



# Software Defined Car- A Mercedes-Benz View

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# Today`s journey

Mercedes-  
Benz Strategy

Mercedes-  
Benz MBOS

Requirements  
for future  
Software  
defined Cars  
-  
Research  
perspective

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Let's start with the essence of our strategy.

# WE WILL BUILD THE WORLD'S MOST DESIRABLE CARS

## Think

and act like a luxury brand

## Focus

on profitable growth

## Expand

customer base by growing top-end luxury

## Embrace

customers and grow lifetime revenues

## Lead

in electric drive and digital experience

## Lower

cost base, improve industrial footprint and increase supply chain resilience

Driven by a highly qualified and motivated team  
Sustainability, integrity and diversity as our foundation

# Our current fully electric portfolio: And there is more to come!



EQA



EQB



EQE  
EQE AMG



EQE SUV  
EQE SUV AMG



EQS  
EQS AMG



EQS SUV



Mercedes-Maybach  
EQS SUV



EQV

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# MERCEDES-BENZ OPERATING SYSTEM

The fundamental building principles

# WE ARE THE ARCHITECTS

SPECIFY

DESIGN

DEVELOP

PROCURE/  
PARTNER

INTEGRATE

UPGRADE



# The fundamental building principles

**1. PURPOSE-BUILT  
AND OPEN TO PARTNERS**



**3. PRIVACY-BY-DESIGN  
FROM THE VERY BEGINNING**



**2. PERSONALIZED SERVICES  
THROUGH ONE UNIQUE MERCEDES  
ME ID**



**4. FULL OVER-THE-AIR  
UPDATABILITY  
AND DECOUPLED SOFTWARE  
AND HARDWARE RELEASES**



# All central to our own Mercedes-Benz Operating System MB.OS

**PROPRIETARY  
OPERATING SYSTEM**

**FOUR DOMAINS:  
INFOTAINMENT, AUTOMATED DRIVING,  
BODY & COMFORT, DRIVING & CHARGING**

**SERVICE-ORIENTED  
CHIP-TO-CLOUD ARCHITECTURE**

It's about the operating system of our entire business



We're connecting the elements  
to build an **INTEGRATED NETWORK**  
makes us **MORE EFFICIENT** and permanently **MORE PROFITABLE**

# Highlights der Mercedes-Benz Intelligent Drive Funktionen

## FAHREN

### Serie & Sonderausstattung

#### Aktiver Brems-Assistent

- Mit Fahrzeug-, Fahrrad- und Fußgängererkennung

#### ATTENTION ASSIST

- Mit Sekundenschlafwarner <sup>1</sup> **NEU**

#### PRE-SAFE® und PRE-SAFE® Sound

#### Aktiver Spurhalte-Assistent

#### Car-to-X-Kommunikation

#### Verkehrszeichen-Assistent **NEU**

- Mit Stoppschild-Warnfunktion
- Mit Rote-Ampel-Warnfunktion

#### DIGITAL LIGHT **NEU**

## PARKEN

#### Park-Paket mit Rückfahrkamera

- Mit Aktivem Park-Assistent PARKTRONIC
- Mit Abstandsanzeige über Aktive Ambientebeleuchtung **NEU**

### Pakete

#### Assistenz-Paket

##### Totwinkel-Assistent

- Mit Ausstiegswarnfunktion

##### Aktiver Spurhalte-Assistent

##### Aktiver Abstands-Assistent DISTRONIC

- Manuelle Geschwindigkeitslimit-Übernahme

#### PRE-SAFE® PLUS

#### Fahrerassistenz-Paket Plus

##### Aktiver Brems-Assistent

- Mit Abbiegefunktion und Bremsung auf entgegenkommende Fahrzeuge **NEU**
- Mit Kreuzungs- und Stauende-Notbremsfunktion

##### Aktiver Abstands-Assistent DISTRONIC

- Anpassung der Geschwindigkeit für max. Reichweite **NEU**
- Automatische Geschwindigkeitslimit-Übernahme

##### Aktiver Spurwechsel-Assistent

##### Aktiver Lenk-Assistent

- Mit Rettungsgassenfunktion

##### Ausweich-Lenk-Assistent

#### PRE-SAFE® Impuls-Seite

#### Park-Paket mit Remote-Parkfunktionen

##### Vorrüstung für INTELLIGENT PARK PILOT<sup>2</sup>

#### Memory Park-Assistent **NEU**

#### Fahrerassistenz-Paket mit DRIVE PILOT

##### DRIVE PILOT **NEU**

- Automatisiertes Fahren bis zu 60 km/h auf freigegebenen Autobahnabschnitten
- Mit hochgenauer Positionierung
- Mit selbstlernender qualitätsgeprüfter HD-Karte



MERCEDES-EQ

Up to 350 sensors, e.g.

- environment light
- distances
- speed
- acceleration
- rain
- temperature
- seat use
- eye blink

OTA update (including new functions)

adaptable AI  
10 massage programs

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# What happend?



2007:  
E 320 BlueTEC Limousine

Mechanical Engineering driven  
SW mapped to ECUs  
– new in each model

2022: EQS

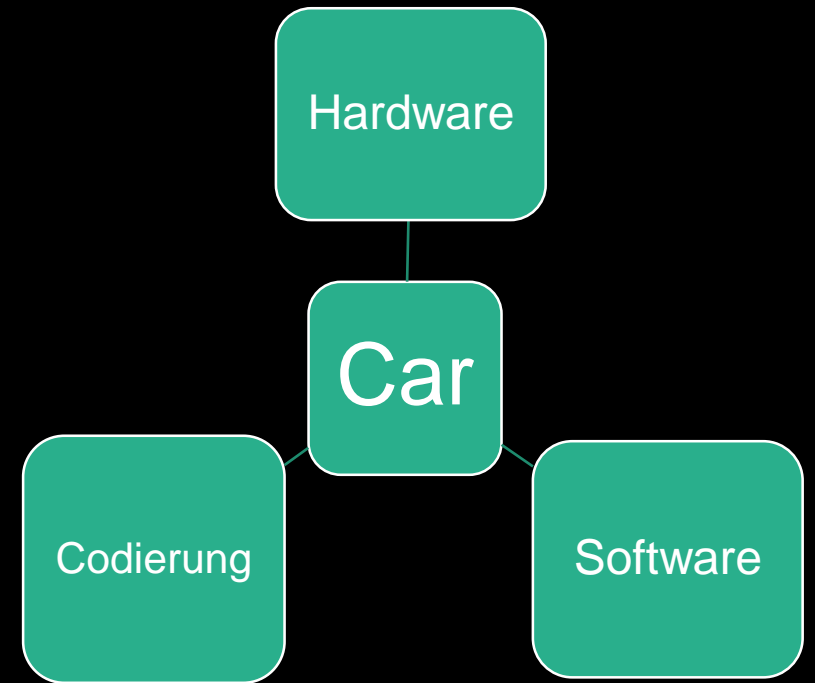
09/2013: Mercedes.me connect  
Car - Edge - Fogg – Cloud

2019: MBUX (Integrated Infotainment)

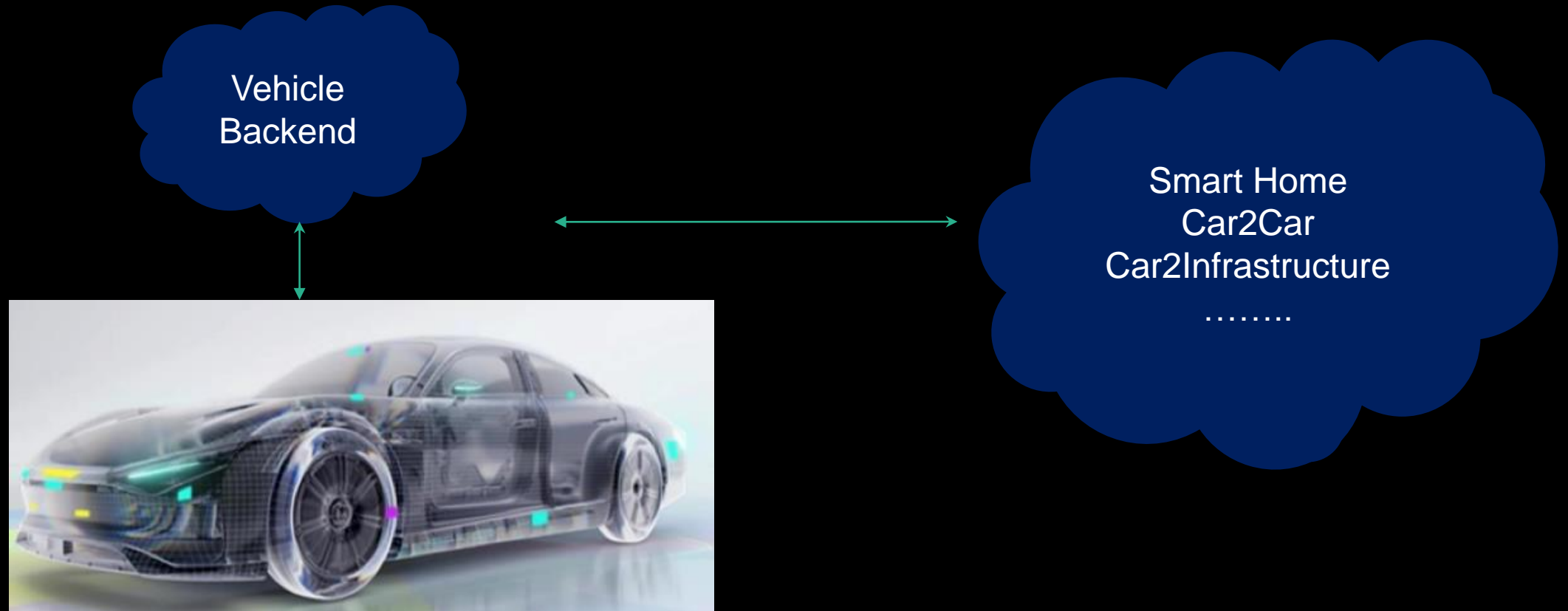
In progress: MB.OS

# A car will be and already is a complex SW system

- One or more supercomputer inside
- A lot of additional ECUs
- Several zone controller
- Many actors and sensors
  
- „Spider web“ of dependencies
- actors / sensors data is used in parallel
  
- Maybe most components will be changed over lifetime

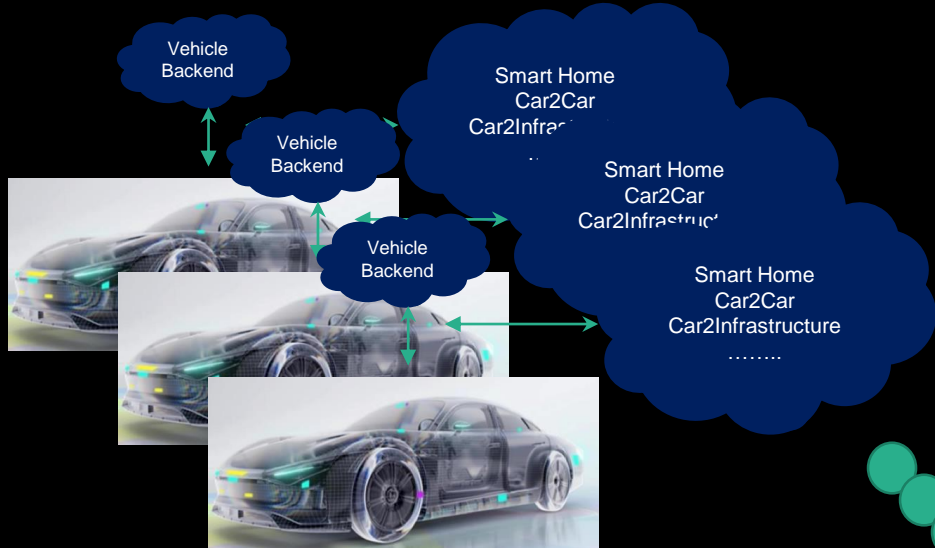


# Adding vehicle backend and ecosystem





# And now: multiply by several millions



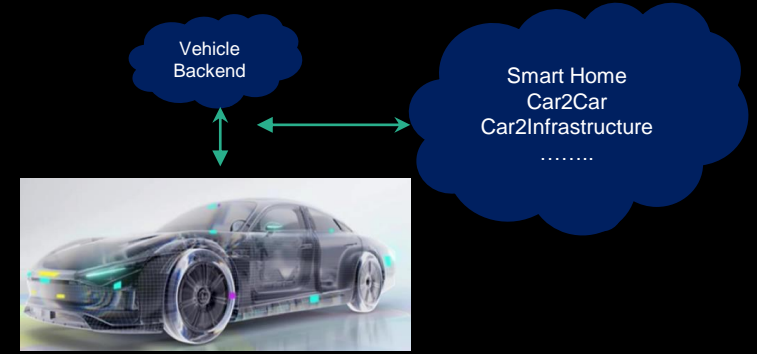
More than 20 years in customer hand

Each car is individual – even more over time

Every time up-to-date

Cars produced per year:  
2020: 2423724  
2021: 2341682  
2022: 2504665

International



# Promotion: car-lifetime oriented development



# Some topics addressed in sofDCar

(software defined for embedded to cloud)



- Version- and configuration management (also including „codierung“)
  - .... some people may call it digital Twin
- Function mapping/shipping
- API management
- Hardware abstraction
- Global and early integration testing
- Production friendly software architecture
- Software picking in production
- Bringing together HW and SW diagnostics
- Anonymity
- ...



# Further important points

- Each supplier wants his part in car SW
- Open Source in Cars

→ Integration and maintenance over lifetime???????

And:

- China politics
- USA politics

# Summary:

Many open topics for research