

TBench.Solutions

Preferred Design House of Infineon Technologies AG
Basic & Premium Consultancy Model



We are very pleased to provide enhanced electronic and mechanic solutions for robotics and industrial applications. TBENCH.SOLUTIONS, located in Hamburg, forms the northern hub for modern small robots and system development services.

We handle current and future challenges by being the most innovative, the most quality-conscious and the fastest company that can not only keep up with new, outstanding trends, but also set them.

Jens Müller, Oliver Schröder
Founder & CEO, CFO



TBENCH.SOLUTIONS

CUSTOMER ORIENTED

FROM THE GROUND UP

Airshark Technology Carrier **ATC 3.0** was introduced at Embedded World 2015, Nuremberg

Airshark Technology Carrier **ATC 3.0** with Swarm Flight Unit **SFU** as well as principle hybrid and intelligent mechanical interface **SST 2nd Generation** was showcased at Consumer Electronics Show 2017, Las Vegas

Airshark Technology Carrier **ATC 3.0** with Swarm Flight Unit **SFU** as well as principle hybrid and intelligent mechanical interface **SST 2nd Generation** was showcased at Embedded World 2017, Nuremberg

TBench.Solutions was founded in spring 2017 as spin off from the Helmut Schmidt University Hamburg

TBench.Solutions moved in the hit-Technopark Hamburg

TBench.Solutions started PDH support for Infineon Technologies AG

TBENCH.SOLUTIONS aims to deliver innovative solutions which include the latest developments in mechanical design as well as hardware, firmware and software development. We are always able to provide a reasonable trade-off between cost and performance by collaborating with strong partners from the electronics industry and other important institutions.

Basis

TBENCH.SOLUTIONS was founded as a spin off from the Helmut-Schmidt-University in Hamburg and has organically built up a network spreading from Europe to Asia and North America. People from around the world contribute their knowledge to enhance the overall portfolio our company can offer.

Way

Since TBENCH.SOLUTIONS was founded in 2017, we have come to embody a spirit of intensive research, realization and sustainability, enabling great ideas to become market-ready faster.

TBENCH.SOLUTIONS stands for high quality services and products from the fields of electrical and mechanical engineering and general system development.

Impulsion

As Isaac Newton once found, energy is converted from one state to another without dissipating over time. Well-designed systems should always be efficient enough to provide energy for the targeted application for as long as possible. Having a good trade-off between energy consumption and operation time is crucial.

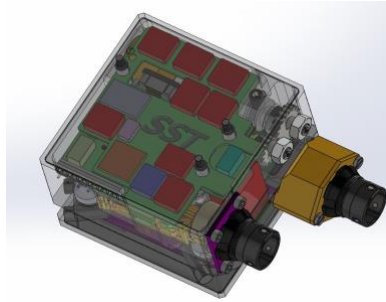
Our motivation is thus based on natural quality, good design and customer satisfaction.

TECHNOLOGIES



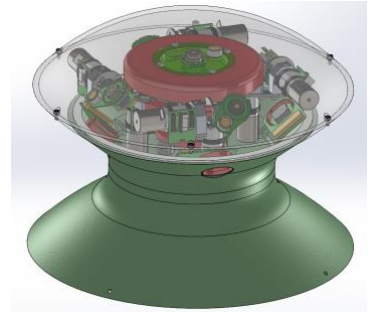
MOBILE ROBOTS

Airshark-Family comprises a range from small sized drones up to large copters to carry heavier loads with integrated IFX driven BLDC motor control approaches.



INTELLIGENT INTERFACES

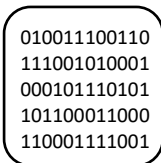
Principle hybrid and intelligent mechanical interfaces (SST) for modern USB-like coupling procedures in mobile robots with integrated IFX driven BLDC motor control.



ENHANCED SENSORS

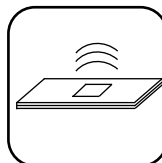
Embedded digital camera systems with image processing capabilities with integrated IFX driven BLDC motor control.

PDH SERVICES



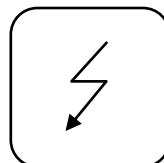
PROGRAMMING

Programming service for embedded Infineon-Micro-controller systems which includes latest **AURIX™** and **XMC™** as well as Field Programmable Gate Array (**FPGA**) systems. Further we also include **Functional Safety** into your projects if required.



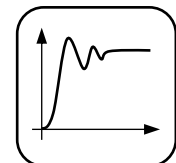
DESIGN

Design service to enable single or multi-core architectures to be implemented in related customer applications. We are specialized in 32bit single up to hexa-core IFX-microcontrollers and offer fast ramp up support and dedicated B2B support for whole system designs.



Safety

Starting with **Application Safety Requirements** which includes *Situational Analysis & Hazard Identification*, *Hazard Classification* as well as *ASIL Assignment* and *Functional Safety Requirements*, we obtain **Semiconductor & System Safety Requirements** by identifying the *Technical- and Hardware Safety Requirements* based on **ISO 26262** (automotive) and **IEC 61508** (meta standard) as well as **EN 62061** (factory automation). Other specialized safety standards e.g. railway, machinery and aerospace are also focused upon.



STUDIES

Preparation of studies for the classification of new technologies in terms of functionality and market relevance.

PDH Support Models

We are experienced in PCB- and system development regarding the entire context of mobile robotics. Moreover, we implemented several IFX-driven applications starting from Unmanned Aerial Vehicle (UAV) flight controls, opening and closing logic for intelligent mechanical interfaces and drive control for ground robots up to a high-speed gear switch control.

Besides several services around mobile robotics, our company offers comprehensive support to you, if you are encouraged to implement the latest IFX technologies into your technical systems. Furthermore, we freely provide tool chain support following customer requests. We primarily support IFX- microcontrollers from the AURIX™ and XMC™ family and also offer IFX context-based FPGA support.

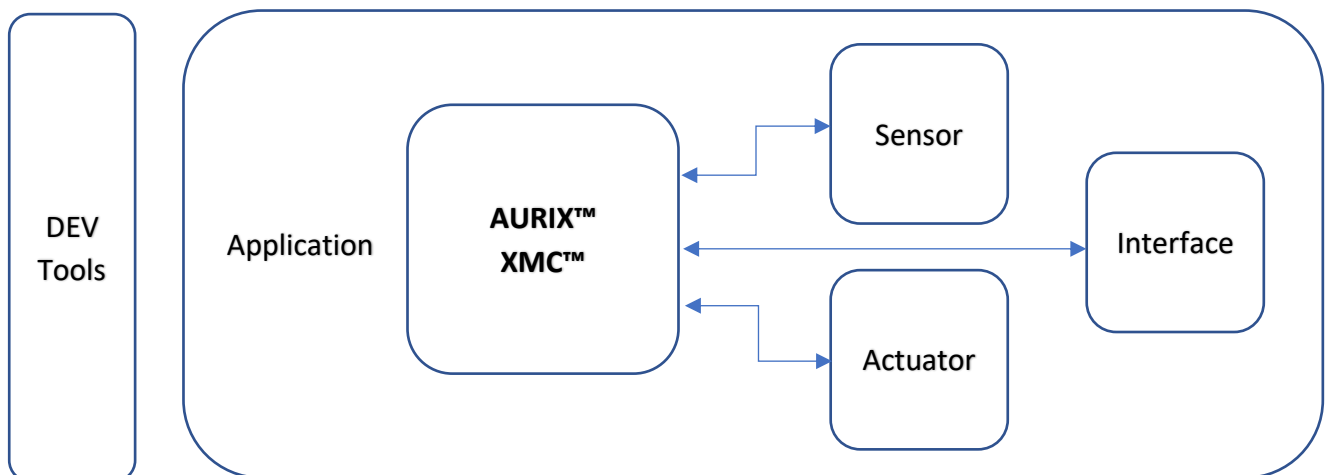
Our close connection to Infineon Technologies AG ensures the best information flow in terms of technical documentation as well as silicon availability, upcoming trends and implementations around AURIX™ as well as XMC™ microcontrollers.

PDH BASIC SUPPORT MODEL

Starting with our **PDH Basic Support Model**, you will receive free of charge information of how to bring your Triboard up and running, you will get information about embedded peripherals, core architecture, Infineon Low Level Drivers (iLLD), AUTOSAR MCAL, tool support and setup as well as basic board support packages within 24 hours response time on working days. After getting basic knowledge, you are also free to decide switching over to a more advanced support model.

PDH Basic Support Model services may answering following questions:

- What about embedded peripherals?
- How many cores are available or reasonable to use?
- How to use Infineon's Low Level Drivers (iLLD)?
- What about safety (SIL, ASIL) and platform independent implementation (AUTOSAR MCAL)?
- Which tools are you using, and are they suitable for AURIX™ development?
- How to bring your Application Kit or Triboard up and running?
- Single core software development
- Debugging and Tracing support



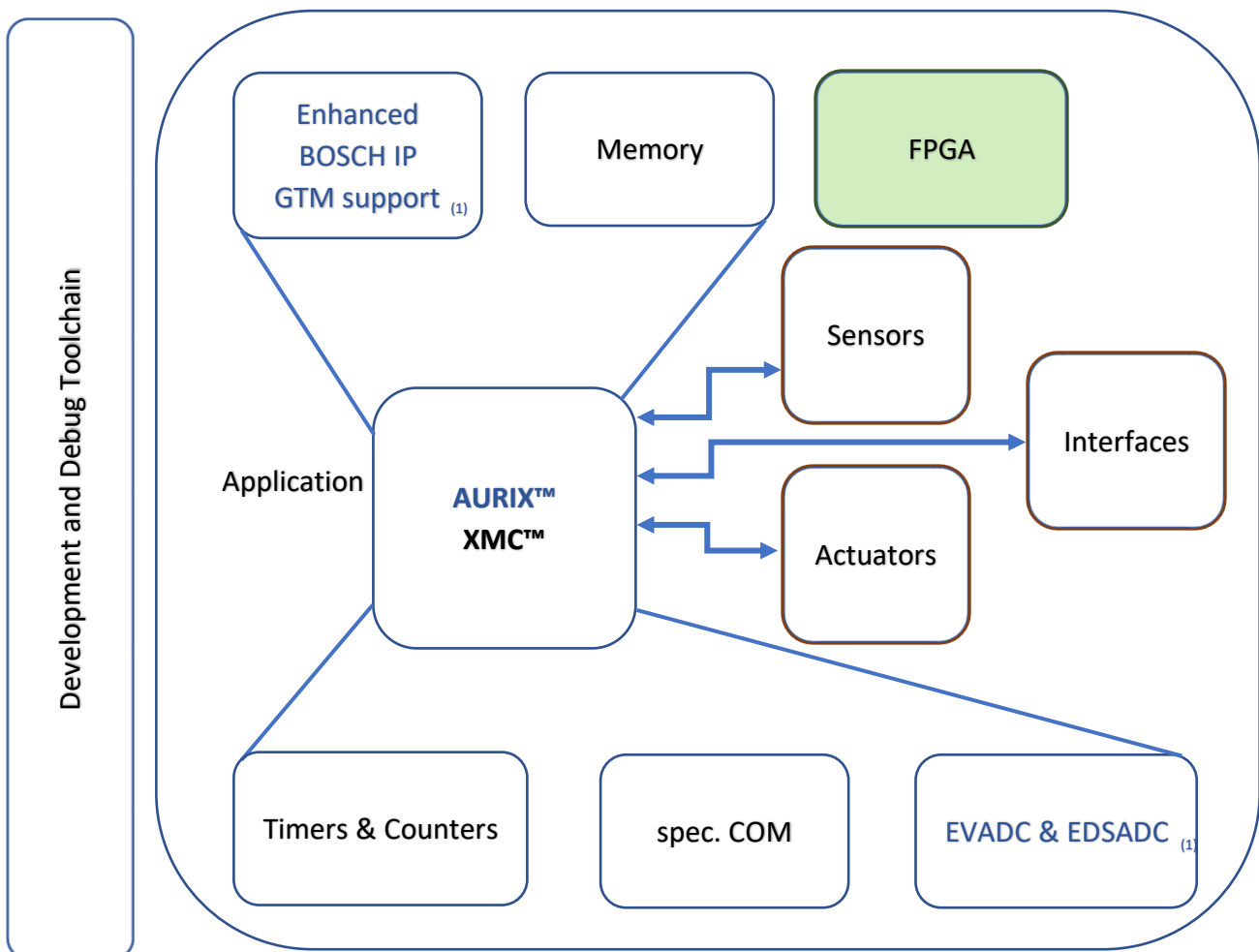
PDH PREMIUM SUPPORT MODEL

For more complex challenges, you can choose the advanced **PDH Premium Support Model**, from where the entire range of system development can be retrieved. Because this service is not free of charge, you will be required to make a separate arrangement with us to receive support and solutions that fit seamlessly into your design.

PDH Premium Support Model services can include the following:

- PCB development
 - Schematic drawing and version recording
 - Component selection
 - Board layout
- Software development (single- & multicore) and version recording
- Overall compliance to safety standards e.g. ISO26262 (ASIL A-D and QM) and IEC61508 (SIL 1-4 and QM), e.g. Hazard Analysis, FMEDA & FTA Analysis
- Testing and documentation
- Project Management

Since we are not only a software development company, we can also cover almost all aspects of system development -e.g. mechanical construction and prototyping- starting from concepts through to readily useable components on demand.



(1) Aurix™ specific implementation

TBench.Solutions

-KNOWLEDGE THROUGH SCIENCE-

“Business is all about the customer: What the customer wants and what they get. Generally, every customer wants a product or service that solves their problem worth their money and is delivered with amazing customer service.”

Fabrizio Moreira

TBench.Solutions UG

hit Technopark
Tempowerkring 6
21079 Hamburg / Germany

T +49 40 79012 808
F +49 40 79012 888

info@tbench-solutions.com

www.tbench-solutions.com