# Economic and Social Council

## Economic Commission for Europe

Inland Transport Committee

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Item 4 (d) of the provisional agenda
**Strategic questions of a horizontal policy or regulatory 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 the implementation of the road map 2012–2020 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.

The Committee is **invited to further consider** the status of ITS in its work beyond the current ITS Road Map, which expires in 2020.

In light of global mega trends, technological developments, and the ongoing transformation of the Committee and its Working Parties, the Committee may wish to **request the secretariat to prepare an updated** ITS Road Map in close consultation with the relevant Working Parties for consideration at its eighty-third session.

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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 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 2019

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

*Documentation:*      ECE/TRANS/288, and Add.1, Annexes III–IV

2.      Transport ministers from Africa, Asia, Europe and the Middle East, 400 participants from 75 countries and the heads of inland transport organizations met at the high-level policy segment of the eighty-first session of ITC on "Automation in Transport" (19 February 2019, Geneva). Panel discussions highlighted the importance of automation and harmonization for sustainable inland transport in the global agenda and addressed challenges for the future of automation as well as the strategic role of the Committee in providing a comprehensive cooperation platform to forge harmonized solutions and enhance international cooperation.

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 Cooperation, Harmonization and Integration in the Era of Transport Digitalization and Automation". The ministerial resolution, later endorsed by ITC, highlighted the relevance of the Committee in ensuring that the accelerated pace of innovation in transport automation and digitalization will be characterized by harmonization and interoperability, as well as safety, equitable access and intermodal integration, as essential preconditions for achieving the Sustainable Development Agenda. In broad terms, the Resolution addresses the need for an enhanced cooperation in the area of automation in transport, to ensure that benefits are shared as widely as possible and to avoid the emergence of fragmented, non-interoperable systems.

4.      The High-level Policy Segment was complemented with two ITC side-events. The first was a joint side-event by the Global Forum for Road Traffic Safety (WP.1) and the World Forum for the Harmonization of Vehicle Regulations (WP.29), with participation of high-level policy makers and experts, who discussed themes concerning the safe and systematic introduction of autonomous/automated vehicles in road traffic. The meeting programme consisted of an opening session with policy statements and four panels during which key topics that need to be addressed before large-scale deployment of automated/autonomous vehicles can be expected. At the closing, the WP.1 and WP.29 Chairs thanked the speakers and participants for their active engagement, pointing out that the constructive comments and outputs of the discussion would be taken into account in the agendas of their respective working parties. The Chairs committed to continuing the process of close cooperation between WP.1 and WP.29 on a regular basis to facilitate the introduction of a safe deployment of automated vehicles in traffic. This side event was a direct response to earlier calls by ITC, the parent body, for closer cooperation between the two ITC Working Parties, WP.1 and WP.29, that drive progress in the safe deployment of automated vehicles in traffic.

5.      The second ITC side-event, on "Digitalization and e-documents", building on current trends towards digitalization, highlighted the positive role of electronic transport documents, and the international conventions administered by ECE which fall under this category

including e-TIR and e-CMR, and the potential trade and economic benefits of the digitalization of information.

*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/2019/

6.    ECE jointly with the International Telecommunication Union (ITU), organized the 2019 session of the Future Networked Car event during the Geneva Motor Show in March 2019. The event gathered experts from the private sector dealing with telematics, vehicle connectivity and automation and cyber security. One session was dedicated to the technical activities at ECE concerning the technical prescription for automated and connected vehicles. The representatives from Japan and the United Kingdom of Great Britain and Northern Ireland at WP.29, the Secretary-General of Global NCAP as well as two representatives from the automotive suppliers and European manufacturers contributed to the session. The session provided insight in the current development of the technical prescriptions relevant for these vehicles.

7.    ECE and ITU have co-organized this annual event since 2013. It contributed to bringing together at the international level two industry sectors having different practices in their operations. The automotive sector relies on technology neutral regulations to gain market access and to eliminate technical barrier to trade, delivering state of the art technologies in terms of safety and environmental performance, the Information Technology and Telecommunication sector relies on standardization and focuses on interoperability. Similar initiatives took place at the regional level attempting to bring these two sectors together. The collaboration of ITU and ECE fostered the outcome on the international level.

*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. Intelligent Transport Systems World Congress 2019 in Singapore

8.    The secretariat contributed to the side event "Autonomous Mobility Summit" and its round table on "regulatory perspectives on autonomous mobility". The round table panellists included the WP.29 Secretary as well as co-Chairs of the Informal Working Group on Automatically Commanded Steering Functions and the Validation Method for Automated Driving. The round table was assessed as one of the most interesting during the congress by key stakeholders highlighting the leading regulatory role of ECE in the area of vehicle automation.

*Road Map Actions addressed* (areas of primary focus are indicated in **bold**): *Actions **20***

## D. Working Parties

### 1. Working Party on Inland Water Transport

9.    Development of River Information Services (RIS) technologies, automated navigation, smart shipping were 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) for 2019.

*(a)    River Information Services*

10.    In 2019, SC.3/WP.3 revised the Recommendation on Electronic Chart Display and Information System for Inland Navigation (Inland ECDIS) (annex to resolution No. 48) and the International Standard for Notices to Skippers in Inland Navigation (annex to resolution No. 80), in close cooperation with the Chairs of the International ECDIS Expert Group and the International Notices to Skippers Expert Group. At its sixty-third session, SC.3 adopted revision 4 of the Inland ECDIS standard as resolution No. 96, and revision 1 of the International Standard as resolution No. 97.

*(b)    Automation and smart shipping*

11.    In 2019, both working parties continued discussion on automated navigation and smart shipping on inland waterways, including the development of international harmonized definitions and harmonizing the legal framework and policy areas for fostering innovations in inland navigation. At its sixty-third session, SC.3 adopted the resolution "Enhancing international cooperation to support the development of smart shipping on inland waterways" as its resolution No. 95. Furthermore, SC.3 approved the road map for the international cooperation that aimed to promote and develop Smart Shipping on inland waterways as a part of the ITS activities of ITC. SC.3 supported the proposal of Belgium on conducting analysis of international conventions and agreements and ECE resolutions relevant to inland water transport with a view to make automated navigation possible, and encouraged member States to support and continue this work.

*(c)    White Paper on the progress, accomplishment and future of sustainable inland water transport*

12.    At its sixty-third session, SC.3 adopted its new White Paper on the progress, accomplishment and future of sustainable inland water transport. This is the third White Paper on the current situation, trends and challenges in Inland Water Transport on European inland waterways in the ECE region since 2011. The documents identifies eight priority areas and comes up with policy recommendations for UNECE actions for each of them. Three of these recommendations are directly related to ITS: Policy Recommendation No. 5: Promote the development and pan-European application of RIS and other information technologies; Policy Recommendation No. 6: Promote the development of automation, digitalization and other innovations in the Inland Water Transport (IWT) sector, and Policy Recommendation No. 8: Safety, security and cyber security in IWT – Countering internal and external threats to the sector.

*Road Map Actions addressed* (areas of primary focus are indicated in **bold**): *Actions 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 13, 14, 15, 16, 17, 18 and 19.*

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

13.    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), through its Informal Working Group on Telematics, concluded its work on ITS applications aimed, inter alia, at improving the speed and efficiency of emergency responses involving dangerous goods in transport.

14.    In 2019, the Joint Meeting agreed on the guidelines proposed in ECE/TRANS/WP.15/AC.1/2019/44 for the use of paragraph 5.4.0.2 of RID/ADR/ADN on documentation requirements for the carriage of dangerous goods. The Joint Meeting agreed to transmit the guidelines to WP.15 and the RID Committee of experts for information at their next sessions. Subsequently, the guidelines are expected to be published on the OTIF and ECE websites. It was also agreed that the guidelines could be applied on a voluntary

basis and for each transport mode separately. However, when used, they must be applied consistently. The Informal Working Group will meet again in January 2020 to further clarify technical issues on the implementation of the guidelines.

*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

15.    For ITS-related activities of the Global Forum on Road Traffic Safety (WP.1) in 2019, see paragraph 4 in this document.

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

16.    Intelligent Transport Systems (ITS), generally understood by WP.29 as systems in which information and communication technologies are applied in the field of road transport, including infrastructure, vehicles and users, and in traffic management and mobility management, as well as for interfaces with other modes of transport. In 2002, WP.29 established an Informal Working Group on ITS to consider these technologies and systems in terms of motor-vehicle performance. During 2002–2013, the ITS informal group focused on the driver-assistance technologies entering the market and human-machine interaction issues, resulting in guidelines for high-priority/safety-critical warnings and on Advanced Driver Assistance Systems (ADAS). As these technologies and systems advanced, the informal group shifted its attention towards automated driving systems (ADS). During 2014–2018, the ITS/Automated Driving (ITS/AD) informal group considered the intersection of automated driving and traffic rules, developed definitions for automated driving terms and concepts, and proposed recommendations along with draft regulatory texts to address cybersecurity and software integrity. In light of rapid advances in automated driving technologies, WP.29 decided in 2018 to convert its subsidiary Working Party on Brakes and Running Gear (GRRF) into a subsidiary Working Party of Automated/Autonomous and Connected Vehicles (GRVA). This anticipated the transformative effect automation is expected to have on the basic vehicle controls of braking and steering, and related systems, and the changing role of the driver. As a result, GRVA assumed responsibility for the Automated Driving activities formerly overseen by the ITS/AD informal group. Nonetheless, as noted above, Intelligent Transport Systems extend beyond the scope of the focus of WP.29 on the regulation of vehicles to intersect with traffic rules, road infrastructure, and communications technologies. Therefore, pursuant to WP.29 discussions, a third phase of work under the ITS informal working group, decided in June 2019, was anticipated to facilitate WP.29 outreach to other ECE groups and external organizations so as to ensure WP.29 awareness of developments relevant to its role in the regulation of motor-vehicle performance, and to ensure those other organizations and institutions are aware of WP.29, its role and responsibilities in this important area. To reflect this new role, the World Forum also adopted revised terms of reference for the Informal Working Group on Intelligent Transport Systems in June 2019.

17.    Autonomous vehicles are expected to bring benefits to society in terms of enhanced mobility and increased safety. However, these benefits would only materialise if autonomous technologies are introduced in a satisfactory manner and based on the best global expertise and international cooperation. This is essential to guarantee the highest levels of safety and social acceptance. To accomplish this, experts from the WP.29 under the leadership of China, the European Union, Japan and the United States of America, have developed a Framework Document to guide the future normative work of the United Nations on this strategic area for

the future of mobility. The Framework, adopted in June 2019, apply to automated/autonomous vehicles equipped with systems that can drive under the driver's partial supervision or without supervision – what is generally referred to as automation Levels 3 to 5. The Framework puts safety at the centre of any development in this area, stressing that:

"The level of safety to be ensured by automated/autonomous vehicles implies that "an automated/autonomous vehicle shall not cause any non-tolerable risk", meaning that automated/autonomous vehicle systems, under their automated mode, shall not cause any traffic accidents resulting in injury or death that are reasonably foreseeable and preventable."

*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.*

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

18.     Following the adoption of the Framework Document, the four newly established informal working groups of GRVA started working on proposals addressing the topics mentioned in it, led by experts from Asia, Europe and North-America, to ensure the widest possible technical and geographical representation. The four groups were requested to deal with:

- Functional requirements for automated vehicles
- Validation of the driving capability of automated vehicles
- Cybersecurity and software updates
- Data Storage Systems for Automated Driving (and Event Data Recorders).

19.     During its September 2019 session, GRVA adopted technical provisions relevant for automated vehicles. GRVA made progress in its activities relevant for cyber security and vehicle connectivity in general. GRVA also adopted amendments proposal relevant for Advanced Driver Assistant Systems (ADAS).

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

### 6. Working Party on Intermodal Transport and Logistics

20.     The Working Party on Intermodal Transport and Logistics (WP.24) has been requested to give more attention to digitalization of transport documents, so as to guide electronic exchange of documents between ports and railways. WP.24 is expected to consider this work further by exploring synergies, in particular with the UN/CEFACT programme.

*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

21.     The Working Party on Road Transport (SC.1), during its annual session in 2019, reviewed its activities in light of the ITC 2030 Strategy, and affirmed its role as a regional platform for the sharing of information on smart roads and other aspects of digitalization including those related to road transport services and documents.

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

**Annex**

## The ECE Road Map on Intelligent Transport Systems 2020

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