Welcome

Webinars 2020

Software y Tecnologías

IMA

Antonio Gordillo IMA Septiembre 2020

PHOENIX CONTACT
INSPIRING INNOVATIONS

Webinar Software y Tecnologías

Agenda

- Software Suite para Controladores Inline, Axioline, RFC
- Software para Controladores PLC PC WORX
- Software para Controladores PLCnext
- Software de Diagnóstico y Configuración de Sistemas de Control
- Software para Diagnóstico de Red
- Softwares para OPC y OPC UA
- Softwares para Sistemas de Entradas/Salidas PROJECT+
- Software para inicio de estaciones Axioline STARTUP+

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Webinar Software y Tecnologías

Agenda

- Software para parametrización de Interfaces de Comunicación
- Software para Seguridad Funcional
- Software para Visualización HMI y SCADA

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Webinar Software y Tecnologías

Agenda

- Tecnología PROFINET
- Tecnología OPC UA
- Tecnología DIGITAL TWIN
- Tecnología PLCnext Technology
- Tecnología PROFICLOUD
- Tecnología SMART Services
- Tecnologías E-Mobility
- Tecnologías IIoT
- Tecnología Plataforma Industria 4.0

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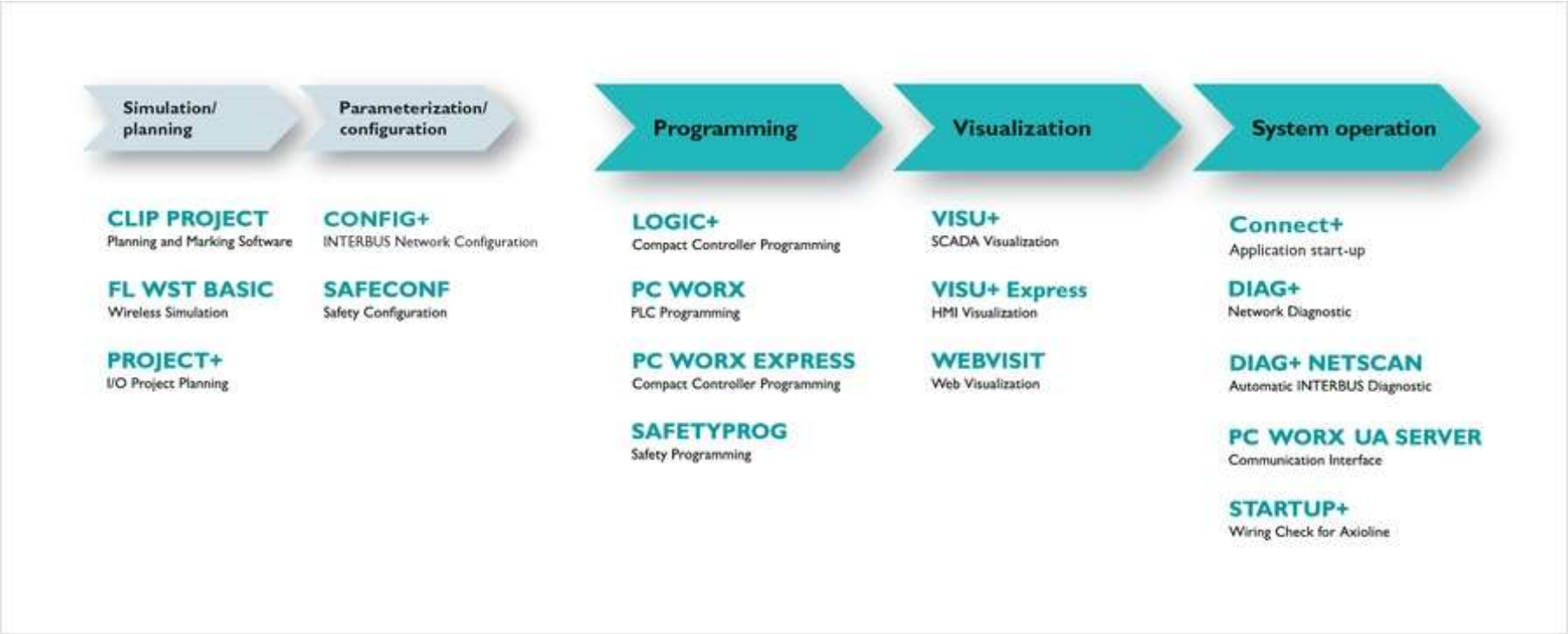
Software

AUTOMATIONWORX



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Softwares de Automatización

AUTOMATIONWORX Software

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Software

AX SW SUITE

The AUTOMATIONWORX Software Suite is a comprehensive collection of optimally coordinated software tools for the Automation Worx automation system consisting of

PC WORX
PC WORX EXPRESS
DIAG+
DIAG+ NETSCAN
CONFIG+
VISU+
VISU+ EXPRESS
WEBVISIT
AX OPC SERVER

2985660 AX SW SUITE DEMO

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Softwares

PC WORX PC WORX EXPRESS

PC WORX

PLC programming

PC WORX DEMO	Order No. 2985725
PC WORX BASIC LIC	Order No. 2985275
PC WORX PRO LIC	Order No. 2985385

- Programming of Phoenix Contact controllers
- Network configuration and diagnostics
- Numerous programming languages supported: IL, FBD, LD, ST, SFC, FFLD

PC WORX EXPRESS

Programming small-scale controllers

PC WORX EXPRESS Order No. 2988670

- Programming for class 100 and AXC 1050 modular small-scale controllers
- Automation system configuration
- INTERBUS module parameterization
- Programming languages supported: FBD, LD, ST
- 128 kB input/output data (mix)
- Can be downloaded free of charge

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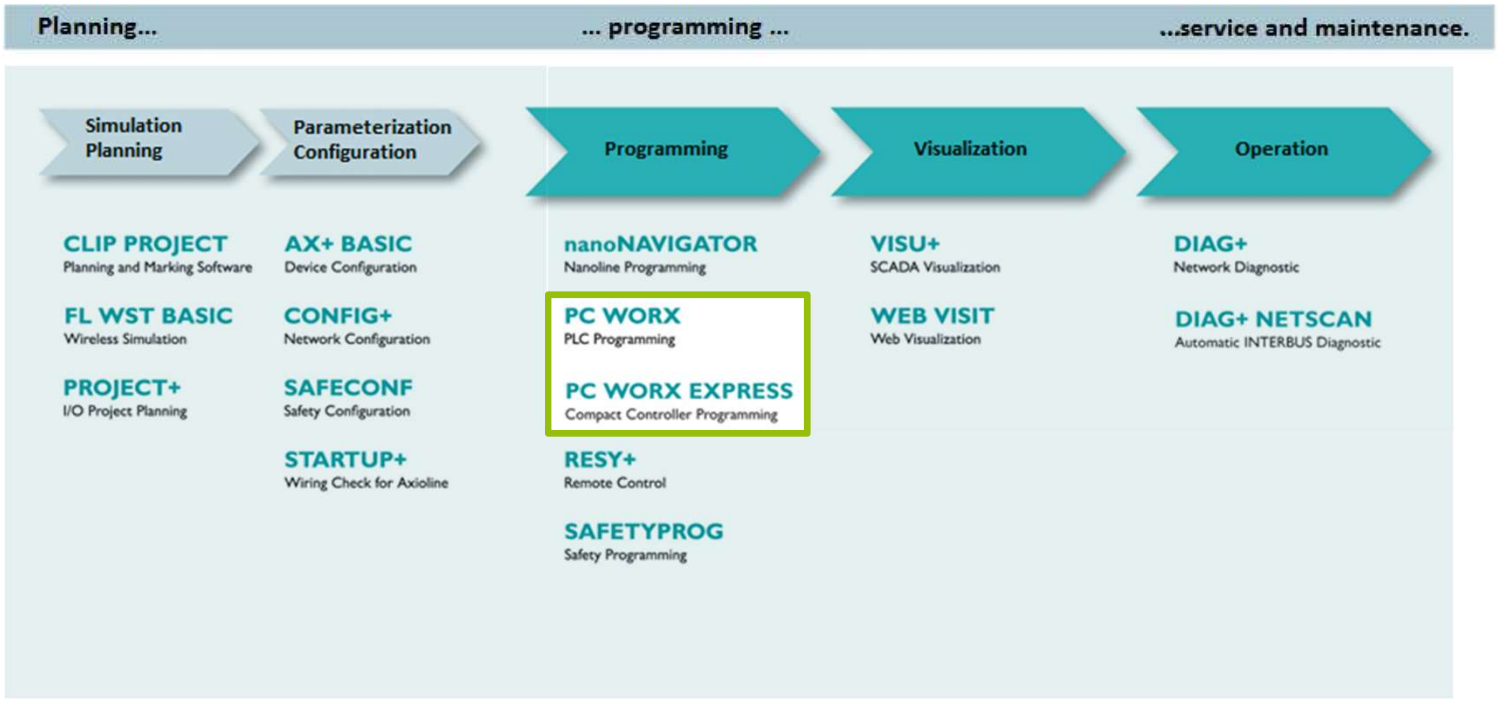
AUTOMATIONWORX Software Overview



Engineering Workflow

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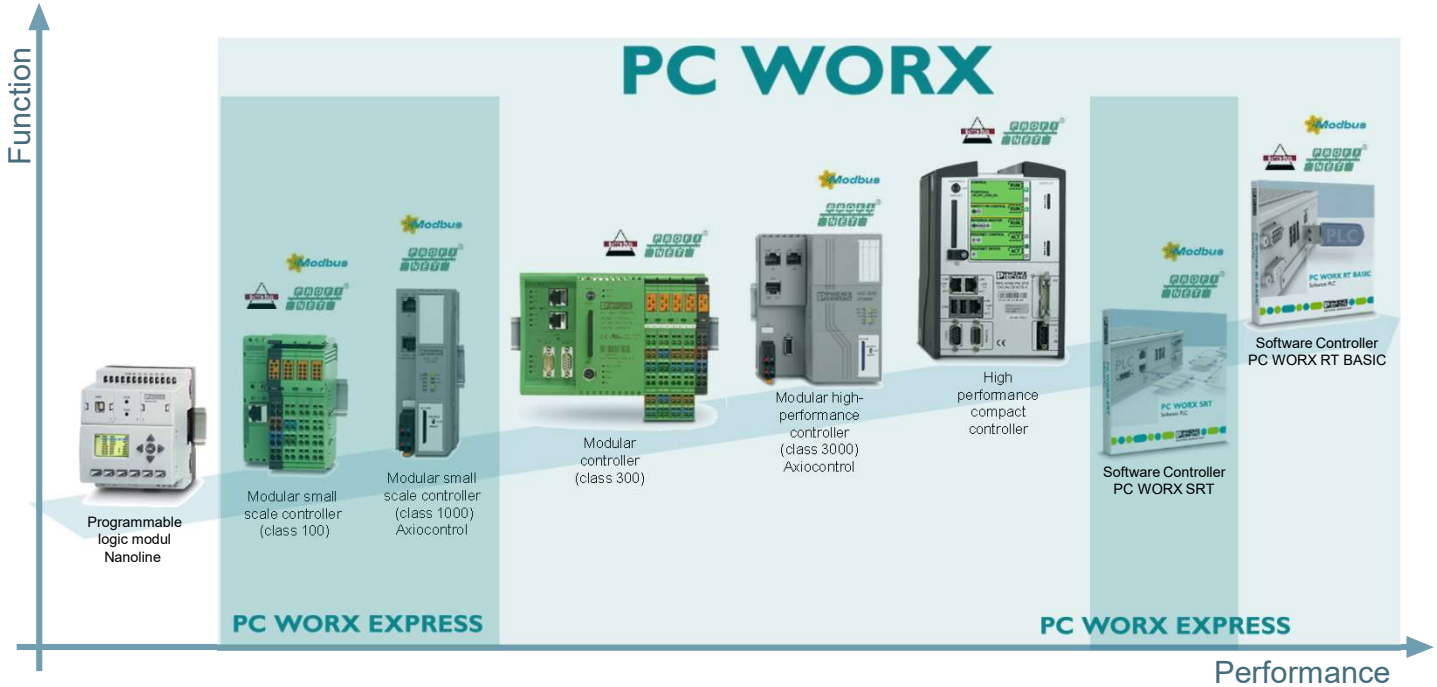
PC WORX – Compatible controller



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PC WORX

Worldwide consistent programming – IEC 61131

Integrated software-tools

Fast and flexible programming

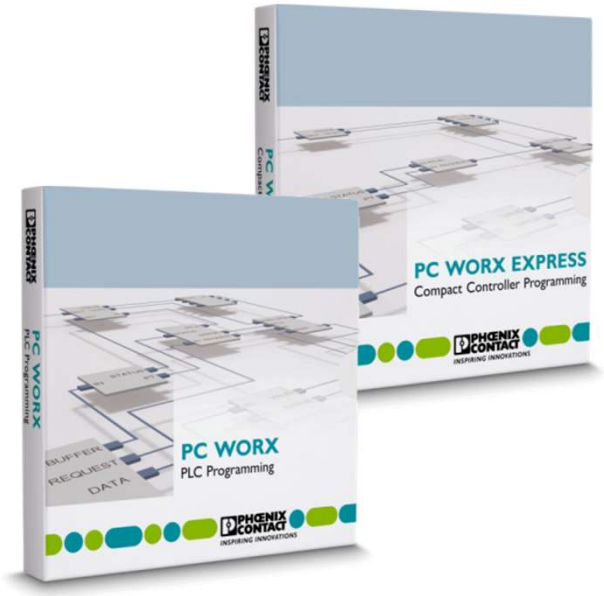
- Additional standard libraries

Extensible

- User functions
- Function blocks or libraries

Easy handling

- Intuitive user interface
- Clear structures



One software for every engineering step

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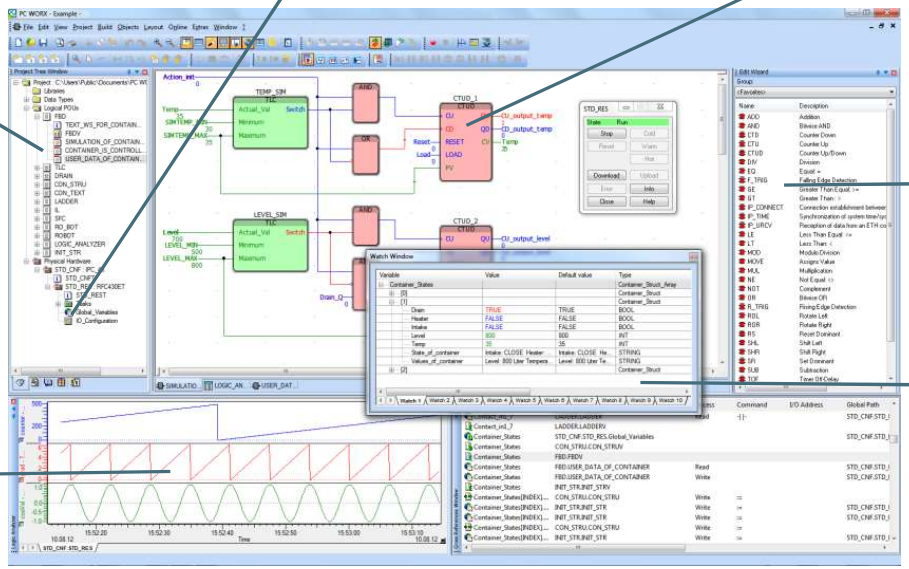
PC WORX – IEC 61131

All programming languages

PLC networks

Free grafical editor



Editor-assistent

Watch windows

Cycle consistent logic analyzer

One programming system for all controllers

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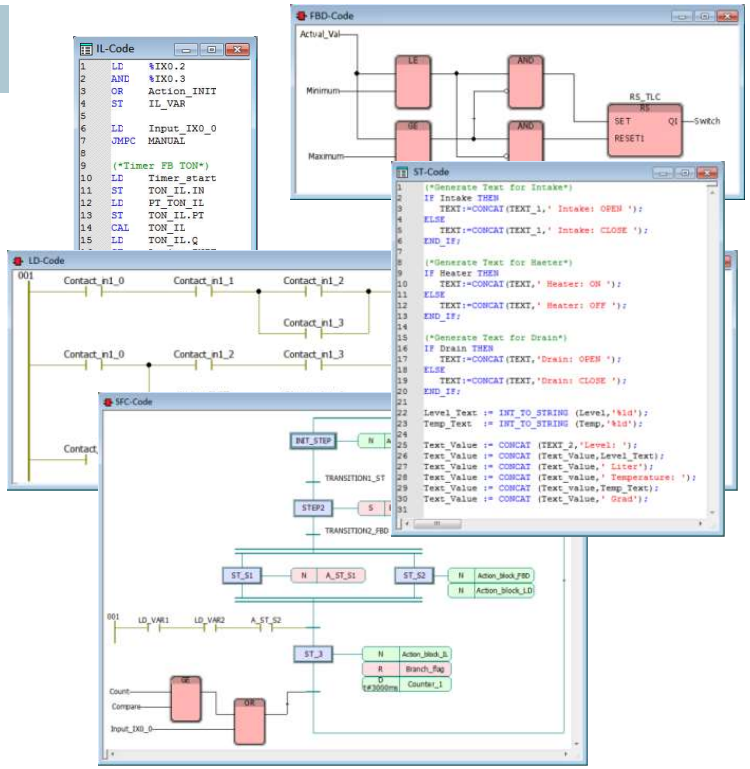
PC WORX – IEC 61131

Fast start with project templates

- Ladder logic (LD)
- Fixed format ladder logic (FFLD)
- Function block diagram (FBD)
- Instruction list (IL)
- Structured text (ST)
- Sequential function chart (SFC)



Easy handling

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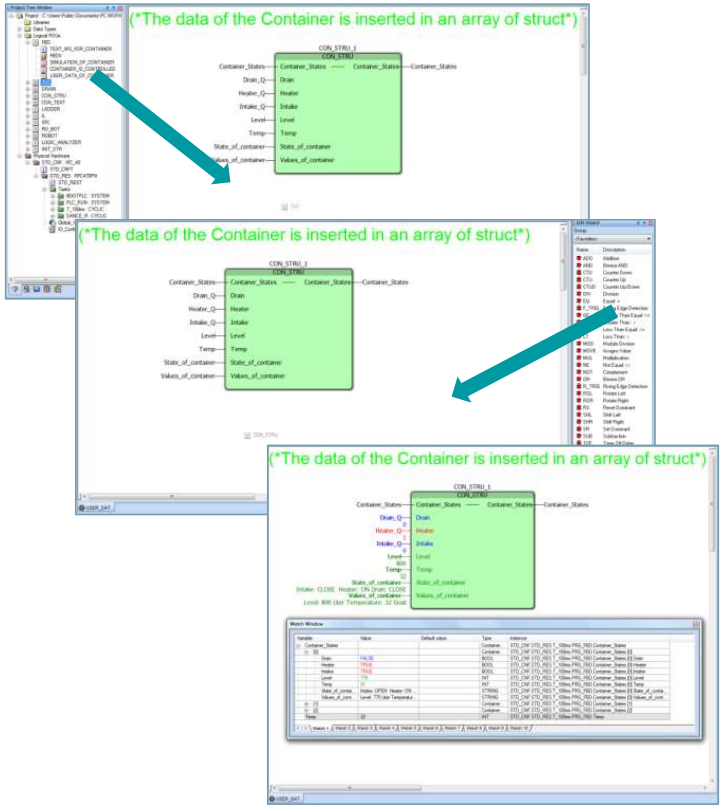
PC WORX – IEC 61131

Consistent Drag & Drop

- Project tree
- Editor assistant
- Variable editor
- Watch windows
- Logic analyzer



Easy programming

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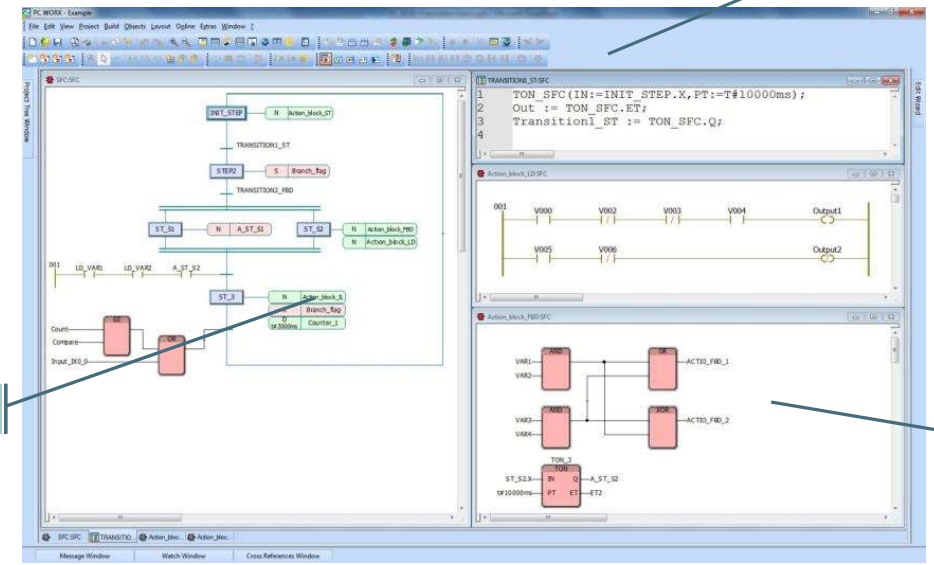
PC WORX – IEC 61131 editors

IntelliSense



Auto-Routing

Implicit addressing

Free graphical or network based programming

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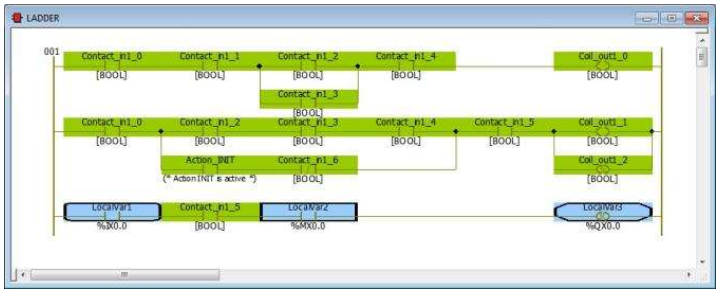
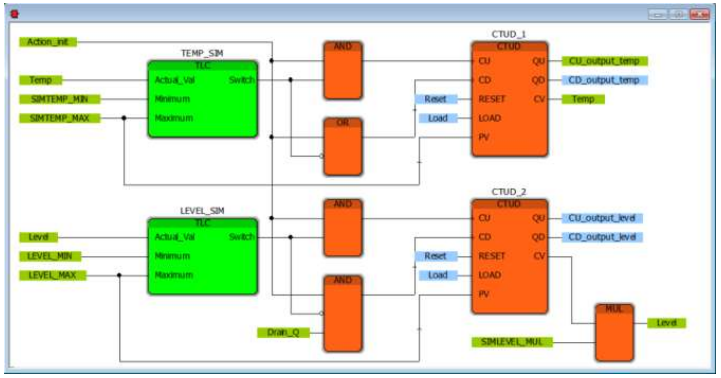
PC WORX – Graphical programming

LD and FFLD

- Free graphical or network based programming
- ST-statements possible (IF, THEN, ELSE)
- LD and FFLD objects mixable
- Auto-Routing
- Easy keyboard handling – programming without mouse



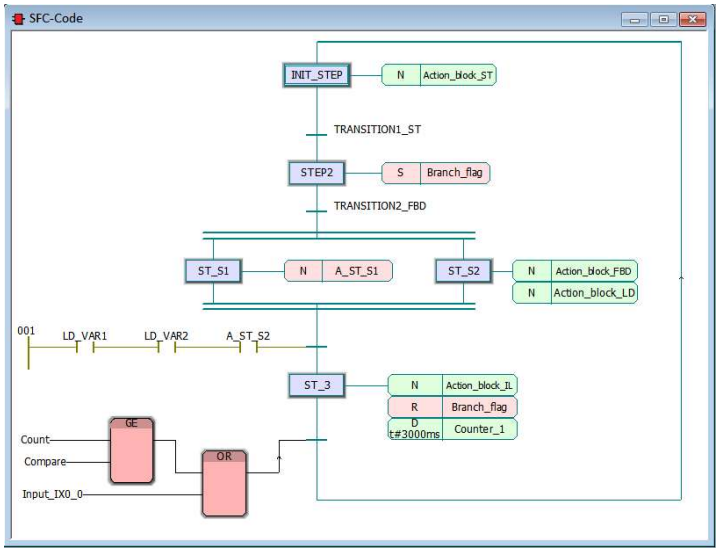


INSPIRING INNOVATIONS

PC WORX – Graphical programming

SFC

- Automatic insert and placing of objects
- Actions and transitions in all base IEC 61131-3 languages
- Auto routing
- Easy keyboard handling – programming without mouse



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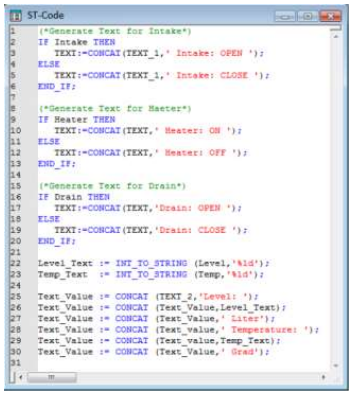
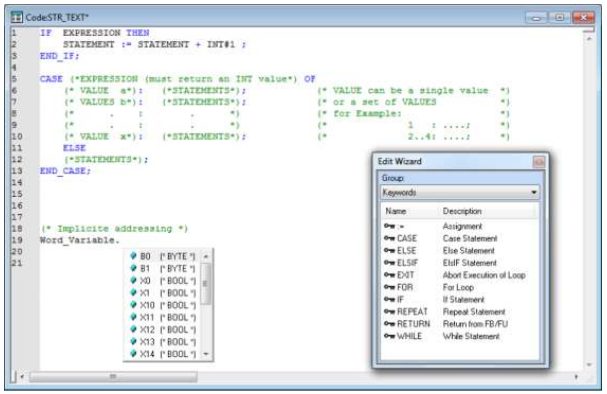
PC WORX – Network based programming

IL and ST

- Syntax highlighting
- Editor assistant for keywords, functions and function blocks
- Context sensitive menus





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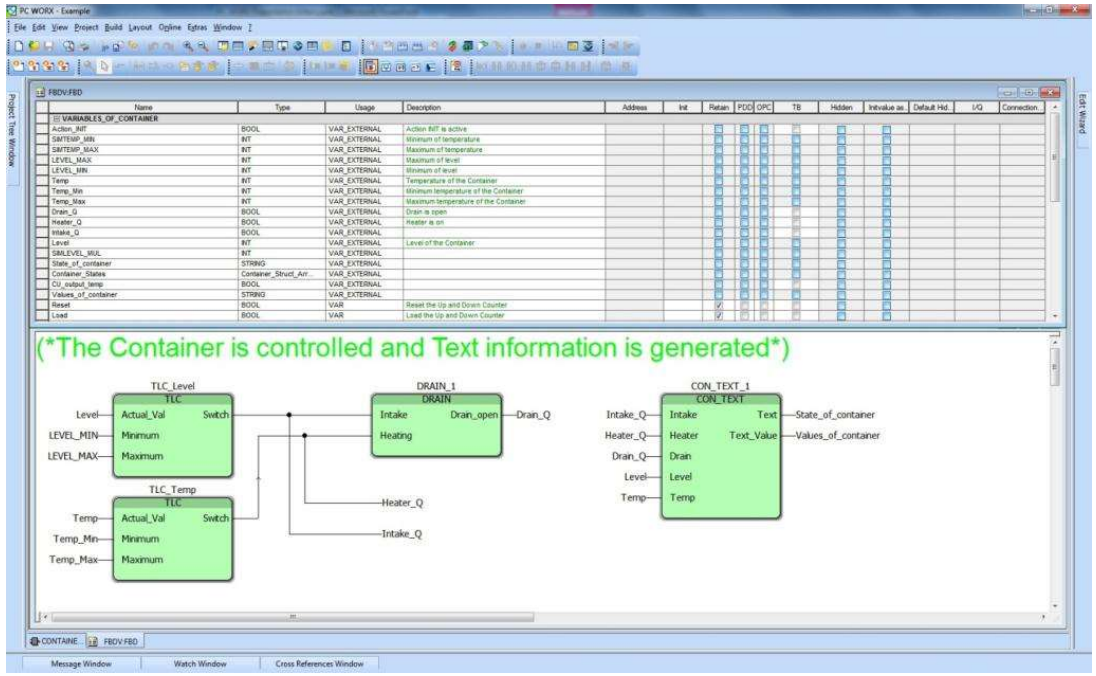
PC WORX – Variable management



Assistants monitor every step | errors are displayed visually

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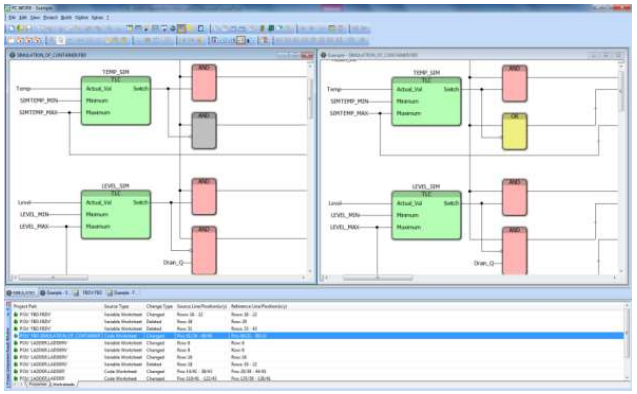
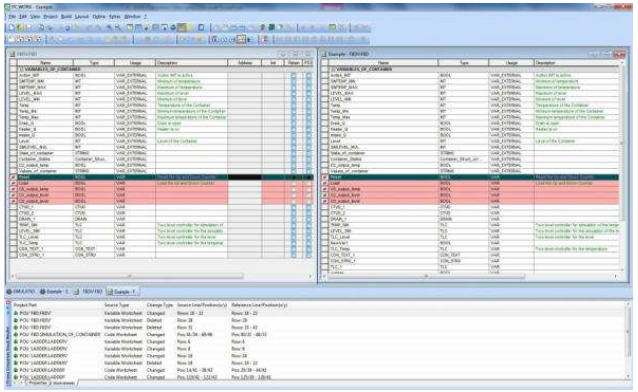
PC WORX – Features

Online und Offline

- Own workspace for program comparison
- Differences will be shown vise versa and highlighted
- Differences in configuration settings will be listed
- Print of differences possible





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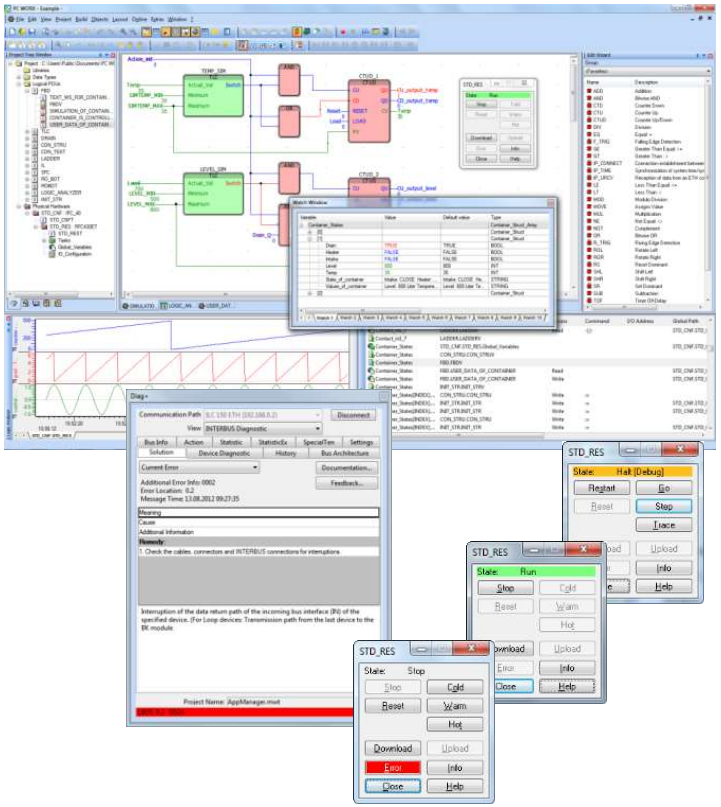
PC WORX – Features

Program und network

- Logic analyzer
- Breakpoints / Single step
- Online debug in libraries
- Instance debug
- Watch windows / recipe management
- Force list
- Plain text messages of PLC errors
- Network- and field bus diagnostic



Easy commissioning and troubleshooting

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PC WORX – Features

Network- and bus configuration

Configuration, parametrization and diagnostic:

- INTERBUS
- PROFINET
- MODBUS
- PROFIBUS
- Ethernet

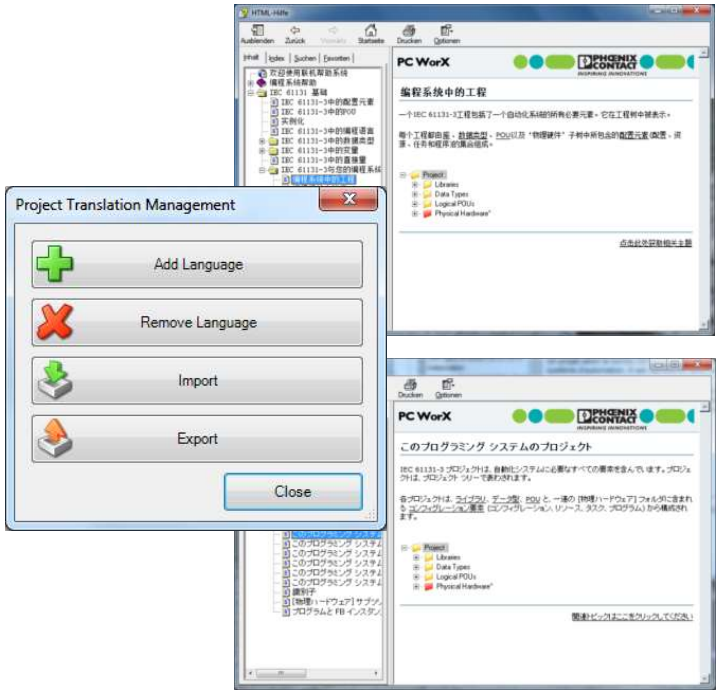
FDT/DTM Technology

Open and uniform

PC WORX – Features

Usable worldwide

- English
- German
- Spanish
- French
- Italy
- Chinese



Easy project translation management

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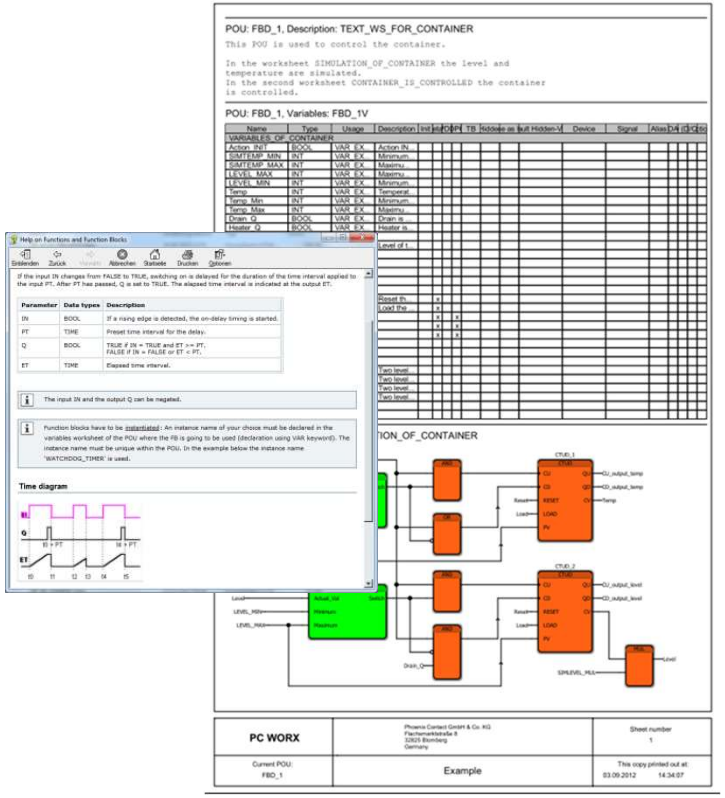
PC WORX – Features

Projekt documentation

Print layout configurable with comfortable page layout editor

User defined documentation for:

- Projects
- Libraries
- Function block functions



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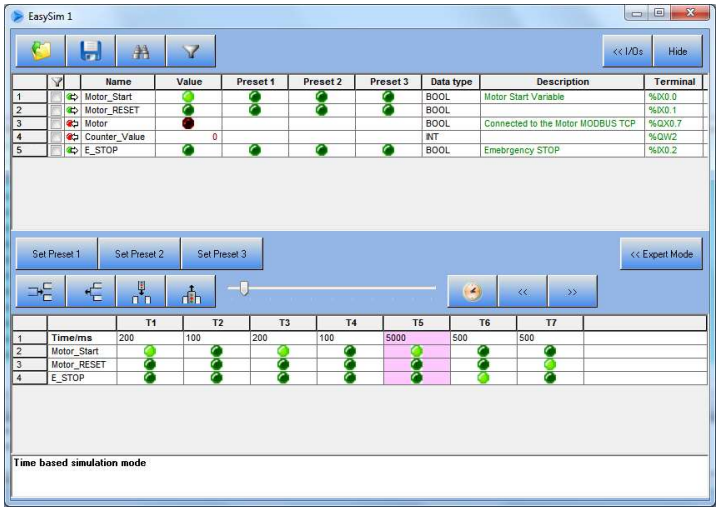
PC WORX – Features

Simulation

- Read and write IO Variables
- Time based simulation of your process
- Comment every simulation step
- Store and reopen the configuration of your simulation



EasySim

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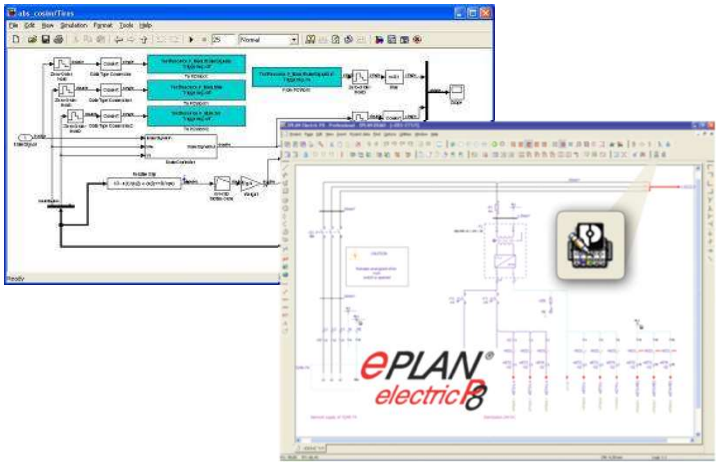
PC WORX – features

Interfaces

- Simulation with WinMOD
- Code generation with Matlab/Simulink® and Stateflow
- PLCopen XML import and export
- EPLAN interface
- Project+ interface
- FDT/DTM



Consistency

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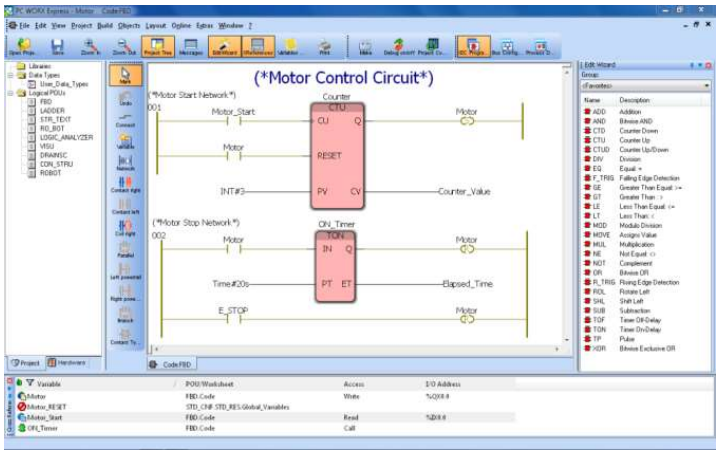
PC WORX – features

Easy Automation - EXPRESS

- Free IEC 61131-3 engineering tool
- For all PLC's of the 1xx class
- Inclusiv configuration and diagnostic



Free download: www.phoenixcontact.com

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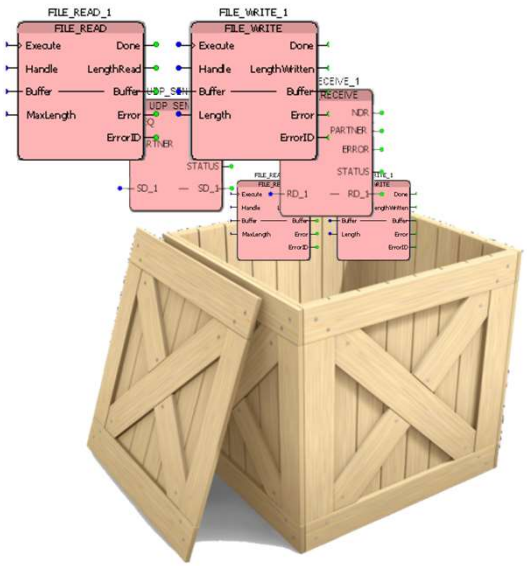
PC WORX – features

Prefabricated libraries

- Analog signal processing
- Control engineering
- IT libraries
- SMTP, SNMP, SQL, FTP Function block libraries
- Building automation
- MODBUS RTU
- Positioning
- CAN open
- And much more…



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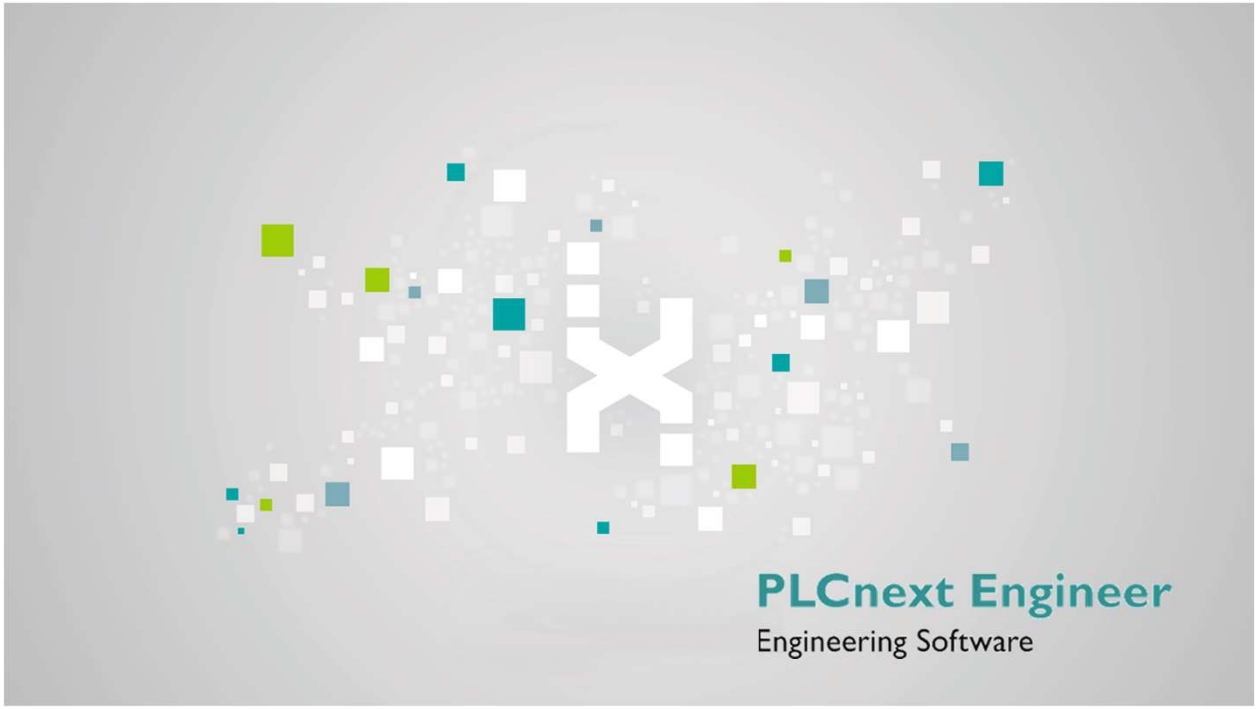
Software para controladores PLCnext

PLCnext Engineer



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PLCnext Technology
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PLCnext Engineer

PLCnext Technology Configuration and Engineering

Fast and flexible configuration

- C-Code, Simulink models, function components, IEC61131-3, Safety, HMI

Extendable

- By licensed add-ins like the Viewer for Simulink

Easy handling

- Intuitive user interface
- Clear structures

The software for configuration and engineering

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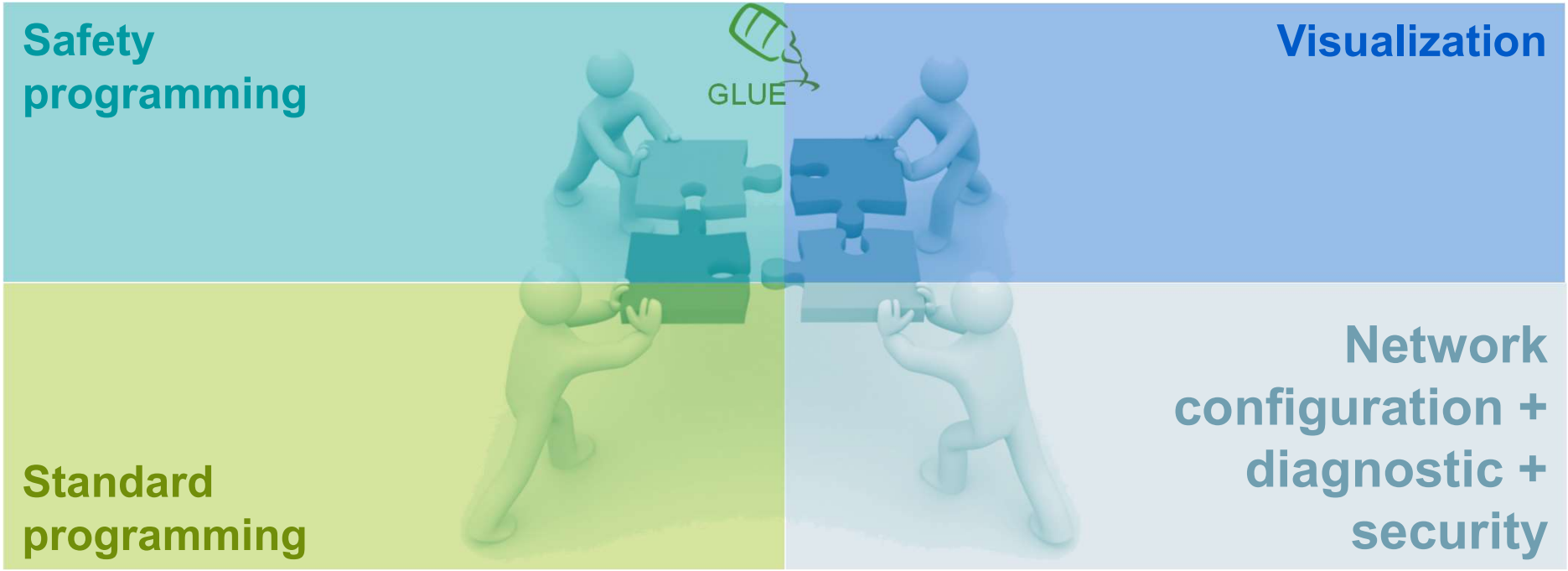
PLCnext Engineer

Complete Integrated System



PLCnext Technology
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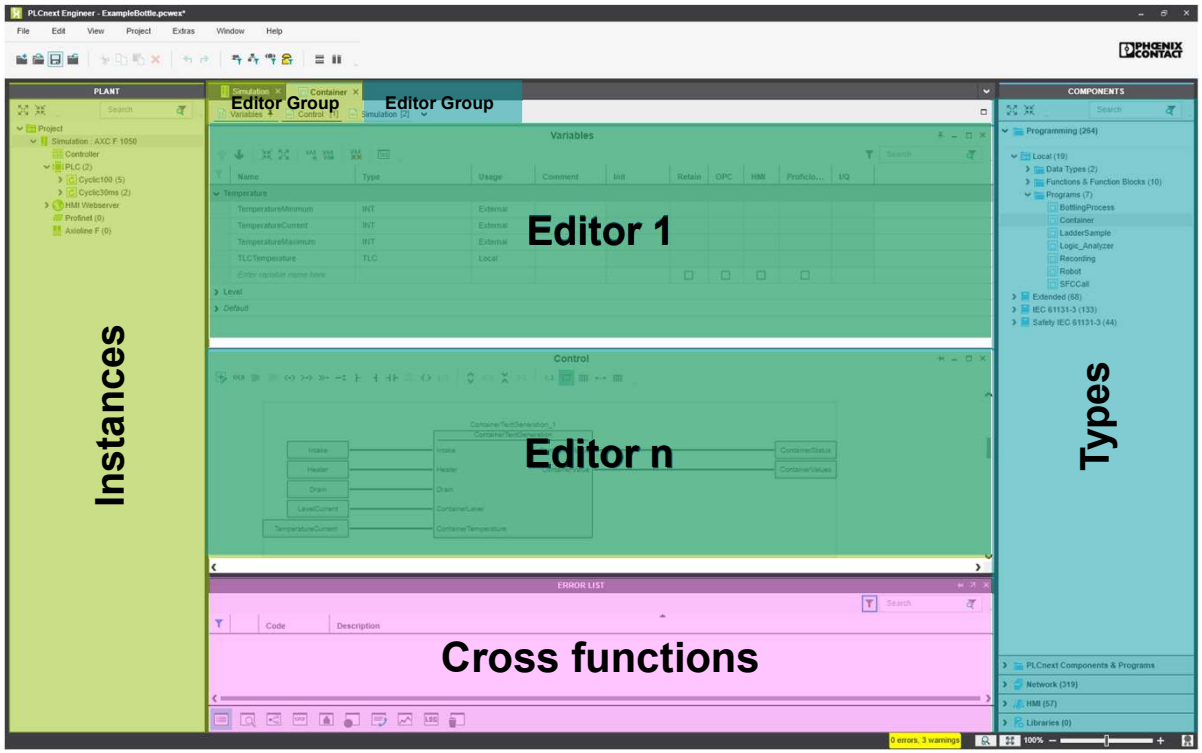
Information Architecture



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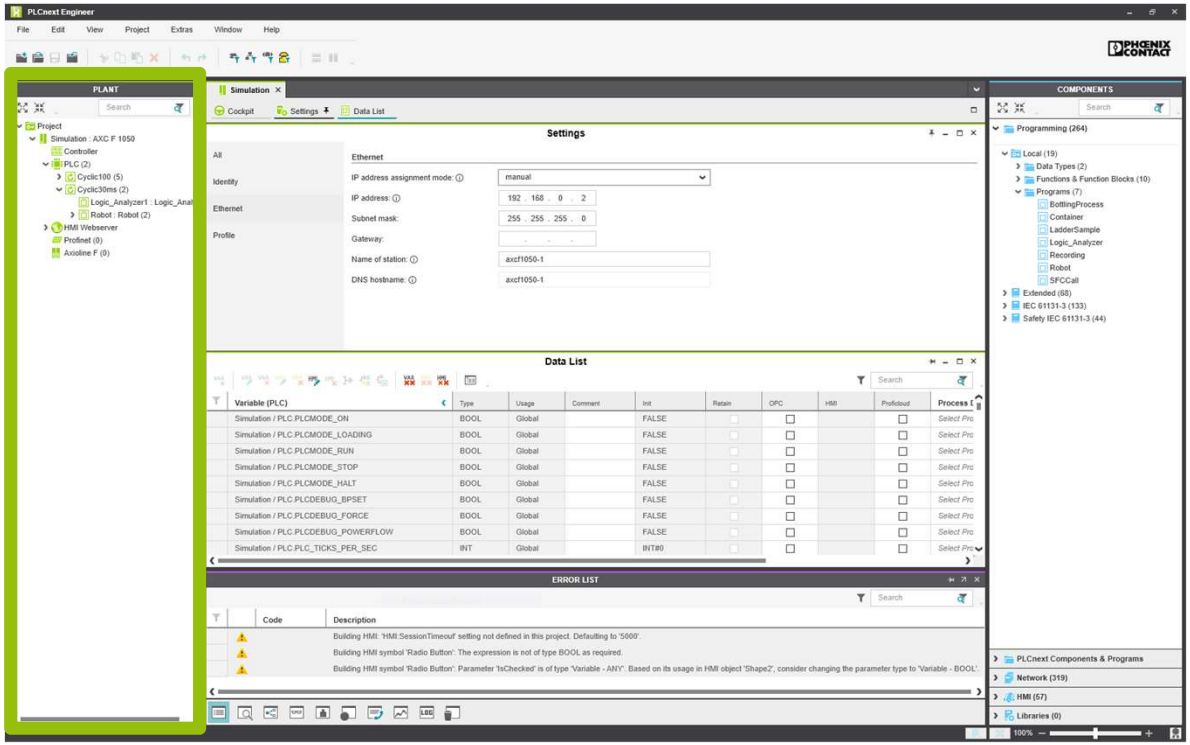
PLCnext Engineer

The User Interface – Plant Area

- Instance trees
  - Programs
  - Visualization pages
  - IO configuration
- Task configuration
- Controller configuration
- Central Cockpit
  - Application control
  - Device information



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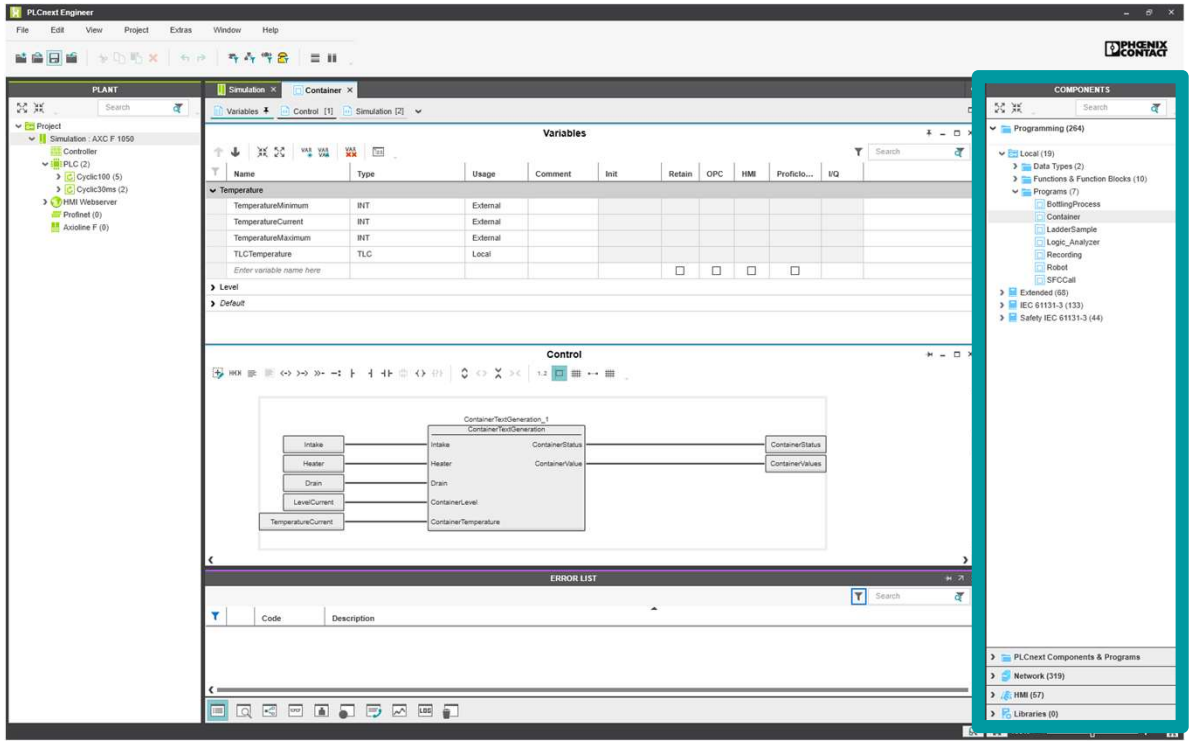
The User Interface – Component Area



- IEC 61131-3
  - Programs, functions and function blocks
  - Data types
- Device catalogue
  - Import of devices
- Visualization symbol library
- References to libraries

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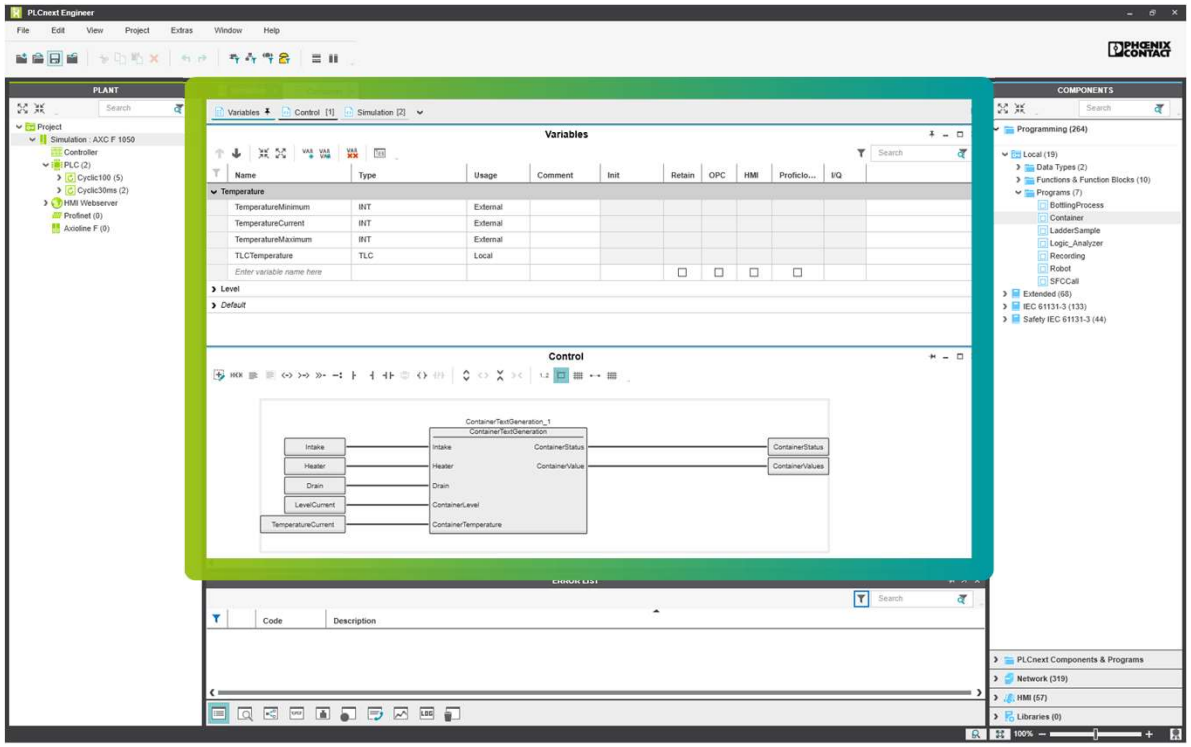
PLCnext Engineer

The User Interface – Editor Area

- Central editing
- Split view windows
- Full screen windows
- Arrange multiple editor windows
- Type or instance Editor color highlighted



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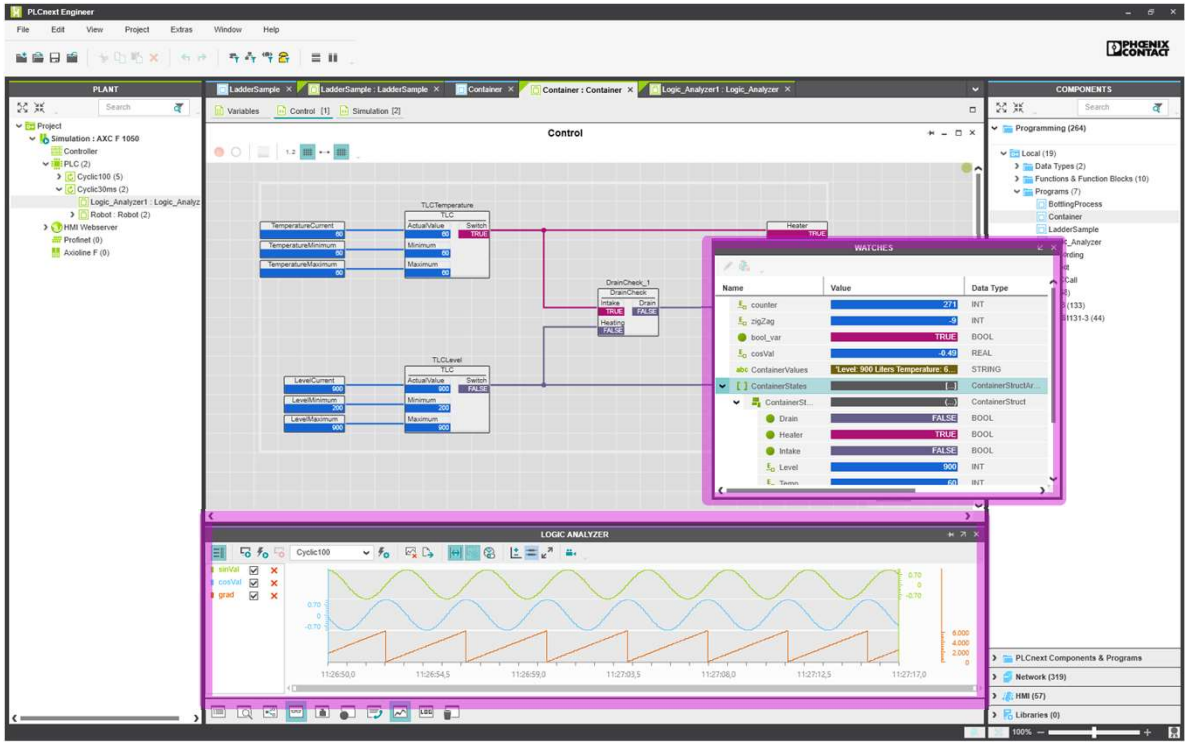
PLCnext Engineer

The User Interface – Cross Function Area

- Undockable windows
- Message window
- Global find & replace
- Cross references
- Watch window
- Debug information
- Logic analyzer
- Logging
- Recycle bin



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PLCnext Engineer

Functional Safety Programming

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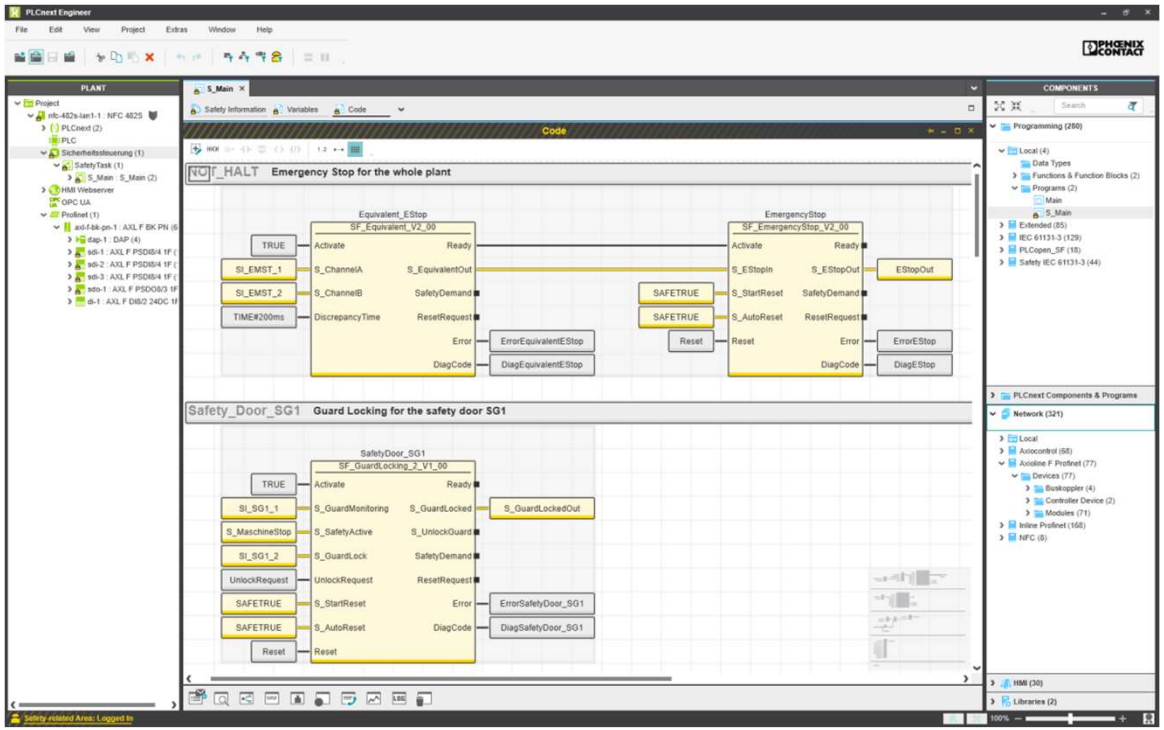
Fully integrated Safety Programming

- TÜV Rheinland certified according to IEC 61508
- Editor with common behavior as known from standard FBD or LD editors
- Low Variability Language support
- Network granular CRC checksums
- PROFIsafe Support



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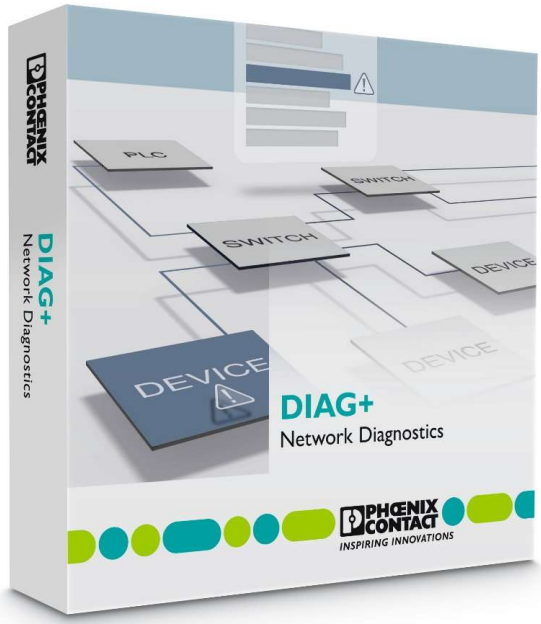
Software de Diagnóstico y Configuración para Sistemas de Control

CONFIG+ DIAG+ DIAG+ NETSCAN



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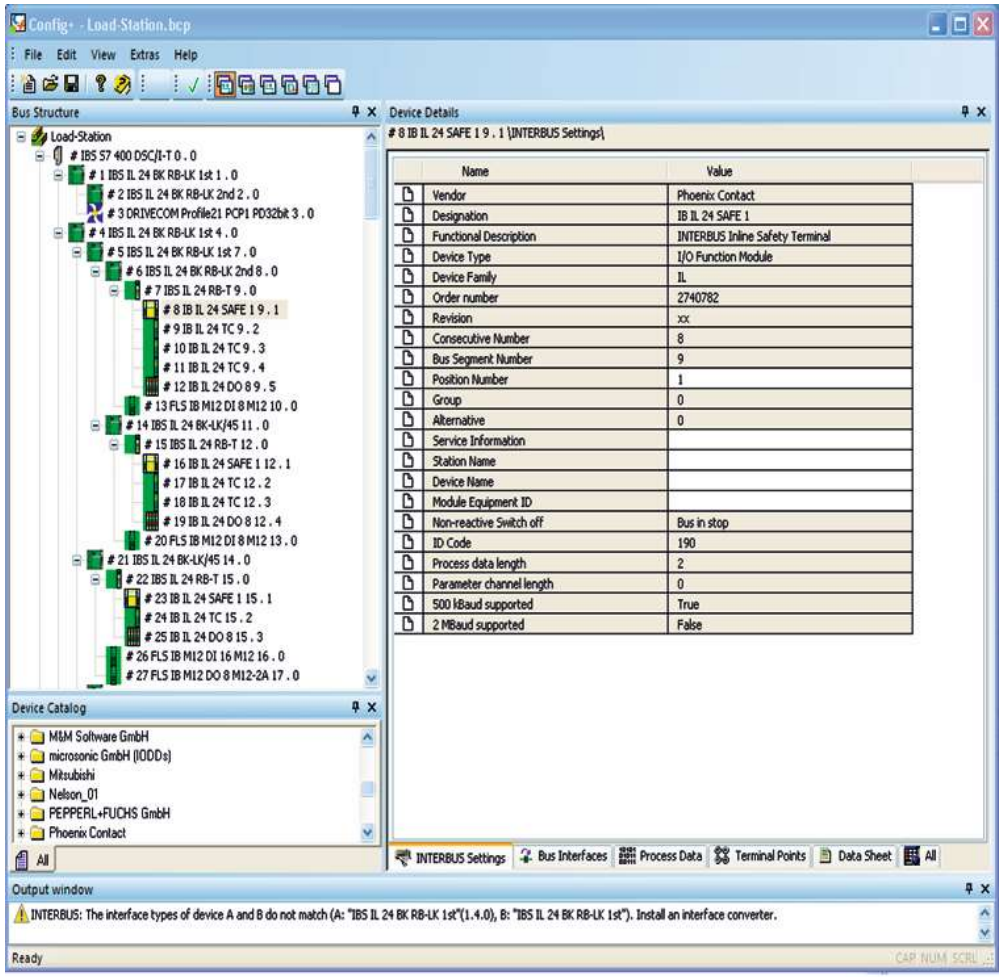
Software de Diagnóstico y Configuración para Sistemas de Control

CONFIG+



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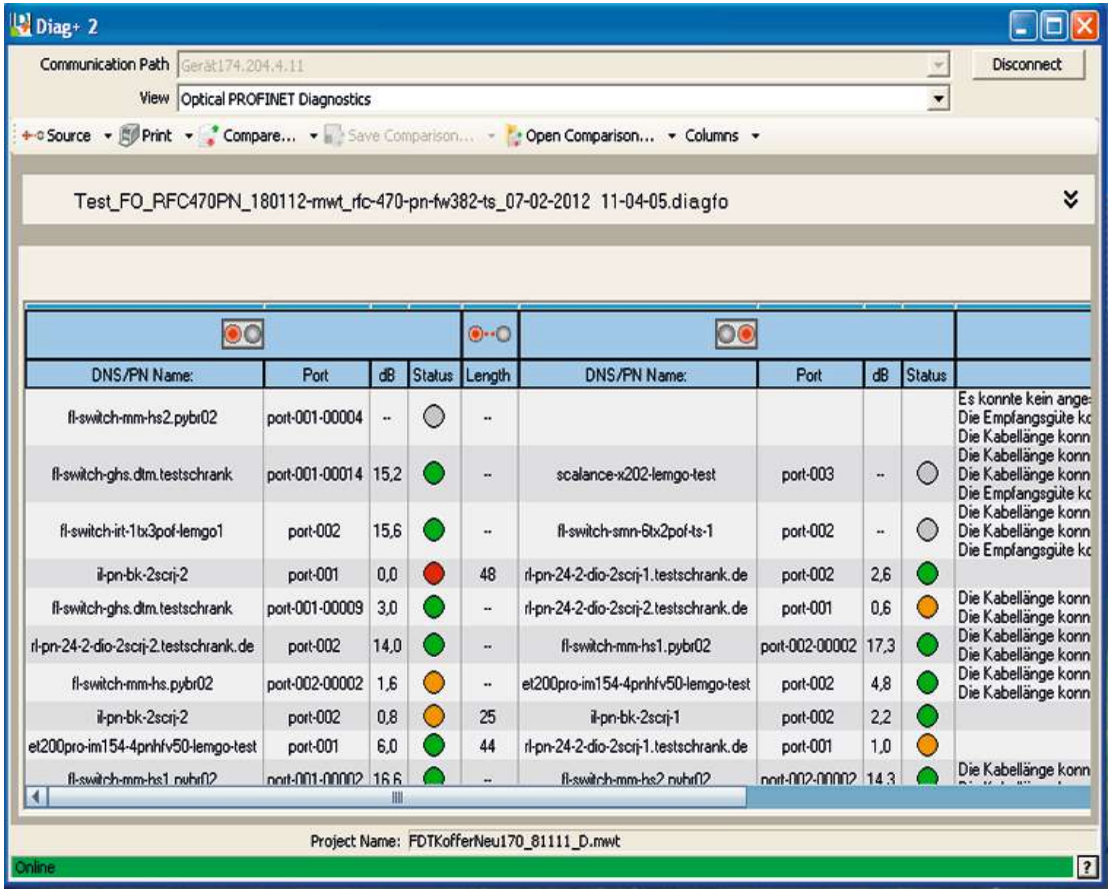
Software de Diagnóstico y Configuración para Sistemas de Control

DIAG+



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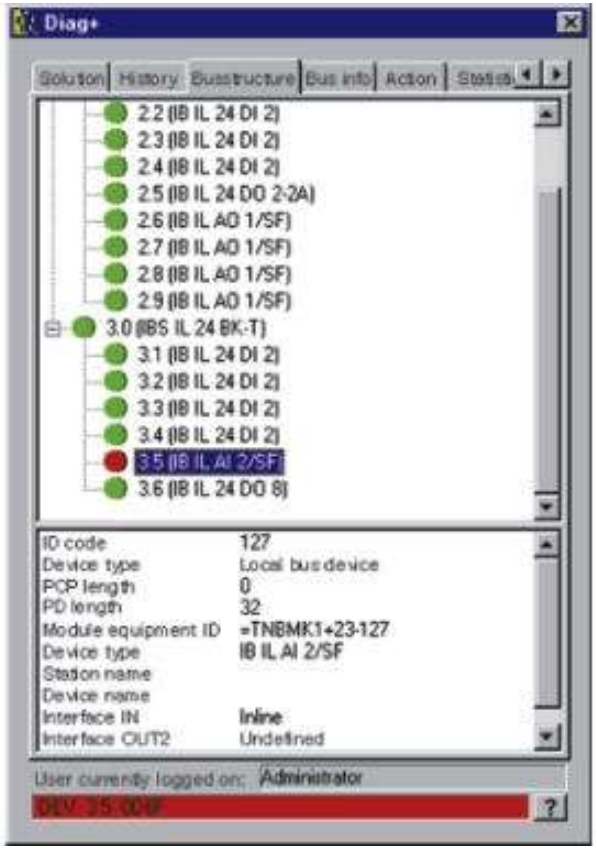
Software de Diagnóstico y Configuración para Sistemas de Control

DIAG+ NETSCAN



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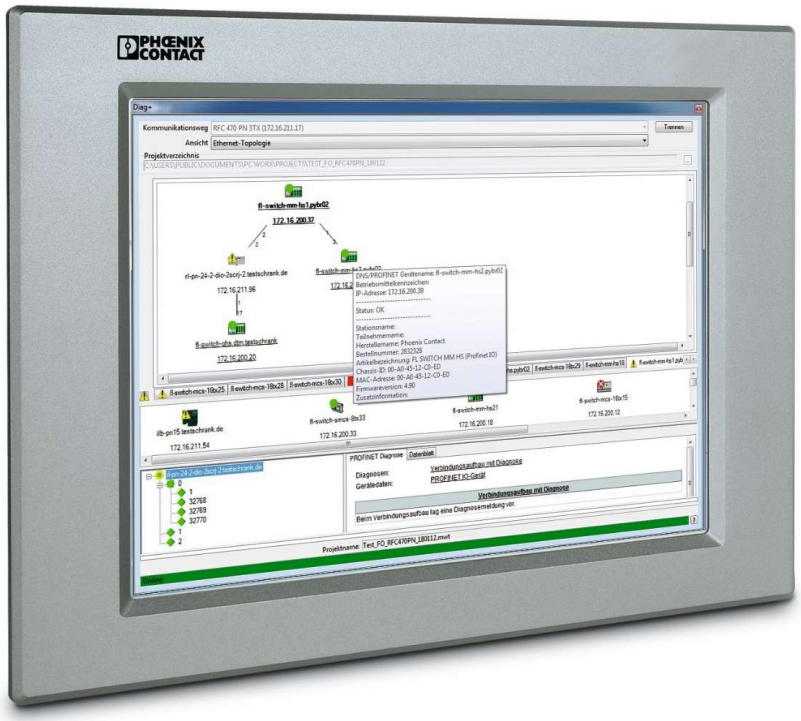
Software de Diagnóstico y Configuración para Sistemas de Control

DIAG+ NETSCAN



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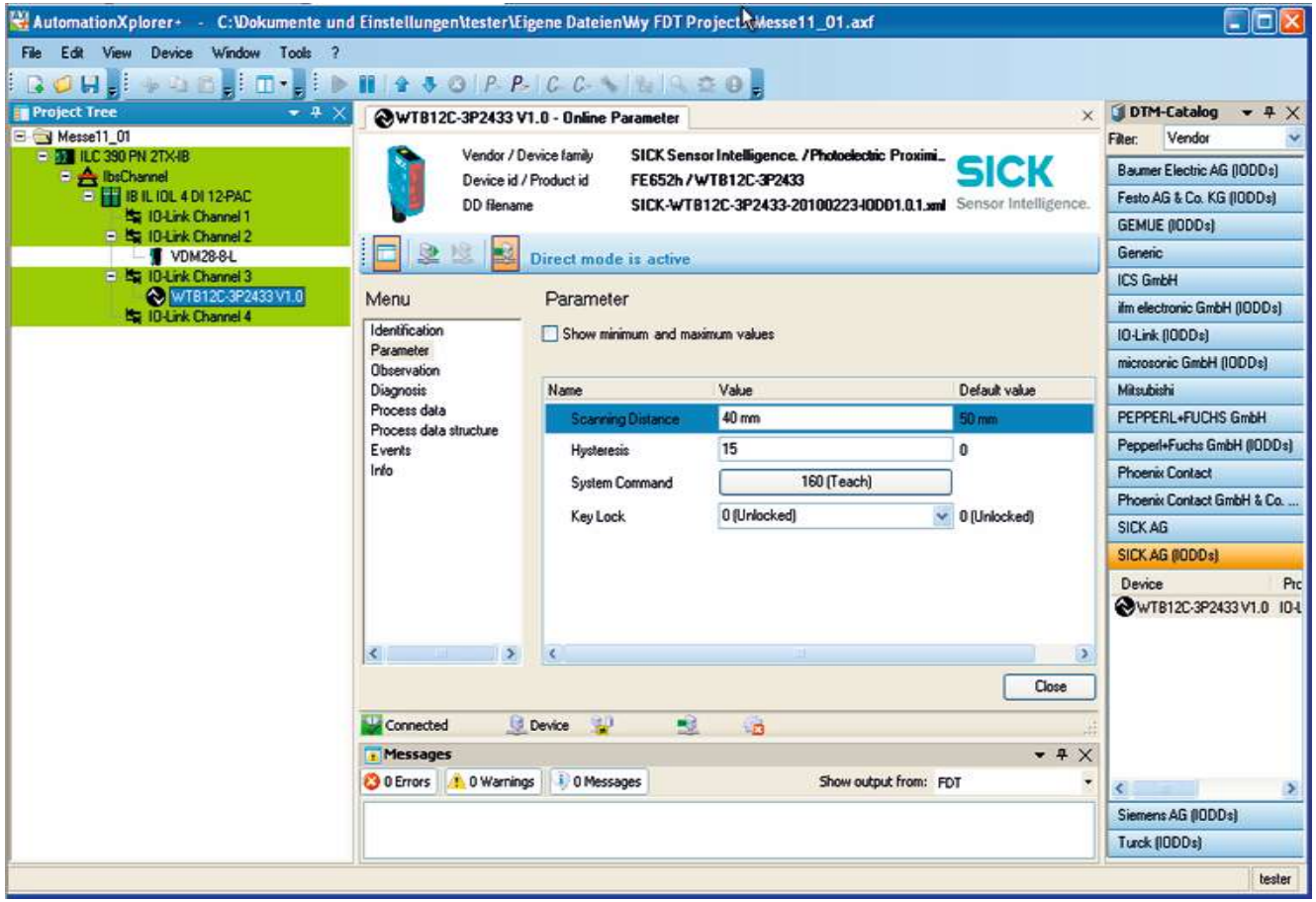
Software de Diagnóstico y Configuración para Sistemas de Control

DIAG+



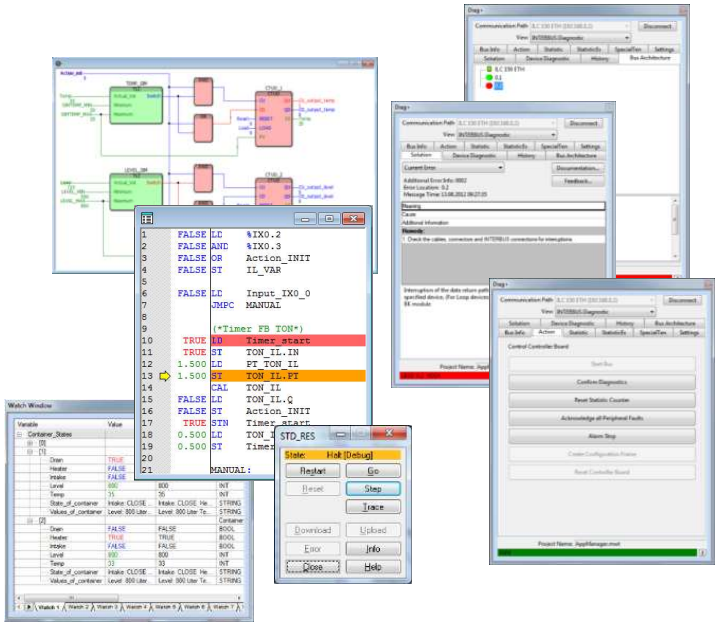
PHOENIX CONTACT
INSPIRING INNOVATIONS

DIAG+ Network Diagnostics

Support in Error Avoiding

Fieldbus Diagnostic with comfortable PLC functions

- Breakpoints
- Individual steps
- Debugging in libraries
- Instance debugging
- Observing values from different program parts in a watch window
- Force list
- Quick bus startup
- Quick error localization thanks to plain-text error messages



Quick error localization and error-free startup thanks to extensive debugging functions.

PHOENIX CONTACT
INSPIRING INNOVATIONS

Herramienta de Software para red

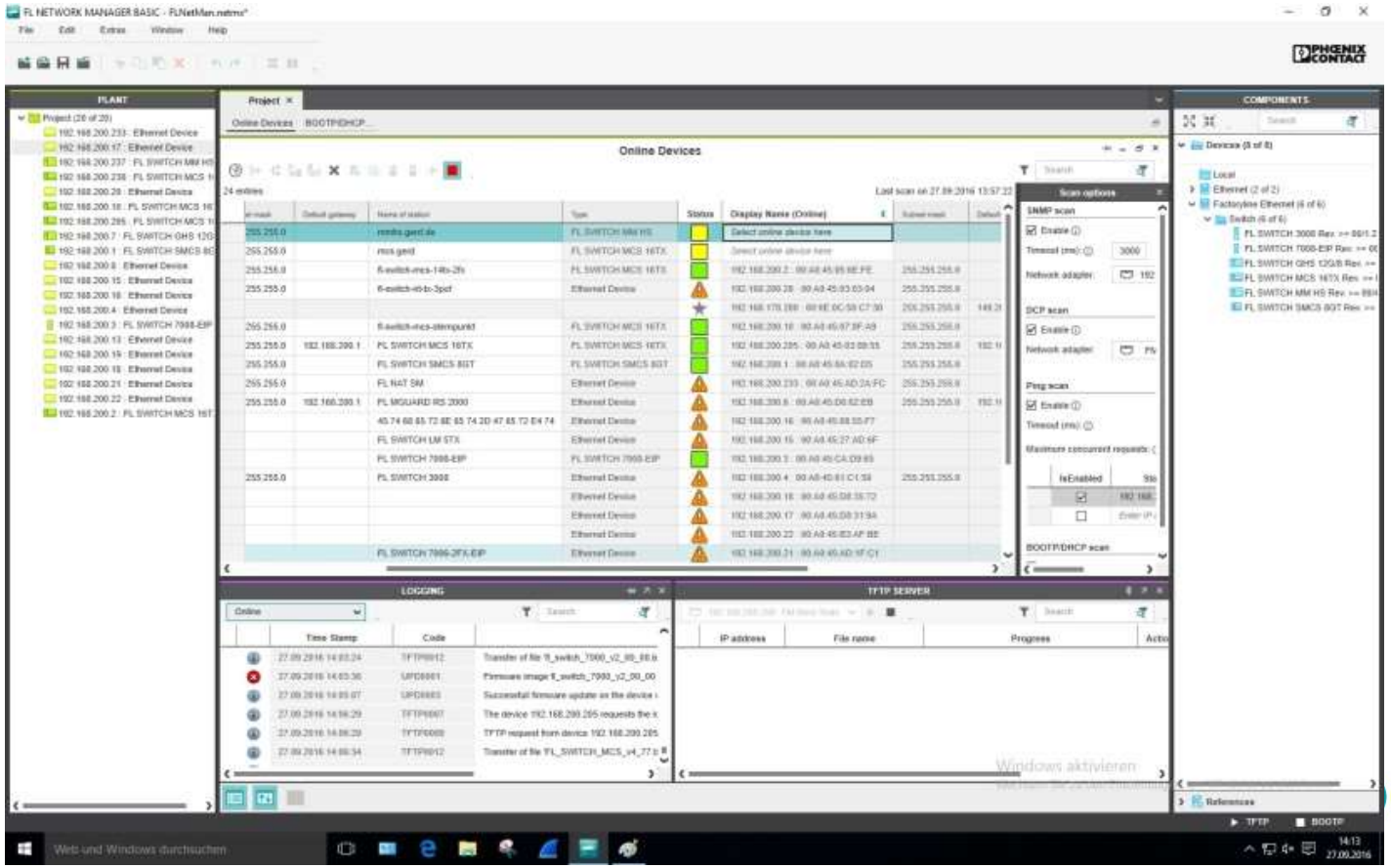
FL NETWORK MANAGER

- With the FL NETWORK MANAGER you are able to get a quick and easy startup of your network . The software supports you with the following functions:
  - Scan of available networks
  - IP Assignment and Multi Device Configuration
  - Configuration File Handling
  - Firmware Update
  - SNMP based scripting

PHOENIX CONTACT
INSPIRING INNOVATIONS

Übersicht der Funktionen des Network Manager

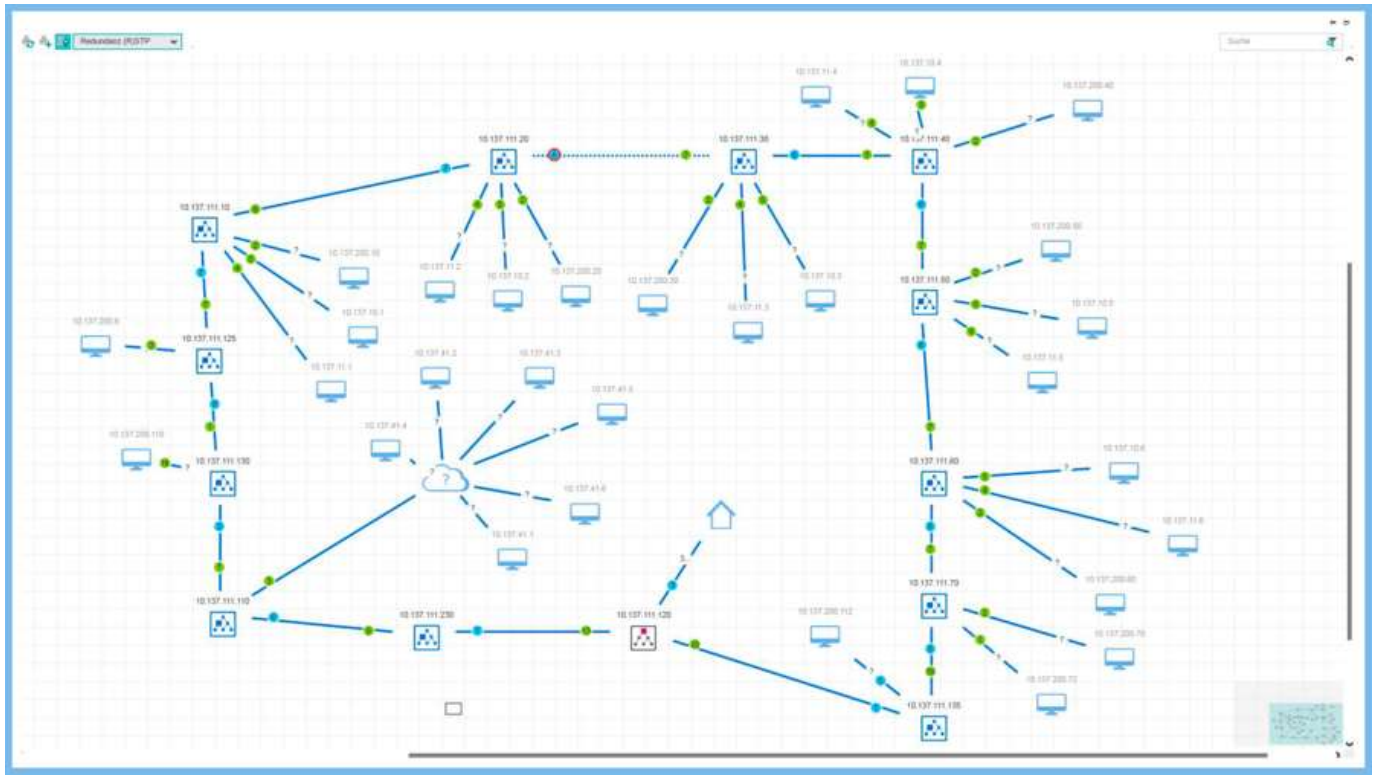
How can the Network Manager help you?



INSPIRING INNOVATIONS

Topology

FL NETWORK MANAGER



PHOENIX CONTACT
INSPIRING INNOVATIONS

Software configurators for OPC

OPC Configurators

PHOENIX CONTACT
INSPIRING INNOVATIONS

Software OPC Visualización

AX OPC SERVER

When all variables of PLC are declared OPC…

Then….

OPC Variables can be used inmediatly on

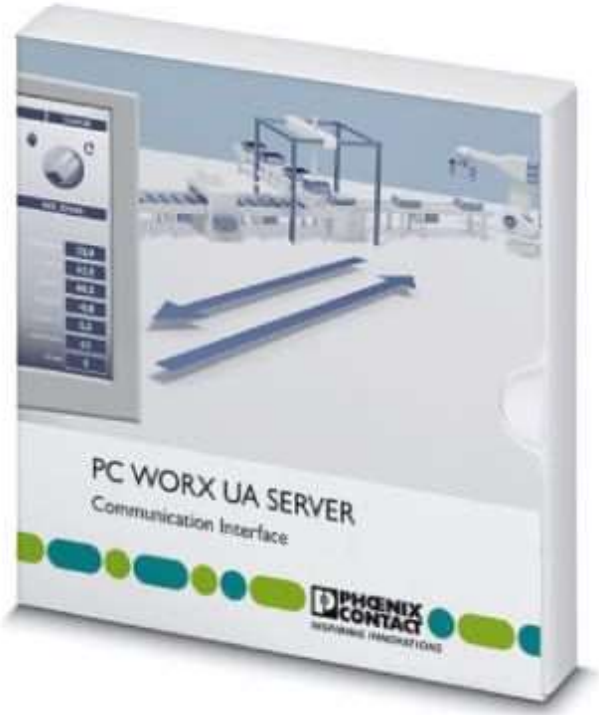
Visualization Software as VISU+

This tool enable communication between PLC and HMI Software

PHOENIX CONTACT
INSPIRING INNOVATIONS

PC WORX OPC UA SERVER

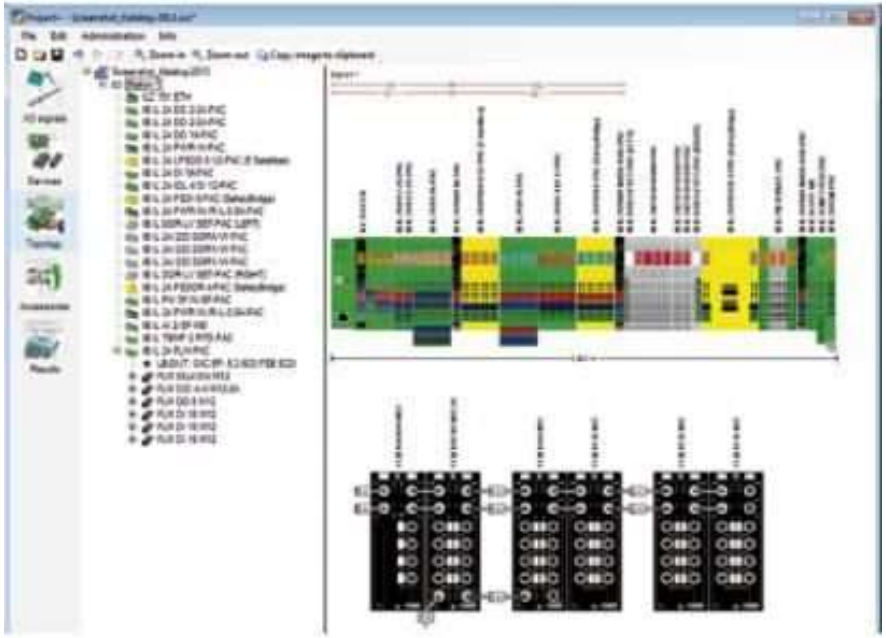
The PC WORX UA SERVER from Phoenix Contact enables you to access all variables of PC Worx programmable controllers via the OPC UA (Unified Architecture) standardized communication protocol.



PHOENIX CONTACT
INSPIRING INNOVATIONS

Software and Technologies

PROJECT+ 2.8



PROJECT+ 2.8

Inline Controllers & Buskopples
I/O

Fieldline Modular

PHOENIX CONTACT
INSPIRING INNOVATIONS

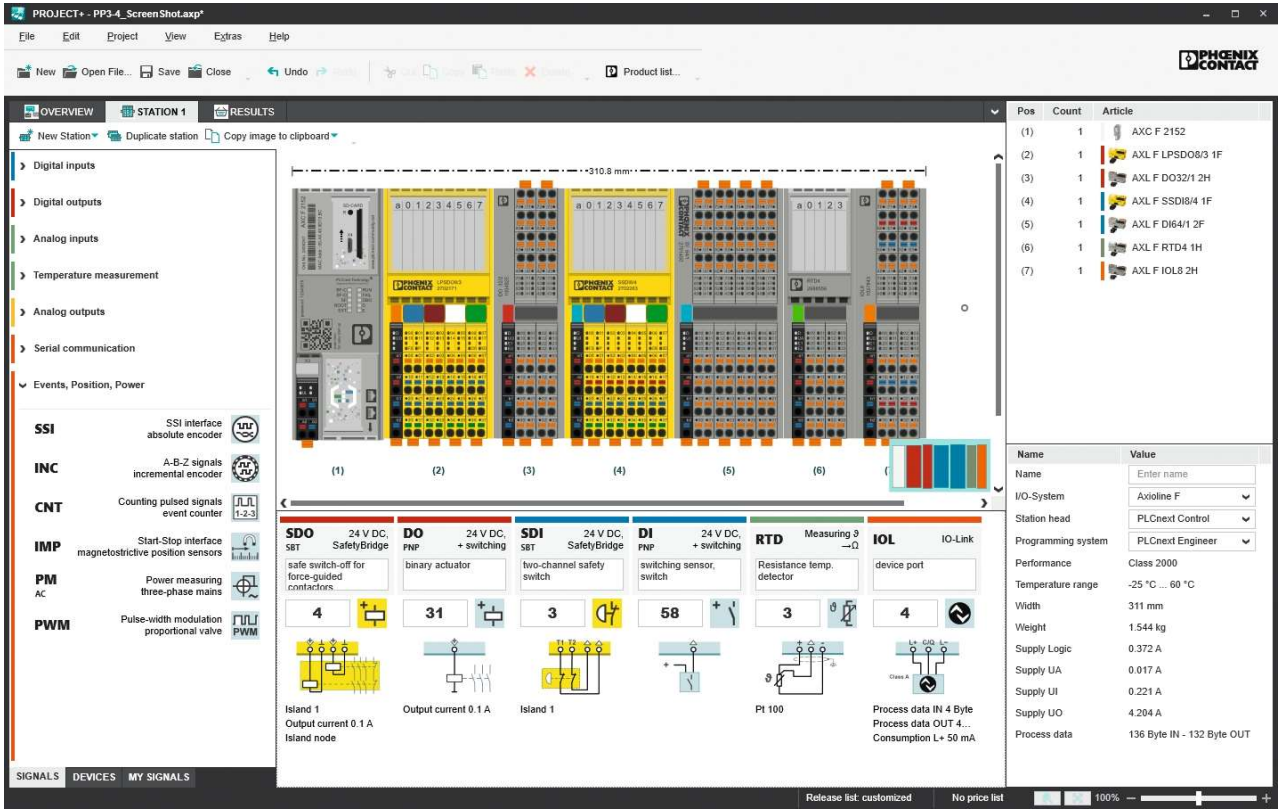
Software and Technologies

PROJECT+

Project+

is a configuration tool that supports you when creating an I/O station as part of the automation of a system, machine or property.

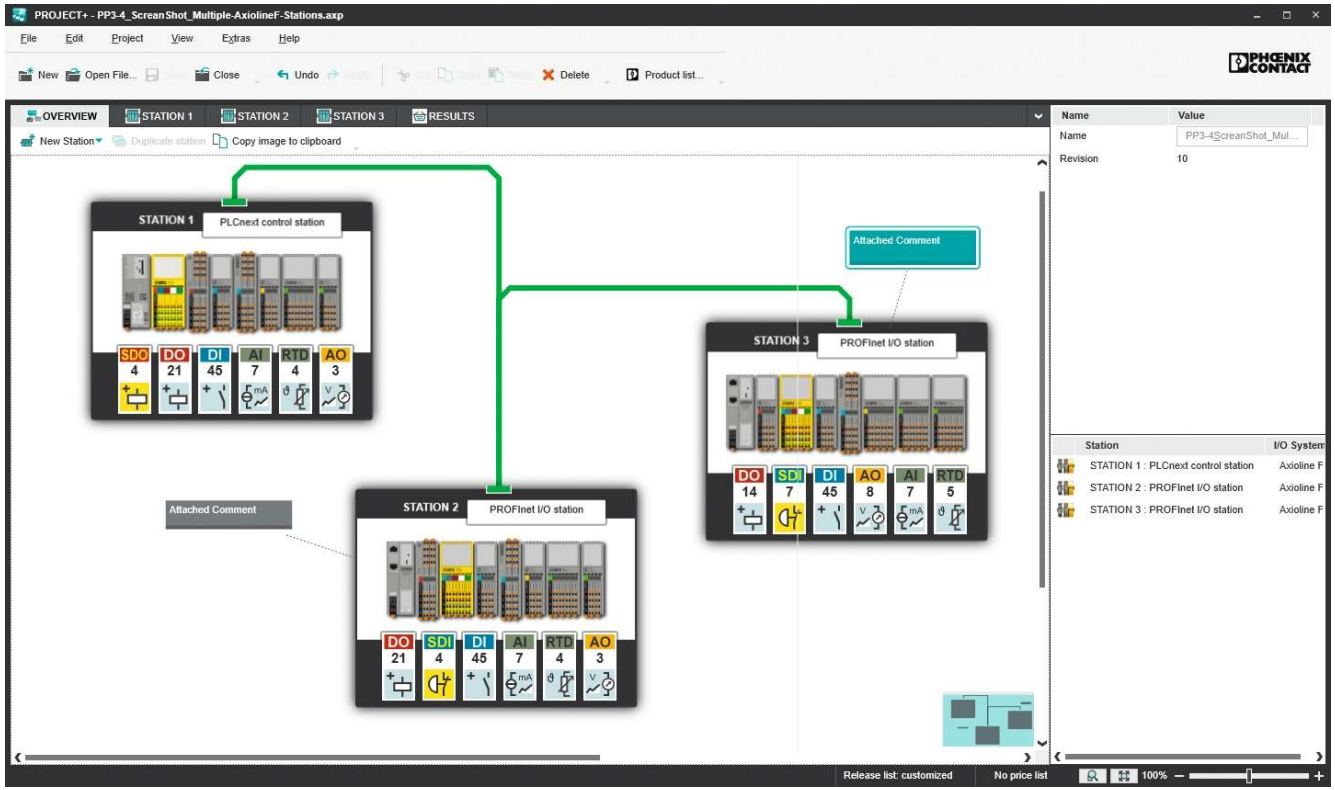
Project + 3: Planning for Axioline F and Inline I/O stations



INSPIRING INNOVATIONS

Software and Technologies

PROJECT+



PROJECT+3

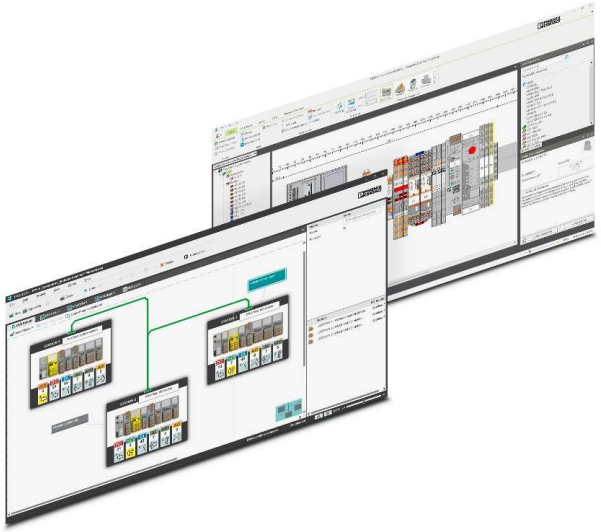
I/O Project Planning

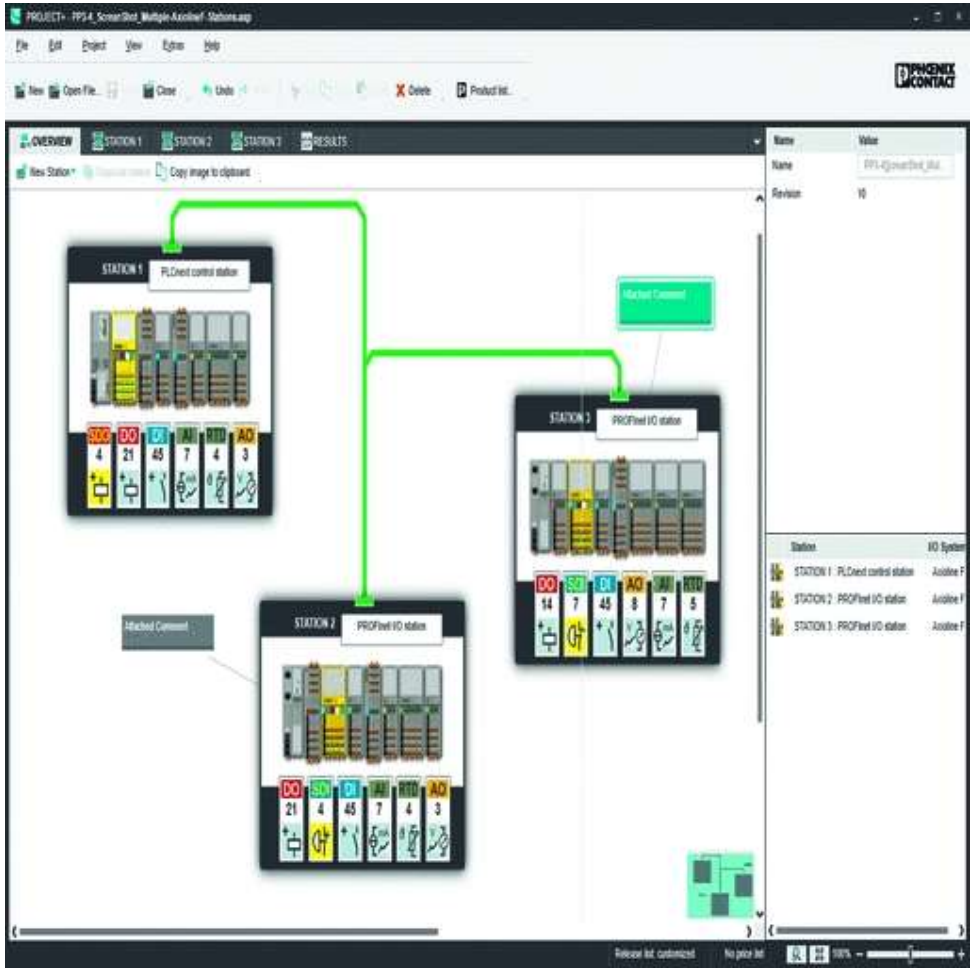
PHOENIX CONTACT

INSPIRING INNOVATIONS

Software

PROJECT+





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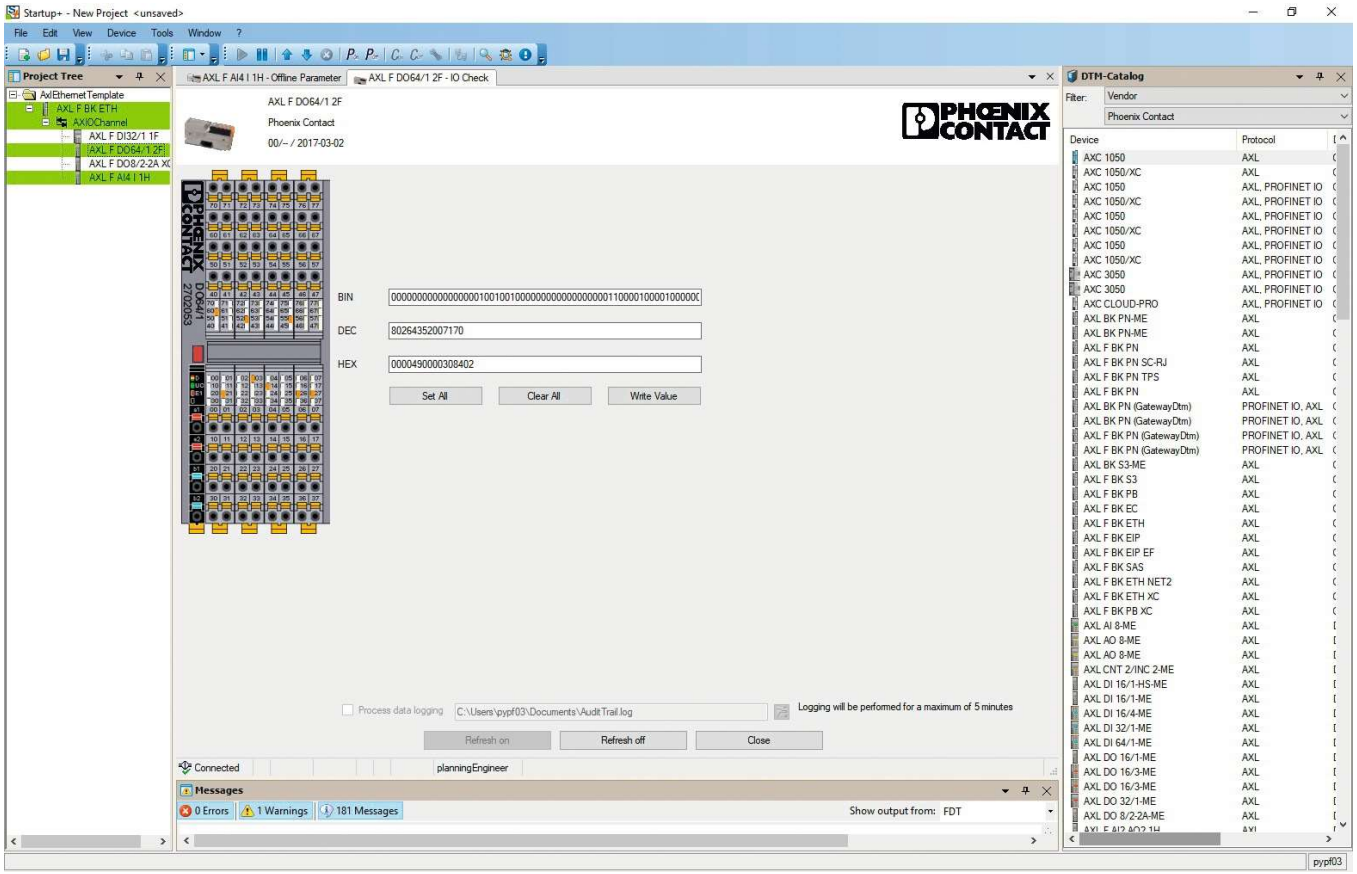
INSPIRING INNOVATIONS

Software for setting Axioline

STARTUP +



Startup+

enables you to quickly and easily establish a connection to an Axioline F station, to configure the connected modules, and to check their wiring (I/O check).

PHOENIX CONTACT
INSPIRING INNOVATIONS

Software

CONNECT+

The Connect+ software can be used to easily start up and maintain automation projects from Phoenix Contact. Connect+ can be extended with various plug-ins that can be tailored to devices and automation solutions from Phoenix Contact.

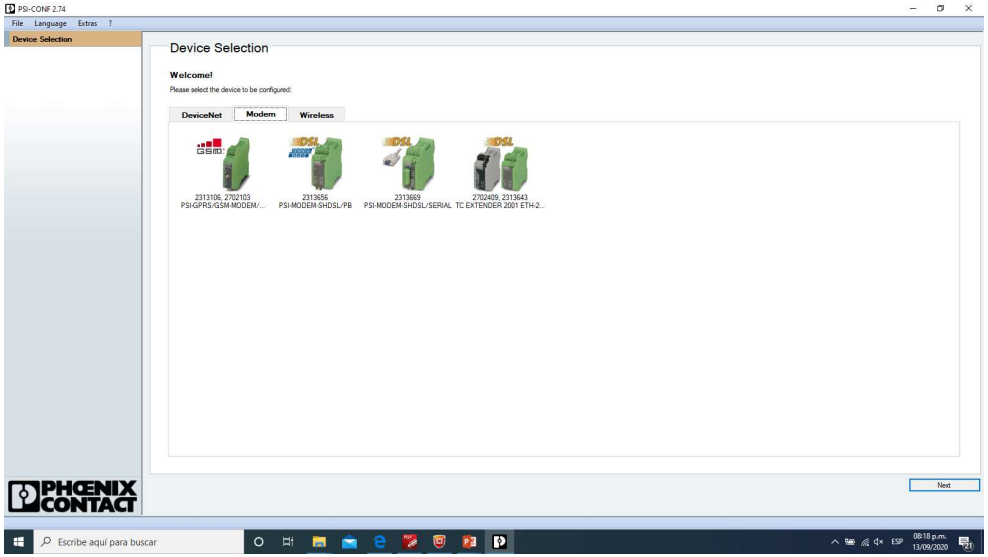
Benefit from the advantages of the free software tool:

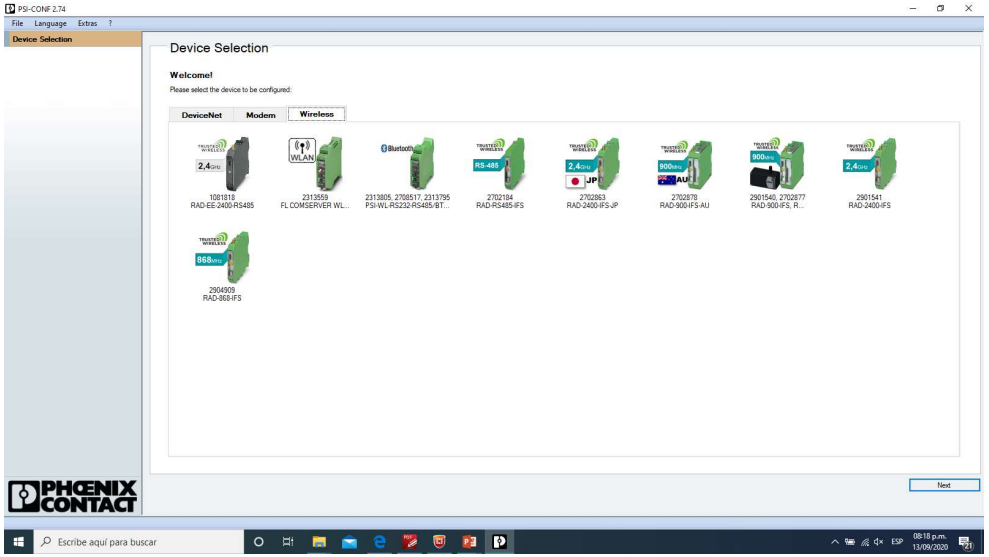
- Easy initial configuration of controllers from Phoenix Contact
- Simple startup and parameterization of automation projects

PHOENIX CONTACT
INSPIRING INNOVATIONS

Software for Radioline,… Interface communication

PSI - CONF

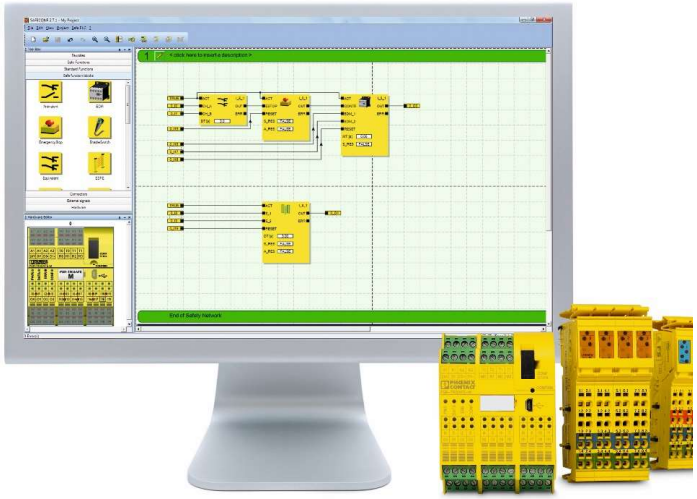




PHOENIX CONTACT
INSPIRING INNOVATIONS

Software Functional Safety

SAFECON

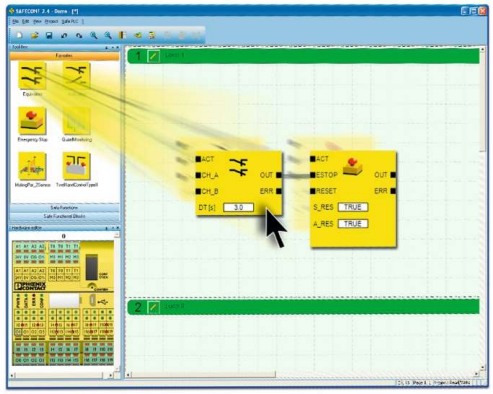


PHOENIX CONTACT
INSPIRING INNOVATIONS

Software Functional Safety

SAFECON

1



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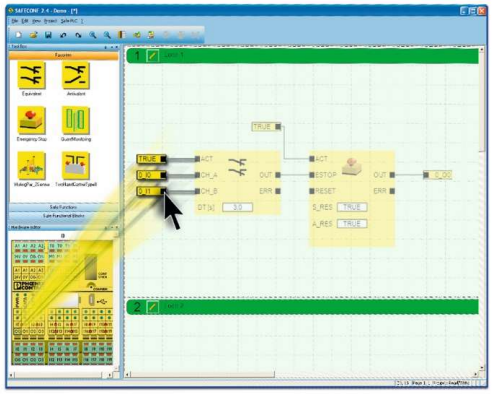

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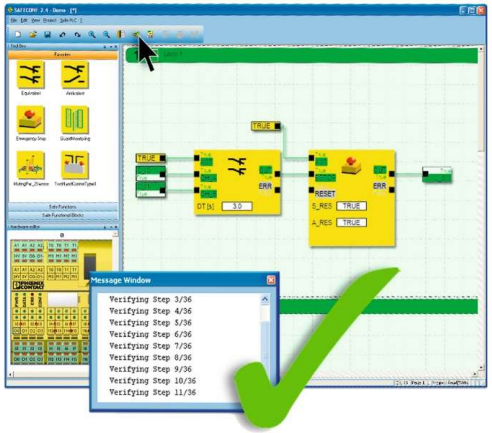
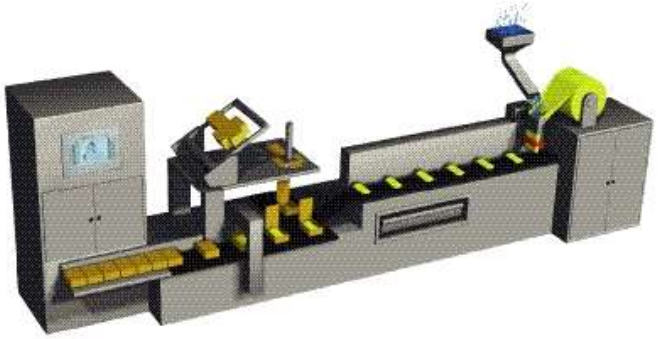
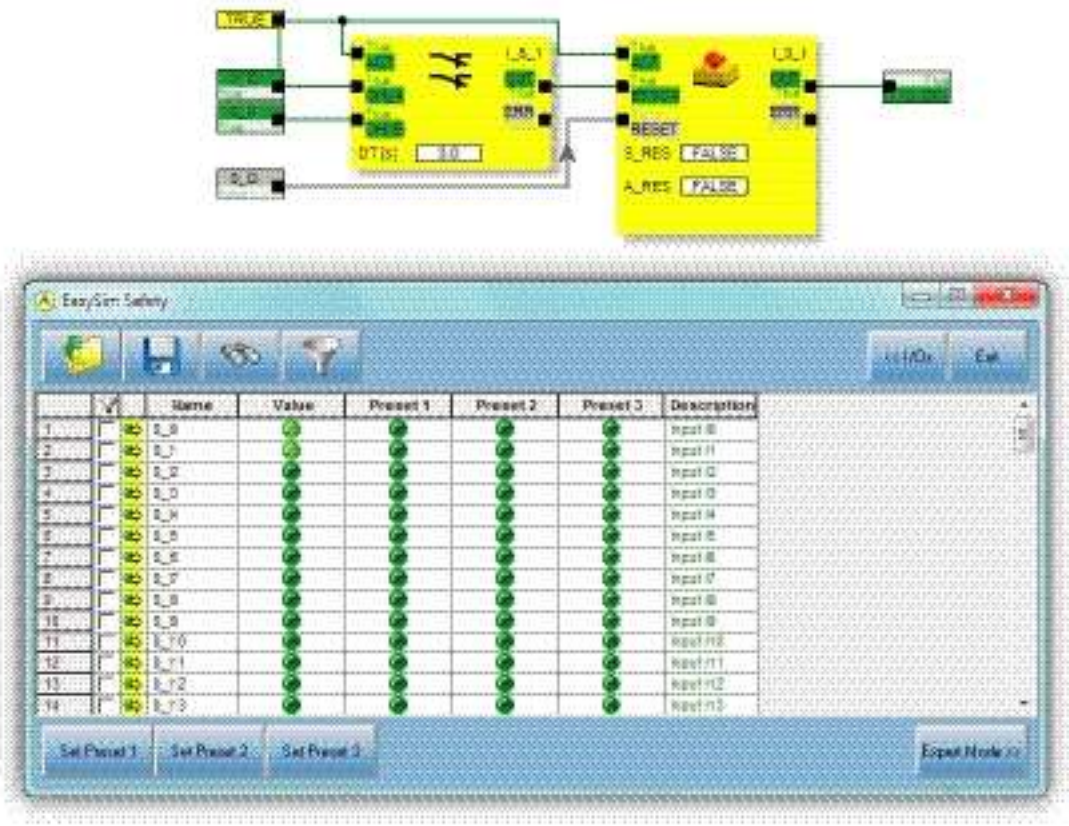


PHOENIX CONTACT
INSPIRING INNOVATIONS

Software Functional Safety

SAFECON





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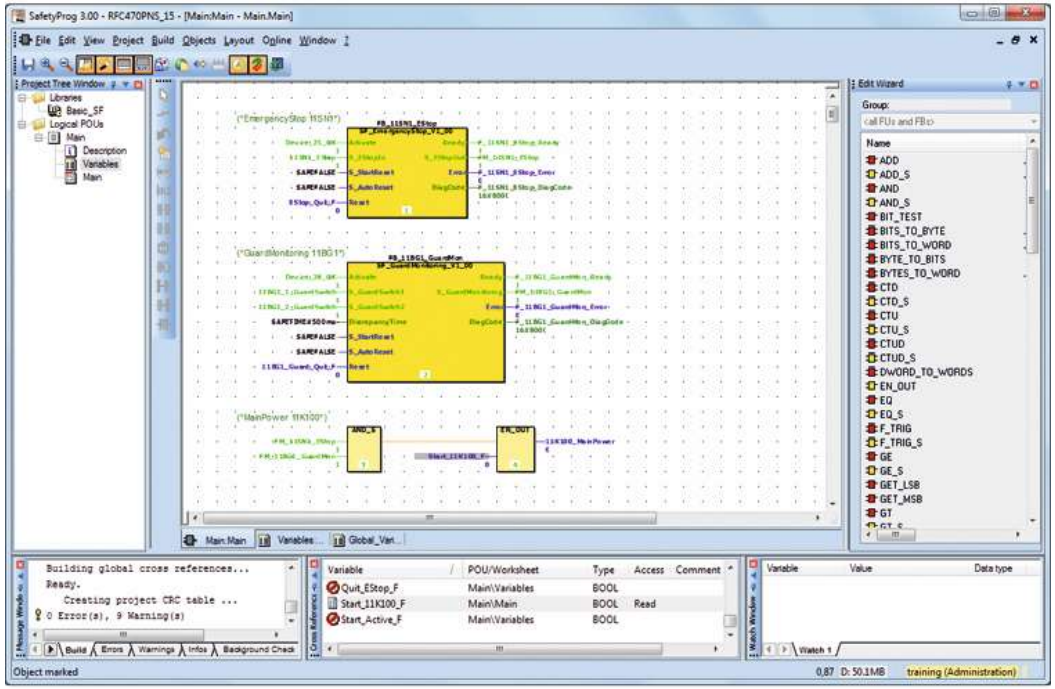
INSPIRING INNOVATIONS

Software for Safety Controllers

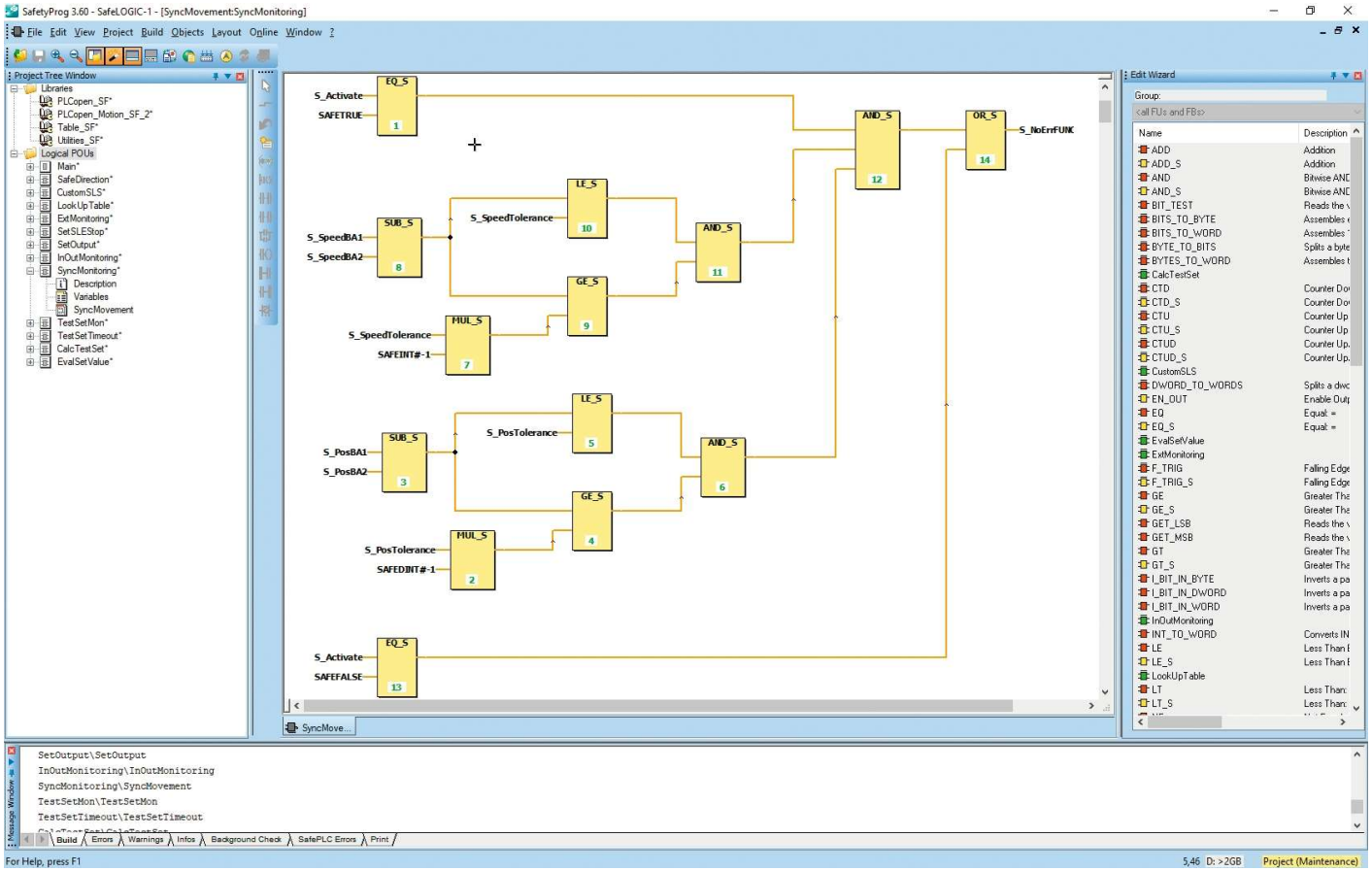
SAFETYPROG



PHOENIX CONTACT
INSPIRING INNOVATIONS

Software for Safety Controllers

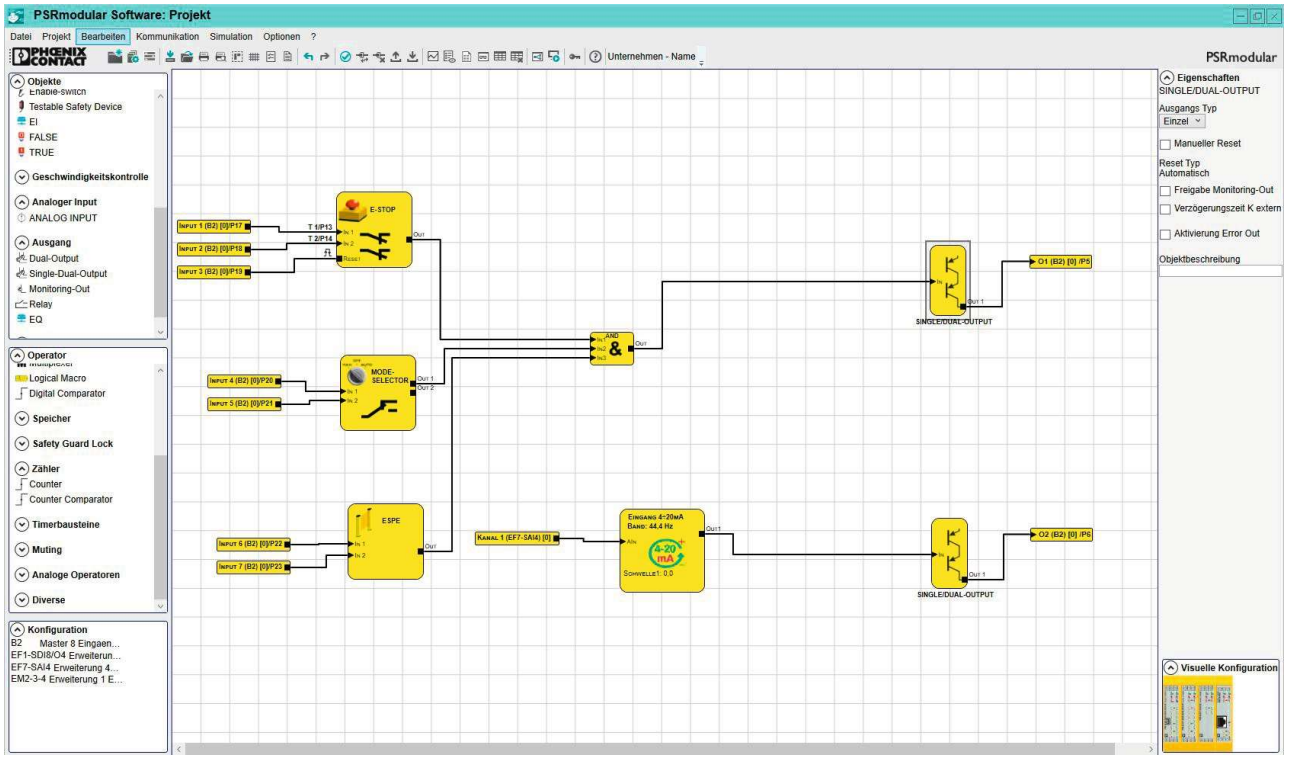
SAFETYPROG



PHOENIX CONTACT
INSPIRING INNOVATIONS

Software

PSRmodular Software

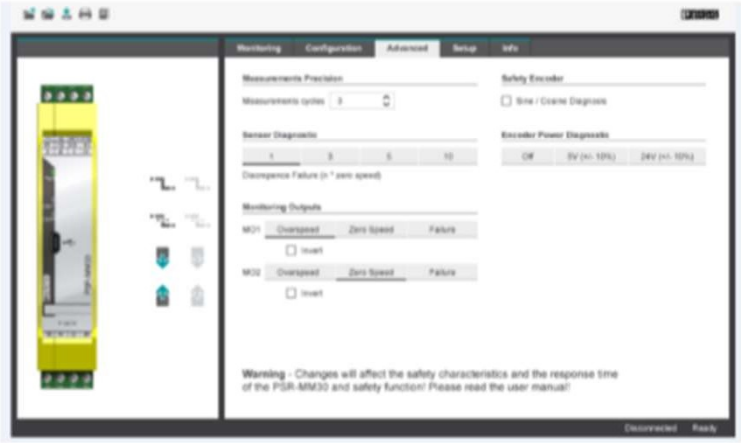


INSPIRING INNOVATIONS

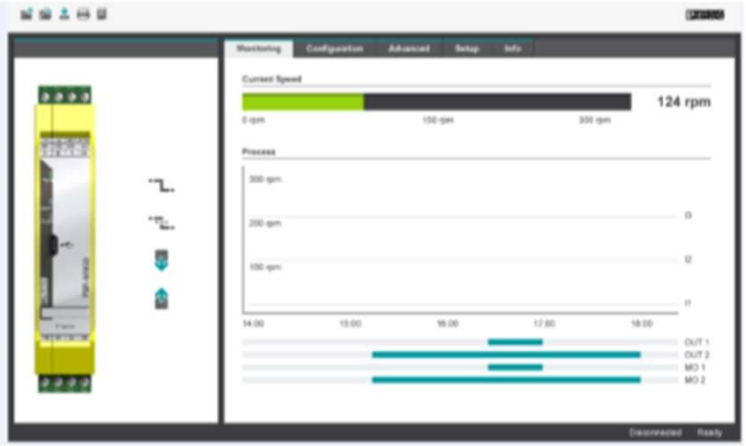
Software Safety

PSRmotion

new



Easy configuration



Online monitoring

PHOENIX CONTACT
INSPIRING INNOVATIONS

Softwares de Visualización

VISU+ EXPRESS VISU+

PHOENIX CONTACT
INSPIRING INNOVATIONS

Softwares Visualización

VISU+

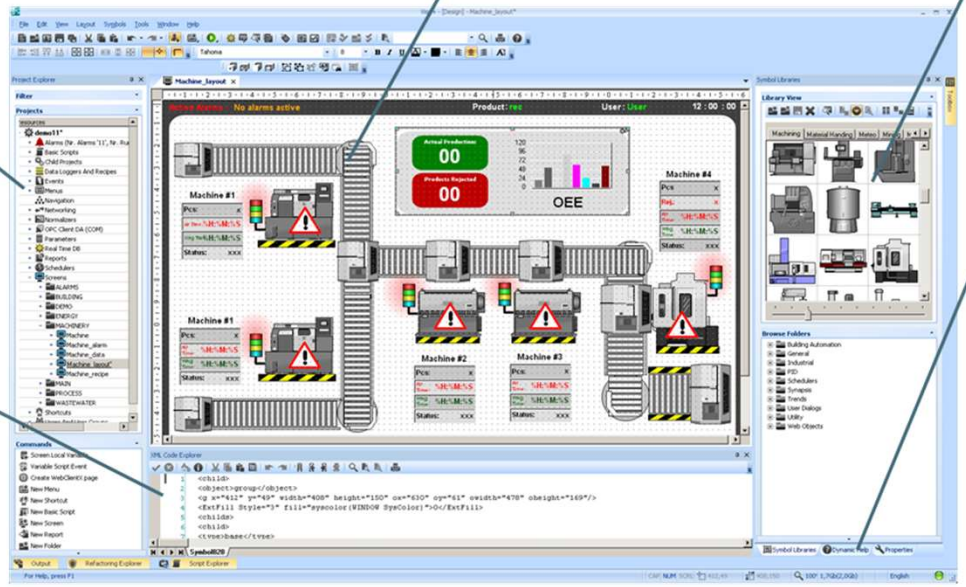
Project explorer
Easy access to all project resources

Editor for the visualization pages

Symbol library
Numerous objects for various applications

Properties-Explorer
Comprehensive configuration options for objects and resources

XML-Editor
Access to the XML object structure



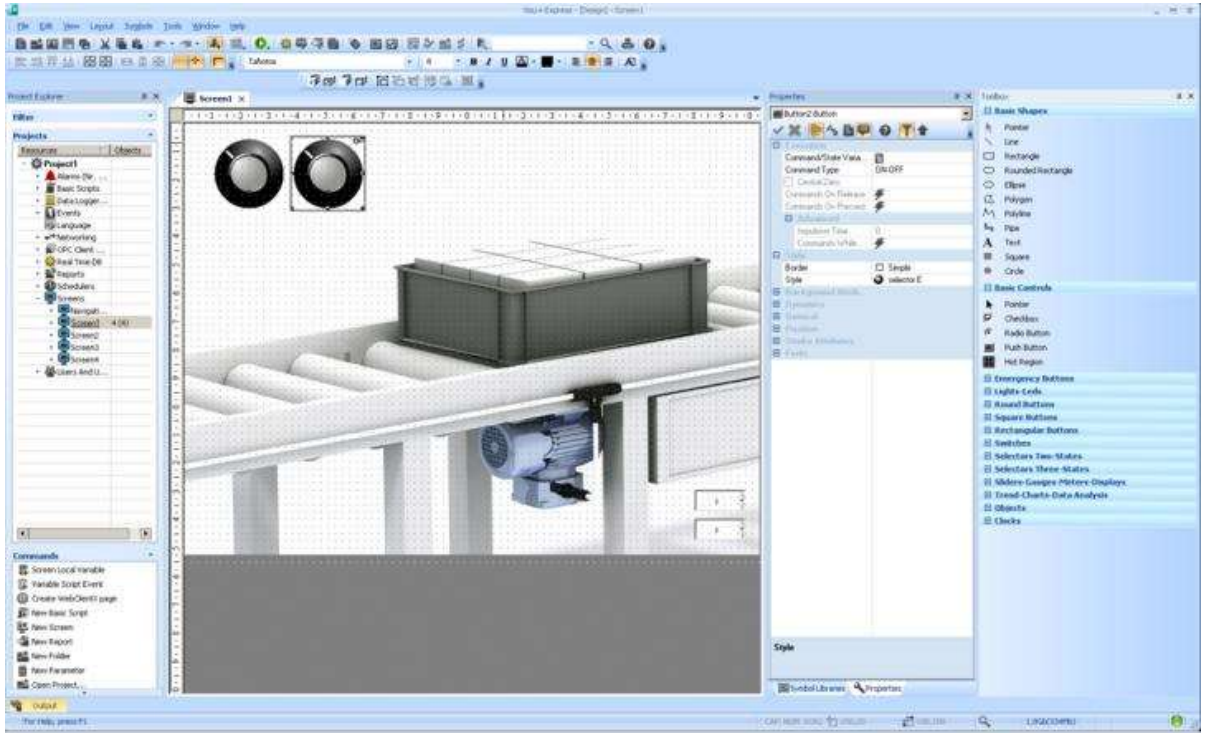
Effective engineering in a modern environment

PHOENIX CONTACT
INSPIRING INNOVATIONS

Design Software

VISU+ Express
HMI Visualization

- EXPRESS is FREE
  - Free download
  - Search for 2402774
- Scalable
  - Derived from SCADA package
  - High quality graphics
  - Simplified user interface
- Advanced
  - Alarming
  - Trending
  - Data Logging
  - Recipe Handling
  - Remote Screen Access
  - …



PHOENIX CONTACT
INSPIRING INNOVATIONS

VISU+ / VISU+ Express – communication drivers

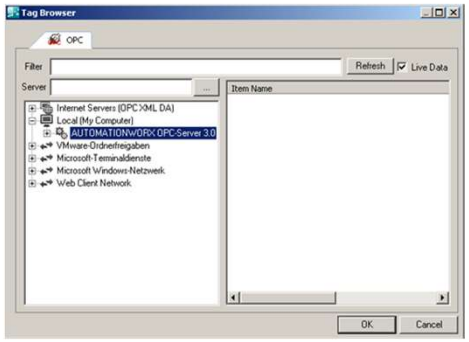
Your connectivity options!

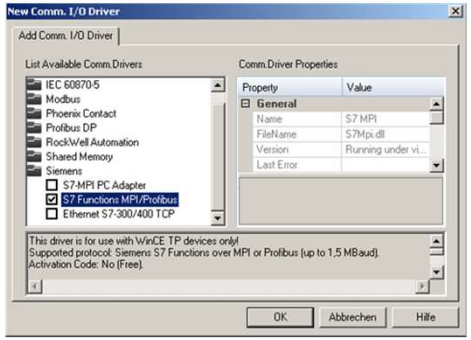
PHOENIX CONTACT
INSPIRING INNOVATIONS

VISU+ | Connection to the PLC

Various possibilities

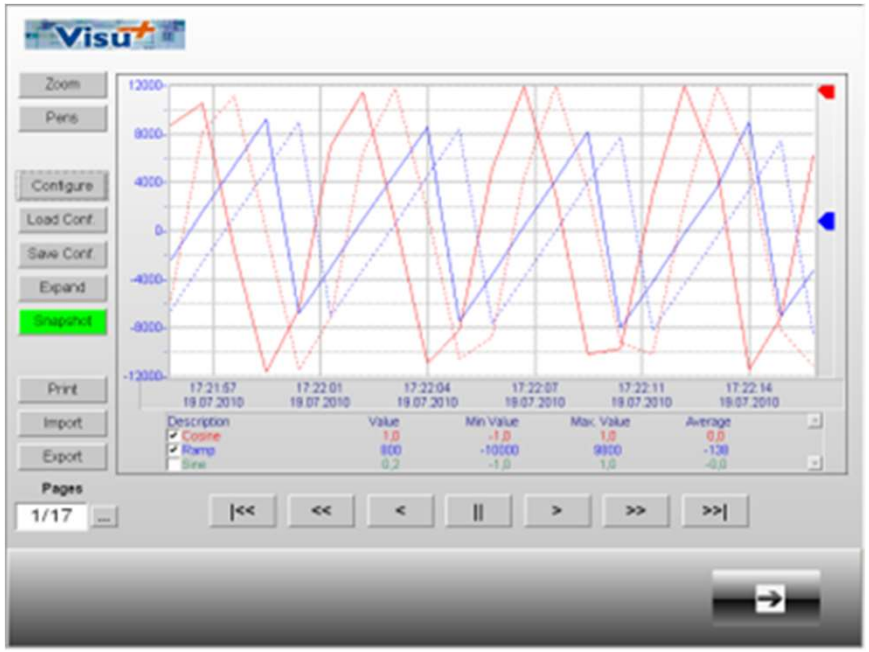
- OPC Connection
  - In conjunction with the AX OPC Server
- Connection with a direct driver
  - Siemens S7 (TCP und MPI)
  - Allen Bradley (EthernetIP)
  - Profibus
  - ModBus TCP und RTU
  - CANopen
  - Phoenix Contact-PLCs

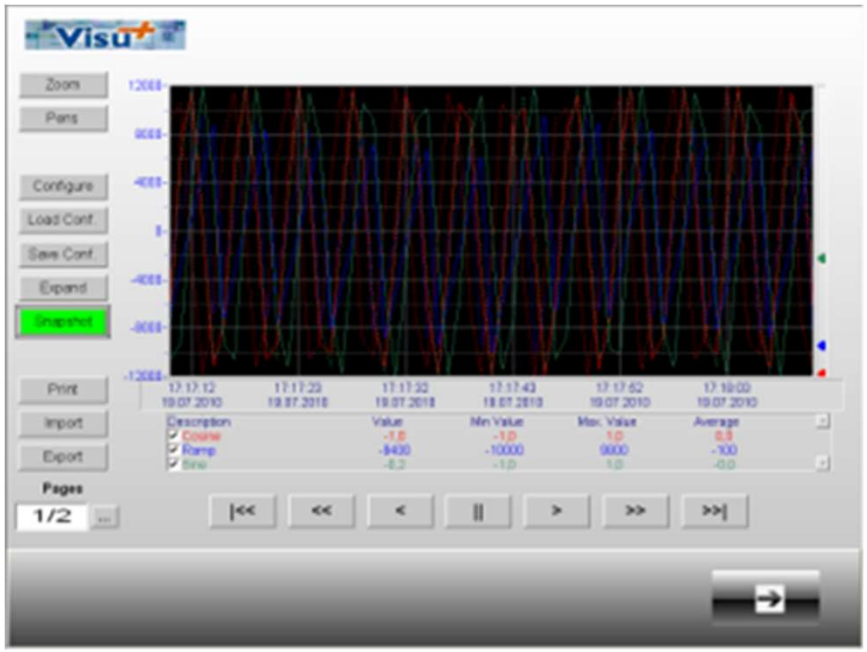




Softwares Visualización

VISU+





PHOENIX CONTACT
INSPIRING INNOVATIONS

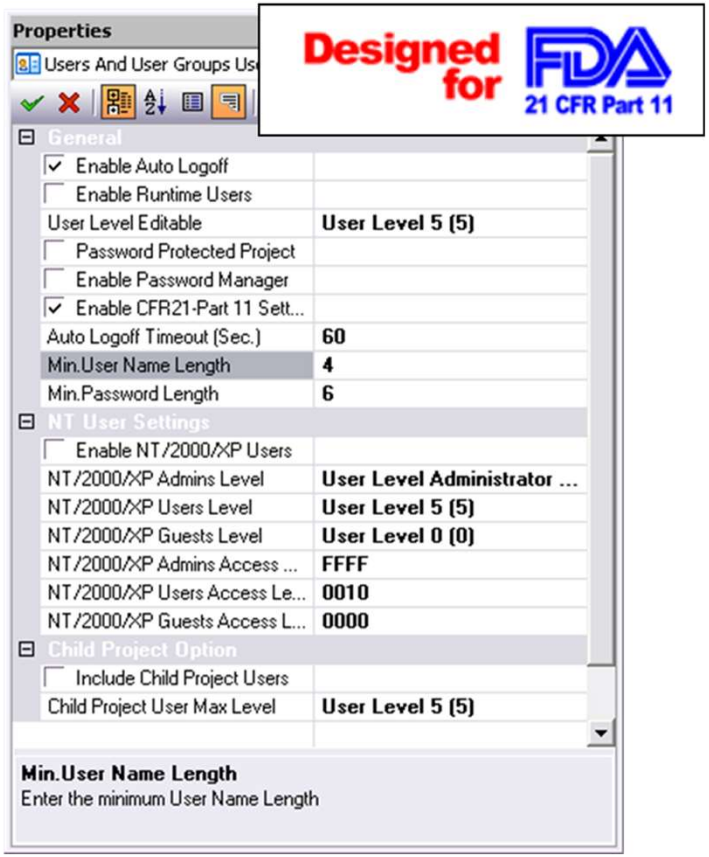
Softwares Visualización

VISU+

FDA 21 CFR Part 11

VISU+ supports FDA CFR21 Part11 functions, even on WinCE HMIs

- Tracing and Audit Trail management for recording every process data variation, value monitoring, complete range of information relating to user names, electronic signatures, previous values, motive and more.
- Security management. Users and passwords with access to commands at 1024 levels and/or 16 areas. Automatic Operating System Access Control functions.

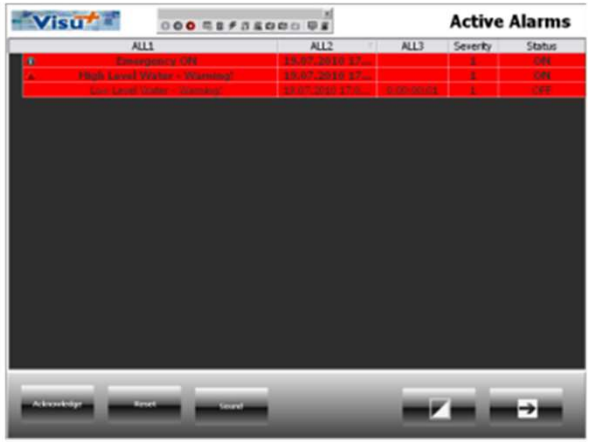


PHOENIX CONTACT
INSPIRING INNOVATIONS

VISU+

Alarm management

- Integrated event and alarm notification management on WinCE HMI devices.
- Up to 1024 alarm priorities
- Various filter options for the alarm representation
- Alarming and event handling are easily customizable with VBA
- Alarm up dimming and acoustic alarming integrated in HMIs



Software Visualization

Webvisit 6

WEBVISIT

Web Visualization

PHOENIX CONTACT
INSPIRING INNOVATIONS

Software Web development

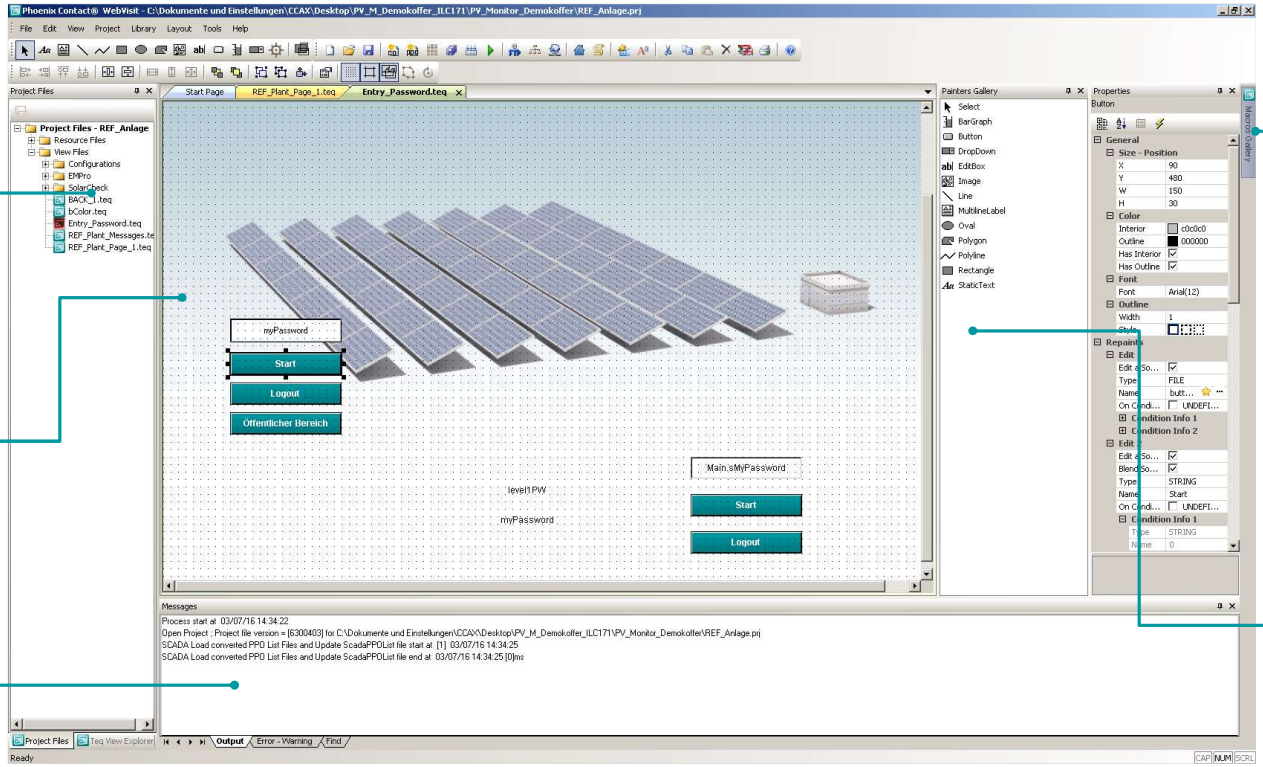
Webvisit – your advantages

- Intuitive
- Can be used via standard browser
- Inexpensive
- Import directly from PC WORX
- For all controllers with an integrated web server

PHOENIX CONTACT
INSPIRING INNOVATIONS

Software Development

Webvisit – At a glance



Project explorer
(visualization pages, objects,...)

Editor for the visualization pages

Output window

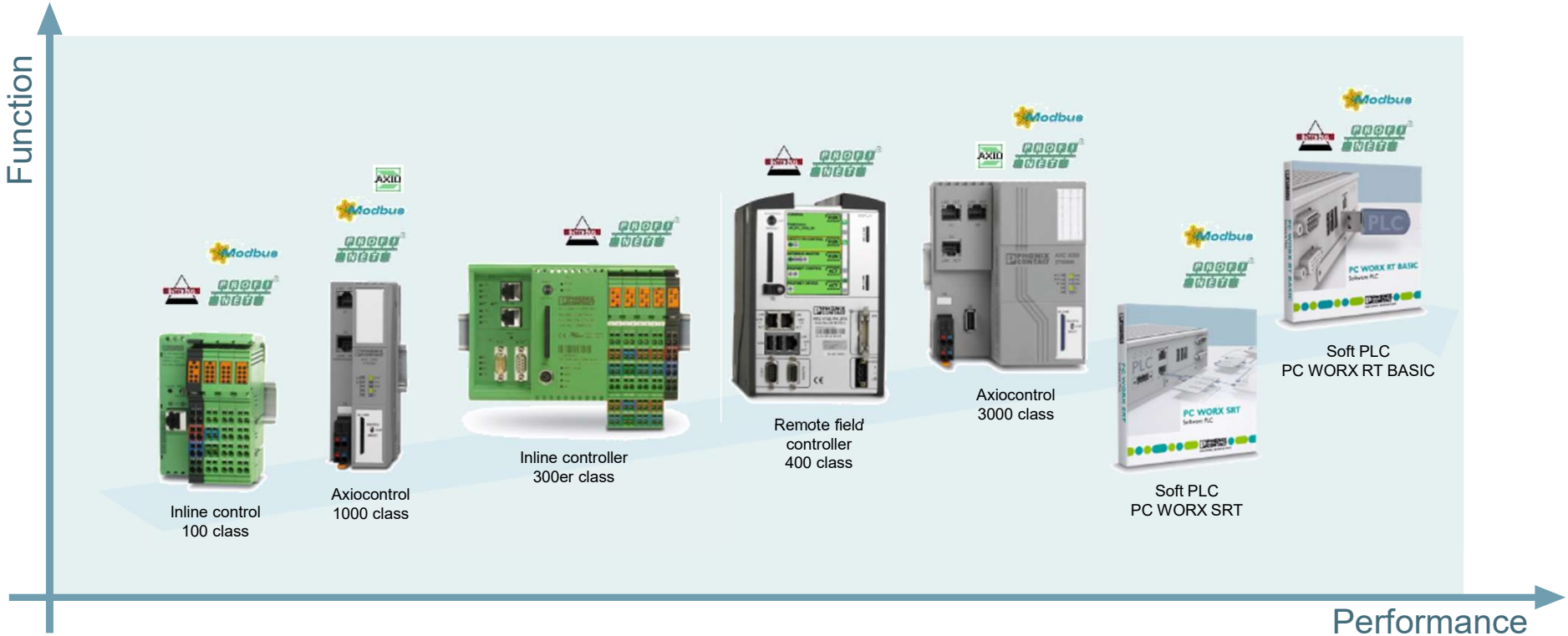
Macro gallery
(comprehensive system library)

Toolbox
(basic graphical elements)

PHOENIX CONTACT
INSPIRING INNOVATIONS

Software development for web server controller

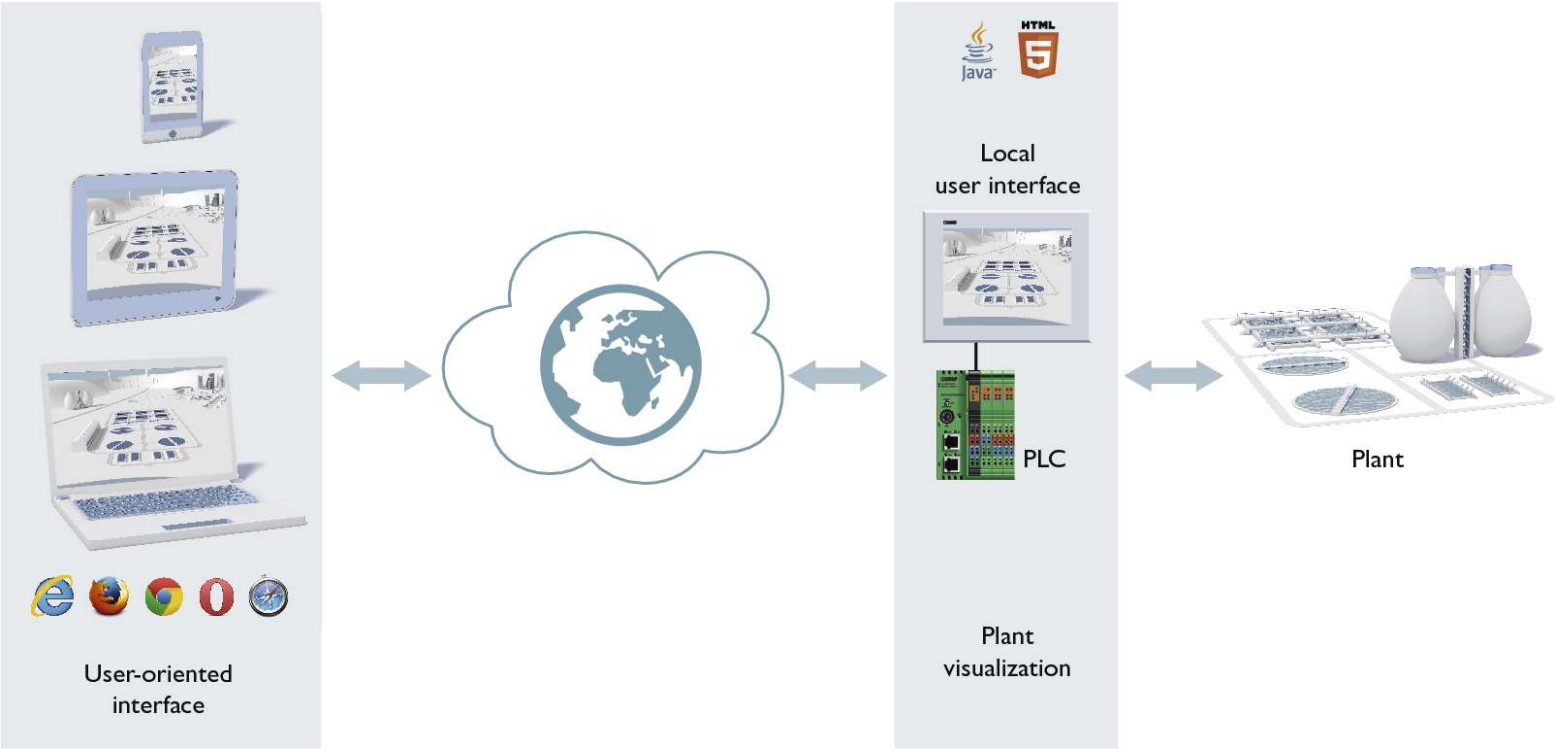
Webvisit - Compatible controller



INSPIRING INNOVATIONS

Software development

Webvisit - Topology



PHOENIX CONTACT
INSPIRING INNOVATIONS

AUTOMATIONWORX Software Suite

A complete application in just a few steps

Creation
- Creating visualization pages using the Webvisit editor

Link
- Importing and linking variables from PC WORX, if required

Download
- Downloading the completed project to the controller

View
- Viewing the application with HMIs (MicroBrowser) or standard/mobile browser

PHOENIX CONTACT
INSPIRING INNOVATIONS

Technology

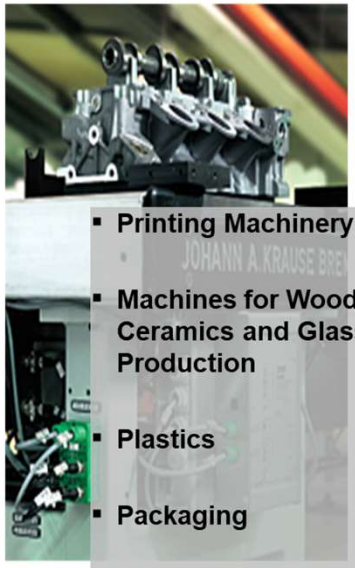
PROFINET

Process Automation

- Oil & Gas & Energy Industries
- Chemical and Medial Industries
- Mines und Metal Industry
- Food & Beverage
- ….

Factory Automation

- Wind Turbines
- Assembly Machine and Textile Industry
- Automotive
- Automotive-Conveying
- Water / Wastewater and Recycling
- Shipbuilding
- Traffic and Railway
- Buildings
- Logistics, Transportation
- ….

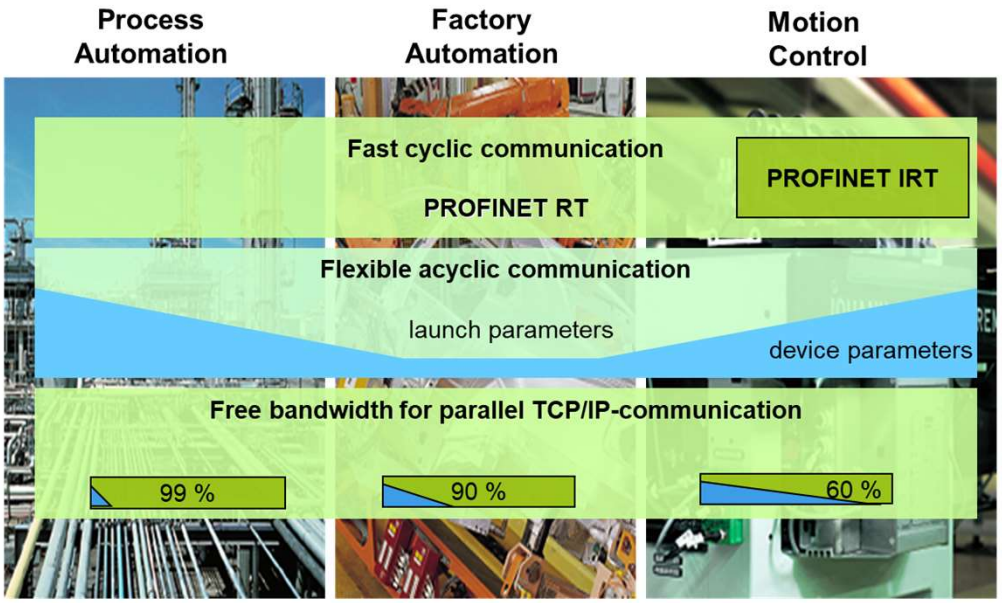


Motion Control

- Printing Machinery
- Machines for Wood, Ceramics and Glass Production
- Plastics
- Packaging
- ….

Technology

PROFINET Flexible and scalable communication



All requirements for communication are covered from Process Automation up to Motion Control

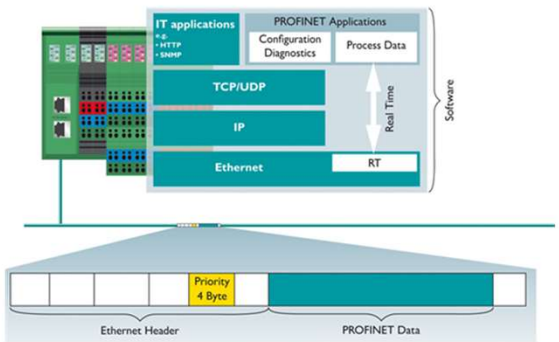
PHOENIX CONTACT
INSPIRING INNOVATIONS

Technology

PROFINET Scalable technology

PROFINET RT

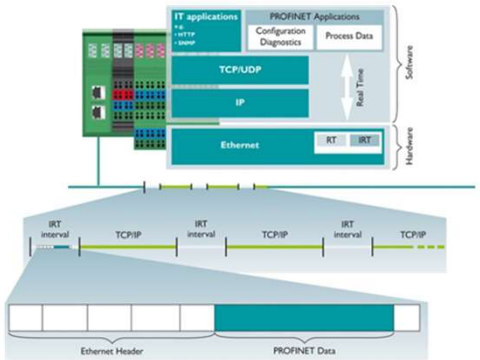
for all markets and applications



Update times >= 250 µs
unsynchronized applikations

PROFINET IRT

for motion control applications and synchronous IOs



Update times >=32,5 µs
synchronized applikations

Same Look&Feel for the user (TCP/IP, diagnostics,…)
Both technologies can be combined

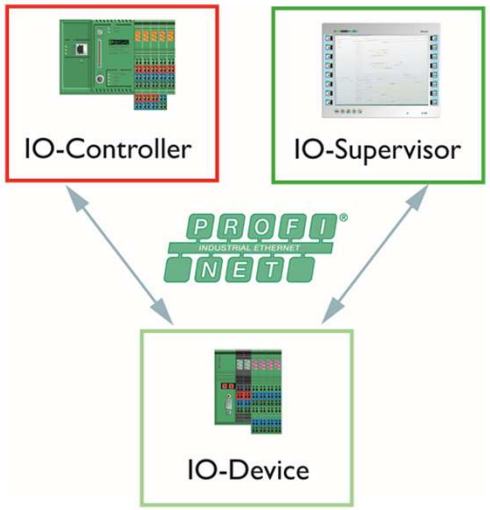
PHOENIX CONTACT
INSPIRING INNOVATIONS

Technology

PROFINET Communication Partners

PROFINET IO-Controller:

- Starts communication and configures field devices
- Cyclic and acyclic data exchange with the IO- Device
- Receives alarms from the IO-Device



PROFINET IO-Supervisor:

- Parallel configuration
- Reading diagnostics

PROFINET IO-Device:

- Cyclic and acyclic data exchange with the IO- Controller
- Sends alarms to the IO-Controller

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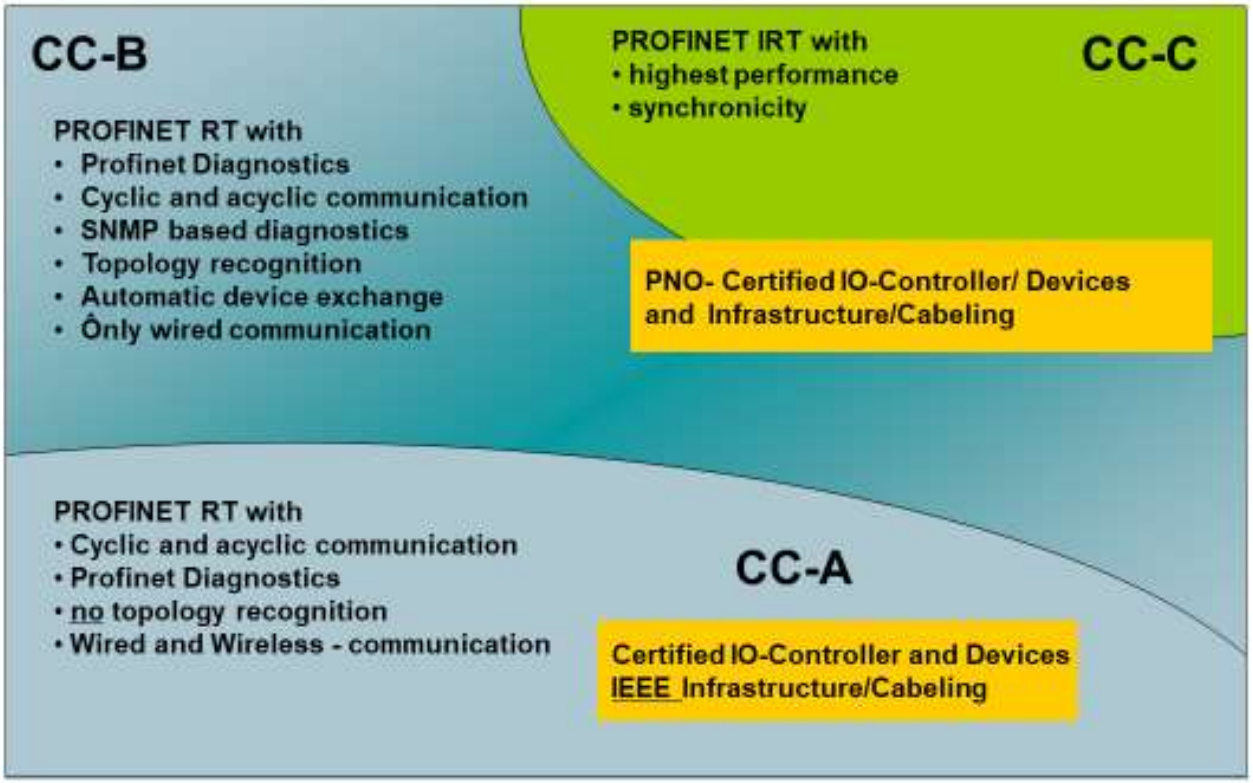
Technology

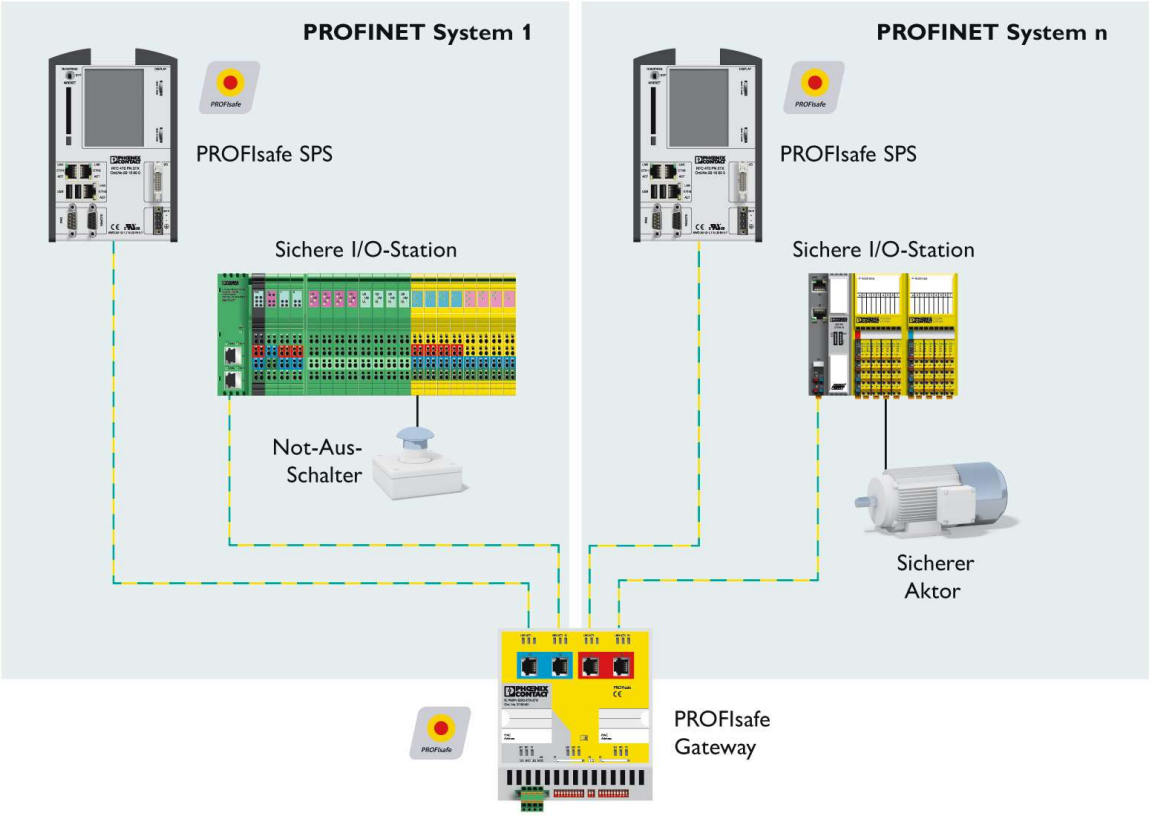
PROFINET

Conformance Classes



Technology

PROFISAFE



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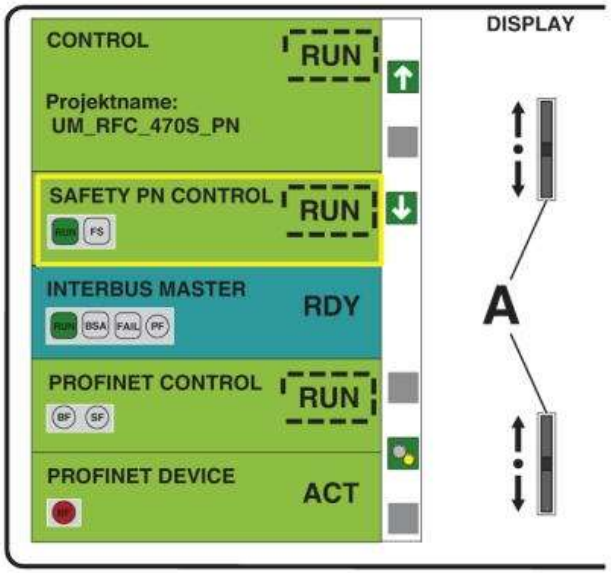
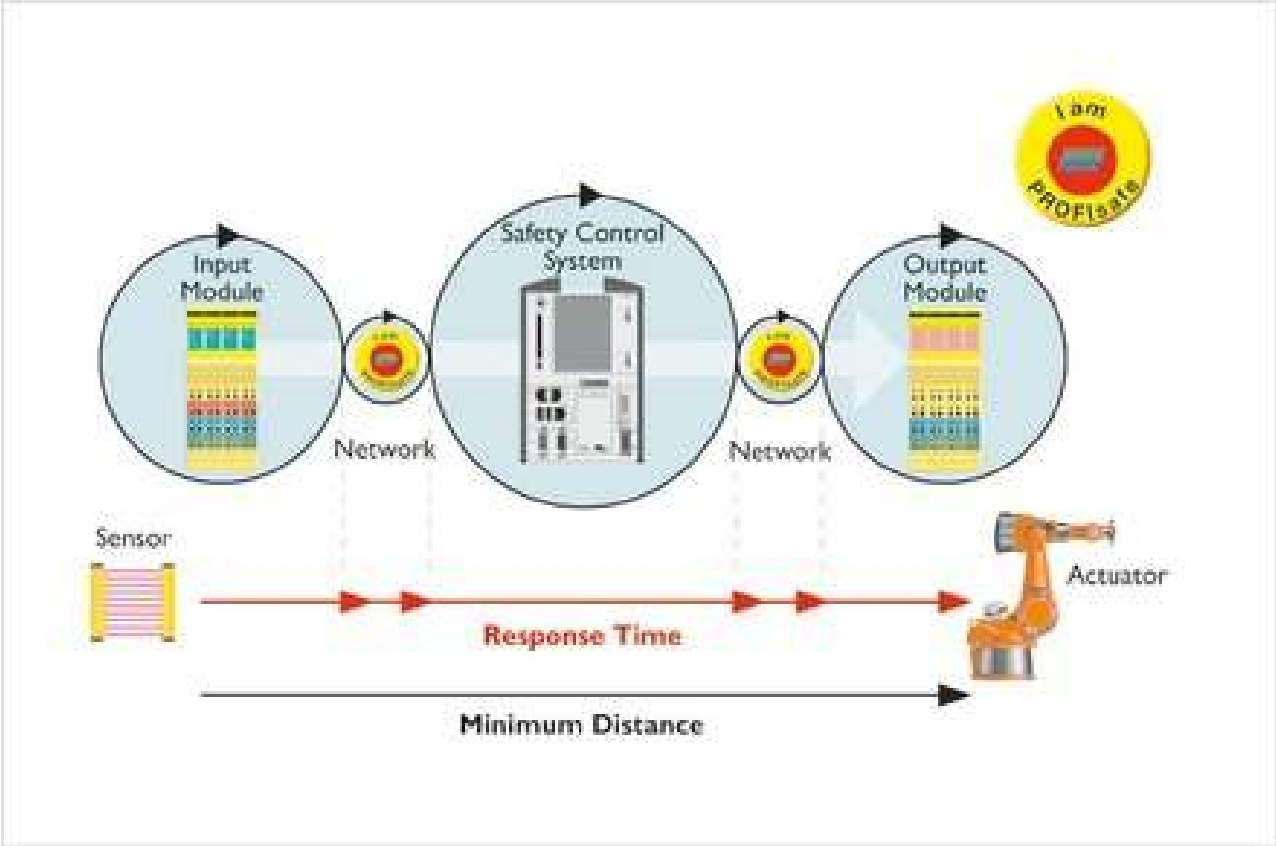
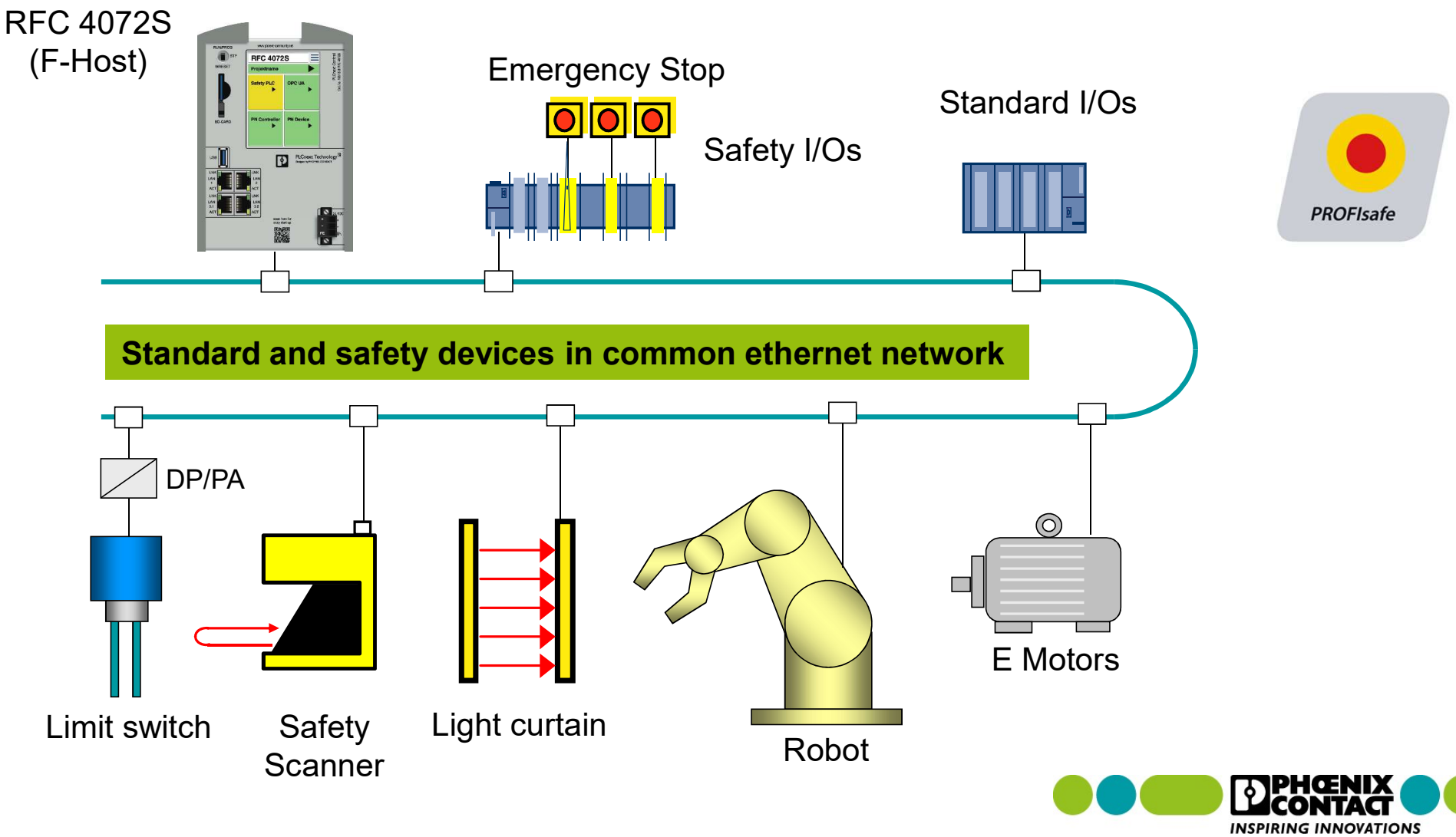
PROFISAFE







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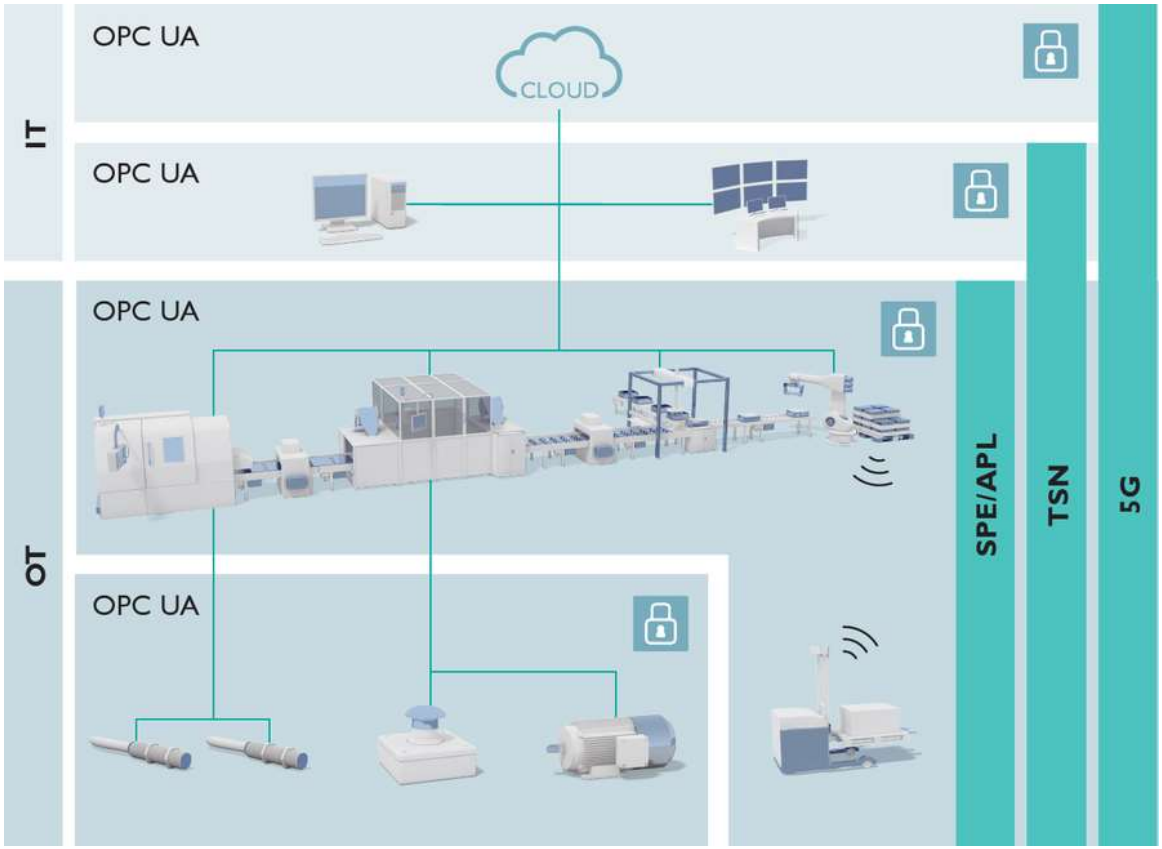
Software and Technology innitiative

OPC UA

The basic framework for the future of industrial communication technology is currently being developed across a large number of committees and standardization projects. New communication standards such as OPC UA, TSN, SPE, and 5G will be far superior to previous systems in terms of costs, data throughput, latency and determinism.



The new technologies TSN, SPE/APL, 5G, and OPC UA, are not to be considered as being independent of each other – rather, together they will form the communication of the future

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OPC UA

OPC UA is already used as the superordinate communication standard in systems. OPC UA is now being expanded through the addition of standardized application profiles in the field, for example for I/O, safety, and motion.

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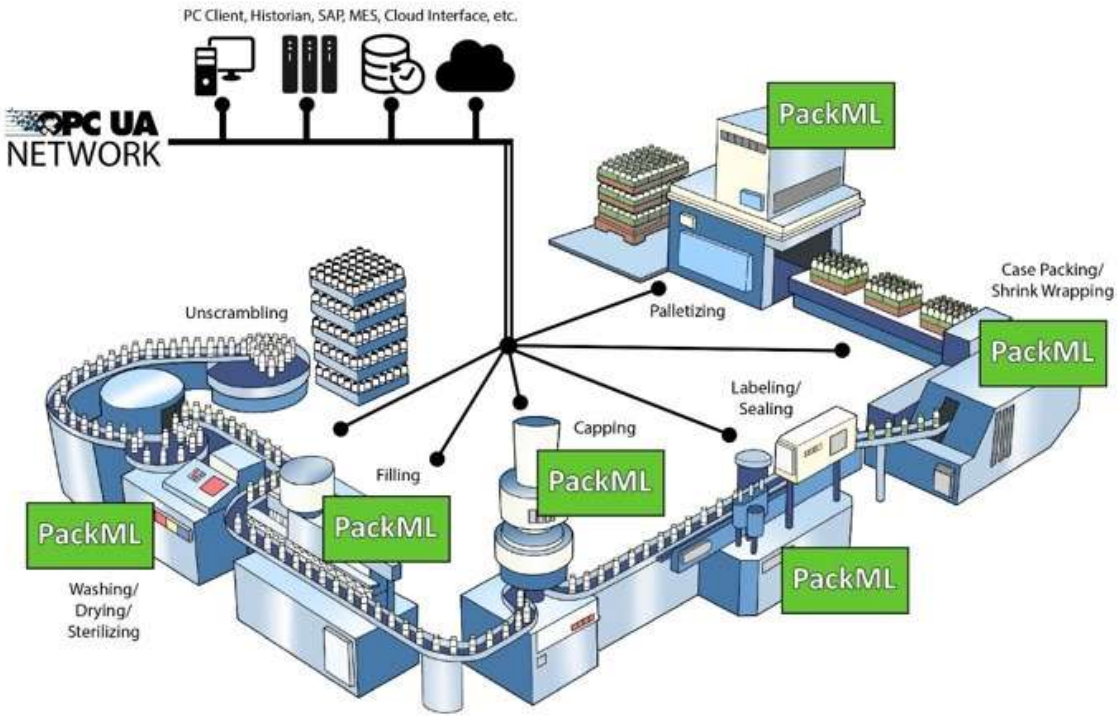
OPC UA Arquitecture



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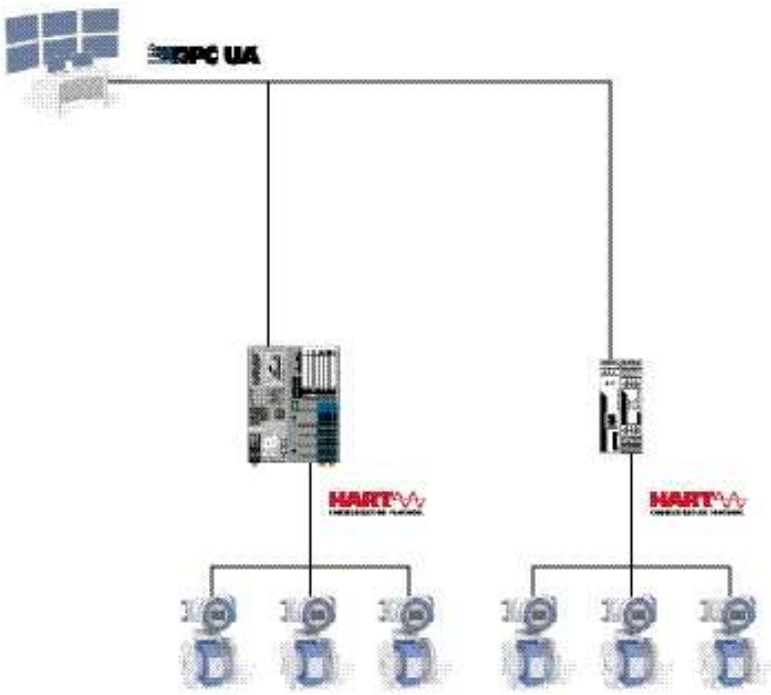
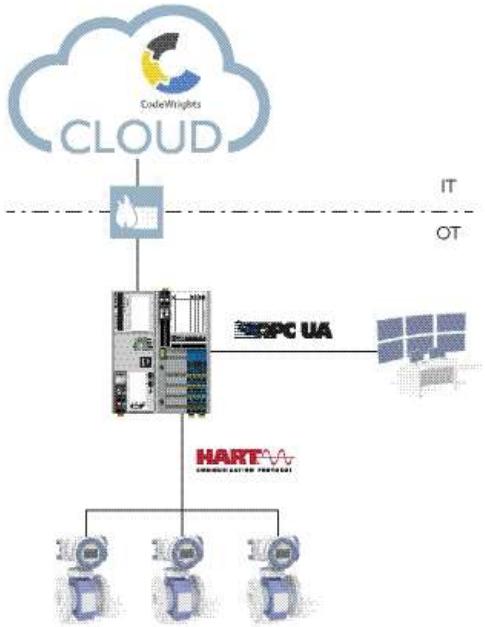
DIGITAL TWIN





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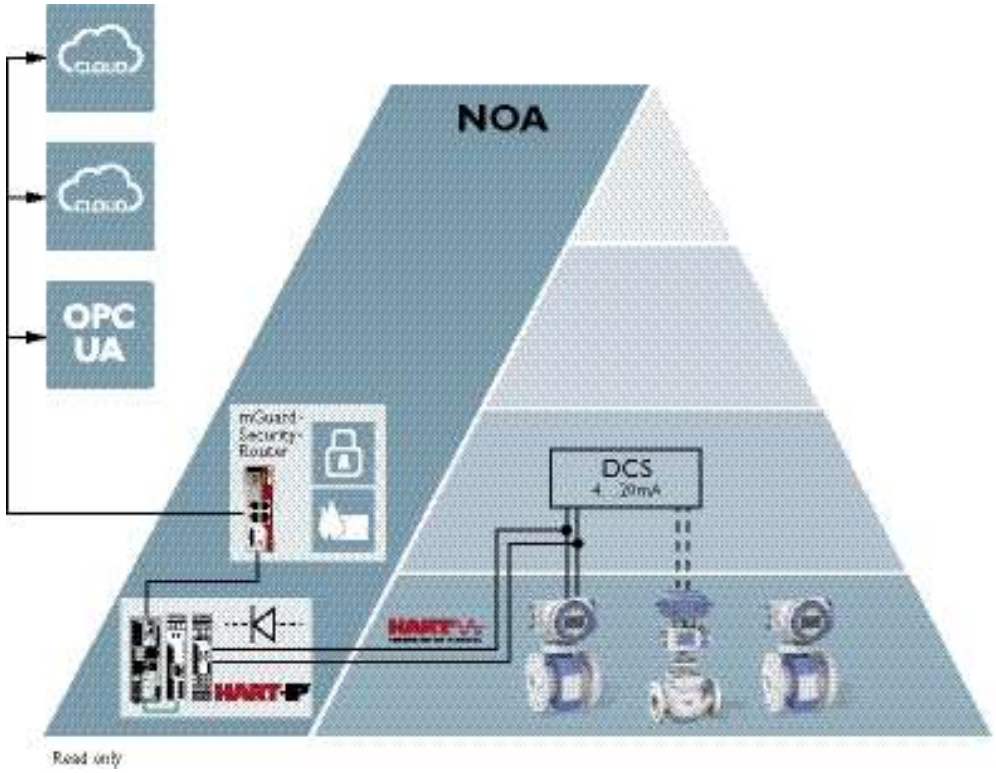
DIGITAL TWIN NOA



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Ecosystem & PLCnext Store

The Open Ecosystem for Limitless Automation

PLCnext Technology
Designed by PHOENIX CONTACT

PLCnext Technology
enhance your automation thinking

PLCnext Control	PLCnext Engineer	PLCnext Store	PLCnext Community
Open Control Platform	**Engineering Software**	**Software Store for Automation**	**User Collaboration & Resources**
PLCs in various performance classes including PLCnext Runtime System and accessories for PLCnext Technology	Engineering tool for commissioning, configuring, and programming PLCnext Controls	Apps for functional extension of PLCnext Control and PLCnext Engineer	Information, support, and helpful resources about PLCnext Technology including FAQs, forums, tutorials and a GitHub presence

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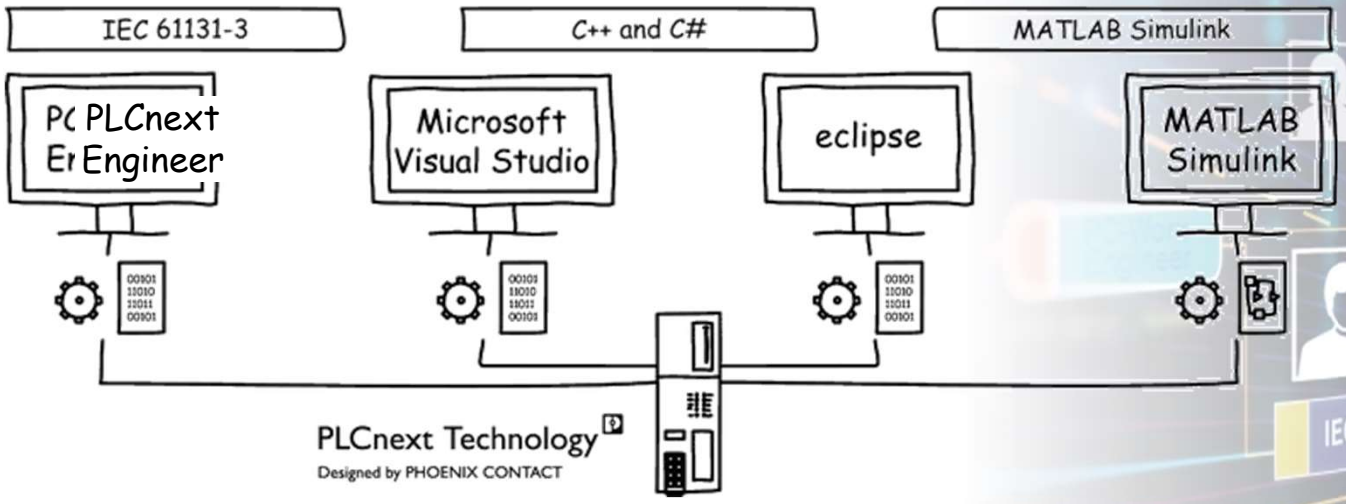
enhanced development

Convenient Engineering & Application Development



With PLCnext Technology, several developers from different generations, with different skill sets and expertise can work on one controller program, in parallel and yet independently, using different programming languages.

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PLCnext Technology
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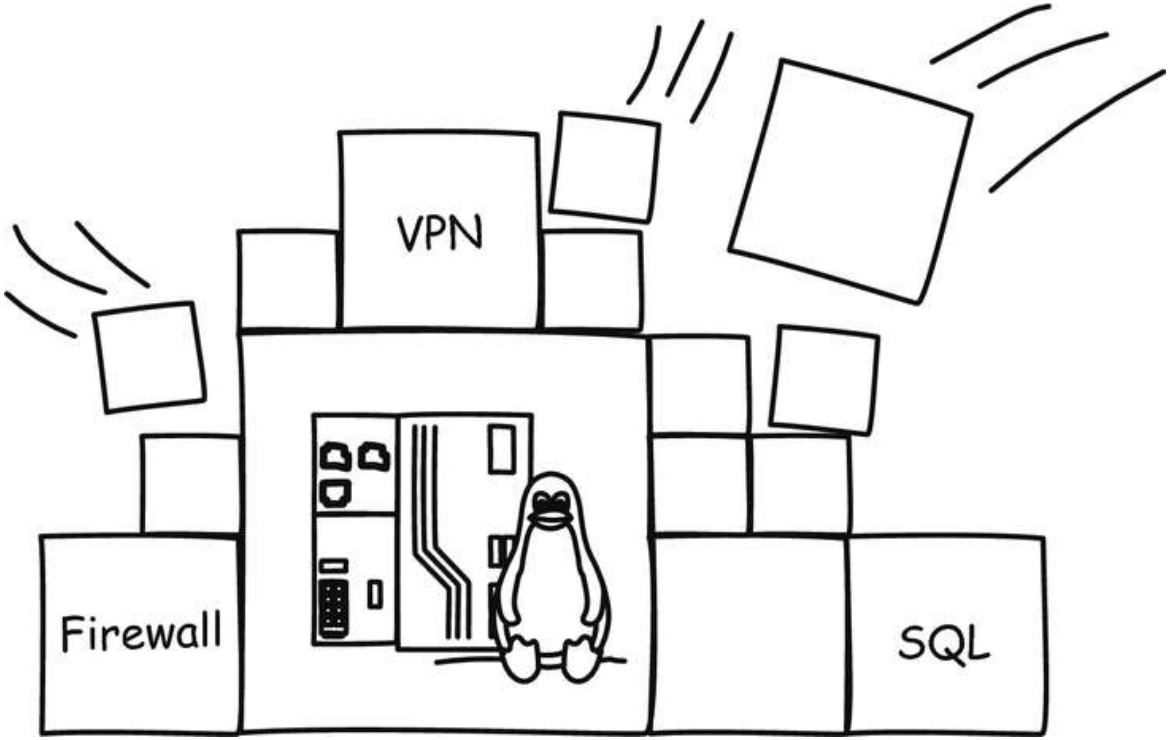
Flexibility of Linux plus the Reliability of a PLC



- **PLCnext Technology is based on Linux…**
  - Open source Linux Packages
- **… but as performant as a “classic” PLC!**
  - Easy task management
  - Precise synchronization
  - Cycle-consistent data exchange
  - No Linux knowledge needed

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Typical Application Scenarios for PLCnext Technology

PLC Applications

PLCnext Benefits

- OPC UA
- Cloud Connection
- Code Generation
- Automation Modules
- PLCnext Engineer
- Security

PLC + PC Applications

PLCnext Benefits

- High Level Languages
- Realtime and Non Realtime
- Cost Efficiency

IOT Applications

PLCnext Benefits

- Open Source
- Raspberry PI
- Edge Gateway
- Linux
- PLCnext on IPC
- Industrial PLC Hardware and IOs

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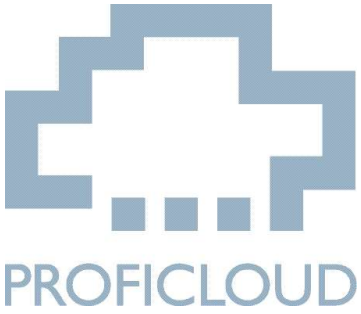
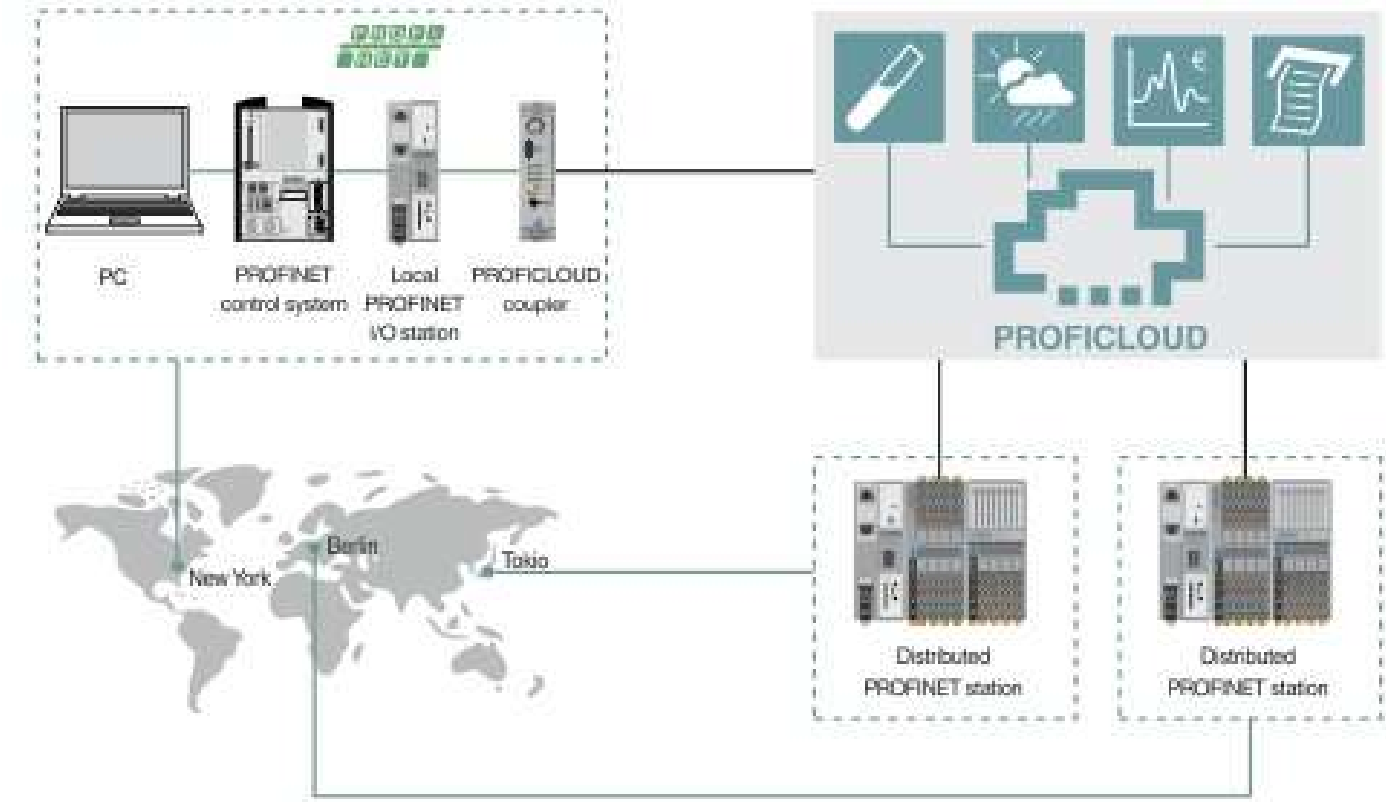
Technología

PROFICLOUD





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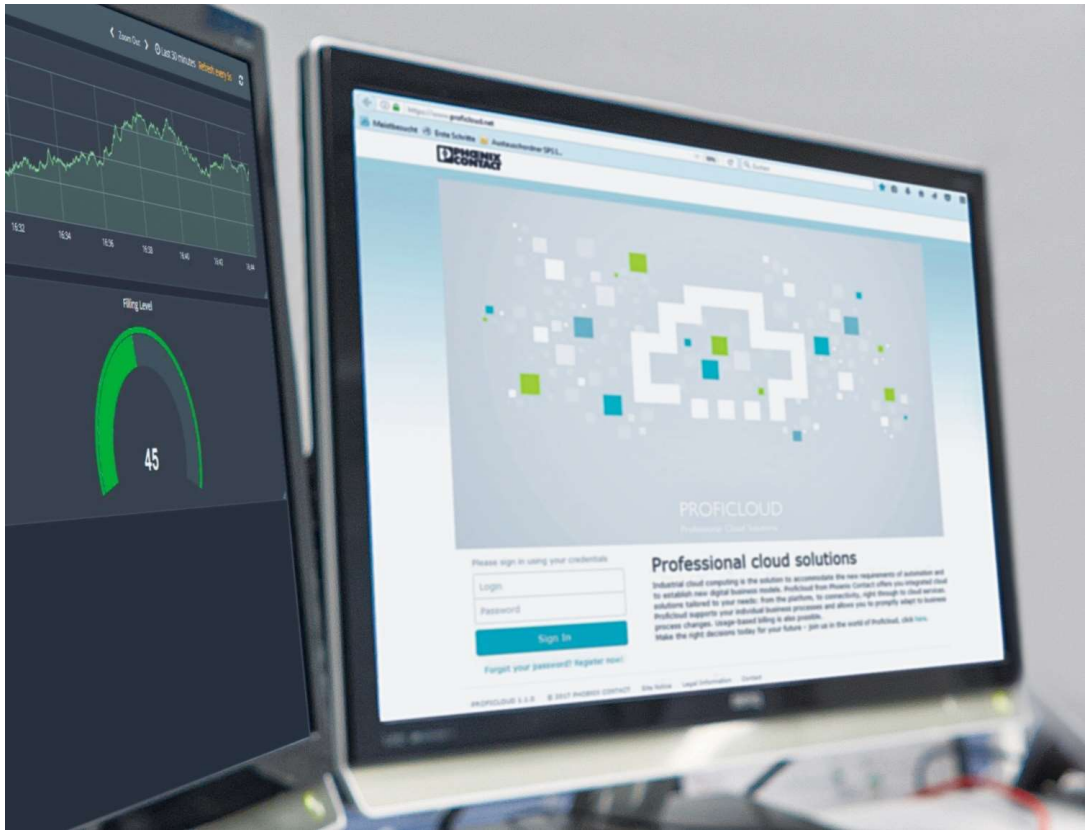
Technología

PROFICLOUD



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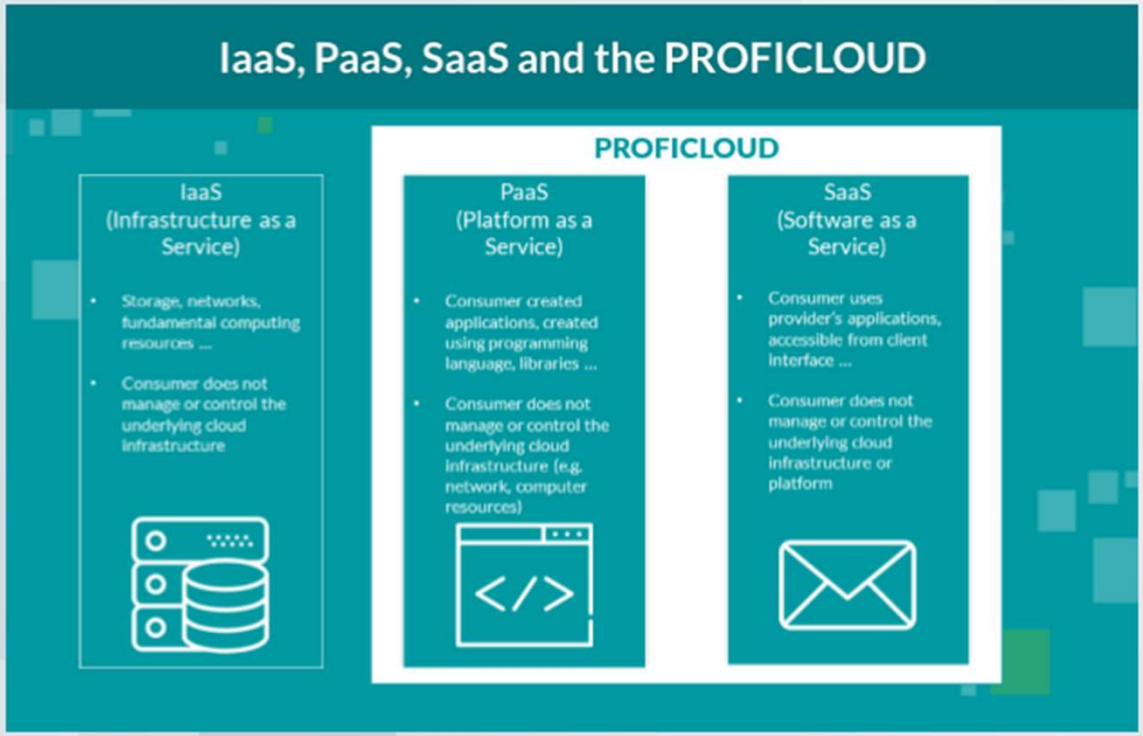
Technology

PROFICLOUD

1. What is the Cloud? What does Cloud mean?

Cloud computing is the concept of offering services over the internet. When it comes to these services, there are three general levels:



Technology

PROFICLOUD

IaaS (Infrastructure as a service)

The capability provided to the consumer is to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications. The consumer does not manage or control the underlying cloud infrastructure but has control over operating systems, storage, and deployed applications; and possibly limited control of select networking components (e.g., host firewalls).

PaaS (Platform as a service)

The capability provided to the consumer is to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages, libraries, services, and tools supported by the provider. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, or storage, but has control over the deployed applications and possibly configuration settings for the application-hosting environment.

SaaS (Software as a service)

The capability provided to the consumer is to use the provider's applications running on a cloud infrastructure. The applications are accessible from various client devices through either a thin client interface, such as a web browser (e.g., web-based email), or a program interface. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of limited user-specific application configuration settings.

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Which of these cloud layers does the Proficloud offer?

Proficloud offers both PaaS and SaaS. Our customers can't "rent" Proficloud servers to do whatever they want with them – that would be IaaS. We also don't offer Dropbox-like functionality, like using Proficloud as file storage, for Documents, Images or Videos for example.

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PROFICLOUD Advantages of CLOUD

PROFICLOUD

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Technología

PROFICLOUD

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Technology

PROFICLOUD Example

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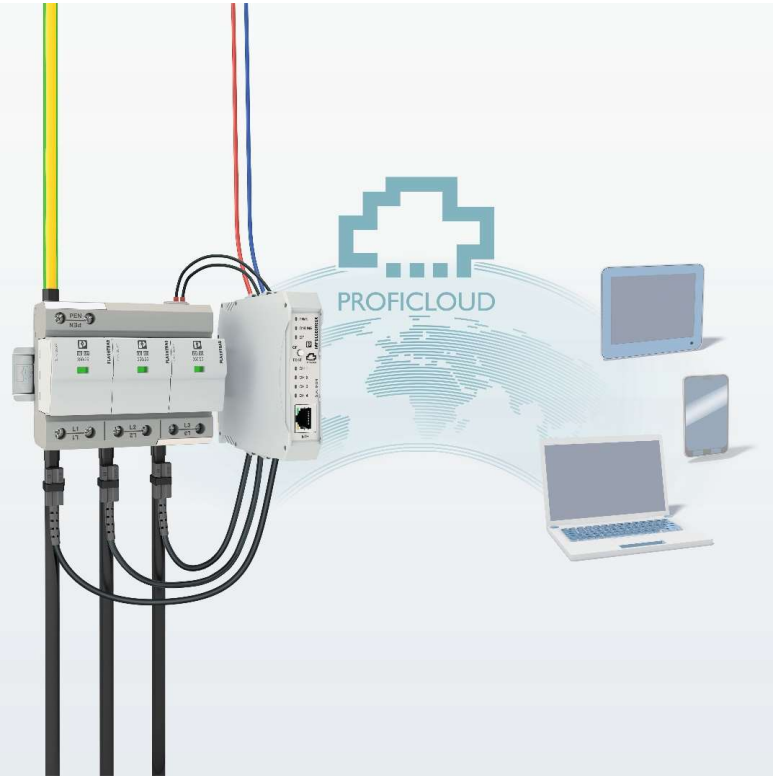
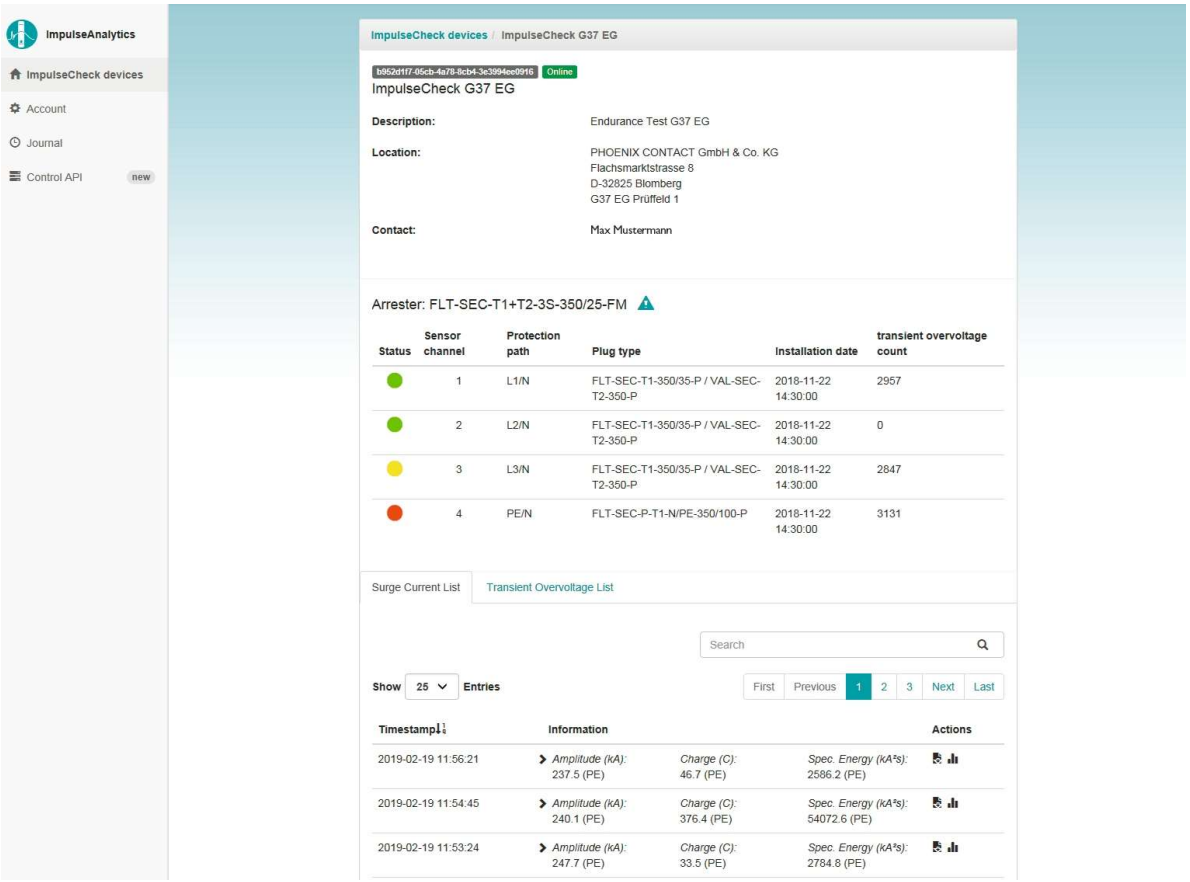
PROFICLOUD Example





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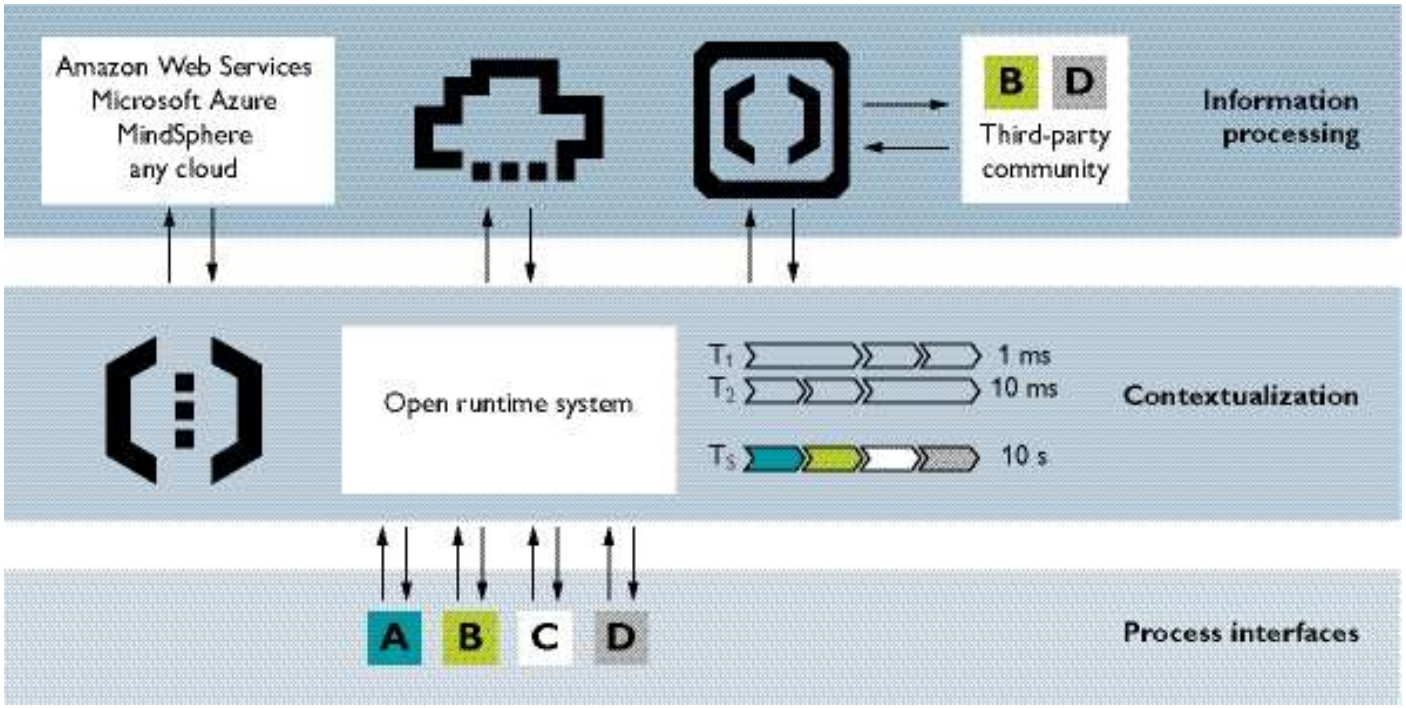
PROFICLOUD



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PROFICLOUD Remote Services

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SMART Services

	DEVICE MANAGEMENT SERVICE	SMART DEVICE SERVICES	SMART SOLUTION SERVICES
DEFINITION	**Minimal standard** for all PROFICLOUD-compatible products	**Standardized** value-added service for different industries / applications	**Industry or application-specific** value-added service
	Standardized, application-independent device information in real time	Direct linkage to one **or more** PROFICLOUD-capable products	**Combination** of Smart Device Services
	Fulfillment of **minimum requirements** for industrial products in **the digital age**	**High data value added** and **additional customer willingnes to pay**	

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Smart Services

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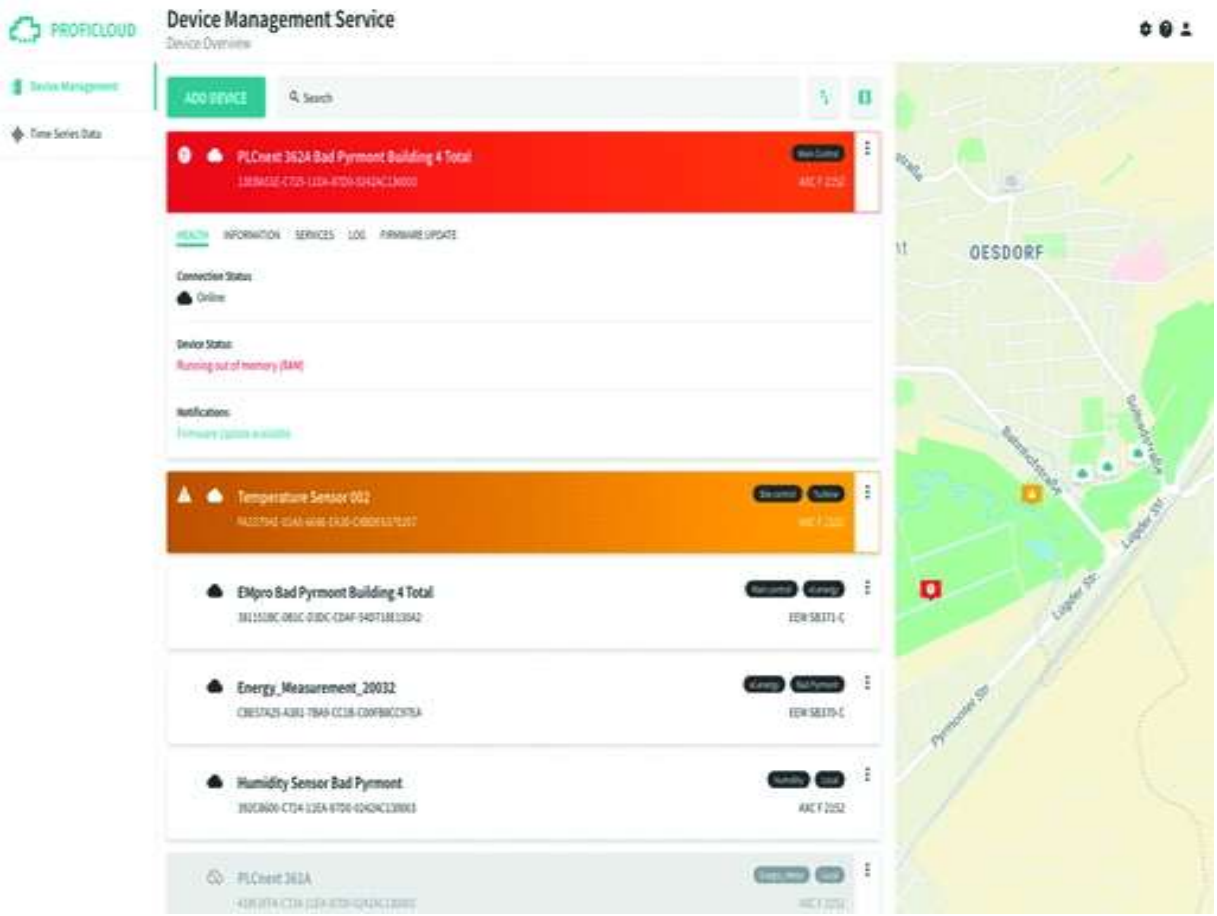
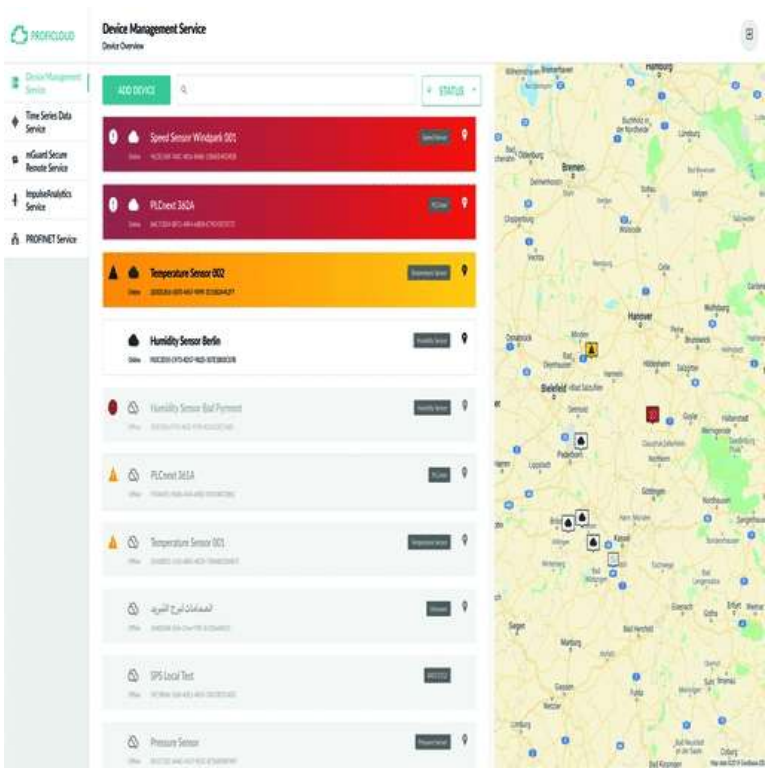
Device Management Service





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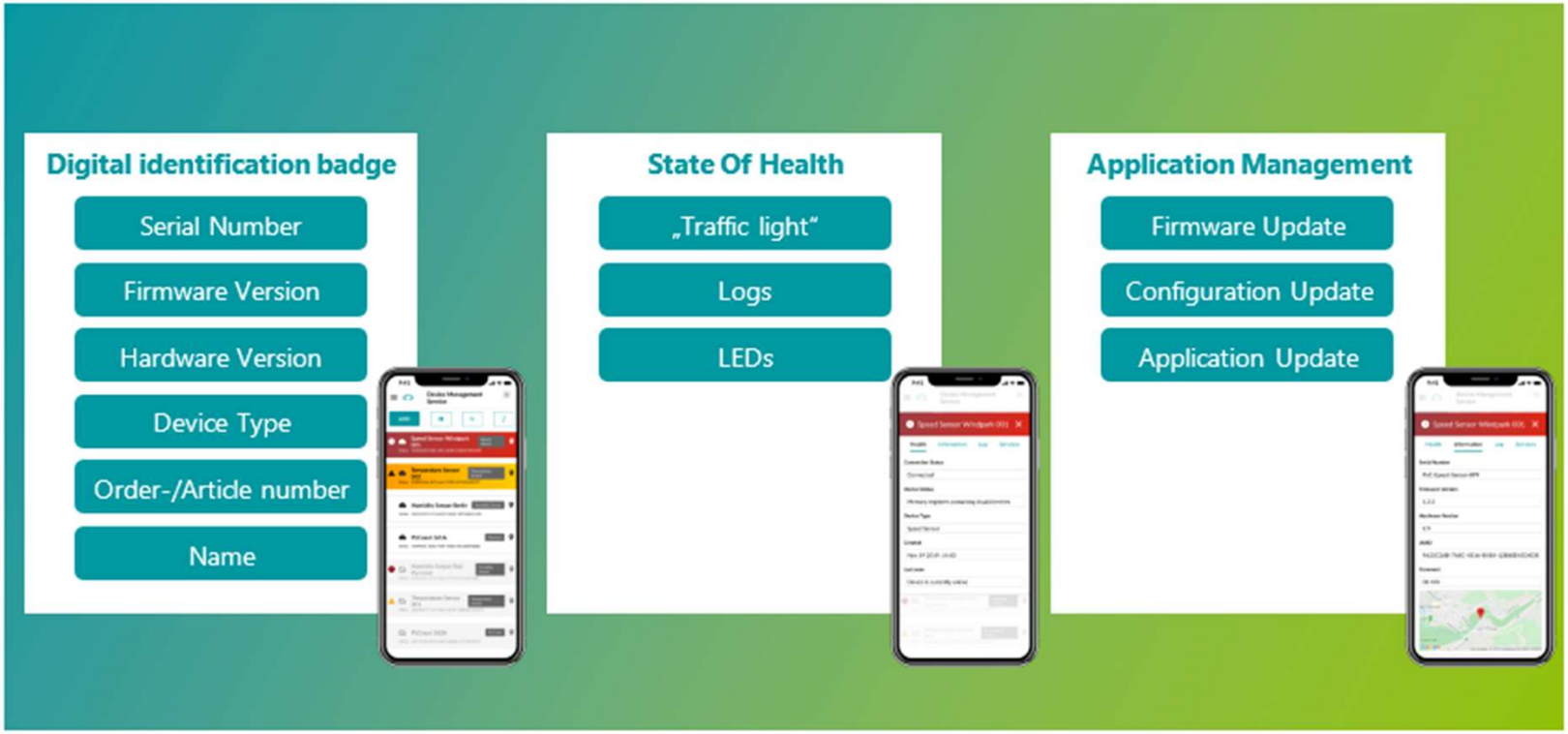
Device Management Service



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E-Mobility

Market trends and market potential

Customer behavior – refueling vs. charging

From present to future

Perspectively charging

- Nearly any location – integration to everyday life
- Decentral charging

➢ Side effect while everday life
➢ Battery level not enough for planned distance

@ night
@ work
@ supermarket
@ shopping
@ restaurant
@ ….

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Applications and standards on e-mobility

Charging infrastructure – configurations

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Charging modes, standards and power classes

AC charging			DC charging
2,3 kW; 3,7 kW; 11 kW; 22 kW; 43 kW			50 kW; 150 kW; 350 kW; 500 kW
Charging mode 2	Charging mode 3, case B	Charging mode 3, case C	Charging mode 4

Charging standards

AC & CCS Type 1

AC & CCS Type 2

AC & DC GB/T

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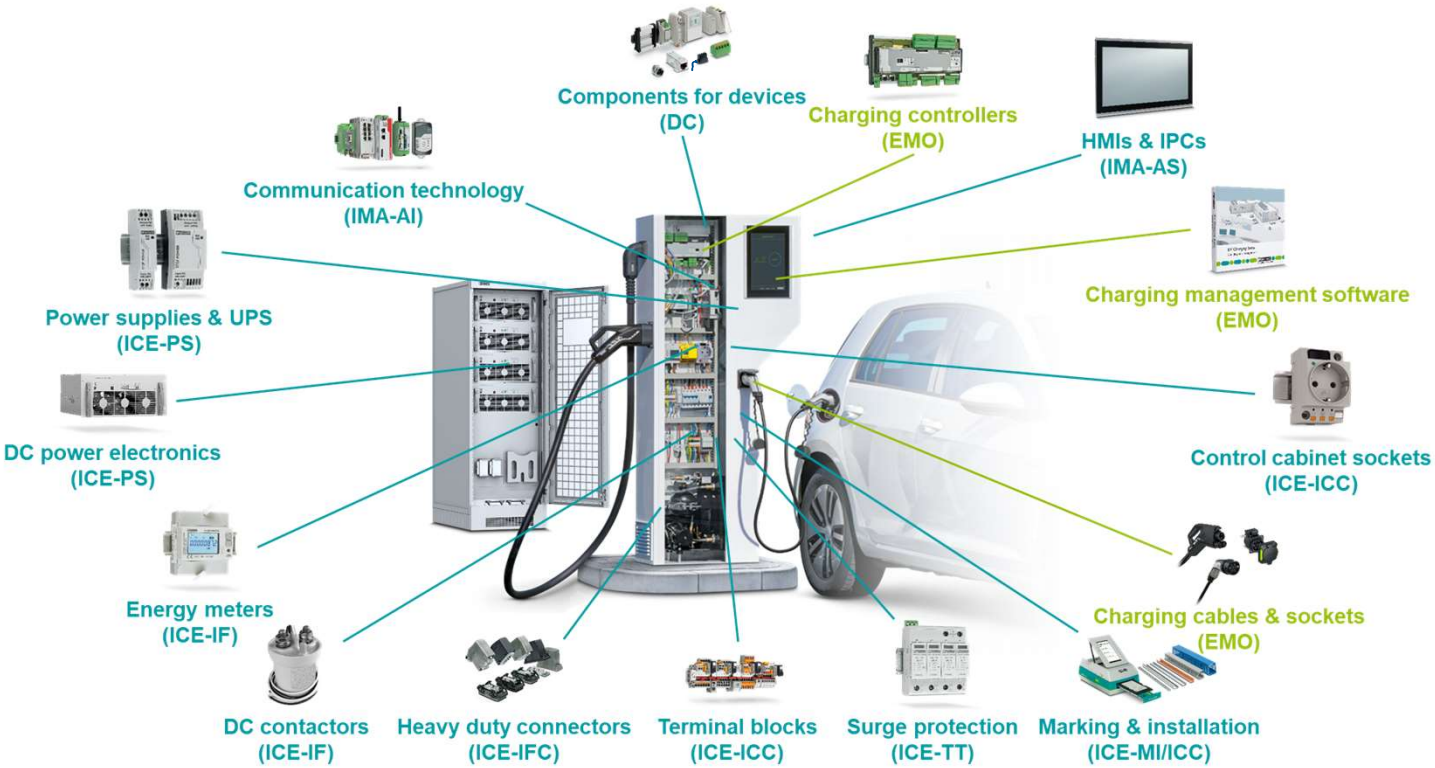
Product portfolio PHOENIX CONTACT

A complete portfolio for charging infrastructure



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IIoT

INDUSTRIAL
INTERNET
OF THINGS

Figure 1: The first step in creating an IIoT application is to make sure that your devices – both legacy and new – can communicate with each other, so that you are getting the most out of all of your data.

Speaking a common language: Getting your devices ready for IIoT

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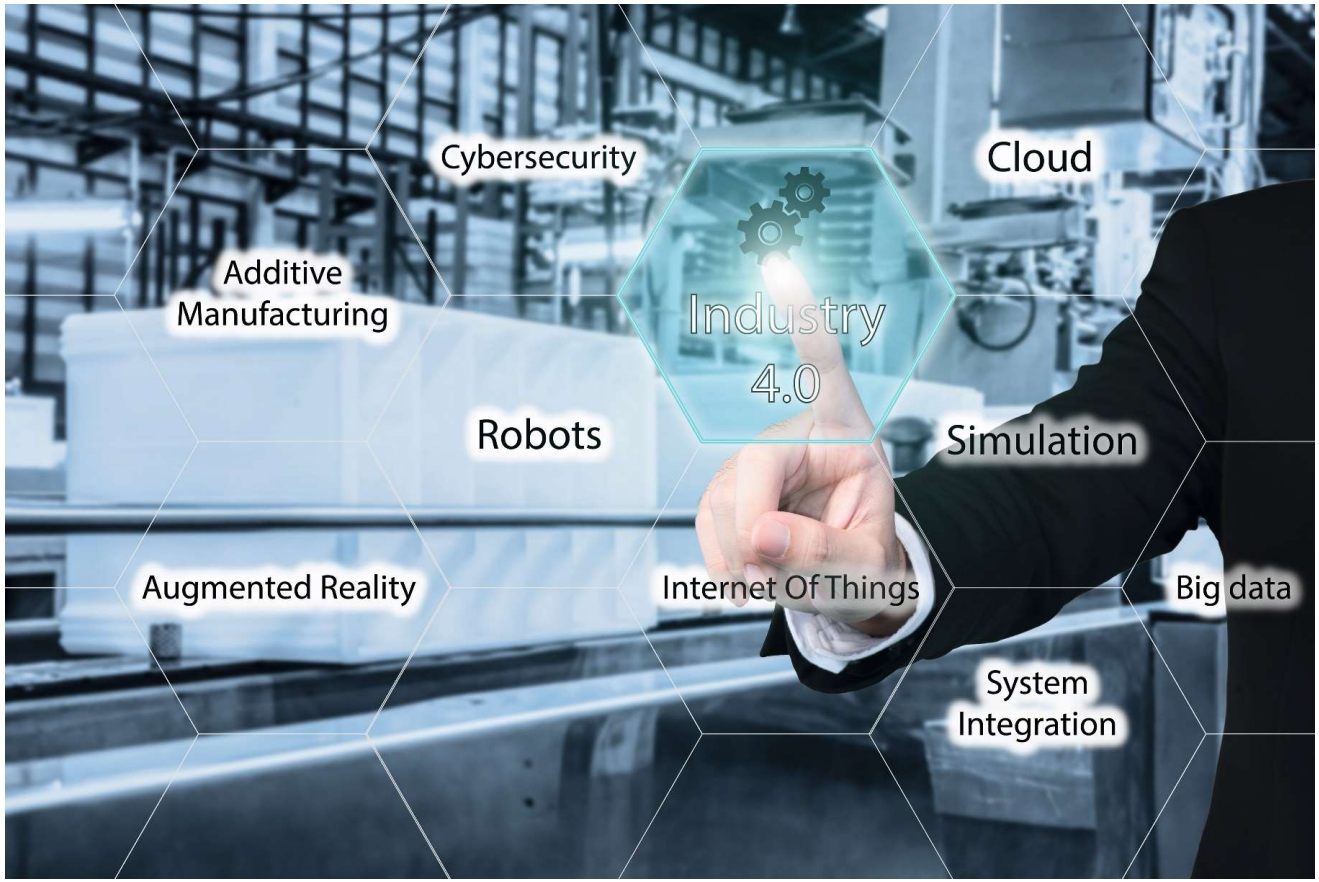
Industrie 4.0



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PLATTFORM Industrie 4.0

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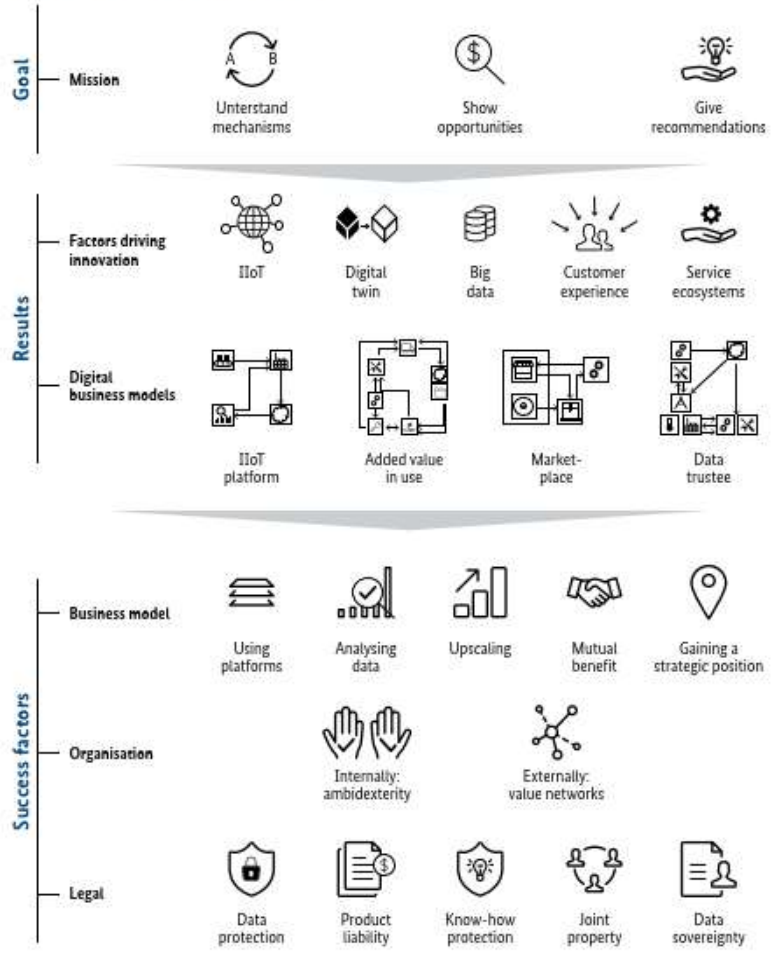
Plattform Industrie 4.0

Through Industrie 4.0, Germany has created a globally recognized brand. Numerous countries have built their strategies for the transformation of production on German standards. For example, Industrie 4.0 has inspired China to seek an "initiative to completely enhance Chinese industry" with its 'Made in China 2025' plan. In addition, 20,000 publications about Industrie 4.0 have been published in German-speaking countries alone since 2014, with well over 100,000 published internationally.[1] Authors include ministries, scientific and research institutions, academies, associations, companies, consulting firms, trade unions and foundations. A remarkable achievement!

Figure 1: Digital business models for Industrie 4.0



Source: Plattform Industrie 4.0

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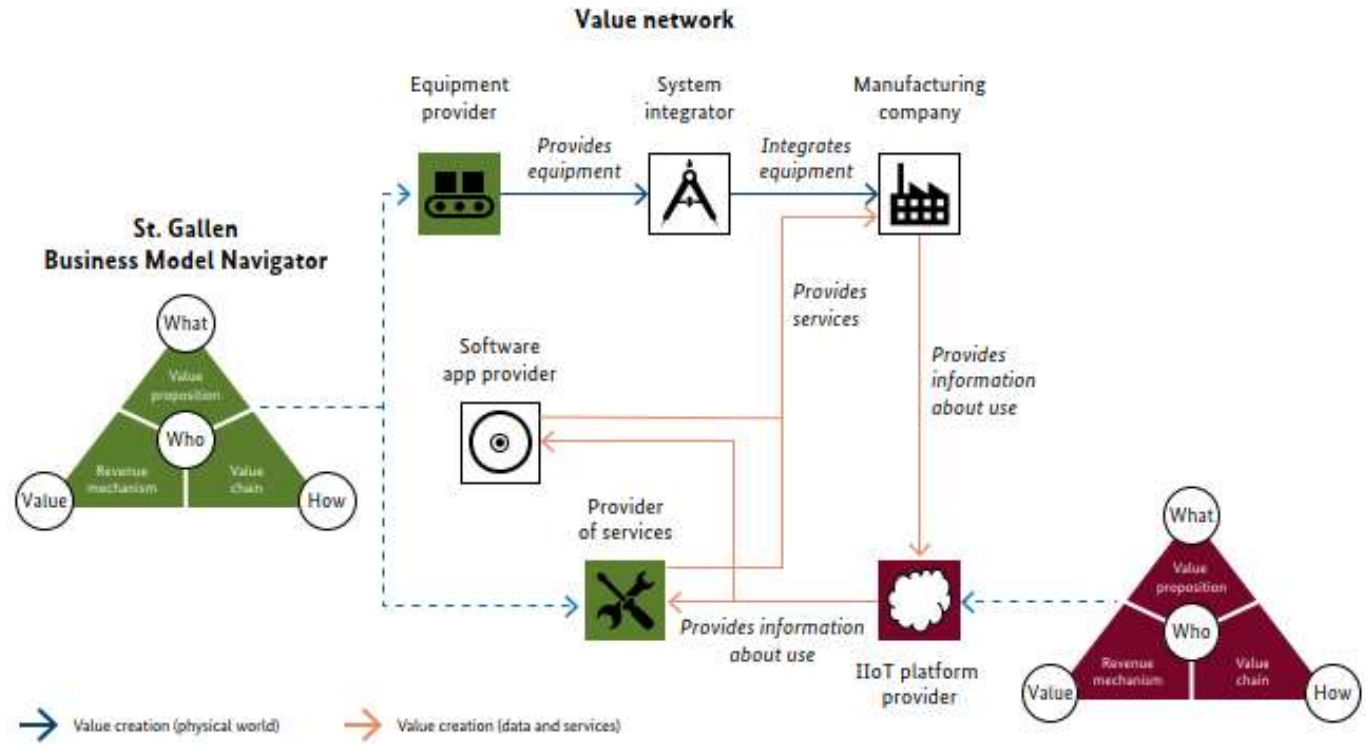
Plattform Industrie 4.0



Source: Plattform Industrie 4.0

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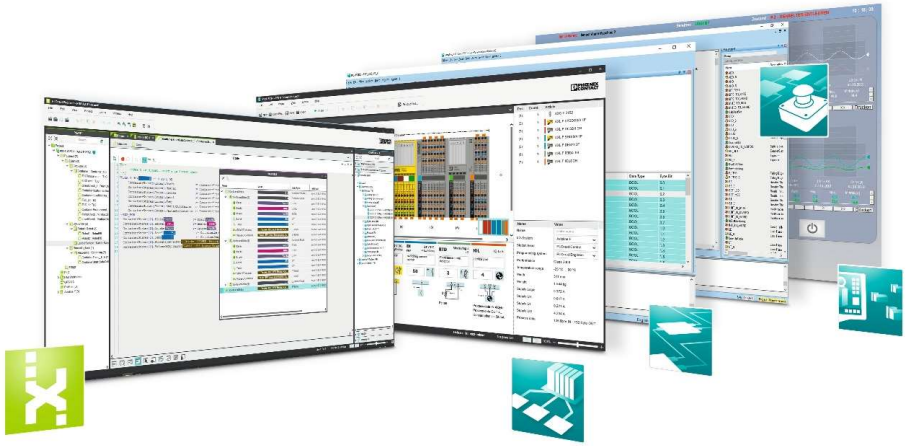
Webinar IMA Septiembre 2020

Panorama y guía de selección de Software y Tecnologías



Fecha	**14 Septiembre 2020**
Hora	9:00
Hora	16:00
Duración	1 hora
Costo	gratuito

Descubra y conozca las herramientas de software de manera general para parametrización, configuración, programación, diagnóstico, monitoreo, visualización web, configuración y diagnóstico de buses de campo, soporte y configuración de interfaces de comunicación, configuradores especiales de conectividad así como un panorama general de las tecnologías actuales que se desarrollan hacia la digitalización inteligente en los campos de la automatización.

Panorama y guía de selección desde Softwares para programación, configuración, diagnósticos de controladores, herramientas de softwares para red, configuradores OPC, planeación de estaciones de automatización para las líneas de controladores y sus sistemas E/S, diversas formas de parametrizar desde radios, equipos de seguridad, visualización HMI, SCADA así como una panorama general de las principales tecnologías como PROFINET, OPC UA, Digital TWIN, PLCnext Technology, SMART Business, Tecnologías E-Mobility, IIoT, y Plataforma Industrie 4.0

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Webinar IMA 2020

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55 1101 1380

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