

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)

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 Updating (CS/OTA) Informal Working Group after its 33rd session.

The modifications to that text are indicated in **bold** for new characters and ~~strike through~~ for deleted characters

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

~~I.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:

~~I.2.~~ Definitions

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

- 2.1. "~~R~~**X** *Software Identification Number (RXSWIN)*" 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 co-operate 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 referring to this annex.

In the paragraph titled "Definitions" the following sub-paragraph is inserted 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 paragraph titled "Modification and extension of the vehicle type" the following sub-paragraphs are inserted 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 paragraph titled "Production definitively discontinued" the following sub-paragraph is inserted 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."

~~III. Requirements for software identification~~

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

- ~~3.1. For the purpose of ensuring the software of the System can be identified, an RXSWIN may be implemented by the vehicle manufacturer.~~
- ~~3.2. If the manufacturer implements an RXSWIN, the following shall apply:~~

- ~~3.2.1. The vehicle manufacturer shall have a valid approval according to UN Regulation No. XXX [Software Update Process Regulation].~~
- ~~3.2.2. The vehicle manufacturer shall provide the following information in the communication form of this Regulation (the Regulation referring to this annex):~~
- ~~(a) The RXSWIN;~~
- ~~(b) How to read the RXSWIN or software version(s) in case the RXSWIN is not held on the vehicle.~~
- ~~3.2.3. The vehicle manufacturer may provide, in the communication form of the related Regulation a list of the relevant parameters that will allow the identification of those vehicles that can be updated with the software represented by the RXSWIN. The information provided shall be declared by the vehicle manufacturer and may not be verified by an Approval Authority.~~
- ~~3.2.4. The vehicle manufacturer may obtain 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 that are 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 testing agency duplication of tests shall be avoided where possible.~~

~~IV. Production definitely discontinued and RxSWIN~~

- ~~4.1. If the holder of the approval completely ceases to manufacture a type of vehicle approved in accordance with this Regulation (the related Regulation referring to this annex), he shall so inform the authority which granted the approval. Upon receiving the relevant communication that authority shall inform thereof the other Contracting Parties to the 1958 Agreement applying this Regulation (the related Regulation referring to this annex) by means of a communication form conforming to the model in Annex [Communication form] to this the related Regulation.~~
- ~~4.2. The production is not considered definitely discontinued if the vehicle manufacturer intends to obtain further approvals for software updates for vehicles already registered in the market.~~

~~V.4. Necessary provisions in the Communication Form relevant to RxSWIN~~

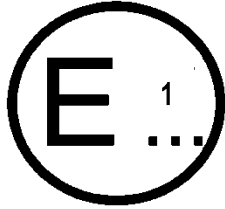
Note: The communication form of the related Regulation referring to this annex shall include the mention of "Production definitely discontinued" **for such a case** and shall include **the text below concerning "Additional information regarding software identification and software updates", additional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

Communication

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

issued by:

Name of administration:



.....
.....
.....

Concerning:² 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)** ~~R~~XSWIN:

R[*number of this Regulation*]SWIN:

Is the R[*number of this Regulation*]SWIN held on the vehicle²: Yes/No

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

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~~X[*number of this Regulation*]SWIN under the item above:

"

"

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

² Strike out what does not apply.

III. Justification

The current provisions of UN Regulation No. 156 (R156) do not mandate the use of an RXSWIN, although they do stipulate certain requirements for when one is used. There are certain benefits to using RXSWIN, 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 RXSWIN is used by a majority of manufacturers applying R156, it is not universally implemented across the industry, which is why certain Contracting Parties considered it necessary to mandate the use of the RXSWIN concept in R156 to avoid discrepancies between manufacturers and enact the benefits that it provides.

It is recognised that it may be an unnecessary burden to use an RXSWIN if the manufacturer does not plan to update the software in connection with a particular system Regulation. Therefore, the requirement for an RXSWIN 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.

In order to enhance the traceability of RXSWIN, it is proposed that other system Regulations be updated so that the communication form includes the reference to RXSWIN since the completed form should be available to authorities on 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 RXSWIN concept.

The remaining items were already contained within the existing R.E.3 text. Information on how to read the RXSWIN on the vehicle is included on the communication form to simplify the process for authorities in accessing the information. RXSWIN 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 RXSWIN. 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 RXSWIN, parameters that allow for the identification of those vehicles are required as well.

Not all manufacturers already apply the necessary processes to implement the RXSWIN concept. In the original version of R156, the means to identify software pertinent to Regulations was left open to the manufacturer to define. One means identified within R156 is the use of the RXSWIN, but other means had not been prohibited. Within UN Regulations, only UN Regulations No. 157 and 171 mandate the use of RXSWIN, and not all manufacturers aim to produce vehicles with this functionality. Consequently, not all vehicle manufacturers have based their SUMS on the RXSWIN concept.

For manufacturers that do not already use RXSWIN, time will be needed to identify and allocate RXSWIN 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 an OEM had a SUMS in place, which have a different architecture to vehicles designed under a SUMS process. Knowledge of these vehicles will be weakest.

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 RXSWINs for all applicable regulations on all vehicles.