WAVESTONE

Together With You Q_PERIOR

Présentation UNECE WP29

11/12/2020 | Théo TAMISIER & Paul FAUCHET

What is UNECE WP.29?

UNECE WP.29 in a nutshell

PERIMETER

54 Contracting Parties:

*Albania, Armenia, Australia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czechia, Denmark, Egypt, Estonia, European Union, Finland, **France**, Georgia, Germany, Greece, Hungary, Italy, Japan, Kazakhstan, Latvia, Lithuania, Luxembourg, Malaysia, Montenegro, Netherlands, New Zealand, Nigeria, North Macedonia, Norway, Pakistan, Poland, Portugal, Republic of Korea, Republic of Moldova, Romania, Russian Federation, San Marino, Serbia, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Thailand, Tunisia, Turkey, Ukraine, United Kingdom, Northern Ireland*

SCOPE

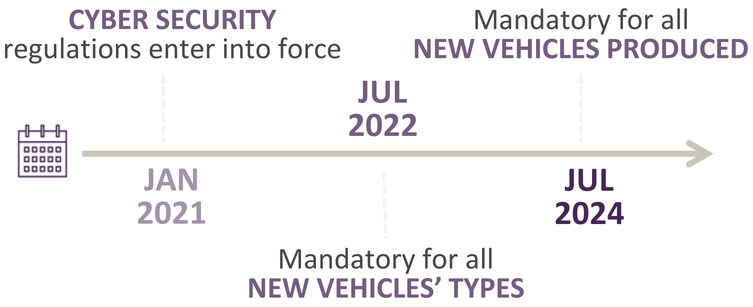
CARS

BUSES

TRUCKS

VANS

TIMELINE



CYBER SECURITY regulations enter into force

JAN 2021

Mandatory for all **NEW VEHICLES' TYPES**

JUL 2022

Mandatory for all **NEW VEHICLES PRODUCED**

JUL 2024

What is inside UNECE WP.29?

SUMS

Software Update Management System

> SW discovery: what SW/dependency running on which target vehicle
> Check compatibility and deploy secure updates
> Assess update impact on Cyber Security or Safety of existing systems

CSMS

Cyber Security Management System

> Risk assessment and management; Security by design
> Lifecycle: monitor threats and patch vulnerabilities, control
> Detect and respond to cyber attacks

ALKS

ADAS: Automated Lane Keeping System

> Black-box "DSSAD" in vehicles
> Recording of events; activation/deactivation of the systems
> SW validation: simulation proofs, etc.

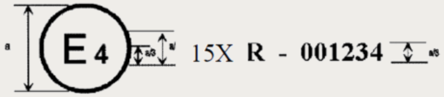
+

ISO 24089

ISO/ SAE 21434

ISO 26262 / ISO 21448

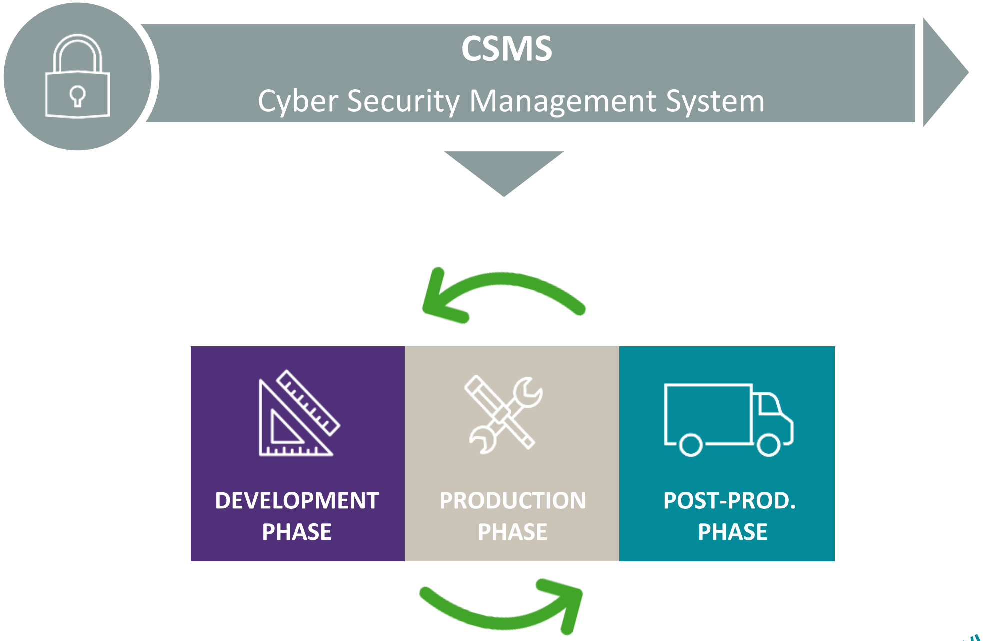
Vehicle Type Certification



UNECE WP29

The **CYBER SECURITY** and **SOFTWARE UPDATE** certifications are valid for a period of **THREE YEARS**

UNECE WP.29 – CSMS and high-level Cyber Security processes



CSMS

Cyber Security Management System

DEVELOPMENT PHASE

PRODUCTION PHASE

POST-PROD. PHASE

GOVERNANCE CSMS

1. The processes used within the manufacturer’s organization to ***manage cyber security***

RISK ANALYSIS / MANAGEMENT

2. The processes used for the ***identification of risks*** to vehicle types

3. The processes used for the ***assessment***, ***categorization*** and ***treatment*** of the risks identified

4. The processes in place to verify that the risks identified are ***appropriately managed***

TESTING

5. The processes used for ***testing*** the cyber security of a vehicle type

LIFECYCLE

6. The processes used for ensuring that the ***risk assessment*** is kept current

SECURITY OPERATION

7. The processes used to ***monitor*** for, ***detect*** and ***respond*** to cyber-attacks, cyber threats and vulnerabilities

THREATS VULNERABILITIES

8. The processes used to assess whether the cyber security measures implemented are still effective in the light of ***new cyber threats and vulnerabilities***

UNECE WP.29 – A lifetime engagement

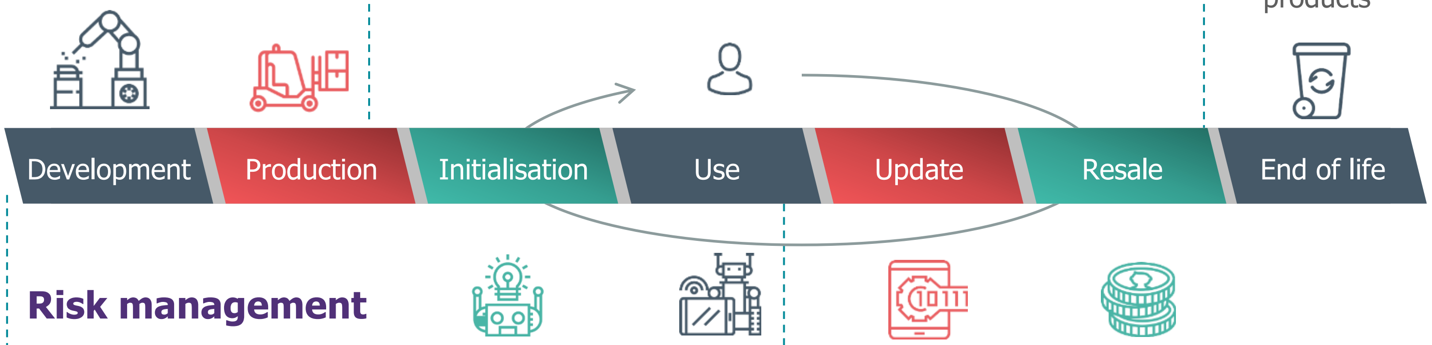
At any stage of a vehicle’s lifecycle, all automotive actors will have to match further cybersecurity requirements.

Production line’s integrity

- **Quality control**
- **Complete integrity** of all **HSM**

End of support

- **Dedicated communication** to all relevant parties ***(especially if end of support occurs before decommissioning phase)***
- **Secure manners** to decommissioned all products



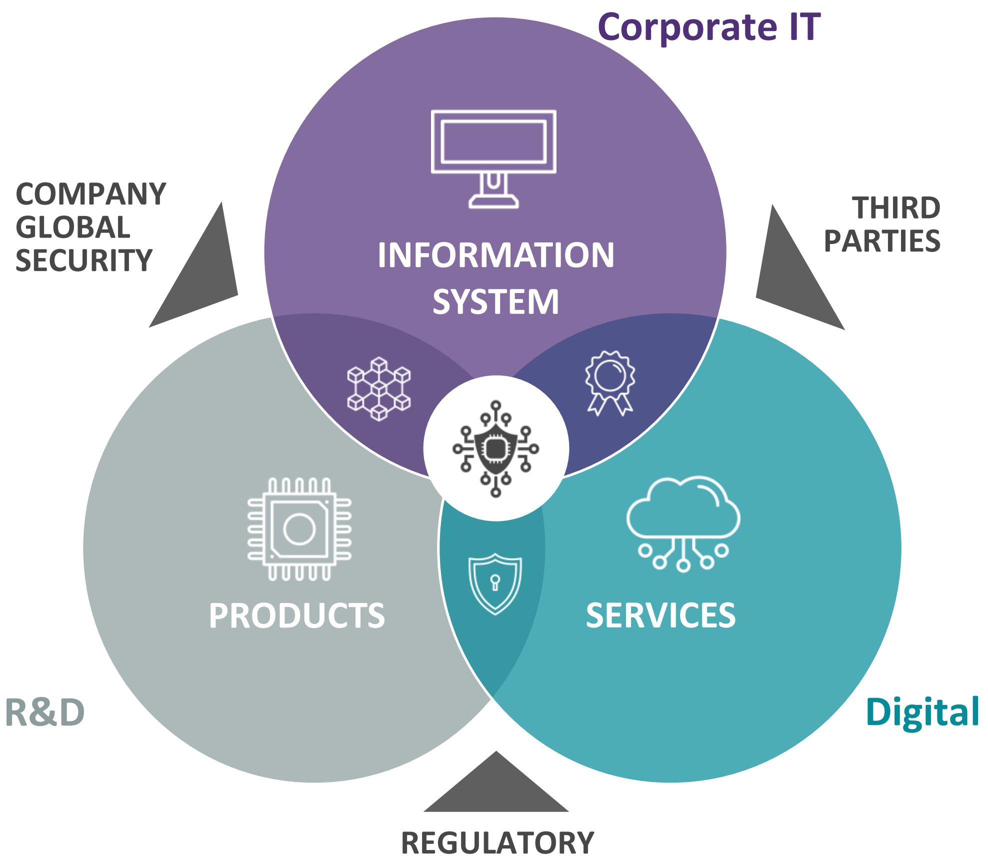
Risk management

- **Risk analysis**
- **Secure** development
- **Risk management** for **system development** and **suppliers’ relations**
- **Testing** and **certification**

Continuous and secured maintenance

- **Patch** for any vulnerability at any time of a **vehicle’s lifecycle**
- **Complete integrity** of the **patching system**

UNECE WP.29 – Significant impact on all core businesses



INFORMATION SYSTEM

- Working environment
- Production environment
- Development environment

SERVICES

- End-user applications (mobile, etc.)
- Services infrastructures (on-premises, clouds, etc.)
- Data management (customers database, data collection, ...)

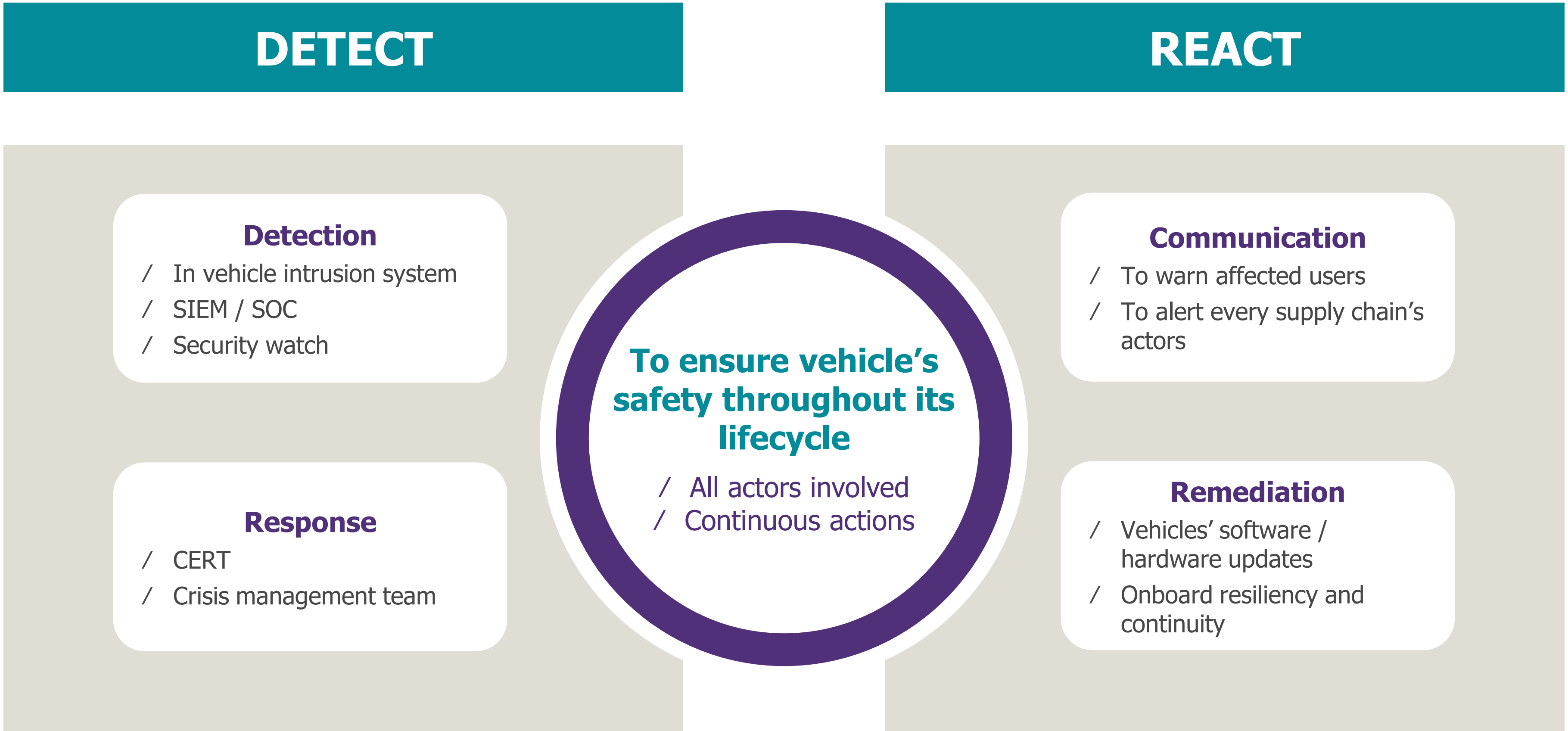
PRODUCTS

- HW / SW development
- Embedded applications
- Product integration / quality / safety

/ 02 Focus on some UNECE WP.29 challenges

Challenges of UNECE WP29 – CSMS : Incident / Response

Building response teams and defining threats scenarios is key to act effectively and quickly against cyber attacks, using data collected from specifically designed components



DETECT

Detection

- In vehicle intrusion system
- SIEM / SOC
- Security watch

Response

- CERT
- Crisis management team

To ensure vehicle's safety throughout its lifecycle

- All actors involved
- Continuous actions

REACT

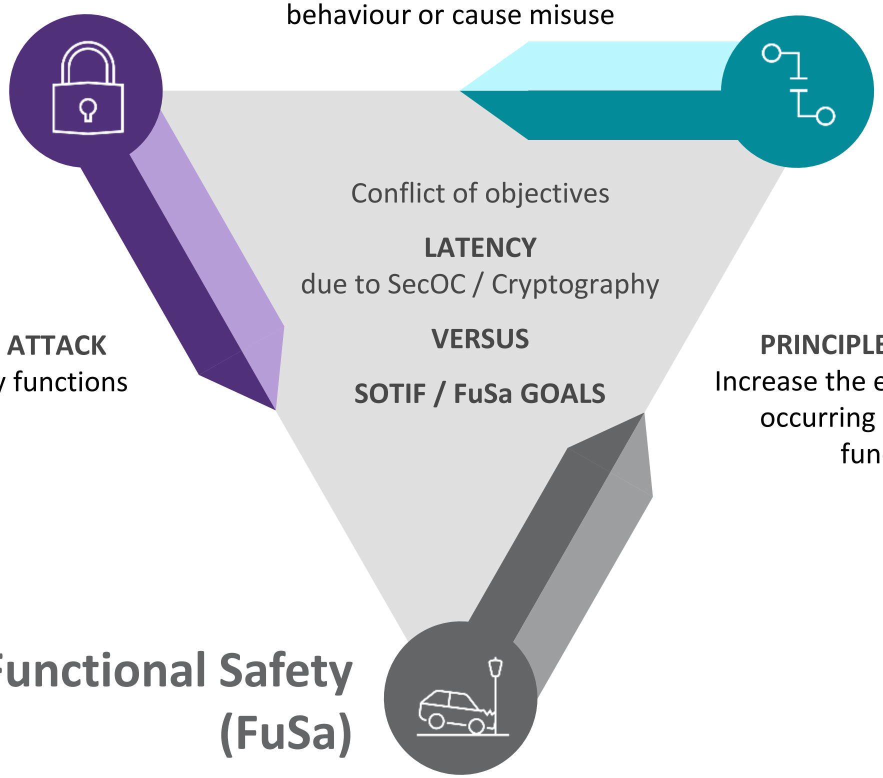
Communication

- To warn affected users
- To alert every supply chain's actors

Remediation

- Vehicles' software / hardware updates
- Onboard resiliency and continuity

Challenges of UNECE WP29 – Integrate Security and Safety in risk analysis methodology



PRINCIPLE OF ATTACK
Evoke unknown system behaviour or cause misuse

Cyber Security

Safety Of The Intended Functionality (SOTIF)

Conflict of objectives

LATENCY
due to SecOC / Cryptography

VERSUS

SOTIF / FuSa GOALS

PRINCIPLE OF ATTACK
Lever out safety functions

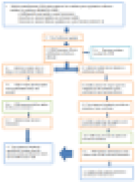
PRINCIPLE OF ATTACK
Increase the exposure to risks occurring for ASIL/QM functions

Functional Safety (FuSa)

Challenges of UNECE WP29 – SUMS and Operational Security

ASSET DISCOVERY
Keep an up-to-date vision of your assets with the running SW version

HOMOLOGATION
Assessing the impact of current certifications and homologating the system

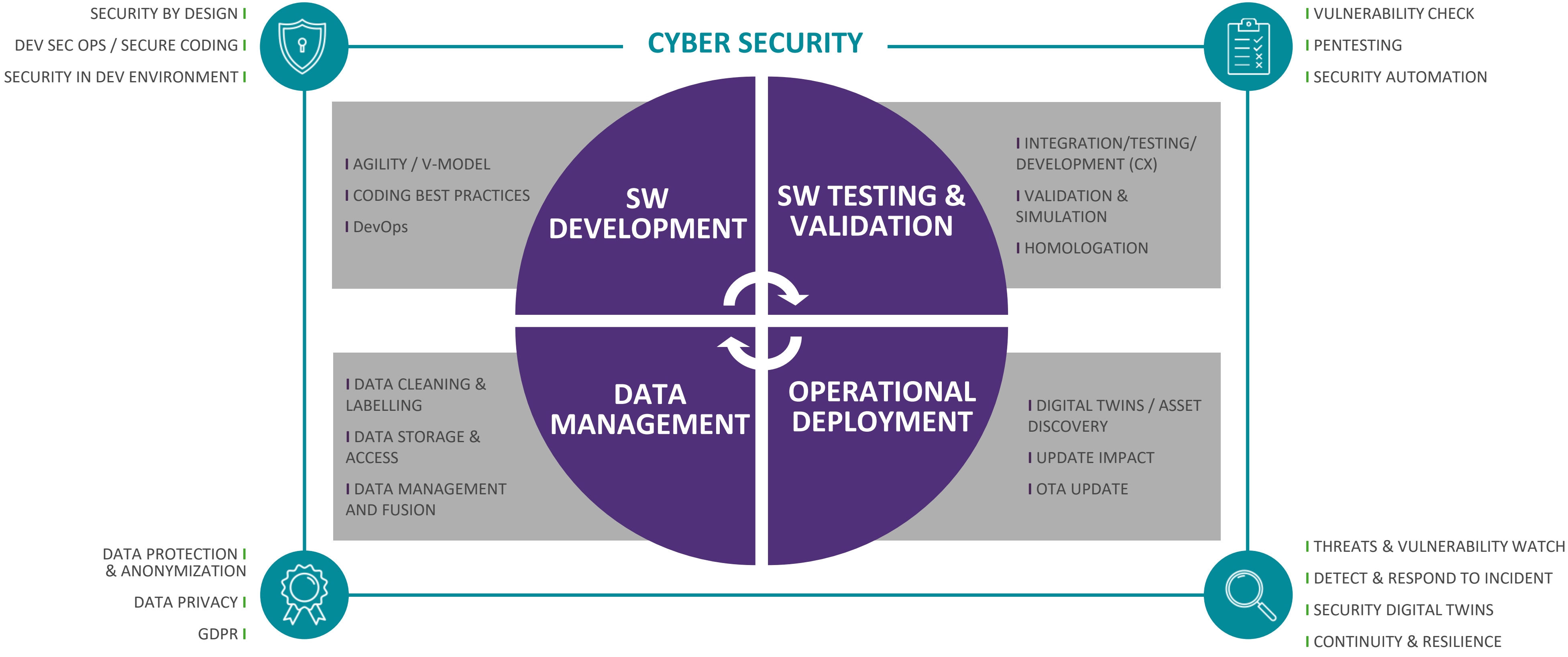


SECURITY OTA
Ensure a secure deployment of your updates, from suppliers / OEM clouds to the car

CAMPAIGN MANAGEMENT
Follow up the update progression and the possible incidents

/ 03 How industrials are tackling these challenges

Integrate Cyber Security within the Software lifecycle environment



CYBER SECURITY

- SECURITY BY DESIGN
- DEV SEC OPS / SECURE CODING
- SECURITY IN DEV ENVIRONMENT

- VULNERABILITY CHECK
- PENTESTING
- SECURITY AUTOMATION

SW DEVELOPMENT

- AGILITY / V-MODEL
- CODING BEST PRACTICES
- DevOps

SW TESTING & VALIDATION

- INTEGRATION/TESTING/ DEVELOPMENT (CX)
- VALIDATION & SIMULATION
- HOMOLOGATION

DATA MANAGEMENT

- DATA CLEANING & LABELLING
- DATA STORAGE & ACCESS
- DATA MANAGEMENT AND FUSION

OPERATIONAL DEPLOYMENT

- DIGITAL TWINS / ASSET DISCOVERY
- UPDATE IMPACT
- OTA UPDATE

- DATA PROTECTION & ANONYMIZATION
- DATA PRIVACY
- GDPR

- THREATS & VULNERABILITY WATCH
- DETECT & RESPOND TO INCIDENT
- SECURITY DIGITAL TWINS
- CONTINUITY & RESILIENCE

On the way to a new car architecture

LEVEL 1 to 3 *"eyes-off"*

DISTRIBUTED
>80 ECUs

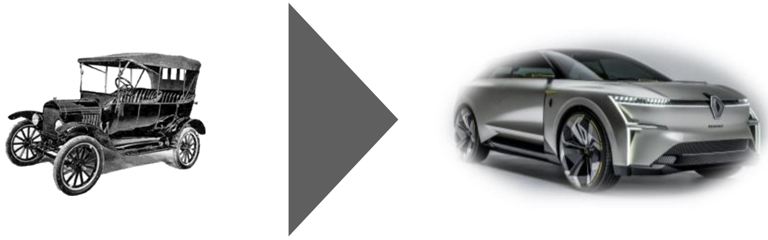
SMART SENSORS
few sensors

EMBEDDED COMPONENTS
firmware

CHEAP

OLD TECHNOLOGY

HUMAN-DRIVEN



LEVEL 4 and 5 *"mind-off"*

CENTRALIZED
Powerful DC

BASIC SENSORS
many sensors

(RT)OS-based
functions and software

EXPENSIVE

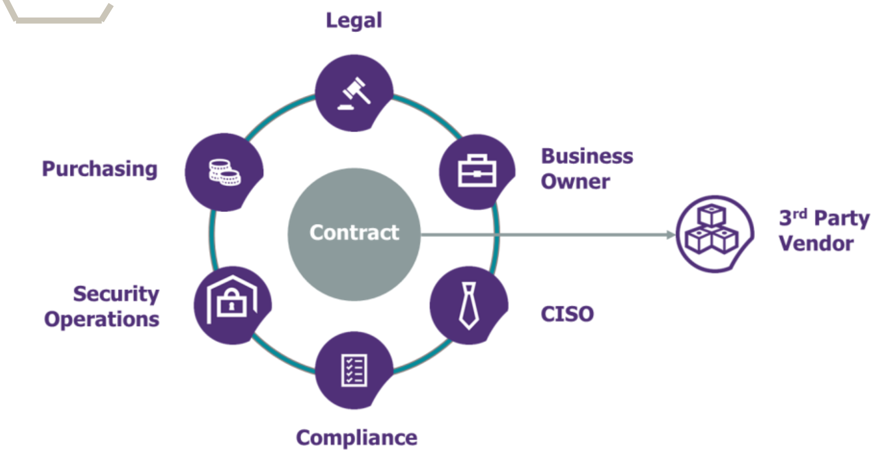
NEW STANDARDS

MACHINE-DRIVEN

Securing the supply chain requires a common vocabulary

New cooperation model
Operational security

Cybersecurity Impacts the Entire Organization



A **large number of stakeholders** across diverse functions is involved in defining contracts with 3rd parties.

Common challenges, such as complexity of developing contracts, stem from the inability to form a **consistent view around cybersecurity.**

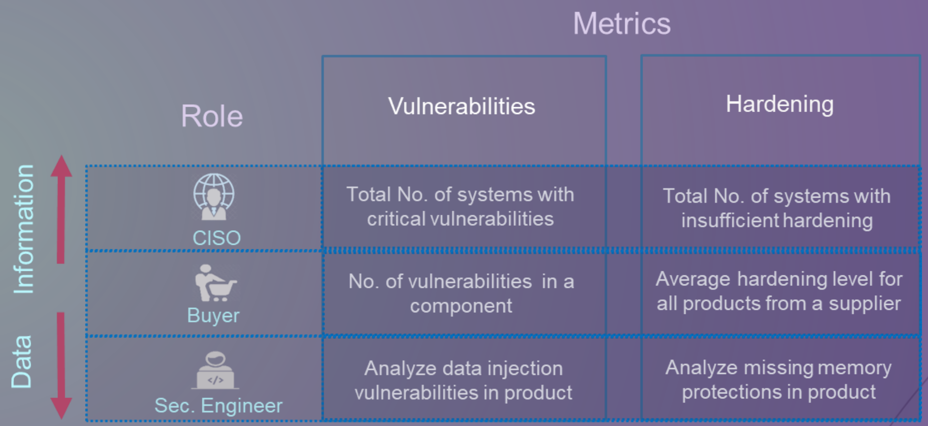
The management of 3rd party risk is therefore heavily influenced by how effectively stakeholders **communicate.**

A Common Vocabulary to Govern Supply Chain Cybersecurity

The main challenge is to address the diverse stakeholders with **different artifacts**, while remaining **aligned and coherent**.

A common vocabulary will enable :

- **Clear communication** between C-level and operational functions
- Translation of high level objectives in mid-level and **operational requirements**
- Translation of operational requirements into **low-level instructions** for developers and security engineers
- **Seamless aggregation** of low level metrics for C-level reporting


Information
Data

	Metrics	
Role	Vulnerabilities	Hardening
CISO	Total No. of systems with critical vulnerabilities	Total No. of systems with insufficient hardening
Buyer	No. of vulnerabilities in a component	Average hardening level for all products from a supplier
Sec. Engineer	Analyze data injection vulnerabilities in product	Analyze missing memory protections in product

Set up relevant metrics that can be encapsulated into information

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Théo TAMISIER
Senior Consultant

theo.tamisier@q-perior.com

Paul FAUCHET
Senior Consultant

paul.fauchet@wavestone.com