

**Where can I find software solutions for ECUs that are efficient, safe, secure, and high-performant?**



Elektrobit



Elektrobit, the visionary supplier of embedded software products and services is your answer.



# Trusted partner in building next-generation automotive architectures

The automotive industry is undergoing disruptive change. The classic vehicle is being transformed into a software-defined Internet of Things (IoT) device. Personalization, connectivity, and mobility-as-a-service are becoming more and more important for drivers and passengers. The amount of software in vehicles is increasing and will continue to increase. The future of driving depends on re-designing the core architecture of the car as well as re-thinking the software that powers it. Developments such as connectivity, smart devices, e-mobility, and automated driving place high demands on the in-vehicle network architecture. Automated driving functions, in particular, call for incredibly powerful electronic control units (ECUs). The more driving tasks the software assumes and the more connections there are to the outside world, the greater the demand on these ECUs is. Functional safety and security create additional requirements for

future software architectures. It is essential that safety systems work reliably to ensure human safety, even in the case of a malfunction or an accident.

To accommodate these increasing demands and changing needs, the vehicle architecture is evolving, moving from complex distributed systems to consolidated, high-performance central and zonal architectures. Future platforms will communicate via service-orientated paradigms that allow flexible updating and localization. **Powering over one billion devices in more than 100 million vehicles and representing more than 30 years history as an embedded software pioneer and innovator for leading car manufacturers and suppliers, EB is the industry expert for embedded and connected software and your trusted partner in building next-generation automotive architectures.**

POWERING OVER **1** BILLION DEVICES

IN MORE THAN **100** MILLION VEHICLES

OVER **30** YEARS OF EXPERIENCE





### **Classic AUTOSAR software**

Everything you need to bring  
Classic AUTOSAR on the road



### **Embedded security software**

Cryptography framework  
to secure ECUs,  
in-vehicle networks, and  
communication channels, e.g.  
theft protection, anomaly,  
and intrusion detection

## **EB products & solutions**

EB offers complete product lines, EB  
tresos, EB corbos, and EB zentur for  
building safe, secure, and flexible ECU  
software, based on AUTOSAR and  
supporting the highest standards for  
functional safety.



### **Adaptive AUTOSAR software**

Your answer to  
high-performance ECUs



### **Functional safety software**

Software solutions for all  
Automotive Safety Integrity  
Levels (up to ASIL D)





# Reliable, scalable, and efficient Classic AUTOSAR solutions

EB is a proud founding member of the AUTomotive Open System ARchitecture (AUTOSAR) development partnership, creating an open and standardized automotive software architecture alongside leading car makers, Tier 1 suppliers, and tool developers. Our AUTOSAR partners include major OEMs such as **BMW, Daimler, Fiat Chrysler Automobiles, General Motors, Groupe PSA, Jaguar Land Rover, Renault-Nissan-Mitsubishi Alliance, Volkswagen Group, Volvo,** and **Weltmeister (WM) Motor**, among others, as well as major semiconductor companies including **Cypress, Infineon, Microchip, NXP, Renesas, STMicroelectronics,** and **Texas Instruments**.

AUTOSAR provides a standardized layer between the application software and hardware in an ECU. It enables the software to be largely independent from any chosen microcontroller and car maker, enabling its reuse for a variety of different ECU systems. With more than a decade

of experience developing and implementing AUTOSAR basic software and tools for vehicle infrastructures, EB is an AUTOSAR specialist. Our expertise spans both the Classic implementation as well as the new Adaptive AUTOSAR standard for high-performance ECUs.

As the evolution of the vehicle requires ongoing improvement in vehicle architectures, EB continues to work with our industry partners to further develop the standards. To this end, AUTOSAR 4.x was developed, supporting a variety of automotive communications networks such as CAN, CAN FD, LIN, FlexRay, and Ethernet.

EB offers complete product lines, EB tresos, EB corbos, and EB zentur for building safe, secure, and flexible ECU software, based on Classic and Adaptive AUTOSAR, supporting the ISO 26262 standard for functional safety.





# Classic AUTOSAR product line

## EB tresos Bootloader

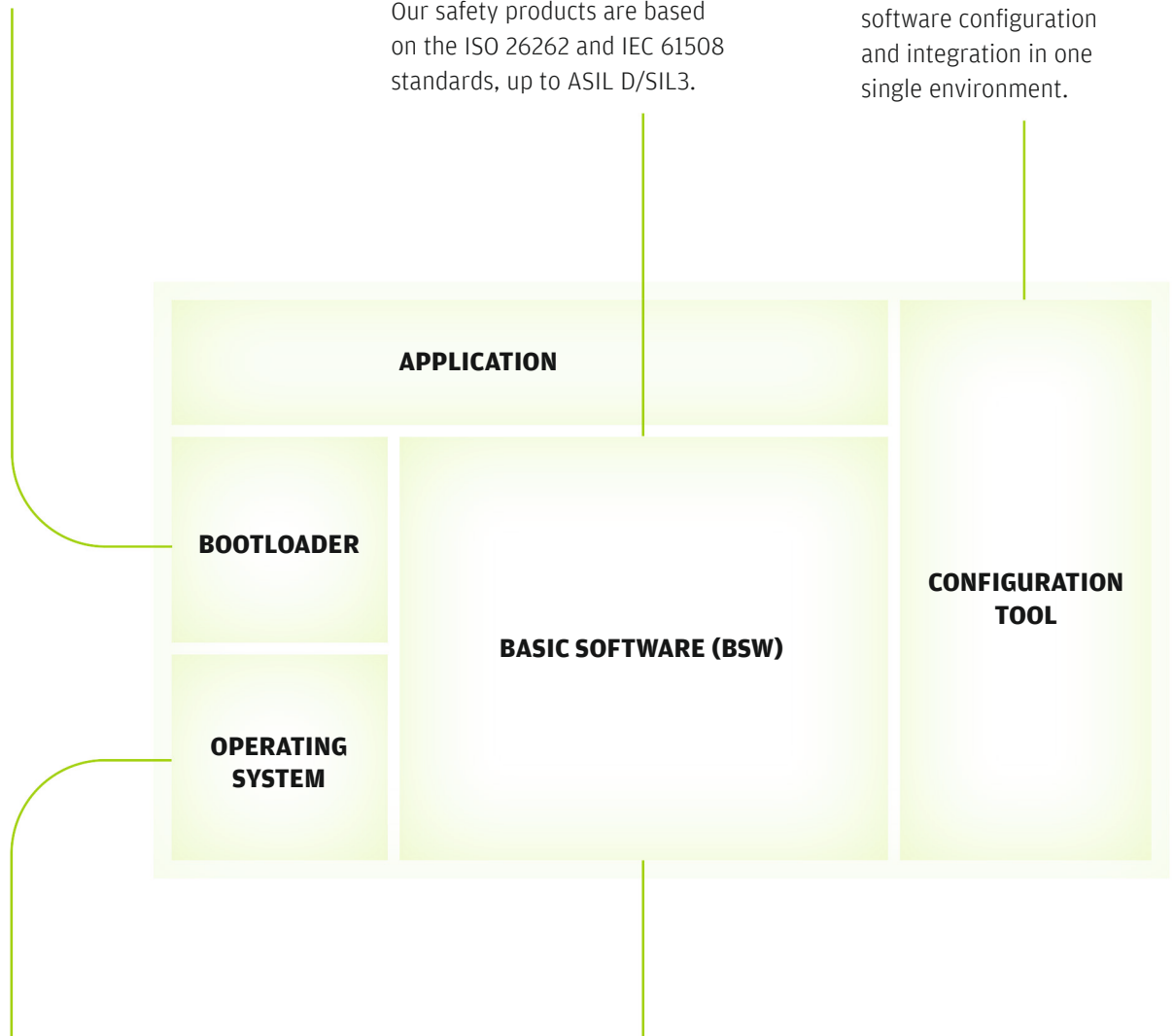
Grants an update of the application software according to OEM-specific requirements.

## EB tresos Safety

Our solutions reduce the complexity of safety architectures to simplify your safety analysis. Our safety products are based on the ISO 26262 and IEC 61508 standards, up to ASIL D/SIL3.

## EB tresos Studio

The best-in-class AUTOSAR tooling provides complete ECU basic software configuration and integration in one single environment.



## EB tresos AutoCore OS

A single-core and multi-core real-time operating system that implements the latest AUTOSAR standard and all its scalability classes.

## EB tresos AutoCore

The industry leading implementation of AUTOSAR-compliant basic software for automotive ECUs.

## EB tresos WinCore

Windows-based AutoCore platform.

## EB tresos Safety OS

A robust and protected single-core and multi-core safety operating system compatible with the latest AUTOSAR standard.

## EB tresos OsekCore

OSEK-/VDX-compliant ECUs.

# Adaptive AUTOSAR

## Where safety meets performance

Adaptive AUTOSAR is the new standard for architectures built on high-performance controllers (HPCs), providing support for interconnectivity and real-time updates. High-performance controllers, powered by a multi-core processor, form the heart of the next-generation automotive functional architecture. To enable highly automated and connected driving, car makers are consolidating up to 100 single ECUs into a centralized functional architecture with just five to ten embedded performance controllers at its core. To make this possible, car makers are in need of new software to leverage the capabilities of powerful multi-core processors.

EB was among the first to offer a commercially available software implementation of Adaptive AUTOSAR, and its scalable solutions are making it easier for car makers and Tier 1 suppliers to develop these advanced systems. Our performance platform provides the necessary ingredients to create fail-operational software systems mandatory for automated driving up to Level 5. It allows maximum potential utilization of today's processors by consolidating heterogeneous applications into one system on a chip. EB works closely with the supplier ecosystem such as **Intel**, **NVIDIA**, **NXP**, **Renesas**, and **QNX** to best meet our customers' needs.

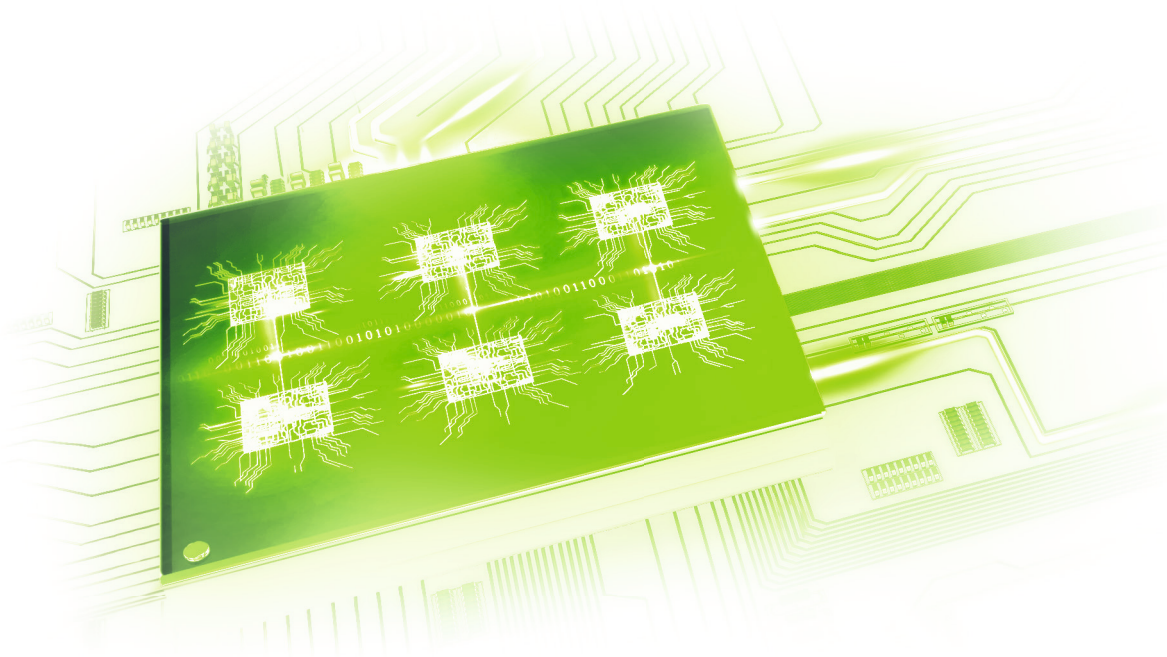
We are proud of our exciting role in the development of the revolutionary VW ID. project, an all-electric fully networked family of vehicle.

“Volkswagen is proceeding full speed ahead with the electric offensive. This also involves working together with strong partners. The Volkswagen ID. contains technology and ideas from the most innovative companies in our industry.”

Ralf Brandstätter,  
Board Member for  
Procurement Volkswagen



**Volkswagen**





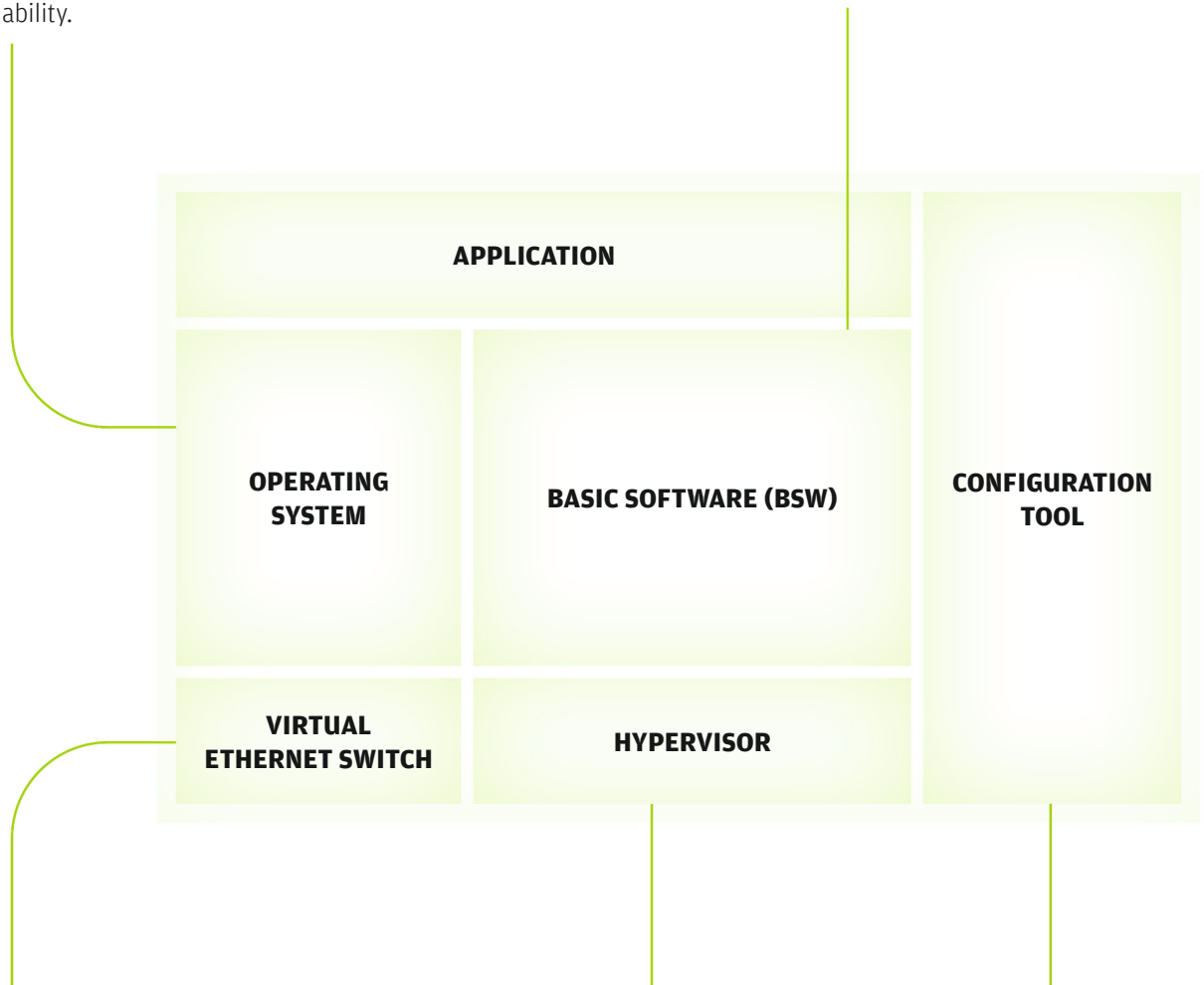
# Adaptive AUTOSAR product line

## EB corbos Linux

Our container-based Linux operating system solves the main challenges of dependency management between diverse applications, offering variability for customer extensions, and is capable of efficient maintainability.

## EB corbos AdaptiveCore

EB's software base for safe and secure high-performance controllers. It provides a holistic software framework according to the industry's new Adaptive AUTOSAR platform.



## EB corbos Virtual Ethernet Switch

The virtual Ethernet switch provides communication between virtual machines as well as between virtual machines and the Ethernet network, connecting both Classic and Adaptive AUTOSAR (Linux) subsystems.

## EB corbos Hypervisor

Provides a virtualization environment for execution of multiple guest operating systems on one single CPU.

## EB corbos Studio

Our versatile tool provides an integrated development environment for developing and integrating applications for high-performance controllers.

# Security you can rely on

Connectivity in a vehicle, while beneficial, comes with new risks. Car makers and suppliers need solutions that protect their vehicles from cyberattacks. EB offers broad experience in automotive cybersecurity and safety. We provide the software, engineering services, and consulting needed to safeguard individual cars or entire fleets from remote third-party attacks.

EB's embedded security solutions protect ECUs, in-vehicle networks, and the connections to the outside world. Our security solutions consist of efficient embedded cryptography architectures based on AUTOSAR, and customer-specific requirements. EB's security mechanisms are designed for secure communication, authenticated identification, theft protection, anomaly detection, intrusion detection, and all types of cryptographic calculations, secure updates, and secure diagnostics.

EB zentur prevents unwanted change of your system and enables functional safety. It guarantees trusted data exchange on all levels - from the ECU to the cloud. EB's security solutions are already on the road in millions of cars.

**ARGUS**  
CYBER SECURITY

In order to further strengthen and enhance its capabilities in automotive cyber security, the technology company Continental has acquired Argus Cyber Security (Argus). Argus is one of the global leaders in automotive cyber security that provides comprehensive and proven solution suites to protect connected cars and commercial vehicles against cyberattacks. Together with Argus we are a full-security stack provider.





## PREVENT

- ▶ Seamlessly integrated into AUTOSAR solution
- ▶ Hardware-specific security products
- ▶ Security consulting and solution design
- ▶ Security applications like key management and anti-theft mechanisms
- ▶ Security basics: optimized crypto library, secure communications, software update, boot, and diagnostics
- ▶ Application hardening
- ▶ Network access filters

## One-stop shop for connected car security



## RESPOND

- ▶ In-vehicle prevention engines
- ▶ Secure environment for connected services
- ▶ Updates over the air, e.g. software configuration



## UNDERSTAND

- ▶ In-vehicle detection engines
- ▶ Security operation center for cyber health management, big data analytics, and forensics

# Engineering services: experience you can trust

There is an ongoing demand in the integration of customer-specific software modules in vehicles. This is where EB's years of experience with complex software integration and AUTOSAR set us apart. Our experts are ready to support your ECU project, whether you need help integrating software or conducting OEM software acceptance tests. EB is the right partner for developing, configuring, testing, and maintaining ECU software throughout the entire product

life cycle. We customize our AUTOSAR software on an ECU according to OEM-specific requirements. Therefore, services are offered on three different levels: module, stack, and reference level covering integration and qualification packages. Additionally, we offer comprehensive software services and support around our product lines, with custom solutions available to meet specialized needs.







### **HARDWARE-SPECIFIC SERVICES**

Modular integration and test strategy to reach quality goals. This includes integration of third-party modules into the EB tresos framework, qualification package, and porting of hardware-dependent EB products.



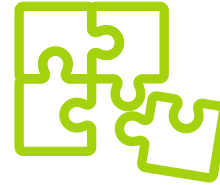
### **PROJECT-SPECIFIC SERVICES**

We make it possible for Tier 1 suppliers and OEMs to set up and run projects involving integration and pre-configuration, considering project-specific input. Additionally, we provide updates of project integration package considering newer versions.



### **SECURITY-SPECIFIC SERVICES**

We provide engineering services and consulting covering embedded solutions. Moreover, our experienced service team makes sure that our customized implementations are realizable.



### **OEM-SPECIFIC PRODUCTS**

We implement car manufacturers' software requirements beyond the AUTOSAR standard. We provide tooling add-ons to support OEMs; we cover OEM requirements, including OEM-specific boot loaders.



### **TRAINING AND CONSULTING**

We offer basic AUTOSAR training, providing insights into the function and interaction of AUTOSAR software modules. Aside from that, we consult car makers and suppliers to bring the latest automotive technologies into the car.



### **CUSTOMER PROJECTS**

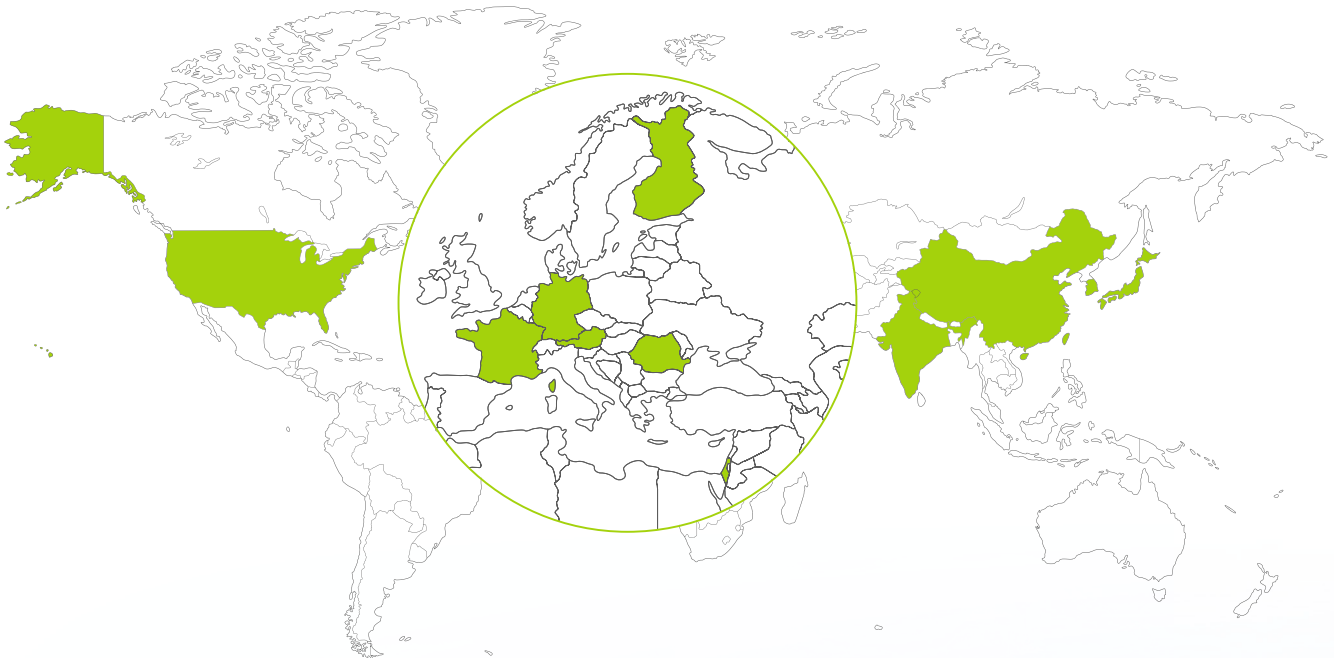
We support Tier 1 suppliers and OEMs throughout the ECU project life cycle by taking over responsibility for specific parts of projects or even the entire project. With our global team of trained experts in America, Europe, and Asia, we are the trusted partner for the value creation in your project.



Elektrobit

# About Elektrobit

Elektrobit (EB) is an award-winning and visionary global supplier of embedded and connected software products and services for the automotive industry. A leader in automotive software with over 30 years serving the industry, EB's software powers over one billion devices in more than 100 million vehicles and offers flexible, innovative solutions for connected car infrastructure, human machine interface (HMI) technologies, driver assistance, electronic control units (ECUs), and software engineering services. EB is a wholly owned subsidiary of Continental.



Austria | China | Finland | France | Germany | India | Israel | Japan | Romania | South Korea | USA

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