

PIONEERING
NEW MOBILITY

Automotive Engineering

Software and Systems Development - From Sensor to the Cloud

+ About b-plus

For more than two decades, b-plus GmbH has built a comprehensive portfolio of software tools and expertise. Specializing in data acquisition, analysis and cloud-based system management, we support the development of autonomous driving functions with innovative solutions and engineering services for hardware and software.

In addition to classical ECU software development, our commitment to pioneering new mobility is evident in our customized engineering services, which address the specific needs of each application on the path to autonomous mobility.

+ Certifications



TISAX® Result Available*

*The ENX Association supports with TISAX (Trusted Information Security Assessment Exchange) on behalf of VDA the common acceptance of Information Security Assessments in the automotive industry. TISAX and TISAX results are not intended for general public. The result is exclusively retrievable over the ENX Portal: <https://portal.enx.com/en-en/TISAX/tisaxassessmentresults>

+ Our Typical Target Applications

ADAS Sensors

For more than 20 years we have been developing stable and reliable base software for radar, camera and lidar sensors. As a trusted partner, we help our customers get their systems into production.

Autonomous Drive Controller

Our software expertise is perfectly suited to the demanding requirements of creating embedded software for AD systems. Architecture support, optimizations and classic development support. We have it all in our portfolio.

Driver Development

We also specialize in driver development for operating systems such as Linux and AUTOSAR. Several silicon vendors trust us for MCAL development, especially for AUTOSAR applications.

Telematics and Connectivity

We provide telematics and connectivity solutions to facilitate communication and data exchange between vehicles and network.

Hybrid- and E-mobility Platforms

Our expertise and engineering services help our customers develop hybrid and electric mobility platforms to support the transition to more sustainable transportation.

Audio

Our applications extend to audio systems, enhancing the in-car audio experience for passengers.



Project Management



Requirements & System Engineering



Architecture Design



Software Engineering

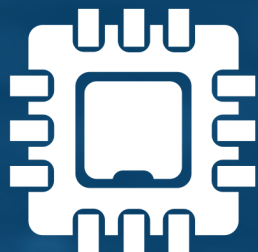


Testing and Test Management



Our Services at a Glance:

System Engineering



Automotive Software Engineering

Whether Classic/Adaptive AUTOSAR, QNX, Linux, Greenhills INTEGRITY or other operating systems - our teams of experts bring your projects safely to the finish line. We take your ideas from concept through development and validation to production readiness.

According to V-model, ASPICE or AGILE, our project managers will support you as a competent partner. In addition, we are familiar with the working methods of all German and numerous European OEMs and can therefore plan, control and implement projects quickly and reliably.

Skills

- + Programming and scripting languages like C, C++, Python
- + Architecture knowledge: AUTOSAR (classic and adaptive), QNX, INTEGRITY, Linux
- + Module, (complex) driver and MCAL development
- + Target optimizations in runtime, RAM and ROM
- + Mastering of all bus communication types and protocols like CAN, CAN-FD, Flexray, autom. ETH
- + Experts in all major chip architectures such as PowerPC, DSP, ARM
- + Know-how in decreasing startup times to your system requirements
- + Deep knowledge of bootloader technology and update processes, locally and over the air

Norms & Processes

- + iSAQB certified software architects
- + Development according to V-Model or agile methods
- + Maturity degree model ASPICE 3.1
- + Functional safety in according to ISO26262
- + MISRA compliant coding standards
- + Functional Safety according to ISO26262 up to ASIL-D
- + Diagnostic communication according to ISO 14229



Validation & Verification

We take full responsibility from unit through integration to software system testing.

In addition, setting up automated CI/CD toolchains or configuring your complete HiL systems are some of our core competencies.

Our test plan, test specification and test report according to ASPICE guidelines are the basis for your release.

- + CI/CD test automation and execution
- + Creation of test plans, specifications and reports
- + Embedded software testing
- + Tool automation for traceability and metric generation
- + Black/White box, performance and HiL testing
- + Testing know how for automotive ADAS/AD software testing

- + iSTQB Certified Testers
- + V-Model and agile testing
- + Functional Safety according to ISO26262 up to ASIL-D



Connectivity & Cloud Software Development

We see our service as more than just web development. The added value for you comes from our expertise in the automotive sector. Signal acquisition, remote access and condition monitoring are our core areas of expertise.

This includes the design of modern, attractive web interfaces as well as the integration or extension of solutions into existing workflows. Benefit from the experience gained in countless customer projects and avoid the common pitfalls.

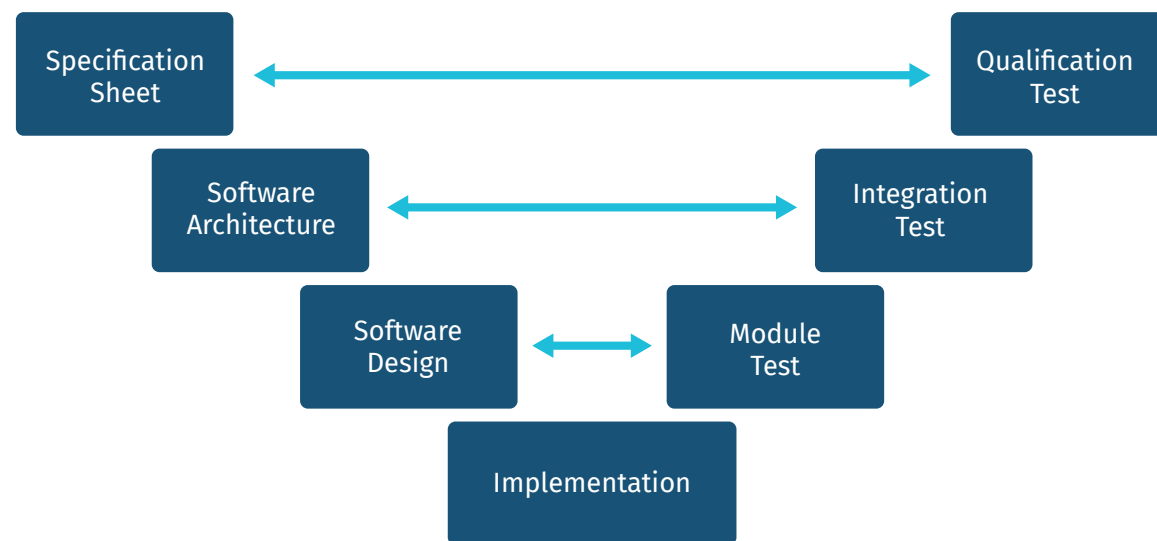
- + Web Frontend/Backend development
- + Programming languages: Python, Go, C/C++, Java
- + Cloud: AWS, Azure, Google Cloud
- + Frameworks/Libs: Angular, Qt, Rails, ROS
- + Protocols: HTTP, MQTT, Websockets
- + Microservice architectures, REST APIs
- + Container technologies: Docker, Ansible
- + Databases: SQL (PostgreSQL, MySQL, etc.), noSQL (e.g. MongoDB)
- + KI/Data Analytics

- + Agile development processes
- + Continuous integration/testing
- + Maturity degree model ASPICE 3.1



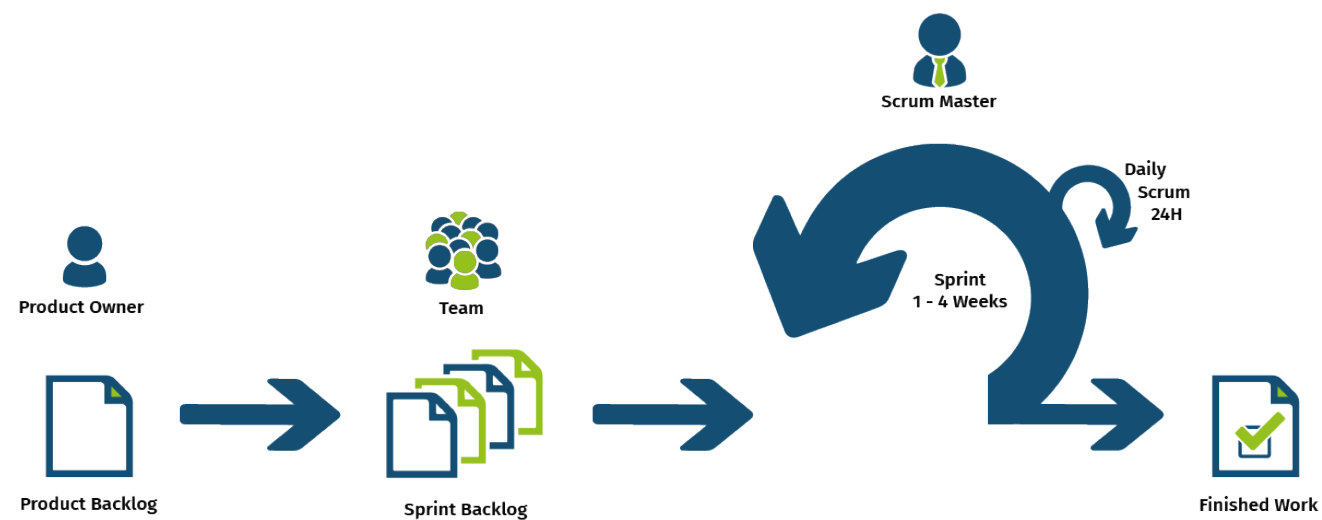
+ V-Model

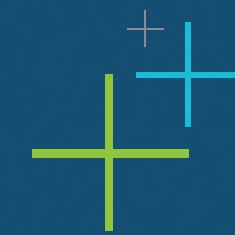
We design, develop, implement and take responsibility for the entire development process of your project. From the initial idea to series production, as an automotive manufacturer and supplier, you can rely on b-plus automotive as a strong partner for software development on and in the ECU to secure the pole position for your future technologies.



+ Agile Teams

For agile projects, we offer a full range of roles tailored to your specific needs.



 **Empowering
automotive mobility:**
Unleash innovation with
customized solutions

+ Experience from Previous Projects

2024

ADAS Radar

We provided full software development and testing support. After a controller change, all components had to be updated and adapted: Bootloader, AUTOSAR base software, complex device drivers. Due to the new setup, validation tests had to be updated and executed.

Process: Customer ASPICE V-Model Process | Criticality: ASIL-B

Onboard Telematic Unit

Handling special requirements for eCall certification and acting as an in-car flash master are just two of the notable achievements we have accomplished together with TIER1. Our expert teams worked on multiprocessor ECUs with classic AUTOSAR and complex inter-processor communication handling with QoS rules. The entire project benefited from b-plus' expertise in high-speed data transfer.

Process: Customer Agile SAFe Process | Safety Level: ASIL-B

Data QA

Data-driven development needs labelled data. We guided an OEM through the data collection and labeling process. We defined labeling specifications, sourced representative data, and set up labeling quality checks to ensure high quality data for AI training. Based on the reports and feedback loop to the labeling team, the quality was significantly increased to a top level.

Process: b-plus | Safety Level: QM

Infotainment

Acting as a "man in the middle", our task was to integrate OEM audio libraries into the base software of a TIER1 on hardware from different vendors. Our expertise in automating the integration and test processes increased the overall project time and quality from start to SOP.

Process: Customer ASPICE V-Model Process | Safety Level: QM

ADAS Camera

Acting as an extended workbench for TIER1s, we took responsibility for the entire software integration in a multiprocessor system. From bootloader development to complex device drivers on multicore microcontrollers and DSPs to classic AUTOSAR configuration, b-plus was a strong partner in bringing cutting-edge technology to series production.

Process: Customer ASPICE V-Model Process | Safety Level: ASIL B

Shadow Mode

The focus was on adapting our CONiX Testfleet Solution for a German OEM to enable automated deployment and execution of new algorithms in safe container environments in the cars. The function output is collected and sent to the backend for post-processing and corner case detection. Together we pioneered this process of testing new algorithms on the road.

Process: Customer Agile SCRUM Process | Safety Level: ASIL-B

ICAS - Central Platform

Working in agile teams with the TIER1 and OEM to smoothly bring a central ECU to SOP was part of this project. A multicore SoC with hypervisor and various operating systems was the heart of the system. Adaptive AUTOSAR integration, CI/CD support and complex debugging support were some of the highlights of this project.

Process: Customer Agile SAFe Process | Security Level: Mixed; ASIL-B & QM

MCAL Development

As a specialist for embedded chips and peripherals, we develop AUTOSAR MCALs and exclusive CDDs for newly designed chip architectures. The development service extends to code generators and integrations into existing toolchains of AUTOSAR stack vendors. The sweet spot for our customers is the deep knowledge of b-plus at all levels of software, MCAL, AUTOSAR, test and also the insight into OEM requirements.

Process: b-plus ASPICE V-Model Process | Safety Level: ASIL-B

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+ What makes us stand out?

b-plus brings together two major areas of expertise:
software solutions and hardware expertise

Customers describe us as
particularly reliable and flexible

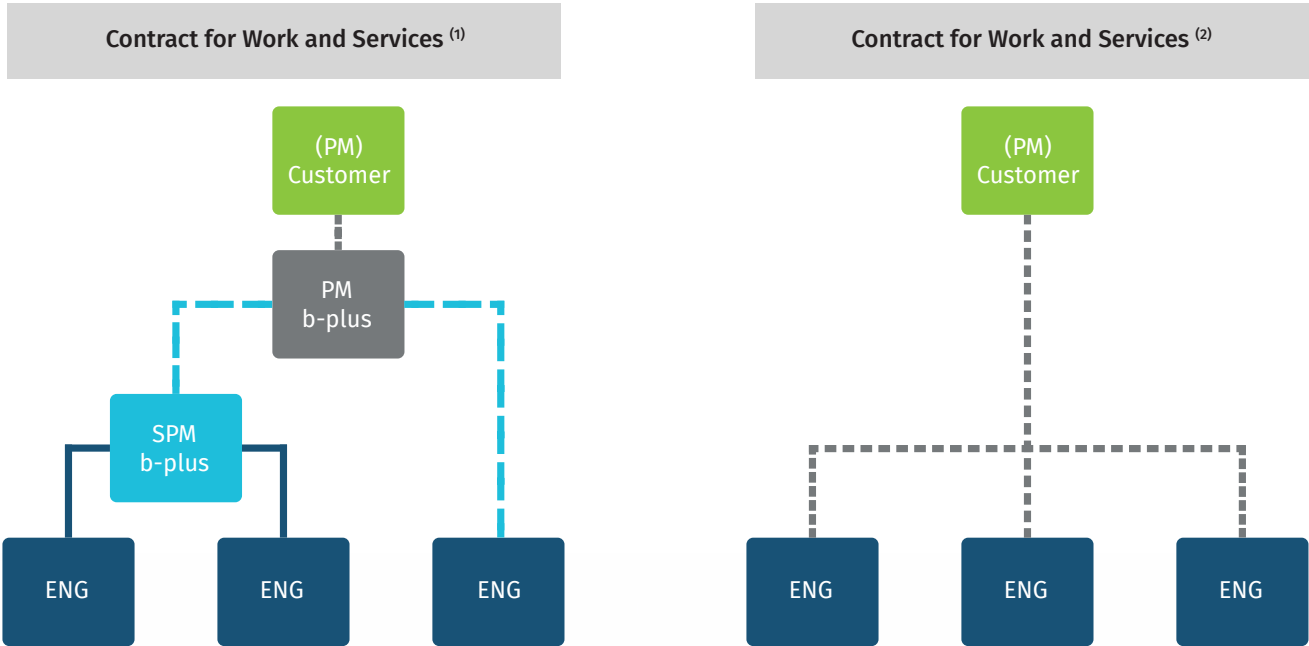
As a **member of various committees**, we work independently and technology-driven on standard-oriented solutions for maximum compatibility

With **cloud specialists**, we ensure secure and protected data transfers

Benefit from our **extensive experience in customer-optimized cloud solutions**

+ Collaboration Models

For the success of your software project, we determine the perfect way to work together before we even start. You can choose to have a single point of contact (1) or to manage the project yourself (2).
Depending on the nature and scope of our collaboration, we may choose to work together on a service or work contract basis.





Contact us

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