EB Automotive
Driving the Future
of Software

2014

EB
Elektrobit

About EB, Elektrobit Corporation

EB empowers people and businesses with smart automotive and radio technologies through innovative products, services and solutions for the automotive, defense, public safety and telecom markets.

About EB, Elektrobit Corporation

EB'S TECHNICAL CORE COMPETENCES ARE:
Automotive-grade software
Wireless technologies and solutions
System and software architectures

OVER 1600 EMPLOYEES

GLOBAL PRESENCE:
development and business offices in Austria, China, Finland, France, Germany, Japan, Romania and USA

2013 NET SALES OF MEUR 199.3

LISTED ON NASDAQ OMX HELSINKI: EBC1V

EB'S CUSTOMERS ARE THE LEADING COMPANIES IN THE AUTOMOTIVE AND WIRELESS MARKETS

Driving the future of automotive software

Redefining the in-vehicle HMI, navigation, driver assistance and ECU

Global knowledgeable development and business teams

Steering innovation and create differentiating solutions

Reliable automotive-grade software partner for the vehicle lifecycle
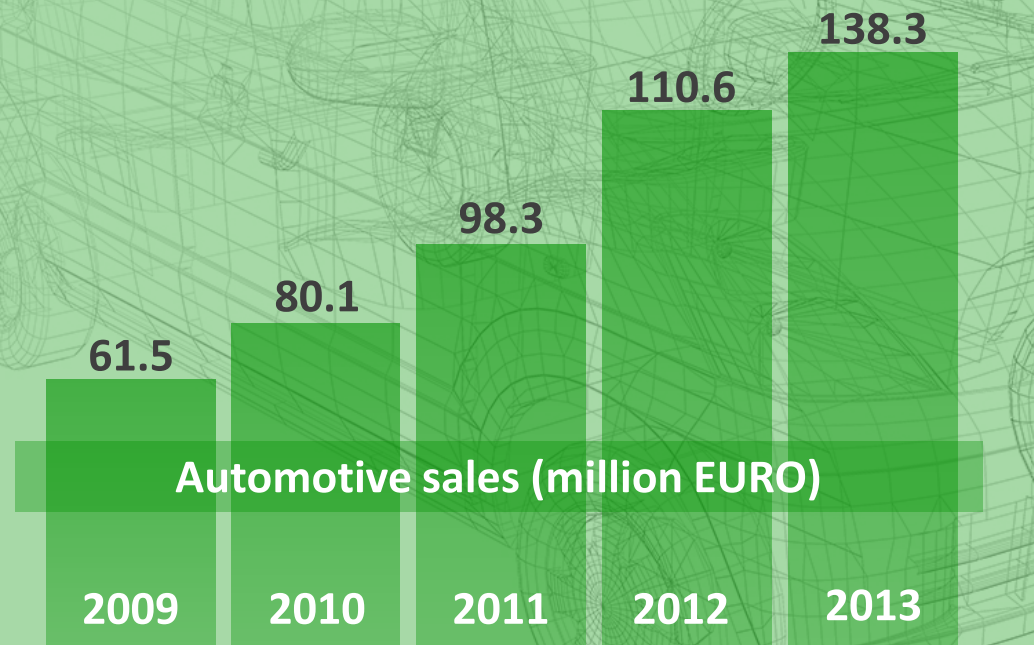
Strong automotive growth year over year

Over **26% CAGR** for the past **9 years**

Over **1200** employees, **7** countries, **3** continents

Significant investment in **R&D** of around **15% every year**

Over **70 million** vehicles on the road and **1 billion** embedded devices

Global partner ecosystem and support for **all automotive platforms**

Automotive sales (million EURO)

Year	Sales
2009	61.5
2010	80.1
2011	98.3
2012	110.6
2013	138.3

Our solution for the automotive world

ECU software and services

- EB tresos – a product family of integrated ECU software and tools, based on AUTOSAR standards
- Complete solutions for: basic software, operating systems, functional safety, automotive security
- Test & Analyzing solutions for Ethernet, EtherCAT, Flexray, CAN, LIN cluster emulation

Driver Assistance software and services

- EB Assist ADTF – a software development environment for driver assistance functions
- Electronic horizon and test drive recording solutions
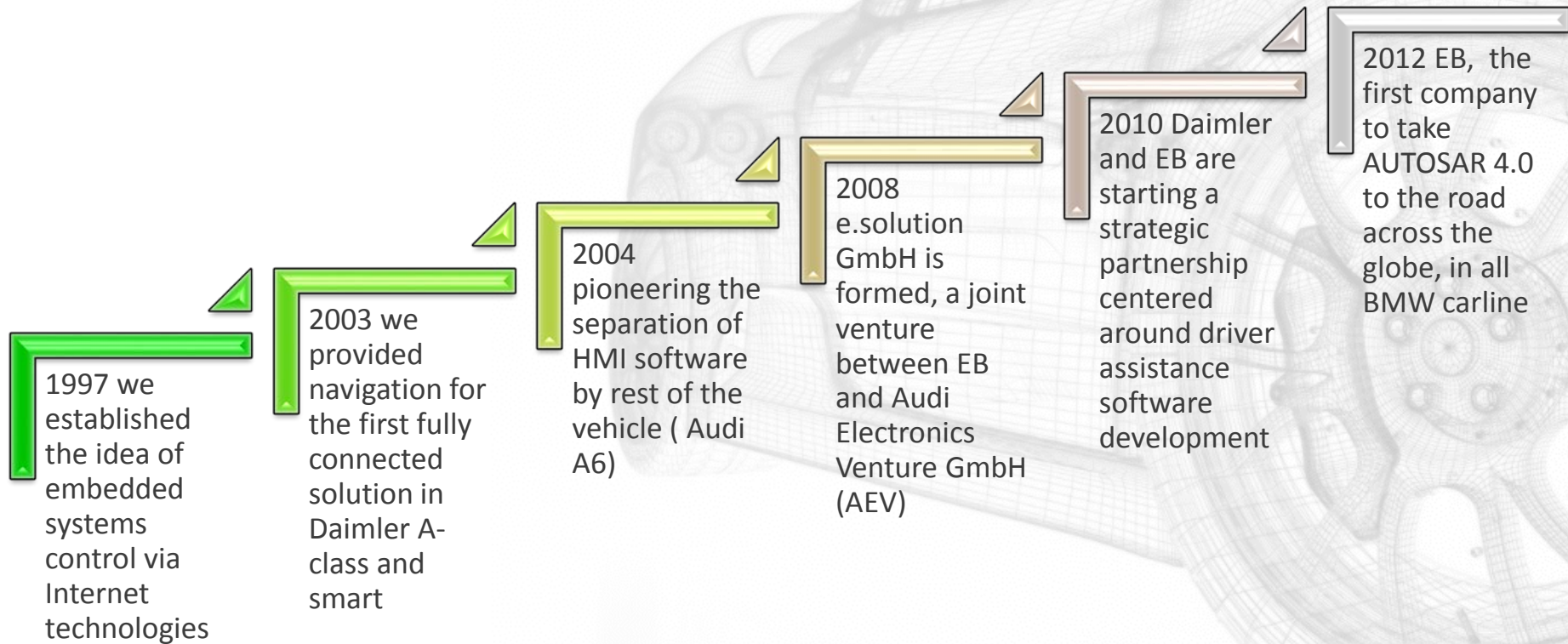- Driver Assistance modules and algorithms

Infotainment software and services

- EB street director – a navigation software solution for state of the art connected automotive infotainment systems
- EB GUIDE – a development platform for multimodal HMIs for infotainment systems, digital instrument clusters and head-up displays
- Global software integration and engineering services

Connected services

- Connected experiences around urbanization, electrification
- Online diagnostics
- Cloud based driver assistance solutions
- Consulting for mission critical infrastructure

EB at the forefront of automotive technologies

1997 we established the idea of embedded systems control via Internet technologies

2003 we provided navigation for the first fully connected solution in Daimler A-class and smart

2004 pioneering the separation of HMI software by rest of the vehicle (Audi A6)

2008 e.solution GmbH is formed, a joint venture between EB and Audi Electronics Venture GmbH (AEV)

2010 Daimler and EB are starting a strategic partnership centered around driver assistance software development

2012 EB, the first company to take AUTOSAR 4.0 to the road across the globe, in all BMW carline

Connected services, expanding the innovation focus

Automated Driving

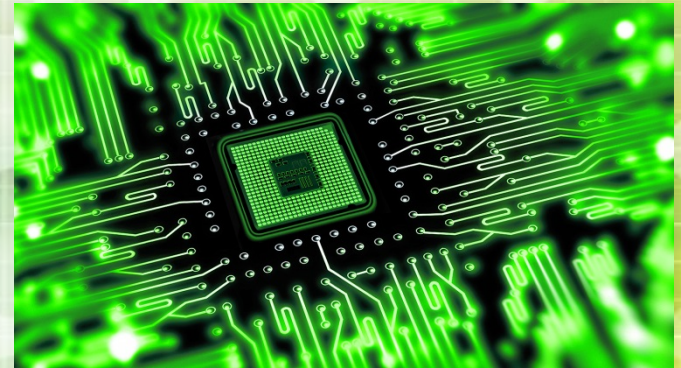**Connected Everything**

Car as a Sensor

EB tresos

Scalable automotive-grade ECU platform
- AUTOSAR basic software & tooling
- Single- and Multi-Core Operating Systems
- ISO26262: Certified Functional Safety Solutions up to ASIL D
- ECU Cluster Emulation for test & analysis

Strong partner ecosystem
- Microcontroller manufacturer and 3rd party tool vendors
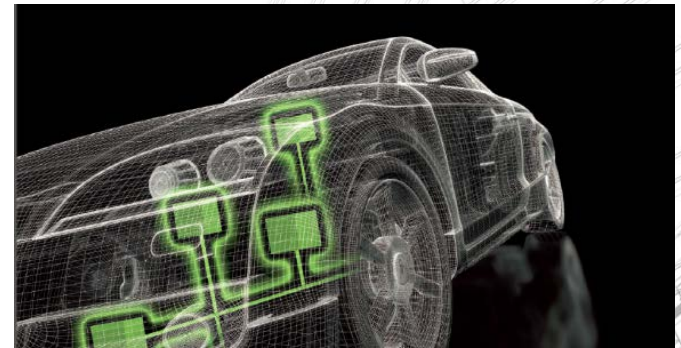- Shared mindset with all leading car makers
- On the road in millions of vehicles

Safe and Secure Solutions

Functional Safety by EB

- Execution environment for safety critical applications like braking and steering systems
- In accordance with ISO26262 and IEC61508 / Up to ASIL D and SIL 3
- Robust and Certified Safety Solutions
- Extendable architecture for Multi-Core devices
- Available for several microcontrollers

Automotive Security by EB

- Protection against unauthorized ECU access & manipulations
- Individual solution design, e.g. secure communication, authentication and signature mechanisms
- Support for cryptographic hardware like SHE
- Integration into existing customer environments & processes
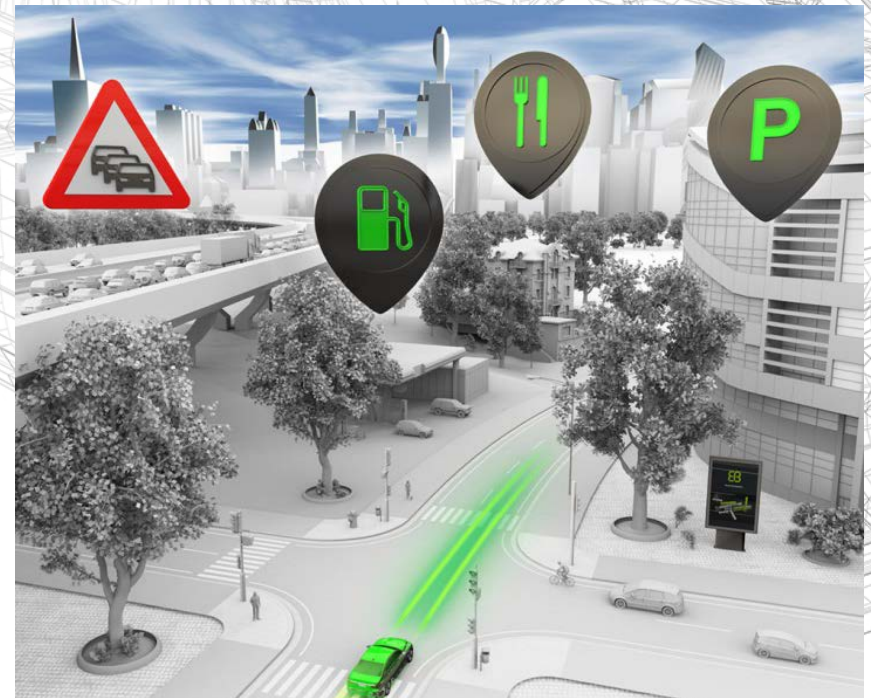- Meeting security needs of all major car makers

EB street director

Automotive-grade navigation
- Versatile and intelligent architecture
- Innovative features: 3D map engines and eHorizon
- Integrated interfaces to enable connected services

Strong partner ecosystem
- Leading map data providers
- Supporting major operating systems
- Connected services providers

EB GUIDE

Intelligent HMI software

- For all in-car screens
- Innovative technologies: 3D graphics, speech, gesture controls, multi-touch, web integration
- Multimodality, multi-user collaboration and on-the-fly simulation

Strong partner ecosystem

- Supports all relevant operating systems
- Using Nuance and Voicebox speech technology
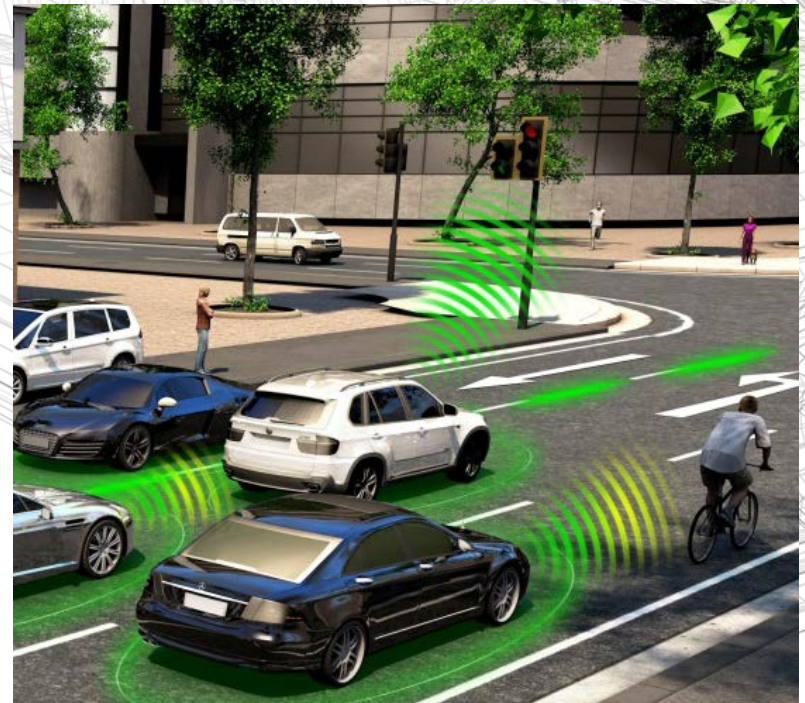- On the road in millions of vehicles worldwide

EB Assist

Efficient development tools and target software for driver assistance
- Reliable, flexible and cost effective tools for development, measurement and validation
- Development, integration and maintenance of complex modules and components for volume production
- Innovative driver assistance technology for automated driving
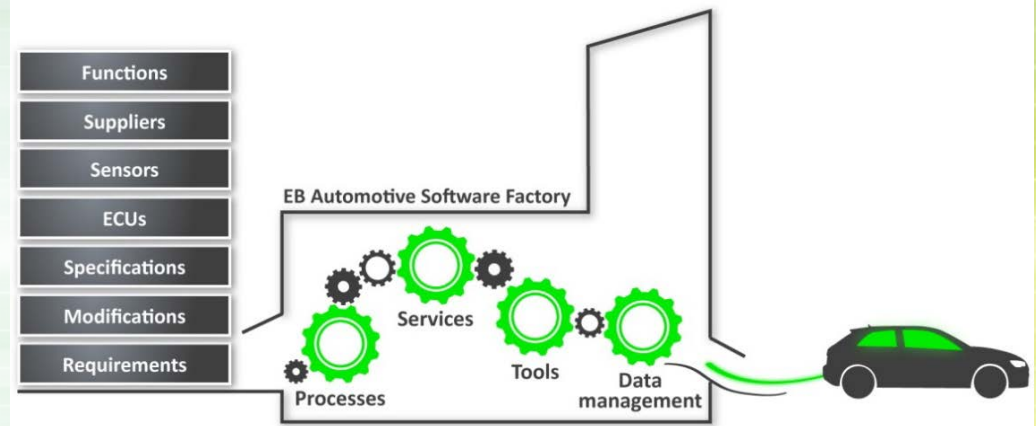
Strong partner ecosystem
- Software development partner for Audi and Daimler
- Huge variety of use cases ranging from research to series validation
- Integration with navigation (green driving and predictive navigation)

Software integration competence

Latest technology and flexible architecture

- Agile methods and established integration processes

- Support integration: EB RACE and EB Automotive Software Factory

- Expertise on all software platforms: Android, Linux / GENIVI, Microsoft, QNX

- Global engineering teams with proven experience

EB powers million of devices around the world

Global software integration for Ford SYNC and **AppLink** development (over 10 million vehicles on the road with SYNC)

First global supplier of AUTOSAR 4.0 for BMW

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

Global supplier of navigation, speech and HMI for the VW Group infotainment, with different user experience (Rotary button vs. Touchscreen)

Get in the driver seat with EB Automotive

Capable of handling complex projects

Trainings and seminars

Proven global software integration

Development and implementation of embedded software

Operating system agnostic

Consulting, project management and software engineering

Excellence in software engineering

25th
1988   2013
ANNIVERSARY
25 years of driving embedded software

WIN
START

Standard and premium navigation for VW Group

The Volkswagen Group was looking for one scalable navigation software usable in both the standard and premium infotainment systems for global use in Volkswagen Group car models across all brands (VW, Audi, Seat and Skoda).

The navigation solution has to be scalable, provide state-of the-art features and be compatible with each brand specific features and requirements, individual look & feel in a high quality. The navigation also has to support different user input and control mechanism such as touch screen, rotary controller and touchpad.

VW Group selected EB street director navigation solution and services. For both the standard and premium infotainment system EB provided one state-of-the-art navigation software with latest features like high end 3D maps, advanced speech support, online services and traffic information as well advanced guidance.

The first market launch of both systems was with the new Audi A3 and VW Golf VII in 2012, followed by Skoda and Seat in 2013.
With VW Group, we have established a trustful relationship, based on our technical automotive competences, reliability as well as our flexibility to handle specifics of each brand: features, processes and suppliers' organization.

Navigation software for Harman

HARMAN designs, manufactures and markets a wide range of audio and infotainment solutions for the automotive, consumer and professional markets – supported by 15 leading brands. More than 20 million automobiles on the road today are equipped with HARMAN audio and infotainment systems.

EB developed a navigation solution based on EB street director. The solution fulfills all relevant requirements of an in-dash system such as rotary-push-button control and intuitive voice entry. Based on EB street director Assistant, Becker® MAP PILOT Webshop offers regular up-dates and upgrades for consumers. Adaptation of the HMI to HARMAN design was done with EB GUIDE.

HARMAN was looking for a navigation software supplier for its Becker® MAP PILOT. **Becker® MAP PILOT** is an innovative, multifunctional mobile navigation system which is not only offered for Mercedes-Benz SLK and C-Class but also as an aftermarket product. The challenge was to integrate the mobile navigation system into the vehicle electronics system as well as the control concept of Mercedes-Benz.

HARMAN benefited from **EB street director's** versatile field of application and EB's high experience in PND- and installation-fields. HARMAN and EB developed a navigation solution which made Mercedes-Benz capable of offering its customers a high performance navigation device.

HARMAN

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Navigation and speech for Audi A1, A6, A7 and Q3

Delphi is a leading global supplier of electronics and technologies for automotive, commercial vehicle and other market segments. Operating major technical centers, manufacturing sites and customer support facilities in 30 countries, Delphi delivers real-world innovations that make products smarter and safer as well as more powerful and efficient.

Delphi was looking for a flexible navigation software solution for Audi's A1 standard headunit. The challenge was to upgrade the entry level hardware platform with high-end navigation and HMI features such as real alternative routes and full-word-speech-entry.

The navigation software is based on the navigation solution EB street director. Using the **EB GUIDE Speech Target Framework,** a speech dialog system has also been integrated into the infotainment solution.

Delphi and **Audi** benefited from EB's highly adaptable navigation and speech dialog software. It allowed to implement Audi's features easily with the required quality standard for in-car navigation. EB supported Delphi to offer a new generation of feature-rich embedded infotainment systems to Audi, even for standard head units.

"EBs products were easily integrated into our system architecture and have helped Delphi to offer Audi superb quality and added functionality."

Dr. Wilhelm Steger, Managing Director Infotainment & Driver Interface Europe, Delphi

Global software integration for Ford SYNC

Ford is a leading carmaker who sold over **4 million** SYNC equipped vehicles. In 2007 Ford introduced **SYNC** – a fully integrated, voice activated in-car communication and entertainment system
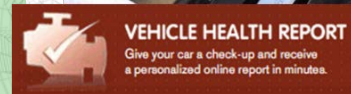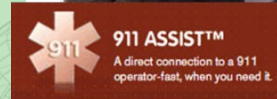
Ford was looking for a reliable partner that could bring new applications on top of the very successful SYNC platform

The first applications developed were **911 Assist (E911)** and **Vehicle Heath Report (VHR)**

EB is working closely with Ford, Microsoft, and other suppliers to develop and integrate new Ford SYNC applications worldwide

EB acts as software integrator to guarantee interoperability of the applications with the rest of the system

EB is Ford's automotive software partner that enables them to create unique experiences that enable differentiation from other carmakers

911 ASSIST™
A direct connection to a 911 operator-fast, when you need it.

VEHICLE HEALTH REPORT
Give your car a check-up and receive a personalized online report in minutes.

Mobile device integration for Ford SYNC

Ford is a leading carmaker who sold over **4 million** SYNC equipped vehicles. In 2007 Ford introduced **SYNC** – a fully integrated, voice activated in-car communication and entertainment system

To maintain its lead in infotainment, **Ford** continues to innovate at an ever-increasing pace. In order to enable third party developers to create consumer apps, Ford created a mechanism that allow mobile apps that run smartphones to interact safely with the vehicle through **SYNC**

AppLink is the application-programming interface (API) that a mobile application uses to register and call to access the various **SYNC** peripherals (buttons, displays, audio...). **EB** implemented **AppLink** functional specification using an open communication protocol designed in collaboration with **Ford**

Ford sold over 4 millions vehicles equipped with SYNC from 2007 until 2012. Also, in consumer surveys, 32% of buyers said that SYNC was important or critical in their decisions to buy a Ford vehicle

HMI Development at Audi

Headquartered in Ingolstadt, Germany, **AUDI AG** is one of the major manufacturers of luxury cars and is a 99%-owned subsidiary (as of 2004) of Volkswagen, the largest car manufacturer in Europe

In successful co-operation, **Audi Electronics Venture GmbH (AEV) and EB** have developed jointly the truly modular infotainment system for the Audi A5, A6 and A8 as well as the Audi Q5, which was introduced in fall 2008 to the public

Beginning of 2005 Audi began development of latest generation of the **Multi-Media technology (MMI 3G)** and needed a development partner with deep understanding of automotive user interfaces and capable of managing complex global project with various features and display variants and over 1400 different user dialogs

Audi benefited from the customized system which at the same time features an extremely high reusability through modularity. Additionally, **EB's** integrated HMI development tool **EB GUIDE** with automatic code generation helped manage the complexity of the project

Audi

Speicher   Radio DAB   Band
▶ Bayern
▶ Ingolstadt
▶ Muenchen
▶ Muenchen BR
▶ Muenchen IRT
◉▶ Nuernberg
Manuell   17:54 SIM   Klang

BMW HMI Development and Maintenance

BMW was one of the first Automotive OEMS who took responsibility for their own HMI Software. Together with partners BMW built up a Software competence center and took a central part of every infotainment head-unit into their own hands

HMI Software is especially important for brand identity and user satisfaction. Changing from one Tier1 supplier to another typically means re-discussing, re-implementing, re-testing and finally re-paying an already implemented software

The BMW "HMI Eigenentwicklung" is an HMI implementation owned by BMW. It is portable to different operating systems and scales from high-end to entry systems. **EB** took care of the HMI for Navigation, iSpeech, Entertainment and is supporting the graphics team

With this new approach the HMI Software is provided by **BMW** to all the different head-unit suppliers. The same code is used in all head-units of the BMW Group across carline. Nearly 100% reuse over the Brands BMW, Mini and Rolls-Royce is unparalleled in the industry

OSEK and AUTOSAR compliant standard core for BMW

Headquartered in Munich, Germany, the **BMW AG** is one of the major manufacturers of performance and luxury cars. It owns and produces the **MINI** brand, and is the parent company of **Rolls-Royce Motor Cars.** BMW produces more than one million cars per year

BMW started using standard software in series production as early as 2001. The Standard Core includes up to 56 basic software modules. In addition, BMW substituted selected standard modules with ones developed on their own. BMW searched for a company to take over the integration work

EB has become the main supplier of the BMW Standard Core in 1997. EB has developed most of basic software and has integrated the complete Standard Core versions SC3 to SC6, and BAC2.1, BAC3 and BAC4 on a great variety of hardware platforms

EB's expertise in **OSEK** and **AUTOSAR** software development has helped make efficient project specific integrations and portings of the BMW Standard Core

Get in touch!

EB

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