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Inland Transport Committee

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Strategic questions of a horizontal policy nature:
Intelligent transport systems

Status of the implementation of the Road Map on Intelligent Transport Systems

Note by the secretariat

Summary

This document provides an overview of activities promoting innovative technologies that impact on the implementation of the road map on Intelligent Transport Systems (ITS), that was launched at the seventy-fourth session of the Inland Transport Committee (ITC).

The Committee is invited to **encourage** the promotion of ITS activities linked to all transport modes.

I. Background

1. This note presents activities and initiatives that promote innovative technologies to implement the ECE road map on ITS. The annex summarizes the 20 actions of the road map.

II. Activities in 2018

A. Recap of ITS-related conclusions of the eightieth session of the Inland Transport Committee

Documentation: ECE/TRANS/274 and Add.1
                                Informal document ITC (2018) No. 13

1. Transport ministers from Africa, Asia, Europe and the Middle East, over 250 participants from 63 countries and the heads of inland transport organizations met at the high-level policy segment of the eightieth session of ITC on "Intermodality: The key to sustainable transport and mobility". During discussions in Panel No. 1 – "Gateway to promote connectivity", consensus emerged among participants that ITS could be a facilitator of intermodal freight transport and passenger mobility. Connecting infrastructure, vehicles and users optimizes the flow of information, and traffic and mobility management. The technological innovation could enhance connectivity and therefore facilitate intermodal transport operations, by reducing their environmental footprint.

2. Participants of the eighth meeting of the Chairs of the Committee's subsidiary bodies and of Administrative Committees of United Nations legal instruments in transport recognized that a shift in the strategic direction of the work of ITC is needed to address the contemporary developmental, economic and environmental challenges in transport, which are on the rise and becoming critical in many parts of the world. Delegates agreed that strengthening the regulatory and governance activities of ITC related to the application of intelligent technologies, digitalization and automation in transport systems presents an opportunity to address the named challenges in a more effective way.

3. In its decision No. 12 taken at the eightieth session of ITC, the Committee: (a) encouraged ITS activities in all inland transport modes including connectivity and to consider ways to address ITS issues in an integrated approach; (b) commended actions taken by the World Forum for Road Traffic Safety (WP.1) and World Forum for Harmonization of Vehicle Regulations (WP.29) in the area of automated driving, as fostering international regulatory frameworks would ensure the benefits in terms of enhanced road safety, better environmental protection, greater energy efficiency and more efficient traffic management. In this context, the Committee requested WP.1 and WP.29, working in close cooperation, to continue developing, according to their mandates, recommendations and/or legal provisions on automated driving to enable a future safe coexistence of automated and traditionally operated vehicles on roads, and their interaction with other road users and infrastructure.

4. In decision No. 13, ITC reiterated its decision from the seventy-seventh session to invite "WP.1 and WP.29 to investigate different possibilities to increase their cooperation" and welcomed organization of the joint session of WP.1 and the Working Party on Brakes and Running Gear (GRRF) (September 2017) to exchange information on the topics of "secondary activities" and cyber security. ITC agreed that these joint sessions were constructive and that they contribute to a better understanding of the role of the driver in highly and fully automated vehicles. Finally, ITC requested both working parties to explore further possibilities for holding additional joint sessions in the future.

Road Map Actions addressed (areas of primary focus are indicated in **bold**): *Actions 2, 3, 4, 5, **6**, 9, 15, and **17**.*

B. Symposium of the International Telecommunication Union on the Future Networked Car

Documentation: http://itu.int/en/fnc/2018/

5. ECE jointly with the International Telecommunication Union, organized the 2018 Symposium on the Future Networked Car at the Geneva Motor Show, and addressed a large professional audience from the telecommunication and transport sectors. The international symposium examined the status and future of vehicle communications and automated driving. Technical sessions examined advances in the area of road safety taking advantage of connected vehicles (V2V, V2X) and automotive innovation from the perspectives of business, technology and regulation. The symposium explored the relationship between

vehicle communications and automated driving analysing the crucial roles of connectivity, cybersecurity, blockchain, virtual reality and artificial intelligence. The symposium discussed how standards bodies can best collaborate to meet industry needs and to achieve interoperability.

Road Map Actions addressed (areas of primary focus are indicated in **bold**): *Actions 1, 2, 3, 4, **5**, 7, 8, 9, 10, 15, 17 and 19.*

C. Annual round table on ITS

6. The Division organized its annual ITS event in cooperation with the International Road Federation (IRF) in December 2018. This year's summit – "Governance and Infrastructure for smart and autonomous mobility" – gathered representatives of key transport sector stakeholders – industry, governments and civil society – to discuss the governance challenges within the vehicles-infrastructure-regulations nexus that have been brought on by the pace of intelligent technologies development and their application and impact on transport systems. The summit's goal, to continue the ongoing stakeholder discussions and debate on how public authorities can adapt governance models in response to the rapidly developing state of the art in the motor vehicles industry, was achieved.

Road Map Actions addressed (areas of primary focus are indicated in **bold**): *Actions 1, 2, 3, 4, 7, **9, 10**, 15 and **20**.*

D. Working Parties

1. Working Party on Inland Water Transport

7. In the Ministerial Declaration "Inland Navigation in a Global Setting" adopted at the International Ministerial Conference on Inland Water Transport held on 18 and 19 April 2018 in Wrocław (Poland) organized jointly by ECE and the Ministry of Maritime Economy and Inland Navigation of Poland, it was recognized that the development of digital technologies and data exchange, River Information Services, Vessel Traffic Services and the traffic management on inland waterways, the digitalization and other opportunities given by new technologies was a significant step forward to a sustainable and efficient transport mode, and countries and international organizations were invited to promote its cross-border harmonized development. Following this decision, the Working Party on Inland Water Transport (SC.3) and its subsidiary bodies continued efforts aimed at promoting the development of River Information Services (RIS) and other Information and Communication Technologies in the European inland navigation.

8. At its sixty-second session, SC.3 adopted the European Code for Signs and Signals on Inland Waterways (SIGNI) as its Resolution No. 90 that replaced Resolution No. 22, revision 2, and Resolution No. 59, revision 2. SIGNI provides recommendations for the installation and application of buoyage and marking on European inland waterways contained in the fifth revision of CEVNI (TRANS/SC.3/115/Rev.5) and, in particular, provisions for variable message signs to regulate traffic and a chapter on monitoring of signs and marking by AIS aids to navigation, which introduces provisions for virtual AIS aids to navigation.

9. In 2018, SC.3 addressed RIS also in the context of autonomous and smart shipping, a new item included into its agenda. The workshop "Autonomous shipping and Inland Navigation" was held on 14 February 2018, at the fifty-second session of the Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation, organized jointly by ECE and De Vlaamse Waterweg nv (Belgium). The workshop focused

on introducing smart and autonomous shipping on inland waterways, its advantages and implications and follow-up steps at the pan-European level. The workshop "Digitalization in inland water transport", held on 4 October 2018 at the sixty-second session of SC.3, was dedicated to the application scope, main trends and recent developments of digitalization on inland waterways. The workshops emphasized the role of RIS as an essential element of digitalization and smart shipping and highlighted new opportunities and challenges for the coming decade.

10.   In 2018, SC.3 closely followed the ongoing revision of basic documents on RIS by the World Association for Waterborne Transport Infrastructure (PIANC) and the European Commission to be finalized by the end of 2018. As the follow-up, in 2019 SC.3 will start updating ECE resolutions on RIS based on the revised provisions. Furthermore, SC.3 and SC.3/WP.3 continued to monitor the recent progress in developing RIS by member States.

Road Map Actions addressed (areas of primary focus are indicated in **bold**): *Actions 1, 2, 3, 4, 5, 6, 7, 9, 11, 13, **14**, 15, 16, 17, 18 and 19.*

2.   Working Party on the Transport of Dangerous Goods

11.   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, through its Informal Working Group on Telematics, continued work on ITS applications aimed, inter alia, at improving the speed and efficiency of emergency responses involving dangerous goods in transport. In 2018, the informal working group agreed on a memorandum of understanding containing the fundamental agreed principles for the establishment of a telematics architecture for the transport of dangerous goods.

Road Map Actions addressed (areas of primary focus are indicated in **bold**): *Actions 1, 2, 3, 4, 5, 7, 9, 11, **12**, 13, 15, 16, 17, 18 and 19.*

3.   Global Forum for Road Traffic Safety

12.   The Global Forum on Road Traffic Safety (WP.1), the only permanent intergovernmental body of the United Nations dedicated to road safety, has adopted a non-binding resolution serving as a guide for the countries which are contracting parties to the 1949 and 1968 conventions on road traffic in relation to the safe deployment of highly and fully automated vehicles in road traffic. The resolution offers recommendations to ensure the safe interaction between automated vehicles, other vehicles and more generally all road users, and stresses the key role of human beings, be they drivers, occupants or other road users. While the Global Forum intends to amend the resolution as technology develops and as experience accumulates regarding the use of highly and fully automated vehicles in road traffic, there have been calls for turning attention to the legal contents of the 1949 and 1968 conventions on road traffic.

Road Map Actions addressed (areas of primary focus are indicated in **bold**): *Actions 1, 2, **3**, 4, 5, 6, 7, 8, 9 and 10.*

4.   Working Party on Automated/Autonomous and Connected Vehicles

13.   Following the decision of WP.29 in June 2018 to, in implementing ITC decision No. 19 of 2018, convert GRRF into the Working Party on Automated/Autonomous and Connected Vehicles (GRVA), GRVA met for the first time, from 25 to 28 September 2018. GRVA retained GRRF activities related to autonomous, automated and connected vehicles and incorporated existing activities of the Informal Working Group on Intelligent Transport Systems/Autonomous Driving (IWG on ITS/AD), other than its coordination. The process

entailed a reallocation of certain former GRRF tasks across the remaining subsidiary Working Parties to WP.29 (as listed in Annex 1 of WP.29-175-25).

14.   The activities of GRVA include the development provisions (compatible with both the 1958 and the 1998 Agreement) on automated/autonomous vehicles. Some of the items that the group will address in the establishment of internationally harmonized regulations on automated driving technologies, that would enable drivers to benefit from a higher degree of automation of the driving task, and of enhanced safety and security, include:

(a)   Functional requirements for intelligent vehicle technology and systems applications (automation and connectivity) in vehicles;

(b)   New safety assessment method;

(c)   Cyber Security and data protection;

(d)   Software updates, including Over-the-Air;

(e)   Data Storage System for Automated Driving (DSSAD);

(f)   Periodic Technical Inspection (PTI) provisions.

Road Map Actions addressed (areas of primary focus are indicated in **bold**): *Actions 1,* ***2, 3****, 4,* ***5****, 6, 8,* ***9****, 15 and 17.*

5.   World Forum for Harmonization of Vehicle Regulations and its Informal Working Group on Intelligent Transports Systems / Automated Driving

15.   The World Forum for Harmonization of Vehicle Regulations (WP.29) adopted a new UN Regulation on Automatic Emergency Call Systems (AECS), which entered into force on 19 July 2018. This UN Regulation covers for the first time the element of vehicle connectivity. In case of an accident, the AECS communicates the position of the vehicle to the nearest emergency response point.

16.   IWG on ITS/AD focused its work on three areas. It received status reports from the Task Force on Cyber Security and Over-The-Air software updates as well as other reports and presentations (e.g. from SAE International on definitions, from Thatcham Research reporting on the international insurance views). It discussed novel safety assessment methods (the so called 3-Pillar approach). The Informal Working Group also completed the drafting of a reference document adopted by WP.29 on definitions of automated driving under WP.29.

17.   IWG on ITS/AD agreed, in principle, in the establishment of the Automated Vehicle Testing (so called "AutoVeh") Task Force. But the Task Force did not become fully operational as the terms of reference for it were not adopted in June 2018, as WP.29 established GRVA on the basis of GRRF, incorporating AutoVeh related activities.

18.   A part of the work of the former IWG on ITS/AD had been taken over by the newly established GRVA. At its 128th session (12 November 2018), the Administrative Committee for the Coordination of Work (AC.2) of WP.29 recommended that the activities of the former IWG that had not been integrated into GRVA were continued, i.e. to provide an inclusive platform for exchange and cooperation on intelligent transport systems with other international organization such as ITU, the International Road Federation (IRF) and other ITS relevant stakeholders.

Road Map Actions addressed (areas of primary focus are indicated in **bold**): *Actions* ***1, 2, 3****, 4,* ***5****, 7,* ***8****, 9, 10, 11, 16, 17 and 19.*

6. Working Party on Intermodal Transport and Logistics

9   The Working Party on Intermodal Transport and Logistics (WP.24) regularly addresses the role of ITS in intermodal transport and logistics by inviting experts to present projects, innovative solutions and good practices or by discussing ITS in logistics. This year WP.24 discussed the role and responsibilities of governments and regulatory authorities in providing the necessary framework conditions for discriminatory-free access to information by all parties in intermodal transport chains.

Road Map Actions addressed (areas of primary focus are indicated in **bold**): *Actions 1, 2, 3, 4, 5, 6, **13**, **15**, 16, 17, 18 and 19.*

7. Working Party on Road Transport

20.   Traditionally, SC.1 worked on developing and facilitating international transport by road of passengers and goods, helping to create simple harmonized transport rules and requirements. However, the harmonization of intelligent infrastructure had not received enough attention until April 2018 when SC.1 held a special workshop which explored practices, trends and perspectives in smart road infrastructure. These included a project called Traffic Management as a Service from the City of Ghent, Belgium, Julius Baer bank on future scenarios, Hellastron's (Hellenic Association of Toll Road Network) virtual traffic management centre and National User Information System for the Aegean Motorway in Greece, Smart Cities Initiative of FIA, and public/private partnerships and projects on smart infrastructure in the Netherlands.

Road Map Actions addressed (areas of primary focus are indicated in **bold**): *Actions 1, 2, 3, 4, 6, 7, 8, 9, 10 and 19.*

III. Non-ECE activities in 2018

21.   The secretariat attended several conferences on ITS, cyber security and vehicle automation to raise awareness on the activities of ECE and the progress achieved. The secretariat is a member of the Foreign Advisory Group on Intelligent and Connected Vehicles of China. In this capacity, secretariat staff attended ITS conferences and meetings in China. The secretariat also participated on an ad hoc advisory basis at ITS conferences and meetings organized during 2018 in Abu Dhabi by the Emirates Authority for Standardization and Metrology.

Road Map Actions addressed (areas of primary focus are indicated in **bold**): *Actions 1, 2, 3, 4, **5**, 6, 7, 8, **9**, 10 and 19.*

Annex

The ECE Road Map on Intelligent Transport Systems

Action 1 Reaching a common definition for ITS	**Action 11** Harmonizing Variable Message Signs
Action 2 Harmonizing policies	**Action 12** Making Transport of Dangerous Goods less dangerous
Action 3 Forging International cooperation	**Action 13** Integrating with Rail Transport
Action 4 Facilitating interoperability and ITS architecture	**Action 14** Integrating with Inland Water Transport
Action 5 Ensuring data security	**Action 15** Enhancing the modal integrator's role of ITS
Action 6 Scaling up the work on ITS in all Working Parties of ITC	**Action 16** Developing cost-benefit assessment methodologies
Action 7 Promoting vehicle to infrastructure communication	**Action 17** Contributing to climate change mitigation and adaption
Action 8 Promoting vehicle-to-vehicle communication	**Action 18** Launching analytical work
Action 9 Fighting the road safety crisis	**Action 19** Contributing to capacity-building, education and awareness-raising, with special attention to emerging economies
Action 10 Addressing the liability concerns	**Action 20** Organizing the United Nations annual round table on ITS