

TIA Portal V21

Technical slides

Version 1.0

TIA Portal V21 - Table of contents

SIMATIC WinCC Unified – Innovations



- Unified Screen Editor (Next Gen.)
- Modernization: All essential features of the predecessor
- Configure Limits & Thresholds
- Electronic record for local user management changes & failed login
- PaCo support in Faceplate
- Reporting in ES
- New screen object - Alarm Indicator
- Sm@rtServer for UBP
- Configure printer without the printer hardware (UCP)
- Real-time online data transfer via MQTT (for PC RT)
- Parallel display of different process screens on multiple monitors (for PC RT)
- WinCC Unified Data Hub – Broad market release
- "Start Program" function for applications with user interface
- Save Licensing Costs by only "pay for what you use"
- Unified for Industrial Edge, WinCC Unified SIQENCE

SIMATIC WinCC RT Prof. – Innovations



- WebUX, RestAPI and communication enhancements
- Cross object interaction

SIMATIC STEP 7 – Innovations



- Continuous Integration / SIMATIC Source Documents
- NVT – feature round-up
- Keep DB online values on structural changes

SIMATIC Motion Control – Innovations



- New IPC and Open Controller hardware for T/TF variants
- Motion Control Multicore support
- Cam and superimposed motion improvements
- Cross-PLC synchronous operation using IRT I-Device
- Support of external encoder at PLC and S120 drive
- New diagnostic functions
- Kinematics and Motion Interpreter improvements

SINAMICS Startdrive & DCC – Innovations



- Support of SINAMICS S220 multi axes servo system
- Support of connection to S7-1500 R/H
- Parameter compare extension
- New download mode

TIA Cloud Services



- TIA Portal Cloud & TIA Portal Cloud Connector
- TIA Simulation Cloud
- TIA Project-Server Cloud

SIMATIC Hardware



- Protection of PLC configuration data on memory card
- Cross-PLC synchronous operation using IRT I-Device
- Configuration in RUN for S7-1500 R/H PLCs – 1st Step
- System Web Pages
- ...

System functions



- Migrating to and upgrading TIA Portal projects
- Enhanced TIA Portal Software Integrity Protection
- PROFINET Security Class 1 enhancements
- TIA Portal Documentation
- TIA Portal Openness
- TIA Portal Add-Ins
- Version Control Interface (VCI)
- CAx: AutomationML & Publication Tools
- TIA Portal Library: Exclusive Multiuser Mode
- TIA Portal Usability: Tracking of modifications, Info file

SIMATIC AX - Automation Xpansion



- Support of further hardware devices e.g. ET200SP CPU
- Extending the amount of available system libraries
- New debugging features: e.g. instance selection
- Publicly available documentation

TIA Portal Options



- SIMATIC STEP 7 Safety
- SIMATIC Safe Kinematics
- TIA Portal Multiuser
- SIMATIC Robot Library
- OPC UA
- SIMATIC S7-PLCSIM / S7-PLCSIM Advanced
- SIMATIC Target for Simulink
- TIA Portal Test Suite
- SIMATIC Visualization Architect (SiVArc)
- SIMATIC Modular Automation (MTP)
- Central User Management (UMC)
- Modular Application Creator
- SIMATIC ProDiag / SysDiag
- TIA Portal Teamcenter Gateway
- TIA Package Manager
- TIA Portal Safety Validation Assistant

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WinCC Unified V21

release 12/25

Scalability

- New device version for Unified Basic Panel, Unified Comfort Panel and Unified PC Runtime
- New RT device: WinCC Unified for Industrial Edge



Unified Screen Editor (Next Gen.)

- Screen Window Preview for Screens
- Faceplate container Preview – Static interfaces values
- Snap to line
- Direct text input
- Rotation and External rotation point
- Additional screen area for designing
- Scroll, Zoom and Pan for Screen and Screen objects
- Multi-selection and resize of screen objects
- Line object handling
- Improved Group | Improved Multiselecting of lines
- Select multiple screen items with SHIFT + lasso functionality
- Line creation using standard angles



Efficient Engineering

- Screen Editor - Retain Layer information during copy paste
- Screen Editor - Bring multiple objects Front/Back/Forward/Backward
- Screen Editor - Select object behind overlapping object
- Set bit while key pressed on HMI Button
- Scripts/Scheduled tasks - Insert system function syntax directly to scripts



Standardization

- Graphic lists as library types
- Any datatype at Faceplate
- Faceplate Support for PaCo



Alarming

- New screen object - Alarm Indicator
- Integer-based datatype support for Discrete Alarm
- Multiline alarm support



Parameter Control

- Decimal Point Support for PaCo
- PaCo support in Faceplate
- Show Min/Max value of parameter within Parameter set control
- Define Parameter Sets in Engineering & Delta Download
- Parameter Set Type Editor Improvements



Audit

- Configuration of Audit Control Settings in Runtime
- Electronic record for local user management changes & failed login



WinCC Unified Corporate Designer

- New compatibility Style – Create screen objects like on Comfort Panels



WinCC Unified V21

release 12/25

System functions

- "Start Program" function for applications with user interface
- Send Email
- Export Log via system function (Tag, Alarm, Audit)
- Set focus to a specific element



Connectivity

- Indirect addressing - multiplex absolute address for Allen Bradley PLC
- Modbus RTU Multipoint, support
- S7-200 / S7-200 Smart Connection
- Support for Struct Datatypes in OPC UA DA of OPC UA Client
- Real-time online data transfer via MQTT (for PC RT)

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10010001
00010000

Visualization

- Save Licensing Costs by only "pay for what you use"
- Configure Limits & Thresholds on IO Field, bar, slider, gauge, trend controls
- Access the Validity range and Threshold values of tags via Scripting
- New screen object - Dynamic widget: "SIWAREX Secure Display" for "legal-for-trade applications"



Reporting

- Reporting configuration in TIA Portal
- Configuration of Report Control Settings (e.g. filter & sorting ...)
- Reporting Excel Add-In ONE (for WinCC Unified & WinCC V8.1)



Operation: Usability

- Logging: Periodically create Backup of Main Database
- Runtime language dependent default font
- Download only relevant fonts
- HMI Tag Display Name
- Automatic Handshake for Block Array Tag used in Buffer Trend



SIMATIC HMI Unified Panels

- Feature complete to Comfort Panels
- Sm@rtServer for UBP
- Sm@rtClient for UCP
- Add printer without connection for UCP
- Optimize Boot time for AutoStart for UCP
- Network Tool - Set network IP Address of Partner
- Control Panel - DCP Protection
- Connect multiple predefined network drives
- Update IEM (UCP) – Enable remote Access



WinCC Unified V21

release 12/25

WinCC Unified PC Runtime

- Parallel display of different process screens on multiple monitors



myWinCCUnified / Station Configurator

- Configuration of Multimonitoring
- Leave Kiosk mode via Scripting with/without password



WinCC Unified Certificate Manager

- Certificate handling - Secure PLC-HMI Communication Enhancement (handling imported CA-signed certificates)



WinCC Unified Data Hub

- Broad Market Release



WinCC Unified for Industrial Edge

- New RT device: WinCC Unified for Industrial Edge



SiVArc

- SiVArc supports WinCC Unified EDGE RT devices in generation
- SiVArc support for Color palette
- Layouting with Rotation angle
- Improvements in SiVArc expressions
- Improvements in Advanced tag rule editor
- Improvement in usability
- Support for MTP-CFL
- Improvements in Openness API



MTP

- Support MTP V1.0, V2.0
- Report values Support
- User management a crucial part of the library



Control Function Library (CFL)

- New Channel Blocks
- New Drive Block → MonTriPosVlv
- User management a crucial part of the library



WinCC Unified SIQENCE

- Broad Market Release by Q2/2026
- ISA88 Recipe and Batch management on WinCC Unified PC
- Based on S7-1500 PLC

Release
in
Q2/2026



WinCC Unified V21 – Scalability

New V21 device version

Unified
Basic



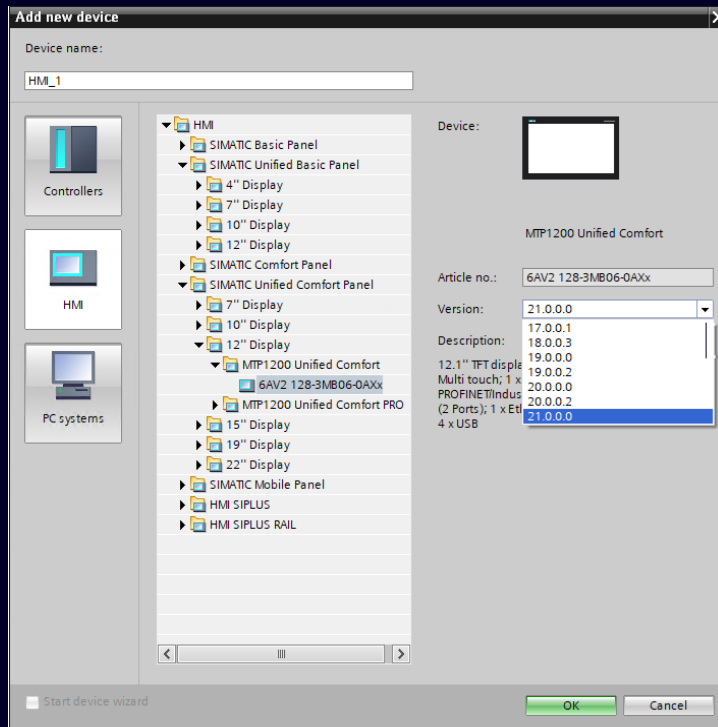
Unified
Comfort



Unified
Edge RT



Unified
PC RT



New V21 device version for

- Unified Basic Panels
- Unified Comfort Panels
- WinCC Unified PC Runtime
- WinCC Runtime Professional
- WinCC Unified Edge Runtime 

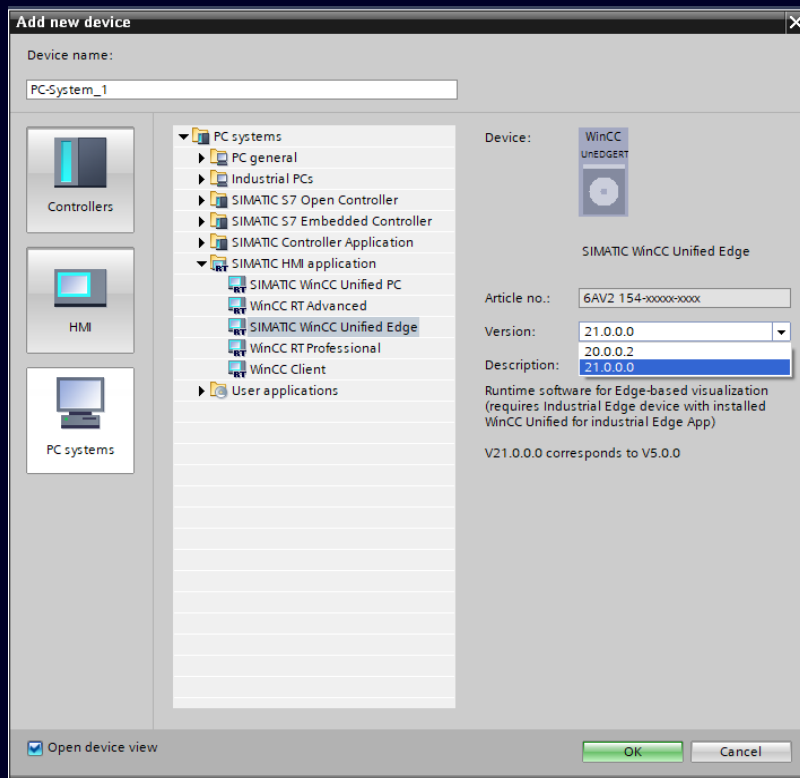
New features are available in the corresponding device version only

- Upgrade the Unified devices
- Upgrade Faceplates in library (*if necessary*)

Note: SiePortal / SIOS entry will be available

WinCC Unified V21 – Scalability

New RT Device: WinCC Unified for Industrial Edge



One Engineering for all WinCC Unified runtimes
User is now able to configure WinCC Unified for Industrial Edge RT in TIA Portal

- **Integrate HMI applications based on Industrial Edge**
 - WinCC Unified for Industrial Edge RT Devices V20.0.0.2 and V21.0.0.0
 - Combine a full-blown HMI with the flexibility of the IE environment like easy deployment and a high level of extensibility
 - Open data flow for connectivity and integration with Industrial Edge applications

Note:

- [WinCC Unified Edge V4.0 \(V20\) - Technical Slides](#)
- [WinCC Unified Edge - What's new V4.0 \(V20\)](#)
- [WinCC Unified Edge – Use Case Pitch Deck](#)
- [WinCC Unified Edge – App Pitch Deck](#)

WinCC Unified V21 – Screen Editor (Next Gen.)



Unlock the Future of Unified Screen Engineering!

The next-generation HMI Screen Editor is crafted to facilitate innovative advancements in screen engineering, empowering us to enhance our engineering efficiency like never before.

Key Enhancements:

➤ Streamlined Simulation Support:

- Experience effortless previews that simplify workflows. No need for compile/download or starting the RT Simulation. Utilize dynamic Screen window previews and static Faceplate interface values preview in engineering.

➤ Intuitive User Experience:

- Effortlessly edit screen objects without digging deep into object properties.
- Access snap functions, manipulate polylines, and zoom/pan with ease. Shortcuts further enhance your design efficiency.

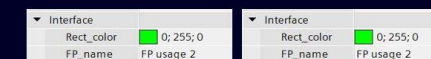
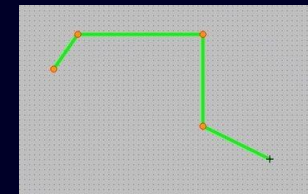
➤ WYSIWYG Environment:

- Enjoy a true "What You See Is What You Get" experience, ensuring your designs look exactly as intended in the final product.

➤ Future-Ready Capabilities:

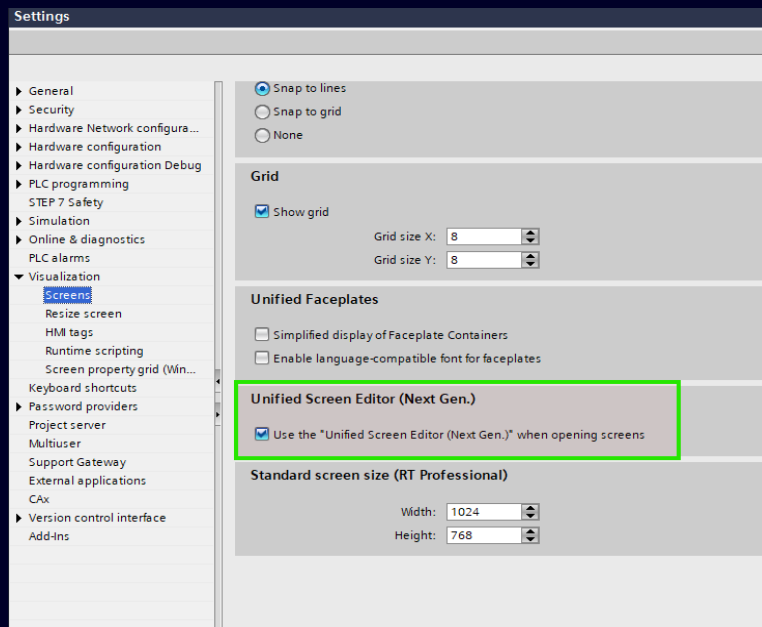
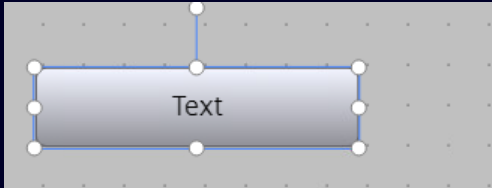
- Embrace responsive design features, paving the way for streamlined process screen engineering that includes pipes and much more!

Elevate engineering projects with the WinCC Unified Screen Editor and step confidently into the future of design!



WinCC Unified V21 – Screen Editor (Next Gen.)

New Screen Editor



Easy identification of the new editor:

- White color grab handles and rotation handle

Note:

- The New and earlier editor can be toggled via toolbar menu settings

TIA Portal -> Options -> Visualization -> Screens -> Unified Screen Editor (Nex Gen.)

WinCC Unified V21 – Screen Editor (Next Gen.)

Screen Window Preview for Screens

Unified
Basic



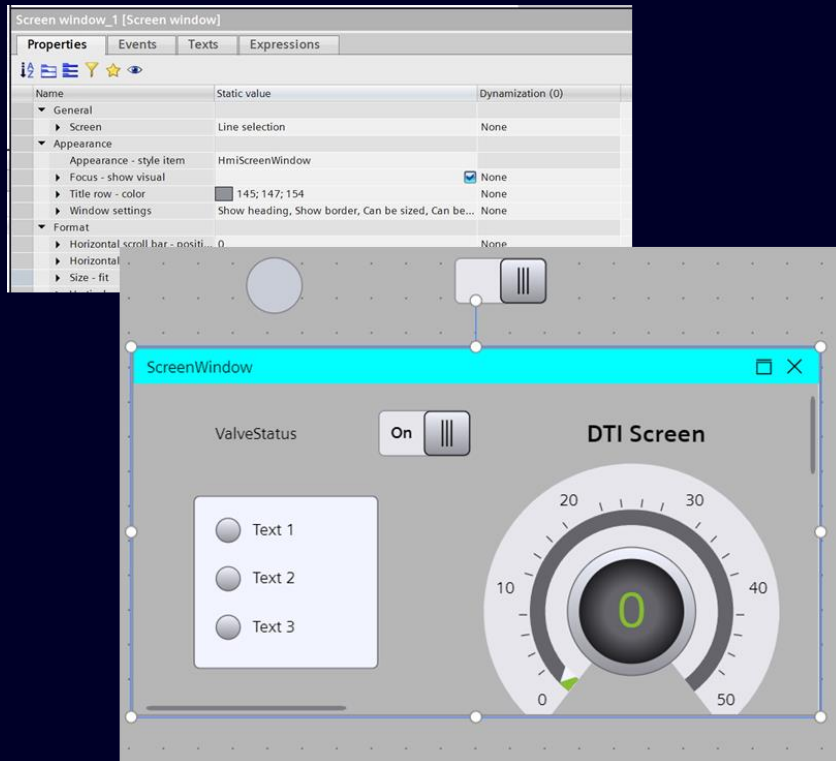
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Extended Support for Screen Window Preview – Enhanced Visualization & Efficiency!

- Users can preview screen inside Screen Window
- Update on another screen previewed on Screen Window

WinCC Unified V21 – Screen Editor (Next Gen.)

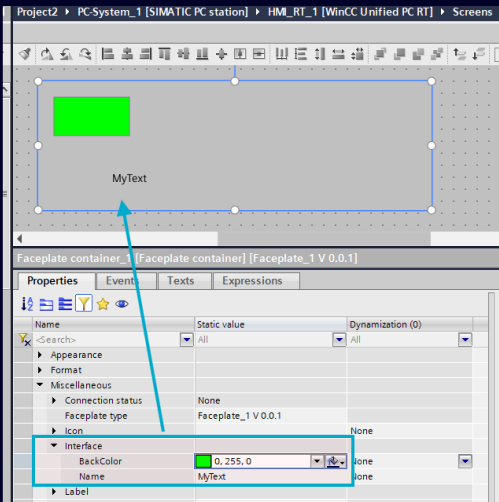
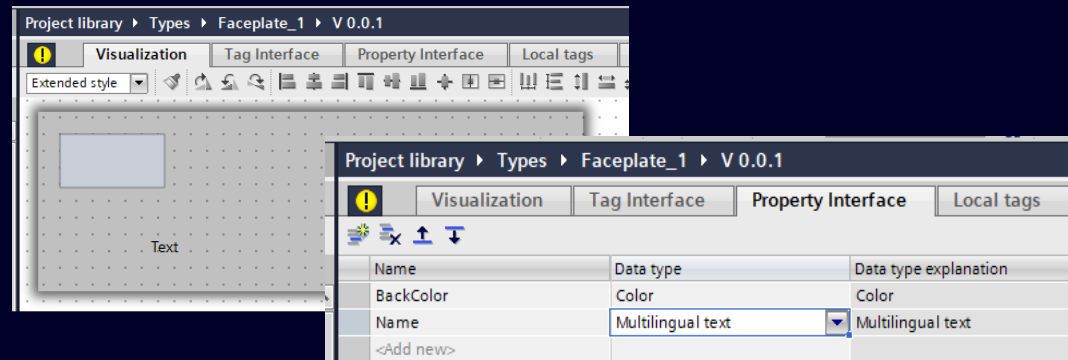
Faceplate container Preview – Static interfaces values

Unified Basic ✓

Unified Comfort ✓

Unified Edge RT ✓

Unified PC RT ✓

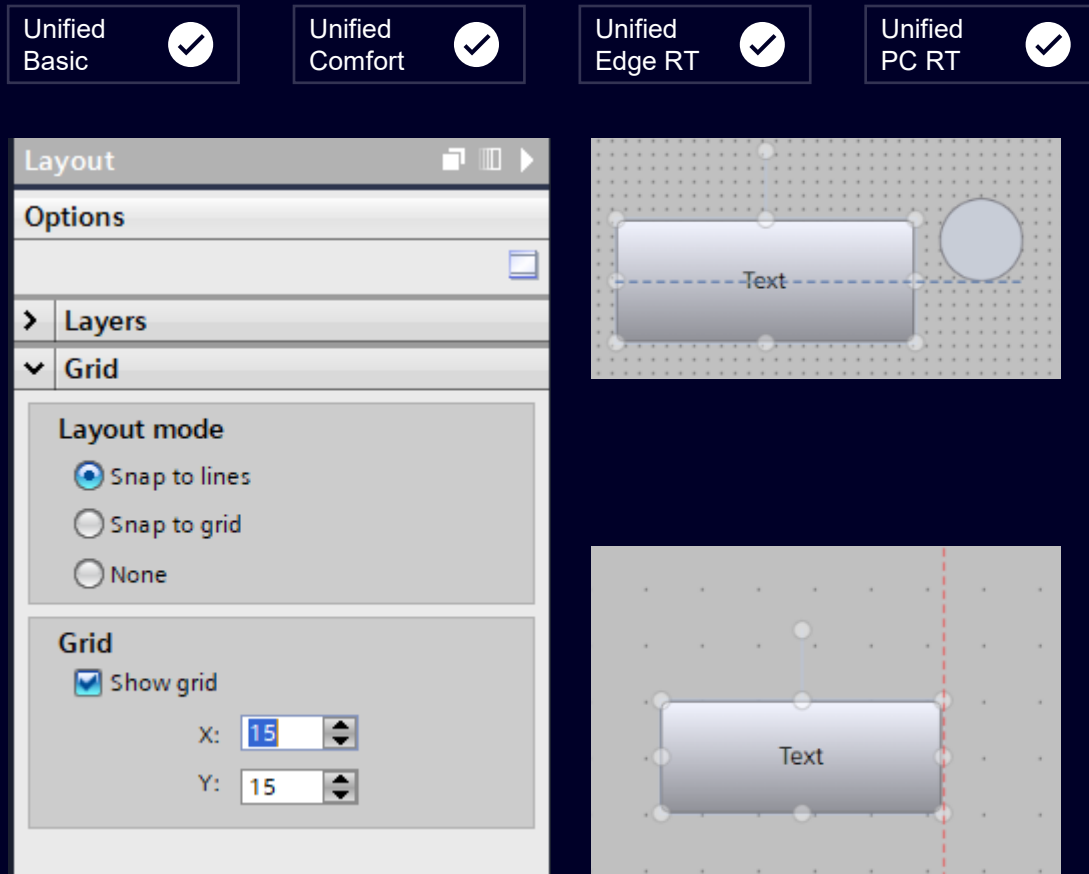


WYSIWYG Faceplate Container – Precision in Preview!

- ‘What You See Is What You Get’ Faceplate container with static values

WinCC Unified V21 – Screen Editor (Next Gen.)

Snap to line



Precision Made Simple – Enhanced Snap-to-Line & Snap-to-Grid!

- Easy placement of objects via Snap to Grid/ Snap to line
- Alt+ Remove Snap to Grid
- Snap lines at center

WinCC Unified V21 – Screen Editor (Next Gen.)

Direct text input

Unified
Basic



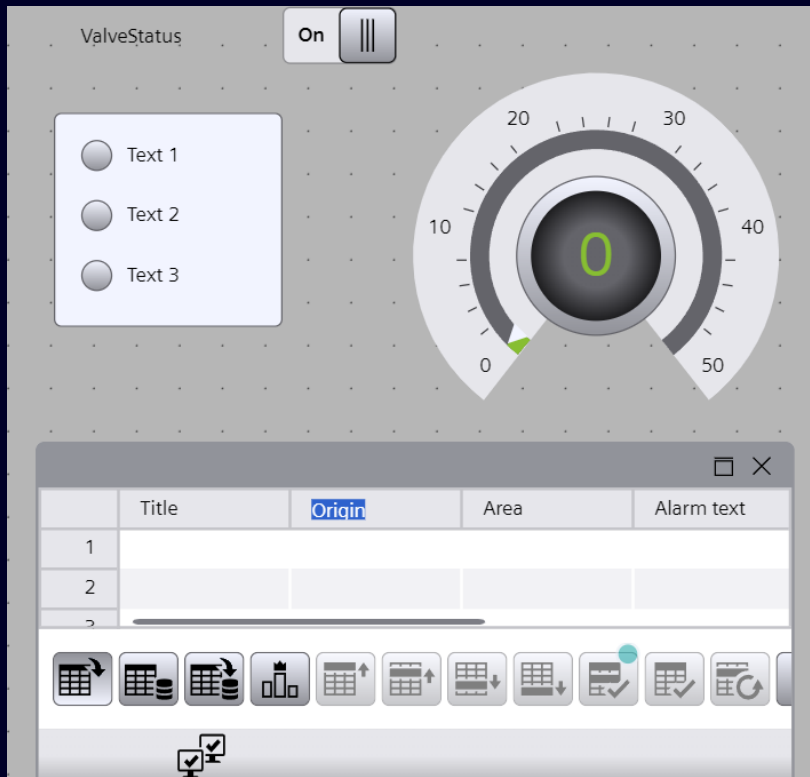
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Enhanced direct text input – Faster & more intuitive editing!

- Extended support is available for Direct text input for Screen elements.
- Press F2 or double click of text to enter in edit mode for screen element
- Press Tab key in edit mode to next direct text input
- Direct text input for column headers are available for complex columns (Beginning of InControl editing)

WinCC Unified V21 – Screen Editor (Next Gen.)

Rotation and External rotation point

Unified
Basic



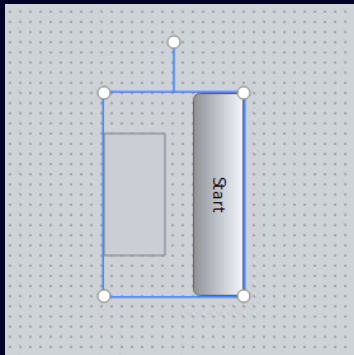
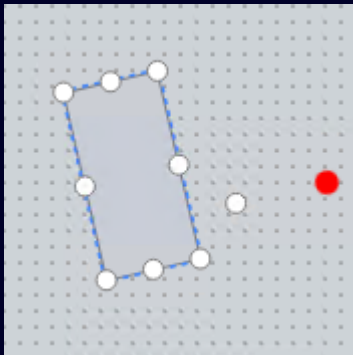
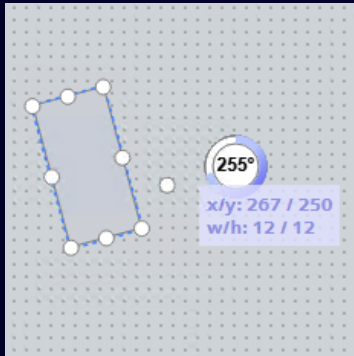
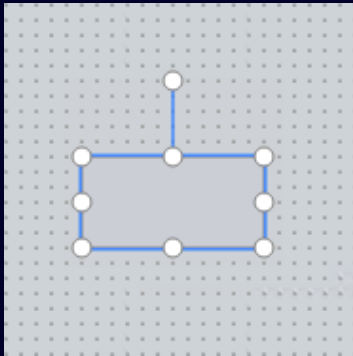
Unified
Comfort



Unified
Edge RT



Unified
PC RT

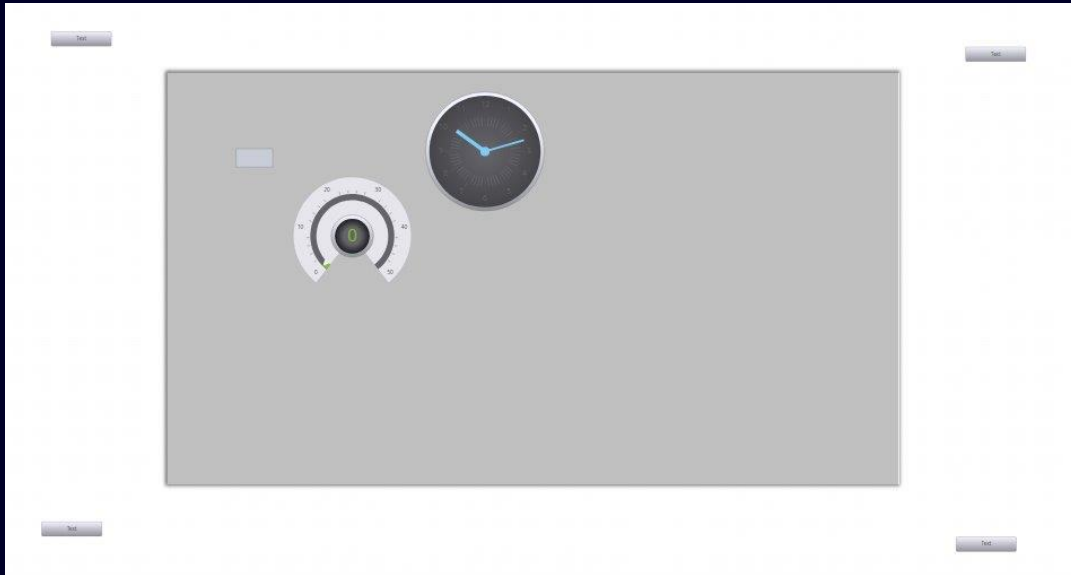


Effortless Object Rotation – Precision at your fingertips

- Support of rotation handle to rotate object directly from screen
- Support of Centered rotation, External Rotation
- Centered Rotation: Rotation handle
- External Rotation: Alt + select object to get external rotation point
- Object can be rotated using external rotation point. (Red dot)
- Rotation of the multiselected objects

WinCC Unified V21 – Screen Editor (Next Gen.)

Additional screen area for designing



Expand Your Workspace – More Room for Engineering Precision!

- Add screen item beyond visual area of screen - Top and Left
- Editing is possible beyond top left corner

WinCC Unified V21 – Screen Editor (Next Gen.)

Scroll, Zoom and Pan for Screen and Screen objects

Unified
Basic



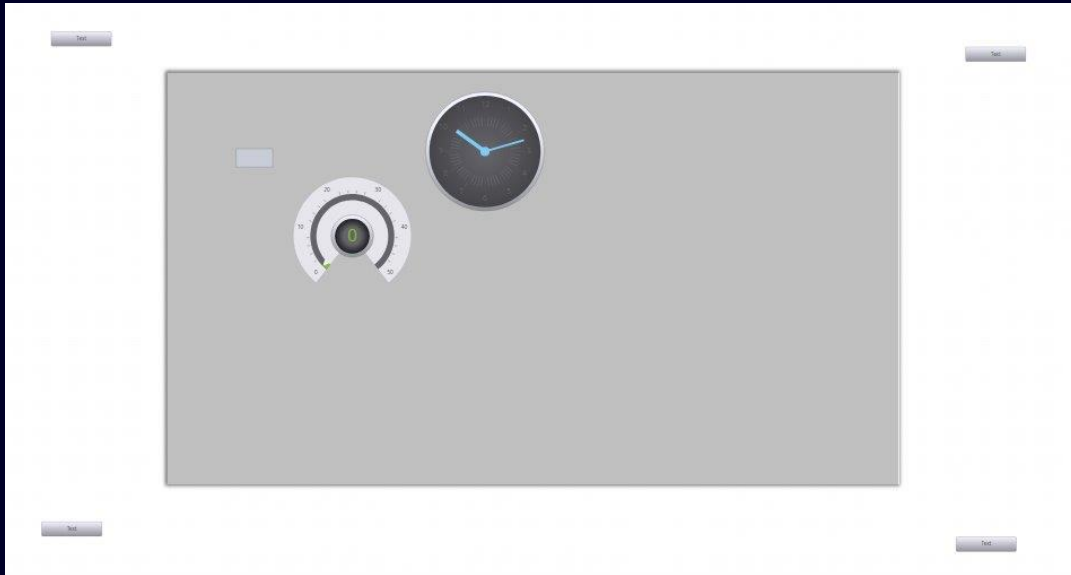
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Seamless Navigation – Scroll, Zoom & Pan with Ease!

- Support of Panning using Space + Left Mouse click drag (Middle mouse button click drag)
- Support of Zooming while panning using Ctrl/Space + Mouse scroll
- Keyboard shortcuts for selection of Screen object for
 - Panning : Space + drag
 - Zooming : Space + mouse wheel

WinCC Unified V21 – Screen Editor (Next Gen.)

Multi-selection and resize of screen object



Effortless Multiselection & Resizing – Maximize Your Productivity!

- Relative resizing of multiselect screen item

WinCC Unified V21 – Screen Editor (Next Gen.)

Line object handling

Unified
Basic



Unified
Comfort



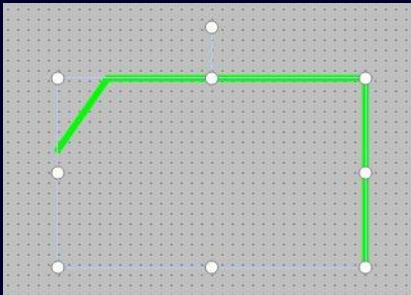
Unified
Edge RT



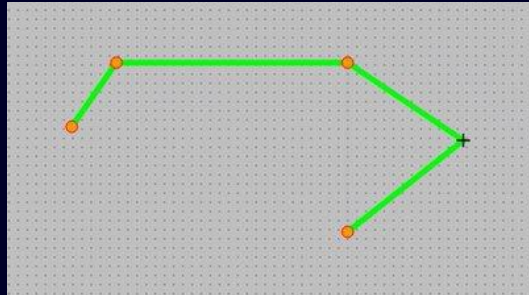
Unified
PC RT



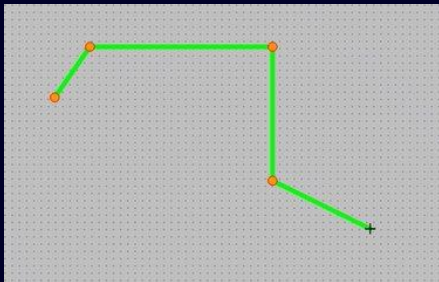
Select mode (click)



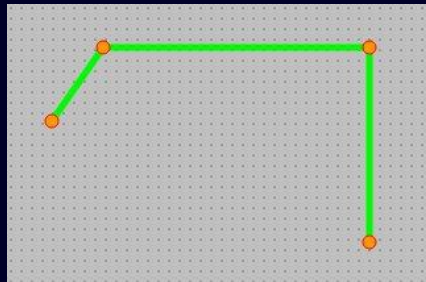
Ctrl => Add new point within
polyline with new position



Edit mode (double click)



Alt => Add new point at
first/last with new position



Enhanced Line Object Handling – Edit with Precision!

- Edit mode for Line/ Polyline / Polygon
- Double click or F2 key
- Add points at the Start/ End using Alt key for Polyline/ Polygon
- Preview of point to be added using Ctrl key
- Enter key/ Click outside in order to exit Edit mode

WinCC Unified V21 – Screen Editor (Next Gen.)

Group Improvement

Unified
Basic



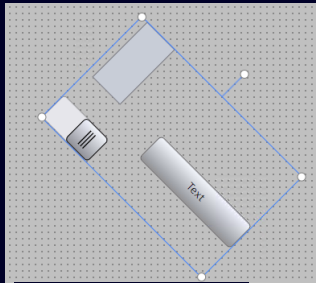
Unified
Comfort



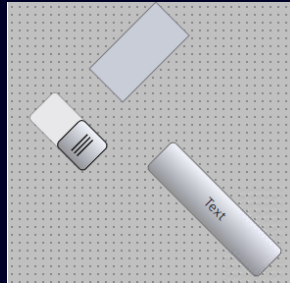
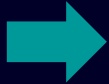
Unified
Edge RT



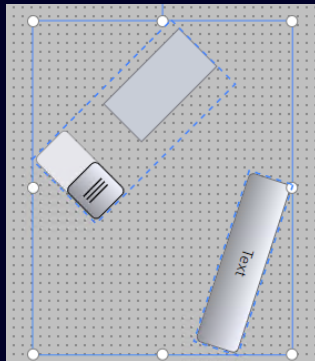
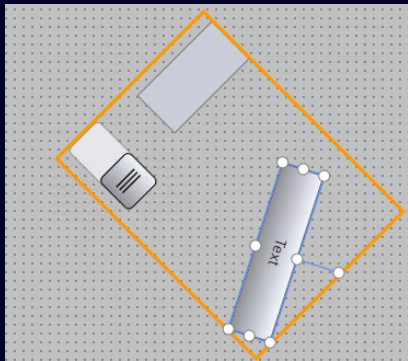
Unified
PC RT



Rotate group by 45 degrees



Group angle gets passed to individual element
and added to angle of individual element

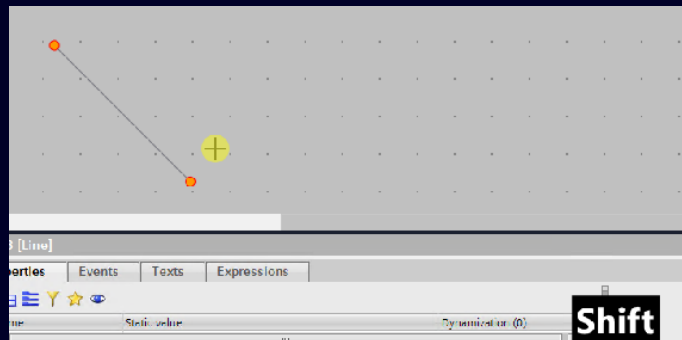
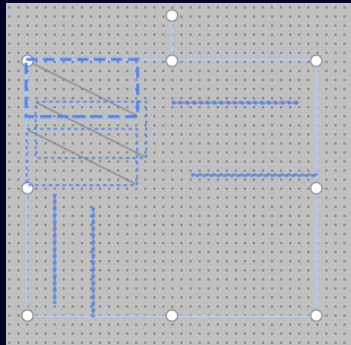


Enhancing Group Handling for Seamless Workflow

- Real time resize of the group
- After Ungrouping rotated group, rotation angle of group added to individual element
- No fallback to unrotated position in Edit mode of group. Objects remains in rotated position.
- Objects stays at its original position while adding or removing object from Group

WinCC Unified V21 – Screen Editor (Next Gen.)

Multi-selection of lines, Line creation using standard angles



Boost Engineering Efficiency with Advanced Screen Editor Features

- **Improve multiselecting of lines to improve engineering efficiency:**
 - Multiselecting lines are shown in dotted pattern so that even if they are horizontal or vertical, their selection can be recognized.
- **Line alignment while Dragging for improved usability in engineering (draw straight lines):**
 - Holding "Shift" while drawing lines is aligning the lines in horizontal, vertical or diagonal direction.

WinCC Unified V21 – Screen Editor (Next Gen.)

Usability – Multiple items selection (Lasso)

Unified
Basic



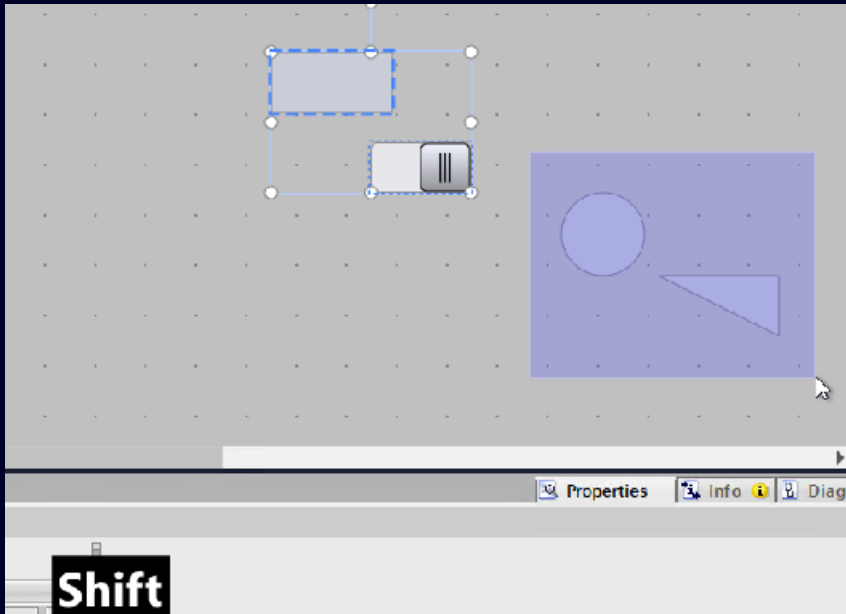
Unified
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Unified
PC RT

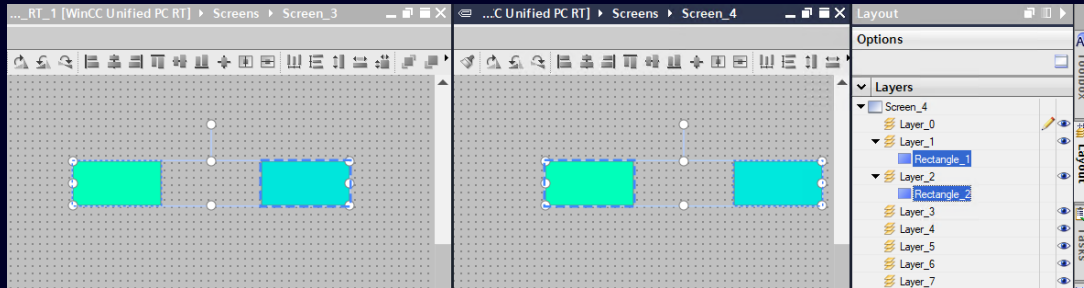


Enhance Productivity with SHIFT + Lasso for Multi-Item Selection in Screen Editor

- Use the lasso functionality together with SHIFT to select more screen items in screen editor.

WinCC Unified V21 – Efficient Engineering

Screen Editor (Next Gen.) – Retain Layer information during copy paste



Layer information is retained during copy paste

➤ Layer information while copy pasting object

- During copy paste operation, the source layer information is retained for objects instead of getting pasted to default layer.

Note:

- All type of screen object copy paste in Unified devices
Ex. One screen to another screen, same screen, master copy/Global library, one device to other device.

WinCC Unified V21 – Efficient Engineering

Screen Editor (Next Gen.) – Bring multiple screen objects Front / Back / Forward / Backward

Unified
Basic



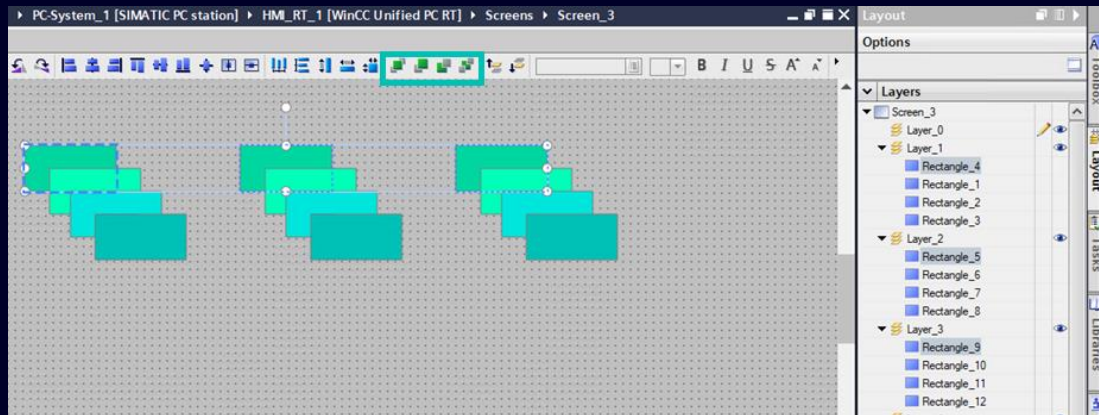
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Order change of multiple objects within a layer

➤ Bring multiple screen objects Front / Back / Forward / Backward

- Multiple screen objects can be brought to front / back / forward / backward via toolbar or using context menu
- Applicable for Order change within the same layer.

WinCC Unified V21 – Efficient Engineering

Screen Editor (Next Gen.) – Select screen object behind overlapping object

Unified
Basic



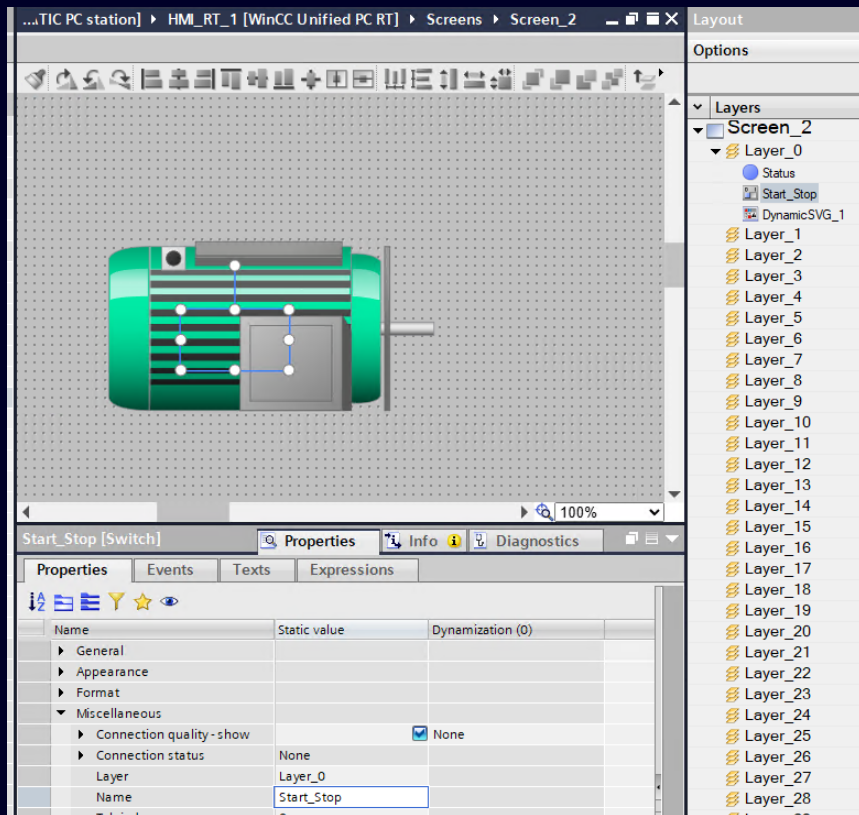
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Easy to select screen object behind overlapping object

- New possibility to select screen object which is behind other objects
 - To select the background object, select the topmost object, then use Alt key + Left mouse click.
 - Applicable for same layer as well as objects present in different layer.
 - Object in background can be resized, moved, modified using keyboard or context menu

WinCC Unified V21 – Efficient Engineering

Set bit while key pressed on HMI Button

Unified
Basic



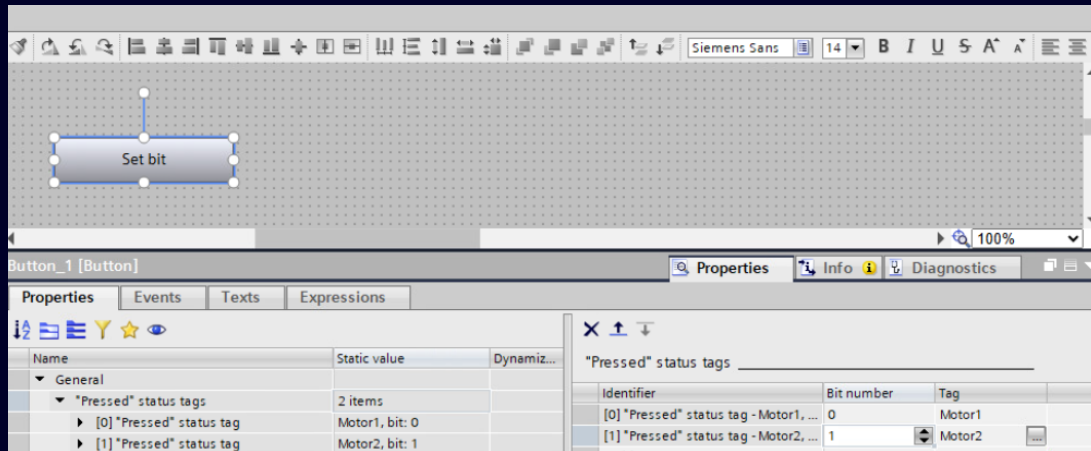
Unified
Comfort



Unified
Edge RT



Unified
PC RT



The function automatically sets the bit to TRUE when the button is pressed and resets it to FALSE when the button is release. This functionality is now bound directly to an Hmi Button and is therefore easy to configure.

It is possible to handle multiple tags and/or bits with one button.

➤ Use Cases

- Manual control of machinery
- Precise control of motor movement

Note : Datatypes supported is only Bool and Numeric

WinCC Unified V21 – Efficient Engineering

Scripts/Scheduled tasks - Insert system function syntax directly to script without typing

Unified
Basic



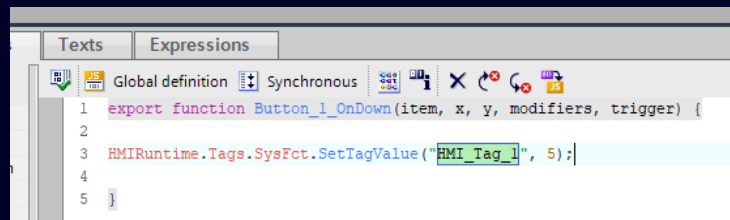
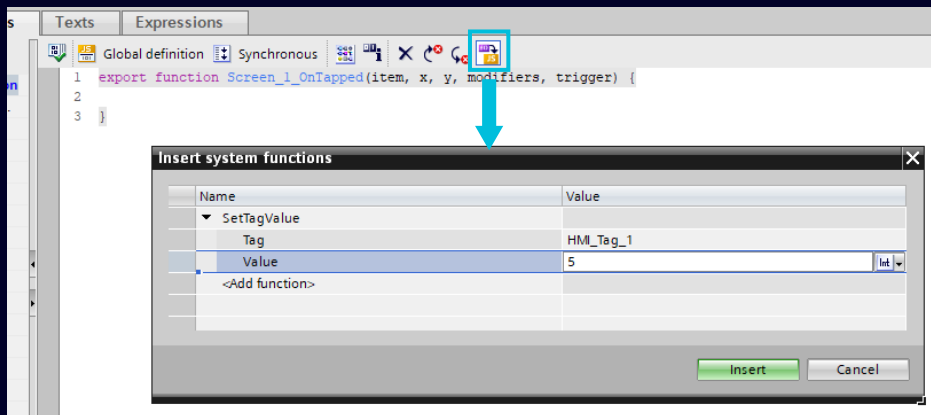
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Insert system functions more efficiently to the script editor

➤ Easy configuration of system functions in script

- A new toolbar button is available in the script editor to open the "Insert system functions" dialog
- In this dialog, users can easily configure system functions with the necessary properties in a graphical dialog
- The configured system functions will be added as scripts to the script editor with one click

WinCC Unified V21 – Standardization

Graphic lists as library types

Unified
Basic



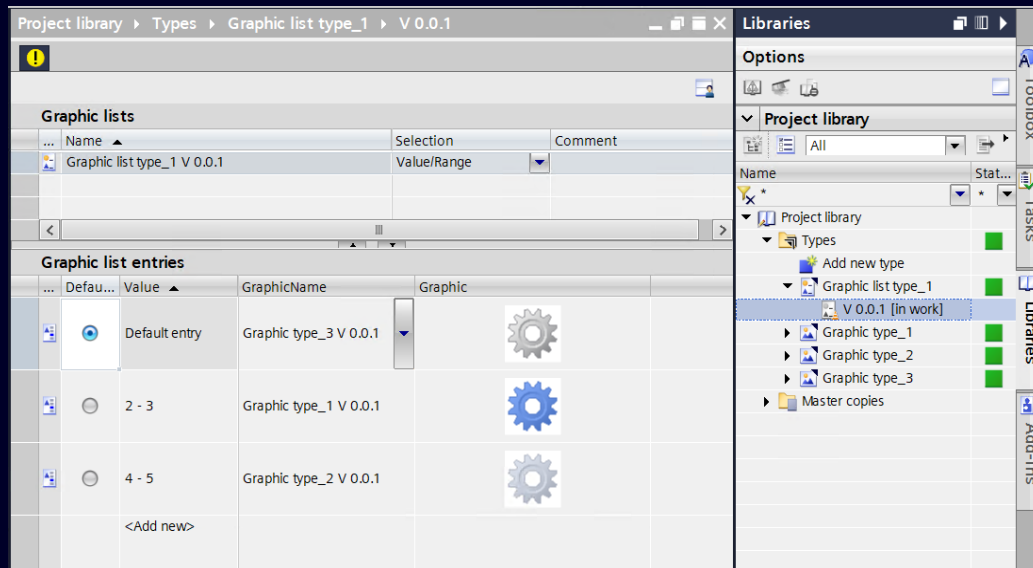
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Graphics lists are now available as library types

➤ Configuration in your project

- Graphic lists as types can easily be used anywhere in the project where graphics or graphic lists can be configured in your project, including faceplate configurations.

➤ Central management

- Graphic lists as a library type can be used as your central management for graphics

➤ Reuse and versioning

- Graphic lists as library types benefit from reusing and versioning capabilities like all library types, as well as reduced maintenance and upkeep.

WinCC Unified V21 – Standardization

Any datatype at Faceplate

Unified
Basic



Unified
Comfort



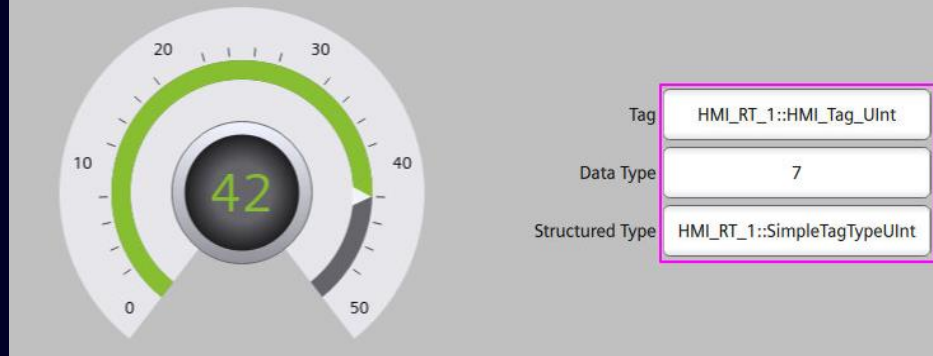
Unified
Edge RT



Unified
PC RT



Faceplate with LReal Interface Tag



```
export function Populate() {  
  const dt = Faceplate.Properties.Interface_Tag_LReal.DataType;  
  const tt = Faceplate.Properties.Interface_Tag_LReal.StructuredTagType;  
  const tn = Faceplate.Properties.Interface_Tag_LReal.Tag;  
  
  Faceplate.Items("IO_DT").ProcessValue = dt;  
  Faceplate.Items("IO_TT").ProcessValue = tt;  
  Faceplate.Items("IO_TN").ProcessValue = tn;  
}
```

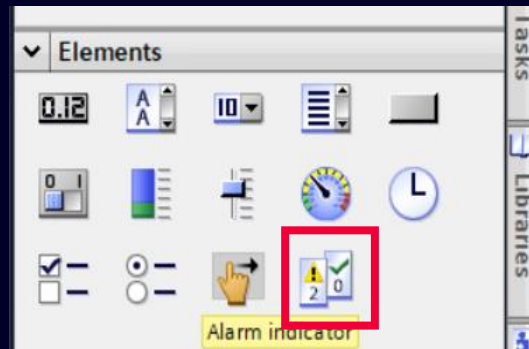
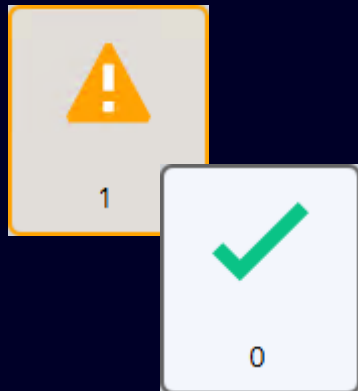
Allow linking of different data types for compatible Faceplate Interface Tags.

- Only one Faceplate version necessary for supporting different data types
 - Any *numeric* data type is supported on LReal Interface Tags¹.
- Scripting can be used to access linked Tags' data type
 - Allows modified behavior depending on concrete data type linked to Interface Tags.

¹as of V20 Update 3

WinCC Unified V21 – Alarming

Don't miss any notifications and enable operators to respond quickly



Don't miss any notifications using the Alarm Indicator

- **Show the indication / number of active alarms instantly**
 - Easy integration of alarm indicators to any screen
 - Quickly set up **multiple** Alarm Indicators
- **Displaying Good state, as "No Alarm" with a count of 0 or show custom images and text**
- **Display the indicator "always" or "Popup on Alarm"**
 - Keep displaying Alarm indicator even in No Alarm state or display only in case of Alarm state
- **Personalize Alarm Indicator**
 - Display the count of priority alarms via filtering, show custom images and text for both Alarm and No Alarm states.
 - Flashing for Alarms with acknowledgement via setting

WinCC Unified V21 – Alarming

Integer-based Discrete Alarm Support for 3rd Party and SIMATIC Systems

Unified Basic

Unified Comfort

Unified Edge RT

Unified PC RT

SInt_Trigger_Tag0100 0000

USInt_Trigger_Tag1000 0000

Int_Trigger_Tag0100 0000 0000 0000

UInt_Trigger_Tag1000 0000 0000 0000

DInt_Trigger_Tag0100 0000 0000 0000 0000 0000 0000 0000

UDInt_Trigger_Tag1000 0000 0000 0000 0000 0000 0000 0000

LInt_Trigger_Tag0100 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000

ULInt_Trigger_Tag1000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000

	Alarm class	Alarm text	Modification time	Raise time	Status text
1	Warning	SInt - Discrete Alarm Trigger Tag	8/27/2025 8:20:41 PM	8/27/2025 8:20:41 PM	Incoming
2	Warning	Int - Discrete Alarm Trigger Tag	8/27/2025 8:20:46 PM	8/27/2025 8:20:46 PM	Incoming
3	Warning	DInt - Discrete Alarm Trigger Tag	8/27/2025 8:20:52 PM	8/27/2025 8:20:52 PM	Incoming
4	Warning	LInt - Discrete Alarm Trigger Tag	8/27/2025 8:20:56 PM	8/27/2025 8:20:56 PM	Incoming
5	Warning	USInt - Discrete Alarm Trigger Tag	8/27/2025 8:20:59 PM	8/27/2025 8:20:59 PM	Incoming
6	Warning	UInt - Discrete Alarm Trigger Tag	8/27/2025 8:21:02 PM	8/27/2025 8:21:02 PM	Incoming
7	Warning	UDInt - Discrete Alarm Trigger Tag	8/27/2025 8:21:05 PM	8/27/2025 8:21:05 PM	Incoming
8	Warning	ULInt - Discrete Alarm Trigger Tag	8/27/2025 8:21:08 PM	8/27/2025 8:21:08 PM	Incoming

Integer Discrete Alarm

PC-System_1 [SIMATIC PC station]

HM_RT_1 [WinCC Unified PC RT]

HM alarms

Discrete alarms

Analog alarms

CPC UA A&B

System events

Alarm classes

ID	Name	Alarm text	Alarm class	Trigger tag	Trigger bit	Acknowledgment status tag	Acknowledgment status tag bit	Acknowledgment control tag	Acknowledgment control tag bit	Priority	Info text
1	Discrete alarm	USInt - Discrete Alarm Trigger Tag	Warning	USInt_Trigger_Tag	7	USInt_Ack_Status_Tag	7	USInt_Ack_Control_Tag	7	0	
2	Discrete alarm	SInt - Discrete Alarm Trigger Tag	Warning	SInt_Trigger_Tag	6	SInt_Ack_Status_Tag	6	SInt_Ack_Control_Tag	6	0	
3	Discrete alarm	UInt - Discrete Alarm Trigger Tag	Warning	UInt_Trigger_Tag	15	UInt_Ack_Status_Tag	15	UInt_Ack_Control_Tag	15	0	
4	Discrete alarm	Int - Discrete Alarm Trigger Tag	Warning	Int_Trigger_Tag	14	Int_Ack_Status_Tag	14	Int_Ack_Control_Tag	14	0	
5	Discrete alarm	UDInt - Discrete Alarm Trigger Tag	Warning	UDInt_Trigger_Tag	31	UDInt_Ack_Status_Tag	31	UDInt_Ack_Control_Tag	31	0	
6	Discrete alarm	DInt - Discrete Alarm Trigger Tag	Warning	DInt_Trigger_Tag	30	DInt_Ack_Status_Tag	30	DInt_Ack_Control_Tag	30	0	
7	Discrete alarm	ULInt - Discrete Alarm Trigger Tag	Warning	ULInt_Trigger_Tag	63	ULInt_Ack_Status_Tag	63	ULInt_Ack_Control_Tag	63	0	
8	Discrete alarm	LInt - Discrete Alarm Trigger Tag	Warning	LInt_Trigger_Tag	62	LInt_Ack_Status_Tag	62	LInt_Ack_Control_Tag	62	0	

Enhanced discrete alarm configuration by supporting Integer-based data types - with broader compatibility for third-party PLC controllers and SIMATIC systems.

➤ Enhanced Discrete Alarm Configuration Flexibility

- Supports (U)SInt, (U)Int, (U)DInt, (U)LInt
- Supports trigger tag, ack. control tag, ack. status tag
- Supports error validation while using same integer-based trigger tag for discrete and analog alarm

WinCC Unified V21 – Alarming

Enhanced Alarm Visibility: Multi-Alarm Text Wrapping

Unified Basic

Unified Comfort

Unified Edge RT

Unified PC RT

	ID	Alarm class	Alarm text	Additional text 1	Additional text 2	Modification time
1	2	Alarm	Scheduled Maintenance: It's time for routine maintenance.	Alert: The temperature has dropped below the acceptable range. Please check the heating system to ensure proper operation and maintain process stability.	Alert: The temperature has dropped below the acceptable range. Please check the heating system to ensure proper operation and maintain process stability.	11/4/2025 3:15:13 PM
2	3	Alarm		Critical Alert: Pressure levels have surpassed the maximum threshold. Immediate intervention is necessary to avoid potential hazards and ensure safety.	Critical Alert: Pressure levels have surpassed the maximum threshold.	11/4/2025 3:15:19 PM
3	4	Notification		Notice: Pressure levels are below the required minimum. Inspect the system for leaks or malfunctions to restore normal operating conditions.	Notice: Pressure levels are below the required minimum.	11/4/2025 3:15:19 PM

V20 Update 3

	ID	Alarm class	Alarm text	Additional text 1	Additional text 2	Modification time
1	2	Alarm	Scheduled Maintenance: It's time for routine maintenance.	Alert: The temperature has dropped below the acceptable range. Please check the heating system to ensure proper operation and maintain process stability.	Alert: The temperature has dropped below the acceptable range. Please check the heating system to ensure proper operation and maintain process stability.	11/4/2025 6:34:34 PM
2	3	Alarm		Critical Alert: Pressure levels have surpassed the maximum threshold. Immediate intervention is necessary to avoid potential hazards and ensure safety.	Critical Alert: Pressure levels have surpassed the maximum threshold.	11/4/2025 6:34:34 PM
3	4	Notification		Notice: Pressure levels are below the required minimum. Inspect the system for leaks or malfunctions to restore normal operating conditions.	Notice: Pressure levels are below the required minimum.	11/4/2025 6:34:34 PM

V21

Faster Decision-Making Through Complete Alarm Visibility

➤ Monitoring Multiple Alarms Simultaneously

- **Automatic Text Wrapping for All Alarms** — Long alarm texts are automatically wrapped and fully visible for all alarms in the alarm control on 1-click, eliminating the need for individual alarm selection to read complete messages.
- **Zero Configuration Required** — Text wrapping works automatically at runtime without any engineering configuration, ensuring immediate benefits for existing and new projects.

Note:

- **V20 Update 3** - Shows the alarm control where only the selected alarm displays wrapped, complete alarm text. Other alarms with longer texts appear trimmed, requiring users to click each alarm individually to read the full message.
- **V21** - Demonstrates the enhanced alarm control where all alarms with longer texts are automatically wrapped and fully visible simultaneously on 1-click. Users can read complete alarm information for multiple alarms at once, improving situational awareness and reducing response time.

WinCC Unified V21 – Parameter Control

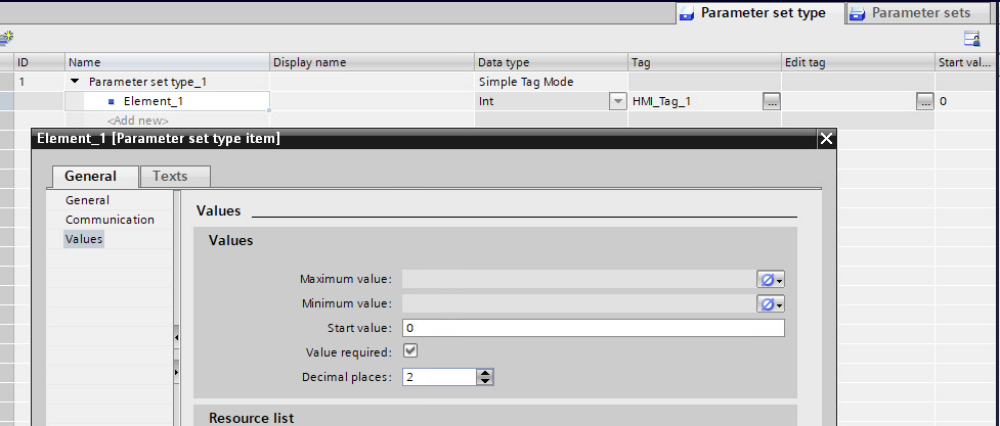
Decimal Point Support for PaCo

Unified Basic ✓

Unified Comfort ✓

Unified Edge RT ✓

Unified PC RT ✓



Parameter set type

Parameter set type_1

Number

1

Parameter set

ParameterSet_1

Number

1

	Name	Value	Unit of measurement
1	Element_1	5.50	
2			

Flexible Decimal Point Configuration in PaCo

- PaCo now supports decimal point configuration, giving engineers the flexibility to define the precision and formatting of parameter values directly within the Engineering System. This ensures that parameter sets not only carry predefined values but also present them in the exact format required by the system or Operator
- The decimal point configuration is applied only for visualization purposes. The actual values written to the PLC remain unchanged as original data, ensuring that control logic and runtime operations are not affected
- This configuration is applicable for all integer-based data types as well as floating-point data types.

WinCC Unified V21 – Parameter Control

Faceplate support for PaCo

Unified
Basic



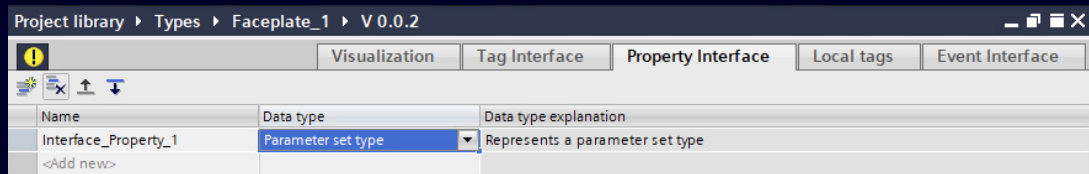
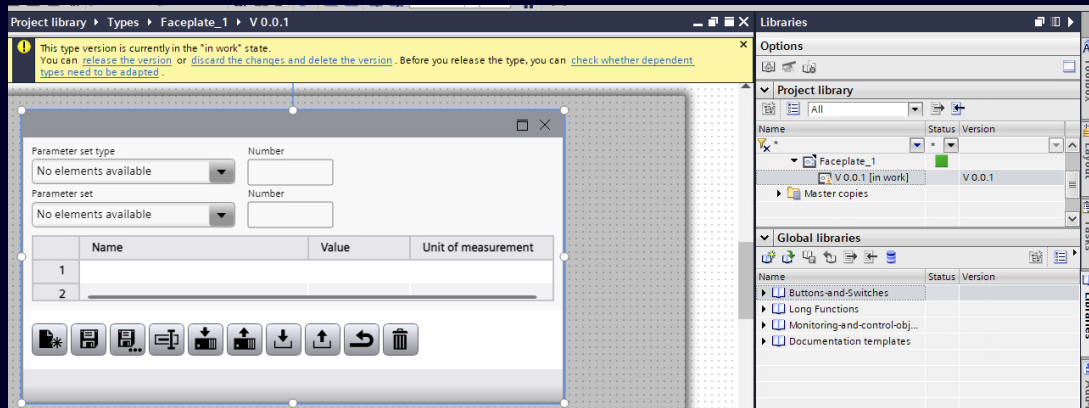
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Faceplate support for PaCo - Enables seamless configuration of parameter types from the project directly through the faceplate's interface

- With WinCC Unified, PaCo can be seamlessly embedded within faceplates, enabling direct configuration at the HMI level.
- All PaCo system functions are fully supported, ensuring smooth operation inside faceplates. This empowers engineers to create flexible, reusable, and efficient faceplate designs with integrated PaCo intelligence
- ParameterSetType can also be exposed as a property interface, enabling a fixed PST to be used within the faceplate

WinCC Unified V21 – Parameter Control

PaCo usability improvements in Runtime

Unified Basic

Unified Comfort

Unified Edge RT

Unified PC RT

Parameter set type
No elements available

Number

Parameter set
No elements available

Number

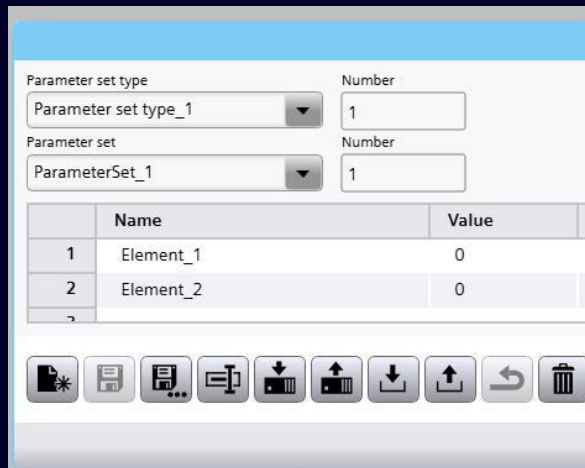
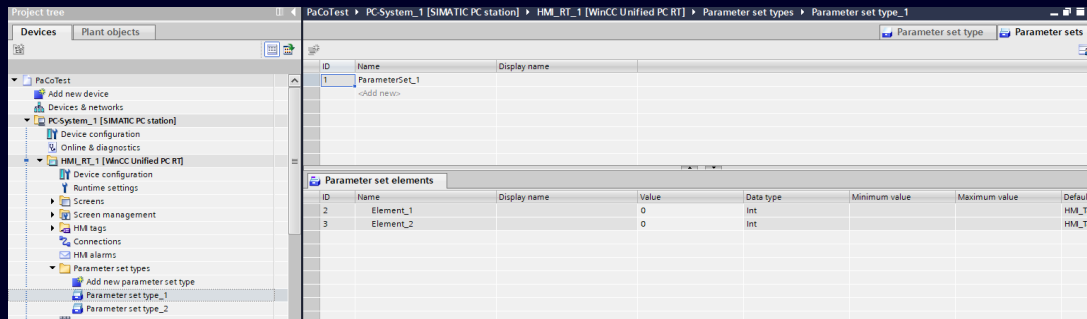
Identifier	Sorting directio...	Sorting order	Visibility
[0] Column - Name	None	0	☒
[1] Column - Value	None	0	☒
[2] Column - Unit of measurement	None	0	☒
[3] Column - Min value	None	0	☒
[4] Column - Max value	None	0	☒

Name	Value	Unit of measurement	Min value	Max value
1				
2				
3				

Parameter set control_1 [Parameter set control]		
Properties	Events	Expressions

WinCC Unified V21 – Parameter Control

Define Parameter Sets in Engineering & Delta Download Support



Improved Control of PaCo through Parameter Set Definition in Engineering System

- With PaCo, configuration engineers can seamlessly derive parameter sets from their corresponding parameter set types.
- Each parameter set is enriched with system properties and tailored with specific values for every parameter set element.
- With the introduction of delta download support, PaCo optimizes engineering workflows by transferring only the changes made to parameter set types or parameter sets.
- This reduces download times, minimizes downtime, and ensures faster, more efficient engineering updates—bringing agility and reliability to both configuration and runtime operations

WinCC Unified V21 – Parameter Control

Parameter Set Type Editor Improvements

Unified
Basic



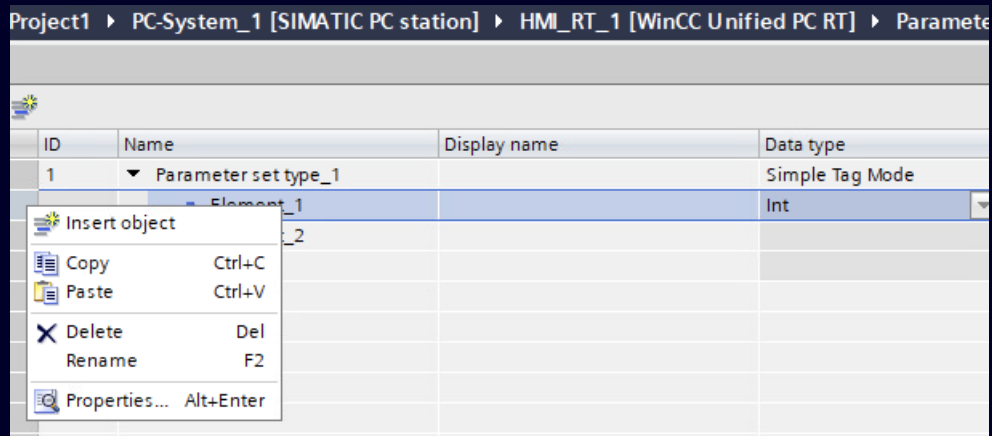
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Key Improvements in Parameter Set Editor

➤ Context Menu Support

- Rich right-click menu with **Copy, Paste, Delete, Rename, Properties**.
- Simplified context menu inside text cells (Cut, Copy, Paste).

➤ Reordering Support

- Flexible **drag-and-drop ordering** in simple tag mode.
- Controlled restriction: reordering in UDT mode only via UDT modification.

➤ Insert Element Options

- Insert above any selected row from context menu.
- Toolbar icon for quick insert (enabled when ≥ 1 element exists).

➤ Find & Replace

- Integrated **Find & Replace (Ctrl+F)** for PST content.
- Search highlights matching rows instantly.
- Replace single or all occurrences in one click.

➤ Global Search Integration

- PST results appear in global project search.
- "Go To" navigation takes you to the right PST.
- (Restriction: does not jump to exact keyword inside PST).

➤ HMI Object Picker Integration

- Directly link/create new tags within PST elements.
- Same intuitive experience as other grid editors.

WinCC Unified V21 – Audit

Configuration of Audit Control Settings in Runtime

Unified
Basic



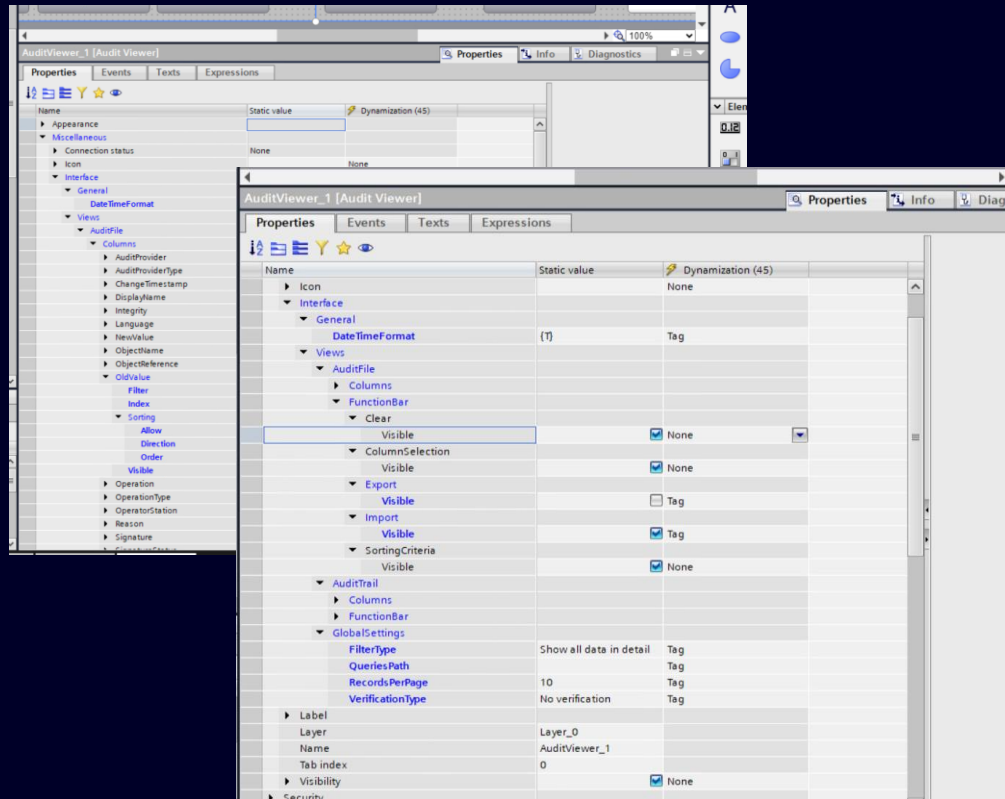
Unified
Comfort



Unified
Edge RT



Unified
PC RT



The Audit Control settings remain persistent across screen switches during runtime.

➤ Pre-configuration of Audit control settings (Engineering)

- Columns visibility
- Filtering and sorting of attributes
- Configuration of settings

➤ Adapt settings Audit Control Properties in Runtime

- Columns visibility
- Filtering and sorting of attributes
- Configuration of settings

WinCC Unified V21 – Audit

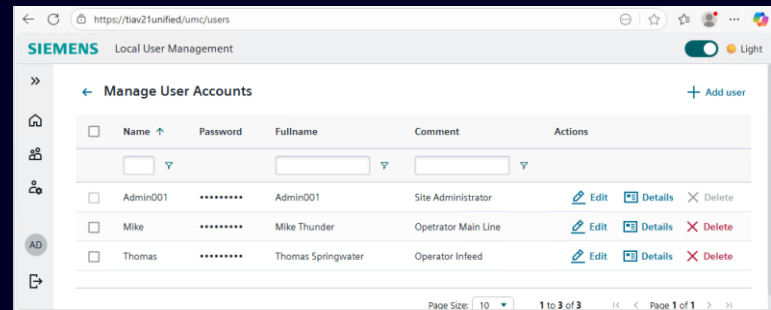
Electronic record for local user management changes & failed login

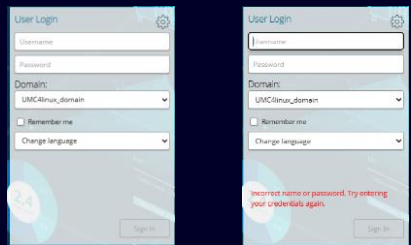
Unified Basic 

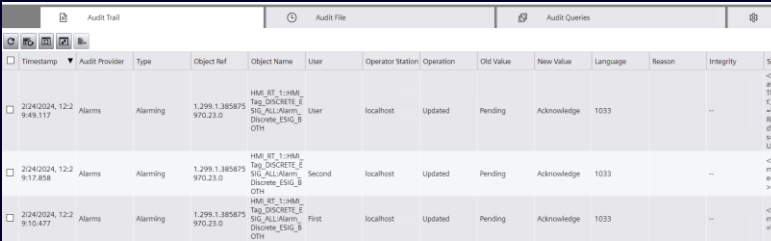
Unified Comfort 

Unified Edge RT 

Unified PC RT 







Complete traceability of security-relevant user actions

- User management changes tracked in Audit Trail
 - creation,
 - modification,
 - and deletion of user accounts
 - password changes (*without storing the actual password*)
- Failed login & number of failed login attempts
- Automatic logouts

WinCC Unified V21 – WinCC Unified Corporate Designer

New compatibility Style – Design screen objects like on Comfort Panels

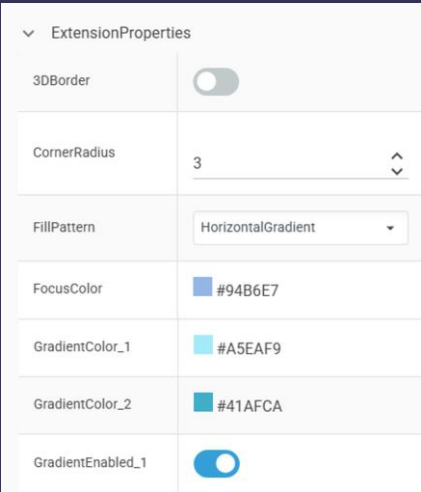


Keep previous look and feel for Panel Modernization

➤ WinCC Unified Corporate Designer with style: “Compatibility style”

➤ Properties that can be adjusted:

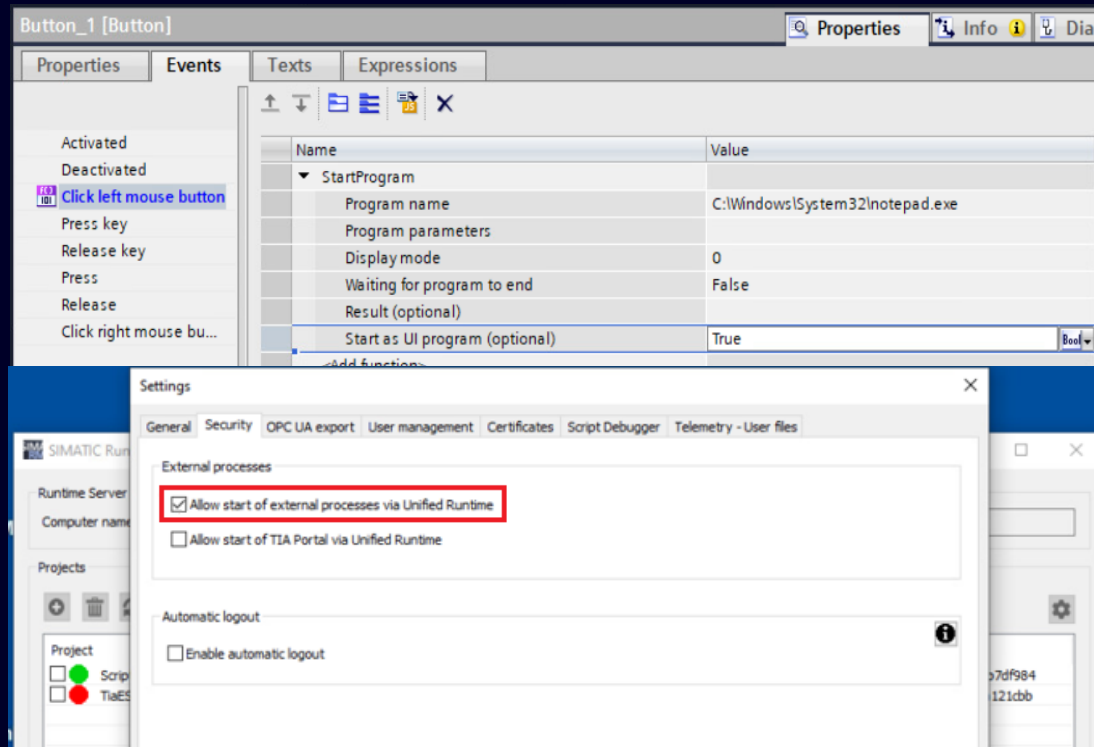
- Corner radius
- 3D Border
- 3-Color-Gradient
- Focus color
- ...



➤ Stay design-compatible with existing devices after Modernization with design properties you are used to on Comfort/Advanced devices

WinCC Unified V21 – System functions

Start program for applications with user interface



Allows to start programs which have a user interface (e.g. Excel) via system function.

The program comes into the foreground so that it can also be used in KIOSK mode

Note:

- Extension in V21 is only for Unified PC. On Unified Panel the functionality is already available before V21.
- Due to security reasons the functionality must be enabled via RT Manager

WinCC Unified V21 – System functions

System Function to send an Email

Unified
Basic



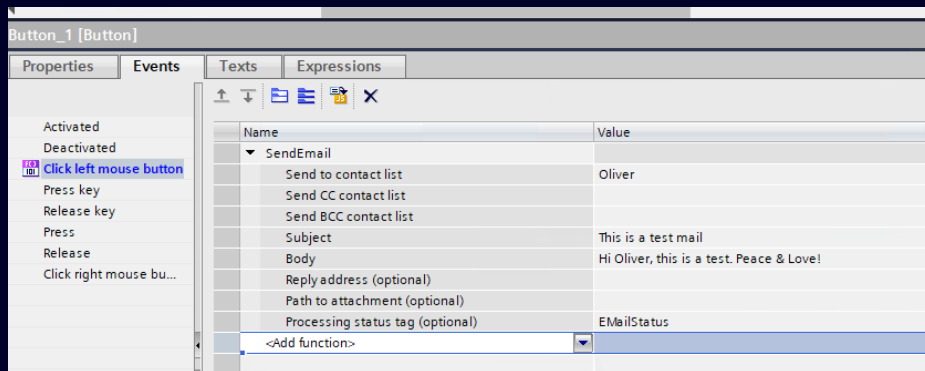
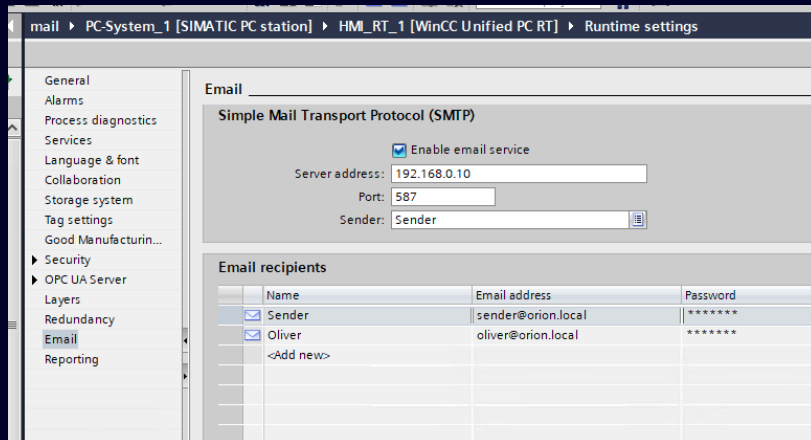
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Built-in system function to send emails from a script or event in Runtime when an Alarm is triggered or a Tag value changes

- Define SMTP Settings incl. contacts in ES
- Use SystemFunction SendEmail() in
 - ScreenItem Events (Button click, ...)
 - Scheduled Tasks (OnAlarm, ...)
- Use Settings in Reporting
- Settings changeable in Runtime via Report Control

Note:

- Currently, Reporting must be enabled
- No license needed

WinCC Unified V21 – System functions

Export Log via system function for Tag, Alarm and Audit

Unified
Basic



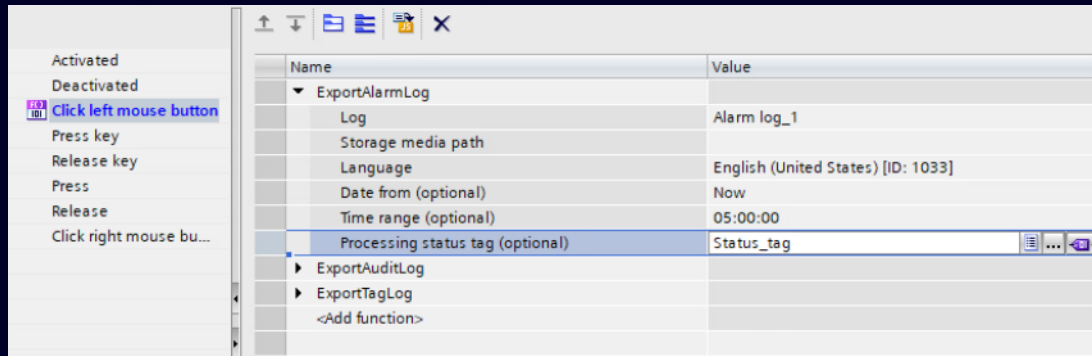
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Export of tag, alarm and audit logs as csv file.

Audit log is integrity protected.
Can be verified with Audit viewer.

➤ Use Case

- Export data for further data analytics via external tools

WinCC Unified V21 – System functions

Set focus to a specific element

Unified Basic ✓

Unified Comfort ✓

Unified Edge RT ✓

Unified PC RT ✓

Faceplate_1_V_0_0_2 [Faceplate type]

Properties Info Diagnostics

Properties Events Texts Expressions

Click left mouse button
Click right mouse bu...
Loaded
Cleared

Name	Value
SetFocusOnElement	
Screen object path	RFID_field
<Add function>	

WinCC Unified RT

https://ua-c03.asrd-lab.net/WebRH

Bar Scanner

Scan

Focus to the IO field is set when the faceplate is loaded

Set focus to a screen item to directly enter a value after screen load

Also, for screen items inside of faceplates.

WinCC Unified V21 – Connectivity

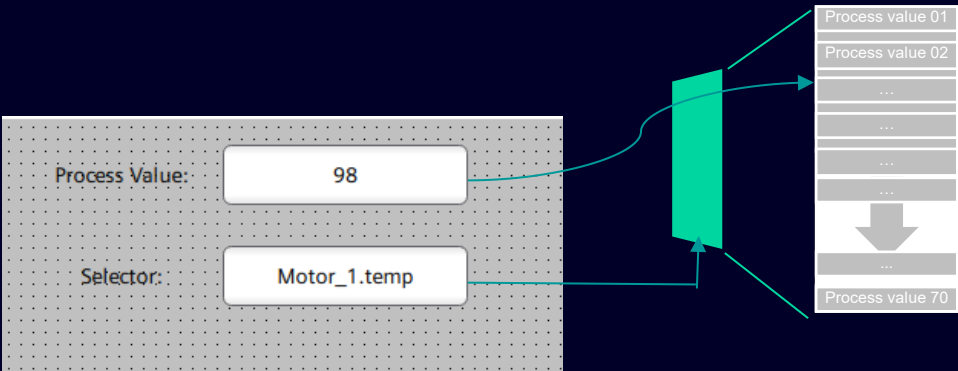
Indirect addressing - multiplex absolute address for Allen Bradley PLC

Unified Basic ✓

Unified Comfort ✓

Unified Edge RT ✓

Unified PC RT ✓



AB multiplexing ▸ PC-System_1 [SIMATIC PC station] ▸ HMI_RT_1 [WinCC RT Advanced] ▸ HMI tags

Name	Data type	Connection	PLC n...	PLC tag	Address
MyProcessValue	Int	Connection_AB		<Address-multiplexed...>	[SelectorTag]
SelectorTag	WString	<Internal tag>		<Undefined>	

Access multiple Allen Bradley PLC addresses using a single tag

- **Two tags are configured:**
 - **Process tag** - shows the current process value
Address is not a static PLC address but a placeholder that is set for a selector tag
 - **Selector tag** - is used to select the PLC address
The value of this tag is used in the corresponding Process tag as a PLC address

- Note:**
- Support for:
 - Allen Bradley Control Logics
 - CompactLogics PLCs

WinCC Unified V21 – Connectivity

Modbus RTU Multipoint Connection

Unified
Basic



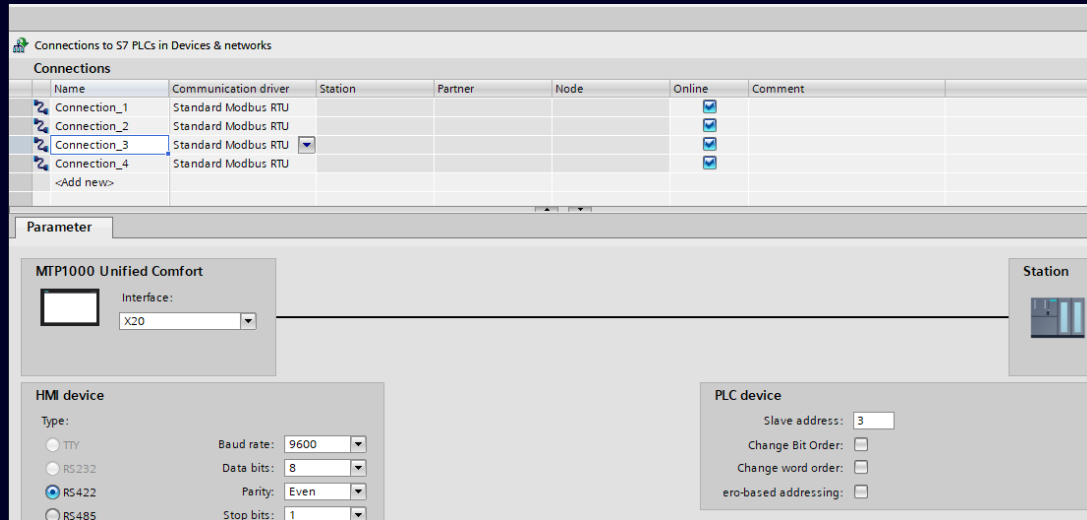
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Proven Multipoint Modbus RTU Master for Diverse Devices

- Unified HMI devices can establish multipoint connections via Modbus RTU (serial interface) as a Master communicating with up to 4 PLCs.
- The HMI established stable, reliable communication with multiple Modbus RTU slave devices maintaining simultaneous connections, ensuring data integrity and delivering accurate, error-free data acquisition.

WinCC Unified V21 – Connectivity

S7-200 / S7-200 Smart driver

Unified
Basic



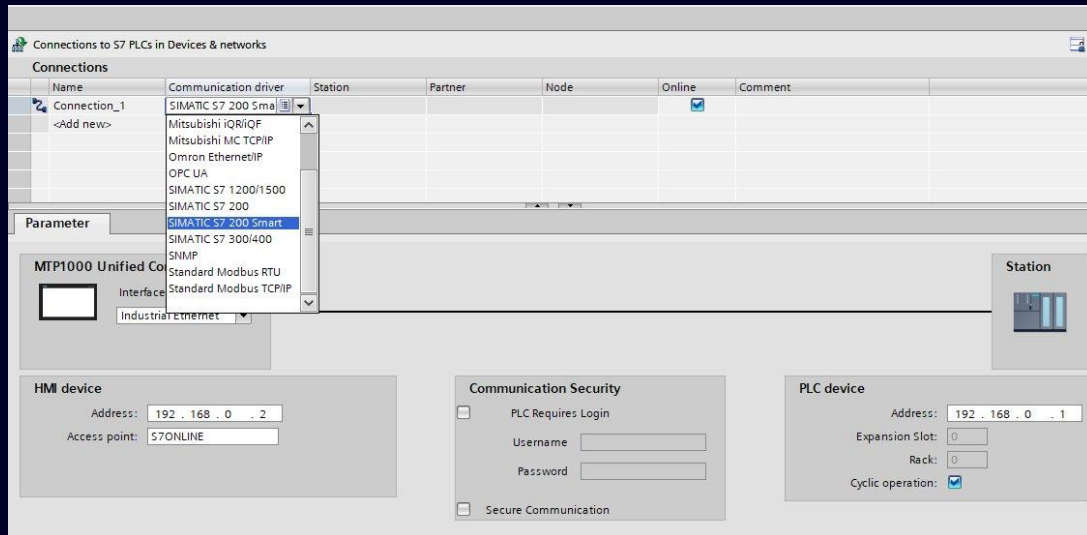
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Fully integrates and secures communication with S7-200 Smart PLCs

- **New S7-200/S7-200 Smart communication driver, extending Unified platform support to S7-200/S7-200 Smart PLCs.**
- **This driver enables both secure (TLS) and non-secure communication, delivering the full capabilities of our flagship Unified platform to these PLCs**

WinCC Unified V21 – Connectivity

Support for Struct Datatype in OPC UA DA of OPC UA Client

Unified
Basic



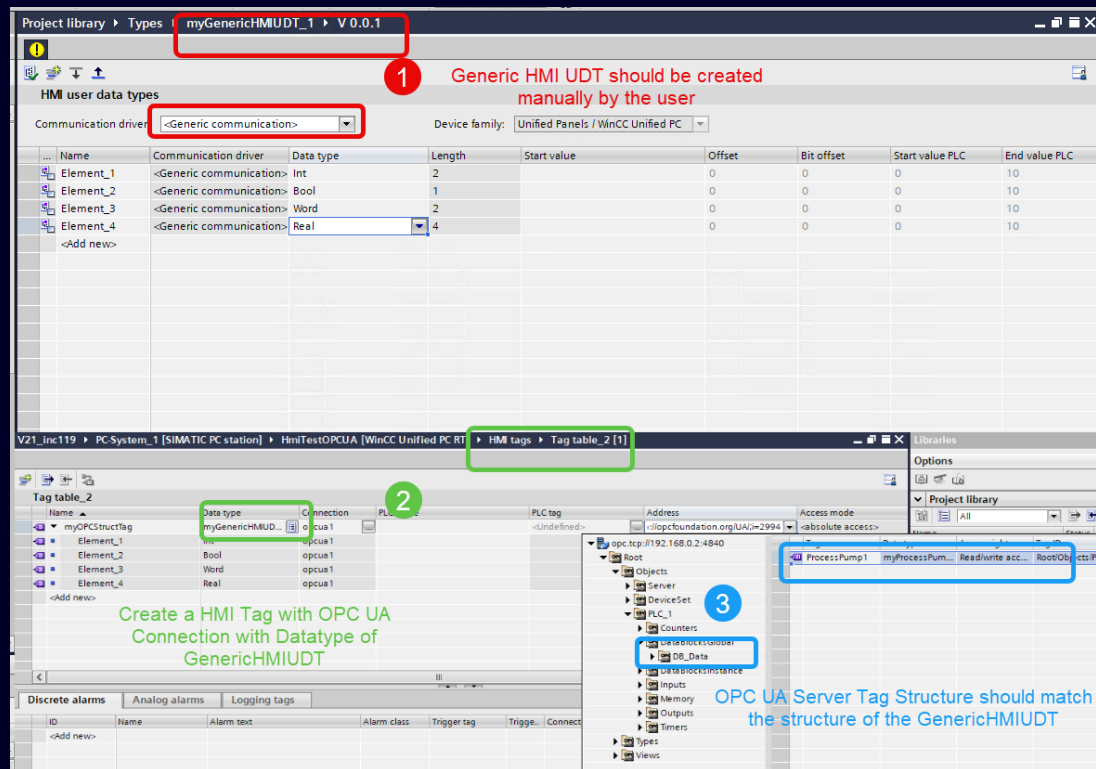
Unified
Comfort



Unified
Edge RT



Unified
PC RT

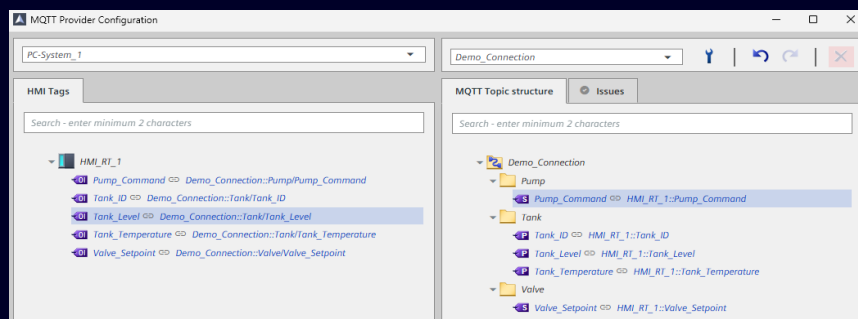
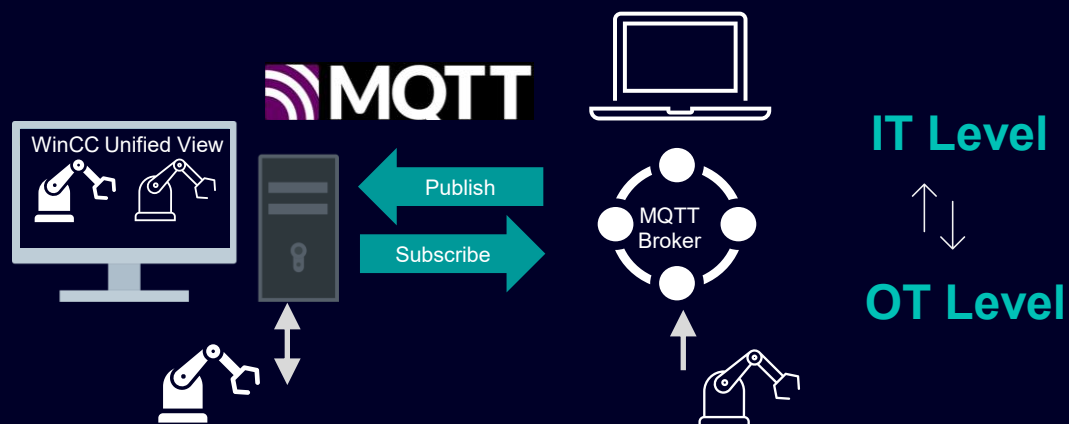


OPC UA Client now supports structured tags—enabling faster integration, smarter data handling, and more robust connectivity in Screens and Faceplates.

- **Support for Struct Data Type by using Generic HMI UDT in WinCC Unified Engineering**
- **Enables data access to Structure of elementary data types with exposed child elements.**
- **Allows reading and writing of individual Structure elements configured in an OPC UA Server.**

WinCC Unified V21 – Connectivity

Real-time online data transfer via MQTT



Connecting WinCC Unified Data with MQTT brokers to connect Field Devices and IT Systems

MQTT - Message Queuing Telemetry Transport is a standardized protocol and independent of vendor-specific solutions

WinCC Unified offers a MQTT provider which can be

- MQTT Publisher – provide WinCC Unified online data to a Broker
- MQTT Subscriber – receive data from a Broker into HMI Tags

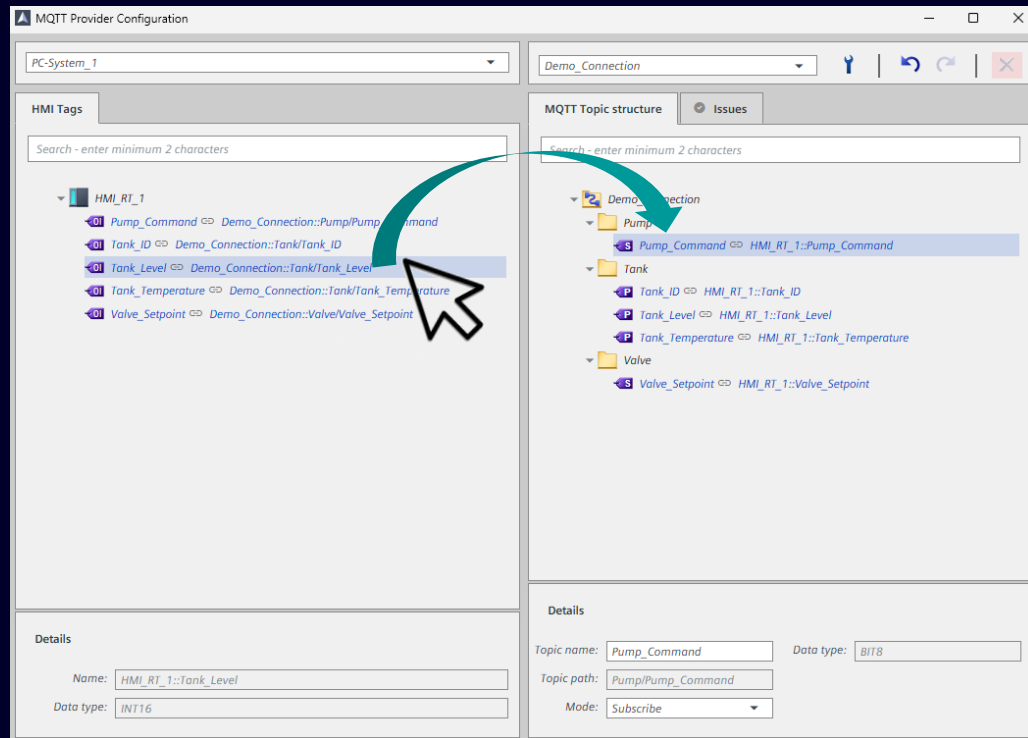
Benefits:

- real-time tag data(1) exchange across your IT/OT landscape via standardized protocol
- seamless data integration with third-party systems
- scale your data infrastructure by leveraging MQTT's efficient, topic-based communication
- Enhanced Interoperability & Scalability

(1) Access to Archives > V21

WinCC Unified V21 – Connectivity

Configure MQTT data transfer via TIA Portal Add-in: MQTT Provider Configuration¹



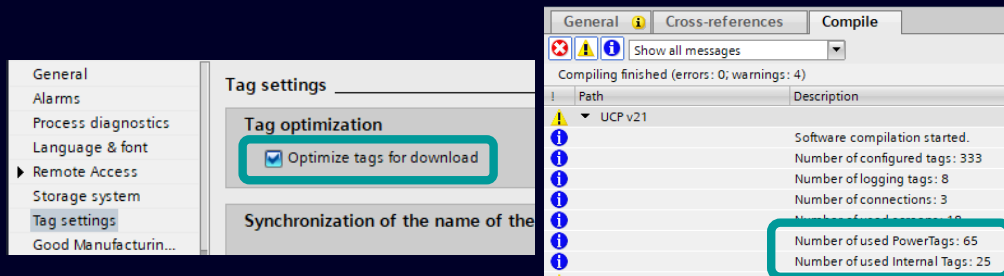
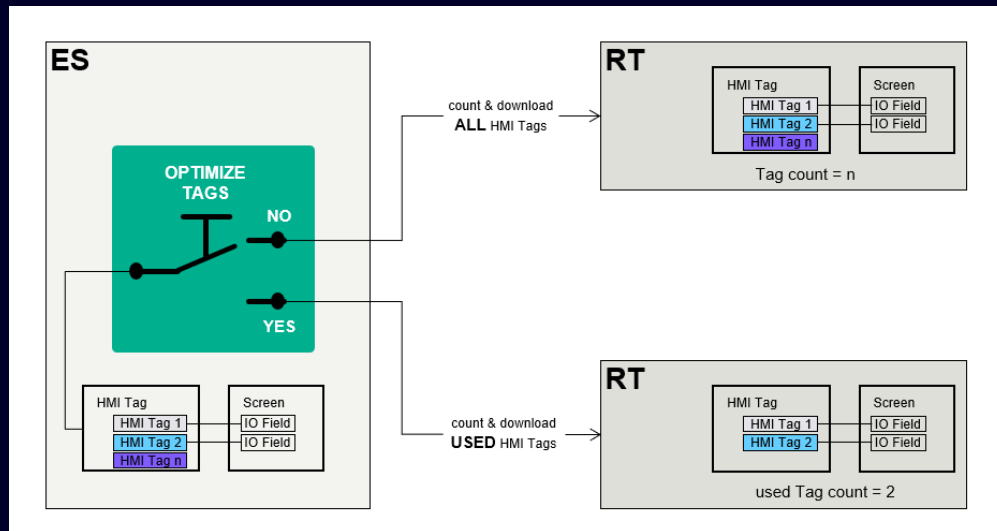
Configuration (Drag & Drop) with integrated MQTT Editor

- Easy integration by TIA Portal Addin without complex interfaces
- Production and process data instantly available in Unified]
- Create MQTT connections
 - MQTT 3.1, 3.1.1 or 5
 - Secure TLS connection support
 - MQTT and WebSocket protocol support
 - Various payload types can be selected
- Create MQTT topics
 - Decide which tags you want to expose
 - Select from publish and subscribe mode

¹ TIA Portal Add-in: MQTT Provider Configuration: download via SIOS: (ID 109995025)

WinCC Unified V21 – Visualization

Tag count optimization: download only what you use



Save Licensing Costs by only "pay for what you use"

- **Enabling tag optimization, only used tags are**
 - counted for license and system limit
 - available in runtime, like Advance RT
- **Disabling tag optimization**
all tags are counted and downloaded to Runtime, independent of their usage, like WinCC V8 / Professional
- **Configuration**
 - easy configuration in the Runtime Settings
 - separate for each device in the project

Note:

Use the Tag optimization when you reference the tags always directly in screen objects, scripts, system functions or task planner.

WinCC Unified V21 – Visualization

Tag count optimization: download only what you use

Unified
Basic



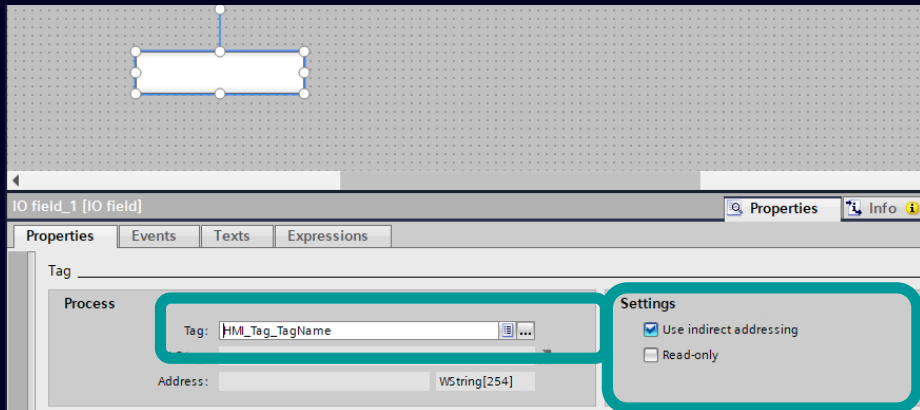
Unified
Comfort



Unified
Edge RT



Unified
PC RT



```
4 //direct access
5 let tagValue1 = Tags("MyTag[1]").Read();
6 HMIRuntime.Trace("value of MyTag1: " + tagValue1);
7
8 //indirect access
9 let tagValue2 = Tags("MyTag[" + index + "]");
10 HMIRuntime.Trace("value of MyTag[" + index + "]" + tagValue2);
```

When tag optimization is not recommended or must be used wisely

➤ Direct reference vs. indirect reference

- Using indirect addressing in screen objects / system functions / ...
- Tag names are constructed in scripts or as string parameter of scripts
- Using tags in script types
- Using faceplates in Popup screens

➤ OPC UA Server

- If optimization is enabled, only direct referenced tags are downloaded in RT and therefore accessible in the OPC UA Server

➤ Note:

- If tag optimization is enabled, only direct referenced tags will be downloaded, the indirect referenced tags are NOT available in Runtime.
 - > disable tag optimization to download all tags to runtime
 - or
 - > reference the additionally wanted tags in a screen

WinCC Unified V21 – Visualization

Enhanced Tag Ranges and Threshold configuration

Unified
Basic



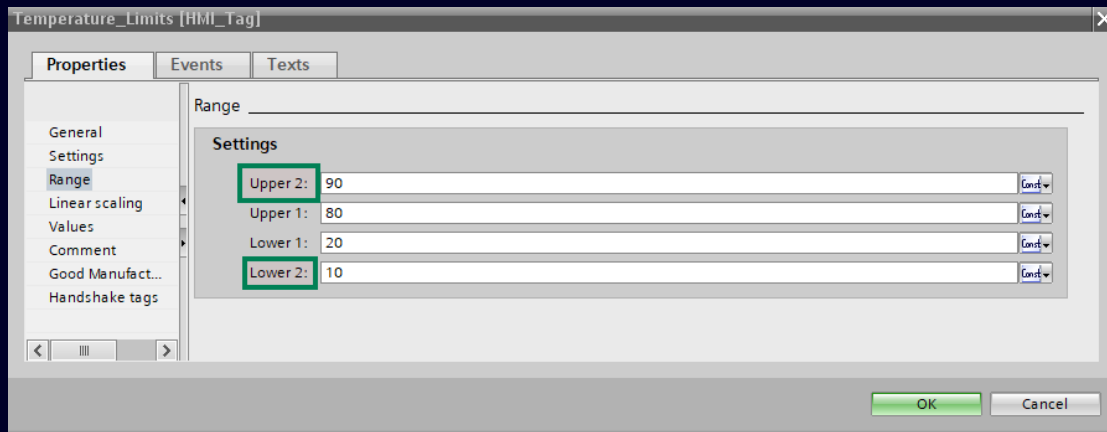
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Project library ▶ Types ▶ Faceplate_1 ▶ V 0.0.1

Name	Data type	Upper 2	Upper 1	Lower 1	Lower 2
Limit_Tag	Int	95	85	25	10
<Add new>					

Advanced Tag Ranges and Thresholds

- Leverage the new **Upper2** and **Lower2** ranges to define critical operational boundaries for tags.
 - Upper2 Range (e.g., 95 °C) for immediate high-level alerts
 - Lower2 Range (e.g., 5 °C) to prevent critical low-level deviations.
- Seamless integration with Visualization: Tag ranges are directly configurable to Thresholds for screen items.
- **Thresholds** as user-defined limit values are available :
 - For IO Fields, Bar, Sliders, Gauges
 - for Trend Control & Function Trend controls
 - via Scripting for all Screen controls.
 - for Faceplate local tags
 - As Trigger actions (e.g., color change) when process values exceed limits.

WinCC Unified V21 – Visualization

Use tag Limits and Threshold for screen objects

Unified
Basic



Unified
Comfort



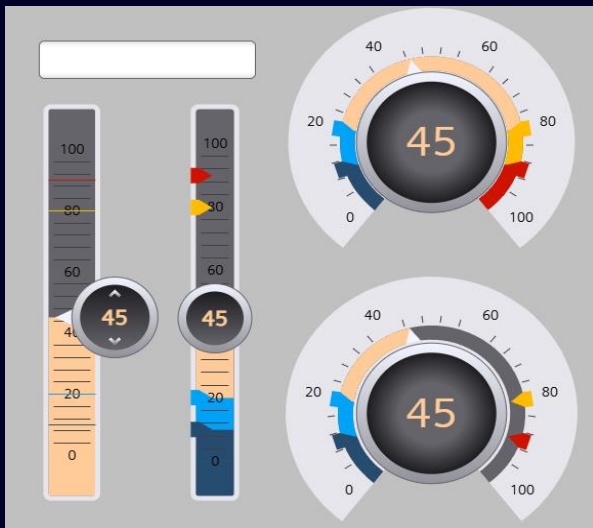
Unified
Edge RT



Unified
PC RT



Thresholds						
Identifier	or	Enable	Mode	Name	Value	
[0] Threshold - Maximum_1	208, 18, 0	☒	Maximum	Maximum_1	> 90	
[1] Threshold - Upper_1	255, 188, 0	☒	High	Upper_1	80 < x <= 90	
[2] Threshold - Normal_1	0, 255, 255	☒	Normal	Normal_1	20 <= x <= 80	
[3] Threshold - Lower_1	0, 163, 247	☒	Low limit	Lower_1	10 <= x < 20	
[4] Threshold - Minimum_1	38, 77, 112	☒	Minimum	Minimum_1	< 10	



Use tag limits and thresholds for screen objects

➤ Configure Thresholds on IO field, Bar, Slider, Gauge

- Indicate limits / ranges in different colors
- Use thresholds to change the color of the bar/slider/gauge according to the value
- Choose between several limit marking and bar modes

WinCC Unified V21 – Visualization

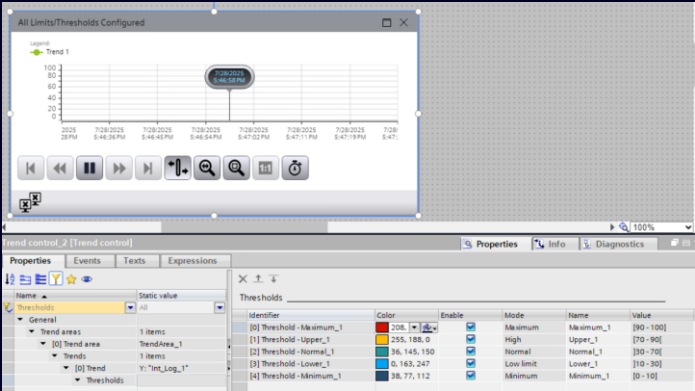
Use tag limits and threshold with Trend Controls

Unified Basic ✓

Unified Comfort ✓

Unified Edge RT ✓

Unified PC RT ✓



Use tag limits and thresholds with trend controls

- Visualize limit or threshold violations, enabling to quickly detect abnormal conditions in operations for faster decision-making.
- Simultaneously show the violations in multiple process values within one trend control.
- Show violations in different trend modes i.e., Interpolated, Points, Stepped, Value.
- Show violation of any online tag in runtime by dynamically attaching the tag to the trends (via tag browser or scripts)

Note: “Drag Drop of IO Field to trend control” feature of runtime does not support Thresholds

WinCC Unified V21 – Visualization

Access the Validity range and Threshold values of tags via Scripting

Unified
Basic



Unified
Comfort



Unified
Edge RT



Unified
PC RT



```
export async function Button_1_OnDown(item, x, y, modifiers, trigger) {
const upperLimitValue = await HMIRuntime.Tags('MyTag').ReadMaxValue()
const lowerLimitValue = await HMIRuntime.Tags('MyTag').ReadMinValue()

HMIRuntime.Trace(`The limits of the tag are ${lowerLimitValue} - ${upperLimitValue}`)
const thresholdsArray = HMIRuntime.Tags('MyTag').GetThresholds()

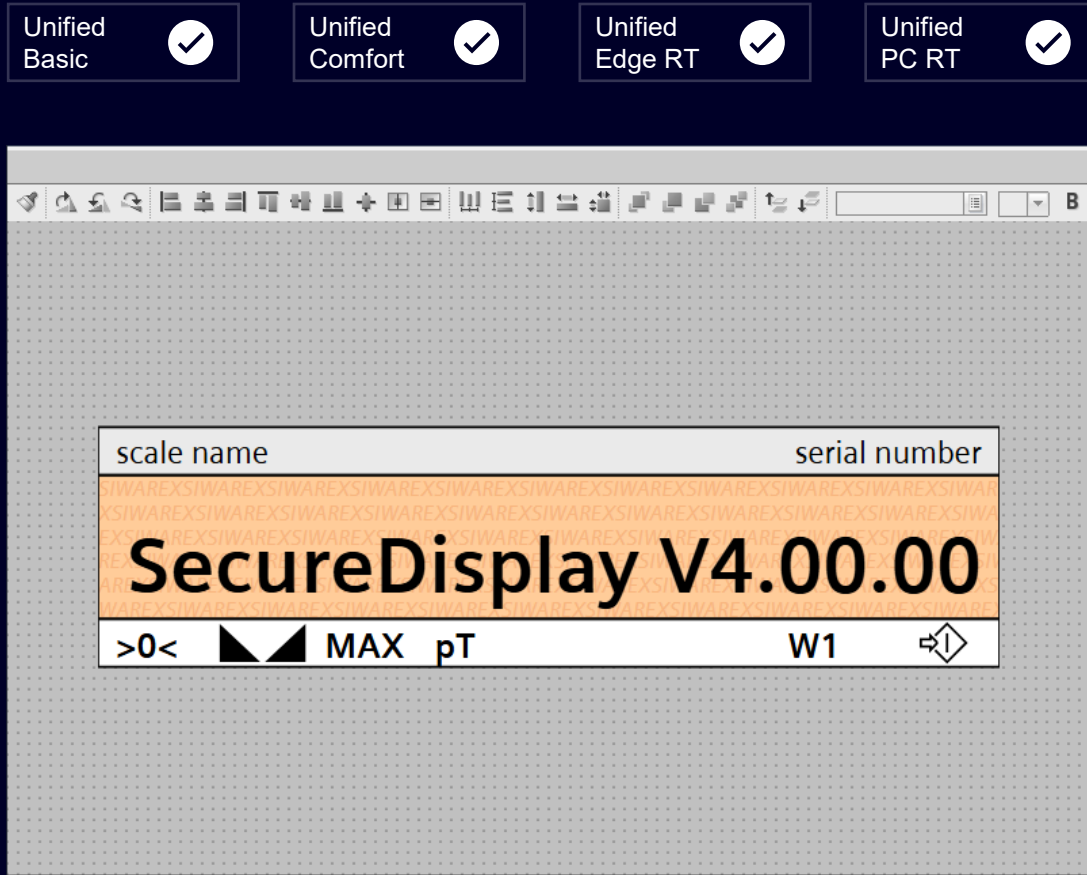
for(const thresholdIndex in thresholdsArray)
{
    let thresholdModeName = ''
    switch(thresholdsArray[thresholdIndex].Mode)
    {
        case Tags.Enums.hmiThresholdMode.UpperThreshold:
            thresholdModeName = 'up'
            break;
        case Tags.Enums.hmiThresholdMode.LowerThreshold:
            thresholdModeName = 'down'
            break;
    }
    const thresholdValue = await thresholdsArray[thresholdIndex].ReadValue()
    HMIRuntime.Trace(`Threshold ${thresholdIndex}: Mode: ${thresholdModeName},
    Name: ${thresholdsArray[thresholdIndex].Name}, Value: ${thresholdValue}`)
}
}
```

Read Thresholds, Min and Max limit of the Hmi Tags using Scripting

- Enabling threshold are supported only for screen items like IO Field, Trend, Function Trend, Gauge, Bar and Slider.
- Scripting can be used to realize a similar behavior for other screen items, e.g., to change background color of rectangle when threshold violation occurs.

WinCC Unified V21 – Visualization

Dynamic widget: "SIWAREX Secure Display" for "legal-for-trade applications"



Dynamic widget for secured weight indication for SIWAREX weighing electronics, which require a legal-for-trade certification (e.g. for price calculations based on weight).

➤ Use Cases

- Usage of WinCC Unified HMI devices as legal-for-trade certified main weight display
- Realization of legal-for-trade weighing applications by use of standard SIMATIC components

WinCC Unified V21 – Reporting

Reporting configuration in TIA Portal

Unified
Basic



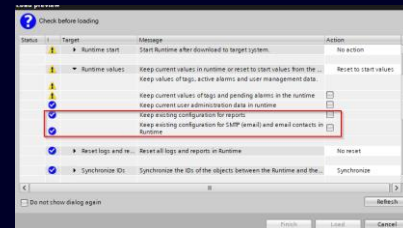
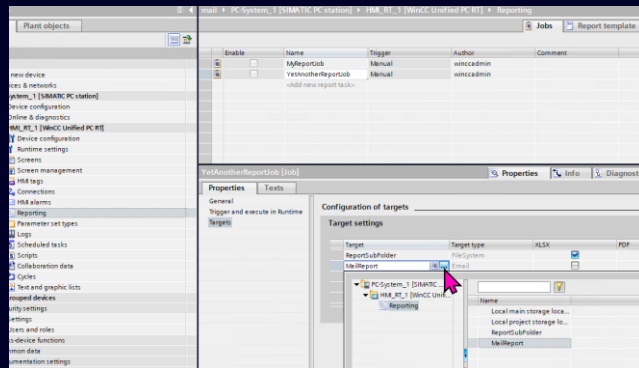
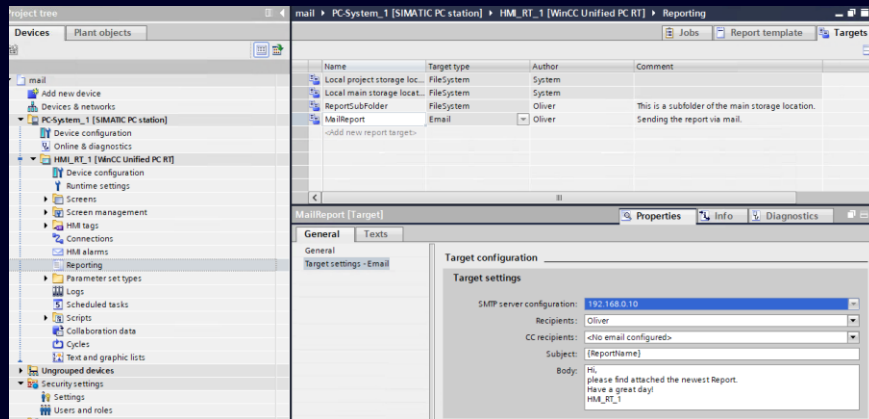
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Configure Reporting in TIA Portal

- Report Targets
- Report Templates
- Report Jobs
- Downloaded Settings can be changed in Runtime via the Report Control

Note:

- Possible to use Reporting without the Report Control (ES config + ExecuteReport() System Function)
- Not all possibilities of Reporting are yet supported, for instance no automatic triggers (Recurrence-, Tag-, Context-Triggers) can be configured.

WinCC Unified V21 – Reporting

Reporting control configuration

Unified
Basic



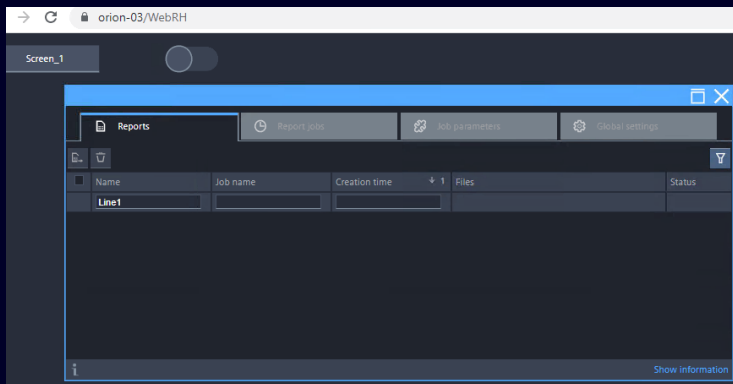
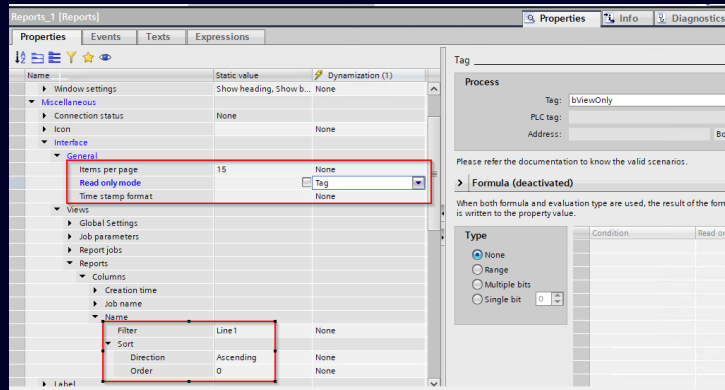
Unified
Comfort



Unified
Edge RT



Unified
PC RT



New properties for Report Control

- Set for all columns in all views
 - Filter
 - Sort direction
 - Sort order (sorting via multiple columns)
- Set items per page
- Read only mode, if true
 - Only Reports view is enabled
 - Download of reports allowed
 - Deletion of reports denied

WinCC Unified V21 – Reporting

Reporting Excel Add-In ONE

Unified
Basic



Unified
Comfort



Unified
Edge RT



Unified
PC RT



WinCC Unified Reporting

User login

Server *

https://Ori-TA-n-0-AdIn.asrd-lab.net

Connect to

User *

UMCAAdmin

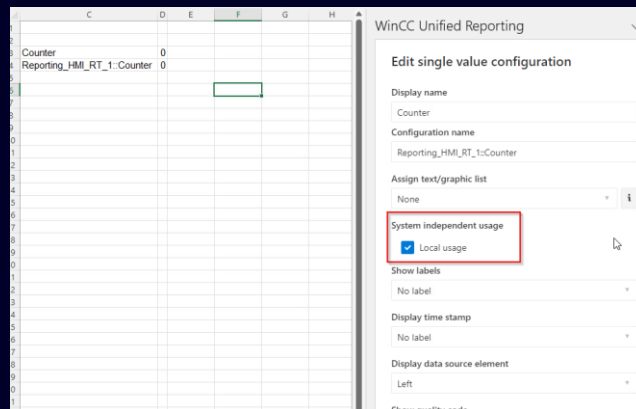
Password *

Advanced settings

Port

443

Go offline Login



One version of Reporting Excel Add-In

➤ Add-In supports

- All WinCC Unified versions
- All WinCC versions from V8.2 onwards

➤ One SiePortal / SIOS page to download the Add-In

➤ New feature in Report Template

- System independent (Logging-)Tags, so that the same template can be used on different Systems

WinCC Unified V21 – Operation: Usability

Logging: Periodically Backup of Main Database

Unified
Basic



Unified
Comfort



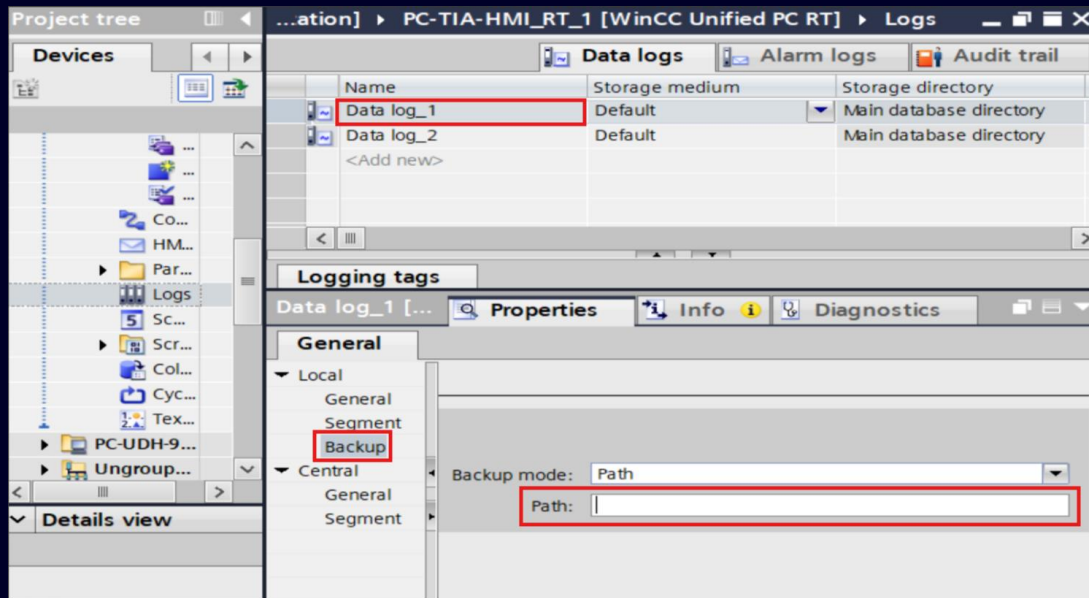
Unified
Edge RT



Unified
PC RT



Used Path mentioned in the note:



Create a backup of the Main Databases, if backup is configured for at least one Log.

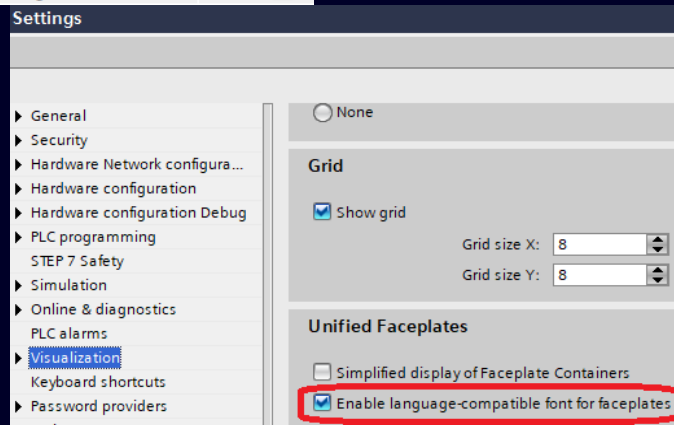
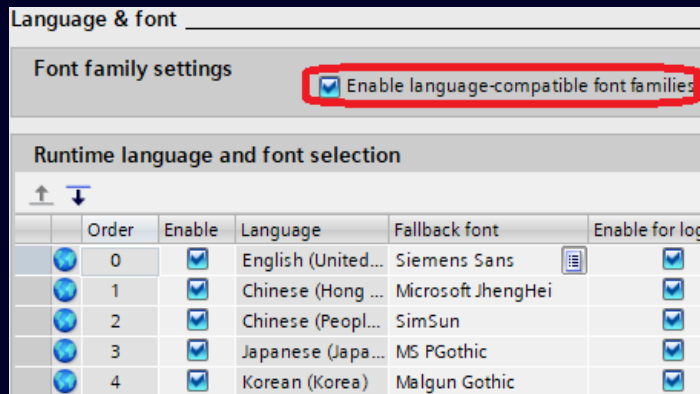
- Automatic Backup is created every hour
- Restore backup manually when Main Database is corrupted or accidentally deleted
- Use database backups e.g. for problem analysis on a different machine. This avoids copying the main live database.

Note:

The main database backup uses the path of the first log created. This setting cannot be changed separately in V21

WinCC Unified V21 – Operation: Usability

Runtime language dependent fallback font



Increased engineering efficiency of font configuration for different runtime languages.

➤ Enable language-compatible font families

- Central fallback font configuration. **Fallback fonts provide automatic substitution** when either style fonts or custom font configurations are unavailable or incompatible with runtime languages. **Particularly beneficial for Asian languages.**
- Only language-compatible font families can be configured.

➤ Enable language-compatible font families for faceplates

- Same functionality as above for Unified faceplates.

WinCC Unified V21 – Operation: Usability

Download only relevant fonts

Unified
Basic



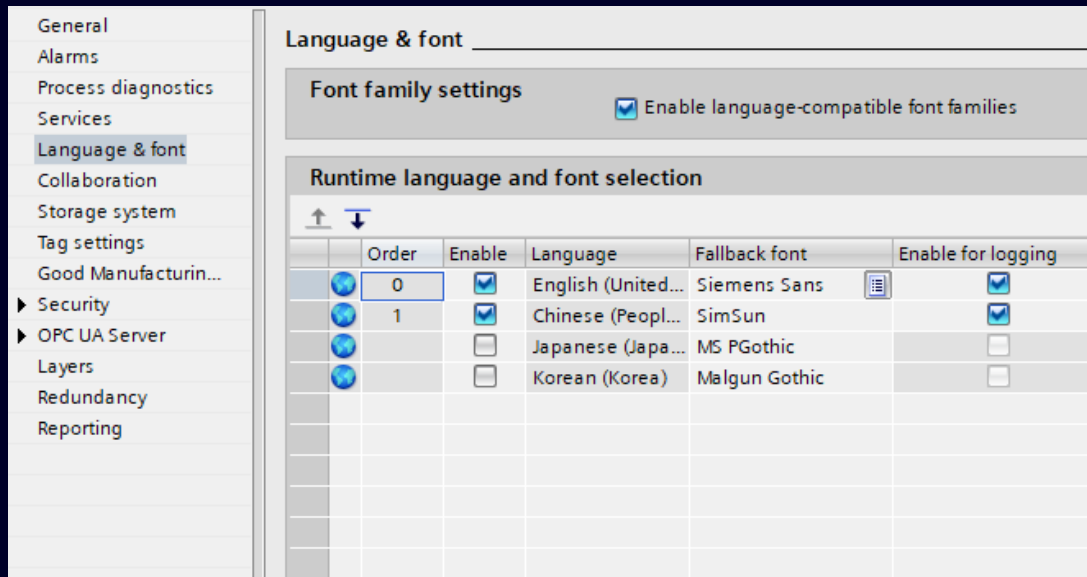
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Unnecessary Fonts are not downloaded.

➤ Disabled Runtime languages

- Fonts that are only used on disabled Runtime languages are removed from download.

➤ Removed Runtime languages

- Fonts that were only used on deleted Runtime languages are removed from download.

Notes:

- Siemens Sans is always downloaded
- If the "Enable language-compatible font families" checkbox is enabled, then Fallback fonts for enabled Runtime languages are also downloaded.

WinCC Unified V21 – Operation: Usability

HMI Tag Display Name

Unified Basic

Unified Comfort

Unified Edge RT

Unified PC RT

Default tag table

Name	Display name	Data type	Connection	PLC name	PLC tag	Ad...
DB_Data_BlockArrayOfInt	BufferValuesOfInt_CN	Array [0..100] ...	HMI_Conne...	PLC_1	DB_Data.BlockArrayOf...	
DB_Data_BlockArrayOfWord	BufferValuesOfWord_CN	Array [0..100] of Word	HMI_Connectio...	PLC_1	DB_Data.BlockArrayOfW...	
DB_Data_BlockArrayOfInt_Read...	IntBuffer_ReadRequest_CN	Bool	HMI_Connectio...	PLC_1	DB_Data.BlockArrayOfInt...	
DB_Data_BlockArrayOfInt_Write...	IntBuffer_BufferAvailable_CN	Bool	HMI_Connectio...	PLC_1	DB_Data.BlockArrayOfInt...	
DB_Data_BlockArrayOfInt_Write...	IntBuffer_BufferWrite_CN	Bool	HMI_Connectio...	PLC_1	DB_Data.BlockArrayOfInt...	
DB_Data_BlockArrayOfWord_Read...	WordBuffer_ReadRequest_CN	Bool	HMI_Connectio...	PLC_1	DB_Data.BlockArrayOfW...	
DB_Data_BlockArrayOfWord_Write...	WordBuffer_BufferAvailable_CN	Bool	HMI_Connectio...	PLC_1	DB_Data.BlockArrayOfW...	
DB_Data_BlockArrayOfWord_Write...	WordBuffer_WriteRequest_CN	Bool	HMI_Connectio...	PLC_1	DB_Data.BlockArrayOfW...	

Simplified Multilingual Display Names for Complex Engineering Names for Tags in Unified Runtime

Discrete alarms

Analog alarms

Logging tags

ID	Name	Alarm text	Alarm class	Trigger tag	Trigg...	Connection of ...	Acknowledgme...	Ackno...	Acknowledg...	C...
<Add new>										

DB_Data_BlockArrayOfInt [HMI_Tag]

Properties

Events

Texts

Chinese (People's Republic of ...)	English (United Kingdom)	German (Germany)	French (France)	Reference
BufferValuesOfInt_CN	BufferValuesOfInt_EN	BufferValuesOfInt_DE		DB_Data_BlockArrayOfIntDisplay name
BufferValuesOfWord_CN	BufferValuesOfWord_EN	BufferValuesOfWord_DE		DB_Data_BlockArrayOfWordDisplay name
IntBuffer_BufferAvailable_CN	IntBuffer_BufferAvailable_EN	IntBuffer_BufferAvailable_DE		DB_Data_BlockArrayOfInt_BufferAvailableFla
IntBuffer_BufferWrite_CN	IntBuffer_BufferWrite_EN	IntBuffer_BufferWrite_DE		DB_Data_BlockArrayOfInt_WriteRequestFlag
IntBuffer_ReadRequest_CN	IntBuffer_ReadRequest_EN	IntBuffer_ReadRequest_DE		DB_Data_BlockArrayOfInt_ReadRequestFlag
WordBuffer_BufferAvailable_CN	WordBuffer_BufferAvailable_EN	WordBuffer_BufferAvailable_DE		DB_Data_BlockArrayOfWord_WriteRequestFl
WordBuffer_ReadRequest_CN	WordBuffer_ReadRequest_EN	WordBuffer_ReadRequest_DE		DB_Data_BlockArrayOfWord_ReadRequestFl
WordBuffer_WriteRequest_CN	WordBuffer_WriteRequest_EN	WordBuffer_WriteRequest_DE		DB_Data_BlockArrayOfWord_BufferAvailable

Simplified Description for Complex HMI Tag Names engineered with Multilingual Display Name Support in Runtime

➤ HMI Tag Display Name in Trend Control/Trend Companion , Audit Trail Logs, PaCo

- Identify HMI Tags by its Display Name.
- Multilingual Support.
- Fall Back on Engineering Name if no Display Name Configured

Note:

- DisplayName are not supported for child members in a structure HMI Tag

WinCC Unified V21 – Operation: Usability

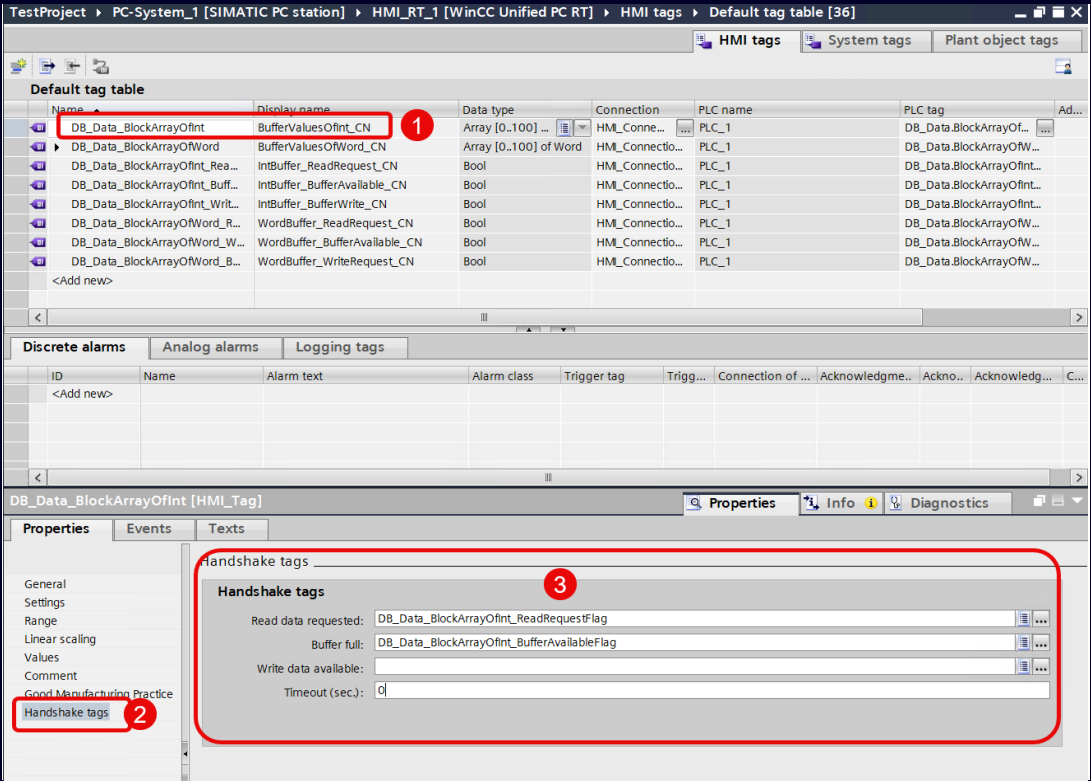
Automatic Handshake for Block Array Tag used in Buffer Trend

Unified Basic

Unified Comfort

Unified Edge RT

Unified PC RT



Capture high-speed data in a PLC Array Buffer with auto-handshake — seamlessly visualize it on Trend Control in real-time!

- Display Buffer Data in a PLC Array on a Trend Control
 - Log High Speed Data in a PLC Array Tag.
 - Automatically handshake data using HMI Block Array Tag and display it in Trend Control.
 - Latest Data automatic update on Trend Control
 - Write HMI Block Array Data to PLC Array Tag

- Note:**
- Trend screen must be in focus to refresh data.
 - Read and Write cannot occur simultaneously.
 - Automatic handshake overrides manual handshake.

WinCC Unified V21 – SIMATIC HMI Unified Panels

All essential features of the predecessor are retained

Unified Basic	✓	Unified Comfort	✓	Unified Edge RT	✗	Unified PC RT	✗
---------------	---	-----------------	---	-----------------	---	---------------	---

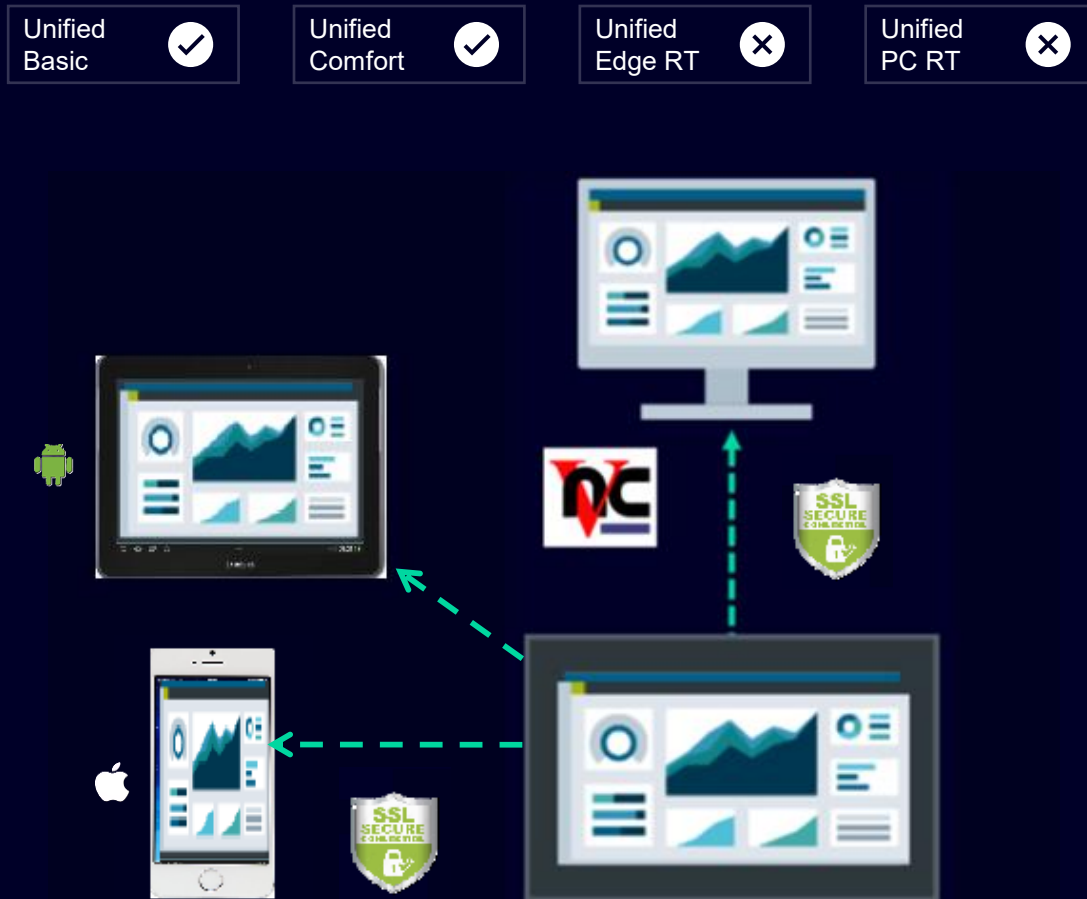


SIMATIC WinCC V21 is the version for change over from Comfort Panel to Unified Comfort

- For each use case you will have the possibility to configure it in WinCC Unified

WinCC Unified V21 – SIMATIC HMI Unified Panels

Smart Server for Unified Basic Panels: Enabling Remote Operation



Smart Server provides an option for accessing the panel remotely using Smart Client.

- Provides secured remote access for real-time monitoring and maintenance, reducing downtime and improving operational efficiency.
- Authenticated access with persistent settings and automatic client disconnect during configuration changes, safeguarding data integrity.
- Offers flexibility to configure Smart Server settings from Control Panel and runtime settings in TIA Portal.

Note: Smart Server settings and functionalities equal UCP.
The key difference: UBP supports only one active remote client connection at a time for optimized performance.

WinCC Unified V21 – SIMATIC HMI Unified Panels

Smart Client App for Unified Comfort Panel

Unified
Basic



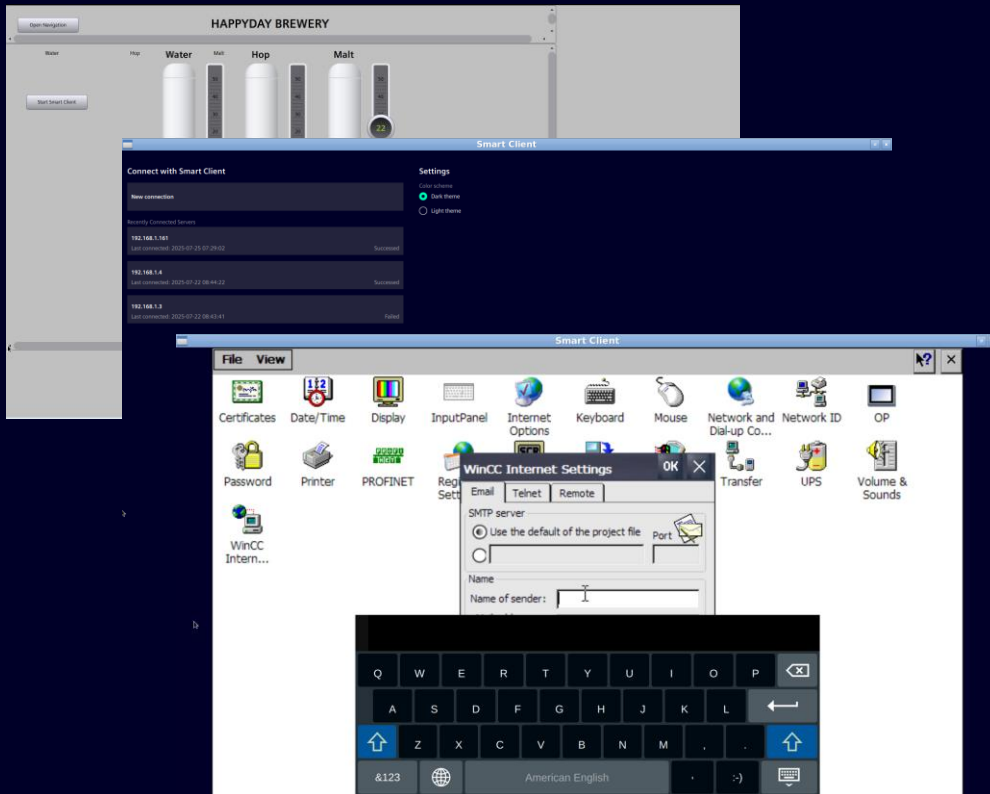
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Use a smart client app on the UCP to connect to the smart server of HMI panels

➤ Direct use on the Unified Comfort Panel

- App home screen to show recently connected servers
- Support of encrypted communication and view only
- Support gestures like zooming
- Color scheme setting
- Save password for future connections

➤ Use via WinCC Runtime

- Configure via Start Program system function from Unified Runtime
- Click configured button in Unified Runtime to trigger app

WinCC Unified V21 – SIMATIC HMI Unified Panels

Add a printer without connection to the Unified Comfort Panel

Unified Basic 

Unified Comfort 

Unified Edge RT 

Unified PC RT 

SIMATIC HMI Unified Comfort

External Devices and Input \ Printers ? →

Printers

Default Printer : PDF

Name	Status	Location	Description
PDF	Idle	PDF Printing	Softprinting to PDF
BrGenML1	Idle	Local	Preconfigured printing options for Brother ...
CUSTOM_Engineering_PLUS...	Idle	Local	Preconfigured printing options for CUSTOM...
DCPL1848W	Idle	Local	DCPL1848W preconfigured options
HL2260	Idle	Local	HL2260 preconfigured options
HL2560DN	Idle	Local	HL2560DN preconfigured options
HL4150CDN	Idle	Local	Preconfigured printing options for HL4150...
HLL2360D	Idle	Local	Preconfigured printing options for HLL2360D
HLL5100DN	Idle	Local	Preconfigured printing options for HLL510...
HLL5200DW	Idle	Local	Preconfigured printing options for HLL520...
HLL5210DN	Idle	Local	Preconfigured printing options for HLL521...
HLL8250CDN	Idle	Local	Preconfigured printing options for HLL825...

Add

Configure

Remove

User is now able to add a new printer without need a Printer hardware connected to the Panel

- Installation of the printer driver without a printer hardware
 - Add a new printer
 - Configure the printer for desired properties
- Commission the printer when the hardware is available
 - Plug-in the USB printer to the UCP
 - Match pre-configured printer configuration to actual printer hardware via 'Configure' screen
 - Print a document

WinCC Unified V21 – SIMATIC HMI Unified Panels

Performance Improvement of Runtime AutoStart up to 40% at Unified Comfort Panel



Acceleration auf the AutoStart compared to previous version

- Device with “AutoStart = 0” configured shows significant faster Start performance (up to 40% faster compared to V20 startup)

WinCC Unified V21 – SIMATIC HMI Unified Panels

Control Panel - Network Tool

Unified Basic

Unified Comfort

Unified Edge RT

Unified PC RT

SIMATIC HMI Unified Comfort

Network and Internet \ Network Tool

Network Tool

PN-X1

Device Name	MAC Address	Device Type	IP Address	Subnet Mask
bizehertertrabzo...	08:00:06:c2:b1:a0	MTP1900 Unified...	192.168.56.113	255.255.255.0
abc123	00:0e:8c:27:71:95	MTP1000 Unified...	192.168.5.60	255.255.255.0
ubp7	4c:e7:05:05:62:50	MTP700 Unified B...	192.168.5.80	255.255.255.0
	30:13:89:35:ff:eb	MTP1500 Unified...	192.168.5.140	255.255.255.0
bizehertertrabzon	30:13:89:09:0c:4b	MTP1900 Unified...	0.0.0.0	0.0.0.0

Configure Device Parameters

Device Name: abc123

IP Address: 192.168.5.60

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.5.1

MAC Address: 00:0e:8c:27:71:95

Edit Type: All

Set

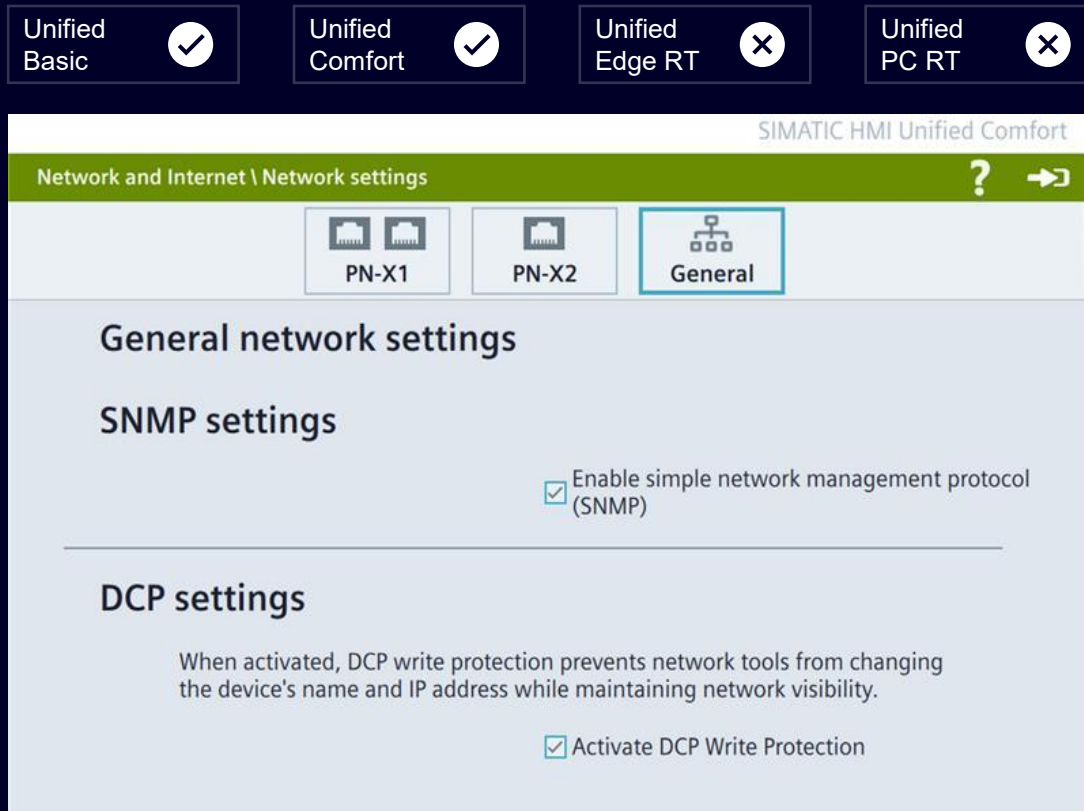
Cancel

Users can change specific interface parameters of PROFINET devices that are in the subnet of your HMI device.

- This gives the ability to change the device name and IP address of the devices on the same network with the panel over control panel UI.
- This eliminate usage of additional network tool (PRONETA, TIA, etc.) and PC for configuring Name, IP or reset to factory of PLC or a device.
- Note: This is a comfort panel Assign IP address feature

WinCC Unified V21 – SIMATIC HMI Unified Panels

Control Panel - DCP Protection



Users can set the DCP Mode to read-only to prevent unauthorized change of IP, Name or Reset to Factory from network tools.

- **This gives you the ability to protect IP Address and Device from unintended or unauthorized changes**

WinCC Unified V21 – SIMATIC HMI Unified Panels

Connect predefined network shares

Unified Basic ✓

Unified Comfort ✓

Unified Edge RT ✗

Unified PC RT ✗

Storage media configuration

Storage media

	Name	Path	Type
☒	Storage_1	/net/es/Storage_1/	Network
☒	Storage_2	/net/es/Storage_2/	Network
<Add new>			

SIMATIC HMI Unified Comfort

Network and Internet \ Network drives ? ➡

Network drives

Remote Path	User Na...	Local Path	Status	Type
//192.168.0.123/Testshare	NotValid	/net/es/Storage_2	Failed	Pre-con...
//192.168.0.123/Testshare	Testuser	/net/es/Storage_1	Connected	Pre-con...
//192.168.0.123/Testshare	Testuser	/net/mount/LocalShare	Connected	User-de...

Add

Configure

Remove

Data logs

Alarm logs

Audit trail

Backup mode

Backup path

Path

/net/es/Storage_1/

Define and use network locations

Configuration engineer

- Defines network-based storage location
- References the storage location by "Local Path" in TIA Portal project

Enter exact connection data „on-the-spot”

Commissioning engineer

- Enters UNC Path at target location
- Authenticates by Username and Password

Use e.g. as backup location for logs

WinCC Unified V21 – SIMATIC HMI Unified Panels

Update Industrial Edge runtime at Unified Comfort Panel

Unified Basic 

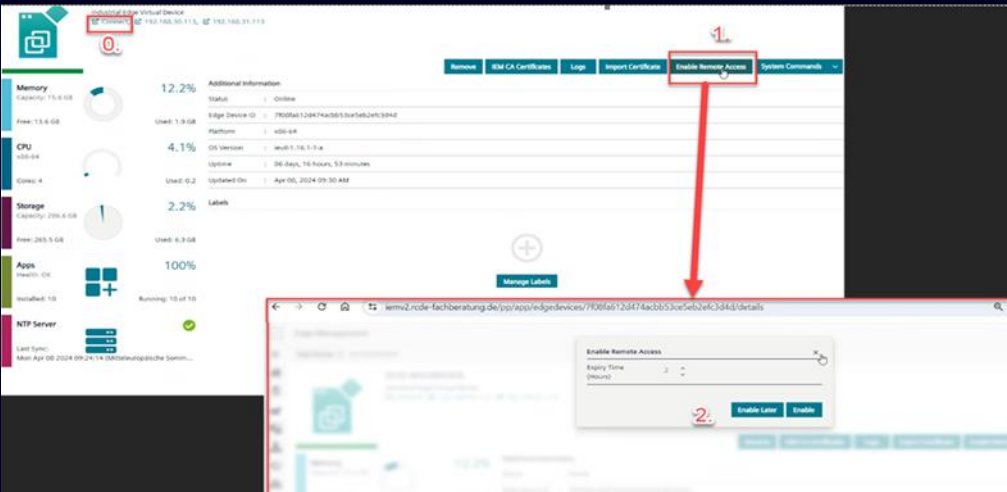
Unified Comfort 

Unified Edge RT 

Unified PC RT 

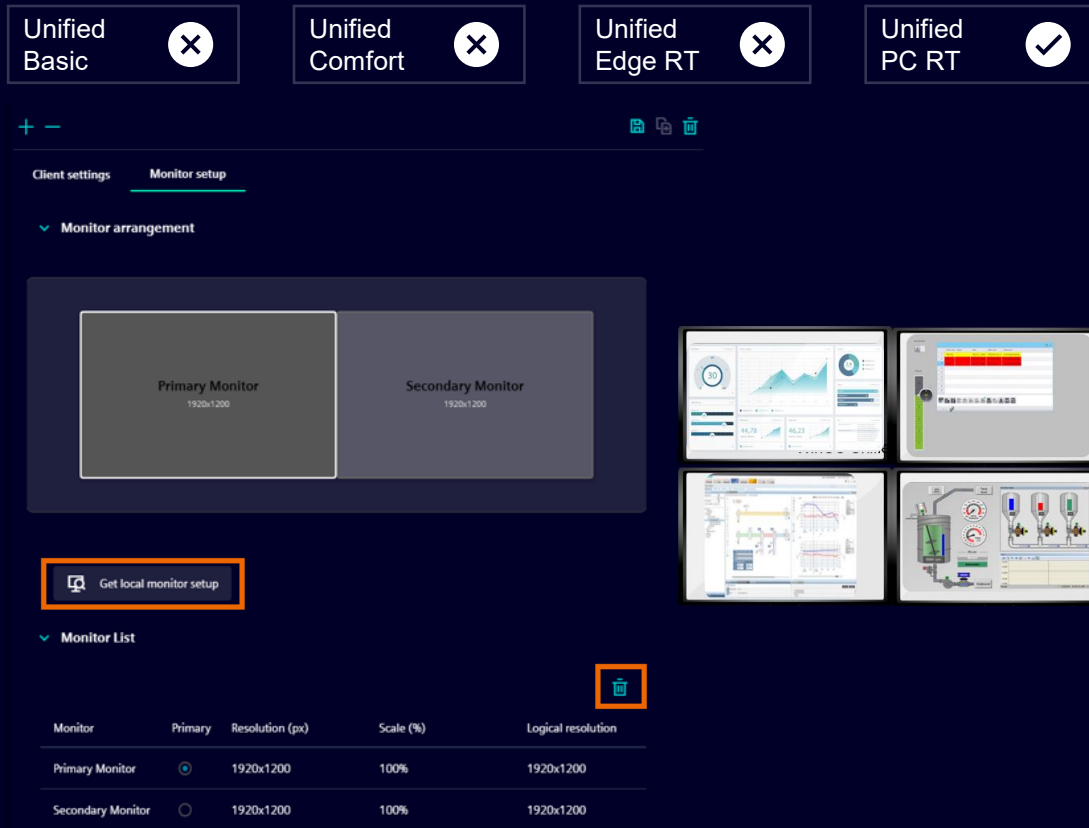
Industrial Edge Runtime is upgraded to latest version 1.26.05

➤ “Remote Access” functionality from IEM possible to configure the UCP Edge remotely



WinCC Unified V21 – WinCC Unified PC Runtime

Parallel display of different process screens on multiple monitors



Next-level SCADA visualization and intuitive operator interaction

- Multiple monitors enable operators to visualize different process areas simultaneously, ensuring no critical information is missed.

Adaptable to on-site conditions using My WinCC Unified

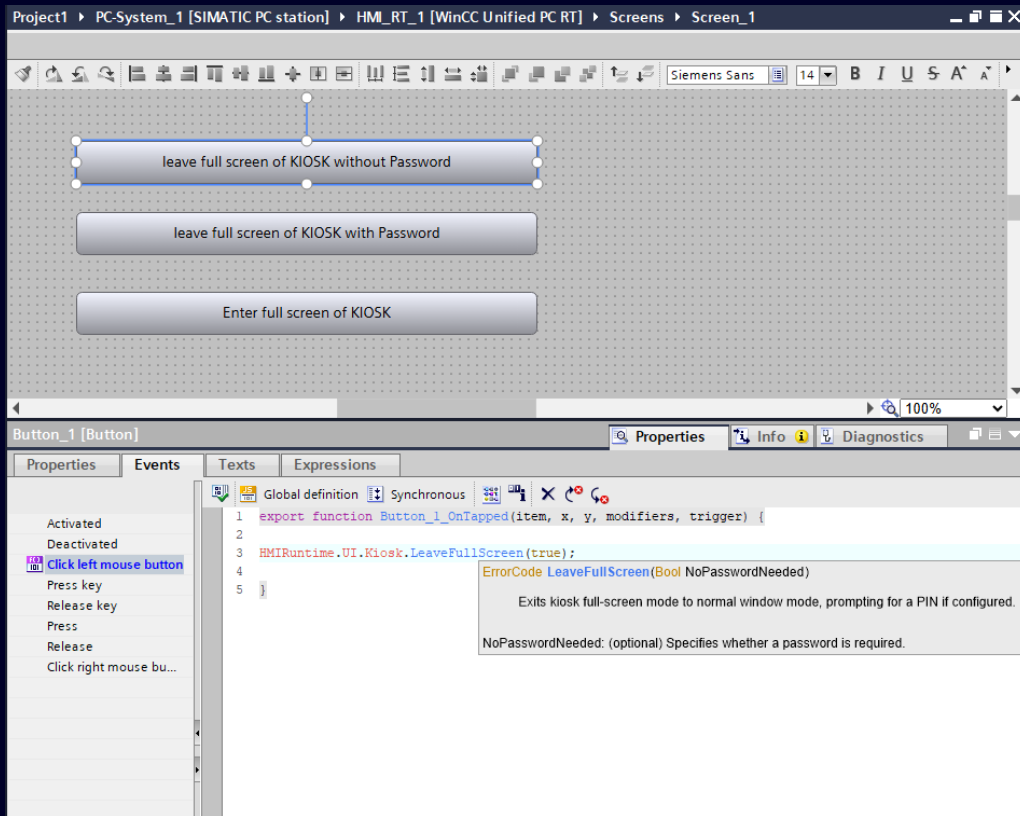
- Retrieve Monitor setup from the operating system of the Unified Client
- Configure a different Startscreen for each Monitor
- Only one Client License is used for the multi-window session

Secure, stable, and focused thru support of Kiosk Mode

- Quick start Multimonitor via Unified Station configurator
- Flexible Multimonitor via Standard Web Browser

WinCC Unified V21 – myWinCCUnified / Station Configurator

Leave Kiosk mode via Scripting with/without password



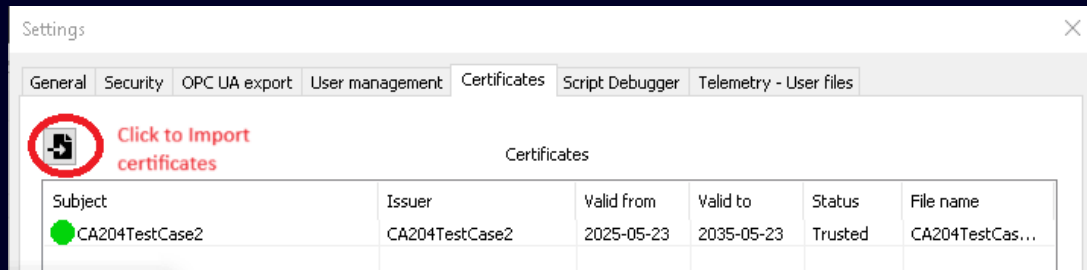
As customer managed administrator: more flexible to leave Full Screen Mode of Kiosk with/without Password by scripting:

Flexible configuration possibilities

➤ Configurable as a parameter in scripting

WinCC Unified V21 – WinCC Unified Certificate Manager

Secure PLC-HMI Communication Enhancement (handling imported CA-signed certificates)

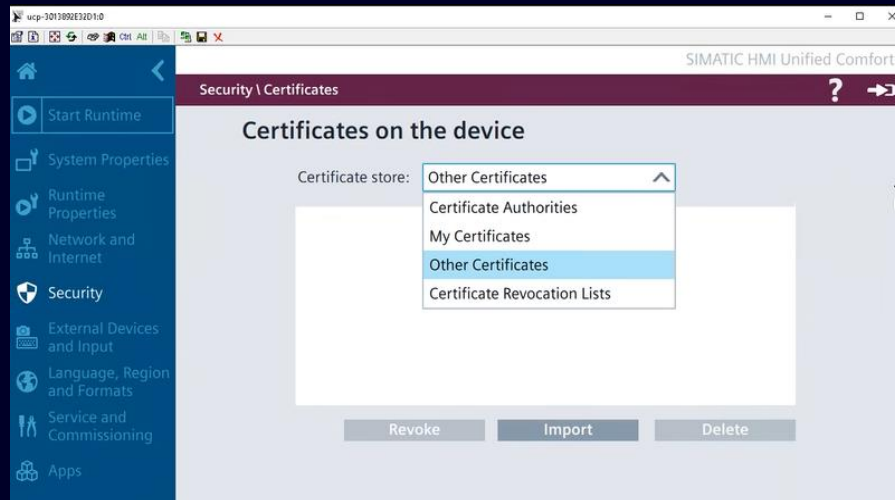


User can dynamically import and trust essential CA and self-signed certificates while the system is running, ensuring that the updated security policies are enforced for all subsequent connections.

➤ PLC certificate renewal is possible even without HMI project

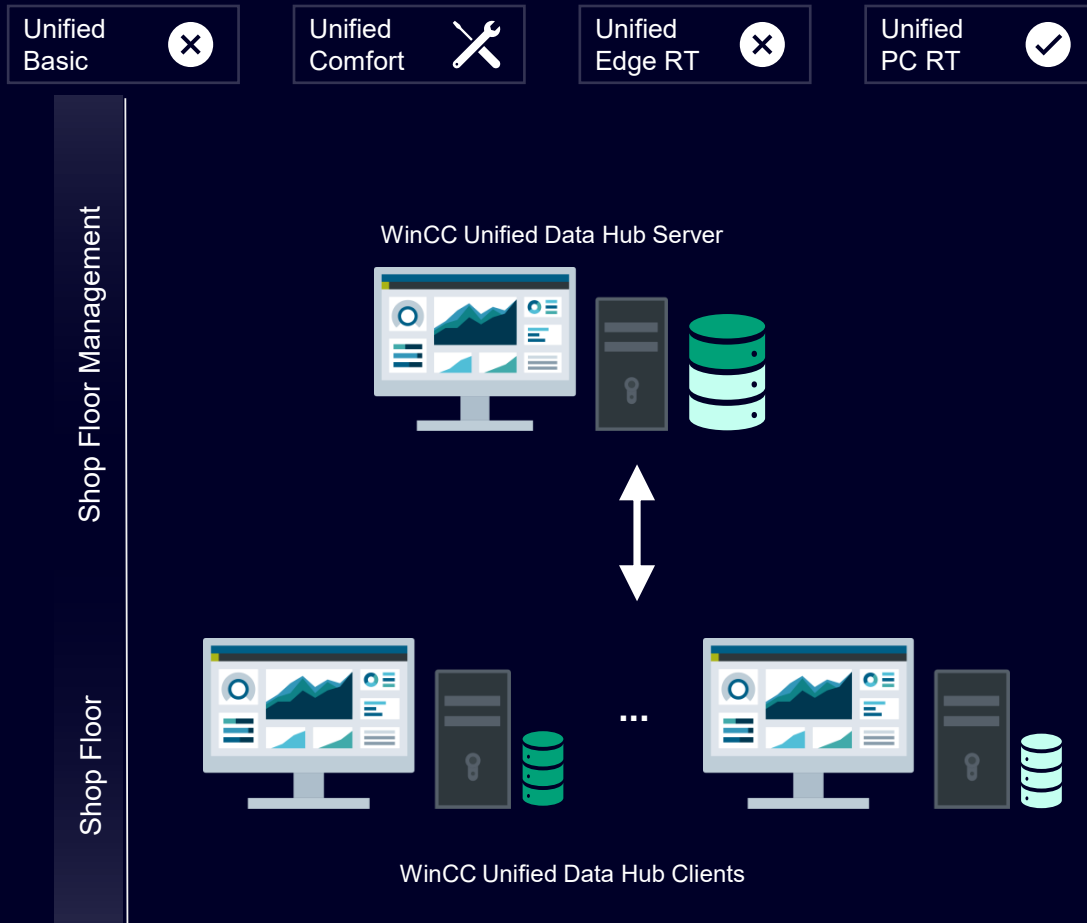
Note:

- On the panel, certificates are imported via certificate control page
- On the PC, certificates are imported via WinCC Unified Runtime Manager



WinCC Unified V21 – WinCC Unified Data Hub

All production data in one place – no more scattered archives.



Broad Market Release with WinCC Unified V21

- A future-ready, scalable, and seamlessly integrable solution for secure, centralized, and transparent archiving and utilization of production data.

Based on WinCC Unified Platform

- Use without extensive training or ramp-up time.
- Runs natively on the Unified platform
- TIA Portal Integration - Decide at the source what matters long-term

Centralized, data access for shop floor and IT systems

- Show Data locally at the UDH Client (WinCC Unified Data Sources)
- Access Data from IT systems using Graph QL

SIMATIC Visualization Architect V21

Support for new devices: Unified HMI EDGE

Unified
Basic



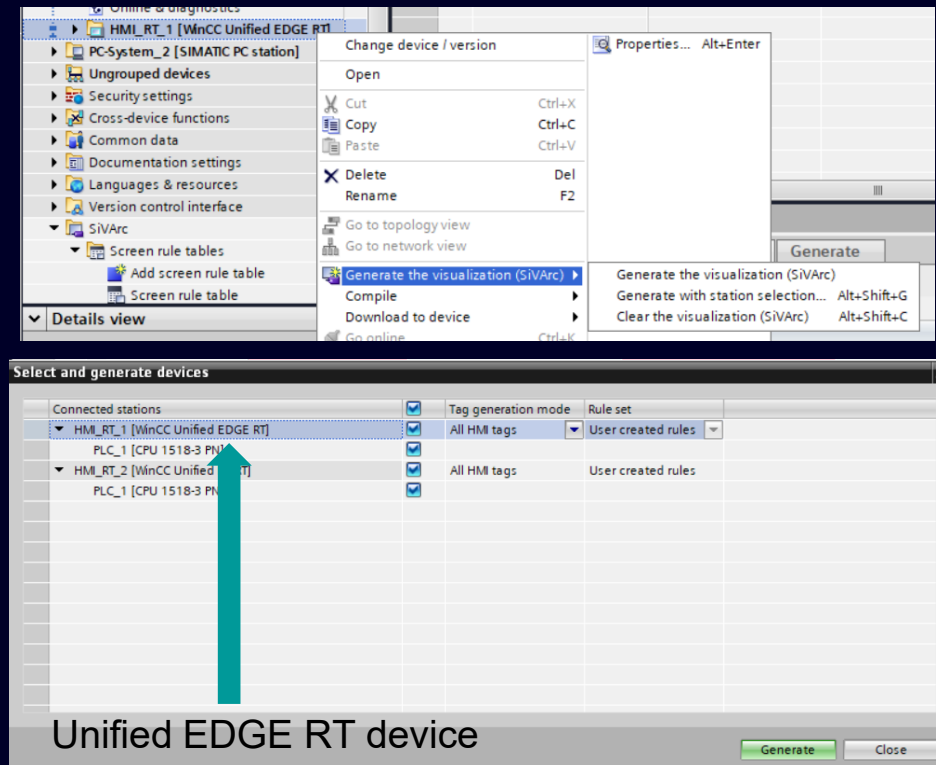
Unified
Comfort



Unified
Edge RT



Unified
PC RT



SiVArc generation supports WinCC Unified EDGE device for automated HMI generation

- SiVArc supports the generation of Unified Edge devices with a comparable range of functions to Unified PC RT devices.
- Clearing SiVArc generated HMI Data is also possible for Unified EDGE RT device.
- Openness support to generate SiVArc for the new device is available.

SIMATIC Visualization Architect V21

Support for color palette

Unified
Basic



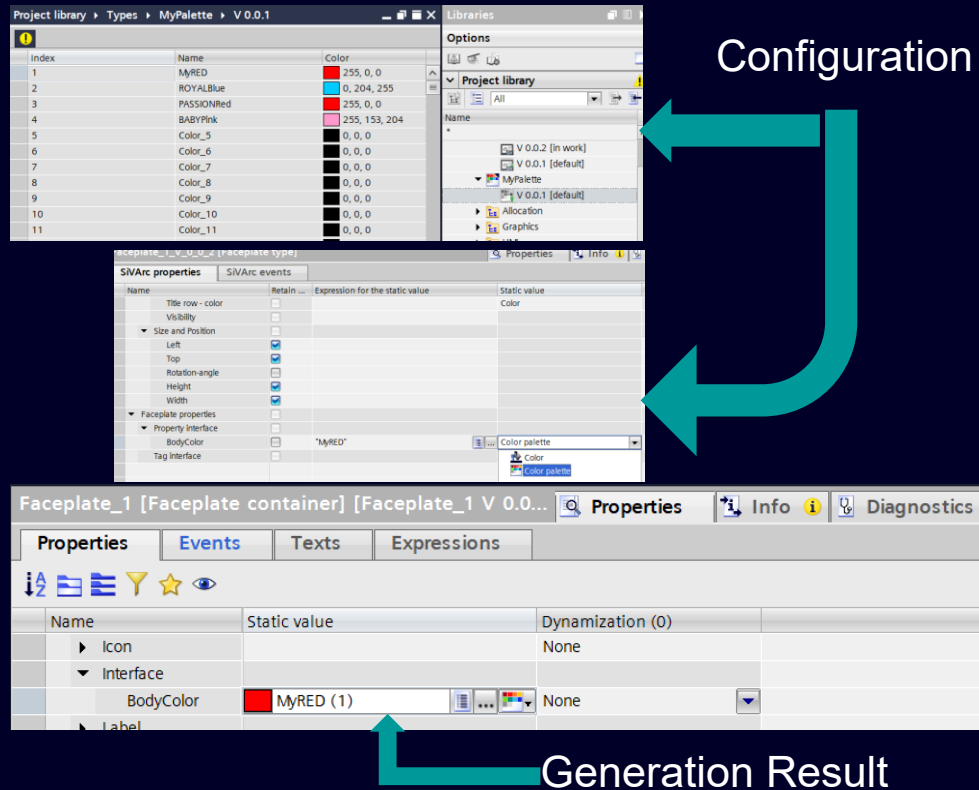
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Color palette support via SiVArc is available.

- With SiVArc, you can use the colors from the typed color palette.
- With SiVArc, you can assign colors based on the name of the respective color in the color palette. Alternatively, for a language-independent approach, you can use the index number of the color during generation.

SIMATIC Visualization Architect V21

Screen Layouting with Rotation Angle

Unified
Basic



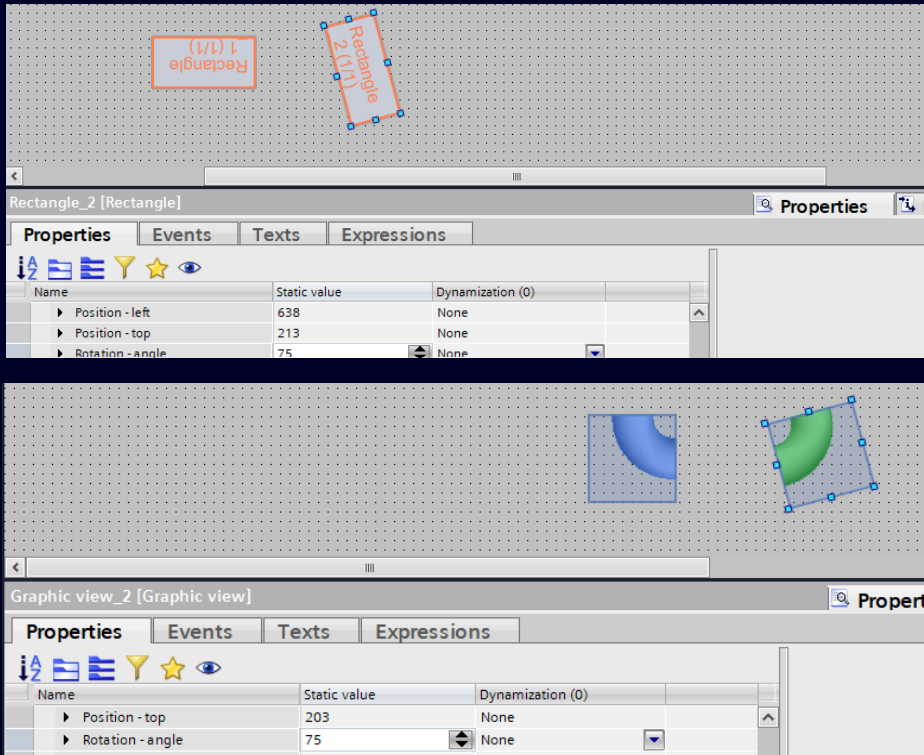
Unified
Comfort



Unified
Edge RT



Unified
PC RT



The user can consider the rotation angle of screen objects when creating the layout.

- When using layout fields, SiVArc considers the rotation angle of the layout fields during generation, so that the screen objects can be not only positioned but also rotated to match the layout.
- If the rotation angle for layout fields is zero, the system considers the rotation angles specified for individual objects via the SiVArc plug-in.

SIMATIC Visualization Architect V21

SiVArc expression improvements

Unified Basic

Unified Comfort

Unified Edge RT

Unified PC RT

SIVArcV21_Demo > PC-System_2 [SIMATIC PC station] > HMI_RT_2 [WinCC Unified PC RT] > Connections

Connections to S7 PLCs in Devices & networks

Connections					
Name	Communication driver	Station	Partner	Node	
HMI_Connection_SiVArc_Test01	SIMATIC S7 1200/1500	S7-1500/ET200MP ...	PLC_1	CPU 1518-3 PN, PR...	
HMI_Connection_SiVArc_Test02	SIMATIC S7 1200/1500	S7-1500/ET200MP ...	PLC_1	CPU 1518-3 PN, PR...	

Scope of expression resolver

Program block/Block instance

HMI device PC-System_2 Readout the HMI connection name

Library object

Resolve expression

HmiDevice.Connections[0]

Expression result

HMI Connection SiVArc Test01

Screen_1 [Screen]

SiVArc properties | SiVArc events | Generation overview

Name

Expression for the static value

General

Name

Rule.ScreenObjectName

New SiVArc expressions are available for user.

- The expression “HmiDevice.Connections” can be used to access the HMI connection name of the Unified devices.
- SiVArc can generate screens with the Screen object names configured in the Screen rule table using new expression “Rule.ScreenObjectName”.
- The Layer property configuration has been enhanced. The "Layer" property can have either an integer value, string or expression as name..

SIMATIC Visualization Architect V21

Advanced tag rules improvements

Unified
Basic



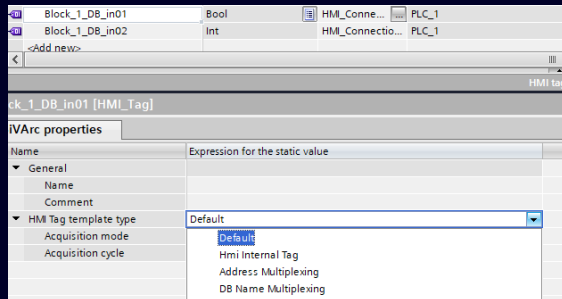
Unified
Comfort



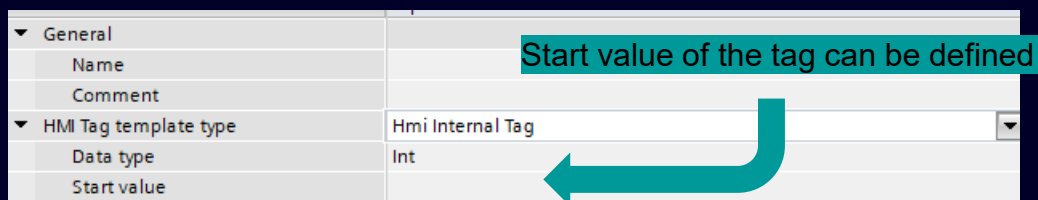
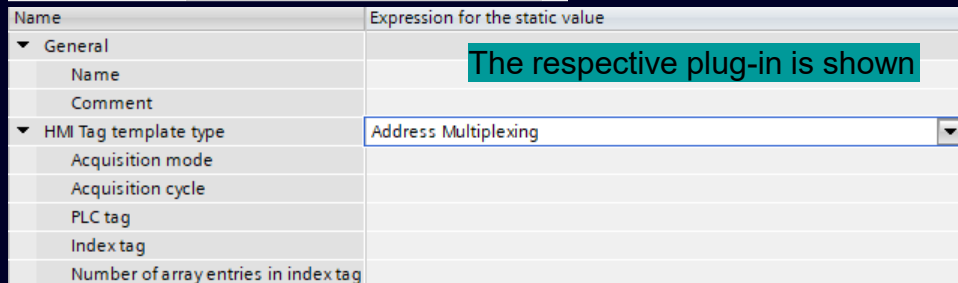
Unified
Edge RT



Unified
PC RT



Chose the type for the template



Improved usability and functionality of HMI tag generation.

- Advanced tag rule editor is more user friendly now, displaying the relevant properties specific to the selected "HMI Tag Template Type" in the "Plug-ins" tab.
- SiVArc supports the setting of Start value of HMI Internal Tags using Tag Template for all supported HMI Devices.

SIMATIC Visualization Architect V21

Usability improvements (1)

Unified
Basic



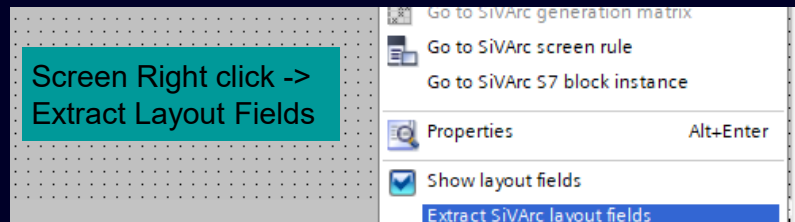
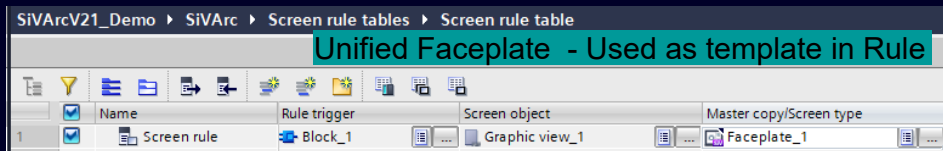
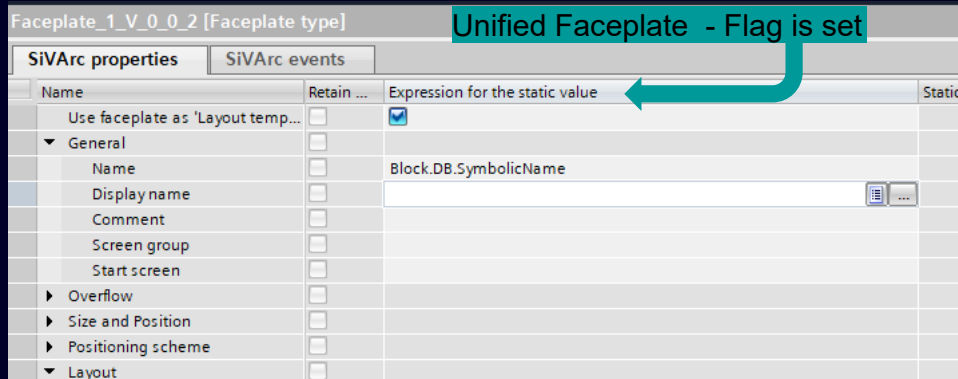
Unified
Comfort



Unified
Edge RT



Unified
PC RT



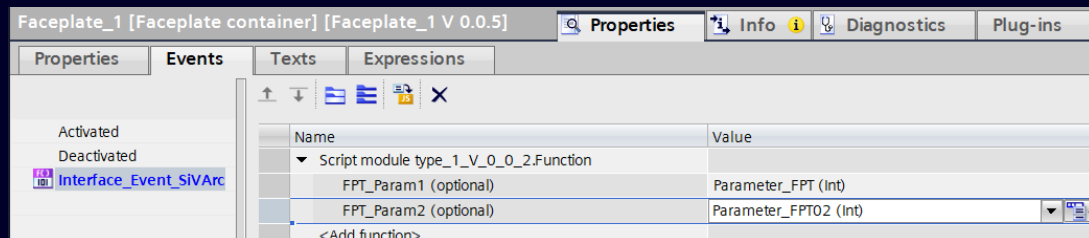
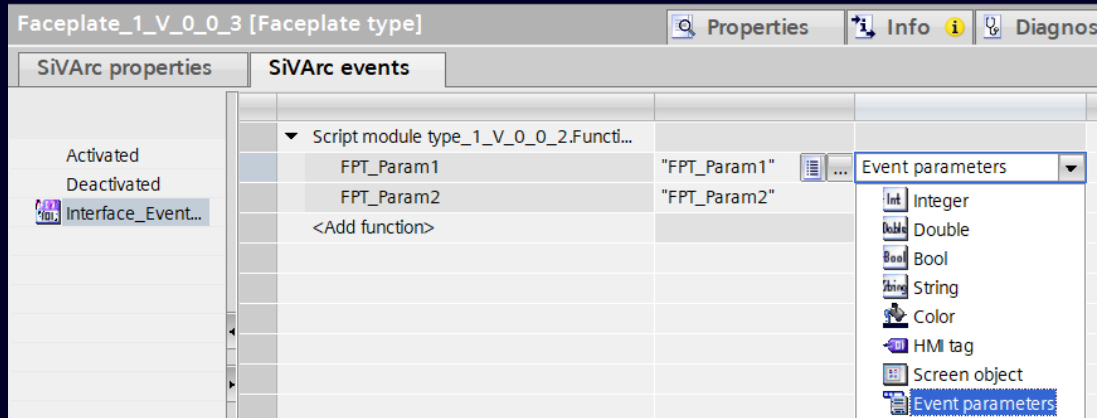
Usability improvements (1)

- The user can create the screens using the faceplate as a SiVArc layout template for SiVArc generation. The screen properties are defined in the SiVArc plug-in's property editor.
- The user can export and import the defined layout screens via a YAML file.

This function makes it possible to reuse layouts from, WinCC Basic / Comfort / Advance or WinCC Professional in WinCC Unified.

SIMATIC Visualization Architect V21

Usability improvements (2)



Usability improvements (2)

- User can generate the Unified faceplates including custom events and map the configured parameters of the custom event with parameters of global script functions using SiVArc events.
- Version number expression types is shown while configuring the expression and the version number is shown in the path for Unified faceplates.
- Global search is possible in SiVArc plug-ins.

SIMATIC Visualization Architect V21

Support for TIA Portal clients

Unified Basic ✓

Unified Comfort ✓

Unified Edge RT ✓

Unified PC RT ✓

System Screen rules					
System Screen rules		System Tag rules		System Advanced tag rules	
Name	Created by	Rule Trigger	Screen object	Master copy/Type of a screen	Layout field
1 ScreenRule_1	CFL	PIT_FB_01	PIT_Button_02	PIT_Screen_01	
2 ScreenRule_5	CFL	PIT_FB_01	PIT_Button_01	PIT_Screen_02	
3 ScreenRule_C	CFL	PIT_FB_01	PIT_Button_01	PIT_Screen_01	

CFL – System rules created

Select stations and controllers for SiVArc generation

Connected stations	Tag generation mode	Rule Set
▼ HMI_RT_11 [WinCC RT Professional]	Used HMI tags	CFL rules
PLC_2 [CPU 1518F-4 PN/DP]		

SiVArc generation option – CFL rules

New Client supported: Control Function Library

- SiVArc supports additional client, MTP-CFL.
- MTP-CFL shall create system rules needed to generate HMI Objects.
- SiVArc generation is enabled for the rule set “CFL rules”.
- Generation results shall be displayed about generated objects for CFL.

SIMATIC Visualization Architect V21

Openness API improvements

Unified
Basic



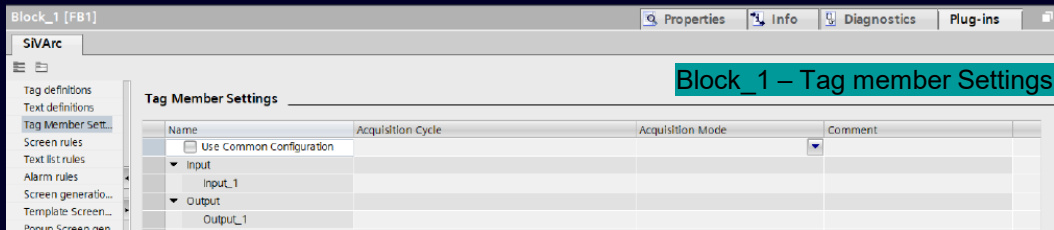
Unified
Comfort



Unified
Edge RT



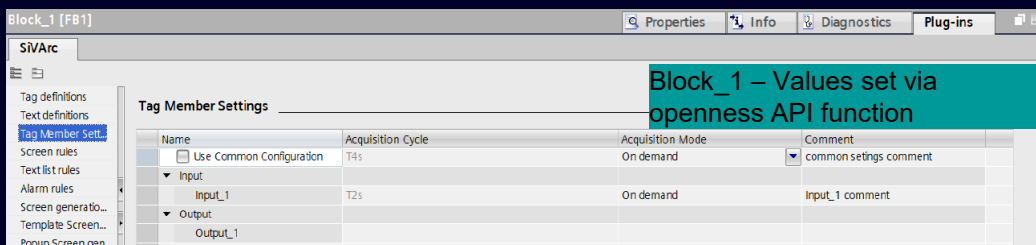
Unified
PC RT



```
// Read properties
Console.WriteLine($"Acquisition mode - {tagMember.AcquisitionMode}");
Console.WriteLine($"Acquisition cycle - {tagMember.AcquisitionCycle}");
Console.WriteLine($"Comment - {tagMember.Comment}");

// Write properties
tagMember.AcquisitionCycle = "T2s";
tagMember.AcquisitionMode = AcquisitionMode.OnDemand;
tagMember.Comment = "Input_1 comment";
```

SiVArc API function to
read/write values



Openness API improvements

- User can access and read/write the Tag Member Settings properties configured for the program block, FC and OB.
- The LayoutData service API provides functionality to export and import screen layouts in SiVArc from one HMI device to another.
- User can update an instance of SiVArc rule table from library to project (PNV).
- User can use Library update functionality for color palettes in library.
- For a given PLC "Upgrade SiVArc definitions" functionality can be used via openness.

WinCC Unified V21 – WinCC Unified SIQENCE

From Recipe to Product

Unified
Basic



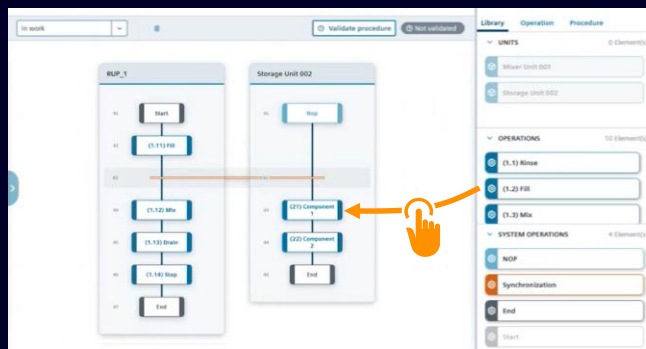
Unified
Comfort



Unified
Edge RT



Unified
PC RT



PC based
HMI

Scalability



Stand-alone machine



Small application ¹⁾

WinCC Unified SIQENCE

Option to extend WinCC Unified with recipe-control functionality for batch processing

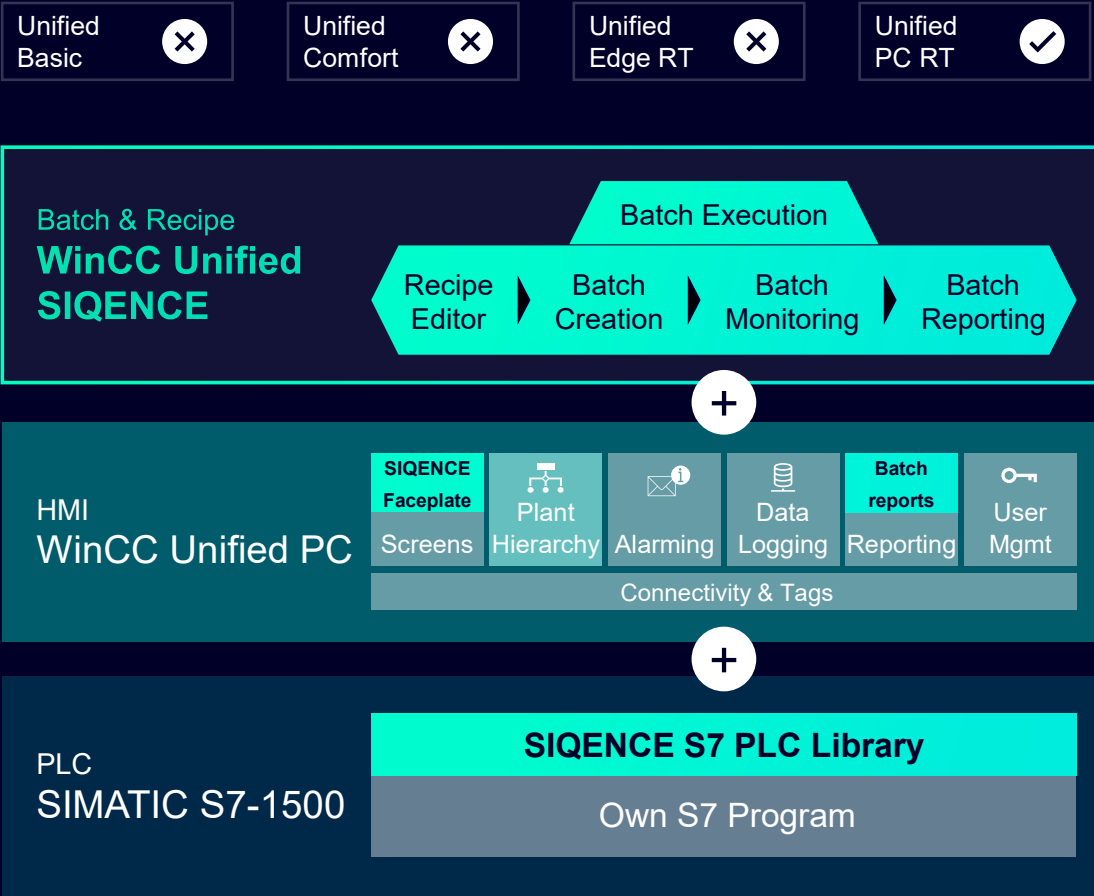
Release
in
Q2/2026

- **Flexible automation** of recipe-controlled production processes (e.g. for blending, mixing, heating, etc.)
- **Standardized recipe & procedure creation** based on units and operations ensuring consistent product quality (ISA-88 compliant)
- **Transparency** of planned and ongoing production batches
- **Clear overview** of the manufacturing operations and their status
- **Excel based reporting** for documentation of the production data

¹⁾ One PLC connection in V21 and up to 30 units

WinCC Unified V21 – WinCC Unified SIQENCE

Architectural overview



Recipe & batch web management



100% integrated into WinCC Unified PC



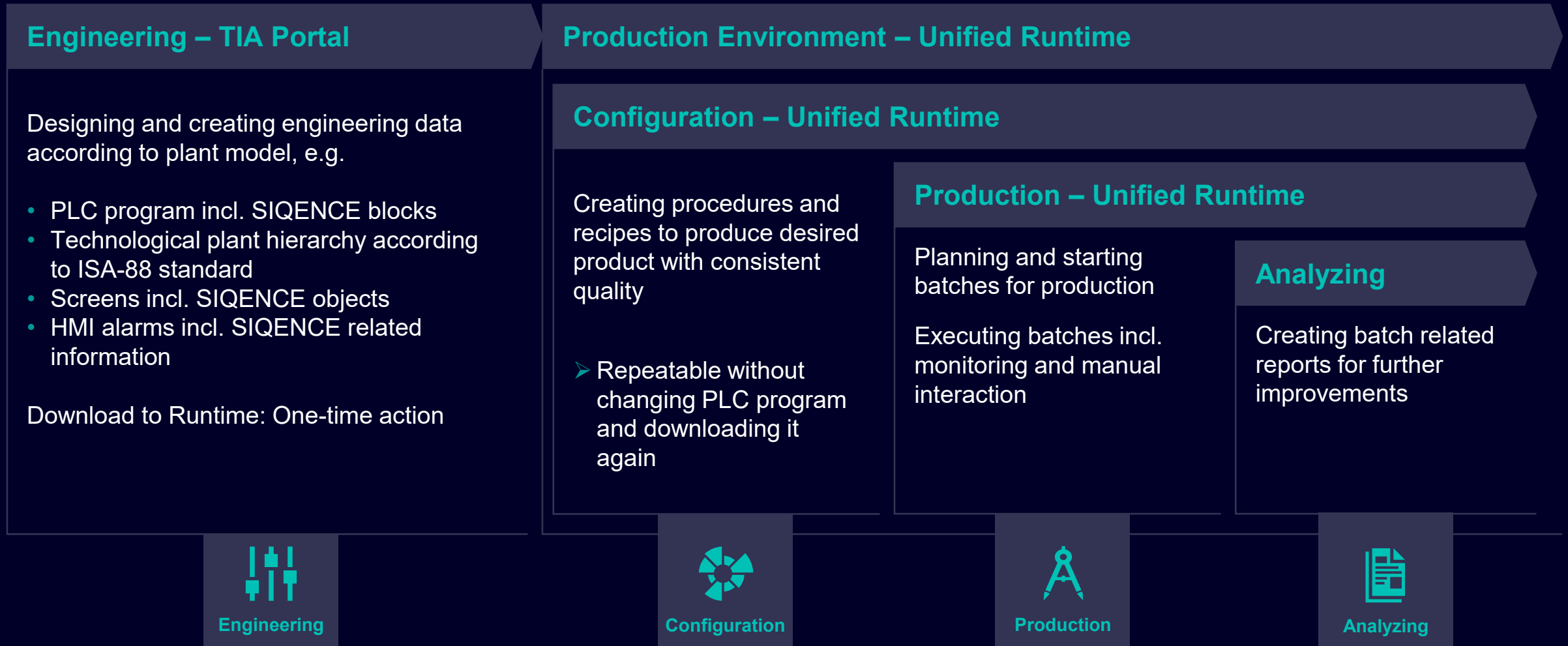
Flexible engineering with SIQENCE S7 TIA Library



PLC based batch execution – ISA88 standard

WinCC Unified V21 – WinCC Unified SIQENCE

Workflow in general to enrich application with each step



WinCC Unified V21 – WinCC Unified SIQENCE

Engineering - Using SIQENCE PLC library and Plant Hierarchy objects

The screenshot displays the WinCC Unified V21 interface. On the left, the 'Project library' pane shows the 'SIQENCE Library' expanded, with 'Unit' selected. The main workspace shows the 'SIQCompDosing' unit instance in the '01_Main' component. Below the unit instance, the 'PLC engineering' pane shows the ladder logic code for the unit, including regions for 'FIRST SEQUENCE CALL', 'WRITE SETPOINTS', 'BEFORE EOP EXECUTION', and 'EOP EXECUTION LOOP'.

PLC engineering

Unit instance

Unit process parameters

Unit Operations

The screenshot displays the WinCC Unified V21 interface for the 'SIQ_Mixer01' plant hierarchy object. The 'Interface' tab shows the object's configuration, including its name, data type, connection, PLC name, and PLC tag. The 'General' tab shows the object type and unit definition. The 'Parameter definition' table lists parameters for the unit, and the 'Equipment operation (EOP) definition' table lists operations for the equipment.

Name	Data type	Connection	PLC name	PLC tag	Access mode
SIQ_Mixer01	SIQ_MixerType	HMI_Connection	PLC	SIQ_Mixer01_DB	<symbolic access>
instUnit	LSIQ_SeqFB	HMI_Connection	PLC	SIQ_Mixer01_DB.instUnit	<symbolic access>
control	typeLSIQ_UnitControl	HMI_Connection	PLC	SIQ_Mixer01_DB.instUnit.control	<symbolic access>
status	typeLSIQ_UnitStatus	HMI_Connection	PLC	SIQ_Mixer01_DB.instUnit.status	<symbolic access>

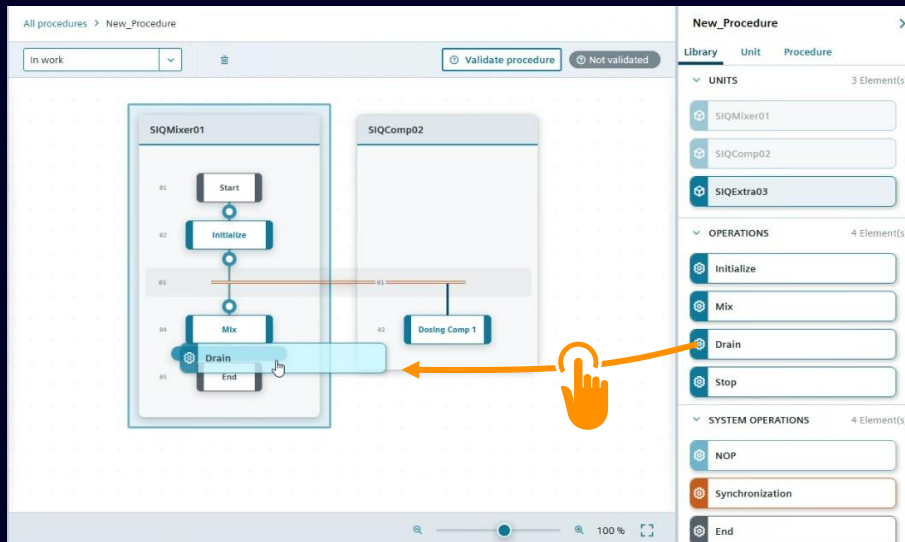
Name	Display name	Parameter ID	Data type	Unit of measurement	Low limit	High limit
statLevel	Level	1	DWord	I	0	10000
statTemperature		2	Real		0	100
statPressure		3	Real		0	100

EOP name	Display name	EOP ID
Fill	Fill	11
Mix	Mix	12
Drain	Drain	13
Stop	Stop	14

Plant Hierarchy objects

WinCC Unified V21 – WinCC Unified SIQENCE

Configuration in Runtime – Create Procedure and Recipe



Recipe Management

- Create Procedure by drag & drop of Units and their Operations
- Coordinate units via synchronizations

The screenshot displays the 'Recipe management' interface. On the left, a tree view shows 'All recipes' and 'New_Recipe'. The main area shows a table of process parameter setpoints. The table has columns for Name, Unit, Setpoint, Unit, Min. value, and Max. value. The table contains the following data:

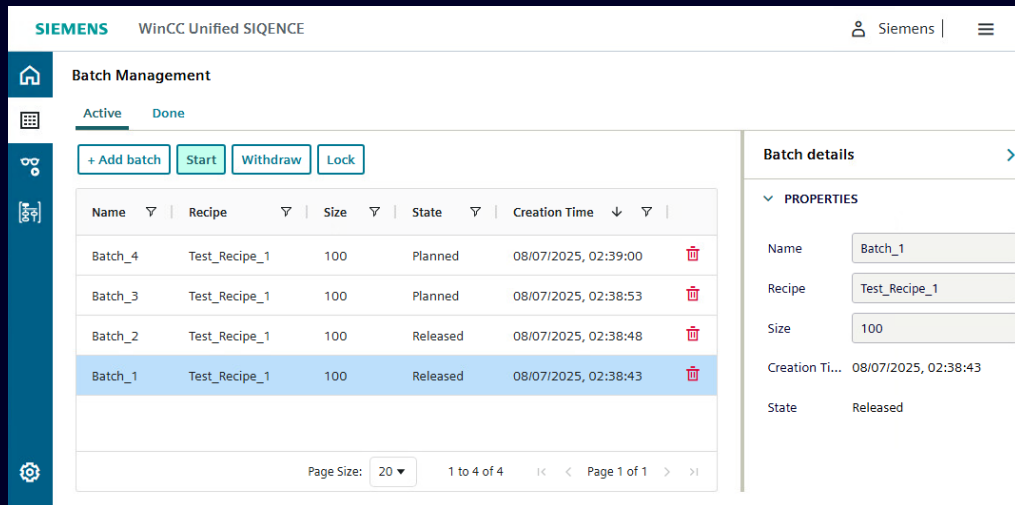
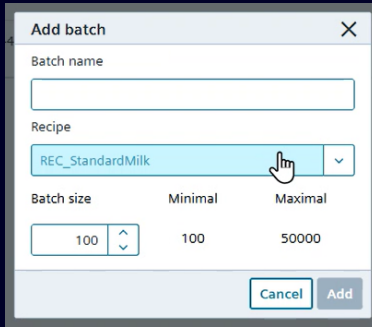
Name	Unit	Setpoint	Unit	Min. value	Max. value
AmountCmp1	g	0	g	0	5000
AmountCmp2	g	0	g	0	5000
AmountEx1	g	0	g	0	5000
AmountEx2	g	0	g	0	5000
Level	mm	0	mm	0	12000
Pressure	Bar	0.00	Bar	0	1000
Temperature	°C	0.00	°C	0	200

On the right, the 'Details of New_Recipe' window is shown. It includes a 'Recipe attributes' section with 'Number' (15) and 'Name' (New_Recipe). The 'State' is set to 'In work'. The 'ASSIGNED PROCEDURE' section shows 'Procedure name' (New_Procedure) and 'Procedure state' (In work). The 'NOMINAL BATCH SIZES' section shows 'For process parameters' (100).

- Define setpoints for Process parameters that will be used for this specific recipe procedure
- Substitute specific setpoints of operation parameters with process parameters (Procedure view)

WinCC Unified V21 – WinCC Unified SIQENCE

Production – Create Batch and execute



Batch Management

Active Done

+ Add batch Start Withdraw Lock

Name	Recipe	Size	State	Creation Time	
Batch_4	Test_Recipe_1	100	Planned	08/07/2025, 02:39:00	
Batch_3	Test_Recipe_1	100	Planned	08/07/2025, 02:38:53	
Batch_2	Test_Recipe_1	100	Released	08/07/2025, 02:38:48	
Batch_1	Test_Recipe_1	100	Released	08/07/2025, 02:38:43	

Page Size: 20 1 to 4 of 4 < > Page 1 of 1 > >

Batch details

PROPERTIES

Name: Batch_1

Recipe: Test_Recipe_1

Size: 100

Creation Ti... 08/07/2025, 02:38:43

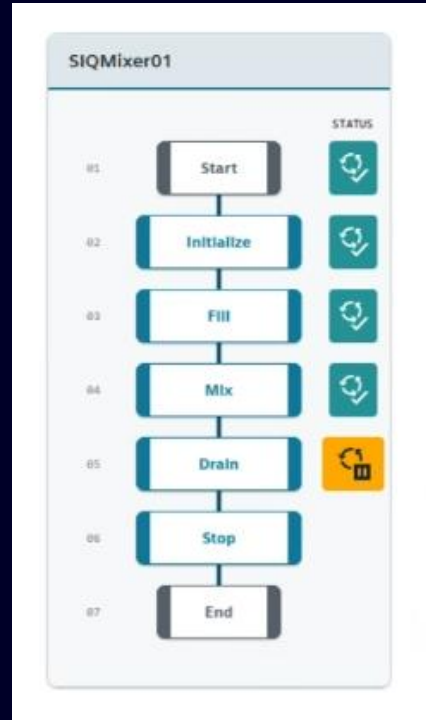
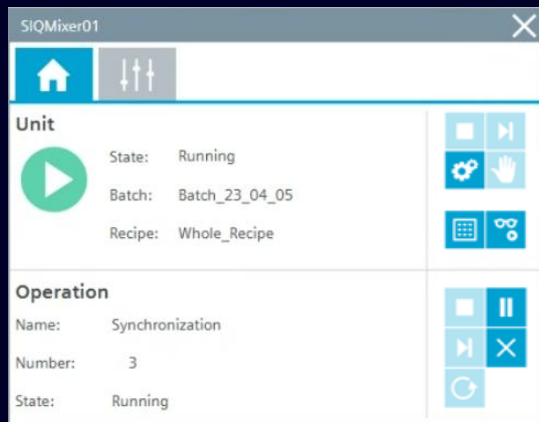
State: Released

Batch Management

- Create batches by selecting the recipe to be produced
 - Define the product quantity for the batch (scaling of parameters will happen if required)
-
- Overview of all created batches
 - Start the batch manually by “Releasing” and “Starting” it for production
 - Monitor current overall state of batches

WinCC Unified V21 – WinCC Unified SIQENCE

Production – Monitor and operate Batches



Unit symbol and Unit faceplate

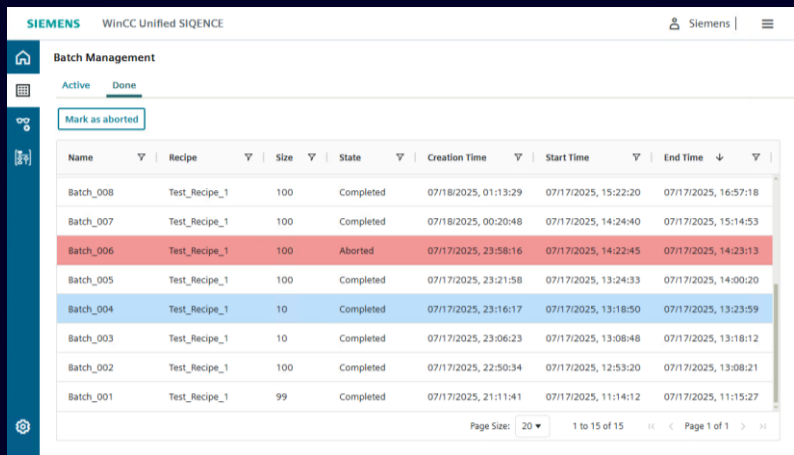
- Small visual object reflecting most important Unit attributes and states
- Visualization of unit and current batch information, including recipe and parameters
- Command buttons based on ISA-88 to operate the unit and the current procedure
- Adjust process parameter setpoints for current operation

Batch monitoring

- Easy to follow representation of executed, current and future operations

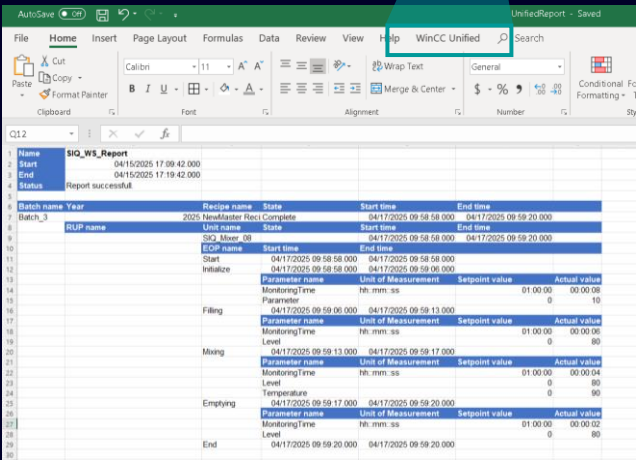
WinCC Unified V21 – WinCC Unified SIQENCE

Analyzing – Batch History and Report



The screenshot shows the WinCC Unified SIQENCE Batch Management interface. It features a sidebar with navigation icons and a main table listing batch data. The table has columns for Name, Recipe, Size, State, Creation Time, Start Time, and End Time. A 'Mark as aborted' button is visible above the table. The table lists several batches, with 'Batch_006' highlighted in red, indicating it is 'Aborted'.

Name	Recipe	Size	State	Creation Time	Start Time	End Time
Batch_008	Test_Recipe_1	100	Completed	07/18/2025, 01:13:29	07/17/2025, 15:22:20	07/17/2025, 16:57:18
Batch_007	Test_Recipe_1	100	Completed	07/18/2025, 00:20:48	07/17/2025, 14:24:40	07/17/2025, 15:14:53
Batch_006	Test_Recipe_1	100	Aborted	07/17/2025, 23:58:16	07/17/2025, 14:22:45	07/17/2025, 14:23:13
Batch_005	Test_Recipe_1	100	Completed	07/17/2025, 23:21:58	07/17/2025, 13:24:33	07/17/2025, 14:00:20
Batch_004	Test_Recipe_1	10	Completed	07/17/2025, 23:16:17	07/17/2025, 13:18:50	07/17/2025, 13:23:59
Batch_003	Test_Recipe_1	10	Completed	07/17/2025, 23:06:23	07/17/2025, 13:08:48	07/17/2025, 13:18:12
Batch_002	Test_Recipe_1	100	Completed	07/17/2025, 22:50:34	07/17/2025, 12:53:20	07/17/2025, 13:08:21
Batch_001	Test_Recipe_1	99	Completed	07/17/2025, 21:11:41	07/17/2025, 11:14:12	07/17/2025, 11:15:27



The screenshot shows an Excel report template for WinCC Unified SIQENCE. The report is titled 'SIQ_WS_Report' and contains detailed batch data for 'Batch_003'. The data is organized into sections for 'Batch', 'Recipe', 'Parameters', and 'Monitoring'. The 'Monitoring' section includes columns for 'Parameter name', 'Unit of Measurement', 'Setpoint value', and 'Actual value'. The report shows various parameters being monitored during the batch process, such as 'Level' and 'Temperature'.

Batch name	Year	Recipe name	State	Start time	End time
Batch_003	2025	Test_Recipe_1	Completed	04/17/2025 09:58:00	04/17/2025 09:59:20
Parameters					
Parameter name	Unit of Measurement	Setpoint value	Actual value		
Level	mm	0	0		
Temperature	°C	80	80		
Monitoring					
Parameter name	Unit of Measurement	Setpoint value	Actual value		
Level	mm	0	0		
Temperature	°C	80	80		

Batch History

- Table with a list of completed and aborted batches, with up to 1000 entries

Batch Reporting

- Standard WinCC Unified Reporting is extended with batch data (e.g., start/end times, operations, recipe, setpoints and actual values, ...)
- Excel report template ready to use with all batch details for manual triggering reports after batch completion
- Can be complemented with standard WinCC Unified information, e.g., tags and alarms

SIMATIC Control Function Library

Introduction & Overview



Chemicals



Pharma



F&B



Batteries



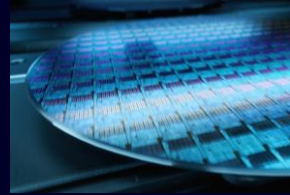
Hydrogen



Marine



W&WW



Semiconductor

Standardization for Plug & Produce in Process & Hybrid industries



1



OEMs-Enablement:
Completion of our portfolio to enable the delivery of process equipment

2



Plant Operators & System Integrators:
completion of our SCADA Portfolio to orchestrate modular plants

SIMATIC Control Function Library Overview

Unified
Basic



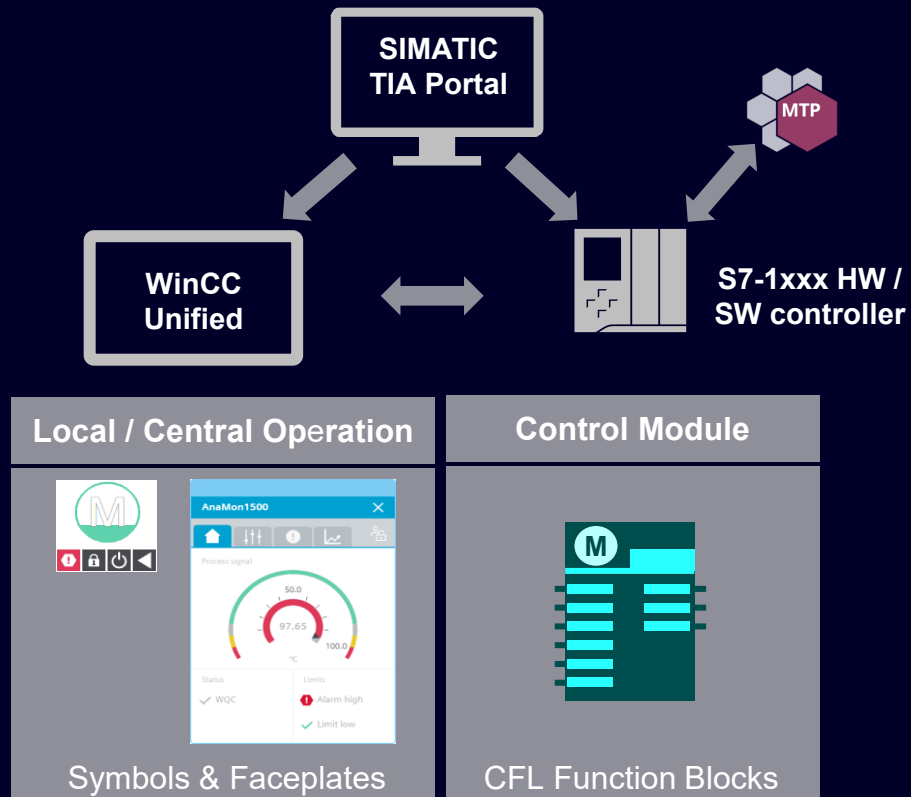
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Standardized module engineering with a modular and memory optimized library, offering:

- TIA Portal blocks – Modular and memory optimized library
- Interfaces based on PI/NAMUR/ZVEI MTP Specification part 3 / 4: Ready to use with MTP on S7-15xx and tested with WinCC Unified.
- Optimized footprint & performance for S7-1xxx HW / SW controller & WinCC Unified.
- Supports virtual commissioning based on PLCSIM Advanced and SIMIT
- HMI Design for the faceplates aligned to WinCC Unified Look & Feel (based on template suite)
- Corporate Design via SIMATIC WinCC Unified Corporate Designer / TIA Portal
- User management a crucial part of the library **New**
- Industry-specific blocks like Aggr8, TimeSwitch, HVAC, ...
- New Application Example for W&WW, H2, Pharma, ... **New**

SIMATIC Control Function Library

Hardware / Software

Unified
Basic



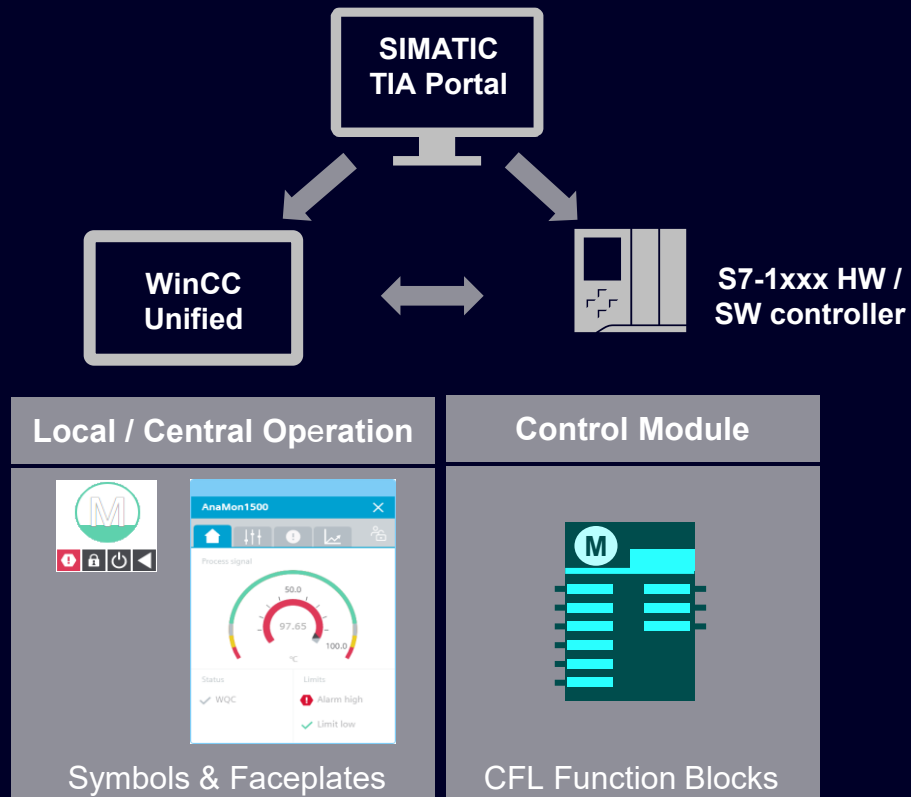
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Hardware & Firmware requirements

- SIMATIC S7-1200 (firmware V4.3 and higher)
- SIMATIC S7-1200 G2 **New**
- SIMATIC S7-1500 (firmware V2.8 and higher)
- SIMATIC S7-1500V (firmware V2.0 and higher)
- SIMATIC S7 Open Controller (firmware V2.5 and higher)
- SIMATIC ET200 SP CPU (firmware V2.8 and higher)
- SIMATIC S7-1500 Software Controller (firmware V2.5 and higher)
- Simulation with SIMATIC S7-PLCSIM (V20 and higher)
- Simulation with SIMATIC S7-PLCSIM Advanced (V7.0 and higher)

Software requirements

- SIMATIC STEP 7 Basic/Professional V20 or higher
- WinCC Unified V20 or higher
- WinCC Unified PC Runtime V20

Additional software:

- SiVarc V20

SIMATIC Control Function Library Scope

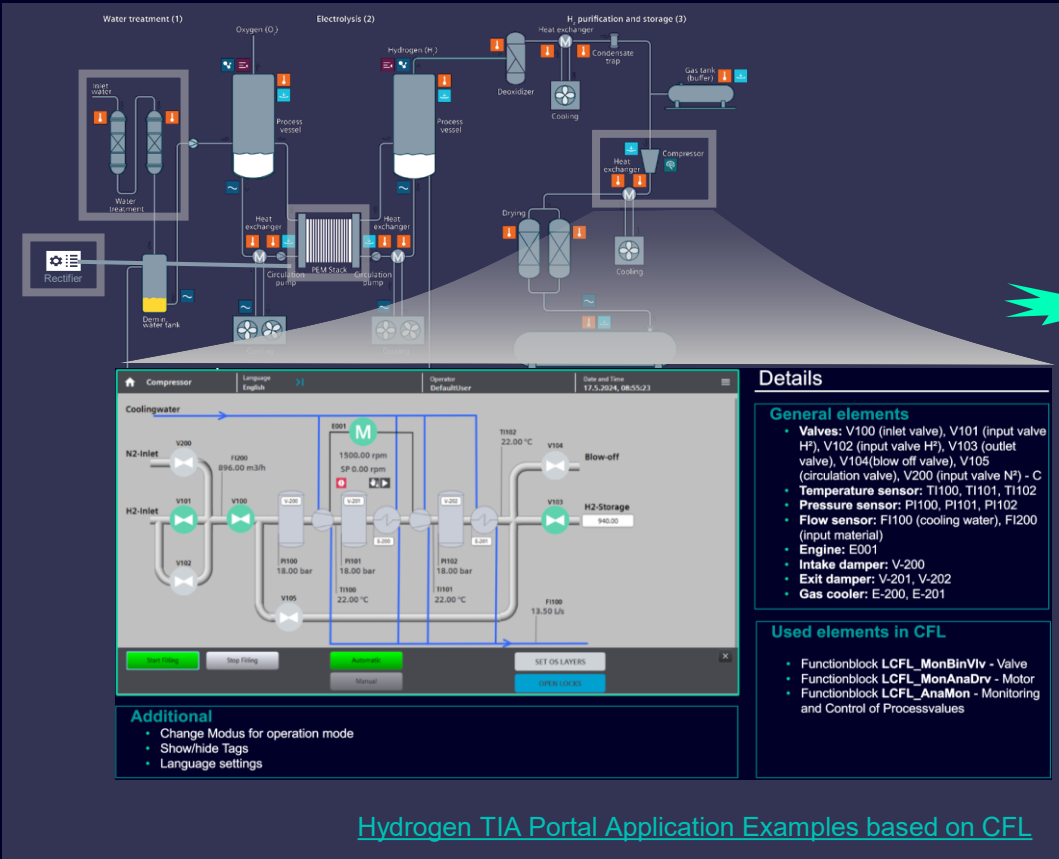
Unified Basic

Unified Comfort

Unified Edge RT

Unified PC RT

OEM
Process Equipment Assembly (PEA)



CFL - Industry-specific blocks

Optimized footprint & performance for S7-1xxx HW / SW controller & WinCC Unified

Drives

- MonBinDrv
- MonAnaDrv
- MonBinVlv
- MonAnaVlv
- MonTriPosVlv

FP

FP

FP

FP

FP

Monitor

- AnaView / AnaMon
- BinView / BinMon
- DIntView / DIntMon
- StringView

FP

FP

FP

FP

Operate

- AnaManInt
- BinManInt
- DIntManInt

FP

FP

FP

Counter

- AnaCounter
- DIntCounter

FP

FP

Interlock

- LockView4
- LockView8

FP

FP

Channel Blocks

- LCFL_ChAnaIn
- LCFL_ChAnaOut
- LCFL_ChDigIn
- LCFL_ChDigOut

FP

FP

FP

FP

Control

- PIDCtrl
- Aggr8
- TimeSwitch8
- SetCrv
- Polygon

FP

FP

FP

FP

FP

HVAC

- Enthalpy
- Absolute Humidity
- Relative Humidity
- Relative Humidity (Td)
- Dew Point Temperature
- Wet Bulb Temperature

FP

FP

FP

FP

FP

FP

MTP Service Framework

- Service
- Procedure
- Config Parameter
- Procedure Parameter

FP

FP

FP

FP

SIMATIC Control Function Library

Visualization

Unified Basic

Unified Comfort

Unified Edge RT

Unified PC RT

BinMon (PLC 1500)

AnaMon (PLC 1500)

MonAnaDrv (PLC 1500)

PIDCtrl (PLC 1500)

- LCFL_MonBinDrvSymbol
- LCFL_MonBinDrvSymbolCompact



Description

- Symbol faceplates are available in 2 versions. Faceplates with the ending "Compact" take less space in the WinCC Unified screen.
- The "Compact" Symbols should be used for SCADA (P&IDs like visualization) and MTP Use Cases. (optimize for the MTP)

- Implementation based on the Engineering guideline for WinCC Unified [Link](#)



HMI Template Suite
Quick and easy setup of your local visualization

MTP as driver for flexible production and package unit integration

Core concepts: Standardized interfaces and application-level description

Module Type Package (MTP)

MTP is a standardized, non-proprietary, application-level description of autonomous equipment assemblies



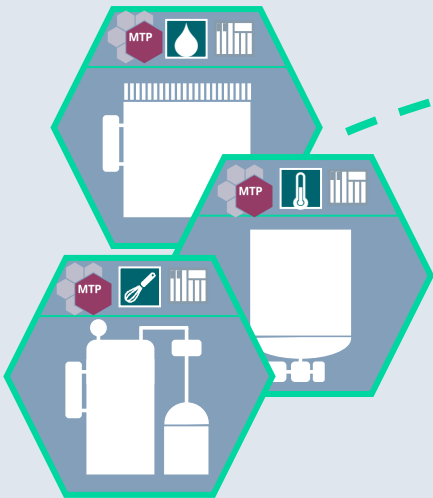
hosted by:



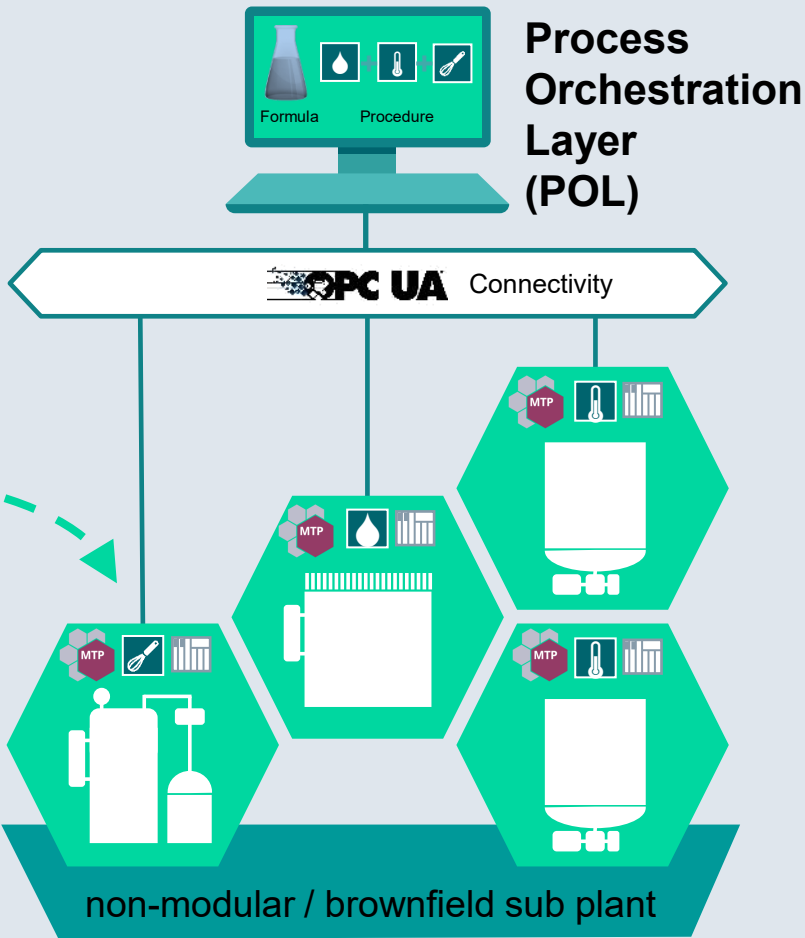
Based on:



Flexible, modular plants are built out of intelligent, autonomous **Process Equipment Assemblies (PEAs)** with **standardized¹⁾ interfaces** described in **Module Type Package (MTP)**

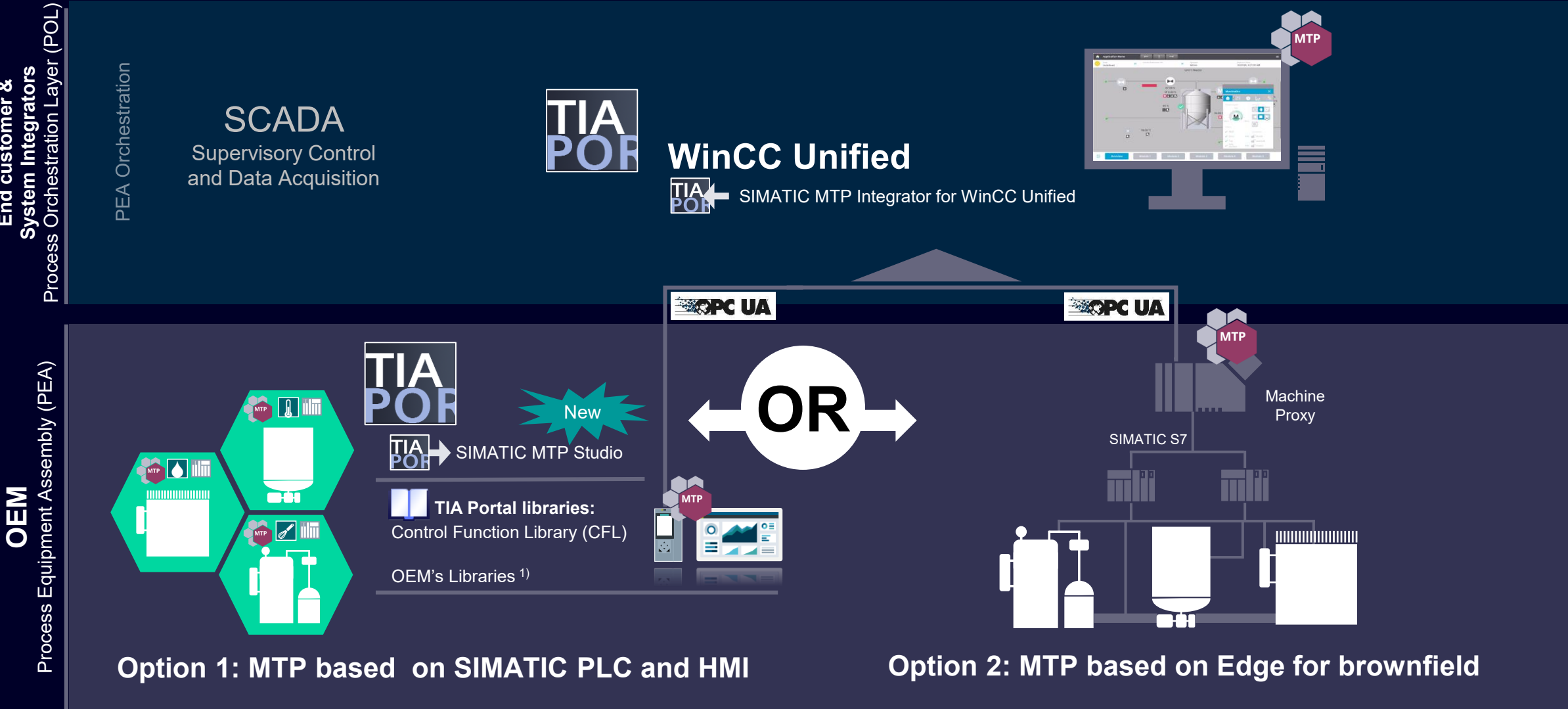


Process Equipment Assemblies (PEAs)



¹⁾ MTP standard hosted by PI

Modular Automation Portfolio



¹⁾ Coming soon

Process Orchestration Layer

SIMATIC MTP Integrator for WinCC Unified - Scope

Unified Basic

✗

Unified Comfort

✓

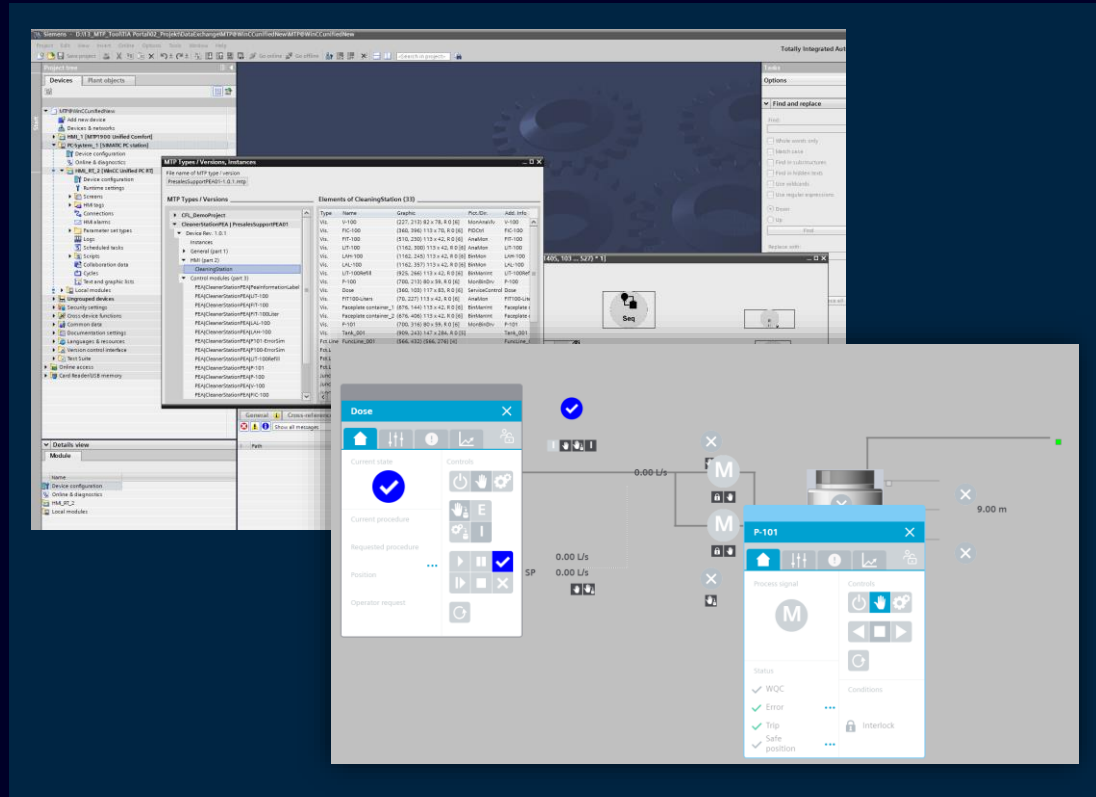
Unified Edge RT

✗

Unified PC RT

✓

End customer & System Integrators
Process Orchestration Layer (POL)



- MTP Import in WinCC Unified Engineering²⁾
- Type management incl. full versioning for your MTP files
- PEA instance management
- PEA Information with Runtime Validation of the Modules (PEA Inventory) **New**
- Static and dynamic HMI Integration (Part 2 + 3)
- Monitoring and control via Faceplate (block icons and detailed views) Orchestration of plantwide HMI (part 3 / 4)
- MTP Multilanguage Support
- User management a crucial part of the library **New**
- Native OPC UA communication with configurable levels of security mechanisms (part 5/5.1) **New**
- POL-based alarms (part 6)

¹⁾ Source: ZVEI, 2022

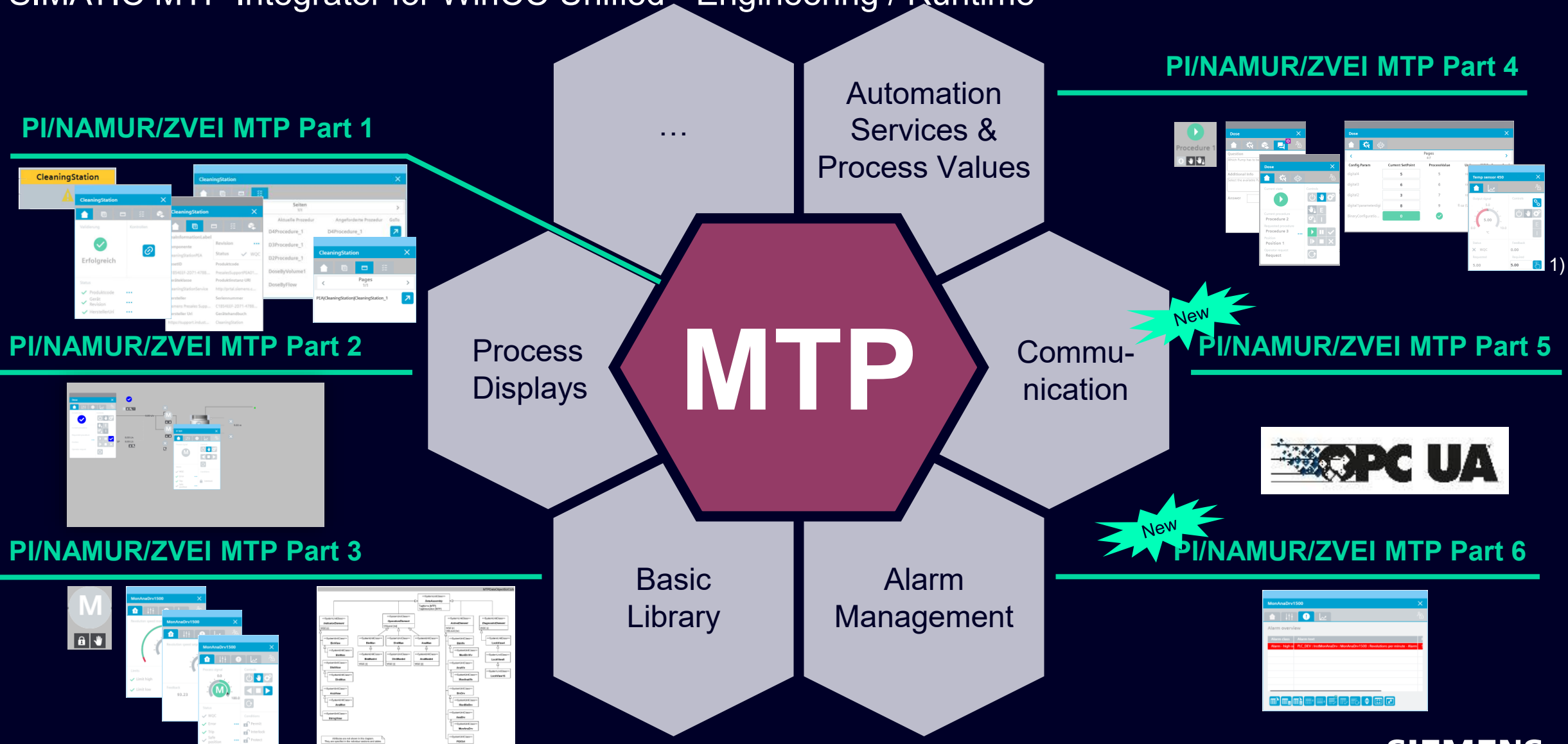
²⁾ Implementation compliant to the noted parts of the MTP Specification (PI/NAMUR/ZVEI)

Latest Version on :  [Simatic MTP SIOS Landing Page](#)

 [Module Type Package \(MTP\)](#)

Process Orchestration Layer

SIMATIC MTP Integrator for WinCC Unified - Engineering / Runtime



Process Orchestration Layer

SIMATIC MTP Integrator for WinCC Unified – Part 1

Unified Basic

✗

Unified Comfort

✓

Unified Edge RT

✗

Unified PC RT

✓

PEA Information

CleaningStation

CleaningStation

Validierung

Kontrollen

✓

Erfolgreich

Status

✓

Produktcode

...

✓

Gerät

...

✓

Revision

...

✓

HerstellerUri

...

CleaningStation1

Seiten

1/1

PEA|CleaningStation1|CleaningStation_1

➔

CleaningStation1

Seiten

1/1

Name	Zustand	Aktuelle Prozedur	Angeforderte Prozedur	GoTo
Dose_German	✓	Coke	Coke	➔

CleaningStation1

Seiten

1/2

Name	Aktuell	Einheit	WQC	GoTo
PVIN_B	10,00	L	✓	➔
PVIN_A	0,00	L	✓	➔
PVDIGI_B	6	K	✓	➔
PVDIGI_A	0	K	✓	➔
PVIN_BIN_C	✗		✓	➔

CleaningStation1

Seiten

1/2

Name	Aktuell	Einheit	WQC	GoTo
PVIN_B	10,00	L	✓	➔
PVIN_A	0,00	L	✓	➔
PVDIGI_B	6	K	✓	➔
PVDIGI_A	0	K	✓	➔
PVIN_BIN_C	✗		✓	➔

Description

Sheet 1: General Concept and interfaces PI/NAMUR/ZVEI MTP V1.1.0 / V2.0.0:

- Manifest.aml file
 - Class model
 - OPC UA communication
- PEA Information with Runtime Validation of the Modules (PEA Inventory)
- Multilingual Support

CleaningStation

Alarmübersicht

Alarm class	Alarm text	Raise time	Status text
Alarm - high	PEA Reactor AnaView : Process value - Alarm	7/31/2025 3:04	Incoming
Warning - high	PEA Reactor AnaView : Process value - Warni	7/31/2025 3:04	Incoming
Tolerance - high	PEA Reactor AnaView : Process value - Tolera	7/31/2025 3:04	Incoming
Alarm - high	PEA Reactor AnaMon : Process value - Alarm	7/31/2025 3:04	Incoming
Tolerance - high	PEA Reactor AnaMon : Process value - Tolera	7/31/2025 3:04	Incoming
Warning - high	PEA Reactor AnaMon : Process value - Warni	7/31/2025 3:04	Incoming
Alarm - high	PEA Reactor DintMon : Process value - Alarm	7/31/2025 3:04	Incoming

Class in MTP	WinCC Unified Object
Dynamic visual object	Faceplate

Process Orchestration Layer

SIMATIC MTP Integrator for WinCC Unified – Part 4

Unified Basic

✗

Unified Comfort

✓

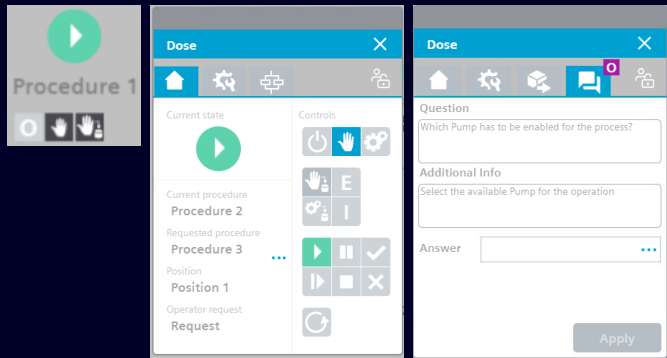
Unified Edge RT

✗

Unified PC RT

✓

Service / Procedure Control



Description

Sheet 4: Modeling of modular services
PI/NAMUR/ZVEI MTP V1.1.0 / V2.0.0:
Service Control (Service interactions, Position texts (optional))

- Procedures
- Configuration / Procedure parameters
- Report values (optional)
- Process values (optional)

FP

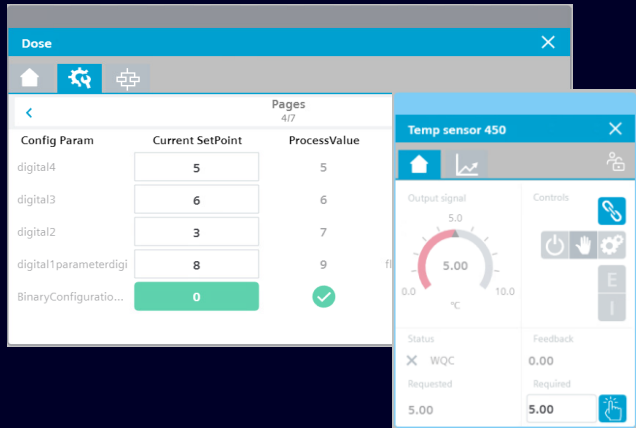
FP

FP

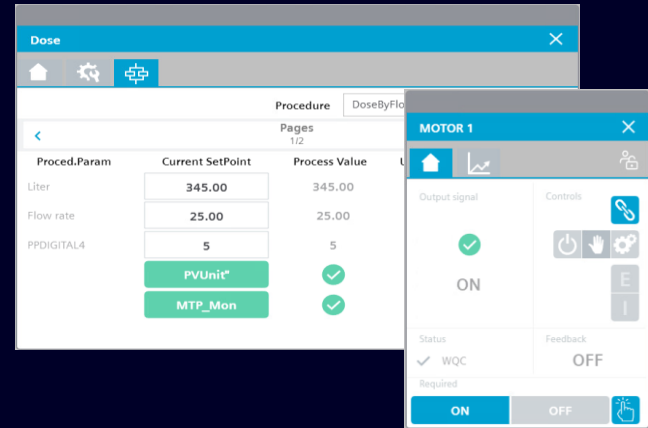
FP

FP

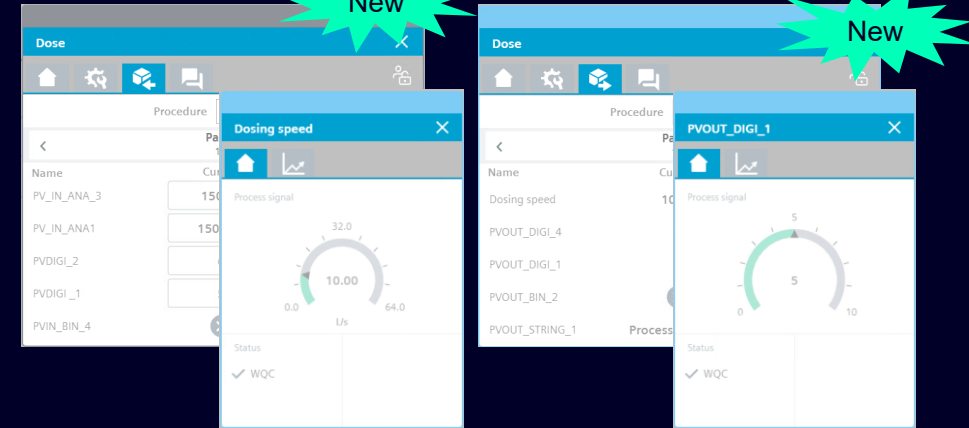
Configuration Parameter



Procedure Parameter



Process Values



Class in MTP	WinCC Unified Object
Dynamic visual object	Faceplate

Process Orchestration Layer

SIMATIC MTP Integrator for WinCC Unified – Visualization

Unified Basic

✗

Unified Comfort

✓

Unified Edge RT

✗

Unified PC RT

✓

✓

ⓘ

ⓘ

✓

ⓘ

false

9999.99 m/s

ⓘ

9999.9 m/s

M

9999.99 m/s

SP 9999.99 m/s

ⓘ ⓘ ⓘ ⓘ ⓘ ⓘ

ⓘ ⓘ ⓘ ⓘ ⓘ ⓘ

M

9999.9 m/s

9999.99 %

SP 9999.99 %

ⓘ ⓘ ⓘ ⓘ ⓘ ⓘ

ⓘ ⓘ ⓘ ⓘ ⓘ ⓘ

9999.9 %

9999.9 %

ⓘ ⓘ

Description

- In addition to the classic symbols, new "compact" symbols are available, which take up less space on the screen. Both symbols offer the same functionality and are integrated in the MTP Integrator Library.
- Compact symbols are used as the default configuration. The symbol type can be customized using the MTP Integrator Viewer before instance creation. When migrating from previous versions, the classic symbols are retained to preserve existing configurations.
- The “Compact” Symbols should be used for SCADA (P&IDs like visualization) and MTP Use Cases. (optimize for the MTP)
- Implementation based on the Engineering guideline for WinCC Unified [Link](#)

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Quick and easy setup of your local visualization

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Page 107 Unrestricted | © Siemens 2025 | TIA Portal V21 Technical Slides

SIEMENS

TIA Portal V21 - Table of contents

SIMATIC WinCC Unified – Innovations



- Unified Screen Editor (Next Gen.)
- Modernization: All essential features of the predecessor
- Configure Limits & Thresholds
- Electronic record for local user management changes & failed login
- PaCo support in Faceplate
- Reporting in ES
- New screen object - Alarm Indicator
- Sm@rtServer for UBP
- Configure printer without the printer hardware (UCP)
- Real-time online data transfer via MQTT (for PC RT)
- Parallel display of different process screens on multiple monitors (for PC RT)
- WinCC Unified Data Hub – Broad market release
- "Start Program" function for applications with user interface
- Save Licensing Costs by only "pay for what you use"
- Unified for Industrial Edge, WinCC Unified SIQENCE

SIMATIC WinCC RT Prof. – Innovations



- WebUX, RestAPI and communication enhancements
- Cross object interaction

SIMATIC STEP 7 – Innovations



- Continuous Integration / SIMATIC Source Documents
- NVT – feature round-up
- Keep DB online values on structural changes

SIMATIC Motion Control – Innovations



- New IPC and Open Controller hardware for T/TF variants
- Motion Control Multicore support
- Cam and superimposed motion improvements
- Cross-PLC synchronous operation using IRT I-Device
- Support of external encoder at PLC and S120 drive
- New diagnostic functions
- Kinematics and Motion Interpreter improvements

SINAMICS Startdrive & DCC – Innovations



- Support of SINAMICS S220 multi axes servo system
- Support of connection to S7-1500 R/H
- Parameter compare extension
- New download mode

TIA Cloud Services



- TIA Portal Cloud & TIA Portal Cloud Connector
- TIA Simulation Cloud
- TIA Project-Server Cloud

SIMATIC Hardware



- Protection of PLC configuration data on memory card
- Cross-PLC synchronous operation using IRT I-Device
- Configuration in RUN for S7-1500 R/H PLCs – 1st Step
- System Web Pages
- ...

System functions



- Migrating to and upgrading TIA Portal projects
- Enhanced TIA Portal Software Integrity Protection
- PROFINET Security Class 1 enhancements
- TIA Portal Documentation
- TIA Portal Openness
- TIA Portal Add-Ins
- Version Control Interface (VCI)
- CAx: AutomationML & Publication Tools
- TIA Portal Library: Exclusive Multiuser Mode
- TIA Portal Usability: Tracking of modifications, Info file

SIMATIC AX - Automation Xpansion



- Support of further hardware devices e.g. ET200SP CPU
- Extending the amount of available system libraries
- New debugging features: e.g. instance selection
- Publicly available documentation

TIA Portal Options



- SIMATIC STEP 7 Safety
- SIMATIC Safe Kinematics
- TIA Portal Multiuser
- SIMATIC Robot Library
- OPC UA
- SIMATIC S7-PLCSIM / S7-PLCSIM Advanced
- SIMATIC Target for Simulink
- TIA Portal Test Suite
- SIMATIC Visualization Architect (SiVArc)
- SIMATIC Modular Automation (MTP)
- Central User Management (UMC)
- Modular Application Creator
- SIMATIC ProDiag / SysDiag
- TIA Portal Teamcenter Gateway
- TIA Package Manager
- TIA Portal Safety Validation Assistant

WinCC Innovations V21

Highlights WinCC RT Professional

WebUX

- Support of User Admin Control in WebUX
- Support for the Usage of custom specific font in WebUX
- Picture Scaling in WebUX

REST API

Support for alarms, data logs and compressed logs tags

Communication

Support LOGO! communication driver

Cross object interaction

Drag and drop of tags across Runtime objects

TIA Portal V21 - Table of contents

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- TIA Portal Teamcenter Gateway
- TIA Package Manager
- TIA Portal Safety Validation Assistant

STEP 7 – Innovations

SIMATIC Source Documents - The Bridge to Modern Version Control

TIA Portal Projects elements Library elements

Export / Import
engineering elements
from TIA Portal to file
system and back
including library types

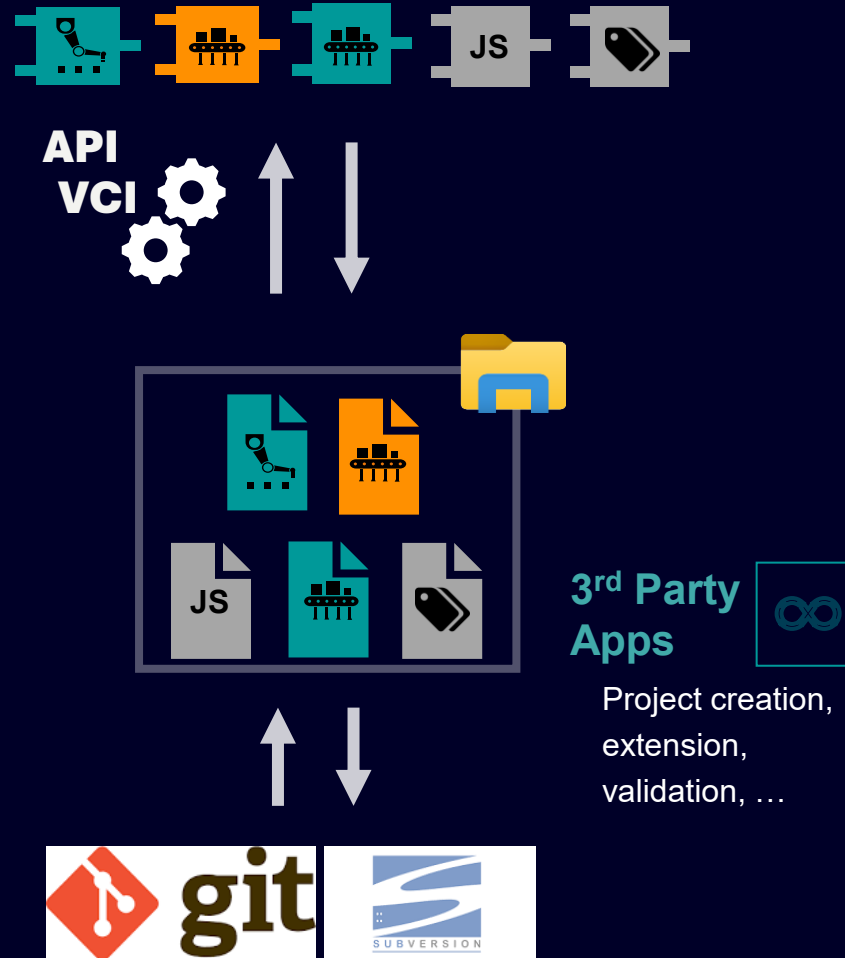


Filesystem

Exported objects
in file system

Version Control System (VCS)

Synchronize changes
in TIA Portal to file system /
Compare differences



SIMATIC Source Documents offers a simple and efficient way to export and import TIA Portal project data and enables processing in external systems.

Benefits

- **Source code only**
 - text-based without internal meta information
- **Human-readable**
 - representation is comprehensible and easily modifiable
- **Version-independent**
 - Enables compatibility across various TIA Portal versions
- **Easy change tracking**
 - via external compare tools and code repositories

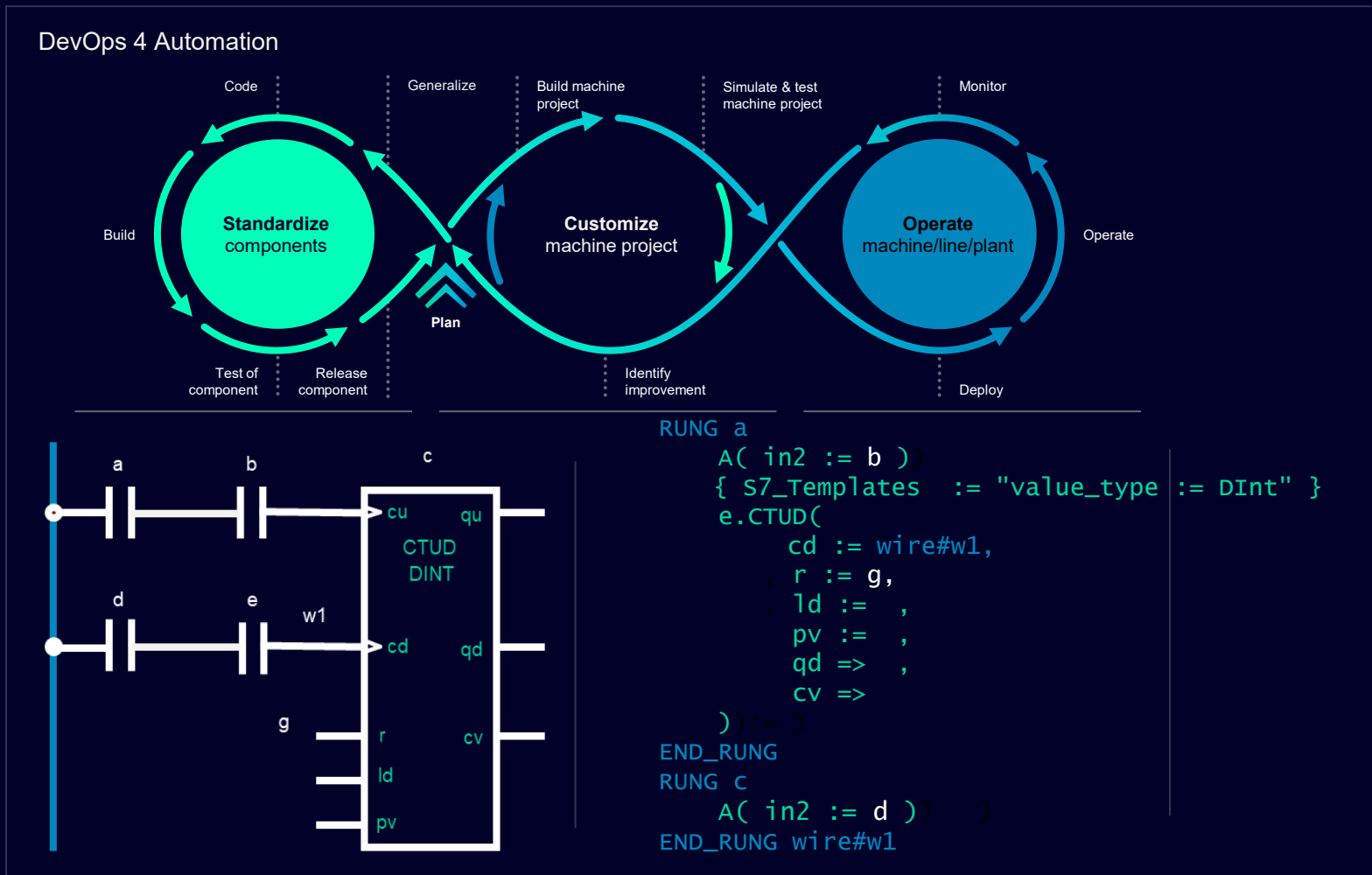
Supported objects

- LAD & F-LAD and DB & UDT
- FBD & F-FBD and SCL
- Global Scripts and Script types
- HMI Tags, Text lists via API



STEP 7 – Innovations

SIMATIC Source Documents - The Bridge to Modern Version Control



Features

- **Human readable** representation of graphical code
- Source code only - no internal meta information
- Version independent syntax
- Including multilingual comments
- Works for (F-) LAD, (F-) FBD and SCL & mixed language blocks
- Support for DBs & UDTs
- Support for project libraries
- Accessible via Openness and VCI

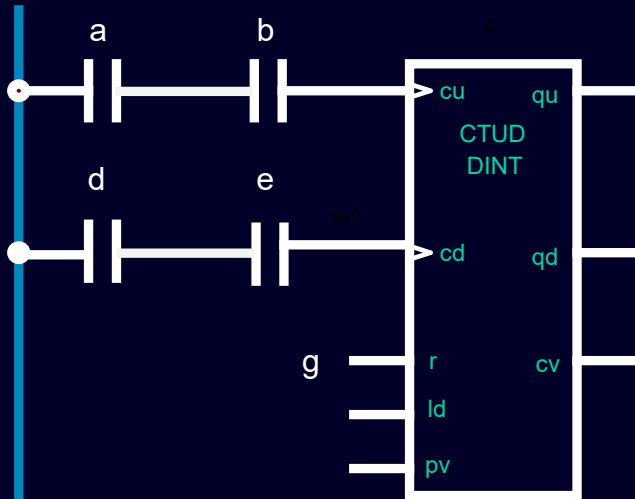


Benefits

- Human-readable representation ensures **easy use with external tools** (e.g., Beyond Compare) and code generators
- Version-independent syntax **simplifies** compatibility when **sharing source code across various TIA Portal versions**
- Easy **tracking of code changes** in external code repositories (e.g., GIT, SVN)

STEP 7 – Innovations

SIMATIC Source Documents - New export format for (F-) LAD



```
RUNG wire#powerrail
  Contact( a )
  Contact( b )
  { S7_Templates := "value_type := DInt" }
  c.Ctud(
    cd := wire#w1,
    r := g,
    ld := ,
    pv := ,
    qd => ,
    cv => )
END_RUNG
RUNG wire#powerrail
  Contact( d )
  Contact( e )
END_RUNG wire#w1
```

Features

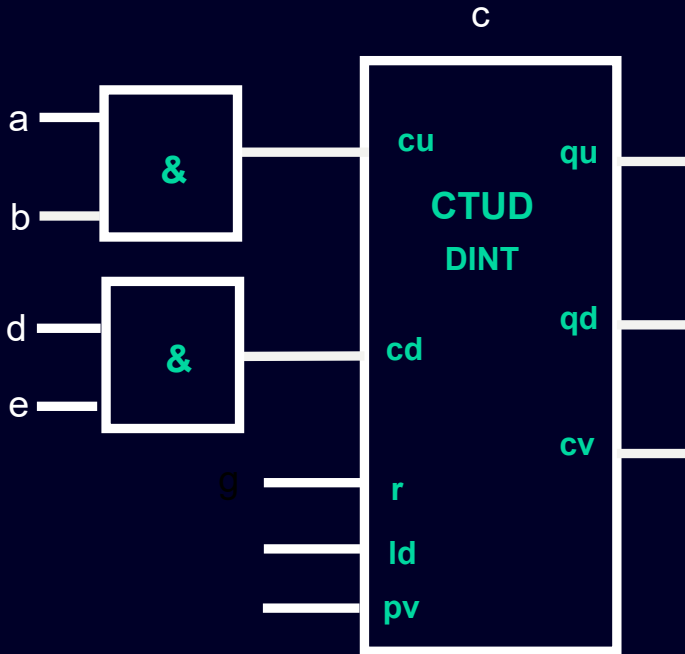
- **Source code only** - no internal meta information
- **Version independent syntax** - Including multilingual comments

Benefits

- **Human-readable** - representation ensures easy use with external tools (e.g. GIT, Beyond Compare, ...) and code generators
- **Version-independent** syntax simplifies compatibility when sharing source code across various TIA Portal versions
- **Easy tracking** of safety block changes in external code repositories

STEP 7 – Innovations

SIMATIC Source Documents - New export format for (F-) FBD



```
RUNG a
  A ( in2 := b )
  { S7_Templates := "value_type := DInt" }
  c.Ctud(
    cd := wire#w1,
    r := g,
    ld := ,
    pv := ,
    qd => ,
    cv => )
END_RUNG
RUNG d
  A (in2 := e )
END_RUNG wire#w1
```

Features

- **Source code only** - no internal meta information
- **Version independent syntax** - Including multilingual comments

Benefits

- **Human-readable** - representation ensures easy use with external tools (e.g. GIT, Beyond Compare, ...) and code generators
- **Version-independent** syntax simplifies compatibility when sharing source code across various TIA Portal versions
- **Easy tracking** of safety block changes in external code repositories

STEP 7 – Innovations

SIMATIC Source Documents - New export format for mixed blocks (LAD & FBD & SCL)

Network 1 - FBD



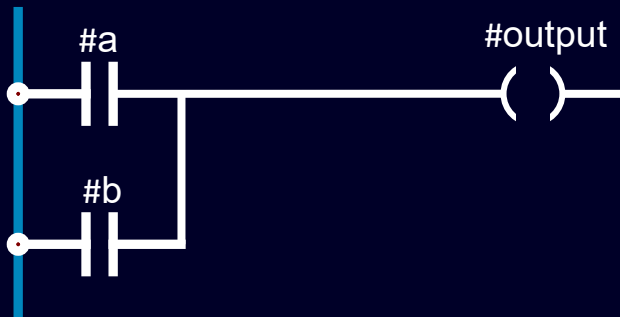
```
{ S7_Language := "FBD" }  
NETWORK  
  RUNG #a  
    O( in2 := #b )  
    Coil(#output)  
  END_RUNG  
END_NETWORK
```

Network 2 - SCL

#output := #a OR #b

```
{ S7_Language := "SCL" }  
NETWORK  
  #output := #a OR #b  
END_NETWORK
```

Network 2 - LAD



```
{ S7_Language := "LAD" }  
NETWORK  
  RUNG wire#powerrail  
    Contact(#a)  
    wire#w1  
    Coil(#output)  
  END_RUNG  
...
```


STEP 7 – Innovations

Avoid Data Block reinitialization for structural changes

Load preview

?

Check before loading

Status	!	Target	Message	Action
✓		PLC_1	Ready for loading.	Load 'PLC_1'
✓		Simulated module	The loading will be performed from a simulated PLC.	
✓		Different modules	Differences between configured and target modules (online)	
✓		Data block re-initialization	The data blocks will be re-initialized with their start values.	Keep actual values
✓		Keep actual values	The actual values of unchanged tags are persisted. New or changed tags will be reinitialized with their start values.	
✓		Re-initialize	Due to changes in the DB, all data values, including retentive data, will be initialized with their defined start values during loading. Set the CPU to STOP before loading.	
✓		Software	Download software to device	Consistent download

☐ Do not show dialog again

Refresh

Finish

Load

Cancel

DB100_ProductRecipe_V1

Before

	Name	Data type	Start value	Monitor value
1	Static			
2	Product_ID	Int	100	100
3	BatchSize	Real	50.0	75.0
4	MixingSpeed_RPM	Int	150	200
5	MixingTime_s	Int	300	300
6	<Add new>			

→

DB100_ProductRecipe_V1

After

	Name	Data type	Start value	Monitor value
1	Static			
2	Product_ID	Int	100	100
3	BatchSize	Real	50.0	75.0
4	MixingSpeed_RPM	Int	150	200
5	MixingTime_s	Int	300	300
6	CoolingTime	Time	T# 60s	T# 1M

Optimized update process, minimized manual intervention

Keep actual values

Provides the possibility to retain the actual values when download is performed with any structural changes in data block

Supported

- PLC 1500 FW 4.1
- Adding new elementary and complex types of variables at any position in the first level*
- Optimized Instance and Global data blocks
- This option is also available via Openness

Benefits

- Adding new machine parameters becomes less of a hurdle with no additional effort to retain the state
- Safeguards critical operational data
- Reduced risk of human error by automating retention of actual values (No more data restoring via snapshot)

*Refer user manual for not supported types

STEP 7 – Innovations

Named value data types within Software Units – Augmented functionality

Inc109-NvtModify ▶ PLC_1 [CPU 1518-4 PN/DP] ▶ Watch and force tables ▶ Watch table_1

	Name	...	Display format	Monitor value	Modify value	
1	Unit_1.Data_block_1.Static_1		Symbolic	GREEN	YELLOW	
2	Unit_1.Data_block_1.Static_2		DEC	127	128	

Modify

Operand: Data_block_1.Static_1 Data type: __Unit_1.TrafficLight

Modify value: Format: Symbolic

GREEN	Byte	127
RED	Byte	129
UNDEF	Byte	0
YELLOW	Byte	128

OK Cancel

Details view

Name	Value	Published	Data type	Default value
PowerStopMode			Dint	Emergency...
EmergencyStop	0			
ImmediateStop	1			
StopMaxDynVal	2			
CoastDown	3			

```
TYPE
PowerStopMode : Dint
(
EmergencyStop := 0,
ImmediateStop := 1,
StopMaxDynVal := 2,
CoastDown := 3
);
END_TYPE
```

Speaking names for named values

Since V19 user can create within Software Units data types with named values (NVTs). Now during online actions like monitoring and trace, we display the values such as the defined and meaningful names.

New Features

- Improved online features:
 - Full support for Named value types in **Watch and Force Table** (incl. Modify value)
 - Visibility in **Life List** and Card Reader
 - Opening of Online-only NVTs from project tree*
- Rename functionality for Named value types
- NVTs and Type can be created and accessed via **Openness**
- Details view for NVTs
- NVT comments displayed in tooltips and Interface comments
- And lots of small improvements...

*With a V21 Update

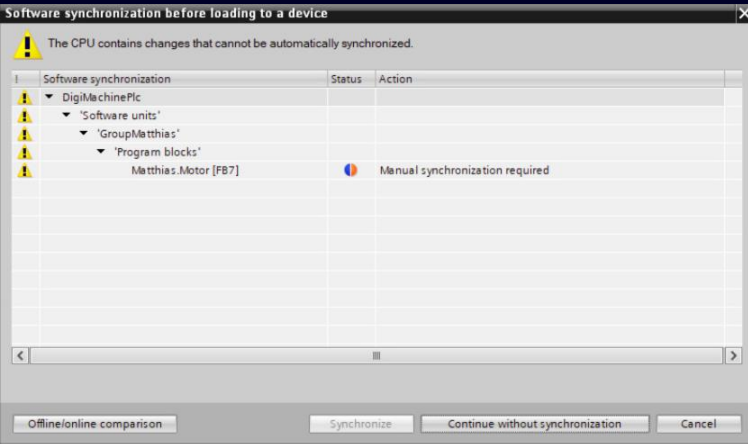
Improved commissioning and maintenance efficiency

STEP 7 – Innovations

General Improvements

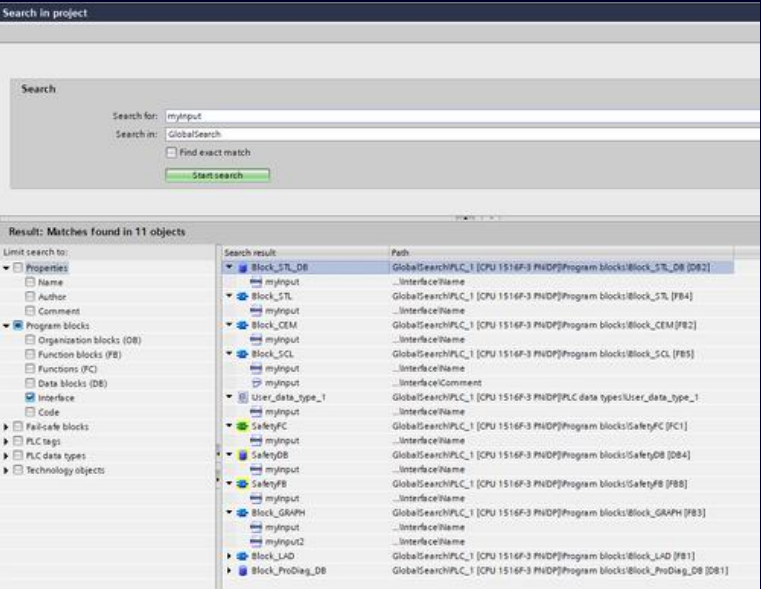
Multiuser improvements

- No PLC synchronization after a Multiuser check-in and refresh from the Project Server anymore



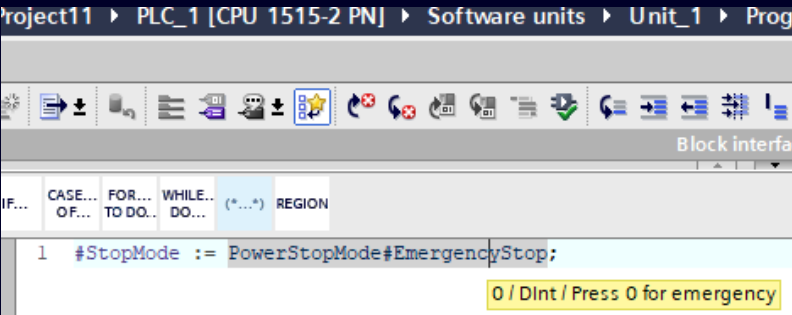
Filter for block interface in global search

- Limit global search for block interface only
- Easier tracking of signals flow across block interfaces



NV Comments as a tooltip

- Comments added before the NVT and NV definitions are displayed as comments in the block interface and as tooltips in the Editor.



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- Cross object interaction

SIMATIC STEP 7 – Innovations



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- NVT – feature round-up
- Keep DB online values on structural changes

SIMATIC Motion Control – Innovations



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- Motion Control Multicore support
- Cam and superimposed motion improvements
- Cross-PLC synchronous operation using IRT I-Device
- Support of external encoder at PLC and S120 drive
- New diagnostic functions
- Kinematics and Motion Interpreter improvements

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- Parameter compare extension
- New download mode

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- TIA Simulation Cloud
- TIA Project-Server Cloud

SIMATIC Hardware



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- Configuration in RUN for S7-1500 R/H PLCs – 1st Step
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- ...

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- TIA Portal Usability: Tracking of modifications, Info file

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- New debugging features: e.g. instance selection
- Publicly available documentation

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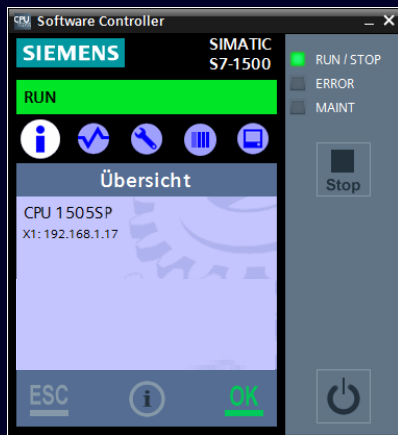
SIMATIC ET 200SP Open Controller 3 (OC3)

Successor of Open Controller 2 (OC2)

With TIA V21
Planned Q2-2026

SIMATIC Software Controller T(F)

for mid-range Motion Control



Software Controller
CPU 1505SP T/TF
(V40.1)

Windows 11
(IoT Enterprise 2024
LTSC)

SIMATIC ET 200SP
(hardware with SSD
slider, IO modules)

- **SIMATIC ET 200SP hardware**
 - Same form factor as OC2
 - Improved hardware and performance
 - Additional IE/PN-RT interface
- **Windows 11**
 - Supporting WinCC Unified (available separately as software packages)
- **Software Controller V40.1:**
 - Code Memory: 4,5 MB (x 1,5)
 - Data Memory: 10 MB (x 1,3)
 - Motion Control Res.: 6.000 (x 2,5)
 - Ext. Motion Control Res.: 300 (x 2,5)

Portfolio enhancement - CPU 1508S T/TF

Software Controller evolution with new hardware

With TIA V21
Planned Q2-2026

SIMATIC Software Controller T(F)

for high-end Motion Control



Software Controller
CPU 1508S T/TF
(V40.1)

SIMATIC CP1625-2
(PCIe card for
PROFINET IO IRT)

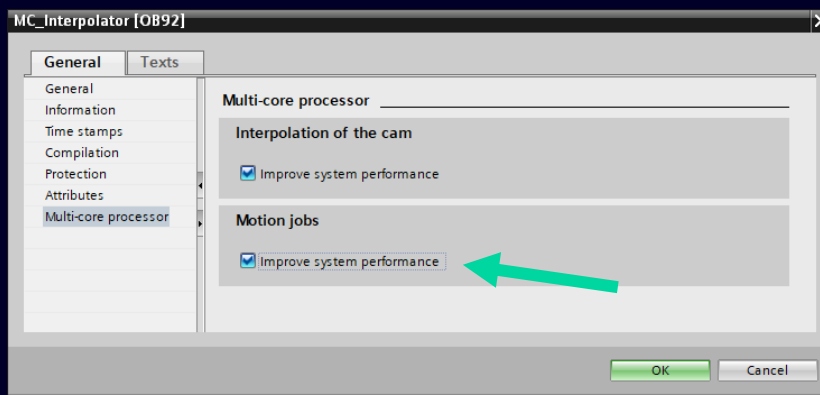
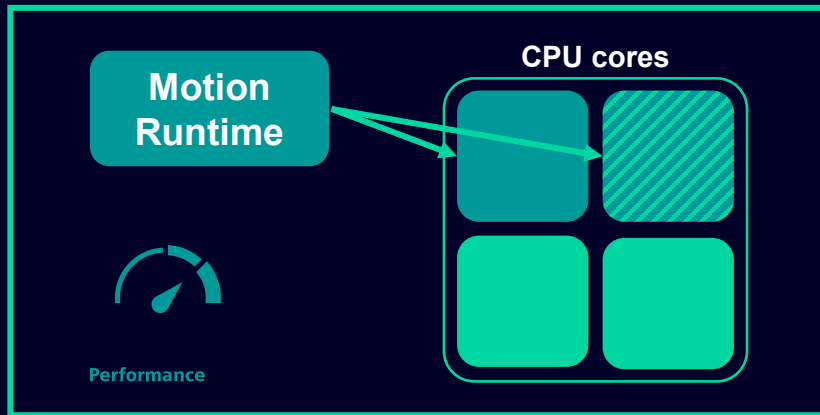
SIMATIC BX-59A
(with Intel core i7
13th generation)

- **IPC BX-59A (i7)**
 - High performance IPC with Intel Raptor Lake CPU
 - Platform designed for high modularity and flexibility
- **CP 1625-2 (PCIe)**
 - PCIe card for PROFINET IO IRT
 - 2 IRT interfaces (4 ports)
 - Increased quantity structure
- **Software Controller V40.1:**
 - Latest S7-1500 firmware (e.g. 64 Bit)
 - Increased number of (Extended) Motion Control resources

Motion Control - Multicore support

Functionality „Improve system performance“

Motion Multicore



The functionality “**Improve system performance**” for motion control offers a possibility to **decrease the calculation time** of the application cycle on **multicore CPUs**

- ➔ Processing of isochronous OBs MC_Servo and MC_Interpolator distributed onto the cores
- ➔ **Processing time** of the application cycle is **reduced by up to 30%***

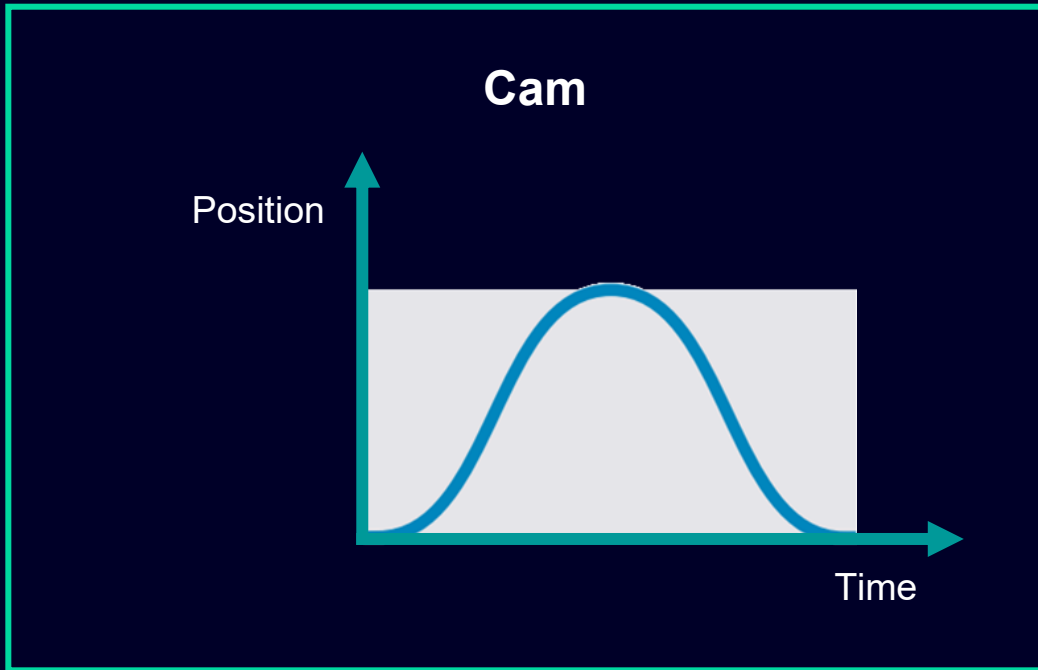
The functionality “Improve system performance” can be **activated** in the **settings of OB MC_Interpolator** in TIA Portal.

* depending on application size and complexity

Cam and superimposed motion improvements

Using cam as position profile

The motion control instruction "MC_PositionProfile" starts a relative or absolute positioning command with a time-based position profile. The time-based position profile is specified with the technology object cam.



The cam profile defines the time-dependent setpoint position of a positioning axis or a synchronization axis.

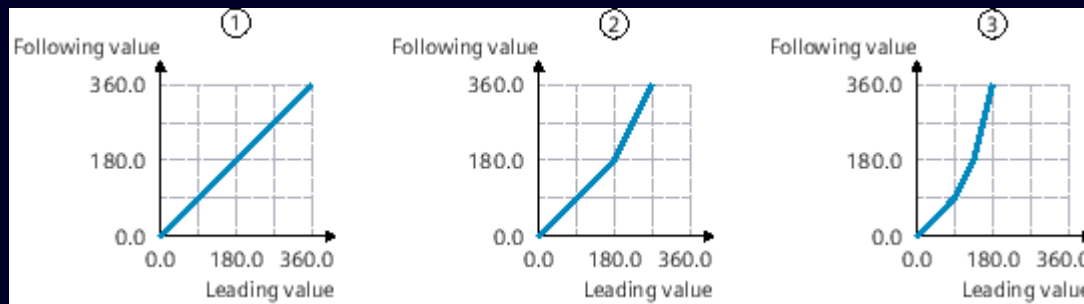
x-axis: time values in seconds

y-axis: Position values in the respective unit of the axis

Cam and superimposed motion improvements

Range scaling for interpolated cams

The Motion Control instruction “MC_SetCamRangeScaling” allows two cam ranges to be scaled. Different scaling modes define whether the scaling range refers to the leading value range or the following value range. This does not change the configuration of the cam technology object. Active range scaling is displayed in the online view of the cam diagnosis. Range scaling can also be simulated offline in the cam configuration.



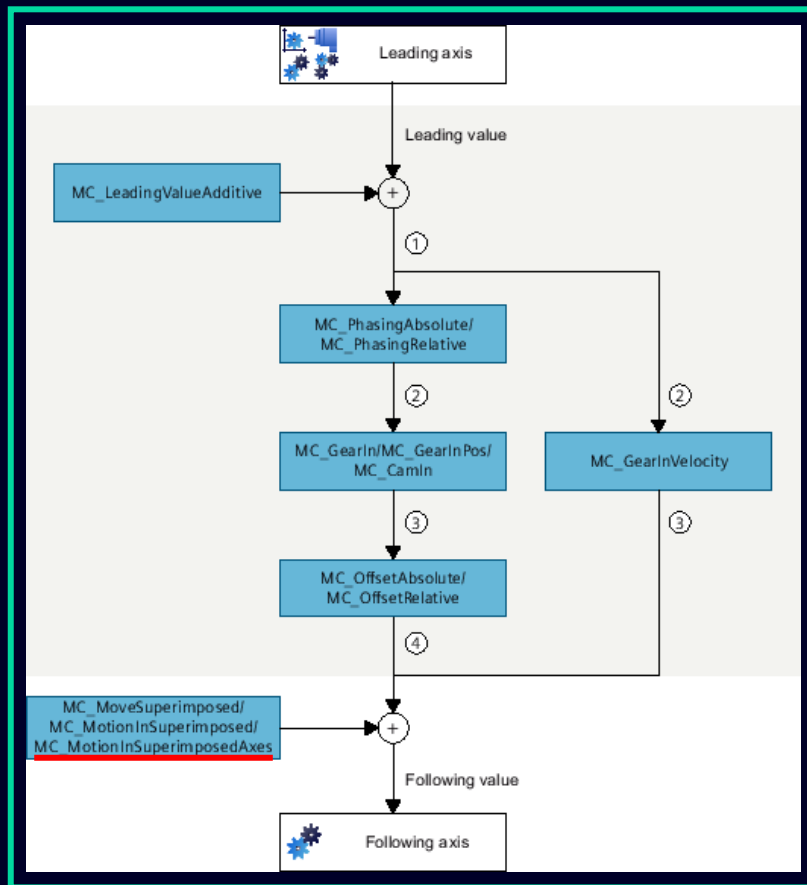
- ① Unscaled interpolated cam
- ② Scaled cam with the first range scaling in the leading value range
- ③ Scaled cam with the first and second range scaling in the leading value range

Range scaling can be used while camming is active. Range scaling can also be applied multiple times.

Cam and superimposed motion improvements

Superimposed motion – MotionIn improvements

The “MC_MotionInSuperimposedAxis” command provides the possibility to add motion setpoints of a defined superimposed axis to the basic motion of an axis, without the delay of an IPO-cycle.

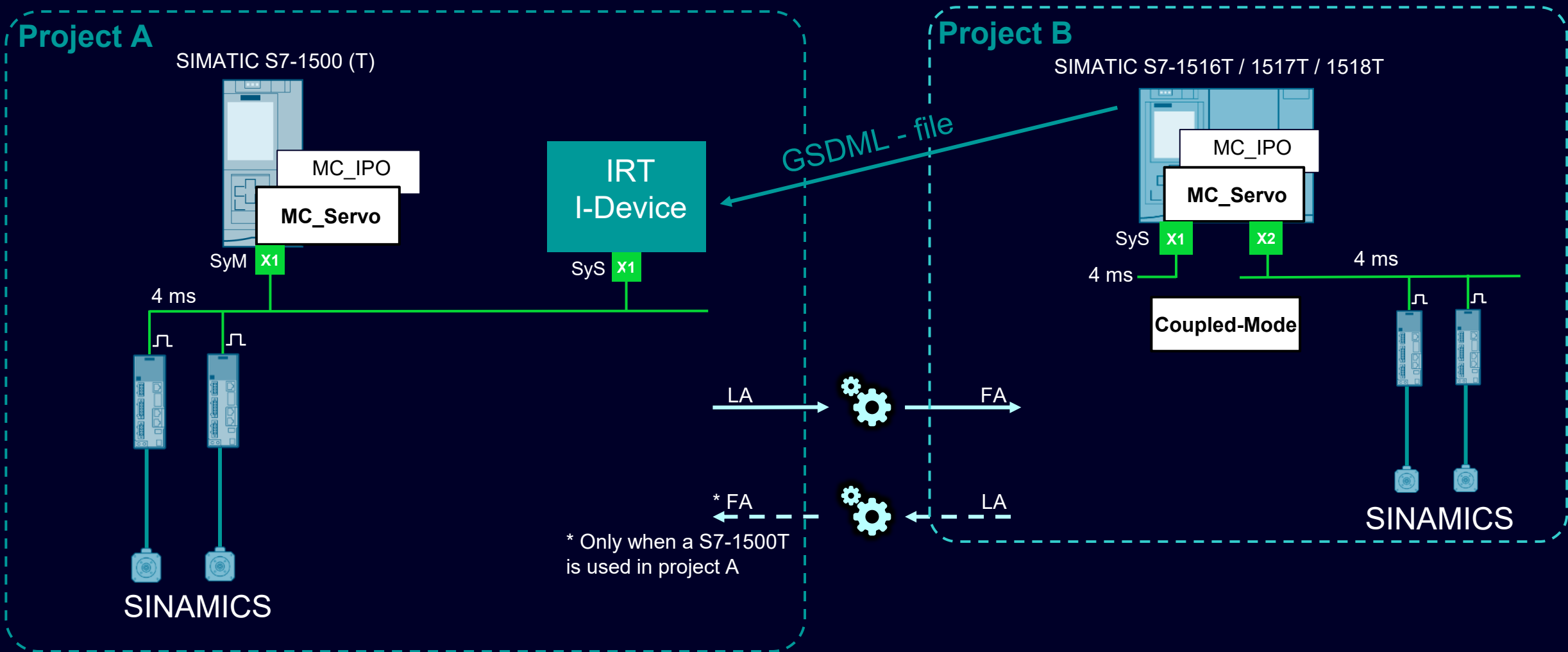


Superimposing motion can be applied to single-axis or synchronous operations.

No cyclic specification of the superimposed leading value is required.

Function chart:
How motion control instructions work on the following axis in synchronous mode

Cross-PLC synchronous operation using IRT I-Device



SyM = Sync master
SyS = Sync slave

LA = Leading axis
FA = Following axis

Support of external encoder at PLC and S120 drive

The STARTDRIVE supports the configuration of external encoders connected via DRIVE-CLiQ or SMC-modules using telegram 81, 82 and 83.

Direct connection to TO-External Encoder or TO-Axis is possible with telegrams 81 and 83.

Basic parameters

Hardware interface

Encoder

Data exchange with enc...

Leading value settings

Extended parameters

Mechanics

Homing

Standstill signal

Actual value extrapolation

Encoder

Data connection: Encoder

Encoder: Drive unit_1.Sensor_1.Standar...

Encoder type:

PLC_1 [CPU 1518TF-3 PN]

Local modules

PROFINET IO-System (100)

Drive unit_1

Device configuration

Name	Device type
Sensor_1	Standard telegram 81

Drive control

Sensor_1

Module

Module	Slot	Type
Drive control		
Drive unit_1		CU320-2 PN
PROFINET interface		PROFINET interface
Port_1		Port
Port_2		Port
Ethernet commissio...		Ethernet commissio...
DRIVE-CLiQ interface		DRIVE-CLiQ interface
Port_1	X100	DRIVE-CLiQ port
Port_2	X101	DRIVE-CLiQ port
Port_3	X102	DRIVE-CLiQ port
Port_4	X103	DRIVE-CLiQ port
Sensor_1		
Encoder evaluation_1		SM
Measuring system_1		DRIVE-CLiQ encoder

Properties

Info

Diagnostics

General

Telegram config...

Drive control...

Sensor_1-Tel...

Send (Act...

Receive (...)

Advanced options

Shared Device

Module parameters

Hardware identifier

Ethernet commissio...

General

Sensor_1-Telegrams

Send (Actual value)

Drive

Partner

Name: Sensor_1-Telegrams

Role: Device

IP Address: 192.168.0.2

Telegram: Standard telegram 81

PLC_1

Controller

192.168.0.1

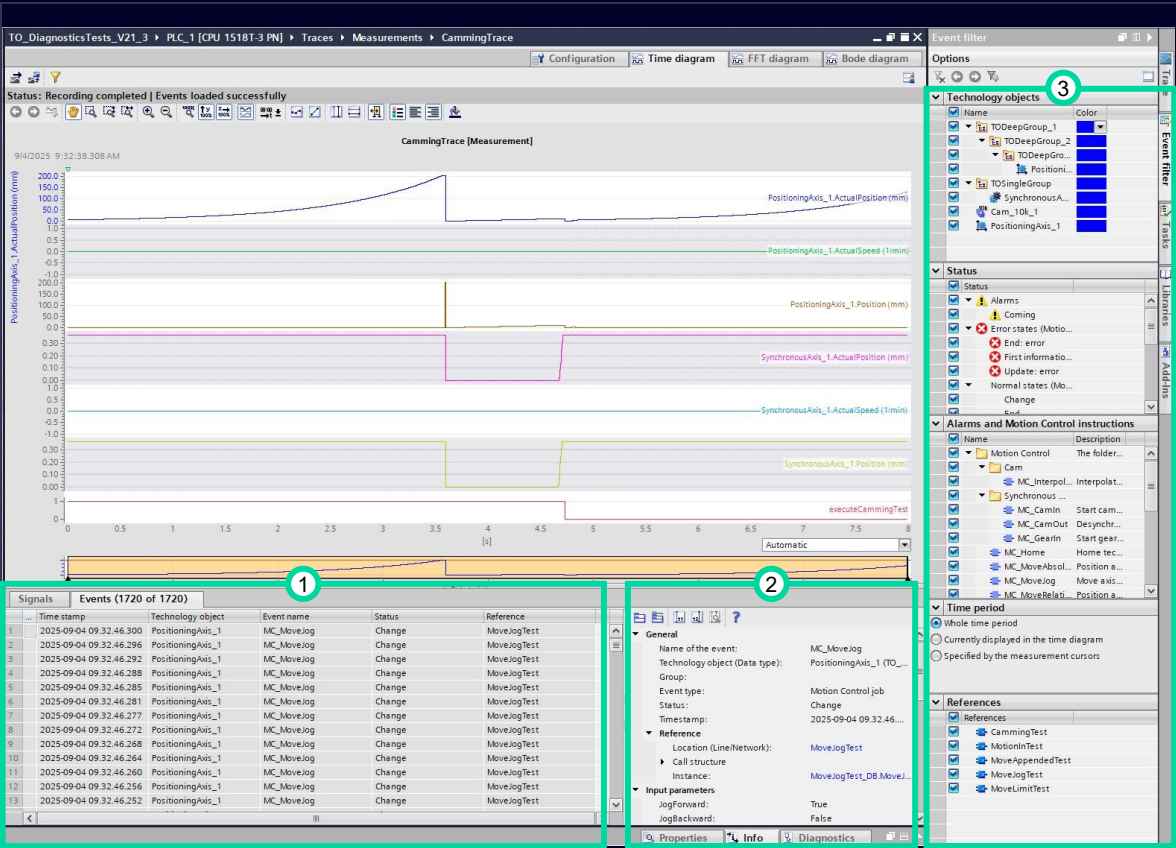


Direct support of external encoder

→ Less engineering effort

New TO diagnostic functions

Sample and analyze TO events in combination with trace



Major functions of TO Diagnostics

Event diagram (1)

- Overview of recorded events
- Timestamp
- Affected TO and object type
- Eventname
- State
- OB reference

Detail Tab (2)

- Insights into recorded Event

Filtering (3) by

- TO, state, time, reference

How to use and handle TO-Diagnostics?

Specific configured events/alarms of the TOs are recorded in the S7-1500 runtime profiling **beside** the configured signals and are uploaded to trace tool to analyze them.

Benefits

- Recording of events on a motion control technology object during a trace recording on CPUs S7-1500
- Events include technology objects commands as well as program and technology alarms.
- *.csv of the TO events is saved after recording to analyze the execution behavior

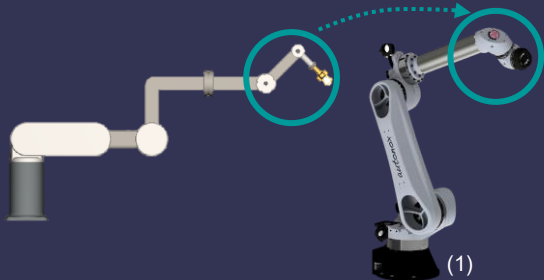
Meaningful insights into TO behavior for system understanding and debugging

Kinematics and Motion Interpreter improvements

KinPlus V10.0

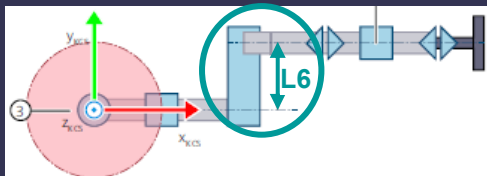
New kinematics type:

- ✓ 6D articulated arm with offset wrist



New geometry parameter:

- ✓ L6: Horizontal offset of the central wrist at 6D articulated arm

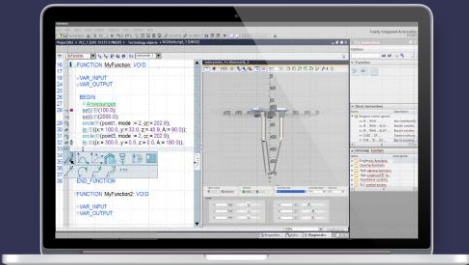


Additional controller support for 5D / 6D

- ✓ S7-1516T-3
- ✓ S7-1516TF-3
- ✓ S7-1517T-3
- ✓ S7-1517TF-3

(1) Source: © Autonox Robotics – https://autonoxfinder.com/de/AT_00031

SIMATIC Motion Interpreter



Enhancement for debugging mode:

- ✓ Adjust variable value at break point for efficient program debugging

Improvements on variable mapping:

- ✓ Support of complex data types for
 - ✓ TO_Struct → Position
 - ✓ TO_Struct → Frame
- ✓ Array of all supported data types

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SINAMICS Startdrive & DCC V21 Highlights

One step further in efficient drive engineering

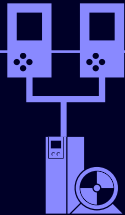
Integration of SINAMICS S220

New multi axes high end servo system



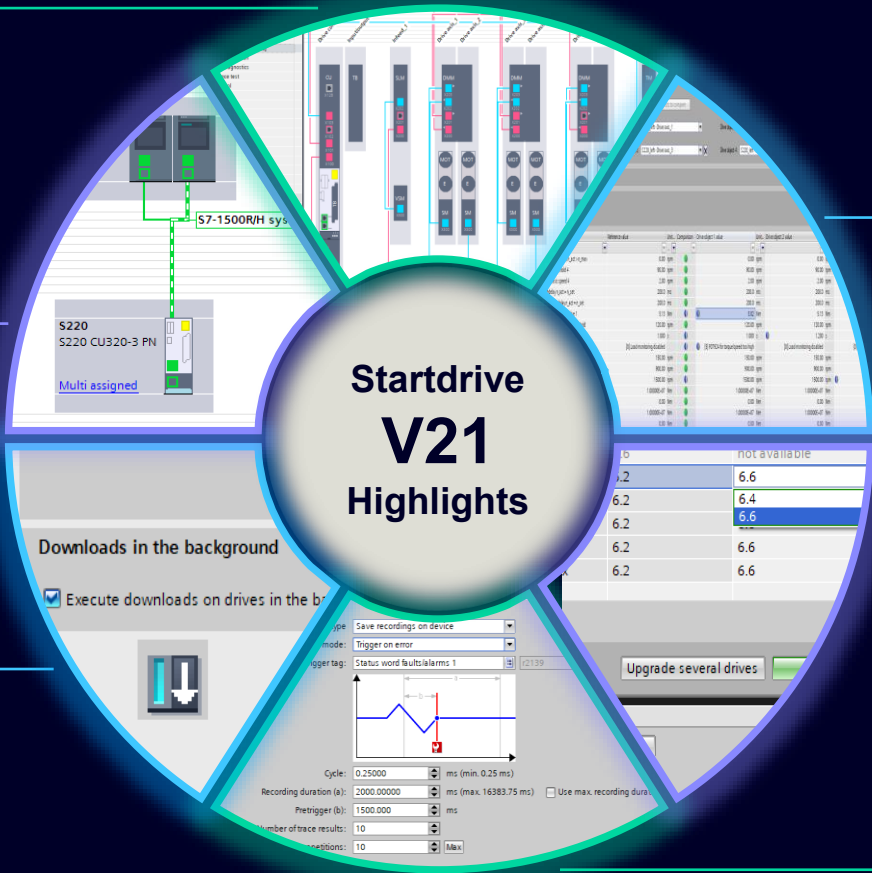
Support R/H systems

Configure drives connected to S7-1500 R/H PLCs, e.g. for S2 redundancy



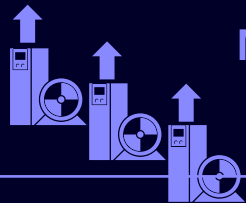
New download mode

TIA Portal user interface is not blocked during drive restart so the user can go on working faster



Extended compare function

Compare up to 5 drive objects at once



Mass firmware upgrade

Upgrade multiple drive's offline firmware version with one action



Trace on device

Configure traces on device and read them out later

Background download mode

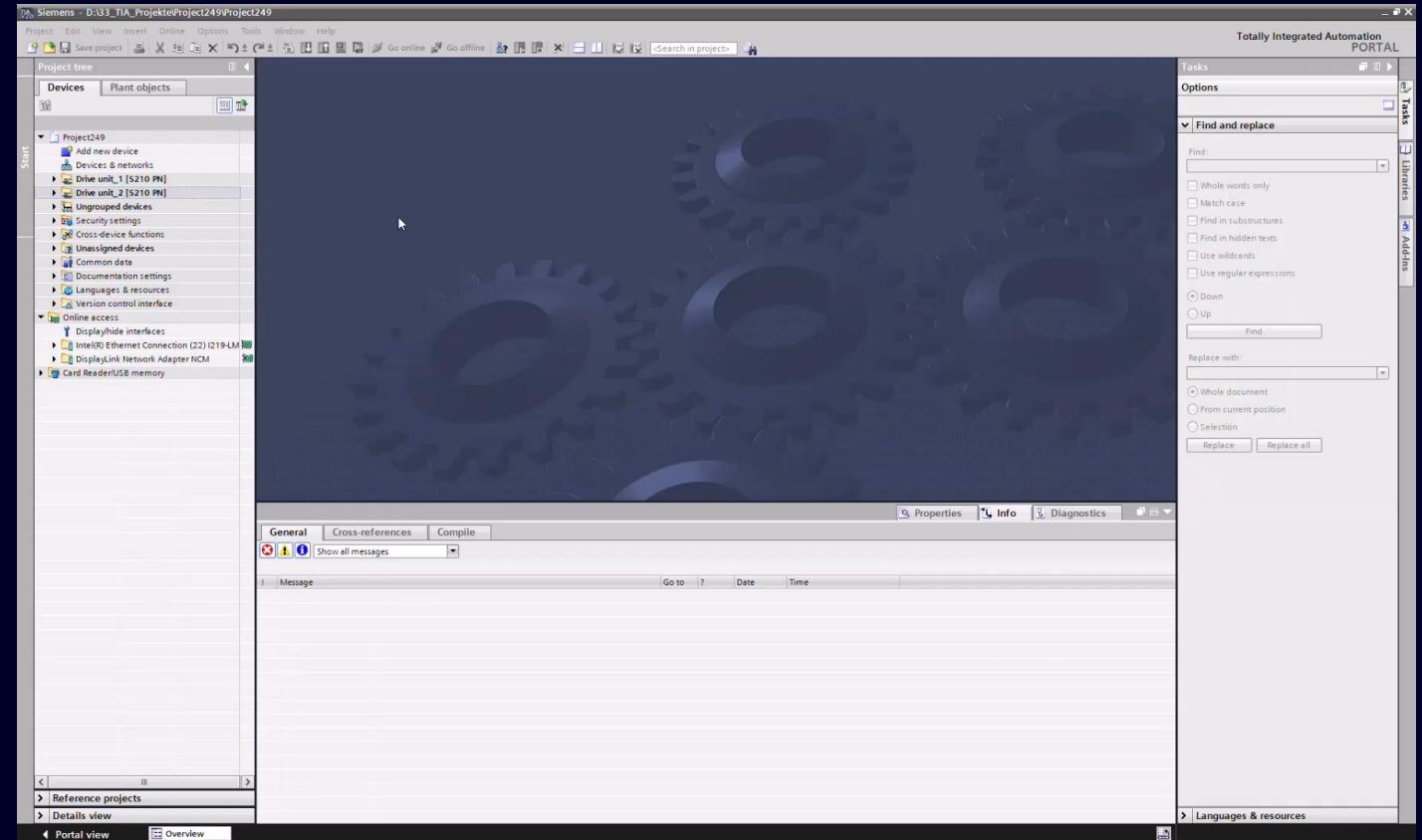
TIA Portal UI is not blocked during drive restart

Background download - new in V21

- Available for
 - ✓ CU3x0-2 based drives
 - ✓ All drives from V6.x
 - ✓ All drives with DCC from V6.6
- After downloading the configuration, the drive does a restart → during that time TIA Portal UI is now not blocked any longer and the user can go on working
- Messages regarding the download and drive status are shown in the “Info” view

→ **Time saving** adds up when downloading several drives

Note: The new mode is activated by default – can be deactivated in TIA Portal settings for legacy mode



Redundancy support

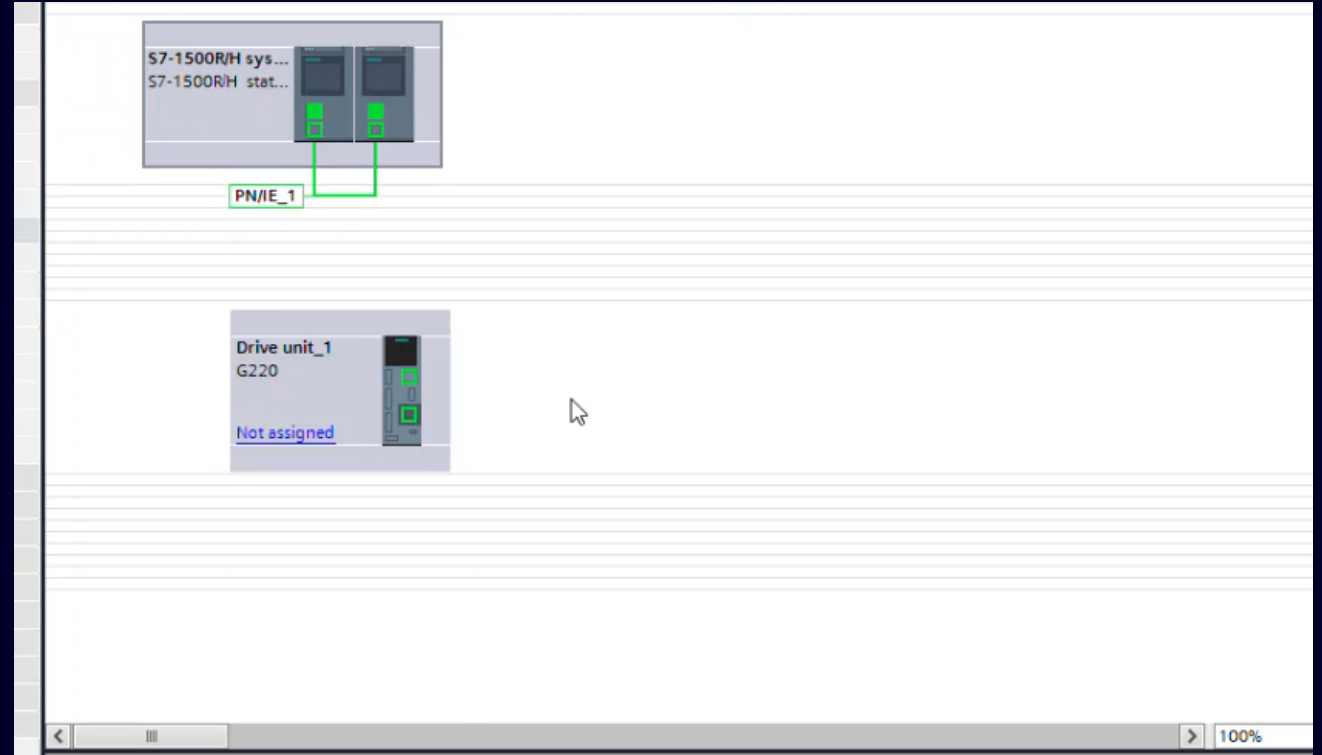
Connection to S7-1500 R/H PLCs

Connect to S7-1500 R/H – new in V21

- S2 redundancy supported by:
G220, S120, S220
- All other drives (G120 family, S200, S210) can still be connected to R/H PLCs with standard switch over functionality

How to:

1. Assign to one of the PLCs of the redundant system
2. Click right and select “assign to new I/O controller”
3. Assign to the other PLC of the redundant system



Parameter compare

compare drives and drive objects

Compare Drives – extended in V21

- Available for all drives as of V6.x and CU3x0-2 based drives (open via context menu)
- Comparison of single axis drives or drive objects of multi axes devices
- Select 1 reference object and up to 4 compare objects
- “Compare” action creates snapshot of current values
- Compare online or offline configurations
- Filter for equal/unequal and r-/p-/c-parameters
- Change parameter values directly within compare result
- “Update view” for new filters or after parameter was changed by user (e.g. to make it equal)
- Export compare result as .csv file or User-defined list (UDL – with or without values from target or reference object)

The screenshot displays the 'Parameter compare' window in the Siemens TIA Portal. It is divided into several sections:

- Comparison inputs:** Includes a checkbox 'Only show identical drive object types' and a button 'Add drive objects to compare'. Below are dropdown menus for 'Reference' (Drive unit_1 - Drive control), 'Drive object 1' (Drive unit_2 - Drive control), and 'Drive object 2' (Drive unit_3 - Drive control), along with a 'Compare' button.
- Filter:** Contains three filter sections:
 - Value filter:** Radio buttons for 'Equal', 'Unequal' (selected), and 'Unknown'.
 - Parameter filter:** Checkboxes for 'p - setting parameter' (selected), 'c - connectable parameter...' (selected), and 'r - display parameter'.
 - Function group filter:** A tree view showing various function groups like 'Commissioning', 'Save & reset', 'System identification', 'Universal settings', 'Inputs/outputs', 'Communication', and 'Power unit'.
- Result:** Includes an 'Export result' button and a table showing the comparison results.

Number	Parameter text	Reference value	Unit...	Comparison	Drive object 1 value	Unit...	Drive object 2 value	Unit...
<All>	<All>							
p1091[0]	Skip speed 1	0.000	rpm	●●	65.000	rpm	0.000	rpm
p1101[0]	Skip speed bandwidth	0.000	rpm	●●	20.000	rpm	0.000	rpm
p1452[0]	Speed controller speed actual value smoothi...	11.68	ms	●●	9.84	ms	12.98	ms

Mass firmware upgrade

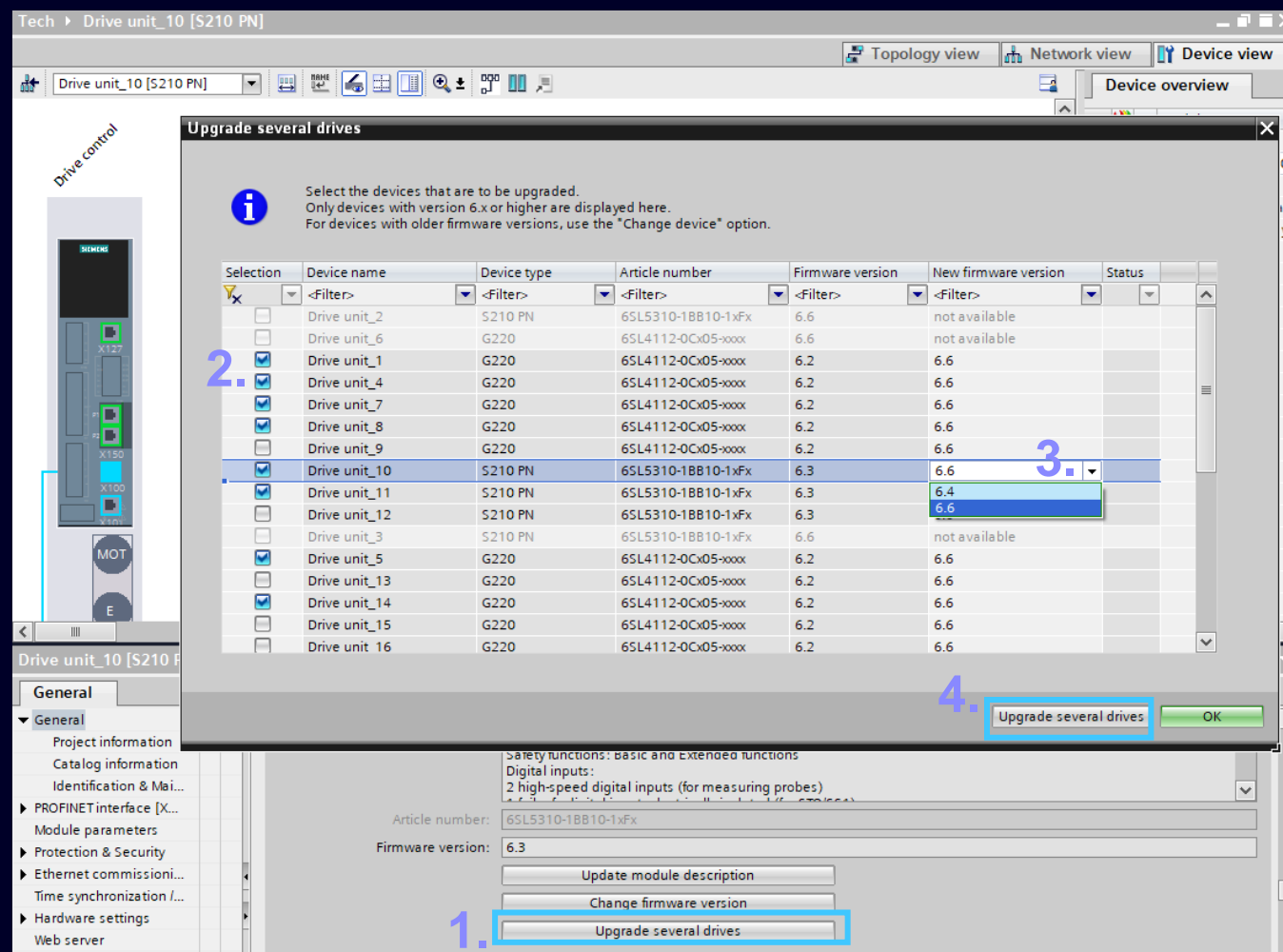
Upgrade several drives in the project with one action

Upgrade several drives

- Available for all drives as of firmware V6.x
- Changes the device's **firmware version** in the **offline project** (not the online firmware version on the device!)

How to:

1. Select the button "Upgrade several drives" in the property of one device
2. Select all drives to be upgraded from the list
3. Select the desired new firmware version
4. Start the upgrade

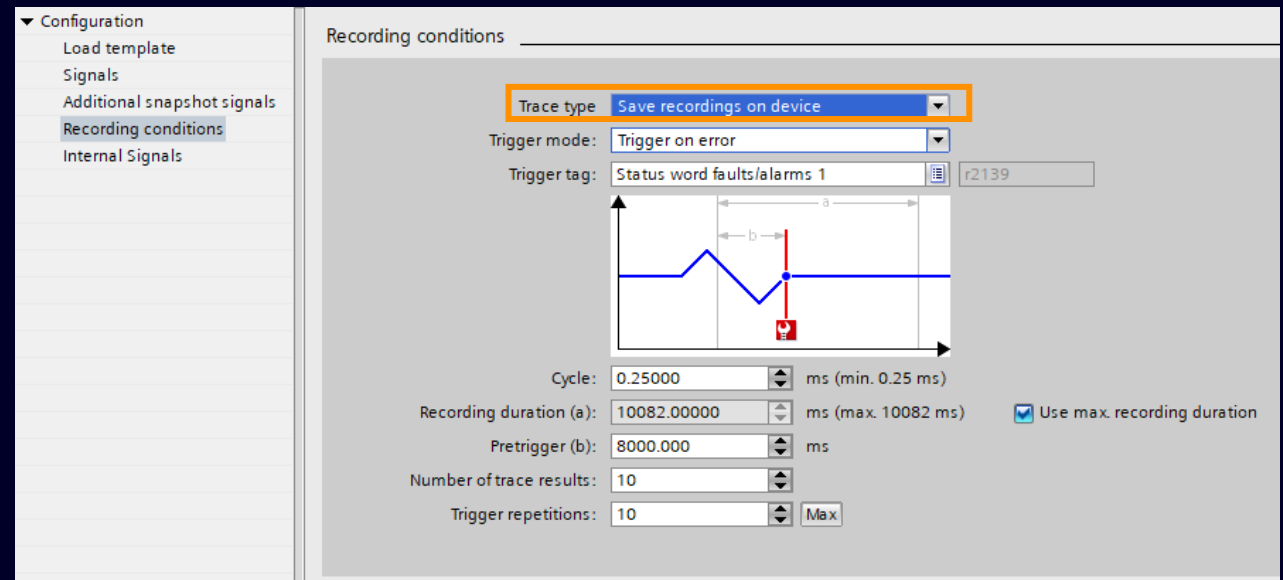


Trace on device

Configure traces on the device

Trace on device – new in V21

- Available for all drives from **firmware 6.6**
- New trace type: Save recordings on device
- Available trigger modes:
 - on tag, on error, on alarm
- Number of trace results max. 50
- Trigger repetitions from 1 up to endless
- Results will be displayed in the “measurements” folder when going online with the drive again



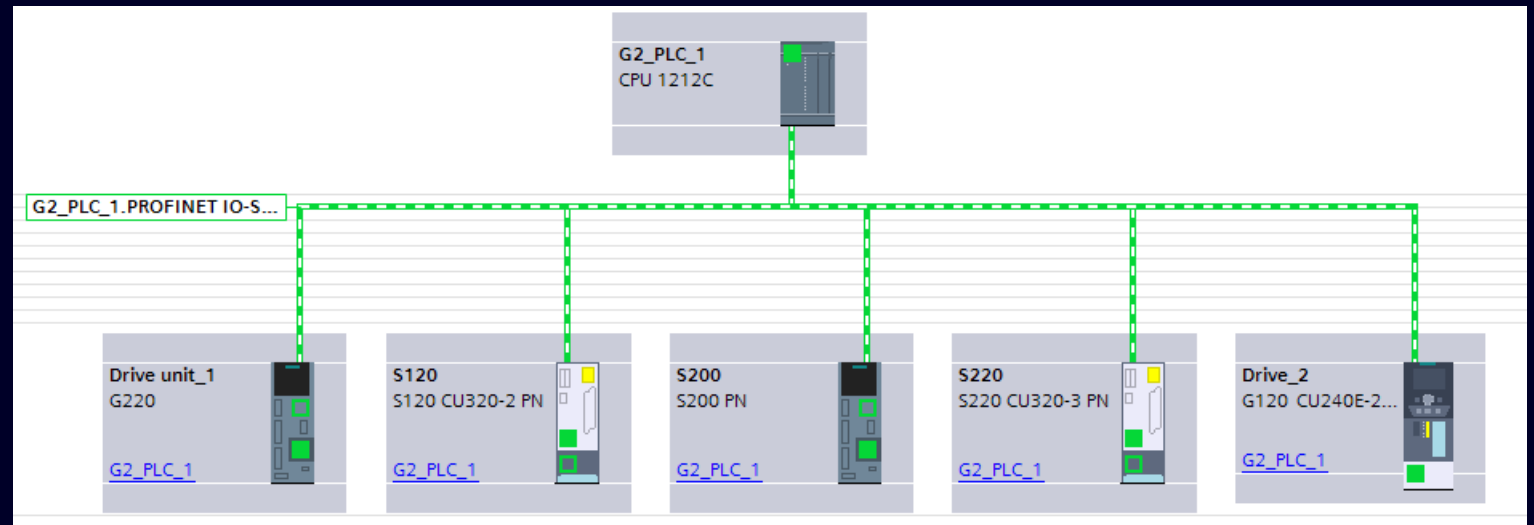
Connection to PLCs S7-1200 (G2)

All drives to be connected to S7-1200 & S7-1200 G2 – new in V21

- Connectable to S7-1200 & S7-1200 G2:
 - ✓ All G1xx drives
 - ✓ All CU3x0-2 based drives (S120, S150, G130, G150, MV)
 - ✓ All G2xx drives
 - ✓ All S2xx drives

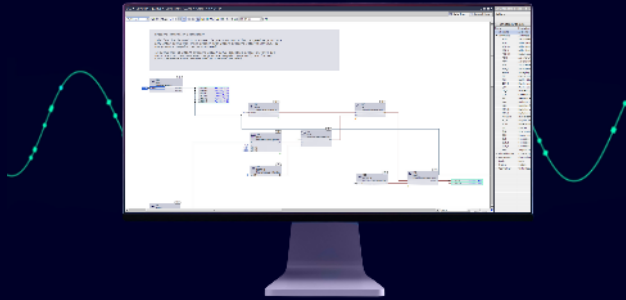
Now: also as Startdrive objects

Before: some drives only as GSDML



SINAMICS DCC (Drive Control Chart)

Graphical programming with logic, arithmetic and technology blocks for your customized application



Easy

Simplify the setup for your applications with easy drag-and-drop configuration.



Customizable

A rich library of DCB blocks for seamless customization to meet specific application needs.



Scalable

Get up to 20 free blocks on SINAMICS S220 / G220 and scale up as needed for ultimate flexibility.



SINAMICS DCC (Drive Control Chart)

Driving Automation Excellence with SINAMICS DCC

Now available also for
SINAMICS G220 and S220!

New

- ✓ Access a wide range of standard Blocks from the DCB Library
- ✓ Support of trace function and online monitoring
- ✓ Modularization of functions through multiple chart
- ✓ New licensing model for G220 and S220: Use up to 20 blocks without requiring a license.
- ✓ Reuse DCC chart from SINAMICS drive system V5.2 SP3
- ✓ Additional feature introduced, e.g. indexing of parameter
- ✓ Ready for DCB Extension to create on DCB Extension libraries

Get up to 20
Blocks Free!



- ✓ Comprehensive standard blocks from DCB library
- ✓ DCB Extension library ready
- ✓ Graphical configuration via Drag & Drop
- ✓ Cyclic times up to 250µs for G220 and 125µs for S220

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- TIA Project-Server Cloud

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- Protection of PLC configuration data on memory card
- Cross-PLC synchronous operation using IRT I-Device
- Configuration in RUN for S7-1500 R/H PLCs – 1st Step
- System Web Pages
- ...

System functions



- Migrating to and upgrading TIA Portal projects
- Enhanced TIA Portal Software Integrity Protection
- PROFINET Security Class 1 enhancements
- TIA Portal Documentation
- TIA Portal Openness
- TIA Portal Add-Ins
- Version Control Interface (VCI)
- CAx: AutomationML & Publication Tools
- TIA Portal Library: Exclusive Multiuser Mode
- TIA Portal Usability: Tracking of modifications, Info file

SIMATIC AX - Automation Xpansion



- Support of further hardware devices e.g. ET200SP CPU
- Extending the amount of available system libraries
- New debugging features: e.g. instance selection
- Publicly available documentation

TIA Portal Options



- SIMATIC STEP 7 Safety
- SIMATIC Safe Kinematics
- TIA Portal Multiuser
- SIMATIC Robot Library
- OPC UA
- SIMATIC S7-PLCSIM / S7-PLCSIM Advanced
- SIMATIC Target for Simulink
- TIA Portal Test Suite
- SIMATIC Visualization Architect (SiVArc)
- SIMATIC Modular Automation (MTP)
- Central User Management (UMC)
- Modular Application Creator
- SIMATIC ProDiag / SysDiag
- TIA Portal Teamcenter Gateway
- TIA Package Manager
- TIA Portal Safety Validation Assistant



The diagram features a large, light blue semi-circular shape with a hexagonal pattern, centered on a dark blue background. At the top of this shape is a cloud icon containing the text 'TIA'. Below this, the text 'TIA Cloud Services' is written in a large, bold, light blue font. Underneath the main title, there are three vertical columns, each separated by a thin white line. Each column contains a cloud icon with a specific label inside (Portal, SIM, and Project-Server), followed by the service name in bold, and then a brief description in white text.

TIA Cloud Services



TIA Portal Cloud

TIA Portal as a Service with demand-oriented licensing



TIA Simulation Cloud

Hardware independent high-performance simulation



TIA Project-Server Cloud

Central project storage with versioning and world-wide collaboration

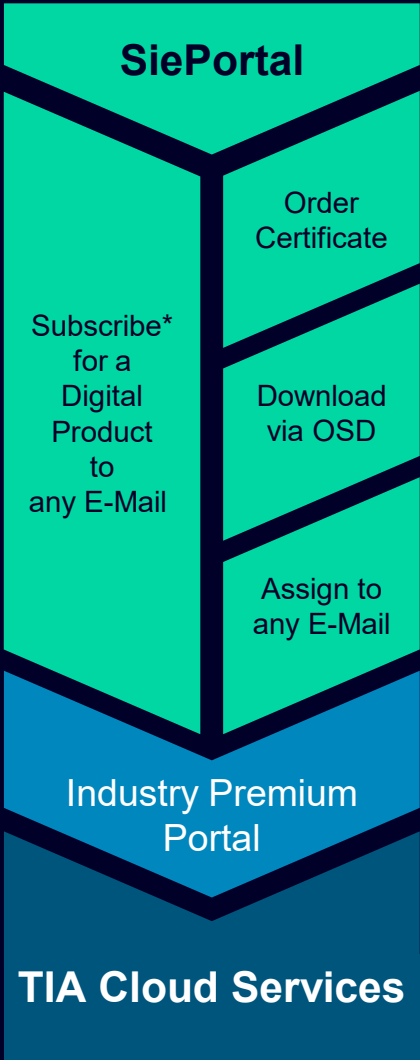
TIA Cloud Services

How to get a license...

Subscribe for ...

- Pay per use**
 Pay only for session time
 No basic charge
- Monthly subscriptions**
 Fixed price + unlimited access
 Can be cancelled monthly
- Annual subscriptions**
 Fixed price + unlimited access
 Including additional value

Direct activation & carefree usage



Order a certificate for ...

- Hourly credit**
 Pay only for session time
 Credit based access
- 31 days**
 Fixed price + unlimited access
 Solid time range
- 365 days**
 Fixed price + unlimited access
 No auto-renewal

Easy to order & flexible usage

* Digital Offering Store has limited country availability

TIA Cloud Services

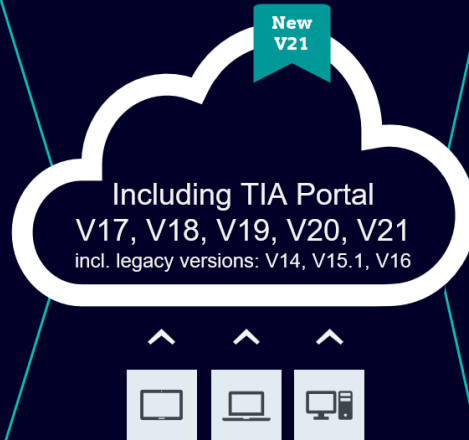
Offerings and Ordering Information

Digital Offering Store	TIA Portal Cloud	TIA Simulation Cloud	TIA Project-Server Cloud	SiePortal	
					
	100 hours	50 hours 50 hours	10 hours	Pre-paid Credits	
				TIA Portal Cloud	6ES7804-0CP41-3YA8
				2D Simulation Engineering	6ES7804-0VP41-3AA8
				3D Simulation Player	6ES7804-0VP41-3BA8
				TIA Project-Server Cloud	6ES7804-0PP01-3YA8
	365 days			Certificates	
				TIA Portal Cloud	6ES7804-0CP41-1YA8
			365 days 31 days	TIA Project-Server Cloud	6ES7804-0PP01-1YA8
				TIA Project-Server Cloud	6ES7804-0PP01-2YA8
				Subscriptions	
	Monthly		Monthly	TIA Portal Cloud	6ES7804-0CP41-2YA0
	Annual		Annual	TIA Project-Server Cloud	6ES7804-0PP01-2YA0
				TIA Portal Cloud	6ES7804-0CP41-1YA0
				TIA Project-Server Cloud	6ES7804-0PP01-1YA0
				Pay-per-use	
	Hourly			TIA Portal Cloud	6ES7804-0CP41-3YA0

TIA Portal Cloud V6.0

Package

STEP 7 Professional
 WinCC BCA / Unified
 STEP 7 Safety
 PLCSIM Advanced
 StartDrive Advanced
 SiVArc
 SINUMERIK STEP 7 Toolbox
 SINAMICS DCC
 SINETPLAN
 Test Suite
New Safety Validation Assistant
 SIMIT Player S
 SIMATIC SCADA Export



License models

Trial – 21 days

- 21 days limited use

Subscription **pay per use**

- pay only for session time

Subscription **monthly**

- fixed price, unlimited access

Subscription **annually**

- fixed price, unlimited access
- including SITRAIN access learning membership

Certificate for **365 days**

- get activation code for user assignment
- full access for 365 days, no auto-renewal

Certificate for **100 hours**

- get activation code for user assignment
- full access with 100 hours of usage credit

TIA Portal Cloud is an efficient SaaS offering, that enables you to work anywhere at any time!

What is new?

TIA Portal Cloud V6.0 (12/2025)

- Integration of TIA Portal V21

TIA Portal Cloud V5.2.2.2 (09/2025)

- Integration of Safety Validation Assistant
- The PLCSIM Virtual Ethernet Adapter is enabled to simulate TCP/IP-related use cases

TIA Portal Cloud V5.2 (05/2025)

- SINUMERIK STEP 7 Toolbox for TIA Portal V20
- Option to disable automatic hibernation
- Improved startup screen and startup time

TIA Portal Cloud V5.1 (02/2025)

- Integration of SIMIT Player S

TIA Portal Cloud V5.0 (12/2024)

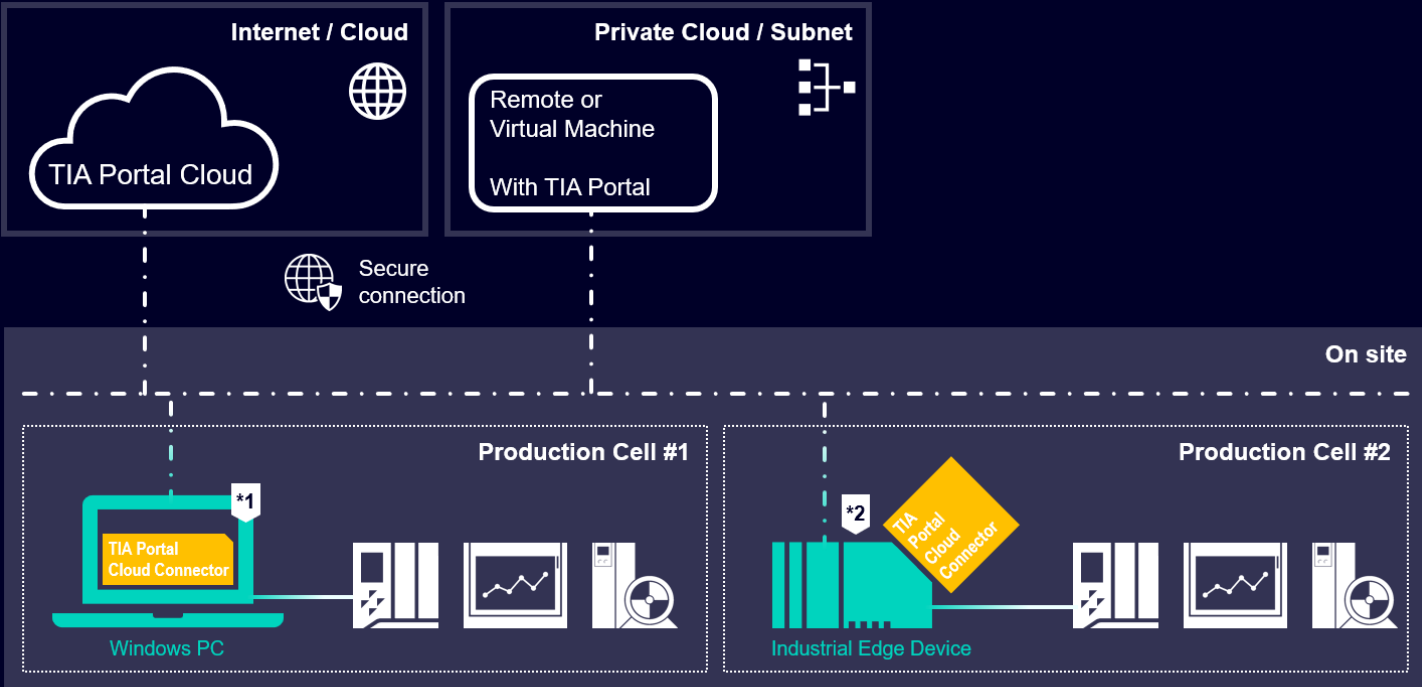
- Integration of TIA Portal V20
- Keep TIA Portal V15.1 and V16 as legacy versions

More information about TIA Portal Cloud is available at Industry Support page ID [109794456](#).

TIA Cloud Services

TIA Portal Cloud Connector

TIA Portal Cloud Connector V2.0



*1 No license needed when use with TIA Portal Cloud *2 Edge App for use with TIA Portal Cloud only

The TIA Portal Cloud Connector enables full access to SIMATIC hardware, if the TIA Portal is located in a different subnet or in a cloud environment.

Features

- ❖ Access to all online functionalities
- ❖ High-performant download to devices
- ❖ Secure connection via https
- ❖ Easy integration as Industrial Edge App
- ❖ Integrated access management for TIA Portal Cloud users

More information and the setup of the latest version are available at Industry Support page ID [109780755](https://www.siemens.com/industry/industry-support/109780755).

TIA Cloud Services

TIA Simulation Cloud



Access from any device
via web browser

		2D Simulation Engineering	3D Simulation Player
		Cost-efficient 2D Engineering and Simulation	2D Engineering and Simulation with performant 3D Visualization
		50 hours certificate MLFB: 6ES7804-0VP41-3AA8	50 hours certificate MLFB: 6ES7804-0VP41-3BA8
3D Visualization capability	e.g. UNITY		●
Simulation Software	SIMIT CONTEC Library	●	●
	SIMIT M	●	●
	S7-PLCSIM Advanced	●	●
Engineering Software	TIA Portal V17, V18, V19 including STEP 7 Professional STEP 7 Safety Advanced WinCC Advanced / Unified SINAMICS Startdrive Advanced	●	●
Cloud Instance	GPU-powered machine (AMD)		●
	CPU-powered machine	●	

More information about TIA Simulation Cloud is available at Industry Support page ID [109983775](#).

TIA Cloud Services

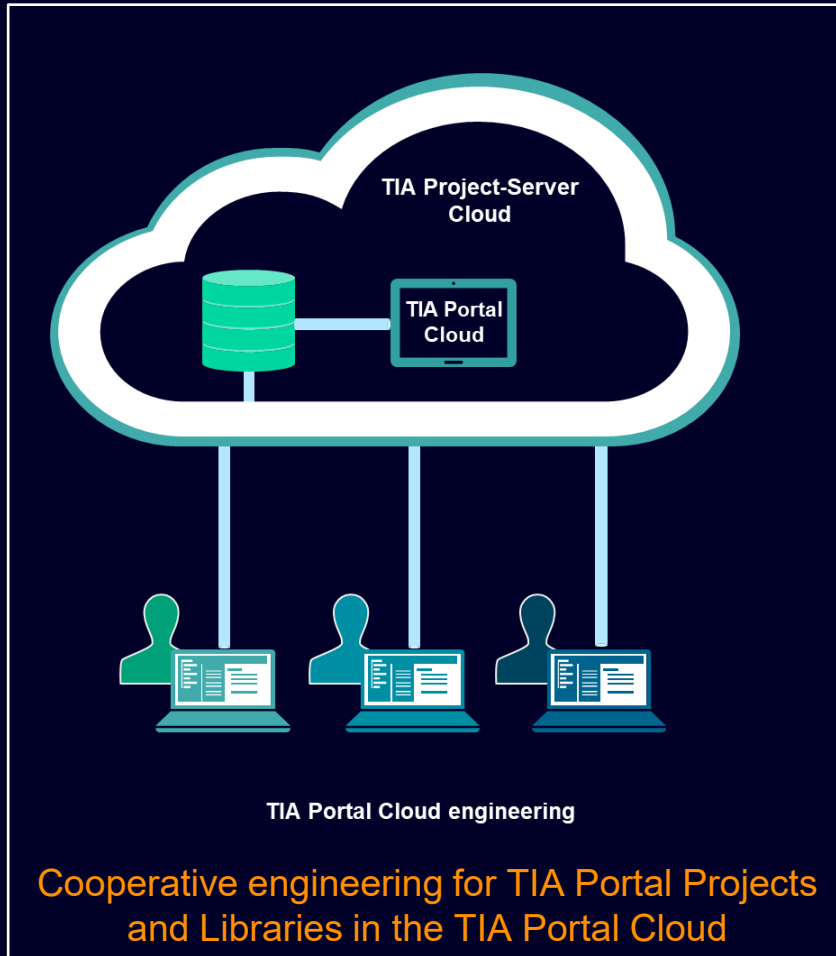
TIA Project-Server Cloud

*Make your TIA Portal projects available in the cloud.
Enables efficient team engineering of projects with the TIA Portal
or TIA Portal Cloud - anywhere, anytime.*

With the **TIA Project-Server Cloud** you have access to your TIA Portal projects and libraries from different locations for collaborative work across company boundaries.

Project storage and user management provided by the TIA Project-Server in the Industry Premium Portal.

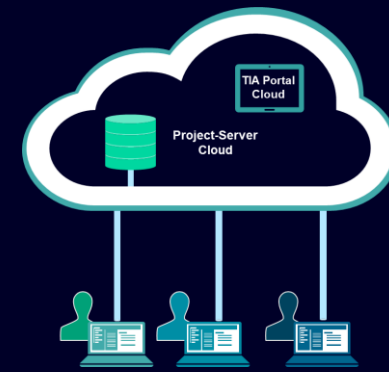
- Direct access to data storage from the TIA Portal, no time-consuming sending of data or coordination of changes.
- Access from TIA Portal engineering stations as well as from the TIA Portal Cloud.
- Dedicated resources for performance and data security.
- Easy integration of suppliers, without opening the own IT structures.
- Management of the Server and the TIA Portal projects via a comfortable web interface.



TIA Cloud Services

Added values from TIA Project-Server Cloud

Use Case: Work together effortlessly, regardless of company boundaries.



Availability

Available from everywhere at any time

- use with on-premise TIA Portal and TIA Portal cloud
- Stable accessibility of the colocation center
- High giga bit network bandwidth

Reliability

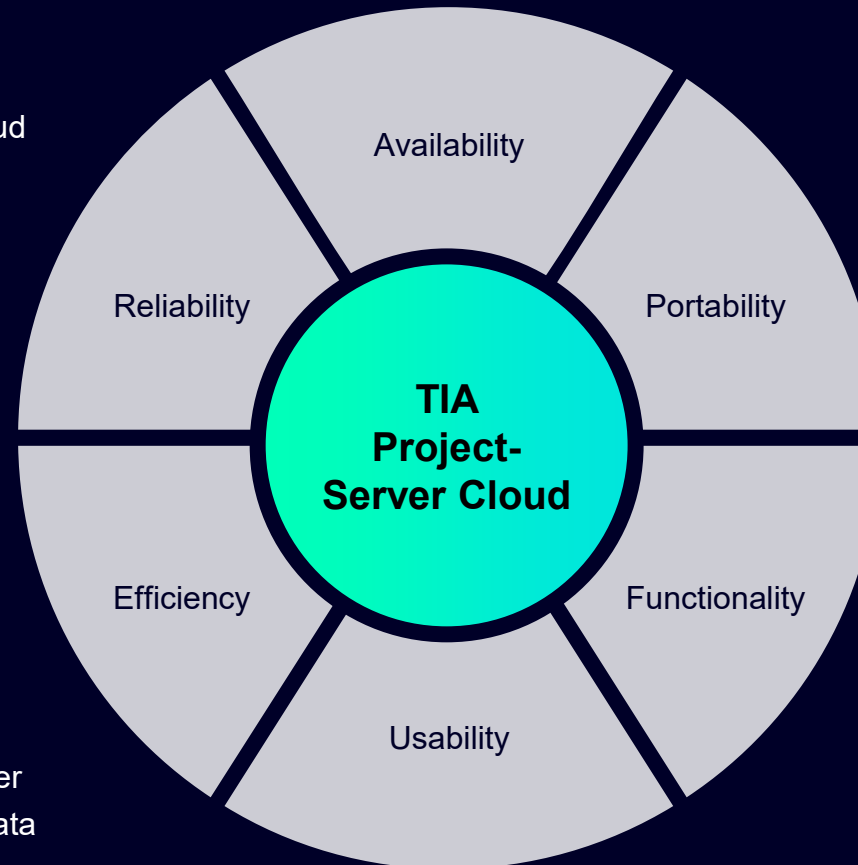
Guaranteed service level

- Average annual availability of at least 99.9%
- 24/7 monitoring service

Efficiency

Secure and fast environment

- Dedicated server with own resources for each order
- High level of data security with full control of the data



Portability

Zero IT effort and easy entry

- no installation, maintenance or update effort
- no hardware, no Windows server license needed

Functionality

Managed service

- Server fully managed by Siemens
- No shared virtual machines, each user gets their own virtual machine.
- Virtual machines with the latest security patches ensures that system software and server services function properly

Usability

User experience

- Simple administration via Web GUI
- Same known experience for the users from TIA Portal point of view with seamless integration

TIA Cloud Services

TIA Project-Server Cloud – How to get access

➔ Different offerings for different demands



10-hours certificate

Non-self-extended 10-hours credit with 100 GB project memory. Interruptible can be combined into one credit period term (e.g. 4x10h = 40h).

→ As Certificate of License via Industry Mall:
[6ES7804-0PP01-3YA8](#) (in preparation)



31-days certificate

Non-self-extended 31-day certificate with 100GB project memory.

→ As Certificate of License via Industry Mall:
[6ES7804-0PP01-2YA8](#) (in preparation)



365-day certificate

365-day certificate with 250GB project Memory. No auto-renewal.

→ As Certificate of Contract via Industry Mall:
[6ES7804-0PP01-1YA8](#)



Monthly subscription

Self-renewing monthly subscription with unlimited access and 100GB project storage.

→ As Certificate of License via Industry Mall:
[6ES7804-0PP01-2YA0](#)



Annual subscription

Self-renewing annual subscription with unlimited access and 250GB project storage.

→ As Certificate of Contract via Industry Mall:
[6ES7804-0PP01-1YA0](#)

TIA Portal V21 - Table of contents

SIMATIC WinCC Unified – Innovations



- Unified Screen Editor (Next Gen.)
- Modernization: All essential features of the predecessor
- Configure Limits & Thresholds
- Electronic record for local user management changes & failed login
- PaCo support in Faceplate
- Reporting in ES
- New screen object - Alarm Indicator
- Sm@rtServer for UBP
- Configure printer without the printer hardware (UCP)
- Real-time online data transfer via MQTT (for PC RT)
- Parallel display of different process screens on multiple monitors (for PC RT)
- WinCC Unified Data Hub – Broad market release
- "Start Program" function for applications with user interface
- Save Licensing Costs by only "pay for what you use"
- Unified for Industrial Edge, WinCC Unified SIQENCE

SIMATIC WinCC RT Prof. – Innovations



- WebUX, RestAPI and communication enhancements
- Cross object interaction

SIMATIC STEP 7 – Innovations



- Continuous Integration / SIMATIC Source Documents
- NVT – feature round-up
- Keep DB online values on structural changes

SIMATIC Motion Control – Innovations



- New IPC and Open Controller hardware for T/TF variants
- Motion Control Multicore support
- Cam and superimposed motion improvements
- Cross-PLC synchronous operation using IRT I-Device
- Support of external encoder at PLC and S120 drive
- New diagnostic functions
- Kinematics and Motion Interpreter improvements

SINAMICS Startdrive & DCC – Innovations



- Support of SINAMICS S220 multi axes servo system
- Support of connection to S7-1500 R/H
- Parameter compare extension
- New download mode

TIA Cloud Services



- TIA Portal Cloud & TIA Portal Cloud Connector
- TIA Simulation Cloud
- TIA Project-Server Cloud

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- TIA Portal Safety Validation Assistant

SIMATIC Controller

S7-1200 G2 standard & F

What's new in FW V4.1 and TIA Portal V21?

Software

- OPC UA server
- System web pages for the Web server
- Motion control
 - Support for Pulse Train Outputs (PTOs)
 - Additional Motion Control functionality
- S7-PLCSIM Advanced support
- NFC for Android
- Support for central users on UMC server
- Backup and Restore
- Modbus TCP redundancy instructions
- PROFINET security class 1
- Communication load default of 20%
- Support for a nesting depth of 26 hierarchical levels of Structs

Hardware

Signal Modules (SM) 1223

- SM 1223 DI 16x 24VDC/DQ 16x relay
- SM 1223 DI 16x 24VDC/DQ 16x 24VDC Sink
- SM 1223 DI 16x 24VDC/DQ 16x 24VDC



Battery Board (BB) 1297

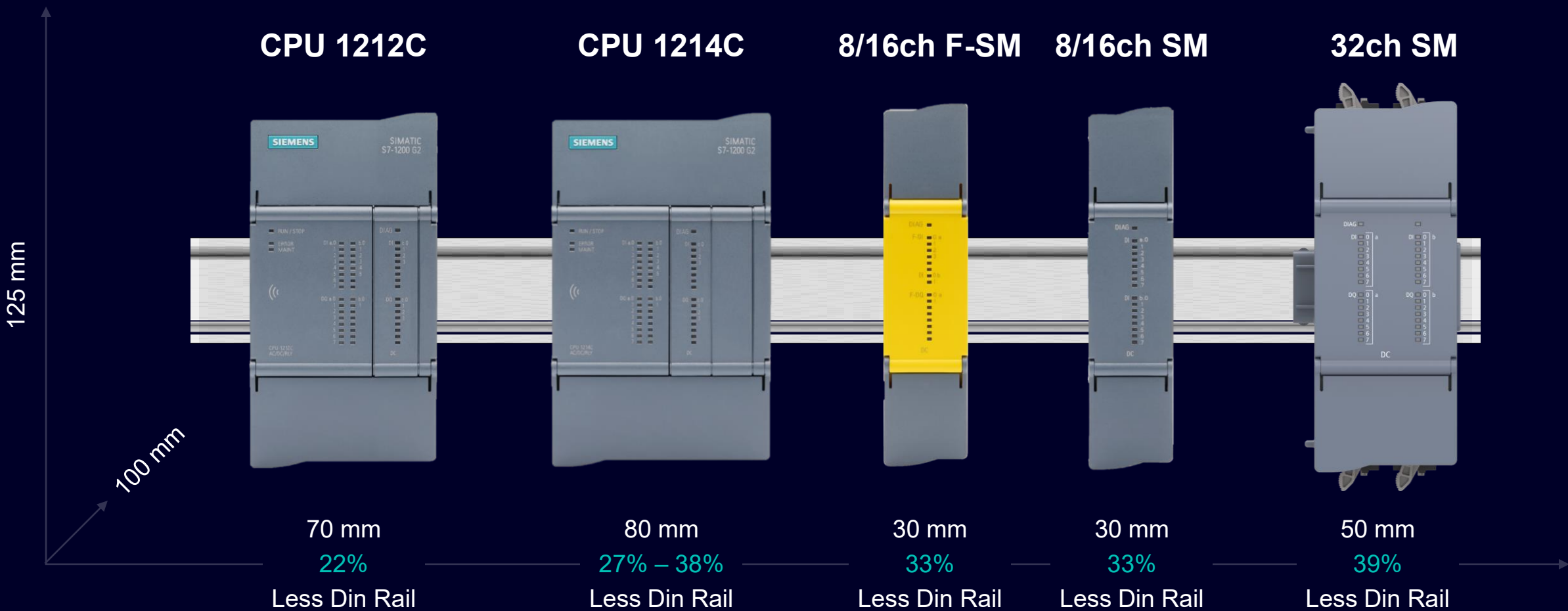


Communication Processor CP 1243-1 G2 Ethernet

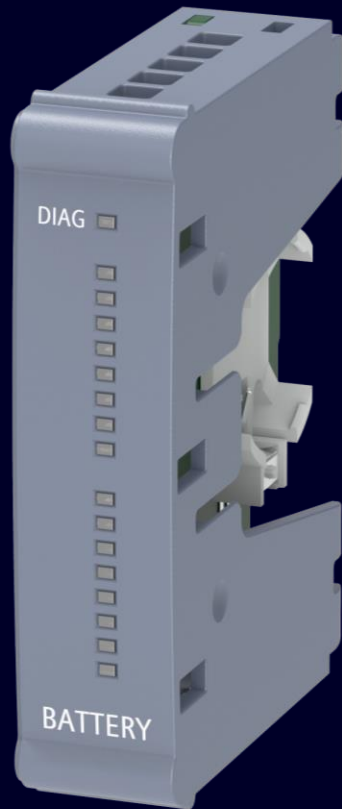


New hardware design

Dimensions



Battery board BB 1297

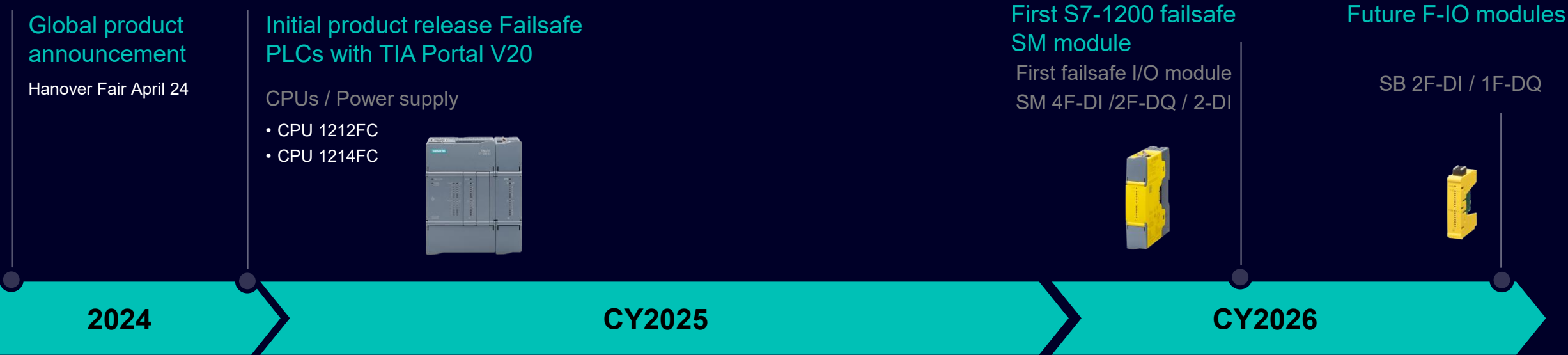


Hold up time Approximately 1 year

Battery board for real-time clock long-term buffering (without CR1032 battery)

SIMATIC S7-1200 G2 Failsafe

Roadmap – Current and Outlook



Currently possible failsafe configuration

Failsafe PLC with decentral ET200SP



Next possible failsafe configuration

Failsafe PLC with central F-IOs (Mix-Modules) + decentral



OPC UA at S7-1200 G2

Full functional compatibility to S7-1200 G1

OPC UA Server functional compatible to S7-1200 G1

- Support of standard mechanism
Read, Write, Browse, Subscriptions, Methods
- Support of user-defined Server interfaces and Companion Specs
- Security (sign & encrypt)
- OPC UA Server diagnostic
- Fully supported by SiOME



1200 G2

User-defined server Interface

No. of server interfaces	2
No. of nodes for user-defined server interfaces	2,000

Subscriptions

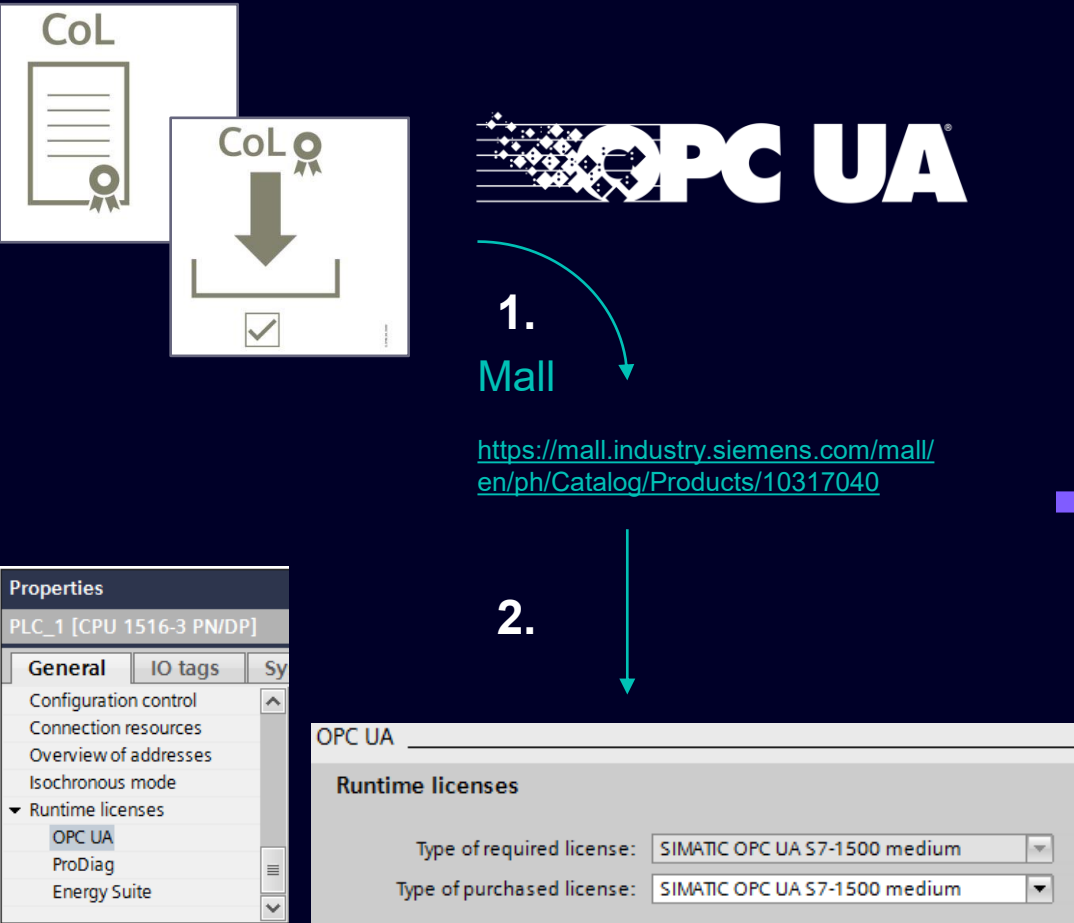
No. of subscriptions per session	5
No. of monitored items, total	1,000

Methods

No. of server methods, max	20
No. of parallel running server methods, max	20
No. of in/outputs per server method	20

OPC UA license model

The usage of OPC UA server and/or client requires a runtime license



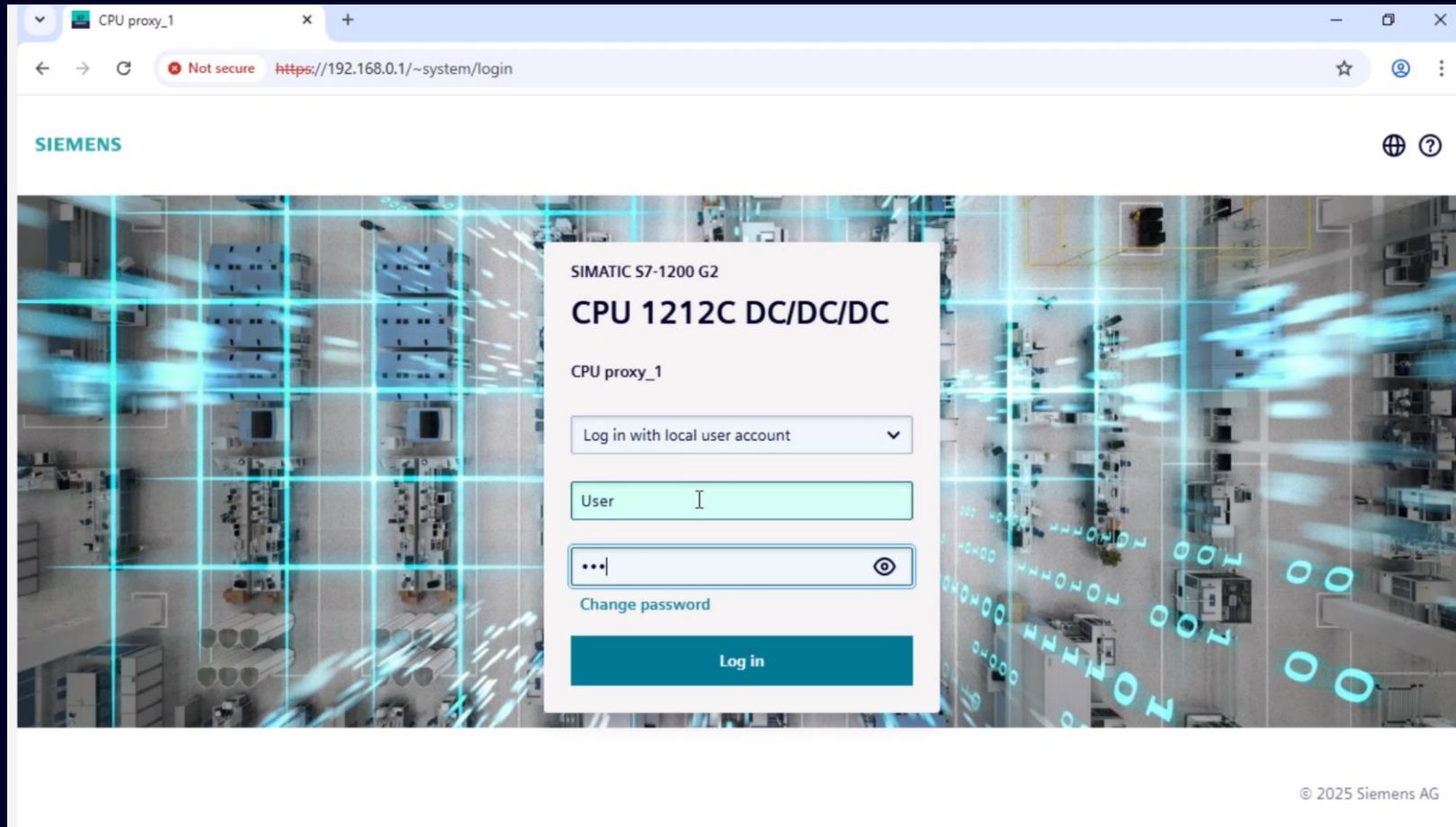
Not NEW – but always good to be remind 😊

- Operating the OPC UA server or client on the S7-1200 and S7-1500, a license is required.
- The type of license needed depends on the performance of the respective CPU.

Basic	CPU S7-1200, CPU S7-1200 G2
Small	up to CPU 1513, 1505S
Medium	up to CPU 1516, 1507S
Large	up to CPU 1518, 1507D , 1508S

Webserver – Default Webpages

Available with FW V4.1 and TIA Portal V21



Systemwebpage:

- accessible over the IP-Adress of the PLC
- Functions:
 - RUN/STOP possible
 - Diagnostics
 - User program
 - Alarming & Logging
 - Maintenance
- Navigation to the WebAPI custom-made application via menu is possible
- Latest technology, No legacy

Motion extension

Support for Pulse Train Outputs (PTOs)

- TO_PTOAxis

▼	Folder	Motion Control PTO	V9.0
+	MC_Power_PTO	Enable/disable axis	V9.0
+	MC_Reset_PTO	Acknowledge errors, restart technology object	V9.0
+	MC_MoveAbsolute_PTO	Position axis absolutely	V9.0
+	MC_MoveRelative_PTO	Position axis relatively	V9.0
+	MC_MoveVelocity_PTO	Move axis at predefined velocity	V9.0
+	MC_MoveJog_PTO	Move axis in Jog mode	V9.0
+	MC_Halt_PTO	Pause axis	V9.0
+	MC_Home_PTO	Home axis, set home position	V9.0
+	MC_ChangeDynamic_PTO	Change Dynamics settings for the axis	V9.0
+	MC_ReadParam_PTO	Read parameters of a technology object	V9.0
+	MC_WriteParam_PTO	Write parameters of a technology object	V9.0

- Full Standard Cam support
 - Curves, Segments Transitions, VDI
- Dual core support
- Absolute gearing
- Kinematics:
 - SCARA up to 3D with Orientation
 - Kinematics Workspace
 - Kinematic tools
- Torque limiting

Compatible for Basic Motion Control

New MC Instructions & Features

Technology Objects

PROFINET IRT (AMC) FW4.1 (TO V9.0)

TO's Speed, Pos. & Syn. Axis: MC_Torque Limiting
MC_GearinPos

TO Cam:
Curves, Segments, Transitions, VDI assistant

TO Kinematics:
SCARA, Tools, Workspace Zones

Pulse Train Output (BMC*) FW4.1 (TO V9.0)

TO PositioningAxis_PTO:
Commissing & Diagnostics

→

* BMC: TO_PTOMCommandTable postponed to TIA Portal V21 update 1 (~Feb 2026)

Name	Version
▼ Motion Control	V9.0
TO_SpeedAxis	V9.0
TO_PositioningAxis	V9.0
TO_SynchronousAxis	V9.0
TO_ExternalEncoder	V9.0
TO_OutputCam	V9.0
TO_CamTrack	V9.0
TO_MeasuringInput	V9.0
TO_Cam	V9.0
▼ Motion Control PTO	V9.0
TO_PositioningAxis_PTO	V9.0

Technology		
Name	Description	Version
▶ Counting		V1.1
▶ PID Control		
▶ Motion Control		V9.0
▼ Motion Control PTO		V9.0
MC_Power_PTO	Enable/disable axis	V9.0
MC_Reset_PTO	Acknowledge errors, re...	V9.0
MC_MoveAbsolute_P...	Position axis absolutely	V9.0
MC_MoveRelative_PTO	Position axis relatively	V9.0
MC_MoveVelocity_PTO	Move axis at predefine...	V9.0
MC_MoveJog_PTO	Move axis in Jog mode	V9.0
MC_Halt_PTO	Pause axis	V9.0
MC_Home_PTO	Home axis, set home p...	V9.0
MC_ChangeDynamic...	Change Dynamics setti...	V9.0
MC_ReadParam_PTO	Read parameters of a t...	V9.0
MC_WriteParam_PTO	Write parameters of a t...	V9.0
▶ SINAMICS Motion Control		V3.3
▶ Time-based IO		V4.1

New MC Instructions & Features

MC Instructions

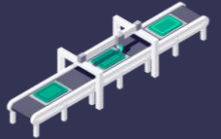
PROFINET IRT (AMC)

Functions	Use-case
Motion	
MC_MoveSuperimposed	Add motion on top of existing
MC_HaltSuperimposed	Smoothly stop additional motion layer
MC_WriteParameter	Change a machine setting value
Synchronous Motion	
MC_GearInVelocity	Slave axis follows master's speed
MC_GearInPos	Slave axis follows master's position
Cam	
MC_GetCamFollowingValueCyclic	Repeatedly get cyclic cam profile value
MC_CopyCamData	Copy cam profile data to another
Torque data	
MC_TorqueAdditive	Add extra force/torque to motion
MC_TorqueRange	Define acceptable force and torque limits
MC_TorqueLimiting	Restrict maximum force or torque

Functions	Use-case
Kinematics	
MC_MoveDirectAbsolute	Move to absolute target position
MC_MoveDirectRelative	Move a specific distance relatively
Zones	
MC_DefineWorkspaceZone	Set boundaries for working area
MC_SetWorkspaceZoneActive	Enable defined working area boundaries
MC_SetWorkspaceZoneInactive	Disable defined working area boundaries
Tools	
MC_DefineTool	Describe properties of attached tool
MC_SetTool	Select and activate a specific tool.

TIA Portal V21 FW V4.1 motion control

Machine applications with V9.0 motion control portfolio

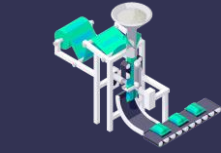


Improved and Additional and Machines applications

Capping machine

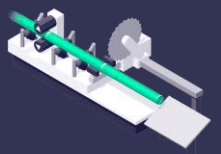
Easy implementation/modification with

MC_TorqueLimiting
MC_TorqueRange



Pulp Molding Hot Press

MC_TorqueLimiting



Packaging machine

MC_SetTool
MC_DefineTool

Plastic Pipe Automatic Assembly Machine



Pick and Place

MC_DefineWorkspaceZone,
MC_SetWorkspaceZoneActive
MC_SetWorkspaceZoneInactive
MC_DefineTool
MC_SetTool

Simple Milling Machines

Welding/glueing application with relative motion

_GroupInterrupt
MC_GroupContinue
MC_GroupStop
MC_MoveDirectAbsolute
MC_MoveDirectRelative

SIMATIC Controller S7-1500 standard & F

SIMATIC S7-1500 CPUs (incl. ET 200 CPUs)

New Functionality with FW V4.1 and TIA Portal V21

Security

- Protection against brute-force attacks by temporarily locking local user accounts
- Protection for complete PLC configuration data on memory card

Quantity structure

- Increase number of Runtime meters to **64**
- Runtime meter resolution in **seconds**

Communication

- PROFINET IRT for I-Device with IRT coupling X1-X2
- Disabling/Enabling IP Forwarding via User Program



OPC UA



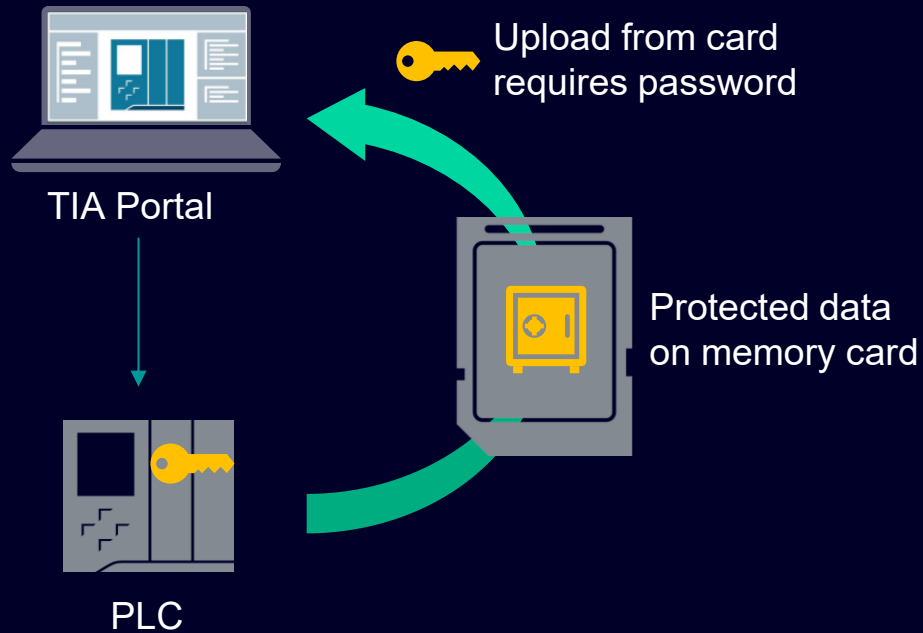
- Certificate Management for OPC UA Client via GDS
- 1510SP-1516 CPUs: Increased number of server methods
- 1516 CPU: Increased number of nodes for user-defined server interfaces
- Client Interface: Increased number of simultaneous methods calls

Webserver

- Extended System Web Pages:
 - operator panel
 - hardware status
 - extended basic information
 - motion control diagnostics
 - failsafe administration
 - service data download

SIMATIC S7-1500 CPUs (incl. ET 200 CPUs)

Protection for complete PLC configuration data on memory card



Protection of confidential PLC configuration data

i Confidential PLC configuration data (e.g. OPC UA certificates) should be encrypted using a password. Because the project is not protected, the password is not saved in the project and must be entered during download. Save the password in a secure location, for example, in a Password...

[More information about 'Protection of confidential PLC configuration data'](#)

☒ Protect confidential PLC configuration data

☒ Additional protection of downloadable configuration data

Password: *****

Enhanced PLC memory card protection

Description

- Advanced security feature based on existing protection mechanisms
- Protects complete PLC configuration data on memory card downloaded via TIA Portal
- Protection password required for local upload from memory card
- PLC online access via existing role-based access control

Benefits

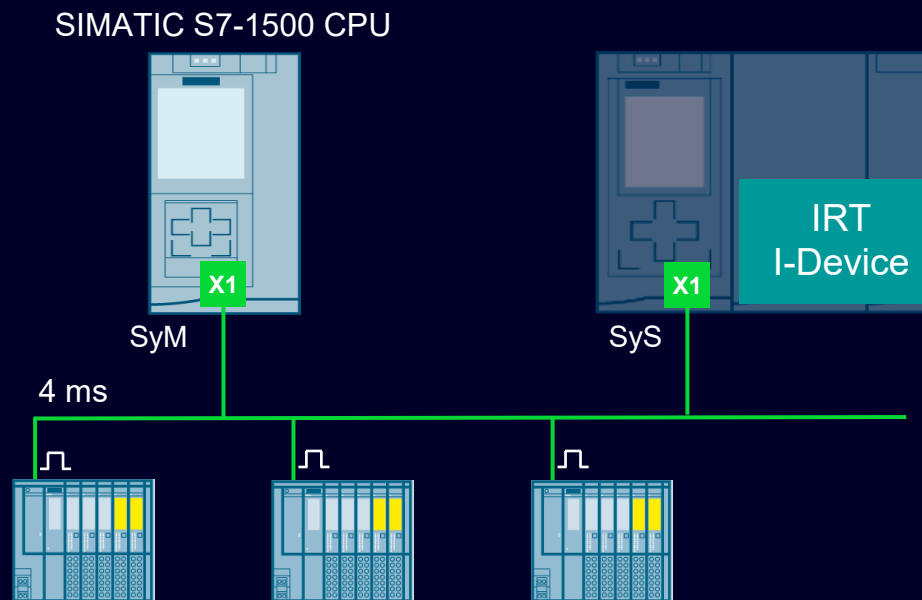
- Strengthened security against unauthorized local memory card access
- Comprehensive protection of sensitive PLC configuration data

SIMATIC S7-1500 CPUs

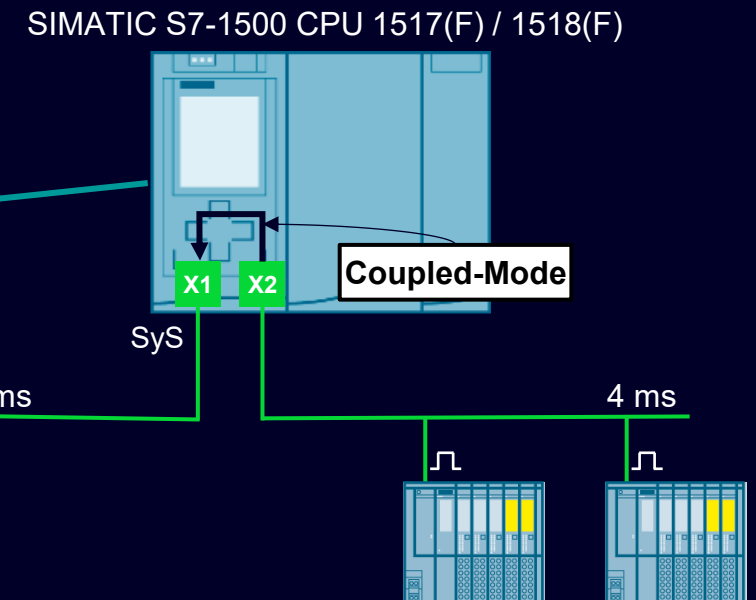
Cross-PLC synchronous operation using IRT I-Device

SIMATIC S7-1500 CPUs 1517(F)-3 PN & 1518(F)-3 PN as I-Device supports PRIFINET IRT !

Project A



Project B

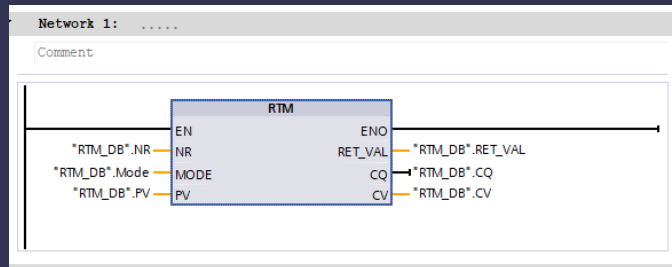


SIMATIC S7-1500 CPUs (incl. ET 200 CPUs)

Runtime meters “RTM”

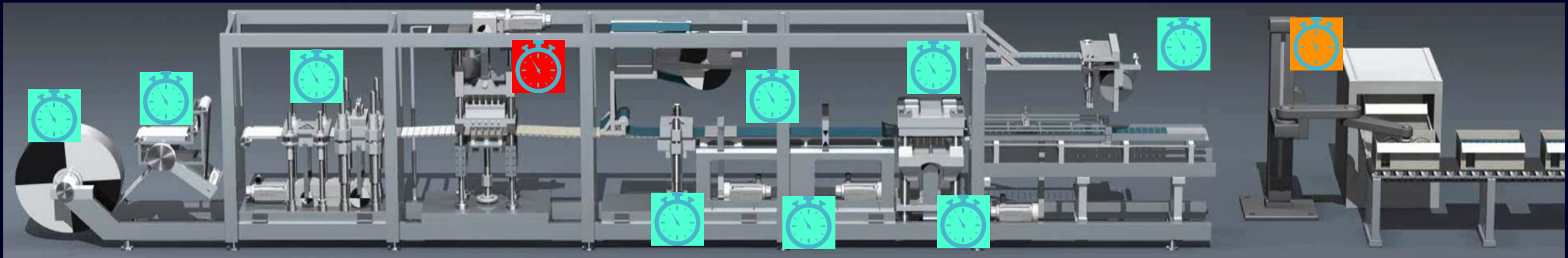
“RTM” improvements:

- Quantity increase of runtime meters from 16 to 64 for all CPUs
- Additional resolution of runtime meters in seconds



Customer Benefit:

- **Increased precision and granularity:** Enables more accurate monitoring of machines and processes
- **Improved maintenance planning:** Optimizes maintenance intervals
- **Greater flexibility:** Allows individual monitoring of different system components or machines
- **Enhanced transparency:** Provides more comprehensive data collection and improves basis for decision-making



SIMATIC S7-1500 CPUs (incl. ET 200 CPUs)

System Web Pages

Extended basic information

Overview

**PLC_4**
CPU 1516-3 PN/DP

Hardware

Article number: 6ES7 516-3AP03-0AB0

Firmware version: T41.20.65

Serial number: S C-N6CA93042021

Software

Project name: Project INC117

TIA Portal version: V21.0.0.0

Operator panel

Operator panel

RUN/STOP

ERROR

MAINTENANCE

Mode switch position:

STOP ☐ RUN ☐

HW Status

PLC_4 [CPU 1516-3 PN/DP]

Hardware status

PLC_4

Status	Cur...	Name	Type	Article number	Q address	Config...
1	PLC_4	CPU 1516-3 PN/DP	6ES7 516-3AP03-0AB0	V4.1		
3	DQ 8x24VDC/2A HF_2	DQ 8x24VDC/2A HF	Configured: 6ES7 522-18F00-0AB0 Current: 6ES7 522-18F00-0AB0	1 ... 1	V2.2	
4	DQ 8x24VDC/2A HF_1	DQ 8x24VDC/2A HF	6ES7 522-18F00-0AB0	0 ... 0	V2.2	

Service data download

SIMATIC S7-1500

PLC_4 [CPU 1516-3 PN/DP]

Service data

Module	Type	Article number	Firmware	Download
PLC_4	CPU 1516-3 PN/DP	6ES7 516-3AP03-0AB0	T41.20.65	Download

Motion control diagnostics

PLC_1518TF [CPU 1518TF-3 PN]

Motion control

Diagnostics

Status	Enabled	Hommed	TO name	TO type
Cam_1			TO_Cam	TO_Cam
Cam_2			TO_Cam	TO_Cam
Cam_3			TO_Cam	TO_Cam
Cam_4			TO_Cam	TO_Cam
Cam_5			TO_Cam	TO_Cam
Cam_6kSeg_1			TO_Cam_6kSeg	TO_Cam_6kSeg
Cam_6kSeg_2			TO_Cam_6kSeg	TO_Cam_6kSeg
Cam_6kSeg_3			TO_Cam_6kSeg	TO_Cam_6kSeg
Cam_10k_1			TO_Cam_10k	TO_Cam_10k
Cam_10k_2			TO_Cam_10k	TO_Cam_10k

Cam_1

Cam status

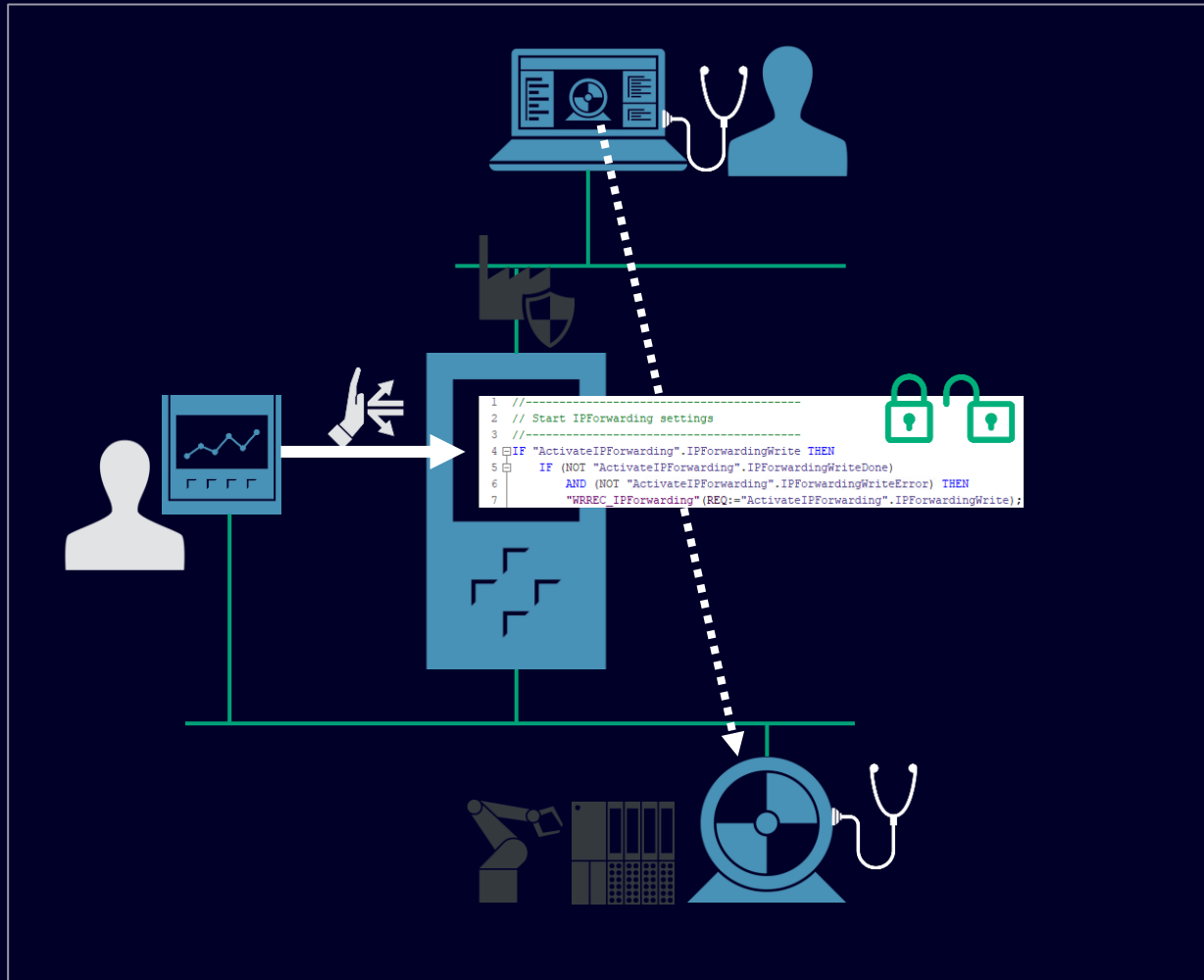
Warnings

Errors

SIEMENS

SIMATIC S7-1500 CPUs (incl. ET 200 CPUs)

Dynamic IP forwarding control: full flexibility directly from your user program



Control IP forwarding from the user program

Description

By writing a data record from within the user program, IP forwarding in the CPU can be activated and deactivated at runtime, independent of the configuration in TIA Portal. Additionally, the current IP forwarding configuration can be read back via a data record.

Benefits

Enables dynamic activation of IP forwarding directly on-site, for example, for maintenance and diagnostic purposes of subordinate plant components, entirely without the need for a PLC_STOP.

Redundant Controller S7-1500R/H

SIMATIC S7-1500 Redundant Systems

What's new with Firmware Version 4.1 / TIA Portal V21

Configuration in RUN (CiR)

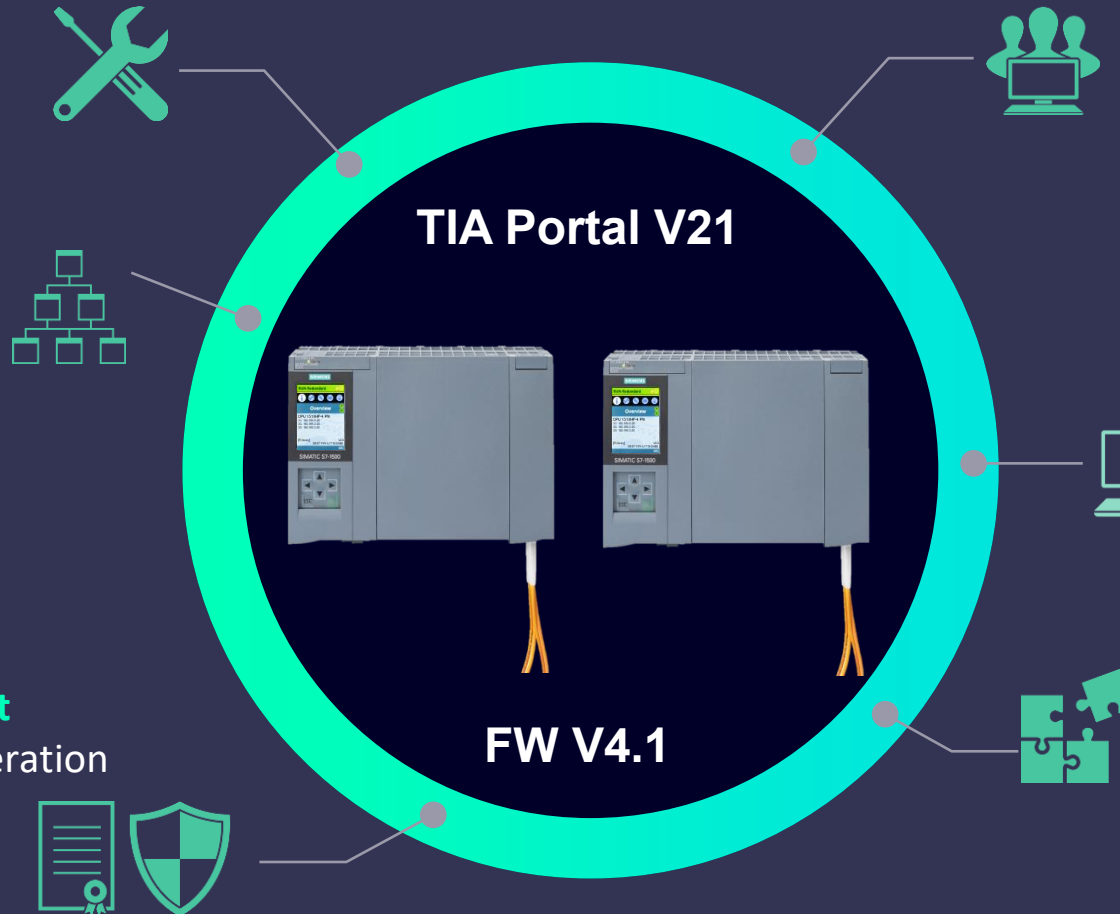
- Allow changes of the hardware configuration without system stop

Increased quantity structures

- PN IO-Devices: 256 → 512 (CPU 1517H / 1518HF)
- OPC UA Nodes:
30.000 → 100.000 (CPU 1517H)
50.000 → 200.000 (CPU 1518HF)
- OPC UA Monitored Items:
25.000 → 50.000 (CPU 1517H)
25.000 → 60.000 (CPU 1518HF)

Dynamic Certificate Management

- Renew Certificates during Operation using OPC UA GDS Push



Improved Usability

- FW-Update via list of active stations
- Move System-IP also for OPC UA Server
- Improved MRP-Ring Status
- SINAMICS Startdrive support

Web Server

- System Web Pages
- Full Web-API support

Additional functions

- TO Ident support
- Activate/Deactivate IP-forwarding in PLC program

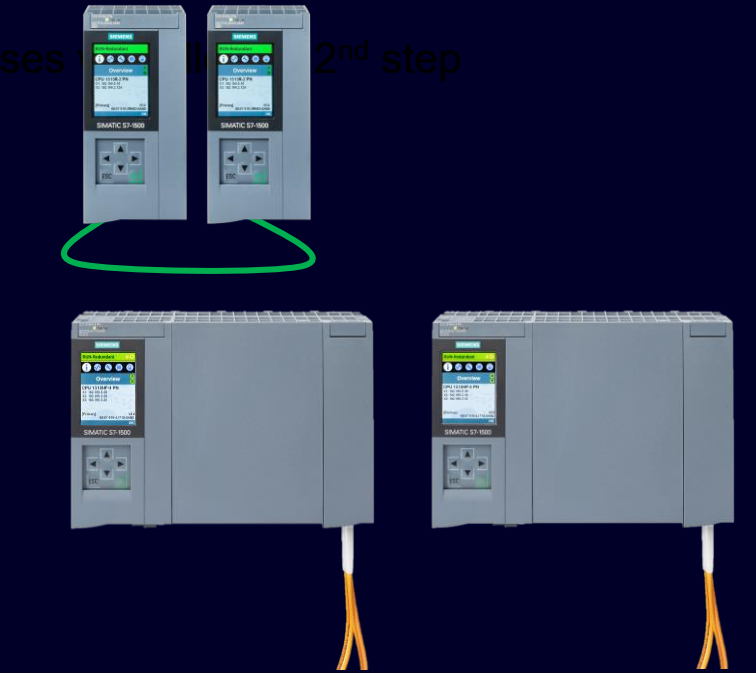
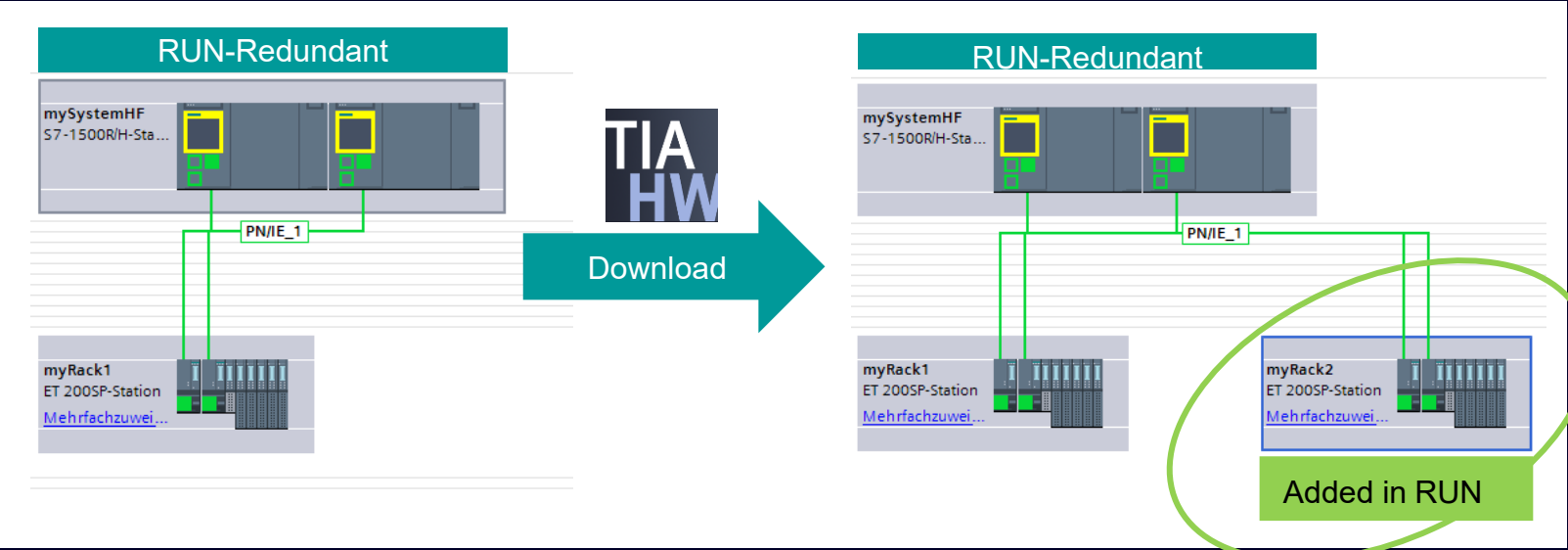
SIMATIC S7-1500 Redundant Systems

Configuration in RUN – 1st Step

Configuration in RUN (CiR) allows to **change the hardware configuration** and load it **during Run-Redundant** operation

Following Use Cases are supported:

- Add new PROFINET IO-Device
 - Change settings of IO-modules (e.g., enable wire break detection)
- Additional use cases will be shown in the 2nd step



CiR is supported for S7-1500R and S7-1500H Controller

S7-1500 Software Controller

ET 200SP Open Controller

S7-1500 Software Controller

What's new with Firmware Version 40.1 / TIA Portal V21

With TIA V21

Planned Feb-Mar 2026

T/TF versions (Motion Control)

With the addition of the T/TF variants of the Software Controller V40.1 for BX-59A and CPU 1515SP PC3, the portfolio for Standard, Safety, and Motion is now complete again.

GPU-Card (NVIDIA) support

Support for the two GPU card variants for the BX-59A, enabling complex AI solutions in combination with the PLC.

Secure Boot

The Software Controller now also supports Secure Boot with both Windows 11 and Linux, enhancing system security and integrity.



Supported Hardware

- IPC BX-59A with CP1625-2 : PN RT/IRT
- **IPC BX-39A w/o CP-Card: only PN RT***
- **IPC PX-39A w/o CP-Card: only PN RT***
- ET 200SP Open Controller CPU 1515SP PC3: PN RT/IRT

Supported Operating Systems

- **Windows 11 Ent. IoT LTSC 2024**
- **Industrial OS V4.2**



* TIA Portal V21 – Update1 needed

S7-1500 Software Controller

Details for Version 40.1

With TIA V21

Planned Feb-Mar 2026

BX-39A / PX-39A:

- **New:** Software Controller CPU 1507S (F) and CPU 1508S (F) V40.1 available*
- No CP card support: will be added for CP1625-2 with release V40.2 (planned for 12/2026)

ET 200SP Open Controller CPU 1515SP PC3

- Software Controller CPU 1505SP (F/T/TF) V40.1 available
- **New:** Additional support of:
 - PROFIBUS via CM_DP*
 - SIMATIC BusAdapter: SCRJ, LC and LC-LD
 - BA-Send Module



BX-59A:

- Software Controller CPU 1507S (F) and CPU 1508S (F) V40.1 available
- **New:** Software Controller CPU 1508S T(F) V40.1 for Core i7 variant
- **New:** Support for the two NVIDIA GPU card variants for the BX-59A.
 - Limitation: Choice between GPU utilization or PROFINET IRT (CP1625-2).
 - Resolution: New M.2 CP enables both in parallel (planned for 12/2026)

* TIA Portal V21 – Update1 needed

SIMATIC S7-1500V

SIMATIC S7-1500V

The basic idea ... we bring **SIMATIC** on the Industrial Edge!

Status 2024

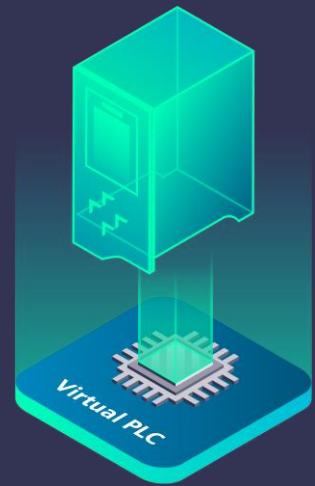
- Lift and Shift of Hardware S7-1517 into a virtual PLC
- Release of V1.0 as Standard Version and Release of Version 2.0 with **Failsafe**
- Part of the Edge Eco System
- Subscription Business Model

Highlights 2025

- Offline Licensing
- Cyclic Retain Backup
- Small Version: S7-1511V(F)
- PID Control
- Support TIA Portal V21 / FW 4.1

Vision

- More IT-like features like APIs and Open Interfaces
- More variants “small-medium-large”
- Failover and redundancy Features
- Motion Control Support
- Multicore support



Market entry virtual PLC

Roadmap – Summary and Outlook

April 2023

Hannover Fair

Global product announcement

December 2023

Version 1.0

Initial product release

- For productive use
- Via Edge Marketplace with access code
- First customer instances deployed

December 2024

Version 2.0

- Limited Sales Release
- **Failsafe** Support
- AX – “IT like” Engineering
- New Licensing

08/2025

Version 2.1

- New variants: **S7-1511V**
- Offline Licensing
- Based on FW 4.0 with TIA V20

12/2025

Version 2.2

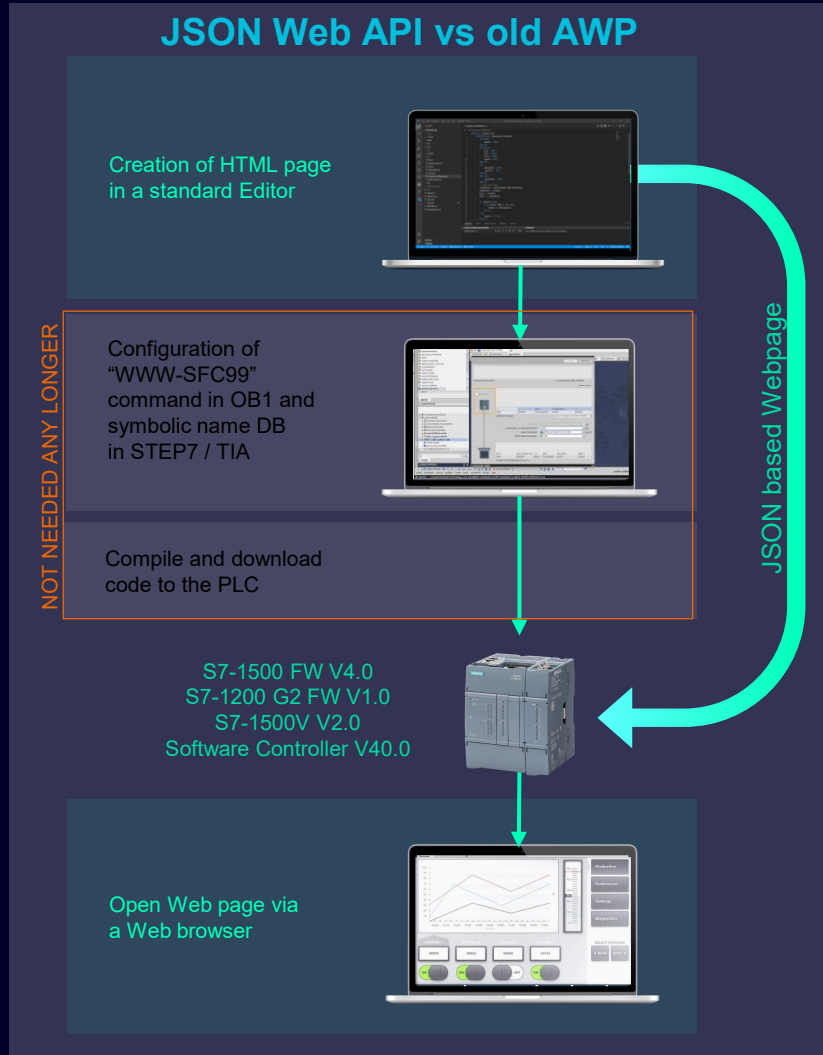
Topics in the backlog

- Cyclic Retain Backup Improvements
- New variants: **S71511V F**
- PID Control
- Based on FW 4.1 with TIA V21

S7-Web Server

S7-Web Server – Development of Custom Web Pages

New state of the art technology (JSON Web API) replace AWP

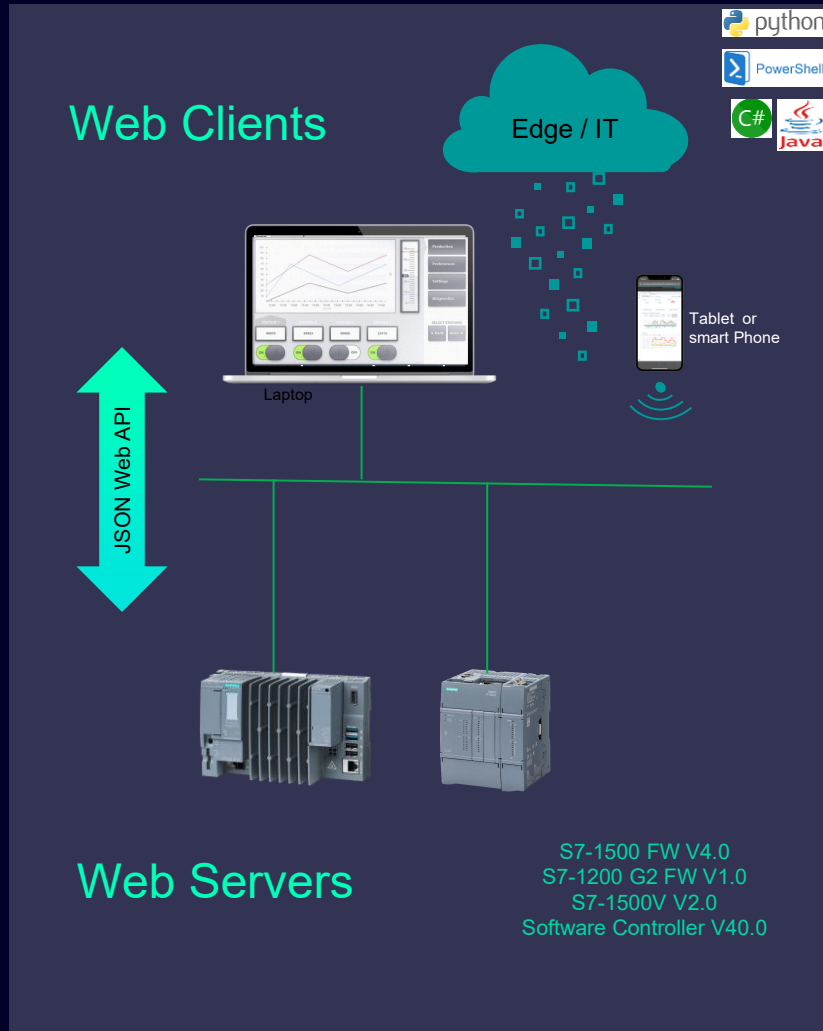


IMPROVEMENTS

- ✓ **Fast & easy creation of Web Pages** using JSON Web API
- ✓ **Reduction of development complexity**
 - No longer use of "WWW" (SFC99) and System DBs for storage
 - No need to compile and download code to the PLC (STOP-RUN)
 - Complete independence from web development and PLC Logic
- ✓ **Web pages editing and testing without process interruption**
- ✓ **Access to more data types and parameters** of the PLC than only process variables
- ✓ **Higher S7-CPU performance** due to lower memory consumption and communication load
- ✓ **Faster Web browser response time** due to improved caching
- ✓ **Embed PLC Web Pages in an HTML Frames** with new Trusted Client (e.g. in WinCC Unified Screens)
- ✓ **Secure encrypted communication** via "https://"

S7-Web Server – Development of IT Applications using JSON Web API

Access to a wide range of OT information



OT / IT Link access via JSON-RPC Web API

Standard lightweight data-interchange format, easy to read and write, supported by many standard programming languages (Python, C++, JavaScript, HTML)

Access to a wide range of OT information

Access to the complete JSON Web API library on the S7-CPU

- User program (reading & writing of process data, profiling, data logs)
- Diagnostic information (alarms, diagnostic buffer, syslog)
- Monitoring of safety status, parameter and runtime groups
- Maintenance (File Management)



Commissioning Support via Scripts

Support of commissioning activities without need of using TIA

- Monitoring and change of operating mode
- Backup and restore

Secure OT / IT Communication

Support of security mechanisms like encrypted communication

- Trusted client configuration
- Password change

S7-Web Server – New Standard System Web Pages

Modern System Web Pages based on HTML5

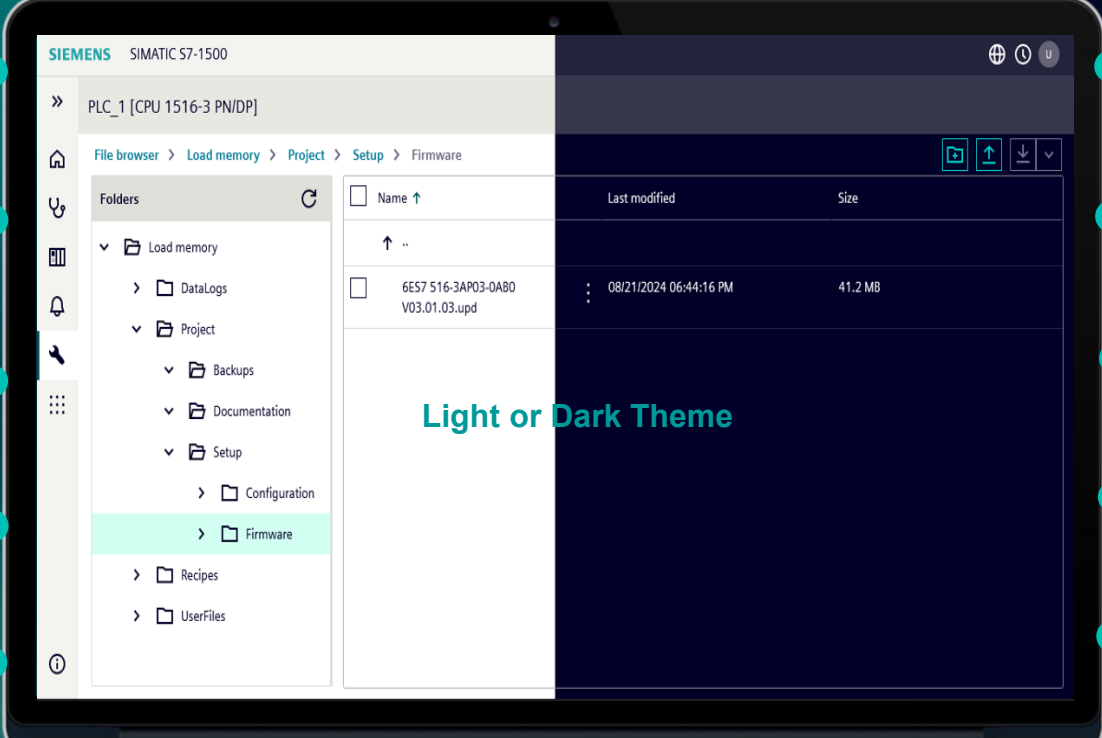
HTML5 File Browser and tree view for an easy navigation through folders

User friendly alarms control and diagnostic buffer viewer

Context sensitive options for download, rename, move, or delete files

Status Information on every page (e.g. alarms)

Easy access to Data Logs, User Files and Recipes



The screenshot shows the SIMATIC S7-1500 web interface. On the left is a file browser with a tree view showing folders like 'Load memory', 'DataLogs', 'Project', 'Backups', 'Documentation', 'Setup', 'Configuration', 'Firmware', 'Recipes', and 'UserFiles'. The 'Firmware' folder is selected. In the center, there's a table with columns 'Name', 'Last modified', and 'Size'. It lists a file '6ES7 516-3AP03-0AB0 V03.01.03.upd' with a last modified date of '08/21/2024 06:44:16 PM' and a size of '41.2 MB'. A teal text overlay 'Light or Dark Theme' is present. On the right, there are icons for file operations. The top of the interface shows 'SIEMENS SIMATIC S7-1500' and a breadcrumb path 'File browser > Load memory > Project > Setup > Firmware'.

Faster Web page loading and reduction in communication load

Support of trusted client methods for Unified Panels

Support of Local and Central User Management (UMC)

Client-side password change capability

Support for S7 Product Family:
S7-1200 G2 FW V1.0, S7-1500 FW V4.0,
S7-1500 R/H FW V4.1, S7-1500V V2.0
Software Controller V40.0,

Interoperability with custom Web pages for consistent session handling, time, language, and theme definition

Enhanced functions for [S7-1200](#) and [S7-1500](#) controller
System Web Pages for S7-1500R/H



Safety Integrated

Machinery Regulation Effectiveness

Publication date and effectiveness



¹ Adaptation from [L 169/35](#)

Machinery Regulation (EU) 2023/1230 / SysLog F-CRC

Machinery Regulation Effectiveness 20.01.2027 (Repeal of the Machinery Directive)

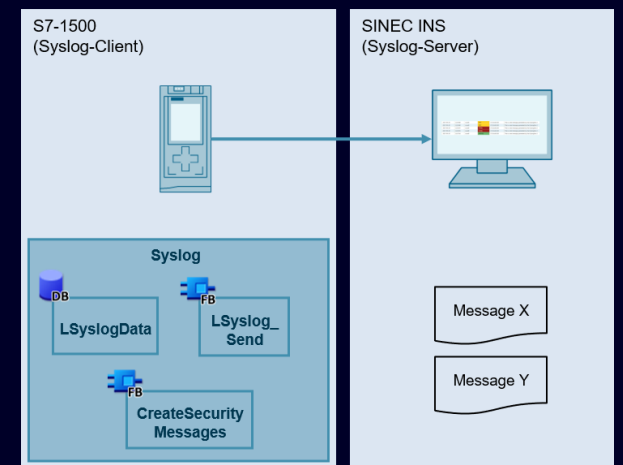


Requirements in Annex III clause 1.1.9

- Protection of the machine against unintentional or intentional corruption through connection of hardware software;
- Collecting evidence in case of hardware or software intervention/modification;
- Installed software for safe operation defined;
- Unauthorized access to the machine must be excluded.

SIMATIC S7 PLC's - Syslog Server

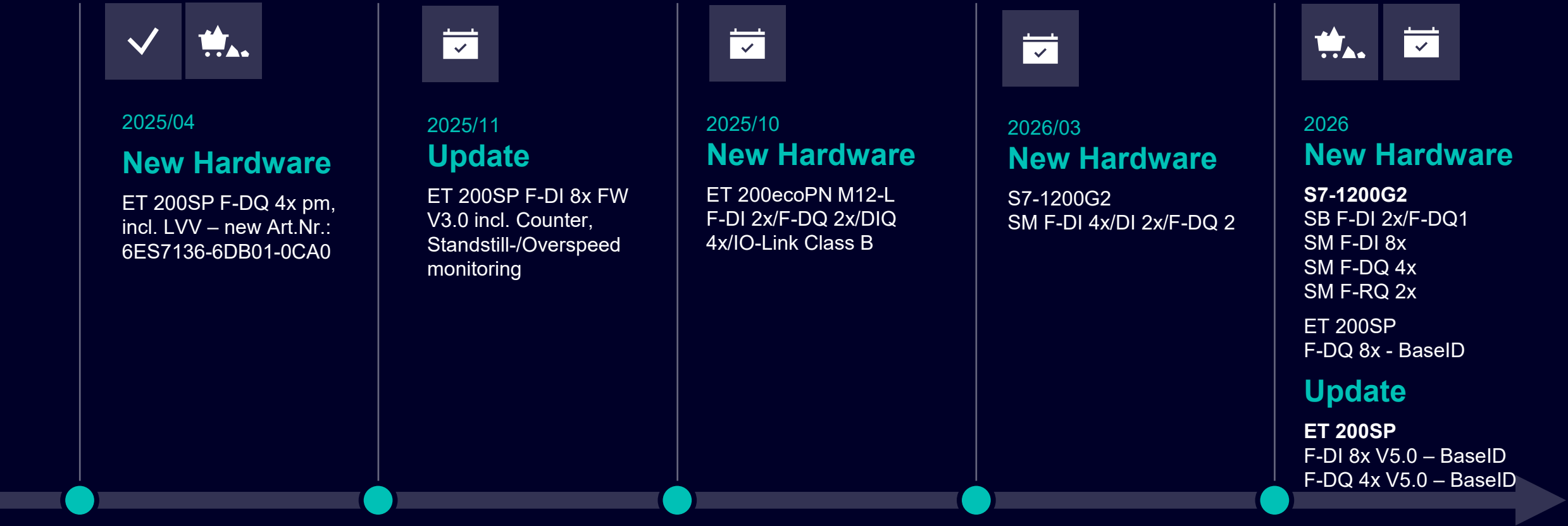
- Failsafe CRC with FW 4.1 / TIA V21
- Reading the F-CRC of a PLC enables the plant operator to monitor whether safety-relevant changes have occurred
- The operator must establish the appropriate infrastructure to evaluate these
e.g. SysLog entries of the PLC via a SysLog server
[SIMATIC S7-1200/S7-1500 CPU Messages via Syslog](#)



Safety Integrated Failsafe I/Os

SIMATIC SEA Failsafe F-IO

Roadmap: New Hardware und updates



SIMATIC F-IOs

ET 200SP

F-DQ 4x24VDC/2A PM HF

- New article number: **6ES7136-6DB01-0CA0**
- Compatible successor
- Reduction of power consumption up to 50%
- Less self operation temperature
- New function Last Valid Value (LVV) acc. EN 54
- Supported with HSP for V20



F-DI 8x24VDC HF

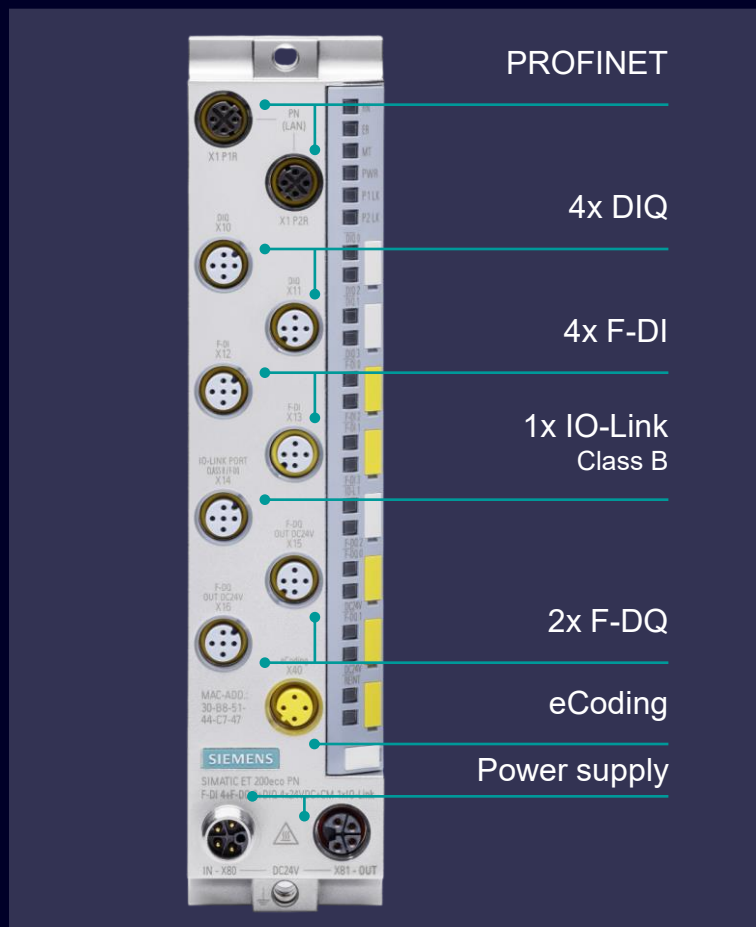
- New Firmware V3.0 – only with new FS
- Compatible successor
- New Feature 1x24V Counter SIL3
 - Standstill monitoring
 - Overspeed detection
 - Counting up and down
 - 500Hz counting frequency
 - 32bit signed value – +/- 2 000 000 000
 - High counting limit, low counting limit and start value are parameterizable
- Supported with HSP for V20



We bring SIMATIC Safety to IP6x environment

ET 200ecoPN M12-L Fail-safe IO-Module

Released in 10/25



- **Less programming for typical safety functions!**
Module embedded Safety functions: E-Stop / Enabling – parameterizable via TIA Portal
- **Parallel use of electronic and mechanical sensors**
by providing separate sensor supply for each F-DI channel
- **F-DQ channels up to SIL3**
Safety shutdown of ET 200AL modules acc. SIL2 using integrated power supply and safety output.
- **Four individually assignable standard channels for maximum flexibility**
4x DIQ standard channels to use as DI or DQ
- **IO-Link class B port for advanced sensors and actuators**, e.g. valve stations, signalling column. Safety shutdown of IO-Link actuators acc. SIL2. SIL3 level when used as third F-DQ.
- Article number: **6ES7146-6FF00-0BB0**

TIA Portal V21 - Table of contents

SIMATIC WinCC Unified – Innovations



- Unified Screen Editor (Next Gen.)
- Modernization: All essential features of the predecessor
- Configure Limits & Thresholds
- Electronic record for local user management changes & failed login
- PaCo support in Faceplate
- Reporting in ES
- New screen object - Alarm Indicator
- Sm@rtServer for UBP
- Configure printer without the printer hardware (UCP)
- Real-time online data transfer via MQTT (for PC RT)
- Parallel display of different process screens on multiple monitors (for PC RT)
- WinCC Unified Data Hub – Broad market release
- "Start Program" function for applications with user interface
- Save Licensing Costs by only "pay for what you use"
- Unified for Industrial Edge, WinCC Unified SIQENCE

SIMATIC WinCC RT Prof. – Innovations



- WebUX, RestAPI and communication enhancements
- Cross object interaction

SIMATIC STEP 7 – Innovations



- Continuous Integration / SIMATIC Source Documents
- NVT – feature round-up
- Keep DB online values on structural changes

SIMATIC Motion Control – Innovations



- New IPC and Open Controller hardware for T/TF variants
- Motion Control Multicore support
- Cam and superimposed motion improvements
- Cross-PLC synchronous operation using IRT I-Device
- Support of external encoder at PLC and S120 drive
- New diagnostic functions
- Kinematics and Motion Interpreter improvements

SINAMICS Startdrive & DCC – Innovations



- Support of SINAMICS S220 multi axes servo system
- Support of connection to S7-1500 R/H
- Parameter compare extension
- New download mode

TIA Cloud Services



- TIA Portal Cloud & TIA Portal Cloud Connector
- TIA Simulation Cloud
- TIA Project-Server Cloud

SIMATIC Hardware



- Protection of PLC configuration data on memory card
- Cross-PLC synchronous operation using IRT I-Device
- Configuration in RUN for S7-1500 R/H PLCs – 1st Step
- System Web Pages
- ...

System functions



- Migrating to and upgrading TIA Portal projects
- Enhanced TIA Portal Software Integrity Protection
- PROFINET Security Class 1 enhancements
- TIA Portal Documentation
- TIA Portal Openness
- TIA Portal Add-Ins
- Version Control Interface (VCI)
- CAx: AutomationML & Publication Tools
- TIA Portal Library: Exclusive Multiuser Mode
- TIA Portal Usability: Tracking of modifications, Info file

SIMATIC AX - Automation Xpansion



- Support of further hardware devices e.g. ET200SP CPU
- Extending the amount of available system libraries
- New debugging features: e.g. instance selection
- Publicly available documentation

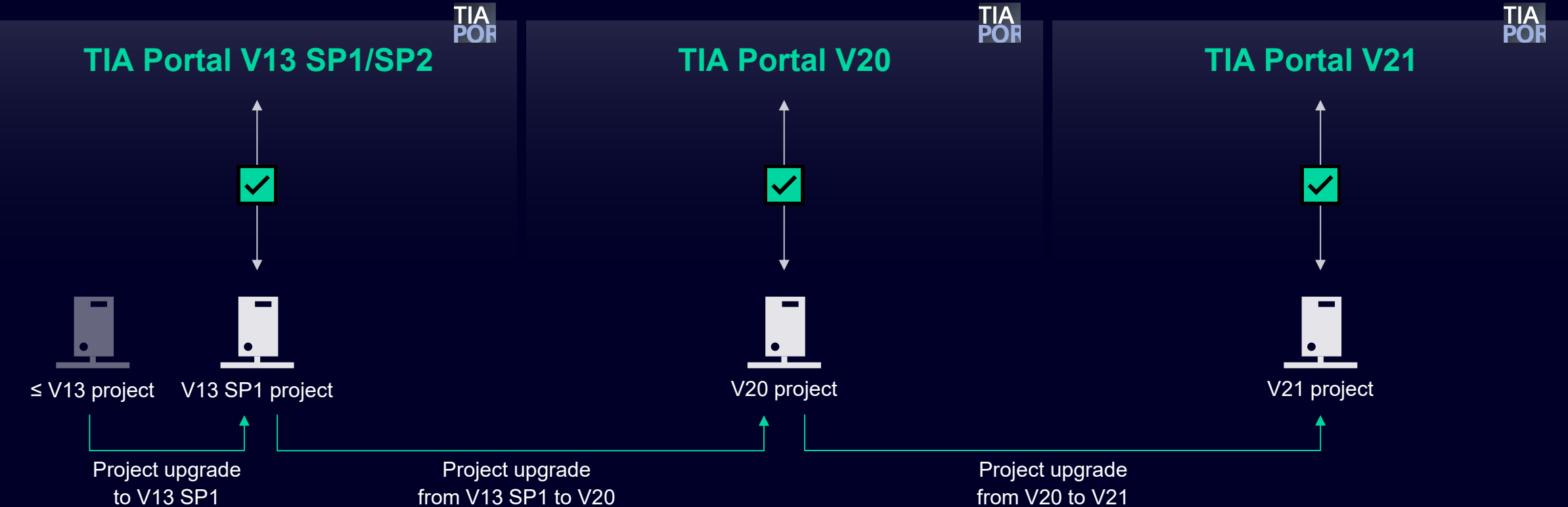
TIA Portal Options



- SIMATIC STEP 7 Safety
- SIMATIC Safe Kinematics
- TIA Portal Multiuser
- SIMATIC Robot Library
- OPC UA
- SIMATIC S7-PLCSIM / S7-PLCSIM Advanced
- SIMATIC Target for Simulink
- TIA Portal Test Suite
- SIMATIC Visualization Architect (SiVArc)
- SIMATIC Modular Automation (MTP)
- Central User Management (UMC)
- Modular Application Creator
- SIMATIC ProDiag / SysDiag
- TIA Portal Teamcenter Gateway
- TIA Package Manager
- TIA Portal Safety Validation Assistant

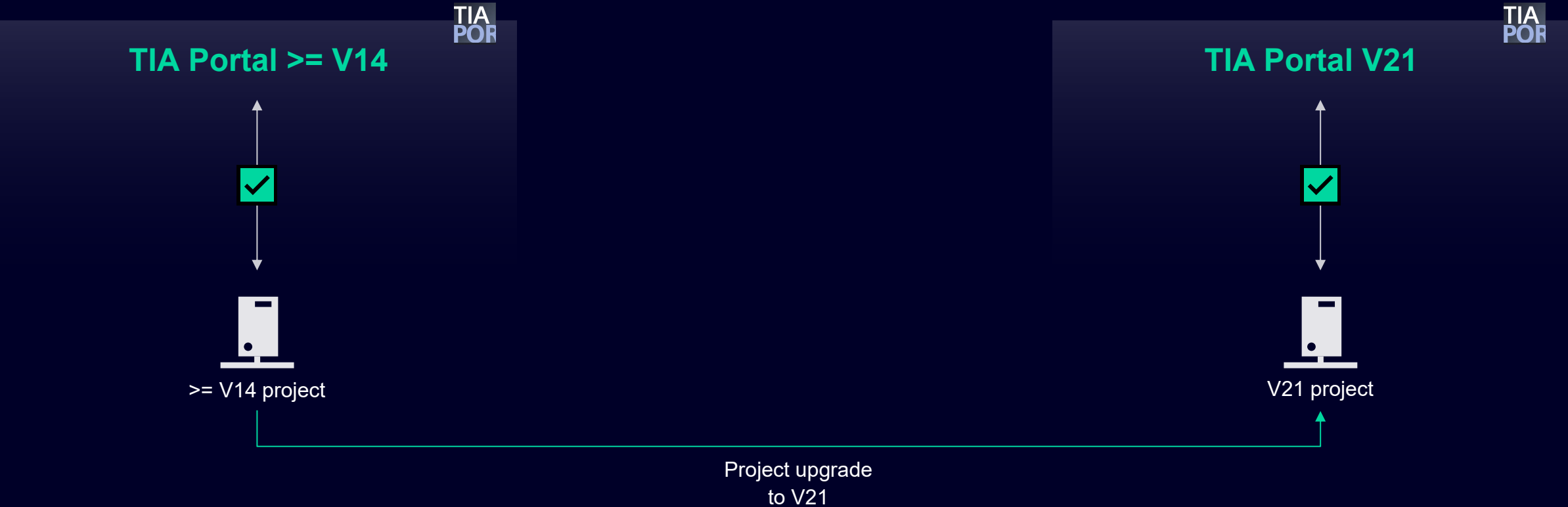
Migrating to and upgrading TIA Portal projects

Upgrading TIA Portal projects from < V14



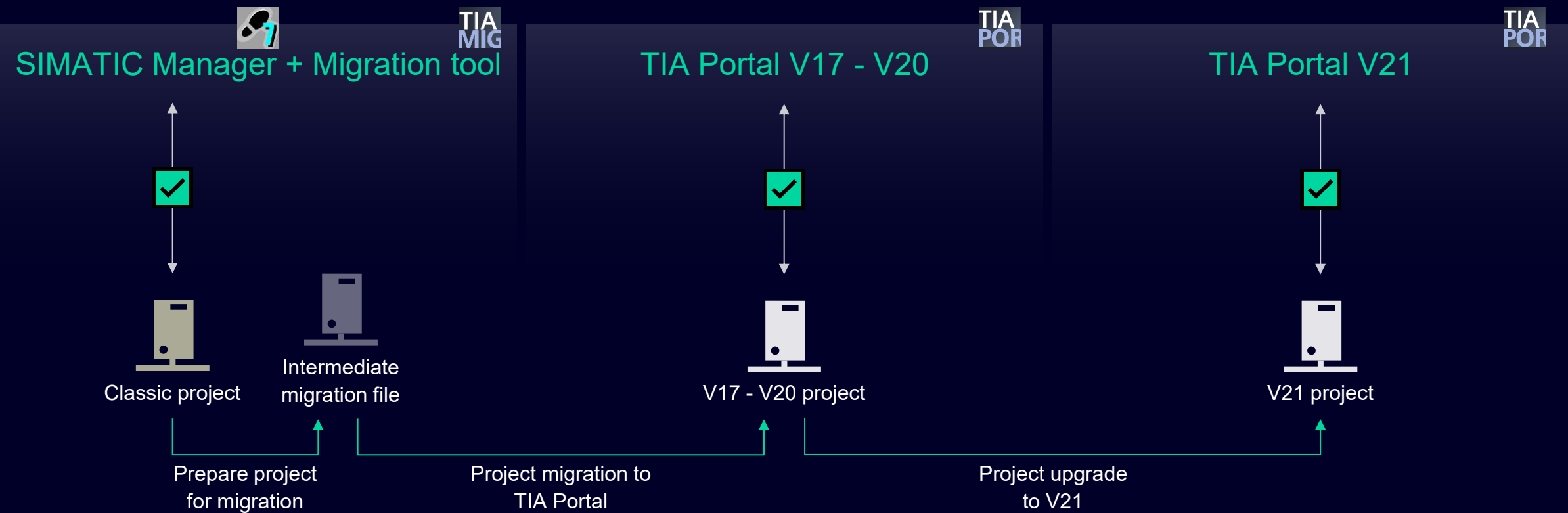
Side-by-side installation of **V13 SP1/SP2** up to **V21** allows access to all project versions.
The **V21** license can be used for all available versions from **V11**.

Upgrading TIA Portal projects from >= V14



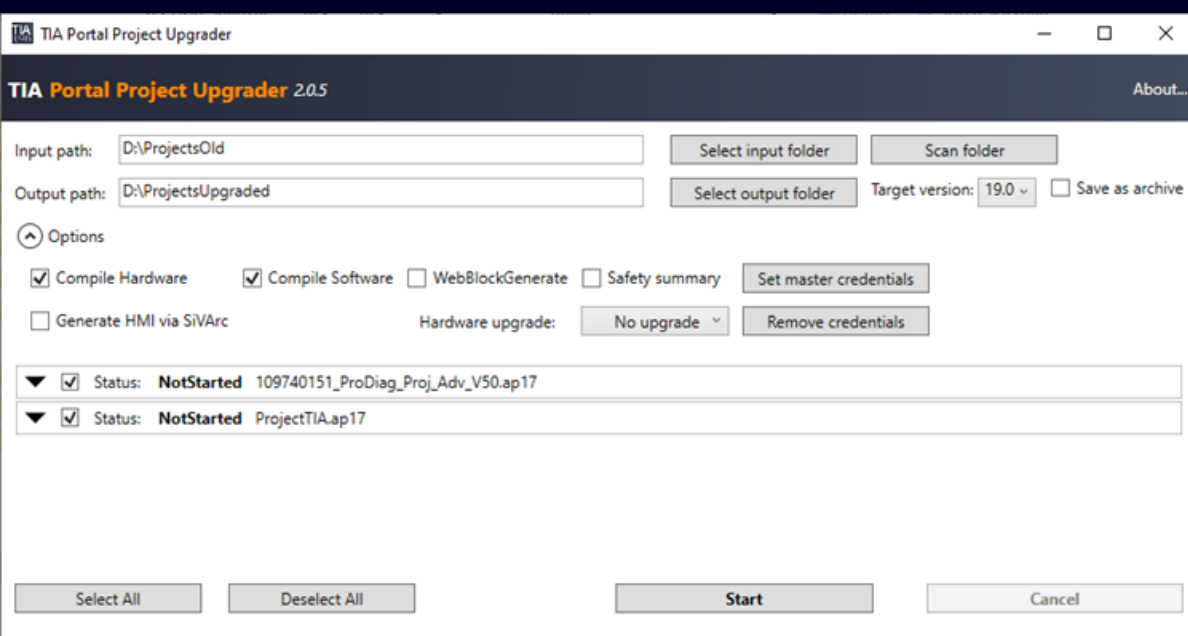
Side-by-side installation of **V13 SP1/SP2** up to **V21** allows access to all project versions.
The **V21** license can be used for all available versions from **V11**.

Migrating classic projects to TIA Portal



Side-by-side installation of **V13 SP1/SP2** up to **V21** allows access to all project versions.
The **V21** license can be used for all available versions from **V11**.

Upgrading TIA Portal projects



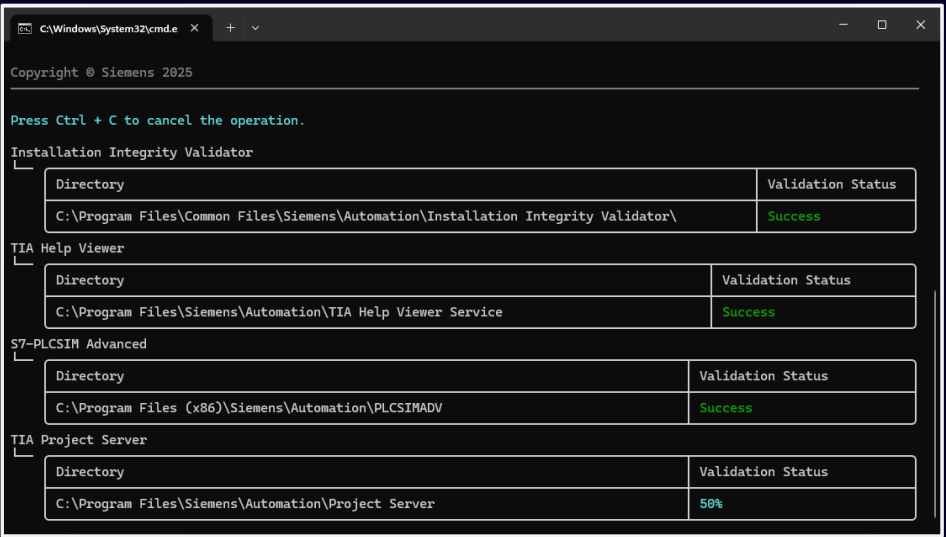
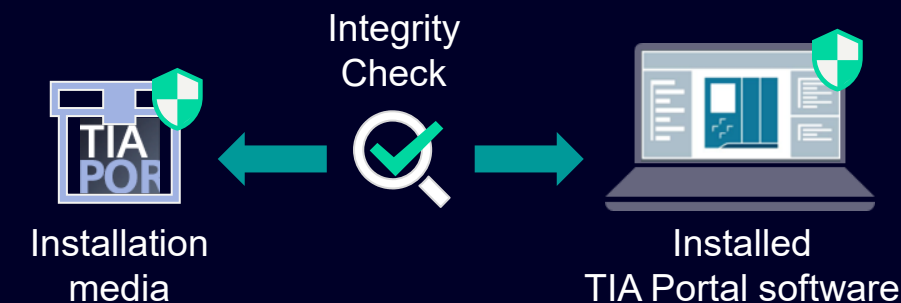
TIA Portal Project Upgrader based on TIA Portal Openness

- Upgrade multiple TIA Portal projects from previous versions ($\geq$ V14) to the current TIA Portal version at once
- Fully automate the upgrade process
- Options to automatically upgrade hardware and firmware
- Options to automatically compile project and to start SiVArC generation after upgrade
- Generate Safety documentation (Safety printout)

Free download at SiePortal: [109811744](#)

Security Enhancements

Enhanced TIA Portal Software Integrity Protection



Installation Media Integrity

- Automatic integrity and authenticity check during setup
- Additional standalone verification option via TIA Integrity Validator tool

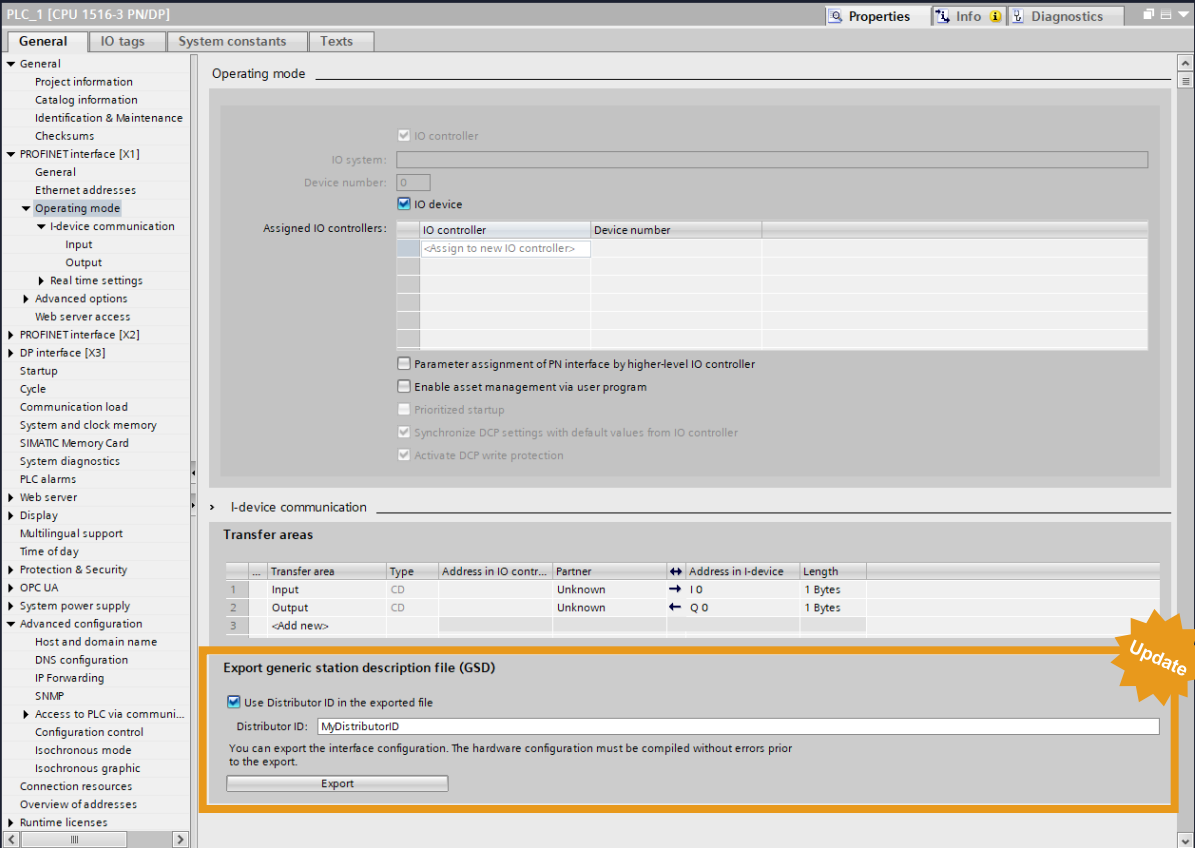
Installed Software Integrity

- Extensive checks for integrity and authenticity of installed TIA Portal products (e.g., modified, removed or added files)
- Flexible verification through “Installation Integrity Validator” command line tool
- Status reporting for individual products and components

Benefits

- Enhanced security through detection of unauthorized software modifications
- Increased system reliability and trustworthiness
- Simplified verification process through automated tools

PROFINET Security Class 1 Enhancements



PROFINET Security Class 1

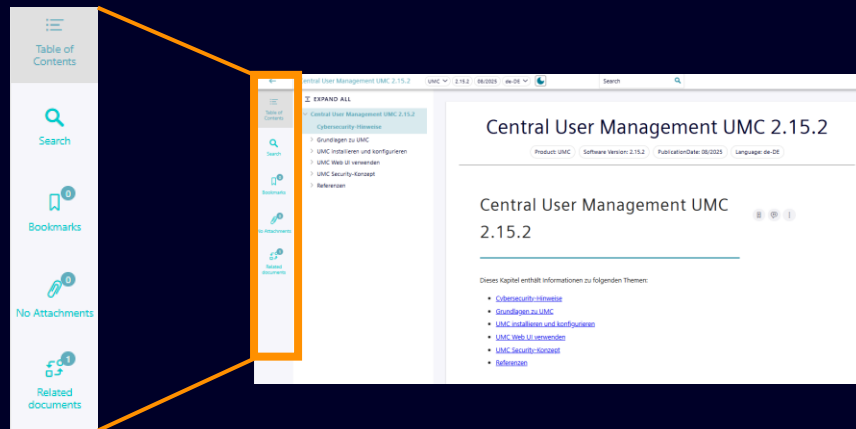
GSD files of I-device configurations can now be exported with a Distributor ID.

➔ This enables signing of GSD files also in I-device configurations

TIA Portal Documentation

TIA Portal Documentation (Online view)

docs.tia.siemens.cloud



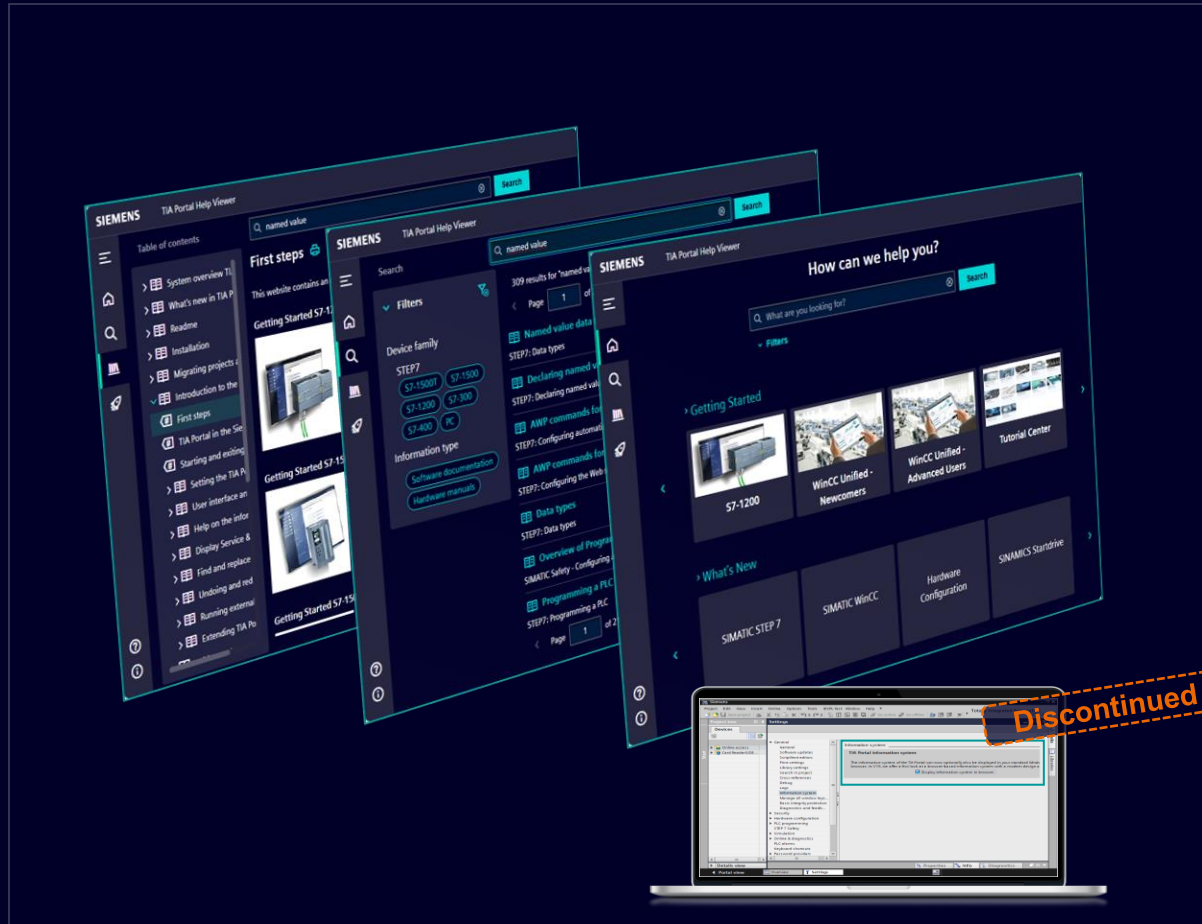
New content

- New videos “What’s new in V21” present the highlights of the new version
- The new chapter “Industrial Cybersecurity” explains “Defense-in-Depth” strategy of TIA Portal.
- The new chapter “Panel Modernization” supports you in migrating your panels to SIMATIC HMI Unified.

New features

- The sidebar shows related documents and attachments
- Improved design: Dark mode

TIA Portal Documentation (Offline view)



TIA Portal information system

Users who want to work offline with the locally installed TIA Portal information system, can continue to do so.

Discontinued: Parallel support of old and new help viewer

The locally installed TIA Portal information system can be viewed in the new browser-based help viewer.

The old Windows-based Help viewer is no longer available:

- Focus on one innovated Help viewer
- Intuitive user experience
- Reduced complexity
- Improved stability

TIA Portal Openness

TIA Portal Openness

at a glance

TIA Portal Openness is our API for automating your engineering workflows

[SiePortal: 109792902](#)

The TIA Portal Openness architecture V21 has been extensively redesigned for seamless integration and long-term stability:

- New modular TIA Portal Openness libraries with simplified assembly management
- See also TIA Portal Openness Readme, chapter “Major changes for long-term stability in TIA Portal Openness V21”

Highlighted API innovations in TIA Portal Openness V21:

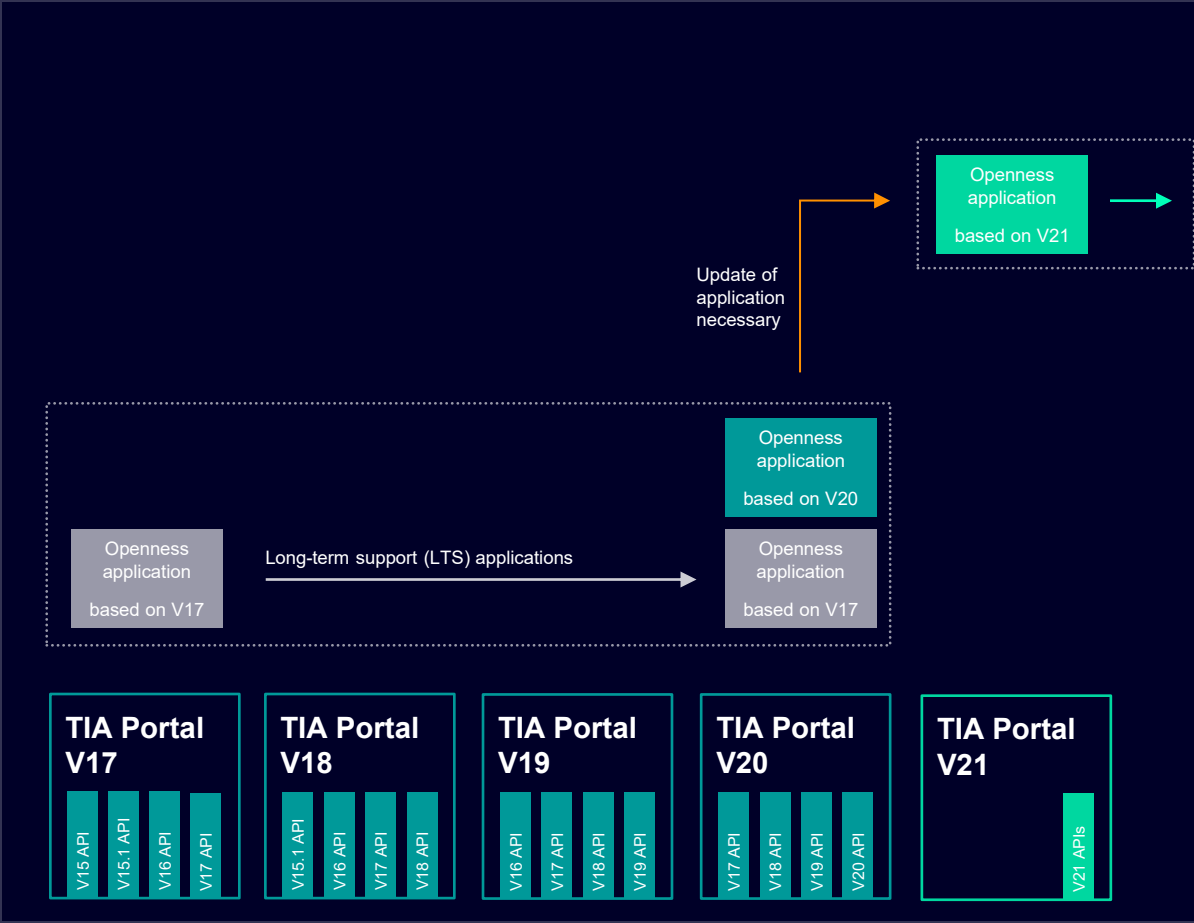
- Hardware configuration and modules: Communication connections management and hardware parameter access for SCALANCE and S7-1200 G2
- Online access: Quick PLC compare, go online and snapshot functionality for data blocks
- PLC programming: Text-based file exchange format “SIMATIC SD” for graphical programming languages, enhanced block attributes and write-protection
- Safety Validation Assistant for activation tests
- WinCC Unified: New HMI controls and widgets, extended attribute access and graphic list management

You can find the complete list of all new features in the TIA Portal Openness system manual, chapter “What's new”.



TIA Portal Openness

Extensive architecture redesign



New modular Openness libraries

Instead of having one large class library where the content depended on the installed products, there are now modular assemblies.

Benefits:

- Develop TIA Portal Openness applications in a modular way
- Develop shared class libraries reusable for applications and TIA Portal Add-Ins

Changeover:

- It is necessary to rebuild applications and Add-Ins to V21.
- Applications and Add-Ins targeted to V21 or greater won't run for previous versions.
- A quick guide for migration and all changes are described in the TIA Portal Openness Readme, chapter "Major changes for long-term stability in TIA Portal Openness V21".

SimaticML file format compatibility

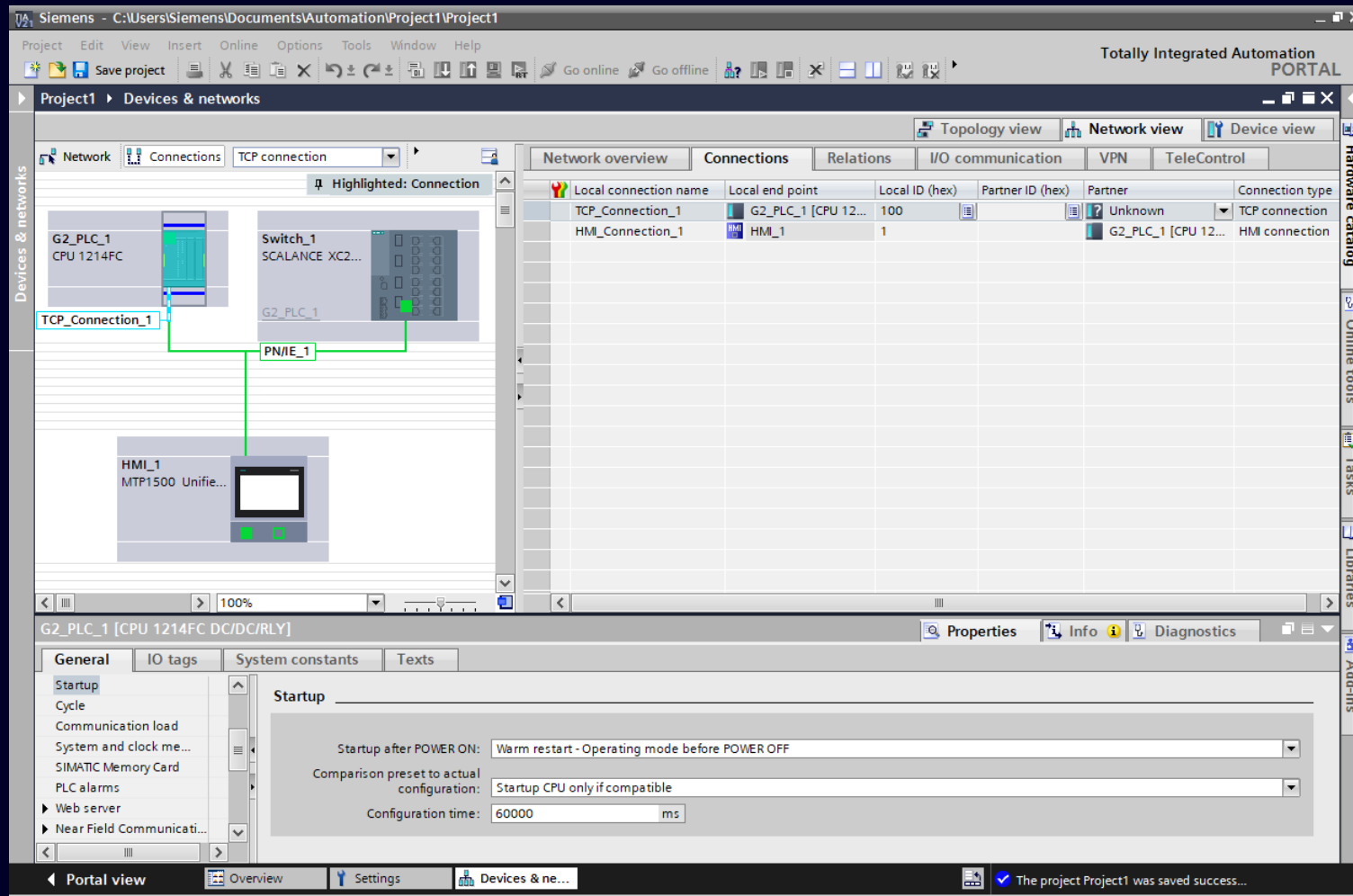
- Improved formatting of SimaticML.
- The APIs in TIA Portal V21 will create SimaticML files of engineering version V21.
- The APIs in TIA Portal V21 can import SimaticML files from engineering versions V18, V19, V20, and V21.

.NET SDK version

- TIA Portal and TIA Portal Openness rely on .NET Framework 4.8 as a mature software framework as part of the operating system to build long-running enterprise-grade industrial-suited applications complying the needed long-term support.

TIA Portal Openness

Hardware configuration and modules



Hardware configuration

- Create and manage communication connections (FDL, HMI, ISO, ISO-on-TCP, PtP, S7, TCP, UDP)
- Features for hardware configuration in run (CiR)
- Export PN-GSD file of an I-Device
- Manage CP / TIM TeleControl data points
- Configure project integrated shared device
- Query status of GSDX signature for GSD devices

Hardware parameter access

- Hardware parameter access* for S7-1200 G2 (Standard)
- Bulk operation support for Safety module parameters*: ET200 SP Safety, ET200 AL Safety, ET200pro Safety, ET200eco PN Safety, ET200MP Safety
- Access to further hardware parameters* of SCALANCE
- Resource configuration and export of configuration file for S7-1500 Software Controller (V30.0)

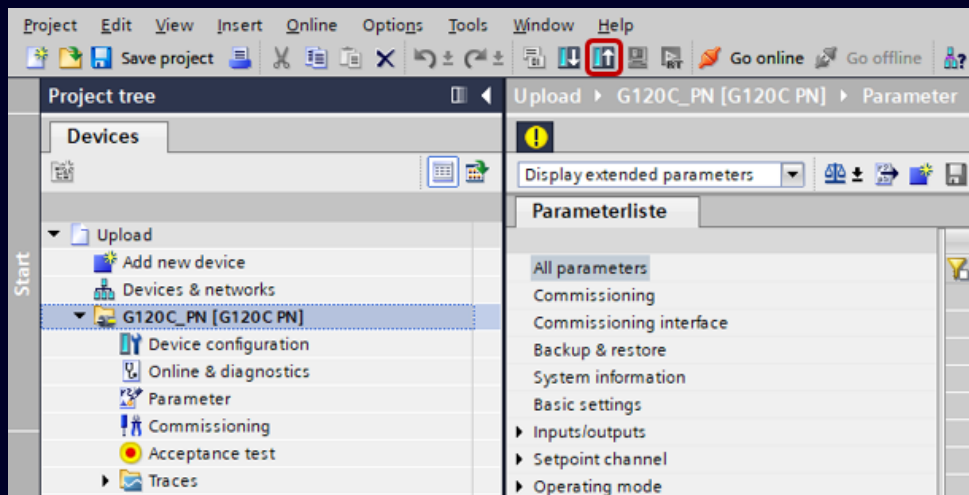
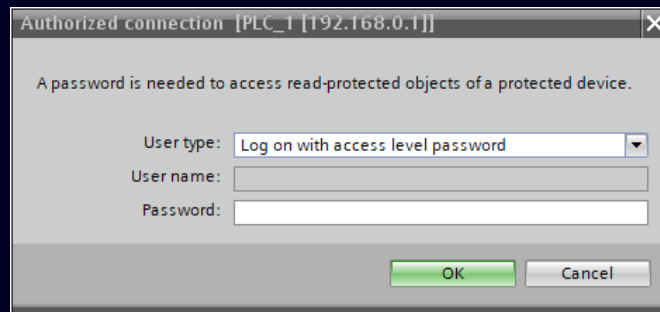
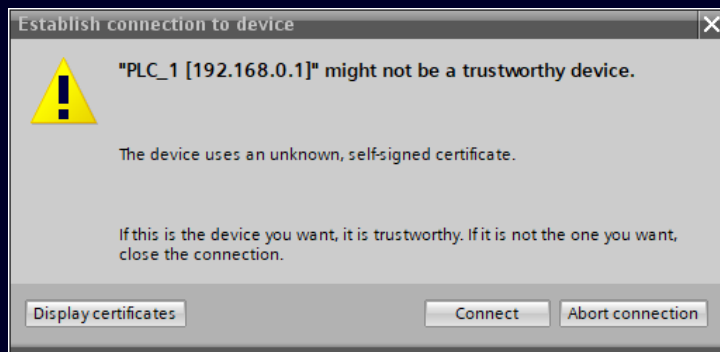
Security

- Support additional confidential configuration data protection settings of a PLC

* Detailed list of supported modules, channels and parameters:
C:\Program Files\Siemens\Automation\Portal V21\PublicAPI\V21\HW Parameter description\

TIA Portal Openness

Online access



Online scenarios

Secure communication

- Verify certificate details of a secure connection in online event handlers
- Check secure communication state for passwords in online event handlers
- Improved error message in case of issues with a secure connection

Go online

- Go online on a protected PLC
- Go online on a PLC by specifying the IP address
- Go online on a primary or backup R/H PLC by specifying the IP address

Quick compare

- Speedup of reading online fingerprints of a PLC for quick station compare

Download

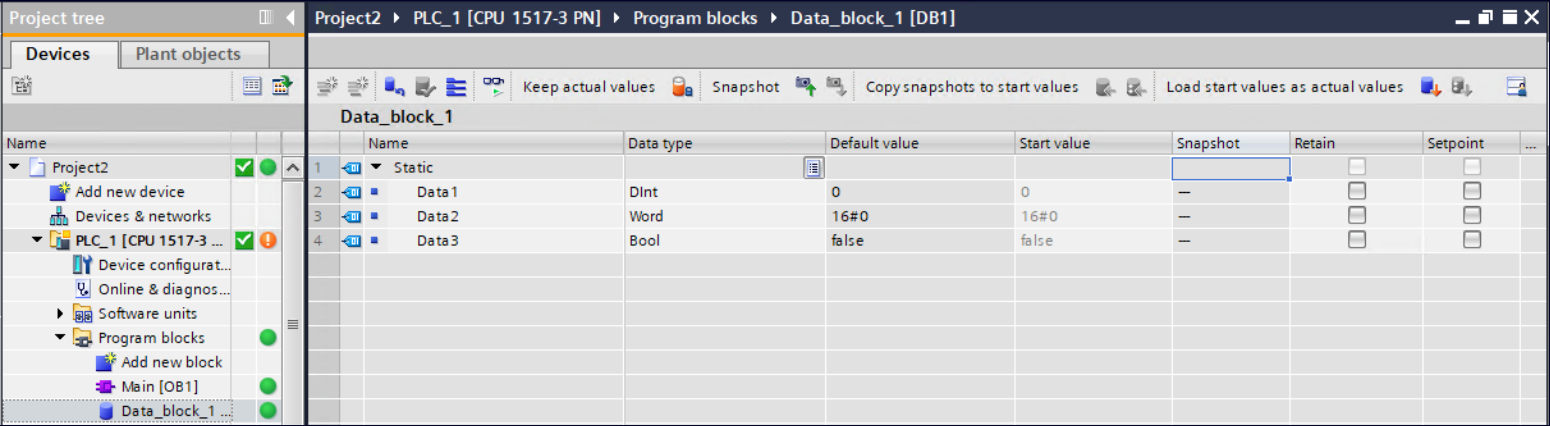
- Download additional user files to PLC

Upload

- Upload drive parameters of SINAMICS Startdrive
- Continue upload device as new station for a PLC if a PROFINET IO device cannot be uploaded

TIA Portal Openness

PLC user programs

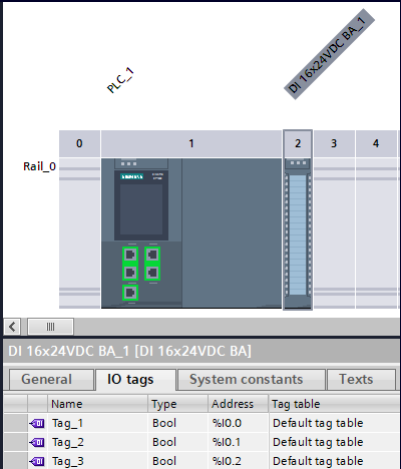
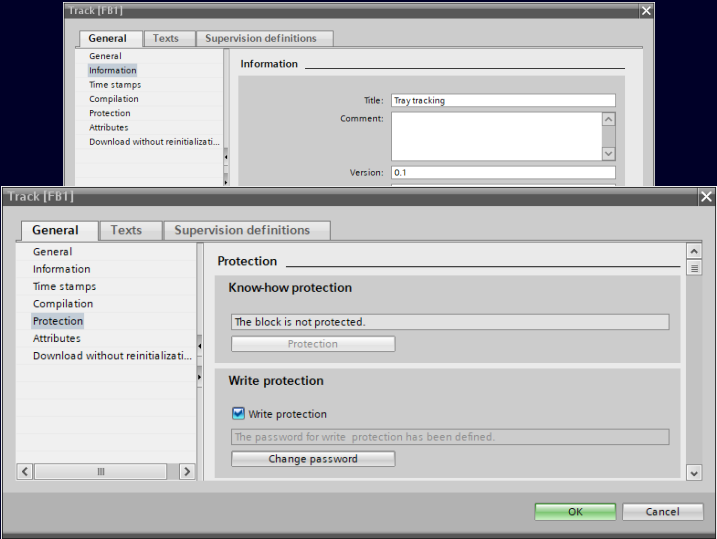


```

Main.s7dcl - Notepad
File Edit View

{
  S7_Optimized := "TRUE";
  S7_PREFERREDLANGUAGE := "LAD";
  S7_Version := "0.1"
}
ORGANIZATION_BLOCK "Main"
VAR_TEMP
  FirstScan : Bool;
  Initialize : Bool;
END_VAR
{ S7_Language := "LAD" }
NETWORK
  RUNG wire#powerRail
  Contact( #FirstScan )
  Coil( #Initialize )
END_RUNG
END_NETWORK
{ S7_Language := "LAD" }
NETWORK
  RUNG wire#powerRail
END_RUNG
END_NETWORK
END_ORGANIZATION_BLOCK

```



PLC user programs

SIMATIC Source Documents (SIMATIC SD)

- Extended new text-based file exchange format for PLC blocks for programming language LAD, Safety-LAD, FBD, Safety-FBD, SCL and blocks with mixed languages as well as data blocks and PLC data types

Actual values

- Create snapshot of actual values for a data block
- Load start values as actual values for a data block
- Load snapshot as actual values for a data block

Object properties

- Read and write further block attributes such as for information, compilation, and download
- Rename groups and objects in PLC software
- Access multilingual titles and comments

Block protection

- Manage write-protection of blocks
- Know-how protection has already been supported

PLC tags

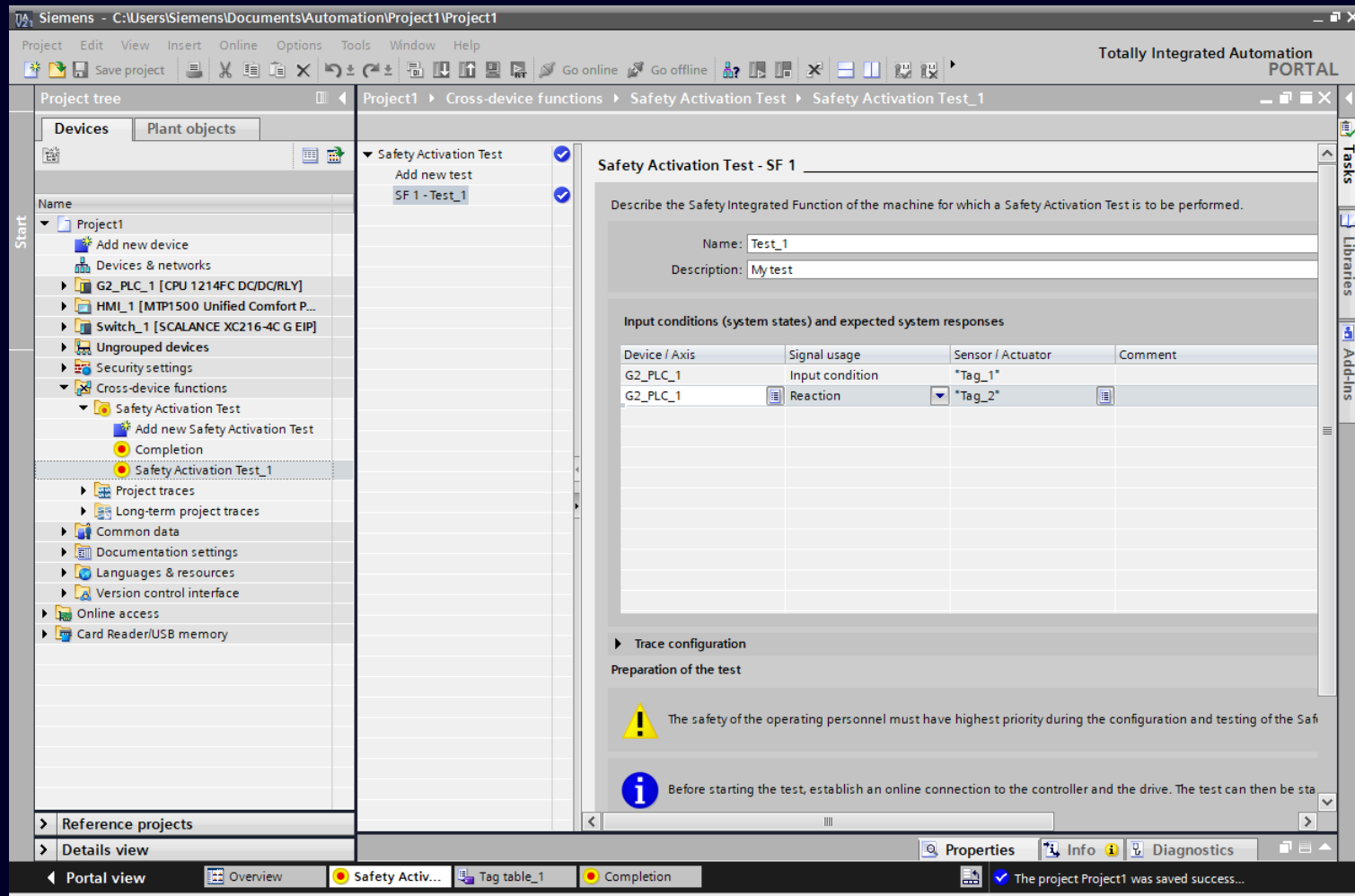
- Get PLC tags of a specific device item

Library workflow

- Use master copies and library types for NVTs

TIA Portal Openness

Safety Validation Assistant

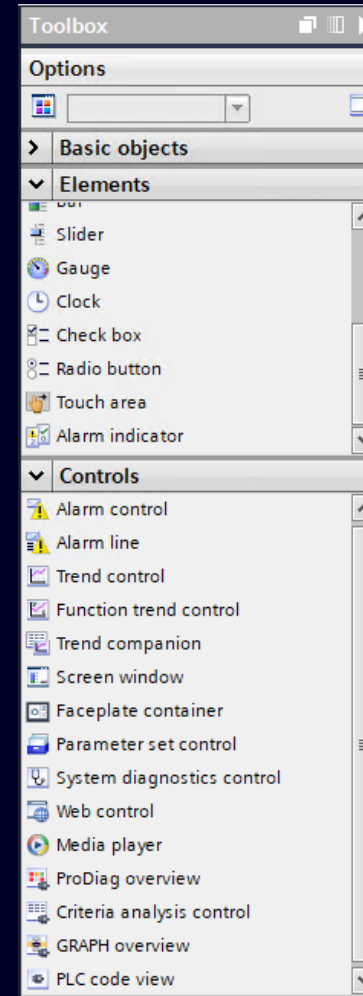
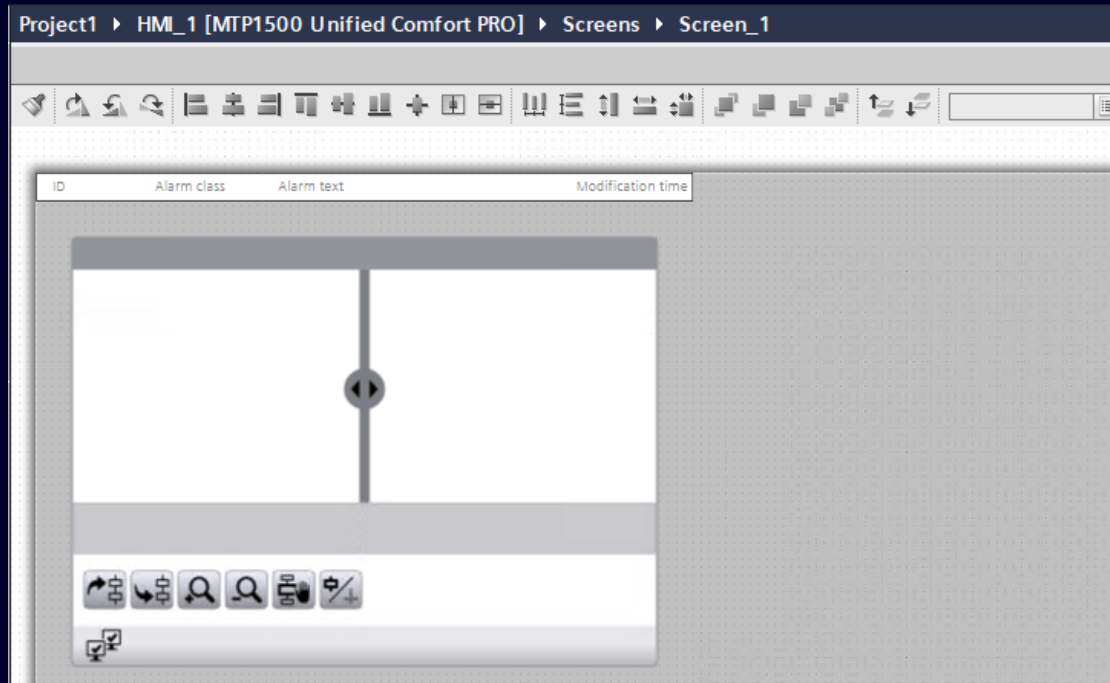
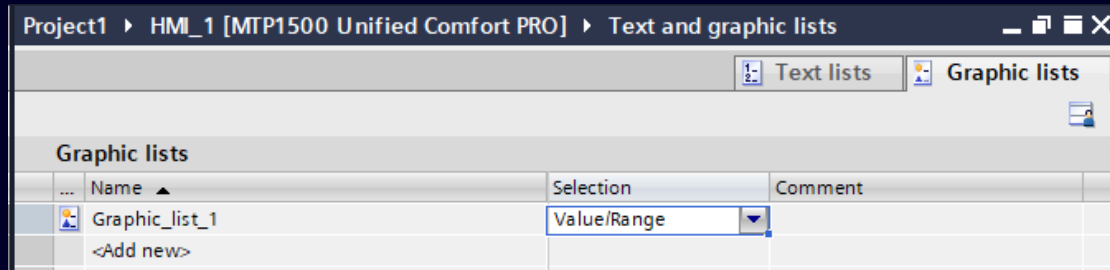


Safety Validation Assistant

- Create and manage Safety Activation Tests, including export/import functionality
- Generate test reports and save as file

TIA Portal Openness

WinCC Unified



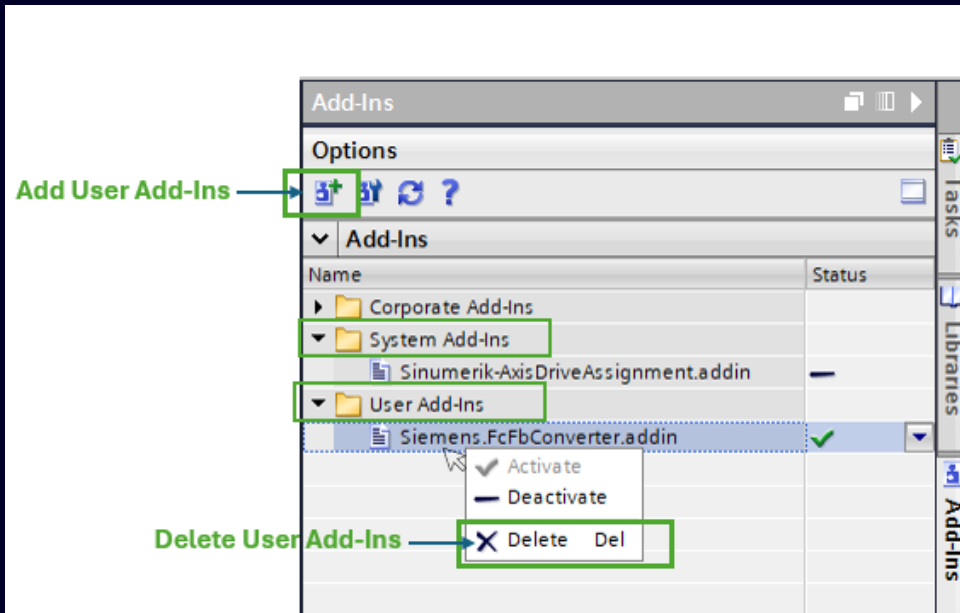
WinCC Unified

- Create and manage HMI graphic lists
- Access additional HMI runtime settings
- New HMI controls: Alarm Line, Process Diagnostic Criteria Analysis, Process Diagnosis Graph Overview, Process Diagnosis Overview, Process Diagnosis PLC Code Viewer
- New HMI widgets: Alarm Indicator
- Export and import layout fields of a screen

TIA Portal Add-Ins

TIA Portal Add-Ins

Enhanced Add-In Management



Improved Organization and Visibility

- The 'Add-In' folder in TIA Portal Add-In task card UI is now separated into two clear categories:
 - 'System Add-Ins': Add-Ins deployed via the setup of a Siemens product.
 - 'User Add-Ins': Add-Ins added directly by the user.
- The 'Corporate Add-Ins' category folder continues to be available in Add-Ins task card.

Improved Add-In management from TIA Portal UI:

- User can now add/delete 'User Add-Ins' from TIA Portal UI.
- Certificate information is shown on Add-In Activation dialog before the Add-In is activated.

Benefits:

- 'User Add-Ins' can be added without Admin rights, directly from TIA Portal UI.
- Simplifies Add-In management, directly from the TIA Portal UI.
- Better Add-In type visualization.
- Activation dialog enhancement helps users to make informed trust decisions before Add-In activation.

TIA Portal Add-Ins

Change in Add-In Deployment Paths

Change in Add-Ins path:

- The 'AddIns' folder in the installation directory has been removed.
- Add-Ins are no longer deployed/copied to the installation path.
- *New Add-Ins Location:*
 - *User Add-Ins:* Stored in the system's AppData folder. User can add *User Add-Ins* from TIA Portal UI itself.
 - *Corporate Add-Ins:* Rolled out to "*C:\ProgramData\Siemens\Automation\Portal V21\CorporateAddIns*", instead of installation directory.

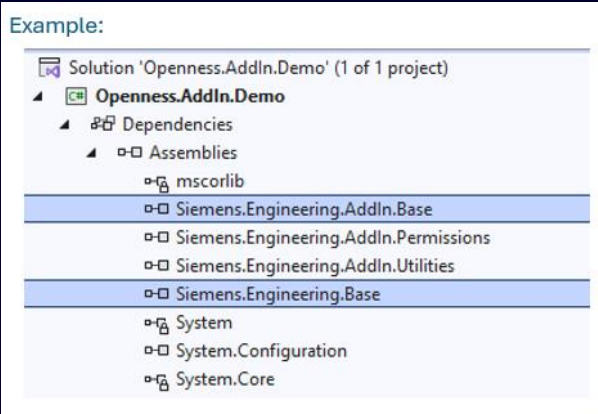
Benefits:

- Enables users to add *User Add-Ins* without machine administrator rights.
- Preserves the integrity of the installation by avoiding file copy actions in the setup directory.

TIA Portal Add-Ins

Changes in Add-In Development

Divided products	TIA Portal and Hardware Configuration (HWCN)	STEP 7	Safety
Separated Add-In assembly	Siemens.Engineering.AddIn.Base.dll	Siemens.Engineering.AddIn.Step7.dll	Siemens.Engineering.AddIn.Safety.dll
Dependencies	Siemens.Engineering.Base.dll	Siemens.Engineering.Base.dll Siemens.Engineering.AddIn.Base.dll Siemens.Engineering.Step7.dll	Siemens.Engineering.Base.dll Siemens.Engineering.AddIn.Base.dll Siemens.Engineering.Safety.dll Siemens.Engineering.Step7.dll



One-time, breaking change in V21 Add-Ins

- New modular TIA Portal Add-In assemblies have been introduced. Add-In projects must reference the new modular assemblies (e.g. Siemens.Engineering.AddIn.Base.dll and dependencies), instead of the single Siemens.Engineering.AddIn.dll.
- All Add-In assemblies for Add-In development are now located under new path: '*<TIA Portal Installation location>\PublicAPI\V21\net48*'.
- Add-In APIs for MessageBox and ProgressWindow are now provided as services, offering the same functionality with a different access approach.

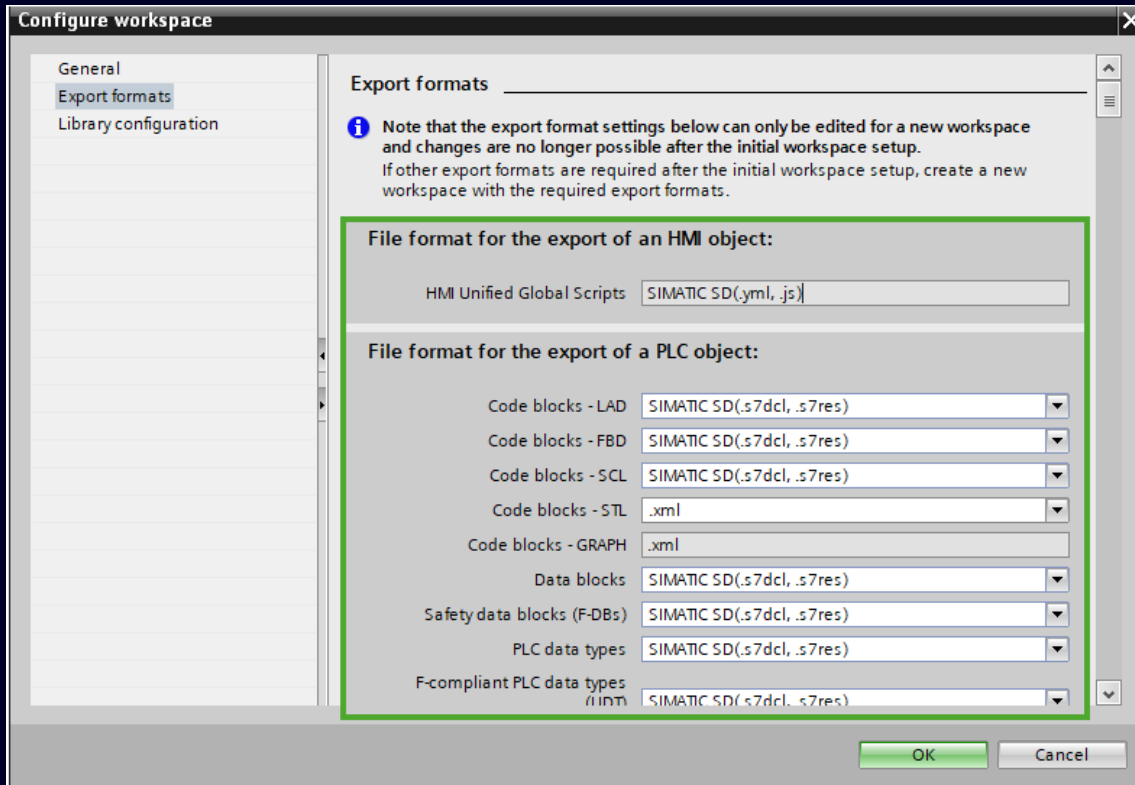
Benefits:

- Introduction of modular, future-ready Add-In assemblies.
- Aligned with latest TIA Portal architecture for long-term compatibility.

Version Control Interface (VCI)

Version Control Interface (VCI)

Support of Simatic Source Document (Simatic SD) formats in VCI



Support of Simatic SD formats in VCI

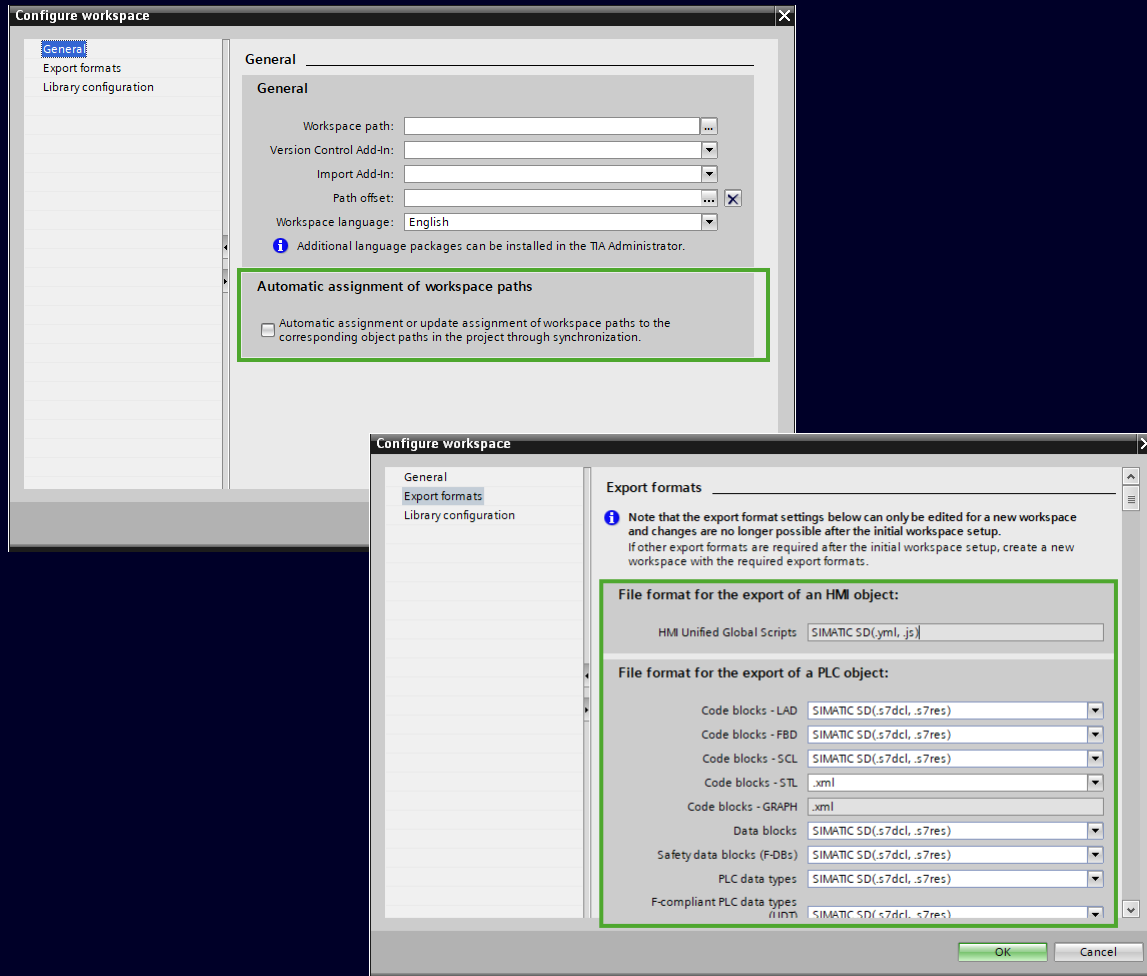
- Simatic SD format export/import in VCI is supported for Blocks (SCL, FBD, LAD), DB, F-DB, UDT and F-UDT.
- This format is in addition to the earlier Simatic ML format.

Benefits:

- Simatic SD format is an easily readable, source code only format. It does have internal meta data. This makes document based code modification and merge conflict handling much easier in VCI with this format.
- This format enables compatibility of VCI workspace repository across various TIA Portal versions.

Version Control Interface (VCI)

Workspace specific export formats and auto-assign path settings in VCI



Extended workspace specific settings in VCI

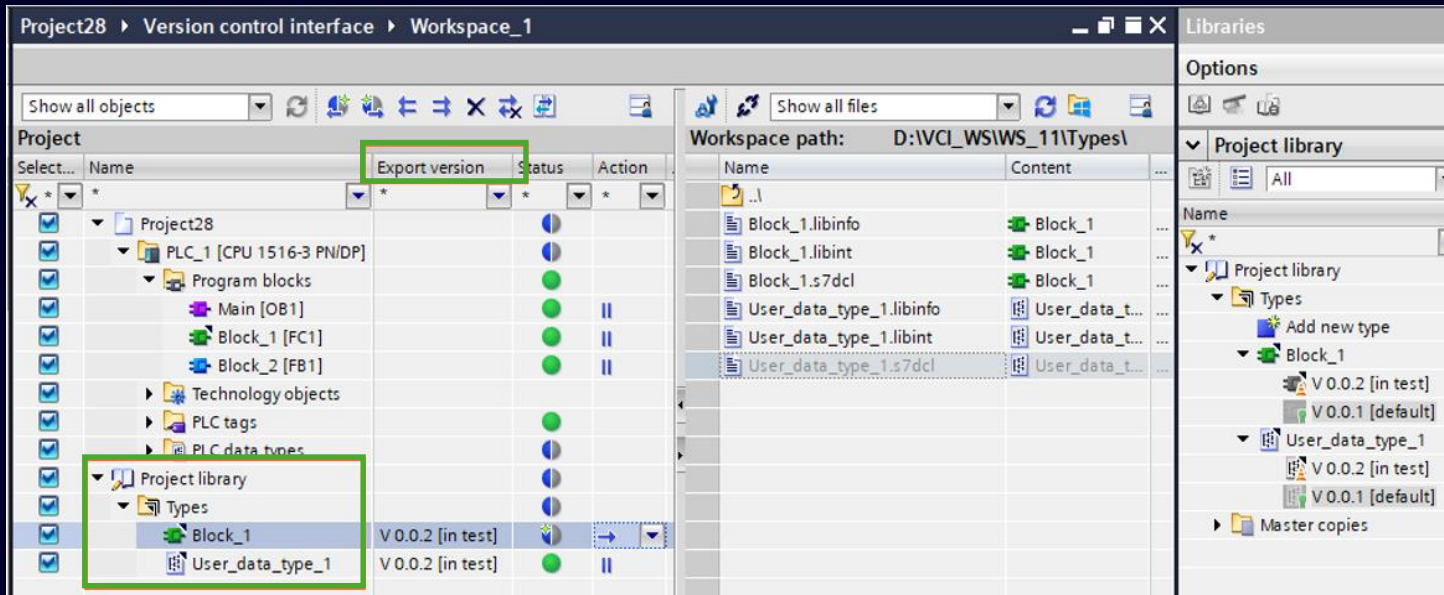
- User can choose export formats and auto-assign path property per workspace, thus enabling customized settings for each VCI workspace.
- These workspace setting is in addition to the TIA Portal Settings, which is default setting for all VCI workspaces, unless overridden at workspace level.
- The workspace level export formats configuration is also saved in the workspace path (in .vci folder).

Benefits:

- Users can now work with multiple export formats simultaneously by creating one workspace per format, no more toggling global settings.
- Changing the global VCI settings no longer impacts existing workspaces, it only sets the default for new workspaces.
- Export configuration can be shared across users along with the workspace.

Version Control Interface (VCI)

Library Types available in VCI

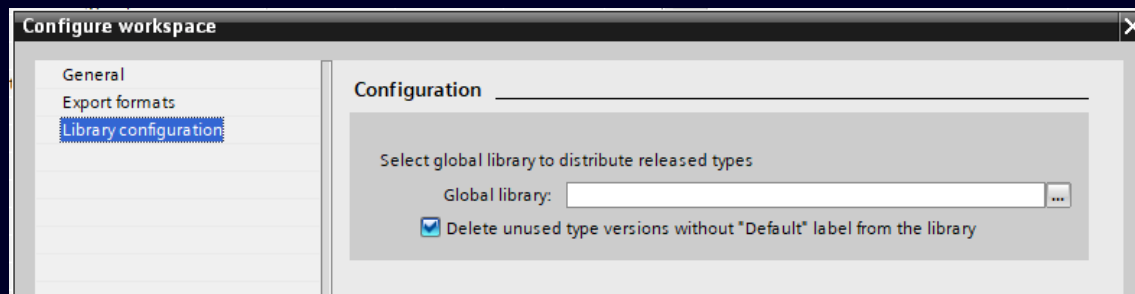


Library Types available in VCI

- User can export/import library types via VCI.
- Latest version (i.e. in-test version if available, else default version) is considered for export.
- In-test versions can be imported in TIA Portal from documents.
- Importing a document as released type in TIA Portal needs additional input of a global library (in VCI Workspace Configuration) where this released type is available.

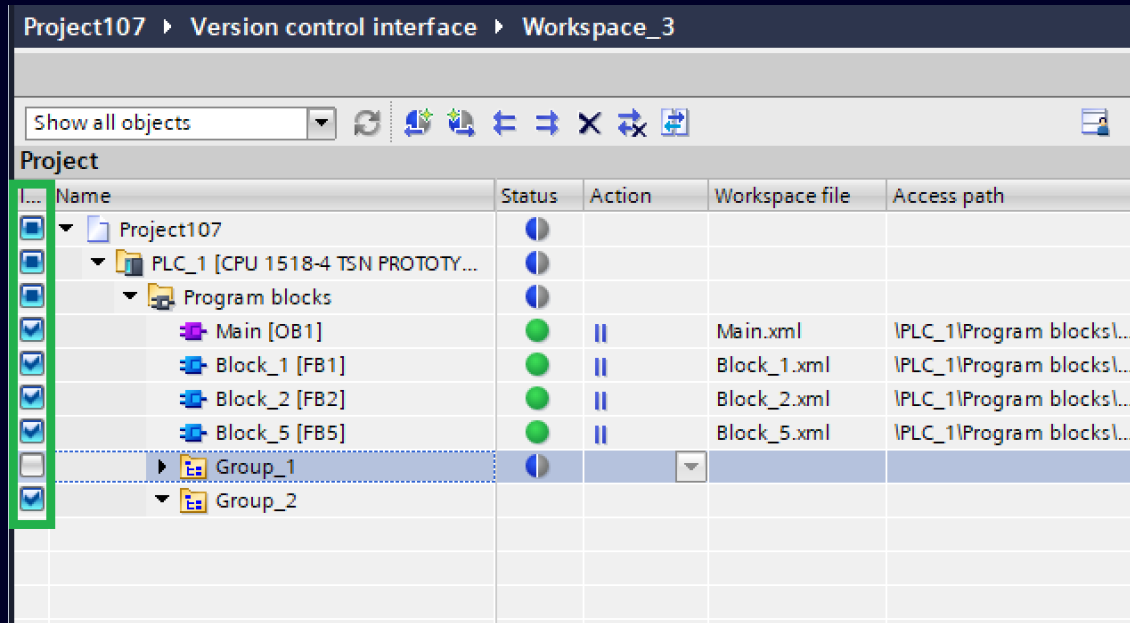
Benefits:

- Library developers can develop libraries in a more collaborative way via a version control system of choice.
- No need to release versions during library development (earlier it was required to share types via global library).



Version Control Interface (VCI)

Scope/Descope objects from VCI Operations



Scope/Descope objects from VCI Operations

- A new checkbox column in project view of the VCI editor is introduced. It is to specify the scope that should be part of import/export operations of VCI.
- This checkbox must be checked to enable corresponding object's export/import in VCI.
- Default state is checked, user needs to uncheck objects that are not supposed to participate in export/import operations.

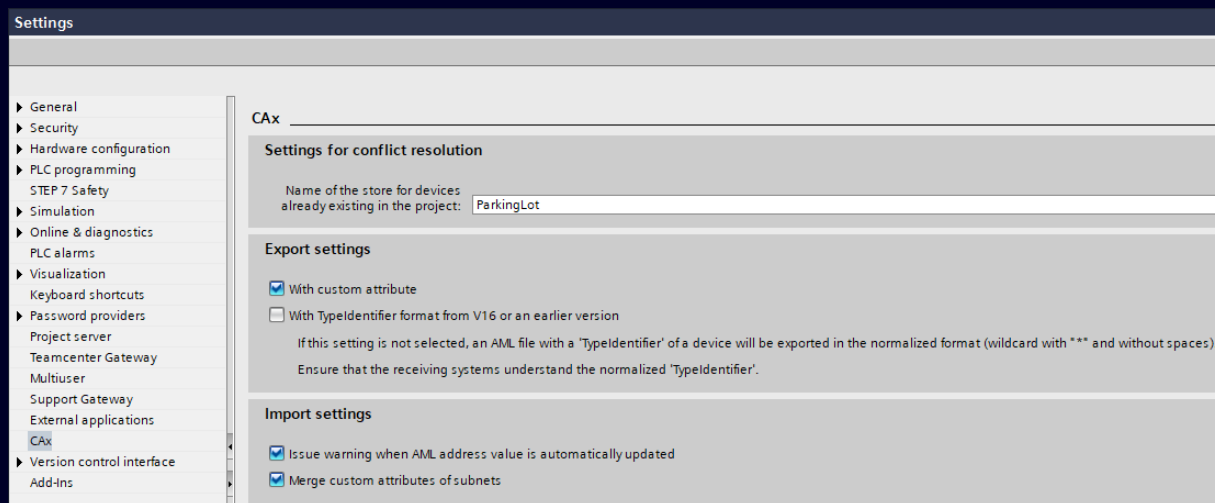
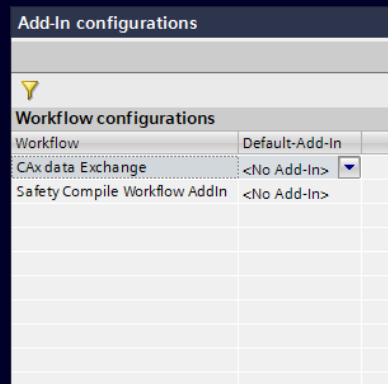
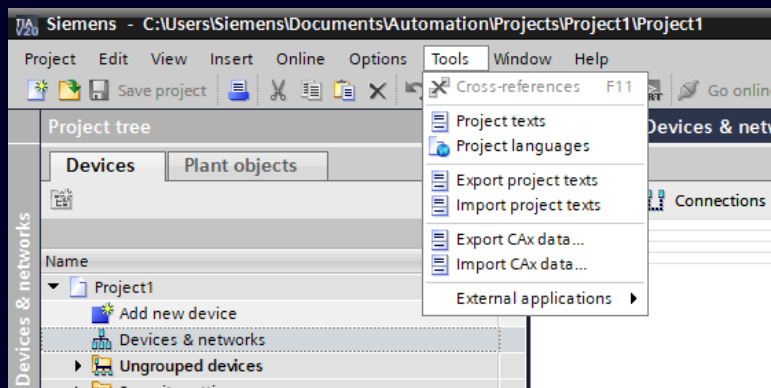
Benefits:

- More granular control over objects that participate in VCI export/import operations.
- Improve workflow efficiency by eliminating the need for manual filtering or post-processing.
- Minimizes configuration errors and subsequent rework.

CAX: AutomationML & Publication Tools

CAX

AutomationML data exchange in TIA Portal V21



TIA Portal CAX

- The CAX interface provides you with the option of exchanging hardware information in AutomationML format between TIA Portal and ECAD systems in accordance with the Application Recommendation Automation Project Configuration (AR APC) standard.
- In addition to exchanging devices, modules and networks, selected parameters can also be exchanged with ECAD systems.
- The definitions of the available parameters can be easily determined using the CAX Publication Tools and can then be imported into other tools.

New in V21

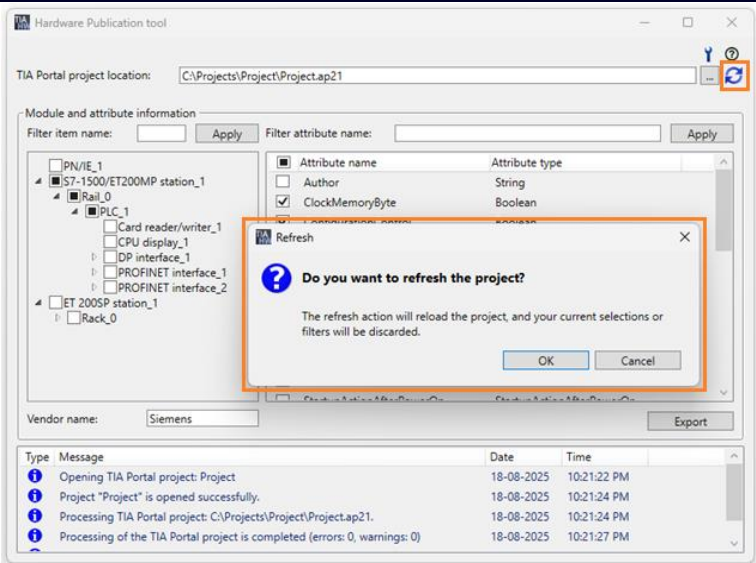
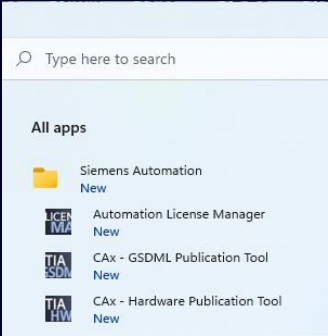
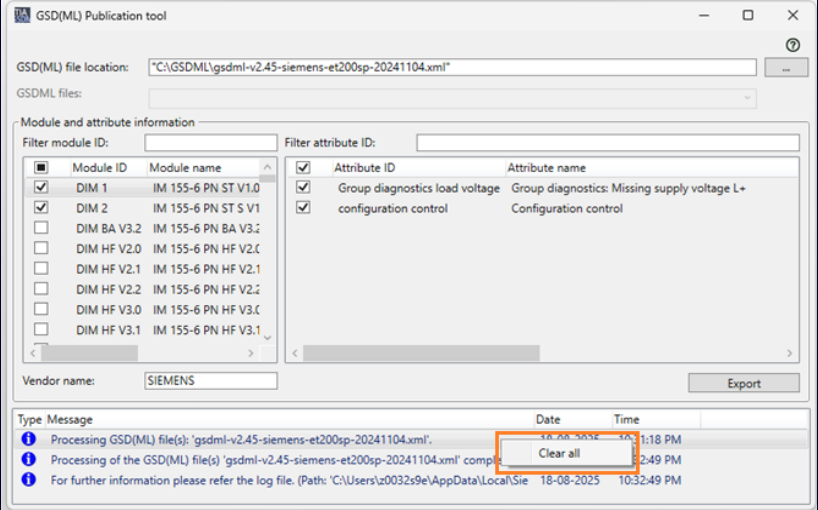
- New 'Signed' CAX PCT Add-In is available for usage with V21 TIA Portal installation bundle (DVD2). This ensures that the Add-In is from 'Siemens' trustworthy source. The functionality of the Add-In remain unchanged, and the user can continue to use it for exporting/importing S7-PCT based IO Link configuration in TIA Portal.

Benefits

- Consistent data exchange for hardware configuration across systems, e.g. from TIA Selection Tool to EPLAN Electric P8 to TIA Portal
- Extended reuse of hardware configuration created outside TIA Portal
- Optional exchange of module and channel parameters by enabling "custom attributes"

Cx

TIA Portal Cx Publication Tools V4.0



TIA Portal Cx Publication Tools

- The **GSD(ML) Publication Tool** can be used via GUI or Command Line to open device description files, display the device data they contain and select device attributes. These attributes can be exported with the tool as metadata.
- The **Hardware Publication Tool** can be used via GUI or Command Line to open TIA Portal projects, display the module data they contain and select module attributes. Module and channel attributes can be selected separately. These attributes can be exported with the tool as metadata.

New in Version 4.0

Both GSD(ML) and Hardware Publication Tools supports an explicit option to 'clear' logs within the user interface by right-clicking on information tab and selecting the 'Clear all' option from the context menu.

The Hardware Publication Tool includes a provision to refresh the currently loaded TIA Portal project, enabling users to reflect the latest changes made to the project in parallel.

Benefits

- Easy retrieval of available custom attributes via Cx Publication Tools
- Reuse the definition of available hardware parameter data for
 - EPLAN master data base (for custom attributes in EPLAN macros)
 - Openness applications (e.g. hardware project generators)
 - furthermore, tools using the "Neutral" or "PcPm" formats

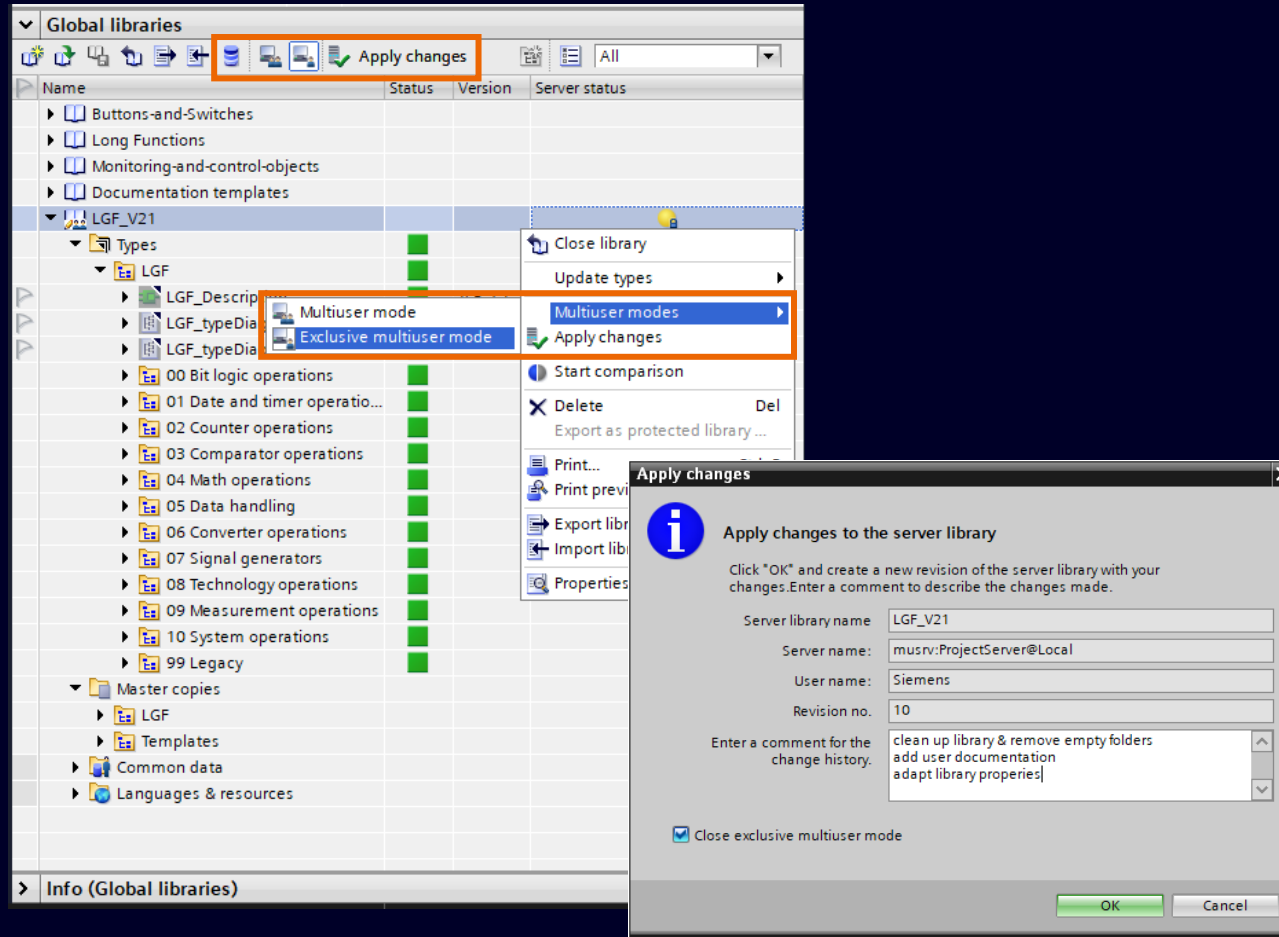
Order details

- The tools are part of the TIA Portal V21 installation and require an own license:
 - Version 4.0: 6ES7823-1JE04-0EA5
 - Upgrade to version V4.0: 6ES7823-1JE04-0EE5
 - Software Update Service (SUS): 6ES7823-1JE03-0EL5

TIA Portal Library Workflows

TIA Portal Library

Exclusive Multiuser Mode



Use case

- Team development of global libraries with Project-Server

Team Engineering with Multiuser

- Use library sessions to develop new revisions of master copy or library types of your global library
- All Multiuser features are supported the same way for projects and libraries

New "Exclusive Multiuser Mode"

- Enable switching from multiuser mode to exclusive mode for library sessions like in multiuser projects
- In exclusive mode, the server library is locked for others, allowing unrestricted modifications
- The switch is only possible if the current library session is based on the latest revision

Benefits

- Develop and share Global Libraries easily in the company
- Benefit from Multiuser collaboration feature e.g., marking of modified objects, history, change log,...
- Full flexibility in modifying the server library
- Faster application of changes in exclusive mode compared to standard check-in procedures

TIA Portal Usability

TIA Portal Usability

Tracking of modifications

Color_Filling_Station > Common data > Logs > 10/1/2025 2:25:28 PM (UTC) - Change log

Log

	Message	Go to	Date	Time
▼	Created Objects		10/1/2025	4:25:28 PM
	HMI_Tag_1: Color_Filling_Station\Color_Mixing_HMI\HMI tags\Default tag table\HMI_Tag_1, TIA Portal User : "Joh...	➔	10/1/2025	4:25:28 PM
	Discrete alarm_1: Color_Filling_Station\Color_Mixing_HMI\HMI alarms\Discrete alarm_1, TIA Portal User : "John S...	➔	10/1/2025	4:25:28 PM
	Control: Color_Filling_Station\Color_Mixing_HMI\Screens\Control, TIA Portal User : "John Smith"	➔	10/1/2025	4:25:28 PM
	CTR_4A_2: Color_Filling_Station\Color_Mixing_PLC\PLC tags\Tag_Control\CTR_4A_2, TIA Portal User : "John Smith"	➔	10/1/2025	4:25:28 PM
	CTR_4A_1: Color_Filling_Station\Color_Mixing_PLC\PLC tags\Tag_Control\CTR_4A_1, TIA Portal User : "John Smith"	➔	10/1/2025	4:25:28 PM
▼	Edited Objects		10/1/2025	4:25:28 PM
	Mixer: Color_Filling_Station\Color_Mixing_HMI\Screens\Mixer, TIA Portal User : "John Smith"	➔	10/1/2025	4:25:28 PM
	Watch table_Control: Color_Filling_Station\Color_Mixing_PLC\Watch and force tables\Watch table_Control, TIA Por...	➔	10/1/2025	4:25:28 PM
	SCL_Valve_Conveyor [FB1]: Color_Filling_Station\Color_Mixing_PLC\Program blocks\SCL_Valve_Conveyor, TIA Port...	➔	10/1/2025	4:25:28 PM
	FBD_Control [FC3]: Color_Filling_Station\Color_Mixing_PLC\Program blocks\FBD_Control, TIA Portal User : "John S...	➔	10/1/2025	4:25:28 PM
	CTR_3B_1: Color_Filling_Station\Color_Mixing_PLC\PLC tags\Tag_Control\CTR_3B_1, TIA Portal User : "John Smith"	➔	10/1/2025	4:25:28 PM
▼	Deleted Objects		10/1/2025	4:25:28 PM
	CTR_4A, TIA Portal User : "John Smith"		10/1/2025	4:25:28 PM
	LAD_Mixer_Return, TIA Portal User : "John Smith"		10/1/2025	4:25:28 PM
▼	Compile Info		10/1/2025	4:25:28 PM
▼	Compiled Time: 10/1/2025 4:25:23 PM, TIA Portal User : "John Smith"		10/1/2025	4:25:28 PM
▼	Color_Mixing_PLC			
▶	Program blocks			
	Compiling finished (errors: 0; warnings: 0)			
▶	Compiled Time: 10/1/2025 4:25:01 PM, TIA Portal User : "John Smith"			

Logs

Manage all window layouts
Basic integrity protection
Diagnostics and feedback

Security
Hardware configuration

Settings

☒ Log changes in the project

☒ Include user names in logs

Supported Components

Programming (STEP 7):

Blocks (OB, FB, FC, Global and Instance DBs)
Variables, Data Types and Constants, Text Lists

Visualization (WinCC):

Screen Management, Script Operations
HMI Messages and Variables, Alarms

Communication: OPC UA Server / Client

Features

Change Tracking:

- Automatic logging of changes
- Storage in structured log files
- Automatic generation when saving
- Storage of logs in the project

Key Features:

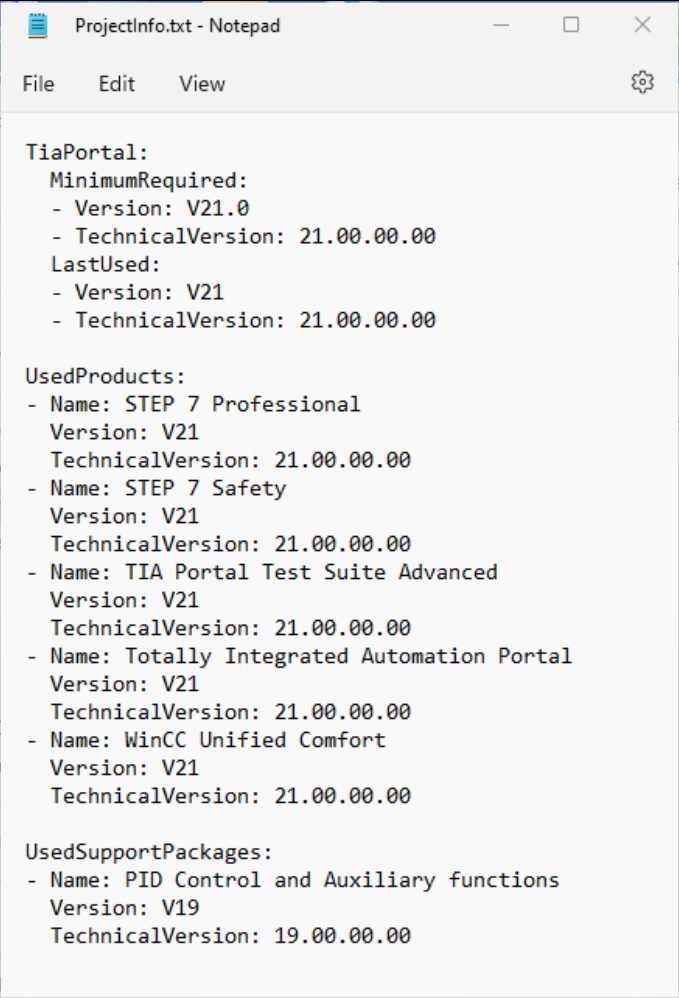
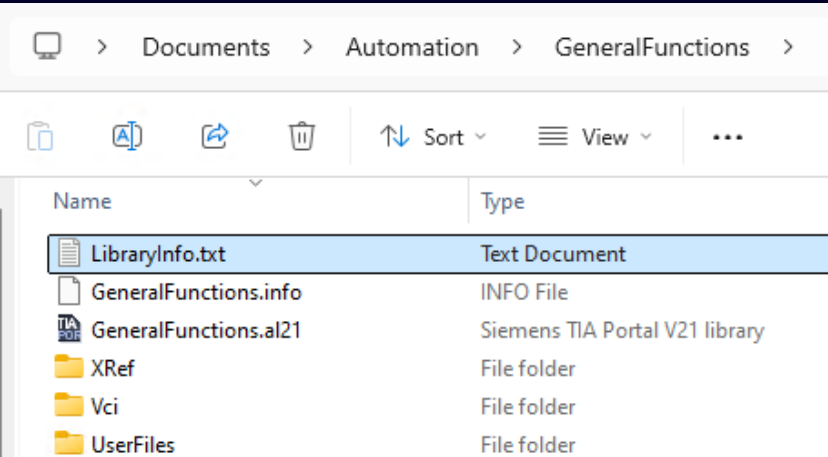
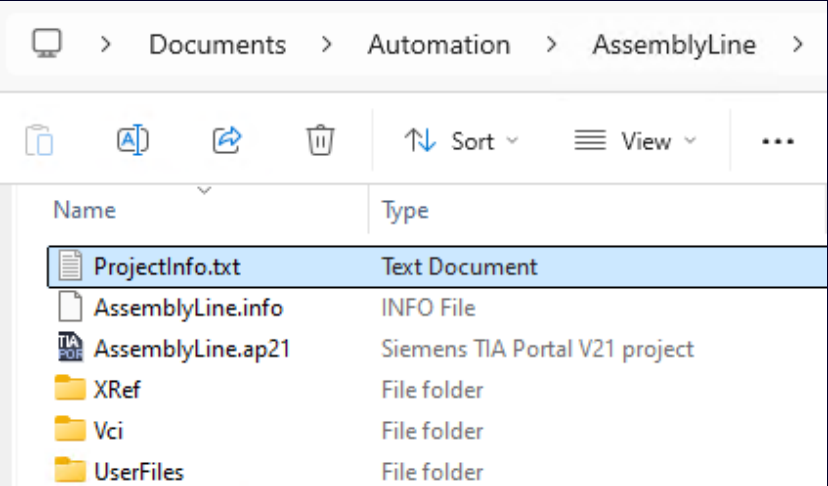
- Documentation of project changes (creation, modification, deletion)
- Library support (Types)
- Recording of last compilation processes
- Navigation to changes via a link to the object

Benefits

- Project modifications and compilation processes are automatically documented.
- Structured logs enable easy navigation and efficient analysis.

TIA Portal Usability

Info file



Info file

- The TIA Portal project directory now provides a human-readable file "ProjectInfo.txt"
- The TIA Portal library directory now provides a human-readable file "LibraryInfo.txt"
- Format is YAML for automated processing
- The file contains information about
 - The minimum required TIA Portal version to open the project / library
 - The last used TIA Portal version (including update)
 - The used products and option packages with their versions in the project / library
 - The used support packages with their versions in the project / library
- The file gets created / updated on every save
- Supported in:
 - Single user projects
 - Multiuser projects (local session and server project)
 - Global libraries

Benefit

- Get all required software information before opening the project or library
- Inventory scan for software products in projects / libraries

TIA Portal V21 - Table of contents

SIMATIC WinCC Unified – Innovations



- Unified Screen Editor (Next Gen.)
- Modernization: All essential features of the predecessor
- Configure Limits & Thresholds
- Electronic record for local user management changes & failed login
- PaCo support in Faceplate
- Reporting in ES
- New screen object - Alarm Indicator
- Sm@rtServer for UBP
- Configure printer without the printer hardware (UCP)
- Real-time online data transfer via MQTT (for PC RT)
- Parallel display of different process screens on multiple monitors (for PC RT)
- WinCC Unified Data Hub – Broad market release
- "Start Program" function for applications with user interface
- Save Licensing Costs by only "pay for what you use"
- Unified for Industrial Edge, WinCC Unified SIQENCE

SIMATIC WinCC RT Prof. – Innovations



- WebUX, RestAPI and communication enhancements
- Cross object interaction

SIMATIC STEP 7 – Innovations



- Continuous Integration / SIMATIC Source Documents
- NVT – feature round-up
- Keep DB online values on structural changes

SIMATIC Motion Control – Innovations



- New IPC and Open Controller hardware for T/TF variants
- Motion Control Multicore support
- Cam and superimposed motion improvements
- Cross-PLC synchronous operation using IRT I-Device
- Support of external encoder at PLC and S120 drive
- New diagnostic functions
- Kinematics and Motion Interpreter improvements

SINAMICS Startdrive & DCC – Innovations



- Support of SINAMICS S220 multi axes servo system
- Support of connection to S7-1500 R/H
- Parameter compare extension
- New download mode

TIA Cloud Services



- TIA Portal Cloud & TIA Portal Cloud Connector
- TIA Simulation Cloud
- TIA Project-Server Cloud

SIMATIC Hardware



- Protection of PLC configuration data on memory card
- Cross-PLC synchronous operation using IRT I-Device
- Configuration in RUN for S7-1500 R/H PLCs – 1st Step
- System Web Pages
- ...

System functions



- Migrating to and upgrading TIA Portal projects
- Enhanced TIA Portal Software Integrity Protection
- PROFINET Security Class 1 enhancements
- TIA Portal Documentation
- TIA Portal Openness
- TIA Portal Add-Ins
- Version Control Interface (VCI)
- CAx: AutomationML & Publication Tools
- TIA Portal Library: Exclusive Multiuser Mode
- TIA Portal Usability: Tracking of modifications, Info file

SIMATIC AX - Automation Xpansion



- Support of further hardware devices e.g. ET200SP CPU
- Extending the amount of available system libraries
- New debugging features: e.g. instance selection
- Publicly available documentation

TIA Portal Options



- SIMATIC STEP 7 Safety
- SIMATIC Safe Kinematics
- TIA Portal Multiuser
- SIMATIC Robot Library
- OPC UA
- SIMATIC S7-PLCSIM / S7-PLCSIM Advanced
- SIMATIC Target for Simulink
- TIA Portal Test Suite
- SIMATIC Visualization Architect (SiVArc)
- SIMATIC Modular Automation (MTP)
- Central User Management (UMC)
- Modular Application Creator
- SIMATIC ProDiag / SysDiag
- TIA Portal Teamcenter Gateway
- TIA Package Manager
- TIA Portal Safety Validation Assistant

IT like hardware engineering

CPU for ET 200SP and local IO modules

Scenario

Builders of small and medium-sized demand an automation solution ideal for applications cases like these:

- Packaging machines
- Small assembly lines
- Material handling systems
- Parts manufacturing
- Simple conveyor systems

Challenges

- Space is limited in the control cabinet
- A cost-effective solution for small to medium applications is demanded
- local I/O modules and distributed I/O system must be supported

Benefits

Within SIMATIC AX it is possible to setup the hardware configuration for the ET200SP based PLCs

- CPU 1510SP-1 PN, V4.0
- CPU 1512SP-1 PN, V4.0
- CPU 1514SP-2 PN, V4.0

and a limited number of local IO modules that can be plugged central along with the PLC.

Key advantages

- Compact design (ET 200SP form factor)
- Integrated PROFINET interface
- Built-in web server functionality
- Support for OPC UA communication
- and others

☒ IT-like PLC engineering ☒ TIAX direct loading ☐ TIAX library development

System library – Overview (status September 2025)

Repository	Description
System	Containing all other system libraries
SIMATIC 1500	Containing all other SIMATIC-1500 libraries
Alarming	Raising and managing alarms of a SIMATIC 1500 PLC
PointToPoint	Providing Freeport(point to point) communication functionality for the SIMATIC S7-1500
ModbusRtu	Providing MODBUS RTU communication functionality for the SIMATIC S7-1500
Communication	Providing communication functionality for the SIMATIC S7-1500
HighSpeedCounter	HighSpeedCounter
Hardware.Utility	The hardware utilities library contains functions for reading from hardware. The memory access library contains functions for reading and writing work and load memory.
Diagnostics	Functionality in the scope of the Diagnostics
Diagnostics.Hardware	Regarding the PLC and device diagnostics
Crypto	Containing functionalities in the scope of the cryptography for the SIMATIC S7-1500 PLCs
Clocks	Providing functions related to time
DistributedIO	Allowing configuration of ProfiNet devices
FileAccess	Regarding the PLC file system access
UA Client	Providing OPC UA functionality for the SIMATIC S7-1500
MotionControl	Collection of MotionControl functions for procedural programming style
Tasks	Task declarations represent the organization blocks of a SIMATIC PLC

Benefits

- Flexibility on libraries version management based on project requirements
- Modular and standardized libraries for various functions, such as communication and motion control
- Consistent program block interfaces
- IT-like or IEC naming conventions
- Maintain compatibility with existing systems, choice between standard and OOP patterns

```

USING System.Timer;

PROGRAM MainProgram
VAR_EXTERNAL
    button : BOOL;
END_VAR
VAR
    delayTimer : OnDelay;
    holdTime : LTIME;
    triggerSuccess : BOOL;
END_VAR

delayTimer(Signal := button, Duration := LT#1.2s);

IF button THEN
    holdTime := delayTimer.elapsedTime;
END_IF;

triggerSuccess := delayTimer.output;

END_PROGRAM

```

```

USING IEC;

PROGRAM MainProgram
VAR_EXTERNAL
    button : BOOL;
END_VAR
VAR
    delayTimer : TON;
    holdTime : LTIME;
    triggerSuccess : BOOL;
END_VAR

delayTimer(IN := button, PT := LT#1.2s);

IF button THEN
    holdTime := delayTimer.ET;
END_IF;

triggerSuccess := delayTimer.Q;

END_PROGRAM

```

Instance Selection

Debug multiple called methods

Scenario

You have multiple instances of a class in your code (e.g. 5 valves defined in an Array) and want to debug a method of only one instance (e.g. “CheckFillAmount” of Valve3).

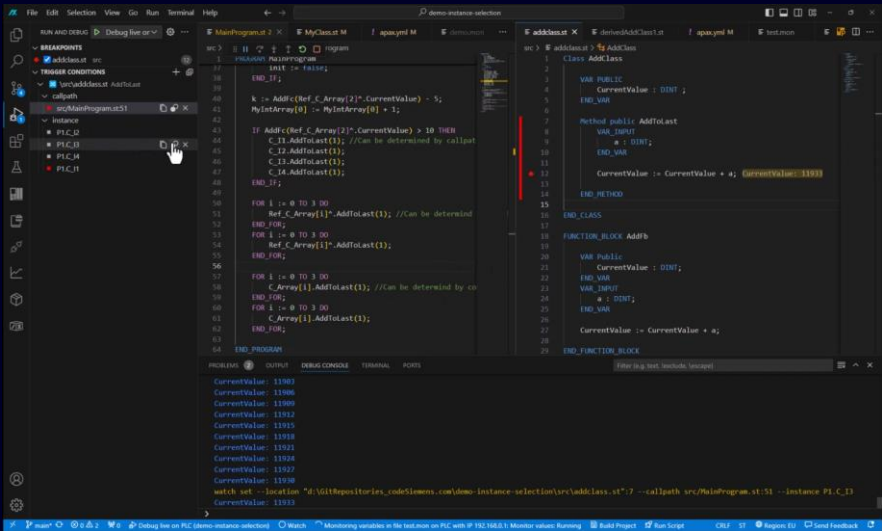
Challenges

When setting a log point inside the method (“CheckFillAmount”) it may show multiple different values of the 5 different valves (or even of less of them)

Benefits

Define the location from where the method is called (it may be called multiple times in your code)

- Define the instance that you want to see values from
- Combine location and selected instance or use only one of it by easy check and uncheck
- Save your settings



Available with release 2510



IT-like PLC engineering



TIAX direct loading



TIAX library development

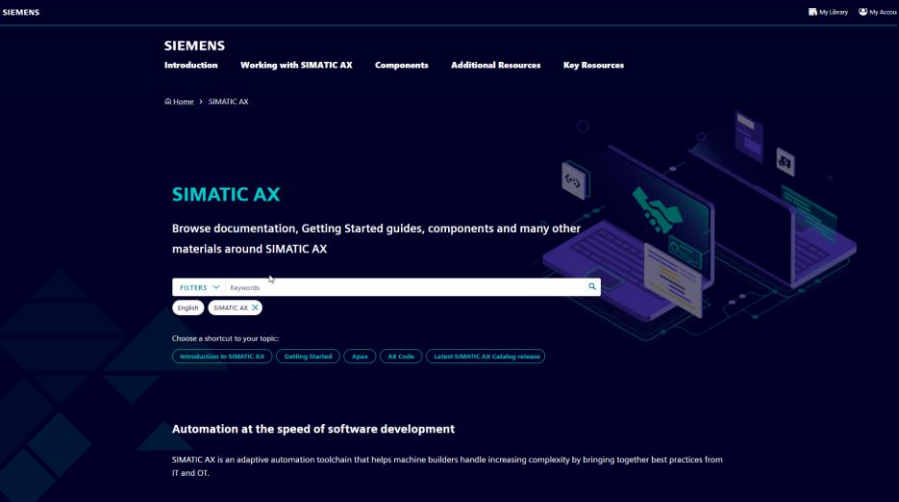
New & public user documentation available on [Fluid Topics](#)

Scenario

Users who search for help and quickly would like to find latest information or specific manuals.

Challenges

The current documentation was not well structured and the search functionality was often misleading. Further, the documentarion was only available for licensed users.



Benefits

- Improved usability with a clear structure
- Common look & feel across the Siemens Automation portfolio
- Improved search capabilities
- Publicly available, even before subscribing to SIMATIC AX
- Offline capability to use documentation w/o internet
- Ability to store bookmarks within the documentation framework

Available starting September 2025

- ✓ IT-like PLC engineering
- ✓ TIAX direct loading
- ✓ TIAX library development

TIA Portal V21 - Table of contents

SIMATIC WinCC Unified – Innovations



- Unified Screen Editor (Next Gen.)
- Modernization: All essential features of the predecessor
- Configure Limits & Thresholds
- Electronic record for local user management changes & failed login
- PaCo support in Faceplate
- Reporting in ES
- New screen object - Alarm Indicator
- Sm@rtServer for UBP
- Configure printer without the printer hardware (UCP)
- Real-time online data transfer via MQTT (for PC RT)
- Parallel display of different process screens on multiple monitors (for PC RT)
- WinCC Unified Data Hub – Broad market release
- "Start Program" function for applications with user interface
- Save Licensing Costs by only "pay for what you use"
- Unified for Industrial Edge, WinCC Unified SIQENCE

SIMATIC WinCC RT Prof. – Innovations



- WebUX, RestAPI and communication enhancements
- Cross object interaction

SIMATIC STEP 7 – Innovations



- Continuous Integration / SIMATIC Source Documents
- NVT – feature round-up
- Keep DB online values on structural changes

SIMATIC Motion Control – Innovations



- New IPC and Open Controller hardware for T/TF variants
- Motion Control Multicore support
- Cam and superimposed motion improvements
- Cross-PLC synchronous operation using IRT I-Device
- Support of external encoder at PLC and S120 drive
- New diagnostic functions
- Kinematics and Motion Interpreter improvements

SINAMICS Startdrive & DCC – Innovations



- Support of SINAMICS S220 multi axes servo system
- Support of connection to S7-1500 R/H
- Parameter compare extension
- New download mode

TIA Cloud Services



- TIA Portal Cloud & TIA Portal Cloud Connector
- TIA Simulation Cloud
- TIA Project-Server Cloud

SIMATIC Hardware



- Protection of PLC configuration data on memory card
- Cross-PLC synchronous operation using IRT I-Device
- Configuration in RUN for S7-1500 R/H PLCs – 1st Step
- System Web Pages
- ...

System functions



- Migrating to and upgrading TIA Portal projects
- Enhanced TIA Portal Software Integrity Protection
- PROFINET Security Class 1 enhancements
- TIA Portal Documentation
- TIA Portal Openness
- TIA Portal Add-Ins
- Version Control Interface (VCI)
- CAx: AutomationML & Publication Tools
- TIA Portal Library: Exclusive Multiuser Mode
- TIA Portal Usability: Tracking of modifications, Info file

SIMATIC AX - Automation Xpansion



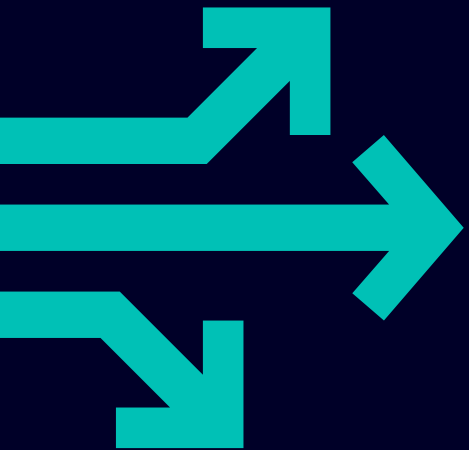
- Support of further hardware devices e.g. ET200SP CPU
- Extending the amount of available system libraries
- New debugging features: e.g. instance selection
- Publicly available documentation

TIA Portal Options



- SIMATIC STEP 7 Safety
- SIMATIC Safe Kinematics
- TIA Portal Multiuser
- SIMATIC Robot Library
- OPC UA
- SIMATIC S7-PLCSIM / S7-PLCSIM Advanced
- SIMATIC Target for Simulink
- TIA Portal Test Suite
- SIMATIC Visualization Architect (SiVArc)
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- SIMATIC ProDiag / SysDiag
- TIA Portal Teamcenter Gateway
- TIA Package Manager
- TIA Portal Safety Validation Assistant

Content

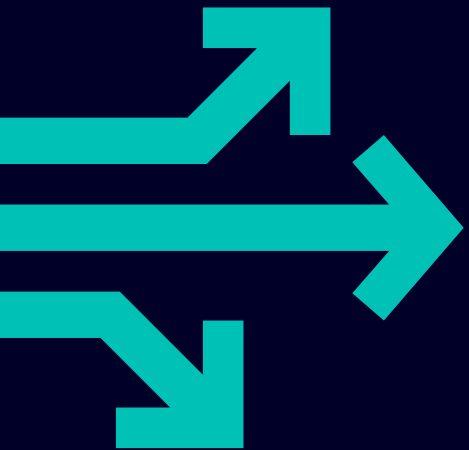


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TIA Portal V21

TIA Portal Options

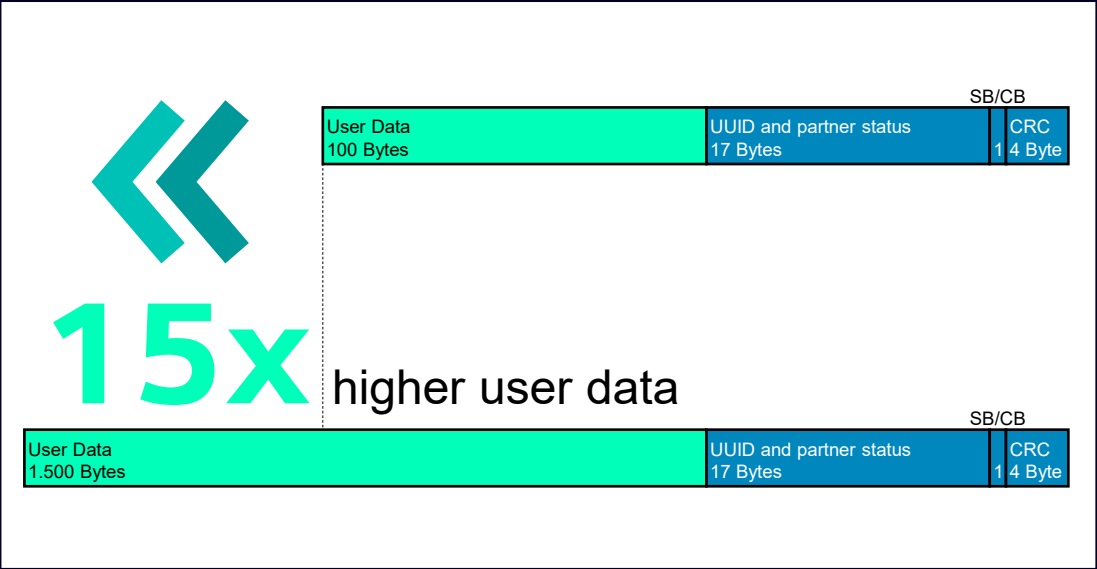
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SIMATIC STEP 7 Safety

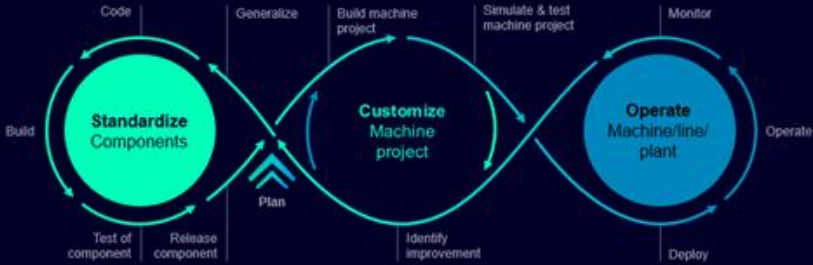
Extension of Flexible F-Link



- Extend Flexible F-Link from 100 bytes to 1500 bytes of user data
- Fully compatible with existing configurations

CI-Support for F-FBD

DevOps 4 Automation
Standardized components with machine project



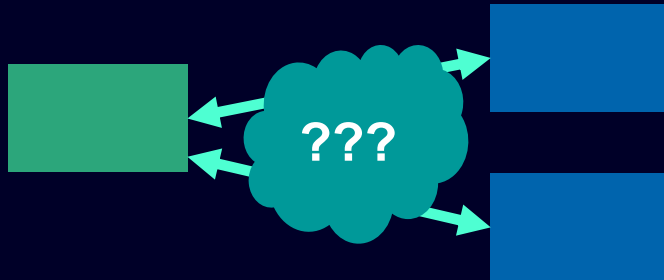
- Continuous Integration enables software developers to locate software bugs faster, improve software quality, and reduce the time until validation and release new software updates.
- Human readable representation of graphical code
 - Source code only – no internal meta information
 - Version independent syntax
 - Works for F-FBD
 - Accessible via Openness
- CI: Continuous Integration
F-FBD: Fail-safe Function Block Diagram

SIMATIC STEP 7 Safety

PROFIsafe Addressing: Challenges for Maintaining Unique Codenames

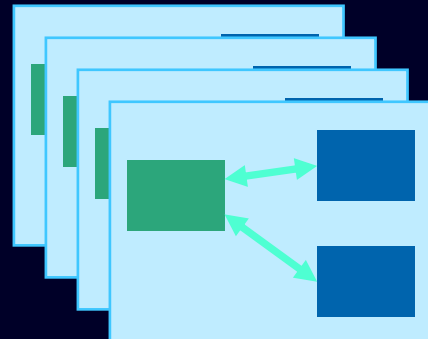
Virtual Networks

- With vPLCs and IT infrastructure, determining where network messages are sent to within the network may not always be straightforward



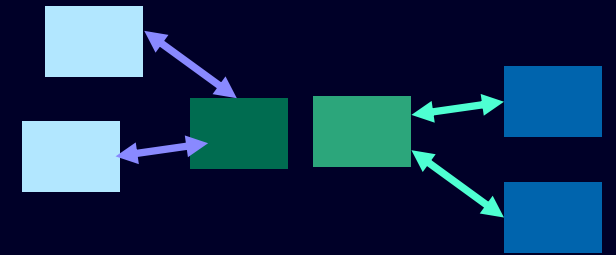
Series Machines

- Machine builders or customers have to create unique codenames for each machine instance within the same network.



Different machine vendors

- Large plants supplied from different machine builders have to synchronize on unique codenames.



Note: PROFIsafe address (common usage) == Codename (PROFIsafe Specification)

SIMATIC STEP 7 Safety Improvements using PROFI-safe BaseID

Current situation

Combination of source and destination address

- must be unique across the network
- user needs to manage all addresses **manually**
- **no** communication over network borders (Layer 2)
- relatively **small address space**
- **synchronization between machine builders** necessary (e.g. multiple vendors for one production line)
- **high efforts** for series machines **to adjust new addresses** for each series machine

Change of source or destination address leads to:

- **change of signature(s)**
- requirement to **re-compile the project** (HW+SW)
- TIA Portal and **TIA project required** to perform address change

Engineering

Operation

Improvements with PROFI-safe BaseID

Combination of **BaseID**, source and destination address

- must be unique across the network
- user needs only to **assign a new BaseID**, to adjust all safety addresses (e.g. for another series machine in the same network)
- **allows communication** over network borders (Layer 2)
- **Increased address space**
- **No** synchronization between the different vendors necessary
- **Quick re-adjustment of address spaces** by just modifying the BaseID in case of address collisions

Delayed transfer of BaseID to the CPU does:

- **not change the signature(s)**
- **no re-compile** of the project necessary
- address changes can be done **without the TIA project**

SIMATIC STEP 7 Safety

Details about the PROFIsafe BaseID

Engineering

Operation

Details about the PROFIsafe BaseID

- BaseID is also referred to as PROFIsafe addressing type 2 with BaseID
- PROFIsafe addressing is looking like:

BaseID	BaseID	BaseID	BaseID	BaseID	BaseID	BaseID	BaseID	Src	Src	Dest	Dest
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte
- Communication across network borders (Layer 2)
- Increased address space (additional 64 bit for BaseID) allows easy maintenance of unique addresses

Use Cases with the PROFIsafe BaseID:

- **Fix defined BaseID** – BaseID is defined once in the TIA Portal project. The BaseID is downloaded to the CPU and modules during commissioning.
- **Delayed transfer of BaseID** - BaseID is kept open in the TIA Portal project.
[BaseID is generated during first startup of the PLC (in runtime using library block BASEID_GEN) and distributed to the connected fail-safe modules.]

SIMATIC STEP 7 Safety

PROFIsafe BaseID ensures unique addresses when within the same network.

Definition BaseID on F-CPU

F-parameters

F-destination address range for PROFIsafe address type 1

Low limit for F-destination addresses: 1

High limit for F-destination addresses: 99

Central F-source address: 1

Default F-monitoring time for central F-ID: 150 ms

F-BaseID

☐ Manual Assignment of F-BaseID

F-BaseID: 3482-ef14-e6f7-606b

☐ Activate delayed transfer of F-BaseID

- Generate BaseID (standard usecase) or
- Activate delayed transfer of BaseID (for serial machine builder)

Display of BaseID

PROFIsafe

F_SIL: SIL3

F_CRC_Length: 4-Byte-CRC

F_Block_ID: 0

F_Par_Version: V2-mode

F_Source_Add: 1

F_Dest_Add: 5

Failsafe_F_BaseID: 00b2-97e6-aae1-4a43

F_Par_CRC_WithoutAddresses: 14028

The BaseID is displayed in the module's parametrization, on the webserver, and in the SAE.

Address assignment with BaseID

Assign PROFIsafe address

Online access

Type of the PROFIsafe interface: PROFIsafe

Connection to interface: Direct at IP: 192.168.1.1

Device address: 192.168.1.1

Identification:

☒ by LID fetching

☐ by serial number

1. Download the current hardware configuration before you assign the PROFIsafe address.
2. First select the module to be identified. Then click on the "Identifikation" button.
3. Compare the section of the module to that in the table.
4. Confirm the reaction of the module in the table and then click on the "Assign PROFIsafe address" button.

Module	Rack	Slot	Type	Order no.	F-BaseID	F-source address	F-destination	Status	Identification	Confirm
PS 307 5A	0	0	PS 307 5A	6ES7 307-1EA00-0AA0	---	---	---	---	---	---
PS 307 5A	0	1	PS 307 5A	6ES7 307-1EA00-0AB0	---	---	---	---	---	---
PS 307 5A	0	2	PS 307 5A	6ES7 307-1EA00-0AC0	---	---	---	---	---	---
PS 307 5A	0	3	PS 307 5A	6ES7 307-1EA00-0AD0	---	---	---	---	---	---
PS 307 5A	0	4	PS 307 5A	6ES7 307-1EA00-0AE0	---	---	---	---	---	---

Online status information

The BaseID will be transmitted to the devices during address assignment and subsequently used in PROFIsafe communication.

Supported PLC

- S7-1200 G2 ≥ V4.1
- S7-1500(V)F ≥ V4.1
- S7-1500S(P)F ≥ V40.1

SIMATIC STEP 7 Safety

New Openness commands and support of Named Value Types

Openness: read offline F-signatures

Openness: enable F-activation

F-signatures

Description	Offline signature	Time stamp
Collective F-signature	9A0773BD	12/4/2024 4:21:19 PM (UTC +1:00)
Software F-signature	9A0773BC	
Hardware F-signature	00000001	
F-signature communication address	none	

F-activation

☒ F-capability activated

Disable F-activation

Read offline F-signatures

- single method call retrieves all offline F-signatures (collective, SW, HW, F-communication)
- automated detection of safety-related project changes

F-activation

- enable/disable F-capability of F-PLC

Openness: bulk editing of attributes

```
<KeyValuePair<string, object>>  
{  
    new KeyValuePair<string, object>("IsochronousTi", (double)0.1),  
    new KeyValuePair<string, object>("IsochronousTo", (double)0.3),  
    new KeyValuePair<string, object>("IsochronousTiToCalculationMode",  
        Siemens.Engineering.HW.IsochronousTiToCalculationMode.Manual),  
    new KeyValuePair<string, object>("IsochronousMode", true)  
};  
project.SetAttributes(attributesToSet, attributeConfiguration =>  
{  
    //this means, if one of the attribute set fails, the mechanism won't stop  
    //just skip the problematic part and the other attributes will be set.  
    attributeConfiguration.CurrentSelection = AttributeChoiceSelection.Ignore;  
});
```

Use SetAttributes for a bulk configuration of F-I/O modules:

- set multiple parameters at module level
- configure complete channel attributes in one single operation
- use a single module-independent API call

Named value types (NVT) support for safety

Project tree

PLC_2 [CPU 1518F-4 PN/DP] > Software units > SafetyUnit > Program blocks

Devices Plant objects

Online & diagnostics

Safety Administration

Software units

Add new software unit

SafetyUnit

Relations

Program blocks

Add new block

FOB_RTG1

Main_Safety_RTG1

Monitor

Main_Safety_RTG1_DB

Monitor

The block is read-only because it is know-how protected.

Name	Data type	Default value	Retain	Accessible
Input				
Output				
InOut				
Static				
ESTOP1_Instance	ESTOP1			

```
1 NAMESPACE myNamespace  
2 TYPE  
3   nvtIoveAbsoluteDirection : Int // Motion direction of the axis  
4   (  
5     POSITIVE := 1,  
6     NEGATIVE := 2,  
7     SHORTEST_DISTANCE := 3  
8   ) := POSITIVE;  
9 END_TYPE  
10 END_NAMESPACE
```

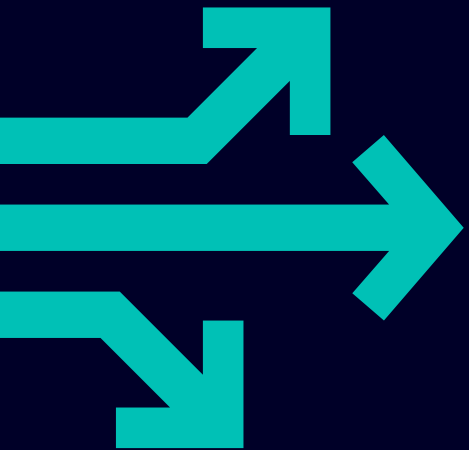
Usage of Named Value Types:

- Know-how protection for typed safety blocks utilizing NVTs enabled
- Support for system NVTs in user F-blocks

TIA Portal V20

TIA Portal Options

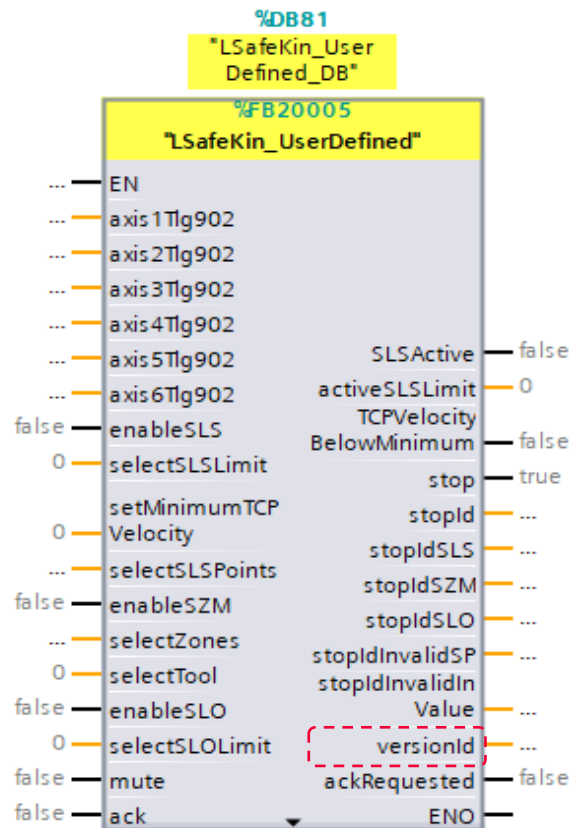
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SIMATIC Safe Kinematics

Minor change for constant CRCs



Constant Checksums for FBs

- The Function blocks of Safe Kinematics provided in <V21 an output called versionId (see Block), which could be used to get the version number of the block.
- With V21 we removed this output because it always caused the checksums of the FBs to change, even if the function didn't change.

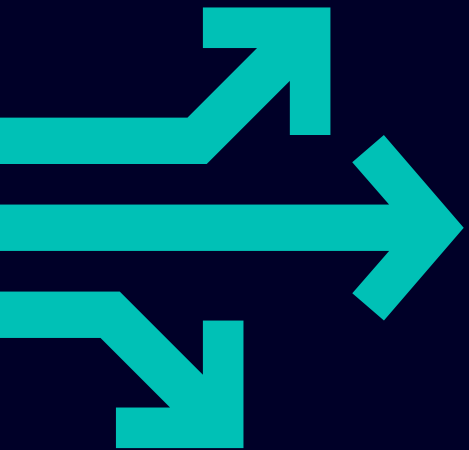
Benefit

- Now the checksums of future versions of the Safe Kinematic FBs will stay constant, if no changes were applied to the FB -> Lower organizational effort for the documentation the safety program.

TIA Portal V20

TIA Portal Options

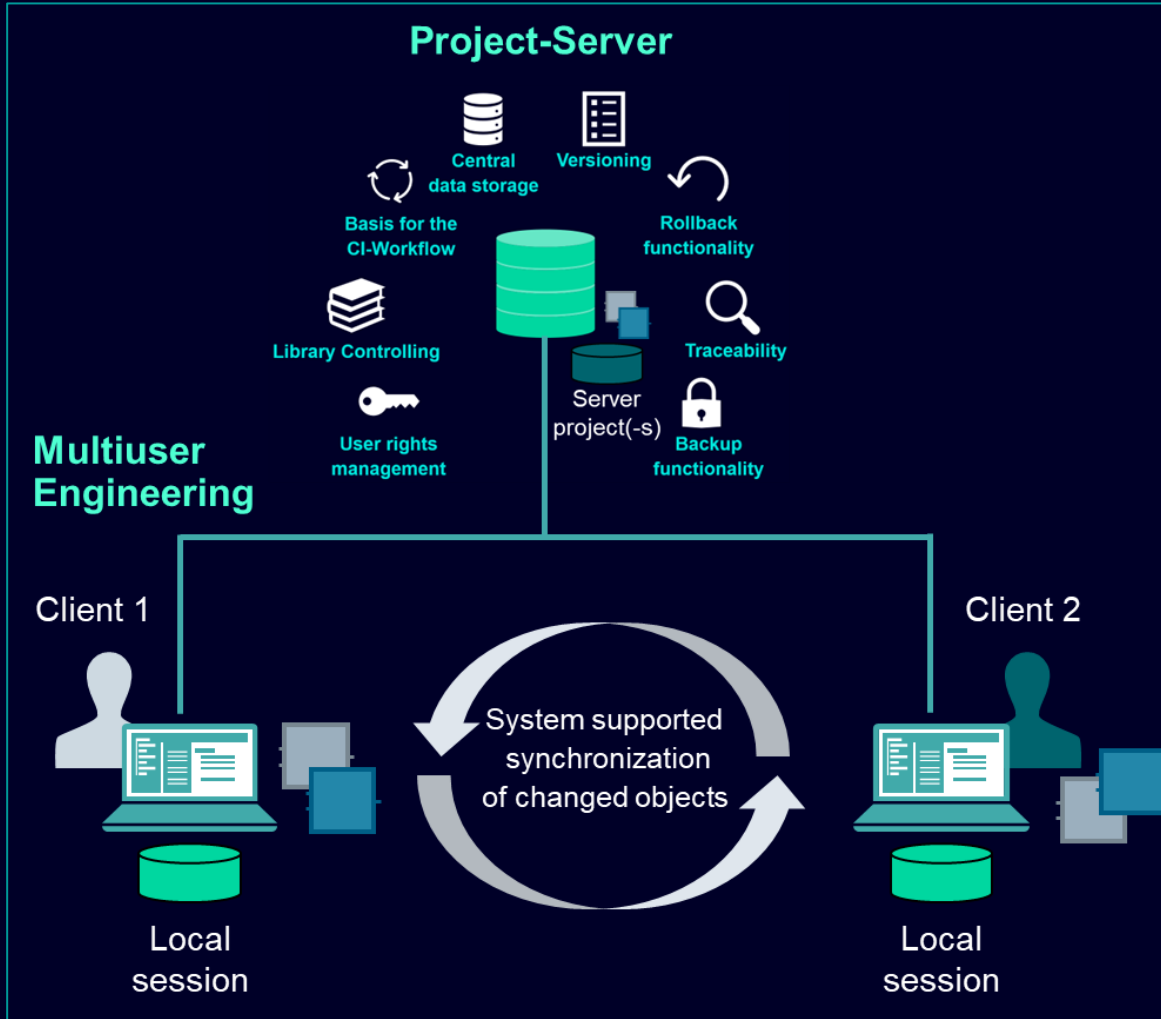
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TIA Portal Multiuser Engineering

Work efficiently in a team



Multiuser Engineering enables the collaborative development of projects and supports the commissioning in the team.

One shared project

...stored centrally on a project server and available for parallel engineering and commissioning

For HMI & PLC

...permits device or function-oriented division of work

System-supported synchronization

...reduces the amount of coordination work in the team

Contains powerful tools

... for change tracking with rollback possibilities, access protection, extensive openness possibilities for automated workflows e.g. continuous integration / deployment

TIA Portal Multiuser Engineering

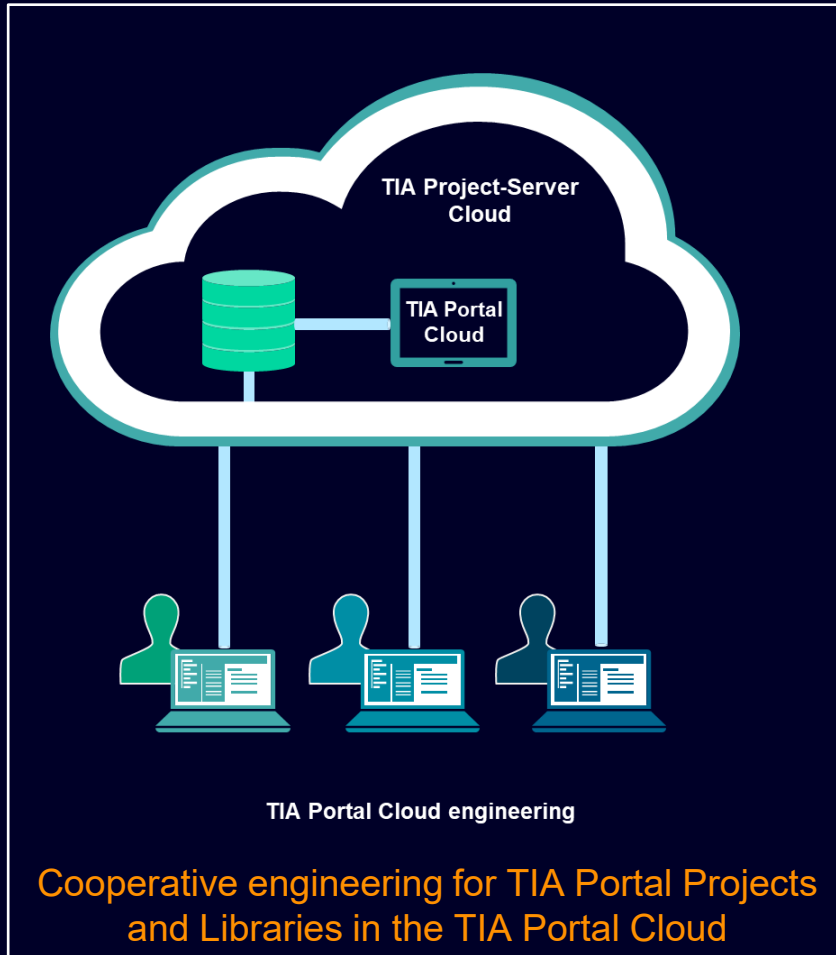
TIA Project-Server Cloud

*Make your TIA Portal projects available in the cloud.
Enables efficient team engineering of projects with the TIA Portal
or TIA Portal Cloud - anywhere, anytime.*

With the **TIA Project-Server Cloud** you have access to your TIA Portal projects and libraries from different locations for collaborative work across company boundaries.

Project storage and user management provided by the TIA Project-Server in the Industry Premium Portal.

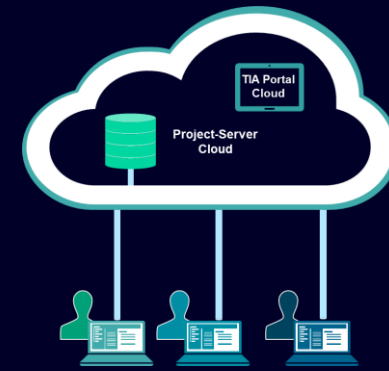
- Direct access to data storage from the TIA Portal, no time-consuming sending of data or coordination of changes.
- Access from TIA Portal engineering stations as well as from the TIA Portal Cloud.
- Dedicated resources for performance and data security.
- Easy integration of suppliers, without opening the own IT structures.
- Management of the Server and the TIA Portal projects via a comfortable web interface.



TIA Portal Multiuser Engineering

Added values from TIA Project-Server Cloud

Use Case: Work together effortlessly, regardless of company boundaries.



Availability

Available from everywhere at any time

- use with on-premise TIA Portal and TIA Portal cloud
- Stable accessibility of the colocation center
- High giga bit network bandwidth

Reliability

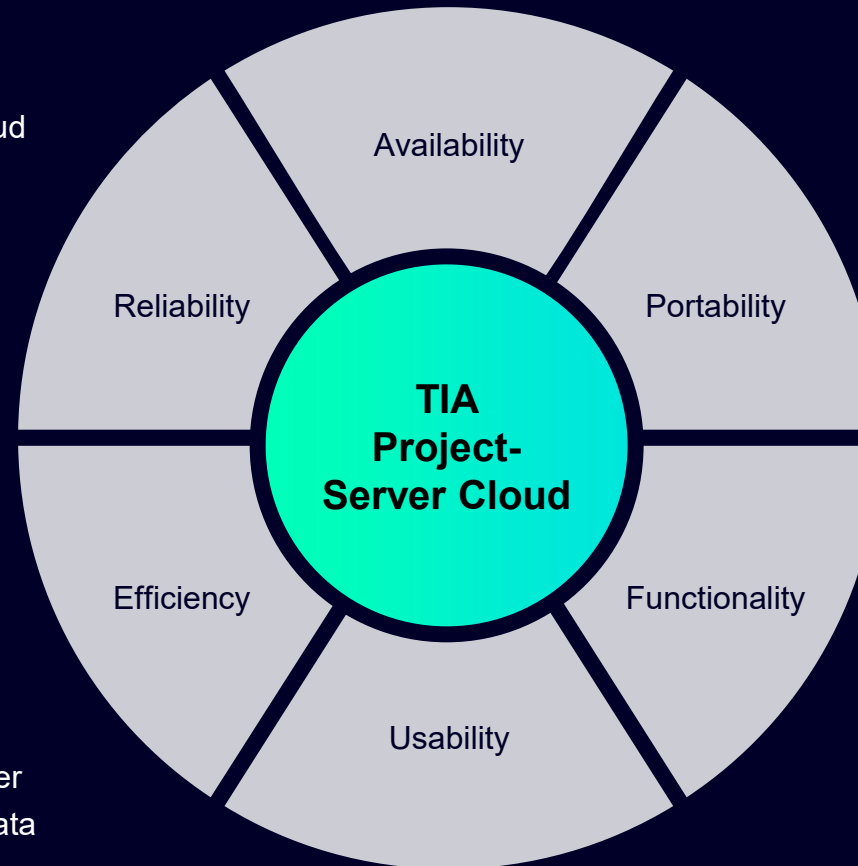
Guaranteed service level

- Average annual availability of at least 99.9%
- 24/7 monitoring service

Efficiency

Secure and fast environment

- Dedicated server with own resources for each order
- High level of data security with full control of the data



Portability

Zero IT effort and easy entry

- no installation, maintenance or update effort
- no hardware, no Windows server license needed

Functionality

Managed service

- Server fully managed by Siemens
- No shared virtual machines, each user gets their own virtual machine.
- Virtual machines with the latest security patches ensures that system software and server services function properly

Usability

User experience

- Simple administration via Web GUI
- Same known experience for the users from TIA Portal point of view with seamless integration

TIA Portal Multiuser Engineering

TIA Project-Server Cloud – How to get access

➤ Different offerings for different demands



10-hours certificate

Non-self-extended 10-hours credit with 100 GB project memory. Interruptible can be combined into one credit period term (e.g. 4x10h = 40h).

→ As Certificate of License via Industry Mall:
[6ES7804-0PP01-3YA8](#) (in preparation)



31-days certificate

Non-self-extended 31-day certificate with 100GB project memory.

→ As Certificate of License via Industry Mall:
[6ES7804-0PP01-2YA8](#) (in preparation)



365-day certificate

365-day certificate with 250GB project Memory. No auto-renewal.

→ As Certificate of Contract via Industry Mall:
[6ES7804-0PP01-1YA8](#)



Monthly subscription

Self-renewing monthly subscription with unlimited access and 100GB project storage.

→ As Certificate of License via Industry Mall:
[6ES7804-0PP01-2YA0](#)

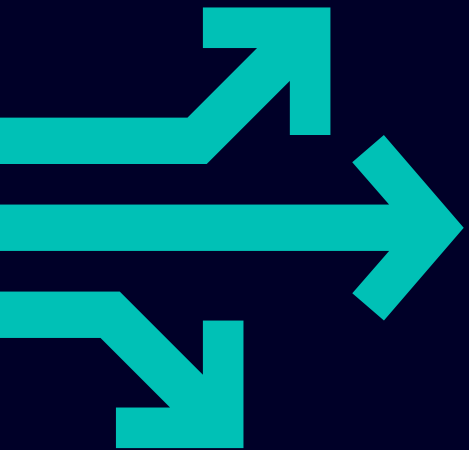


Annual subscription

Self-renewing annual subscription with unlimited access and 250GB project storage.

→ As Certificate of Contract via Industry Mall:
[6ES7804-0PP01-1YA0](#)

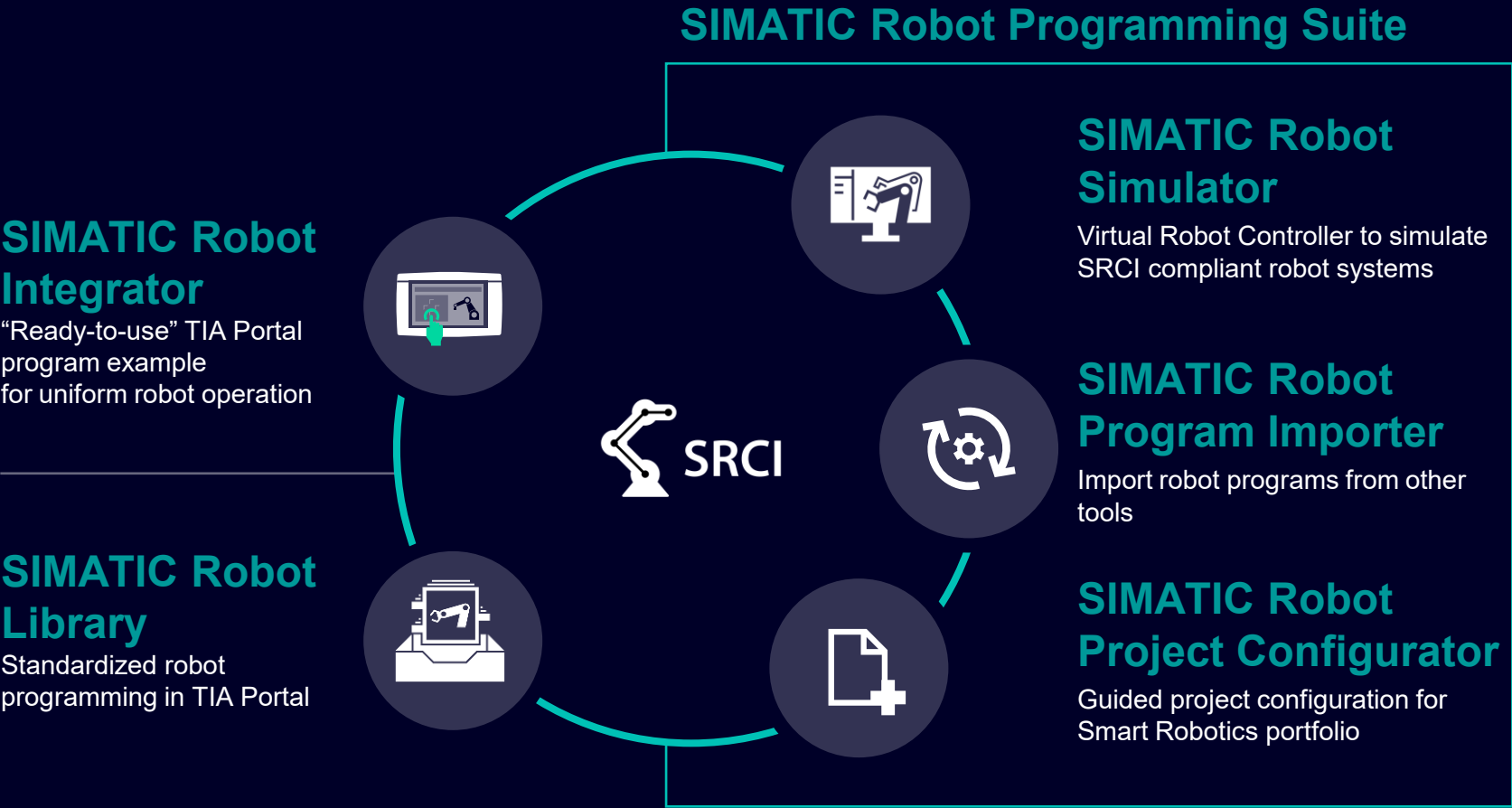
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Smart Robotics Offerings

Making robotics more accessible



Smart Robotics offerings are based on SRCI and provide robot vendor independent solutions for PLC experts in robotics.

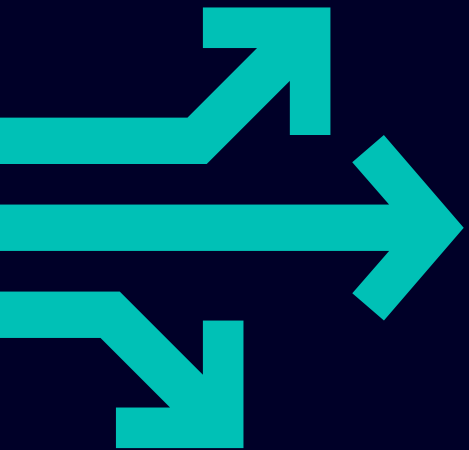


Smart Robotics

SRCI supporting manufacturers



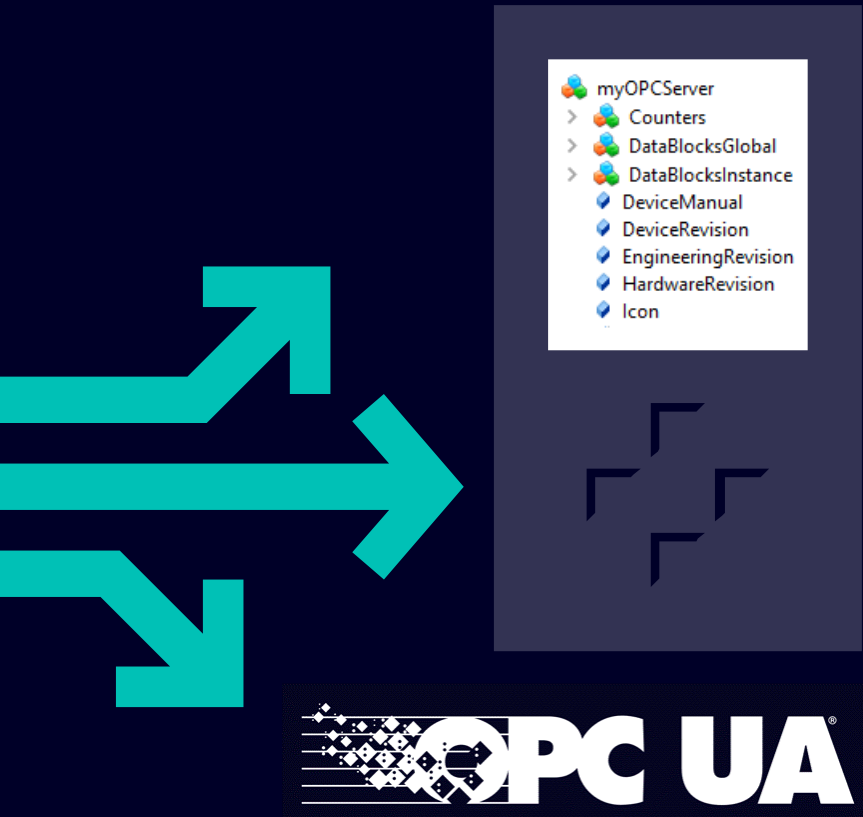
Content



01	SIMATIC STEP 7 Safety
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OPC UA – improvement with V21 / FW V4.1

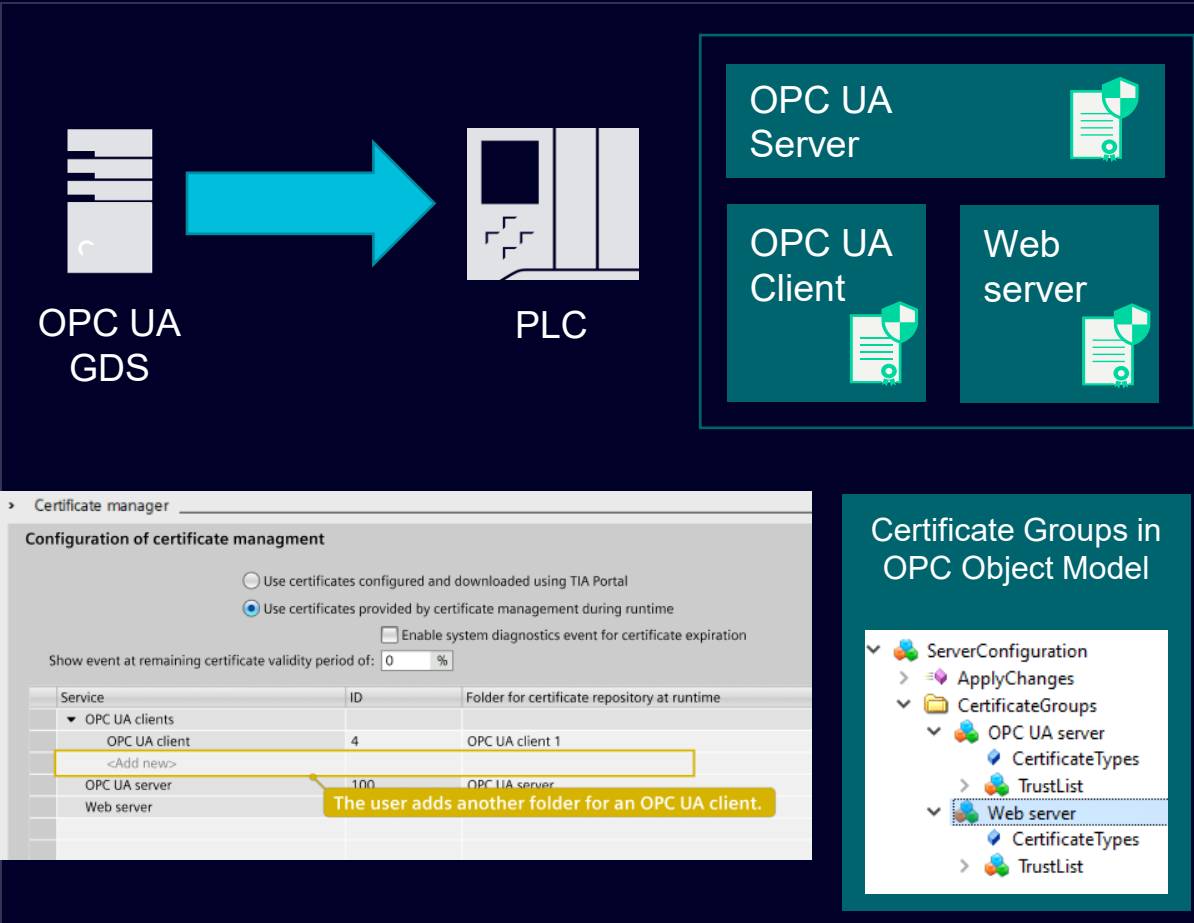
Overview of new planned OPC UA features for SIMATIC PLCs



Certificate management	• Support of Certificate Management via OPC UA GDS for: • OPC UA Server on R/H PLC • OPC UA Client in S7-PLC
Quantity structures	• Increased number of nodes for user-defined server interfaces • Increased number of possible client & server methods
Access control	• Support of access rights for individual OPC UA user • High flexibility to make data available to authorized users only
General	• Improvements on the user-defined server interfaces • Improvements the client and client interface editor for SIMATIC
S7-1200 G2 with OPC UA	• Support of OPC UA Server functionality (compatible to S7-1200 G1)

OPC UA GDS Push – Certificate Management

OPC UA server for 1500 R/H PLC & OPC UA client for Standard PLC



Extended certificate management at runtime

Certificate can be managed via OPC UA GDS mechanisms

- ✓ OPC UA server certificate (incl. trust list etc.) → V17
- ✓ Webserver certificate → V18

NEW with V21 / FW 4.1:

- OPC UA server certificate for R/H PLCs
- OPC UA client certificate for Standard PLCs

OPC UA improvements V21 / FW 4.1 @ Standard PLC

Increased quantity structures

	1510 ... 13 FW 4.1		1514SP/15 FW 4.1		1516 FW 4.1		1517 / 18 FW 4.1	
Improvements quantity structures								
User-defined server Interface								
No. of server interfaces	10	10	10	10	10	10	10	10
No. of nodes for user-defined server interfaces	15,000	15,000	30,000	30,000	30,000 → 50,000		100k / 200k	100k / 200k
Subscriptions								
No. of subscriptions per session	50	50	50	50	50	50	50	50
No. of monitored items, total	10,000	10,000	20,000	20,000	20,000 → 50,000		50k / 60k	50k / 60k
Methods								
No. of server methods, max	20 → 500		50 → 1,000		100 → 2,000		4,000 / 8,000	4,000 / 8,000
No. of parallel running server methods, max	20 → 25		20 → 50		20 → 50		100 / 200	100 / 200
No. of in/outputs per server method	20	20	20	20	20	20	20	20
Client Interface								
No of simultaneous calls of methods, max. total	5 per con. → 50		5 per con. → 100		5 per con. → 150		5 per con. → 200 / 300	

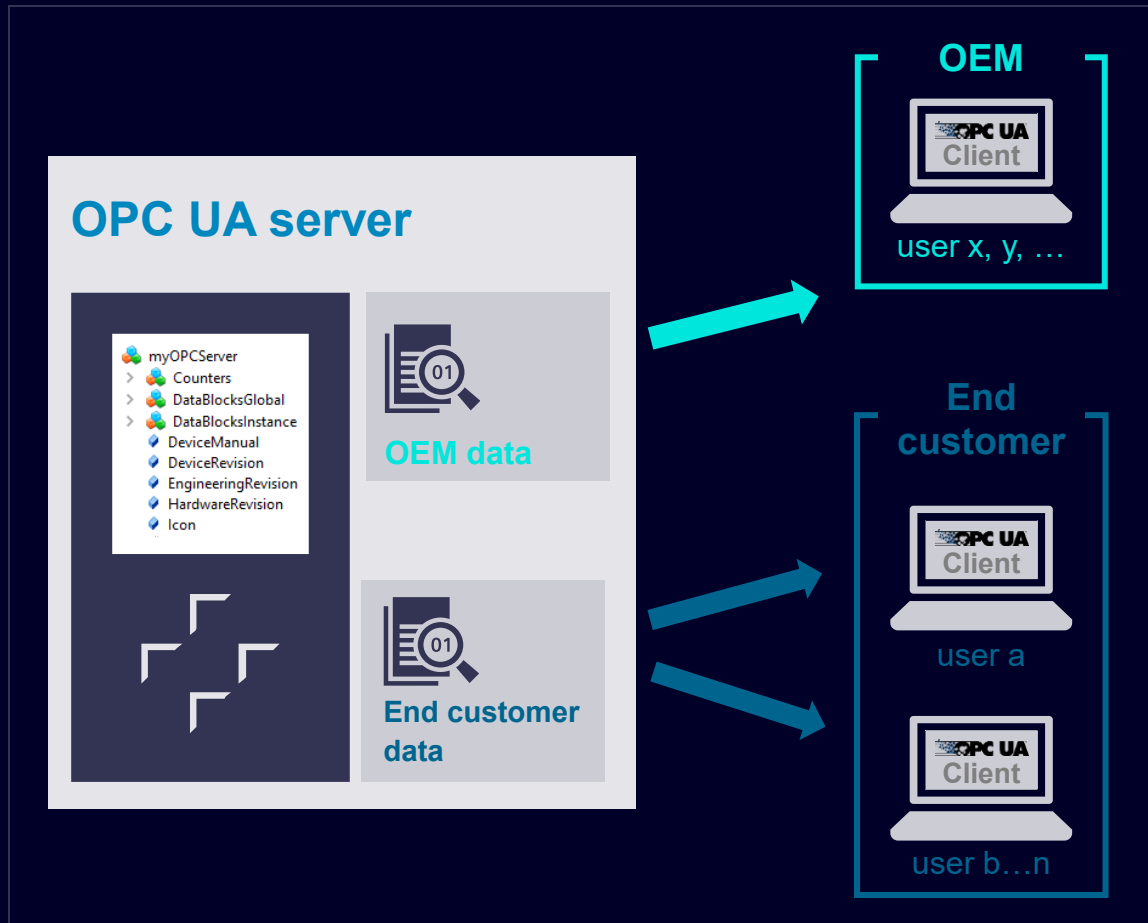
OPC UA improvements V21 / FW 4.1 @ R/H PLC

Increased quantity structures



	1513 R	FW 4.1	1515 R	FW 4.1	1517 R	FW 4.1	1518 H	FW 4.1
Improvements quantity structures								
User-defined server Interface								
No. of server interfaces	10	10	10	10	10	10	10	10
No. of nodes for user-defined server interfaces	15,000	15,000	30,000	30,000	30,000	➡ 100,000	30,000	➡ 200,000
Subscriptions								
No. of subscriptions per session	25	25	25	25	25	25	25	25
No. of monitored items, total	10,000	10,000	20,000	20,000	50,000	➡ 50,000	50,000	50,000
Methods								
No. of server methods, max	20	➡ 250	50	➡ 500	100	➡ 2,000	100	➡ 4,000
No. of parallel running server methods, max	20	➡ 25	20	➡ 25	20	➡ 50	20	➡ 100
No. of in/outputs per server method	20	20	20	20	20	20	20	20

OPC UA Access control for OPC UA server

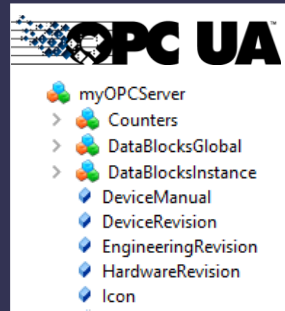


Improvements at access control for individual OPC UA user

- Easy handling of access restrictions for multiple roles
- Support of openness
- Improved consistency checks

OPC UA Improvements within TIA Portal

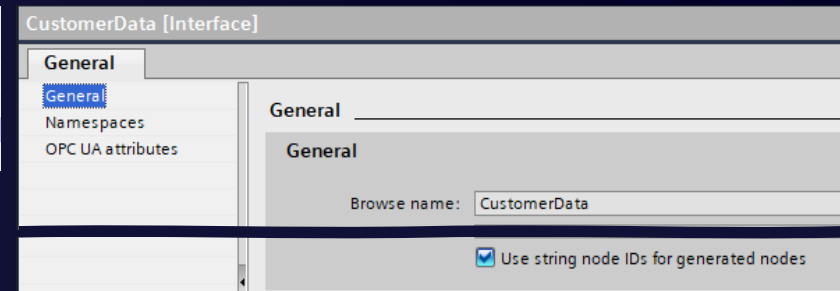
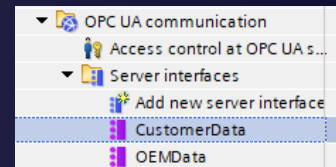
for OPC UA server interface



Server

Improvements on the user-defined server interfaces

- Openness support for easier handling
e.g. enabling use of string node IDs,
Renaming Ref. Namespace, generation of nodes, ...
- Support of numeric and string node IDs on each interface individually



OPC UA at S7-1200 G2

full functional compatibility to S7-1200 G1

OPC UA Server functional compatible to S7-1200 G1

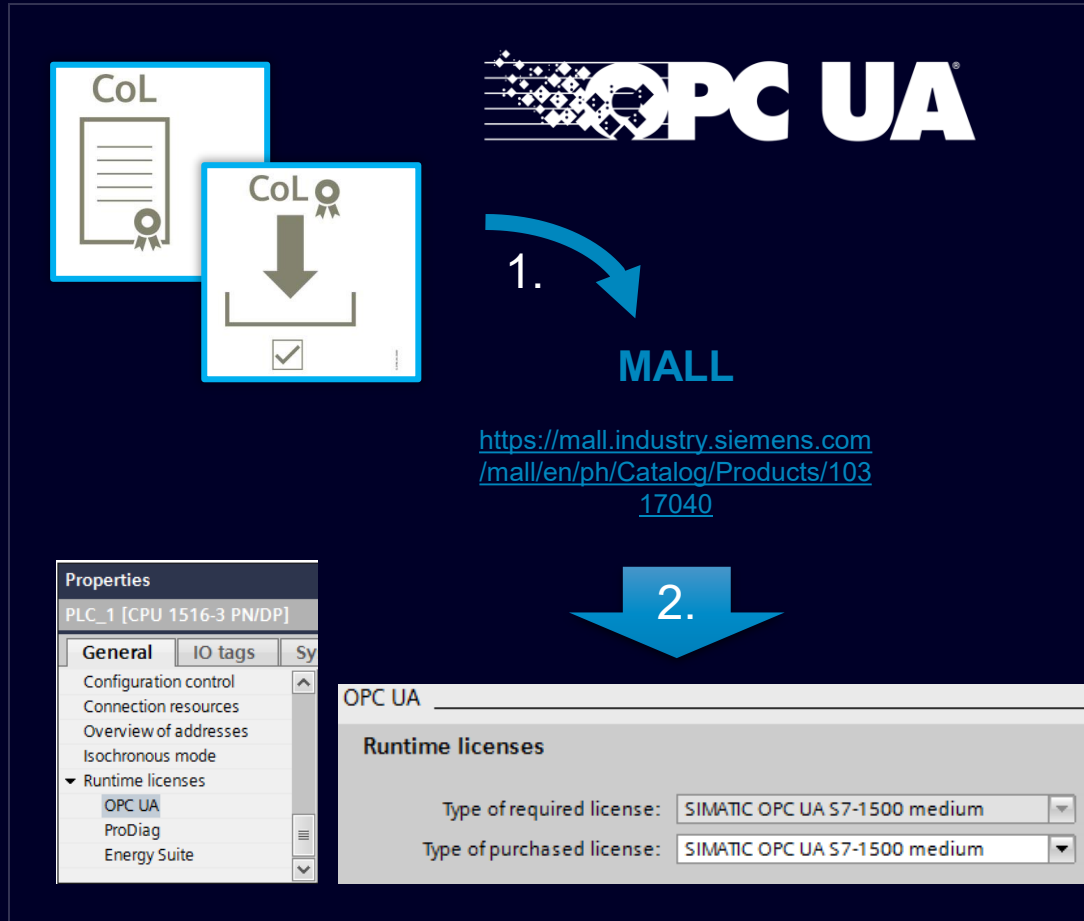
- Support of standard mechanism
Read, Write, Browse, Subscriptions, Methods
- Support of user-defined Server interfaces
and Companion Specs
- Security (sign & encrypt)
- OPC UA Server diagnostic
- Fully supported by SiOME



OPC UA		1200 G2
User-defined server Interface		
No. of server interfaces		2
No. of nodes for user-defined server interfaces		2,000
Subscriptions		
No. of subscriptions per session		5
No. of monitored items, total		1,000
Methods		
No. of server methods, max		20
No. of parallel running server methods, max		20
No. of in/outputs per server method		20

OPC UA license model

The usage of OPC UA server and / or client requires a runtime license



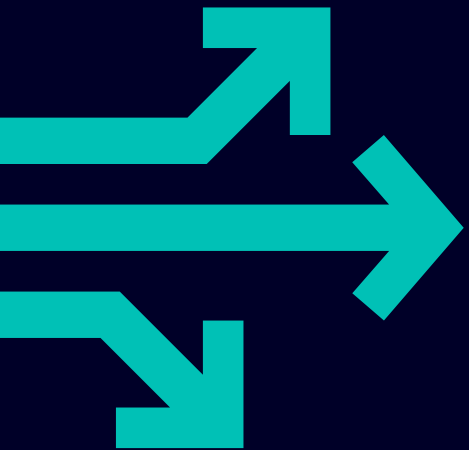
Not NEW – but always good to be remind 😊

- Operating the OPC UA server or client on the S7-1200 and S7-1500, a license is required.
- The type of license needed depends on the performance of the respective CPU.
- **Basic:** CPU S7-1200, CPU S7-1200 G2
- **Small:** up to CPU 1513, 1505S
- **Medium:** up to CPU 1516, 1507S
- **Large:** up to CPU 1518, 1507D , 1508S

TIA Portal V20

TIA Portal Options

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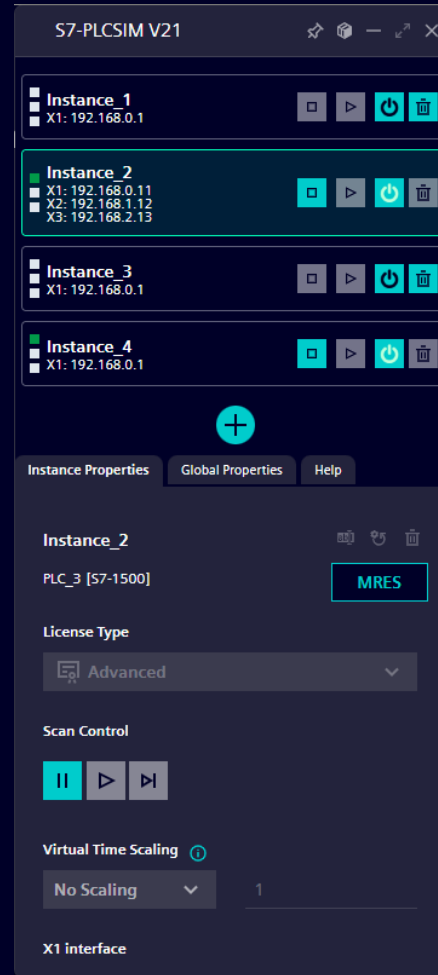
S7-PLCSIM V21

Enhanced new User Interface support Standard and Advanced Customers

Key Enhancements

SIMATIC S7-PLCSIM V21:

- Improved User Interface:
New design of the Essentials view, which also allows additional S7-PLCSIM Advanced functions to be used (S7-PLCSIM Advanced license required)
- Expanded PLC Firmware Support:
Full support for the latest firmware versions in both S7-1200 and S7-1500 controllers. Support S7-1200 G2 also in the Advanced mode (S7-PLCSIM Advanced license required)
- Updated Workspace concept:
Data improvements to better support manual and automated Workspace creation.
- Improved Migration:
Redesigned Sequence editor to allow for easier sequence editing and support additional action types.
- Transparency with Activity Log
Activity Log to give the user a history of application events.



Key Enhancements

Essential View

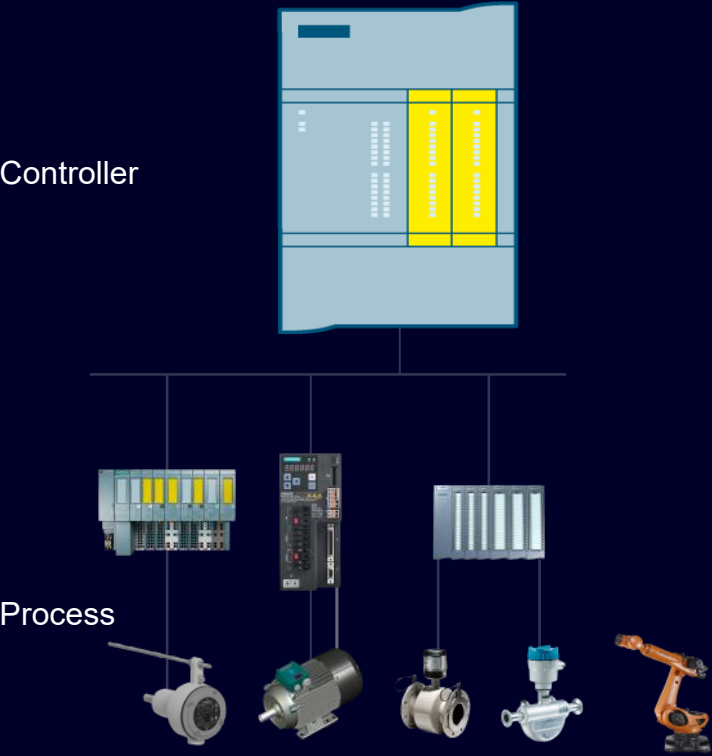
- The new essential showing the list of instances with their properties.
- The new view will be the successor of PLCSIM Advanced mature Control Panel in future
- This is concept merge the former compact view and the control panel into a new highly functional display space saving user interface
- Especially in Co-Simulation scenarios the smaller footprint on the display help to have the overview at a glance
- The UI allowing to setup the TCP/IP in Single- and Multiadapter mode for IP Addresses and used Adapter
- Strict Motion Timing can be switched to off/on
- Communication Port can be set
- The essential view can be pinned in front
- Seamless change between Full- and Essential view mode is possible

S7-PLCSIM Advanced V8.0

NEW - Simulated S7-1200 G2 Controller open the Co-Simulation world for Basic Controllers

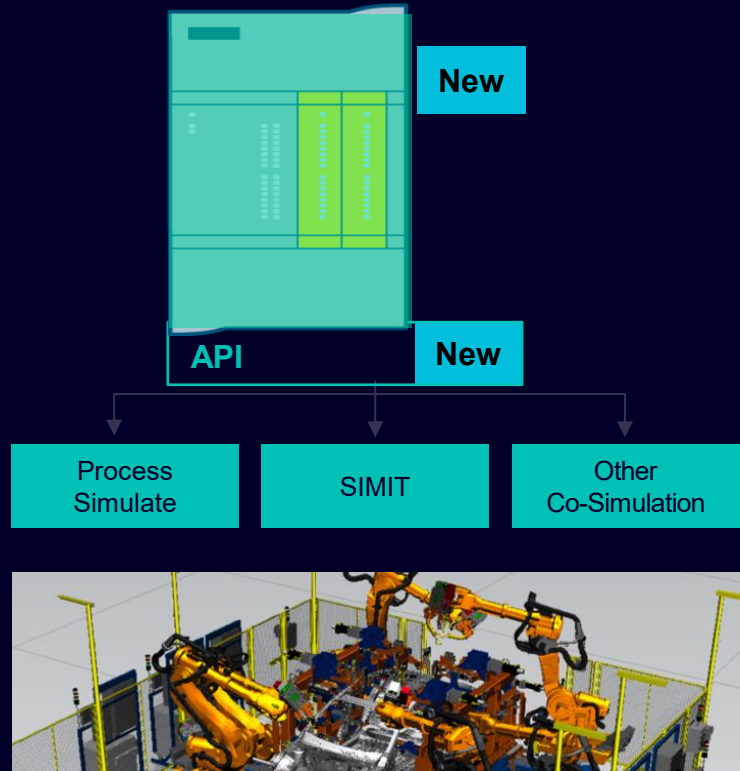
Real world

S7-1200 G2
Hardware Controller



Simulation system

S7-PLCSIM Advanced
Simulated S7-1200 G2 CPU



S7-PLCSIM Advanced
supports S7-1200 G2
Controllers with the same
feature set as for the
S7-1500 Family

“Software in the Loop”

S7-PLCSIM Advanced V8.0

Display Simulation - What is it about?

S7-PLCSIM Advanced now enables access to the PLC-Display via API

Goal:

- The PLC-Display is now integrated into the software.
- The S7-PLCSIM Advanced API is extended to support full PLC-Display access, following an API-first approach.
- The simulated display replicates the physical one.
- Users can embed the simulated display into co-simulation applications.

The simulated display supports multiple use cases:

- Operator and user training
- Basic control and configuration of the simulated PLC (e.g., Start/Stop, IP setup)
- Access to the diagnostic buffer ...



S7-PLCSIM-Advanced V8.0

Key enhancements

Secure Remote Simulation Mode on Runtime Manager

- PLCSIM Advanced now supports secure remote runtime connections using TLS encryption via Windows SChannel API.

Why It Matters:

- Meets EU Cyber Resilience Act (CRA) requirements
- Protects communication between distributed simulation systems
- Ensures authentication, authorization, and data encryption

Key Benefits:

- Seamless integration with existing workflows
- Backward compatibility with non-TLS clients
- No user action needed thanks to auto-generated certificates
- Secure orchestration of simulation workloads across multiple hosts—scalable, compliant, and future-ready

Enhanced Connectivity on TCP/IP adapter

- The PLCSIM Advanced virtual Ethernet adapter now supports WiFi connections, expanding the communication options for virtual PLC instances.



Why it Matters:

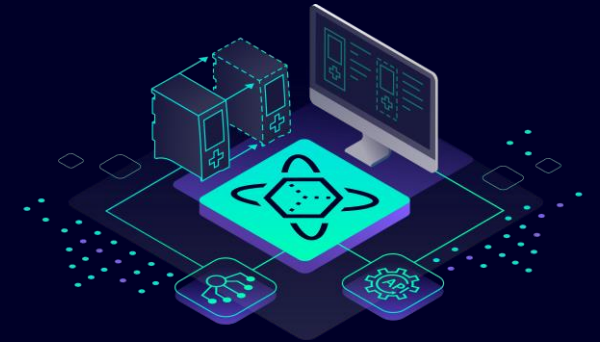
- Network Flexibility: Users can now choose between wired, virtual Ethernet or WiFi adapters when configuring their PLCSIM Advanced virtual controllers concerning higher latency.

Key Benefits:

- Test PLC programs with wireless HMI devices
- Support remote testing scenarios without physical network cables
- Multiple Adapter Mode: In advanced configurations, different PLC interfaces can be mapped to different network adapters, including mixing wired and wireless connections.
- Seamless Integration: The virtual PLC instances can communicate with real devices on the network through WiFi, just as they would through a wired connection.

Extended Compatibility & Functionality

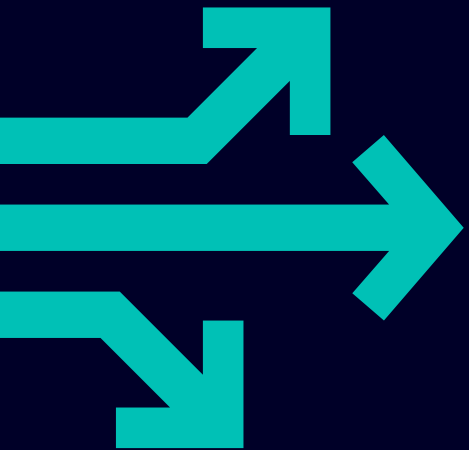
- New S7-1200 G2 PLC Family now supported as well in S7-PLCSIM Advanced
- Extended Compatibility: TIA Portal projects from versions V14 to V21 as well as S-1500 CPU firmware versions V1.8 to V4.1 are now supported.
- S7-1200 G2 is supported from Firmware Version V4.1
- Latest Software Controller Version 40.1 can be simulated
- API Version from 4.0 – 8.0



TIA Portal V20

TIA Portal Options

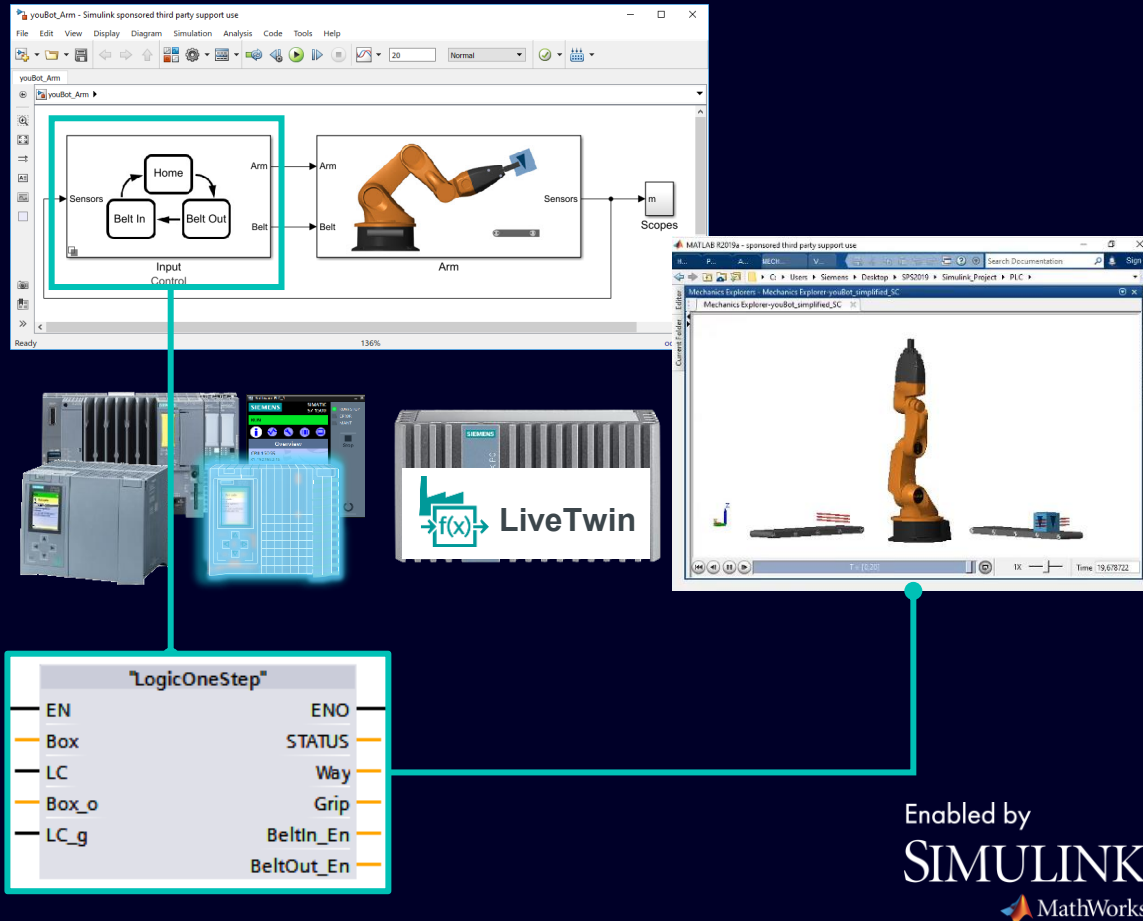
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SIMATIC Target™ for Simulink®

Model-based design with SIMATIC Target for Simulink



Overview

- Is an add-on for Simulink by MathWorks
- Model-based design with MATLAB® and Simulink
- Automatic generation of executable code from Simulink

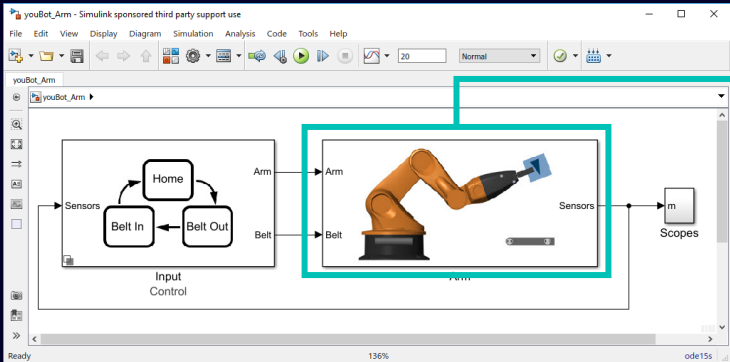
Executable on

- LiveTwin for Industrial Edge
- The standard and failsafe version of
 - S7-1500 Software Controller
 - ET 200SP Open Controller
 - CPU 1518 MFP
- Simulation with PLCSIM Advanced

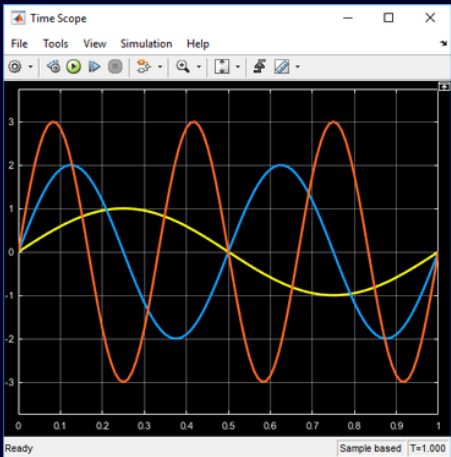
Enabled by
SIMULINK
MathWorks

SIMATIC Target™ for Simulink® V6.0 SP3

Secure Monitoring and Debugging with External Mode for S7-1500 Runtimes

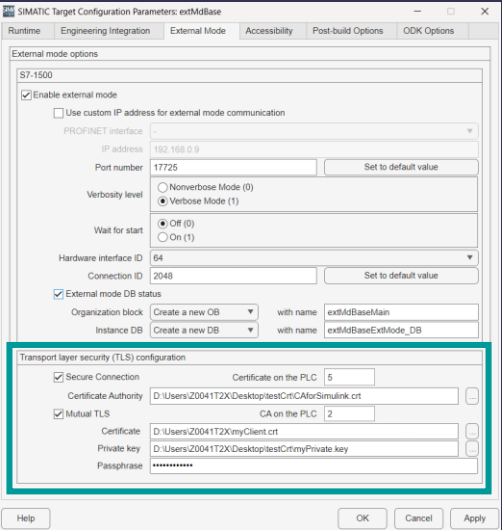


MATLAB and
Simulink



Function

- Secure External Mode communication between Simulink and S7-1500 Runtime
- Based on standard TLS mechanisms



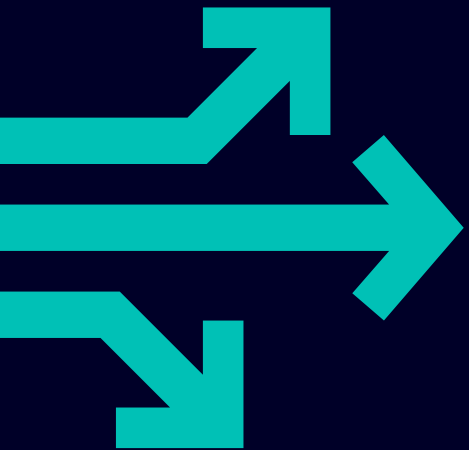
Benefit

- Monitoring & tuning of model behavior directly on the runtime
- Secure remote monitoring and modification of machine behavior

TIA Portal V20

TIA Portal Options

Content



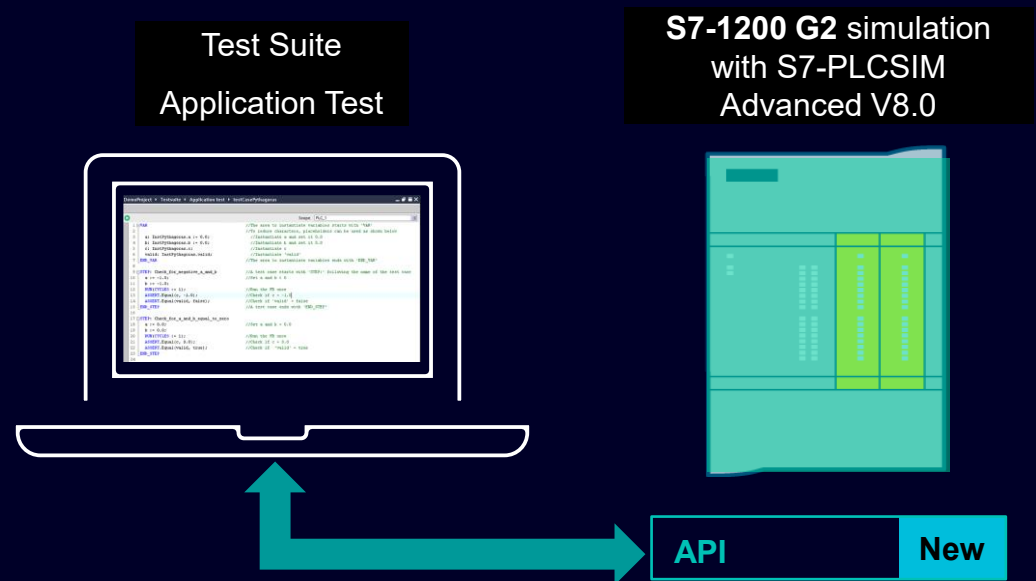
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Test Suite V21

General Improvements

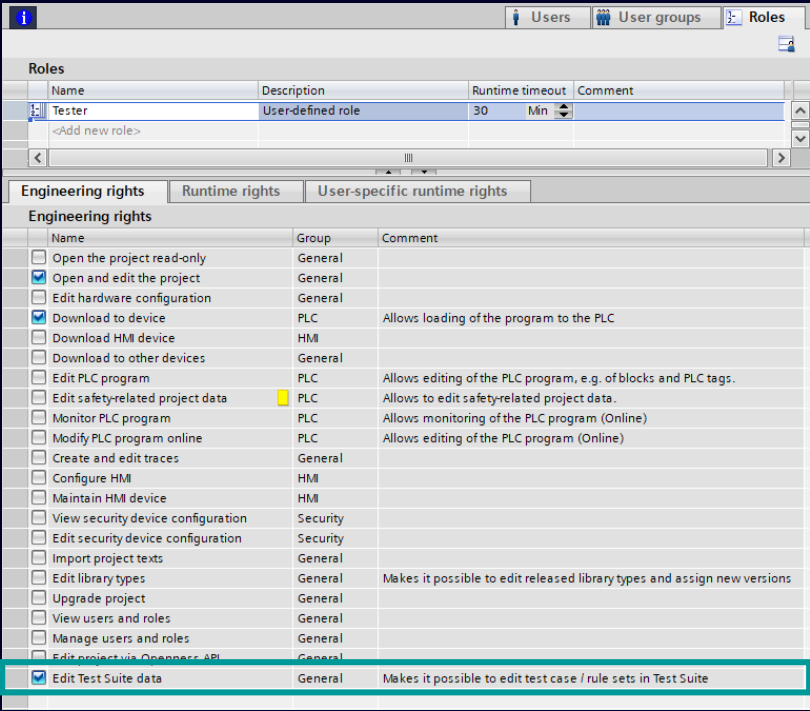
Application test

- S7-PLCSIM Advanced V8 enables application testing for S7-1500 and **S7-1200 G2** controllers via TIA Portal Test Suite.



General

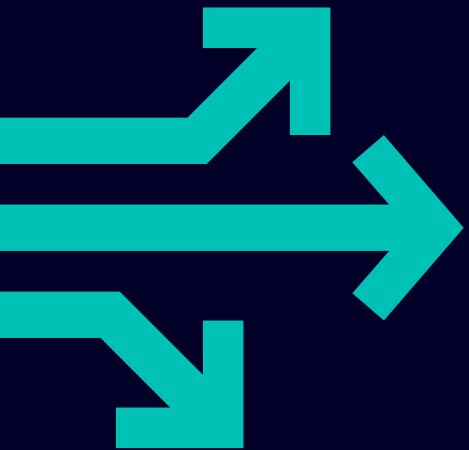
- Possible to use Openness APIs only via **Siemens.Engineering.TestSuite.dll**
- New engineering right “**Edit Test Suite data**” is available to protect your tests/rules from unprivileged access.
- Without this new right, user is only allowed to execute the test cases / rule sets and to customize the scope.



TIA Portal V20

TIA Portal Options

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SIMATIC Visualization Architect V21

Support for new devices: Unified HMI EDGE

Unified
Basic



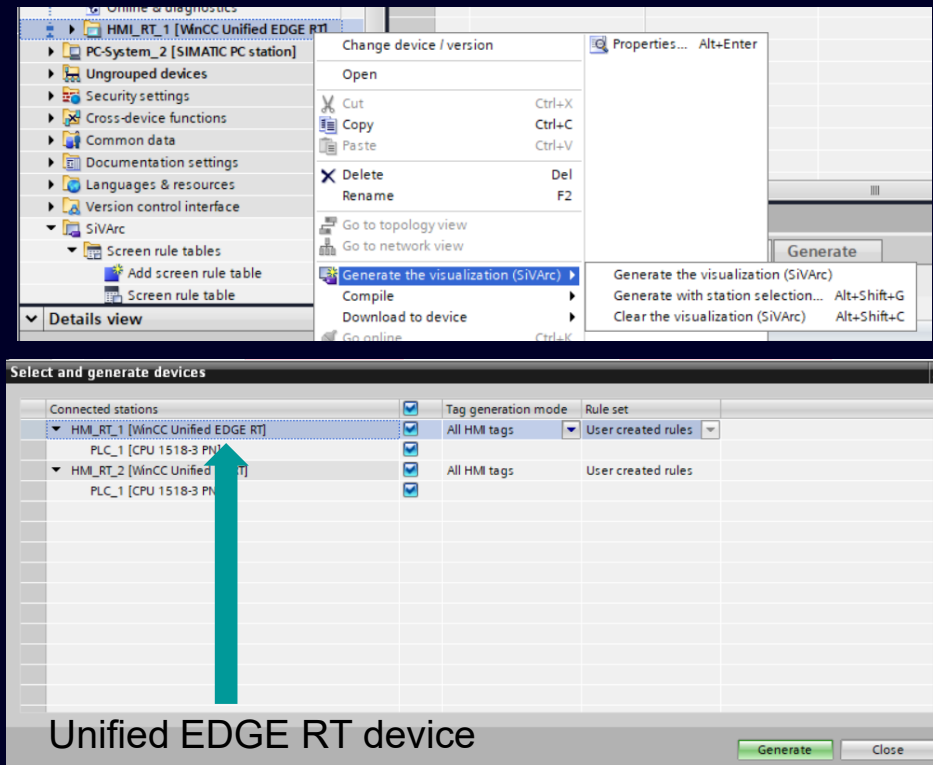
Unified
Comfort



Unified
Edge RT



Unified
PC RT



SiVArc generation supports WinCC Unified EDGE device for automated HMI generation

- SiVArc supports the generation of Unified Edge devices with a comparable range of functions to Unified PC RT devices.
- Clearing SiVArc generated HMI Data is also possible for Unified EDGE RT device.
- Openness support to generate SiVArc for the new device is available.

SIMATIC Visualization Architect V21

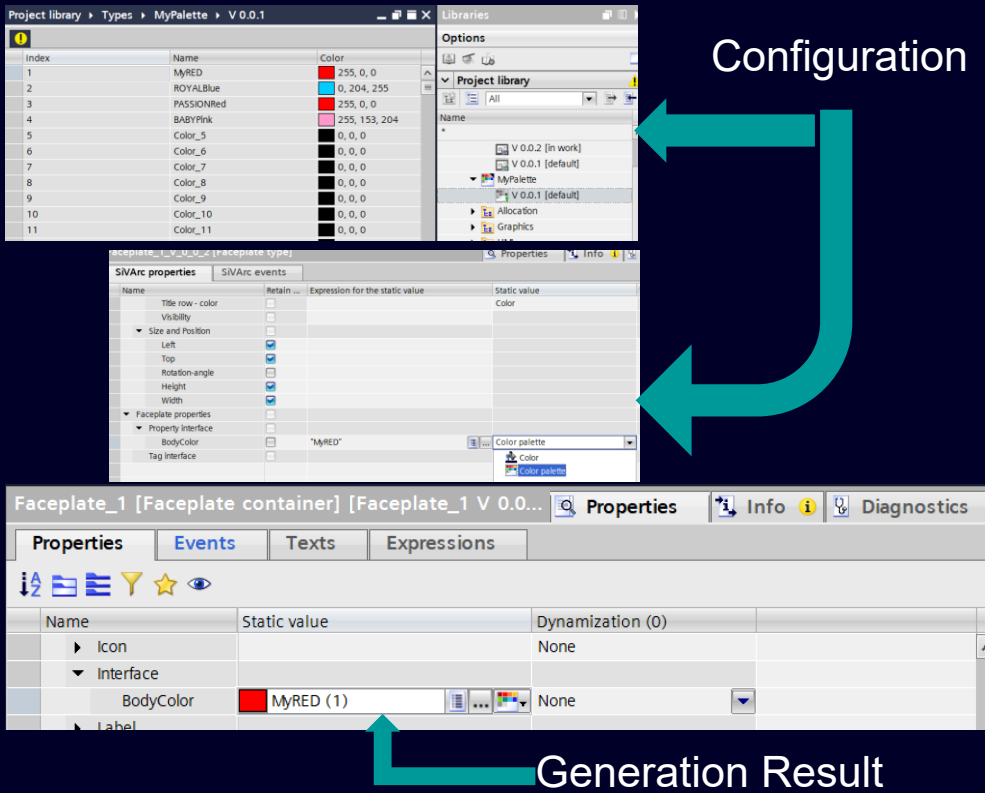
Support for color palette

Unified Basic 

Unified Comfort 

Unified Edge RT 

Unified PC RT 



Configuration

Generation Result

Color palette support via SiVArc is available.

- With SiVArc, you can use the colors from the typed color palette.
- With SiVArc, you can assign colors based on the name of the respective color in the color palette. Alternatively, for a language-independent approach, you can use the index number of the color during generation.

SIMATIC Visualization Architect V21

Screen Layouting with Rotation Angle

Unified
Basic



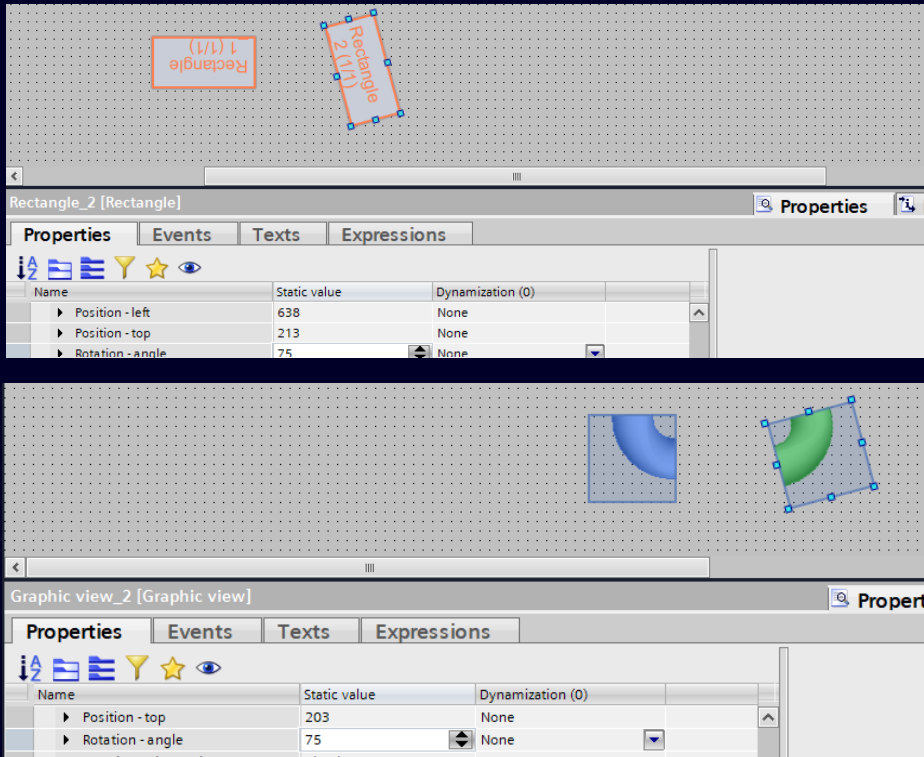
Unified
Comfort



Unified
Edge RT



Unified
PC RT



The user can consider the rotation angle of screen objects when creating the layout.

- When using layout fields, SiVArc considers the rotation angle of the layout fields during generation, so that the screen objects can be not only positioned but also rotated to match the layout.
- If the rotation angle for layout fields is zero, the system considers the rotation angles specified for individual objects via the SiVArc plug-in.

SIMATIC Visualization Architect V21

SiVArc expression improvements

Unified Basic

Unified Comfort

Unified Edge RT

Unified PC RT

SIVArcV21_Demo > PC-System_2 [SIMATIC PC station] > HMI_RT_2 [WinCC Unified PC RT] > Connections

Connections to S7 PLCs in Devices & networks

Connections

Name	Communication driver	Station	Partner	Node
HMI_Connection_SiVArc_Test01	SIMATIC S7 1200/1500	S7-1500/ET200MP ...	PLC_1	CPU 1518-3 PN, PR...
HMI_Connection_SiVArc_Test02	SIMATIC S7 1200/1500	S7-1500/ET200MP ...	PLC_1	CPU 1518-3 PN, PR...

Scope of expression resolver

Program block/Block instance

HMI device PC-System_2 Readout the HMI connection name

Library object

Resolve expression

HmiDevice.Connections[0]

Expression result

HMI Connection SiVArc Test01

Screen_1 [Screen]

SiVArc properties

SiVArc events

Generation overview

Name	Expression for the static value
General	
Name	Rule.ScreenObject.Name

New SiVArc expressions are available for user.

- The expression “HmiDevice.Connections” can be used to access the HMI connection name of the Unified devices.
- SiVArc can generate screens with the Screen object names configured in the Screen rule table using new expression “Rule.ScreenObject.Name”.
- The Layer property configuration has been enhanced. The "Layer" property can have either an integer value, string or expression as name..

SIMATIC Visualization Architect V21

Advanced tag rules improvements



Chose the type for the template

Block_1_DB_in01 [HMI_Tag]

IVArc properties

Name Expression for the static value

General

Name

Comment

HMI Tag template type Default

Acquisition mode

Acquisition cycle

The respective plug-in is shown

Address Multiplexing

Acquisition mode

Acquisition cycle

PLC tag

Index tag

Number of array entries in index tag

Start value of the tag can be defined

Hmi Internal Tag

Int

Improved usability and functionality of HMI tag generation.

- Advanced tag rule editor is more user friendly now, displaying the relevant properties specific to the selected "HMI Tag Template Type" in the "Plug-ins" tab.
- SiVArc supports the setting of Start value of HMI Internal Tags using Tag Template for all supported HMI Devices.

SIMATIC Visualization Architect V21

Usability improvements (1)

Unified Basic 

Unified Comfort 

Unified Edge RT 

Unified PC RT 

Faceplate_1_V_0_0_2 [Faceplate type] **Unified Faceplate - Flag is set**

SiVArc properties	SiVArc events	Retain ...	Expression for the static value	Static
Use faceplate as 'Layout temp...				
General				
Name			Block.DB.SymbolicName	
Display name				
Comment				
Screen group				
Start screen				
Overflow				
Size and Position				
Positioning scheme				
Layout				

SiVArcV21_Demo > SiVArc > Screen rule tables > Screen rule table

Unified Faceplate - Used as template in Rule

Name	Rule trigger	Screen object	Master copy/Screen type
Screen rule	Block_1	Graphic view_1	Faceplate_1

Screen Right click -> Extract Layout Fields

- Go to SiVArc generation matrix
- Go to SiVArc screen rule
- Go to SiVArc S7 block instance
- Properties Alt+Enter
- Show layout fields
- Extract SiVArc layout fields

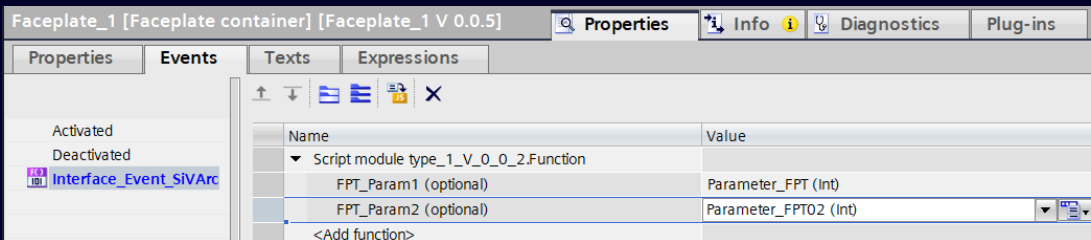
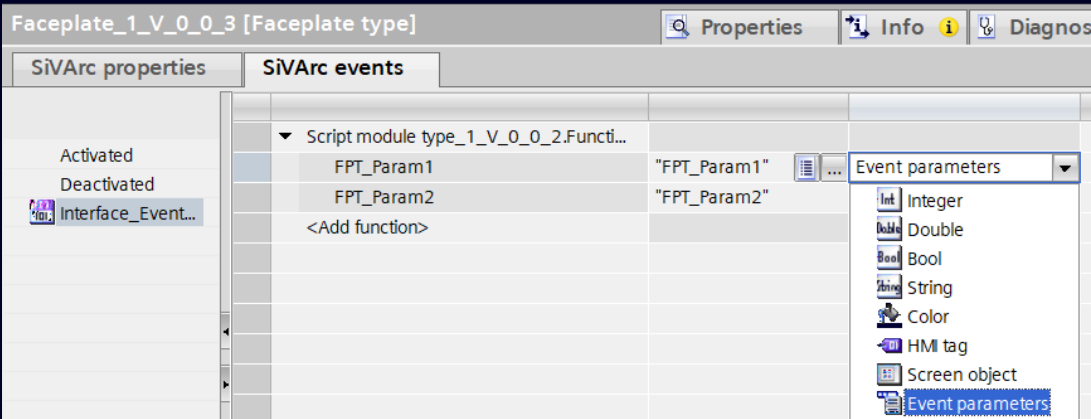
Usability improvements (1)

- The user can create the screens using the faceplate as a SiVArc layout template for SiVArc generation. The screen properties are defined in the SiVArc plug-in's property editor.
- The user can export and import the defined layout screens via a YAML file.

This function makes it possible to reuse layouts from, WinCC Basic / Comfort / Advance or WinCC Professional in WinCC Unified.

SIMATIC Visualization Architect V21

Usability improvements (2)



Usability improvements (2)

- User can generate the Unified faceplates including custom events and map the configured parameters of the custom event with parameters of global script functions using SiVArc events.
- Version number expression types is shown while configuring the expression and the version number is shown in the path for Unified faceplates.
- Global search is possible in SiVArc plug-ins.

SIMATIC Visualization Architect V21

Support for TIA Portal clients

Unified Basic ✓

Unified Comfort ✓

Unified Edge RT ✓

Unified PC RT ✓

System Screen rules					
System Screen rules		System Tag rules		System Advanced tag rules	
Name	Created by	Rule Trigger	Screen object	Master copy/Type of a screen	Layout field
1 ScreenRule_1	CFL	PIT_FB_01	PIT_Button_02	PIT_Screen_01	
2 ScreenRule_5	CFL	PIT_FB_01	PIT_Button_01	PIT_Screen_02	
3 ScreenRule_C	CFL	PIT_FB_01	PIT_Button_01	PIT_Screen_01	

CFL – System rules created

Select stations and controllers for SiVArc generation

Connected stations	Tag generation mode	Rule Set
▼ HMI_RT_11 [WinCC RT Professional]	Used HMI tags	CFL rules
PLC_2 [CPU 1518F-4 PN/DP]		

SiVArc generation option – CFL rules

New Client supported: Control Function Library

- SiVArc supports additional client, MTP-CFL.
- MTP-CFL shall create system rules needed to generate HMI Objects.
- SiVArc generation is enabled for the rule set “CFL rules”.
- Generation results shall be displayed about generated objects for CFL.

SIMATIC Visualization Architect V21

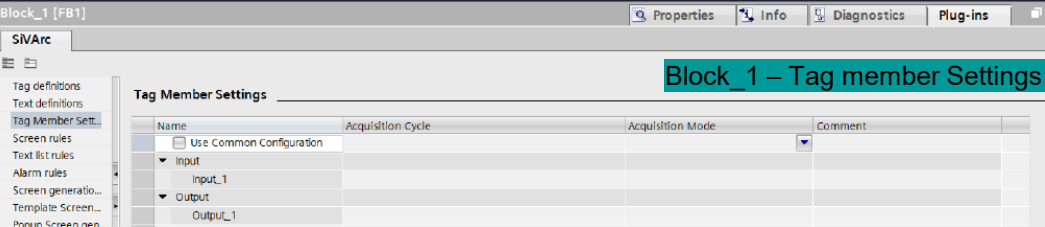
Openness API improvements

Unified Basic 

Unified Comfort 

Unified Edge RT 

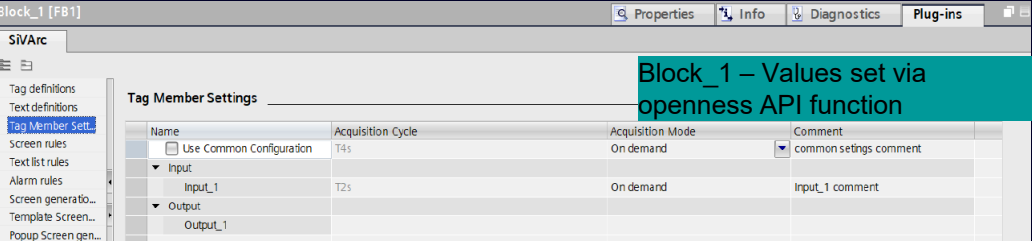
Unified PC RT 



```
// Read properties
Console.WriteLine($"Acquisition mode - {tagMember.AcquisitionMode}");
Console.WriteLine($"Acquisition cycle - {tagMember.AcquisitionCycle}");
Console.WriteLine($"Comment - {tagMember.Comment}");

// Write properties
tagMember.AcquisitionCycle = "T2s";
tagMember.AcquisitionMode = AcquisitionMode.OnDemand;
tagMember.Comment = "Input_1 comment";
```

SiVArc API function to read/write values



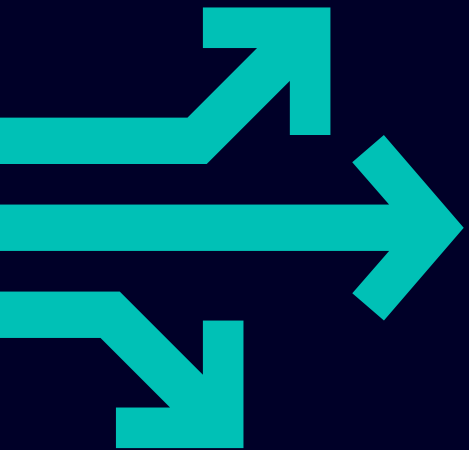
Openness API improvements

- User can access and read/write the Tag Member Settings properties configured for the program block, FC and OB.
- The LayoutData service API provides functionality to export and import screen layouts in SiVArc from one HMI device to another.
- User can update an instance of SiVArc rule table from library to project (PNV).
- User can use Library update functionality for color palettes in library.
- For a given PLC "Upgrade SiVArc definitions" functionality can be used via openness.

TIA Portal V20

TIA Portal Options

Content



01	SIMATIC STEP 7 Safety
02	SIMATIC Safe Kinematics
03	TIA Portal Multiuser
04	SIMATIC Robot Library
05	OPC UA
06	SIMATIC S7-PLCSIM / S7-PLCSIM Advanced
07	SIMATIC Target for Simulink
08	TIA Portal Test Suite
09	SIMATIC Visualization Architect (SiVArc)
10	SIMATIC Modular Automation (MTP)
11	Central User Management (UMC)
12	Modular Application Creator
13	SIMATIC ProDiag / SysDiag
14	TIA Portal Teamcenter Gateway
15	TIA Package Manager
16	TIA Portal Safety Validation Assistant

MTP as driver for flexible production and package unit integration

Core concepts: Standardized interfaces and application-level description

Module Type Package (MTP)

MTP is a standardized, non-proprietary, application-level description of autonomous equipment assemblies



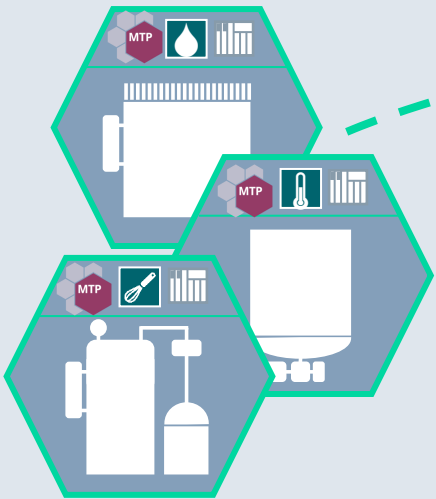
hosted by:



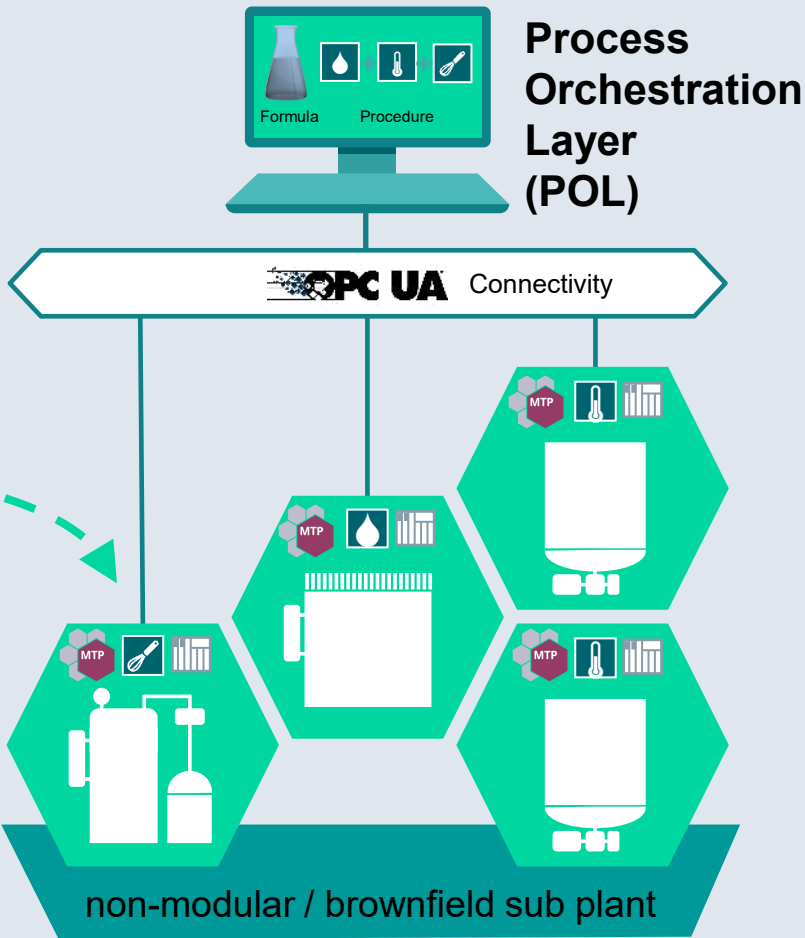
Based on:



Flexible, modular plants are built out of intelligent, autonomous **Process Equipment Assemblies (PEAs)** with **standardized¹⁾ interfaces** described in **Module Type Package (MTP)**



Process Equipment Assemblies (PEAs)



¹⁾ MTP standard 2658 hosted by PI

Modular Automation

Introduction & Overview



Chemicals



Pharma



F&B



Batteries



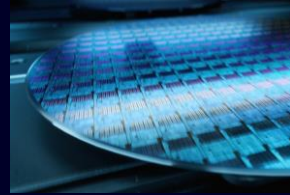
Hydrogen



Marine



W&WW



Semiconductor

Standardization for Plug & Produce in Process & Hybrid industries

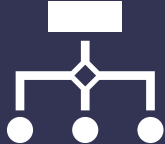


1



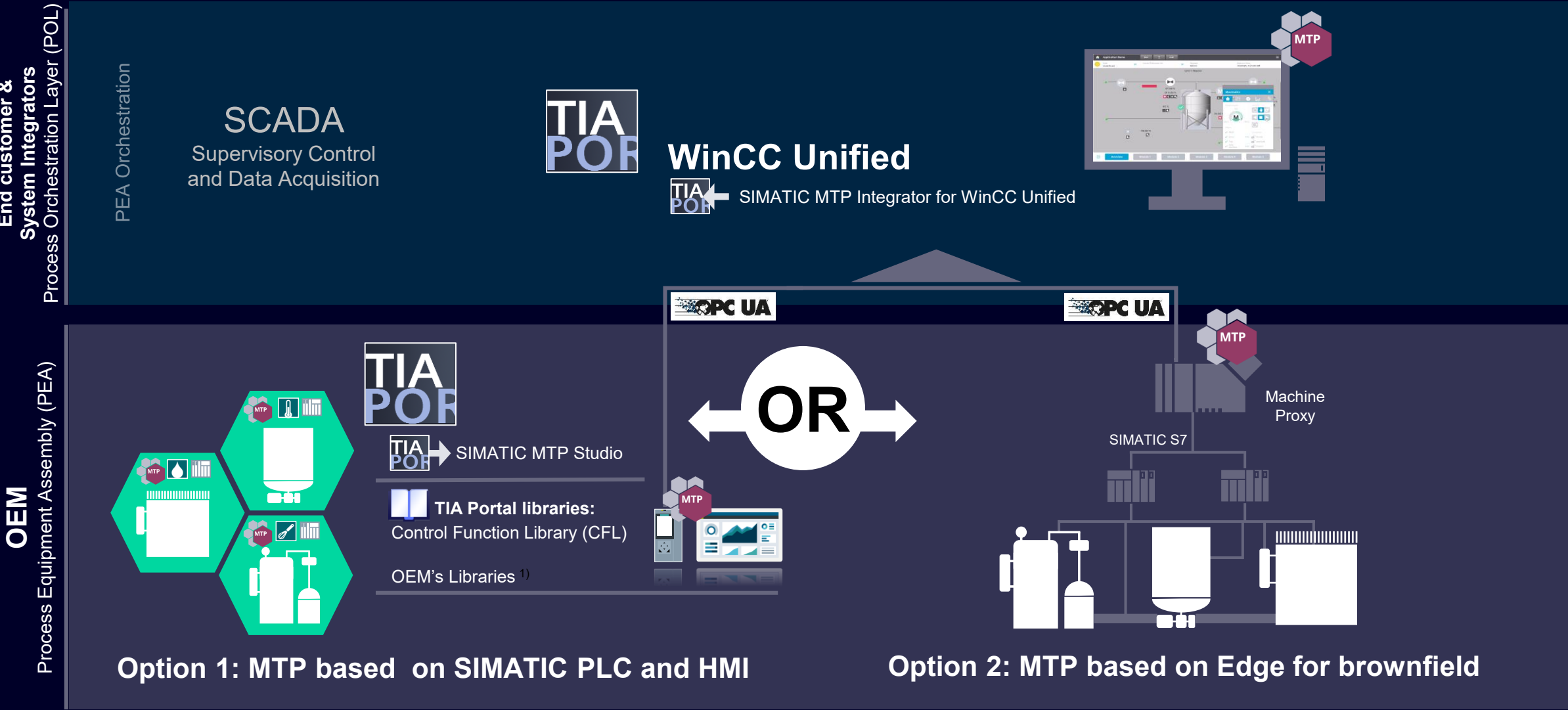
OEMs-Enablement:
Completion of our portfolio to enable the delivery of process equipment

2



Plant Operators & System Integrators:
completion of our DCS and SCADA Portfolio to orchestrate modular plants

Modular Automation Portfolio



¹⁾ Coming soon

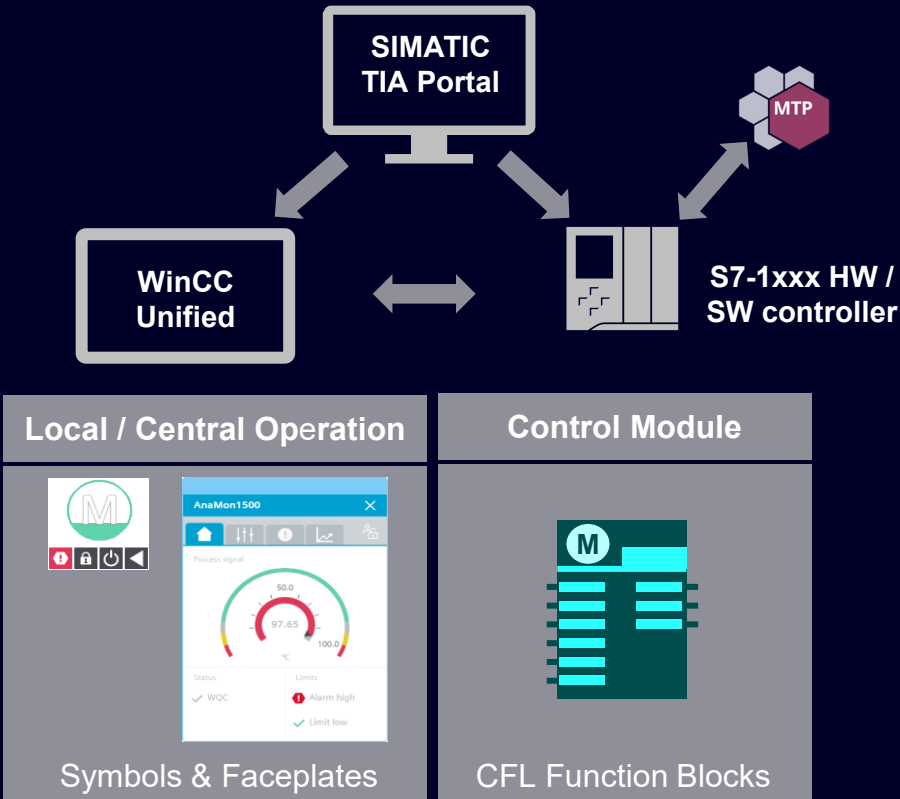
Engineering Efficiency for Process Equipment's SIMATIC Control Function Library - Overview

Unified Basic ✓

Unified Comfort ✓

Unified Edge RT ✓

Unified PC RT ✓



Standardized module engineering with a modular and memory optimized library, offering:

- TIA Portal blocks – Modular and memory optimized library
- Interfaces based on VDI/VDE/NAMUR* 2658 part 2 / 3: Ready to use with MTP on S7-15xx and tested with WinCC Unified.
- Optimized footprint & performance for S7-1xxx HW / SW controller & WinCC Unified.
- Supports virtual commissioning based on PLCSIM Advanced and SIMIT
- HMI Design for the faceplates aligned to WinCC Unified Look & Feel (based on template suite)
- Corporate Design via SIMATIC WinCC Unified Corporate Designer / TIA Portal
- User management a crucial part of the library **New**
- Industry-specific blocks like Aggr8, TimeSwitch, HVAC, ...
- New Application Example for [W&WW](#), [H2](#), Pharma, ... **New**

Engineering Efficiency for Process Equipment's SIMATIC Control Function Library - Hardware / Software

Unified
Basic



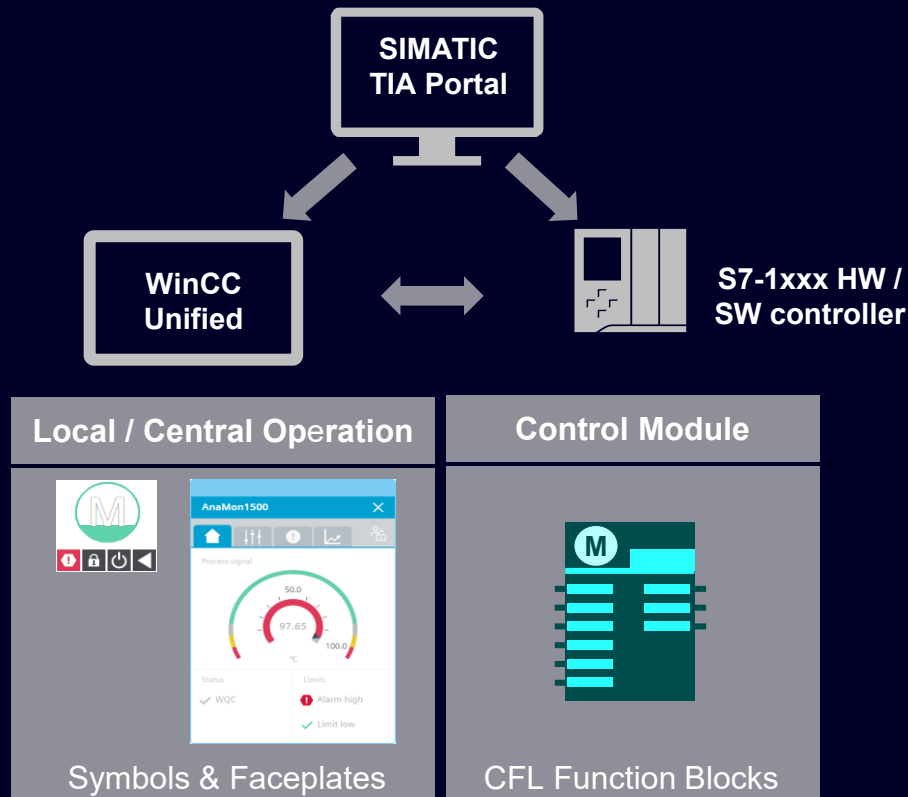
Unified
Comfort



Unified
Edge RT



Unified
PC RT



Hardware & Firmware requirements

- SIMATIC S7-1200 (firmware V4.3 and higher)
- SIMATIC S7-1200 G2 **New**
- SIMATIC S7-1500 (firmware V2.8 and higher)
- SIMATIC S7-1500V (firmware V2.0 and higher)
- SIMATIC S7 Open Controller (firmware V2.5 and higher)
- SIMATIC ET200 SP CPU (firmware V2.8 and higher)
- SIMATIC S7-1500 Software Controller (firmware V2.5 and higher)
- Simulation with SIMATIC S7-PLCSIM (V20 and higher)
- Simulation with SIMATIC S7-PLCSIM Advanced (V7.0 and higher)

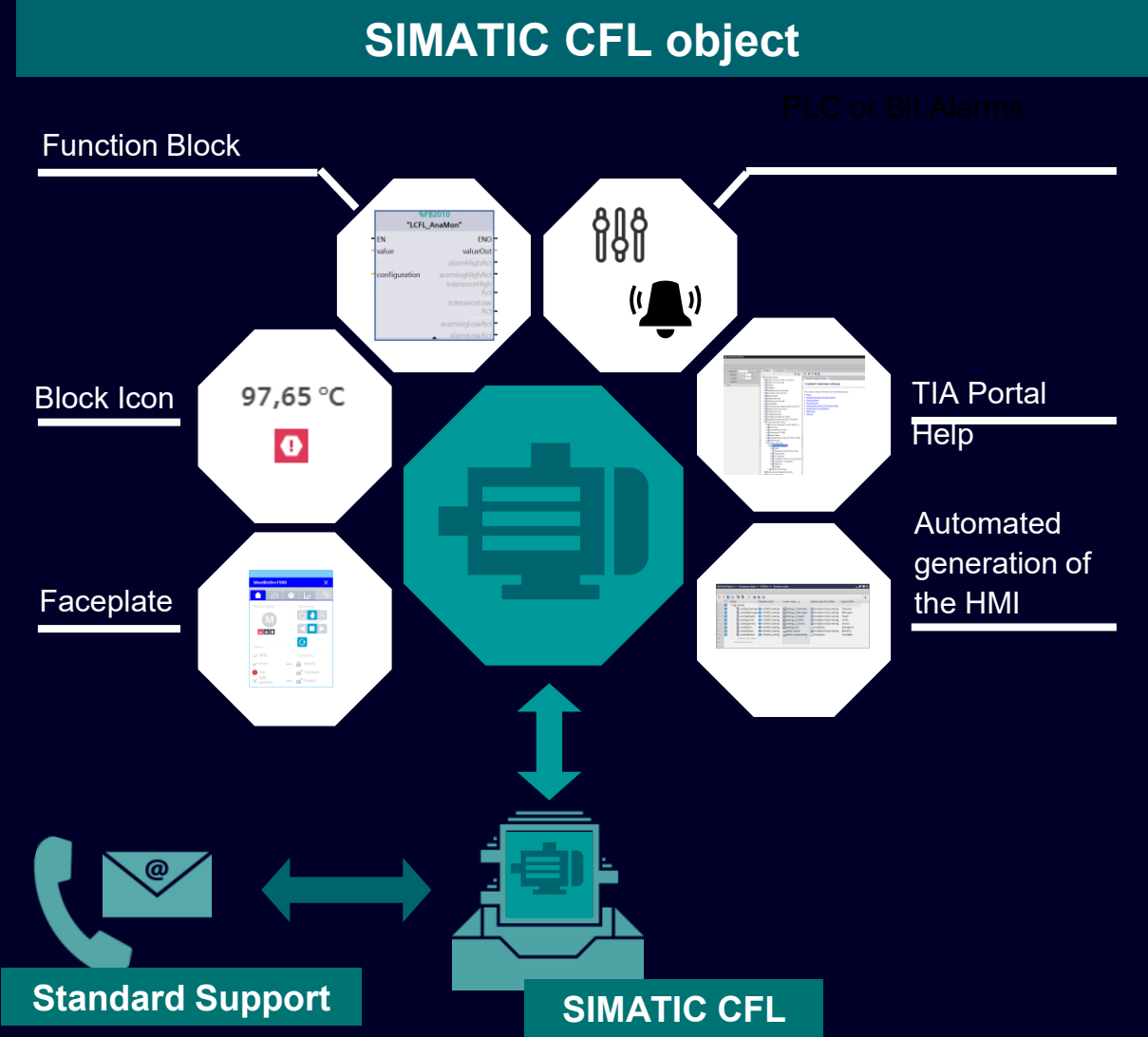
Software requirements

- SIMATIC STEP 7 Basic/Professional V20 or higher
- WinCC Unified V20 or higher
- WinCC Unified PC Runtime V20

Additional software:

- SiVarc V20

Engineering Efficiency for Process Equipment's SIMATIC Control Function Library - Object oriented approach



Engineering Efficiency for Process Equipment's SIMATIC Control Function Library - Scope

Unified Basic

✓

Unified Comfort

✓

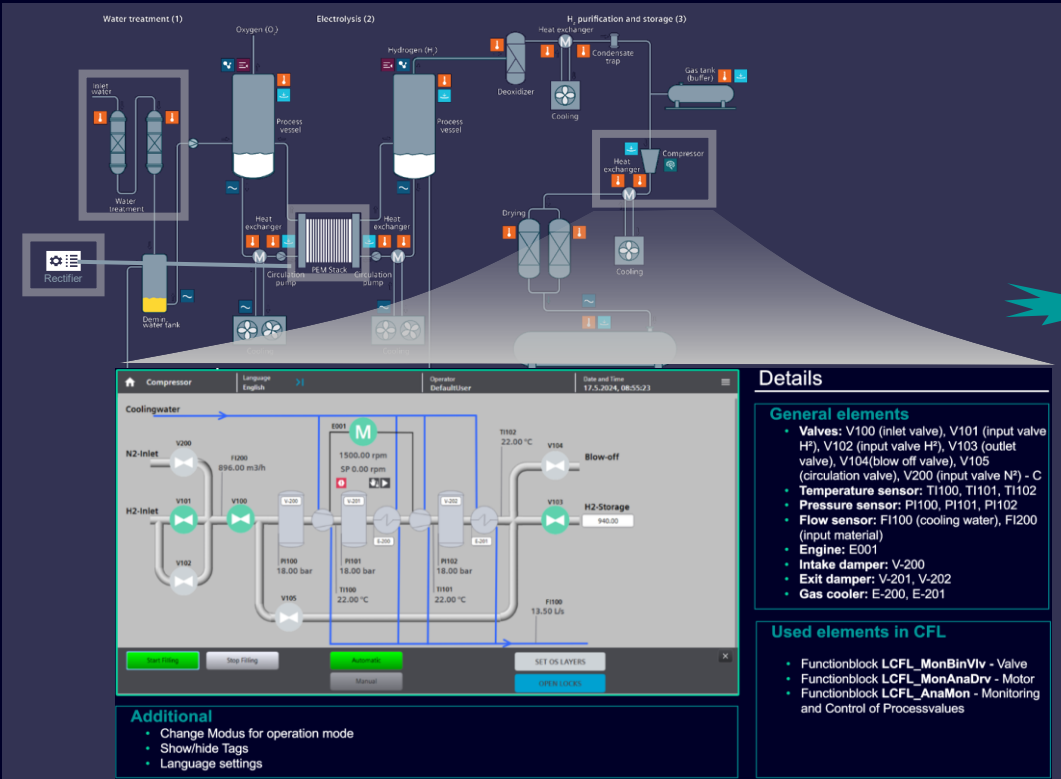
Unified Edge RT

✓

Unified PC RT

✓

OEM
Process Equipment Assembly (PEA)



CFL - Industry-specific blocks

Optimized footprint & performance for S7-1xxx HW / SW controller & WinCC Unified

Drives

- MonBinDrv
- MonAnaDrv
- MonBinVlv
- MonAnaVlv
- MonTriPosVlv

FP
FP
FP
FP
FP

Counter

- AnaCounter
- DIntCounter

FP
FP

Control

- PIDCtrl
- Aggr8
- TimeSwitch8
- SetCrv
- Polygon

FP
FP
FP
FP
FP

Monitor

- AnaView / AnaMon
- BinView / BinMon
- DIntView / DIntMon
- StringView

FP
FP
FP
FP

Interlock

- LockView4
- LockView8

FP
FP

HVAC

- Enthalpy
- Absolute Humidity
- Relative Humidity
- Relative Humidity (Td)
- Dew Point Temperature
- Wet Bulb Temperature

Operate

- AnaManInt
- BinManInt
- DIntManInt

FP
FP
FP

Channel Blocks

- LCFL_ChAnaIn
- LCFL_ChAnaOut
- LCFL_ChDigIn
- LCFL_ChDigOut

FP
FP
FP
FP

MTP Service Framework

- Service
- Procedure
- Config Parameter
- Procedure Parameter

FP

Engineering Efficiency for Process Equipment's SIMATIC Control Function Library - Visualization

Unified Basic

Unified Comfort

Unified Edge RT

Unified PC RT

BinMon (PLC 1500)

AnaMon (PLC 1500)

MonAnaDrv (PLC 1500)

PIDCtrl (PLC 1500)

- ▶ LCFL_MonBinDrvSymbol
- ▶ LCFL_MonBinDrvSymbolCompact

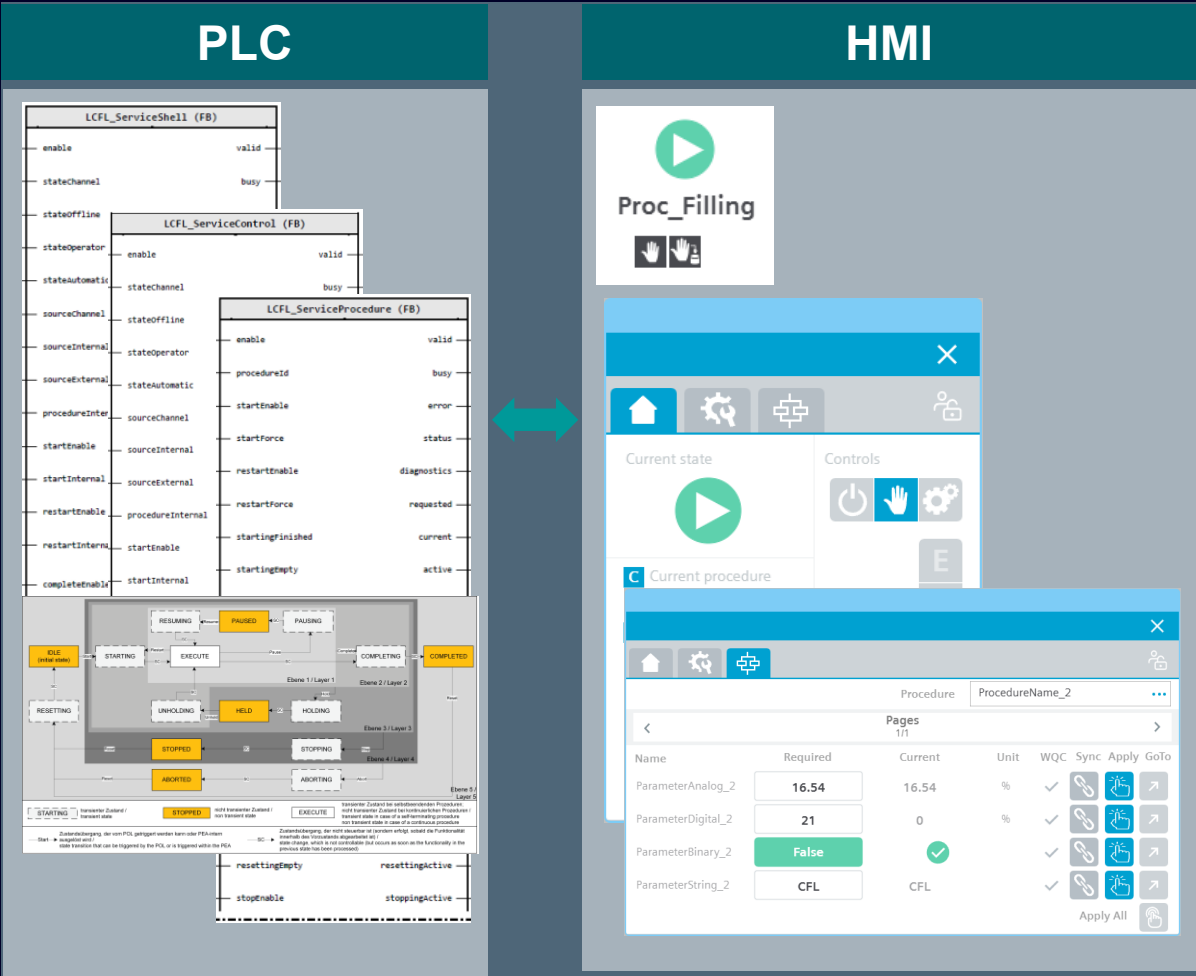
Description

- Symbol faceplates are available in 2 versions. Faceplates with the ending "Compact" take less space in the WinCC Unified screen.
- The "Compact" Symbols should be used for SCADA (P&IDs like visualization) and MTP Use Cases. (optimize for the MTP)
- Implementation based on the Engineering guideline for WinCC Unified [Link](#)



HMI Template Suite
Quick and easy setup of your local visualization

Engineering Efficiency for Process Equipment's SIMATIC Control Function Library - Services



New

The process engineering functions provided in a PEA are encapsulated as services that can be parameterized and can be used by the POL or other services via a state-based interface. A PEA “Stirring reactor”, for example, could thus offer the service “Stirring”. Since the reactants are to be filled into the reactor, the reactor also offers the service “Filling”, which can differ depending on the number and designation of the filling nozzles, e.g., “FillingA” and “FillingB”. If the reactor has a heating system, the “Heating” service can also be implemented. The services are used to influence the PEAs in service-based process control. Thereby, the services follow a fixed and non-configurable state machine similar to the concept of ISA 88 or DIN EN 61512-1. The service orchestration sends a command to the PEA to change the state of a service. Within each state, various programs, e.g., processes according to DIN EN 61131-3, are implemented. The programmes within the states then control the field devices necessary for the process-related function and evaluate the corresponding signals from the sensors. Different states of a service may contain the same functionality. For example, stopping (in the Stopping state) and aborting (in the Aborting state) a service can be solved via the same functionality. The current states of the services are reported by each PEA to the POL.

Lastest Version on :  [Simatic MTP SIOS Landing Page](#)

 [Control and Operate for Discrete Industries](#)

 [Module Type Package \(MTP\)](#)

Engineering Efficiency for Process Equipment's SIMATIC MTP Studio - Overview

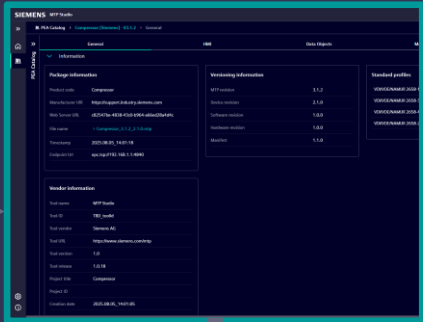
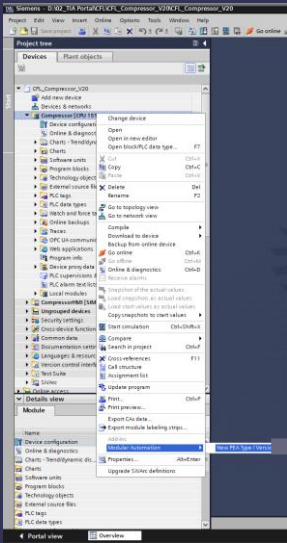
OEM
Process Equipment Assembly (PEA)

SIMATIC
Control
Function
Library

SIMATIC
Modular
Automation
Library

TIA
LIB

TIA
POR



<file>.mtp

SIMATIC MTP Studio for handling PEA Types based on the TIA Portal and the generation of MTP File, by only one-click! The SIMATIC MTP Studio could be also used for the visualization von MTP File.

- The MTP file contains MTP relevant Contents like control modules, services, OPC UA configuration and the pictures based on the STEP 7 (TIA Portal) and WinCC Unified engineering.
- Supports VDI/VDE/NAMUR 2658 Part 1 / 2 / 3 / 4
- Supports SIMATIC SIMATIC Control Function Library (CFL) and Customer Libraries ¹⁾
- Distributed with system Modular Automation Library contains PEA Information label, eClass SVG graphics and MTP Custom ¹⁾ (for exporting your own custom visual objects and function blocks)

Latest Version on :



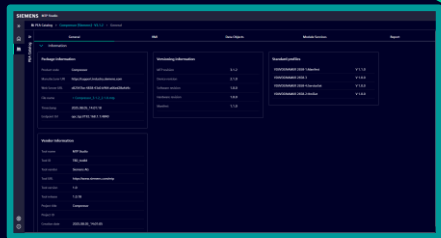
[Simatic MTP SIOS Landing Page](#)



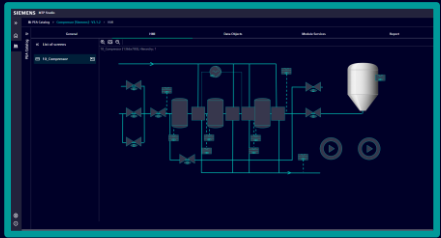
[Module Type Package \(MTP\)](#)

Engineering Efficiency for Process Equipment's SIMATIC MTP Studio - Engineering

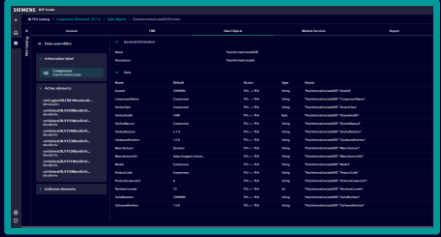
VDI/VDE/NAMUR 2658-1



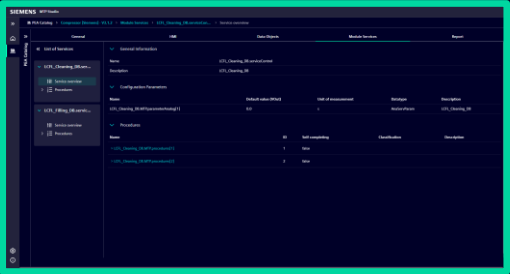
VDI/VDE/NAMUR 2658-2



VDI/VDE/NAMUR 2658-3



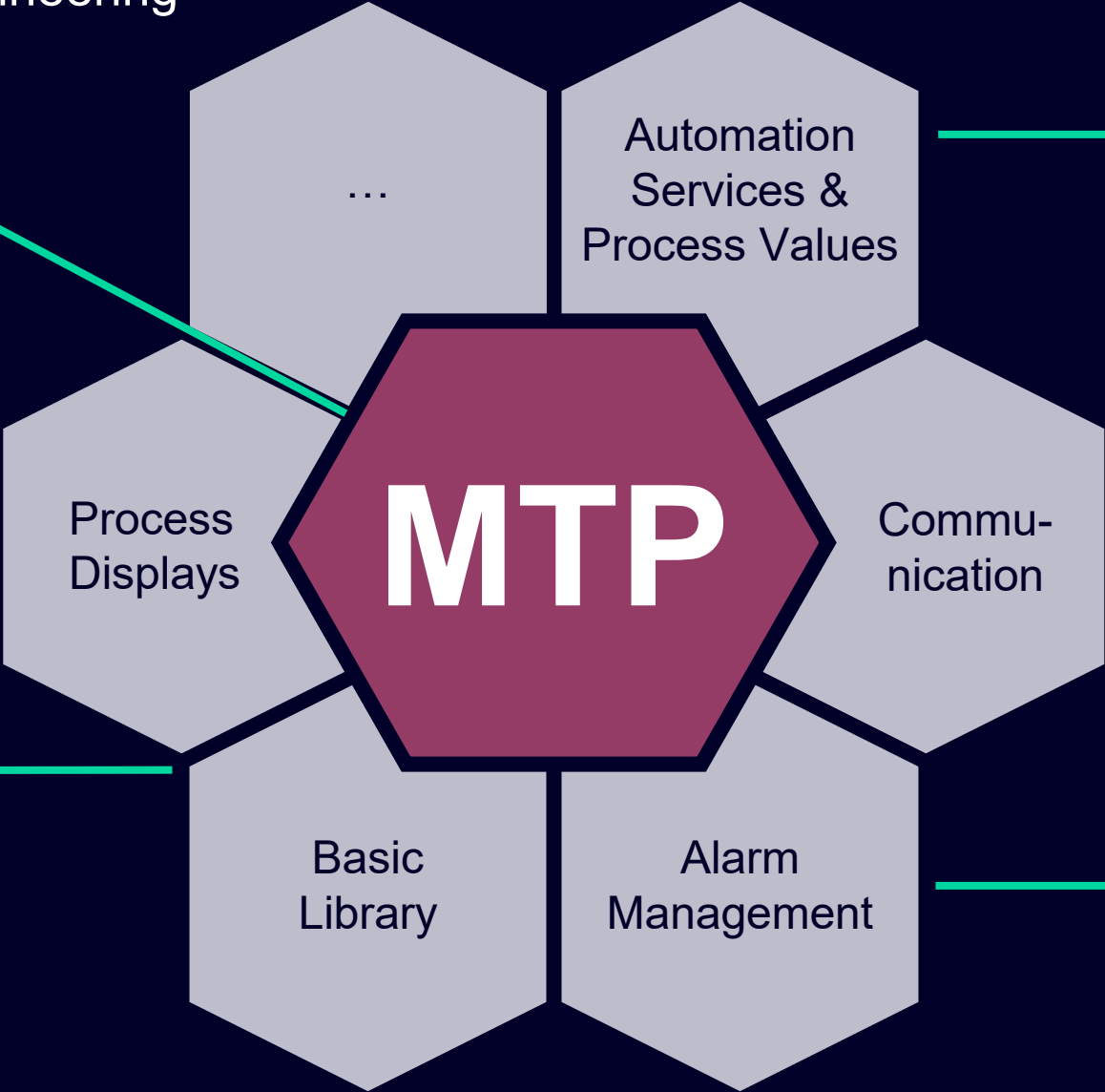
VDI/VDE/NAMUR 2658-4



VDI/VDE/NAMUR 2658-5



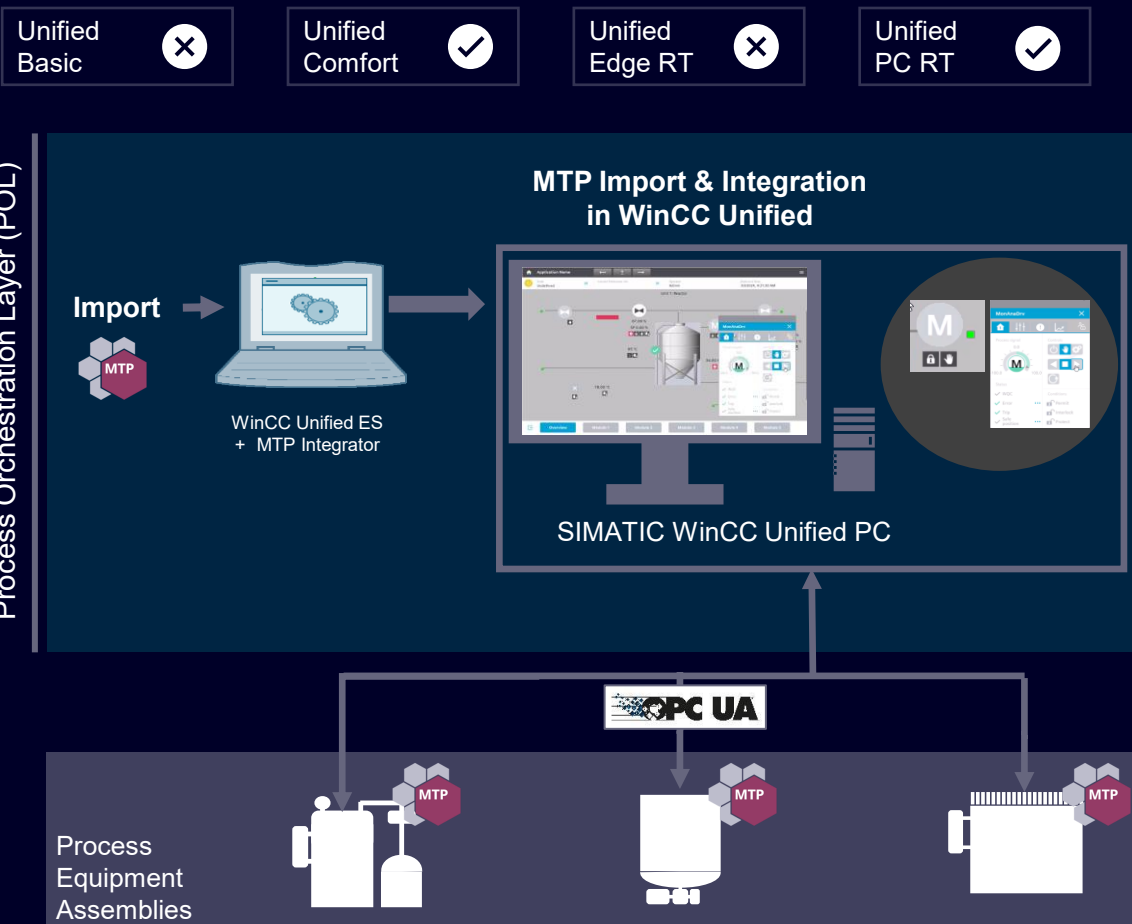
VDI/VDE/NAMUR 2658-6



Process Orchestration Layer

SIMATIC MTP Integrator for WinCC Unified - Overview

End customer & System Integrators
Process Orchestration Layer (POL)



Integrate standardized MTP package units / machines in WinCC Unified, including PLC and HMI components

- Standardized, line operation of package units / machines

Use MTP files (Siemens or 3rd party) to integrate (cross- vendor) machines automatically

- By instantiating the machine type within your project, the OPC UA connections, PLC tags and HMI components are created with just one click.

Controlling complete units / machines in an abstract way

- Operators can focus on the production without needing to understand details of each multi-vendor machine.
- Maximized operational efficiency, reduced training effort and consistency regarding operation, even if new modules are added modified due to changing market demands.

No. of Package Units / Machines : Unified PC RT: 10 // Unified Comfort Panel: 3

Latest Version on :



[Simatic MTP SIOS Landing Page](#)



[Module Type Package \(MTP\)](#)

Process Orchestration Layer

SIMATIC MTP Integrator for WinCC Unified - Scope

Unified Basic

✗

Unified Comfort

✓

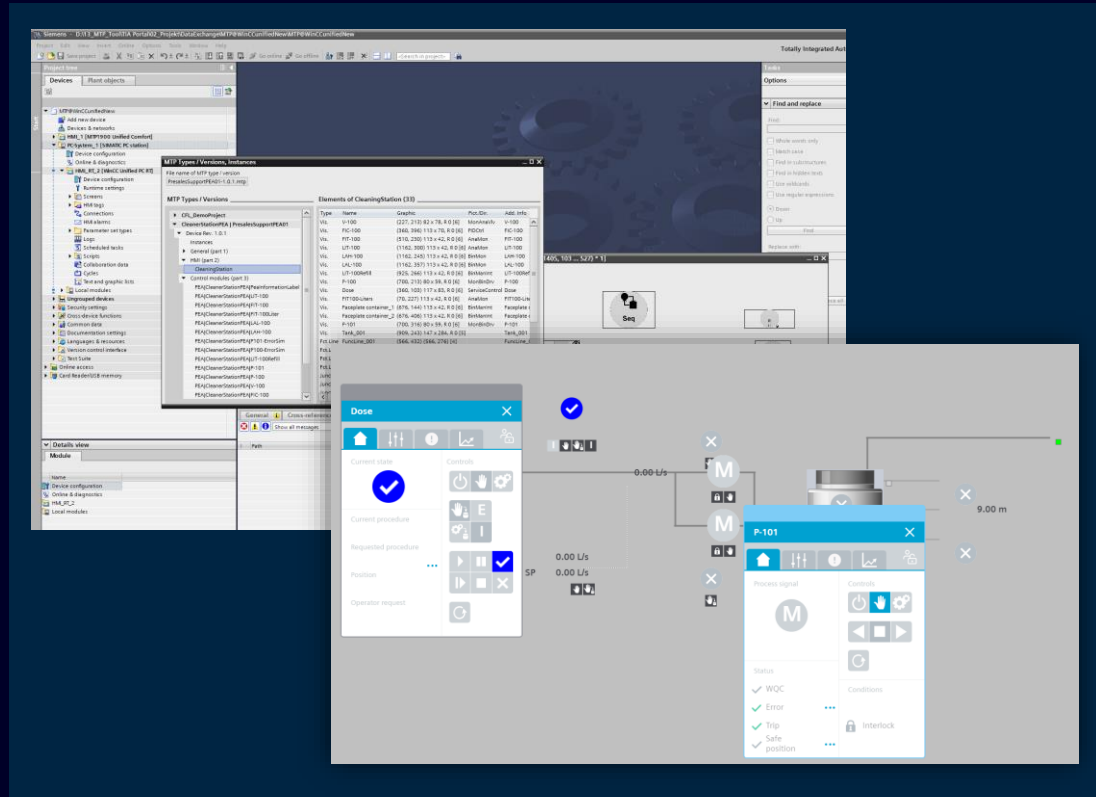
Unified Edge RT

✗

Unified PC RT

✓

End customer & System Integrators
Process Orchestration Layer (POL)



- MTP Import in WinCC Unified Engineering²⁾
- Type management incl. full versioning for your MTP files
- PEA instance management
- PEA Information with Runtime Validation of the Modules (PEA Inventory) **New**
- Static and dynamic HMI Integration (MTP Part 2 + 3)
- Monitoring and control via Faceplate (block icons and detailed views) Orchestration of plantwide HMI (part 3 / 4) **New**
- MTP Multilanguage Support
- User management a crucial part of the library **New**
- Native OPC UA communication with configurable levels of security mechanisms (draft part 5/5.1) **New**
- POL-based alarms (draft part 6/7)

¹⁾ Source: ZVEI, 2022
²⁾ Implementation compliant to the noted parts of the MTP Specification (VDI/VE/NAMUR 2658)

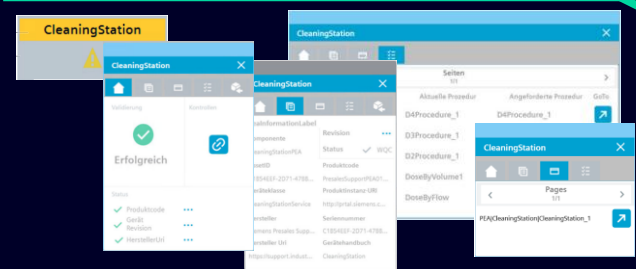
Latest Version on :  [Simatic MTP SIOS Landing Page](#)

 [Module Type Package \(MTP\)](#)

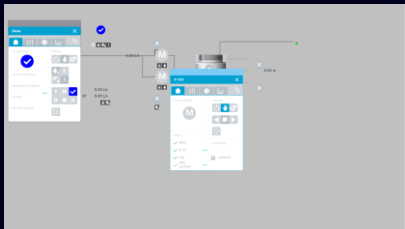
Process Orchestration Layer

SIMATIC MTP Integrator for WinCC Unified - Engineering / Runtime

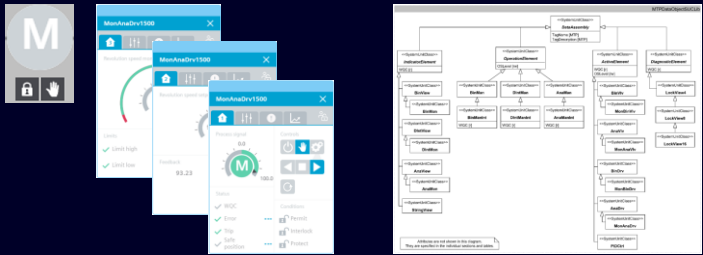
VDI/VDE/NAMUR 2658-1



VDI/VDE/NAMUR 2658-2

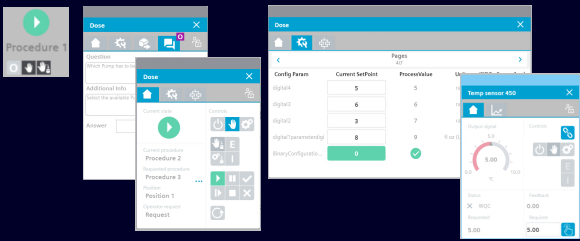


VDI/VDE/NAMUR 2658-3



Automation
Services &
Process Values

VDI/VDE/NAMUR 2658-4



New

VDI/VDE/NAMUR 2658-5



New

VDI/VDE/NAMUR 2658-6



Process
Displays

MTP

Commu-
nication

Basic
Library

Alarm
Management

1) Without Batch

Process Orchestration Layer

SIMATIC MTP Integrator for WinCC Unified – Part 1

Unified Basic

✗

Unified Comfort

✓

Unified Edge RT

✗

Unified PC RT

✓

PEA Information

CleaningStation

CleaningStation

Validierung

Kontrollen

✓

Erfolgreich

Status

✓

Produktcode

...

✓

Gerät

...

✓

Revision

...

✓

HerstellerUri

...

CleaningStation1

Seiten

1/1

PEA|CleaningStation1|CleaningStation_1

➔

CleaningStation1

Seiten

1/1

Name	Zustand	Aktuelle Prozedur	Angeforderte Prozedur	GoTo
Dose_German	✓	Coke	Coke	➔

CleaningStation1

Seiten

1/2

Name	Aktuell	Einheit	WQC	GoTo
PVIN_B	10,00	L	✓	➔
PVIN_A	0,00	L	✓	➔
PVDIGI_B	6	K	✓	➔
PVDIGI_A	0	K	✓	➔
PVIN_BIN_C	✗		✓	➔

CleaningStation1

Seiten

1/2

Name	Aktuell	Einheit	WQC	GoTo
PVIN_B	10,00	L	✓	➔
PVIN_A	0,00	L	✓	➔
PVDIGI_B	6	K	✓	➔
PVDIGI_A	0	K	✓	➔
PVIN_BIN_C	✗		✓	➔

Description

Sheet 1: General Concept and interfaces PI/NAMUR/ZVEI MTP V1.1.0 / V2.0.0:

- Manifest.aml file
 - Class model
 - OPC UA communication
- PEA Information with Runtime Validation of the Modules (PEA Inventory)
- Multilingual Support

CleaningStation

Alarmübersicht

Alarm class	Alarm text	Raise time	Status text
Alarm - high	PEA Reactor AnaView : Process value - Alarm	7/31/2025 3:04	Incoming
Warning - high	PEA Reactor AnaView : Process value - Warni	7/31/2025 3:04	Incoming
Tolerance - high	PEA Reactor AnaView : Process value - Tolera	7/31/2025 3:04	Incoming
Alarm - high	PEA Reactor AnaMon : Process value - Alarm	7/31/2025 3:04	Incoming
Tolerance - high	PEA Reactor AnaMon : Process value - Tolera	7/31/2025 3:04	Incoming
Warning - high	PEA Reactor AnaMon : Process value - Warni	7/31/2025 3:04	Incoming
Alarm - high	PEA Reactor DintMon : Process value - Alarm	7/31/2025 3:04	Incoming

Class in MTP	WinCC Unified Object
Dynamic visual object	Faceplate

Process Orchestration Layer

SIMATIC MTP Integrator for WinCC Unified – Part 4

Unified Basic

✗

Unified Comfort

✓

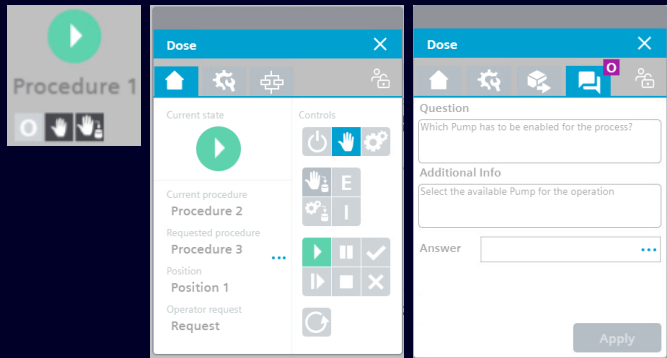
Unified Edge RT

✗

Unified PC RT

✓

Service / Procedure Control



Description

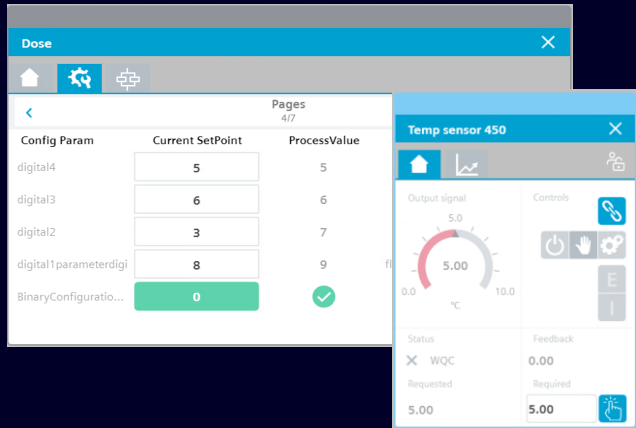
Sheet 4: Modeling of modular services

PI/NAMUR/ZVEI MTP V1.1.0 / V2.0.0:

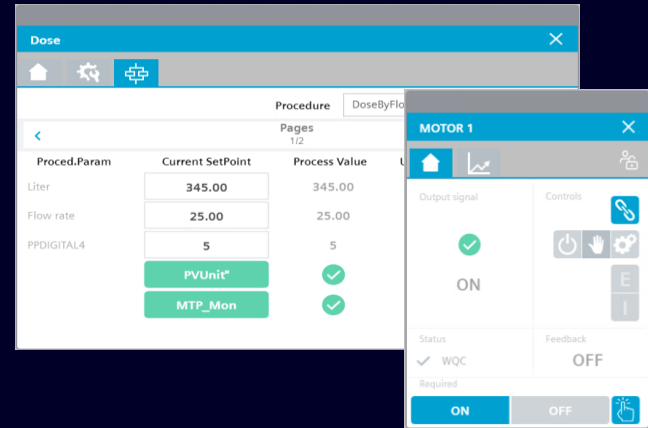
- Service Control (Service interactions, Position texts (optional))
- Procedures
- Configuration / Procedure parameters
- Report values (optional)
- Process values (optional)

FP
FP
FP
FP
FP

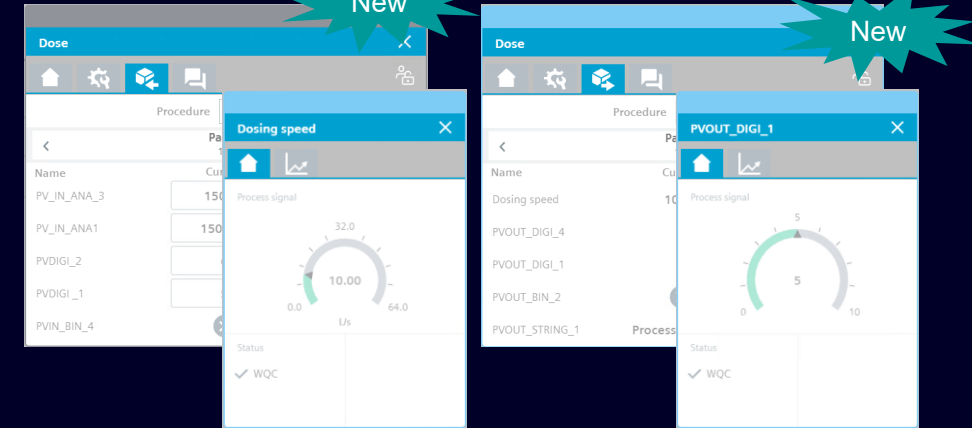
Configuration Parameter



Procedure Parameter



Process Values



Class in MTP	WinCC Unified Object
Dynamic visual object	Faceplate

Process Orchestration Layer

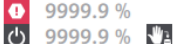
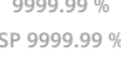
SIMATIC MTP Integrator for WinCC Unified – Visualization

Unified Basic	✗	Unified Comfort	✓	Unified Edge RT	✗	Unified PC RT	✓
---------------	---	-----------------	---	-----------------	---	---------------	---









Description

- In addition to the classic symbols, new "compact" symbols are available, which take up less space on the screen. Both symbols offer the same functionality and are integrated in the MTP Integrator Library.
- Compact symbols are used as the default configuration. The symbol type can be customized using the MTP Integrator Viewer before instance creation. When migrating from previous versions, the classic symbols are retained to preserve existing configurations.
- The “Compact” Symbols should be used for SCADA (P&IDs like visualization) and MTP Use Cases. (optimize for the MTP)
- Implementation based on the Engineering guideline for WinCC Unified [Link](#)



HMI Template Suite
Quick and easy setup of your local visualization

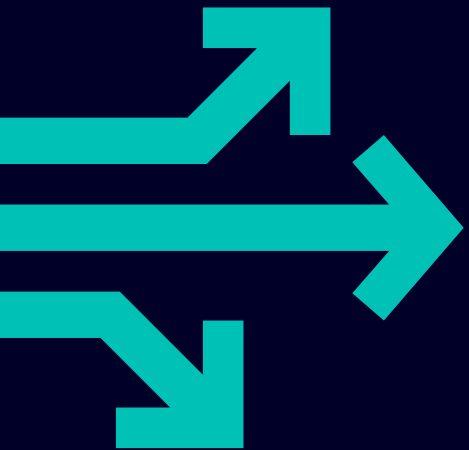
Latest Version on :  [Simatic MTP SIOS Landing Page](#)

 [Module Type Package \(MTP\)](#)

TIA Portal V20

TIA Portal Options

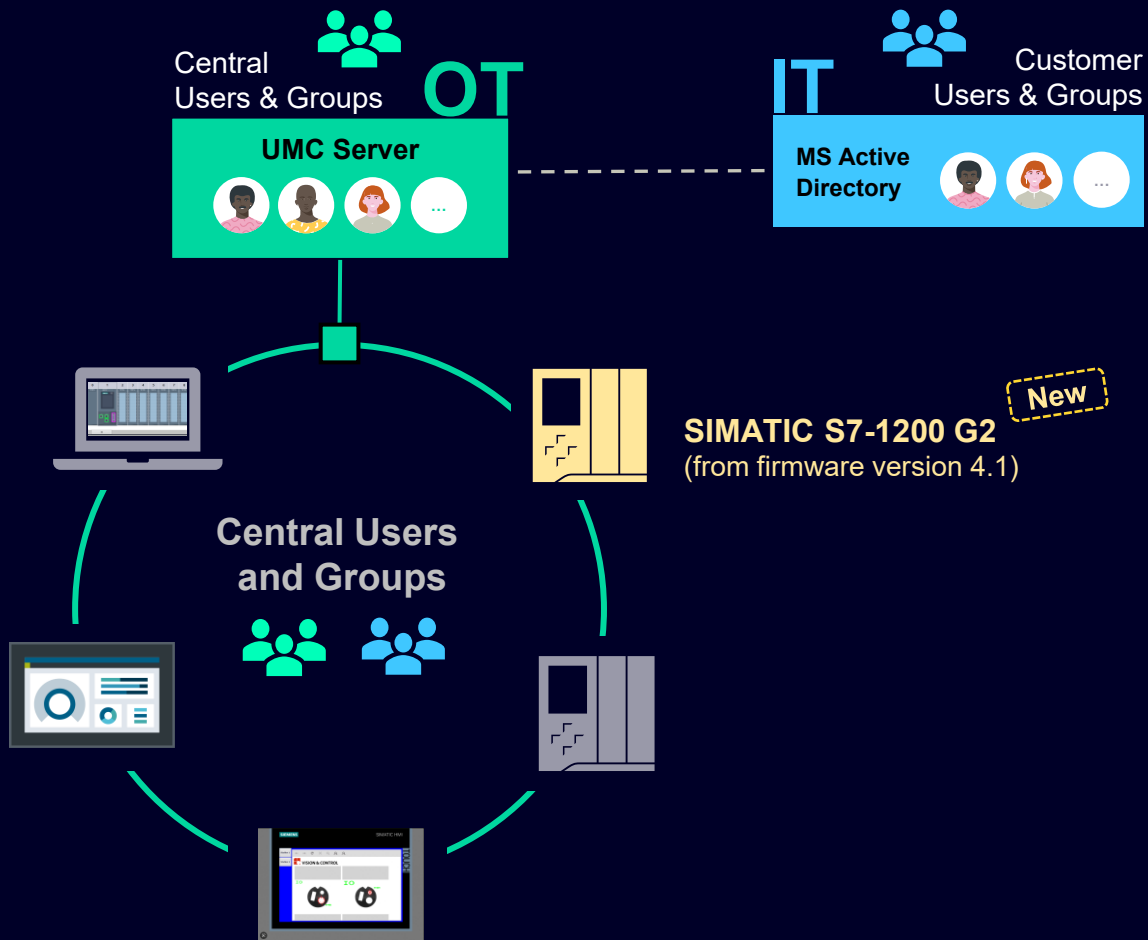
Content



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14	TIA Portal Teamcenter Gateway
15	TIA Package Manager
16	TIA Portal Safety Validation Assistant

Central User Management (UMC)

Support of SIMATIC S7-1200 G2 CPU for Central User Management



The SIMATIC S7-1200 G2 CPU (from firmware V4.1) can connect to UMC to use centrally managed users and groups

- The CPU services can now be used by centrally managed users and user groups from UMC and a connected Microsoft Active Directory.
- The central user data can be changed directly in the central user administration or the MS Active Directory without changes to the CPU configuration.

Benefit

- Central user management (UMC) is available for a growing supported product portfolio, allowing an efficient user management within the OT
- Supported products are:

TIA Portal Engineering | WinCC Unified PC RT | Unified Comfort Panel
WinCC Advanced RT | SIMATIC Comfort Panel | SIMATIC S7-1500
SIMATIC S7-1200 G2 | SINUMERIK ONE | SINUMERIK 828D
SINEMA Remote Connect | SINEC NMS | SINEC INS
selected SCALANCE X / W / S / M devices (via SINEC INS)

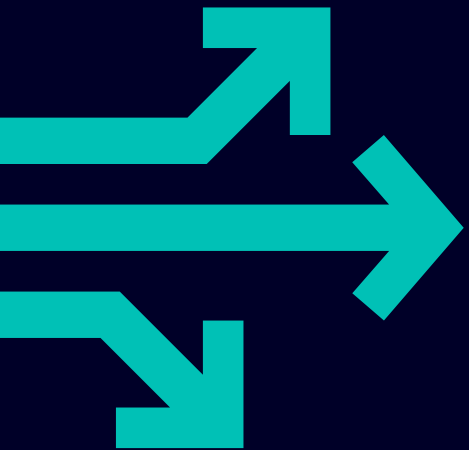
SIMATIC PCS neo (*) | OpCenter Execution Foundation (*)
OpCenter BPX (*)

(*) with separate configuration

TIA Portal V21

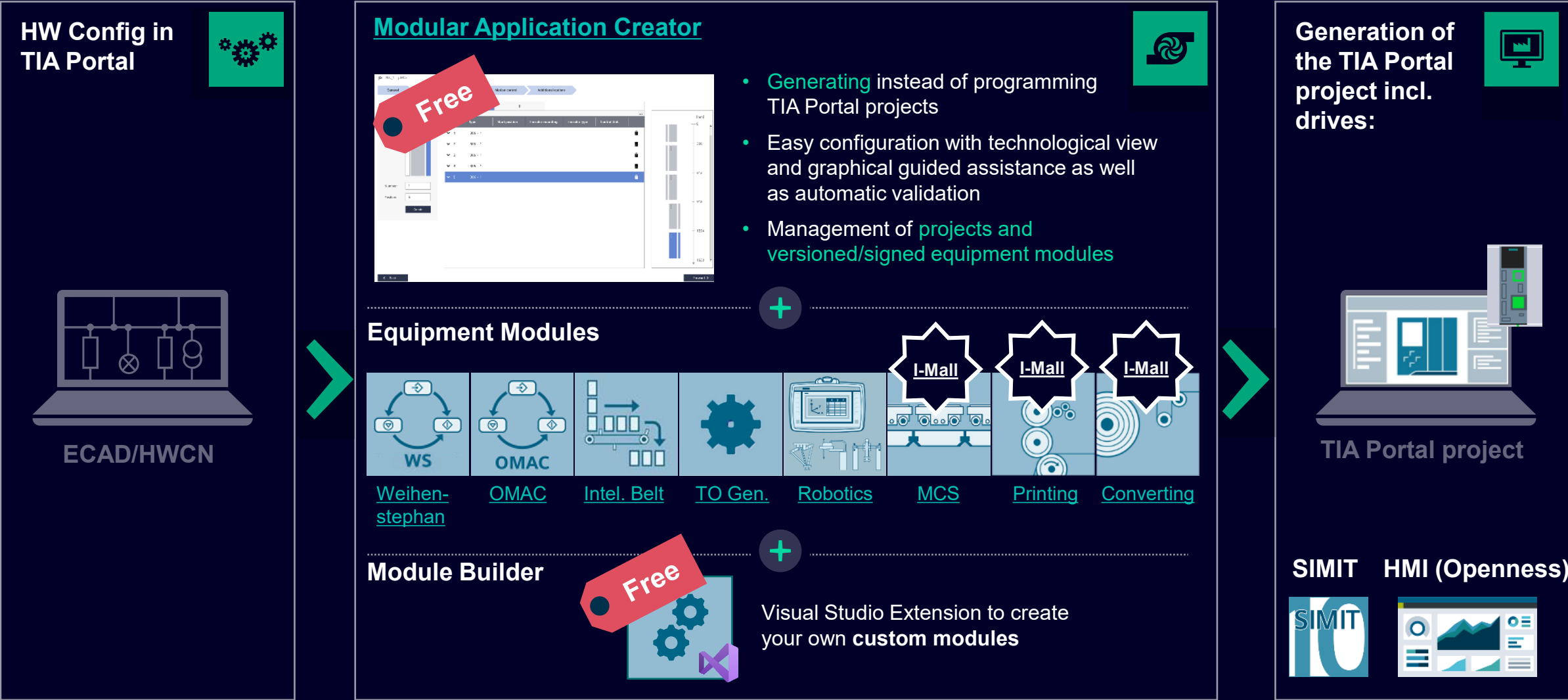
TIA Portal Options

Content



01	SIMATIC STEP 7 Safety
02	SIMATIC Safe Kinematics
03	TIA Portal Multiuser
04	SIMATIC Robot Library
05	OPC UA
06	SIMATIC S7-PLCSIM / S7-PLCSIM Advanced
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14	TIA Portal Teamcenter Gateway
15	TIA Package Manager
16	TIA Portal Safety Validation Assistant

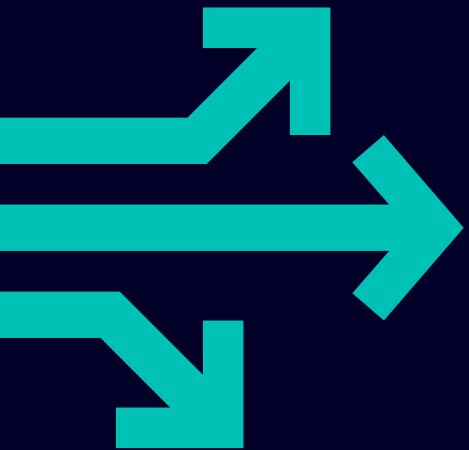
Modular Application Creator – Generating instead of programming



TIA Portal V21

TIA Portal Options

Content

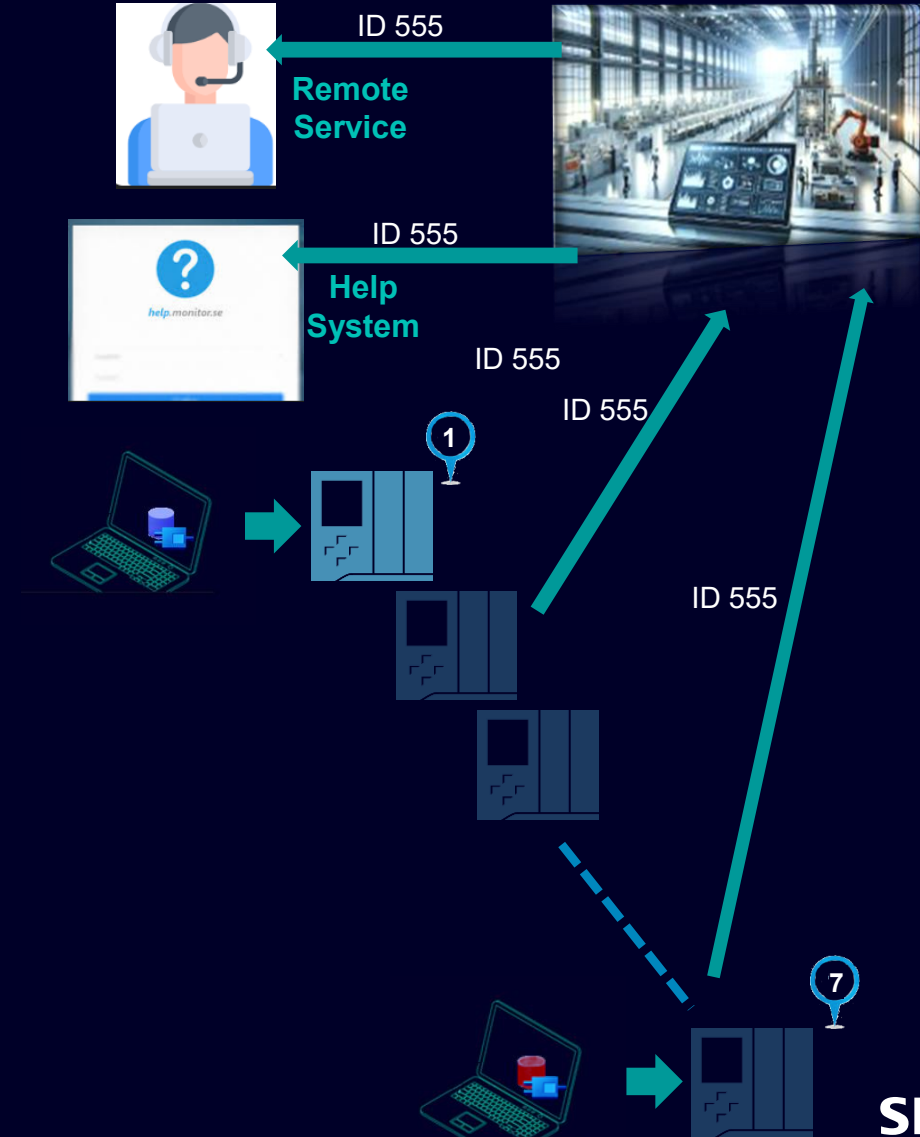


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SIMATIC ProDiag – New Feature V21: Instance Label

Essential Use Case

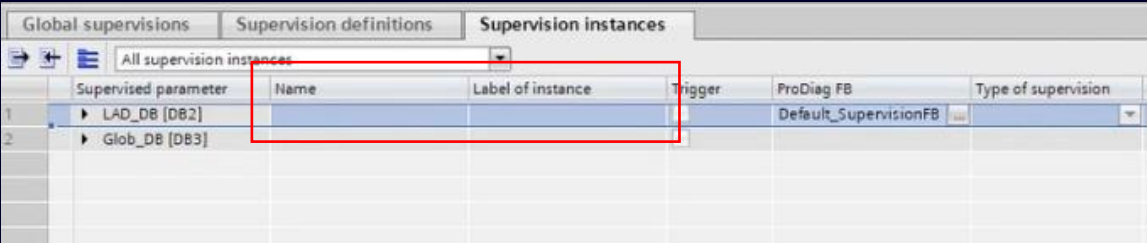
- To uniquely identify an alarm on the control system (e.g. MES), an ID (Label) is necessary, which does not change during the operating time of a machine.
- The Instance Label should always be the same for every independent project (machine)
Example: 7 transmission test stations (PLCs) should send alarms with identical ID's
- Different OEMs can support the same ID's (OEM-ID).



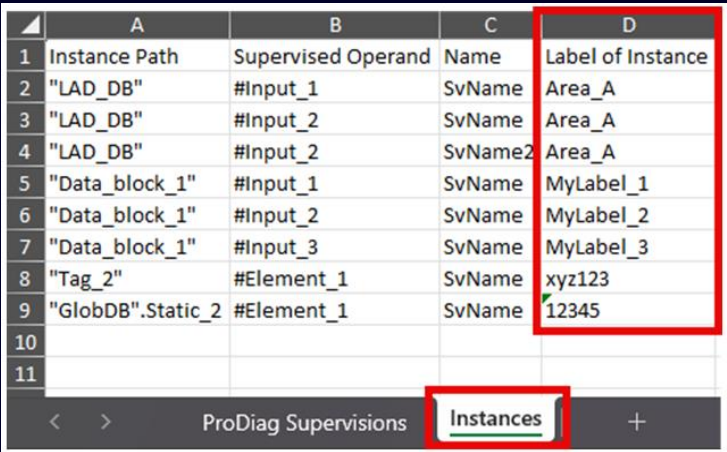
SIMATIC ProDiag – New Feature V21: Instance Label

Basic conditions

- Name of supervision and Instance Label are monolingual
- In case of using Instance Labels the Name of supervision is only necessary if more than one supervision is defined for one tag
- Name of supervision must be unique within a parameter scope
- Name of Supervision is IEC61131 conform (rule like namespaces)
- Name of Supervision is max. 60 characters
- Name of Instance Label is IEC 61131 conform + pure numbers without associated values



Global supervisions		Supervision definitions		Supervision instances	
All supervision instances					
Supervised parameter	Name	Label of instance	Trigger	ProDiag FB	Type of supervision
1 LAD_DB [DB2]				Default_SupervisionFB	
2 Glob_DB [DB3]					



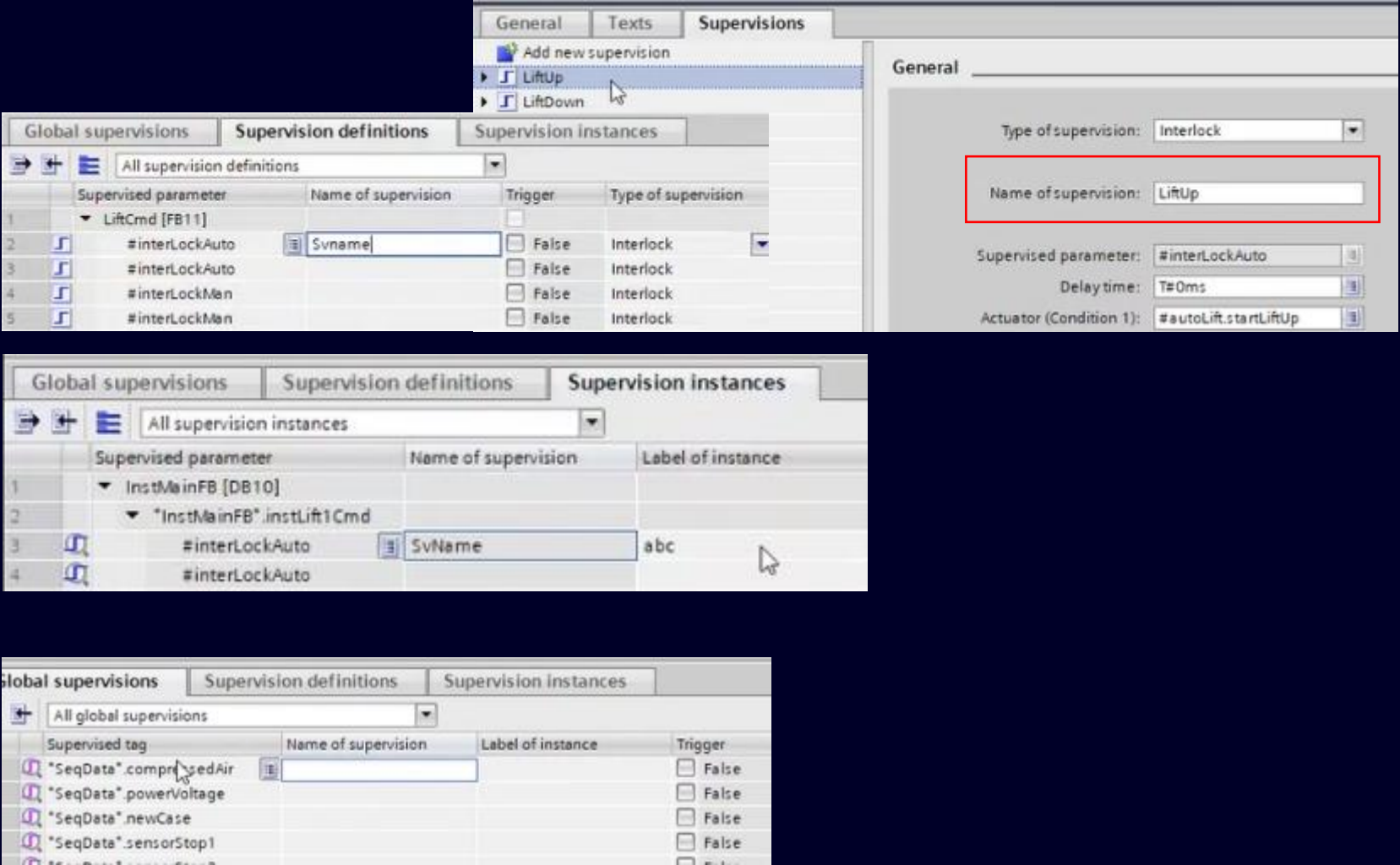
	A	B	C	D
1	Instance Path	Supervised Operand	Name	Label of Instance
2	"LAD_DB"	#Input_1	SvName	Area_A
3	"LAD_DB"	#Input_2	SvName	Area_A
4	"LAD_DB"	#Input_2	SvName2	Area_A
5	"Data_block_1"	#Input_1	SvName	MyLabel_1
6	"Data_block_1"	#Input_2	SvName	MyLabel_2
7	"Data_block_1"	#Input_3	SvName	MyLabel_3
8	"Tag_2"	#Element_1	SvName	xyz123
9	"GlobDB".Static_2	#Element_1	SvName	12345
10				
11				

ProDiag Supervisions **Instances** +

SIMATIC ProDiag – New Feature V21: Instance Label

Engineering

- Name of supervision in the context of a supervision definition
- Label of instance in the context of a supervision instance
- Name of Supervision and Label of instance in context of a global supervision



SIMATIC ProDiag – New Feature V21: Instance Label

Engineering

Supervision Excel export/import

Global supervisions

Have both attributes: The name of supervision and the label of instance. This is because they function as a hybrid between a type and an instance. So, we have two new columns in the global supervisions excel export file.

The name and label can be edited in excel, which makes mass operations easier. Thereafter the changed or extended data can be reimported into the TIA-Portal.

Supervision Definitions

Only include the attribute name of supervision as this is a type specific attribute. In contrast the label of instance is an instance specific attribute and thus not part of the supervision definition.

- Various export/import functionalities, in detail it concerns:
- Supervision Excel export/import
- Openness export/import
- Developer-XML export/import

	A	B	C	D	E	F	G	H
1	ProDiag FB Namespace	ProDiag FB Name	ID	Supervised tag	Name	Label of Instance	Trigger	Type
2		Default_SupervisionFB	1	"Tag_1"	SpeakingName1	AB1	False	O
3		Default_SupervisionFB	4	"GlobDB".Static_1	SpeakingName2	xyz	False	O
4		Default_SupervisionFB	25	"myTag"	SpeakingName3	12345	False	O
5		Default_SupervisionFB	26	"anotherTag"	SpeakingName4	Test123	False	O
6		Default_SupervisionFB	27	"anotherTag"	SpeakingName5	myLabel	True	Mt
7								

	A	B	C	D	E
1	Supervised type name	Supervised member	Name	Trigger	Type of supervision
2	"LAD"	#Input_1	SvName	False	O
3	"LAD"	#Input_2	SvName	False	O
4	"LAD"	#Input_2	SvName2	False	O
5	"SCL"	#Input_1	SvName	False	O
6	"SCL"	#Input_2	SvName	False	O
7	"SCL"	#Input_3	SvName	False	O
8	"User_data_type_2"	#Element_1	SvName	False	O
9	"User_data_type_1"	#Element_1	MyName	False	O
10	"User_data_type_1"	#Element_2	NewName	False	O
11					

SIMATIC ProDiag – New Feature V21: Instance Label

Engineering

- Supervision Excel export/import

Supervision instances

Have the attribute label of instance editable; the name of supervision is inherited from their corresponding type (supervision definition) and thus read-only.

Prior to version 20, the sole instance-specific information exported was the assignment of the ProDiag-FB to an instance (instances with supervisions can include I-DBs, tags of type UDT, or DB members of type UDT). With the introduction of instance labels, specific information can now be stored within each supervision instance. To effectively represent this in the supervision instance Excel file, a new worksheet named Instances have been added.

	A	B	C	D
1	Instance Path	Supervised Operand	Name	Label of Instance
2	"LAD_DB"	#Input_1	SvName	Area_A
3	"LAD_DB"	#Input_2	SvName	Area_A
4	"LAD_DB"	#Input_2	SvName2	Area_A
5	"Data_block_1"	#Input_1	SvName	MyLabel_1
6	"Data_block_1"	#Input_2	SvName	MyLabel_2
7	"Data_block_1"	#Input_3	SvName	MyLabel_3
8	"Tag_2"	#Element_1	SvName	xyz123
9	"GlobDB".Static_2	#Element_1	SvName	12345
10				
11				

< >

ProDiag Supervisions

Instances

+

SIMATIC ProDiag – New Feature V21: Instance Label

Engineering

■ Compare Editor

Consideration of the new attribute name of supervision within the Compare editor (offline/online)

Relevant for all blocks that can contain monitoring:

- FB's
- Instance DB's
- Global DB's
- UDT's

The screenshot shows the 'Compare editor offline' window. It compares two instances: 'ProDiagShowcase_AWB_V20_20250113_1417_V21: PLC1' and 'ProDiagShowcase_AWB_V20_20250113_1417_V21: PLC1_2'. The objects are listed in two columns, with a central status column showing icons for comparison results. The bottom section, 'Comparison result: Objects are different.', shows a detailed comparison of the 'LiftCmd [FB11]' block, highlighting differences in the 'Supervision configuration' section, specifically the 'Checksum' field.

Name	Comment	Title	Address	Number...	Status	Action
PLC1						
Software units						
Program blocks						
Main [OB1]	*Main Progr...	*Main Progr...	OB1	Automatic		
ProDiag						
MainBeltLift [OB1...]	Main progra...	*Main Progr...	OB125	Automatic		
ProDiagOB [OB250]	Main ProDia...	*Main Progr...	OB250	Automatic		
Common [FB13]	Common fu...	Common	FB13	Automatic		
Frequency [FB100]	Frequency (...)	Frequency	FB100	Automatic		
LEDs [FB15]	LEDs BeltLift	LED	FB15	Automatic		
LiftCmd [FB11]	Lift comma...	LiftCmd	FB11	Automatic		
LiftProDiagFB [FB1]	ProDiagFB f...	LiftProDiagFB	FB1	Automatic		
LiftSeq [FB12]	Graph sequ...	LiftSeq	FB12	Automatic		
LiftSim [FB14]	Simulation ...	LiftSim	FB14	Automatic		
MainFB [FB10]	Main FB Bel...	MainFB	FB10	Automatic		
MovingLight [FB16]	Moving ligh...	MovingLight	FB16	Automatic		
InstFrequency [DB...	IDB Frequen...	InstFrequency	DB2	Automatic		

Comparison result: Objects are different.

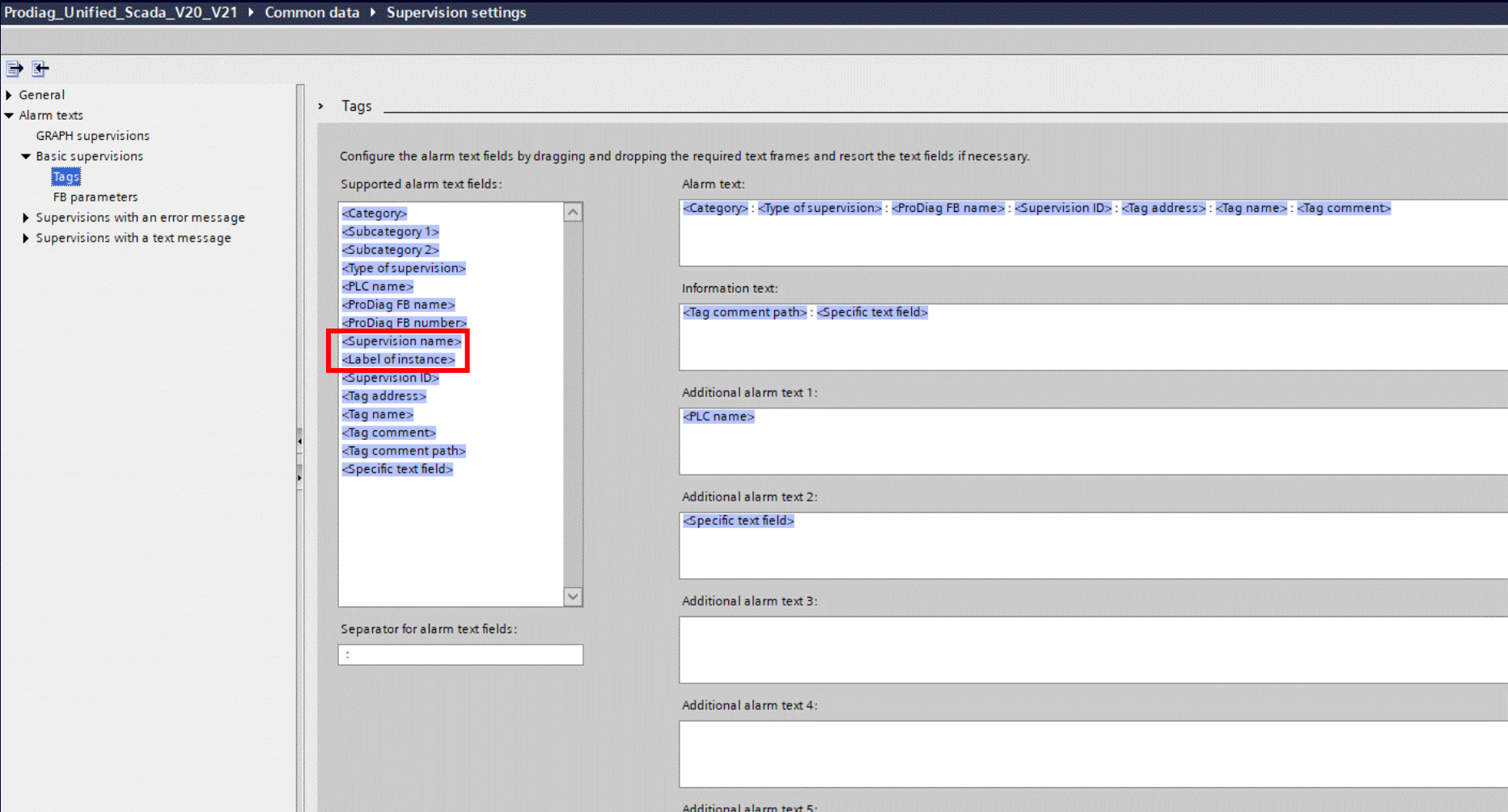
Source data	Target data
Interface without comments	
Program code	
Program code (legacy)	
Comments (multi-language)	
Language configuration	
Properties	
Supervision configuration	
Checksum:	#0NNq+nKTEJXptb0ndnTW+Zabfc=
Target data	

SIMATIC ProDiag – New Feature V21: Instance Label

Engineering

Alarm configuration

New key words in the alarm configuration



SIMATIC ProDiag – New Feature V21: Instance Label

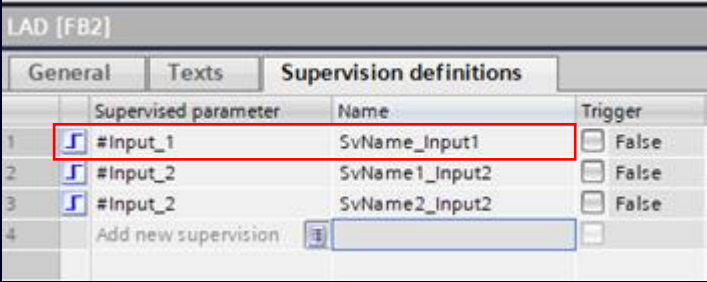
Engineering

■ Openness

The Openness export/import for supervision definitions affects the SimaticML of

Code blocks and UDT's

There is already an XML area with supervision specific information for each supervised member in previous versions, this XML is be extended with the name of supervision.



	Supervised parameter	Name	Trigger
1	#Input_1	SvName_Input1	☐ False
2	#Input_2	SvName1_Input2	☐ False
3	#Input_2	SvName2_Input2	☐ False
4	Add new supervision		



```
<Supervisions>
  <BlockTypeSupervisions xmlns="http://www.siemens.com/automation/Op
  <BlockTypeSupervision Number="1" Type="Operand">
    <SupervisedOperand Name="#Input_1" />
    <SupervisionName>SvName_Input1</SupervisionName>
    <SupervisionStatus>false</SupervisionStatus>
    <DelayOperand Name="T#0ms" />
```

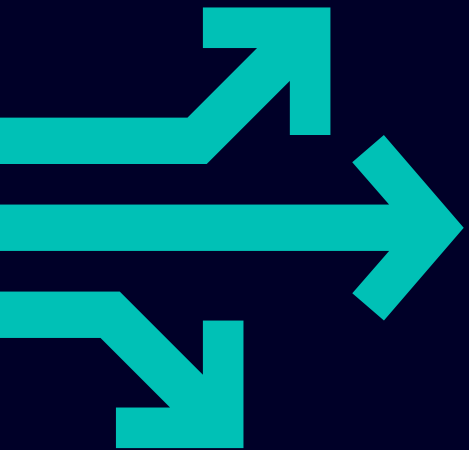
I Compatibility between Versions

- Existing projects (versions less than V21) do not include Names of Supervision or label of instance, so nothing special is required during the upgrade.
- Customer experience remains unchanged, provided they do not begin using Names of Supervision or labels of instances
- Projects containing these attributes cannot be opened in earlier versions, which is expected due to TIA Portal's lack of backward compatibility.
- Specifically for the different export/import functionalities, we guarantee forward compatibility so that all old export formats are still understood and can be imported. Backward compatibility is not possible as previous versions do not know anything about the new attributes name of supervision or label of instance.

TIA Portal V20

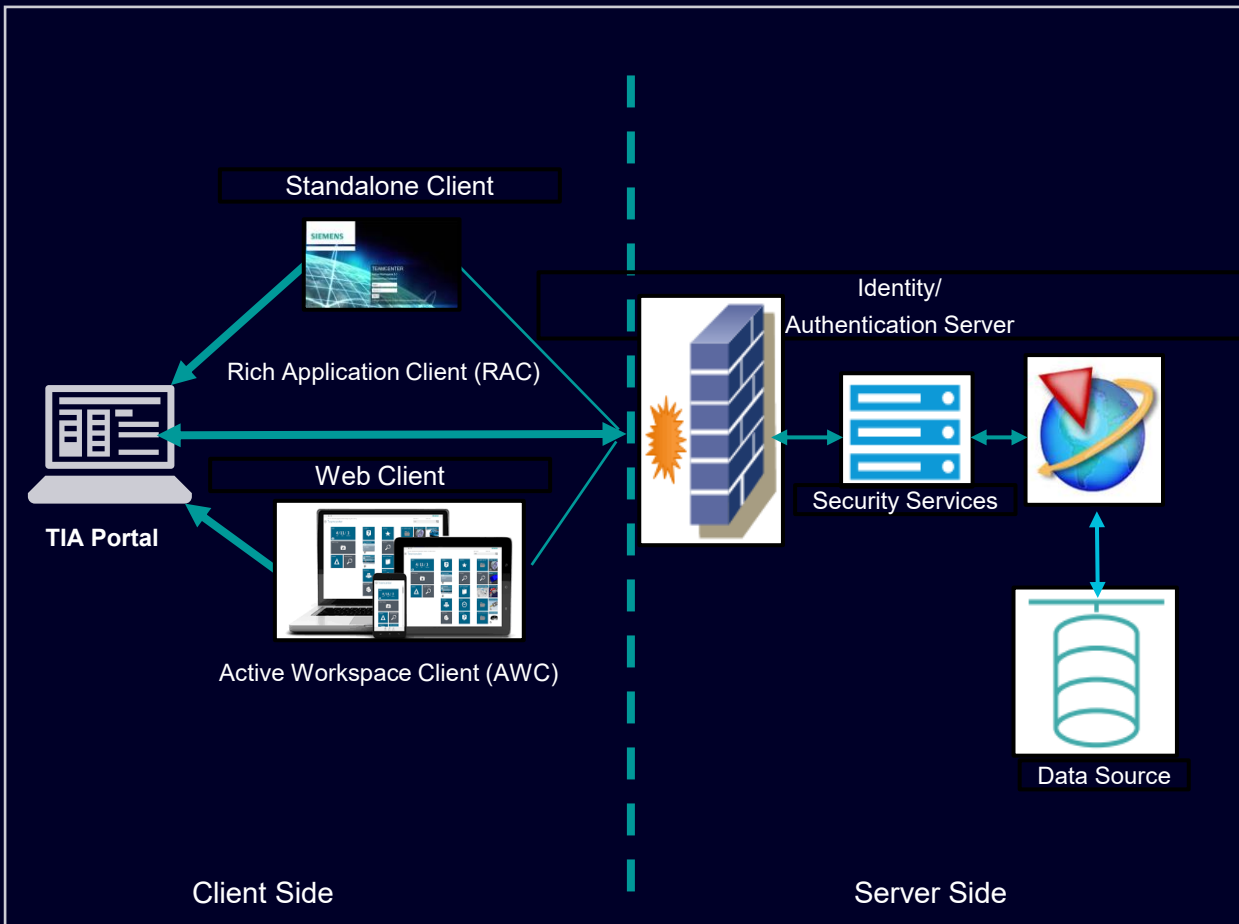
TIA Portal Options

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TIA Portal Teamcenter Gateway (TCG) Integration of new Teamcenter versions



Integration of new Teamcenter versions

- Teamcenter Gateway now supports Teamcenter versions 2406, 2412 & 2506.

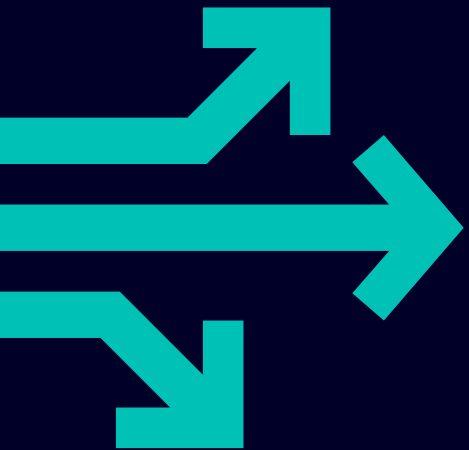
Benefits:

- Ensures seamless compatibility with the latest Teamcenter releases, enabling users to leverage new Teamcenter capabilities.
- TCG enables TIA Portal for seamless Integration of automation engineering into versioning and release workflows in PLM Teamcenter toolchain.

TIA Portal V21

TIA Portal Options

Content

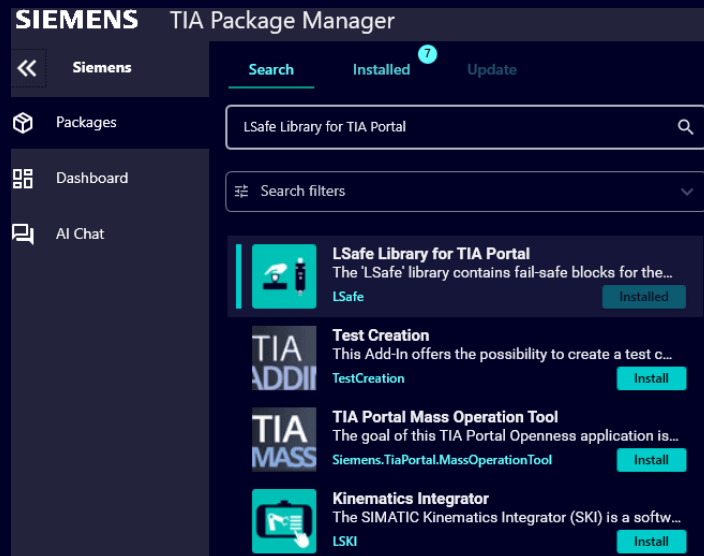
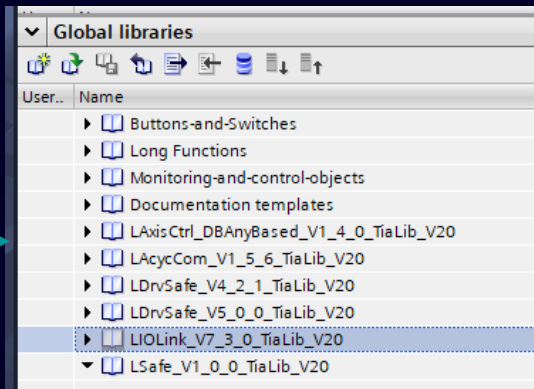
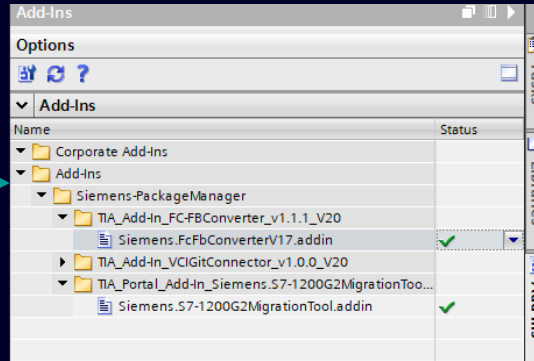


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Automatic management of software assets for TIA Portal



- TIA Portal global libraries
- TIA Portal projects
- TIA Portal Add-Ins
- Stand-Alone Software tools
- Ready-to-use applications



TIA Package Manager

The **TIA Package Manager** is a tool designed to streamline the process of downloading, and managing application packages – *global libraries, TIA Portal Add-Ins, Stand-Alone software tools, and Example projects.*

Advantages:

- **Powerful search engine** with real-time results, suggestions and advanced filters
 - **Compatibility check** that verifies which TIA Portal version is required for the package
 - **Installation tracking** that monitors which libraries and TIA Add-Ins were installed
 - **Update or uninstall** TIA Portal libraries or Add-Ins
 - **AI-Chat embedded for quick access to Siemens**
- AKG**



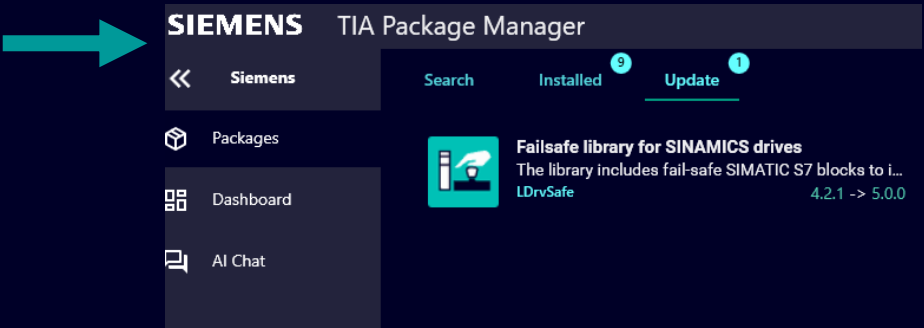
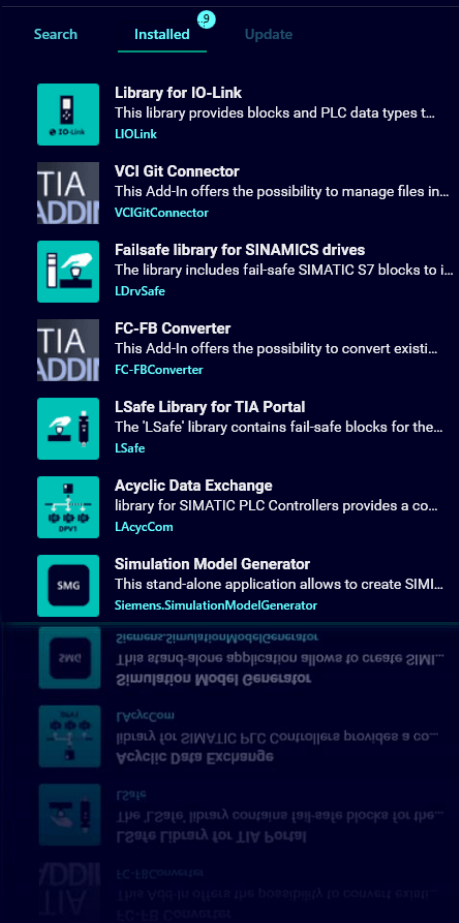
[Download TIA Package Manager](#)

Updates check

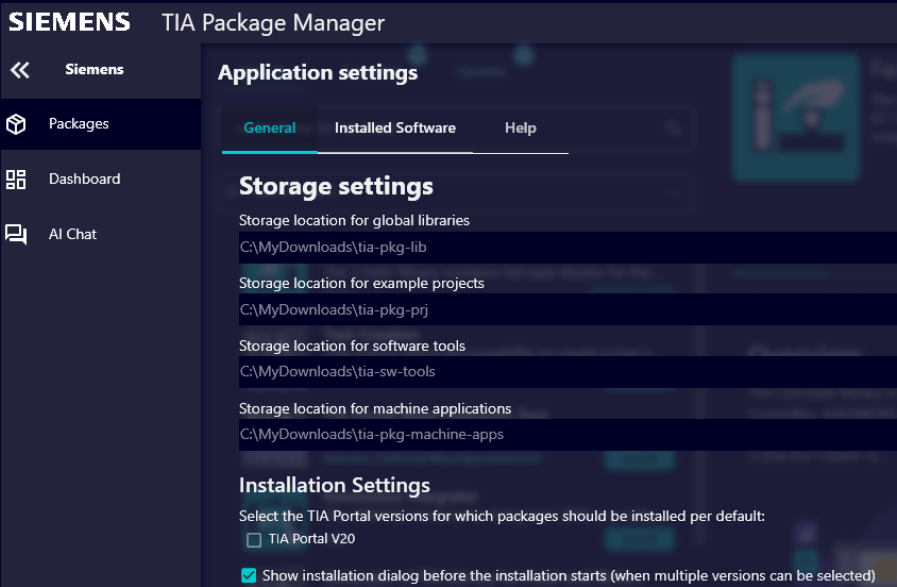
Installation Tracking



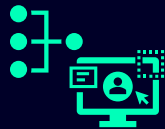
- Notification if update available
- Possible to keep more than one version if required for compatibility or uninstall automatically



Individual path selection for the package type



TIA Package Manager – Features



Powerful search engine



- Real-Time results and suggestions
- Advanced search filters
- AI-Enhanced

Installation Tracking



- Possibility to uninstall
- Notification if update available

Compatibility check



- Check TIA version
- Additional software requirements

The screenshot displays the Siemens TIA Package Manager interface. On the left, a sidebar shows a search bar with 'Safety' entered and a list of search results. The main area shows the details for the 'SIMATIC - Failsafe library - LDrvSafe'. The interface includes sections for 'Search filters', 'Type', 'Categories', 'Overview', 'Tags', 'Installed For', and 'More Info'. The 'Installed For' section shows the library is installed for TIA Portal V20, V19, and V18. The 'More Info' section shows the identifier 'LDrvSafe', type 'PLC Library', and latest version '5.0.0'.

SIEMENS TIA Package Manager

Search filters:

- Type: Libraries (35), TIA Portal Add-Ins (9), SIMIT Behavior Library (12), Software Tools (2)
- Categories: Openness & .NET (23), Wizards (23), PLC libraries (35)

Fail-safe library for SINAMICS drives

The library includes fail-safe SIMATIC S7 blocks to implement various Safety applications in conjunction with a S7-1200F, S7-1500F, failsafe Open/Software Controller, SINUMERIK ONE and SINAMICS drives as well as SIMATIC Micro-Drive coupled through PROFIsafe.

DETAILS CHANGELOG DOCUMENTATION

SIMATIC - Failsafe library - LDrvSafe

Overview

The LDrvSafe library is designed to implement various Safety applications in conjunction with a S7-1200F, S7-1500F, failsafe Open/Software Controller, SINUMERIK ONE and SINAMICS or SIMATIC Micro Drive coupled through PROFIsafe. It enables simple control of SINAMICS Safety Functions via PROFIsafe as well as failsafe diameter detection, up Safety Level: SIL3 (EN 62061) and PL, Cat.4 (EN ISO 13849-1).

Tags

PLC libraries

Installed For:

- TIA Portal V20
- TIA Portal V19
- TIA Portal V18

More Info

Identifier	LDrvSafe
Type	PLC Library
Latest version	5.0.0

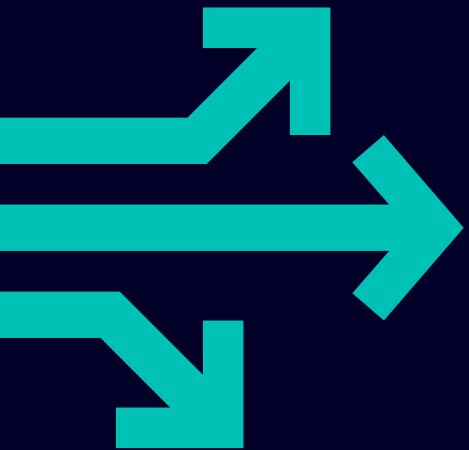
Installed for

- TIA Portal V20
- TIA Portal V19
- TIA Portal V18

TIA Portal V20

TIA Portal Options

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TIA Portal Safety Validation Assistant

Obligation of verification and validation is stated in the standards

Machinery Directive

EN ISO 13849-2 Section 8 | EN ISO 62061 Section 9

“[...] function test of the safety functions in all operating modes of the machine to determine whether they comply with the specified characteristics [...]”



Road to CE marking of a machine ...

One important step: Verification & validation

Time-consuming function test
→ Test and document whether the safety functions are implemented as previously specified

CE label

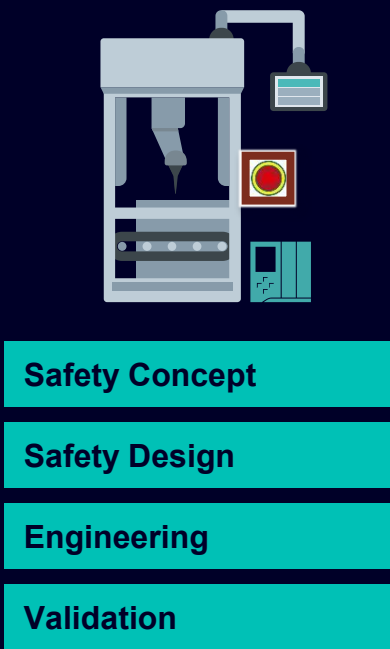
Each machine needs to have the CE label which confirms that all of the relevant directives have been complied



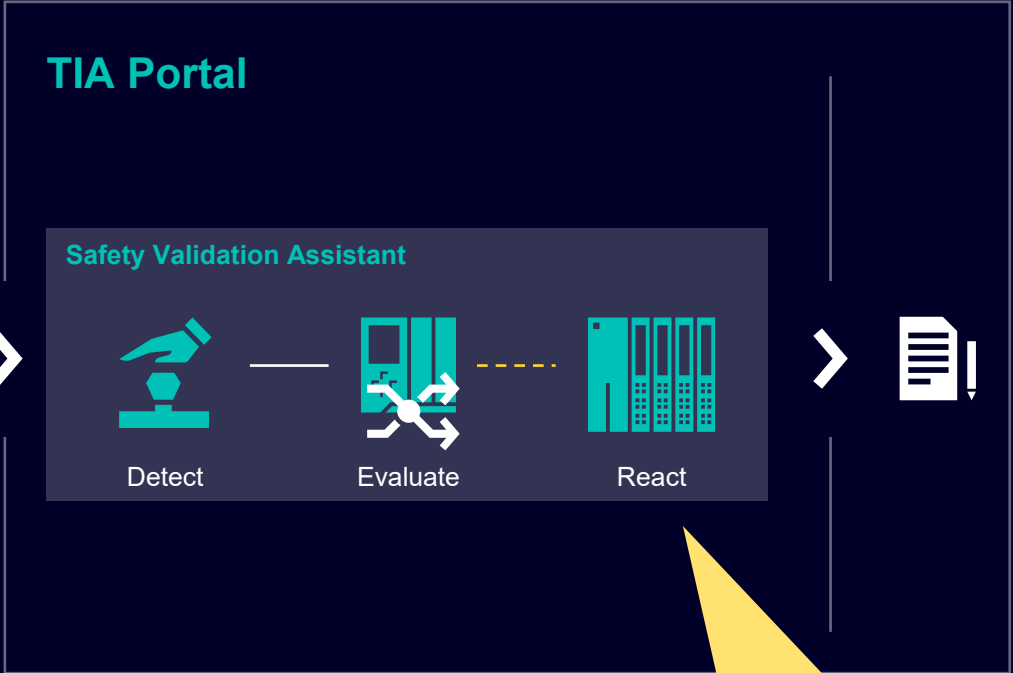
TIA Portal Safety Validation Assistant

Overview of machine validation

Safety concept, design
and engineering



Validation



Documentation

Solution

Guided validation of the machine safety functions

Easily validate the parametrization of the entire chain of a safety function by using software-guided test wizards.

The **Safety Activation Test** in **TIA Portal Safety Validation Assistant** validates the safety function of the entire chain from sensor to actuator. It supports **SIMATIC** as well as **SINAMICS** and **SIRIUS** products.

The results can be exported afterwards in a single test report to proof the correct function of the entire safety function chain. The test report is an integral part of the machine documentation.

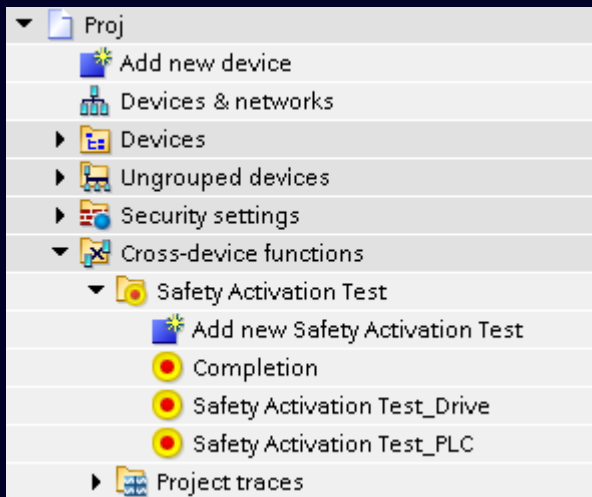
Tool qualification as T2 according to IEC61508-4 as of TIA V21

TIA Portal Safety Validation Assistant

Where to find & how to start

Location in TIA Portal

The Safety Activation Test is located under **Cross-device functions**



Supported Hardware

Depending on the installed software, the following devices are supported:

With **STEP 7**

- SIMATIC 1500 PLC (Standard and Failsafe)
- Decentral periphery (Standard and Failsafe)

With **Startdrive**

- SINAMICS Drives (With enabled Safety Integrated Functions)

With **SIRIUS Safety ES V21**

- SIRIUS 3SK2

New in
TIA V21

TIA Portal Safety Validation Assistant

Supported evaluation devices



Simplified structure of a Safety Function

Detect (e.g. Light curtain, Estop)

Evaluate (e.g. F-PLC, Safety Relay)

React (e.g. Contactors, Drives)

The **evaluation device** contains the Safety functions logic.

With the **Safety Activation Test**, tests of the system interfaces can be performed.

It is checked whether the defined signal paths from the sensor via the evaluation to the actors are passed through properly.

The following evaluation devices are supported:

- SIMATIC PLCs
- SINAMICS Drives
- SIRIUS Safety Relays

SIMATIC as evaluation device

- For **S7-1500, S7-1200, S7-1200G2** in TIA Portal
- Boolean tags for Activation Test
- Access networked devices (periphery, SINAMICS, ...)
- Trace support

SINAMICS as evaluation device

- For SINAMICS with **more than 1 F-DI**
- Safety Integrated Status and F-DI Status for Activation Test
- Trace support

SIRIUS as evaluation device

- For 3SK2 in TIA Portal
- Boolean tags for Activation Test

New in
TIA V21

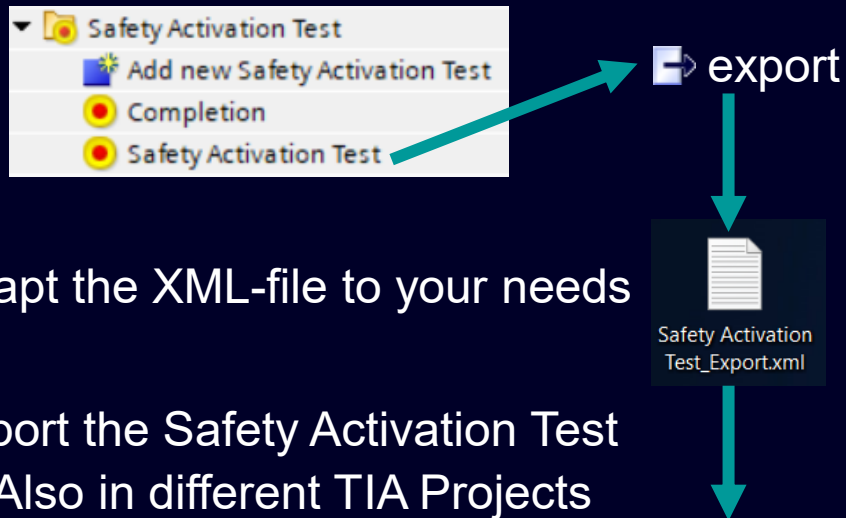
TIA Portal Safety Validation Assistant

Adapting test data via Export and Import

New in
TIA V21

Export / Import functionality for Safety Activation Test

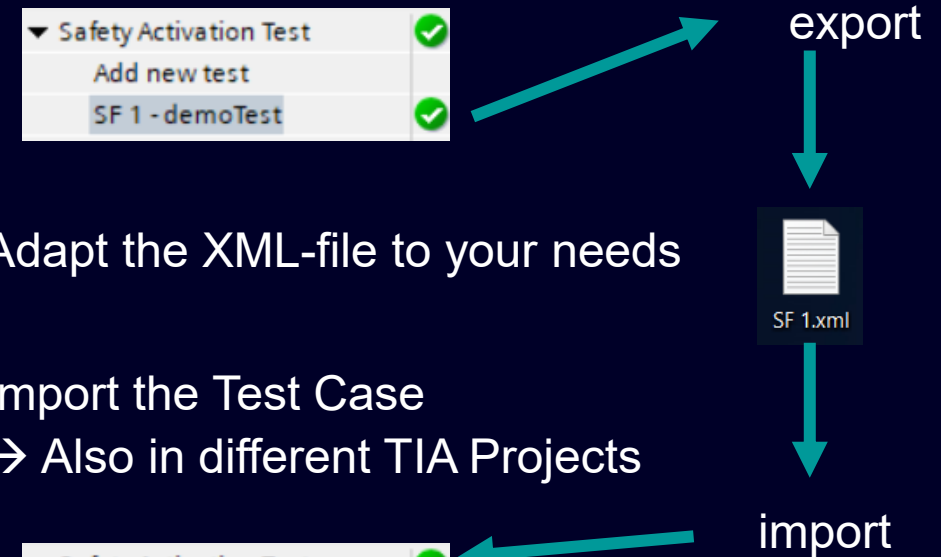
- Export an existing Safety Activation Test



- Adapt the XML-file to your needs
- Import the Safety Activation Test
→ Also in different TIA Projects

Export / Import functionality for Test Cases inside Safety Activation Test

- Export an existing Test Case



- Adapt the XML-file to your needs
- Import the Test Case
→ Also in different TIA Projects

TIA Portal Safety Validation Assistant

Adapting test data via Openness

New in
TIA V21

Openness Support for Safety Validation Assistant

```
private ActivationTest CreatingActivationTest(
    ActivationTestComposition activationTests,
    string testName,
    string deviceName)
{
    DeviceItem deviceItem = GetEvaluationDeviceItem(deviceName);
    ActivationTest activationTest = activationTests.Create(testName, deviceItem);
    return activationTest;
}
```

```
private SafetyFunction CreatingSafetyFunction(
    SafetyFunctionComposition safetyFunctions,
    string sfTestName,
    string sfDescription)
{
    SafetyFunction newSF = safetyFunctions.Create();
    newSF.TestName = sfTestName;
    newSF.Description = sfDescription;
    return newSF;
}
```

```
private void GeneratingActivationTestReports(
    ActivationTest activationTest,
    FileInfo reportFile)
{
    ActivationTestPrintout printout = activationTest.GetService<ActivationTestPrintout>();
    printout.Generate(reportFile);
}
```

Openness support

- Create and alter Safety Activation Tests
- Create and alter Test Functions
- Create Test reports
- ... and many more functions available

→ Automate the creation of the Safety Activation Test with various inputs from e.g. Safety Concept, Safety Design, Safety Engineering

- Test execution not supported via Openness

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