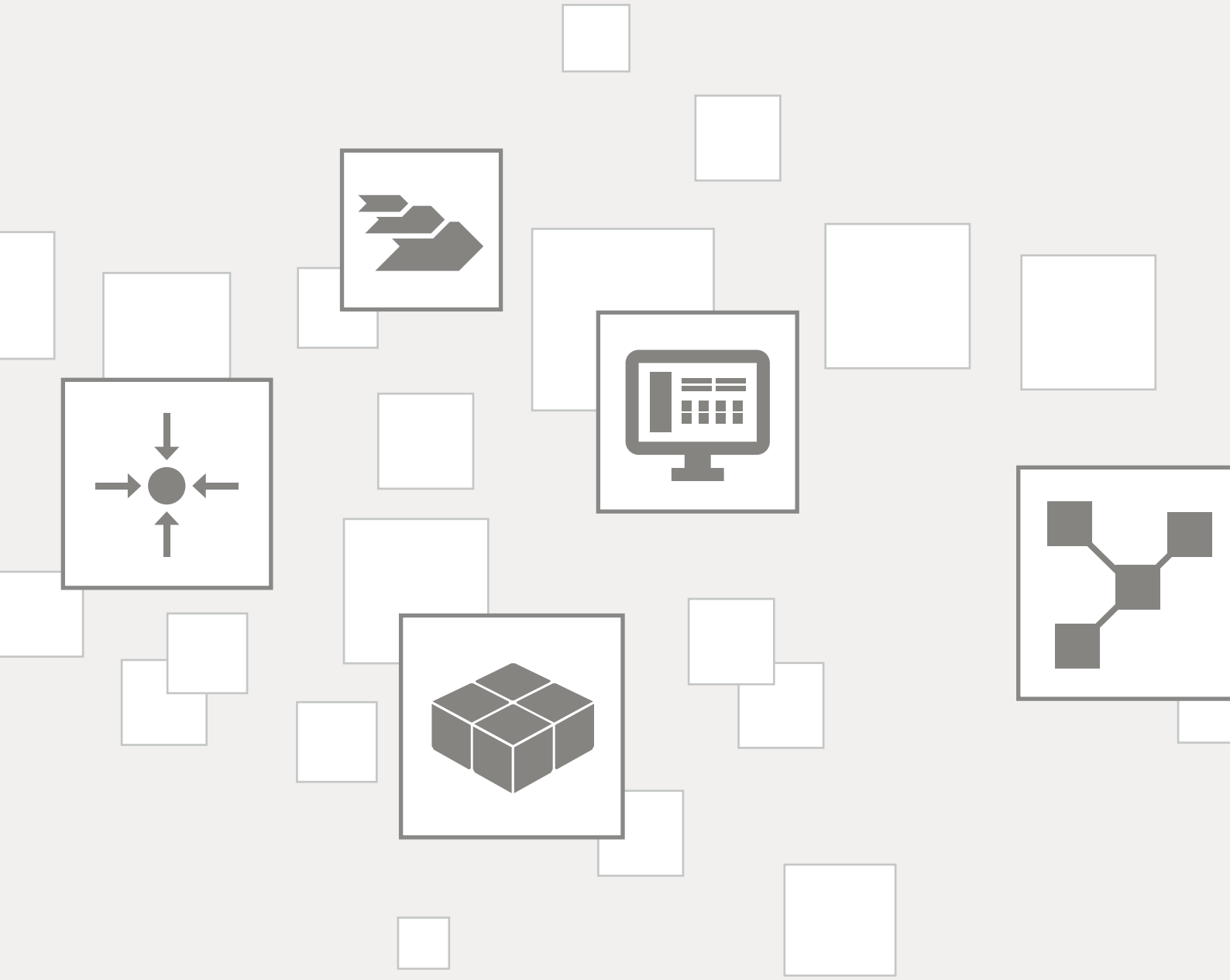
Modern Engineering – Familiar Environment

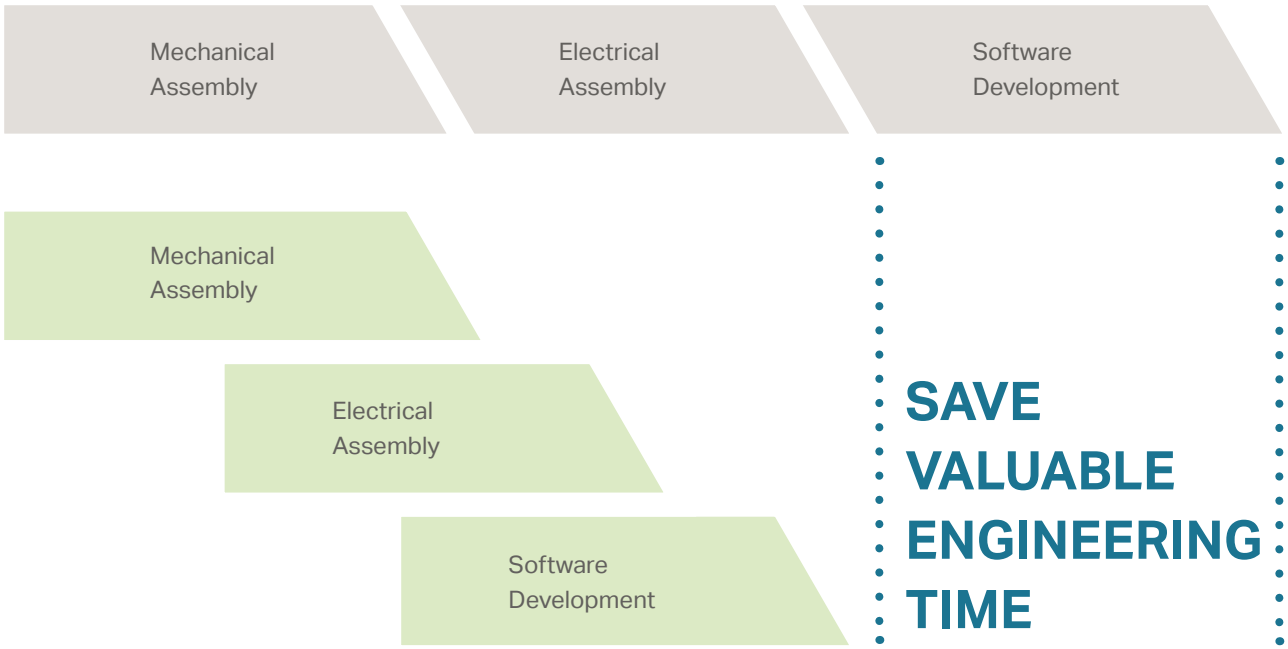
A Trusted Approach Advances Automation – With *eCOCKPIT*



MECHATRONICS TODAY

Engineering is a Key Factor for Success

Traditional Machine Development



Modern Machine Development through Simultaneous Implementation and Integration Every Step of the Way

The Challenge of Mechatronics

The merging of mechanical, electrical and software components has enabled today's machinery, plant engineering and related industries to achieve what was once seemingly impossible – shortening development cycles while increasing both product diversity and sophistication.

Software Is a Distinguishing Feature

The amount of software embedded in a mechatronic unit is steadily rising, and this software is being tasked with increasing levels of machine functionality. In fact, this change has led to software becoming more and more important as a key differentiator between automation systems.

Integrated Development Is a Crucial Factor

Developing high-performance mechatronic units relies on integrated development. However, success only occurs when mechanical and electrical engineering are tightly integrated into software development. Every task and function must be seamlessly synchronized in order to meet critical time-to-market deadlines.

Leverage Your Engineering Tools

State-of-the-art engineering tools support every step of the development cycle – from assembly up to machine operation. Thus engineering software is crucial to the development of sophisticated solutions.

e!COCKPIT – MODERN DEVELOPMENT

Software for Seamless Engineering

ADVANTAGES:

- One software package for every task
- Consistent look & feel
- Perfectly integrated into a machine's life cycle

One Automation Software Package

Quickly implementing complex machine functions is critical in modern mechanical engineering applications. Both in the office and on the shop floor, development engineers and technicians must manage challenging tasks.
e!*COCKPIT* is an integrated development environment that supports every automation task from hardware configuration, programming, simulation and visualization up to commissioning – all-in-one software package. Completely reimagined, this development environment enables users to easily master complex automation networks, saving both time and money.

Embedded in the Development Process

It has never been more important for users to artfully align each task and function to master the onslaught of increasingly complex – and demanding – parallel development of multiple product lines. To keep projects on time, ***e!****COCKPIT* provides end-to-end data storage for every automation task – all in one project.

In addition, ***e!****COCKPIT* offers interfaces for master data exchange with external electrical and mechanical engineering software. This simplifies complex data transmission, while largely eliminating error-prone double inputs.

GETTING STARTED – AUTOMATION

Easy Start

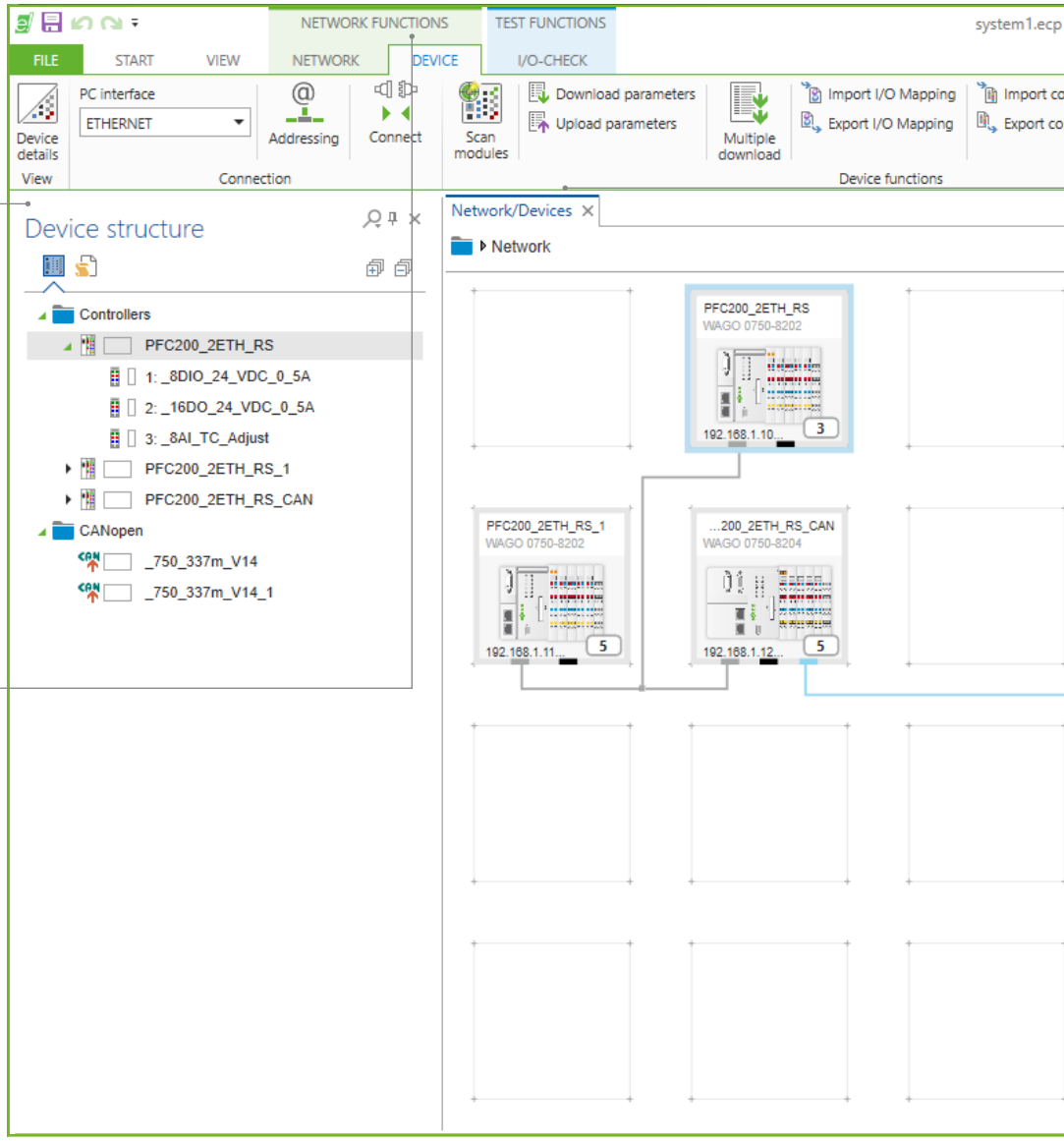
Using new software often requires that valuable engineering time must be taken to learn it. Recognizing this shortcoming in other software programs, WAGO developed ***e!****COCKPIT* for rapid deployment with a minimized and clearly structured user interface that invites you to discover how project development and commissioning has evolved. The engineering software is based on well-known and established user interface features, such as context-sensitive menu prompts, that only display the functions and commands related to the current task. Even starting ***e!****COCKPIT* is incredibly easy.

Clear Device Structure

- Separation of device and program items
- Tabular and graphical views
- Easily log responsibilities and dependencies

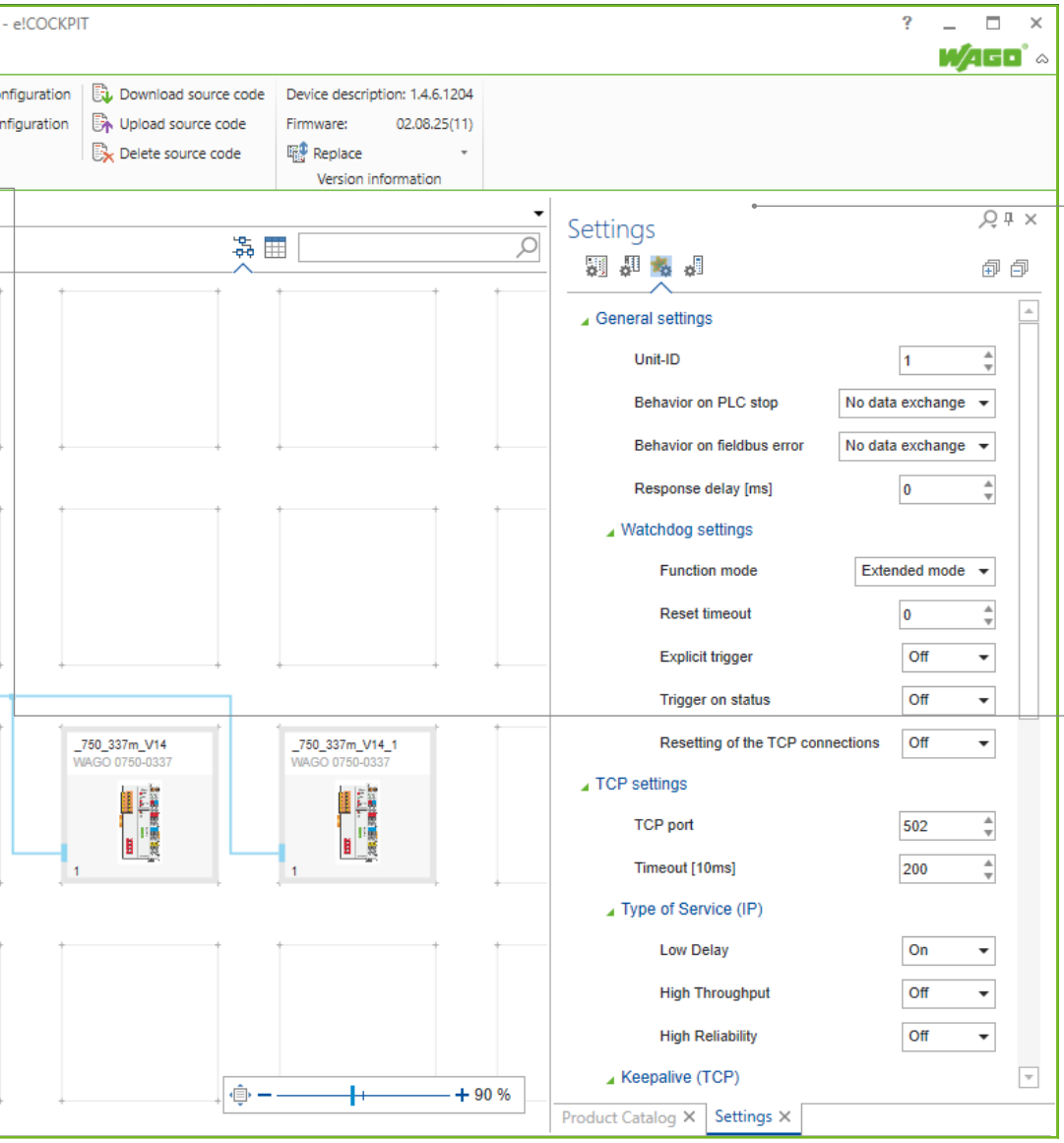
Trusted User Guidance

- Context-sensitive menus: Focus on the task at hand
- Simple symbols: Identify rather than search
- Quick access to frequently used functions



Always in Control

Working effectively means always seeing the entire picture, even when dealing with complex automation topologies. ***e!****COCKPIT* features user-defined workspaces that are tailored to the task at hand. Graphical configurators show relationships clearly and intuitively, while highly visible status indicators enable quick diagnostics and troubleshooting.



Target-Oriented Configuration Dialogs

- Clearly structured controller, fieldbus coupler and I/O module settings
- Batch processing: Simultaneously set parameter values for several modules

Optimum Workspaces

- Predefined workspaces for networks and devices, as well as programming
- User-defined workspaces can be customized and saved

CONFIGURING

Simple Hardware Parameterization

Configuration:
The Foundation for Automation

Configuring hardware and related components is essential in automation – every device must be precisely calibrated to support high-performance control software. As such, controllers, fieldbus couplers, input/output modules and their communication relationships should be adjustable.

The integrated ***e!****COCKPIT* configurators provide modern operating tools: Devices can be arranged via Drag & Drop within a project, individual devices or complete network branches can be duplicated via Copy & Paste. Simultaneously setting parameter values for several modules also highlights the simplicity of configuration with ***e!****COCKPIT*.

Clear Graphical Topology View

Network devices are typically arranged in a tree structure. In addition to this type of presentation, ***e!****COCKPIT* also provides a graphical network topology. This allows the complex relationships between network devices and their current statuses to be identified easily and intuitively.

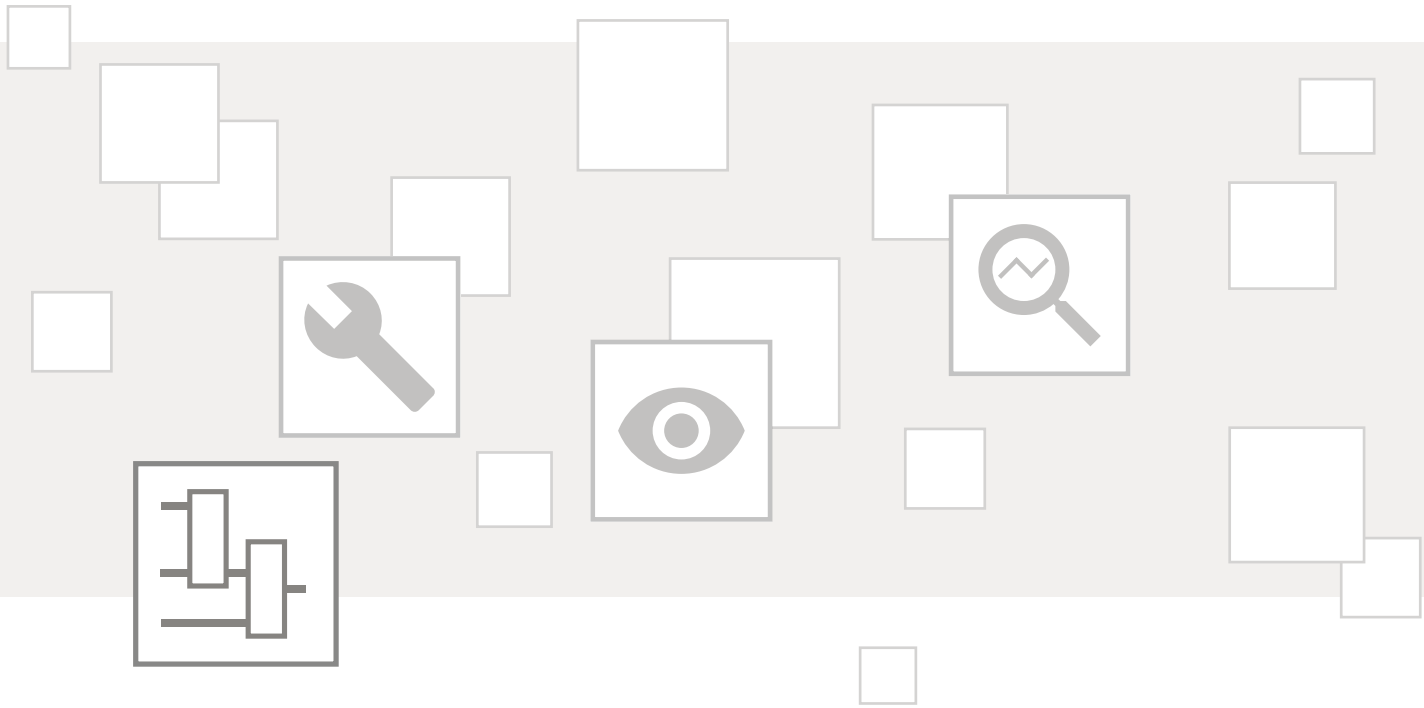
This graphical topology view is also used to configure different communication protocols. This way, connecting controllers to fieldbus systems using ***e!****COCKPIT* is incredibly simple. And automation engineers can seamlessly incorporate available field devices using fieldbus-specific device description files, such as EDS.

ADVANTAGES:

- **Integrated configurators:**
  Optimally tune hardware
- **Ease of use:**
  Save time with Drag & Drop
- **Graphical network topology:**
  Easily identify relationships

PROGRAMMING

Future-Proof Based on an Industrial Standard



CODESYS V3:
Integrated Environment

e!*COCKPIT* is based on the high-performance and well-established CODESYS V3 industry standard. This supports software development in IEC 61131-3 PLC programming languages: Structured Text (ST), Ladder Diagram (LD), Function Block Diagram (FBD), Instruction List (IL), Sequential Function Chart (SFC) and Continuous Function Chart (CFC). For flexibility, all programming languages can be combined with one another Created programs can be easily debugged on the engineering PC via simulation.

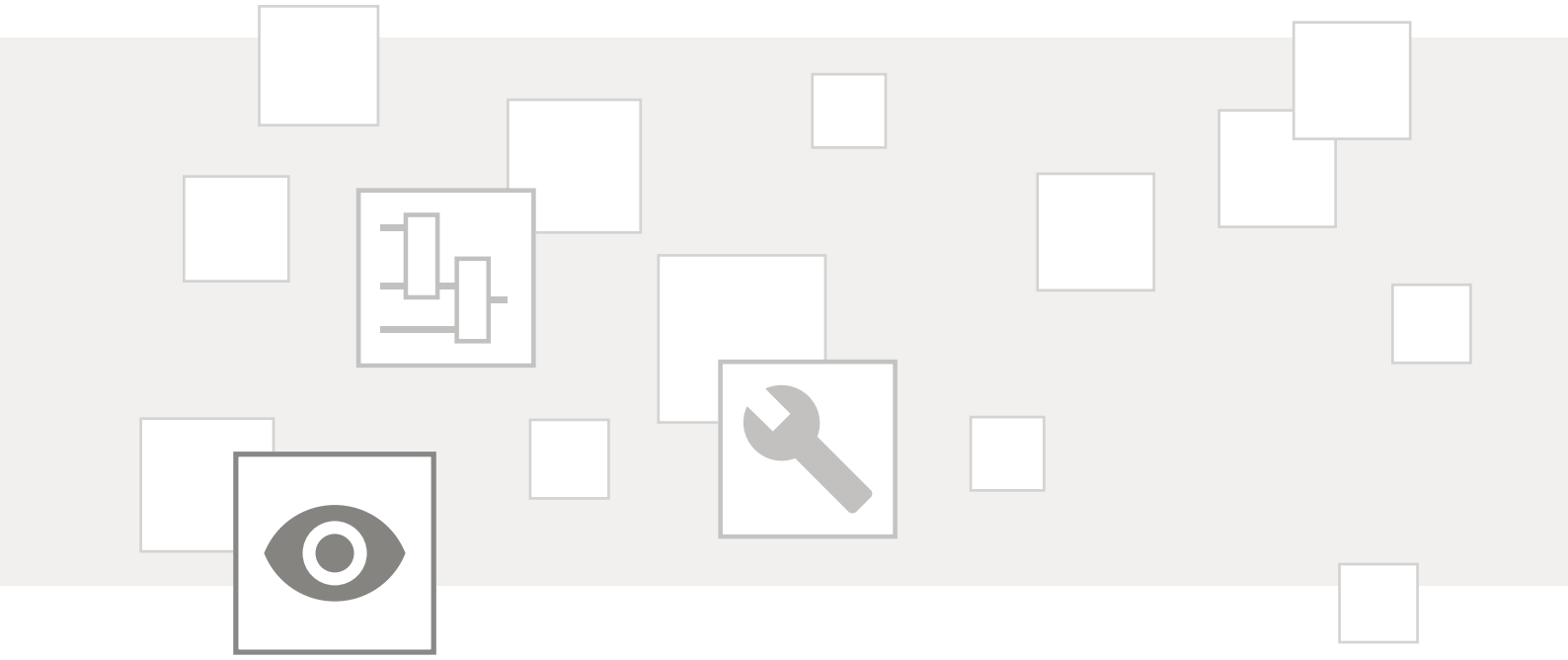
This standardized and highly simplified programming environment guides developers, allowing them to reuse and further develop existing programs without relearning software. Further highlighting ***e!****COCKPIT*'s value is the fact that developers will benefit from the ongoing development of its CODESYS V3 platform. Compatibility with the IEC standard ultimately ensures the continued profitability of all investments – including those you have already made. In addition, ***e!****COCKPIT* also supports modern paradigms, such as Object-Oriented Programming (OOP).

ADVANTAGES:

- Based on CODESYS 3 technology
- IEC 61131-3:
  No need to learn new programming
- Object-Oriented Programming (OOP):
  Benefit from modern paradigms

VISUALIZING

Industry-Leading Operating and Monitoring



**Modern Visualization –
Modern Machines**

Advanced user interfaces for machine operating and monitoring are standard. Today, HMI-based design is a critical factor that influences the purchase of an entire automation line. ***e!****COCKPIT* employs Drag & Drop to streamline the design of modern user interfaces.

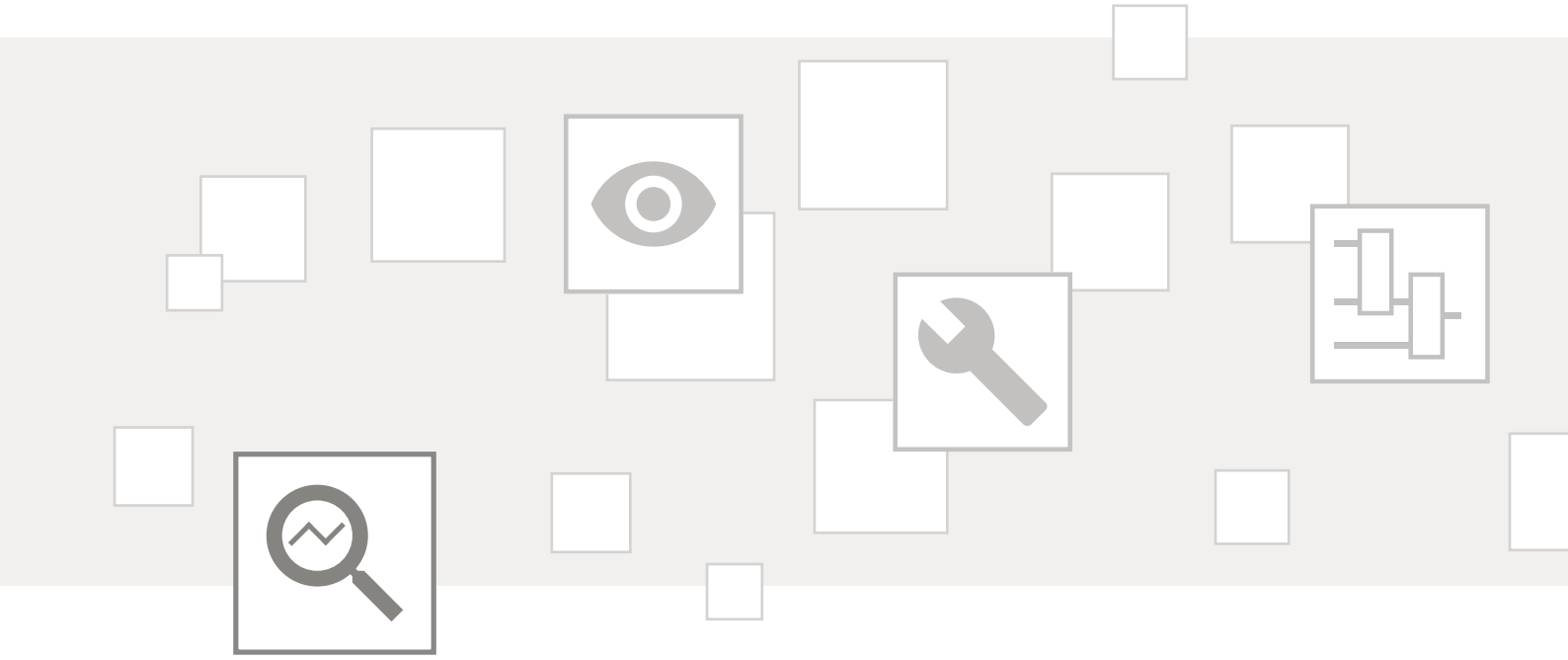
The integrated visualization editor offers direct access to program variables; the HMI and PLC programs can be simulated on the engineering PC without being opened, dramatically expediting project development. Using Unicode and modern standards, such as HTML or CSS, also provides freedom from the traditional barriers of language and target systems.

ADVANTAGES:

- Modernized operating and monitoring user interfaces
- Integrated visualization editor: Direct access to program variables
- Not bound to any one language or target system: Unicode, HTML 5 or CSS

DIAGNOSING

Fast Development, Commissioning and Maintenance



Simple Diagnostics Are Critical Every Step of the Way

Being acutely aware of the automation network's current status is an absolute must for the rapid detection and elimination of errors – be it during development in the office or directly on the machine during commissioning.

e!*COCKPIT* offers comprehensive diagnostics options for this, with individual views always displaying the control systems' current status data – in both tables and diagrams.

To keep the project on time, error messages are transmitted directly and clearly. Employing the structured wiring test function, erroneous wiring can be systematically identified. Even with complex automation solutions, you always have a clear status overview.

ADVANTAGES:

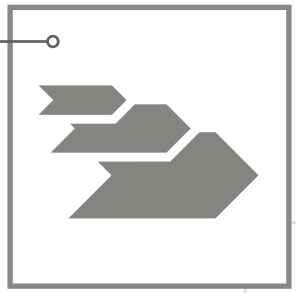
- **Systematic status views: Always have a complete system overview**
- **Extensive diagnostics options: Fast error localization and elimination**

e!COCKPIT – YOUR BENEFITS

Engineering Software for Automation Technology

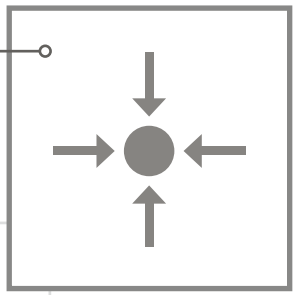
Integrated Engineering:
One Software for Every Task

e!*COCKPIT* offers end-to-end functions, which optimally support all automation tasks: from data import for upstream software tools, through programming and on up to commissioning. Accelerate project development.



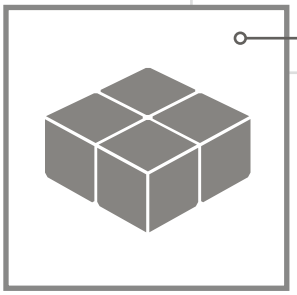
A Smart Design That
Invites You to Discover

The modern user interface will stay in step with ever-evolving demands. Well-structured, clearly laid out, customizable and focused – only the functions and commands relevant to task at hand are displayed. This makes adapting to new software easy.



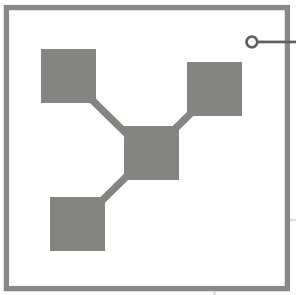
Modern Software

From the onset, ***e!****COCKPIT* was developed to be, and remain, state of the art. In addition to the integration of established standards, the software is equipped with end-to-end data storage and automatic online upgrades to pace fast-moving industry trends. Always stay up to date.



CODESYS V3 –
The Technological Platform

e!*COCKPIT* is based on the CODESYS V3 software platform. This recognized industrial standard allows you to reuse previously created software to maximize the profitability of every investment.

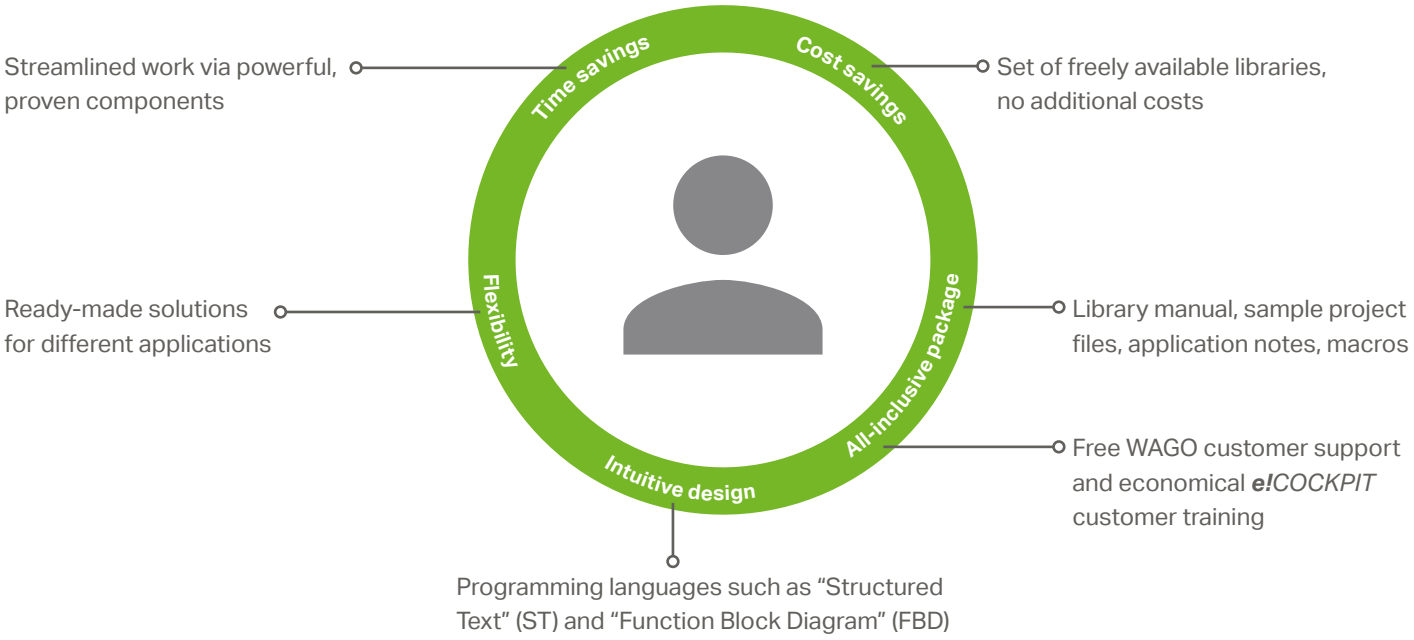


Graphical Network Configuration

e!*COCKPIT* provides graphical network configuration. Put yourself in complete control of even the most complex automation networks.

e!COCKPIT LIBRARIES

Automation Made Easy!



e!*COCKPIT* comes standard with a large number of free libraries containing extensively tested function blocks for various automation tasks. Save time by choosing between several hundred function modules.

Ready-Made Solutions for Many Applications
Whether automating buildings, machines, plants and other processes – use ready-made solutions:

- Communication via protocols, such as Ethernet-IP, CANopen and MODBUS
- Functions include lighting, timer functions, energy metering, network diagnostic maintenance, data logging and cloud integration
- Direct integration of third-party devices, e.g., for data collection and proprietary customization of vendor-specific solutions

For more information, see the ***e!****COCKPIT* libraries manual:

Orientation via Intuitive Naming
Libraries provided by WAGO for ***e!****COCKPIT* are classified into layers and named according to their abstraction degree. Quickly find what you need!

Library Name Prefix	Use
WagoSol	**Solution-oriented libraries** with ready-made software solutions, e.g., for building automation
WagoApp	**Application-oriented libraries** with technology-based functions and simple applications
WagoSys	Full access to the **system layer** for experienced programmers
WagoTypes	**Support functions** for overlaid layers

Anything Is Possible Thanks to Your Own Libraries
Can't find a WAGO library for your specific, individual application? Create your own library in ***e!****COCKPIT* and use your function blocks whenever you need them.

e!COCKPIT AT A GLANCE

Systems, Integrated Functions and Interfaces

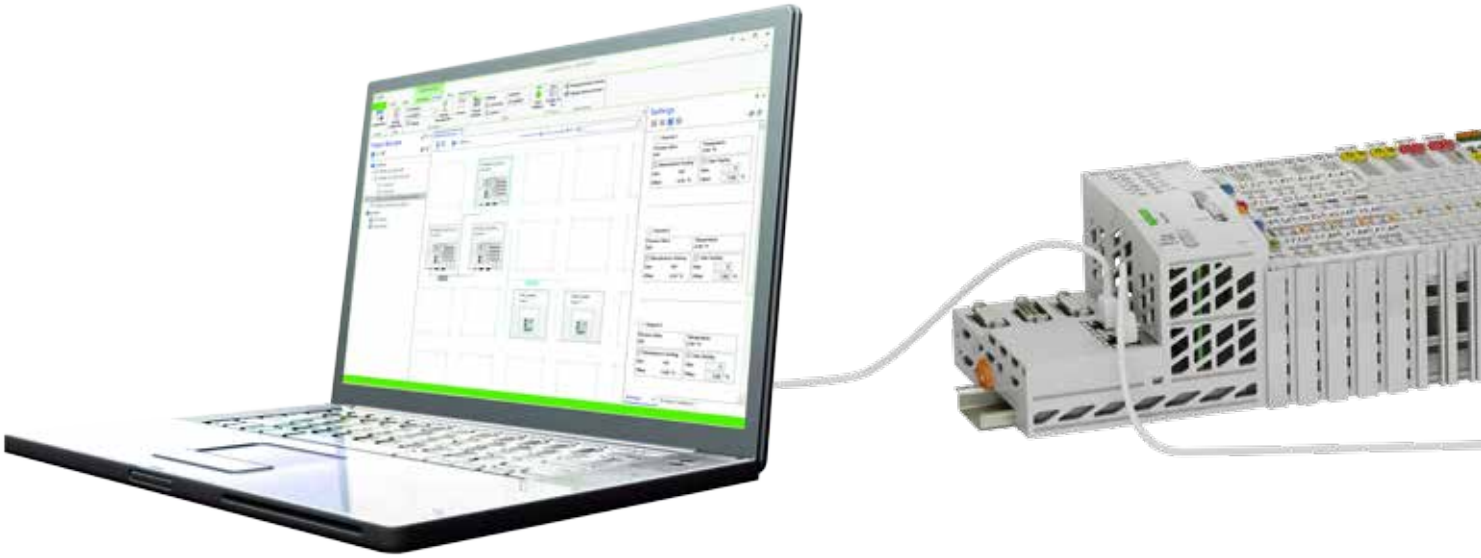
Configuring		
Device configuration	Controllers based on CODESYS V3, 750/753 Series I/O Systems	
Fieldbus configuration	CANopen, MODBUS TCP/UDP, MODBUS RTU, PROFIBUS	
Field device integration	Manufacturer-independent support of EDS and GSD device description files	
Connectivity	TCP, USB, OPC, network variables, CODESYS DataServer	
Programming		
Programming languages	Structured Text (ST), Ladder Diagram (LD), Function Block Diagram (FBD), Instruction List (IL), Sequential Function Chart (SFC), Continuous Function Chart (CFC)	
Methods and tools	Object-oriented programming, source level debugging, project-wide cross reference monitoring	
Simulation	PC-based control, operation and monitoring simulation	
Technologies	Comprehensive base technologies that feature IEC libraries (e.g., control technology, communication)	
Visualizing		
Display	Supports modern Web browsers via HTML 5 and CSS	
Language selection	Nearly an unlimited number of languages supported by UNICODE	
Diagnosing		
Diagnostic views	Integrated wiring test feature, targeted network and device diagnostics using context-related views	
Software Features		
Import and export interfaces	CODESYS V3 project files and archives, PLC Open, ***smart***DESIGNER, I/O mapping, device configuration	
Convenience features	Automatic online updates, flexible, savable workspaces, automatic download of project changes	
Supported operating systems	Windows 7, Windows 8, Windows 10	
System requirements	Minimum: Dualcore CPU, 4 GB RAM 10 GB free hard drive memory 1,366 x 768 px display resolution	Recommended: Quadcore CPU, 8 GB RAM 10 GB free hard drive memory 1,920 x 1,080 px screen resolution
Licensing	30-day trial, workstation, multi-user, site, buy-out license	

ADDITIONAL INFORMATION

Please contact us – we would be happy to provide an in-person presentation of *e!COCKPIT*. Additional information is available on our website: www.wago.com/ecockpit

e!COCKPIT IN ACTION

Ideal for PFC Controllers and the WAGO-I/O-SYSTEM 750



PFC Controllers

As valuable members of the WAGO controller family, the PFC Controllers shine thanks to their high processing speeds and application diversity. The PFC100 blends an extremely compact design with high performance.

The PFC200 excels with its wide range of interfaces and generous memory.

Both are generously equipped with two ETHERNET ports and additional communication interfaces, such as RS-232/-485, CANopen, PROFIBUS DP or MODBUS (depending on model).

To ensure a high level of security, SSL/TLS, SSH, VPN and a firewall are standard. With the integrated Web-based Management, as well as state-of-the-art HTML5 visualization, the PFC Controllers offer a convenient programming environment. This is perfectly complemented by ***e!****COCKPIT* and the real-time capable Linux® operating system. With these features, the PFC Controllers readily support the migration to ***e!****COCKPIT*.

ADVANTAGES:

- PLC and IT functions all in one device
- Linux® real-time operating system
- Visualization and configuration via Web-server
- High level security with SSH and SSL/TLS, VPN and a firewall

The WAGO-I/O-SYSTEM 750: One System for Every Application

Optimized for process-oriented communication, the WAGO-I/O-SYSTEM offers scalable performance and high integration density at an unbeatable price/performance ratio.
With a fieldbus-independent design that features finely granular and modular components, the WAGO-I/O-SYSTEM readily meets all the requirements placed on distributed fieldbus systems.

The system also carries certifications from prominent worldwide agencies for use in extremely diverse applications. This design reduces hardware and system costs while providing virtually unlimited application possibilities.
The WAGO-I/O-SYSTEM provides simple operation and maximum efficiency!

ADVANTAGES:

- Open, fieldbus-independent design maximizes return on investment
- More than 500 different 1-, 2-, 4-, 8- and 16-channel function modules
- Tested and approved worldwide

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