

UN Regulation 156 Software Update & Software Updates Management System

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UN Regulation 156 **Summary**

- Objectives
- Requirements
- Application dates
- Next steps



UN Regulation 156 Summary

➤ Objectives

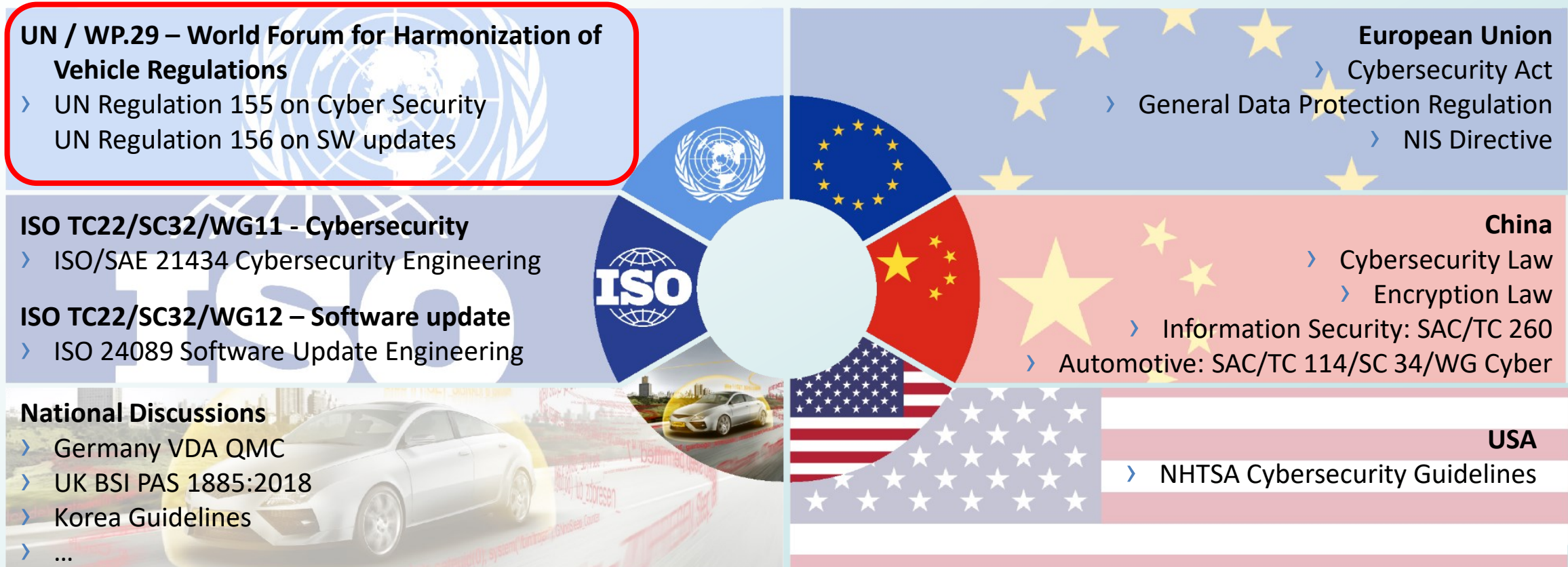
➤ Requirements

➤ Application dates

➤ Next steps



Global Automotive Standards and Regulations to address Cybersecurity and SW updates



UN Regulations (adopted in June 2020) are a worldwide collaboration:
Developed under GRVA (chaired by Germany, Japan and China)
/ TF Cybersecurity & OTA issues (chaired by UK, Japan and USA).

Why a SW update regulation?



➤ Need for Software Updates

- More and more vehicles are becoming **connected vehicles**
- Requirement to update software on vehicles **during the whole vehicle life**
- Vehicle manufacturers intend to make SW updates (incl. OTA Over The Air) in order to **add new functions** (e.g. ADAS) on **already registered vehicles**

➤ Objective of the regulation

- **Ensure that the SW on a vehicle is and stays compliant with vehicle type approval**



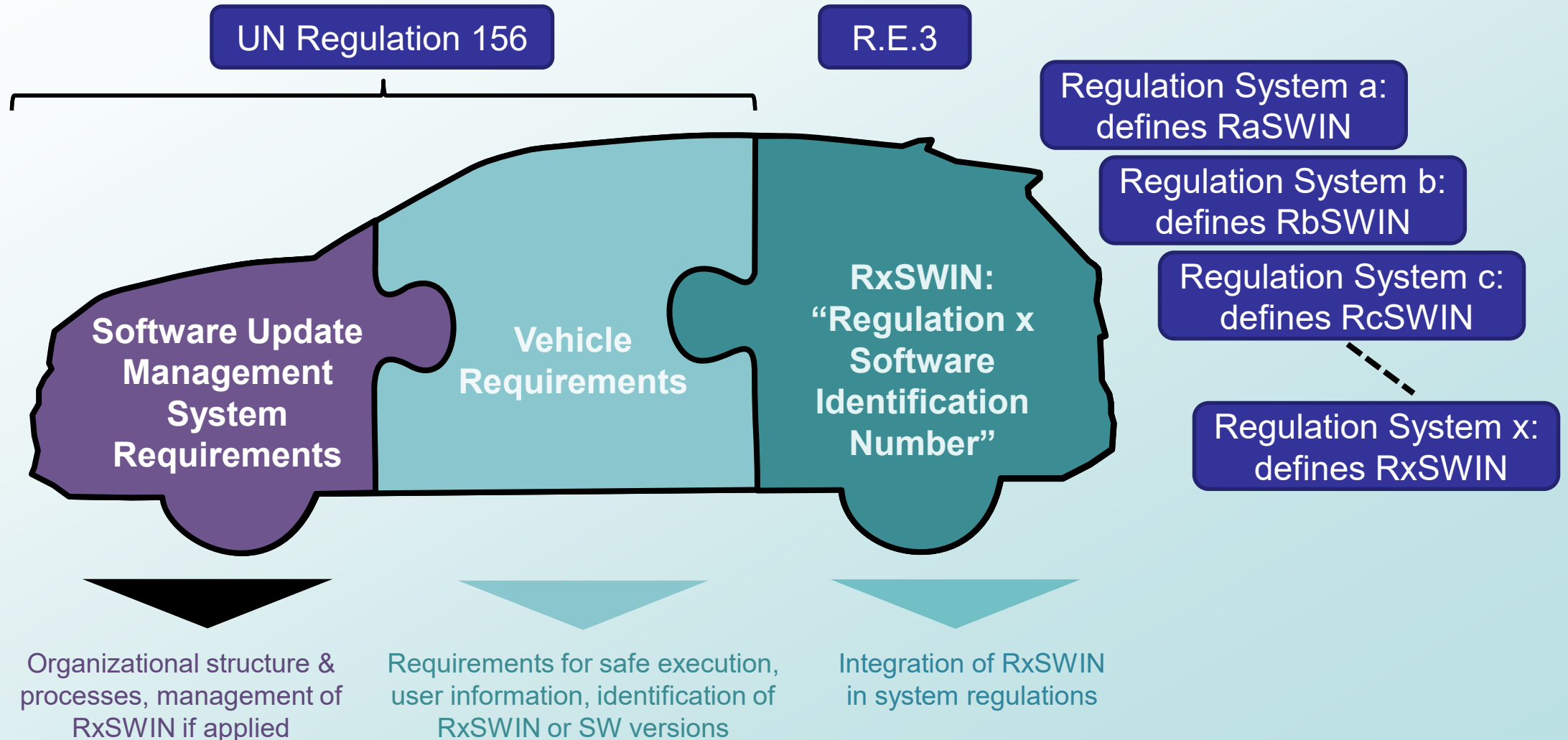
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Rational of UN Regulation 156

Scope: "Vehicles that permit software updates."

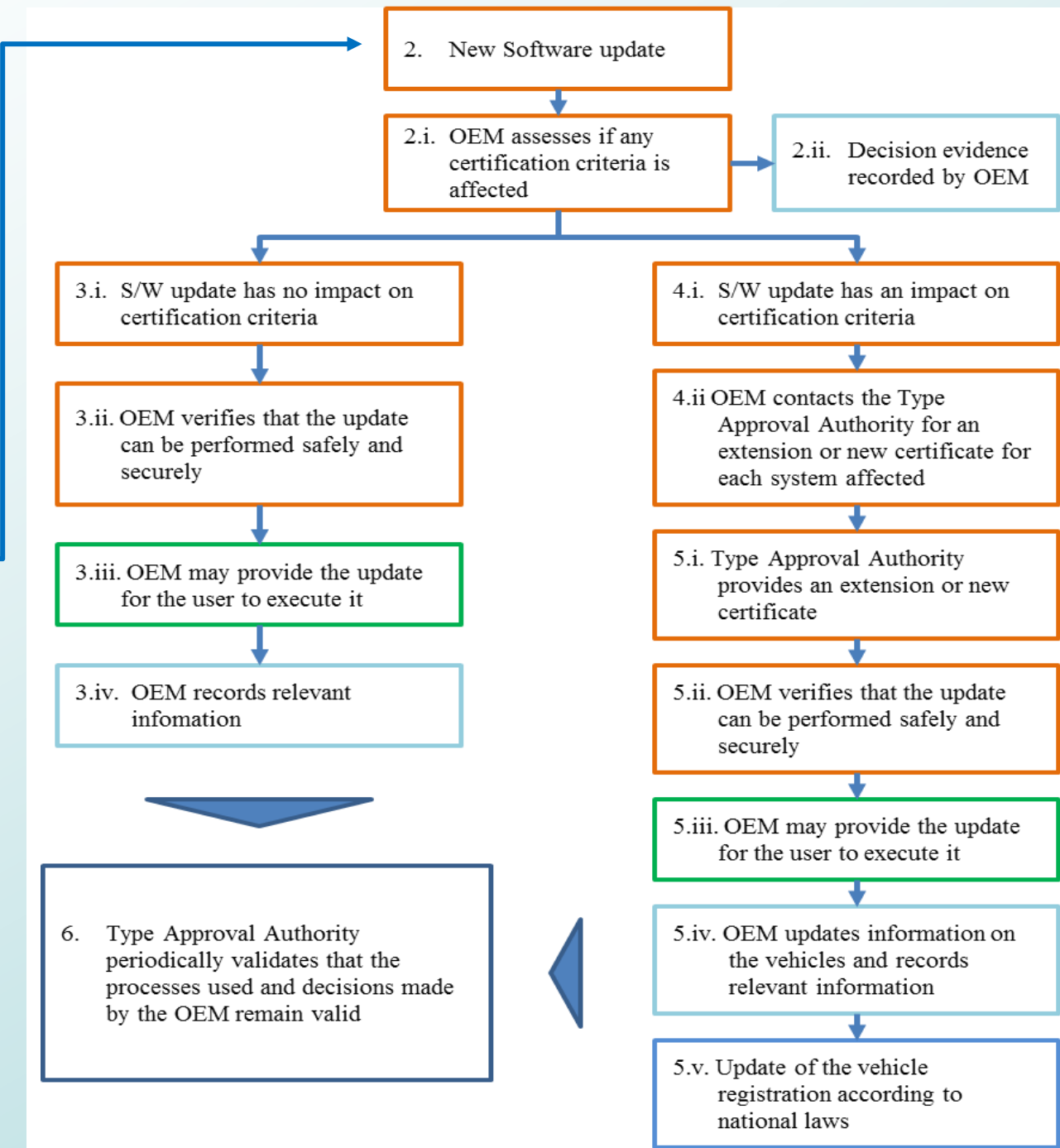




Flowchart of the Process for SW updates

1. Vehicle manufacturer (OEM) gains approval to conduct post-registration software updates, by gaining validation of their:

- Configuration and quality control processes (paragraph 4.3)
- Processes to ensure updates are executed safely (paragraph 5.2)
- Processes to ensure software updates are cyber secure (paragraph 5.4)





Examples of requirements for SUMS (SW update management system)

The vehicle manufacturer shall **record and store**, specific information for each update applied to a given vehicle type:

- The **purpose** of the update
- What **systems or functions** of the vehicle the update may impact
- Whether the software update **affects any of the relevant requirements** of type approved system
- **How the update may be executed** and under which conditions
- Confirmation that the software update **has undergone adequate verification and validation** procedures.



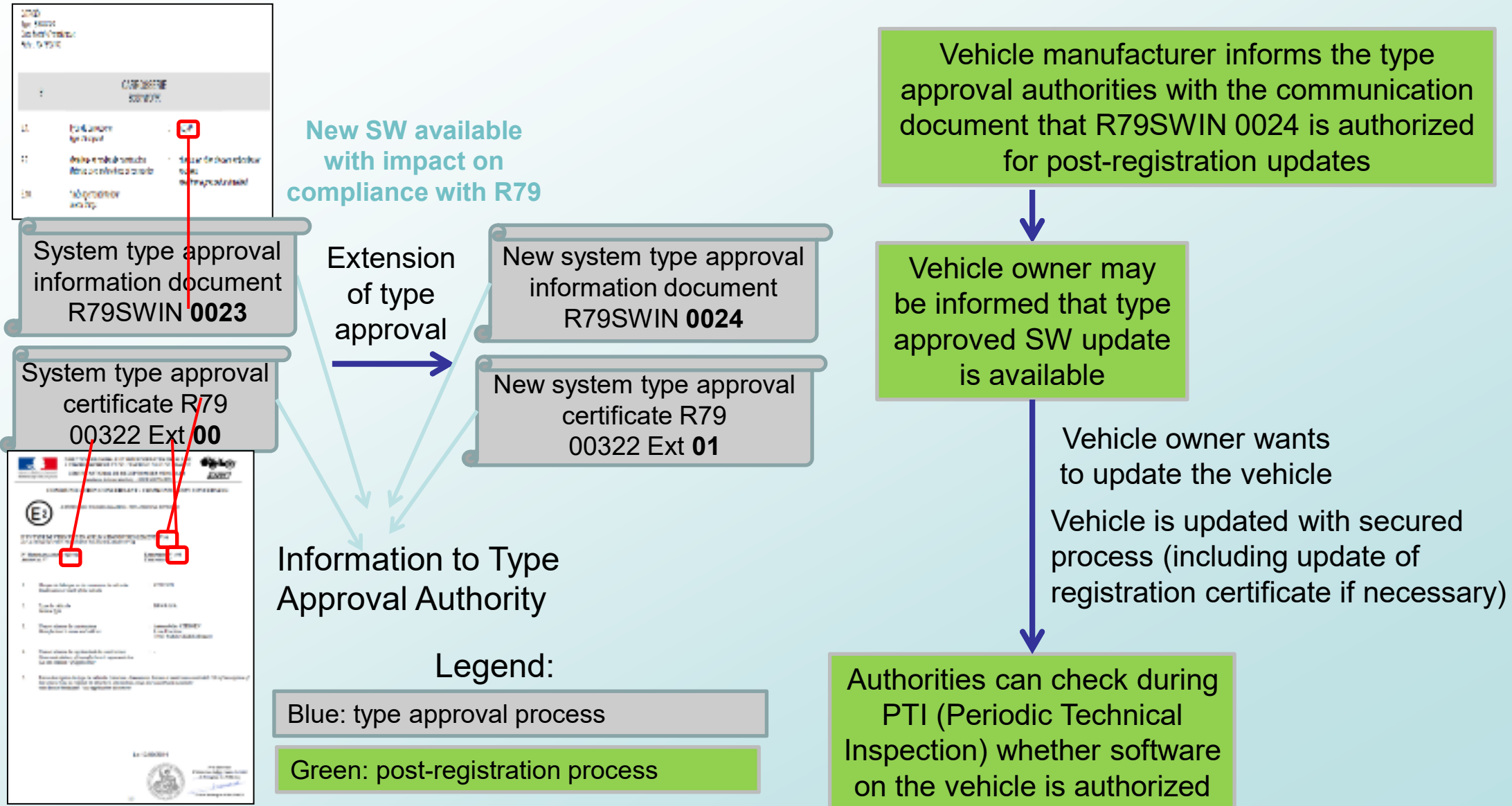
Examples of requirements for the vehicle type* in case of OTA updates

- The vehicle is **able to restore systems** to their previous version in case of a failed update
- Software updates can only be executed when the **vehicle has enough power** to complete the update
- **The vehicle user is able to be informed** before the update on:
 - The purpose of the update
 - Any changes implemented by the update on vehicle functions
 - The expected time to complete the execution of the update
 - Any vehicle functionalities which may not be available during the execution of the update
 - Any instructions that may help the vehicle user safely execute the update
- In the situation where the execution of an update **whilst driving** may not be safe:
 - Ensure the **vehicle cannot be driven** during the execution of the update
 - Ensure that the **driver is not able to use any functionality** of the vehicle that would affect the safety of the vehicle or the successful execution of the update.
- **After the execution** of an update:
 - The vehicle user is able to be informed of the success of the update



Principle of RxSWIN

RxSWIN: "Regulation x Software Identification Number" is a dedicated identifier representing information about the software that is type approval relevant with regard to Regulation x.





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Implementation of UN R155 and R156

- June 2020: Formal adoption by UN WP.29 of the two UN Regulations
- Jan 2021: Entry into force: legal act is available for application in UN Member States
- UN Member States (Contracting Parties of 1958 Agreement) may require those legal acts:
 - Japan (R155 Cybersecurity and R156 SW update mandatory)
 - 2020 for automated vehicles SAE level 3 or higher
 - July 2022* for new whole vehicle types & July 2024 for new registrations:
 - » Both UN Regulations, if SU affecting type approval and OTA capability
 - Jan 2024 for new whole vehicle types & May 2026 for new registrations:
 - » Both UN Regulations, if SU affecting type approval and no OTA capability
 - » Only UN Regulation 155 on cybersecurity: All other vehicles
 - European Union
 - R155 Cybersecurity is mandatory (via General Safety Regulation [EU 2019/2144](#), Annex II, item D4):
 - 6 July 2022 for new whole vehicle types & 7 July 2024 for new registrations
 - Introduction timing for R156 SW update: **under preparation**

*: July 2023 for imported vehicles

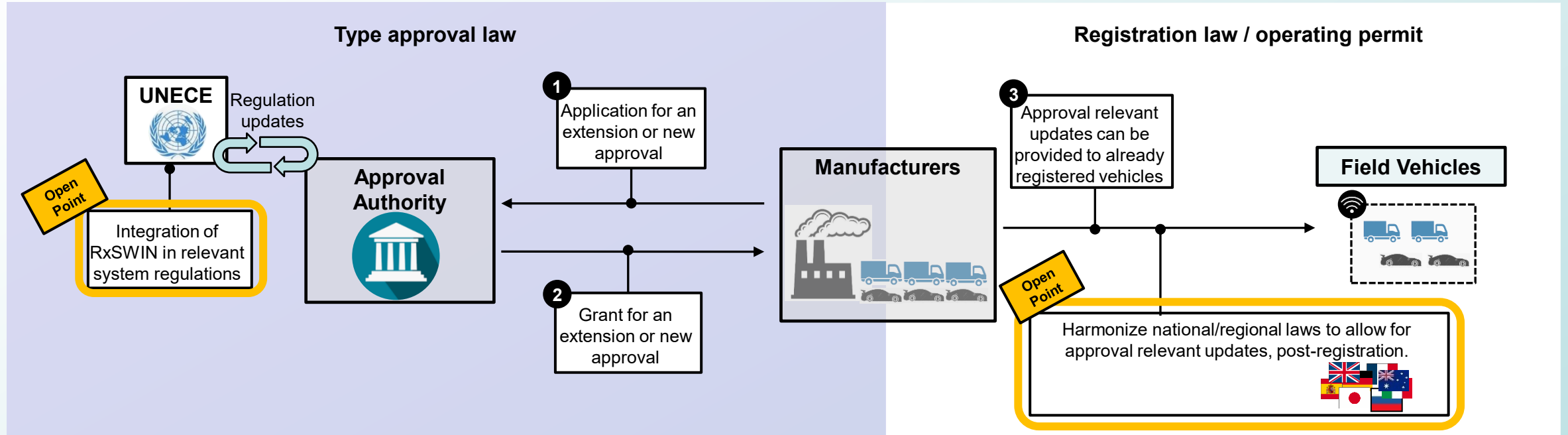


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Open points to be addressed



Need to clarify national/regional implementation dates:

- for R156 and
- for the open points mentioned above



Link to official UN documents

- UN Regulation 155 Cybersecurity <https://unece.org/transport/documents/2021/03/standards/un-regulation-no-155-cyber-security-and-cyber-security>
- Interpretation document on Cybersecurity <http://unece.org/sites/default/files/2020-12/ECE-TRANS-WP29-2021-059e.pdf>
- UN Regulation 156 SW update <https://unece.org/transport/documents/2021/03/standards/un-regulation-no-156-software-update-and-software-update>
- Interpretation document on SW update <http://unece.org/sites/default/files/2020-12/ECE-TRANS-WP29-2021-060e.pdf>
- UN Regulation 157 ALKS (see chapter 9 with link to UN Regulations 155 and 156 and Annex point 19) <https://unece.org/transport/documents/2021/03/standards/un-regulation-no-157-automated-lane-keeping-systems-alks>
- Consolidated Resolution on the Construction of Vehicles (R.E.3), Annex 7: Provisions on Software Identification Numbers (integration of RXSWIN in system regulations) <http://www.unece.org/fileadmin/DAM/trans/doc/2020/wp29/ECE-TRANS-WP29-2020-082e.pdf>
- The UN Task Force is drafting a **set of technical requirements** relevant for the 1998 Agreement Contracting Parties that have **no type approval system** (e.g. USA).



THANK YOU FOR YOUR INTEREST!
MERCI DE VOTRE INTERET !
VIELEN DANK FÜR IHR INTERESSE!
谢谢