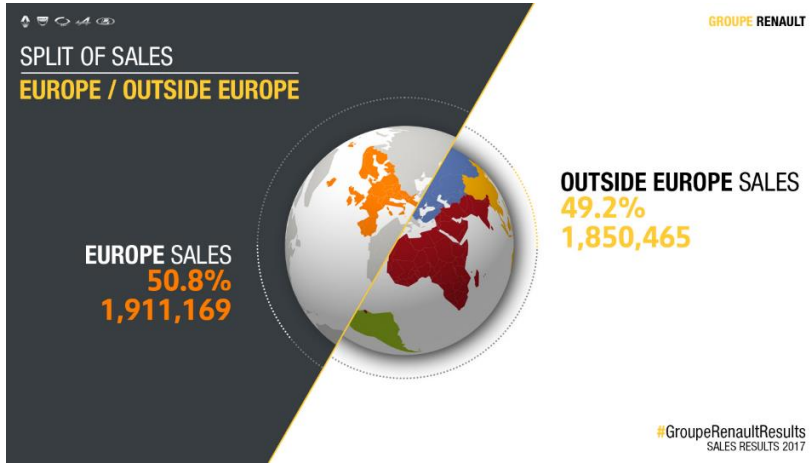
SAFETY AND CYBERSECURITY

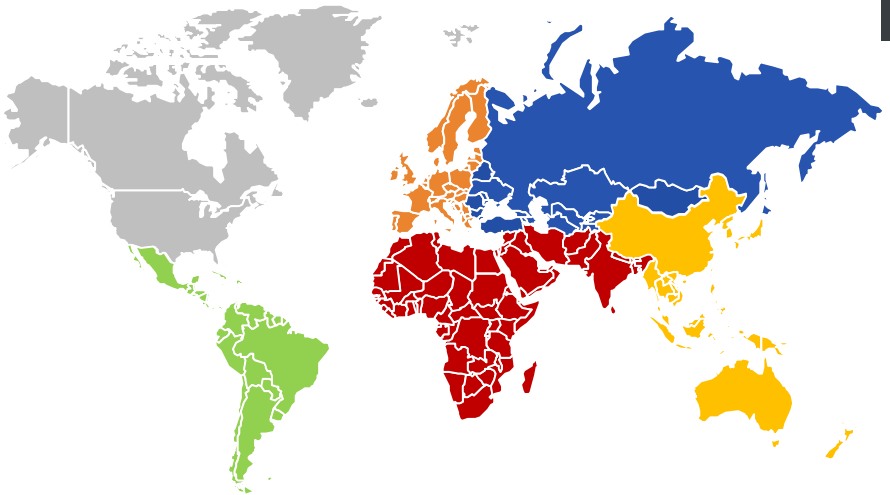
PROGRESS AND POSSIBILITIES IN A FUNCTIONAL SAFETY-CYBER SECURITY ENVIRONMENT

GROUPE RENAULT

A WORLD WIDE BRAND

- Renault is the first French Brand throughout the world





- Alliance (with Nissan and Mitsubishi) is the first automaker of the world based on volumes

2017 : GROUPE RENAULT

SALES RECORD

VEHICLES SOLD
3,761,634

+8.5%
VS 2016

MARKET SHARE
4%

+0.2 pt
VS 2016

GROUPE RENAULT EXPERIENCING A TREMENDOUS TRANSFORMATION

GLOBAL MARKET TREND - FUTURE

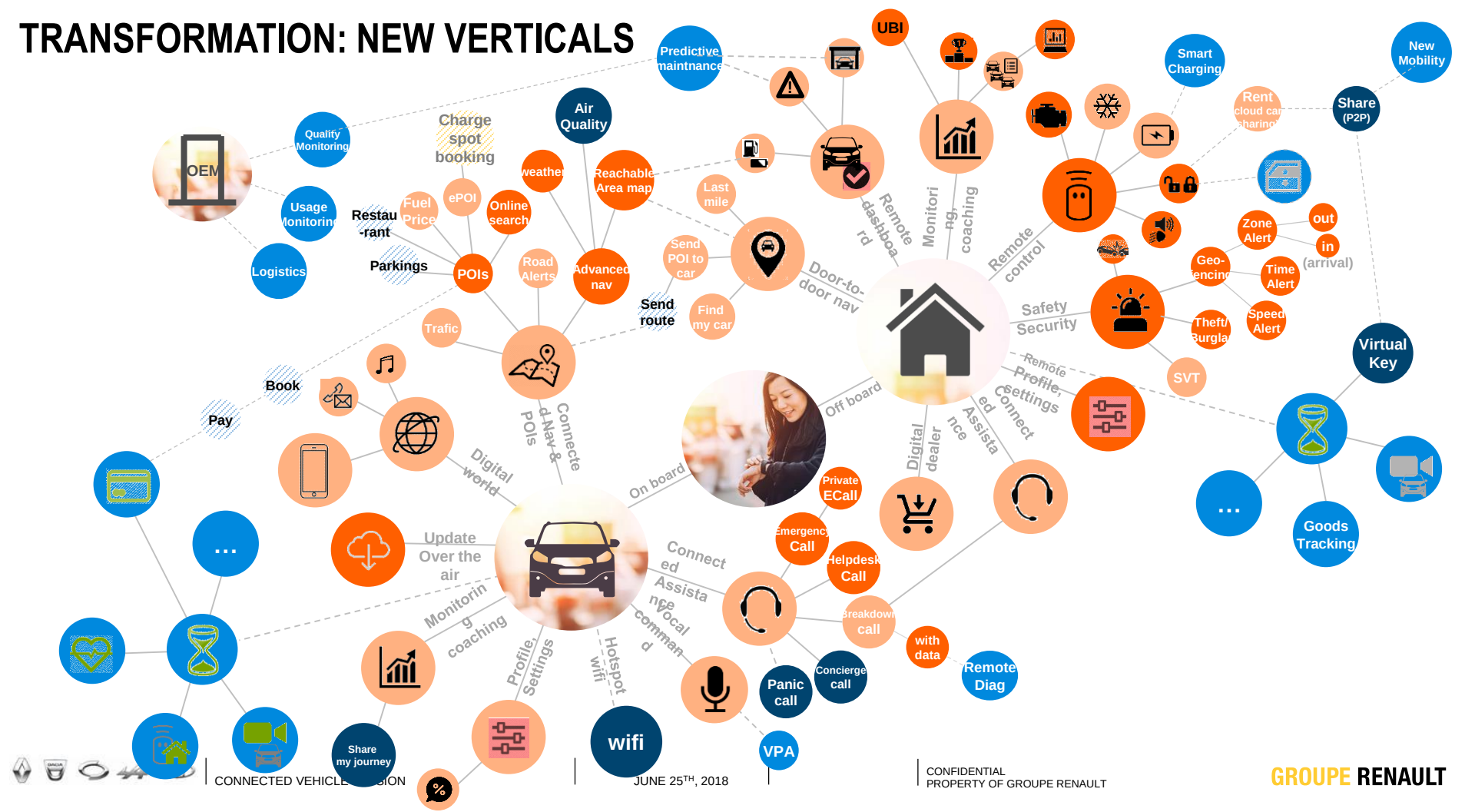
RENAULT NISSAN MITSUBISHI

MARKET WILL EXPAND DRAMATICALLY

	2016	2030
Autonomous Drive	0 - 1%	15%
Connected Car	30%	100%
Electric Vehicle	1%	25%

CONFIDENTIAL
PROPERTY OF GROUPE RENAULT

TRANSFORMATION: NEW VERTICALS



CYBERSECURITY: ACCROSS ALL THE PROCESSES (JUST LIKE SAFETY !)

In-Car

Telematic Control Unit, Head Units, Control Units, Sensors …

Front & Back-Ends

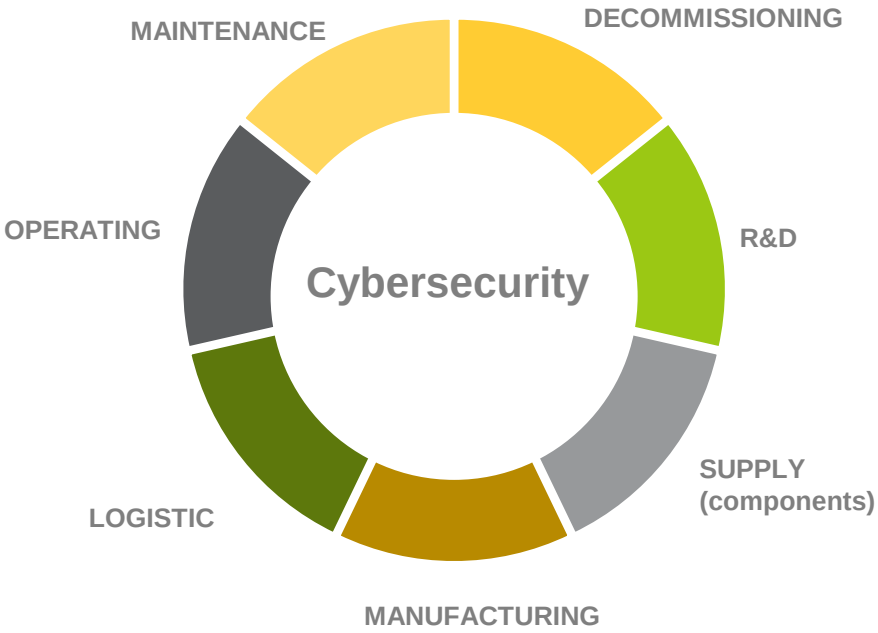
Business Logic, Data Lake, Application Programming Interfaces …

MNOs

Gateways, Nodes, Backhaul network …

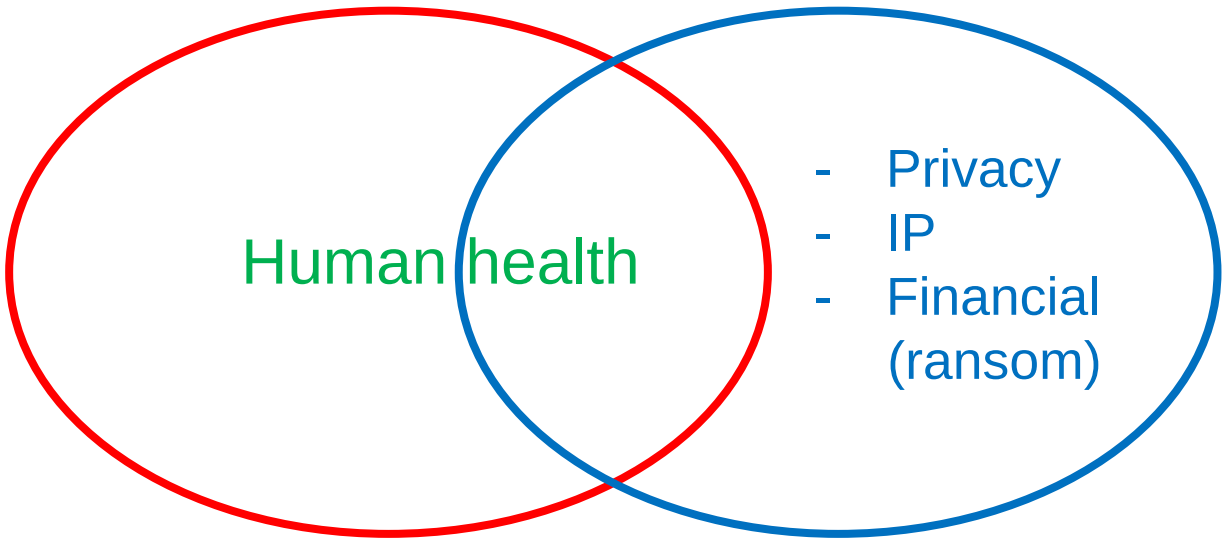
IS-IT

Customer **R**elationship **M**anagement, Billing, **D**ealer **M**anagement **S**ystem …



SAFETY AND CYBERSECURITY

POTENTIAL IMPACT



CYBERSECURITY RISK ANALYSIS

- **Safety risks analysis is important**

Safety goals and their ASIL but not only.

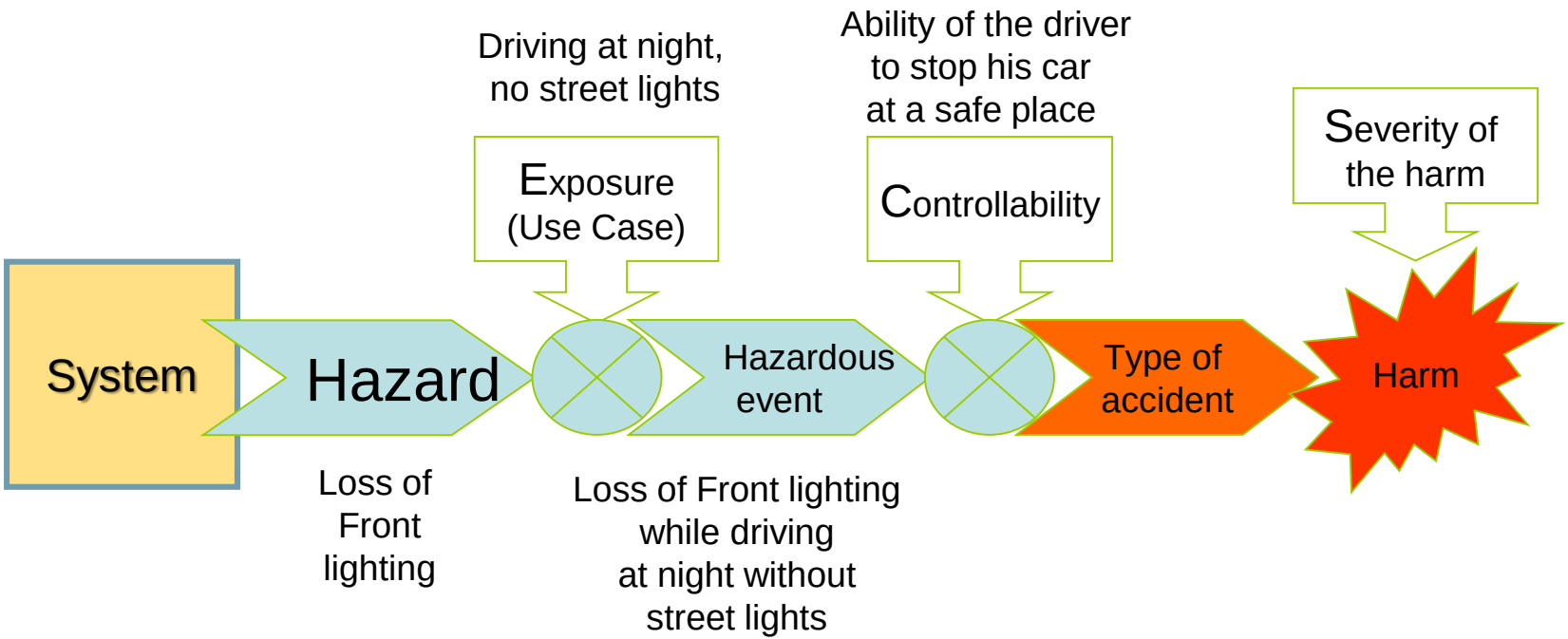
Exposure
to know if an attacker could detect the situation

Controllability
to verify the capability to independently control (multiple point attack)

Severity
to know the severity of the impact

SIDE DISCUSSION REGARDING RISK ANALYSIS

- **Should the ASIL change considering cybersecurity risks ?**



SIDE DISCUSSION REGARDING RISK ANALYSIS

- **Should the ASIL change considering cybersecurity risks ?**

Severity

Estimate of the extent of harm to one or more individuals that can occur in a potentially hazardous situation

→ **In a given hazardous situation: NO**

Exposure

State of being in an operational situation that can be hazardous if coincident with the failure mode under analysis

→ **In a given weather, road, traffic: NO**

Controllability

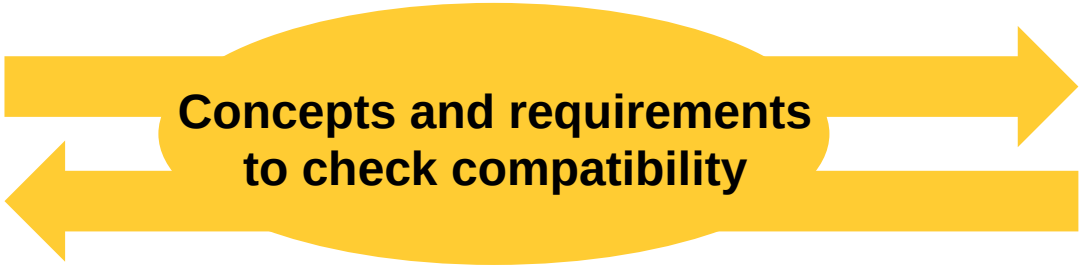
Ability to avoid a specified harm or damage through the timely reactions of the persons involved,

possibly with support from external measures

→ **As long as driver control is ensured: NO**

SAFETY CONCEPT, SAFETY REQUIREMENTS

FUNCTIONAL SAFETY **SECURITY**



Check reaction times

Safety requirements
=> assets to protect

Safe state
=> Denial of Service

Example :
- MAC

SAFETY ANALYSIS, VALIDATION

FUNCTIONAL SAFETY

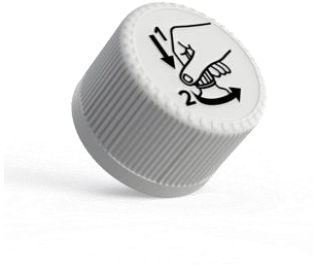
SECURITY

Check « AND » doors
=> Multi points attacks

Potentially « strange behaviour »
=> Close to stress tests or fault injection tests

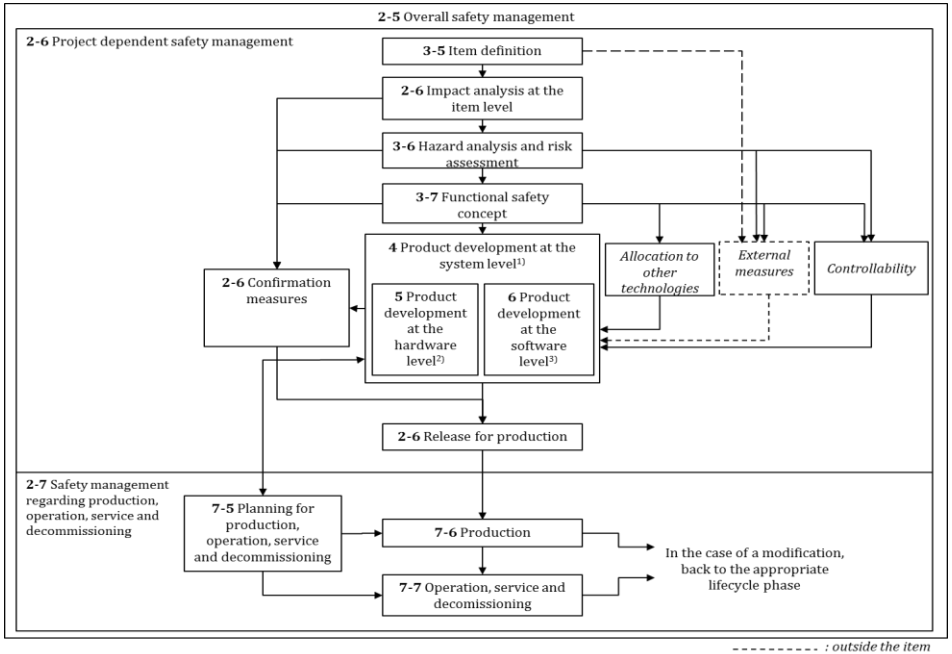
POTENTIAL OF OPTIMISATION

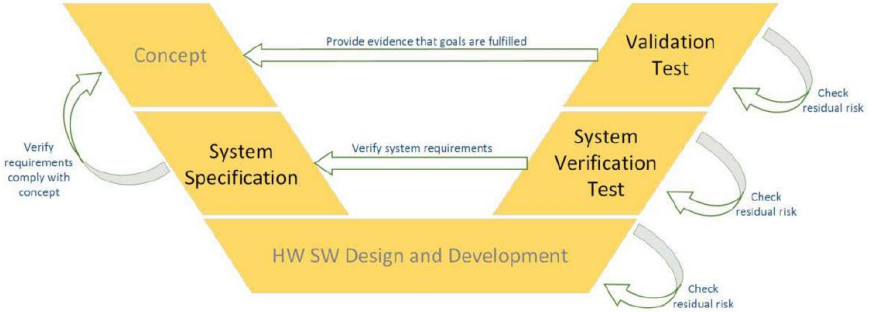
- **Integrity**

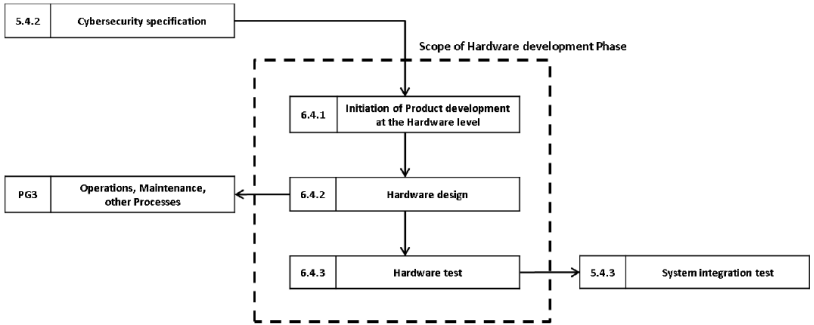


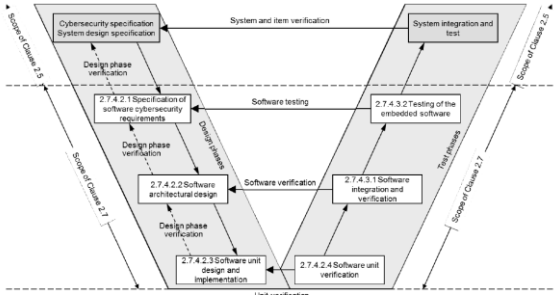
- **Coding**

NEXT STEPS IN STANDARDISATION









- **Safety and cybersecurity: a clear demarcation with some defined interactions**
- **Some opportunities for optimisation**
- **Regarding standards: as ISO SAE 21434 is fixed, interfaces can be studied with ISO 26262**

Thank you!