA Guideline “Vessel Traffic Services in Inland Waters” to replace V-120, and SC.3 decided to begin revising resolution No. 58 after the adoption of the IALA guideline.

7. Provisions for the Automatic Identification System (AIS) and the Electronic Chart Display and Information System for Inland Navigation based on the revised resolutions Nos. 48 and 63 were updated in chapter 4 of the sixth revision of the European Code for Inland Waterways (CEVNI), adopted by SC.3 at its sixty-fifth session.

8. With the aim to promote the development of RIS in the ECE region and following the substantial revision of SC.3 resolutions on RIS in 2019–2020, the booklet “River Information Services in the region of the Economic Commission for Europe” was prepared in 2021 and approved by SC.3 at its sixty-fifth session. It will be available in the beginning of 2022 as a printed and electronic publication in the three official languages.

9. In 2021, the various aspects of RIS were addressed at the following events:

(a) Discussion on augmentation systems for navigation satellite positioning systems and their application on inland waterways, held at the fifty-ninth session of SC.3/WP.3. Key speakers were United Nations Office for Outer Space Affairs, German Federal Waterways and Shipping Administration, European Union Agency for the Space Programme, Volga-Baltic Waterway Administration (Russian Federation), Finnish Geospatial Research Institute of the National Land Survey of Finland, Alberding GmbH, Argonav GmbH, Lower Danube River Administration (Romania) and Technical University of Civil Engineering of Bucharest. The participants discussed (i) the Global Navigation Satellite Systems (GNSS) and Satellite-Based Augmentation Systems for GNSS applied in Europe, (ii) land-based and local area augmentation systems on inland waterways, (iii) the use of GNSS receivers on inland navigation vessels, and (iv) prospects for using differential GNSS (DGNSS) and Internet for improving the positioning accuracy on inland waterways and related issues.

(b) Workshop “Cybersecurity in inland water transport”, held on 3 November 2021 at the sixty-fifth session of SC.3. Key speakers were Alsic NV, the Central Commission for the Navigation of the Rhine (CCNR), Aalto University (Finland), Wärtsilä, Norton Rose Fulbright LLP Partner, Russian Maritime Register of Shipping and GRVA. The presentations and the subsequent discussion addressed (i) the existing regulatory framework, including the PIANC Awareness Paper on Cybersecurity in Inland Navigation, (ii) cyberthreats and cyberattacks and their impact and consequences for inland navigation, (iii) equipment and technologies that were most exposed to cyber risks, including RIS key technologies, RIS operational services and AIS Aids to Navigation, (iv) protection measures against cyber incidents and (v) challenges and opportunities for cybersecurity in the shipping industry.

(b) *Automation and smart shipping*

10. At its sixty-fifth session, SC.3 continued discussion on automated and autonomous vessels and smart shipping in inland navigation. SC.3 took note of the information on: (i) activities of the CCNR Small Navigation (RN) Committee in the field of autonomous navigation, (ii) activities and tasks of the CCNR group of volunteers which was working on the revision of the CCNR definitions of the automation levels; (iii) pilot projects on autonomous and smart shipping in the Flanders by De Vlaamse Waterweg nv (Belgium), that included joint projects with Seafar, project Autonomous Shipping Initiative for European Waters (AUTOSHIP) and tests of autonomous vessel *Marine Litter Hunter* as a part of a

waste collecting installation by Dredging, Environmental and Marine Engineering nv (DEME), and (iv) the research work on developing provisions for autonomous (unmanned) vessels planned by the Russian Federation in 2022.

11. SC.3 continued discussing the terms and definitions for automation and smart shipping (ECE/TRANS/SC.3/2020/13). Following the proposal of Belgium, SC.3 agreed to postpone further discussion until the outcome of the CCNR work.

*Road Map Actions addressed: 1, 2, 3, 4, 5, 6, 7, 9, **11**, 12, 13, 14, 15, 16, 17, 18.*

## **2. Working Party on the Transport of Dangerous Goods**

12. The Joint Meeting of the Committee of experts on the Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) and the Working Party on the Transport of Dangerous Goods (WP.15), in particular its informal working group on telematics for the transport of dangerous goods, continued its work in collaboration within the European Union on the implementation process of the Regulation (EU) 2020/1056 on electronic Freight Transport Information (eFTI). Thus, expert groups have been established under the Digital Transport and Logistics Forum (DTLF) to ensure good coordination at technical and political levels.

13. The Joint Meeting agreed on the need to adapt on a biannual basis the data model for the transport of dangerous goods. The future data model would most probably consist of a first part containing more general data and a second part covering the data for the transport of dangerous goods. That second part would be facilitated by references to the dangerous goods data model.

*Road Map Actions addressed (areas of primary focus are indicated in bold): **2, 3, 4, 5, 9, 12**, 14, 15.*

## **3. Global Forum for Road Traffic Safety**

14. The Global Forum for Road Traffic Safety (WP.1) remains the only permanent body in the United Nations system that focuses on improving road safety. Its primary function is to serve as guardian of the United Nations legal instruments aimed at harmonizing traffic rules. The Conventions on Road Traffic and on Roads Signs and Signals of 1968, and other ECE legal instruments that address the main factors of road accidents are tangible contributors to improved road safety. Consequently, many countries across the world have become contracting parties to these legal instruments and thus benefit from their implementation. These contracting parties are also the key driving forces keeping these international road safety conventions up to date by participating in WP.1 sessions. Given this background, the Global Forum has continued playing an important role in facilitating and forging international cooperation to improve road safety.

15. In 2021, WP.1 continued its work in ensuring that new in-vehicle technology is – when deemed necessary – accompanied by new traffic rules. For example, WP.1 exchanged information with WP.29 and its subsidiary bodies by – among others – inviting the GRVA Chair to its sessions, by planning and proposing joint events to share views and experience on the recent rapid technological advancements, and by offering timely the appropriate guidelines for the road environment of the future. WP.1 has always stressed the importance of close co-operation with vehicle regulations subsidiary bodies.

16. In addition, WP.1 continued to explore the definition and role of the driver, driver education and training, remote driving, and a possibility contributing to developing a glossary of terminology for automated vehicles. Developing a framework of key principles for automated vehicle safety and human centred needs may become an important element of the WP.1 workplan in 2022. Also in 2022, in the context of ITS, the exchange of views will be continued with expected contributions from eminent academics and experts on issues ranging from future advanced studies and anticipatory systems, human-machine learning in the field of artificial intelligence, automation, human factors and ethics, and the herd immunity as applied to automated vehicles in traffic.

*Road Map Actions addressed* (areas of primary focus are indicated in bold): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18.

#### 4. World Forum for Harmonization of Vehicle Regulations and its Informal Working Group on Intelligent Transport Systems

##### (a) *Activities of the World Forum for Harmonization of Vehicle Regulations*

17. The World Forum continued its work on ITS and specifically automated driving systems by guiding the relevant Working Parties on their activities through the Framework Document on Automated Vehicles (FDAV). This document was amended in order to reflect the new developments and guide the activities on the expected deliveries between 2022 and 2024. WP.29 adopted the first iteration of the New Assessment / Test Method – Master Document, which is detailing the different pillars for the performance assessment of Automated Driving Systems. It also adopted amendments to UN Regulation No. 157 (Automated Lane Keeping System) to extend its scope to heavy vehicles (such as trucks and coaches) and to UN Regulation No. 160 (Event Data Recorder). WP.29 received the status report of the Informal Working Group (IWG) on ITS and made decisions as reported below.

18. The World Forum was informed by the Chair of GRVA that he had been invited by WP.1 to answer to questions related to UN Regulation No. 157. 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. Some experts proposed to first clarify the purpose and deliverables of a joint session. An expert suggested technical items for exchange with WP.1: he stressed the inconsistency in terminology between the two groups and the need to address it. WP.29 supported combined activities of GRVA and WP.1.

##### (b) *Activities of the Informal Working Group on Intelligent Transport System*

19. The IWG on ITS held its third session on 19 November 2021. It was well attended, and the delegations were very active, they showed interest on issues such as infrastructure on which intelligent vehicles would operate on. The group received the keynote presentation of the expert from the United States of America, Mr. Mark de la Vergne, the Vice-President of Development at Cavnue, on “The future of roads”. During the exchange of information section, the group also received presentations from China, France and the United Kingdom of Great Britain and Northern Ireland, updating on developments within their countries as it relates to vehicle automation and ITS.

20. The group reviewed the activities performed in 2021 in line with the revised ECE Road Map on ITS, adopted by ITC at its February 2021 session. The International Organization of Motor Vehicle Manufacturers (OICA) delegation provided terms and definitions for ITS, which is relevant for Action 1 of the road map. The group reviewed it and agreed to resume consideration at next sessions.

21. The IWG on ITS discussed having more frequent meetings of the group and agreed the next one will be scheduled for June 2022.

22. The outcomes of the IWG on ITS were presented at the 185<sup>th</sup> session of WP.29. WP.29 agreed that the Co-Chairs of the IWG on ITS and secretariat would be hosting a small series of webinars on actions of the revised ECE Road Map on ITS specifically, Actions 5, 6 and 7 in the first quarter of 2022.

23. WP.29 agreed that the leadership of the ITS group assume a coordinative role in the preparation of a round table on “The future of electrification and automation of Vehicles”, a side event at the seventy-fifth celebration of ITC in 2022 and represent WP.29 in the 2022 Future Networked Car symposium organized by ECE and the International Telecommunication Union (ITU).

*Road Map Actions addressed* (areas of primary focus are indicated in bold): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18.

## 5. Working Party on Automated/Autonomous and Connected Vehicles

24. The Working Party on Automated/Autonomous and Connected Vehicles (GRVA) worked according to the guidance provided by the programme management tool FDAV. GRVA received status reports from its IWGs on Functional Requirements for Automated Vehicles (FRAV), Validation Method for Automated Driving (VMAD), Event Data Recorder / Data Storage Systems for Automated Driving (DSSAD) and Cyber Security and Over-The-Air (OTA) Issues.

25. GRVA produced amendment proposals to UN Regulation No. 157 on Automated Lane Keeping System (ALKS). This regulation is the first international regulation for the type approval of an automated driving system, with a limited use case and a simple definition of the dynamic driving task given the limited Operational Design Domain (ODD).

26. The last amendments UN Regulation No. 157 included clarifications as well as the scope extension of the regulation, to allow the type approval for these systems for heavier vehicles (trucks, coaches and buses).

27. GRVA addressed questions related to Artificial Intelligence (AI) in the context of vehicle regulations and reviewed input from the delegations, a note by the expert from the Russian Federation and a note of the secretariat recalling all positions expressed on this matter and including a proposal for a guidance document or resolution on AI in vehicles.

28. GRVA reviewed the Resolution of the Parliamentary Assembly of the Council of Europe calling GRVA to perform a Human Rights Impact Assessment (HRIA) related to its activities and GRVA decided on the response to it based on reference documents from The Office of the High Commissioner for Human Rights, from the United Nations Educational, Scientific and Cultural Organization and from the European Commission.

29. GRVA continued its activities on cybersecurity and drafted provisions suitable for the contracting parties of the 1958 and 1998 Agreement, as mandated by FDAV.

30. The secretariat together with Japan organized workshops on the implementation of UN Regulation No. 155 (Cyber Security and Cyber Security Management System), including provisions in paragraph 5.3., related to the obligations of the approval authorities to exchange assessment methods.

31. GRVA also continued its activities related to the remote access to in-vehicle data following interventions and presentations from the International Federation of Automobile (FIA), from the European Committee for Standardization (CEN), from the International Organization for Standardization (ISO) and from the International Motor Vehicle Inspection Committee (CITA).

32. GRVA initiated a task force on Advanced Driver Assistance Systems (ADAS) that reviewed UN Regulation No. 79 (Steering equipment), which is instrumental for the approval of several ADAS. The task force initiated the drafting of a horizontal regulation for the type approval of ADAS systems.

33. GRVA continued its activities regarding the development of UN Regulations Nos. 152 and 131 (Advanced Emergency Braking System). GRVA also reviewed the braking regulations (UN Global Technical Regulation No. 8, UN Regulations Nos. 13 and 13-H) to adapt them to technical progress and covering innovative steering systems and the electrification of vehicles (Electric as well as hybrid electric light and heavy vehicles).

*Road Map Actions addressed (areas of primary focus are indicated in bold): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18.*

## 6. Working Party on Intermodal Transport and Logistics

34. The Working Party on Intermodal Transport and Logistics (WP.24) continued to discuss at its annual sessions ITS and technological developments in support of intermodal transport. The Working Party continued to exchange information on the digitalization of transport documents underpinned by data interoperability in support of intermodal transport as well as on ways to accelerate automation in intermodal transport. The Working Party agreed that it would organize workshops in 2022 for countries to share national experience

and challenges faced with transport document digitalization used in intermodal transport and for sharing experience, good practices and innovation with regard to automation in the sector. The Working Party, as part of its work to modernise and digitalize infrastructure agreements, was in the process of finalising the renewal of the European Agreement on Main International Railway Lines (AGC) / European Agreement on Important International Combined Transport Lines and Related Installations (AGTC) online tool aimed at assisting operators in identifying optimum routes for rail flows across the region and facilitating then shift to rail as well as show the level of the implementation of the AGC/AGTC agreements.

*Road Map Actions addressed* (areas of primary focus are indicated in bold): **12**.

## 7. Working Party on Rail Transport

35. The Working Party on Rail Transport (SC.2) continued its work on ITS activities through the regular updating of the rail security observatory and through the creation of a new innovation platform as mandated by the seventy-third session of the Working Party aimed at identifying key areas where ITS could increase the competitiveness of the rail sector following the successful workshop on the issue at its seventy-second session. This builds on document ECE/TRANS/SC.2/2019/5 which identified a number of innovation and ITS related actions for the rail sector. As part of this work, the Working Party also continued its activities related to the digitalization of documents in collaboration with other Working Parties. Finally, as part of its activities modernise and digitalize infrastructure agreements the Working Party was in the process of finalising the renewal of the AGC/AGTC online tool aimed at assisting operators in identifying optimum routes for rail flows across the region and facilitating then shift to rail.

*Road Map Actions addressed* (areas of primary focus are indicated in bold): **Actions 2, 3, 4, 5, 6, 10, 13, 15, 16, 17, 18 and 19.**

## 8. Working Party on Road Transport

36. During the 116th session of Working Party on Road Transport (SC.1), Liechtenstein gave a presentation on managing a vehicle's life cycle with blockchain technology. SC.1 highly appreciated the presentation and discussed the applicability of the model/approach to other countries and various aspects of transport logistics.

*Road Map Actions addressed* (areas of primary focus are indicated in bold): **Actions 1, 2, 3, 4, 6, 8, 13, 14, 15 and 16.**

# III. Recurrent activities

## A. Annual ECE/ITU symposium on the Future Networked Car

37. The 2021 session of the ECE/ITU symposium on the Future Networked Car took place for the second time as a virtual symposium co-organized by ECE and ITU, instead of being organized during the Geneva International Motor Show, as it was the case in preCOVID-19 times.

38. The symposium was organized over four days with one session per day. The attendance was reported by ITU to be the following:

Table 1  
**Attendance**

<i>Session</i>	<i>Attendance</i>
Session 1	308
Session 2	209
Session 3	188
Session 4	193

39. The first day was opened by the Secretary-General of the International Telecommunication Union, Mr. Houling Zhao, the Executive Secretary of ECE Ms. Olga Algayerova and by the United Nations Secretary General's Special Envoy for Road Safety, Mr. Jean Todt. The opening was followed by session 1, which was dedicated to WP.29 activities and titled "Regulatory advances in highly automated driving." The GRVA informal working groups reported on the progress on developing the complex technical regulations for automation and demonstrated the crucial role that WP.29 has at the global level. This was followed by a broadly based discussion seeking to answer the question "Are the tried and trusted approaches for standards and regulations suitable for a digital future?" recognising the pace of technology change and the inherent risk of regulations failing to keep pace. The discussion noted the valuable role of WP.29 and the ITS group in strengthening its external links with other agencies to ensure high quality regulations are developed. Session 2 was dedicated to cybersecurity. It reviewed the advances of the automotive sector in that field and acknowledged the impact of UN Regulation No. 155 (Cyber Security and Cyber Security Management System) beyond the area covered by the contracting parties of the 1958 Agreement, under which this regulation was adopted. Session 3 reflected on the use of artificial intelligence for automated driving and session 4 on communication or highly automated driving.

## **B. Other activities**

40. The secretariat was invited to participate in several conferences organized by other international governmental organizations such as the International Labour Organization, ITU and the International Transport Forum hosted by the Organisation for Economic Co-operation and Development (OECD), as well as industry-led conferences, to which it contributed remotely, with presentations via web conferencing or with recorded presentations, to promote the ECE activities.

## Annex

### The ECE Road Map on Intelligent Transport Systems for the period 2021-2025

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<b>Action 1</b> Reaching a common definition for ITS	<b>Action 10</b> Integrating with Rail Transport
<b>Action 2</b> Harmonizing policies	<b>Action 11</b> Integrating with Inland Water Transport
<b>Action 3</b> Forging International cooperation	<b>Action 12</b> Enhancing the modal integrator's role of ITS
<b>Action 4</b> Facilitating interoperability and ITS architecture	<b>Action 13</b> Developing cost-benefit assessment methodologies
<b>Action 5</b> Ensuring data security	<b>Action 14</b> Improving the long-term environmental sustainability of transport
<b>Action 6</b> Promoting vehicle-to-infrastructure communication	<b>Action 15</b> Promoting analytical work among contracting parties
<b>Action 7</b> Vehicle-to-vehicle communication	<b>Action 16</b> Contributing to capacity-building, education and awareness-raising, with special attention to emerging economies
<b>Action 8</b> Improving road safety	<b>Action 17</b> Organizing the United Nations Annual Round Table on Intelligent Transport Systems
<b>Action 9</b> Enabling safer Transport of Dangerous Goods	<b>Action 18</b> Wheeled vehicle automation and emerging technologies

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