



## ROAD VEHICLE - CYBERSECURITY ENGINEERING

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## AGENDA

- Introduction
- ISO/SAE 21434
- UNECE WP29

# INTRODUCTION



# AIT AUSTRIAN INSTITUTE OF TECHNOLOGY

over

**1.300**

employees

bmvit

**8**

Centers

Austria's largest

**RTO**

Applied Research

Infrastructure Systems

System  
Competence

Federation of  
Austrian Industries

**2**

Subsidiary Enterprises

Next Generation  
Solutions

**143**

m EUR total revenue

**Tomorrow Today**

- Member of
  - Austrian Standards Institute (ASI)
  - Das Österreichische Elektrotechnische Komitee (OEK)
- ISO/TC 22 Road vehicles
  - Participation in the development of ISO26262:2018
    - Safety and Cybersecurity Topic Group
  - Coordination of the Austrian group in the development of ISO/SAE 21434
- Safety and Security engineering in automotive and industrial



# These Chinese hackers tricked Tesla's Autopilot into suddenly switching lanes

Tom Huddleston Jr. | 11:17 AM ET Wed. 3 April 2019



**TEN HACKS IN TEN WEEKS- IS 2018 THE YEAR OF THE AUTOMOTIVE CYBER THREAT?**

# Tesla Model 3 Gets CR Recommendation After Braking Update

Automaker responds to Consumer Reports test results and reduces stopping distance by nearly 20 feet

By Patrick Olsen  
May 30, 2018

TRANSPORTATION \ CARS \ ELECTRIC CARS

## Over-the-air update strands NIO electric car on a highway in China

*Only a software update could make China's traffic worse*

By Sean O'Kane | @sokane1 | Jan 31, 2019, 5:33pm EST

The NIO representative who was stuck in the car said on Chinese social media site Weibo that “[p]olice officers came, one group after another, yet we could not even wind the window down,” according to *SCMP*.

# CYBERSECURITY OVERVIEW

2009	2010	2013	2014	2015	2016	2017	2018	2019	2020
ISA/IEC TS 62443-1-1	ETSI TR 102 893 V1.1.1 – TVRA	ETSI TR 102 698 – ITS, Vehicular Communications	AUTOSAR Start of security WG	ISO/IEC Information technology – TPM library	SAE J3061 Cybersecurity Guidebook for Vehicle	SAE J3101 WIP Hardware Security Vehicle	S.1885 - AV START Act		
	ISA/IEC 62443-2-1 IACS security program				ISO/SAE 21434 NWIP		ISO/SAE 21434 CD		ISO/SAE 21434 IS (30.11.2020)
					UNECE WP29 - ITS/AD TF on CS and OTA		H.R.3388 - SELF DRIVE Act	UNECE WP29 ITS AD Report on CS and OTA	



# ISO/SAE 21434



## ISO / SAE 21434

### Road Vehicles - Cybersecurity Engineering

- **Scope:**

- Requirements for cybersecurity risk management
- Covers engineering, production, operation, maintenance, and decommissioning
- Framework for cybersecurity process
- Common language for communicating and managing cybersecurity risk
- Applicable to road vehicles (E/E) systems
- Does not prescribe specific technology or solution

Standard is still in development!

# ISO / SAE 21434

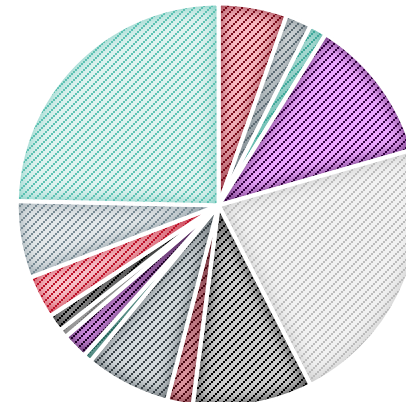
## Development, Participation



- Total registered members: 147
- Around 80 companies contributing across OEMS, TIER1, TIER2, Regulators, R&D
- Austria: AIT, AVL, Kapsch, Magna, TTTech, ViV

## COUNTRIES

- Austria
- Belgium
- China
- France
- Germany
- Israel
- Italy
- Japan
- Luxembourg
- South Korea
- Spain
- Sweden
- Netherlands
- UK
- USA

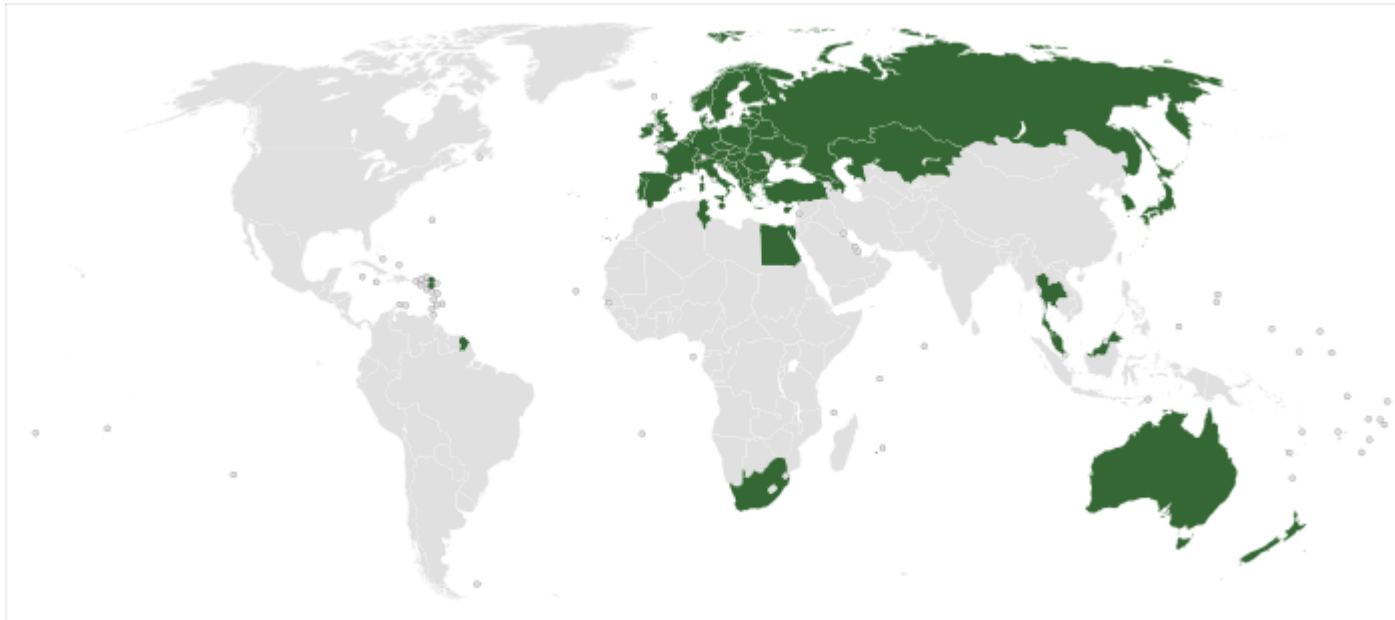


# UNECE WP29



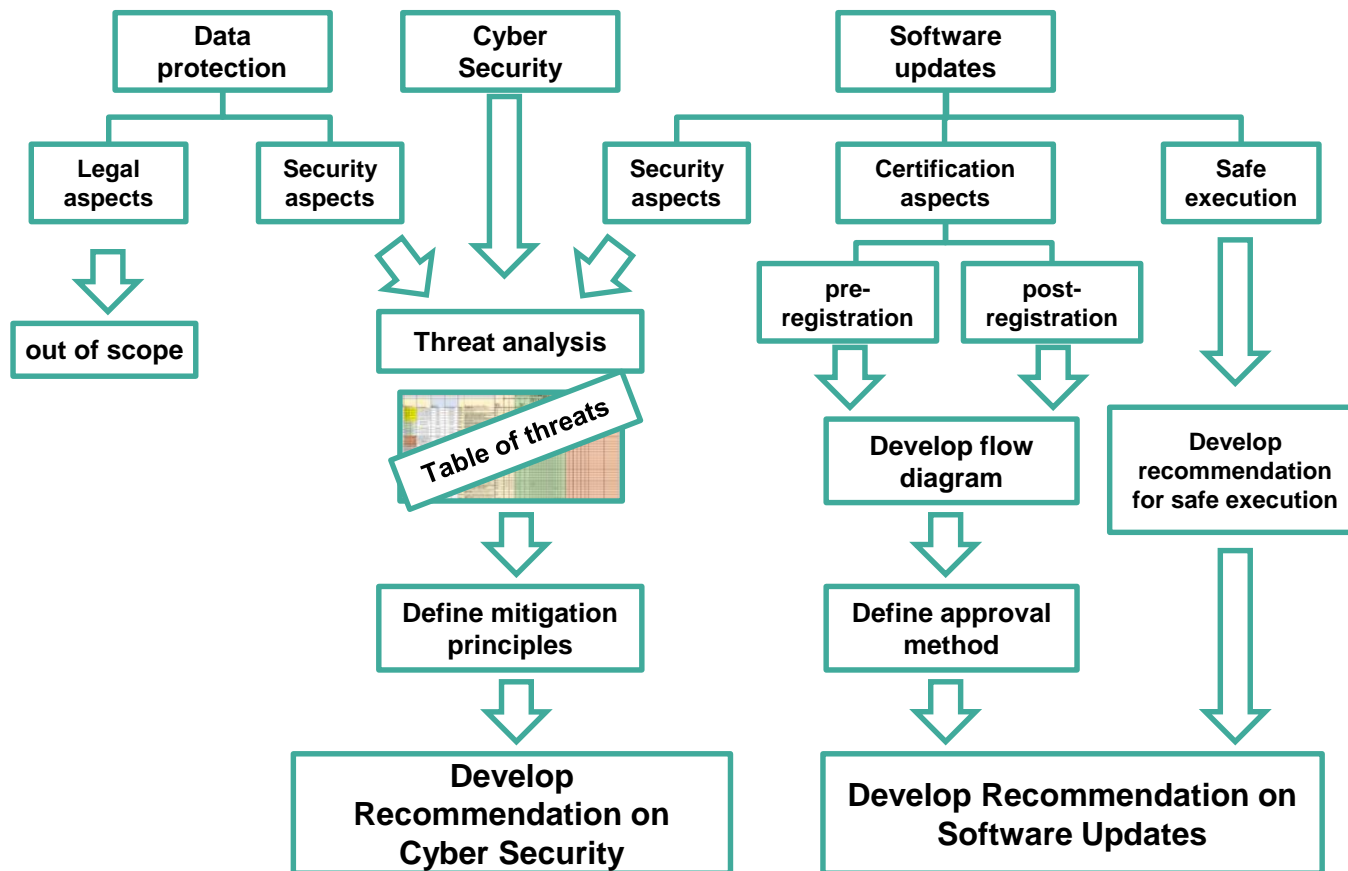
## UNECE WP29

- UNECE (United Nations Economic Commission for Europe)
  - World Forum for Harmonization of Vehicle Regulations (WP.29)
  - 62 States follow UNECE Type Approval regulation

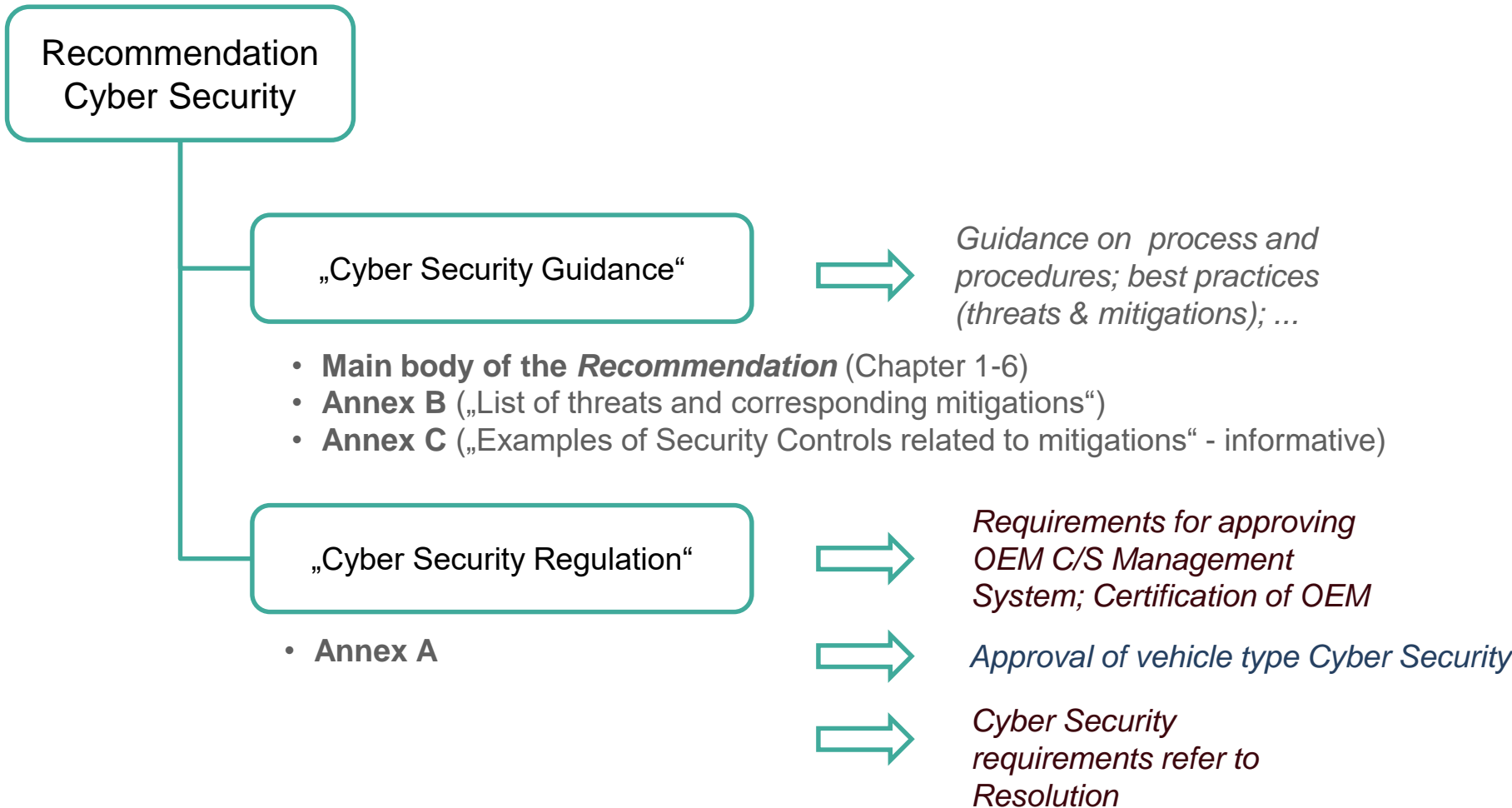


# UN TASK FORCE ON CYBER SECURITY AND OVER THE AIR

- Two Task Forces, working on considering Cybersecurity and Software Updates

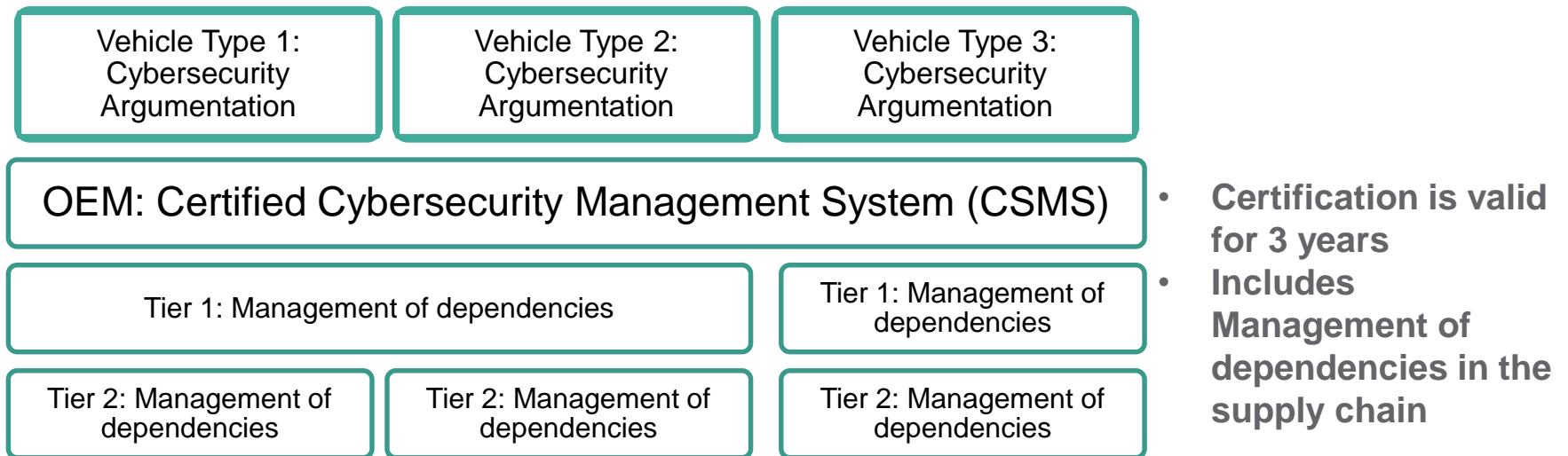


# RECOMMENDATION ON CYBER SECURITY



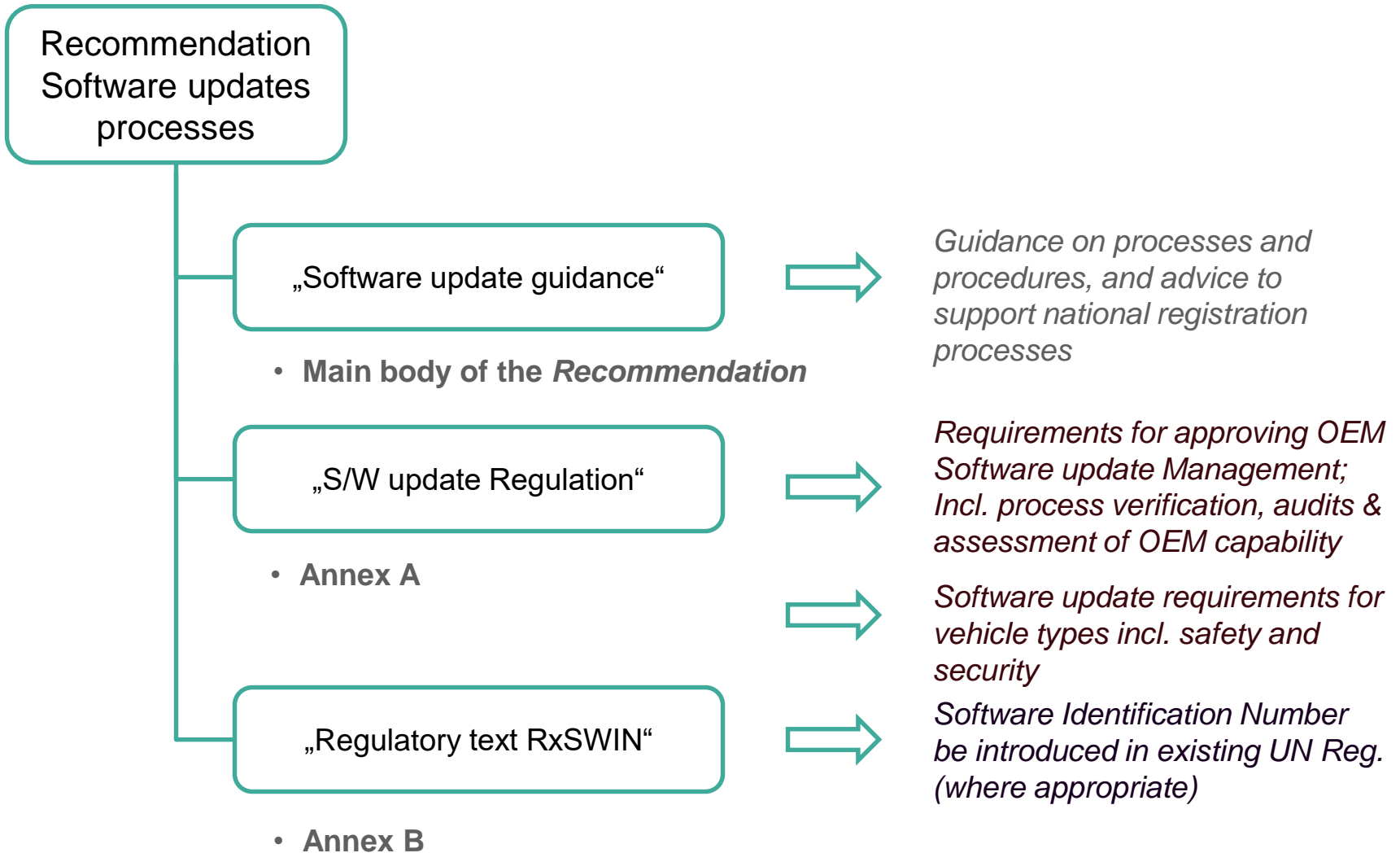
# UNECE WP29 – DRAFT REGULATION ON CYBERSECURITY

- New approach to type approval => Test phase start in 2019
- Horizontal and vertical approach





# RECOMMENDATION ON S/W UPDATE PROCESSES

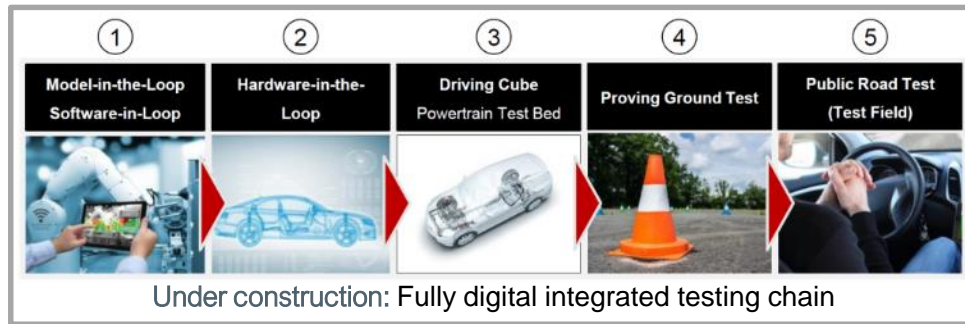


# AUTOMOTIVE INTEGRATED SAFETY & SECURITY SERVICES

Joint HARA & TARA  
Functional Safety & Security Concepts  
Assessments, ...

Safety of the Intended  
Functionality (SOTIF), ...

StVO, Testcase Generation,  
Development Test Report Management  
& Approval



Responsibilities:  
AIT: Methods, Standards,  
Security Database, Software Security, V&V

TÜV: System Know-how, Functional Safety,  
Software & Hardware Security, V&V  
Certification

Automotive  
Security  
Database;  
ISO/SAE 21434

Software- &  
Firmware Update  
Over The Air

SIEM Anomaly  
Detection

White Box  
PEN Tests

**Safety & Security by Design: System Safety**

Type Approval for  
Vehicles & Systems

Continuous  
Monitoring  
&  
Testing



Conformity Assessment- & Reports  
With integrated Safety & Security