EB Automotive
Driving the Future of Software
Driving the Future of Automotive Software

Architecting...
the experiences inside and outside the connected vehicle in a safe manner.

Leading...
innovation and creating differentiating solutions for the automated car.

Facilitating...
automotive-grade software partnerships for the entire vehicle lifecycle.

Enabling...
knowledgeable development, testing, and business teams.
Technical competencies
EB's technical core competencies are development of automotive-grade (software) products and engineering services.

Employees
More than 1,900 employees worldwide (including e.solutions). Spans three continents and nine countries.

Consistent growth
Headcount growth in 2015: 7.2 %

Global presence
Development and business offices in Austria, China, Finland, France, Germany, India, Japan, Romania and USA.

Continental AG
Wholly owned subsidiary of Continental AG.

90+ million
Over 90 million vehicles on the road and 1 billion embedded devices.
Global footprint

Elektrobit (EB) — Locations

- Tokyo, Nagoya, Japan
- Beijing, Shanghai, China
- Bangalore, India
- Dulu, Finland
- Brasov, Timisoara, Romania
- Vienna, Austria
- Boeblingen, Brunswick, Erfangen, Ingolstadt, Radolfzell, Munich, Ulm, Germany
- Paris (Carrières-sur-Seine), France
- Bothell (WA), San Jose (CA), Farmington Hills (MI), USA
Delivering unique experiences year after year

03
- Pioneering the separation of HMI software from the rest of the vehicle (Audi A6)
- Providing navigation for the first fully connected solution (Daimler A-class and smart)

04
- EB started as global software integrator for Ford SYNC

07

08
- Strategic partnership of Daimler and EB centered around driver assistance software development

10
- EB, the first company to take AUTOSAR 4.0 to the road across the globe (all BMW carline)

12

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16
- EB powers first driverless bus on public roads
- EB collaborates with NVIDIA to deliver first-of-its-kind automated driving platform
- Expanded global reach: Connected navigation for China and Japan
Global software integration for Ford SYNC and AppLink development (over 6.5 million vehicles on the road with SYNC)

Global maintenance and integration of driver assistance software for the whole Daimler fleet from smart to S-Class

First global supplier of AUTOSAR 4.0 for BMW

Global supplier of navigation, speech and HMI for the VW Group infotainment, with different user experience for different brands
Driving technology further

**Car Infrastructure**
- AUTOSAR-Standard
- Single- & multi-core OS
- Functional Safety OS
- Embedded Security
- Automotive networks, e.g. Ethernet

**Driver Assistance**
- Functional software architecture and modules for automated driving
- Electronic horizon reconstructor
- Sensor data fusion
- SW industrialization

**Navigation**
- Navigation client for connected use cases
- Electronic horizon provider enabling map-based ADAS functions
- Scalability across classes through one-core principle

**HMI / Speech**
- Model-based development of multimodal user interfaces
- From concept phase to series production
- Augmented reality solutions

**Connected Car**
- Intelligent big data analytics & online diagnostics
- Scalable backend infrastructures
- Cyber security solutions
- Software updates over-the-air

**Software Factory**
- SW Integration
- SW Engineering Service
- EB solys tooling for system analysis
- SW Factory for software Integration

**Consulting Services**
- Consulting services for Functional Safety and Software Architectures
- Lean Software Development
- Established agile processes

**Verification and validation**
- End-to-end testing of complex embedded SW systems
- Test concept development
- Independent verification and validation of SW systems
EB as independent software partner

EB acting as neutral party offering independent software and managing software integration with OEM and 3rd party software suppliers.

**EB delivers independency of services thanks to:**
- Full autonomy in business and project execution
- Confidentiality – also to Continental - as a key commitment
- Separated IT infrastructure

**Common approach on demand**
If customers demand a common approach, we will be able to generate additional value by bundling the development, application and industrialization expertise of Elektrobit and Continental.
Our innovations
Paving the way for latest in-car infrastructures

Scalable solutions for AUTOSAR ECUs

- Basic software, tooling, services
- Single- and multi-core operating systems, Functional Safety conform: ISO 26262 certified up to ASIL-D
- Embedded Security
- Automotive Ethernet software
- Car network simulation

Benefits

- 20+ years of expertise
- Integration on latest microcontrollers
- Extensive partner ecosystem
- On the road in millions of vehicles
Driving the automated car of the future

Driver assistance and highly automated driving solutions

- EB robinos - series grade software architecture with open interfaces and modules for highly automated driving
- Tools for development, validation and test
- High-end measurement technologies for ADAS prototypes
- Experienced system and safety support for driver assistance applications, up to ASIL D

Benefits

- Broad experience of ADAS software development, integration and industrialization
- Worldwide qualified and scalable teams provide professional driver assistance and highly automated driving projects
- Several awards for safety, ADAS, security and innovation demonstrate expertise and experience

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The navigation solution leading the way

Industry-leading navigation

- Versatile and intelligent architecture for global use
- High-performance 3D map engines and electronic horizon
- Aligns with Navigation Data Standard (NDS)
- Integrated interfaces to enable connected services
- Sophisticated tooling and mature validation processes for high software stability

Benefits

- Outstanding customer portfolio
- 15+ years of navigation experience
- Extensive partner ecosystem
- Global company – local presence
- Millions of systems on the road
- Test and award winning technology
Delivering the user experience

Human machine interface (HMI) solutions

- All interaction modalities for instrument clusters, head units and head-up displays, as well as non-automotive user interfaces
- Reliable and easy-to-use toolchain EB GUIDE for the development of multimodal HMIs (graphic, voice, touch and gesture)
- Ranging from concept phase to mass production
- Augmented reality, Personal Voice Assistant, self-learning HMIs, HMIs for automated driving

Benefits

- Expertise of proven and stable solutions in more than 30 million vehicles
- Reusable software across car models, variants, brands and model years
- Agile development process ensures efficient specification, on-time delivery and high-quality results
- Worldwide product support, consulting services and project execution by a global team of highly qualified HMI experts
From embedded software to cloud services

Automotive cloud computing solutions

• Remote analytics solution
• Implementation of new features through software updates over-the-air (OTA)
• Scalable backend infrastructures in place with 24/7 service availability
• Secure engineering

Benefits

• Enabling new business models through big data analytics
• Quality through continuous deployment using microservices and DevOps
• Cost efficient through scalability
• Unique combination of two decades of embedded experience with the latest cloud computing skills
Software integration and services

Latest technology and flexible architecture

- Integrator for own and 3rd party software into systems of all major OEM and Tier1 customers
- Project ownership with global OEM infotainment project since more than 7 years
- Agile methods and established integration processes
- Support integration: EB solys and EB Automotive Software Factory

Benefits

- Delight customers by delivering cost efficient, performant and secure driving experience
- Expertise on all software platforms
- Global engineering teams with proven experience in large projects on all continents
Consulting Services

Manage challenging automotive projects

Consulting by experts

• Strategies to handle complex software development projects
• Software Architecture
• Lean Software Development
• Functional Safety Consulting

Benefits

• Shorter delivery times
• Increased component re-use
• Increased quality and maturity of software
• Reduced risk and greater transparency
• Efficient execution of safety critical projects
Recognition and awards

2009

Frost & Sullivan “European Automotive Telematics Infotainment Product Line Strategy Award”

Microsoft Windows Embedded “EMEA Partner Excellence Award”

2014, 2015

Telematics Update “Best Telematics Safety and Security Award for Driver Assistance Software Solutions” (developed with Daimler)

CES Innovation Award Honoree EB Assist Electronic Horizon Solution
Global software integration for Ford

Challenge

Ford, with over 6.5 million SYNC equipped cars on the road, was looking for a partner to help adding new Applications (such as 911 assist and Vehicle Health Report) on top of the SYNC platform. (SYNC is a fully integrated, voice activated in-car communication and entertainment system)

Constraints:
- Must work seamlessly with SYNC across the globe
- Must accommodate a variety of suppliers, developers and logistic processes

Solution

EB has become a key software integrator ensuring interoperability between 3rd party developed applications and the rest of the systems in the SYNC environment.

Benefits:
- 3rd party application integration allows Ford to differentiate

EB’s added value

EB’s experience in the automotive software domain enables Ford to have the versatility of working with a variety of 3rd party vendors and keep a high bar of excellence.
Ford SYNC case study II

Mobile device integration for Ford

Challenge

**Ford**, with over 6.5 million SYNC-equipped vehicles, needed an extensible interface which allowed drivers to safely operate their favorite gadgets in the vehicle using voice control.

Constraints:
- Must leverage AppLink as an integration solution for 3rd party manufacturers and developers.
- Must allow 3rd party development teams to enable the native SYNC controls.

EB’s added value

EB has established a design thinking quality bar with their EB GUIDE, which outlines Human-Machine interactions within automobiles. EB’s demonstrated experience in automotive software made them the logical choice to implement the integration solution for SYNC.

Solution

EB implemented AppLink’s functional specification using an open communication protocol designed in partnership with Ford.

Benefits:
- AppLink integration made it possible for FORD to sell over 4 million vehicles between 2007 and 2012.
- 32% of the 4 million buyers expressed that SYNC was either critical or important in their purchase decision.
Volkswagen Group case study

Standard and premium navigation for VW Group

Challenge

VW needed a scalable navigation software solution that could be used in the standard and premium infotainment systems.

Constraints:
- Must be compatible across all their brands (VW, Audi, Seat and Skoda)
- Must be able to be rebranded
- Have a high quality look and feel
- Support touch screen, rotary controller, and touch pad.

Solution

VW decided for Elektrobit and the global navigation solution EB street director

Benefits:
- High-end 3D maps
- Advanced speech support
- Online services (such as traffic information)
- Advanced guidance

EB’s added value

Technical competencies, reliability, and flexibility (especially important when handling different brands’ processes, and logistics).
HMI Development with Audi

Challenge

Audi needed to develop a truly modular Infotainment system so that the solution could be used for any of their lines of vehicles. Audi was looking for a partner with deep understanding of automotive user interfaces.

Constraints:
• Must function well across all variants of the vehicles
• Must be modular for customization
• A partner must be capable of managing complex global projects with various features, display variants, and over 1,400 different user dialogs.

Solution

Audi chose to partner with EB to instantiate the solution and make it extensible.

Benefits:
EB has a deep understanding of Automotive User Interfaces and by leveraging EB GUIDE, EB’s integrated HMI development tool, EB created a highly reusable, but modular solution.

EB’s added value

Elektrobit offers EB GUIDE, an integrated HMI development tool which allows to model multimodal user interfaces. EB GUIDE helped manage the scope and complexity of the project.
BMW case study

BMW HMI development and maintenance

Challenge

BMW wanted to control the in-car infotainment experience across all of their car-lines. They needed a system that would allow consistency and code reuse.

Constraints:
• Must fit in all car lines from Luxury to entry level
• Must have a consistent interaction paradigm and look.

Solution

EB delivered the Human Machine Interaction (HMI) experience for Navigation, iSpeech, entertainment and supports the graphics team.

Benefits:
This has enabled BMW to provide consistent HMI software to all their head-unit suppliers, and therefore have nearly 100% code reuse over the brands BMW, Mini, and Rolls-Royce.

EB’s added value

EB’s customer proximity and ability to manage large /global projects make it possible to deliver high quality software in a technical challenging environment and a complex project setup.
In 2001, BMW began putting standard software-in-series production. The Standard Core included up to 56 basic software modules. BMW was looking for someone to take over the integration of BMW modules substituting selected standard modules.

Constraints:
• Develop majority of basic software modules since 1997
• Fully integrate various Standard Core versions and BMW AUTOSAR Core on a great variety of platforms.

Solution
EB’s experience with both OSEK and AUTOSAR software development which made integrations efficient.

Benefits:
EB has partnered with BMW since 1997 and its expertise in ECU software development has helped BMW to efficiently realize project-specific integrations of the BMW Standard Core.

EB’s added value
EB has experience with both OSEK and AUTOSAR software development. EB has a demonstrated ability to manage large/global projects.
Daimler case study

Driver Assistance software implementation for Daimler – From Smart to S-Class

**Challenge**

Daimler looked for a **software partner** to build a strategic alliance with the best **expertise in software development** from the first software concept, to lifetime care.

Constraints:
- A partner who takes over functions and implementation models, software implementation, module testing and integration testing
- Must smoothly integrate with Daimler by keeping functionalities, timelines, and quality at the same level.

**Solution**

In **2010 EB took on the development environment** in a smooth transition. Due to iterative, continuous optimizations, **EB provided innovation and variant handling**. Ensuring efficiencies of time, costs, and quality.

Benefits:
- More than 230 version releases, with 75 series approvals, were delivered on schedule between 2010 to 2013.
- Daimler is able to concentrate on driver assistance algorithm development, self-driving vehicles, and their core competence; building innovative cars.

**EB’s added value**

EBs “Software factory” allowed EB to provide “continuous integration”, which enables innovation and variant handling on an on-going basis, including complexity management.

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