CODESYS® Services

Training, Consulting und Entwicklungsdienstleistungen direkt vom CODESYS-Hersteller
CODESYS Services

CODESYS is the programming and engineering tool used by over 350 manufacturers of PLCs, industrial PCs, and programmable automation devices. Thousands of users all over the world value the features of the IEC 61131-3 Development System – the market leader in providing solutions for industrial automation tasks.

The standard version of CODESYS already provides for almost any task. Both the functionality and usability of the software product are in continual development.

Device manufacturers can use toolkits to extend the engineering tool by integrating their own plug-in components, driver customizations, and libraries.

For those customers requiring an even further customized software development directly from the manufacturer, there is CODESYS Services. A specialized team of developers from 3S-Smart Software Solutions provide development services for every aspect of CODESYS.

CODESYS Services is primarily intended for device manufacturers. CODESYS users benefit from increased efficiency in their day-to-day work.

Benefits for device manufacturers

- **Fast and cost-efficient implementation of development projects** without lengthy training phases is guaranteed. As employees of 3S-Smart Software Solutions, the engineers in the CODESYS Services team communicate constantly with the core developers of CODESYS and have direct access to toolkits and system interfaces.
- **Reliable planning and delivery is ensured**, as the CODESYS Services team works independent of development cycles from both the customer and 3S-Smart Software Solutions.
- **All development services from a single source** – the CODESYS Services team: runtime system implementation on customer devices, extensions based on the automation platform, driver development for drives, customization of display variants of CODESYS visualization on proprietary platforms, performance of unit tests or system tests on customer systems.
- **Guaranteed fixed prices** – customers can depend on expense estimates based on an certified specification.

Customization of the runtime system on an operating system not in the product portfolio on the Hitachi Micro-EHV+ PLC

CODESYS SoftMotion – driver development (CANopen) for the CMMP-A5 motor controller from Festo AG & Co. KG

OVERVIEW OF THE DEVELOPMENT SERVICES

Engineering

- Plug-in components
- Libraries
- Customized extensions and features
- Training for device manufacturers and users

Visualisation

- Implementation of display variants
- Customized visualization elements
- Training for device manufacturers and users

Fieldbus

- Consulting (architecture)
- Driver development
- Development of and link to specific configuration tools
- Link to external protocol stacks
- Training for device manufacturers and users

Motion + CNC

- SoftMotion drivers for drives
- Training for device manufacturers and users

Safety

- Consulting (architecture/safety concept)
- Support in runtime system customization
- Support in all project phases
- Training for device manufacturers

Runtime

- Consulting (architecture)
- Support in runtime system customization
- Driver development for I/O systems
- Support for quality assurance
- Training for device manufacturers
Detailed range of services

In all phases of software development, manufacturers of programmable industrial controllers benefit from the expertise of an automation specialist.

**Technical consulting for every aspect of CODESYS**
- Support in selecting the optimum system platform for controller development
- Manufacturer-independent consultation for selecting the appropriate CPU series and operating system
- Consultation for selecting fieldbus systems
- Architecture and system consultation for the automated generation of application code: support in the planning and realization of modules for the automated generation of application code using the CODESYS Application Composer
- Overall consideration of implementation-relevant criteria
- Development assistance in the realization of safety controllers according to IEC 61508 SIL2/SIL3 in all project phases: support in interpreting the current standard, working out the safety approach, assistance in preparing for the certification process of a safety controller

**Implementation service and customization support for the CODESYS Control Runtime System**
- Support in implementing the runtime system on customer-specific embedded devices: acceptance of portions of the runtime system customization, even for safety controllers according to IEC 61508 SIL2/SIL3 and ISO 13849 PL d/e
- Support in customizing operating system platforms beyond the standard product focus: use of CODESYS Control (e.g., on ThreadX, SMX, RTX, μCos, INTEGRITY, or entirely without an operating system by means of customization)
- Implementation of CODESYS Visualization on customer hardware: customization support and complete realization of all display variants (e.g., for frame buffer visualization on devices without an operating system)
- For support of bus and fieldbus systems not offered within the product scope of CODESYS: implementation of specific fieldbus adapters, customization to special chipsets, customization of protocol stacks
- For support of special I/O systems on controller platforms: development of drivers for special I/O ports or customer-specific I/O adapters
- For controlling drives with CODESYS SoftMotion: implementation of drivers (e.g., for CANopen or EtherCAT drives)
- For data exchange via communication channels and protocols unsupported by default: implementation of shared memory or SPI drivers for communicating with the CODESYS Development System

**Driver development**
- Realization of stand-alone applications (e.g., for drive configuration or diagnosis)
- Development of visualization elements: integration of customer-specific controls and elements without a toolkit
- Development service and customization support for the CODESYS Control Runtime System: development of discrete add-on tools (e.g., for drive configuration or diagnosis)
- Development assistance in the realization of safety controllers according to IEC 61508 SIL2 / SIL3 in all project phases: support in interpreting the current standard, working out the safety approach, assistance in preparing for the certification process of a safety controller

**Integration of specific configurators and editors**
- Development of plug-in components for the CODESYS Automation Platform running under C# or .NET which can be seamlessly integrated into the CODESYS Development System
- Integration of available add-on tools for specific components, markets, sectors, customers, or tasks: customization of C# or .NET tools to the interfaces of the CODESYS Automation Platform and embedding into the CODESYS Development System
- Development of visualization elements: integration of customer-specific controls and elements without a toolkit

**Creation, customization, and extension of system libraries**
- Libraries for integrated fieldbus diagnosis: access and preparation of generic and fieldbus-specific diagnosis information
- Libraries for providing system access: read/write of controller system properties with user-appropriate function calls
- Service libraries for additional plug-in components: supply of library functions for using and operating add-on functionality from the application code
- Library functions for communication protocols: provision of user functions for protocol services and message modules that are implemented in the controller firmware
- Library functions for accessing redundancy functionalities in the controller system: reading information (e.g., status or synchronization)

**Customer-specific versions and product extensions**
- Link to third-party software and devices via the CODESYS PLCHandler: implementation of a symbolic software interface for convenient data exchange (e.g., with proprietary control and service devices or ERP tools)
- Customized development of new system components: new compilers and engines on behalf of the customer
- Integration of third-party software in the CODESYS Control Runtime System: integration and linking of external code (e.g., for protocol stacks or interpolators)
- Brand labeling of the CODESYS Development System: Adaptation of the user interface to the corporate design standards of the customer
Software tests with customer devices
- Release tests for customer-specific CODESYS versions: testing of customized CODESYS versions (e.g. with additional or customized plug-in components), full product release on behalf of the customer, or certification of compatibility with CODESYS Safety
- Outsourcing of test resources: unit, module, regression, and system tests of the runtime system implementation on customer devices

Training
- Practice-oriented user training: condensed initial training and more effective engineering for project engineers: practice-oriented training for system developers, support, marketing, and sales
- Integration workshops that extend beyond the standard scope of CODESYS Control Toolkits: training for implementing special requirements
- Workshops for decision-makers and project managers: training helpful in making decisions about further product development

Expertise of the CODESYS Services Development Team
- Many years of experience
  - in different development projects
  - with numerous prestigious automation companies
- Support in nearly all industrial systems

Selected references
- FESTO AG & Co. KG: driver development for drive support of CODESYS SoftMotion
- TELESTAR s.r.l.: RTx drivers for the CODESYS Control Runtime System
- Invensys Eurotherm plc: customization support for the CODESYS Control Runtime System
- Hitachi Europe GmbH: customization support for the CODESYS Control Runtime System
- Sensor-Technik Wiedemann GmbH: customized hardware test according to IEC 61508 SIL2
- Altus Sistemas de Informática S. A.: customized extension of the CODESYS IEC 61850 Server

Support for the following technologies:
- CPU platforms (Intel and Motorola architecture, CISC, RISC)
- Operating system platforms (single- and multitasking, embedded, bootloader, smartphone OS, etc.)
- Development environments (GNU, Hitex, WindRiver, Microsoft, IAR, etc.)
- Communication systems (TCP/IP, UDP/IP, FTP, field buses, OPC, HTML, etc.)
- Software architectures (shared memory connection, plug-in models, etc.)
- Development frameworks (C# / .NET, CODESYS Automation Platform, CODESYS Control Runtime System)

Development Service – easy to budget and meets requirements

There are different accounting models depending on the type of development project. In each and every case, the development service is planned and implemented according to an ISO 9001-certified process. All parameters are recorded in the project management tool JIRA© (Atlassian) so that project details, such as status, process progress, and remaining expenses, can be tracked in every phase of the development project. Each completed development service is delivered to the customer with accompanying documentation only after internal release tests have been passed.

Accounting models for customized services

Fixed price model
- Offer and billing at a fixed price:
  - Requirement specification describing the customer demands
  - Functional specification describing the offer accepted by the customer and the services to be rendered
  - Performance of services according to the functional specification
  - Billing upon completion of milestones (order, delivery, acceptance)
  - Transfer to the customer and billing at a fixed price

Product extension model
- Extension of the product scope as defined in the customer order and integration into the standard product:
  - Offer and billing according to expenditures
  - Sharing of development costs and expenses between the customer and 3S-Smart Software Solutions
  - First commercialization by the customer
  - Enhancement of the product extension within the scope of the standard product

Project advisor model
- Project manager or advisor on duty for the duration of a development project:
  - Renewed offer and billing in periodic intervals (e.g., daily, weekly, or monthly)
  - Complete or partial project management
  - Ideal for supporting development projects performed by customer software teams

Your benefits at a glance:
- Consulting, training, and development services for every aspect of CODESYS from a single source and directly from the manufacturer
- Expert team of software developers specialized in the most varied range of tasks in automation engineering
- Many years of project experience with prestigious manufacturers and every established industrial system
- Cost-efficient and easy to budget implementation of development projects for every aspect of CODESYS
CODESYS – the manufacturer-independent
IEC 61131-3 automation software.

CODESYS Product Families:

- Engineering
- Runtime
- Visualization
- Fieldbus
- Motion + CNC
- Safety

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Note: Not all CODESYS features are available in all
territories. For more information on geographic
restrictions, please contact support@codesys.com.