

Automotive Cybersecurity

How a Regulation changes the Automotive Industry

Dr. Markus Tschersich | Mobile Business II | June 29th, 2021

Cybersecurity in the Automotive Domain

Agenda



1

Introducing Continental

2

Introduction to Automotive Cybersecurity

3

Explaining UNECE

4

Industry is Reacting to Regulation

5

Prepare as Supplier

6

Entry Possibilities at Continental



We are shaping the future of mobility.



Continental Group

Leading the Way for Your Mobility



A leading player
in **autonomous
mobility**

First to market
with **software-
defined**
vehicle architecture

Industry-
benchmark
operational efficiency
in **Tires**

~235,000
talented and
dedicated
employees

Technological and Societal Changes

Challenges and Opportunities



Our Objectives

What Drives Our Strategy?

**What do
we want?**



**Emerge as a winner
of the transformation.**



Create value for all stakeholders.

Customers, suppliers, employees,
partners, communities and shareholders.

Our Vision:

Your Mobility.
Your Freedom.
Our Signature.

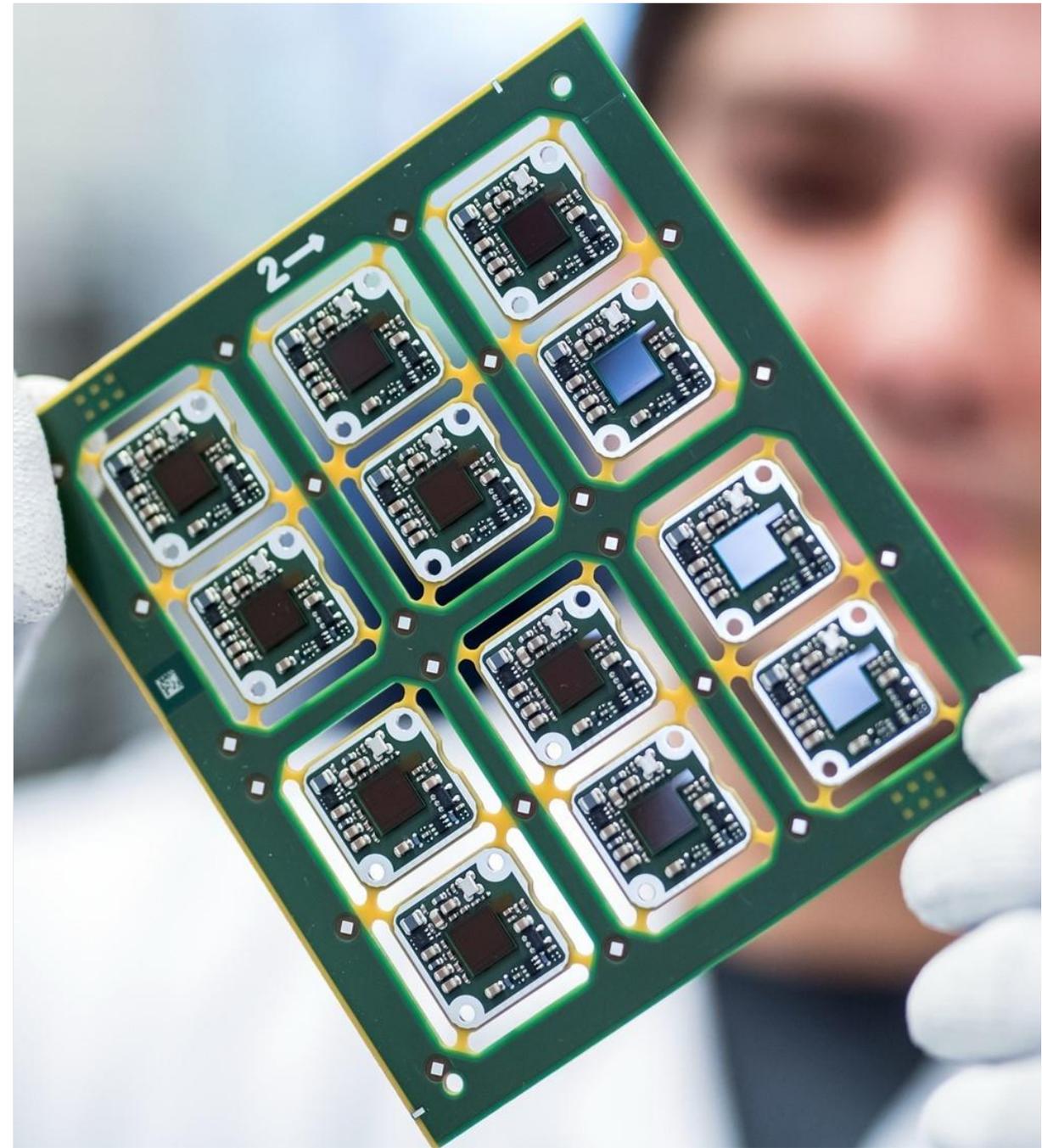
- › Highly developed, intelligent technologies for mobility, transport and processing make up our world.
- › We want to provide the best solutions for each of our customers in each of our markets.
- › This is how we satisfy the demands of our stakeholders and become recognized as a highly reliable and respected partner creating the highest possible value.



Our Mission:

The Future Starts Earlier with Continental.

- › **Safety –**
our aim: **Zero accidents**
To protect life and conserve resources
- › **Information –**
our aim: **Saving time, increasing comfort**
Intelligent mobility through constantly connected driving
- › **Environment –**
our aim: **Clean air**
Resource-efficient and emission-free driving
- › **Affordable mobility –**
our aim: **Individual mobility for everyone**
Enabling more freedom and opportunities



Our Values

Trust

We both give and earn trust.



Passion To Win

We have the passion to win.



Freedom To Act

We grow through freedom toward responsibility.



For One Another

We attain top value with our team as one Continental



Great People Culture

Continental Group

Overview of 2020



37.7 billion
in **sales**



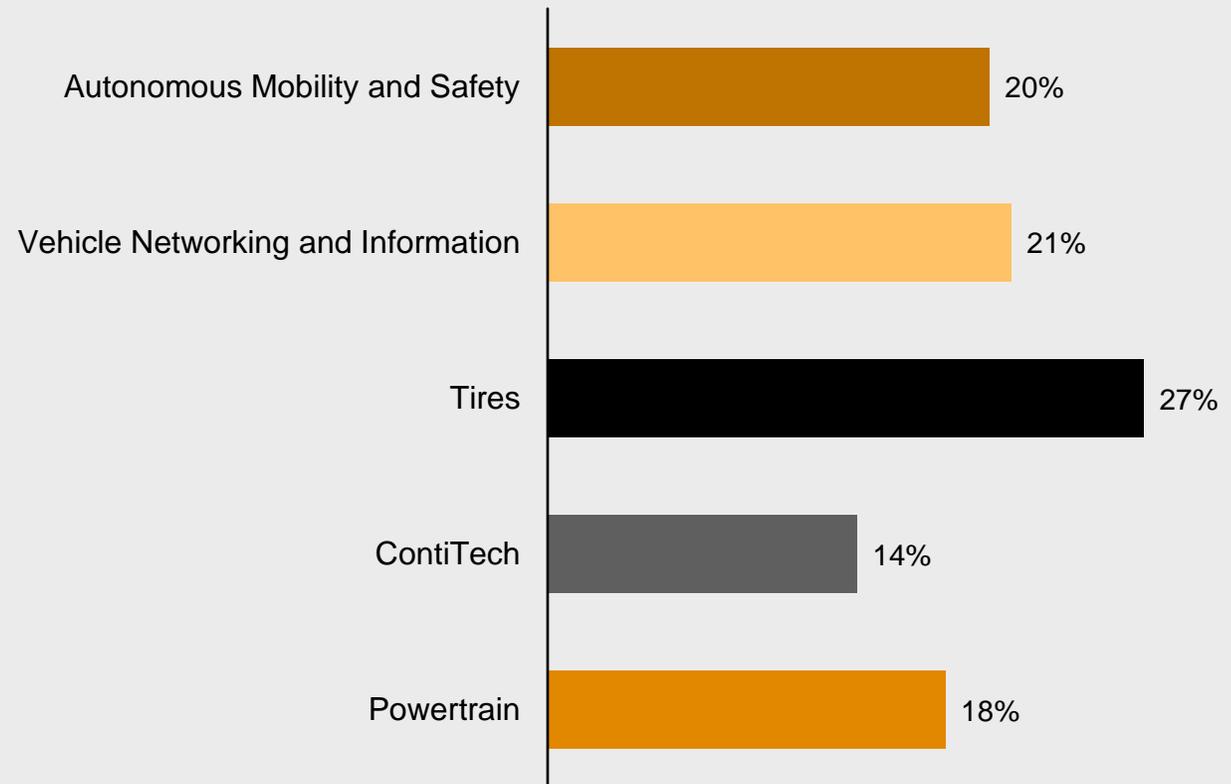
236,386
employees



561 sites*
in 58 countries

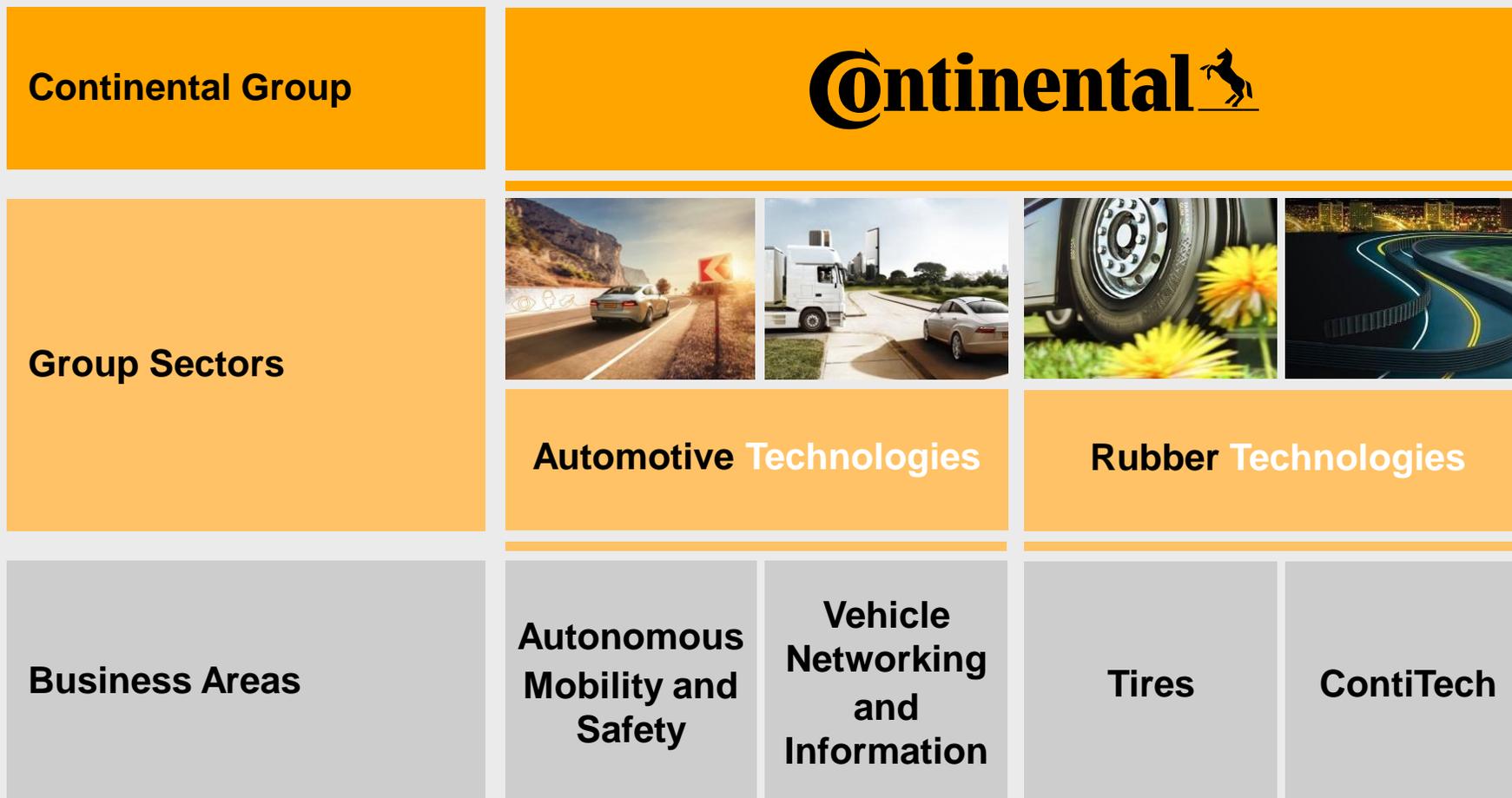
* Since 1871 with headquarters
in Hanover, Germany

Sales by business area in %



As at: Dec. 31, 2020

Continental Group Structure





Vitesco Technologies

**The full spin-off is planned for the second half of 2021.*

Continental Group Present Worldwide



*Headquarters in Hanover

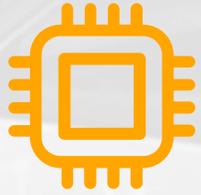
As at: Dec. 31, 2020

Introduction to Automotive Security

Vehicle Software Gets More Complex

Increasing Complexity

- › 1997: 5 ECUs in Audi A6
- › 2007: about 50 ECUs in Audi A4
- › today: about 80 to 100 ECUs
- › future: High-Performance Computer



Variety of Applications

- › Lane Assistance
- › Collision avoidance
- › Accident Reporting (eCall)
- › Autonomous and Cooperative Driving

ECU: Electronic Control Unit

Introduction to Automotive Security

Consequences from a lack of security

From Black Hat and Defcon

Researchers showed all manner of serious attacks on everything from browsers to automobiles

During the Hacking Conferences - “Black Hat Las Vegas & Defcon Las Vegas” Aug 2015 - a **video was shown** and **distributed via social media**.

Introduction to Automotive Security

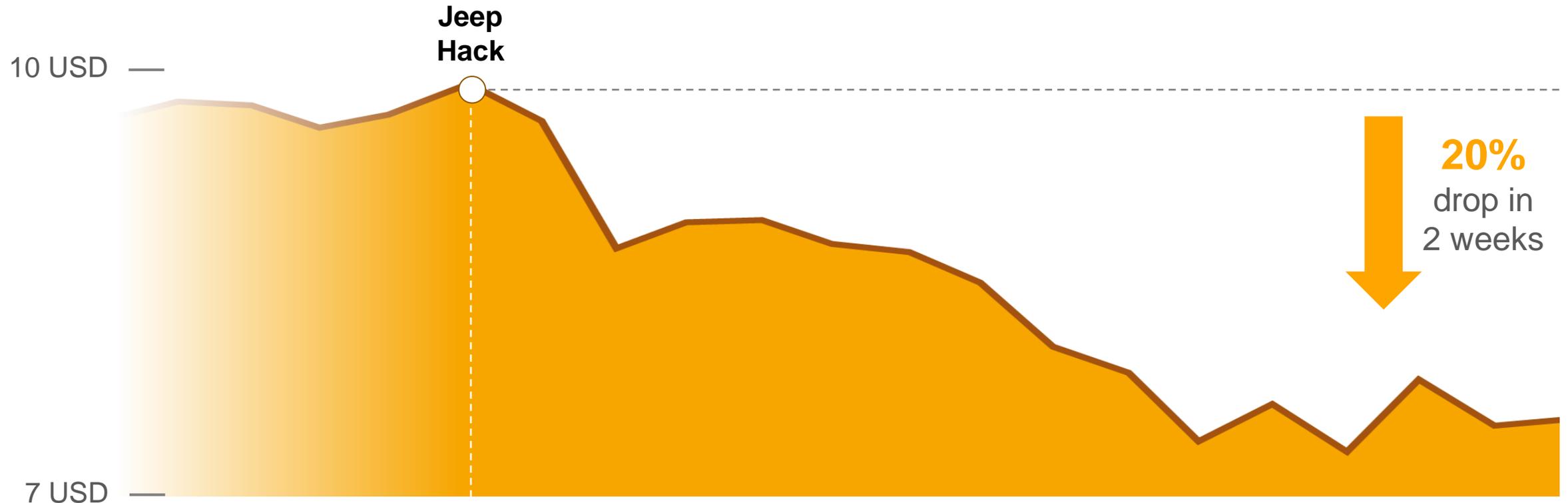
Consequences



„After this jeep hack,
Chrysler recalled 1.4 Mio. vehicles for a security bug fix.”

Introduction to Automotive Security

Stock Value Fiat Chrysler August 2015



Introduction to Automotive Security

Stock Value Fiat Chrysler August 2015

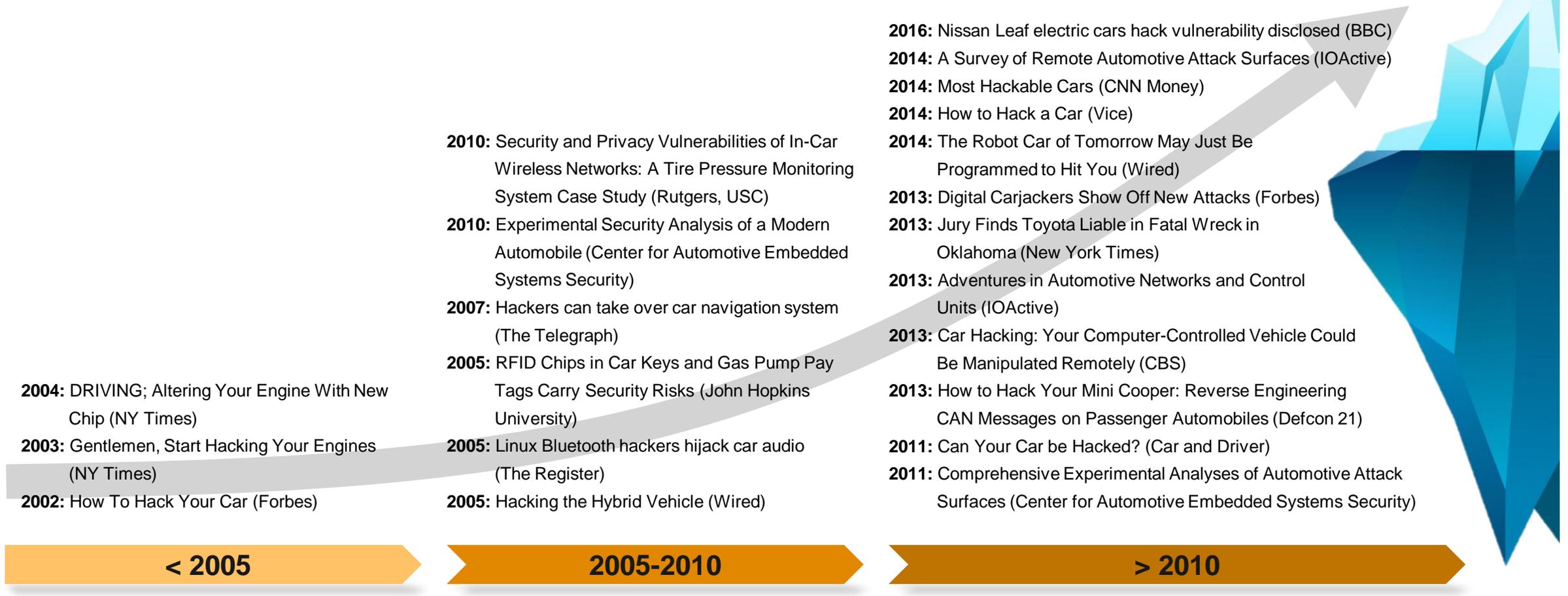
Lack of Security has a **deep impact on a company's value**

Even if the hack is done by only friendly scientists



Introduction to Automotive Security

Number of Attacks with increasing press perception



Cybersecurity Regulations

Motivation for Regulation is to Ensure Road Safety

Cybersecurity

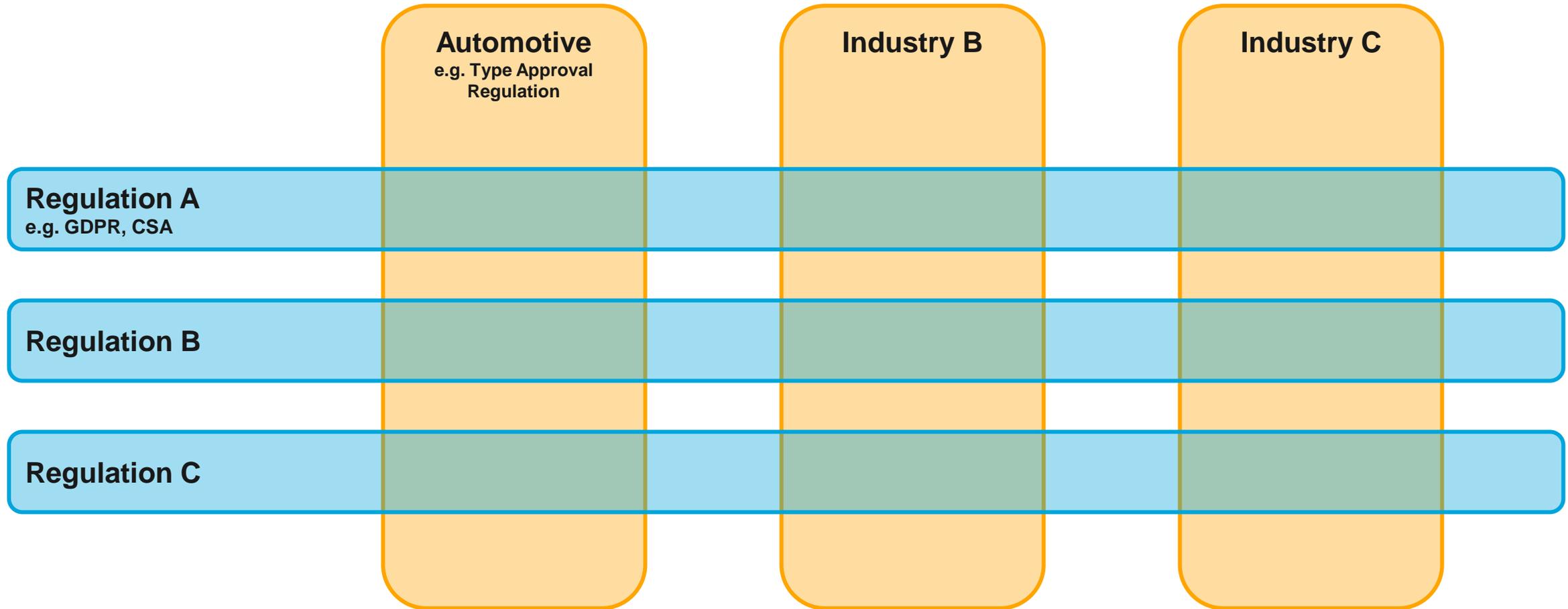


SW Update



Cybersecurity Regulations

Increased Complexity by Horizontal and Vertical Regulation



Global Automotive Standards and Regulations on Cybersecurity

Continental actively Contributing to Global Discussions

UN / WP.29 – World Forum for Harmonization of Vehicle Regulations

- › Regulation on Cyber Security (R.155) and Software Updates (R.156)

ISO Cybersecurity Standardization

- › ISO/SAE 21434 FDIS Road vehicles – Cybersecurity Engineering
- › ISO AWI 24089 Software Updates Engineering
- › ISO/NP PAS 5112 Guidelines for auditing cs engineering

National Discussions

- › (D) VDA QMC AK ACSMS
- › (D) VDA QMC ASPICE
- › (UK) BSI PAS 1885:2018
- › ...



European Union

- › Cybersecurity Act (esp. CS Certification Schemes)
- › General Safety Regulation (EC) 2019/2144
- › General Data Protection Regulation (EU) 2016/679
- › NIST Directive
- › C-ITS Delegated Act

China

- › Cybersecurity Law
- › Draft Encryption Law
- › SAC/TC 114/SC 34/WG Cyber
- › ...

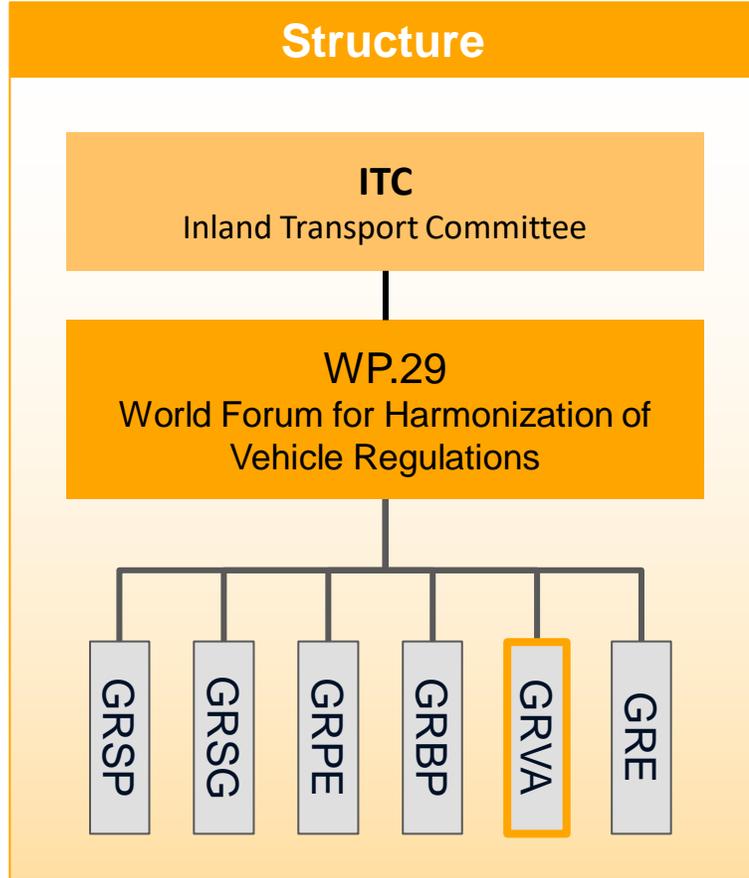
Regulation American Market

- › NHTSA Cybersecurity Guidelines
- › Draft SELF DRIVE Act
- › Draft AV START Act

- › Continental is actively participating...
- › Continental is *not* actively participating...

Introduction to UNECE

United Nations Economical Commission of Europe



Legal Framework

UN Regulations – 1958 Agreement
Provisions related to safety and environmental aspects for vehicles, their systems, parts and equipment.

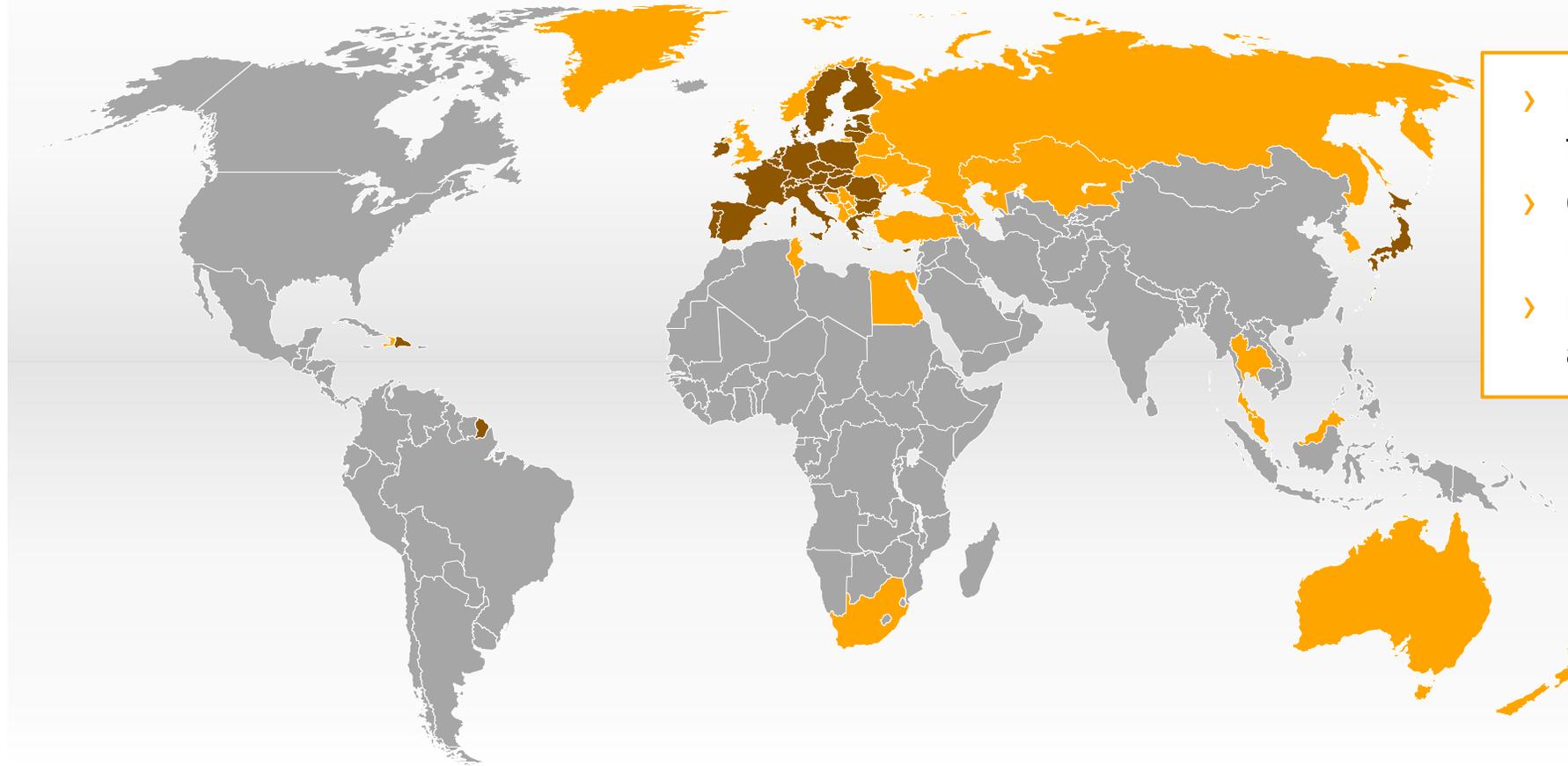
UN GTRs – 1998 Agreement
Globally harmonized performance-related requirements and test procedures for predictable regulatory framework

UN Rules – 1997 Agreement
Periodical technical inspections of vehicles in use



UN Regulation on Type Approval with regard to Cybersecurity

Potential Affected Markets of UNECE 1958 Agreement



- › Regulation is adopted under the 1958 Agreement
- › Contracting Parties can sign regulation
- › EU27 and Japan already announced to sign

UN Regulation on Type Approval with regard to Cybersecurity

Potential Affected Markets of UNECE 1958 Agreement

Regulation (EU) 2019/2144 „General Safety Regulation“

- › Date of publication: 16/12/2019
- › <http://data.europa.eu/eli/reg/2019/2144/oj>

- › Regulation is adopted under the 1958 Agreement
- › Contracting Parties can sign regulation
- › EU27 and Japan already announced to sign

Showa 26 (=1951) Law No. 185 „Road Transport Vehicle Act“

道路運送車両法（昭和二十六年法律第八十五号）

- › Enforcement: 01/04/2020
- › https://elaws.e-gov.go.jp/search/elawsSearch/elaws_search/lsg0500/detail?lawId=326AC0000000185
- › Supplement Documents: <https://confluence.conti.de:8090/display/department0398/Japanese+Law>

Type Approval with regard to Cybersecurity besides 1958 Agr. Potential Extension to UNECE 1998 Agreement

Planned: NHTSA Guideline

- › No Regulation considered at this point in time

- › Regulation under 1998 agreement for Global Technical Regulations (GTR)



National Type Approval Regulation planned

- › ISO 21434 will be adopted as Chinese national standard (Recommended) by middle 2021 (estimation)
- › China will publish national standards of “Software Update”(Recommended) by middle 2021(estimation)
- › China will not adopt UNECE regulation till now -> more details Chinese specific regulations are expected to be out around early 2021

UN Regulation on Type Approval with regard to CS and SU

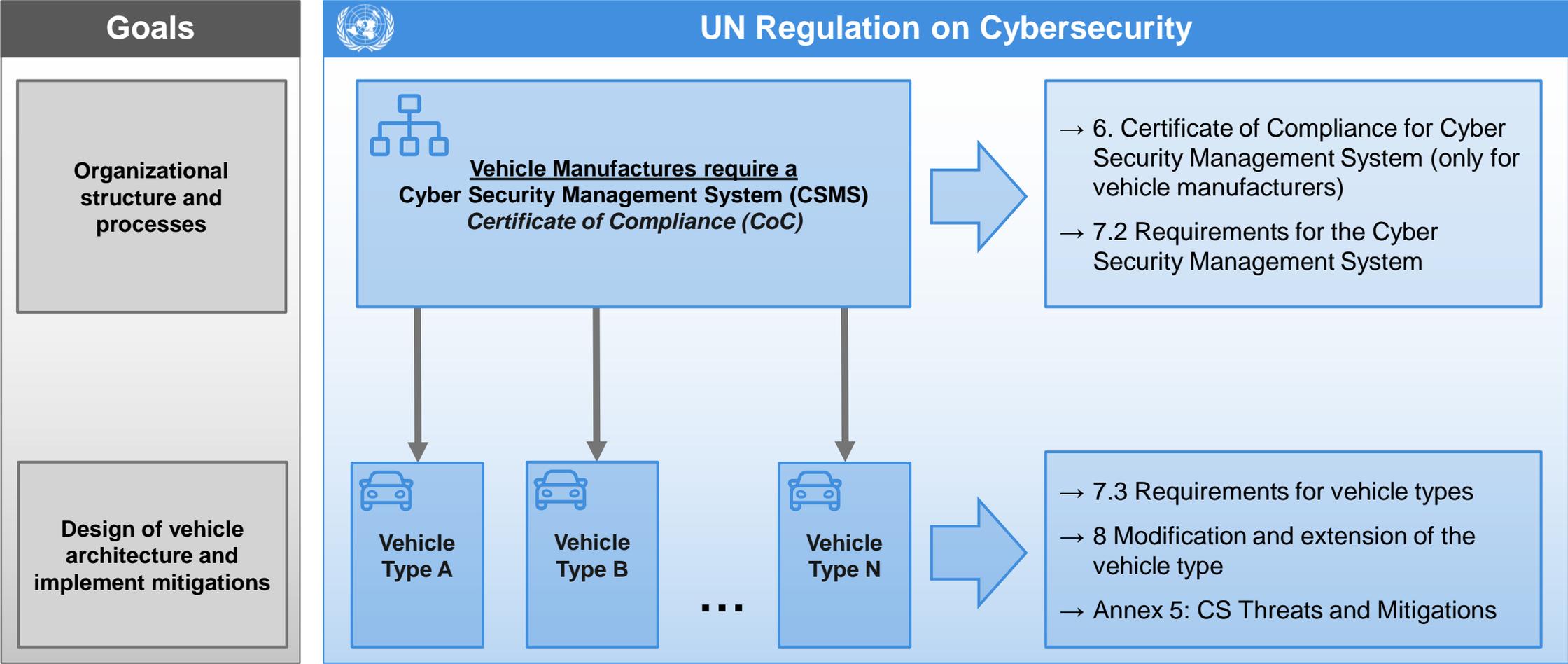
Affected Vehicle Categories for UNR 155 and UNR 156

			CS	SU
	M₁	Passenger vehicles	X	X
	M_{2,3}	Busses	X	X
	N_{1,2,3}	Light and heavy duty trucks	X	X
	L_{6,7}	Light and heavy quadricycles If equipped with automated describing functionalities from level 3 onwards as defined in ECE/TRANS/WP.29/1140	X	
	O	Trailers If fitted with at least one electronic control unit	X	X
	R	Agricultural Trailers		X
	S	Interchangeable towed equipment		X
	T	Agricultural and Forestry tractor		X

Based on: TRANS/WP.29/1045

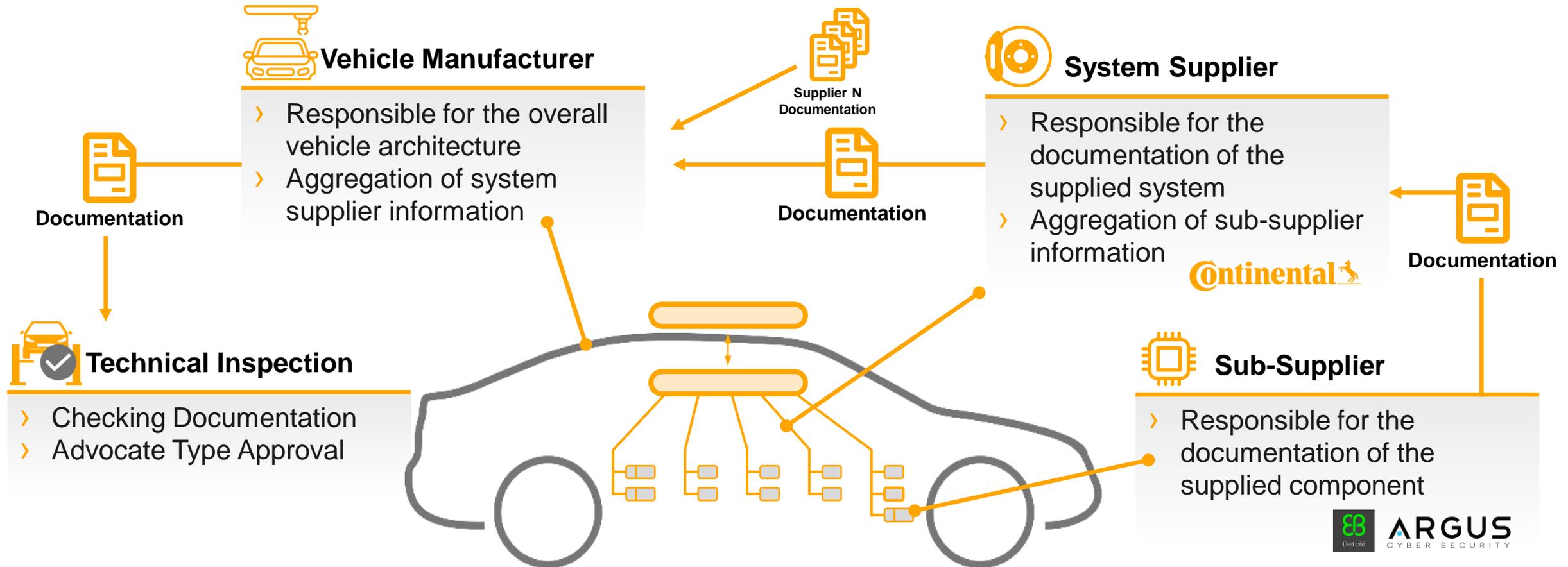
UN Regulation on Type Approval with regard to Cybersecurity

Requirements on CSMS and Vehicle Type



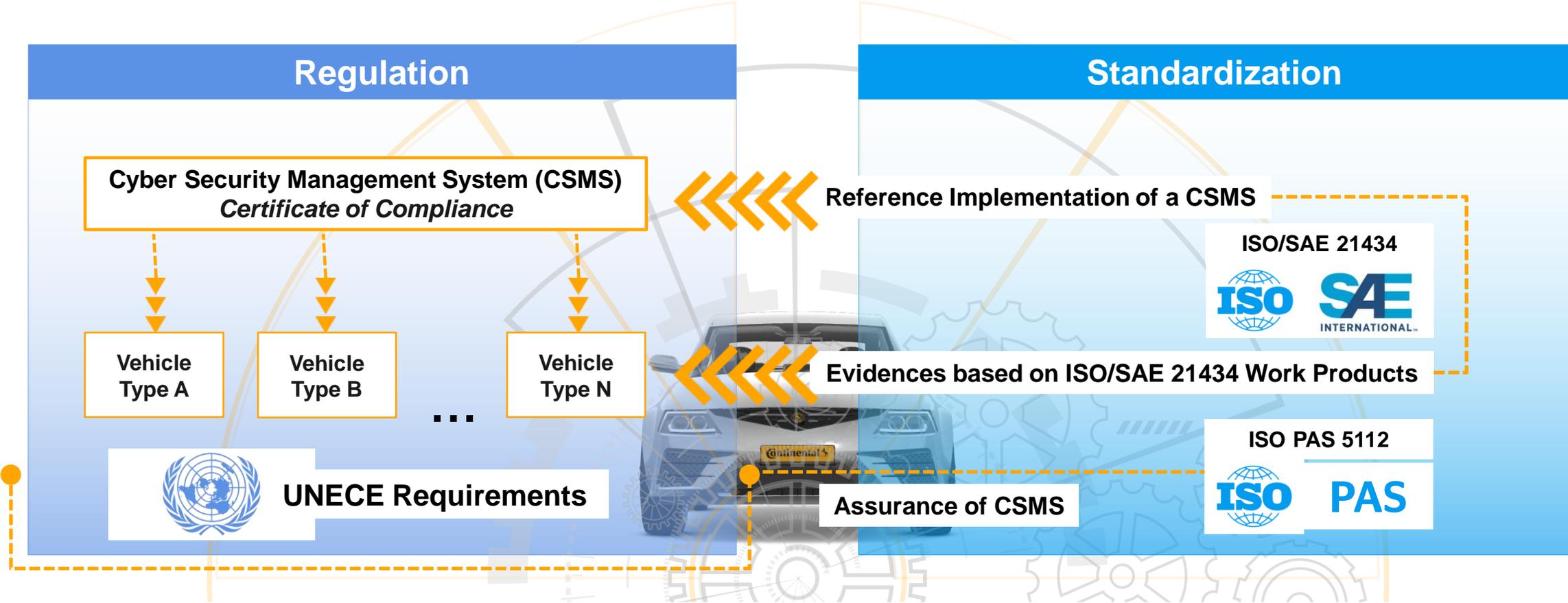
Technical Documentation for Vehicle Type Approval

ISO/SAE 21434 Work Products for Documentation Along Value-Chain



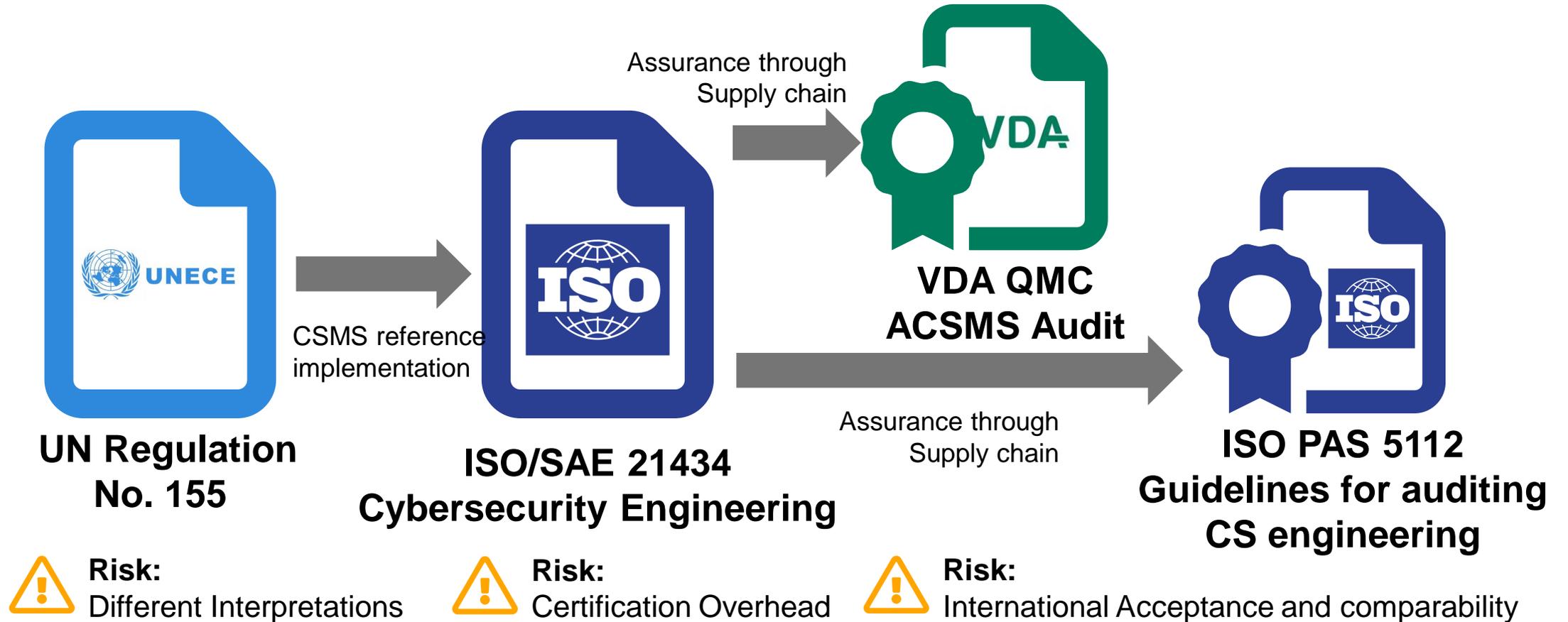
UNECE Requirements on Cybersecurity for Type Approval

ISO/SAE 21434 can Prepare Value-Chain for Compliance



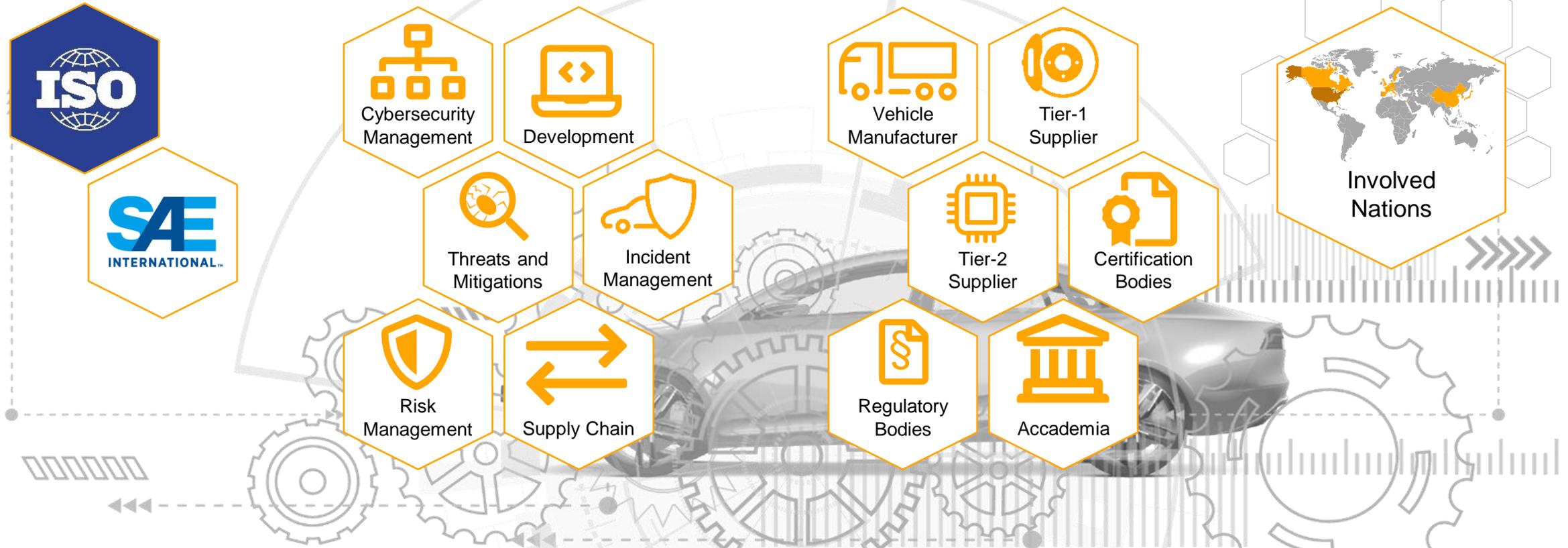
Setting the Regulatory Field

Different Interpretations are Risks For Global Suppliers



ISO/SAE 21434 Road vehicles – Cybersecurity Engineering

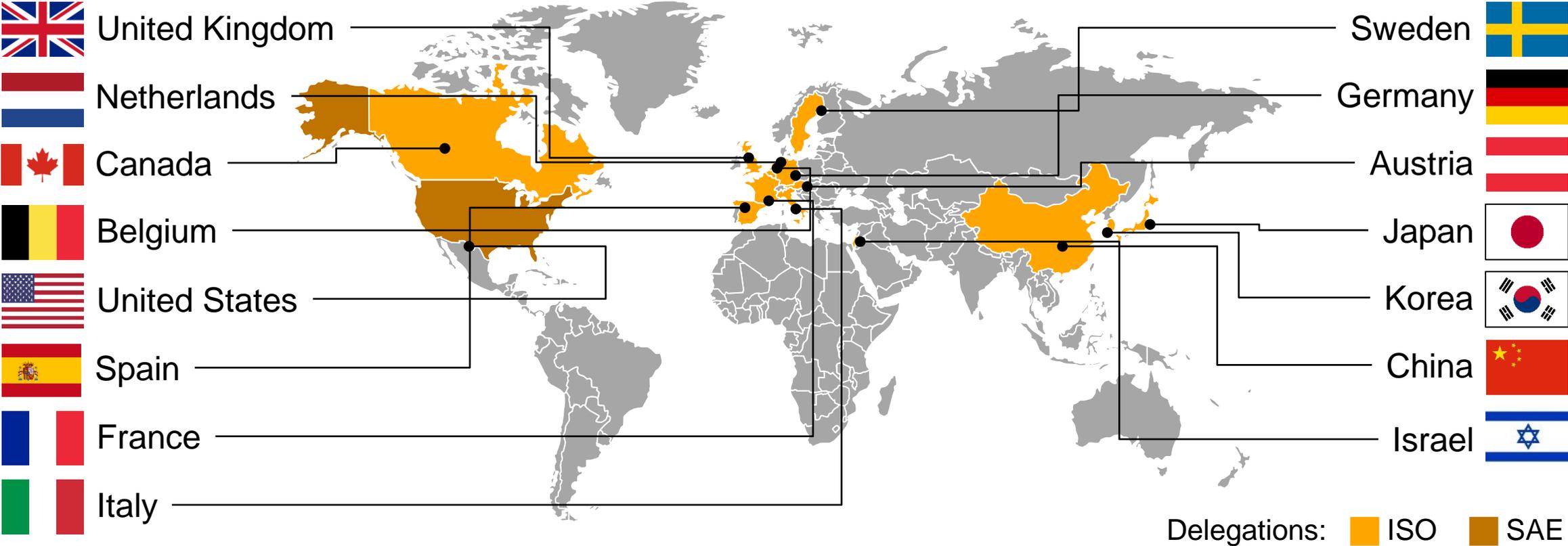
Industry Solution for Cybersecurity Challenges



June 29th, 2021

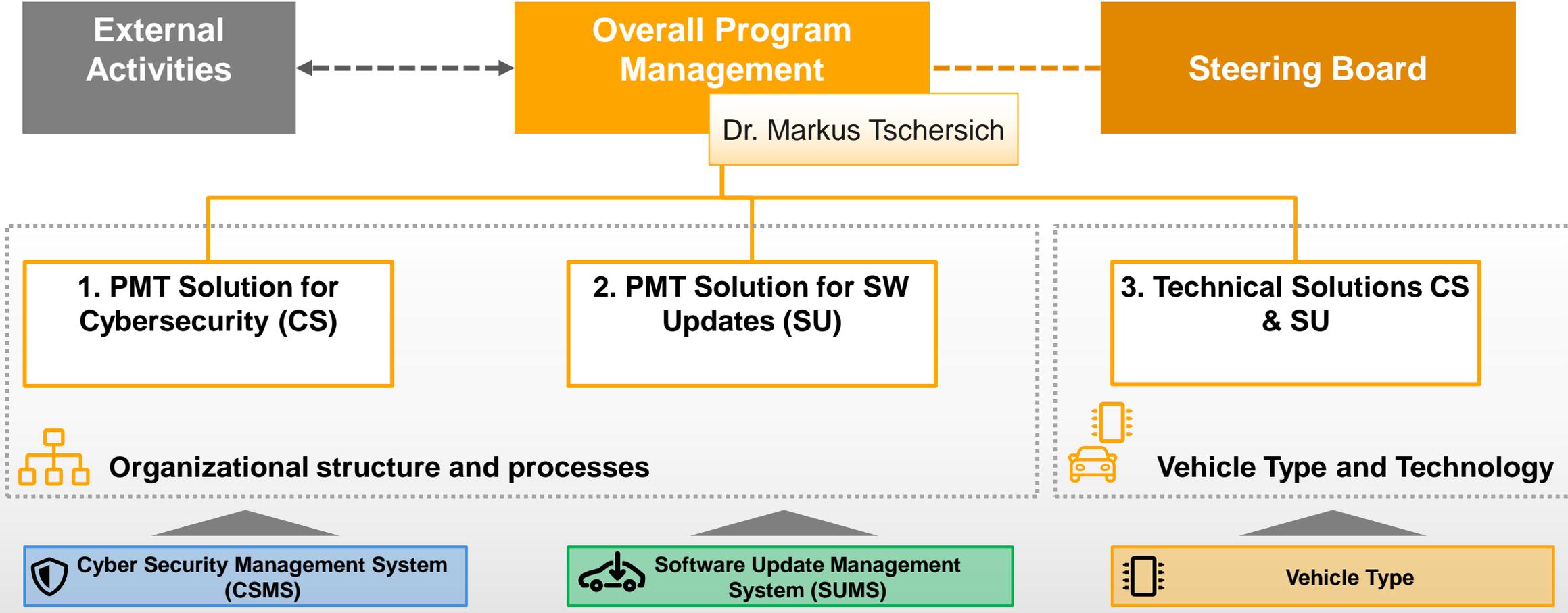
ISO/SAE 21434 Road vehicles – Cybersecurity Engineering

National Delegations



Compliance Project for Regulations and Standards

Setting Up a Project Structure



| PMT: Processes, Methods & Tools | CS: Cyber Security | SU: Software Update |

Compliance Project for Regulations and Standards

Gap Analysis to Deduce Concrete Actions

Baseline for Conformity Check

Main Focus

 UN Regulation on type approval with regard to cyber security

 ISO/SAE 21434 Road vehicles – Cybersecurity Engineering

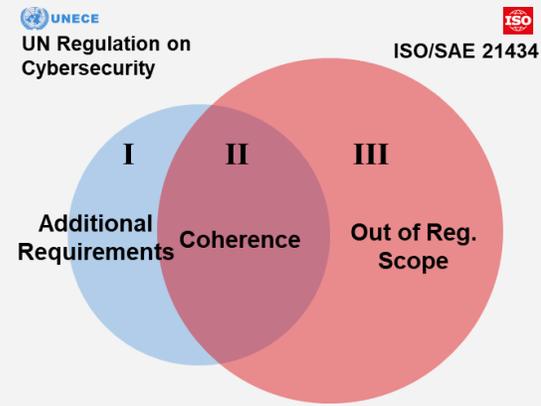
Additional Aspects

 Customer Requirements

 ISO/IEC 62443 Industrial communication networks – Network and system security

 VDA QMC ACSMS
Future related ISO documents

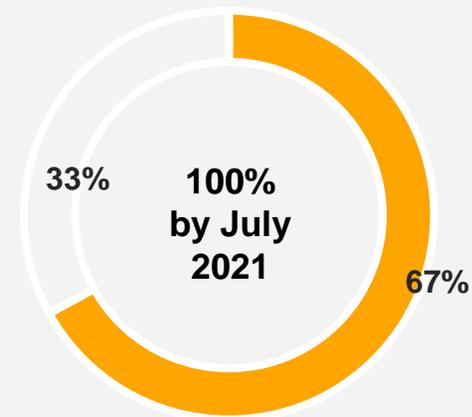
Prioritization to UNECE Relevance



- > Reduce overall number of requirements
- > Shows gaps that are beyond the scope of ISO/SAE 21434

Gap Analysis

Full Achievement of ISO/SAE 21434 Requirements



Status: 1.1.2020
Baseline: ISO/SAE 21434 DIS (E), ECE/TRANS/WP.29/2020/79 revised

Current Actions

Revise Governance

Cybersecurity Policy

Rules

Responsibilities

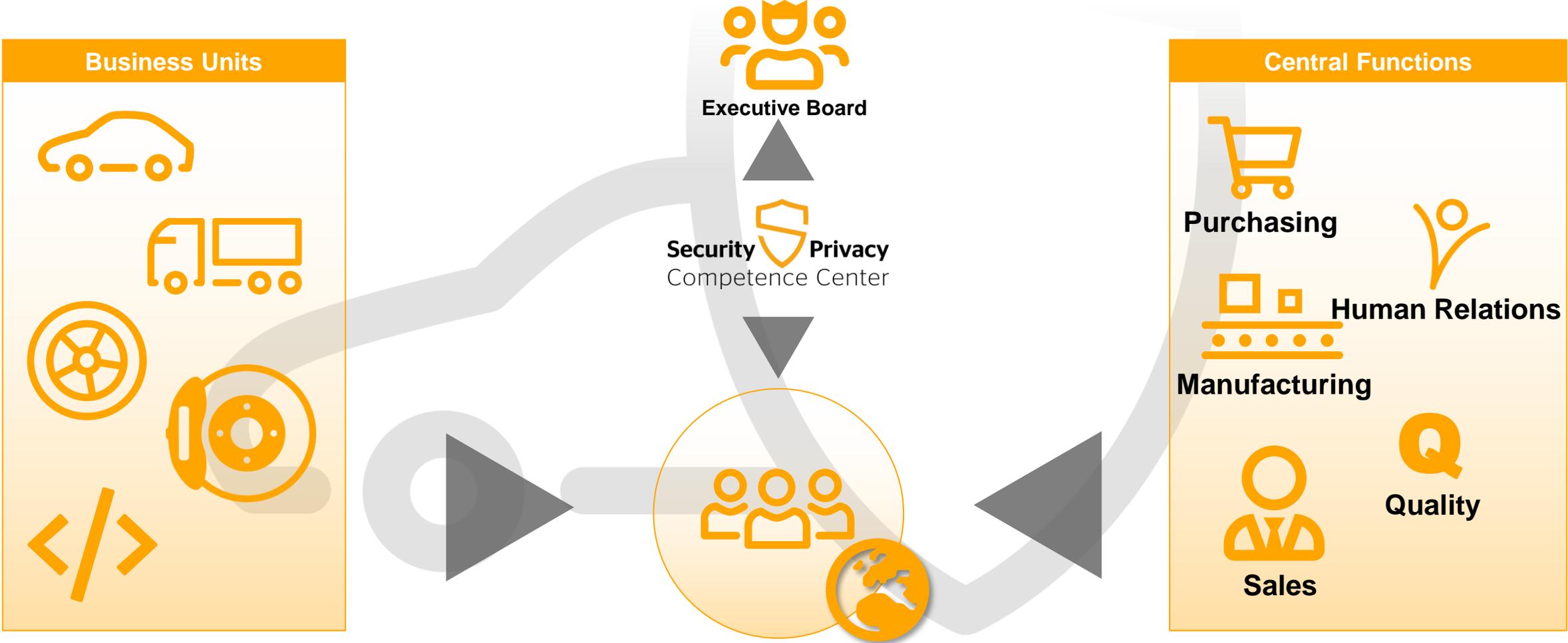
Ressources

 **Ensure Harmonization** along supply-chain for document exchange and used methods

 **Solutions for Annex 5**
Ability to implement Mitigations to all threats mentioned in the UN R.155

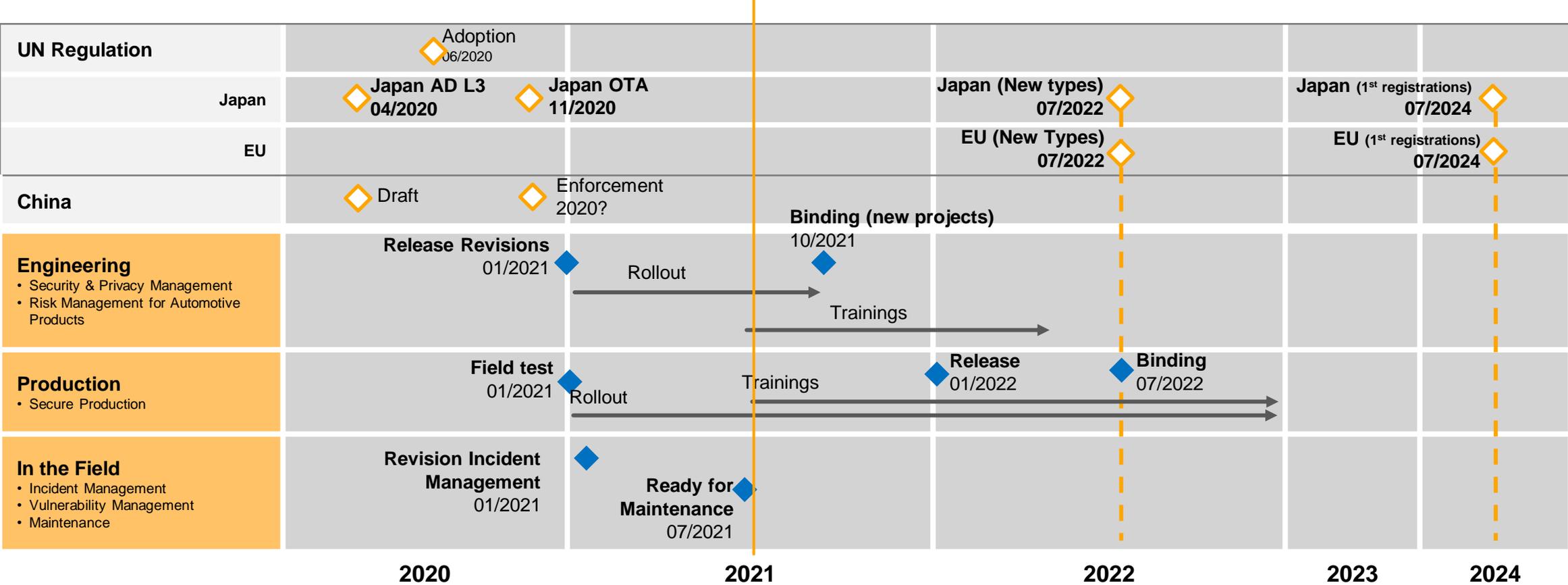
Compliance Project for Regulations and Standards

Involve Affected Areas And Building Effective Team



Roadmap to Compliance on Cybersecurity

Continental's Rule Landscape



AD = Autonomous Driving; OTA = Over the Air





A group of diverse people walking in a modern office hallway. In the foreground, a woman with long dark hair, wearing a grey blazer over a mustard-colored top, is smiling warmly at the camera. Behind her, a woman in a black blazer and white top is looking down and smiling. In the background, a man in a light grey sweater and a woman in a white top are walking away from the camera. The hallway is bright and modern, with large windows and a clean, professional atmosphere.

WE ARE LOOKING FOR YOU!

WHO WE HIRE



STUDENTS

- › *INTERNSHIP*
- › *WORKING STUDENTS*
- › *THESIS*



GRADUATES

- › *CONTINENTAL TRAINEE & GRADUATES PROGRAMM*
- › *DIRECT ENTRY*



PROFESSIONALS

- › *DIRECT ENTRY*

WHAT WE OFFER

The benefits of joining an inspiring global team



A CULTURE OF INNOVATION

Opportunities to collaborate, contribute your ideas and make an impact every day.



FLEXIBLE WORK

Maintain a healthy work/life balance with remote work options.



CAREER DEVELOPMENT

Comprehensive, talent management programs prepare our employees for the next step.

WHAT WE OFFER

Cross Moves – Developing Talent „Across Borders“ ...

BE MANAGER OF YOUR OWN TALENT

- › *Establish corporate thinking*
- › *Generate new networks*
- › *Improve your skills and expertise*
- › *Increase intercultural competence*



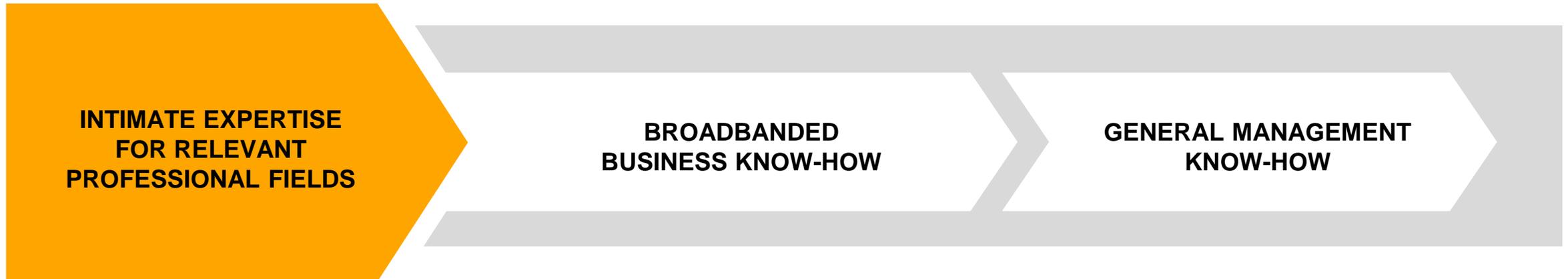
Cross
divisional
moves



Cross
Functional
moves



Cross
Country
moves



WHAT WE OFFER

We guide you along your way - Continental Entry Development Program

ELEARNING „C.ONBOARD“

- › Providing relevant information about the company and important company related topics.

CONTINENTAL ENTRY CONFERENCE (CEC)

- › Welcome Conference For New Hires For Experiencing The Continental Spirit.
- › Getting To Know The Company, It's Vision & Culture.
- › Networking.
- › Discussion With Top Management.

FURTHER MODULES: OPTIONAL ELEMENTS (availability depending on country of participation)

Training „Communication & Our Employee Dialogue“

- › Communication models
- › Giving and receiving feedback
- › Developing and communicating development goals

Project Management (Basics)

- › Specifics of continental project management
- › Methods and instruments of project work
- › Project phases
- › Reflection and project evaluation

Effective Presentations

- › Exploring the importance of audience- orientation
- › Preparing a successful presentation
- › Receiving feedback on a “real” presentation

Self Management

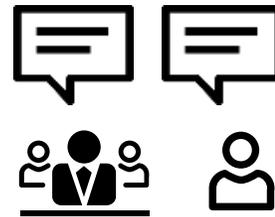
- › Balancing self discipline with creativity
- › Recognizing priorities
- › Setting goals
- › Time control means self-control

OUR APPLICATION PROCESS

ONLINE APPLICATION
via www.careers-continental.com



RECRUITING PROCESS
Telephone interview, assessment center or personal interview



FORMAL OFFER



WHERE TO FIND US?



Continental Career



Continental_career



Continental Press Office



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www.careers-continental.com

Thanks for Listening

Any Questions?



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