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The Future in Motion

Continental Commercial Vehicle Days

Cybersecurity Regulations

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Upcoming Regulations and Standards

Motivation for Regulation is to Ensure Road Safety

Cybersecurity

SW Update

Lawmakers:

UNECE Regulations

R.155 - UN Regulation on Cybersecurity

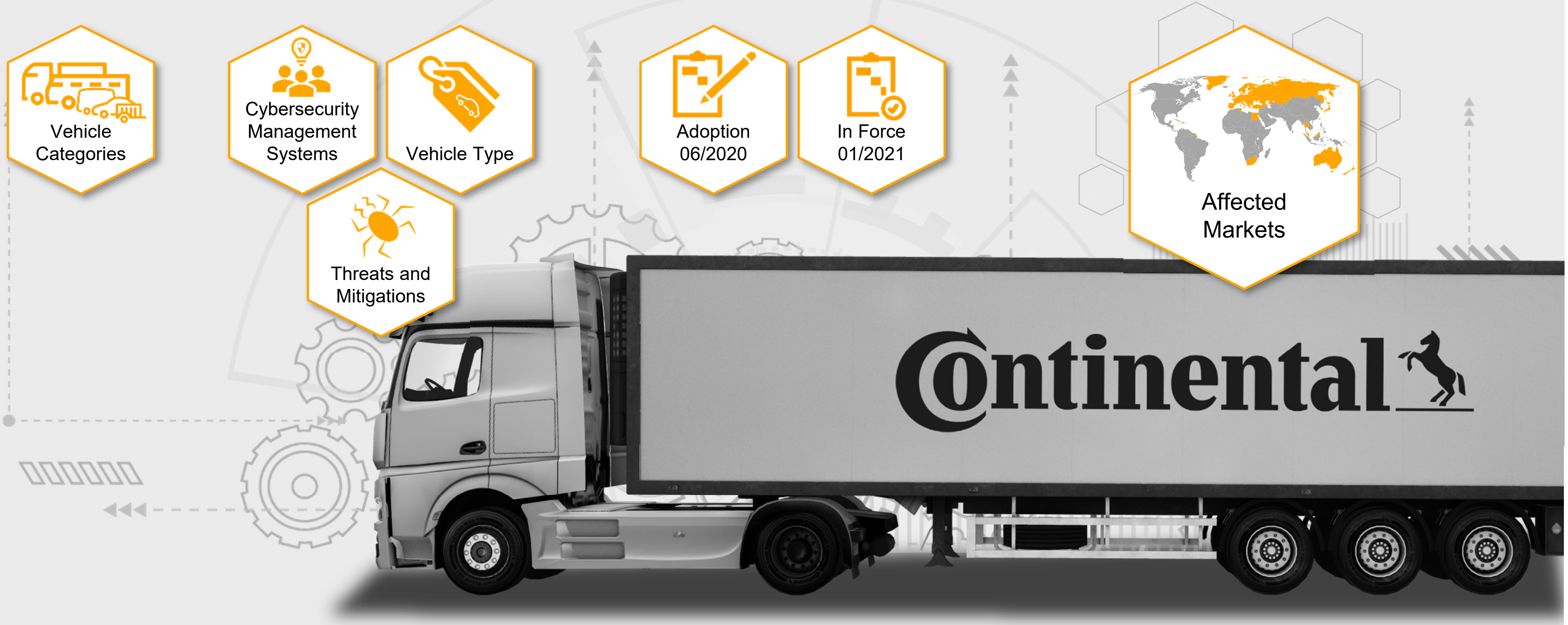
Industry Solutions:

ISO Standardization

ISO/SAE 21434 Road vehicles – Cybersecurity Engineering

Upcoming UNECE Regulation on Cybersecurity

Accelerate Automotive Cybersecurity in the Industry



Vehicle Categories

Cybersecurity Management Systems

Vehicle Type

Threats and Mitigations

Adoption 06/2020

In Force 01/2021

Affected Markets

UN Regulation on Type Approval with regard to Cybersecurity

Requirements on CSMS and Vehicle Type

Goals

Organizational structure and processes

Design of vehicle architecture and implement mitigations

UN Regulation on Cybersecurity

Vehicle Manufactures require a
Cyber Security Management System (CSMS)
Certificate of Compliance (CoC)

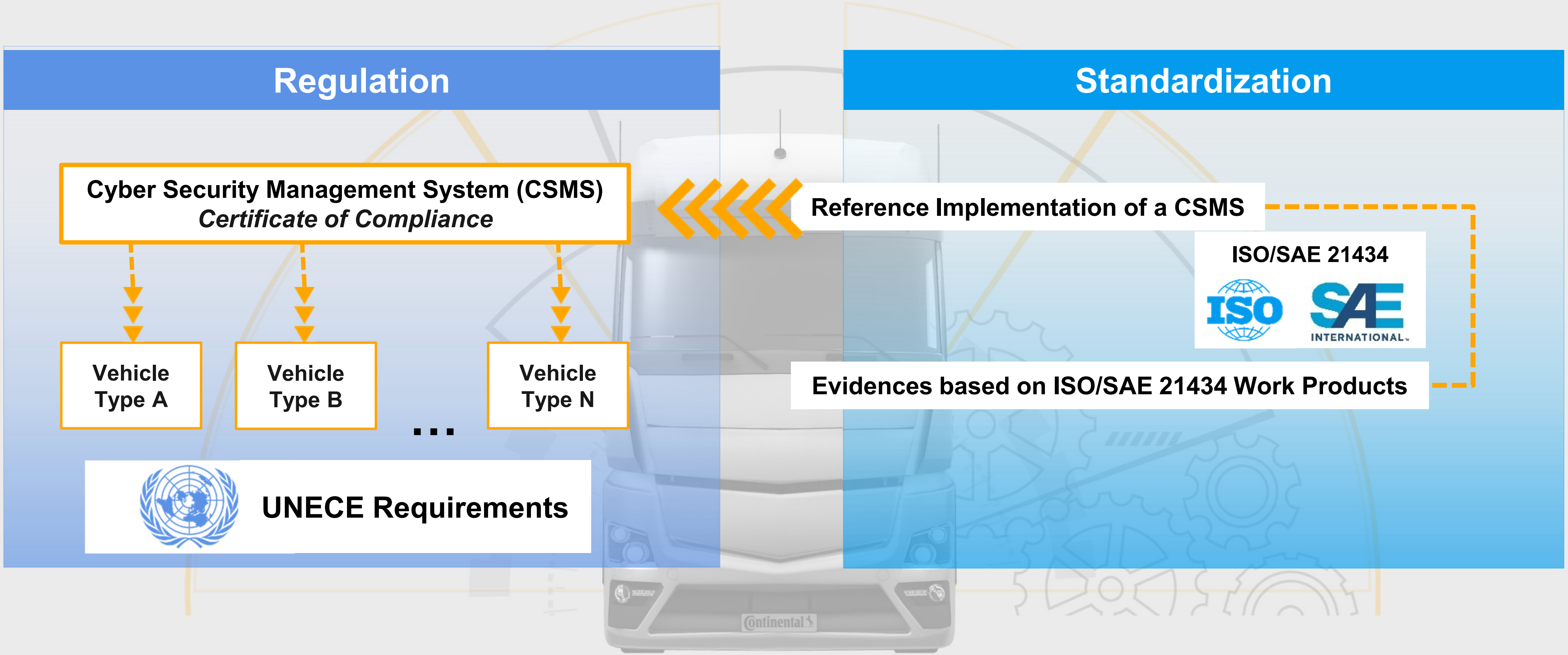
- Processes for Development, Production and Operations
- Risk Management
- Sufficient Resources and Staffing
- ISO/SAE 21434 as CSMS Reference Implementation

Vehicle Type A **Vehicle Type B** **...** **Vehicle Type N**

- Consideration of Cybersecurity for vehicle types
- Comprehensive list of Cybersecurity Threats and Mitigations to be considered

UNECE Requirements on Cybersecurity Management System

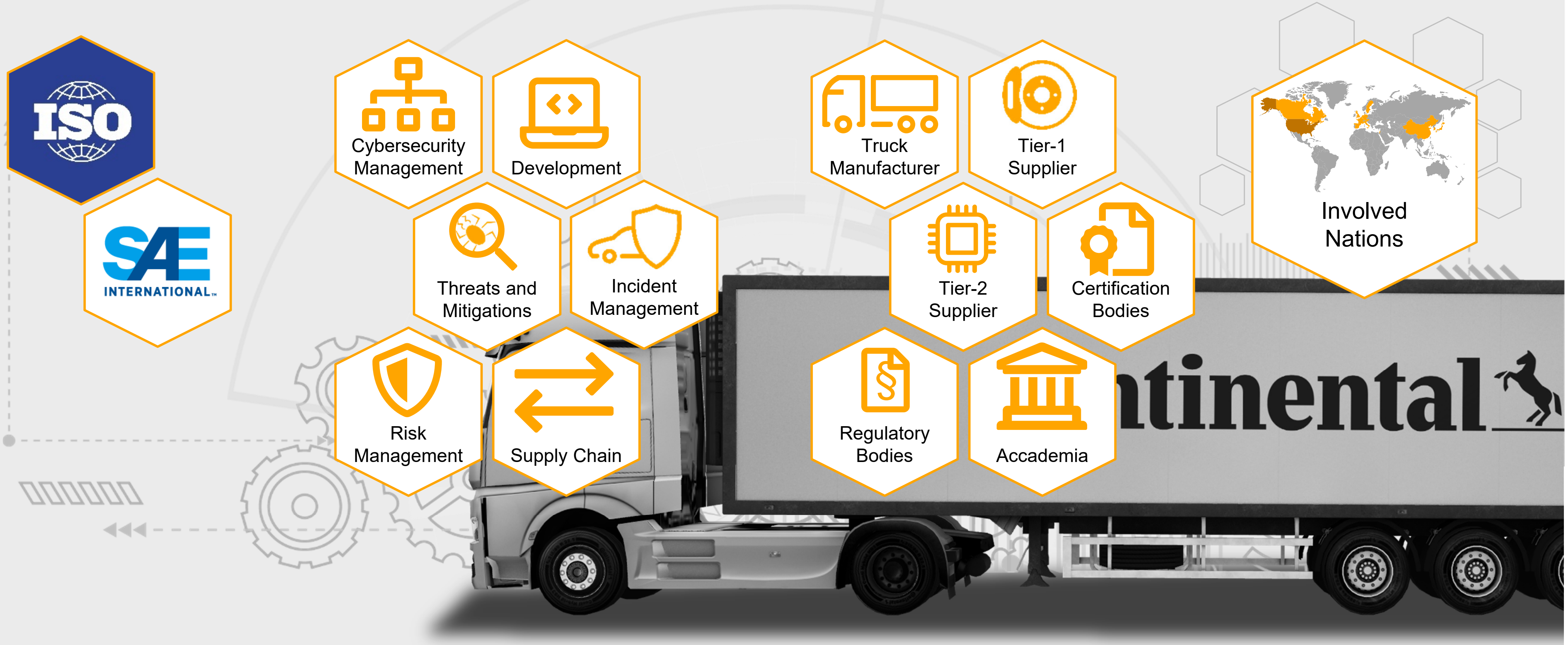
ISO/SAE 21434 can Prepare Value-Chain for Compliance



Regulation
Cyber Security Management System (CSMS)
Certificate of Compliance
Vehicle Type A
Vehicle Type B
…
Vehicle Type N
UNECE Requirements
Standardization
Reference Implementation of a CSMS
ISO/SAE 21434
ISO
SAE INTERNATIONAL
Evidences based on ISO/SAE 21434 Work Products

ISO/SAE 21434 Road vehicles – Cybersecurity Engineering

Industry Solution for Cybersecurity Challenges



Cybersecurity Management

Development

Threats and Mitigations

Incident Management

Risk Management

Supply Chain

Truck Manufacturer

Tier-1 Supplier

Tier-2 Supplier

Certification Bodies

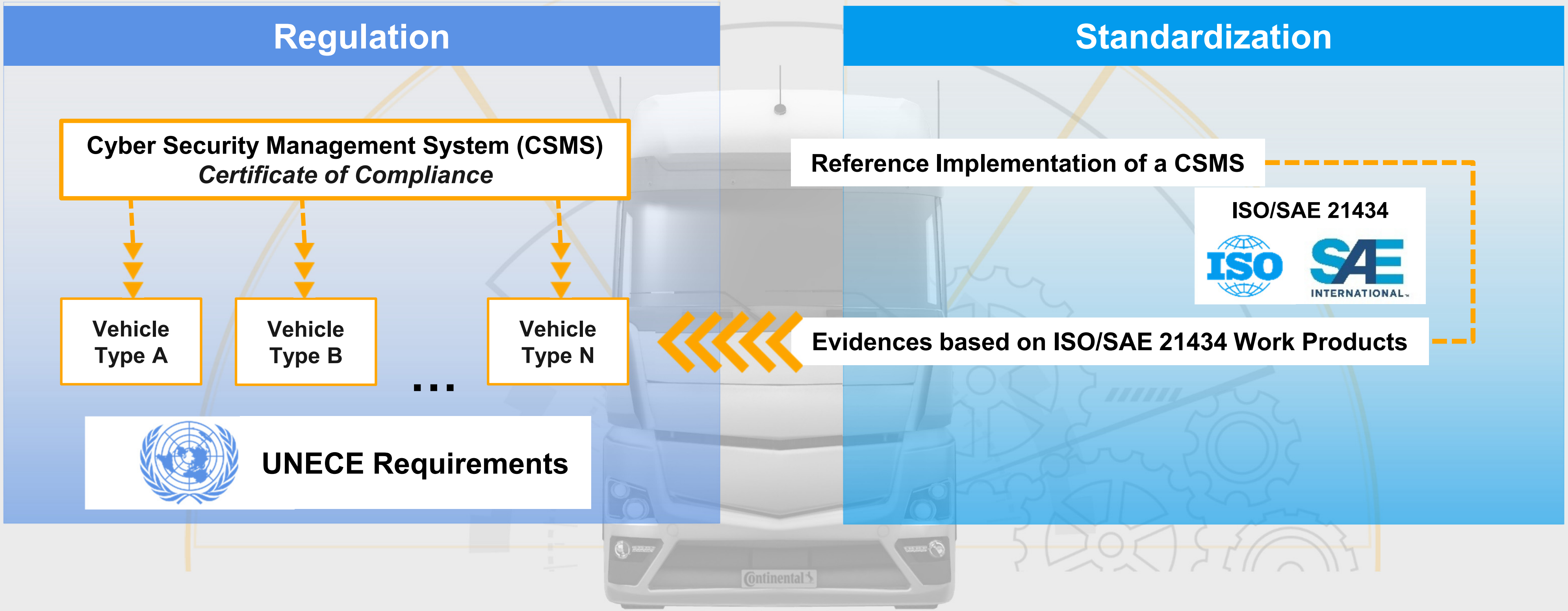
Regulatory Bodies

Accademia

Involved Nations

UNECE Requirements on Cybersecurity for Type Approval

ISO/SAE 21434 can Support the Exchange of Documentation



Regulation

Cyber Security Management System (CSMS)
Certificate of Compliance

Vehicle Type A

Vehicle Type B

…

Vehicle Type N

UNECE Requirements

Standardization

Reference Implementation of a CSMS

ISO/SAE 21434

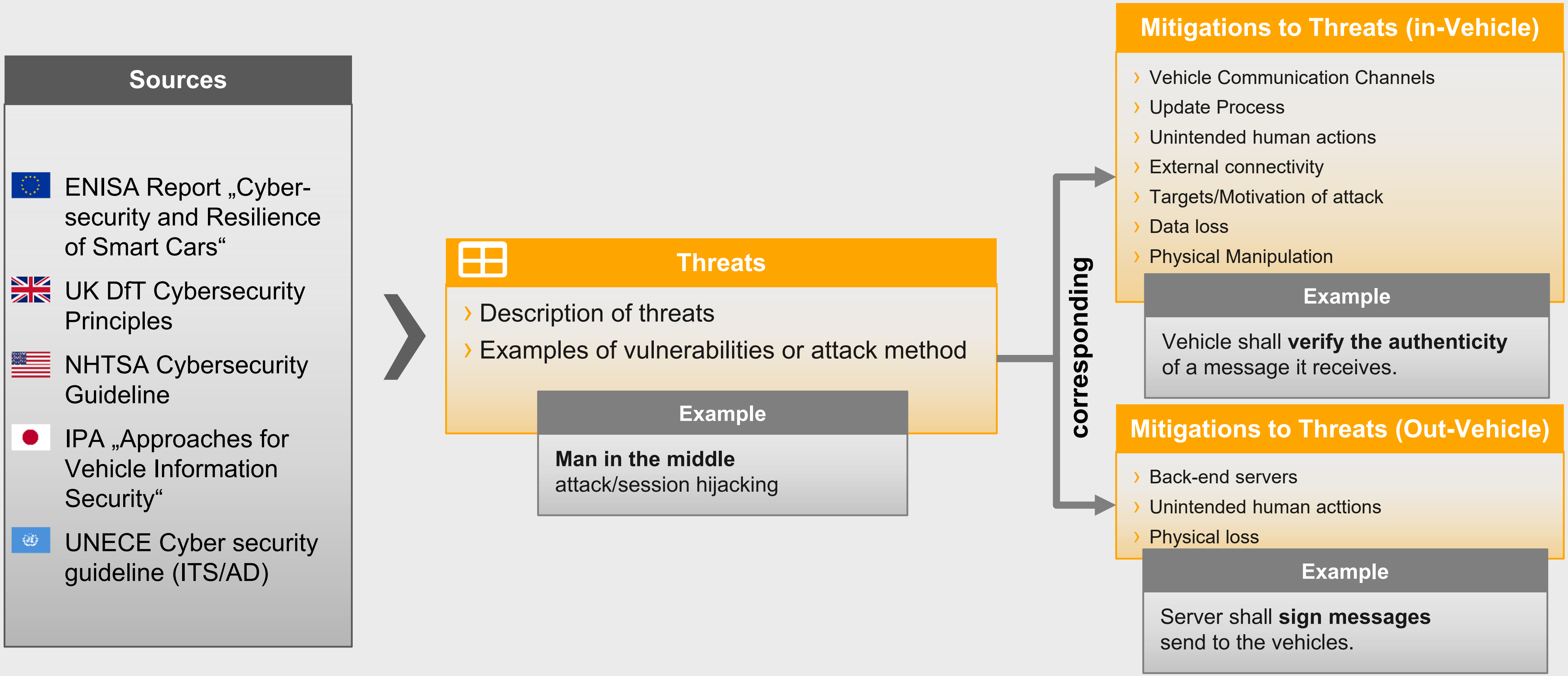
ISO

SAE INTERNATIONAL

Evidences based on ISO/SAE 21434 Work Products

UNECE Requirements on Cybersecurity for Type Approval

Minimum Required Mitigations for Potential Threats



Sources

- ENISA Report „Cyber-security and Resilience of Smart Cars“
- UK DfT Cybersecurity Principles
- NHTSA Cybersecurity Guideline
- IPA „Approaches for Vehicle Information Security“
- UNECE Cyber security guideline (ITS/AD)

Threats

- Description of threats
- Examples of vulnerabilities or attack method

Example

Man in the middle attack/session hijacking

Mitigations to Threats (in-Vehicle)

- Vehicle Communication Channels
- Update Process
- Unintended human actions
- External connectivity
- Targets/Motivation of attack
- Data loss
- Physical Manipulation

Example

Vehicle shall **verify the authenticity** of a message it receives.

Mitigations to Threats (Out-Vehicle)

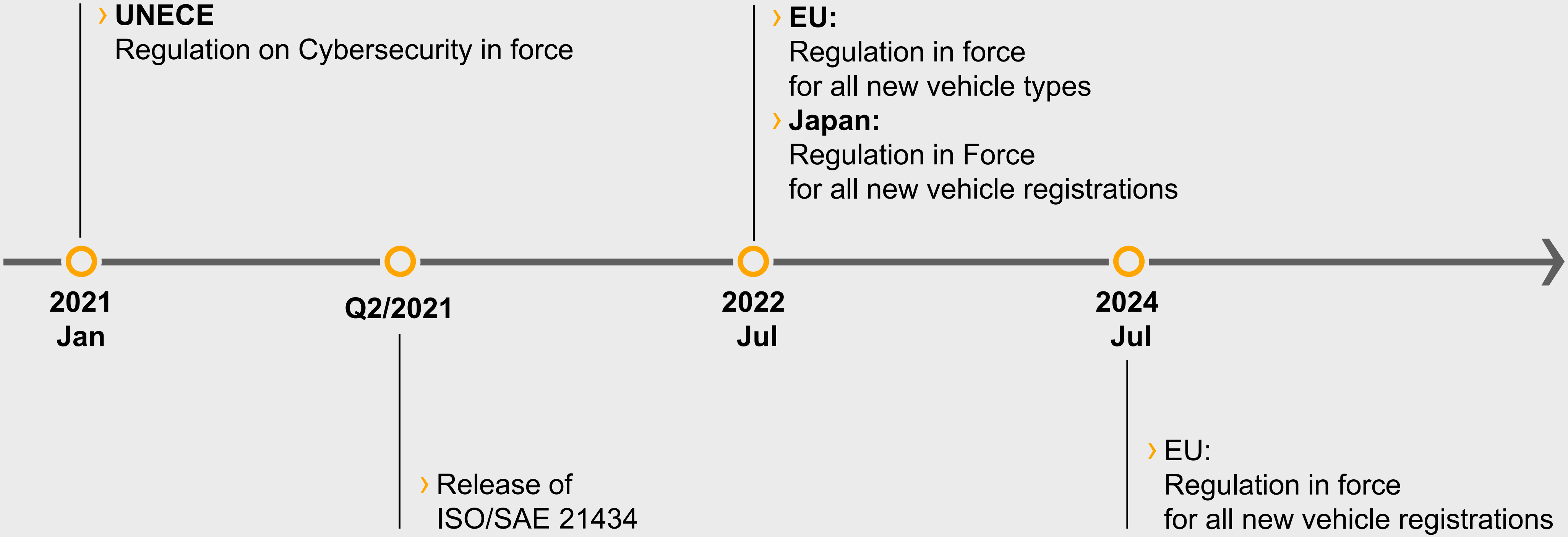
- Back-end servers
- Unintended human acttions
- Physical loss

Example

Server shall **sign messages** send to the vehicles.

Upcoming Regulations and Standards for Cybersecurity

Timeline



2021 Jan

- **UNECE**
  Regulation on Cybersecurity in force

Q2/2021

- Release of
  ISO/SAE 21434

2022 Jul

- **EU:**
  Regulation in force
  for all new vehicle types
- **Japan:**
  Regulation in Force
  for all new vehicle registrations

2024 Jul

- EU:
  Regulation in force
  for all new vehicle registrations

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