



# Continental Commercial Vehicle Days

## Cybersecurity Solutions Addressing WP.29

Martin Böhner | September 8, 2020

[www.continental-corporation.com](http://www.continental-corporation.com)

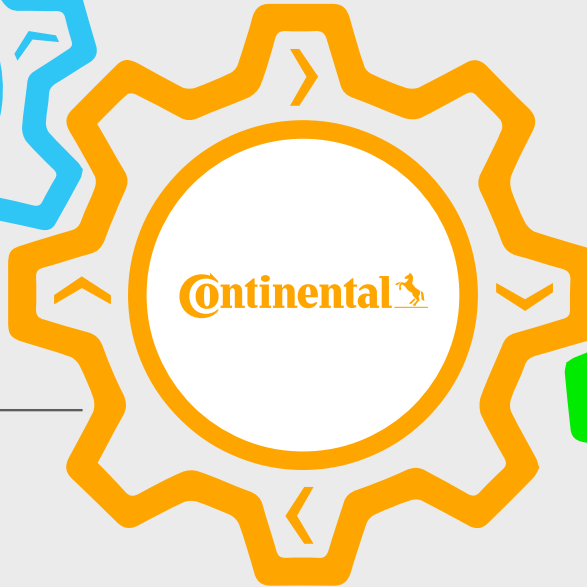
Continental AG

# Our Combined Value

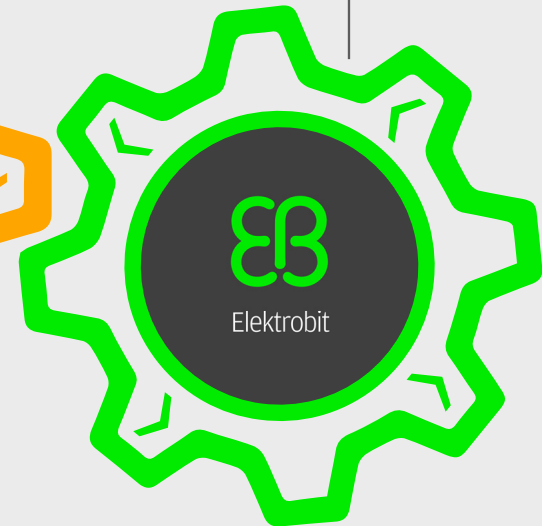
- › World Class Research Team
- › Holistic Security Offering



- › Leading Automotive Supplier with ~150 Years Automotive Experience
- › Advanced Cyber Security Research



- › Automotive security leader for more than 16 years
- › EB's software powers over 1 billion devices in 100+ million vehicles



A pre-integrated combination of Continental leading products, Argus cyber security, and EB Automotive software!

# Cyber Security Philosophy

## Prevent

Make it as hard as possible to attack



## 3 Pillars of End-to-End Security



## Understand

Know you are being hacked and how, in real time

## Respond

Mitigate the damage and immunize the fleet in hours with software updates over-the-air



# UN ECE Regulation

## New requirements for vehicle manufacturers

### UN Regulation on Cybersecurity



#### CSMS Related

- › **A FRAMEWORK** for ongoing cyber-risk management
- › Response and reporting **PROCEDURES**
- › **ONGOING CONFORMITY** requires continuous improvement processes



Vehicle Type A



Vehicle Type B

...



Vehicle Type N



#### Vehicle Type Related

- › Cyber-risk should be **EVALUATED, PRIORITIZED** and **TREATED** throughout the value chain and lifecycle
- › Need for **DETECTION, PREVENTION** and **RESPONSE** backed up by quick remediation cycles for new threats

# Measures For Each Phase of the Lifecycle

## Development

The period before the vehicle type is approved for registration and use in road traffic

## Production

The period in which the vehicle type is manufactured and there are new registrations for use in road traffic

## Post-Production

The period in which a vehicle type is no longer produced and there are no operational vehicles of a specific vehicle type

Type approval



End of lifetime for vehicle type

## Cyber Security Management System (CSMS)

# Measures For Each Phase of the Lifecycle

## Processes & technologies for each phase of the lifecycle

### Development

The period before the vehicle type is approved for registration and use in road traffic



### Production

The period in which the vehicle type is manufactured and there are new registrations for use in road traffic



### Post-Production

The period in which a vehicle type is no longer produced and there are no operational vehicles of a specific vehicle type

## VEHICLE CYBER-RISK MANAGEMENT



## ONGOING MONITORING, ANALYSIS & SW UPDATE



## RESPONSE CAPABILITIES



# Procedures and Processes across the Vehicle Lifecycle

## Required activities according to WP.29



### Gap Analysis:

- › Cyber Security Management System (CSMS)
- › Vehicle Type approval

### Security approach:

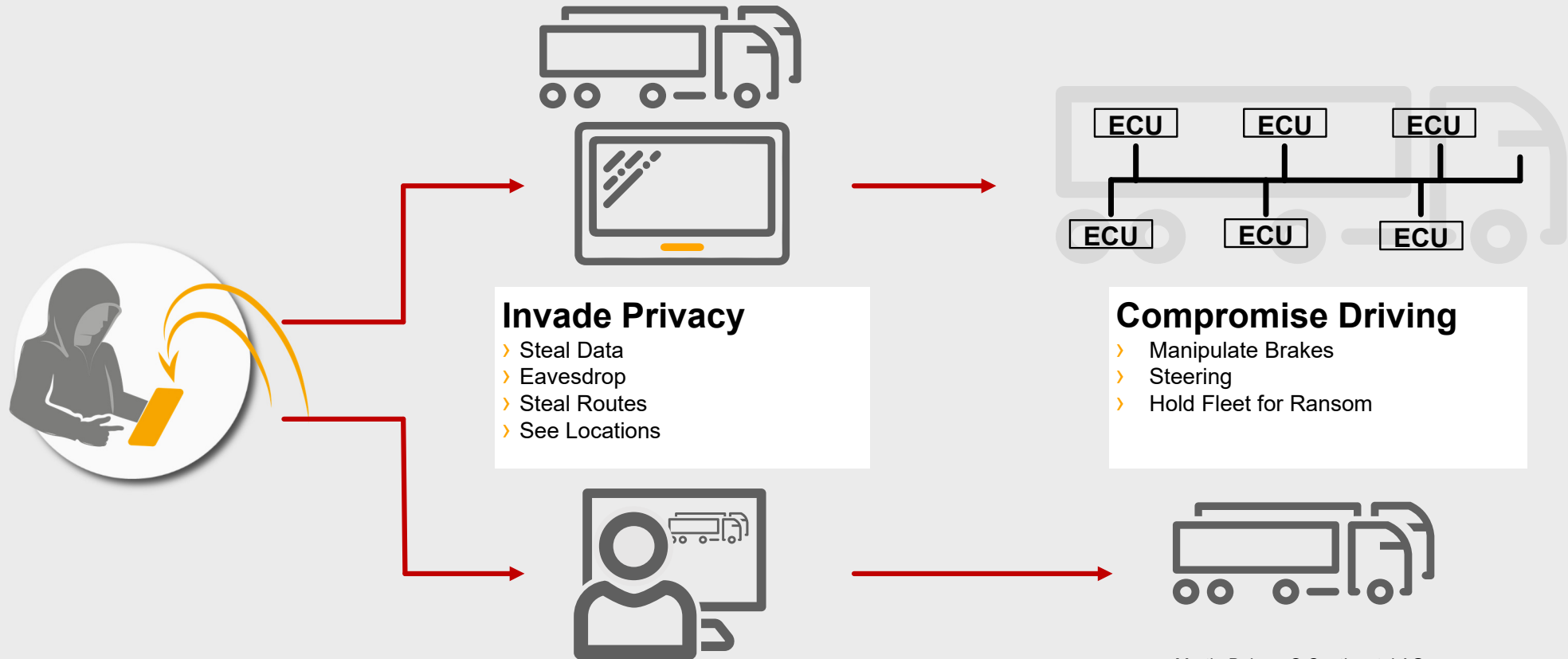
- › TARA
- › Security Requirements & Specifications
- › Security Concept

### Security Validation:

- › Security Testing
- › Pen Testing
- › Document evidence for type approval

# What does it mean from a technology perspective?

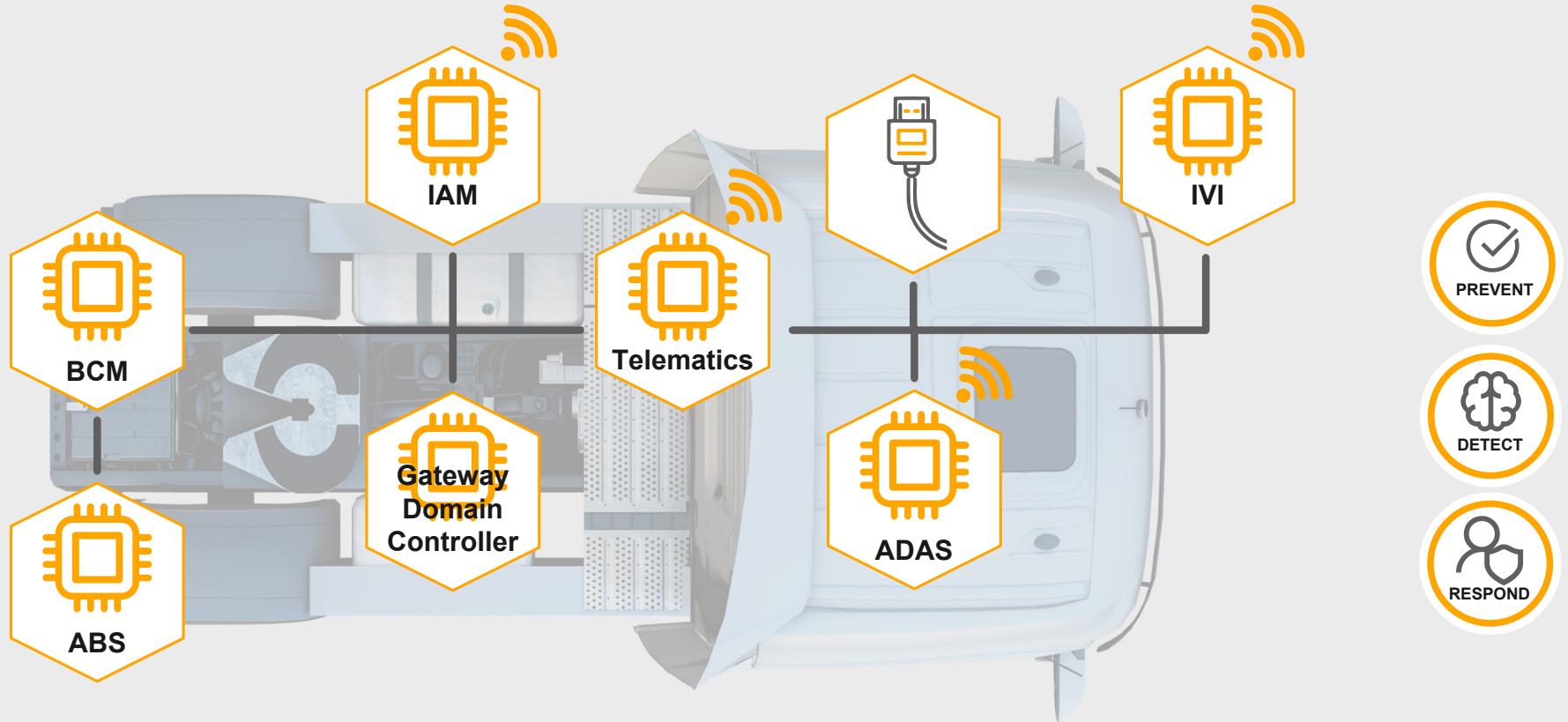
## What hackers can do remotely





# On-Board Technologies

Protect against attacks targeting any component or network



# In-Vehicle Security

## Scalable defense-in-depth



### Connected Components



### General ECUs



### Network



Secure Boot

System Limiter

ECU Firewall

Control Flow Integrity

Secure diagnostics

Identity & access mgmt

Cryptography & Post Quantum Crypto

Hardware security modules

**CAN**

CAN Firewall

Network Integrity

Secure Updates

**Ethernet**

Ethernet Firewall



Threat Detection

Security Logger

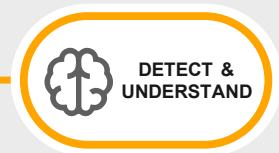
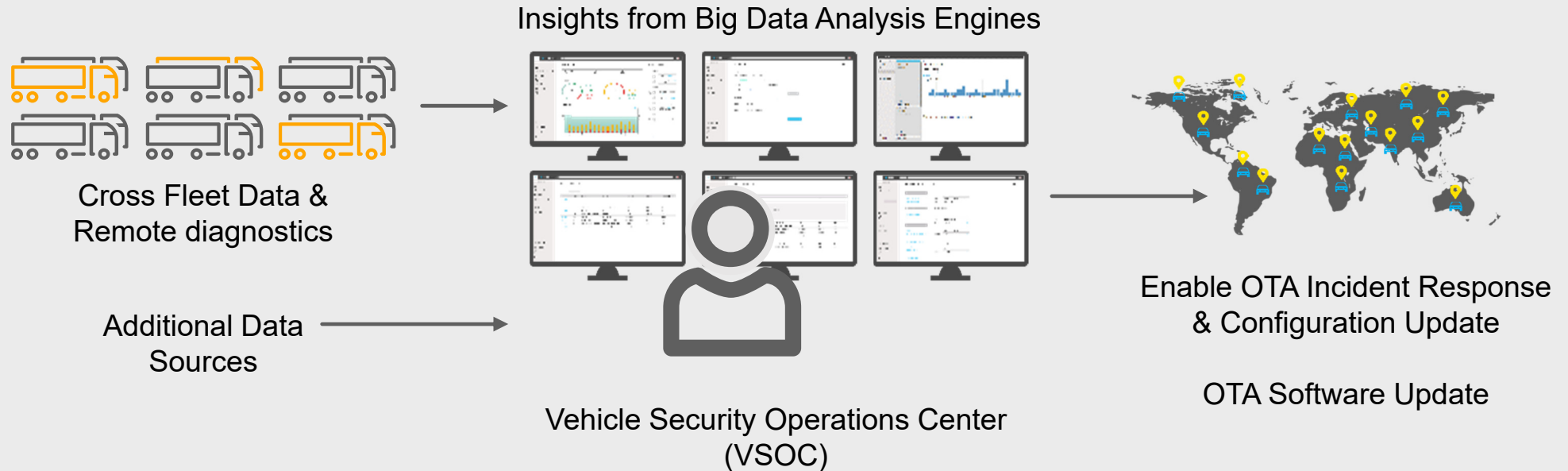
Remote Diagnostics

CAN IDPS

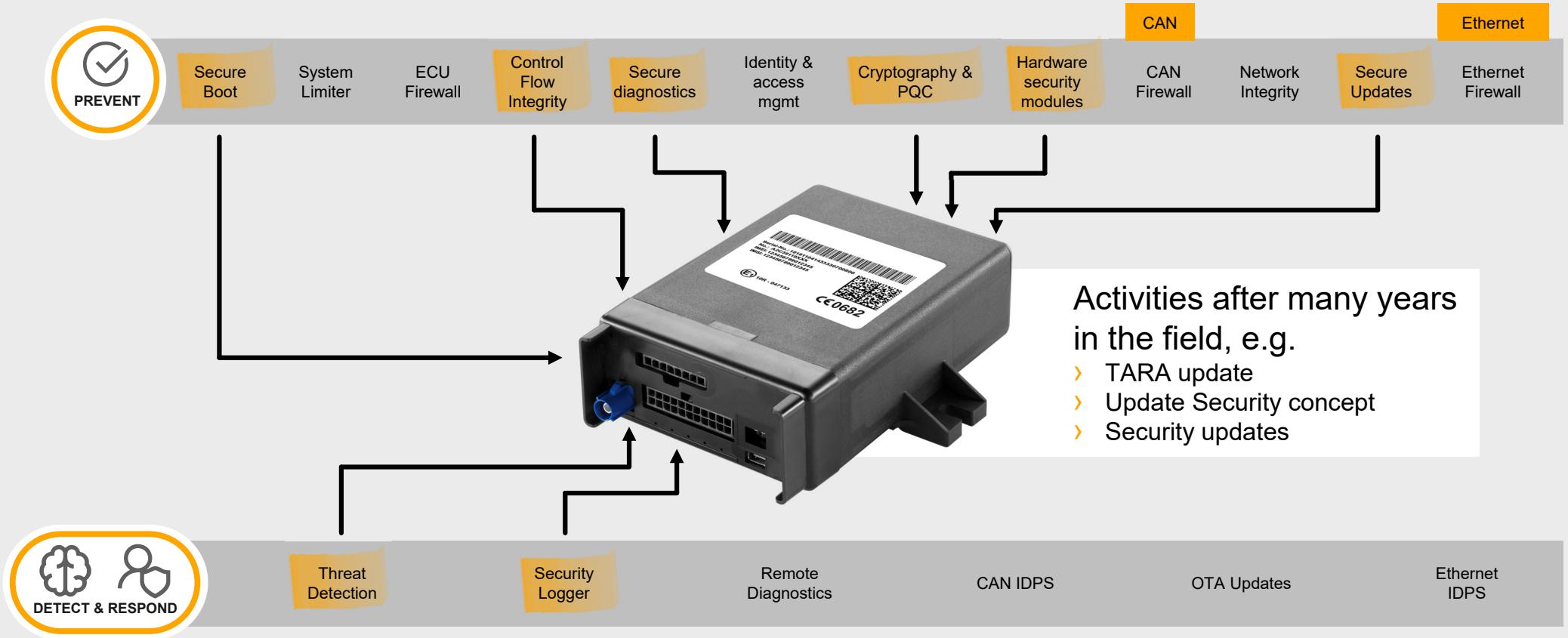
OTA Updates

Ethernet IDPS

# Off Board Technologies



# Example of an ECU Security Mapping



Activities after many years in the field, e.g.

- › TARA update
- › Update Security concept
- › Security updates

# Take-Away Messages



# Take-Away Messages

A futuristic truck is shown on a road, with a digital overlay of binary code and a padlock icon on its hood. The background features a blue sky with clouds and a network of orange lines connecting various points, suggesting a global or interconnected network. The truck is positioned on the left side of the frame, moving towards the right.

- › Security involves a large combination of activities and technologies across the entire lifecycle
- › Regulation provides a framework for the security goals a manufacturer needs to achieve
- › We help the industry to cost-effectively fulfill the requirements and ensure security
- › Regardless of the regulations, cyber security is a MUST for innovation in connected transportation

A large, dense pile of 3D white question marks is scattered across a light gray surface. The question marks are of various sizes and orientations, creating a sense of depth and abundance. The lighting is soft, casting gentle shadows that emphasize their three-dimensional form. The overall composition is clean and minimalist, focusing on the central theme of inquiry.

# Questions and Answers

