Compute technologies

Scalable compute platforms

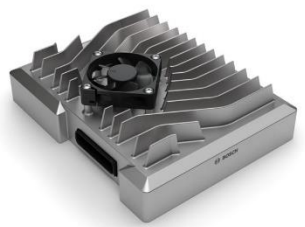
XC Compute Performance
Our solutions

COCKPIT INTEGRATION PLATFORM

Powerful control unit that integrates computing functions of the infotainment and instrumentation domains.

ADAS INTEGRATION PLATFORM

High-performance central ADAS vehicle computer for driving and parking functions from NCAP up to L4.



COCKPIT & ADAS INTEGRATION PLATFORM

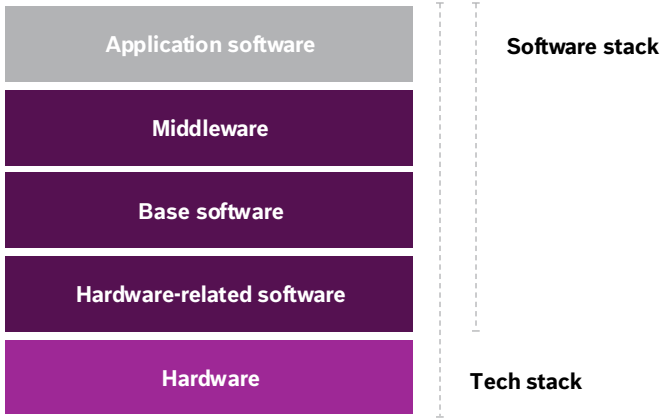
Single high-performance computer that combines ADAS and cockpit functions in one ECU or even on one SoC.

Cockpit integration platform

Host of infotainment and instrumentation software

Compute

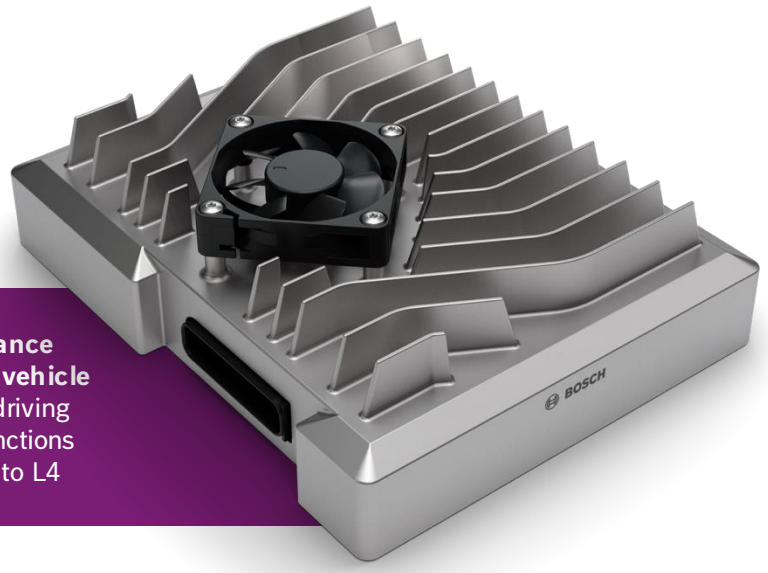
Powerful control unit that integrates computing functions of the **infotainment and instrumentation domains.**



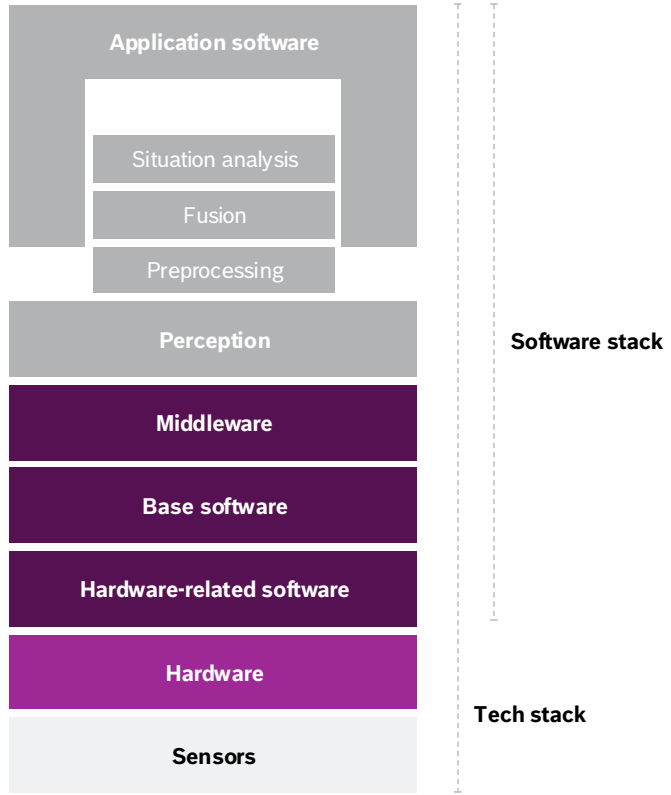
ADAS integration platform

Host of driver assistance software

Compute



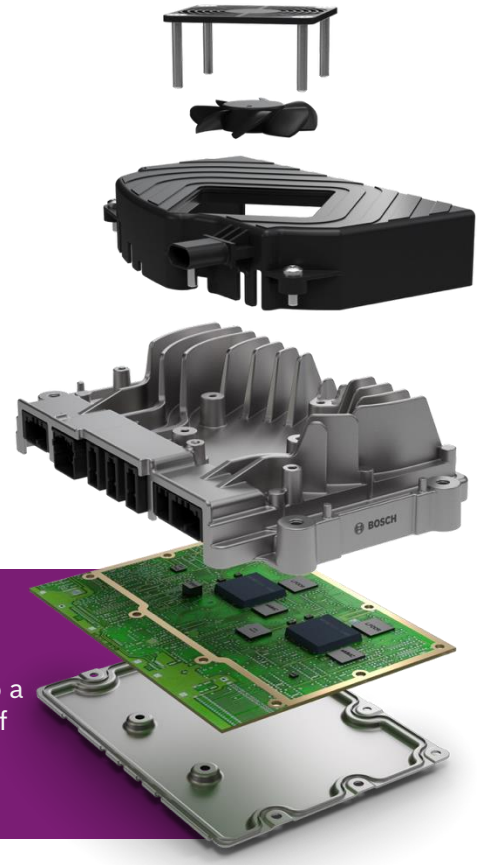
High-performance central ADAS vehicle computer for driving and parking functions from NCAP up to L4



ADAS integration platform

Compute hardware, software, and services

Compute



Enabling you to **flexibly implement** your differentiating software into a **safe platform** consisting of hardware, software, and services.

ADAS integration platform

Services

- Safety as a service
- Integration services
- ...

Software

- Middleware
- Base software
- Hardware-related software

Hardware

- Hardware design
- Manufacturing

Application software

- Situation analysis
- Fusion
- Preprocessing

Perception

Middleware

Base software

Hardware-related software

Hardware

Sensors

Software stack

Tech stack

ADAS integration platform
Flexible business models

Compute

Hardware+

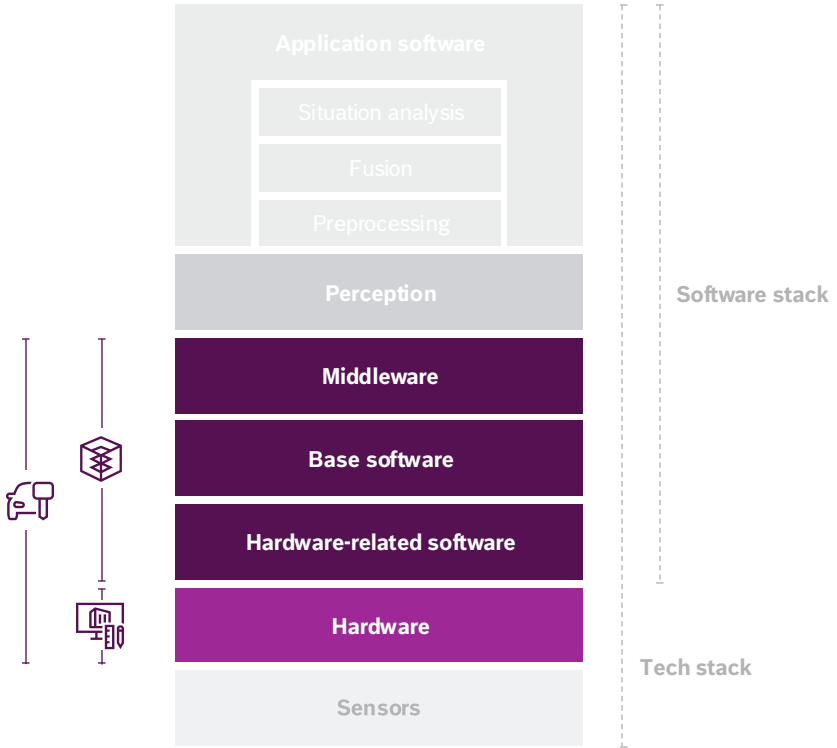
Turnkey hardware device with base software and hardware-related software

Integration services

Multilayer integration on Bosch or third-party hardware

Design services/ manufacturing

Hardware design with third-party manufacturing or manufacturing of customer or third-party design.



ADAS integration platform

A safe and open integration platform

Compute

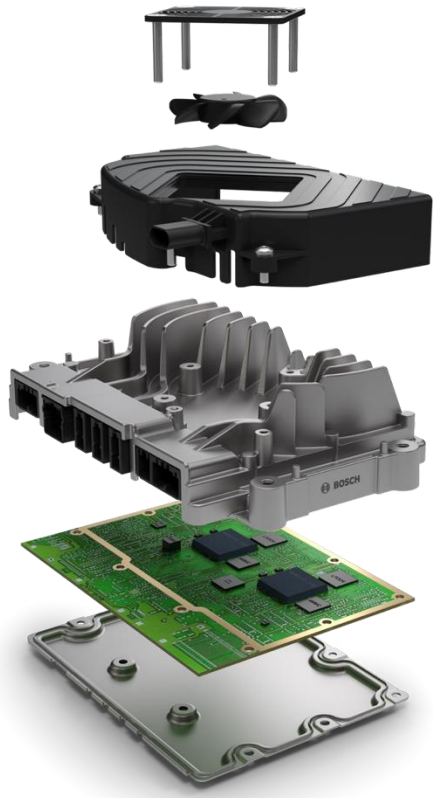
Hardware-only or turnkey solution
Enabled by broad ADAS system expertise incl. application software, middleware, and sensors

Multi SoC capability
Integration of multiple systems on chip (SoCs) protects the customer from SoC lock-in

Qualcomm NVIDIA RENESAS Horizon Robotics

Holistic vertical safety concept
Safety concept across the whole tech stack thanks to strong safety know-how

Scalable modular concept
Reusable building blocks allow flexible integration and scalability from cost-sensitive to high-performance segments



Open integration platform
Allows integration of customer-specific third-party software

Integration services
Integration on system, software, electronic control unit (ECU), and sensor level

Competitive perception
Powerful deep-learning algorithms for various ADAS sensors

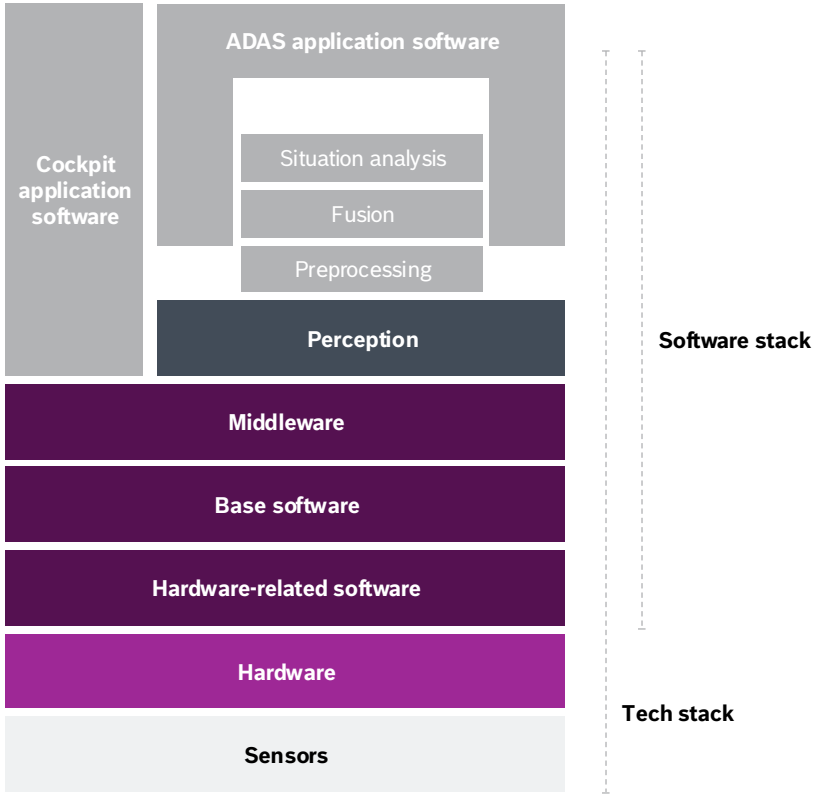
Various business models
For hardware and non-hardware, e.g., hardware design, manufacturing, integration, or safety services, or hardware-related software (HSW)/basic software (BSW) only

Cockpit & ADAS integration platform

Host of driver assistance software

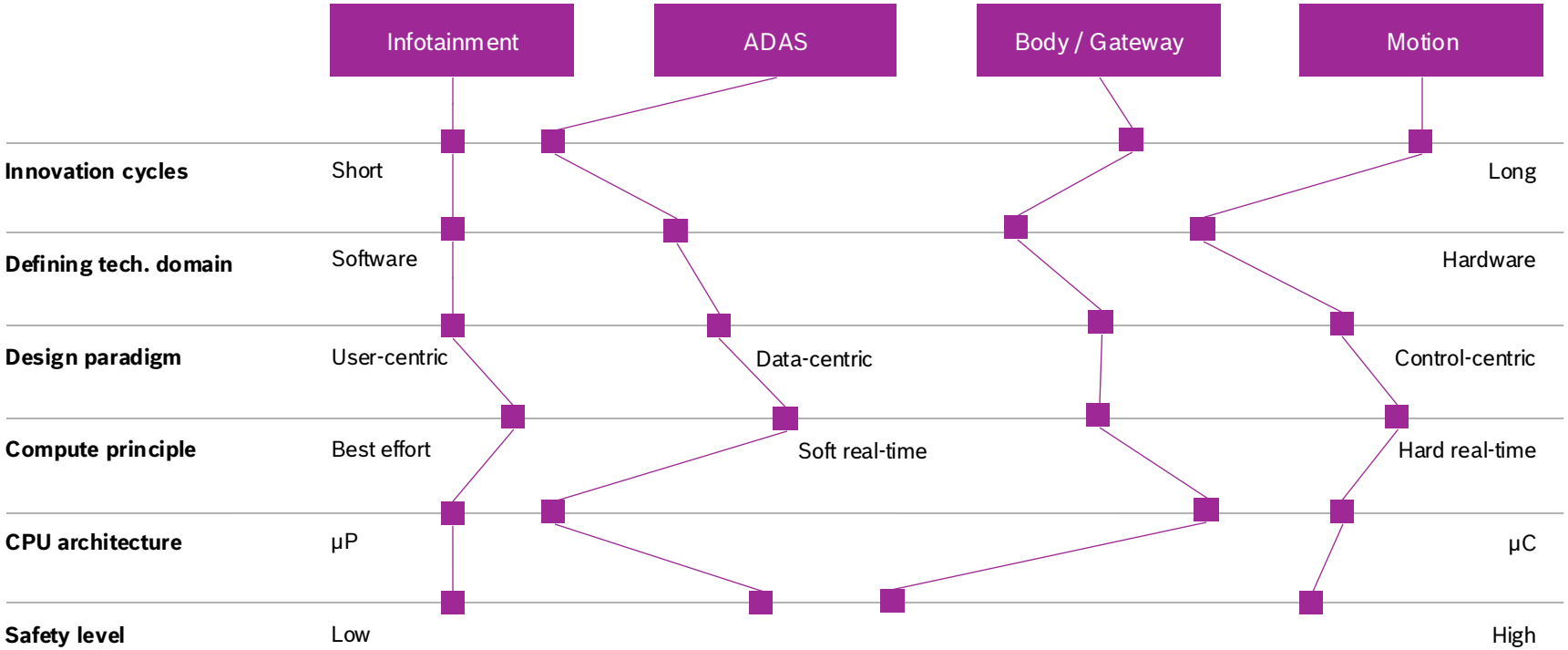
Compute

Single high-performance computer that combines **ADAS and cockpit** functions in one ECU or even one SoC.



Cockpit & ADAS integration platform

Domain fusion comparison



At the technology level, a fusion of infotainment and ADAS functions offers several advantages compared to an alternative fusion based on non-functional factors (schematically)

Cockpit & ADAS integration platform

Different architectural solutions for domain fusion

Compute

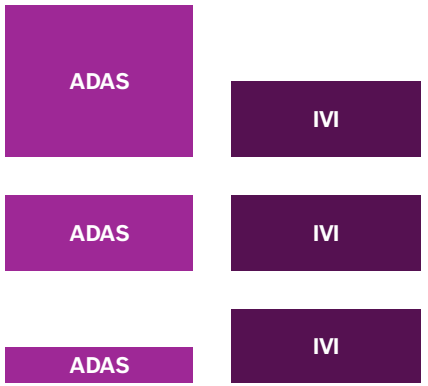
Trim level
(exemplary sensor set)

High (L2++/L3)
12× Video/Camera head, 5-7× Radar,
12× Ultrasonic sensor, 1× Lidar,
1x Occupant monitoring camera

Mid (L2+)
5× Video/Camera head, 5× Radar,
12× Ultrasonic sensor,
1x Occupant monitoring camera

Entry (L0-L2)
2× Video/Camera head, 4× Radar,
12× Ultrasonic sensor,
1x Driver monitoring camera

Standalone ECUs

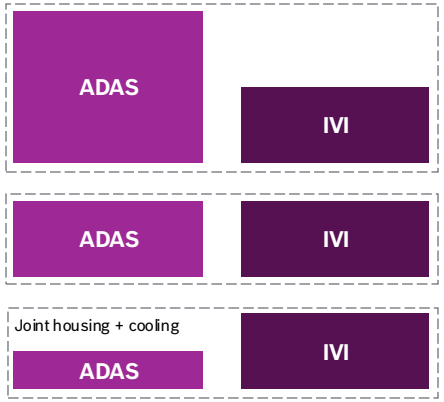


- Independent scalability between ADAS/IVI
- Low freedom from interference (FFI) complexity

- Highest TCO and R&D costs
- Limited synergies on compute performance

In development / series

One ECU fusion

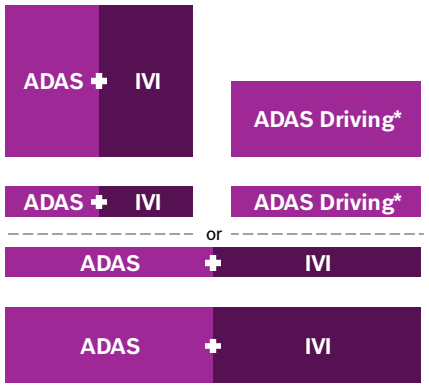


- Medium FFI complexity
- Medium cost reduction potential
- Re-use of existing ADAS/IVI stack

- No passive cooling in entry segment
- Cost potential not fully utilized

In development

One SoC fusion/mixed criticality



- Highest cost reduction potential
- Flexible compute resource allocation

- High FFI complexity
- Limited scalability on a single SoC

In-vehicle demonstrator available

*Separation of ASIL-B and ASIL-D functions or driving and parking functions

Cockpit & ADAS integration platform

Product overview

Compute

Cockpit & ADAS
integration platform
Multi domain fusion in a single ECU

- Domain fusion of ADAS and cockpit functions in a single ECU or even on one SoC
- TCO reduction of up to 30% possible whilst increasing efficiency in compute resource utilization
- Scalability up to L3 through multi SoC fusion approach with different proven mechanical concepts

Fusion compute platform benefits

Hardware-only or turnkey solution

Enabled by broad ADAS & cockpit system expertise incl. application software, middleware, and sensors

Scalable modular concept from entry to high trim

Reusable building blocks allow flexible integration and scalability from cost-sensitive to high-performance segments including extension towards Gateway and Motion

Cost saving potential on ECU and system-level

TCO reduction through less components, reduced R&D efforts, eased supplier handling and less logistics costs

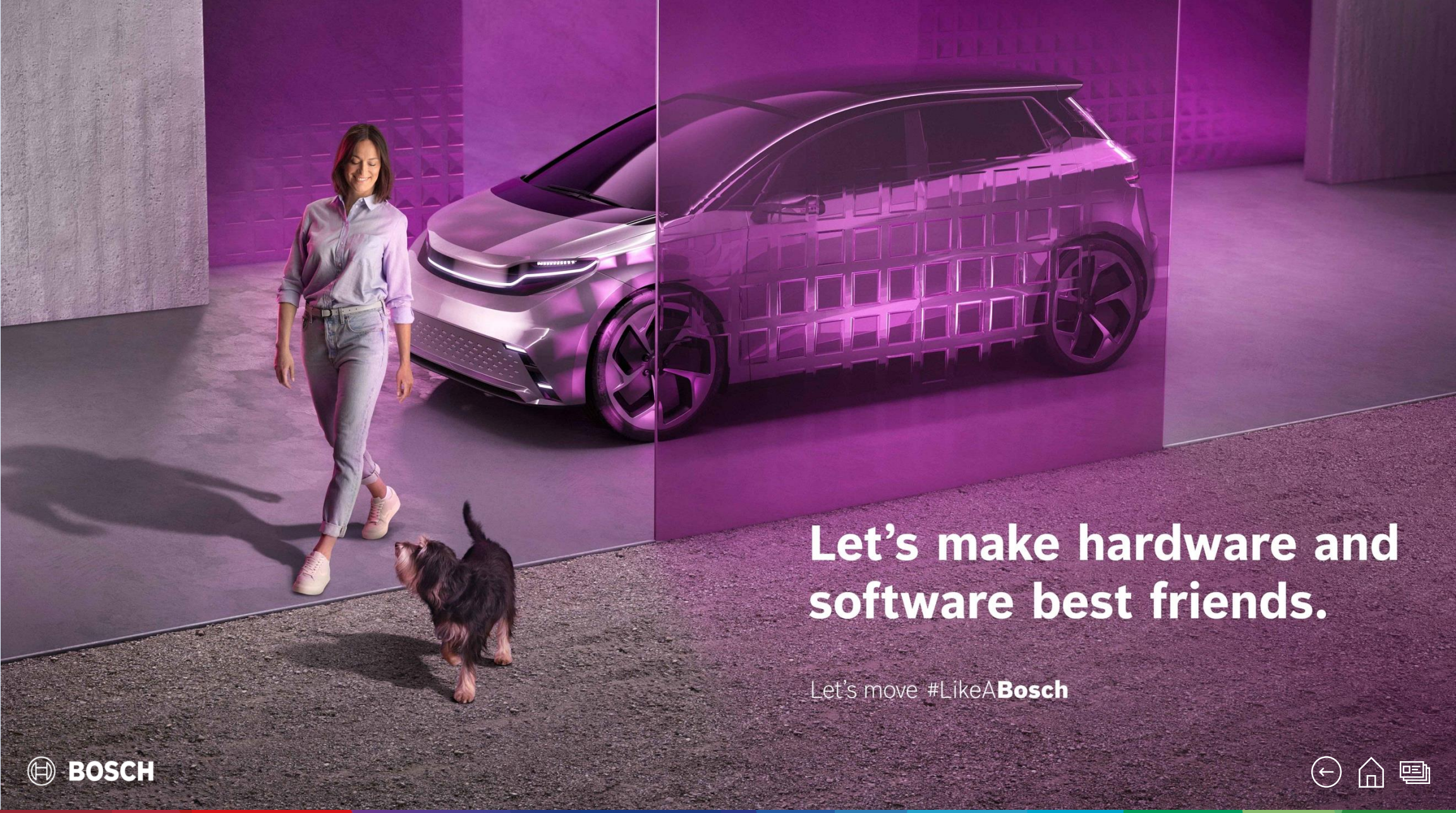
Flexibility for compute resource utilization

Dynamic loading for functions based on architecture, flexibility in usage of headroom for future feature additions

Multi SoC capability

Selection out of systems-on-chip (SoC) solutions from different vendors possible, e.g. Qualcomm or Renesas

Qualcomm RENESAS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Let’s move #LikeABosch
BOSCH