



# Capital Market Days 2020

## Strategic Action Field: Software and Systems Excellence

### Our Strengths Overcome Software Challenges

Ticker: CON  
ADR-Ticker: CTTAY  
<http://www.continental-ir.com>

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# Strategic Action Field: Software and Systems Excellence

## Our Strengths Overcome Software Challenges



# Did You Know That ...

... Continental performs  
**>250 software builds** for existing  
customers/projects per day

... Continental has equipped  
**1,000,000,000+** cars with  
software



... Continental has had its  
own dedicated **Software  
Academy** since 2019

# Software-defined Vehicles

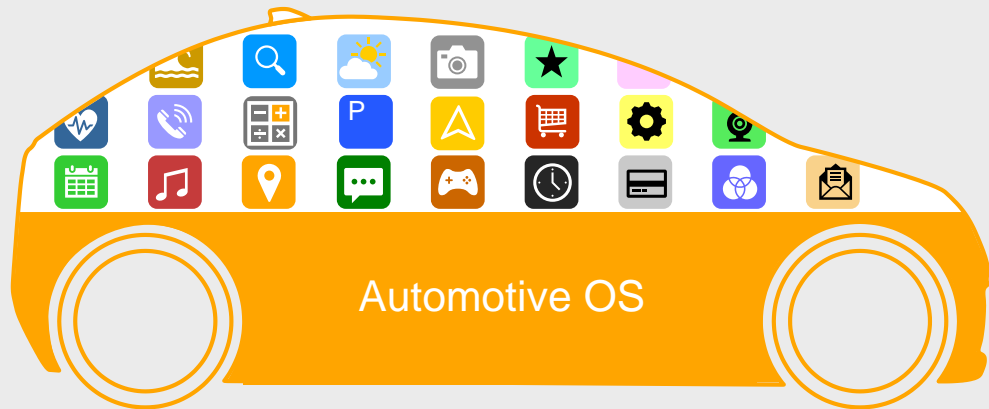
## ... Face Numerous Challenges



1 microprocessor  
1 display  
1 OS  
7 sensors  
0.174 kg  
0 km/h

Faulty software is **annoying**

<sup>1</sup> Reference vehicle: German premium class vehicle in 2020



100 microcontrollers  
4 displays  
4 OS  
hundreds of sensors  
1,995 kg  
250 km/h<sup>1</sup>

Faulty software **can be fatal**

# Software-defined Vehicles

## ... Face Numerous Challenges



### Explosion of complexity

- › Customer expectations and regulatory requirements
- › SW-defined differentiation



### High degree of variants

- › Regional requirements
- › Numerous models per OEM
- › Highly customizable models



### Long product lifetimes

- › Long-term maintenance period
- › Always up-to-date, safe and secure



### Vague standards

- › Generic industry standards
- › OEMs interpret standards individually



### Safety

- › Safety-critical mission
- › Defects can be life-threatening

# Our Strengths Overcome Software Challenges

## We Cover the Entire Spectrum of Customer Needs

60%

### Non-differentiating software

- › Common functionality required of all vehicles, regardless of brand, OEM, trim level, etc.
- › **Customer needs:**  
Economies of scale for most competitive cost position



40%

### Differentiating software

- › Unique functionality for specific OEMs, models, regions, customer groups, etc.
- › **Customer needs:**  
Economies of scope to provide best support/expertise

Continental offers best-in-class  
**software and systems  
excellence** based on:



Competence



Technology



Workflow



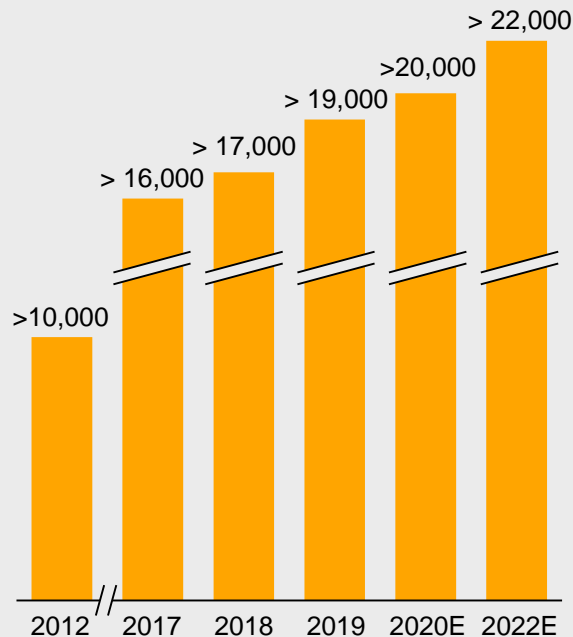
Collaboration



# Software Experts in Every Field

Continuously Improving with New Specialist Staff, Acquisitions and Training

## Number of software and IT specialists



## Software-related acquisitions

- 2015**  **Elektrobit**  
 Expanded software and systems expertise
- 2016**  **ZONAR**  
 Access to fleet management market
- 2017**  **ARGUS**  
 Leading automotive cyber security expertise

## In-house Software Academy

### Boost software expertise

- › **Effective on-boarding** new hires
- › **Systematic up-skilling** to new technologies
- › **Extensive cross-skilling** non-software engineers on software topics

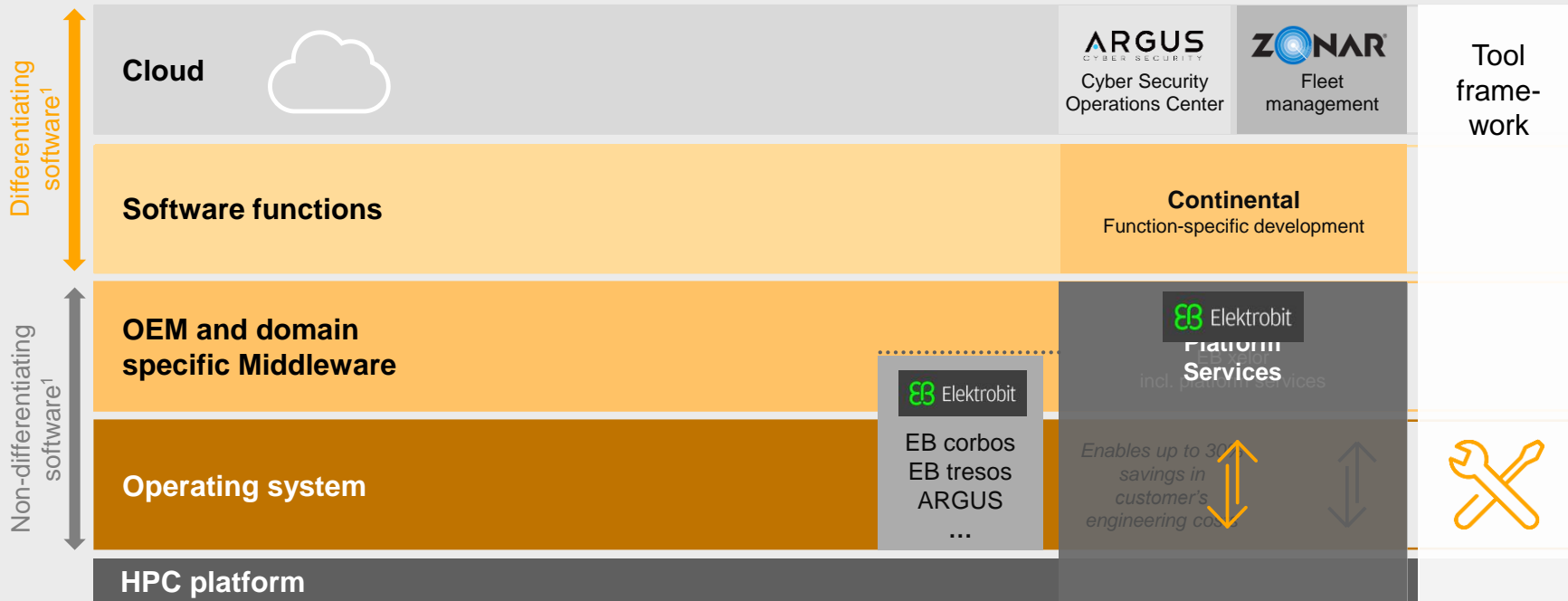
### State-of-the-art learning

- › **+319% YoY** completed learning items
- › **Agile:** +100 training units added in 2020
- › **Artificial Intelligence:** ~1,900 employees with knowledge in the area of AI by 2022
- › **Cyber security:** 20k+ training units attended
- › **New formats:** Hackathons, hands-on,...

# Scalable, Integrated and Cloud-ready Platforms

We Deliver Software Stacks for Present and Future Architectures

## Continental's Technologies

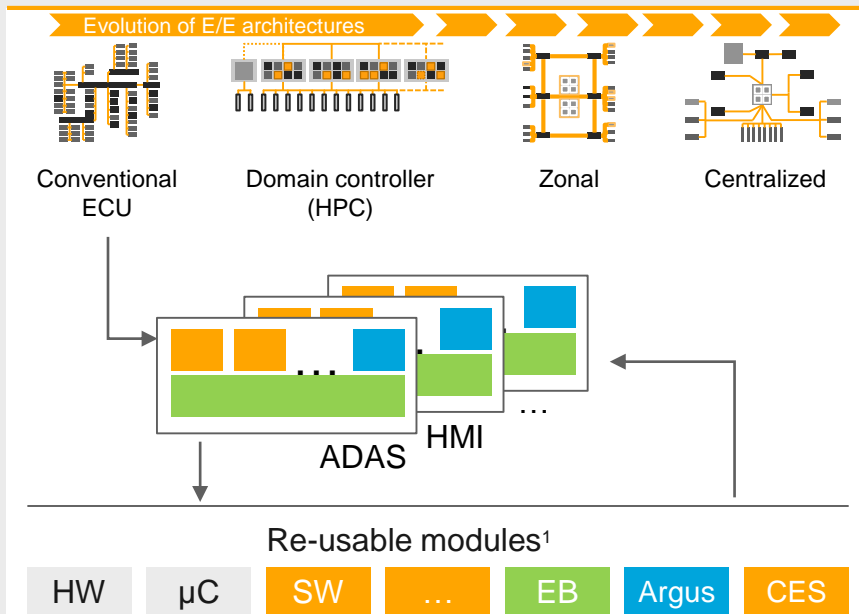




# Scalable, Integrated and Cloud-ready Platforms

Our Products Fit into Today's and Future E/E Architectures

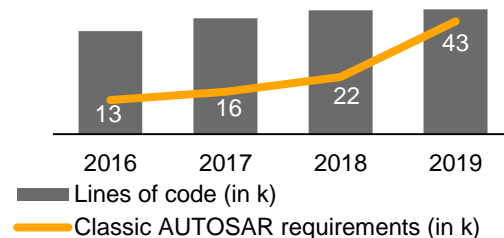
**Re-usable product architecture to deal with complexity and transition**



<sup>1</sup> HW: Hardware, μC: Microcontroller, SW: Software, EB: Elektrobit, CES: Continental Engineering Services

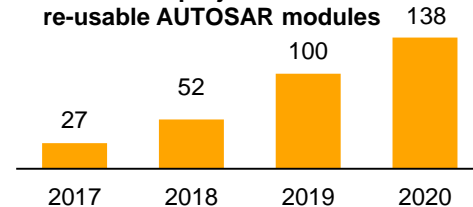
**We continuously enhance our platform products and increase the richness of functionality**

Efficiency to deal with complexity



Re-usable platforms applied across numerous customer projects

**Continental projects based on re-usable AUTOSAR modules**



# Speed and Agility

We Have Efficient Software Development in Place

Fast and regular deliveries without compromising on quality

From projects ...



set-up development validation release maintenance

Classical project set-up with  
**V-model**

6 months iteration



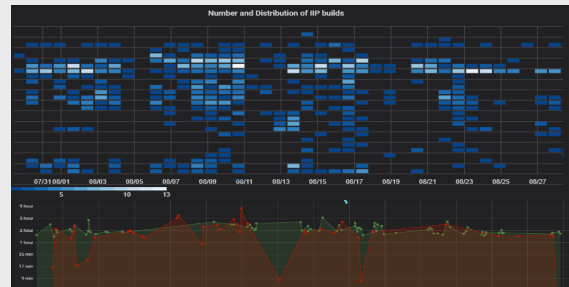
... to flow development



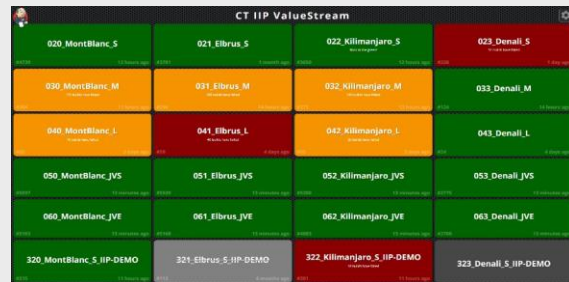
continuous dev/int built-in quality release on demand

State-of-the-art  
**flow development**

2 – 4 weeks iteration



250 software builds per week for IIP<sup>1</sup> project



70k tests executed/week

<sup>1</sup> IIP: Integrated Interior Platform

# Speed and Agility

## We Manage the Complexity of Software Integration End2End



### Continental software factory

- › Continuous integration, testing and delivery
- › On-site and cloud resources
- › Embedded hardware



### Continental Cooperation Portal



### External software factories

OEMs and partners

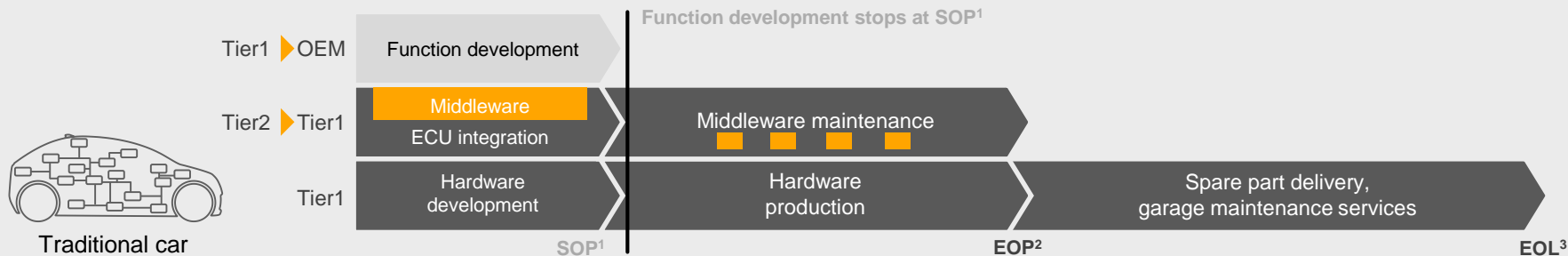


- ✓ Solution to integrate an exponentially growing amount of software
- ✓ Automatization and standardization
- ✓ Reduction in development time and costs, increase in software quality

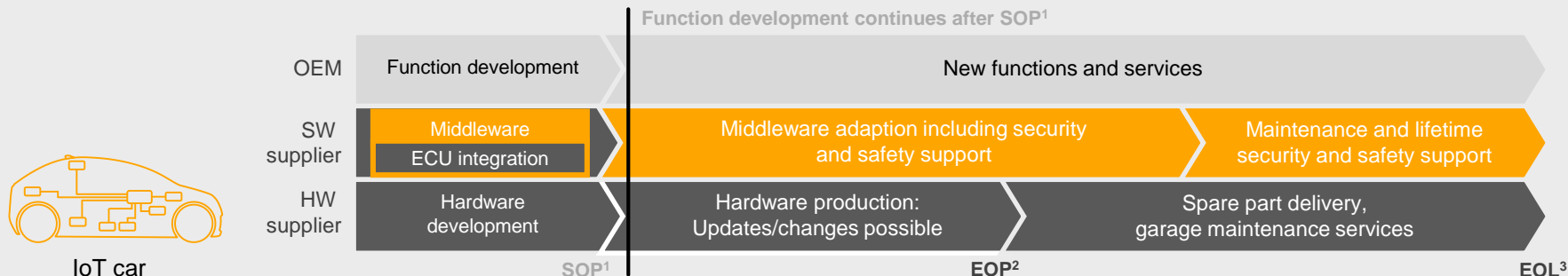
# Collaborations Based on Trust

## Software-defined Vehicles Require a New Collaboration Model

### Hardware and function coupling – Software treated like hardware



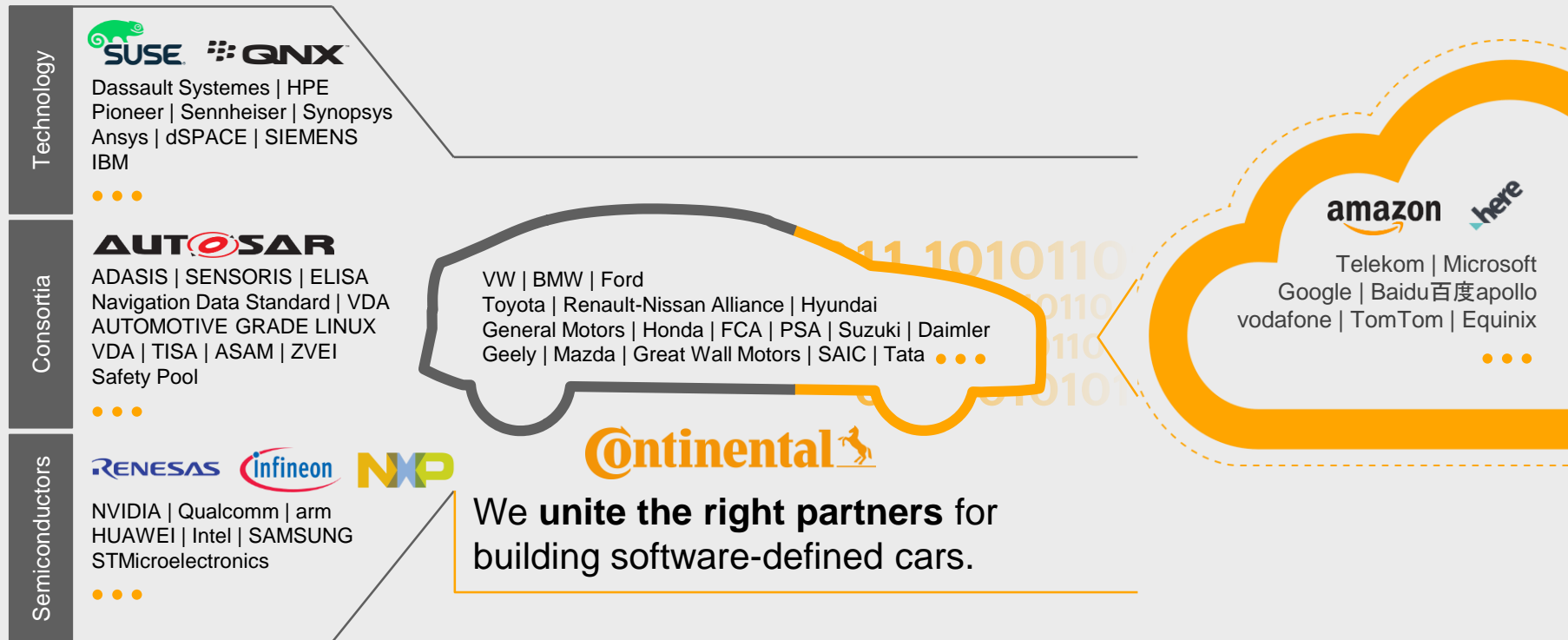
### Software-defined vehicle needs a software platform partner throughout vehicle lifecycle



<sup>1</sup> SOP: Start of production, <sup>2</sup> EOP: End of production, <sup>3</sup> EOL: End of life

# Collaborations Based on Trust

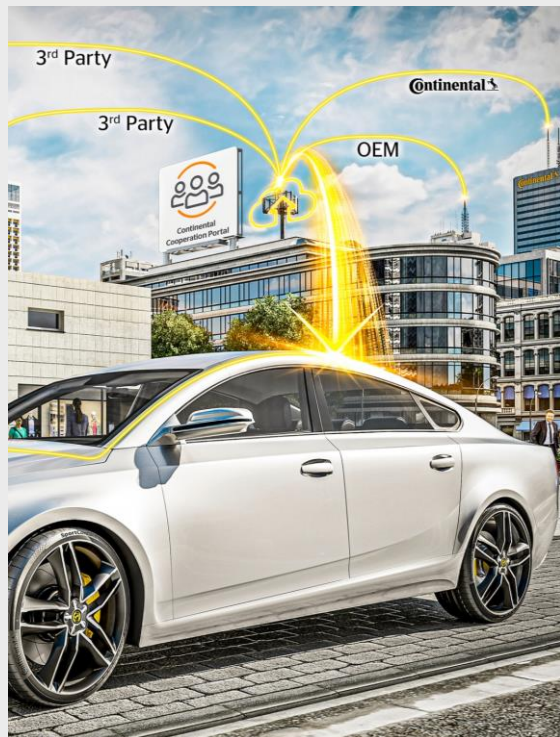
## Our Strong Partnerships Within the Ecosystem



Note: Any rights of trademark owners remain unaffected

# Software and Systems Excellence

## Summary



**First supplier** in the automotive industry to enable **software-defined vehicles** (Volkswagen ID.3)

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We cover **100%** of customers' software needs, **from non-differentiating to differentiating software**

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We have a **strong software team**, continuously growing with new specialist staff, acquisitions and training

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Our **technologies and workflows** enable efficient and agile development of **full software stacks**

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**Proven collaboration model** that brings together OEMs, hardware and software suppliers, and services providers

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