BOSCH

The Software-Defined-Vehicle Was Yesterday!
What's the Next Big Hype –
and how should we deal with it?

Alexander Springer
Robert Bosch GmbH

Let's move #LikeABosch

The Bosch Group is a leading global supplier of technology and services. Its operations are divided into **four business sectors**. Universal trends such as automation, electrification, digitalization, and connectivity, as well as an orientation to sustainability, are increasingly determining the group's business operations.

Mobility

Industrial Technology

Consumer Goods

Energy and Building Technology

THE GLOBAL BOSCH TEAM

417 900 associates

SALES AND EARNINGS 2024

in billions of euros

90.3 sales

3.1 EBIT from operations

The Bosch Group comprises Robert Bosch GmbH and its roughly 490 subsidiary and regional companies in over 60 countries.

490

subsidiaries
and regional companies

More than 150 nationalities work at Bosch, contributing each day to the company's success.

150
nationalities

1st
place

in patent registrations in Germany.
And a forerunner in AI patents in Europe.

RESEARCH AND DEVELOPMENT

7.8

billion euros invested in research and development in 2024.

1 in 5

Bosch associates worldwide works in research and development.

Artificial intelligence

100%

All Bosch products and solutions either contain artificial intelligence or are developed or manufactured with its help.

Semiconductors

40+
Bosch chips

will be integrated in every newly built vehicle by 2035 according to current projections.

Bosch is working on tomorrow's key technologies.

Electromobility

8
billion euros in sales revenue

is the target Bosch has set itself for its electromobility solutions by 2030.

Hydrogen

In 2025
H_2

Bosch is entering the hydrogen production technology business. Bosch anticipates sales revenue in the billions in the strategic growth area of hydrogen by 2030.

CO_2
neutral

With its more than 450 locations worldwide, the Bosch Group has been carbon neutral overall (scopes 1 and 2) since 2020.[1] In 2024, residual emissions of roughly 531,300 metric tons of CO_2 were offset through carbon credits to achieve this.

ROBERT BOSCH STIFTUNG

Roughly
219

million euros in funding in 2024

Robert Bosch Stiftung works in the areas of health, education, and global issues. Through its funding, the limited liability company with a charitable purpose works for a fair and sustainable future. It is not-for-profit, independent, and non-partisan. Its origins go back to the legacy of Robert Bosch. The entrepreneur and philanthropist formulated a dual mission of securing the company's future and continuing his social commitment. Robert Bosch Stiftung finances its work from the dividend it receives as a shareholder in Robert Bosch GmbH.

From pure mechanical effect chains to real cyber physical systems
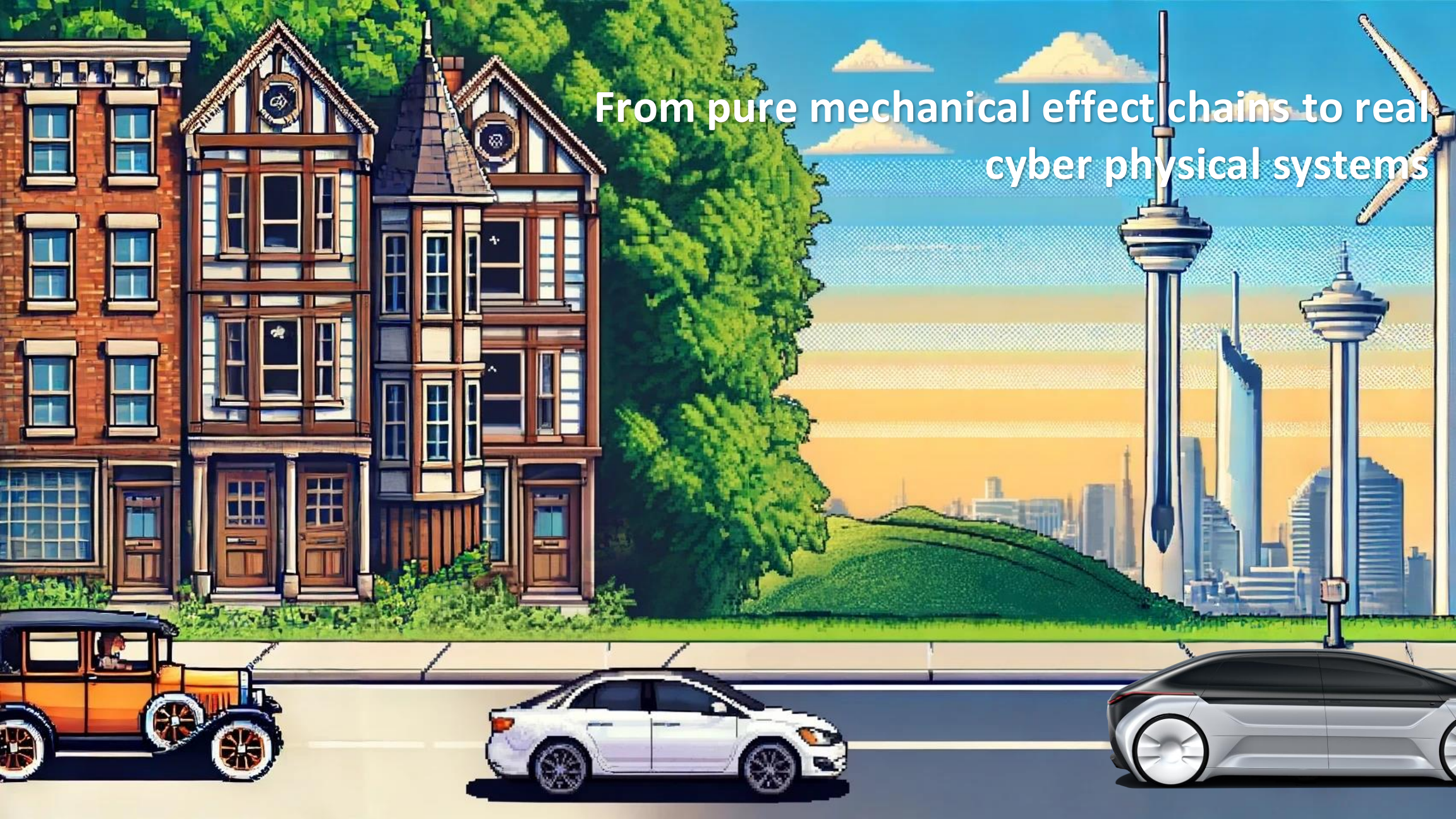
SdV was yesterday - what's next?
Key Features & USPs 1980-2025...

Shift to Efficiency & Safety Tech

2001-2010
Early infotainment ecosystems (Bluetooth, USB)
Basic driver assistance (lane departure warning)
Hybrid management software (Toyota Prius lead)
Software role: growing in significance

Shift to Electronics

1980-2000
Focus on engine innovation (TDI, FSI)
Safety & crash structure advances (ESP, ABS)
Early infotainment (basic navigation)
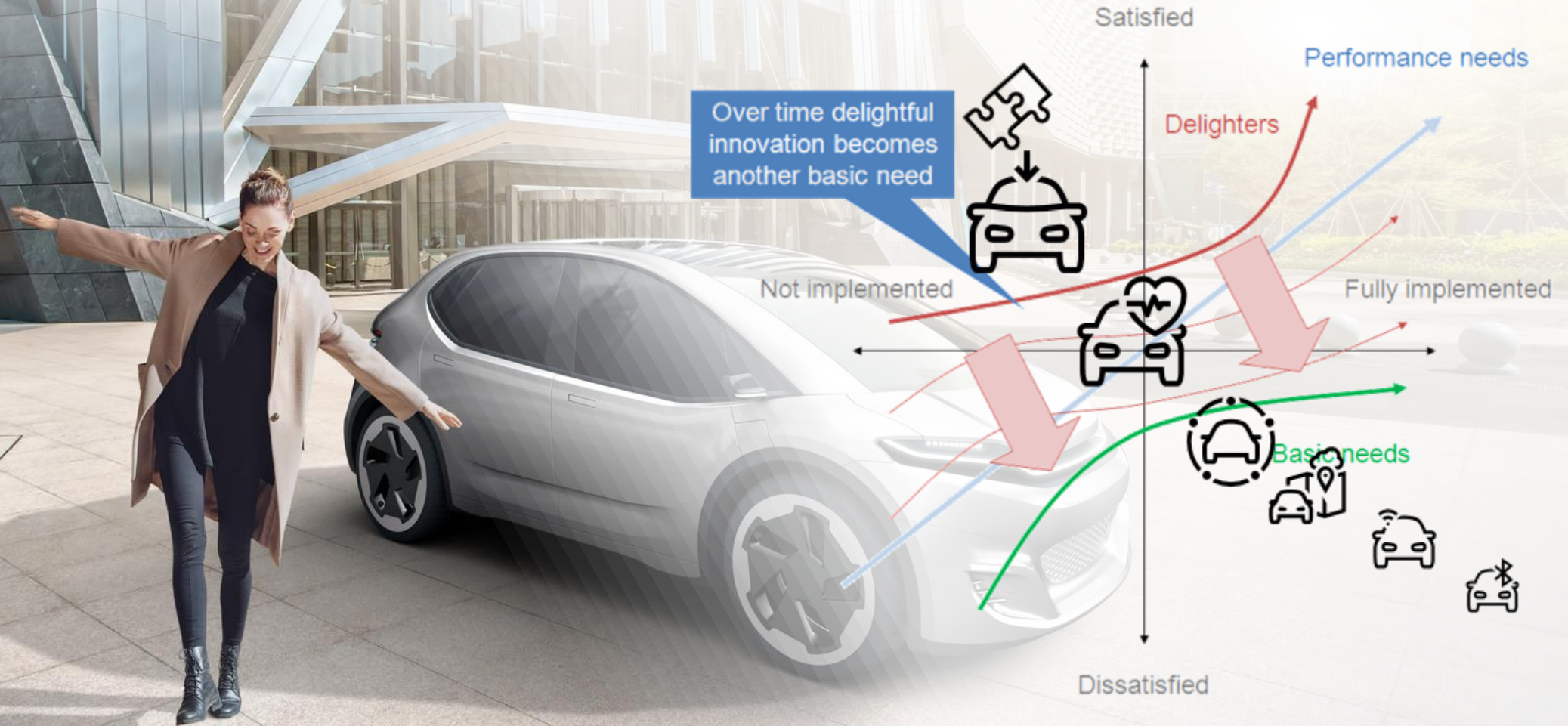**Software role: Minimal – isolated control units**

Software as a Key Selling Point

2011-2015
Connected services (BMW ConnectedDrive, Audi MMI Online)
Fusion of ADAS sensors (camera + radar = automatic braking)
Infotainment touchscreens & app integration
Software role: crucial for user experience

Birth of Software-Defined Vehicles

2016-2020
OTA updates & App-based vehicle controls (Tesla)
Digital cockpits & personalization (Audi Virtual Cockpit)
Advanced ADAS (Autopilot, Pilot Assist)
Software role: defining factor for innovation

Software-First & Feature-on-Demand

2021-2025
Full vehicle OTA (VW, Tesla, Mercedes)
Subscription-based features (BMW)
Personalized UI with AI integration
Vehicle-to-Grid (V2G) & EV grid integration
Software role: core product feature including gen-AI

BOSCH

SdV was yesterday - what's next?
The race for end-customer satisfaction

Over time delightful innovation becomes another basic need

Satisfied

Performance needs

Delighters

Not implemented

Fully implemented

Basic needs

Dissatisfied

BOSCH

SdV was yesterday - what's next?
The OEM's answer: Internalization of SW Development

01. February 2023

Recruiting-Offensive
Volkswagen schafft 2.800 neue Tech-Jobs
Der Volkswagen-Konzern hat für die Marken VW, Audi und Cariad eine Recruiting-Offensive gestartet, um weltweit rund 2.800 Tech- und IT-Stellen zu besetzen. Allein [...] diesem Jahr 1.700 Experten.

BERUFSCHANCE
Mercedes will 3.000 Softwareentwickler einstellen
Mercedes-B[...]

08. April 2022

[...]öffnet mit dem Electric Software Hub eine Softwarefabrik in [...] will viele Entwickler einstellen.

26. January 2022

GM intends to hire 8,000 for new tech jobs in 2022
General Motors Co. says it will hire more than 8,000 new technology employees this year as it works to develop its platform technology in a push to become known as a tech company that also makes vehicles.

- **Mercedes hat in diesem Jahr die Losung ausgegeben, weltweit 3000 Software-Ingenieure einzustellen. Allein in Deutschland hat der Konzern für den Standort Sindelfingen 1000 Stellen geschaffen.**
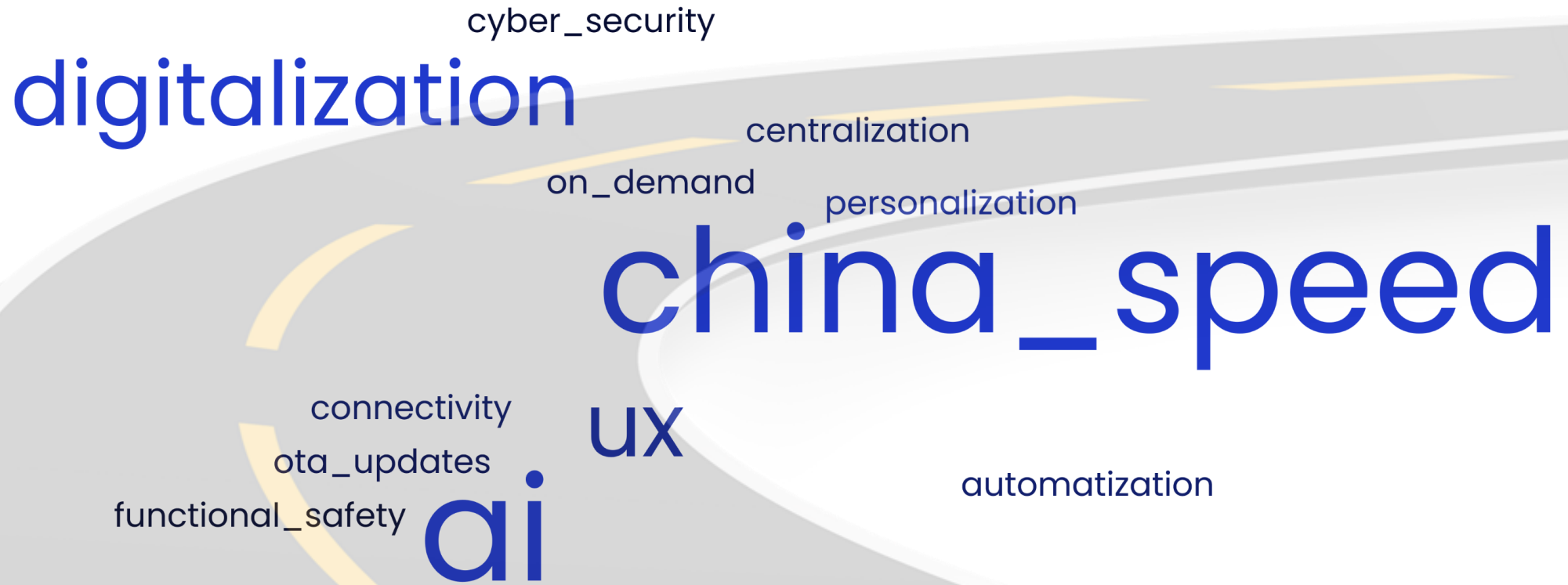
28. November 2021

30. December 2021

BMW May Add Up To 6,000 Jobs In 2022

BOSCH

SdV was yesterday - what's next?
Major challenges ahead

BOSCH

SdV was yesterday - what's next?
Where will the road lead us?

The vehicles are becoming **smarter, safer, more secure, connected** and more **sustainable**.

Vehicles are becoming **rolling computers** that are continuously evolving, adapting to the user and actively contributing to traffic optimization and environmental protection.

Data is becoming the new fuel of innovation, be it in services, physical products or in all areas of AI

It must be thought of both **interdisciplinary** and **inter-eco-system**

Partnerships are becoming increasingly important

BOSCH

There is a massive **disruption**, and it needs a massive **transformation**:

in **Technology, Methods, Tools** and **Collaboration**

but **People** have to be taken along -
we need to break up **behavioral patterns**

BOSCH

WELCOME TO
MONSTERLAND

Working with behavioral patterns
for greater business impact

SdV was yesterday - what's next?
Applying the monsters to talk about behavioral pattern

The Not-Invented-Here Monster

The Silo Monster

The Agility Monster

The Spaghetti-Code Monster

The Process Monster

GenAI created

The Perfection Monster

The monsters represent our ingrained behavioral patterns. They help us sometimes – but also hold us back.
By getting to know these monsters, we can better control their impact on our collaboration, efficiency and speed.

Each monster has…
• positive and limiting characteristics
• impact on business success
• hints on how to identify the behavior
• questions to start conversation & formulate actions
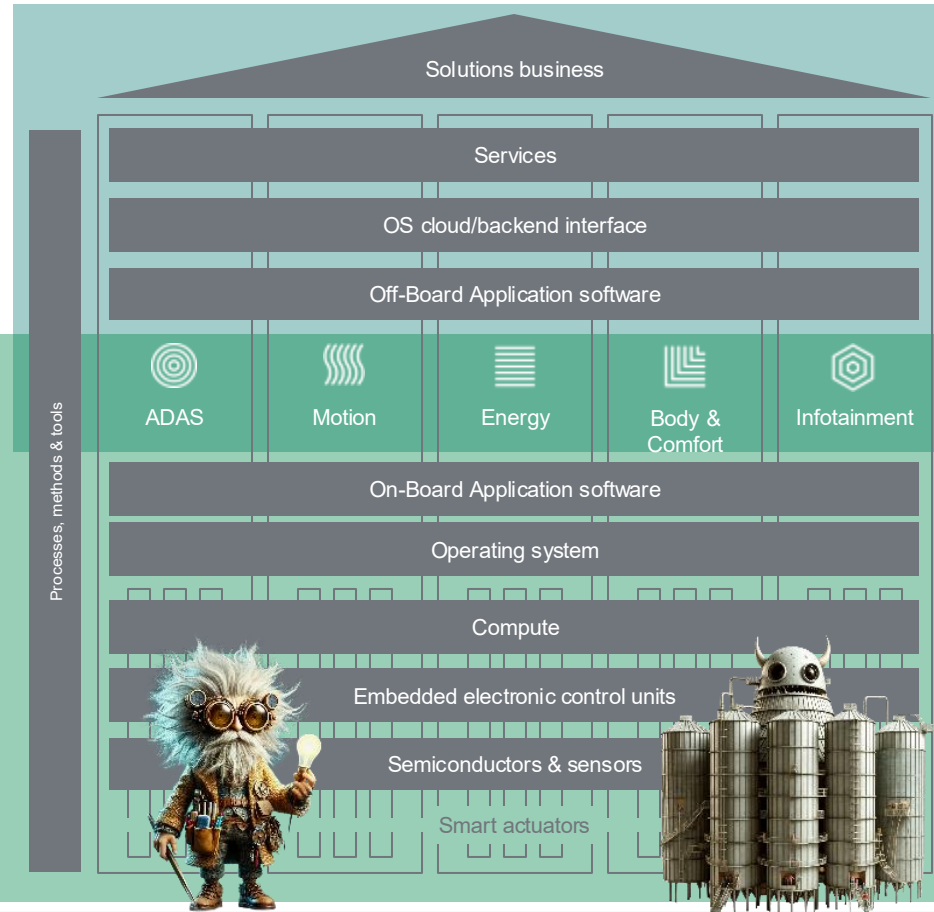
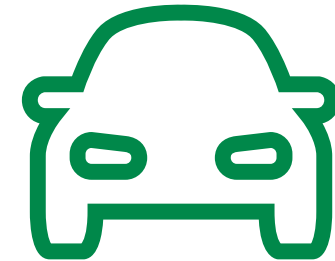**BOSCH**

SdV was yesterday - what's next?
Our way

Balancing standardization and customization with an **internal development platform**.

Optimization of software architecture and development for fast and seamless feature development as well as integration.

Processes, methods & tools

Solutions business

Services

OS cloud/backend interface

Off-Board Application software

| ADAS | Motion | Energy | Body & Comfort | Infotainment |

On-Board Application software

Operating system

Compute

Embedded electronic control units

Semiconductors & sensors

Smart actuators

Balancing standardization and customization for **deployment and commercialization** of the BBM software and service portfolio **in the market.**

Develop

Deploy & Commercialize at Scale

BOSCH

SdV was yesterday - what's next?
Efficient enablement of Bosch as a player in the Software World

BBM Common Frameworks

Product Architecture

Common architecture decisions, guidelines and reference architectures
to enable **portable software functions**

Processes, Methods & Tools

Processes, methods and tools synchronizing the PMT landscape
to seamlessly **work together**

Internal Development Platform

CFW Warehouse

The warehouse is the catalogue of all assets offered to all BBM entities for generation of products
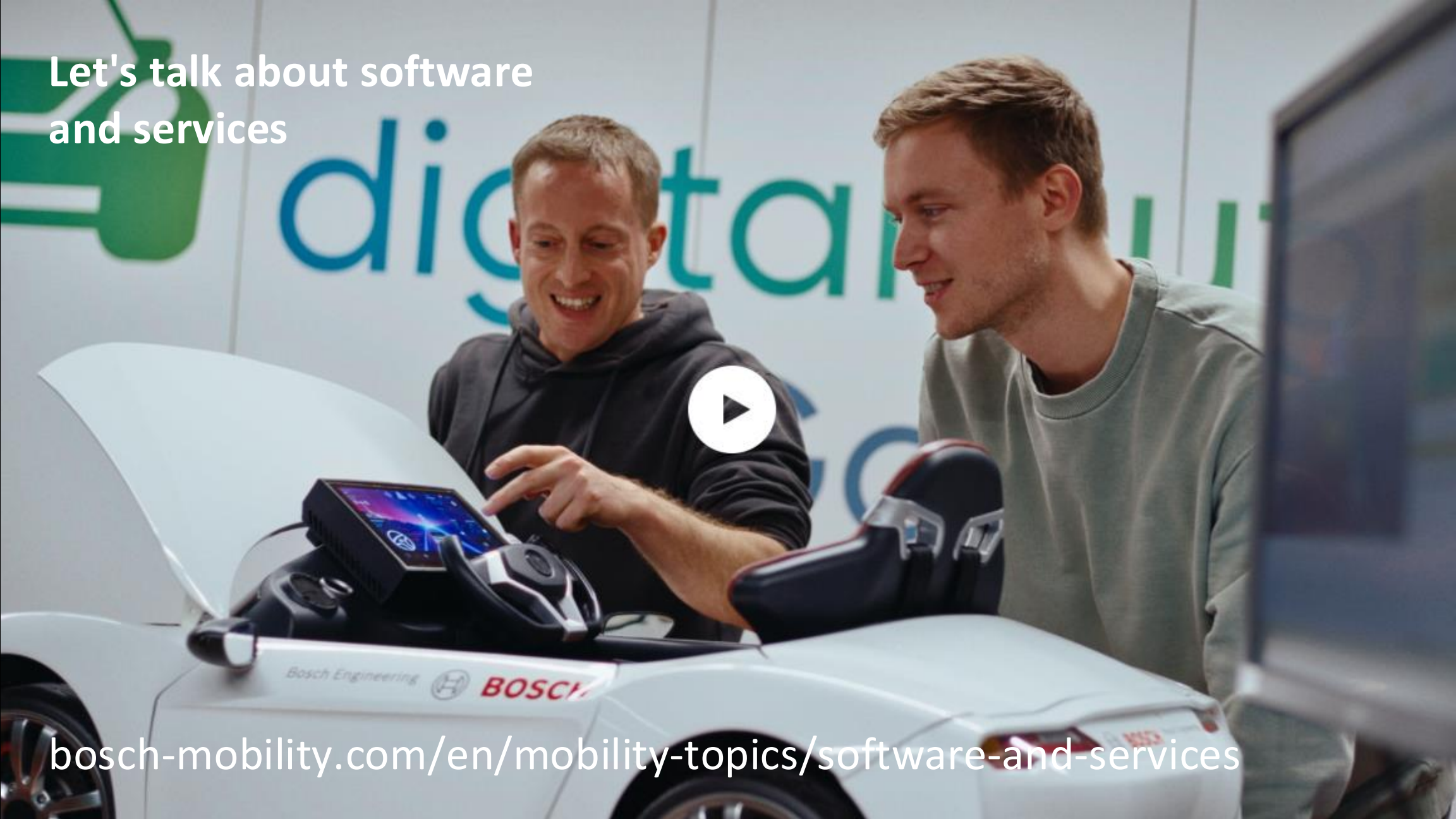
CFW Frame

Realizes the developer self-services and provisioning of assets for the development

CFW Operating & Steering Model

Way of collaboration for fast joint value creation.

BOSCH

Let's talk about software and services

bosch-mobility.com/en/mobility-topics/software-and-services

Which monsters have you tackled today?

BOSCH

SdV was yesterday - what's next?

Let's create the future

TOGETHER

Alexander Springer

Vice President BBM Technology and Engineering - Program Lead of Common Frameworks (M/PJ-CFW) Mobile + 49

160 702 88 98

alexander.springer@de.bosch.com

BOSCH