# PREMOSYS®

# RANGE OF SERVICE

July 2025

# Foreword

The PREMOSYS GmbH stands for specialized development competence in the fields of firmware, hardware, optics, software and vision systems. With a high standard of quality, technological depth and partnership-based cooperation, we offer specialized engineering services that are precisely customized to the requirements of our customers. This overview presents our range of services in the field of customized design. It serves as a transparent basis for project-related agreements and the associated calculation of costs.

Our aim is to develop sustainable solutions through experience, diligence and technical excellence - from conception to system integration.

We look forward to working with you.

# Range of Service

## 01 Service Firmware Design

- Firmware development: ARM Cortex® M (STM32), bootloader, drivers for peripheral devices (UART, SPI, I2C, etc.)
- Real-time operating systems (RTOS): Integration and configuration of RTOS, task management, inter-process communication (IPC) and synchronization
- Low-level programming: register-level programming, optimization of interrupt service routines (ISR)
- Debugging and testing: use of debugging tools (e.g. JTAG, SWD), use of logic analyzers and oscillo-scopes

- Communication protocols: Implementation of protocols and network stack integration
- Security requirements: Implementation of security mechanisms (e.g. encryption)
- Toolchain und IDEs: Keil µVision
- Protocol and stack integration: Integration of middleware (e.g. USB stacks) and working with HAL (Hardware Abstraction Layer) or LL (Low-Level) drivers
- Specific requirements: e.g. sensor integration, motor control, IoT integration

## 02 Service Hardware Design

- Schematic Design: Creation of the circuit diagram
- PCB Layout: Design of the circuit board layout
- DFM/DFT: Design for Manufacturing / Design for Testability
- Prototyping: Creation of prototypes
- EMC Optimization: Electromagnetic compatibility optimization
- Gerber File Generation: Creation of manufacturing data
- Multilayer PCB Design: Design of printed circuit boards with multiple layers

- Manufacturing Data Preparation: Preparation of bill of materials, assembly plans, and pick-and-place programs

# Range of Service

## 03 Service Optical Design

- Optics development: lighting and imaging systems, including LED-based applications
- Optics design and simulation: with Ansys Zemax OpticStudio (e.g. beam path analyses)
- Spectrum of optical solutions: Lenses, mirrors, beam splitters, reflectors, optical fibers

- System integration: Design of optical systems in a CAD environment
- Prototyping: Creation of prototypes (e.g. 3D-printed), including the analysis of optical parameters (e.g. light intensity, illuminance)

## 04 Service Software Design

- Software development: Customized solutions for desktops in C, C++, C#, .NET
- DLLs and SDKs: Creation of DLLs and SDKs for cross-platform applications including wrappers for use in other programming languages

- UI/UX design: User-friendly interfaces with optimal user experience
- Version control: Management and use of Git (e.g. Bitbucket) for version control
- IDEs: Visual Studio and Visual Studio Code

## 05 Service Vision-Design

- Application Evaluation: Application evaluation on site or in our laboratory
- Vison System: Cognex In-Sight and Cognex VisionPro

- System Integration: Commissioning of image processing systems

# Closing remarks

Our expertise does not end with our services-
it begins with them.
With every project, we pursue the goal of
making innovation tangible and mastering
technical challenges together with our partners
in a solution-oriented manner.
individual modules or complete system

solutions: we support you with our know-how,
commitment and vision.

For further information or individual inquiries,
feel free to contact us personally.

**Your PREMOSYS team**

# Contact Information

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