

The future UN Regulations on Cybersecurity and SW updates

Dr.-Ing. Kai Frederik ZASTROW

Master Expert Regulation Certification Standards

Groupe PSA, France



Context

- Some cases of cyber-attacks on vehicles in the medias
- Necessity to update software on vehicles during the whole vehicle life
- Some vehicle manufacturers (Tesla) make already SW updates OTA for new ADAS functions
- **Governments want to enforce regulations to cover those issues asap**

Creation of **UN TF Cybersecurity and SW updates OTA**

Reporting to UNECE / WP.29 ([World Forum for Harmonization of Vehicle Regulations](#)) / GRVA

Activity: 14 physical meetings from 12/2016 to 12/2018

Co-Chairs: **UK**, DfT Department for Transport

Japan, NTSEL National Traffic Safety and Environment Laboratory

Secretary: OICA / Hyundai

Main Participants: **UN Countries** (China, European Commission, France, Germany, Japan, South-Korea, Netherlands, United Kingdom, USA, etc.)

Non-Governmental Organizations (CITA, CLEPA, FIA, ISO, ITU, OICA, SAE)

Profile: Type approval and cyber security experts, ≈30 people per meeting

Link between UN Task Force and automotive industry

UN WP.29 World Forum for Harmonization of Vehicle Regulations

UN WP.29 GRVA **Working Party on Automated/Autonomous and Connected Vehicles**

UN TF CS / OTA Task Force on Cyber Security and Over The Air issues

OICA TC Technical Committee

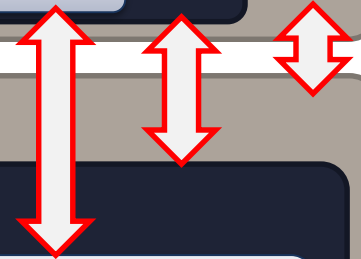
OICA GEVA **Expert Group on Automated/Autonomous and Connected Vehicles**

OICA/CLEPA "Cluster 4"

Chair: Kai Frederik Zastrow

Tasks:

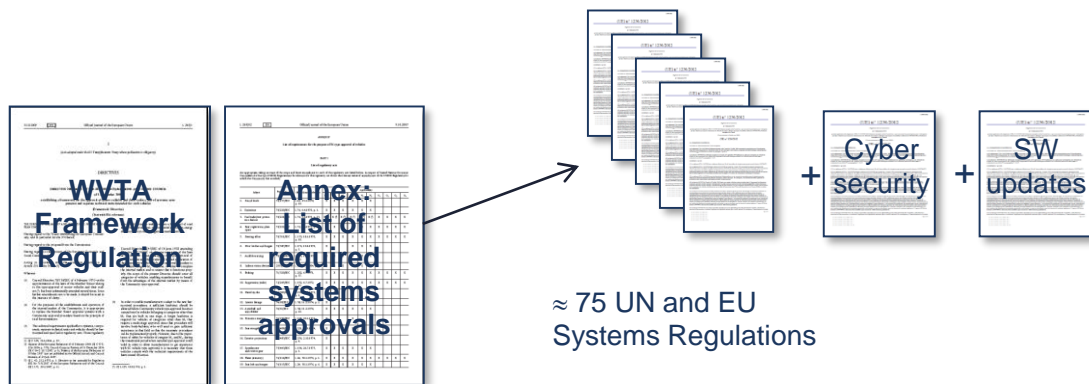
- Review technical input from UN stakeholders
- Prepare industry positions



Integration of UN Regulations in national law

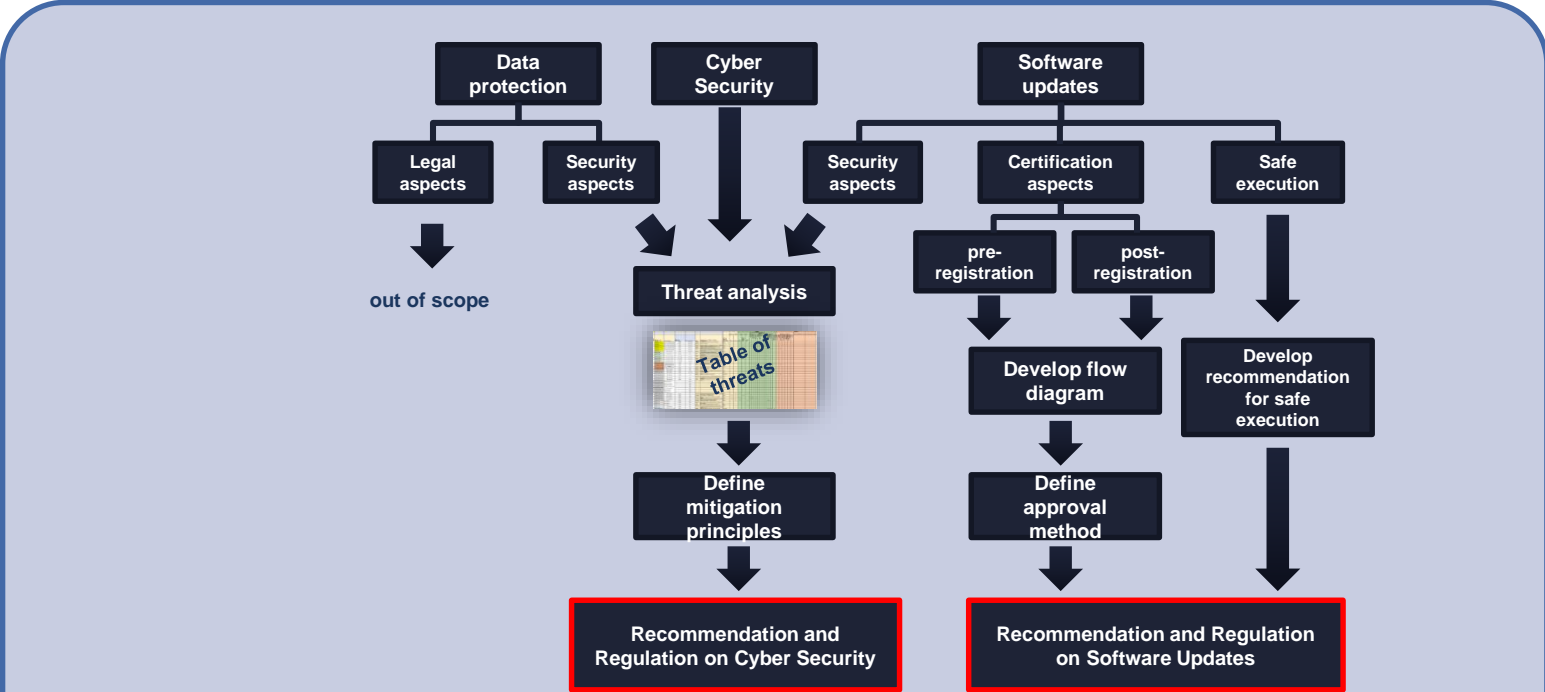
Example: European Union Whole Vehicle Type Approval (EU WVTA)

- EU WVTA allows the sale of vehicles covered by the approved type in all 28 countries of the European Union + Iceland, Norway, Switzerland, etc.
- Once there are adopted and in force, need to integrate UN Regulations on Cybersecurity and SW updates in EU WVTA



Same principle for Japan, Russia, Australia, etc.

Scope of UN TF Cybersecurity and SW updates and delivery of results



The UN TF has developed two documents:
Cyber Security [GRVA/2019/2](#) & Software Updates [GRVA/2019/3](#) (not limited to OTA)

Structure of the Recommendation on Cyber Security [GRVA/2019/2](#)

Recommendation Cyber Security

Cyber Security Guidance



Guidance on **process** and **procedures**; best practices (threats & mitigations); Reference to standards (e.g. **ISO/SAE 21434**)

- **Main body of the *Recommendation*** (Chapter 1-6)
- **Annex B** (List of threats and corresponding mitigations - informative)
- **Annex C** (Examples of Security Controls related to mitigations - informative)

Cyber Security Regulation



Requirements for **assessment of Cyber Security Management System** (to be updated every 3 years)



Requirements for **vehicle type approval with regard to Cyber Security**

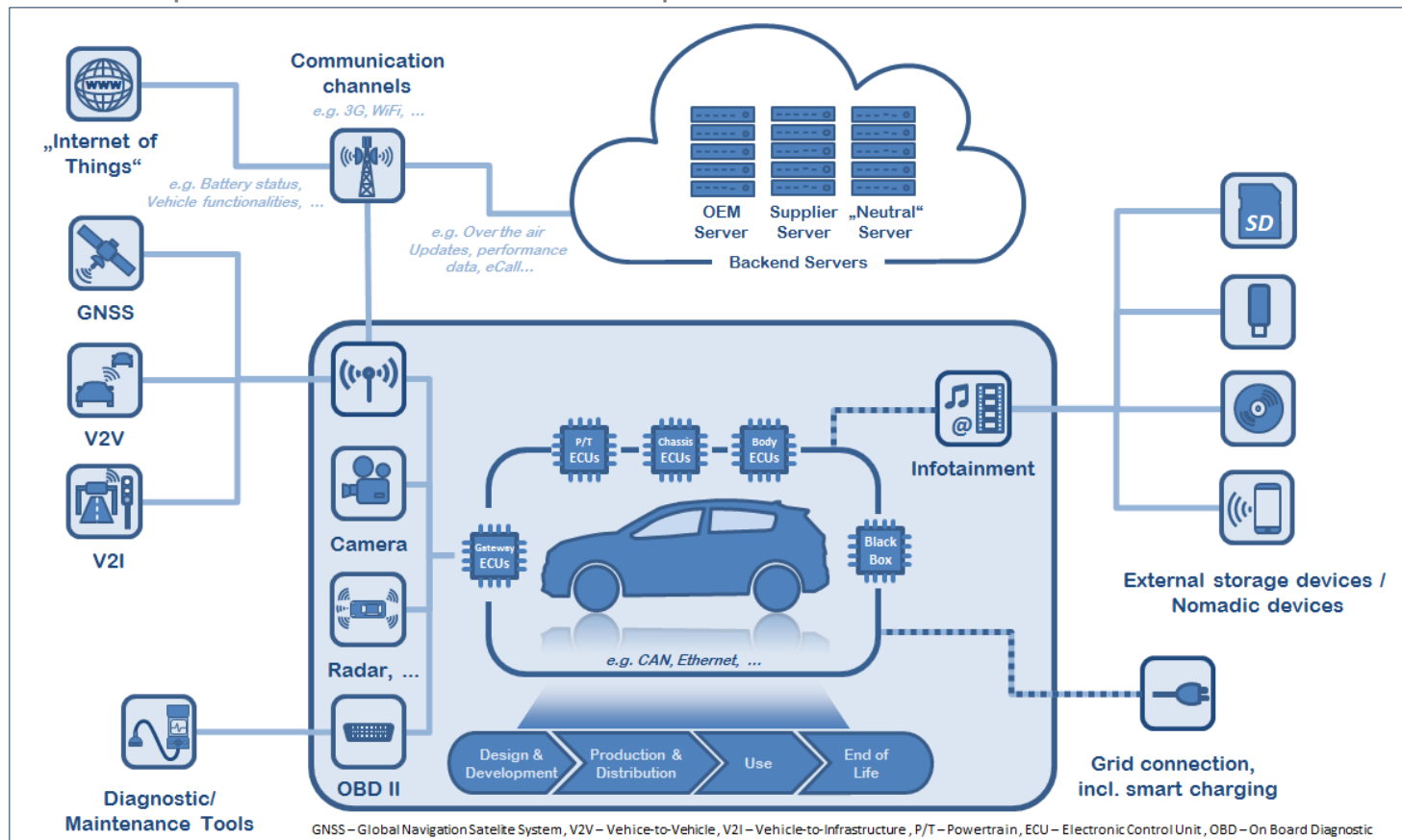


Cyber Security requirements refer to Guidance part

- **Annex A**

Reference model used for the threat analysis

Note: This does not represent an ideal vehicle but the possible attack vectors.



GNSS – Global Navigation Satellite System, V2V – Vehicle-to-Vehicle, V2I – Vehicle-to-Infrastructure, P/T – Powertrain, ECU – Electronic Control Unit, OBD – On Board Diagnostic

Structure of the Recommendation on SW update [GRVA/2019/3](#)

SW update Guidance (chapter 1-6):
Recommendations that can be used by Countries in order to implement the requirements

To be
transposed

Country C
Country B
Country A
National vehicle
registration regulation

SW update Regulation (Annex A):

- Assessment of **SW Update Management System** of vehicle manufacturer (to be updated every 3 years)
- Demonstration that the **vehicle type** to be approved complies with the requirements including safe and secure update mechanisms (a vehicle type could cover one generation of EE Architecture using the same technical solution with regard to SW updates)

Regulatory text RxSWIN (Annex B):
Requirements for the different system regulations in order to type approve SW updates

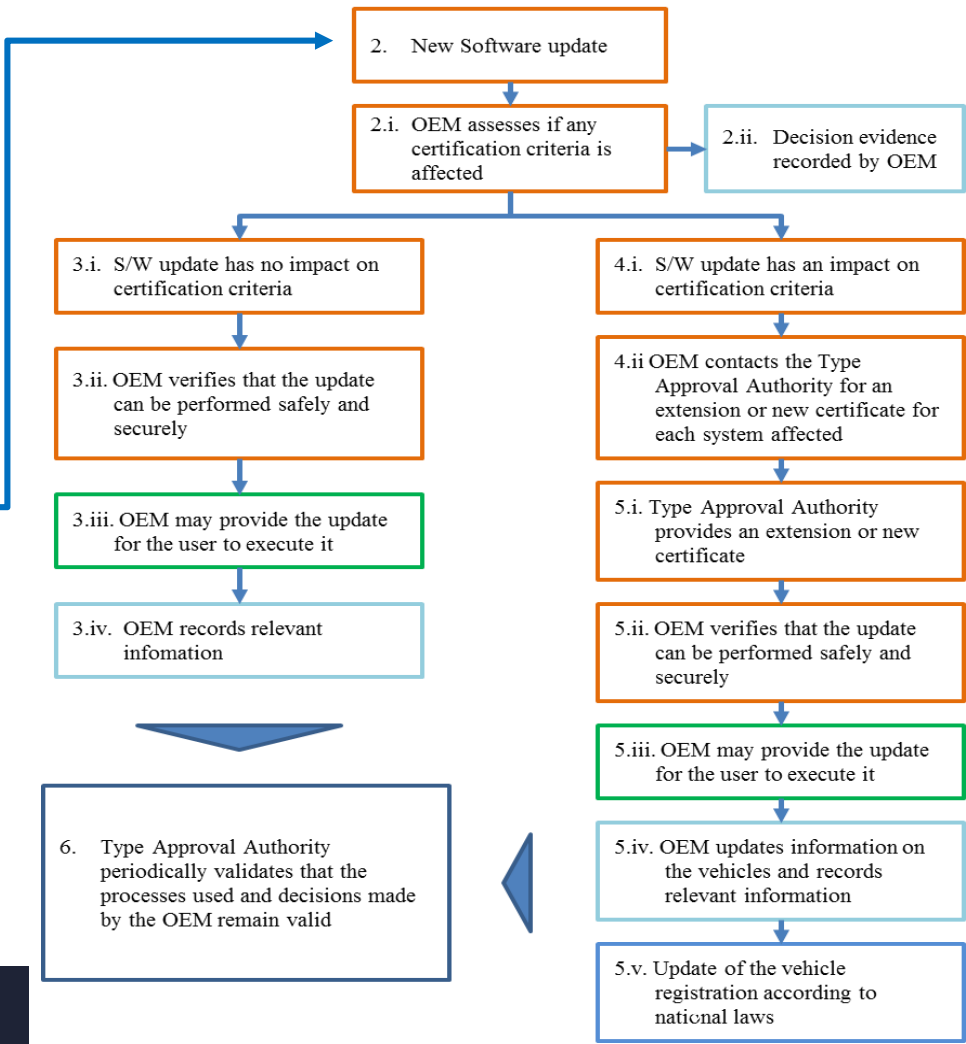
To be
integrated

UN Regulation Emissions
UN Regulation Braking
UN Regulation Steering
Requirements to type
approve SW updates for this
regulation

Flowchart of the Process for SW updates

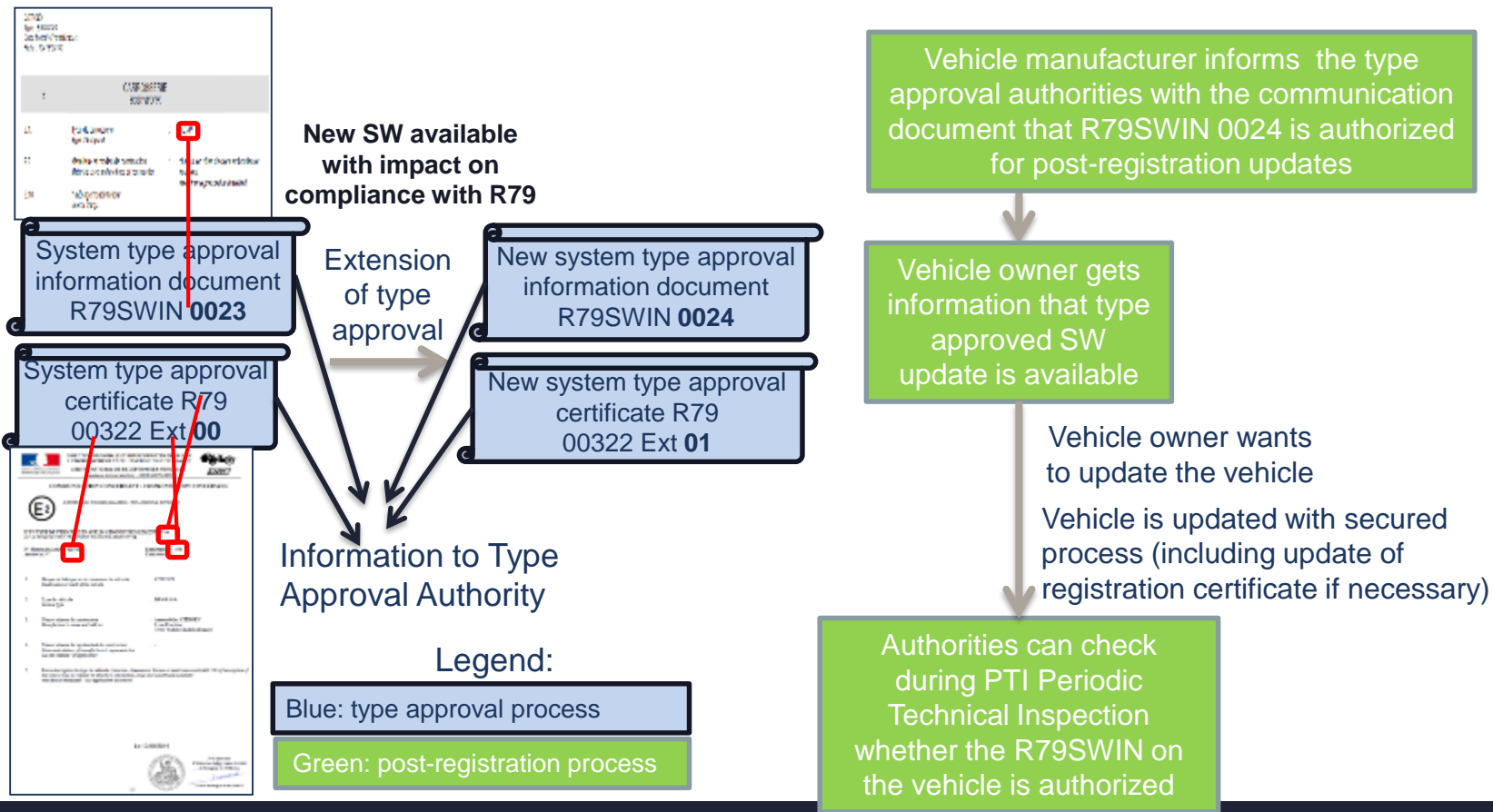
1. Vehicle manufacturer (OEM) gains approval to conduct post-registration software updates, by gaining validation of their:

- 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)



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**.



How to read RxSWIN on a vehicle?

- The draft regulation requires:
The RxSWINs of the single vehicle shall be **easily readable** in a **standardized way** via the use of an electronic communication interface, at least by **standard interface (OBD port)**.
- ISO 14229-1 (UDS Unified Diagnostic Services) is currently being amended in order to define how to read the RxSWIN via the OBD port.

All dates are our estimations

Next milestones

- Start of discussion of TF documents by GRVA and WP.29 Sep 2018
- **Test phase** with voluntary authorities and voluntary vehicle manufacturers to test **robustness** and **fine-tune** the draft texts (TFCS-14-11 for details: [link](#)) Jan – August 2019
- **GRVA** decision on content of the 2 final UN Regulations (CS & SW update) Sep 2019
- Formal adoption by UN **WP.29** of the 2 final UN Regulations Mar 2020
- Entry into force: legal act is **available for application in UN Member States** Sep 2020
- **Contracting Parties require** those legal acts for **whole vehicle type approval** / whole vehicle certification
 - Japan Sep 2020: for autonomous vehicles level 3 or higher
 - European Union May 2022: New Types & May 2024: First Registrations
 - Other countries (Australia, Russia, etc.) ?





谢谢

Thank you for your attention!

PSA
GROUPE