Five Unpleasant Truths about Automotive Cybersecurity

Dr. Thomas Wollinger
FuzzCon Europe Automotive Edition

escrypt
SECURITY. TRUST. SUCCESS.

Design Security

Professional Services

- Strategic Security Consulting
- Security Trainings
- Product Security Consulting
- Product Security Engineering
- Security Testing

Enable Security

Products and Solutions

ECU Production

CycurTLS
Transport Layer Security (TLS)
for embedded platforms

Backend

Credential Management

Cyber Defense Center

Production Key Server
Crypto server for secure key
injection in mass production

CycurIDS
Intrusion
detection

CycurGATE
Automotive
firewall

CycurLIB
Cryptographic
library

CycurV2X-SCMS
V2X security credentials
management system

CycurHSM
Automotive-qualified
security stack for HSM

CycurV2X
Secure V2X
Communication SDK

CycurACCESS
Vehicle access
and key sharing

CycurKEYS
Secure management of
cryptographic keys and certificates

CycurGUARD
Intrusion monitoring
and analysis

Manage Security

On-Premise / Managed Cloud
Security Services

- Managed PKI Service
- Security Operations Center (SOC)
- Threat Intelligence and Forensics
- Vulnerability Management
- Incident Response as a Service (IRaaS)

escrypt
SECURITY. TRUST. SUCCESS.

Associates
400

Associates in engineering
240

R&D locations
7

Locations worldwide
19

ESCRYPT – is the leading solution provider for automotive cybersecurity

Founded in:
2004

Shareholder:
100 % ETAS GmbH, a subsidiary of the Robert Bosch GmbH

Headquarters:
Bochum, Germany

Management:
Uwe Bingel
Dr. Thomas Wollinger

1980
Single device/ECU

2000
Vehicle System

2020 ff
Infrastructure

Increasing complexity of the system

Increasing connectivity

Increasing vulnerability to cyber attacks

Increasing relevance of IT security skills

775.000.000
connected passenger cars
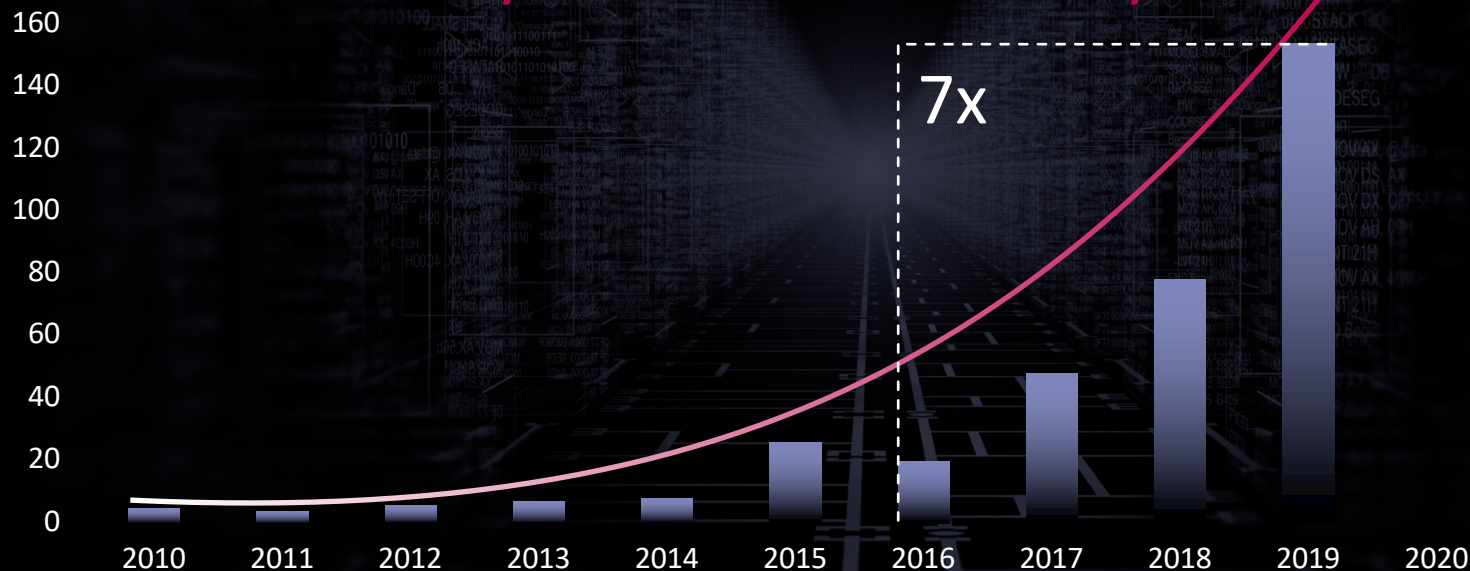
Quelle: Juniper Research 2019

12/1/20   5   info@escrypt.com

"Those who put themselves in danger, perish in it."

Car manufacturers without a security strategy will not survive.

- Enabler for connected mobility
- Penalty service
- Survival premise

"Those who put themselves in danger, perish in it."

Car manufacturers without a security strategy will not survive.

► Security as a strategic task
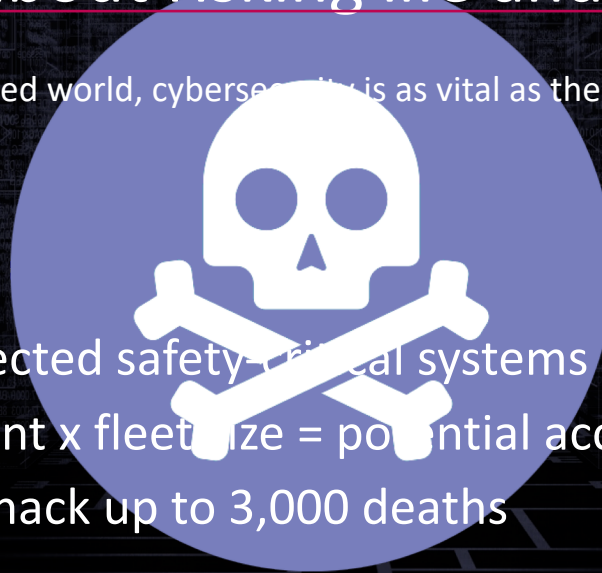
► Security awareness

► Security orchestration

escrypt
SECURITY. TRUST. SUCCESS.

7x more
cyberattacks within 4 years

7x

| 160 |
| 140 |
| 120 |
| 100 |
| 80 |
| 60 |
| 40 |
| 20 |
| 0 |

2010   2011   2012   2013   2014   2015   2016   2017   2018   2019   2020

Source: Upstream Security, 2020

info@escrypt.com

"It is about risking life and limb".

In a connected world, cybersecurity is as vital as the brakes.

- Connected safety-critical systems
- Incident x fleet size = potential accidents
- Fleet hack up to 3,000 deaths

It is about risking life and limb".

In a connected world, cybersecurity is as vital as the brakes.

► Original equipment for every vehicle

► Lifecycle

► Classical IT security competence
  ▪ IDS, SOC, Firewalls

escrypt
SECURITY. TRUST. SUCCESS.

300 – 500 Mio.
Lines of Code

Quelle: Heise, KFZ-Betrieb 2019

info@escrypt.com

"100% security is not affordable."

Automotive Security needs calculation of investment and residual risk.

- Security invest vs. risk
- „Loss-making" business
- Cloud security

"100% security is not affordable."

Automotive Security needs calculation of investment and residual risk.

► Segmentation: critical safety, connectivity

► Prioritization

► Resilience management

escrypt
SECURITY. TRUST. SUCCESS.

322.000

new malware programs per day

Quelle: AV Test – The Independent IT-Security Institute 2020

"If you don't find the holes, someone else does."

The evil is always there and everywhere

- Complex systems (challenging testing)
- Long vehicle life cycle
- Connected production processes

"If you don't find the holes, someone else does."
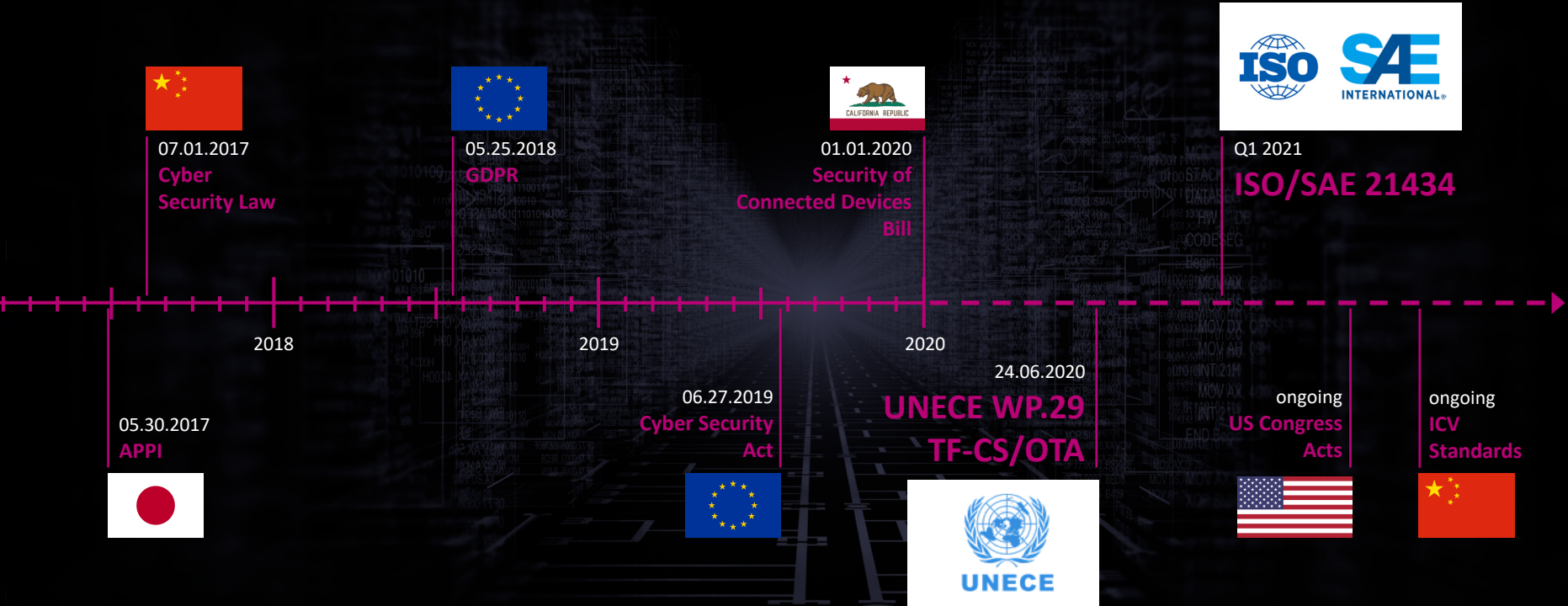
The evil is always there and everywhere.

► Security testing strategy

► Protection of all connected entities

► Over the entire vehicle life cycle

07.01.2017
Cyber
Security Law

05.25.2018
GDPR

01.01.2020
Security of
Connected Devices
Bill

Q1 2021
ISO/SAE 21434

2018

2019

2020

24.06.2020
UNECE WP.29
TF-CS/OTA

06.27.2019
Cyber Security
Act

ongoing
US Congress
Acts

ongoing
ICV
Standards

05.30.2017
APPI

Quellen: Personal Information Protection Commission Japan, China Briefing, Europäische Kommission, ISO, UNECE, Jones Day, The Hill

escrypt
SECURITY. TRUST. SUCCESS.

"Those who don't follow the rules are disqualified."

Automotive cybersecurity becomes a prerequisite for market participation.

- Increasing complexity
- Fear from over-regulation
- High pressure to act

"Those who don't follow the rules are disqualified."

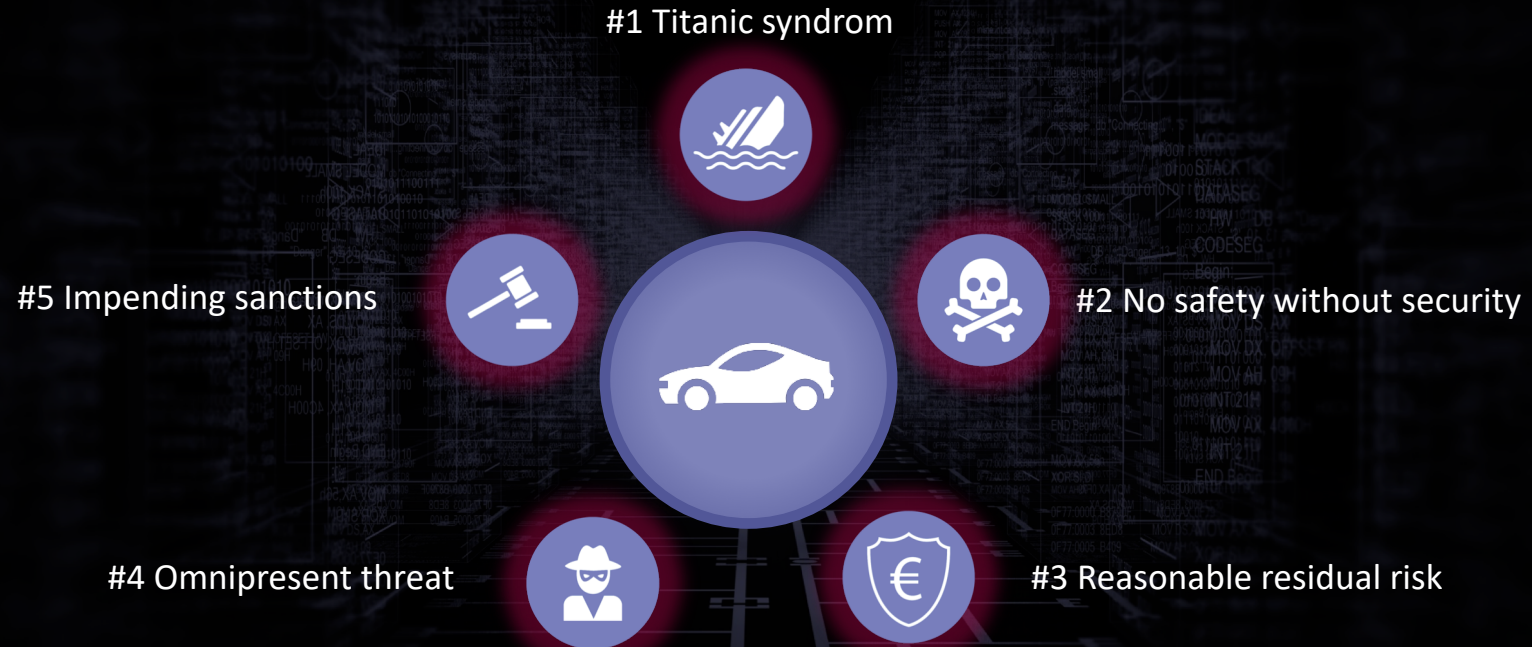Automotive cybersecurity becomes a prerequisite for market participation.

▶ Legal expertise

▶ Standard-compliant security design

▶ Implementation of a Cybersecurity Management System (CSMS)

Five Unpleasant Truths about Automotive Cybersecurity
At a glance

escrypt
SECURITY. TRUST. SUCCESS.

#1 Titanic syndrom

#5 Impending sanctions

#2 No safety without security

#4 Omnipresent threat

#3 Reasonable residual risk

escrypt
SECURITY. TRUST. SUCCESS.

*"Security is not a product, but **a process.**"*

Bruce Schneier

**ESCRYPT GmbH
Headquarters**
Wittener Straße 45
44789 Bochum
Germany

Phone: +49 234 43870-200
Fax: +49 234 43870-211

info@escrypt.com
www.escrypt.com