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**Economic Commission for Europe**

Inland Transport Committee

**World Forum for Harmonization of Vehicle Regulations****Working Party on Automated/Autonomous and Connected Vehicles****Twenty-second session**

Geneva, 24 June 2025

Item 5(a) of the provisional agenda

**Connected Vehicles:****Cyber security, software updates and over-the-air issues****Proposal for a new series of amendments to UN Regulation No. 156 and a revision to Consolidated Resolution on the Construction of Vehicles (R.E.3)****Submitted by the Informal Working Group on Cyber Security and (Over-the-Air) Software Updates \***

The text reproduced below is based on the original version of UN Regulation No. 156 (software updates and software update management systems) and Revision 7 of the Consolidated Resolution on the Construction of Vehicles (R.E.3). The proposal indicated below is the outcome of discussion of the Cyber Security and Software Updates (CS/OTA) Informal Working Group after its thirty-third session. The modifications to that text are indicated in bold for new characters and strikethrough for deleted characters.

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\* In accordance with the programme of work of the Inland Transport Committee for 2025 as outlined in proposed programme budget for 2025 (A/79/6 (Sect. 20), table 20.6), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.



## I. Proposal for new series of amendments to UN Regulation No. 156

*Insert new paragraph 7.1.1.3., to read:*

**"7.1.1.3. A process whereby the vehicle manufacturer assigns a dedicated RxSWIN for every Regulation No. X type approval to which the vehicle manufacturer executes software updates to type approval relevant software of the Electronic Control System contributing to the UN Regulation No. X type approval relevant characteristics.**

*Paragraphs 7.1.1.3. (former) to 7.1.1.12., renumber as paragraphs 7.1.1.4. to 7.1.1.13.*

*Insert new Paragraph 7.1.4., to read:*

**"7.1.4. The vehicle manufacturer shall not execute software updates to vehicles approved to the 01 series of amendments of this Regulation already registered in the market, unless an RXSWIN has been assigned to every Regulation No. X type approval assessed during the performing of the process in paragraph 7.1.1.9."**

*Paragraphs 7.1.4. (former) to 7.1.4.2., renumber as paragraphs 7.1.5. to 7.1.5.2.*

*Paragraph 7.2.1.2., amend to read:*

**"7.2.1.2. ~~Where a vehicle type uses~~ Requirements for RxSWIN:"**

*Insert new Paragraph 13., to read:*

**"13. Transitional provisions**

**13.1. As from the official date of entry into force of the 01 series of amendments, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type approvals under this Regulation as amended by the 01 series of amendments.**

**13.2. As from 1 September 2028, Contracting Parties applying this Regulation shall not be obliged to accept type approvals issued to the original version of this Regulation, first issued after 1 September 2028.**

**13.3. Until 1 September 2030, Contracting Parties applying this Regulation shall accept type approvals issued to the original version of this Regulation, first issued before 1 September 2028.**

**13.4. As from 1 September 2030, Contracting Parties applying this Regulation shall not be obliged to accept type approvals issued to the original version of this Regulation.**

**13.5. Notwithstanding paragraphs 13.2. and 13.4., Contracting Parties applying this Regulation shall continue to accept type approvals issued to the original version of this Regulation, for vehicles which are not affected by the changes introduced by the 01 series of amendments.**

**13.6. Contracting Parties applying this Regulation shall continue to grant extensions of existing approvals issued to the original version of this Regulation."**

*Annex 1., amend to read:*

"...

9. Software Updates

9.1. General construction characteristics of the vehicle type: .....

9.2. The number of the Certificate of Compliance for Software Update Management System: .....

9.3. Security measures.

9.3.1. Documents for the vehicle type to be approved describing that the update process will be performed securely .....

9.3.2. Documents for the vehicle type to be approved describing that the RxSWINs on a vehicle are protected against unauthorized manipulation.....

9.4. Software updates over the air

9.4.1. Documents for the vehicle type to be approved describing that the update process will be performed safely.....

9.4.2. How a vehicle user is able to be informed about an update before and after its execution.....

**9.5. Identification and accessibility of RxSWIN**

**9.5.1. Information on how to read any RxSWIN, or the relevant software version(s) in the case where the RxSWIN is not held on the vehicle: .....**

**9.5.2. Description of how to access the information from the auditable register of all software versions relevant to any RxSWIN: .....**

"

*Annex 2.*, amend to read:

"...

8. Software updates over the air included (Yes/no): .....

**9. Information on how to read any RXSWIN, or the relevant software version(s) in the case where the RXSWIN is not held on the vehicle: .....**

**10. Description of how to access the information from the auditable register of all software versions relevant to any RXSWIN: .....**

9.11. Technical Service responsible for carrying out the tests: .....

10.12. Date of test report: .....

11.13. Number of test report: .....

12.14. Remarks: (if any). .....

13.15. Place: .....

14.16. Date: .....

15.17. Signature: .....

16.18. The index to the information package lodged with the Approval Authority, which may be obtained on request is attached."

**II. Proposal for a revision to Consolidated Resolution on the Construction of Vehicles (R.E.3)**

*Annex 7.*, amend to read:

**"Annex 7**

**Provisions on Software Identification Numbers**

**1.1. Introduction**

UN Regulation No. 156 [15...] on uniform provisions concerning the approval of vehicles with regards to software update and software updates management

system is defining "*RX Software Identification Number (RXSWIN)*" that means a dedicated identifier, defined by the vehicle manufacturer, representing information about the type-approval relevant software of the Electronic Control System contributing to the UN Regulation No. X type approval relevant characteristics of the vehicle.

In order to make use of RXSWIN, relevant UN Regulations ~~can~~ **shall** refer, ~~by incorporation,~~ to **and incorporate** this annex to introduce relevant definitions and provisions as follows:

## **II.2. Definitions**

For the purpose of this Consolidated Resolution and the UN Regulations referring to this annex:

- 2.1. "*R~~x~~ Software Identification Number (R~~x~~SWIN)*" means a dedicated identifier, defined by the vehicle manufacturer, representing information about the type approval relevant software of the Electronic Control System contributing to the UN Regulation No. X type approval relevant characteristics of the vehicle.
- 2.2. "**Software**" means the part of an Electronic Control System that consists of digital data and instructions.
- 2.3. "**Software update**" means a package used to upgrade software to a new version, including a change of the configuration parameters.
- 2.24. "*Electronic Control System*" means a combination of units, designed to cooperate in the production of the stated vehicle control function by electronic data processing. Such systems, often controlled by software, are built from discrete functional components such as sensors, electronic control units and actuators and connected by transmission links. They may include mechanical, electro-pneumatic or electro-hydraulic elements. "The System", referred to herein, is the one for which type approval is being sought.
- ~~2.3. "*Software*" means the part of an Electronic Control System that consists of digital data and instructions.~~

## **3. Necessary provision for the relevant UN Regulations**

**Note:** The following paragraphs shall be integrated into or amended in the related Regulation (target regulation) referring to this annex.

*In the "Definitions" paragraph of the target regulation, insert a new paragraph, to read:*

- "x.x. **For the definitions with regard to Software Identification Number, refer to the Consolidated Resolution on the Construction of Vehicles (R.E.3), Annex 7, paragraph 2.**"

*In the "Modification and extension of the vehicle type" paragraph of the target regulation, insert a new paragraph, to read:*

- "x.x. **The vehicle manufacturer may apply for a new vehicle approval for the purpose of differentiating software versions intended to be used on vehicles already registered in the market from the software versions intended to be used on new vehicles. This may cover the situations where type approval regulations are updated or hardware changes are made to vehicles in series production. In agreement with the Type Approval Authority or its Technical Service, duplication of tests for these approvals shall be avoided where possible.**"

*In the "Production definitively discontinued" paragraph of the target regulation, insert a new paragraph, to read:*

"x.x. **The production is not considered definitively discontinued if the vehicle manufacturer intends to obtain subsequent extensions of the approval for software updates of vehicles already registered in the market.**"

Paragraph III and IV, shall be deleted.

Paragraph V, amend to read:

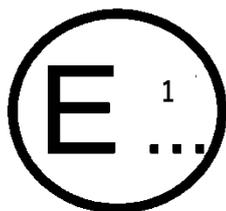
**V.4. Necessary provisions in the Communication Form relevant to ~~Rx~~SWIN**

*Note:* The communication form of the related Regulation referring to this annex shall include the mention of "Production definitively discontinued" for such a case and shall include **the text below concerning "Additional information regarding software identification and software updates", additional information regarding ~~Rx~~SWIN as follows (and marked in bold):**

**Communication**

(Maximum format: A4 (210 x 297 mm))

issued by: Name of administration:  
 .....  
 .....  
 .....



Concerning:<sup>2</sup> Approval granted  
 Approval extended  
 Approval withdrawn with effect from dd/mm/yyyy  
 Approval refused  
 Production definitively discontinued

of a vehicle type, pursuant to UN Regulation No. [*this Regulation*]

Approval No.: .....

Extension No.: .....

Reason for extension: .....

(...)

(...)

Additional information regarding **software identification and software updates (where applicable) ~~Rx~~SWIN:**

**R[*number of this Regulation*]SWIN:** .....

**Is the R[*number of this Regulation*]SWIN held on the vehicle<sup>2</sup>: Yes/No**

Information on how to read the ~~Rx~~[*number of this Regulation*]SWIN or software version(s) in case the ~~Rx~~[*number of this Regulation*]SWIN is not held on the vehicle: .....

<sup>1</sup> Distinguishing number of the country which has granted/extended/refused/withdrawn approval (see approval provisions in the Regulation).

<sup>2</sup> Strike out what does not apply.

If applicable, list the relevant parameters that will allow the identification of those vehicles that can be updated with the software represented by the ~~R<sub>X</sub>~~*[number of this Regulation]*SWIN under the item above: .....

### III. Justification

1. The current provisions of UN Regulation No. 156 (UN R156) do not mandate the use of an R<sub>X</sub>SWIN, although they do stipulate certain requirements for when one is used. There are certain benefits to using R<sub>X</sub>SWIN, such as providing authorities with a clear indication of changes to the software that is relevant to the approval and supporting compliance / market surveillance activities. Whilst R<sub>X</sub>SWIN is used by a majority of manufacturers applying UN R156, it is not universally implemented across the industry, which is why certain Contracting Parties considered it necessary to mandate the use of the R<sub>X</sub>SWIN concept in UN R156 to avoid discrepancies between manufacturers and enact the benefits that it provides.
2. It is recognised that it may be an unnecessary burden to use an R<sub>X</sub>SWIN if the manufacturer does not plan to update the software in connection with a particular system Regulation. Therefore, the requirement for an R<sub>X</sub>SWIN does not apply if UN Regulation No. X is not part of the list of Regulations checked by the manufacturer as potentially affected by software updates.
3. In order to enhance the traceability of R<sub>X</sub>SWIN, it is proposed that other system Regulations be updated so that the communication form includes the reference to R<sub>X</sub>SWIN since the completed form should be available to authorities on the Database for Exchange of Type-Approval documentation (DETA). The necessary text would be provided in Consolidated Resolution on the Construction of Vehicles (R.E.3), with the current text revised appropriately. The various GRs would be encouraged to update their various Regulations, as appropriate, to incorporate this text to enable the full benefits of the R<sub>X</sub>SWIN concept.
4. The remaining items were already contained within the existing R.E.3 text. Information on how to read the R<sub>X</sub>SWIN on the vehicle is included on the communication form to simplify the process for authorities in accessing the information. R<sub>X</sub>SWIN does not need to be held on the vehicle, but an auditable register should be provided to allow cross-referencing of the software version(s) on the vehicle to the R<sub>X</sub>SWIN. Therefore, how to read the software version(s) is also included when that is the case. To know which vehicles can be updated with the software related to a particular R<sub>X</sub>SWIN, parameters that allow for the identification of those vehicles are required as well.
5. Not all manufacturers already apply the necessary processes to implement the R<sub>X</sub>SWIN concept. In the original version of UN R156, the means to identify software pertinent to Regulations was left open to the manufacturer to define. One means identified within UN R156 is the use of the R<sub>X</sub>SWIN, but other means had not been prohibited. Within UN Regulations, only UN Regulations No. 157 and 171 mandate the use of R<sub>X</sub>SWIN, and not all manufacturers aim to produce vehicles with this functionality. Consequently, not all vehicle manufacturers have based their SUMS on the R<sub>X</sub>SWIN concept.
6. For manufacturers that do not already use R<sub>X</sub>SWIN, time will be needed to identify and allocate R<sub>X</sub>SWIN to vehicles. This may become complex where a relationship with a supplier does not provide for the required information flow and new contractual arrangements are needed. The risk of such complexity is highest in vehicles with an existing type approval, especially those vehicle types approved before a manufacturer had a SUMS in place, which have a different architecture to vehicles designed under a SUMS process. Knowledge of these vehicles will be weakest.
7. For these reasons, the proposal for new types from September 2028, and for all types from September 2030, in order to permit sufficient lead time to transform the current SUMS and introduce R<sub>X</sub>SWINs for all applicable regulations on all vehicles.