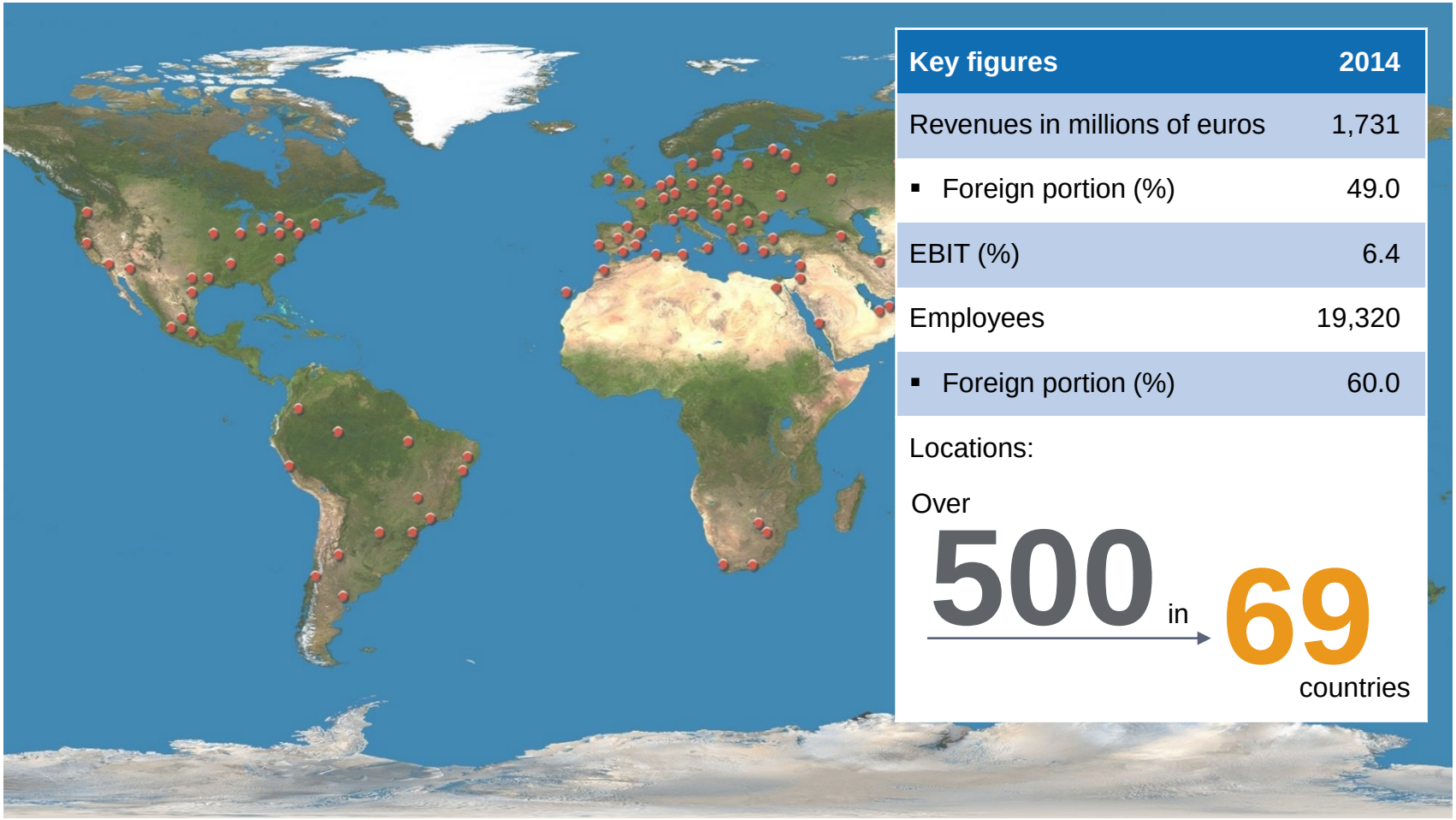
Connected Cars – Combining Security and Safety

TÜVRheinland®
Genau. Richtig.

At Home on All Continents.



Key figures	2014
Revenues in millions of euros	1,731
▪ Foreign portion (%)	49.0
EBIT (%)	6.4
Employees	19,320
▪ Foreign portion (%)	60.0

Locations:

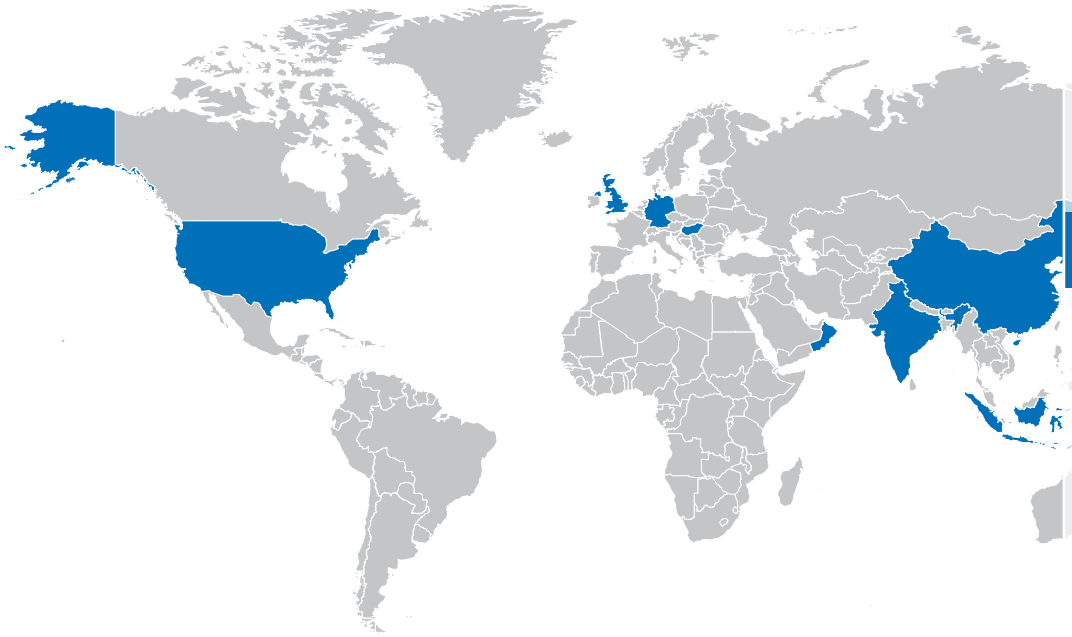
Over **500** in **69** countries

Revenues by Business Areas.

TÜVRheinland®
Genau. Richtig.

The World of ICT & Business Solutions.

Worldwide locations



Revenues in 2014:

Approximately

€ 123 million

Business fields

- IT Services & Cybersecurity
- Telco Solutions, Business & Engineering Services
- Management Consulting
- R&D Management

Agenda.

1 The development of the car

2 New challenges?

3 Possible solutions

4 Next steps?

Development of the car.

Benz Patent Motorwagen (1886)

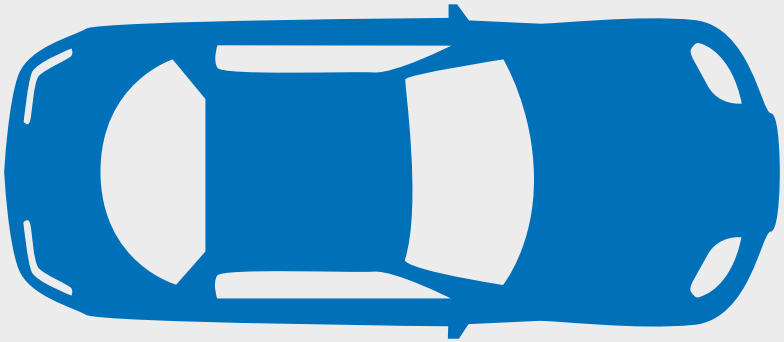
Passive security

Development of engines and mechanical aspects

Passive security

Development of control units, software and assistant systems

Passive security



Active security

Connection of the car to backend systems and the internet

Active security

car2X and autonomous driving

Development Cycle and Challenges.

Car Development

- Focus on design, functionality and safety (engineering components)
- Time to market: around 6 years with a facelift after 3 years

Software Development

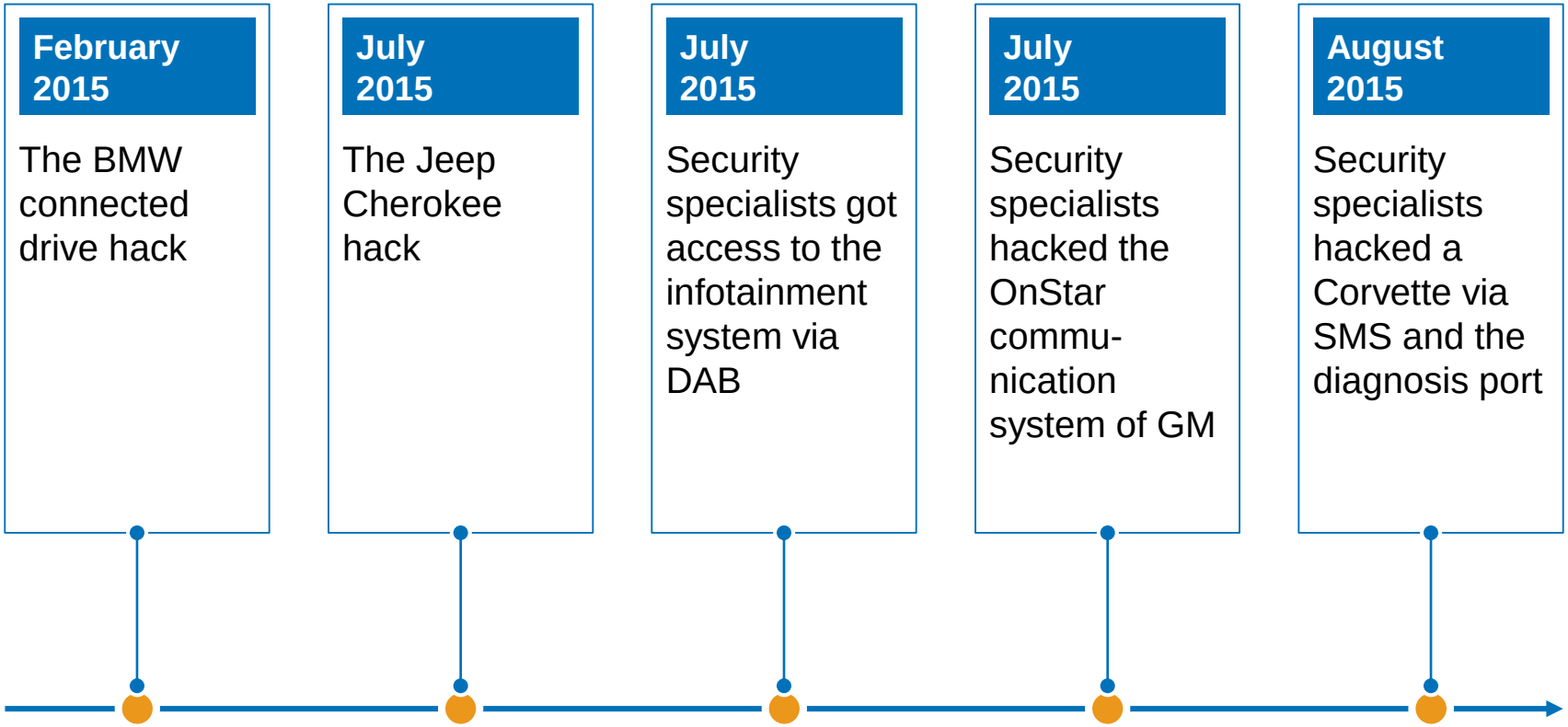
- Focus on functionality
- Time to market less than 1 to 2 years with
  - functional updates every month,
  - (security) patches up to daily

New Challenges

Safety, security for software in cars and data privacy of car users

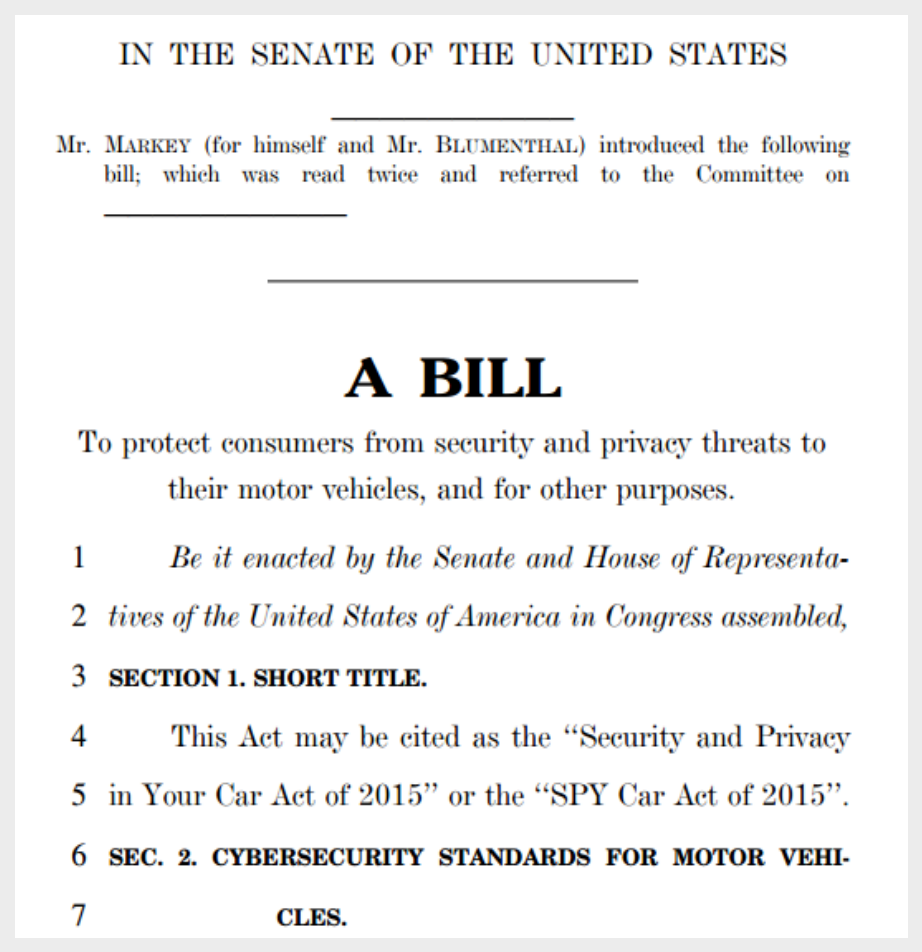
- New strategies, processes and technologies required for
  - Security in software development in a multi component environment
  - Combination of security and safety
  - Update processes and regulations for software of cars “on the street“

New Challenges?



source: heise.de

Joint solutions.



IN THE SENATE OF THE UNITED STATES

Mr. MARKEY (for himself and Mr. BLUMENTHAL) introduced the following bill; which was read twice and referred to the Committee on

A BILL

To protect consumers from security and privacy threats to their motor vehicles, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Security and Privacy in Your Car Act of 2015" or the "SPY Car Act of 2015".

SEC. 2. CYBERSECURITY STANDARDS FOR MOTOR VEHICLES.

- The Security and Privacy in Your Car Act
- The Verband der Automobilindustrie (VDA) works on security standards for cars

Next steps.

- Acts and standards may build a common under-standing of the topic

- Enforce cooperation in concern of security, safety and data privacy between:
  - Information security departments
  - Development departments and between
  - car manufacturers and
  - automotive suppliers

- Safety and security will be incorporated and cannot furthermore be looked at separately

- The safety of a car will only be secured in future when
  - using tools and methods of information security
  - based on best practices and experiences of IT industry

Next steps (organisational).

- Build an ISSMS (Information Security and Safety Management System)

- Define a goal/policy for safety and security for software in cars

- Use standards like ISO 27001 and ISO 26262 for governance of security and safety of software components in cars

- Create guidelines for car development like
  - „development of secure safe software“
  - authentication and encrypting of protocols and data
  - ...

- Create guidelines and processes for
  - security in operation (attack detection and countermeasures ...)
  - patch management and update procedures
  - health check and status for software in cars ...

Next steps (technical).

- Define technical specifications and implement technical safeguards like
  - secure software development for specific programming languages
  - strong authentication for connections and commands
  - ...

- Test security of in-car systems for
  - firmware
  - software
  - communication protocols

- Test security of communication channels from and to the car

- Test security of backend systems and applications (also mobile apps) by source code reviews, penetration tests and audits

Conclusion.

A car is a mobile device in the Internet of things world

01

Use proven standards like ISO 27001/ISO 26262 and enhance it with the safety and security aspects we need for the car specifics

02

Describe, use and check the organisational and technical safeguards you use

03

There is no ready to use approach yet

04

Participate in the experience of IT industry to be faster and better in software development and operation for cars

05

TÜV Rheinland is a well known partner for the safety of cars and security of IT, so **WE** can combine safety and security

06

Questions?

Udo Adlmanninger
TÜV Rheinland i-sec GmbH
Zeppelinstrasse 1, 85399 Hallbergmoos

T: +49 811 9594 - 146
M: +49 173 398 23 78
F: +49 811 9594 - 220
Udo.adlmanninger@i-sec.tuv.com

www.tuv.com/informationssicherheit