TIA Portal V21.1



News overview

Version 1.0

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- SIMATIC Safe Kinematics
- TIA Portal Multiuser Engineering
- SIMATIC Robot Library
- OPC UA
- SIMATIC S7-PLCSIM / S7-PLCSIM Advanced
- SIMATIC Target™ for Simulink®
- TIA Portal Test Suite
- SIMATIC STEP 7 CFC
- SIMATIC Visualization Architect (SiVArc)
- SIMATIC Modular Automation (MTP)
- Central User Management (UMC)
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Start of a new era: TIA Portal V21.x

TIA Portal engineering software – one version line from V21 onward



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OVERVIEW

A new era for your project lifecycle: TIA Portal V21.x

Your challenge today: every new TIA Portal version means a lengthy project upgrade, revalidation and new licenses.

1 version line: annual releases, no planned end

0 project upgrades within the line (today: one per version)

10 years min. line support after its last release

How V21.x supports you along your project lifecycle:



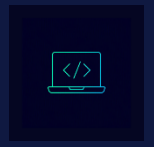
PLAN

See what a project needs before opening TIA Portal



INSTALL

One TIA Installer instead of many manual setups



ENGINEER

Open project in newer versions, no upgrade (save is one-way)



RUN

Switch TIA Portal versions without stopping the machine



MAINTAIN

Cumulative updates, fast hotfixes



EVOLVE

Keep your license for existing firmware and runtime

Your benefit: less upgrade effort, no downtime for changes loadable in RUN, licenses that keep working.

Our recommendation: move to the latest V21.x with your next project change. From below V21, upgrade once into the line.

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THE CONCEPT

One continuous version line instead of an upgrade every time

Your challenge today: each new version needs its own project upgrade.

ANNUAL RELEASES · NO PLANNED END · LATEST V21.x: MIN. 10 YEARS SUPPORT AFTER LAST RELEASE



V21

Entry: one-time upgrade from < V21

V21.1

Now: A full release with new features

V21.2

Next planned annual release

Latest V21.x

Line continues, gets updates & hotfixes

PROJECTS

Open in any newer V21.x

No project upgrade, same runtime behavior.

One-way: once saved in a newer V21.x, it stays there.

LICENSES

Existing licenses stay valid

Any V21.x license works across the line.

License upgrade only for new firmware / runtime features.

FIXES

Fixes for the latest V21.x

Each new V21.x is also the fix, with only a short revalidation.

Your benefit: fewer versions side by side. Older versions may stay installed during the transition.

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PLAN

Know what a project needs before you open TIA Portal

Your challenge today: you often find out which version and options a project needs only when opening it fails.

`ProjectInfo.txt` in every project directory

```
TiaPortal:
  MinimumRequired:
  - Version: V21.1
  LastUsed:
  - Version: V21.1
UsedProducts:
- Name: STEP 7 Professional
  Version: V21.1
- Name: WinCC Unified
  Version: V21.1
UsedSupportPackages:
- Name: gsdml-v2.31-robot-profinet…
  Version: 1.0
```

Also as LibraryInfo.txt in every global library · single user & multiuser projects

1. **Minimum required version**
   Which TIA Portal V21.x opens the project or library
2. **Products, options & hardware support packages**
   Everything the project uses, with versions
3. **Always up to date**
   Plain text (YAML), rewritten on every save

Your benefit

Plan installations & run inventory scans across all projects & libraries

PLAN | INSTALL | ENGINEER | RUN | MAINTAIN | EVOLVE

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INSTALL

One tool for every setup task: TIA Installer V1.0

Your challenge today: you set up every product, option and hardware support package separately, by hand.

1 tool

for TIA Portal products, options & hardware support packages

0 manual interaction

One-click to install everything needed

WHAT THE INSTALLER DOES

INSTALL	Fresh TIA Portal V21.x with one-click installation
SWITCH	From V21 to V21.x, products auto-selected
UPDATE	Updates & hotfixes, plus TIA Installer self-update
MODIFY	Add products & options to an installation
HARDWARE SUPPORT	Install hardware support packages anytime

Your benefit: one consistent installation per workstation, with updates offered by the TIA Installer.

PLAN | **INSTALL** | ENGINEER | RUN | MAINTAIN | EVOLVE

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INSTALL · KEY FEATURES

Setup in one guided flow – no reboots in between

Your challenge today: product-by-product setup, manual selection and a reboot after each step.

GUIDED

Step-by-step workflow + one-click installation

Replaces manual, product-by-product setup

SMART BUNDLE

V21.1 based on your V21

Scans your V21 installation and selects the matching products

ORCHESTRATED

One flow, no reboots

Download, installation & updates without mandatory restarts in between

ONLINE OR OFFLINE

Install from any source

Siemens Update Server or locally

LANGUAGES

Integrated product languages

Products & options now include language packs

MODERN UI

Clear overview

Light & dark mode. Shows the products, options & hardware support packages you need

Your benefit: a complete, matching setup in one run – less time, no manual product selection.

PLAN | **INSTALL** | ENGINEER | RUN | MAINTAIN | EVOLVE

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ENGINEER

Open projects in any newer V21.x without upgrading

Your challenge today · Every new version

- Project upgrade per version
- Risk of changed runtime behavior
- Re-testing & coordination effort

The improvement · V21.x line

✓ **Open directly**
e.g. V21 → V21.1 or V21.1 → V21.3

✓ **Same runtime behavior**
With the same firmware / runtime, not the TIA Portal version

✓ **Focus on innovation**
Keep working, and use new features when you need them

NEW FEATURES EVERY YEAR
With each successor V21.x

PARTNERS FOLLOW EASILY
Install the latest version, the licenses keep working

Your benefit: no upgrade project per release – only a short revalidation.

PLAN | INSTALL | ENGINEER | RUN | MAINTAIN | EVOLVE

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RUN

Switch TIA Portal versions while the machine keeps running



Your challenge today: changing the TIA Portal version often means stopping the machine and reloading the program.

1
Open project in V21.1 and edit*
no project upgrade

2
Delta compile PLC & HMI*
only your changes

3
Delta download changes in RUN
only changed parts

4
Production continues
no downtime

Safety program untouched

The new TIA Portal version leaves the safety program unchanged: no reload needed

Online across versions

Monitor & diagnose PLCs across TIA Portal versions. Upload from V21 into a V21.x project

Your benefit: update TIA Portal without stopping production – for all changes loadable in RUN (not e.g. hardware changes that need a CPU STOP).

PLAN | INSTALL | ENGINEER | **RUN** | MAINTAIN | EVOLVE

* Changes to the WinCC Unified VoT application, WinCC RT Professional device can be made and downloaded only after upgrading it to V21.1

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RUN · Your benefits

What this means for your plant: no downtime, fewer versions



NO DOWNTIME

Switch versions while production runs

MACHINE BY MACHINE

Move one machine at a time, on your schedule

FEWER PARALLEL VERSIONS

The newest TIA Portal V21.x opens every V21.x project

LONG-TERM SIMPLICITY

One version line for your plant’s whole lifecycle

PLAN | INSTALL | ENGINEER | **RUN** | MAINTAIN | EVOLVE

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MAINTAIN

Updates on schedule, hotfixes when it matters

Your challenge today: waiting for the next update and often unclear when fixes arrive for your version.

UPDATE

Regular, on a planned schedule

Cumulative, includes all previous fixes. No more service packs.

HOTFIX

Fast, for critical security & stability issues

As needed. The next update includes it.

FOR YOUR ENGINEERS · HOW TO READ THE VERSION NUMBER · EXAMPLE V21.1

21.1.0.0	21.1.0.1	21.1.1.0	21.1.1.1
Release	Hotfix 1	Update 1	Update 1 + Hotfix 1

21.1 = version · **3rd digit** = update · **4th digit** = hotfix

Your benefit: critical fixes fast, always visible in the version number.

PLAN | INSTALL | ENGINEER | RUN | **MAINTAIN** | EVOLVE

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EVOLVE

Keep your license – upgrade only for new firmware/runtime

Your challenge today: a new TIA Portal version means new licenses.

CONFIGURED RUNTIME
PLC firmware & HMI runtime version

defines

YOUR LICENSE
V21.x keys

works with

INSTALLED VERSION
Newest V21.x, anytime

SAME FIRMWARE/RUNTIME

Existing license is enough

Engineer in the newest TIA Portal V21.x with your PLCs and HMIs on their current firmware/runtime.

NEW FIRMWARE FEATURES

License upgrade only where needed

Product by product (e.g. STEP 7 Professional or WinCC Unified V21.1), or always current with a Software Update Service (SUS) contract.

Your benefit: use the newest software with the licenses you have. Coming from below V21: one license upgrade into the line.

PLAN | INSTALL | ENGINEER | RUN | MAINTAIN | **EVOLVE**

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Your benefits

The line stays – you choose when to move

One continuous line instead of an upgrade per version: every later V21.x opens your project as is.



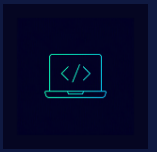
Your FLEXIBILITY grows

You decide when to upgrade licenses – only for new firmware / runtime features



Your SUPPORT grows

Free updates & fast hotfixes for the latest V21.x; line support min. 10 years after its last release



Your VELOCITY grows

No project upgrade per release anymore: more time for your own innovation

YOUR NEXT STEPS

1 Next project change: install the latest V21.x

2 Open your project (last one-time upgrade if < V21)

3 Check licenses for new firmware / runtime

4 Consider a Software Update Service (SUS) contract

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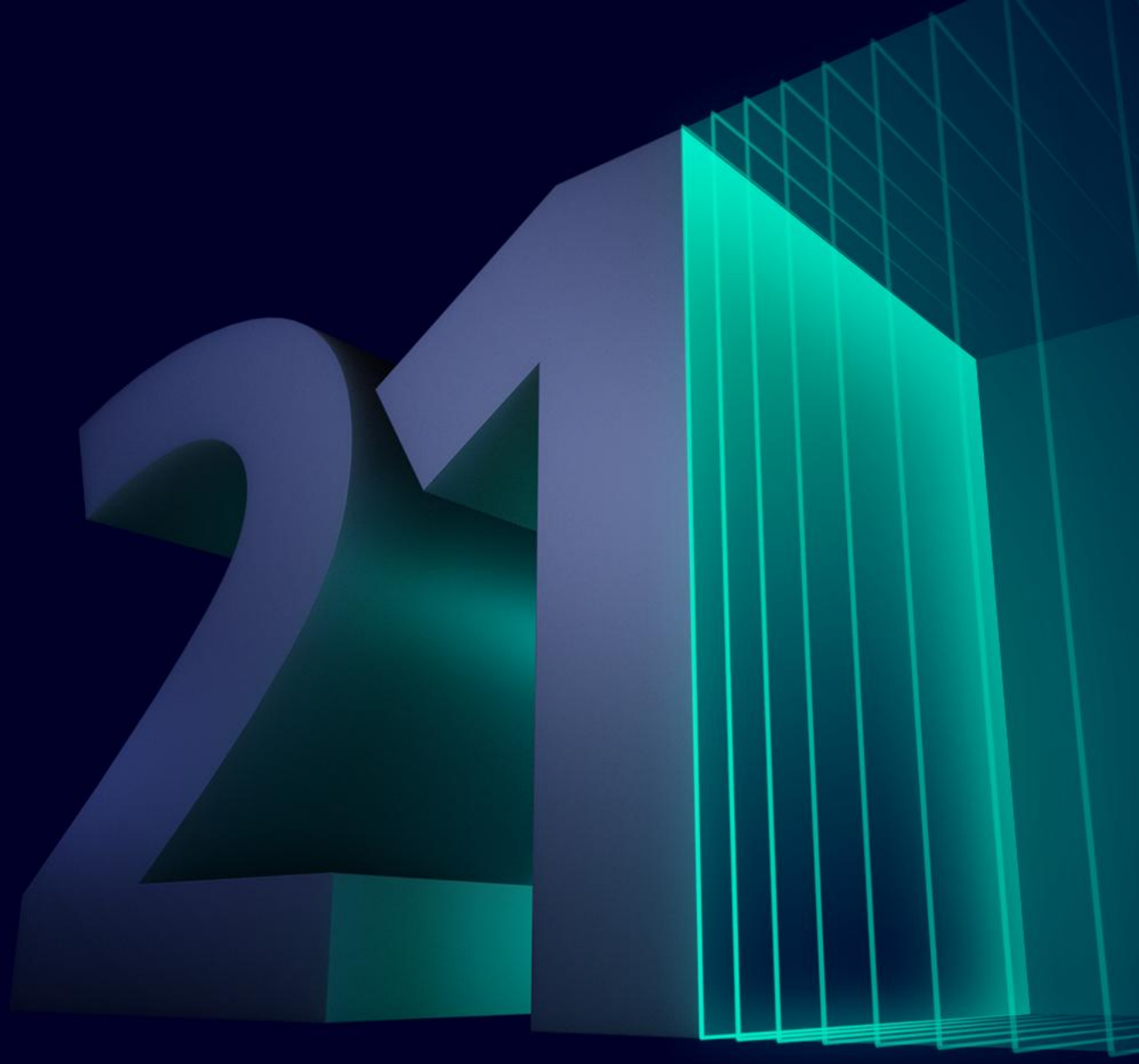
TIA Installer



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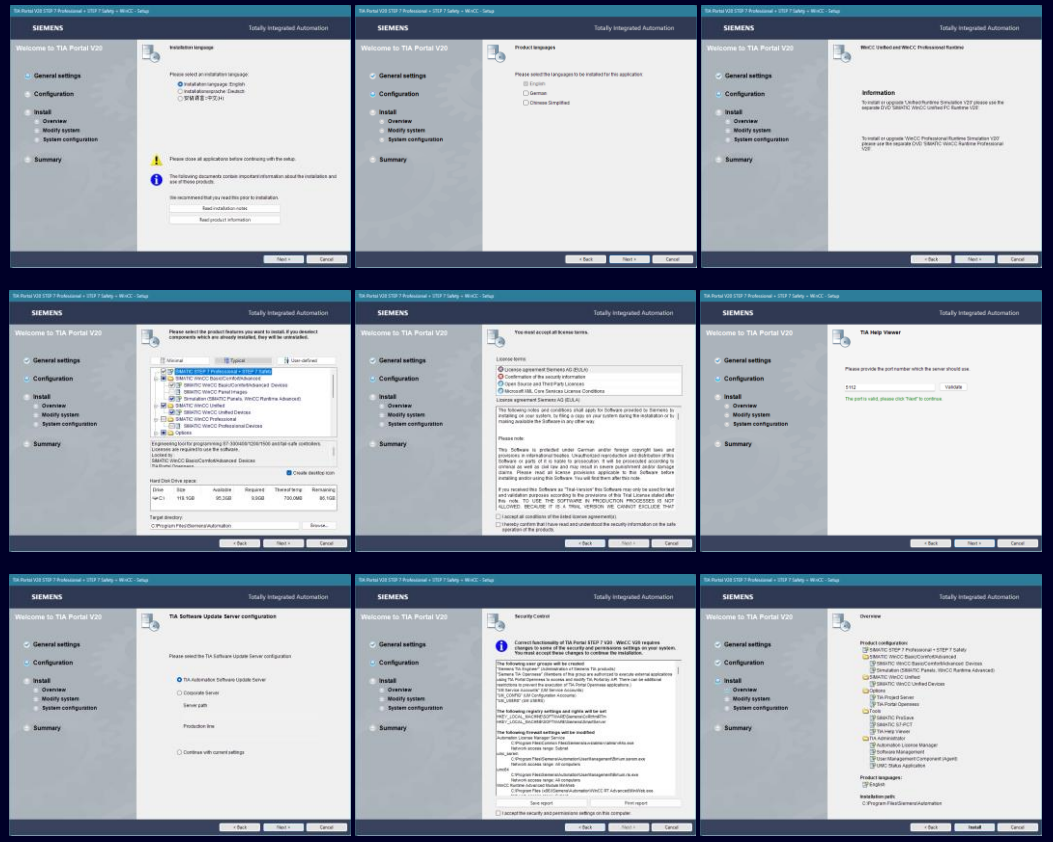
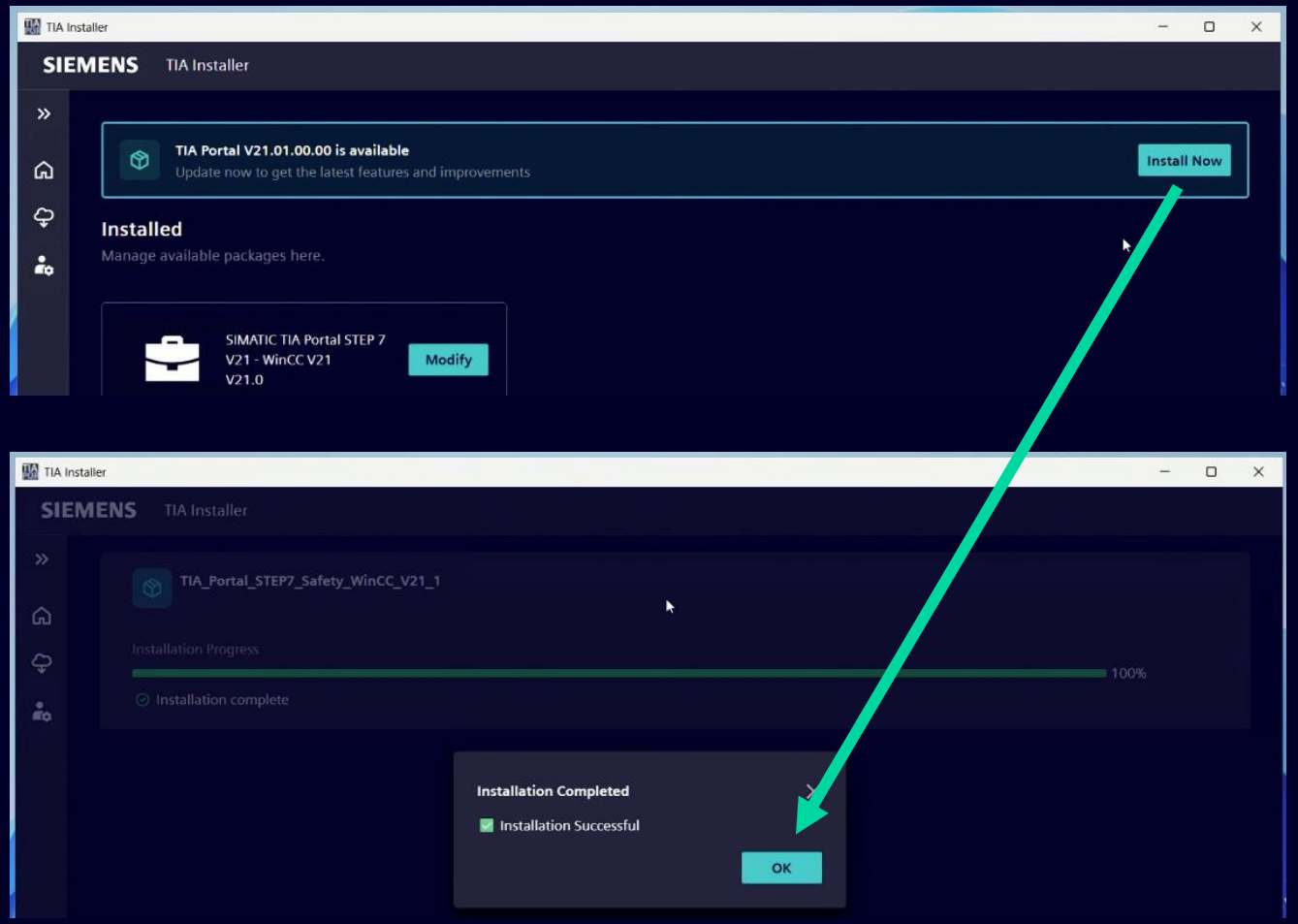
Your challenge today:
Manual installation with multiple time-consuming setups



New: TIA Installer



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TIA Installer
Key features in V1.0

Modern UI
Graphical interface in light and dark mode

6 GUI languages
English, German, French, Spanish, Italian, Simplified Chinese

Clear overview
Relevant TIA Portal engineering products, options and HSPs

Smart V21.1 bundle
Installation based on a scan of your V21 installation

Fully orchestrated
Download, installation & updates in one flow

Offline & online
Install locally or from Siemens Update Server

No manual setups
Replaces manual setup execution

Guided workflow
Drastically simplified, step-by-step guidance

No reboots
Install and update without restarting in between

Integrated product languages
Language packs now integrated into products/options

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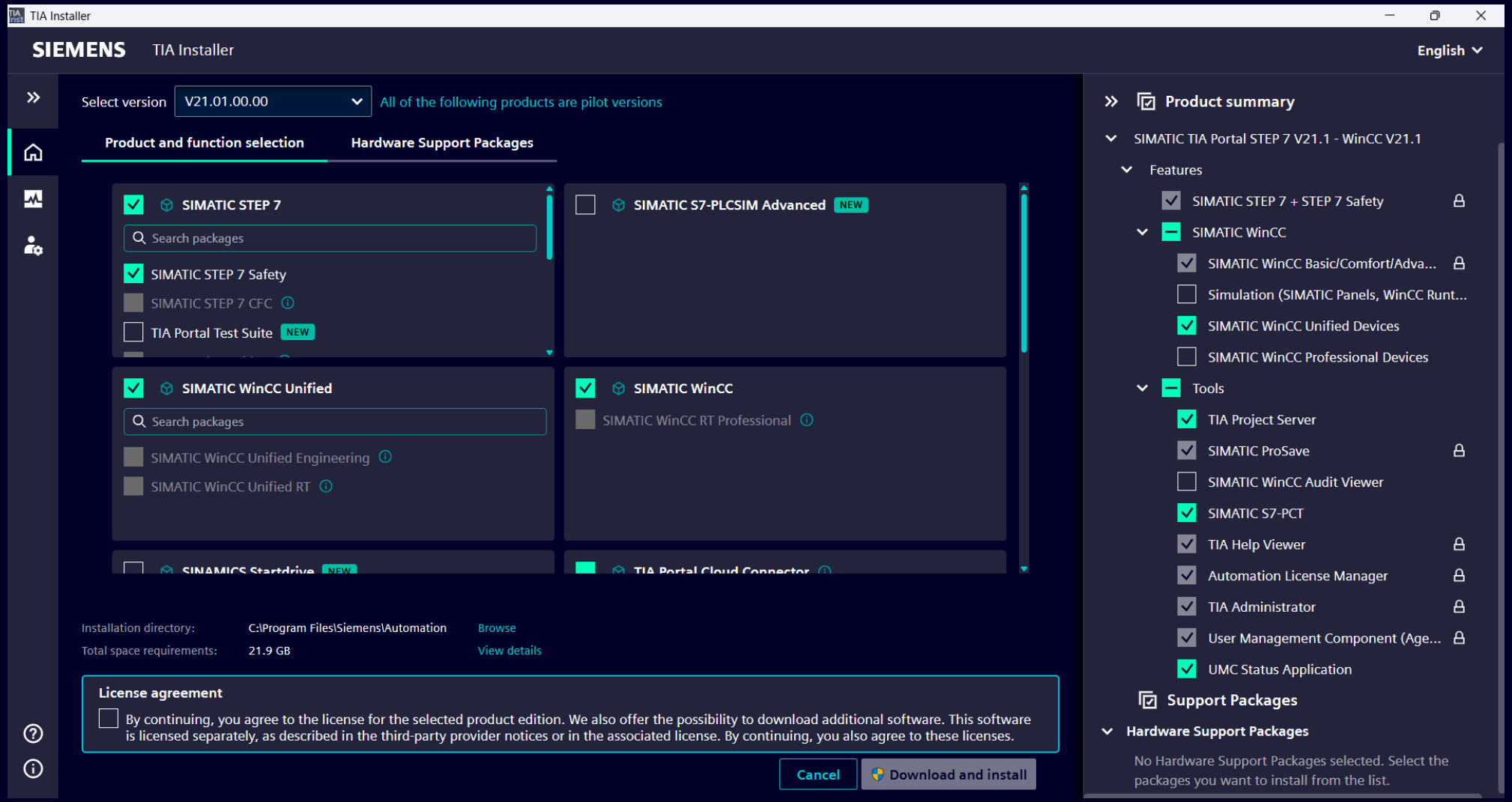
TIA Installer
One tool to set up every product, option and hardware support package



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TIA Installer
Supported use cases in V1.0

Install

Install a fresh new TIA Portal V21.x

Switch

Switch an existing V21 installation to V21.x with auto selection

Update

Continuous self-update of TIA Installer and
Get updates and hotfixes for TIA Portal

Modify

Add new products and options to an existing installation

HSPs

Install Hardware Support Packages (HSPs) anytime

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TIA Installer
Supported TIA Portal versions

V21	✓ SUPPORTED Update existing installations
V21.x	✓ FULLY SUPPORTED Install, update and modify
≤ V20	✕ NOT SUPPORTED Not supported now or in future



www.siemens.com/tia-installer

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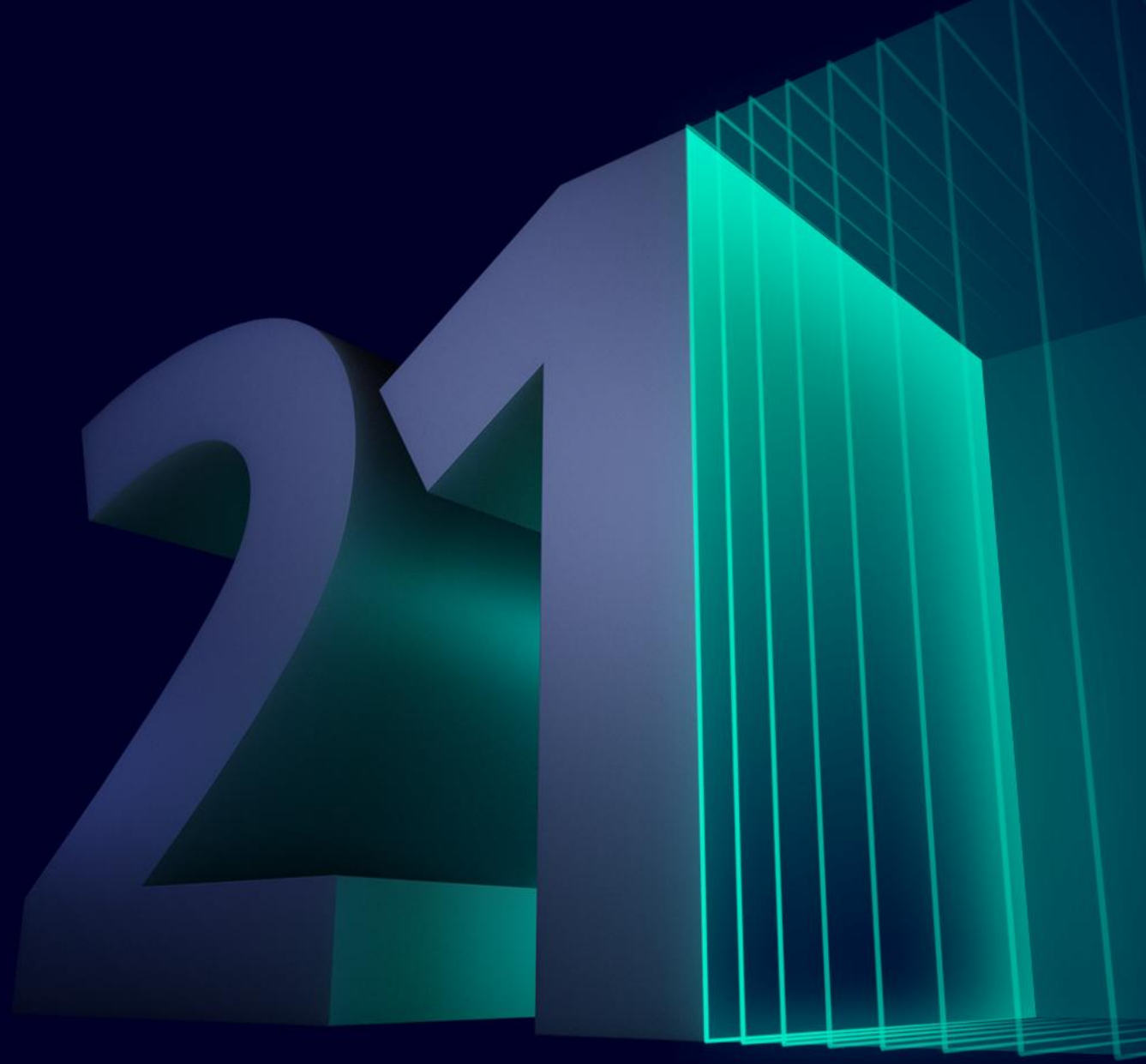
TIA Cloud Services



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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 Storage

Your secure hub for engineering data in the cloud

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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

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TIA Cloud Services
Offerings and Ordering Information

	TIA Portal Cloud	TIA Simulation Cloud	TIA Project-Server Cloud
Free Trials	21-day free trial	8-hour free trial	
Credits (Prepaid)	100 hours	50 hours 50 hours	10 hours
Certificates	365 days		365 days 31 days
Subscriptions	Monthly Annual		Monthly Annual
Pay-per-use	Hourly		

Digital Offering Store *

TIA Cloud Services @ SiePortal

Free Trials
- TIA Portal Cloud — Activate your free trial
- TIA Simulation Cloud — Activate your free trial

Credits (Prepaid)
- 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

Certificates
- TIA Portal Cloud — 6ES7804-0CP41-1YA8
- TIA Project-Server Cloud — 6ES7804-0PP01-1YA8
- TIA Project-Server Cloud — 6ES7804-0PP01-2YA8

Subscriptions
- TIA Portal Cloud — 6ES7804-0CP41-2YA0
- TIA Project-Server Cloud — 6ES7804-0PP01-2YA0
- TIA Portal Cloud — 6ES7804-0CP41-1YA0
- TIA Project-Server Cloud — 6ES7804-0PP01-1YA0

Pay-per-use
- TIA Portal Cloud — 6ES7804-0CP41-3YA0

* Digital Offering Store is not available in all countries

TIA Cloud Services
Availability, Nov 2026

Available in ...



Argentina
Australia
Austria
Belgium
Brazil
Bulgaria
Canada
Chile
Columbia
new **Croatia**
Czech Republic
Denmark
new Ecuador
Estonia
Finland
France
Germany
Greece
Hungary
India
Ireland
Italy
Japan
Latvia
Lithuania
Mexico
Netherlands
Norway
new **Peru**
Poland
Portugal
Romania
Singapore
Slovakia
South Africa
Spain
Sweden
Switzerland
Taiwan
Turkey
United Arab Emirates
United Kingdom
United States

43 countries with free Trials (activate directly in TIA Cloud Services Hub) *

36 countries with Certificates (Order at SiePortal)

12 countries with Subscriptions (Assign via Digital Products at SiePortal)

43
countries
and expanding

Check availability in your country –
Legal clarifications are ongoing

https://tiacloudservices.siemens.com/rolled-out

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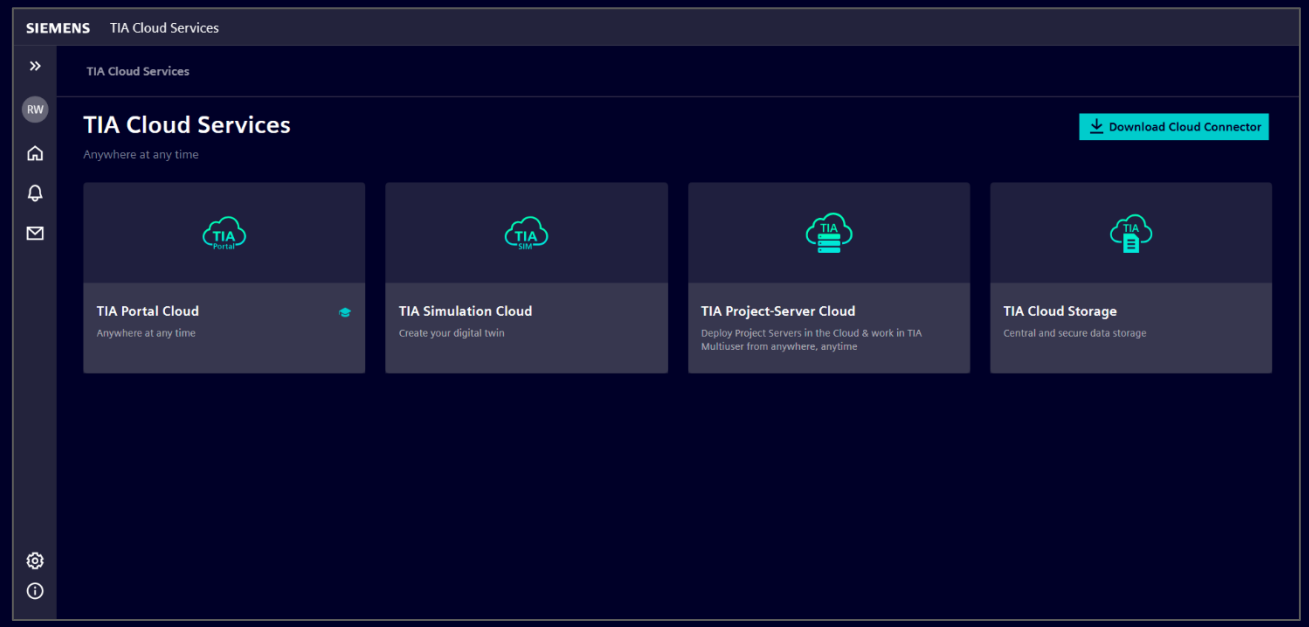
* Free Trials are not available for all services

TIA Cloud Services
Your central hub for Totally Integrated Automation in the Cloud

TIA Cloud Services Hub



Start exploring using the new URL and don't forget to add it to your Favorites:
https://tiacloudservices.siemens.com

TIA Cloud Services – Your central hub for Totally Integrated Automation in the Cloud

Our new environment, optimized for future scalability, accessibility and performance.

Benefits

Future-Ready Platform
- Built for scalability and high performance, ensuring your engineering workflows stay ahead of industry demands.
- Optimized architecture for faster access and improved reliability.

Enhanced Data Management
- Integrated TIA Cloud Storage for secure and centralized data handling.
- 42 GB free storage included for your projects and backups.
- Seamless interoperability with the cloud services

Seamless User Experience
- Single Sign-On with **Siemens ID**, supporting MFA and corporate Identity Provider federation
- Centralized hub for all TIA Cloud Services

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 Storage

Your secure hub for engineering data in the cloud

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TIA Portal Cloud
Stop managing software. Start engineering.

Classic local installation

Install & update every PC
Setup, options and patches per workstation

Keep legacy versions alive
Costly retention of old systems for old projects

Bound to a high-end workstation
Powerful hardware at every engineering seat

Projects on local drives
Data tied to individual machines

High upfront investment
Perpetual license plus update service

FROM EFFORT

TO VALUE

TIA Portal Cloud

Ready to use on release day
Start in the browser – no download, no installation

All versions, one click
From V14 to the latest – preserved in the cloud

Any PC or tablet, anywhere
Low hardware needs – hardware access via Cloud Connector

Projects secure in the cloud
TIA Cloud Storage with auto-sync – 42 GB free

Pay only for what you need
Subscription or hourly credits – OpEx instead of CapEx

Customer value: faster access • less IT effort • version flexibility • licensing aligned with demand

TIA Cloud Services
TIA Portal Cloud

Release with TIA Portal V21.1 on 19th Nov 2026

TIA Portal Cloud V7.0

Package

- STEP 7 Professional
- WinCC BCA / Unified
- STEP 7 Safety Advanced
- S7-PLCSIM Advanced
- SiVArc
- SINUMERIK STEP 7 Toolbox
- SINAMICS Startdrive Advanced
- SINAMICS DCC
- SINETPLAN
- Test Suite Advanced
- Safety Validation Assistant
- SIMIT Player S
- SiOME
- Modular Application Creator (MAC)
- SIMATIC SCADA Export

Remark: Included software may vary depending on the supported versions.



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

More information about TIA Portal Cloud is available at Industry Support page ID 109794456.

Customer challenge

- Access to data and software from anywhere, at any time
- Flexible working models needs flexibility in payment & billing according individual needs are essential
- Existing systems need to be maintained, which results in costly retention of previous versions

Solution and benefit

1. Reduce installation and maintenance costs
   - Ready to use software as a service
   - Always up-to-date: **TIA Portal V21.1** – ready to use at release day, no installation effort
   - Access to legacy versions: we preserve **TIA Portal V14, V15.1 and V16** in the cloud
2. Flexible subscription-based licensing
   - Lower CapEx and shift to OpEx
   - Demand oriented usage and billing
   - Credit based usage (e.g. 100 hours)

Further improvements:

- New future proofed environment: TIA Cloud Services Hub
- Automatic cloud storage sync
- Increased validity of certificates to 3 years

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TIA Portal Cloud
Activate your free 21-day trial

Your free 21-day trial – activated in three steps

Try out TIA Portal in the cloud – no installation, no local hardware resources, no cost – ready to use!

1

Click the link

Go to the TIA Cloud Services Hub. Everything runs in your browser – nothing to install.

2

Use your Siemens ID

Log in or register for free in a minute and get 42 GB of TIA Cloud Storage on top.

3

Activate and start engineering

Pick your TIA Portal version and start. Each version comes with its own 21-day trial period.

Activate now: https://tiacloudservices.siemens.com/tia-portal-cloud/trials

Visit SiePortal Knowledge Base ID 109794456 for more information about TIA Portal Cloud.

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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 Storage

Your secure hub for engineering data in the cloud

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TIA Cloud Services
TIA Simulation Cloud (2025-12)





Access from any device
via web browser

		2D Simulation Engineering	3D Simulation Player
		Cost-efficient 2D Engineering and Simulation 50 hours certificate MLFB: 6ES7804-0VP41-3AA8	2D Engineering and Simulation with performant 3D Visualization 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, V20 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.

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TIA Cloud Services

TIA Portal Cloud

TIA Portal as a Service with demand-oriented licensing

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Hardware independent high-performance simulation

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Central project storage with versioning and world-wide collaboration

TIA Cloud Storage

Your secure hub for engineering data in the cloud

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TIA Cloud Services
TIA Project-Server Cloud



Cooperative engineering for TIA Portal Projects and Libraries in the TIA Portal Cloud

Cloud-based team engineering across company boundaries

Collaborative engineering

- Share projects and libraries across locations and company boundaries via TIA Portal or TIA Portal Cloud. Integrate suppliers without opening your own IT infrastructure.

Simple access and administration

- Direct data access without sending project files. Manage projects, users and the server through the web interface in the Industry Premium Portal.

Usability

- Simple administration via Web GUI and seamless integration for a familiar TIA Portal user experience.

Reliable, Siemens-managed infrastructure

- Dedicated virtual machine with full data control, current security patches and high-bandwidth connectivity.
- No hardware, Windows Server license or installation, maintenance and update effort required.

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 200GB 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

31-days certificate
Non-self-extended 31-day certificate with 200GB project memory.

→ As Certificate of License via Industry Mall: 6ES7804-0PP01-2YA8

365-day certificate
365-day certificate with 500GB 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 200GB project storage.

→ As Digital Offering via Industry Mall: 6ES7804-0PP01-2YA0

Annual subscription
Self-renewing annual subscription with unlimited access and 500GB project storage.

→ As Digital Offering via Industry Mall: 6ES7804-0PP01-1YA0

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 Storage

New

Your secure hub for engineering data in the cloud

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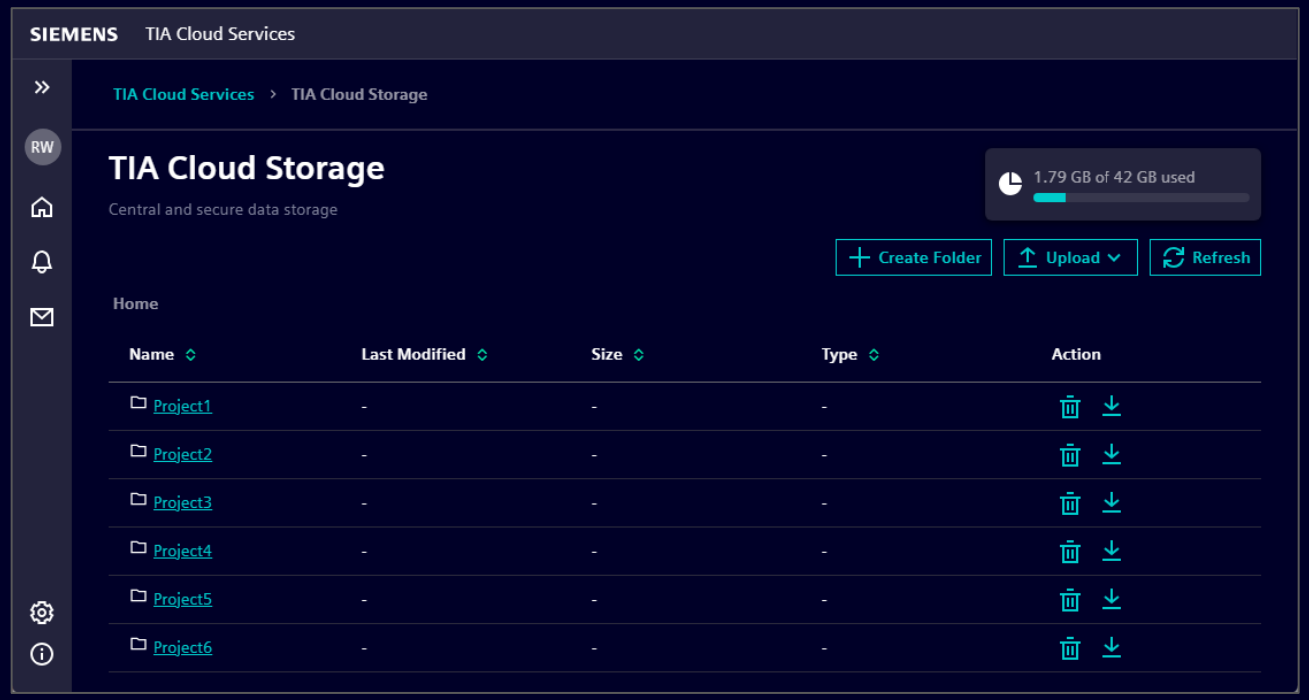
TIA Cloud Services
TIA Cloud Storage

TIA Cloud Storage



Link: https://tiacloudservices.siemens.com/tia-cloud-storage

TIA Cloud Storage – Your secure hub for engineering data in the cloud

Benefits

Centralized and unified data storage

- Cloud-based storage fully integrated into TIA Cloud Services
- **42 GB of free storage** included for every user
- Planned: Storage can be expanded through additional paid options

Continuous engineering workflow

- Effortless project upload directly via web browser
- Seamless interoperability with the TIA Portal Cloud environment
- **Automatic synchronization** ensures your engineering data is always up-to-date

Secure access to your cloud storage

- Single Sign-On with **Siemens ID**, supporting MFA and corporate Identity Provider federation
- Built on Siemens high security standards
- Data hosted in trusted German data centers

TIA Portal Cloud Connector



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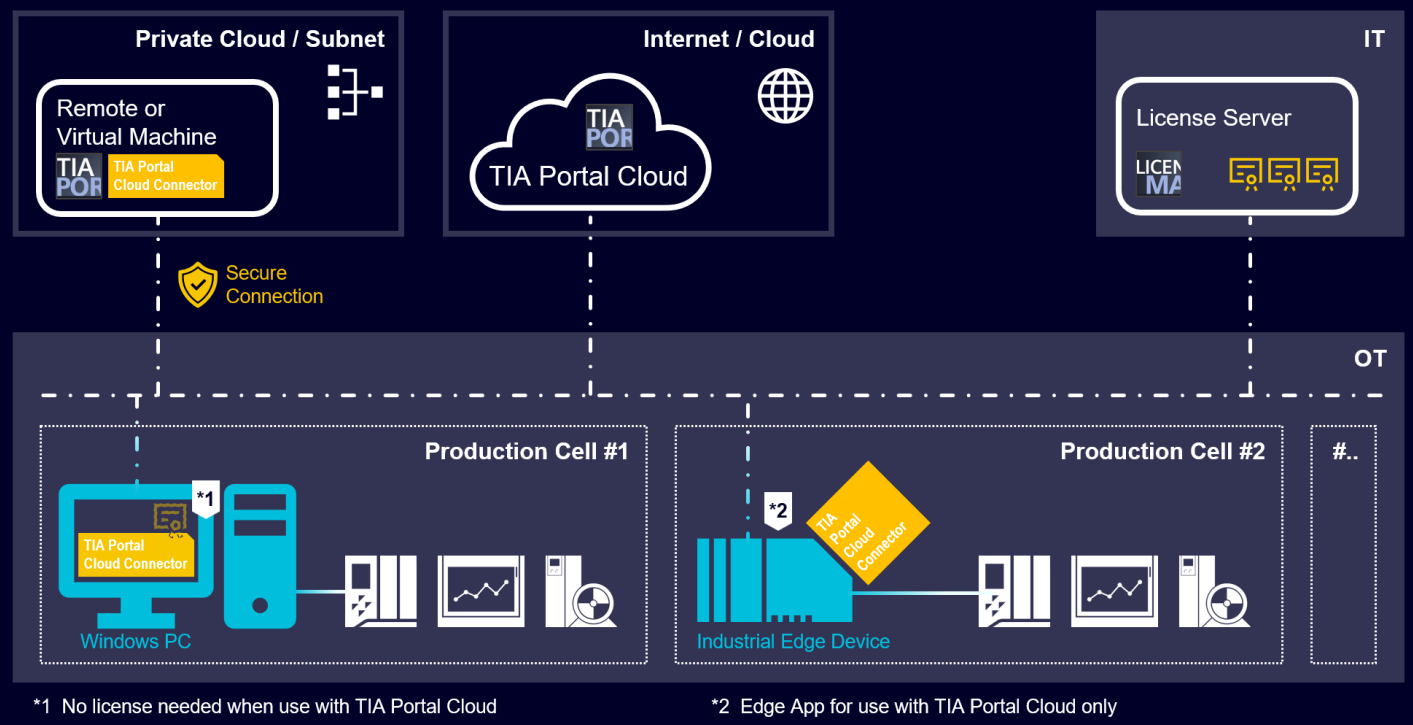
TIA Cloud Services
TIA Portal Cloud Connector



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
- New: Central license management

More information and the setup of the latest version are available at Industry Support page ID 109780755.

TIA Portal V21.1 - Table of contents

Start of a new era: TIA Portal V21.x
- A new era for your project lifecycle
- Concept & Details: One continuous version line
- TIA Installer

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

SIMATIC WinCC Unified – Innovations
- Responsive Design: Flexible Layouts for different screen sizes
- Panel Portfolio Extension: Unified Outdoor, ...
- Enhanced Connectivity: Tag Collaboration, OPC UA HA, ...
- EU CRA Preparation … and more!

SIMATIC WinCC RT Prof. – Innovations
- …

SIMATIC STEP 7 – Innovations
- Smooth Forward Online handling
- Keep DB online values on structural changes – 2nd step

SIMATIC Motion Control – Innovations
- New SIMATIC Drive Controller Redesign
- Kinematics & Interpreter innovations
- Cam Enhancements
- Named Value Data Types Enhancements

SINAMICS Startdrive & DCC – Innovations
- Support SINAMICS G210,G210C, G210X, G200 Stand, and basic
- Openness new automation interfaces for commissioning mode
- Export DCC chart as a DCC Library and Subchart monitoring
- FW5.3 and SIMATIC DC Redesigned FW 5.3 support

SIMATIC Hardware
- SIMATIC Controller
- SIMATIC Webserver
- Bus Adapter G2
- ET 200SP & MP

TIA Portal Hardware Configuration
- Ex-/Import of HW configuration via Hardware Declaration Data
- PROFINET Security: Data Record Access Limitation
- PROFINET: Reporting security-relevant auditable events
- Access PLCs via Fully Qualified Domain Name (FQDN)

PROFINET & Communication
- IPv6 support for S7-1500 OPC UA and Webserver
- PROFINET: Topology based device name assignment
- PROFINET: Optional shared device

System functions
- TIA Portal Updates
- Open, upgrade and migrate TIA Portal projects
- Project & Software Integrity
- TIA Portal Openness & Add-Ins
- SIMATIC Source Documents (SimaticSD)
- Version Control Interface (VCI)
- CAx: AutomationML & Publication Tools
- TIA Portal Usability

TIA Portal options and more…
- **SIMATIC STEP 7 Safety**
- **SIMATIC Safe Kinematics**
- **TIA Portal Multiuser Engineering**
- **SIMATIC Robot Library**
- **OPC UA**
- **SIMATIC S7-PLCSIM / S7-PLCSIM Advanced**
- **SIMATIC Target™ for Simulink®**
- **TIA Portal Test Suite**
- **SIMATIC STEP 7 CFC**
- **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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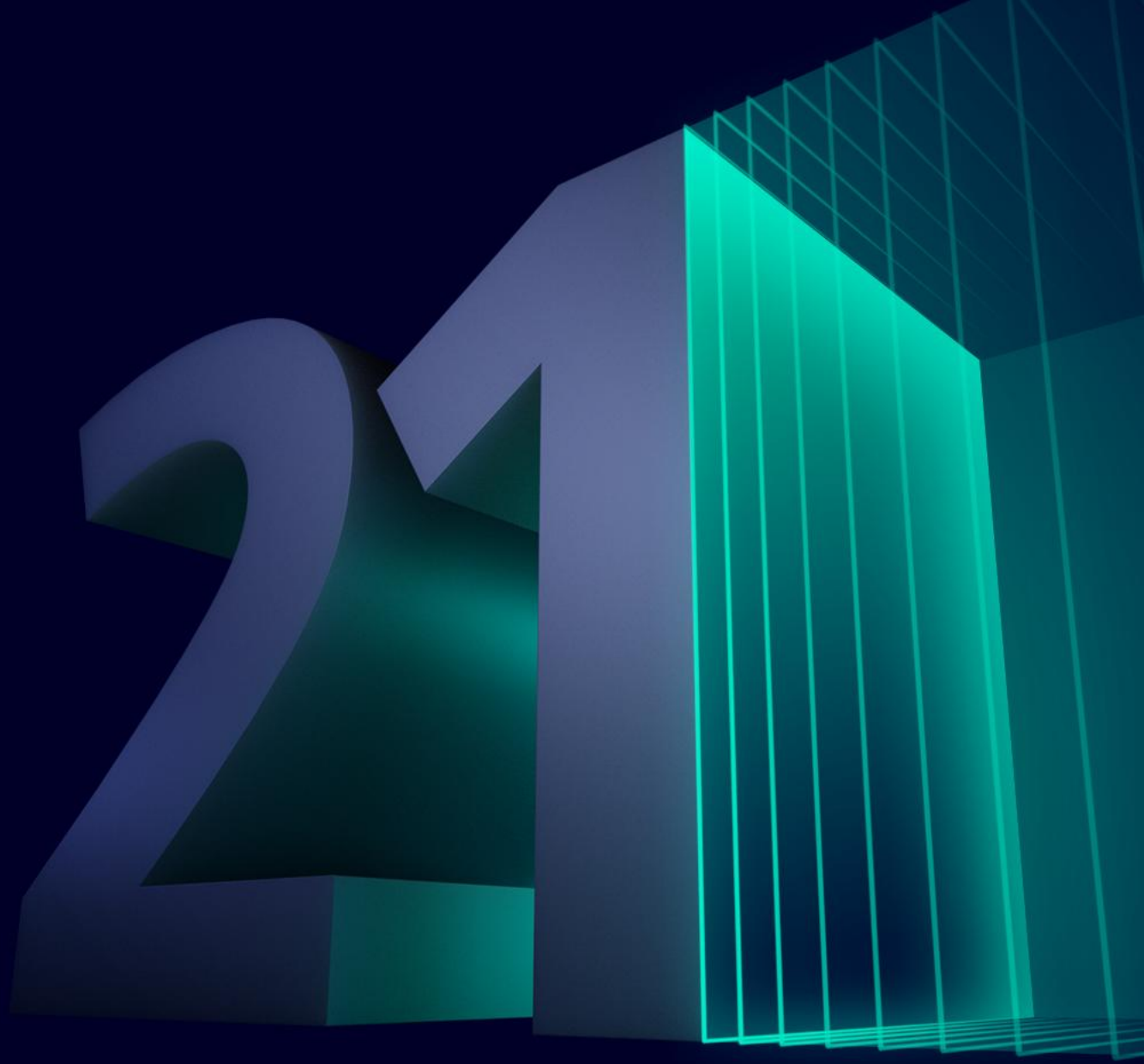
WinCC Unified



News overview V21.1

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WinCC Unified V21.1 – Topics covered
Continuous innovation across all key areas

Core:
- Responsive Design
- New Grid Container
- New Layout Breakpoints
- New Stack Container
- New Wrap Container
- Multilingual alarm class names
- Dynamic alarm filtering
- Configurable normal alarm colors
- Extension for Tag Optimization
- PLC Tag Comment in HMI
- Expanded array capacity
- OPC UA historical access
- MQTT enhancements
- Enhanced Allen-Bradley PLC communication
- Inactivity-triggered runtime actions
- Diagnostics with TIA Portal topology view
- Certificate Revocation
- Security events for certificate handling
- Proactive security threat detection

Basic Options:
- Secure runtime audit trail restart
- Distributed Tag collaboration
- Expanded parameter set capacity
- Bulk parameter set exchange
- Complex PaCo data structures
- Swipe-based code viewer navigation
- Web client connection monitoring

SCADA:
- Centralized runtime settings overview
- Disable screen persistency
- Runtime integrity and authenticity

Engineering:
- Automate Parameter Set engineering
- Automated library type management
- Automated master copy handling
- Unified screen version control
- Unified Tag version control
- Configurable simulation start behavior
- Identify initial faceplate properties
- Secure Corporate Designer projects
- Restrict library type access

SiVArc:
- New license concept
- Allen-Bradley HMI tag generation
- Generate based on S7 Safety blocks
- Automated scheduled task generation
- Visualize SiVArc-generated properties
- Bulk text definition management
- Automated alarm indicator generation
- Graphic list type integration
- Faceplate template object generation
- Reuse multiple SiVArc rules
- Enhanced SiVArc expression support
- Expanded Openness API capabilities

Plant Intelligence:
- Custom shift header colors
- Display shift production targets
- Planned downtime time categorization
- Third-party calendar data API
- Default cyclic-on-change counter logging
- Context-relevant time ranges
- Top downtime occurrence analysis

SIQENCE:
- Overview
- Monitor and control a complete batch
- Long-term batch data archiving
- Flexible batch scripting
- Batch and recipe GraphQL access
- Standardized YAML recipe exchange
- General improvements

Panels:
- CRA-ready Unified Panel hardware
- Expanded operating temperature
- Simplified Unified Panel engineering
- Full HD 15-inch panels
- Outdoor Unified Comfort Panels
- Adaptive brightness adjustment
- Unified Mobile Panel engineering
- Cross platforms remote access
- Enhanced SmartClient App
- New Backup option
- Secure project transfer and recovery
- CRA-ready Unified Air

Modular Automation:
- Standardized automation across platforms
- Expanded industry-specific function blocks
- Safe double-seat valve control
- End-to-end MTP engineering
- Flexible modular process orchestration

RT Advanced:
- CRA-ready RT Advanced version
- Secure-by-default RT Advanced projects
- Secure RT Advanced deployment
- Modern OPC UA security policies
- Secure user administration transfer

RT Professional:
- Modern, secure, web-ready HMI

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WinCC Unified – One Platform. Countless Possibilities.
Where powerful capabilities come together



WinCC Unified PC Runtime (MS Windows)

WinCC Unified RT for Industrial Edge

HMI Unified Comfort Panels

HMI Unified Basic Panels

WinCC Unified View of Things (based on S7-1500 PLCs)

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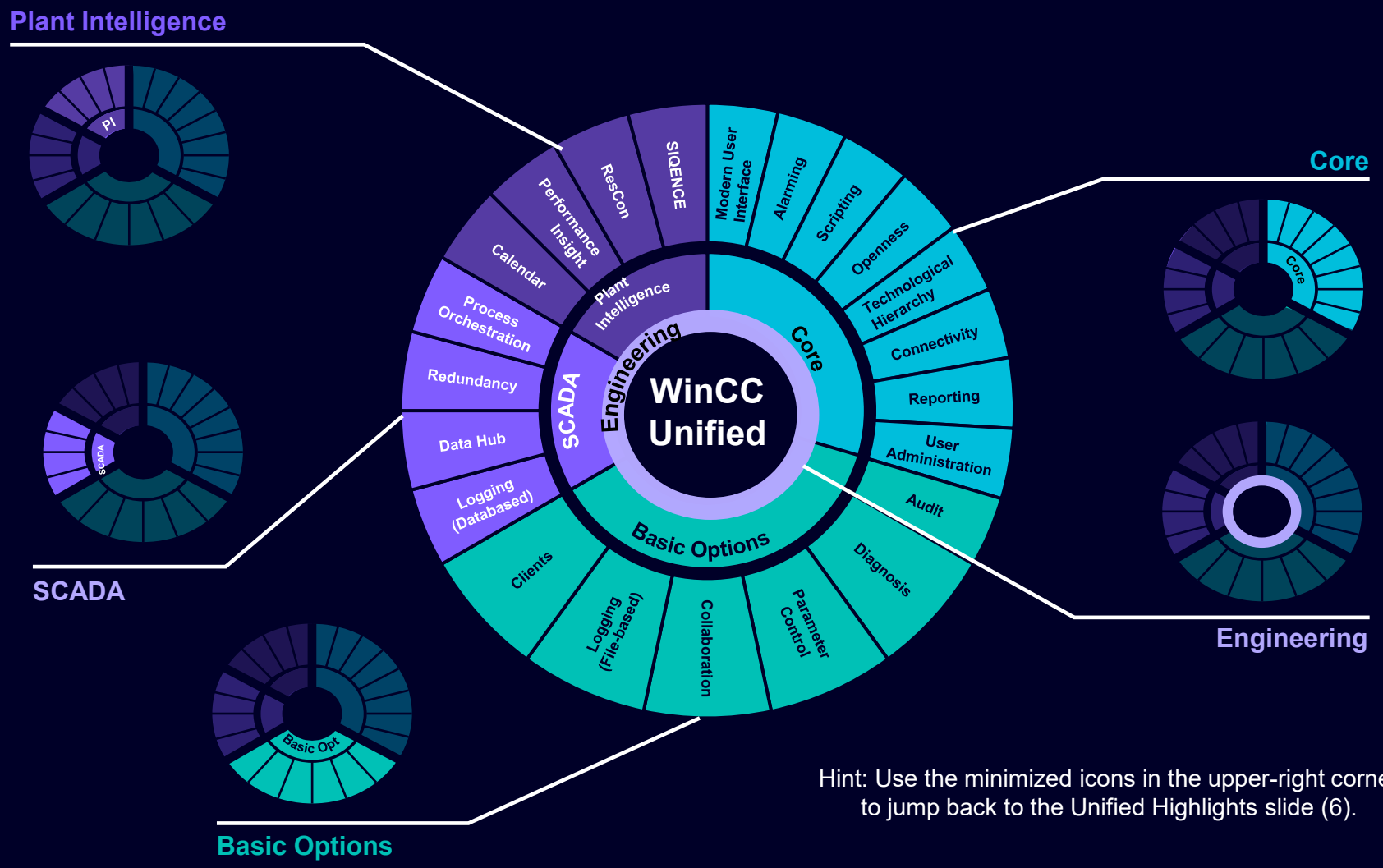
WinCC Unified – One Platform. Countless Possibilities.
Let the icons Guide you



Hint: Use the minimized icons in the upper-right corner to jump back to the Unified Highlights slide (6).

1. **Introduction**
2. **Highlight Slides**
   - Highlights V21 Unified Overall
   - Highlights Panel
   - Highlights SIQENCE
3. **Detailed Unified System Slides – arranged per 5 topics on the left**
   - Core
   - Basic Options
   - SCADA
   - Engineering
   - Plant Intelligence
4. **Cross Portfolio Products**
   - Panels
   - Modular Automation CFL + MTP
   - Runtime Advanced
   - Runtime Professional

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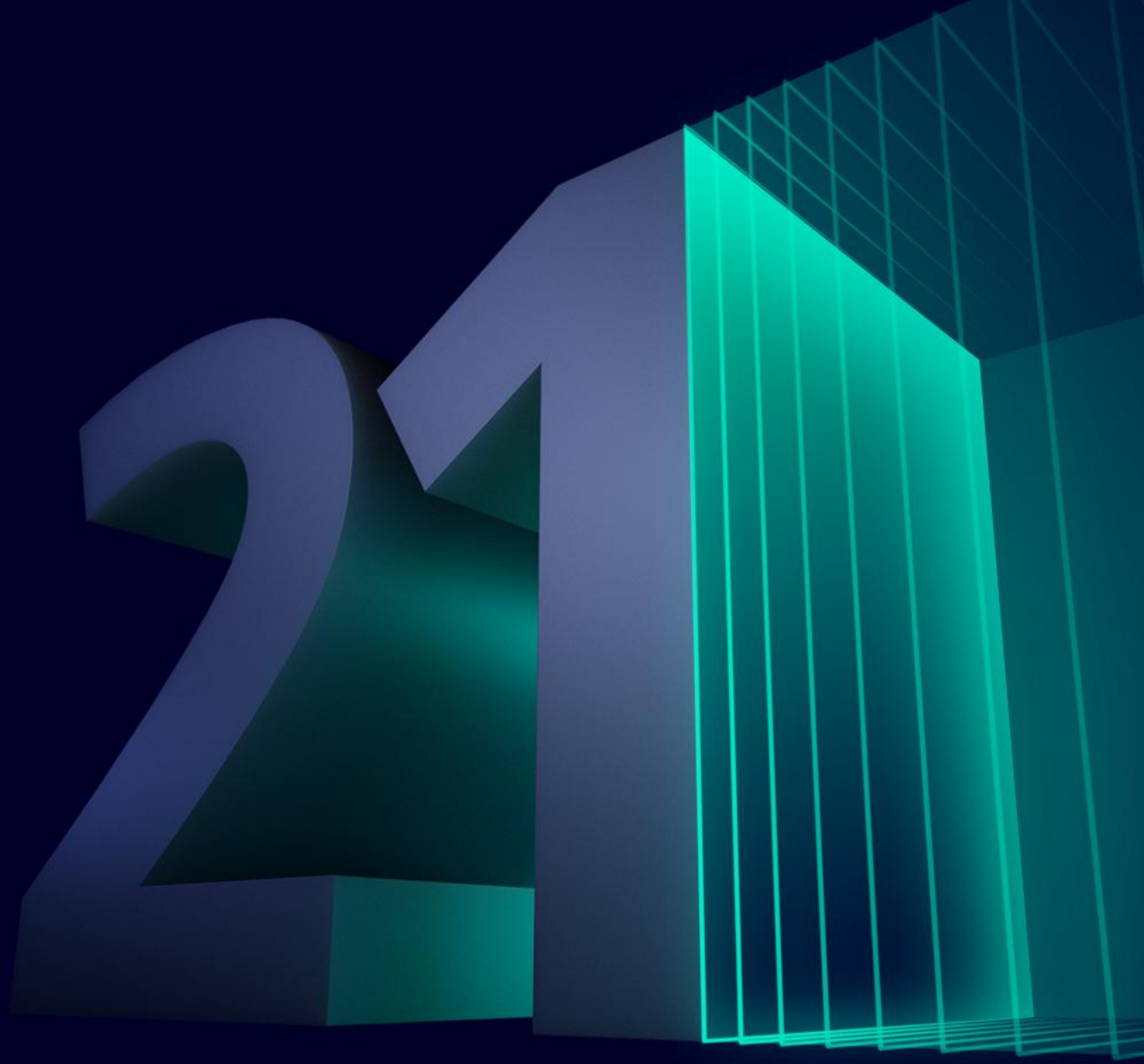
WinCC Unified



Highlights

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Improved Alarm Handling

Multi-Language · Filter improvements · Usability improvements

Design once, use everywhere:

Responsive applications that adapt, not just scale - from small panels up to Unified PC runtimes and smart devices

Increased Quantity Structures

4k Arrays · 10k PACO

Improved Parameter Set

Import/Export · PLC UDT

Strengthened Audit

Restart of GMP · Security Events

Enhanced Connectivity & Openness

Tag collaboration · OPC UA HA Server · improved 3rd party integrations



WinCC Unified System V21.1 Highlights

Responsive Design · Panel Extension · Connectivity · EU CRA

Expanded SIQENCE Functionality

YAML Import & Export · Longterm Batch Archiving · Scripting & GraphQL extended for Batches and Recipes

Remote Device Operation

Operator interlock & handover for Unified devices

Engineering Openness Extensions

Master copy handling · VCI Screen, Tag Device Update from Library · PaCo

Unified Air

Strong Security Improvements

More Panels. More Possibilities.

New Unified Mobile* · New Unified Outdoor · Improved data backup and restore functionalities



Standardization

MTP · CFL



EU CRA – on track

Helping customers meet upcoming EU cybersecurity requirements for our products

* Planned release 07/'27

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Completing Unified Panel Portfolio

Unified Mobile Panel

Enhanced Connectivity

Tag collaboration · OPC UA HA Server · More 3rd party integrations

Extended Remote Device Operation

Operator interlock & handover for Unified devices
Seamless remote access across PC and Panel platforms

EU CRA – on track

New Hardware to cover upcoming Cybersecurity requirement regulations



HMI Unified Panels V21.1 Highlights

More flexibility with new Data Backup concept

Increased Quantity Structures

4k Arrays · 10k PACO

Unified Air

Strong Security Improvements



New Display for all 15'' Devices

Full HD resolution & better optical representation

One Panel every condition

Unified Outdoor Panel

Simplification of Panel selection in Engineering

Extended Operational Temperature range

Unified Comfort up to 55°C

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TIA Portal workflows
Seamless PLC connectivity · Certificate handling of PLC connection

Optimized user experience
Refreshed web styling for Recipe Management · Batch Management

Operation execution time
Unit faceplate · Visu block

Enhanced parameter scaling
at equipment and procedure level

Enhanced Extensibility
Scripting · new functions for batch creation, recipe selection and batch start



WinCC Unified SIQENCE[1] V21.1 Highlights
Unified Integration · Extensibility · EU CRA

Standardized Export & Import of recipes
YAML format · Human-readable · Versionable and comparable

WinCC Unified Logging Long term archive for Batch data
SQLite · SQL DB

Monitor & Control complete batch
Follow complete batch in graphical way · Monitor actual values · Change setpoints of parameters · Execute ISA88 commands

Enhanced Interoperability
GraphQL · new functions for batch creation, recipe selection and batch start

Bulk Batch creation
Multi selection · Multi actions

Preparing for EU CRA compliance – on track
Helping customers across Europe confidently meet upcoming EU cybersecurity requirements for our hardware and software products

[1] Planned release 01/2027

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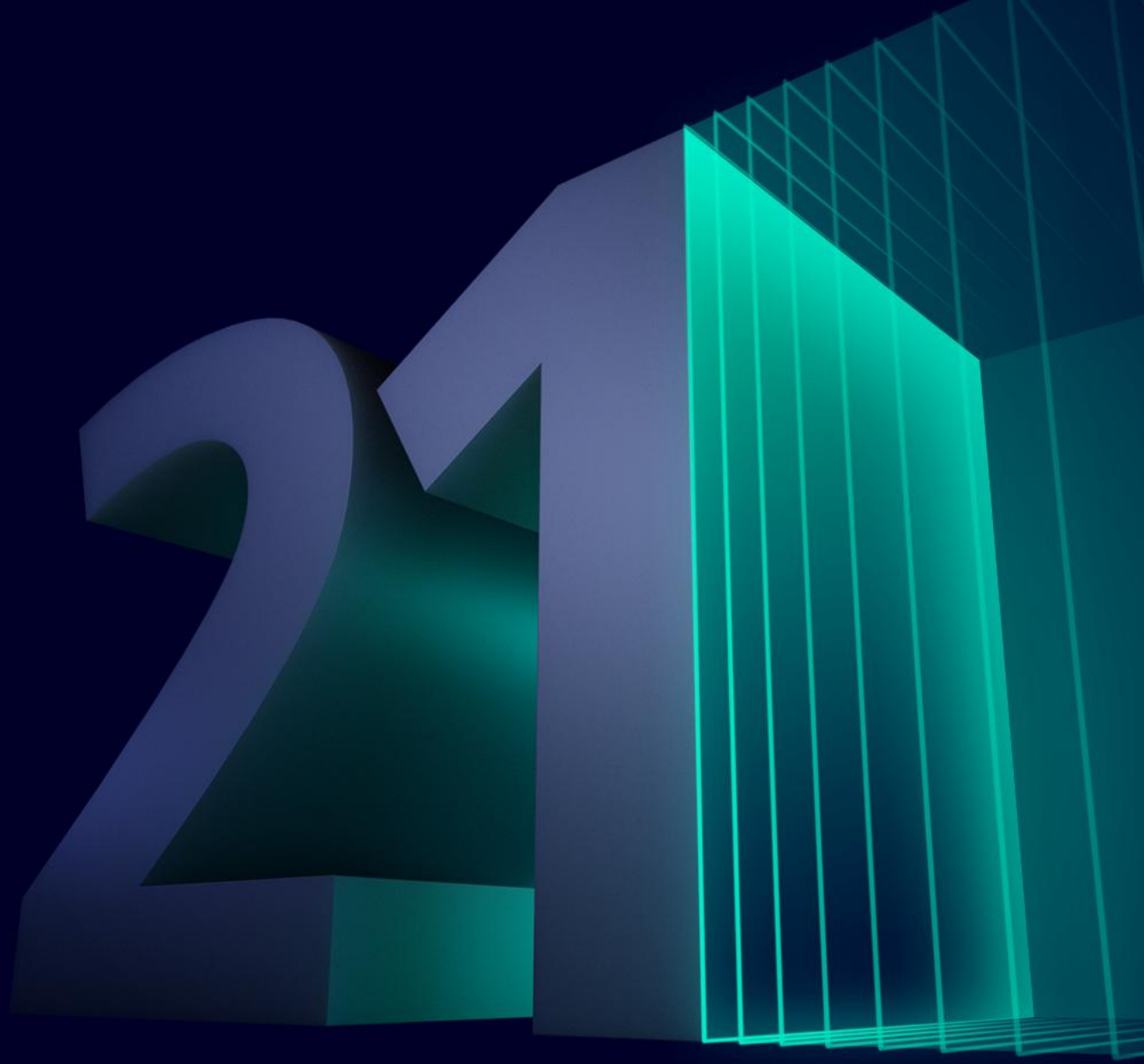
SIMATIC
WinCC Unified



Detailed Unified System Slides

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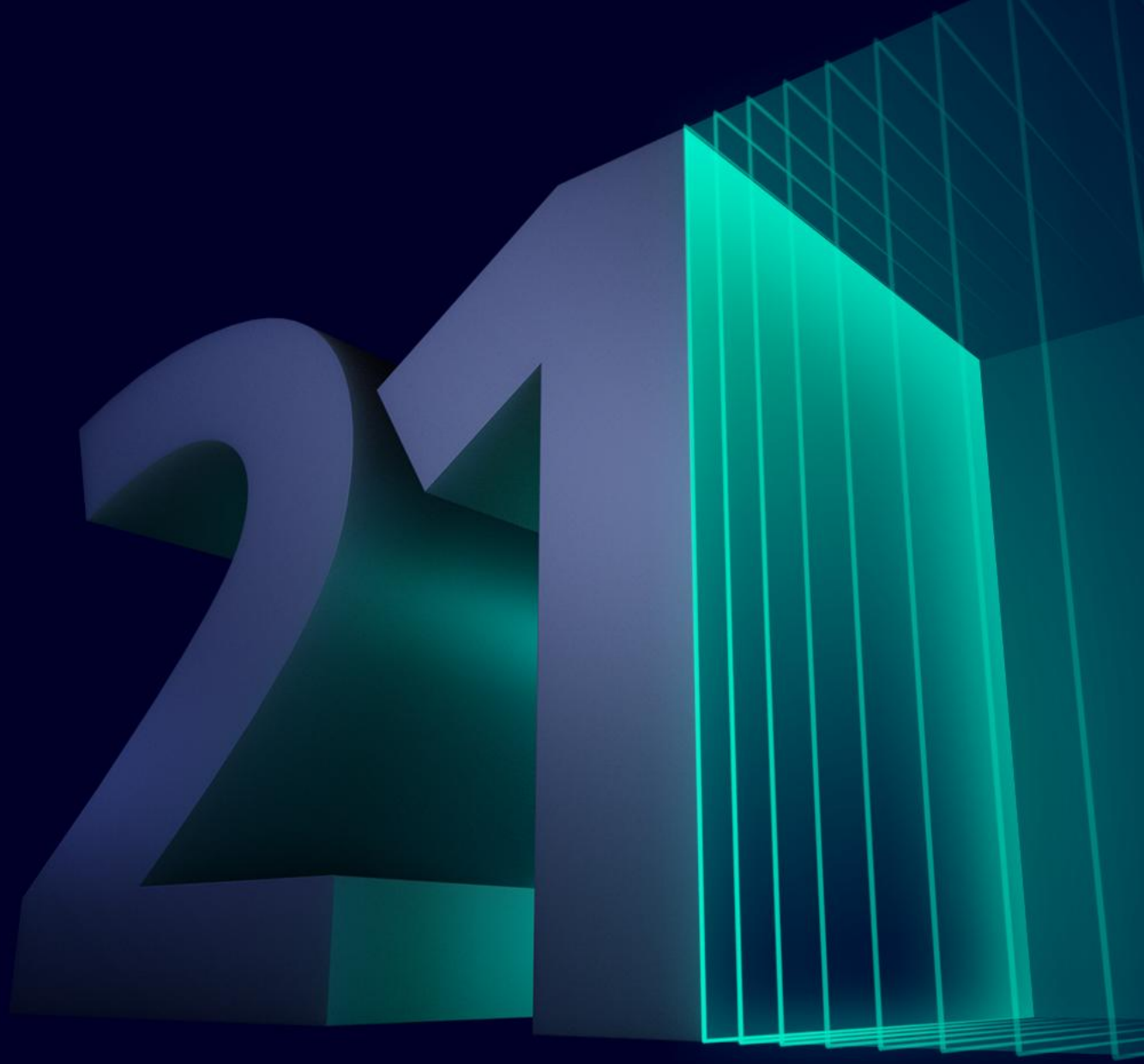
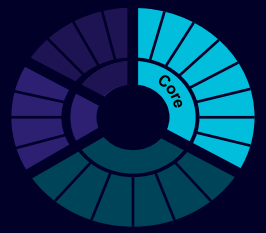
SIMATIC
WinCC Unified



Core



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WinCC Unified V21.1 – Responsive Design
One Project. Any Device. Every Experience

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



Design Once. Run Everywhere

Responsive Design enables you to create modern, flexible and device-independent HMI applications with the same project – delivering the optimal operator experience on every screen size.

Flexible Layouts:
Use Grid, Stack and Wrap containers to create adaptive layouts that automatically adjust to the available space

Device Independence:
Define breakpoints for different screen sizes – from small panel to large displays.

Efficient Engineering:
Design once and preview across engineering devices no separate screens required

Consistent User Experience:
Maintain a uniform look & feel with optimized content, alignment and usability

Future Ready:
Build Modern, Scalable and maintainable applications for today and tomorrow.

Embrace Responsive Design and unlock the full potential of WinCC Unified.

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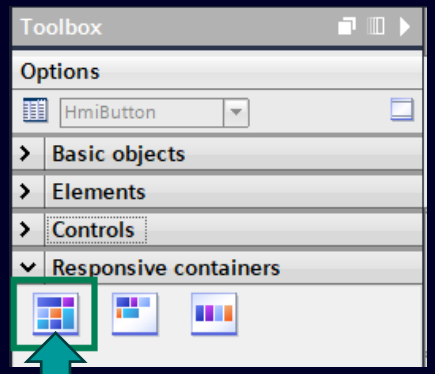
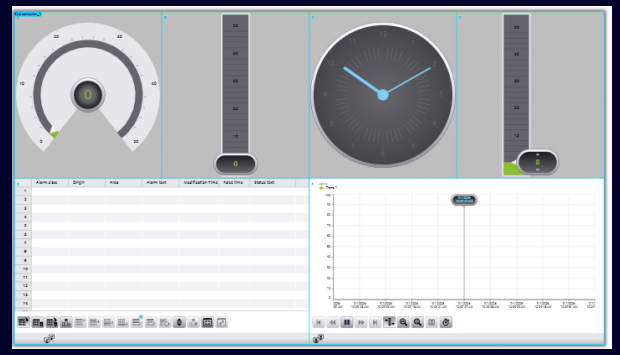
WinCC Unified V21.1 – Modern User Interface
Responsive Design - Grid Container

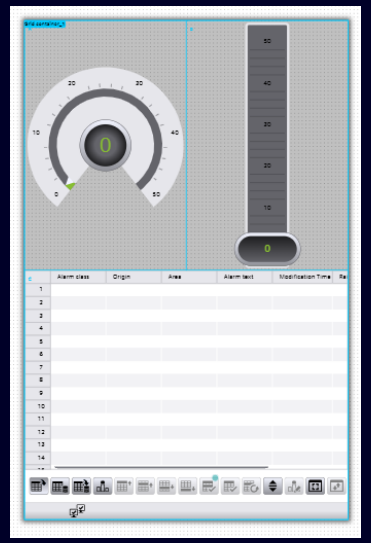
Unified Basic	Unified Comfort	Unified Edge RT	Unified PC RT
✗	✗	✓	✓



New grid container in toolbox



Responsive Layout 1



Responsive Layout 2

Enables structured, responsive layouts with rows and columns for consistent alignment across all devices.

- **Powerful Grid Layout Control**
  - Ideal for dashboards, panels and data displays
  - Define layouts for different display sizes via grid
  - Set column/row dimensions for precise grid placement
  - Automatically adapts to available space based on breakpoints

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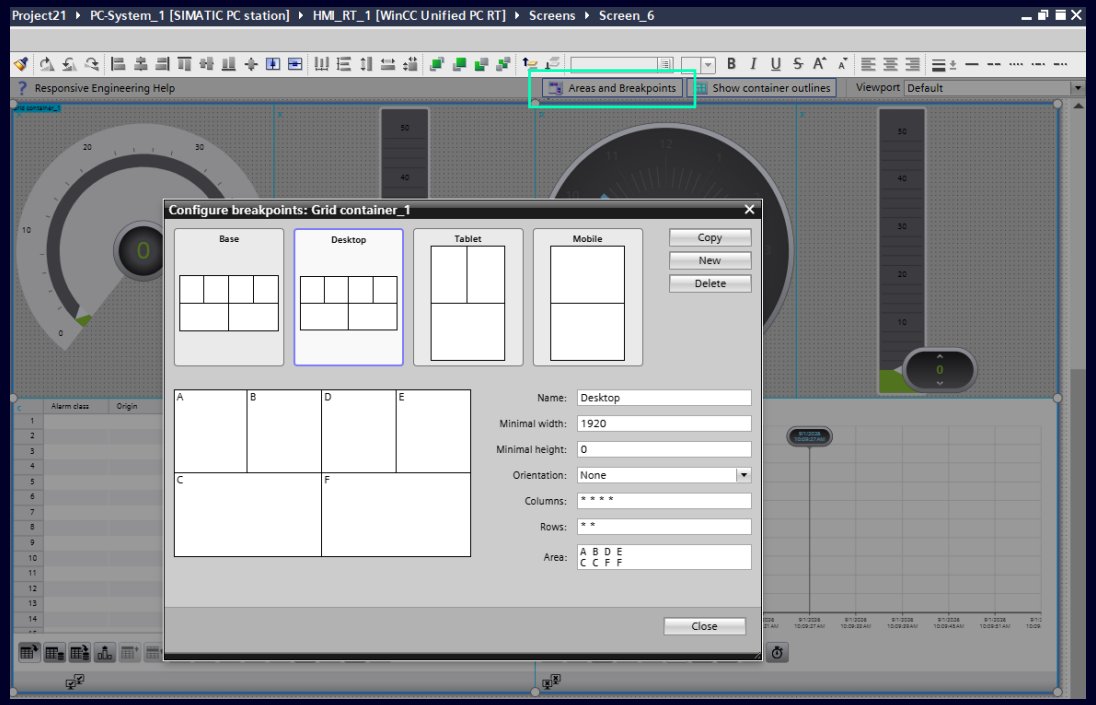
WinCC Unified V21.1 – Modern User Interface
Responsive Design - Layout Breakpoints

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



Breakpoint dialogue in screen editor

Allows you to change layouts and orientation ensuring optimal experience on various display sizes

➢ **Design Once. Run Everywhere**

- Custom breakpoints for your screen
- Preview layouts across devices in engineering via “viewport”
- Deliver the best operator experience on any screen size in one screen
- Combine with responsive containers for maximum flexibility

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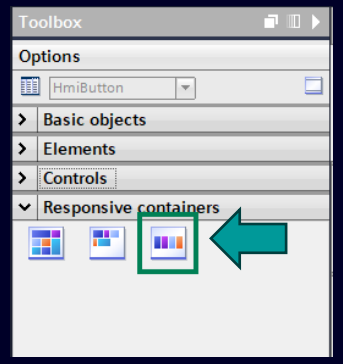
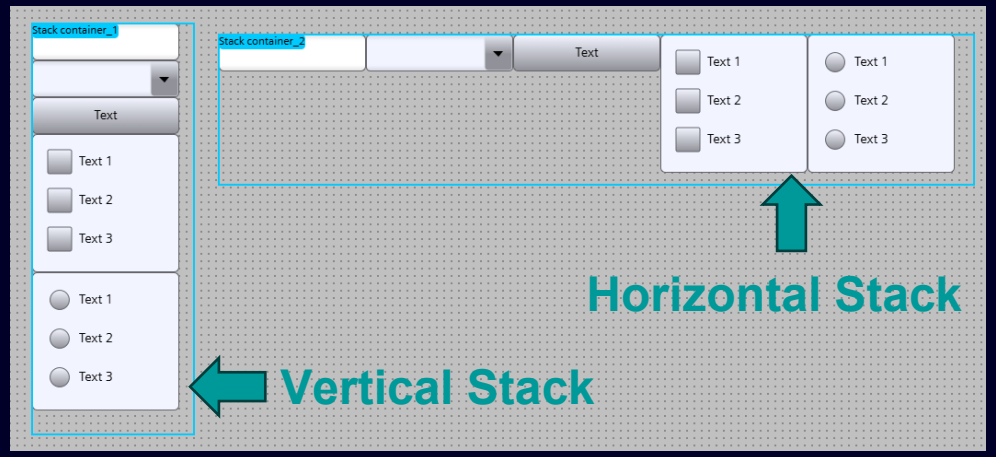
WinCC Unified V21.1 – Modern User Interface
Responsive Design - Stack Container

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



New stack container in toolbox



Example for stack container behaviour

Stacks items vertically or horizontally with flexible sizing to adapt across devices.

- **Effortless Responsive Stacking**
  - Arrange items in vertical or horizontal stack, with automatic resizing and reordering
  - Set alignment behavior: Left, Right, Stretch or Center
  - Set overflow behavior: Scroll on demand, Scroll always or clip
  - Ideal for headers, footers, sidebars and content sections

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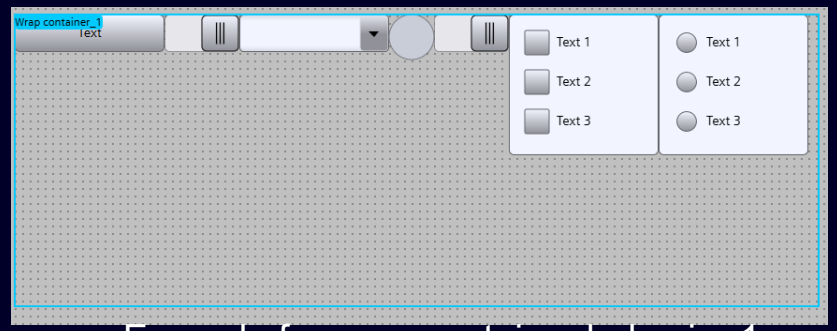
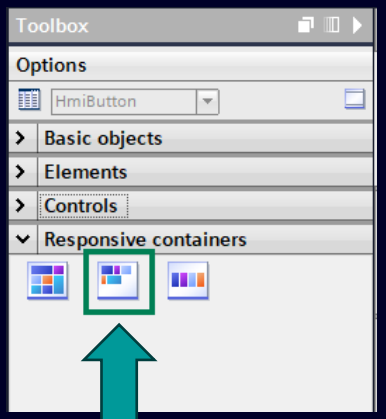
WinCC Unified V21.1 – Modern User Interface
Responsive Design - Wrap Container

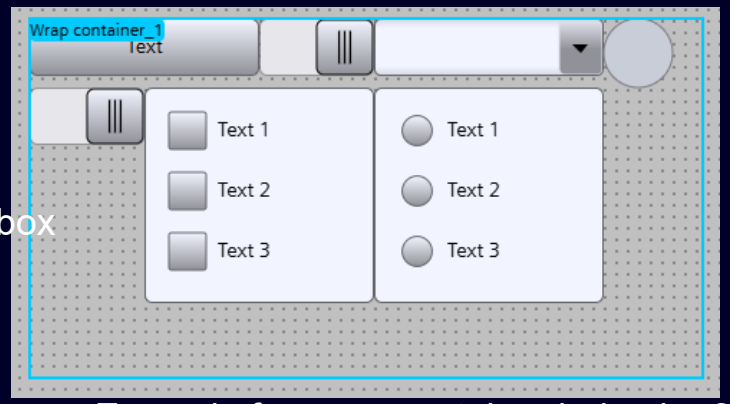
Unified Basic	Unified Comfort	Unified Edge RT	Unified PC RT
✗	✗	✓	✓



Example for wrap container behavior 1



New wrap container in toolbox



Example for wrap container behavior 2

Automatically arranges items in rows or columns and wraps them based on the available space

- **Smart and Adaptive Layout**
  - Responds to screen size changes seamlessly
  - Set overflow behavior: Scroll on demand, Scroll always or clip
  - Horizontal or vertical wrap direction adjustable
  - Set individual spacing and alignment between screen items
  - Ideal for icon sets, tiles, cards and toolbars

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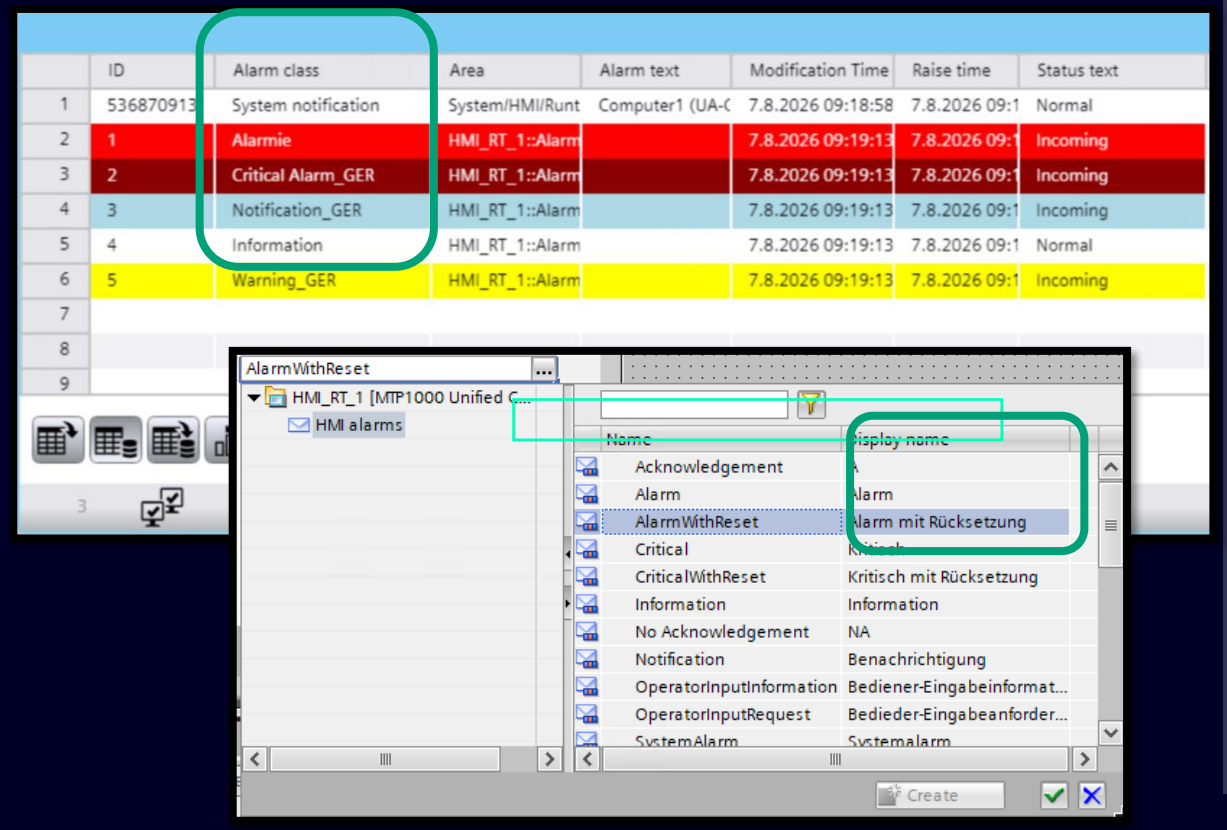
WinCC Unified V21.1 – Alarming
Alarm classes in preferred languages

Unified Basic	Unified Comfort	Unified Edge RT	Unified PC RT
✓	✓	✓	✓



Configure multilingual display names for alarm classes

Multilingual Display and Filtering of Alarm Class Names in addition to alarm texts

➢ Enhance Operator Experience

- Configure alarm class names in multiple languages
- Displays Alarm class name in Runtime's current language
- Language-dependent alarm filters for the operators
- Automatic fallback to Default language if translation is unavailable

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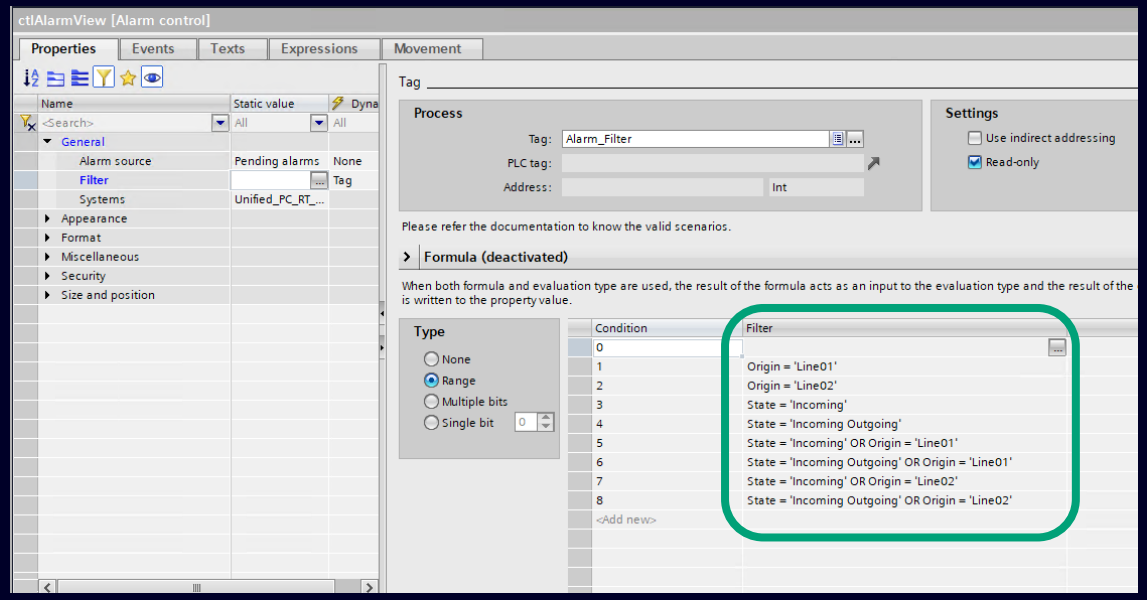
WinCC Unified V21.1 – Alarming
Alarm filter dynamization

Unified Basic	Unified Comfort	Unified Edge RT	Unified PC RT
✓	✓	✓	✓



Setting of alarm filter via dynamization

Switch Alarm Filter via dynamization

- Alarm filter dynamization via expression to change between different filter criteria at runtime
- No scripting needed
- Consistent view between configuration and display for all alarm control objects (Alarm Control, Alarm Line Control, Alarm Indicator)
- Supported in Tag Dynamization, Property Interface Dynamization, Expression Dynamization

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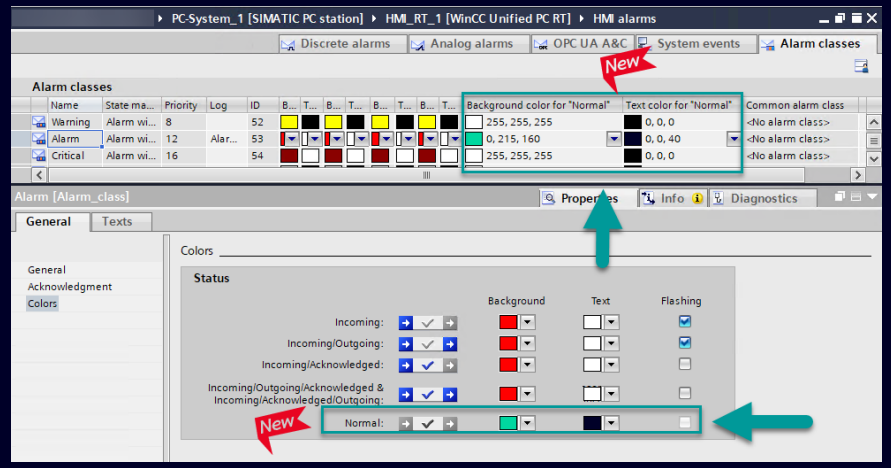
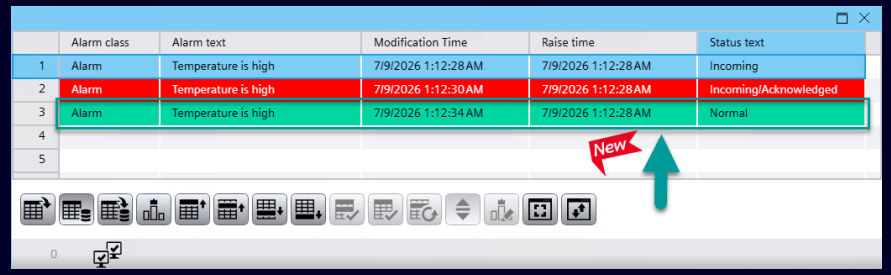
WinCC Unified V21.1 – Alarming
Color configuration for 'Normal' alarm state

Unified Basic	Unified Comfort	Unified Edge RT	Unified PC RT



Set normal state color in engineering



Alarm view to show logged alarms

Configure colors also for 'Normal' alarm state in addition to existing alarm state colors

- **Enhanced Alarm State Color Configuration to improve readability via higher contrasts**
  - Set **background color and text color** behavior for 'Normal' state
  - Improve visual differentiation between alarm states for faster operator response in runtime, especially for light runtime backgrounds
  - Adapt alarm visualization to corporate color schemes and operational standards

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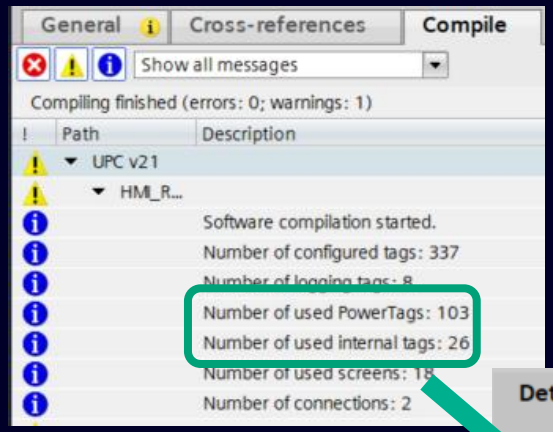
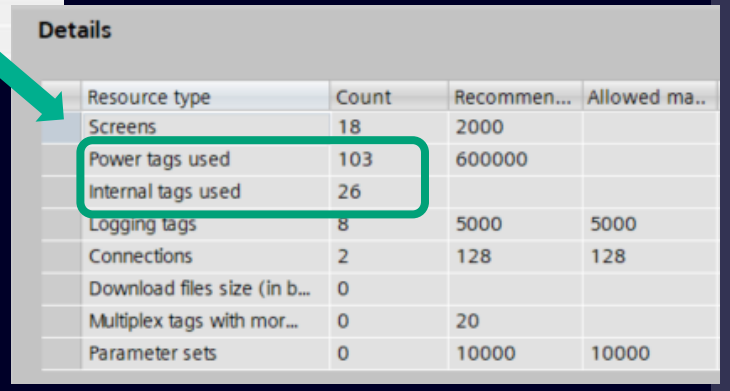
WinCC Unified V21.1 – HMI Tags
Resource monitor extension for Tag Optimization

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓



Compiler Output



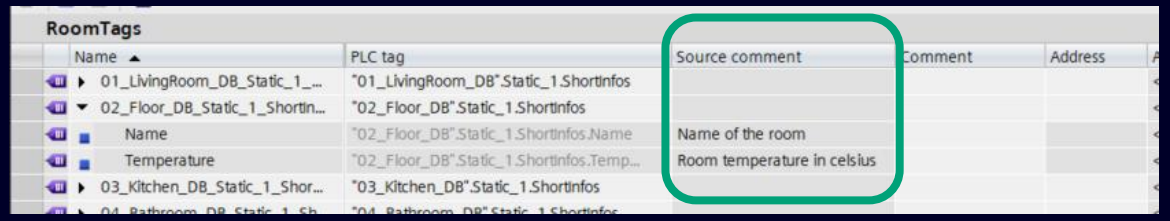
Resource Monitor

Get Optimized Tag Counts Instantly, Without Recompiling

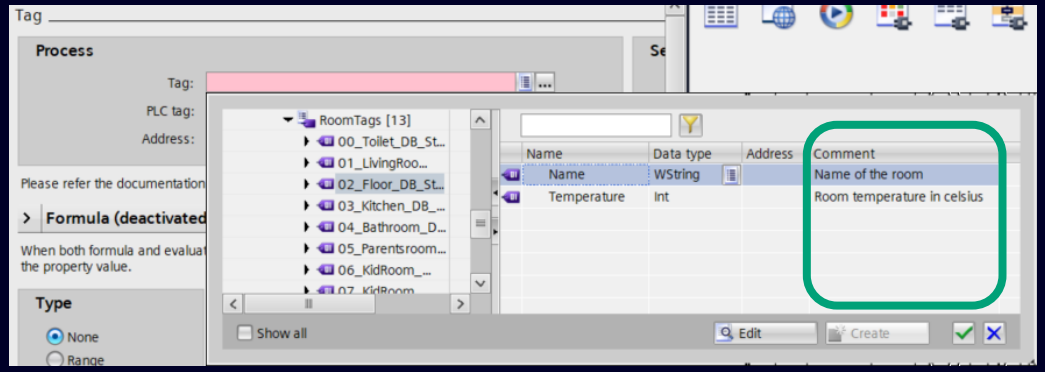
- **Consistency with Compiler Output:** The tag counts displayed in the Resource Monitor will now align with the optimized counts you see after compiling your project.
- **Save Time & Effort:** No more project recompilations (rebuild/compile) just to check if your tag configuration fits your panel or PowerTag license! Get instant, optimized tag counts.
- **Easier Decision Making:** Quickly assess how enabling/disabling Tag Optimization impacts your tag counts, empowering you to make informed decisions about the best configuration.

WinCC Unified V21.1 – HMI Tags
Show PLC Tag Comment to help HMI Engineering

Unified Basic	Unified Comfort	Unified Edge RT	Unified PC RT
✓	✓	✓	✓



PLC comments in HMI tag table



Tag Selection for process tag of an object

See PLC comments in HMI to save time and reduce errors.

- **Save Time & Effort:** No more switching between PLC and HMI editors or copy the PLC comments into HMI needed to understand a PLC tag's purpose. Comments are now visible directly within your HMI
- **Faster Tag Selection:** Easily find and select the correct tags in HMI, even by searching based on their comments
- Comments assigned to HMI UDTs will also appear in the tag table and property page, without affecting the tag's own comment.

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WinCC Unified V21.1 – HMI Tags
Increased Array & Block Array Limits

Unified Basic	Unified Comfort	Unified Edge RT	Unified PC RT
✓	✓	✓	✓

HMI tags

Name	Tag table	Data type	Connection
HMI_ArrayTag_1	Default tag table	Array [0..3999] of Bool	<Internal tag>
HMI_S7ArrayTag_1	Default tag table	Array [0..3999] of Int	S7_Connection
HMI_S7BlockArrayTag_1	Default tag table	Array [0..3999] of Int	S7_Connection
HMI_ABArrayTag_1	Default tag table	Array [0..3999] of Real	AB_Connection
HMI_ABBlockArrayTag_1	Default tag table	Array [0..3999] of Real	AB_Connection
HMI_OmronArrayTag_1	Default tag table	Array [0..3999] of Word	Omron_Connection
HMI_ModbusArrayTag_2	Default tag table	Array [0..3999] of Float	Modbus_Connection

Arrays with up to 4000 elements in tag editor

Efficient handling of larger datasets, with expanded Array and Block Array limits

- **Array Limits**
  - Arrays of simple data types (e.g., INT, REAL, BOOL) are increased from 2,000 up to 4,000 elements
- **Block Array Limits**
  - Block Arrays for STEP 7 and Allen-Bradley drivers are increased from 2,000 up to 4,000 elements

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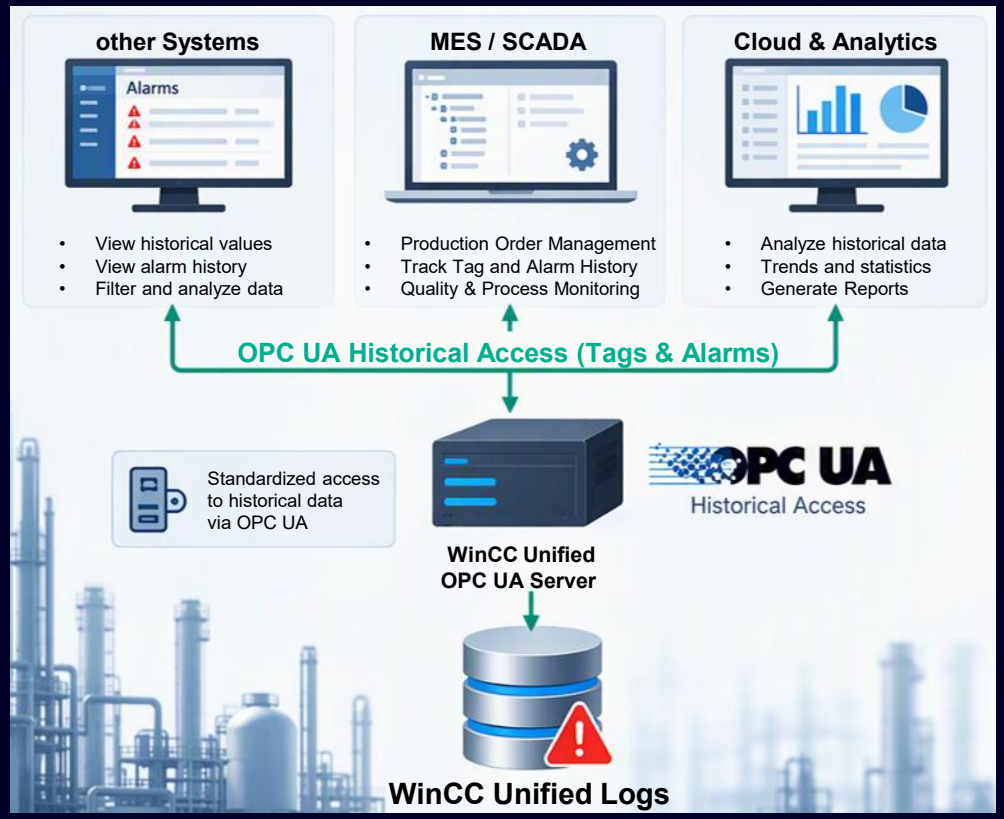
WinCC Unified V21.1 – Connectivity
OPC UA Server – Historical Access (HA)

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓



OPC UA Historical Access

WinCC Unified Runtime – OPC UA HA Server

- **OPC UA Historical Access provides standardized access from external systems to the historical data from the Tag- and Alarm- Logs of WinCC Unified**

the WinCC Unified OPC UA Server supports now

- OPC UA - DA for active Tag monitoring, to receive data in real time
- OPC UA - A&C to receive alarms and perform operator actions such as acknowledge (with V19)
- OPC UA - HA to query historical values of Tags for e.g. optimizations, trend analyzes or quality assurance (with V21.0)
- OPC UA - HA to retrieve the alarm history to allow root cause analysis and troubleshooting (with V21.1)

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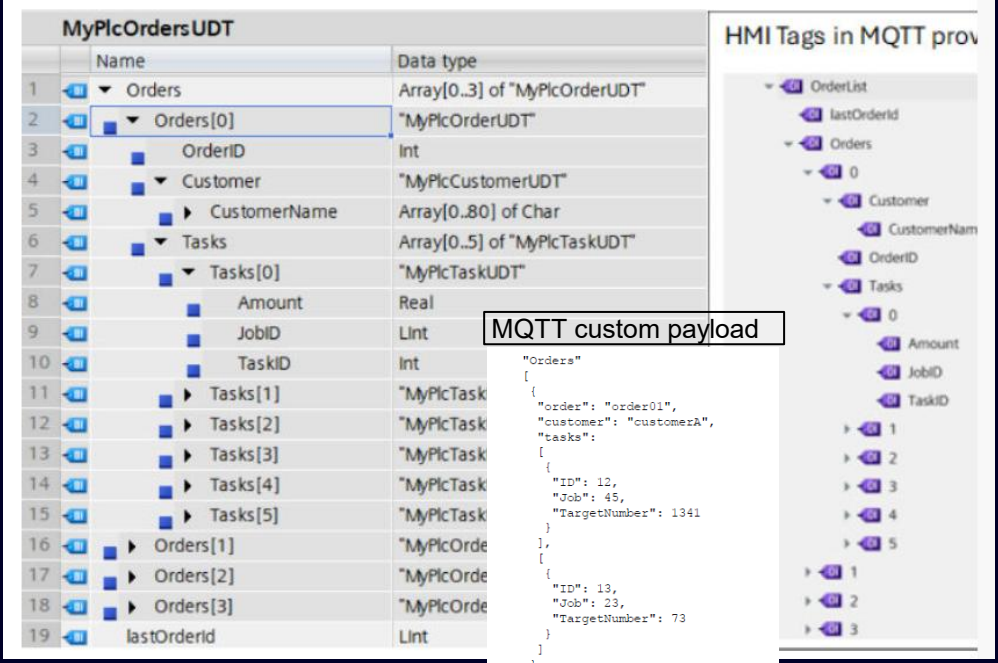
WinCC Unified V21.1 – Connectivity
MQTT enhancements

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



MQTT Editor

Publish and consume complex MQTT messages

- MQTT custom payload allows flexible MQTT messages to publish or consume (e.g.: orders or reports)
- Supports UDTs, UDT in UDT, Arrays

Enhanced Broker connection settings

- Custom MQTT client ID
- Single Device representation

More MQTT topic-specific setting

- Payload type, Quality of Service, Retain Flag can be overridden on topic level

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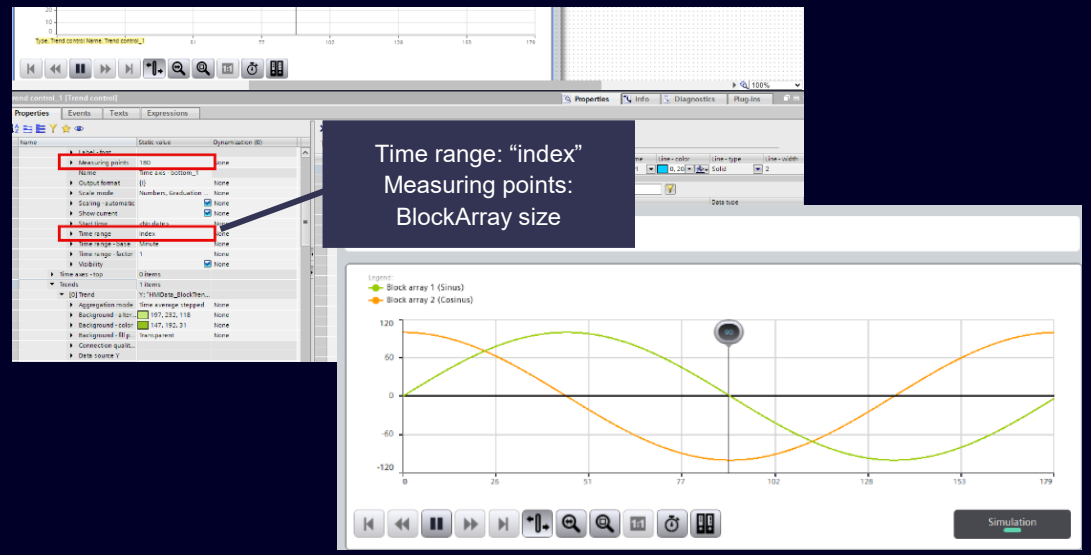
WinCC Unified V21.1 – Connectivity
Enhanced Allen-Bradley PLC Communication

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓

HMI tags

Name	Tag table	Data type	Connection
HMI_Tag_1	Default tag table	LInt	AB_Connection
HMI_Tag_2	Default tag table	LReal	AB_Connection
HMI_Tag_3	Default tag table	ULInt	AB_Connection
HMI_ArrayTag_1	Default tag table	Array [0..9] of Bool	AB_Connection
HMI_ArrayTag_2	Default tag table	Array [0..9] of LInt	AB_Connection
HMI_ArrayTag_3	Default tag table	Array [0..9] of LReal	AB_Connection
HMI_ArrayTag_4	Default tag table	Array [0..9] of ULInt	AB_Connection
HMI_ArrayTag_5	Default tag table	Array [0..9] of String	AB_Connection

new data types in TagEditor



BlockArray as BufferTrend

Achieve more comprehensive and efficient data processing with Allen-Bradley PLCs.

- **Additional data types available**
  - LInt, LReal and ULInt
  - Array of Bool, LInt, LReal, ULInt and String
- **Block array support for Allen-Bradley communication**
  - Efficient reading and writing of large data blocks
  - Improved data consistency through handshake mechanism
  - Usable within trend view, script and RT openness

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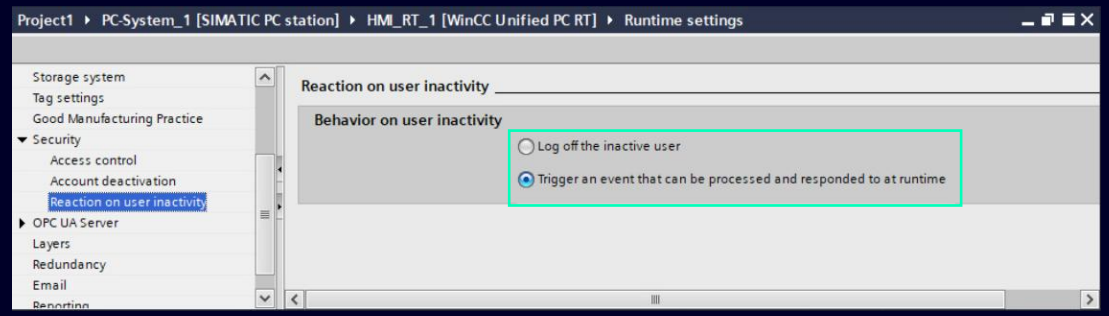
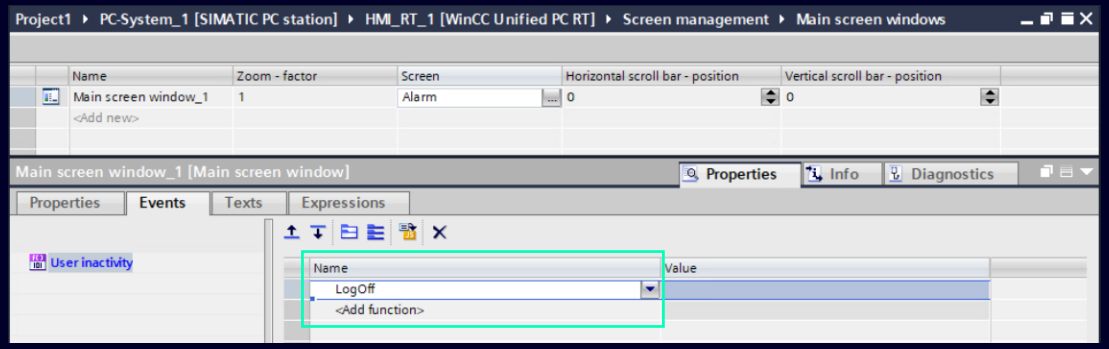
WinCC Unified V21.1 – User Management
Trigger Events After Operator Inactivity

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓



Configuration of runtime behavior in TIA Portal



Select log-off event in screen properties

Configurable actions on operator inactivity to reduce risks from unattended operator stations

➢ Enhanced User Management

- In addition to automatic logout of inactive users, trigger runtime events, e.g. scripts or system functions
- Standardize HMI behavior across plants and sites
- Centrally configured in engineering via scripting

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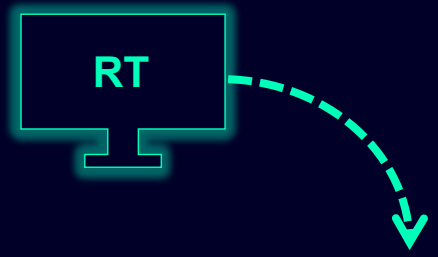
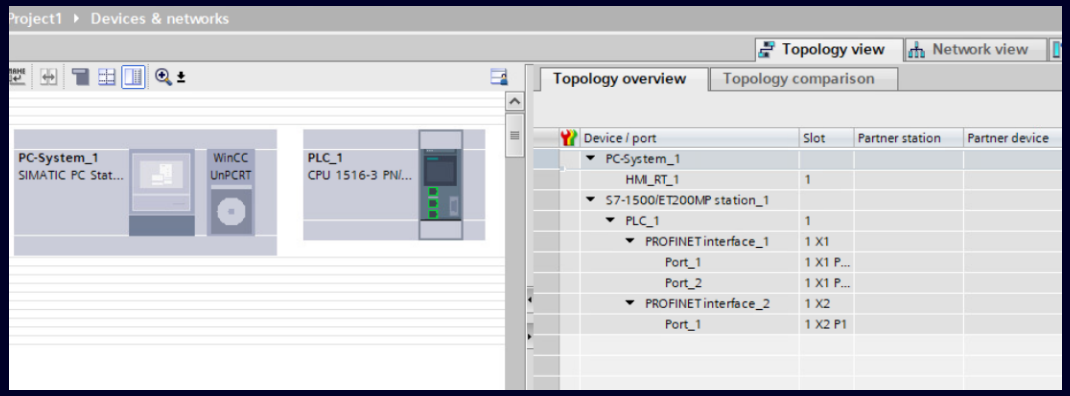
WinCC Unified V21.1 – Scripting
Extension: Open TIA Portal topology view from HMI runtime station

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

Scripting functionality to open TIA Portal





Topology View in TIA Portal for settings configuration and details

Enhanced diagnostic possibilities of plant or machine during runtime

- Faster trouble shooting for Operators by enabling access to plant topology view of TIA Portal Engineering by using new script functionality in runtime.

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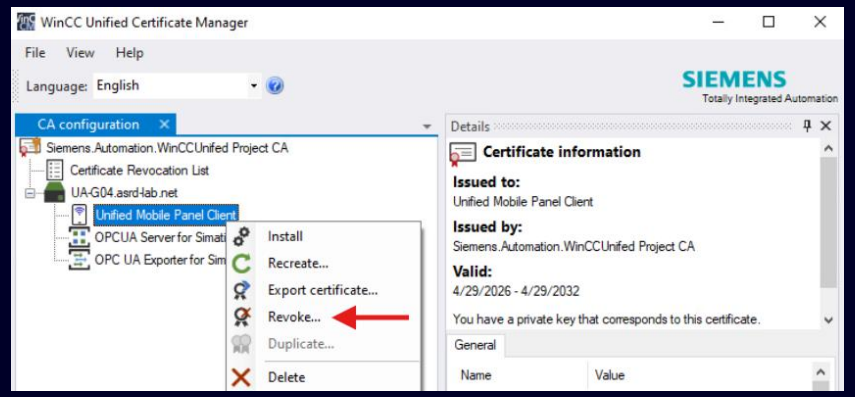
WinCC Unified V21.1 – Security
Certificate Revocation

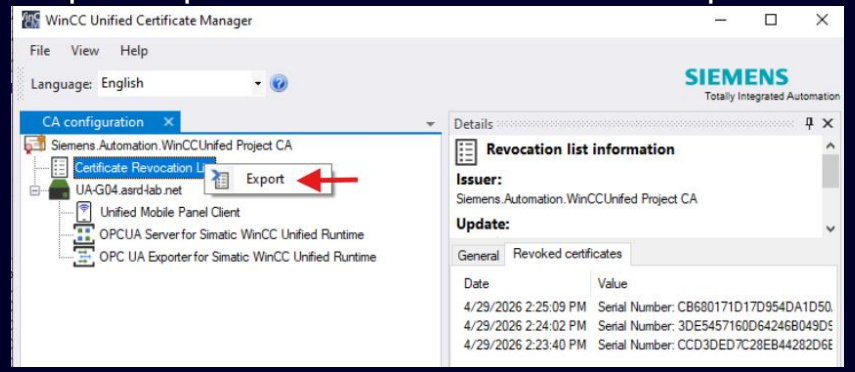
Unified Basic	Unified Comfort	Unified Edge RT	Unified PC RT
✗	✗	✗	✓

Step 1: Revoke certificate



WinCC Unified Certificate Manager

Step 2: Export CRL to the communication partners



WinCC Unified Certificate Manager

Certificate revocation via the WinCC Unified Certificate Manager helps and improves security by blocking communication with revoked certificates.

- **Improved security**
  - Revoke certificates directly via the WinCC Unified Certificate Manager
  - Prevent communication with revoked or invalid certificates, reducing security risks

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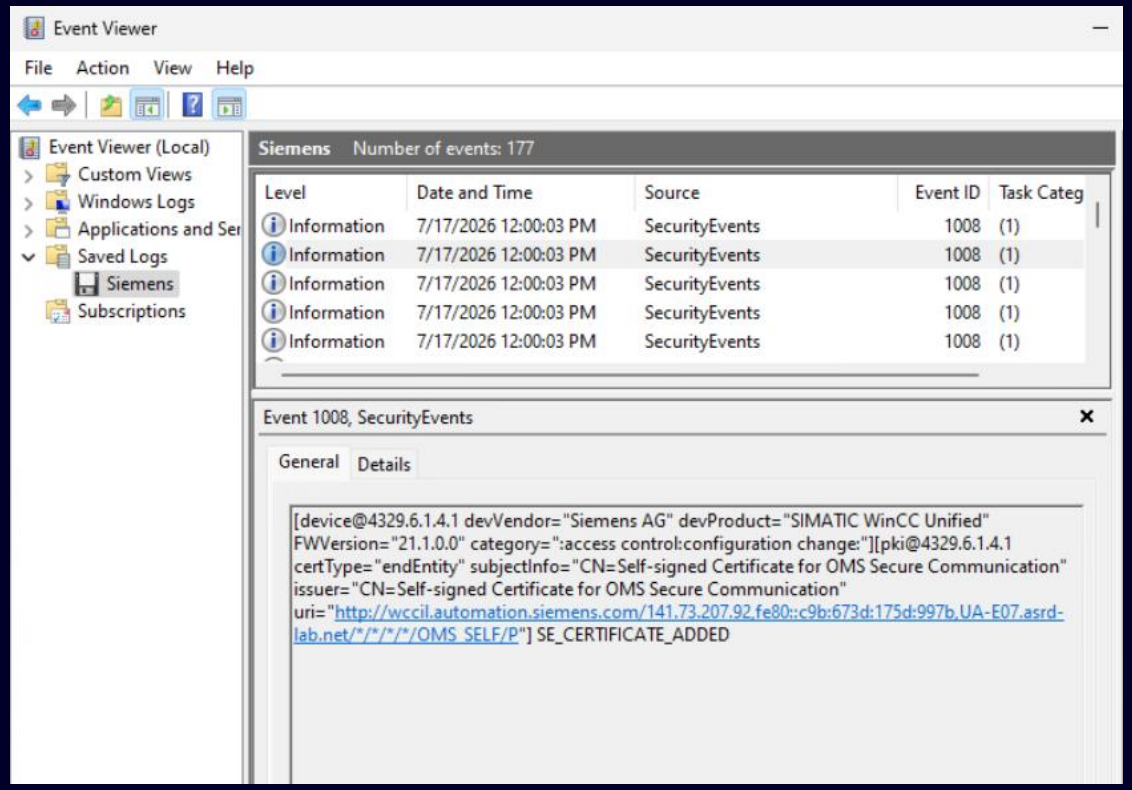
WinCC Unified V21.1 – Security
Security events for certificate handling

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



Windows event viewer

Relevant certificate actions are stored in a security log to fulfill the CRA compliance

- **Relevant security events**
  - Certificate issued
  - Certificate added or removed
  - Certificate expired or nearing expiration
  - CRL updated on the device

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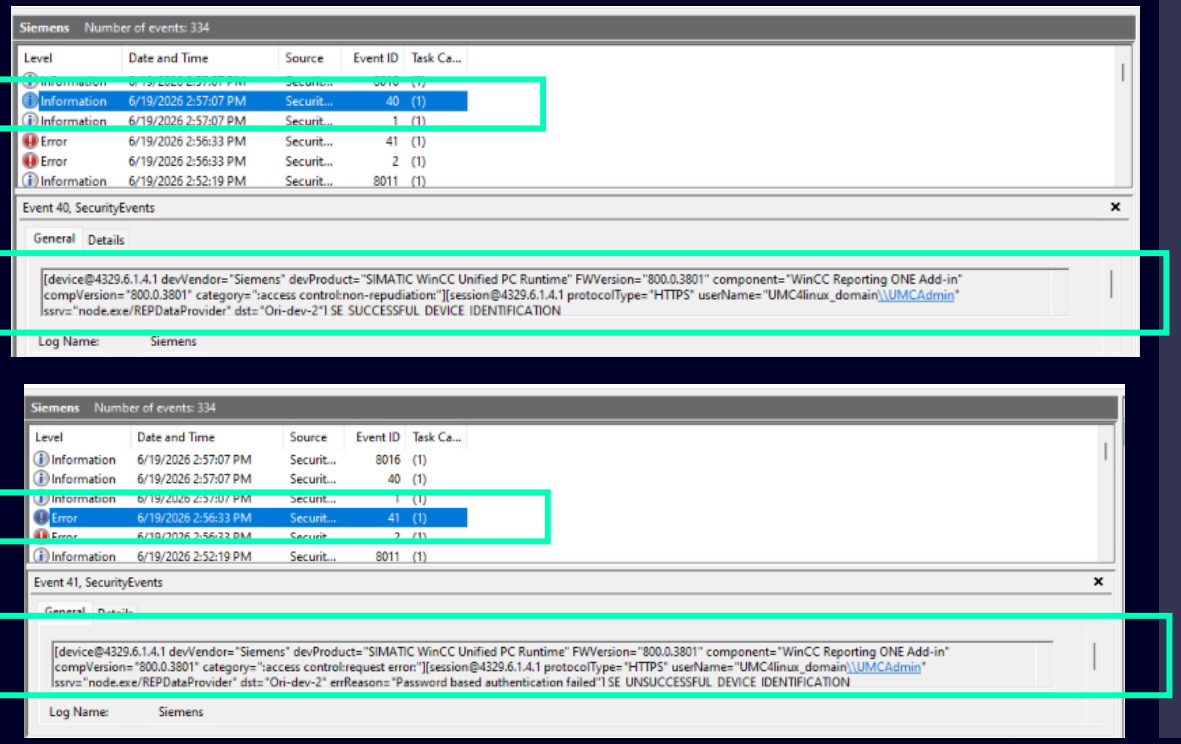
WinCC Unified V21.1 – Security
See Security threats before they impact operations

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

Stored in Windows event viewer / Linux System Journal



Customer value

- Increase visibility into security-relevant communication activities
- Detect unauthorized or failed connection attempts earlier
- Accelerate troubleshooting of authentication and connectivity issues
- Improve compliance, audit readiness and cybersecurity monitoring

Feature details

- Automatic logging of successful and unsuccessful secure device connections
- Monitoring of both inbound and outbound communication channels
- Coverage of OPC UA, Web UI, Reporting, GraphQL and additional interfaces
- Security events stored in standard Windows and Linux system logs for easy integration with existing monitoring tools

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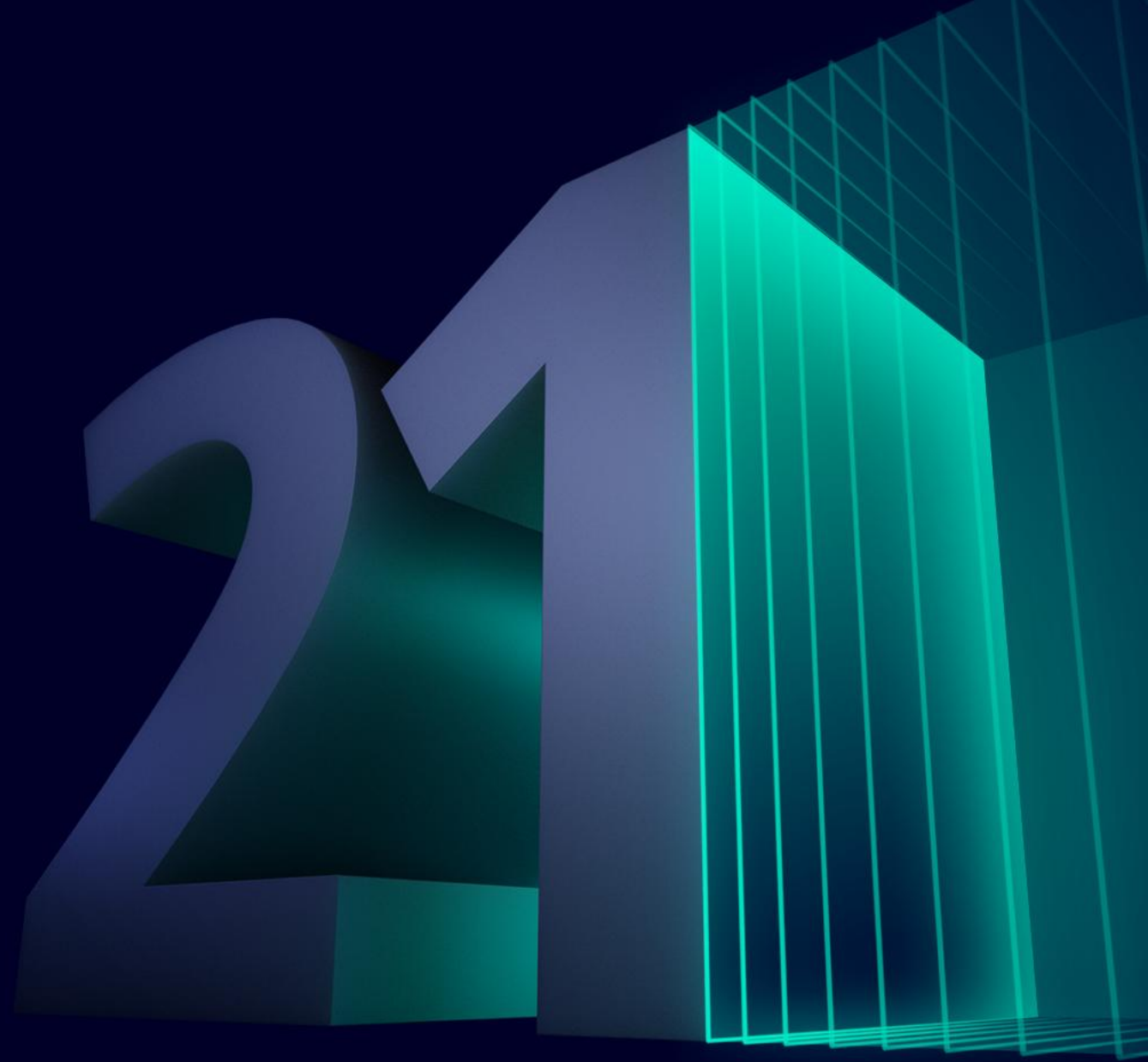
Basic Options



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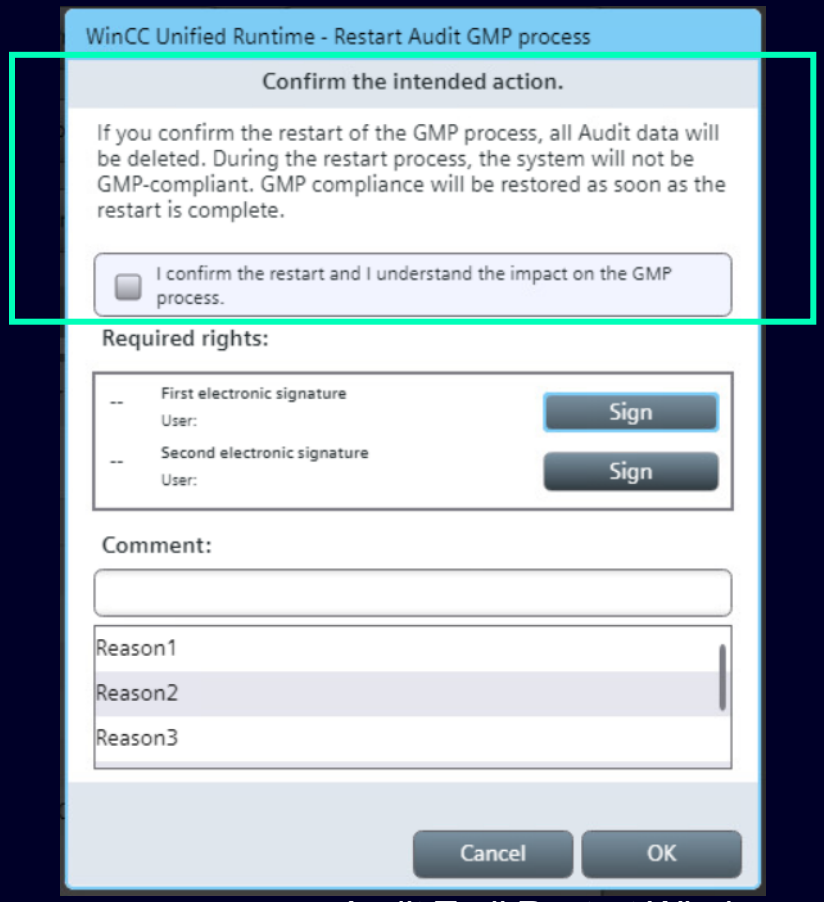
WinCC Unified V21.1 – Audit
Restart GMP Audit Trails with Full Control and Accountability at Runtime

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



Audit Trail Restart Window

Customer value

- Secure removal of existing audit trail data when required, including tracking in audit trail
- Restart GMP Audit trails securely with low operational effort

Feature details

- Controlled restart of the GMP audit process during Runtime
- Protected by additional confirmations, permissions and approvals
- Intended for scenarios such as revalidation, retention period expiration or storage optimization

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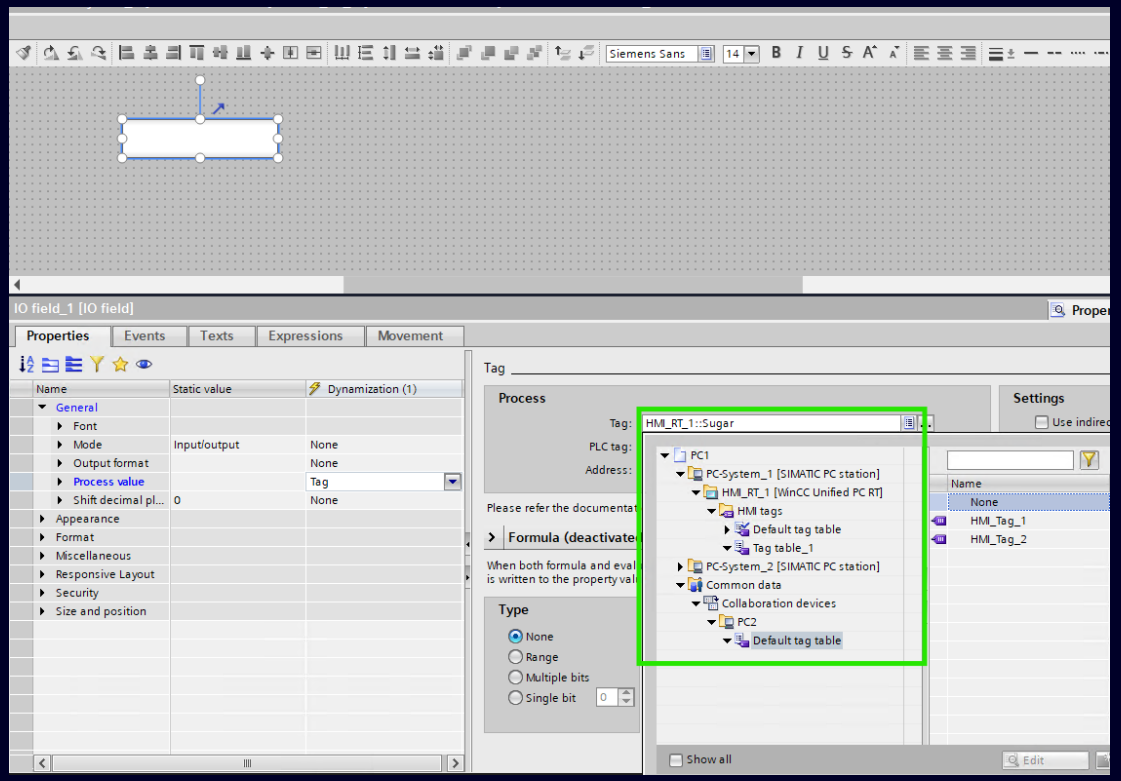
WinCC Unified V21.1 – Collaboration
Tag collaboration

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



Tag Picker to select remote tag from other device (in the configuration window of an IO field)

Share online tags in distributed configurations

- Exchange HMI tag data between multiple HMI stations in distributed systems
- Users will be able to share remote tags in addition to screens & alarms between configured devices
- Single Source of information: tags & screens in one view
- No difference in tag handling: Remote tags can be used for visualization, triggering scripts, dynamization, events

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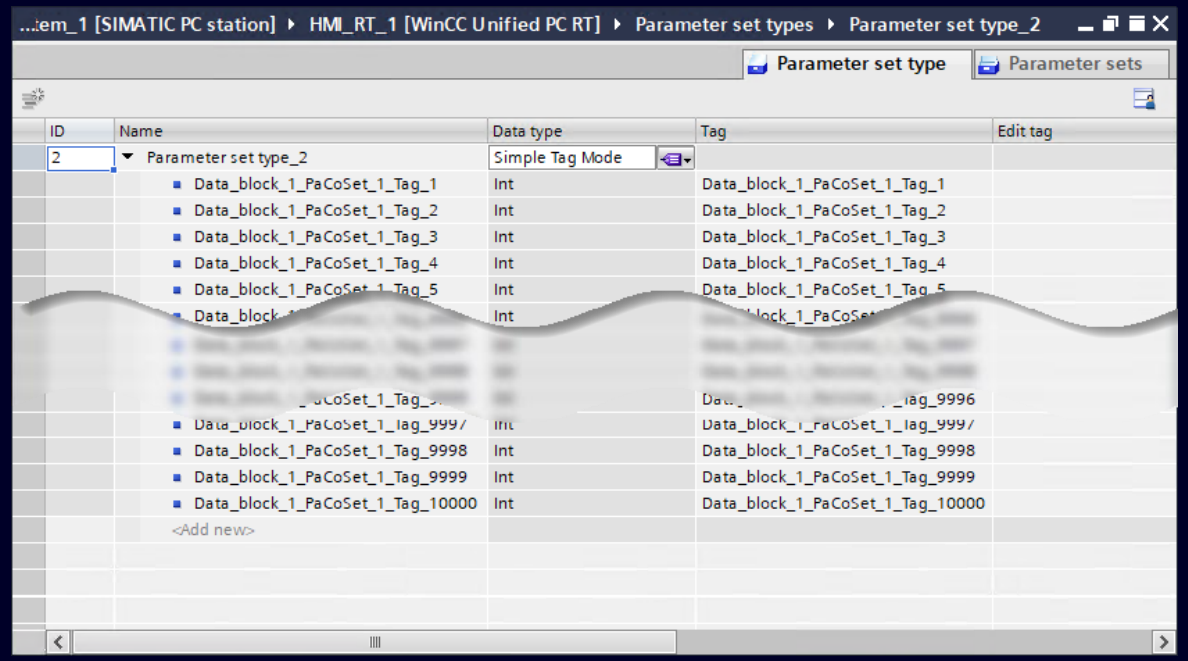
WinCC Unified V21.1 – Parameter Control
Increased number of supported Parameter Set Type elements

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓



Parameter Set Type with up to 10.000 Elements

Parameter Set Types support 10.000 elements, enabling larger structures to be mapped

- **Extended data structures:** The increased element count of 10.000 raised from the previous limitation of 4.000
- This enables more complex data structures to be mapped in Parameter Set Types without the need to restructure the types.

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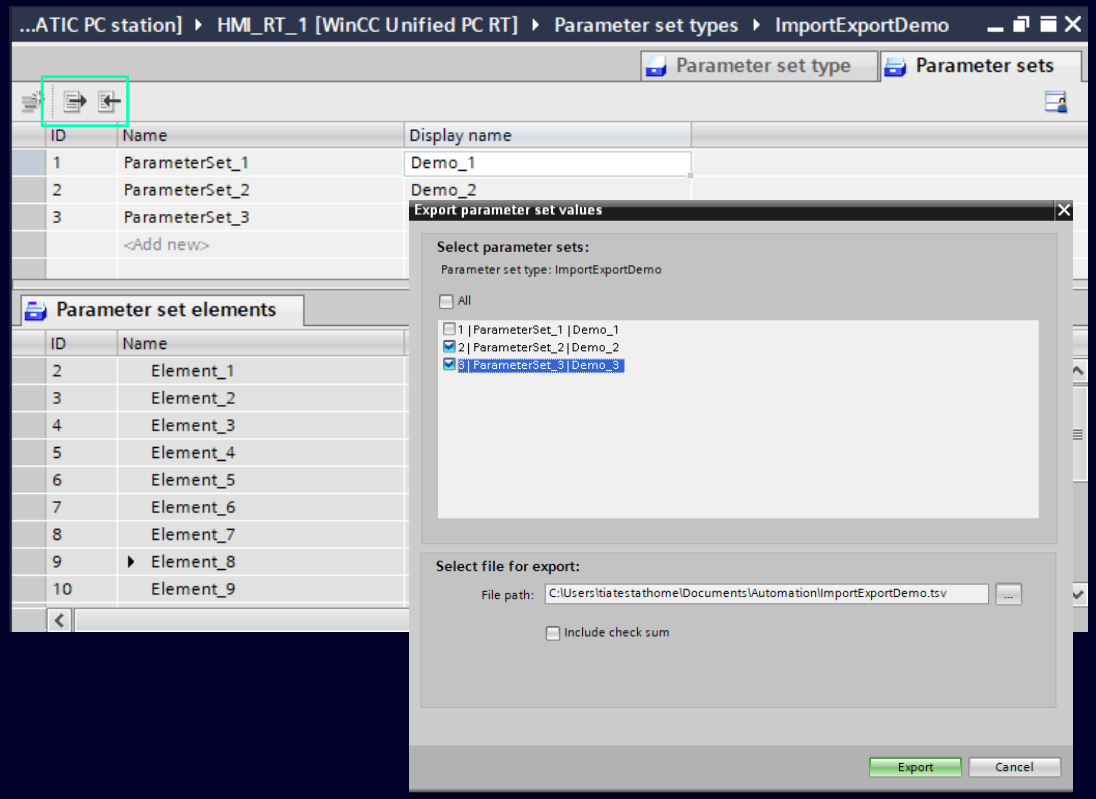
WinCC Unified V21.1 – Parameter Control
Parameter Set Import & Export to simplify mass data handling

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓



Export Dialogue to select parameter sets to be exported from the editor

Import Parameter Sets into TIA Portal,
Export Parameter Sets from TIA Portal for external processing

- Support bulk data exchange between engineering and runtime stations
- Optional checksum validation for data integrity
- Supports any subset of parameter sets, or all of them
- Simple (mass) edit possibility of parameter sets in 3rd party editors (e.g. Excel) and import it back to TIA Portal

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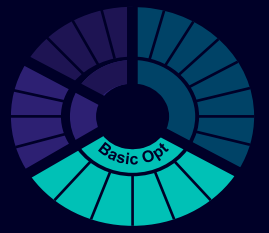
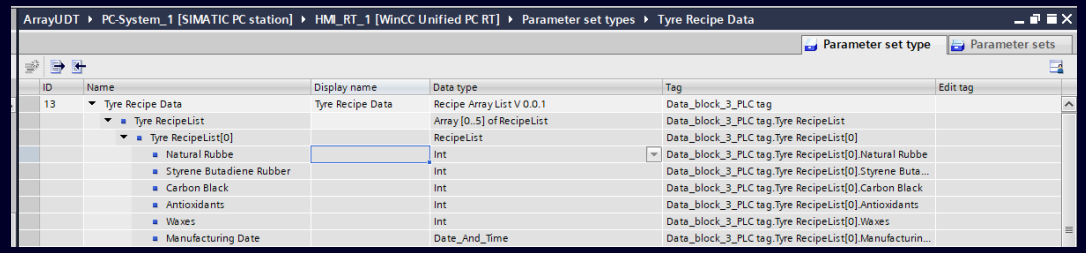
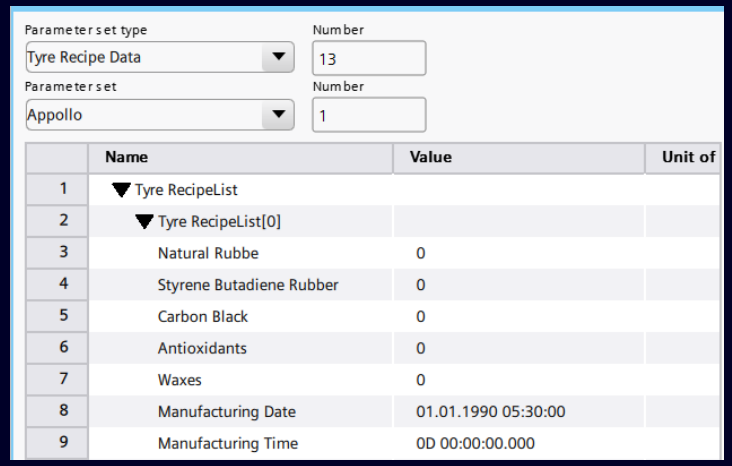
WinCC Unified V21.1 – Parameter Control
Support of complex data structures



Unified Basic	Unified Comfort	Unified Edge RT	Unified PC RT
✓	✓	✓	✓



Structure in Engineering



Structure in Runtime

Customer Value:

- Represent complex machine and recipe structures more naturally
- Consistency between PLC and HMI data structures
- Faster engineering and easier mass data handling

Feature Details:

- Support for PLC-based Array-of-UDT structures
- Additional to the already supported single level UDT, UDTinUDT and Array of simpleDatatype
- Fully compatible with existing Parameter Control engineering and runtime functionality

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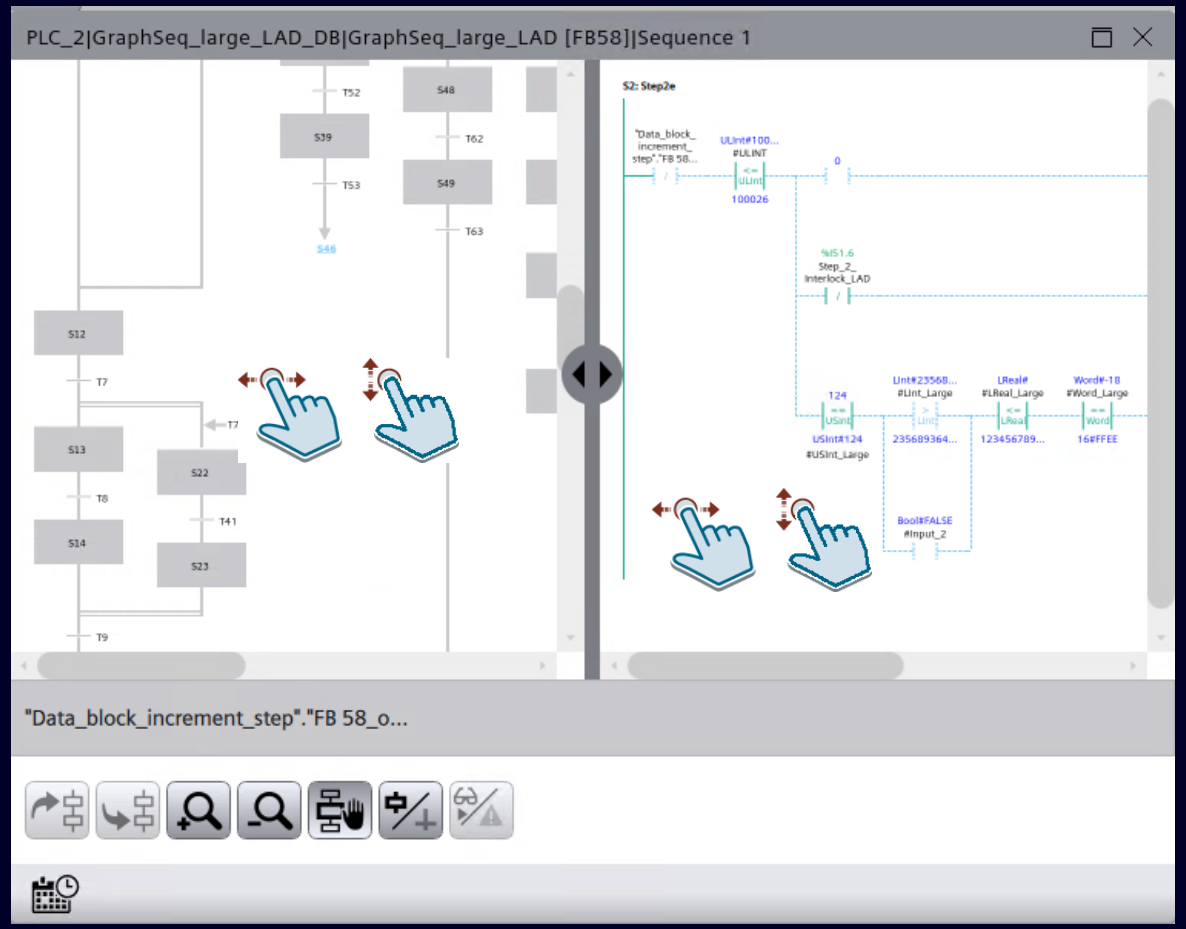
WinCC Unified V21.1 – ProDiag
Swiping Gesture in PLC Code Viewer Control

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



PLC Code Viewer Control

Easily navigate through extensive S7 Graph and ProDiag networks using swipe gestures

- **Enhanced Usability and Operability**
  - Fast or slow swipe gestures for horizontal, vertical, and diagonal navigation
  - Momentum scrolling continues after the swipe with gradual deceleration
  - Scrolling stops immediately when touching the screen
  - No additional engineering settings required

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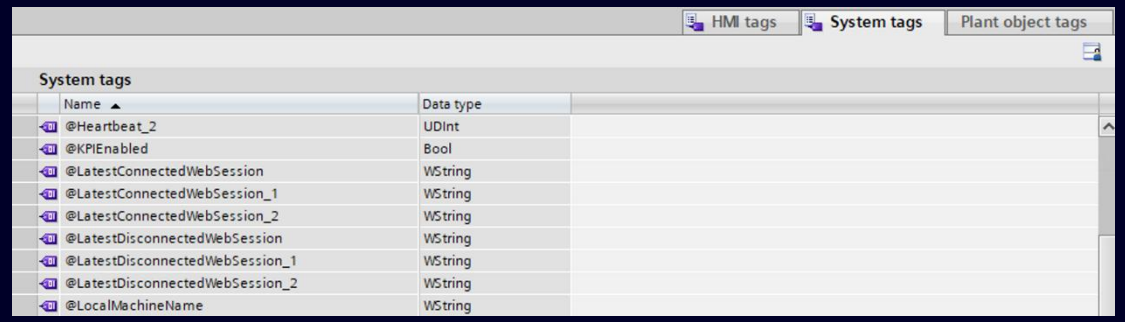
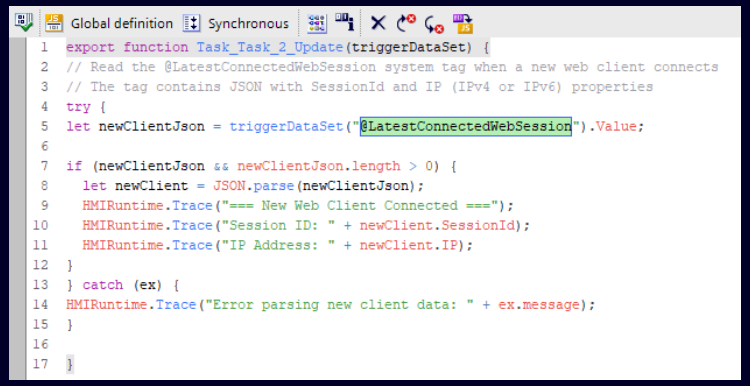
WinCC Unified V21.1 – Clients
Connection Overview

Unified Basic	Unified Comfort	Unified Edge RT	Unified PC RT
✓	✓	✓	✓



New System tags





Read System tags via Code Snippet to get detailed information

React on new or disconnected web clients or get a list of all connected web clients with System tags

- **New System tags with Client Information`s:**
  - **@LatestConnectedWebSession** → contains all connected Clients Information
  - **@LatestDisconnectedWebSession** → contains last disconnected Client Information
- Use tag triggers to create custom actions to react on connected web client changes
- Easy access to web client information with JavaScript code snippets
- Works in Scheduler and in Screens or Faceplates

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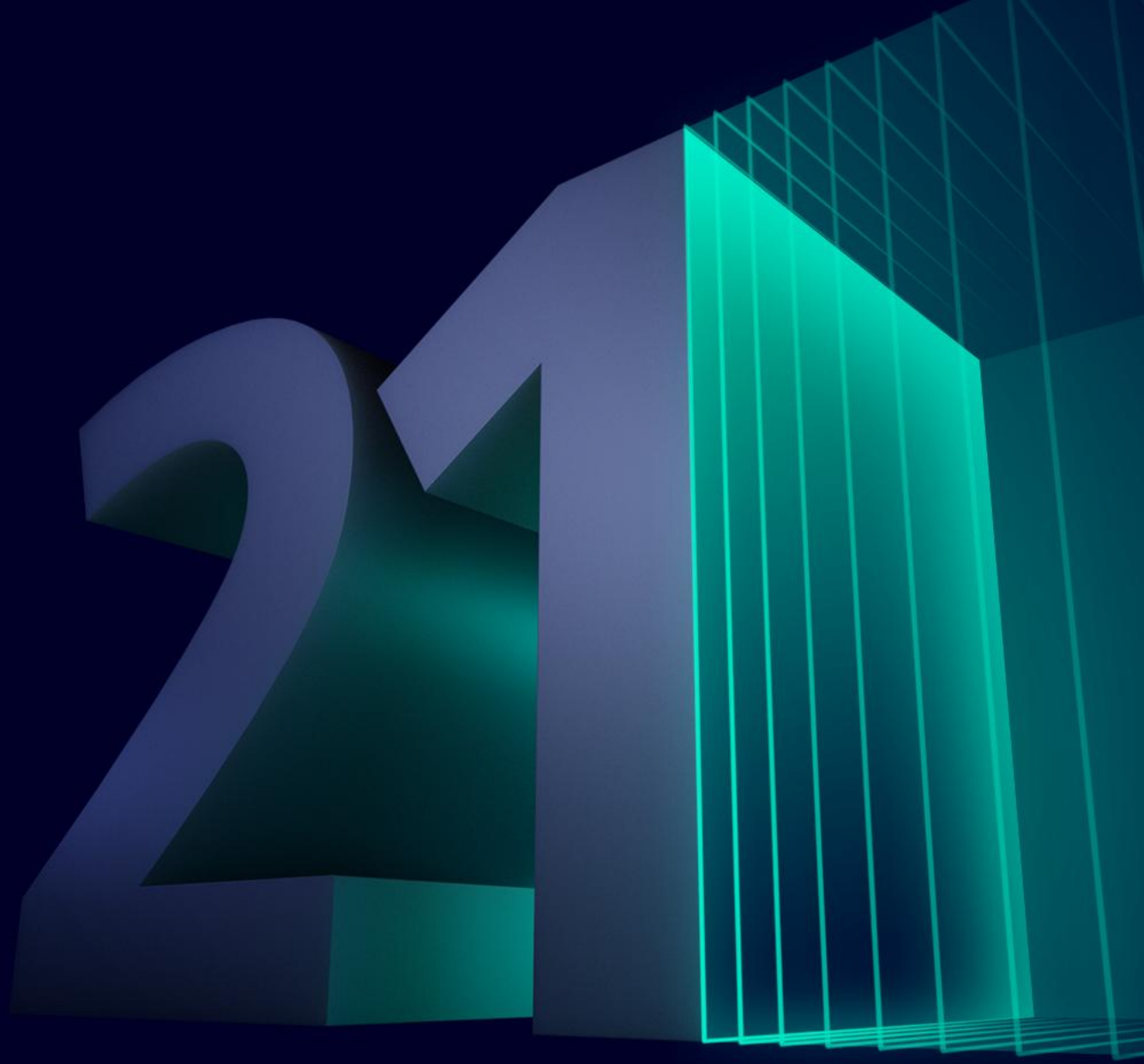

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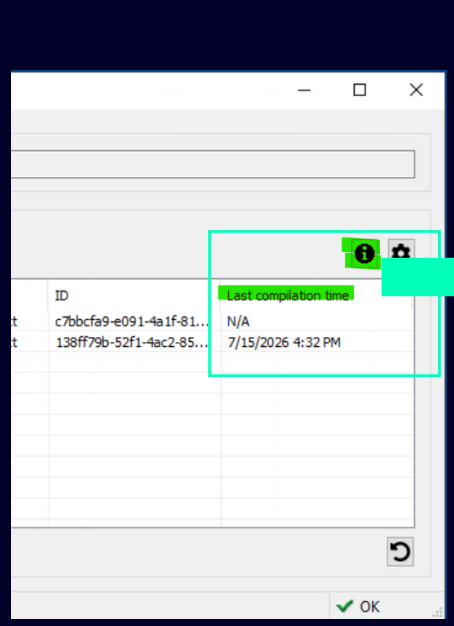
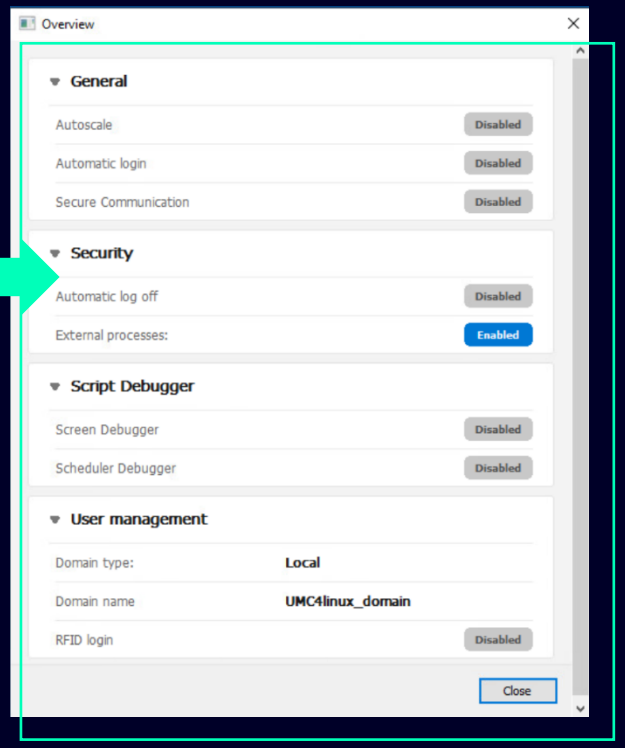
WinCC Unified V21.1 – Settings for Runtime Station
WinCC Unified Runtime Manager

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



Unified Runtime Manager



New Runtime Setting Overview

Gain a quick overview into the runtime settings of the current station.

- Central overview of all relevant Runtime settings in a single page
- Display of latest compile/download information
- Fast verification of deployed Runtime configuration
- Quickly identify configuration mismatches and missing downloads

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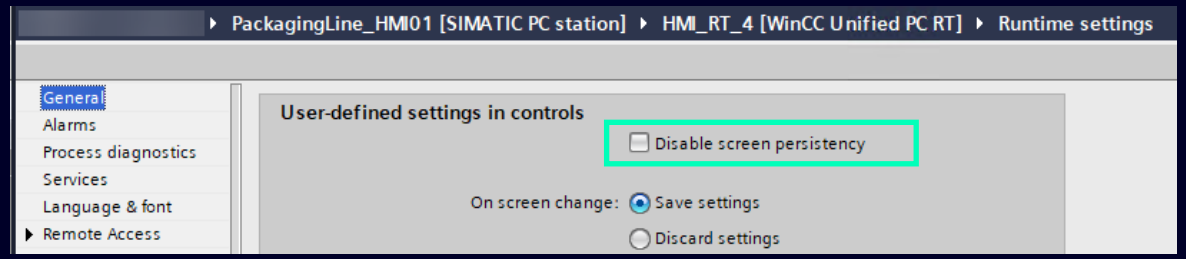
WinCC Unified V21.1 – WinCC Unified PC Runtime
Personalized HMI – Disable screen persistency

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



Disable Screen Persistency in Engineering.

Screen Persistency Deactivation via Engineering

- Current behavior in WinCC Unified Runtime: settings that are changed for Controls e.g., Alarm Control are persisted for each operator. This means an alarm filter made by operator A would be saved for operator A, and operator B has got his own settings or the default of the alarm control.
- Through this new setting in engineering, this persistency can be disabled for the project.
- With **Disabled screen persistency**, any changes in the controls on the current screen would not be persisted by system and the initial settings of the control are used for all operators when opening a screen

SIEMENS

WinCC Unified V21.1 – Security
Integrity & Authenticity Protection Tool for your PC Runtime

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



Integrity & Authenticity Protection Tool

Quickly verify that your WinCC Unified PC Runtime has not been modified, corrupted, or compromised

➢ Customer Value

- Reduce cybersecurity risks
- Simplify compliance and validation processes
- Increase confidence in deployed systems

➢ Feature Details

- Verify integrity and authenticity of installed runtime components via the Integrity & Authenticity tool
- Detect unauthorized modifications or tampering

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WinCC Unified V21.1 – Logging
Database Storage

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



- **Long-Term Logging**
  Enable reliable long-term storage of historical Runtime and process data in a dedicated SQL database.
  - Support for Microsoft SQL Server 2025
  - Enhanced compatibility, security, and future-proof operation
- **Software Update Service (SUS)**
  - New SUS contract introduced with V21.1
  - Stay up to date with continuous access to the latest Database Storage innovations.

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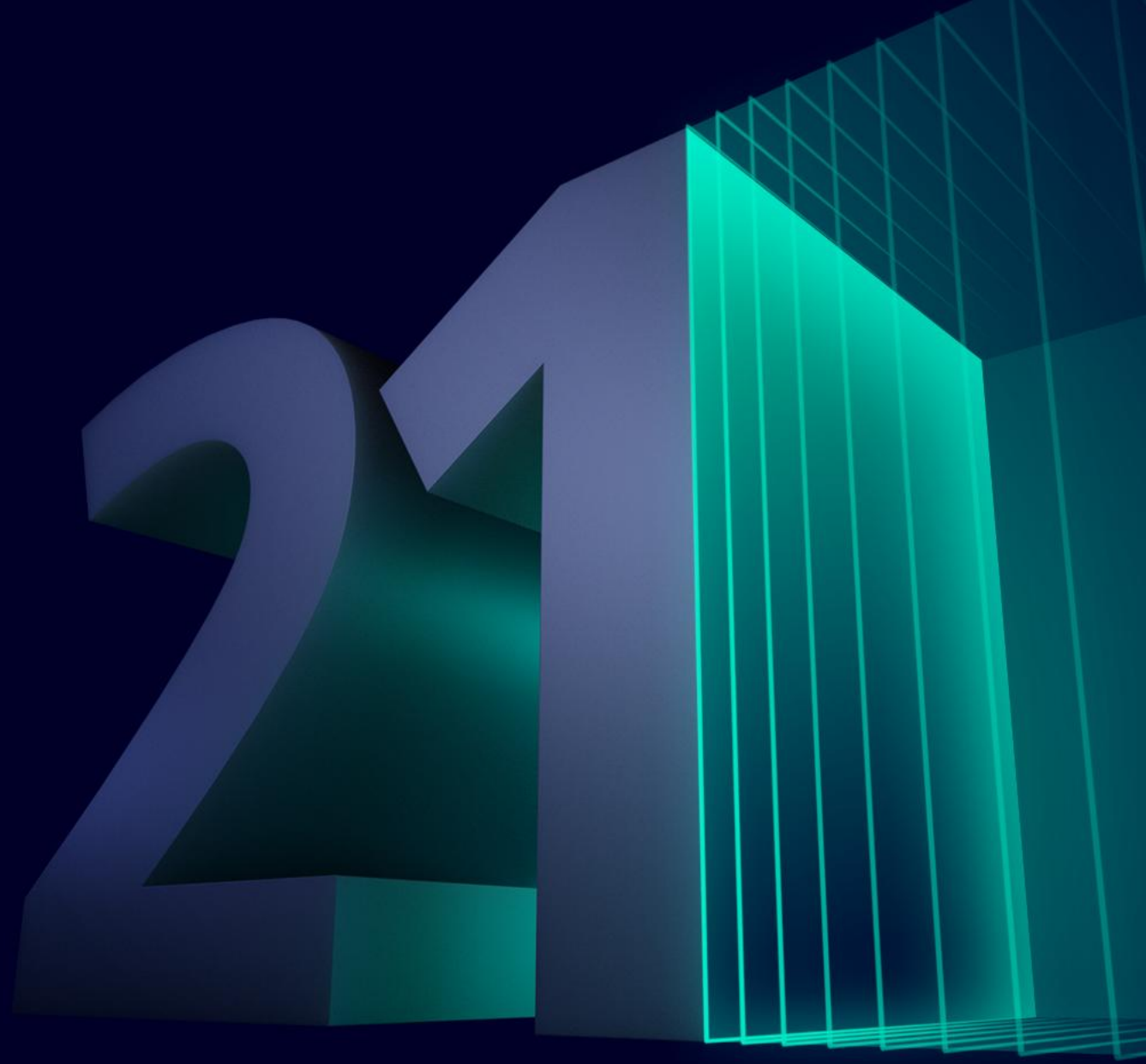
SIMATIC
WinCC Unified

Engineering



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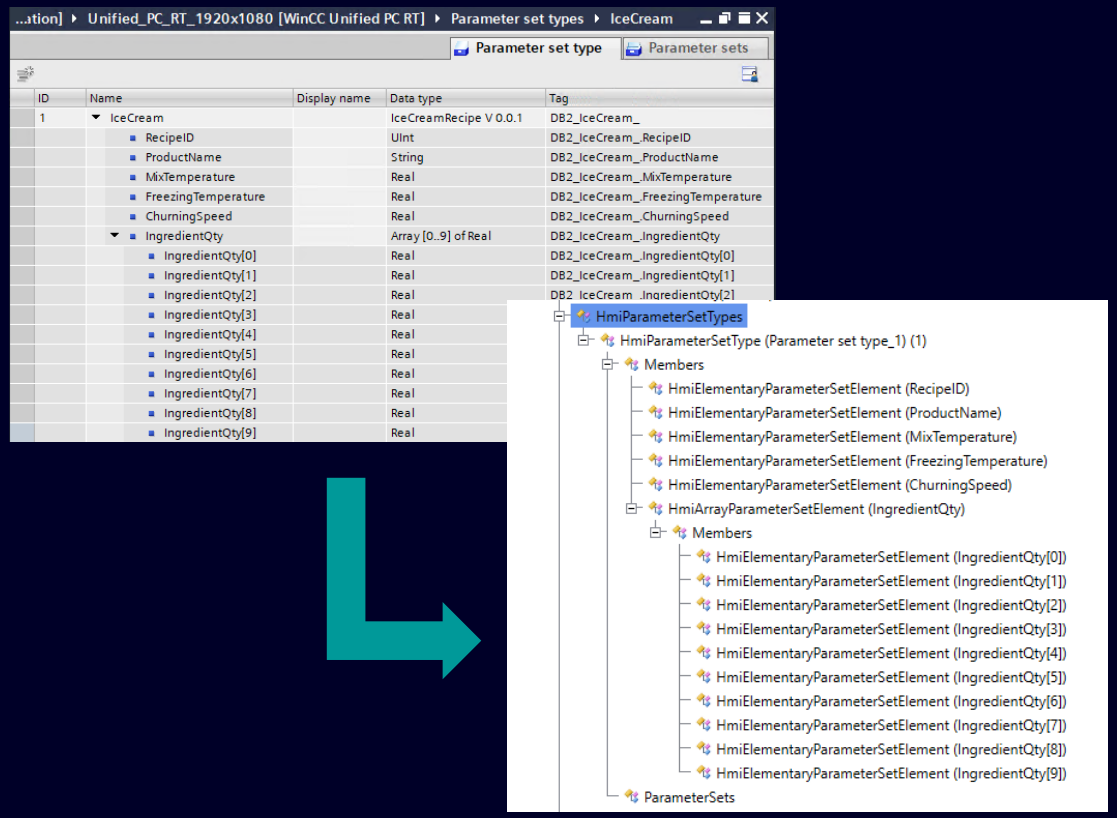
WinCC Unified V21.1 – Automated Engineering | Parameter Control
Automate Parameter Set Type engineering with TIA Portal Openness API

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓



TIA Portal Openness Explorer

Reduce manual effort and create consistent, repeatable engineering workflows.

- **Automate Parameter Set Type engineering**
  - Create and manage Parameter Set Types and Parameter Sets using TIA Portal Openness API
  - Find, read, modify, and delete existing Parameter Set Type configurations
  - Reuse configurations across devices and via project or global libraries

Note:
- Supports all device versions available in TIA Portal V21.1

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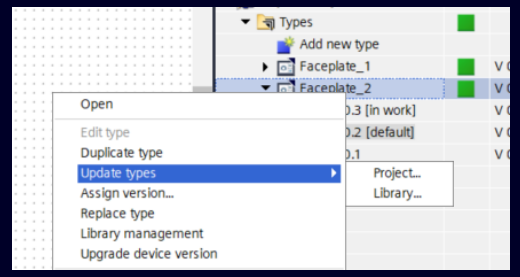
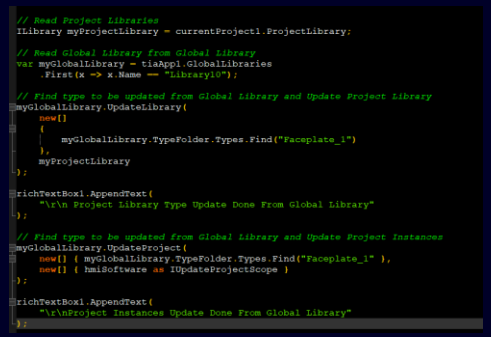
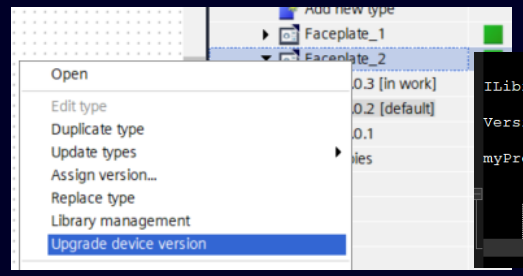
WinCC Unified V21.1 – Automated Engineering
Openness API based Library Type Update/Upgrade/Instantiation

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓





```
// Read Project Libraries
ILibrary myProjectLibrary = currentProject1.ProjectLibrary;

// Read Global Library from Global Library
var myGlobalLibrary = tiaApp1.GlobalLibraries
    .First(x => x.Name == "Library10");

// Find type to be updated from Global Library and Update Project Library
myGlobalLibrary.UpdateLibrary(
    new[]
    {
        myGlobalLibrary.TypeFolder.Types.Find("Faceplate_1")
    },
    myProjectLibrary
);

richTextBox1.AppendText(
    "\r\n Project Library Type Update Done From Global Library"
);

// Find type to be updated from Global Library and Update Project Instances
myGlobalLibrary.UpdateProject(
    new[] { myGlobalLibrary.TypeFolder.Types.Find("Faceplate_1" ),
    new[] { hmiSoftware as IUpdateProjectScope }
);

richTextBox1.AppendText(
    "\r\nProject Instances Update Done From Global Library"
);
```




```
ILibrary myProjectLibrary = currentProject1.ProjectLibrary;

Version faceplateVersion_upgradeTo = new Version("21.0.0.0");

myProjectLibrary.TypeFolder.Types
    .Find("Faceplate_1")
    .UpgradeDeviceVersion(
        faceplateVersion_upgradeTo,
        UpdateInstanceOptions.UpdateInstances
    );
```

Manual way | API Code

Automated Library Type Handling via API

- Updating Library Types between Device and Project/Global Library.
- Upgrading Device Version for Supported Library Types

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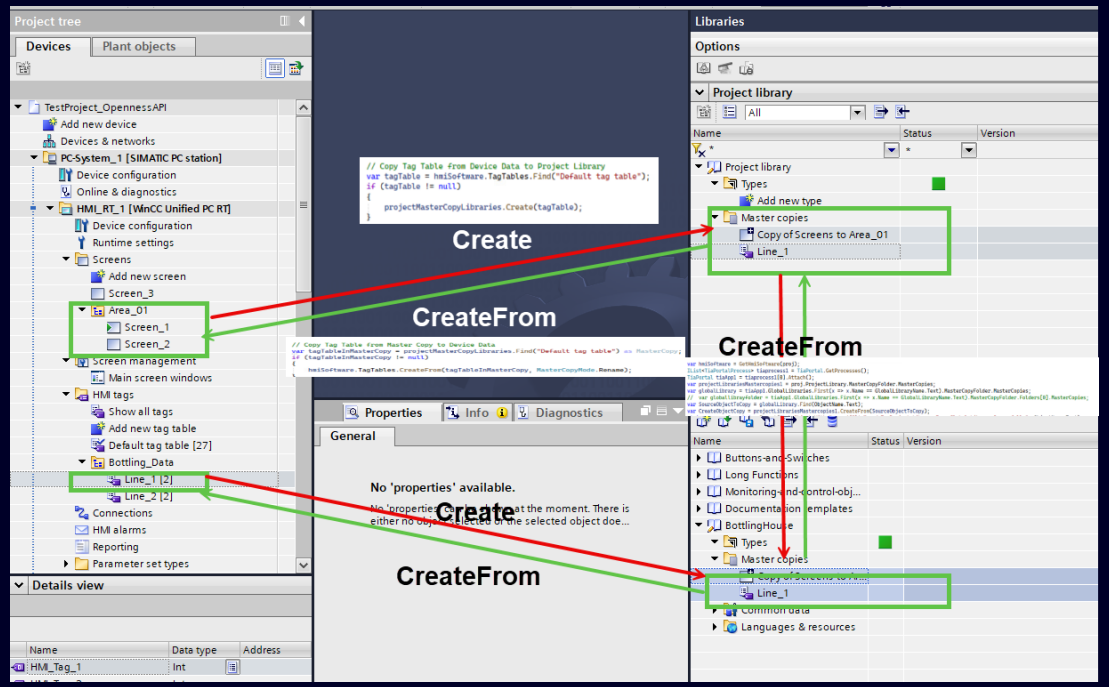
WinCC Unified V21.1 – Automated Engineering
Openness API based Master Copy Handling between Device and Library

Unified Basic	Unified Comfort	Unified Edge RT	Unified PC RT



Automated Library Master Copy Handling

- Master Copies can be created of WinCC Unified Objects from Device to Project/Global Library using Openness API
- Device Objects can be created from Master Copies in Project /Global Library using Openness API
- Master Copies can be moved between Project and Global Library using Openness API
- Supported Objects – Screens, HMI Tag, Parameter set type, Script module, Script function, Scheduled task, Project Graphic, Text List , Graphic List.

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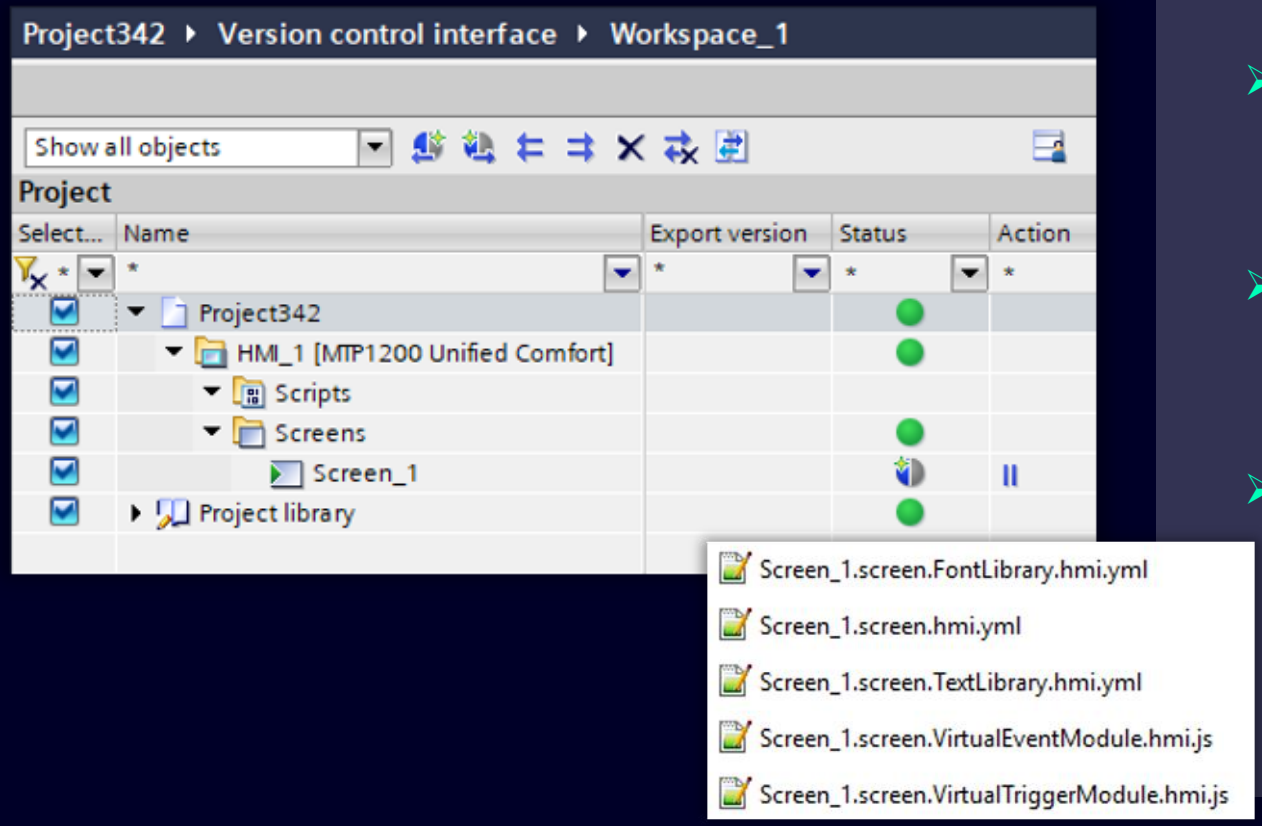
WinCC Unified V21.1 – Automated Engineering
Version Control Interface support for Unified Screens

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓



Version Control Interface support for Screens

- Screens are now supported by Version Control Interface and can be imported and exported by WinCC Unified Openness API Methods.
- Screens can be exported as SIMATIC Source Documents into a file based YAML representation (WinCC ML).
- File based YAML representation (WinCC ML) can be imported from SIMATIC Source Documents, as a newly created screen.

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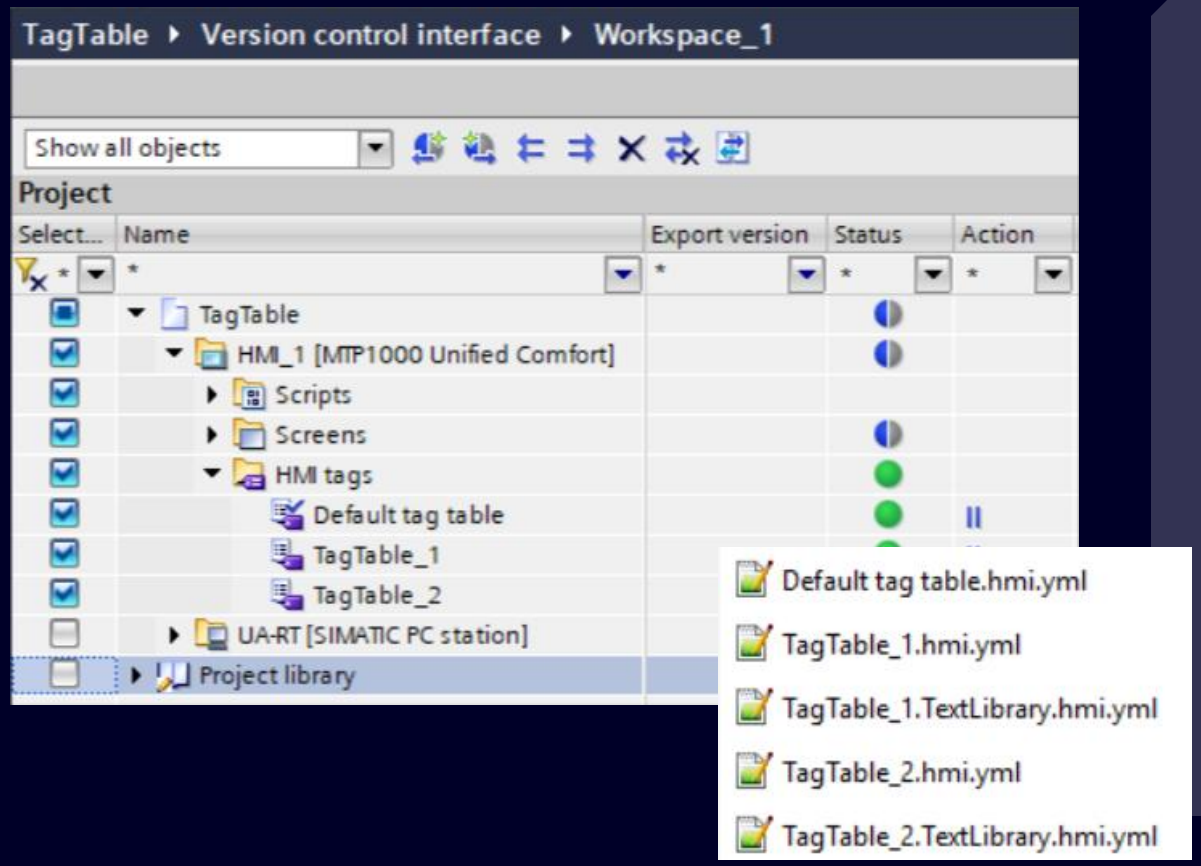
WinCC Unified V21.1 – Automated Engineering
Version Control Interface support for Unified Tag Tables

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓



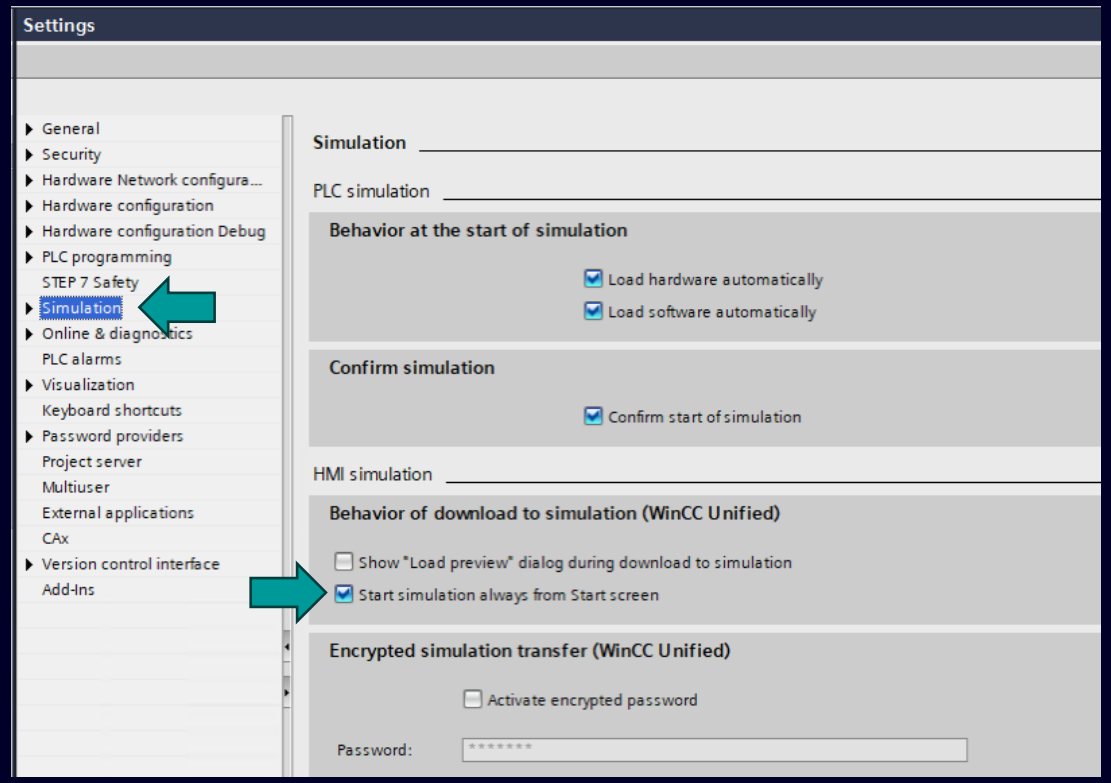
Version Control Interface support for Tag Tables

- Tag Tables are now supported by Version Control Interface and can be imported and exported by WinCC Unified Openness API Methods.
- Tag Tables can be exported as SIMATIC Source Documents into a file based YAML representation (WinCC ML).
- File based YAML representation (WinCC ML) can be imported from SIMATIC Source Documents, as a modified Tag Table.

SIEMENS

WinCC Unified V21.1 – HMI Engineering
Configurable HMI Simulation Start Behavior

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓



Engineering Settings for Simulation

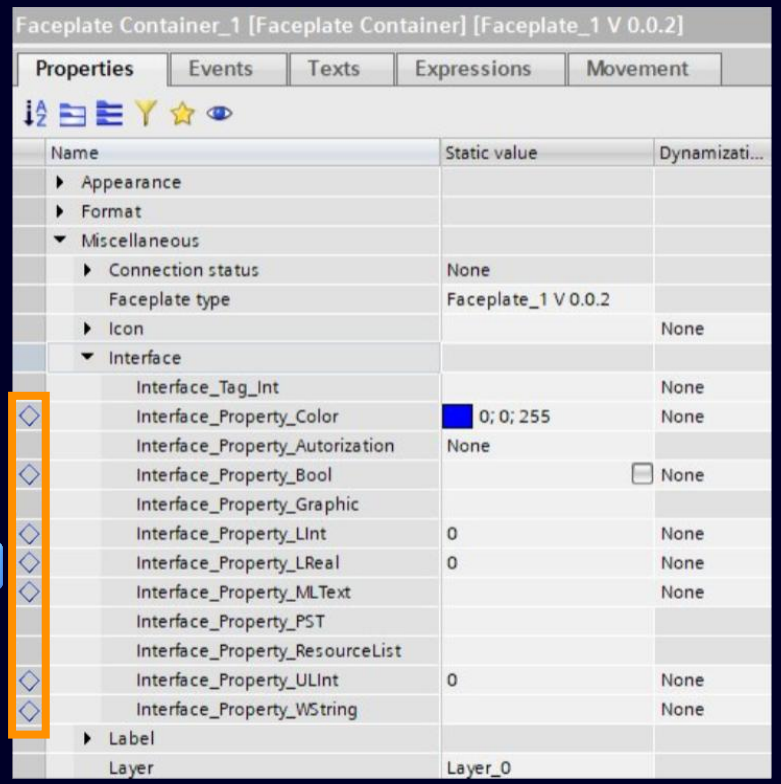
Full control over simulation start behavior via checkbox in TIA Portal

- **Use Case 1:** Simulation always starts from the Start screen, regardless of the active TIA Portal tab
- **Use Case 2:** Users can uncheck the option to launch simulation from the currently active screen

SIEMENS

WinCC Unified V21.1 – Modern User Interface
Identify initial values of interface properties at faceplates

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



Interface Properties of Faceplate instance

Easy identification of properties generated by SiVArc

- **Quickly identify which faceplate instance properties are still at their initial values ◇ and which have been manually modified.**
- **Supported interface properties:**
  - All numeric types
  - Bool
  - WString
  - Multilingual text
  - Color

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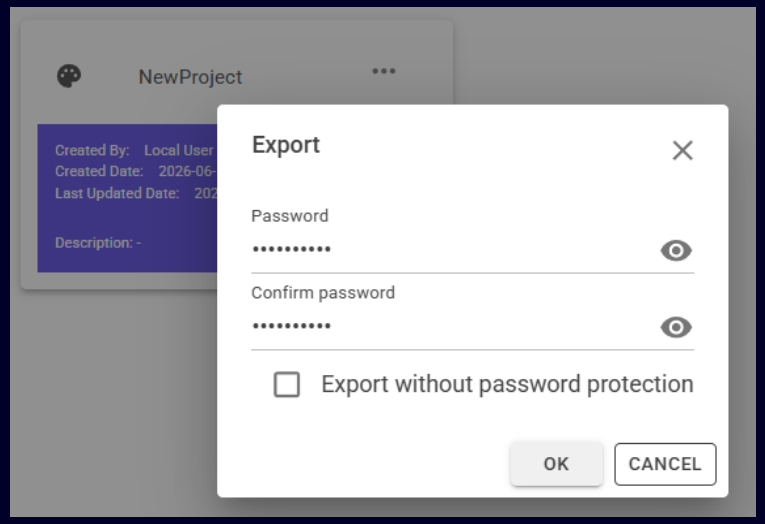
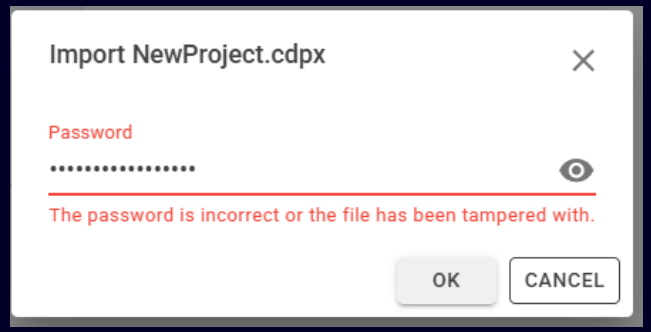
WinCC Unified V21.1 – Corporate Designer
Encryption and password protection for Corporate Designer projects

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓



Setting a password during corporate designer export



Password validation during import

Enhanced Data Security: Projects are always encrypted, with optional password protection to safeguard sensitive brand assets and prevent unauthorized access

- **Flexible Protection Options:** Users can easily choose whether to apply a custom password or rely on default encryption—adapting security to their specific needs.

- **Safe & Controlled Sharing:** Password-protected exports ensure that only intended recipients can import and use Corporate Designer projects, increasing confidence in collaboration.

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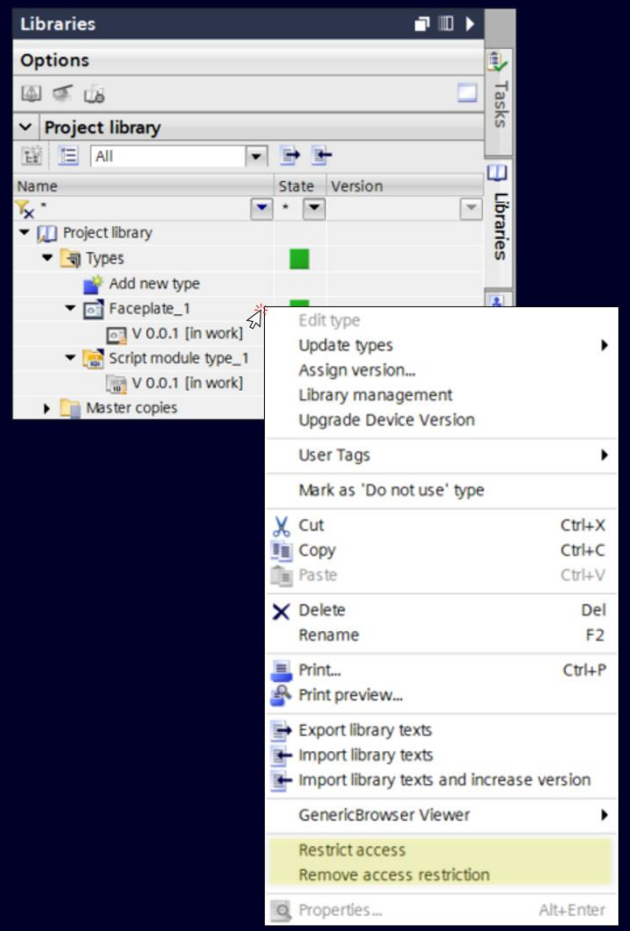
WinCC Unified V21.1 – Libraries
Type access restriction for Unified Faceplates and Script Modules

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓



Activating restricted access via UMC right

OEMs can restrict other project engineers to access library types (Faceplates and Script Modules)

- Project protection and UMAC is required to enable the functionality
- Engineering admins can restrict access to Faceplate types and Script Module types
- Restricted types can only be accessed in TIA Portal with the corresponding function right
- Types can be not shared via global library

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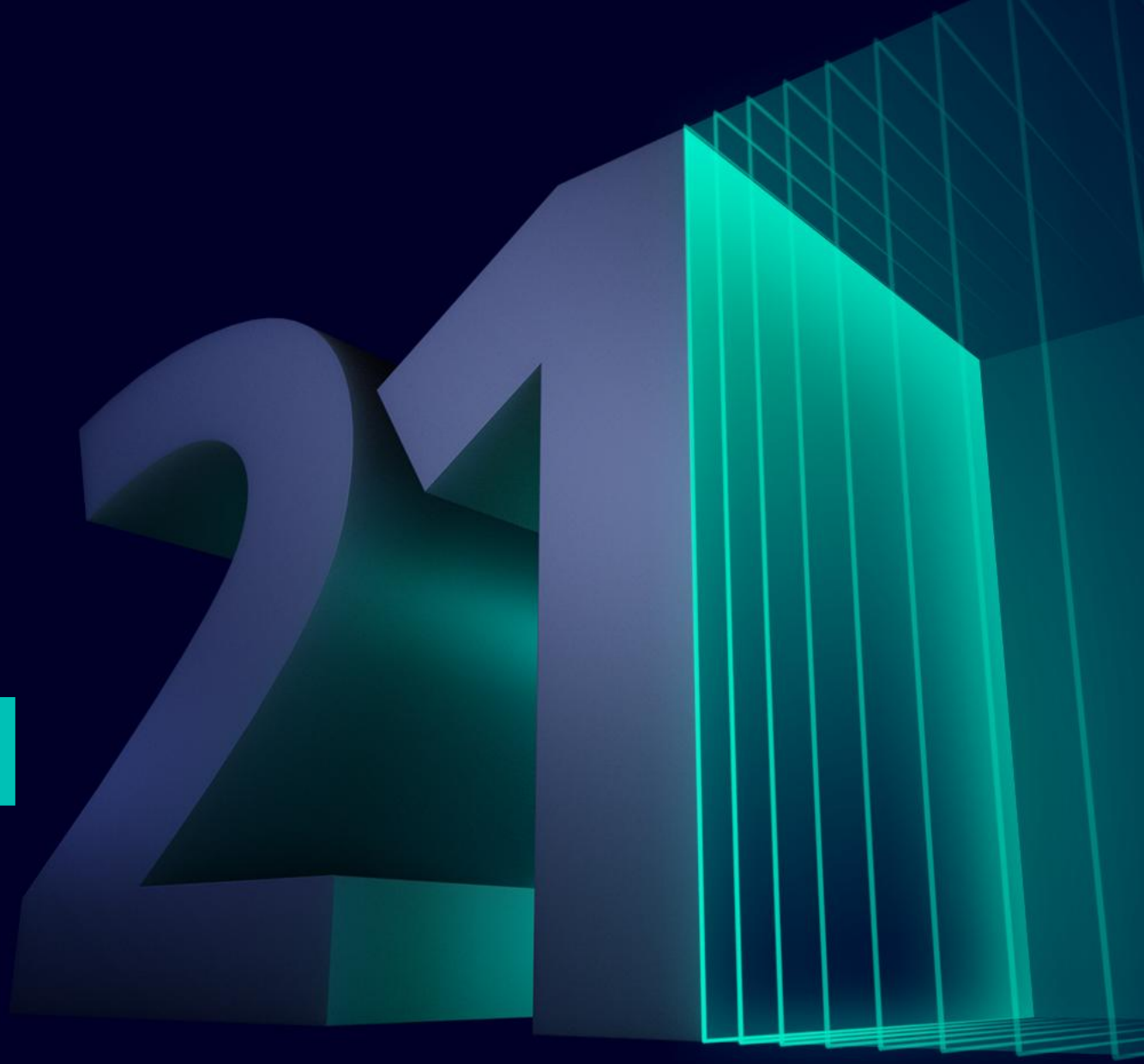
SIMATIC
SiVArc V21.1



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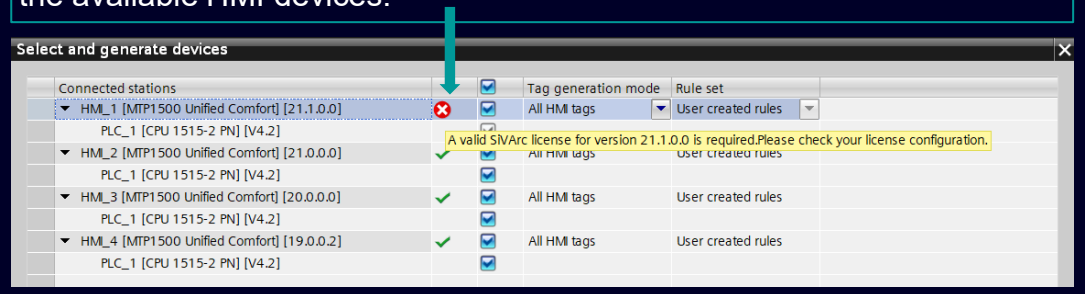
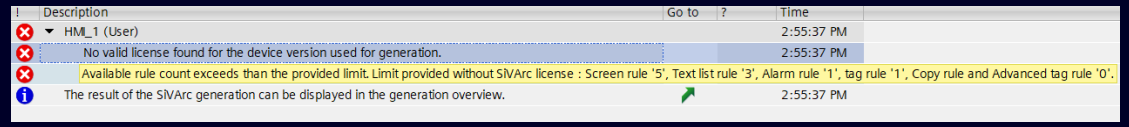
SiVArc V21.1
New license concept

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✓	✓

Generation Dialog:
License availability shown with icons along with tooltip description against the available HMI devices.



SiVArc generation feedback:
Information about the needed license is shown to the user and the limited functionality mode if it is allowed against the rule limits



New license concept with smooth forward functionality.

- New license concept enables the SiVArc (In line with TIA Portal concept) user to install the latest version V21.1 and continue to generate HMI on their device versions V21.0 with a V21.0 license.

SiVArc Licenses present in the machine	TIAP Installation	HMI device version the Project	Features granted to the user
No licenses	V21.1	V21.0 / V21.1	Limited Mode V21.1 will work
V21	V21.1	V21	Only the generation of <= V21.0 Devices will work
V21	V21.1	V21.1	Allow Limited functionality mode for V21.1 Devices
V21.1	V21.1	V21.0 / V21.1	The generation of all Devices <= V21.1 will work

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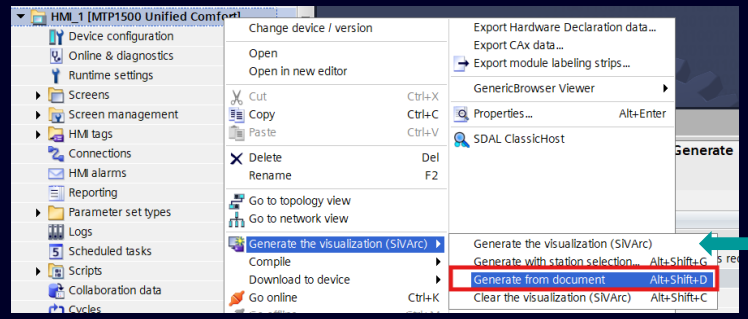
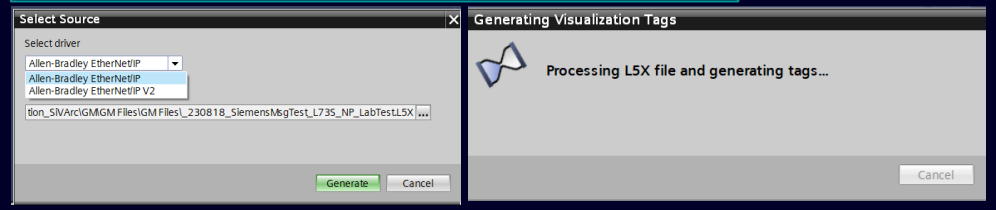
SiVArc V21.1
SiVArc Connect – Generation based on third party PLCs (Allen Bradley)

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✗	✗

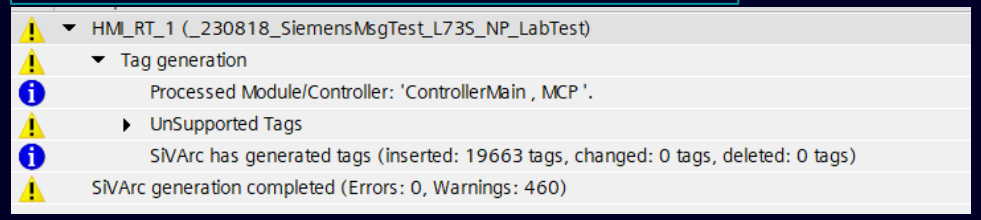


Invoke SiVArc connect via new Generation menu option

Browse and select .L5X files



SiVArc Connect generation results for HMI Tags.



User shall be able to generate HMI tags on unified devices for Allen Bradley controllers.

- SiVArc now supports generating HMI tags for Unified HMIs from Allen Bradley controller source files (.L5X).
- This enables seamless HMI panel generation, helping engineers save engineering effort and streamline project development own comment.

Benefits for users:

- This enables user to enhance the automation level via automated generation of HMI tags for Unified HMIs using .L5X as source (Export file from LogixControl software)

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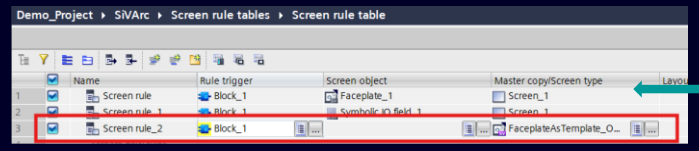
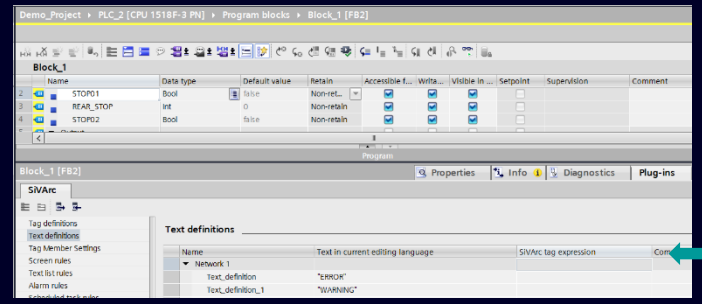
SiVArc V21.1
Generation based on S7 Safety blocks

Unified System ✓ | WinCC Basic/Comfort/Advanced ✓ | WinCC Professional ✓

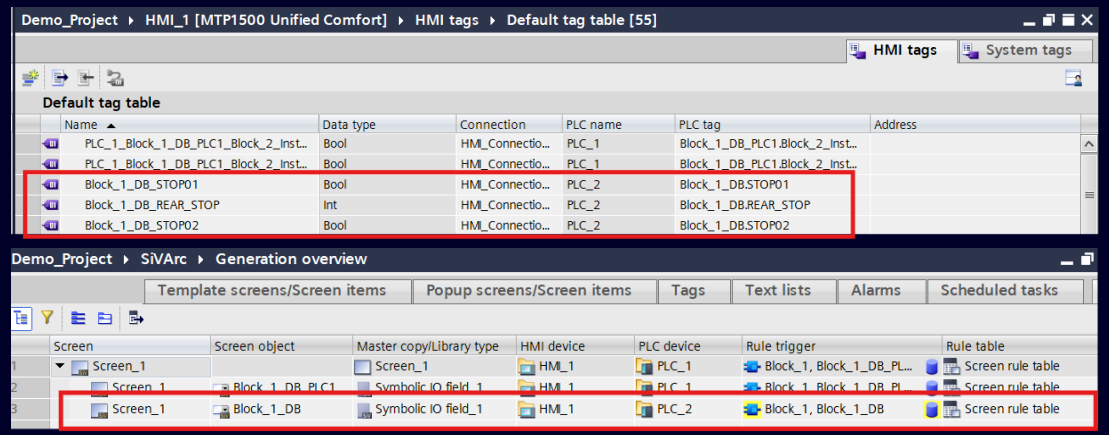


SiVArc rule configuration with S7 blocks as trigger



SiVArc configuration in IECPL editors for S7 blocks

Generation Results



User can now generate HMI Objects (Screens, screen objects, faceplates etc.) & HMI tags based on S7 safety blocks, that are called in PLC call hierarchy.

- SiVArc now supports generating HMI tags & HMI Objects for Unified HMIs from S7 blocks as source.
- The feedback and the generation results shall be displayed to users.
- User can use Expression Resolver tool to prepare & trouble-shoot the needed SiVArc expressions.

Benefits for users:

- This enables user to enhance the automation level via automated generation based on S7 blocks.

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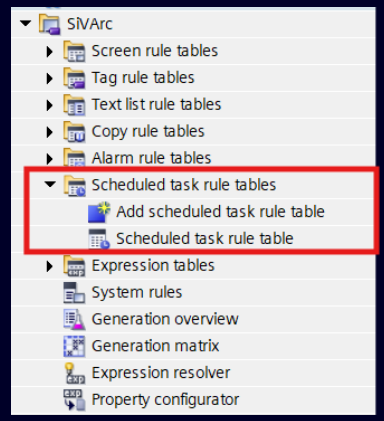
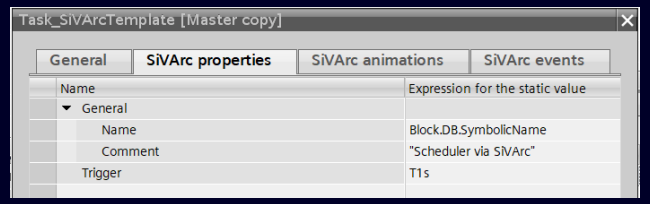
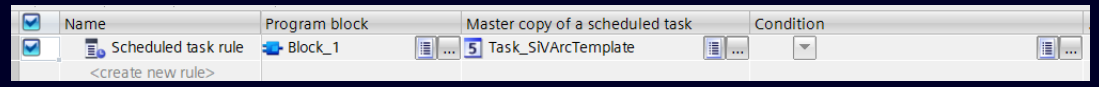
SiVArc V21.1
Generation of scheduled task

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✗	✗

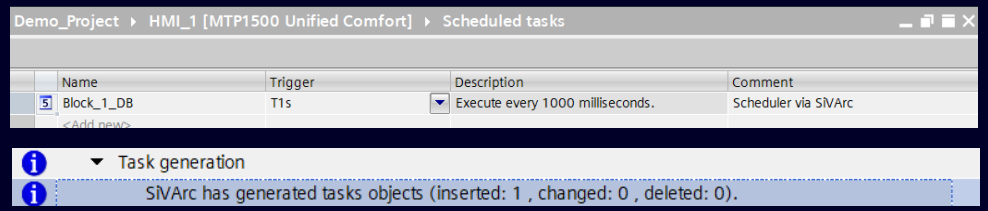
SiVArc configurations: Plug-ins, rule tables, rules







Generation Result & Feedback



User shall be able to generate Schedulers for unified devices via SiVArc.

- SiVArc now supports generating scheduled tasks for Unified HMIs.
- It is possible to define scheduled tasks templates with SiVArc plug-in configuration with SiVArc expressions.
- New rule table & rule support: Scheduled task rule table and Scheduled task rules are possible to define.
- System generates the scheduled tasks based on the configuration from templates & rules defined.

Benefits for users:

- This enables user to enhance the automation level via automated generation of tasks for Unified HMIs.

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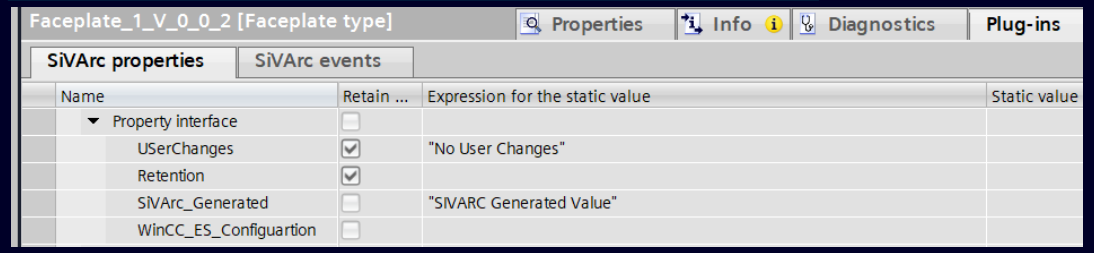
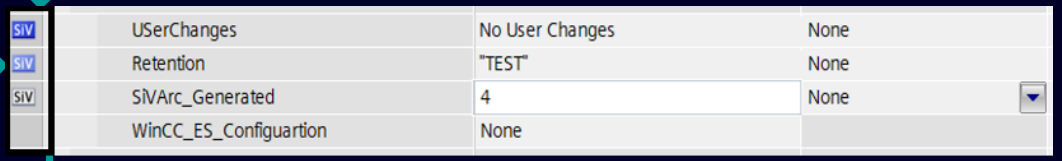
SiVArc V21.1
Visual identification of SiVArc-generated properties for HMI objects

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✗	✗

Faceplate – SiVArc plug-in configuration



This property is generated by SiVArc



The value changed by user, will not be retained.

The user changes are retained for this property

User should be able to visually get the indicators within the WinCC Unified Engineering environment to clearly show the origin of faceplate instance properties.

- The indication highlights which interface property is SiVArc generated.
- The indication highlights the interface property that will be retained when user changes in WinCC ES.
- The indication highlights if the interface property will not be retained in subsequent SiVArc generations.

Benefits for users:

- This enables configuration engineers to quickly verify compliance with contractual agreements without having to sift through a detailed audit trail.

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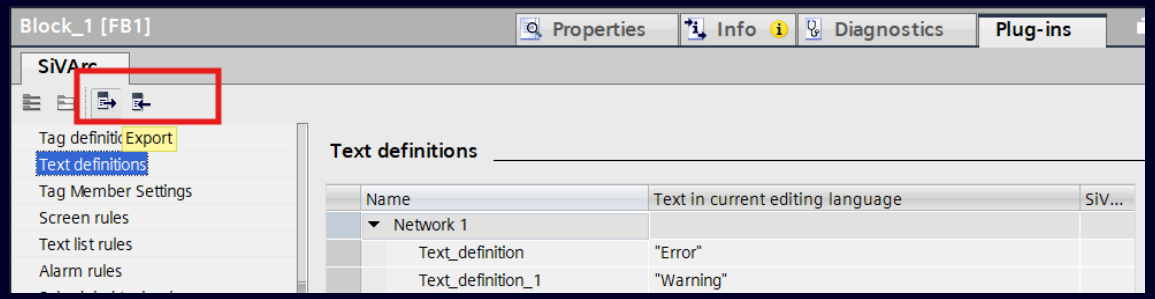
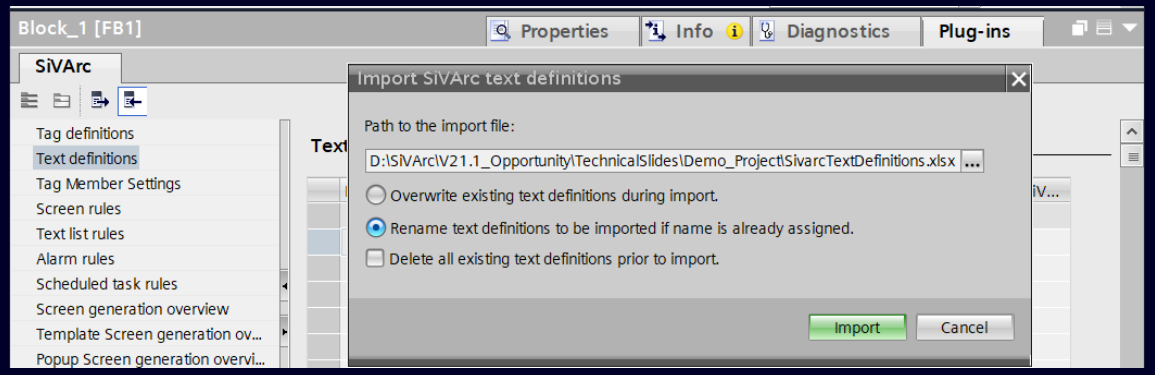
SiVArc V21.1
Export and Import of Text definitions configuration of S7 blocks

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✓	✓

Export/Import feature – New Menu icons for text definitions



Import of excel files to make bulk configuration at once



User shall be able configure large number of text definitions via Export/import into Excel.

- SiVArc now supports export of text definitions from a S7 block into Excel files.
- Import allows user to import modified/updated text definitions on to the S7 blocks in bulk.

Benefits for users:

- This enables user to make bulk modifications of text definitions in Excel files and import them instead of clicking on each text entries individually in TIA Portal IECPL editor.

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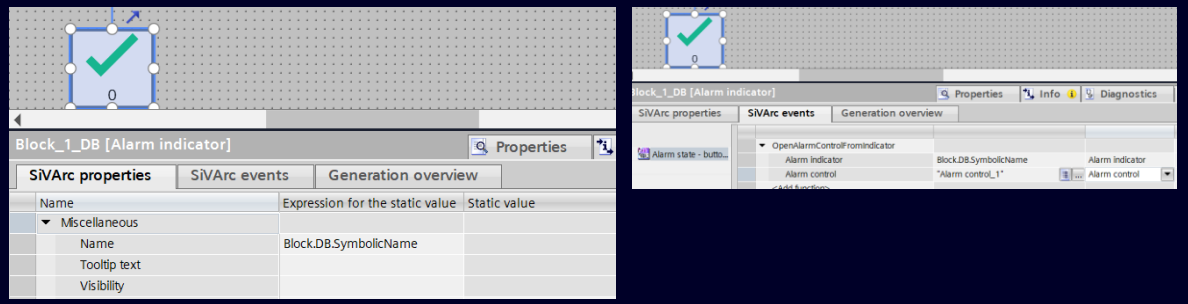
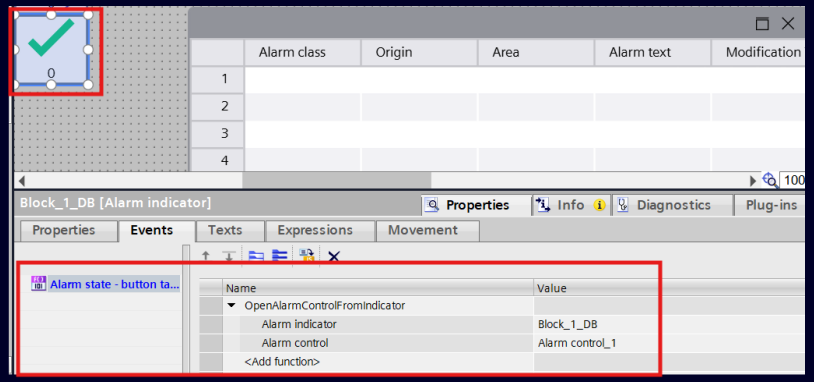
SiVArc V21.1
Alarm indicator support via SiVArc

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✗	✗

Configuration: Alarm indicator – SiVArc Plug-in



Generation Results: Alarm indicator with event



SiVArc now supports Unified HMI Alarm Indicator objects throughout the engineering workflow.

- Users can configure Alarm Indicator properties, store them as Master Copies, use them in Screen Rules, and automatically generate fully configured alarm indicators on target HMIs.
- The system supports event generation that includes “OpenAlarmControlFromIndicator”, enabling standardized and scalable alarm visualization across large automation projects.

Benefits for users:

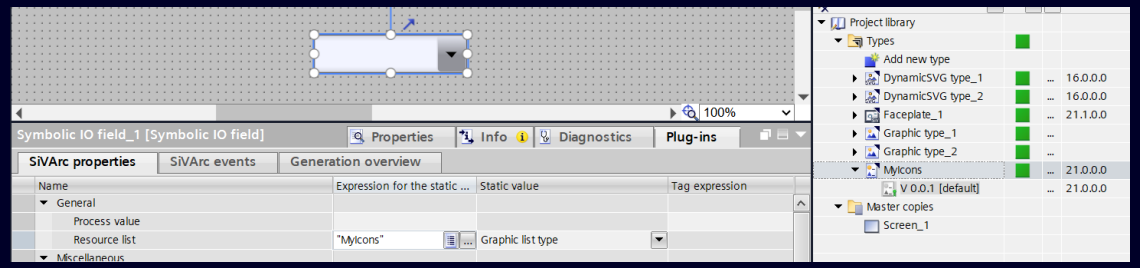
- Standardize alarm handling across the entire application.
- Reduce repetitive configuration tasks & Minimize engineering errors

SIEMENS

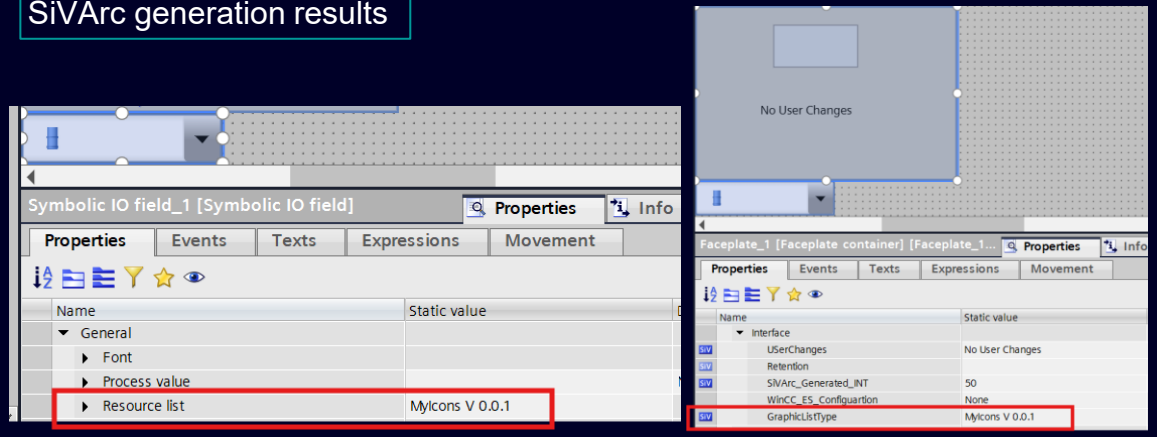
SiVArc V21.1
Support for Graphic list types

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✗	✗

SiVArc plug-in configuration with Graphic list types



SiVArc generation results



User shall be able connect Graphic List types to Symbolic IO Field & faceplates via SiVArc generation.

- User shall be able to configure SiVArc expressions for “Resource list” property of Symbolic IO Field and Faceplates.
- The system generates & connects the Graphic List type objects from library to “Resource list “ property of HMI objects Symbolic IO Field and faceplates on screens.

Benefits for users:

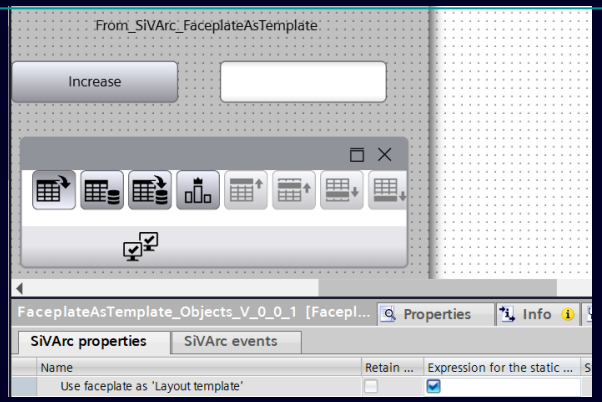
- Increase in level of automation and supports the customer in standardization.

SIEMENS

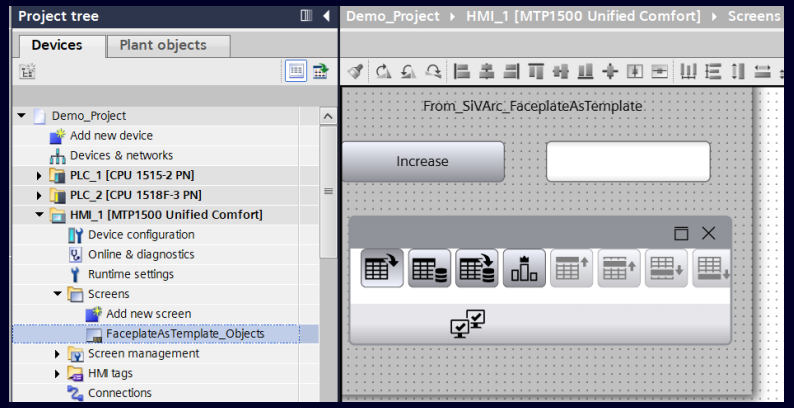
SiVArc V21.1
Generation of screen objects within faceplate layout templates

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✗	✗

Configuration: Faceplate as Layout Template with HMI objects in it.



Result: Generated Screen with configured HMI Objects



Generation of objects within faceplate layout templates for SiVArc.

- User shall be able to configure supported HMI Objects on Faceplates & use the faceplate as SiVArc Screen Template.
- The system generates the configured HMI Objects from faceplate as template to unified screens.

Benefits for users:

- User don't need to create several new screen rules for separate generation of these objects, and it increases engineering efficiency.

SIEMENS

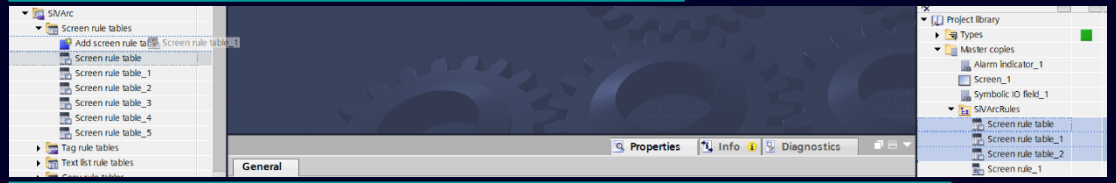
SiVArc V21.1
Drag-drop and copy-paste of multiple SiVArc rules from library to rule table

Unified System ✓

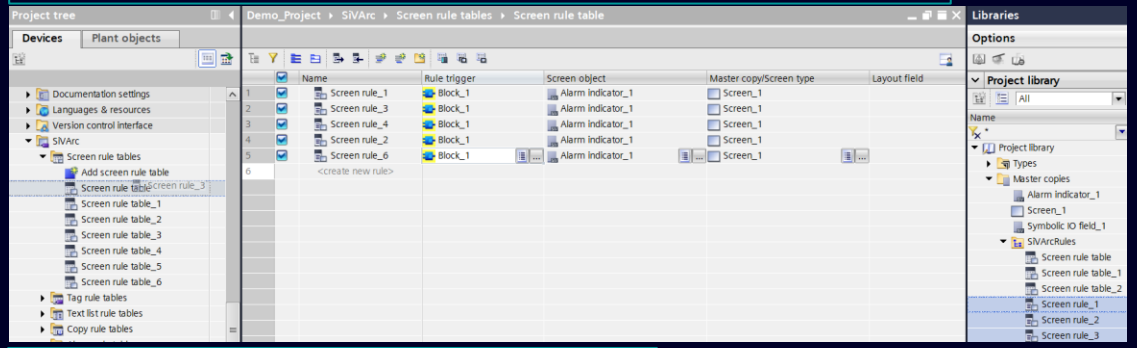
WinCC Basic/Comfort/Advanced ✓

WinCC Professional ✓

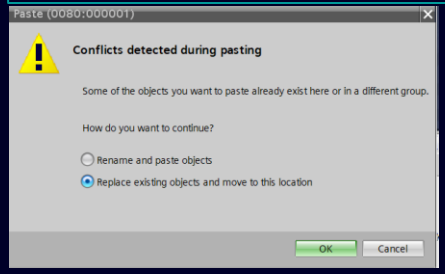
Multi select & Drag-drop of rule tables on PNV



Multi select & drag-drop the rules from library onto the rule tables



Name conflicts handled and decided by user



Accelerate HMI engineering by reusing proven rules directly from your rule library.
Simply drag-and-drop or copy-paste master rules into your project rule table to instantly create new working copies.

- User shall be able to bring rules, rule tables from Library-> Master copies to Rule editors and rule tables.
- Copy-paste of rules, rule tables is possible from Library -> Master copies to PNV.

Benefits for users:

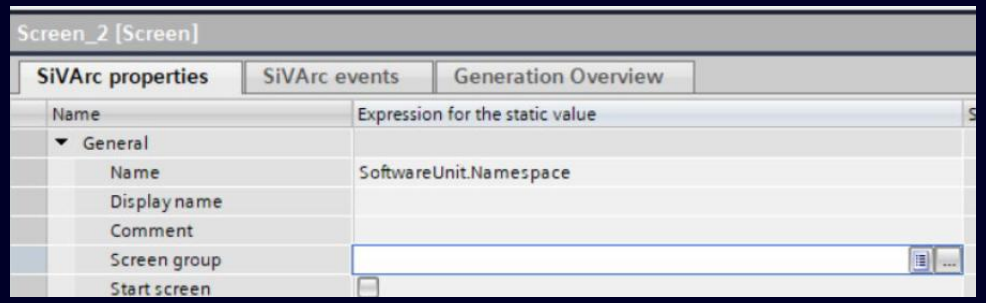
- Increases user experience.

SIEMENS

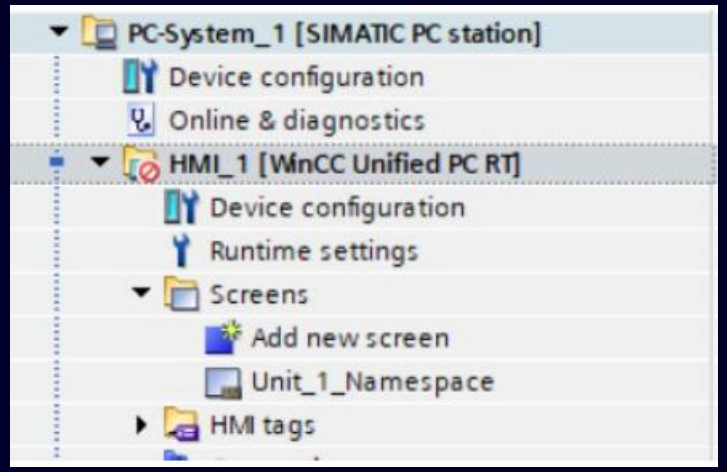
SiVArc V21.1
Improvements in SiVArc expressions

Unified System ✓ | WinCC Basic/Comfort/Advanced ✓ | WinCC Professional ✓

SiVArc Expression to readout Namespace of an unit.



Expression resolved & configured as needed,



Now customers can access the namespace of the Software Unit with SiVArc expressions unlocking Software Unit Integration for HMI Engineering.

- Customers using the Software Units shall use this expression in designing tag rules to generate needed HMI Tags.
- System handles the generation based on the expression resolved values based on Erroneous or valid values.

Benefits for users:

- Increases user experience.
- Improves consistency across machines.

SIEMENS

SiVArc V21.1
Improvements in Openness API

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✓	✗

Examples: SiVArc event configuration

```
HmiScreen hmiScreen = GetHmiScreen();
HmiScreenItemBaseComposition screenitems = hmiScreen.ScreenItems;
Console.WriteLine(screenitems[0].Name);
PluginProvider pluginProvider = screenitems[0].GetService<PluginProvider>();

EventHandlerComposition events = pluginProvider.Events;
var clickLeftMouseEvent = events.Find(name: HmiScreenEventType.ClickLeftMouseButton);
```

System returns the respective event handler 'ClickLeftMouseButton'. When the provided event is not supported for the given screen item, then system returns 'null' and user needs to handle this case.

```
// Access functions
SivarcFunctionComposition functions = clickLeftMouseEvent.Functions;

// Create a new system function
SivarcFunction changeScreenSystemFunction = functions.CreateSystemFunction(SystemFunctionName.ScreenChangeScreen);

// Access and configure parameters
FunctionParameterComposition parameters = changeScreenSystemFunction.Parameters;
foreach (var parameter in parameters)
{
    Console.WriteLine($"Parameter name: {parameter.Name}");
}

FunctionParameter screenName = parameters.Find(name: "Screen name");
screenName.ValueExpression = "\"Screen_1\"";

FunctionParameter screenWindowPath = parameters.Find(name: "Screen window path");
// Get supported data types for a parameter
var dataTypes: IList<ParameterDataType> = screenWindowPath.GetSupportedDataTypes();
screenWindowPath.DataType = dataTypes.First().Value;
screenWindowPath.ValueExpression = "\"MainScreen\"";
```

System creates system function under selected event type and also sets the parameter for newly created system function.

Now customers can access the namespace of the Software Unit with SiVArc expressions unlocking Software Unit Integration for HMI Engineering.

- Extended SiVArc plug-in configuration support to Unified Basic objects, Elements, and Control objects, providing consistent API access across supported HMI objects.
- Introduced Openness APIs for Expression objects, enabling creation and management of Expressions, Expression groups, Expression tables, and Expression folders.
- Added Openness support for Layout Field configuration, allowing engineering of generation-based positioning settings through APIs. And many more API extensions

Benefits for users:

- Increase in automation level.

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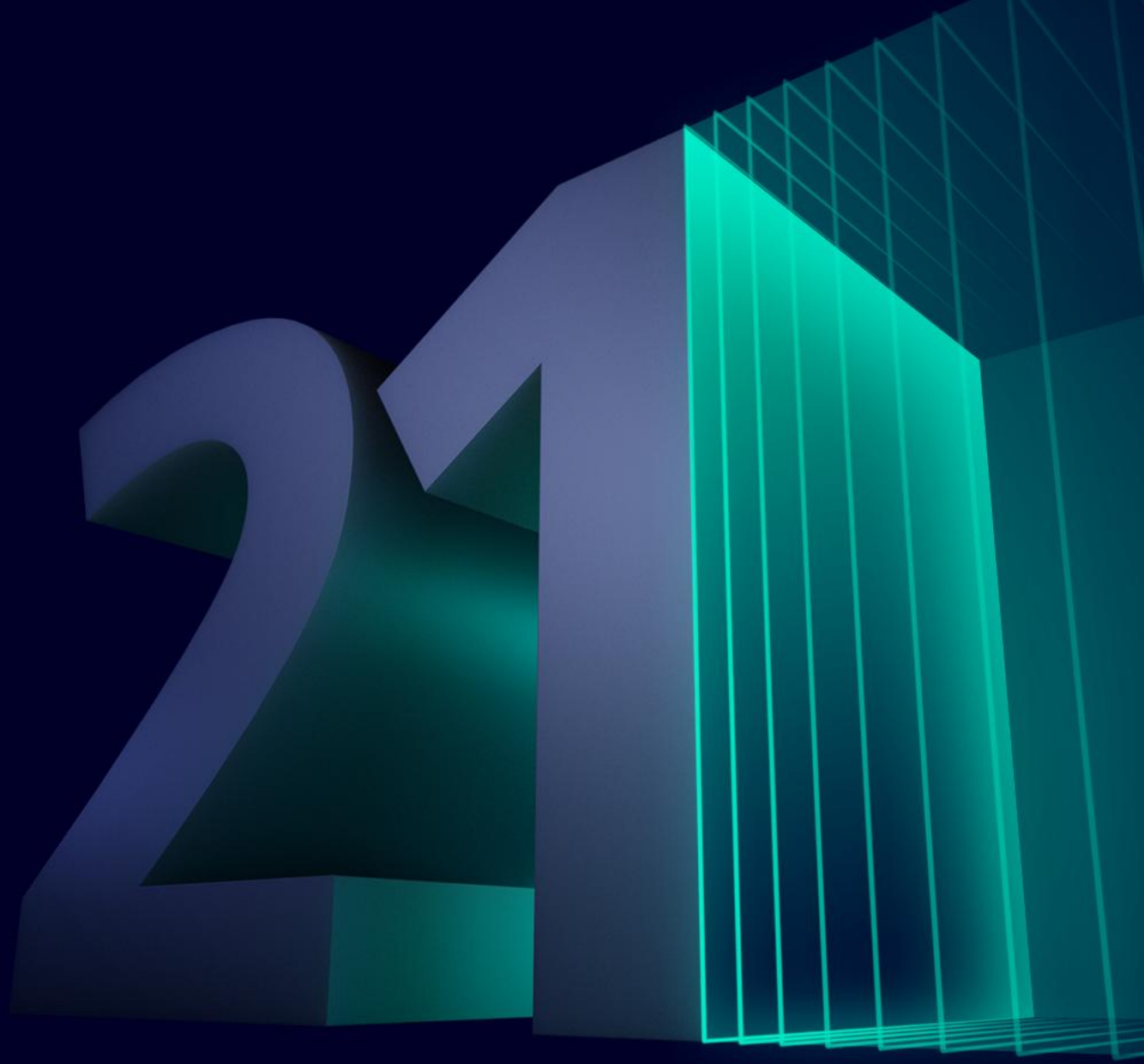
SIMATIC
WinCC Unified



Plant Intelligence

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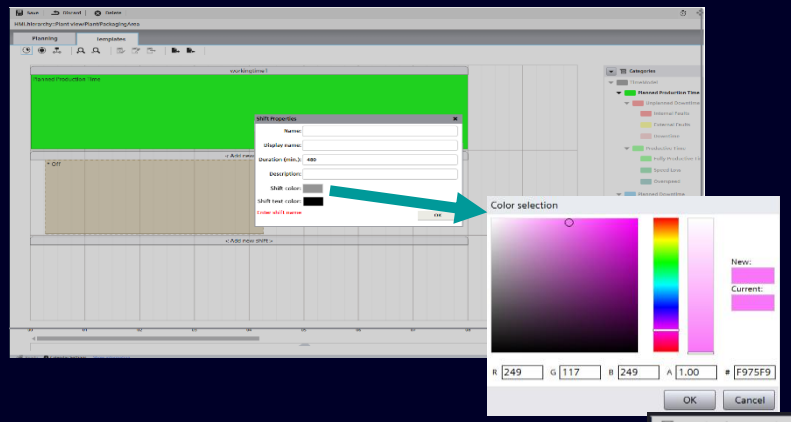
WinCC Unified V21.1 – Plant Intelligence
Calendar – Own color of shift header

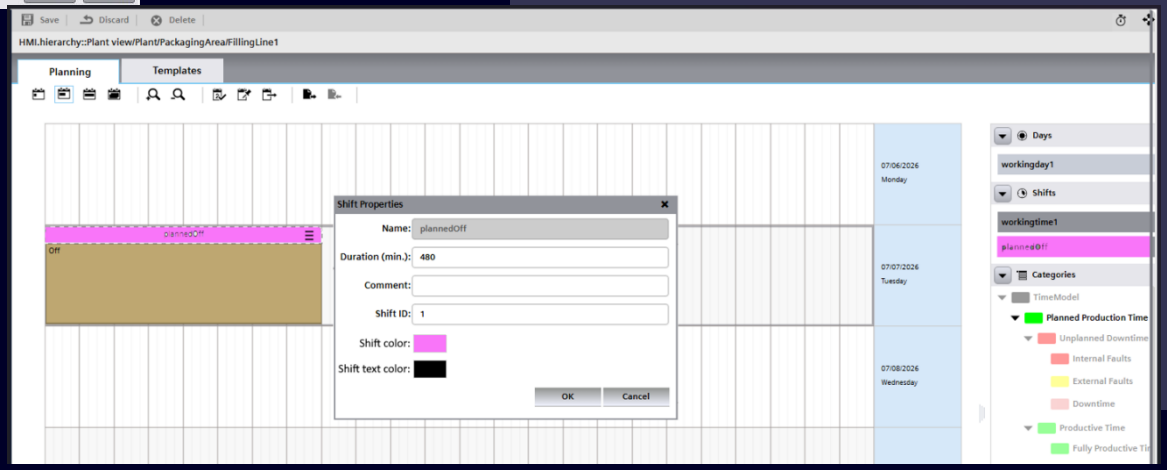
Unified Basic	Unified Comfort	Unified Edge RT	Unified PC RT
✗	✗	✗	✓



Color of shift header in Template

Own color of shift header

- Shift header color and text color are configurable



Color of shift header in calendar

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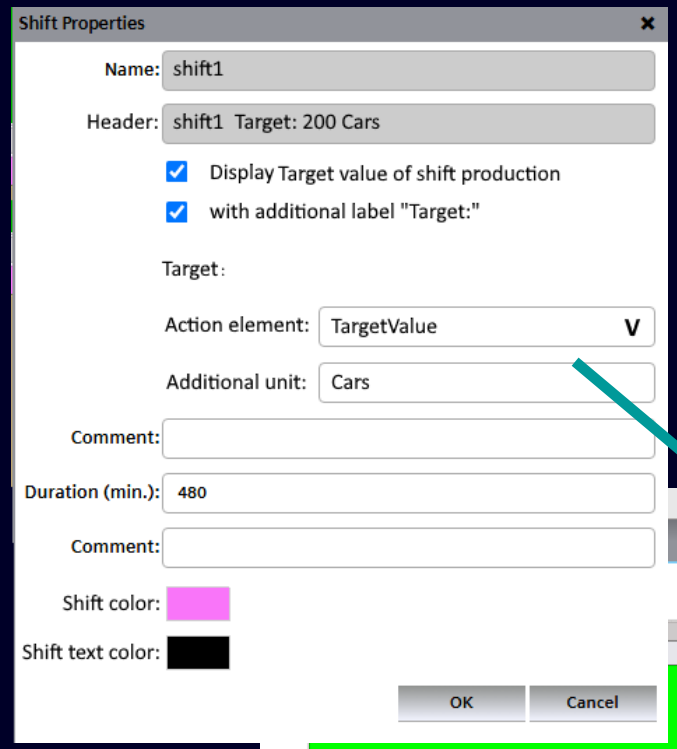
WinCC Unified V21.1 – Plant Intelligence
Calendar – Display target value of shift production

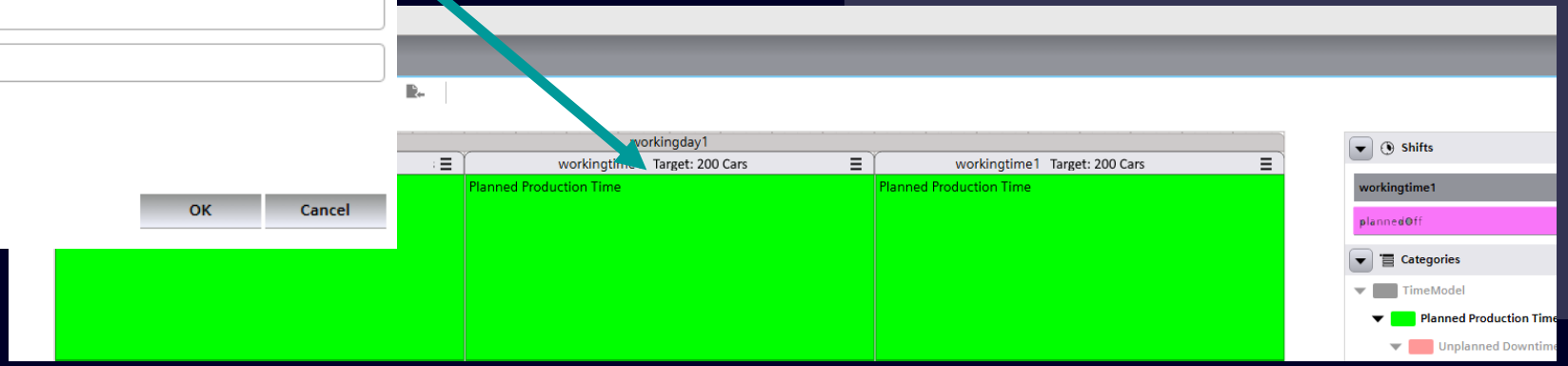
Unified Basic	Unified Comfort	Unified Edge RT	Unified PC RT
✗	✗	✗	✓

Shift header shows the target value of shift production

- Shift action element and the assigned value could be configurable and shown on the shift header



Configuration of the Target value of Shift



Shift shows the defined Target value of shift production

 Unrestricted | © Siemens 2026 | TIA Portal V21.1 News Overview

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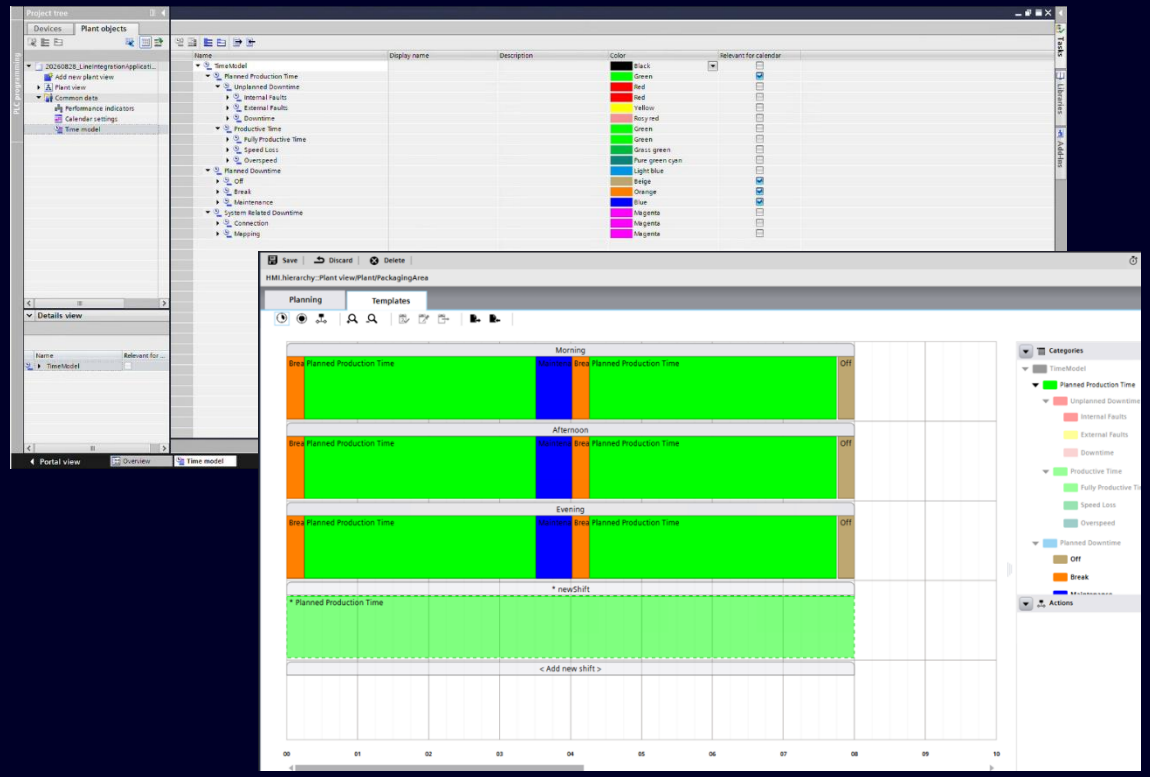
WinCC Unified V21.1 – Plant Intelligence
Calendar – Time Category extension for Planned downtime time relevant

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



21 Languages are supported by Calendar control in Runtime

New property extension of Time Category for Planned downtime relevant

- This property “Planned downtime relevant” is editable from ES2RT

21 languages of Runtime are supported by Calendar control

- The same 21 languages which are supported by Unified PC Runtime can be supported also by Calendar control

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WinCC Unified V21.1 – Plant Intelligence
Calendar – New API Interface for 3rd party applications

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

```
/// <summary>
/// Reads shifts information between the requested interval based on the requested plant object/equipment
/// </summary>
/// <param name="refNodeId">Plant object chromId</param>
/// <param name="startTime">Starting time from which shifts are requested</param>
/// <param name="endTime">Ending time up to which shifts are requested</param>
/// <param name="bInheritParentShifts">flag to include/exclude parent equipment/plant object shift information</param>
/// <param name="pShiftDataReadCB">ShiftData reply interface</param>
CF_INTERFACE_METHOD(Read)(
    IN const CFREF refNodeId,
    IN const CFDATETIME64 startTime,
    IN const CFDATETIME64 endTime,
    IN const CFBOOL bInheritParentShifts,
    OUT IShcShiftDataReadReply* pShiftDataReadCB) PURE;
```

New API Interface to “Read” Calendar Info

New API Interface for 3rd party applications

- Calendar provides a new API Interface “***ICalendarShiftDataSource“*** to read the planned production plan in the future for 3rd party applications

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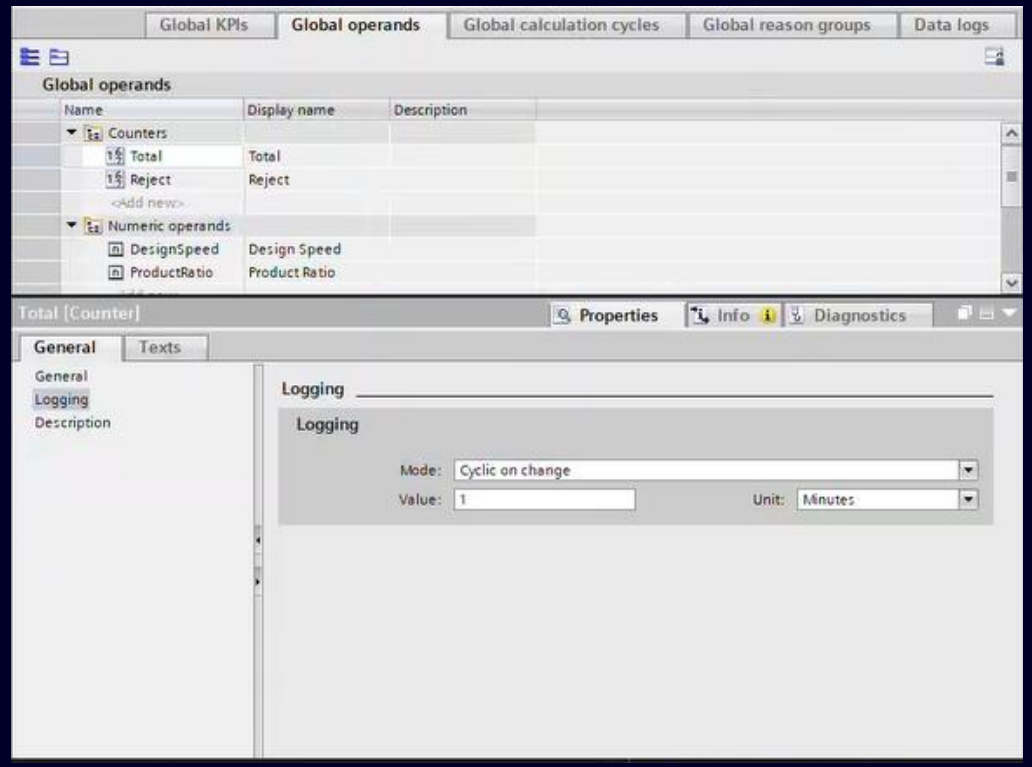
WinCC Unified V21.1 – Plant Intelligence
Performance Insight – By default, logging mode of counter is “Cyclic on change”

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



By default “Cyclic on change” in ES

UX and System Performance Improvements

- The default **Counter logging mode** has been changed from “**On change**” to “**Cyclic on change**” with a logging interval of **1 minute**
- UX improvement: no additional modifications in TIA Portal are required for this setting in newly created project, as it is applied by default
- System performance improvement: KPI calculations are performed more effectively, requiring less raw data and reducing process overhead

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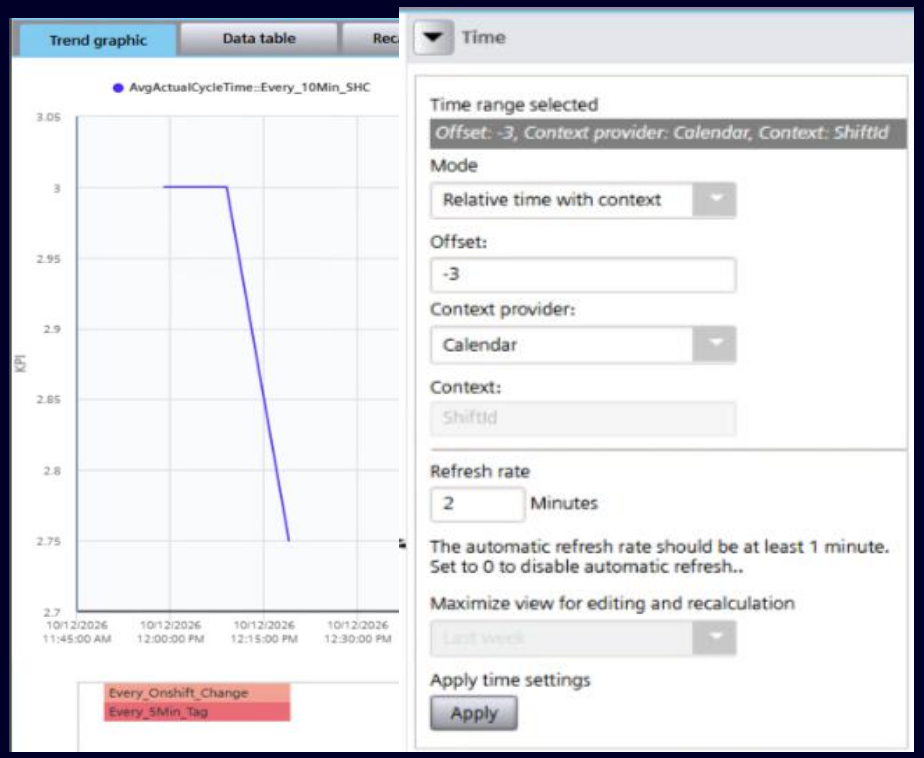
WinCC Unified V21.1 – Plant Intelligence
Performance Insight – Configure context-relevant time ranges

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



Performance Analyzer Control allowing selection of context.

Until now, static and relative time ranges were feasible

- **Now both, Performance Analyzer & Downtime Analysis support relative time range additionally based on context.**

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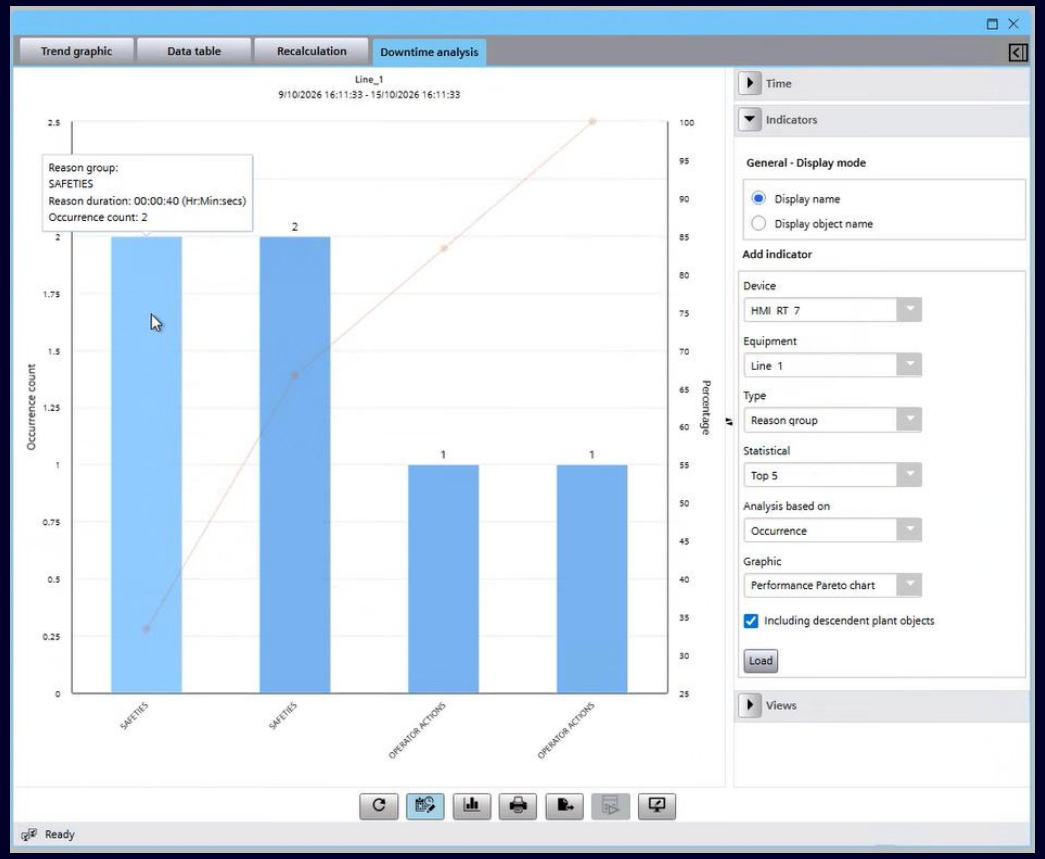
WinCC Unified V21.1 – Plant Intelligence
Performance Insight – Downtime analysis: Top 10 / 5 Occurrences

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



Downtime Analysis in Performance Analyzer Control.

Downtime Analysis supports Top 10 / 5 Occurrences to identify major machine-relevant problems.

Supported Types:

- Machine states
- Reason groups
- Reasons

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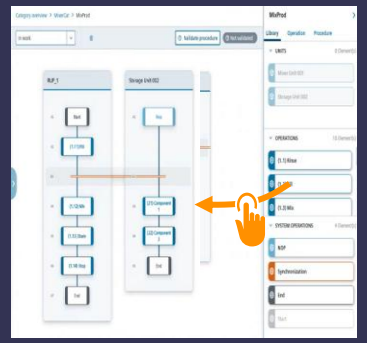
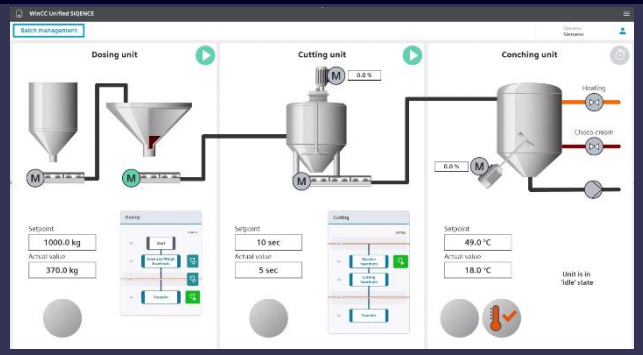
WinCC Unified V21.1 – WinCC Unified SIQENCE V21.1 Overview

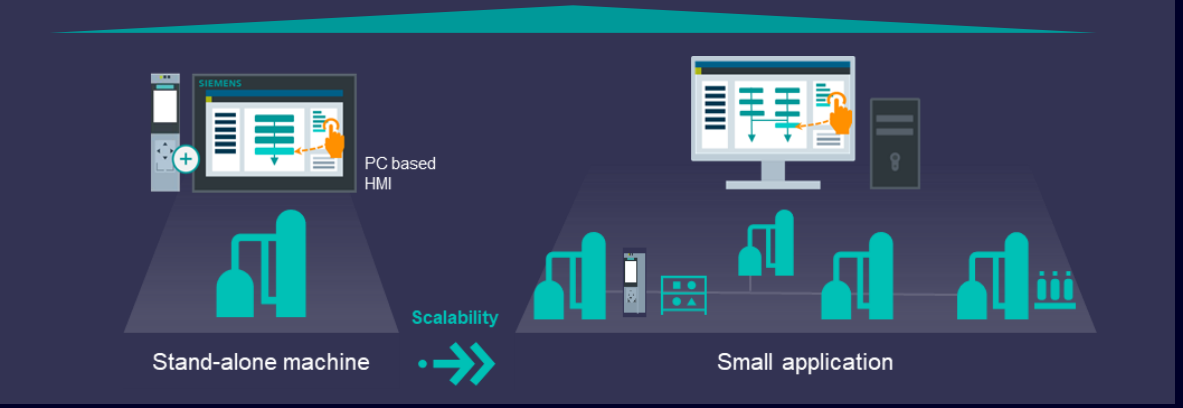
Unified Basic	Unified Comfort	Unified Edge RT	Unified PC RT
✗	✗	✗	✓



Recipe Editor



Batch Monitoring & Control within Unified



Scalable from stand-alone machines to production cells

Option to extend and enable WinCC Unified with recipe-control functionality for batch processing, based on ISA88 standard

- PLC-based batch processing with integrated library in TIA Portal (S7-1500 blocks and WinCC Unified Faceplates)
- Innovative recipe editor for flexible creation and adaptation of recipe procedures and parameters via drag and drop without changing the PLC program
- Integrated web-based editors for batch creation and graphical batch monitoring with all process-relevant information
- Excel based reporting for documentation of the production data

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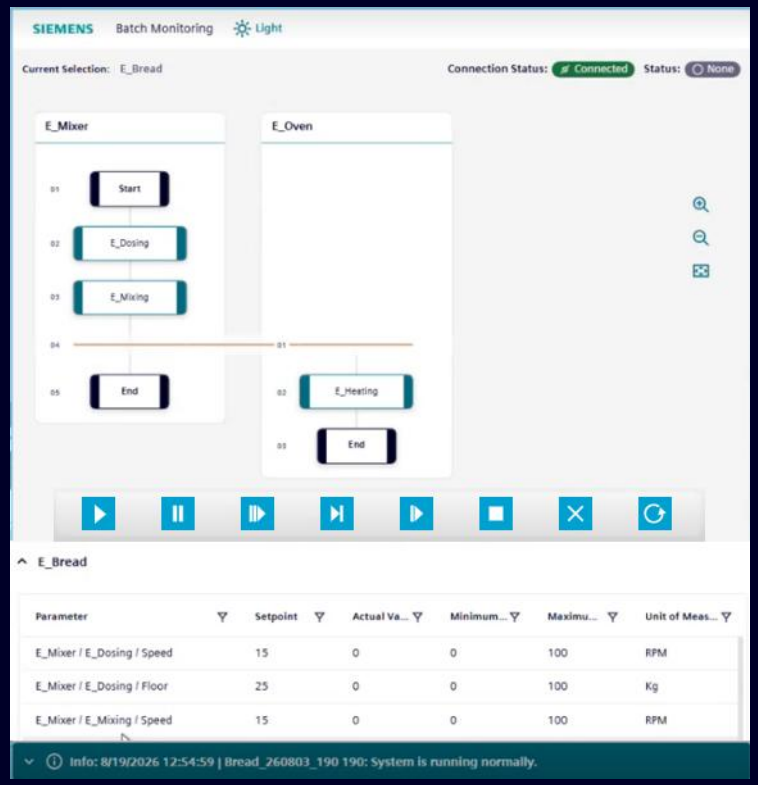
WinCC Unified V21.1 – WinCC Unified SIQENCE V21.1
Monitor and control a complete batch

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



Batch Monitoring

Follow production and react in case of need

- **Monitor batch execution**
  - Follow production process in a graphical way
  - Recognize state changes easily due to different colors
  - Monitor actual values of parameters
- **Control batch execution**
  - Change setpoints of parameters
  - Execute ISA88 commands (e.g. Pause, Resume, Hold, Restart,…) at Unit or Operation level (depending on selection)

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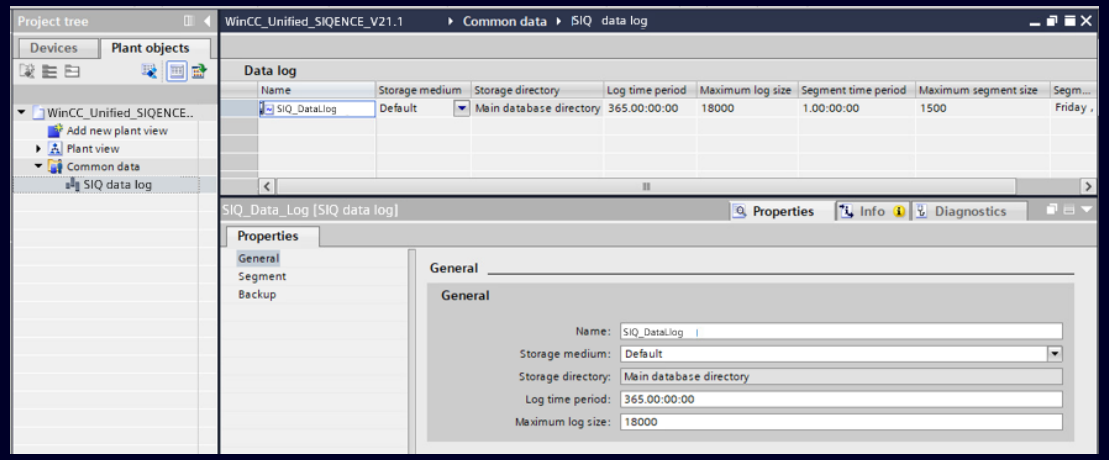
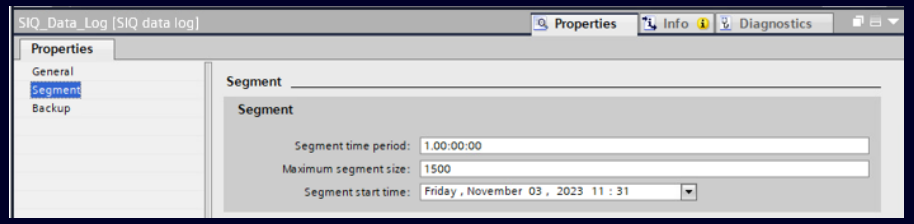
WinCC Unified V21.1 – WinCC Unified SIQENCE V21.1
Long term archiving with WinCC Unified Logging

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



Batch archiving settings under “Plant objects“/ "Common data“



Batch archiving settings

Deeper integration into Unified, higher transparency and traceability of production data

- **Configurable data log of batch archiving data**
  - Access to long term historical production data
  - SQLite or SQL Database Storage

Note:
Settings and segmentation as known from Logging

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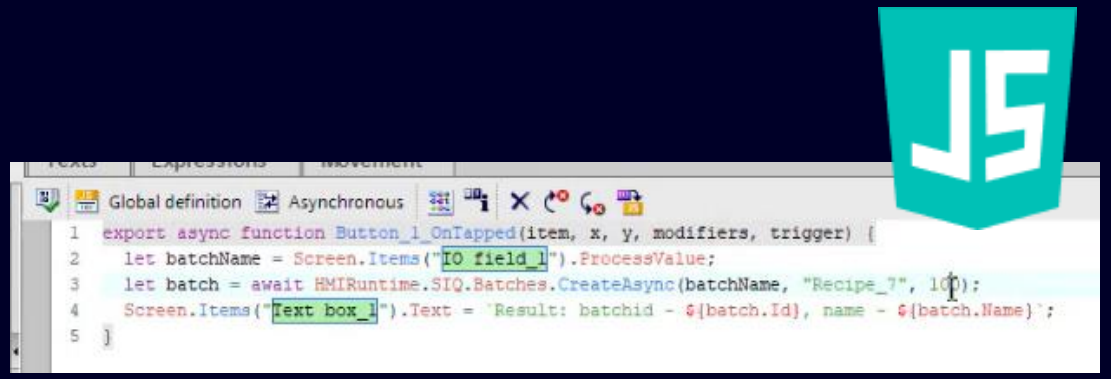
WinCC Unified V21.1 – WinCC Unified SIQENCE V21.1
Scripting for Batches to gain higher flexibility

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



Scripting definition with new functions

Existing WinCC Unified scripting is extended to customize your application to create batch and recipe workflows using integrated scripting functions.

- **New scripting functions for "Batches"**
  - Get list of active batches
  - Create new batches
  - Execute commands, e.g. start, release, delete...
- **New scripting functions for "Recipes"**
  - Get available Recipes for production

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WinCC Unified V21.1 – WinCC Unified SIQENCE V21.1
GraphQL API extended for Batches and Recipes to enable IT/OT workflows

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

GraphQL

```
mutation BatchManagement_createBatch {
    batchManagement_createBatch(input: { name: "b1",
        recipeName: "test" }) {
        id
        name
        recipeId
        size
        state
        creationTime
        error {
            code
            message
            affectedObject
            executionResult
```

GraphQL with batch and recipe access

Existing WinCC Unified GraphQL is extended to provide new set of functions to manage Batches and Recipes as HTTP requests

- **Enablement of IT2OT workflows**
  - Batch planning triggered from MES / 3rd application
  - Transparency to IT systems about current batches
- **New access to “Batches"**
  - Get list of active batches
  - Create new batches
  - Execute commands e.g., start, release, delete...
- **New access to "Recipes"**
  - Get available Recipes for production

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WinCC Unified V21.1 – WinCC Unified SIQENCE V21.1
Standardized YAML Export & Import of Recipes

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



Export Dialogue




```yaml
recipe:
  id: RCP_CHOCOLATE_MILK_001
  name: Chocolate Milk 1000L
  version: 1.0
  status: ReleasedForProduction

  nominalBatchSize:
    value: 1000
    unit: L

  procedure:
    name: ChocolateMilkProduction

    units:

      - unit: MixingTank01
        operations:

          - name: Initialising
            executionTime: 5s

          - name: Filling
            parameters:
              waterQuantity:
                processParameter: WATER_QTY
              milkQuantity:
                processParameter: MILK_QTY
```

Example YAML file

SIQENCE Recipes can be exported and imported for further external use, to

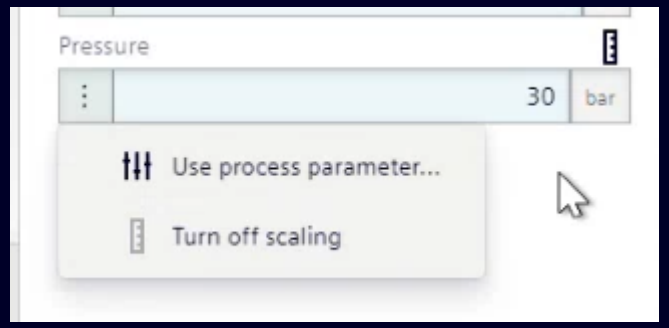
- **Enable extended use cases like:**
  - External versioning workflows
  - Recipe templates
  - Recipe exchange between stations
  - Backup management

- **YAML -** Modern format with powerful capabilities
  - ✓ Well-known standard
  - ✓ Human-readable
  - ✓ Versionable and comparable (VCS-friendly)

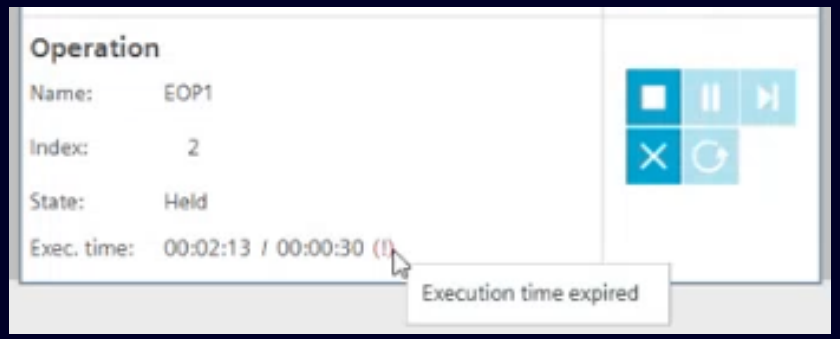
SIEMENS

WinCC Unified V21.1 – WinCC Unified SIQENCE V21.1
General improvements

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



Scaling at Procedure Parameter



Operation Execution time

Further SIQENCE-wide Enhancements

- **Enhanced parameter scaling** at equipment and procedure level
- **Optimized user experience** with refreshed web styling and multi-select bulk actions
- **Operation execution time** available as a dedicated visualization block
- **Seamless PLC connectivity** via standard TIA Portal workflows

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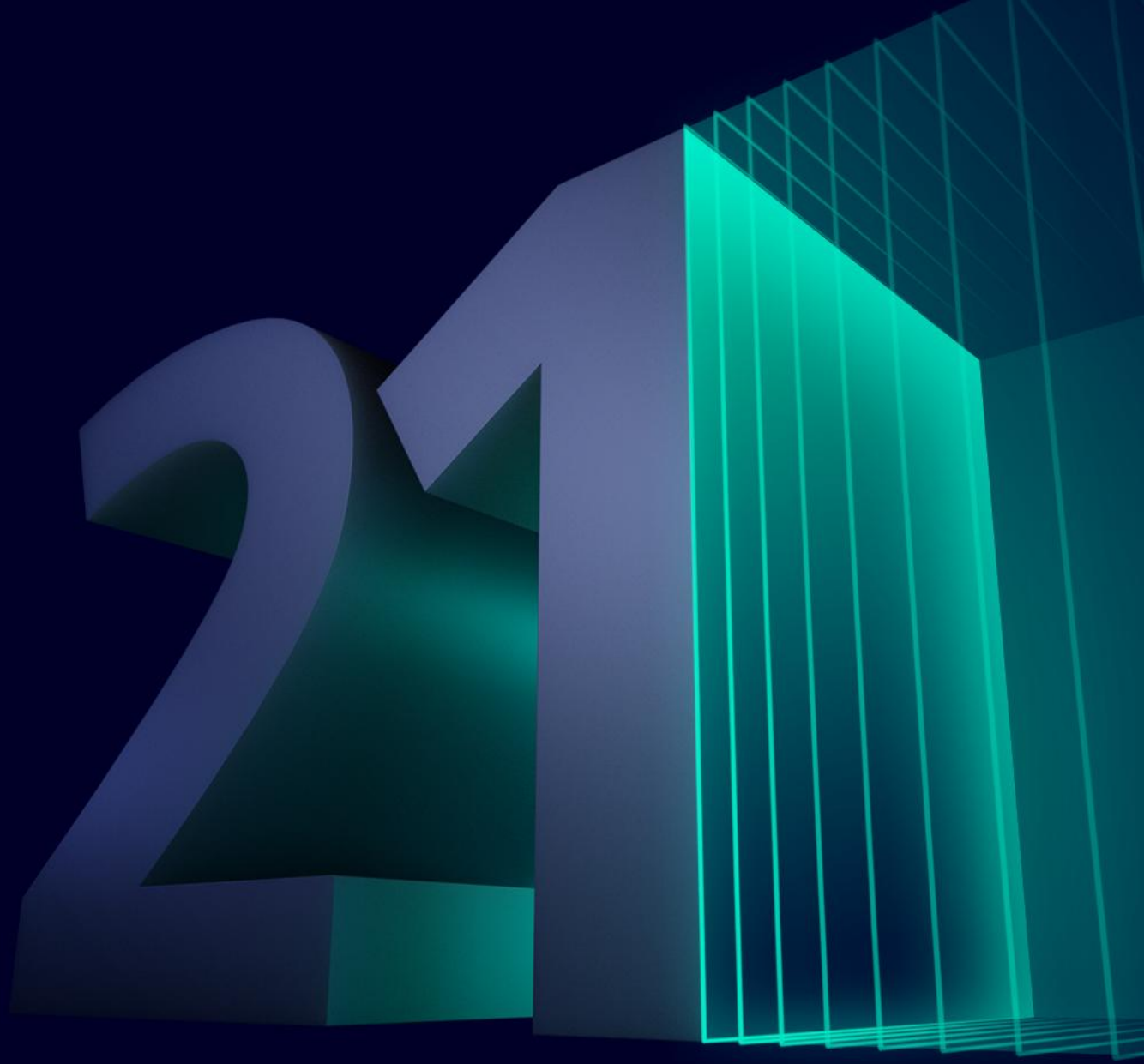
SIMATIC
WinCC Unified



Cross Portfolio

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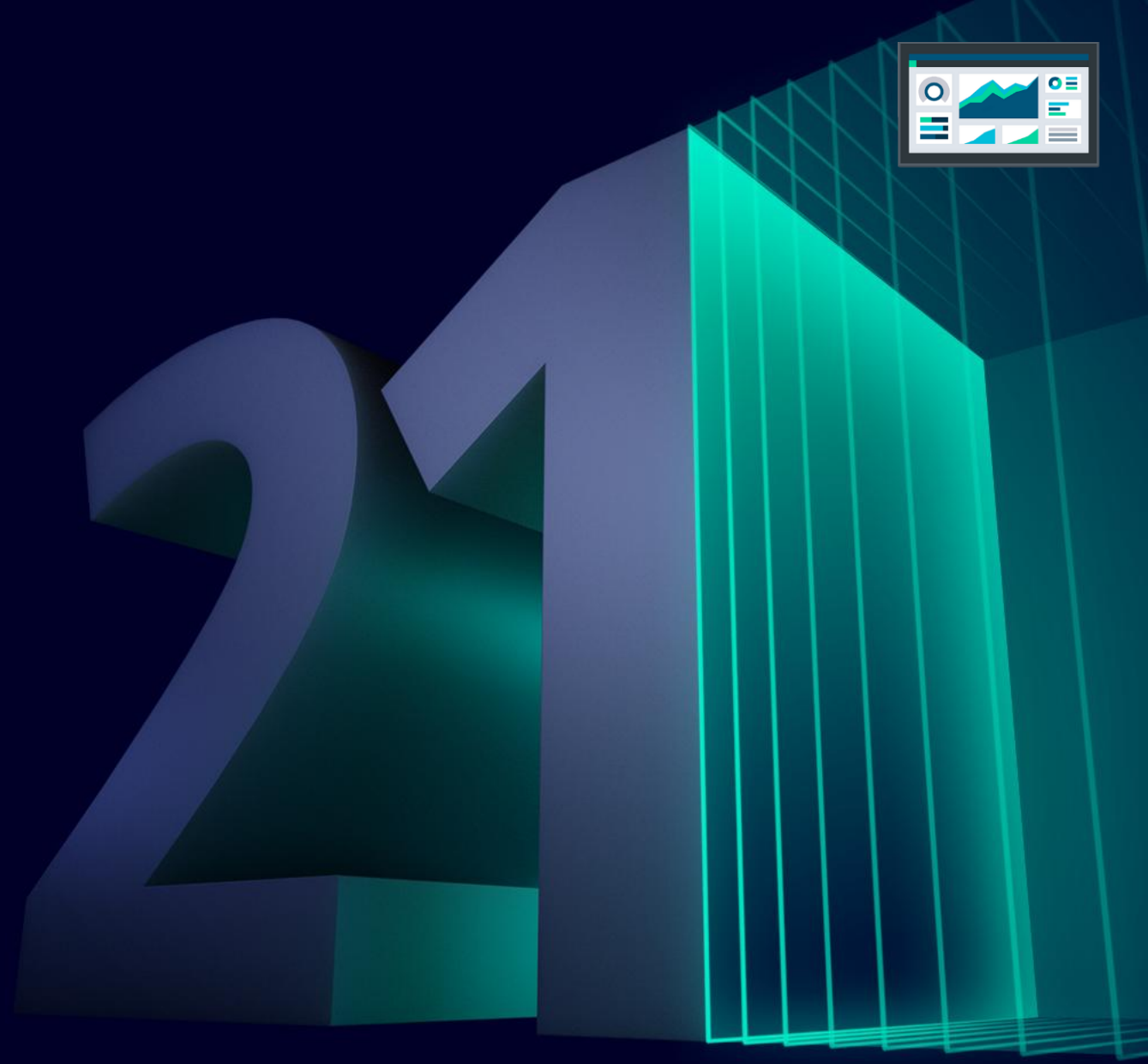
SIMATIC
WinCC Unified



Unified Panels

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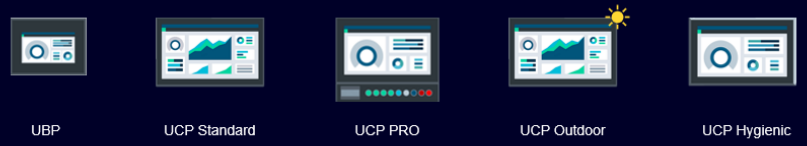
WinCC Unified V21.1 – Unified Panel
New Ordering numbers for CRA ready Hardware

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



MLFB for all Unified Panels with Hardware "CRA ready" ends with "…. -…. - ...3"

Prepare customer for CRA readiness from Hardware point of view

- **All Unified Panels with MLFB is ending with …0AX3 indicates Hardware CRA readiness**
  - Easy identification
  - Reduced complexity

Note

- Additional Image Update for complete CRA readiness required (planned 06/2027)
- Effected Devices:
  - Unified Basic Panel
  - Unified Comfort Standard
  - Unified Comfort PRO
  - Unified Comfort Hygienic
  - Unified Comfort Outdoor

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WinCC Unified V21.1 – Unified Comfort Panel
Increased Temperature Range

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



Ensure reliable operation in hotter ambient conditions without additional cooling.

- All Unified Comfort Panels 7-15” with MLFB ending with …0AX3 can be used in operating temperature range up to +55°C with restrictions (1)

Note:

- (1) only horizontal orientation and no inclination
- no USB load
- maximum display brightness of 70%

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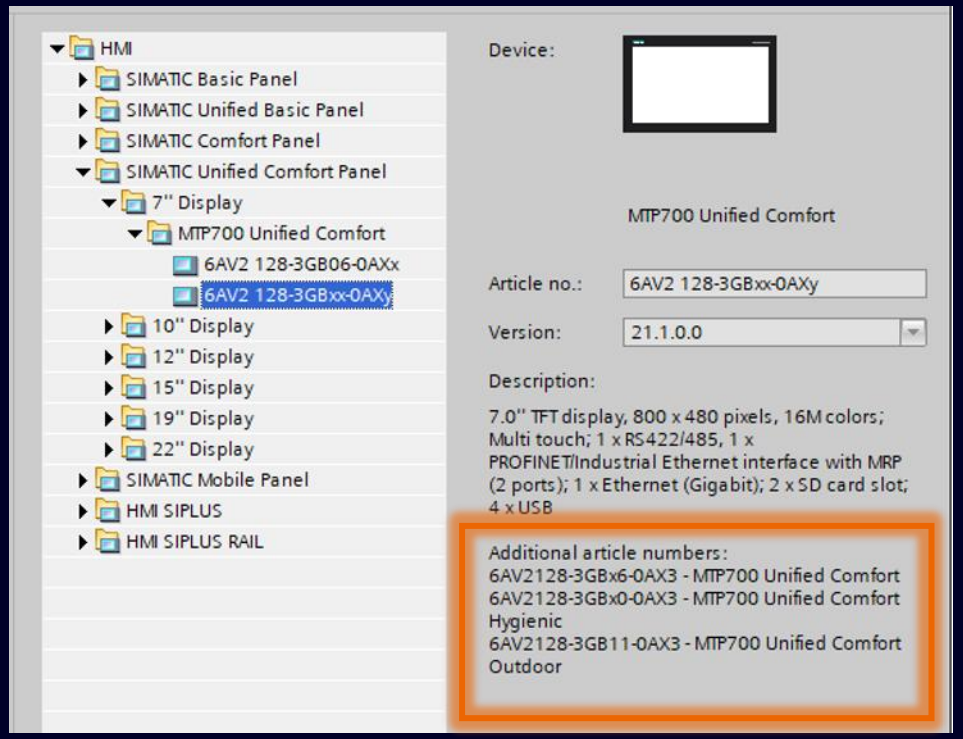
WinCC Unified V21.1 – Unified Panel
Simplified Device creation in Engineering

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



Hardware Catalog TIA Portal:
Unified Comfort contains all variants

Reduce complexity in TIA Hardware catalog

- **UCP Standard, Hygienic, PRO, Outdoor will be reflected in TIA HW catalog as one device**
  - Easy identification
  - Reduced complexity

One Unified Comfort portfolio will be configured as One device

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WinCC Unified V21.1 – Unified Comfort Panel
Full HD resolution for all 15” devices

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



Unified visual appearance across 15" to 22" Panels

- Better optical representation compared to 15’’ predecessor
- Higher view angle stability
- Complete 15’’ UCP Portfolio effected (Standard, PRO, Outdoor, Hygienic)
- Aspect ration 16:9

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WinCC Unified V21.1 – Unified Outdoor Panel

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



Enable Unified application in Outdoor Environment

- Daylight readable Unified Comfort Panel
- Automatic Brightness Adaption
- Extended operating temperature (-30 … +60 °C)
- IP 66 protection class
- Same optical representation as Standard devices
- Complete Unified Comfort Portfolio

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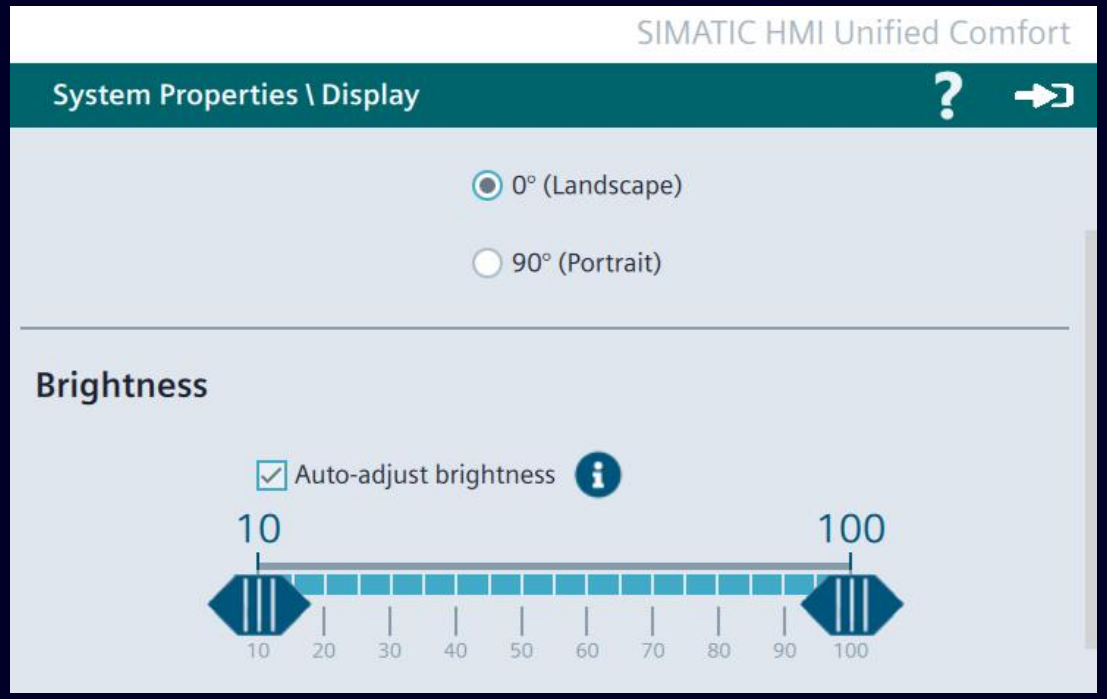
WinCC Unified V21.1 – Unified Outdoor Panel
Adaptive Brightness Adjustment

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



Control Panel → System Properties: Auto-adjust brightness

Visibility and Ease of use

- **Auto-adjustment of display brightness**
  - The screen brightness is automatically adjusted according to ambient light conditions
  - Auto mode is enabled by default
  - User can switch between manual and auto brightness modes
  - Option to set minimum and maximum value limits

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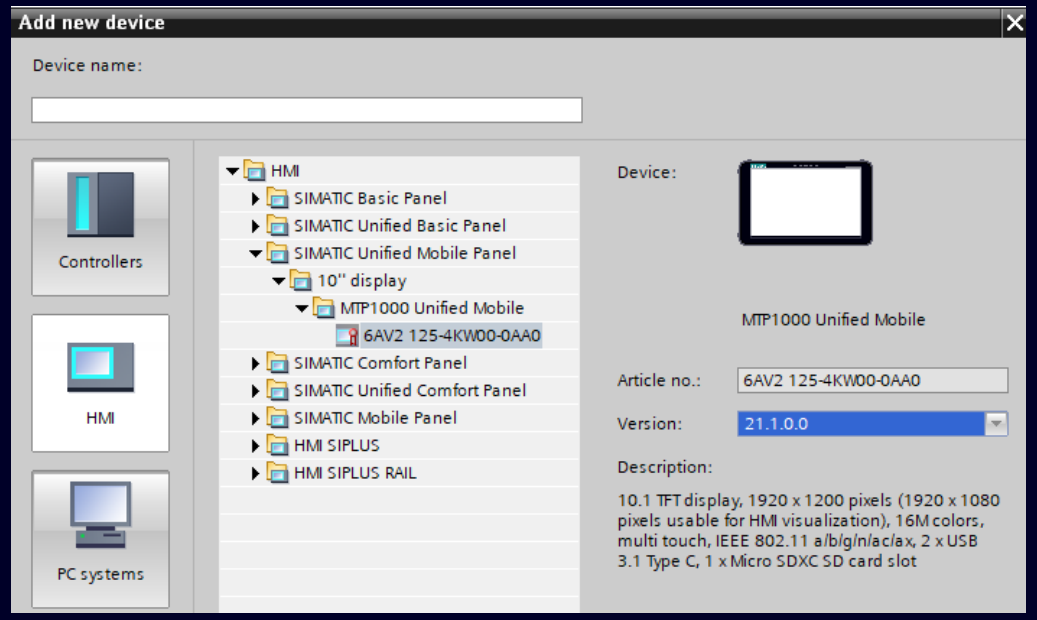
WinCC Unified V21.1 – Unified Mobile Panel
Start Engineering of Unified Mobile

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



Unified Mobile Panel in TIA Hardware Catalog

The Unified Mobile will be available in the TIA Portal V21.1

- **Project creation, device change & setup**
  - Project creation as a new device
  - Convert available project to UMP via device change
  - Designing screens & project configuration
  - Feature set of Unified Comfort
- **Complete HMI Unified Panel Portfolio**

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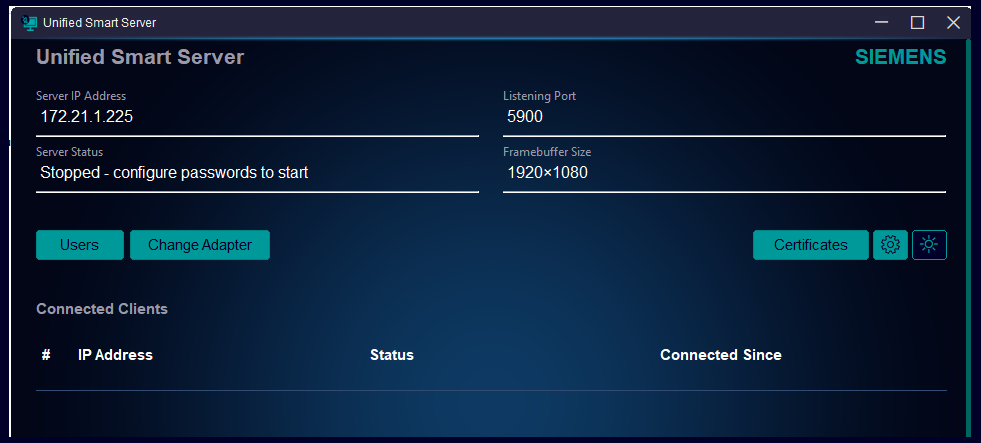
WinCC Unified V21.1 – Unified Smart Server
Seamless remote access across PC and Panel platforms



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



Unified Smart Server configuration dialog on PC.

Cross PC/Panel platform Smart Server connection now available

- **SmartServer and SmartClient available as Windows Installation**
  - SIOS Download as separate installation
  - New MLFB with license
- **SmartClient App for UCP**
  - Available within the App page in Control Panel
  - Full SmartClient functionality including new operator interlock in exclusive and forced exclusive mode

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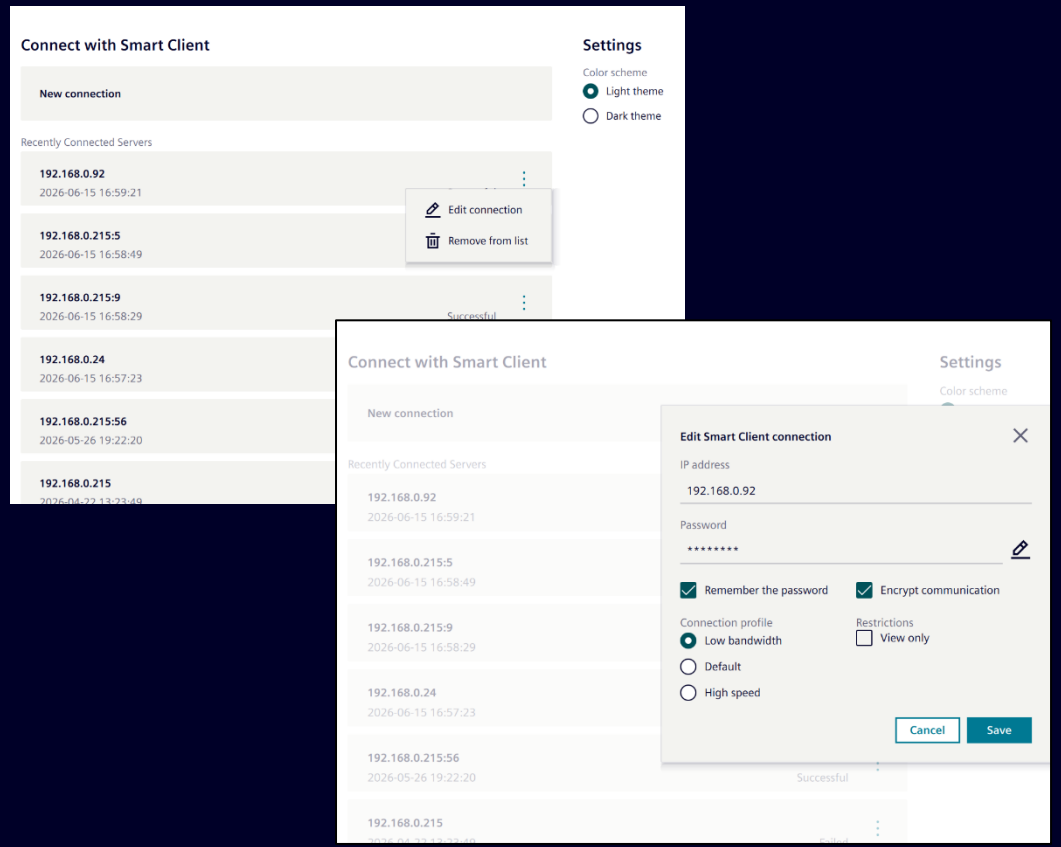
WinCC Unified V21.1 – Unified Panels
Increase functionality for Smart Client App

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



Configuration dialogue on panel.

Improved Handling for Smart Server Connections

- **Edit existing connection entries**
  - Smart Client connections can be edit/deleted
- **Delete specific connection entries**
- **Maximum saved connection entries extended from 3 to 10**

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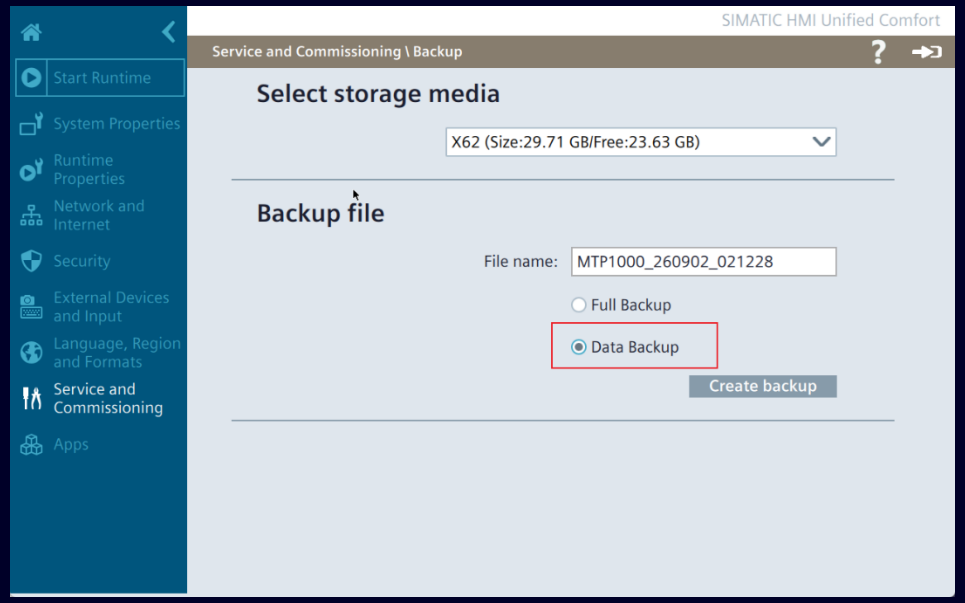
WinCC Unified V21.1 – Unified Panels
New Backup option

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



Data Backup option added to the control panel.

Faster and more convenient data exchange

- Upgrade of runtime data was not feasible so far
- Data backup of user data (e.g. Parameter Sets, User management data, Project...) possible
- Users can transfer runtime data between different devices and versions without TIA Portal
- Data Backup/Restore via Device and Prosave V21.1

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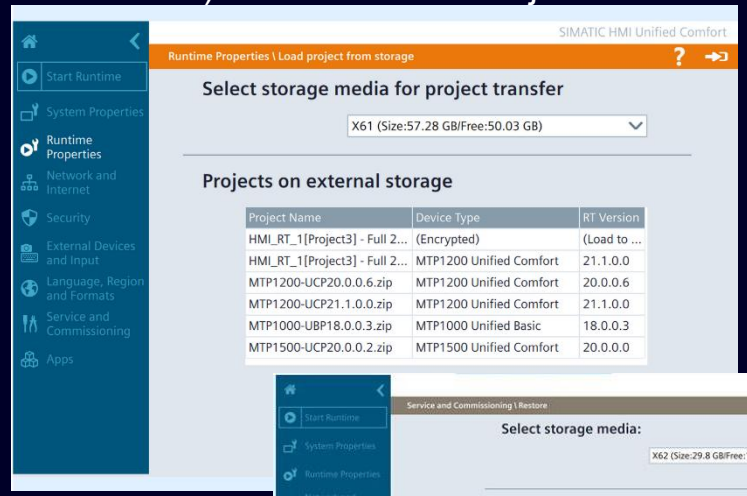
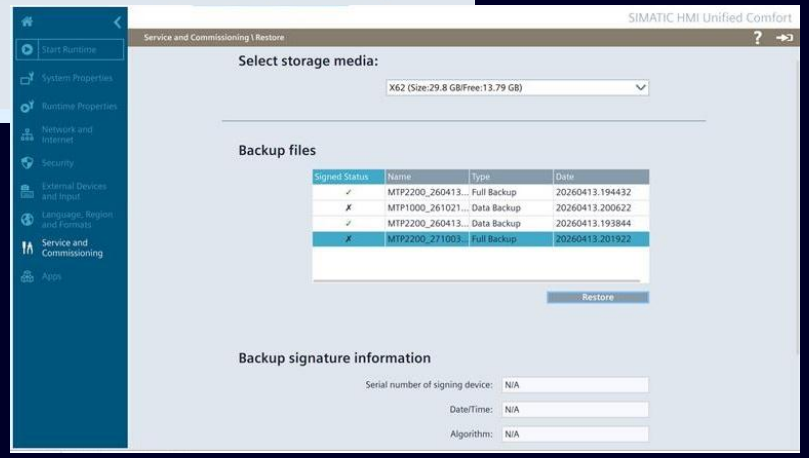
WinCC Unified V21.1 – Unified Panels
Increased security

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

1) Secure Offline Project Transfer





2) Signed Backup from Panel

1) Ensure secure and trusted transfer of Unified Runtime offline project files

- Protect project files on removable media with encryption, password validation and integrity checks.

2) Keep devices secure by ensuring only verified software is restored and deployed

- Secure Backup & Restore for Safe and Reliable System Recovery

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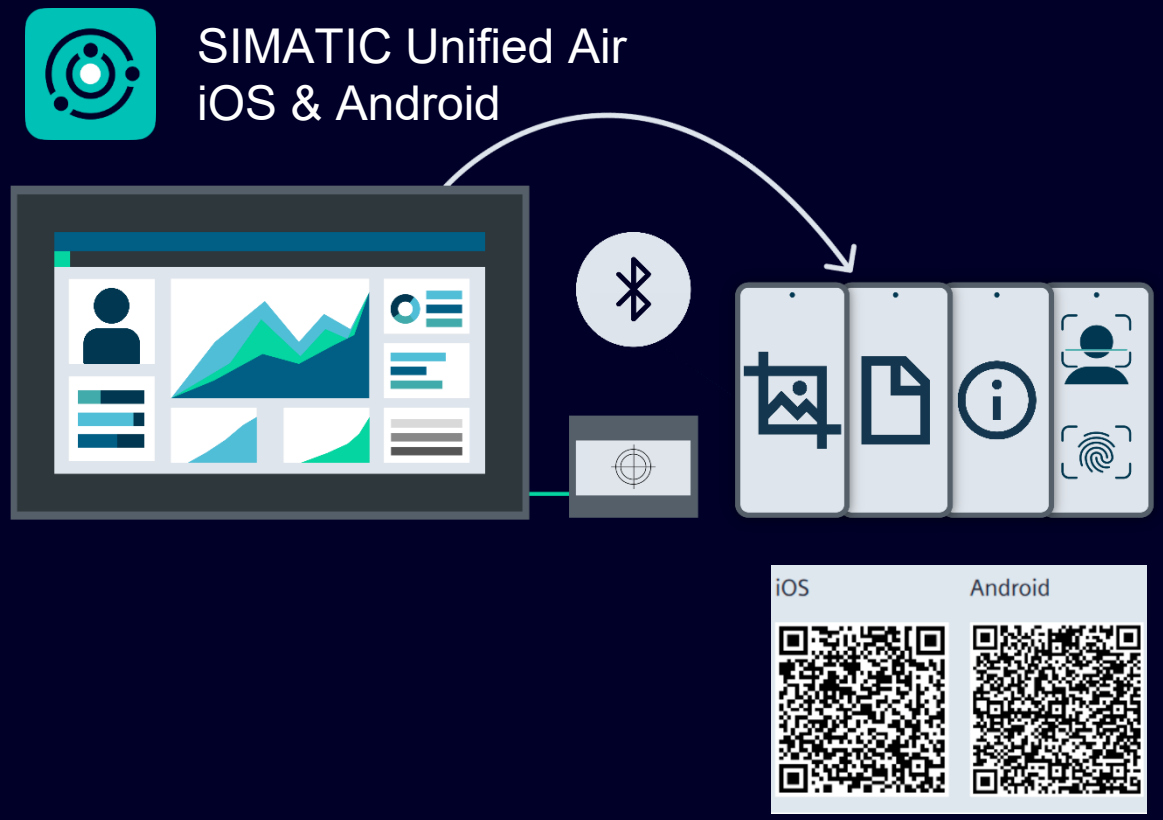
WinCC Unified V21.1 – Security
SIMATIC Unified Air becomes CRA-ready

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



Secure access, secure communication, secure device

- **Login security raised:** the familiar authentication is now hardened with stronger keys, safe password feedback and tighter lockout limits
- **Token access hardened:** effortless rollout to Unified Comfort Panels stays – now protected by PKI certificates and authenticated, integrity-checked channels
- **Data you can trust:** certificate-based, integrity-checked connections – also wireless – ensure values and commands are never altered
- **Clear responsibility:** role permissions, session control and traceable actions show who did what – valuable evidence for audits
- **Keeps running when attacked:** DoS and resource protection plus robust error handling keep operators in control instead of facing downtime
- **Future-proof:** hardened defaults, minimized attack surface and an updated iOS/Android platform ease CRA compliance

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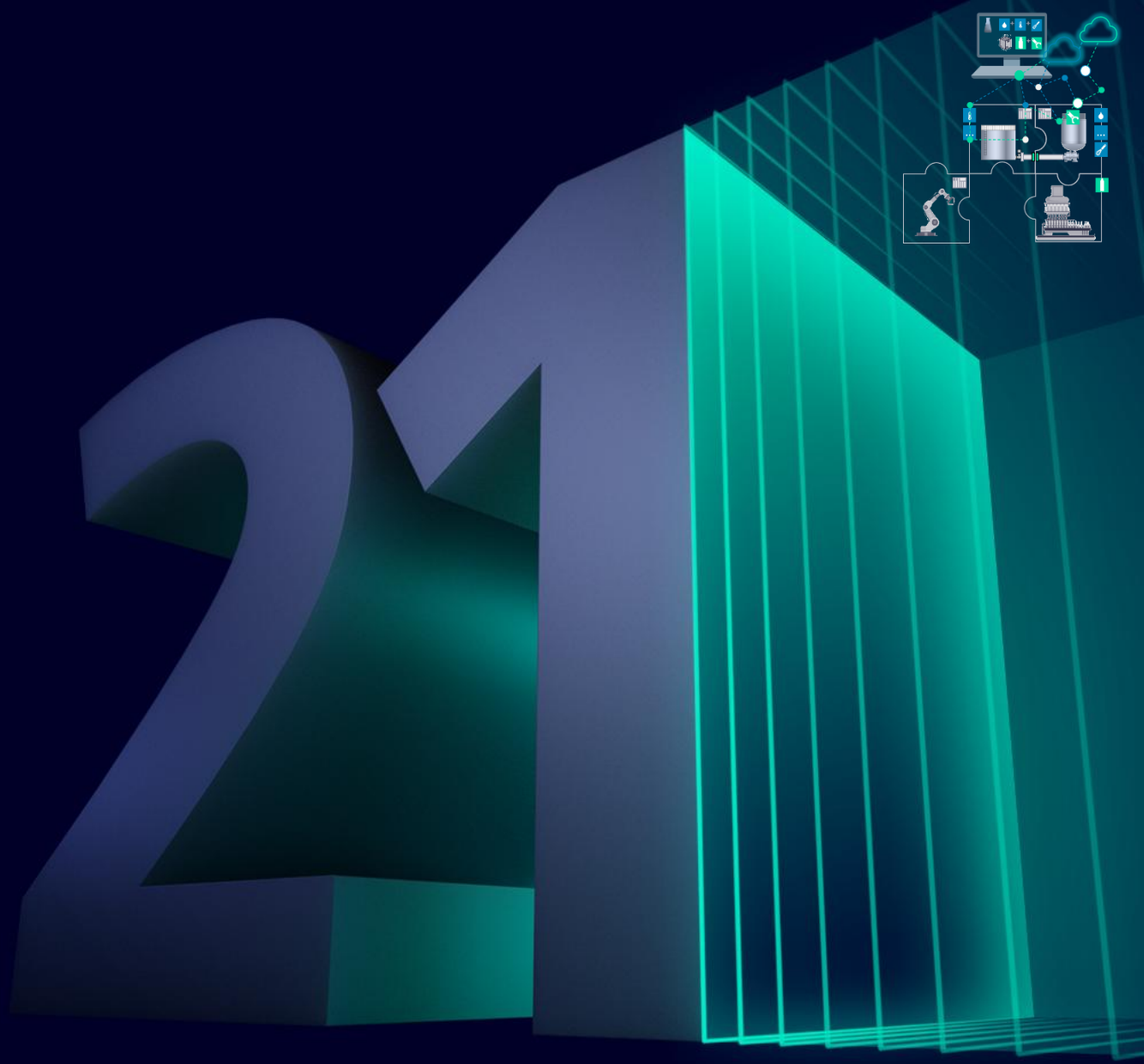
SIMATIC
WinCC Unified

Modular Automation



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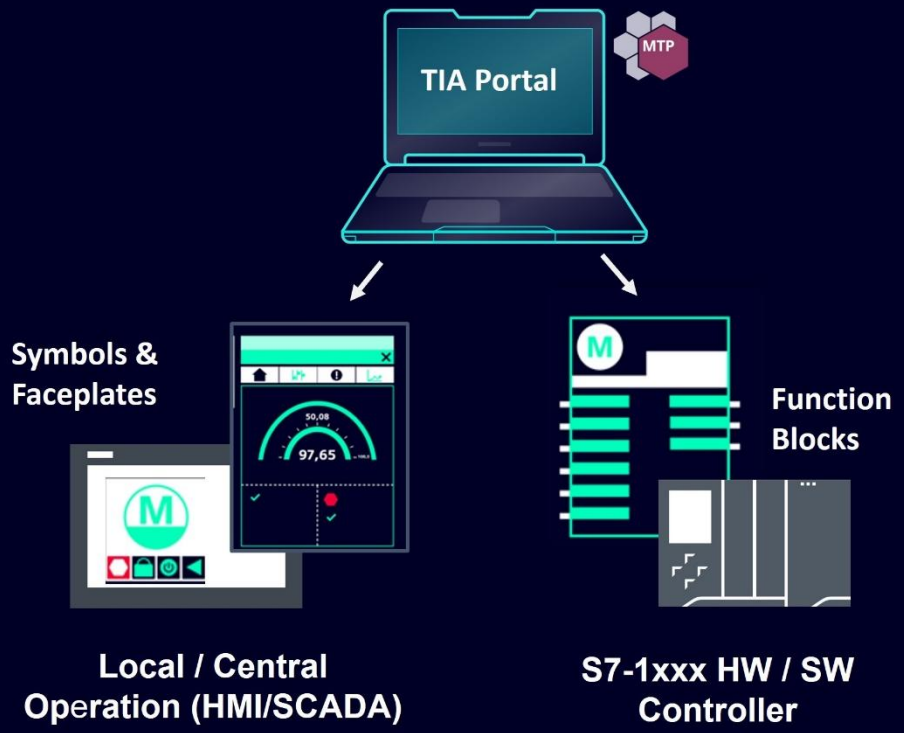
SIMATIC Control Function Library
Standardization across the entire PLC, HMI and SCADA Landscape



Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓



Stay flexible through standardization and focus on what makes you unique.

- Support of S7-1xxx HW / SW / Virtual controller
- Support from the WinCC Unified Panel up to the SCADA Systems **WinCC Unified / V8 / OA**
- **Support of Module Type Package (MTP)** for the Integration in PCS 7 / PCS neo as well as 3rd party SCADA / DCS System

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SIMATIC Control Function Library
New Industry Use Cases and Competition of the MTP V2.0 Feature Set



Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓

OEM
Process Equipment Assembly (PEA)



Pumping station using Aggr8 Application Example with Control Function Library

CFL - Industry-specific blocks

Optimized footprint & performance for S7-1xxx HW / SW controller & WinCC Unified / V8 / OA

Drives
- MonBinDrv — FP FP
- MonAnaDrv — FP FP
- MonBinVlv — FP FP
- MonAnaVlv — FP FP
- MonTriPosVlv — FP
- MonDsLVlv — FP

Monitor
- AnaView / AnaMon — FP FP
- BinView / BinMon — FP FP
- DIntView / DIntMon — FP FP
- StringView — FP FP

Channel Blocks
- ChAnaIn — FP
- ChAnaOut — FP
- ChDigIn — FP
- ChDigOut — FP

Interlock
- LockView4 — FP FP
- LockView8 — FP FP

Counter
- AnaCounter — FP
- DIntCounter — FP

Operate
- AnaManInt — FP FP
- BinManInt — FP FP
- DIntManInt — FP FP

Control
- PIDCtrl — FP FP
- Aggr8 — FP
- TimeSwitch8 — FP
- SetCrv — FP
- Polygon — FP

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

MTP Service Framework
- Procedure
- Config Parameter
- Procedure Parameter
- Process Values
- Report Values
- Service Interactions
- Position text

FP

WinCC V8 FP

WinCC Unified FP

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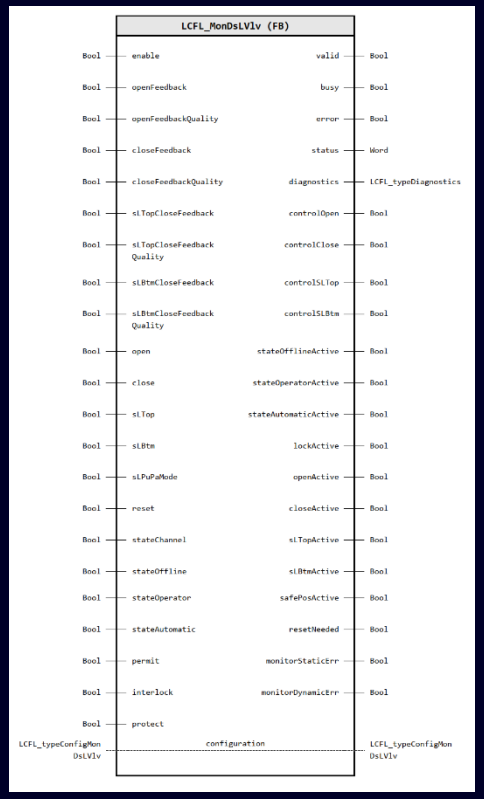
SIMATIC Control Function Library
Double Seat Valve - Applications Requiring Safe Separation of Process Media



Unified Basic	Unified Comfort	Unified Edge RT	Unified PC RT
✓	✓	✓	✓



A double-seat valve is used to ensure the safe separation of two incompatible media in piping systems while enabling simultaneous process control and minimizing the risk of cross-contamination, particularly in hygienic and industrial applications.

- Modular and memory optimized Block
- Support of S7-1xxx HW / SW / Virtual controller
- Support from the WinCC Unified Panel up to the SCADA Systems **WinCC Unified**
- **Supports virtual commissioning** based on PLCSIM Advanced and SIMIT

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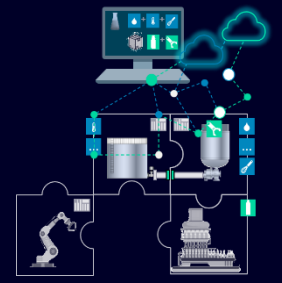
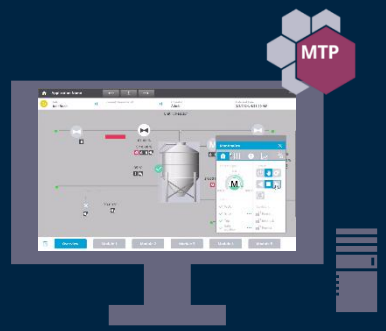
SIMATIC MTP Studio
ONE TOOL for all Use Cases from the PEA to the POL

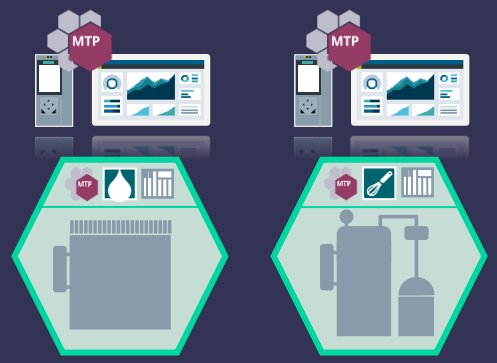


End customer & System Integrators
Process Orchestration Layer (POL)

SCADA



OEM
Process Equipment Assembly (PEA)



Option 1: MTP based on SIMATIC PLC and HMI

Option 2: MTP based Gateway on PLC / Edge

Modules / Skids

Engineering

TIA POR → SIMATIC MTP Studio

TIA Portal libraries:
POL
MTP Studio POL Library
PEA:
MTP Studio PEA Library
Control Function Library (CFL)
Process Function Library (PFL)
Customer Library (OEMs)

SIMATIC MTP Studio and TIA Portal deliver end-to-end MTP design / engineering from PEA to POL.

- **PEA Engineering** based on SIMATIC PLC / HMI also for gateway use cases (SIMATIC PLC / HMI or Edge)
  - SIMATIC Control Function Library
  - SIMATIC Process Function Library
  - Customer Libraries
- **POL Engineering** based on WinCC Unified
- **MTP Editor** for creating und editing of MTP File (rMTP Use Case)
- Supports the following MTP versions:
  - VDI/VDE/NAMUR 2658 (V1.1.0)
  - **MTP Specification; 2025; PI Specification no. 30.X (V2.0.0)**

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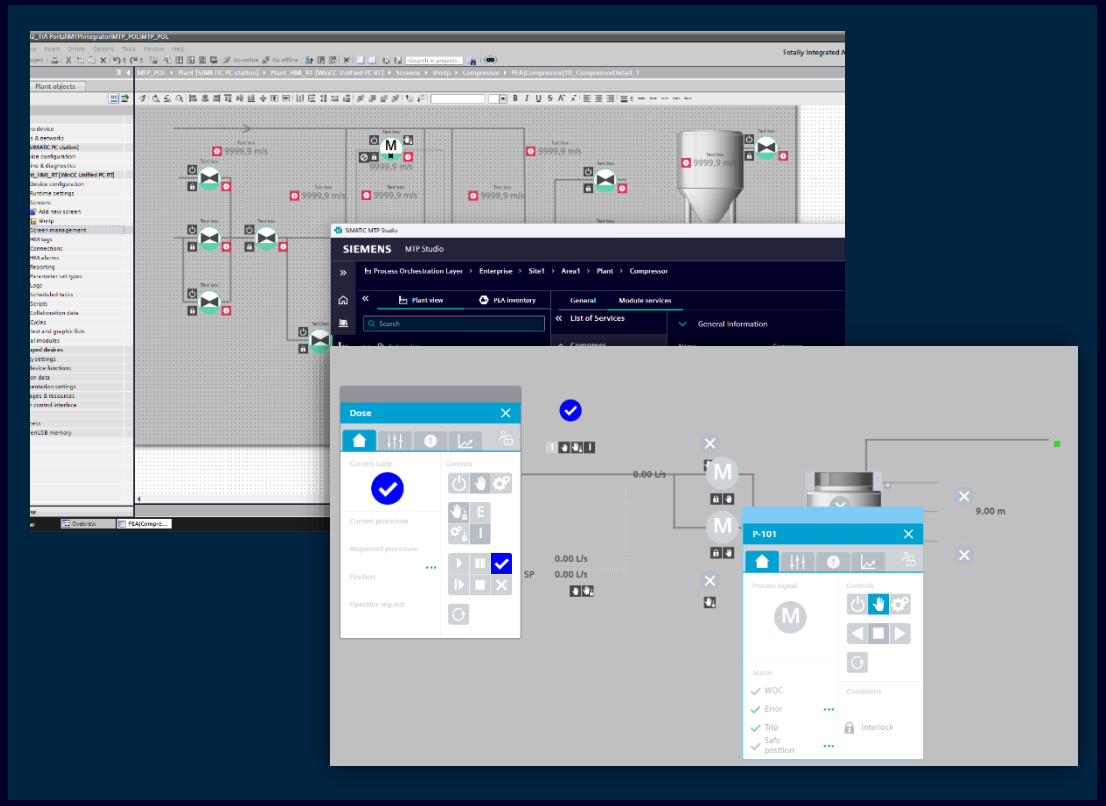
WinCC Unified - Process Orchestration
Reduce engineering effort by -70% [1] and Increase flexibility by +80% [1]



End customer & System Integrators
Process Orchestration Layer (POL)



WinCC Unified Process Orchestration Layer (POL) is a software-based orchestration layer that enables the operation and monitoring of modular production plants based on the Module Type Package (MTP) standard.

- WinCC Unified POL Engineering via the **MTP Studio**
- Supports the following MTP versions:
  - VDI/VDE/NAMUR 2658 (V1.1.0)
  - **MTP Specification; 2025; PI Specification no. 30.X (V2.0.0)**

[1] Source: ZVEI, 2022

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TIA Portal V21.1 - Table of contents

Start of a new era: TIA Portal V21.x
- A new era for your project lifecycle
- Concept & Details: One continuous version line
- TIA Installer

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

SIMATIC WinCC Unified – Innovations
- Responsive Design: Flexible Layouts for different screen sizes
- Panel Portfolio Extension: Unified Outdoor, ...
- Enhanced Connectivity: Tag Collaboration, OPC UA HA, ...
- EU CRA Preparation … and more!

SIMATIC WinCC RT Prof. – Innovations
- …

SIMATIC STEP 7 – Innovations
- Smooth Forward Online handling
- Keep DB online values on structural changes – 2nd step

SIMATIC Motion Control – Innovations
- New SIMATIC Drive Controller Redesign
- Kinematics & Interpreter innovations
- Cam Enhancements
- Named Value Data Types Enhancements

SINAMICS Startdrive & DCC – Innovations
- Support SINAMICS G210,G210C, G210X, G200 Stand, and basic
- Openness new automation interfaces for commissioning mode
- Export DCC chart as a DCC Library and Subchart monitoring
- FW5.3 and SIMATIC DC Redesigned FW 5.3 support

SIMATIC Hardware
- SIMATIC Controller
- SIMATIC Webserver
- Bus Adapter G2
- ET 200SP & MP

TIA Portal Hardware Configuration
- Ex-/Import of HW configuration via Hardware Declaration Data
- PROFINET Security: Data Record Access Limitation
- PROFINET: Reporting security-relevant auditable events
- Access PLCs via Fully Qualified Domain Name (FQDN)

PROFINET & Communication
- IPv6 support for S7-1500 OPC UA and Webserver
- PROFINET: Topology based device name assignment
- PROFINET: Optional shared device

System functions
- TIA Portal Updates
- Open, upgrade and migrate TIA Portal projects
- Project & Software Integrity
- TIA Portal Openness & Add-Ins
- SIMATIC Source Documents (SimaticSD)
- Version Control Interface (VCI)
- CAx: AutomationML & Publication Tools
- TIA Portal Usability

TIA Portal options and more…
- **SIMATIC STEP 7 Safety**
- **SIMATIC Safe Kinematics**
- **TIA Portal Multiuser Engineering**
- **SIMATIC Robot Library**
- **OPC UA**
- **SIMATIC S7-PLCSIM / S7-PLCSIM Advanced**
- **SIMATIC Target™ for Simulink®**
- **TIA Portal Test Suite**
- **SIMATIC STEP 7 CFC**
- **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 Runtime Advanced



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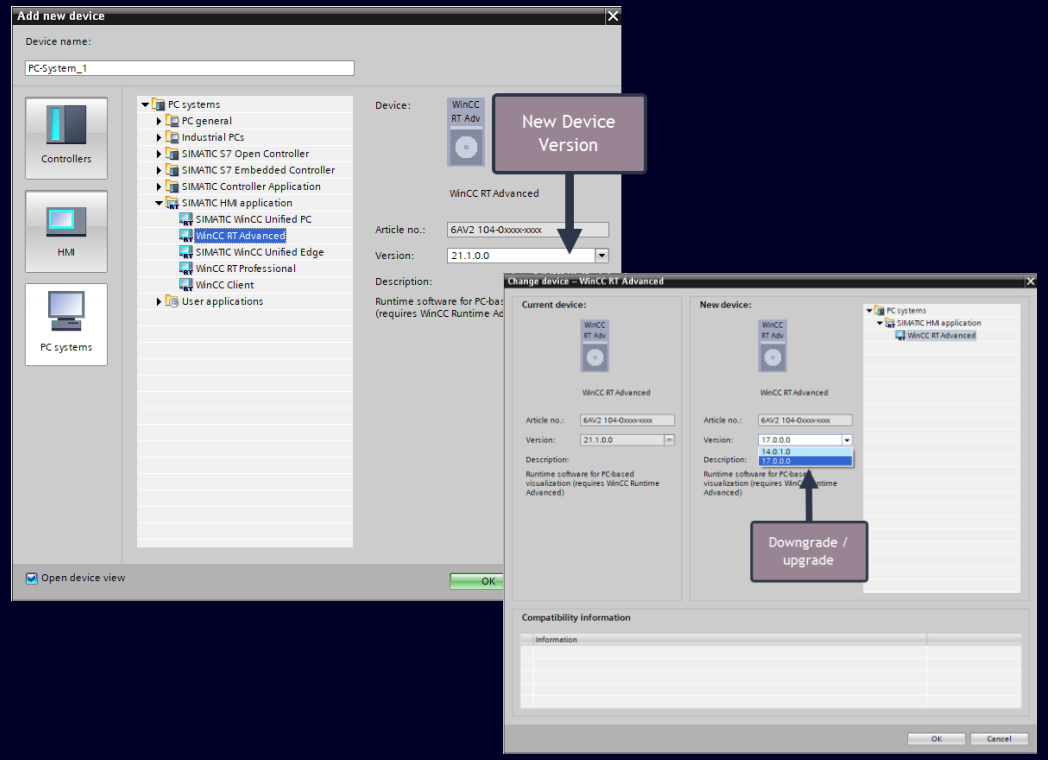
WinCC RT Advanced – Security
New WinCC RT Advanced device version V21.1



Creation of new device.

CRA compliance with zero rework — same RT Advanced setup, just a newer device version.

- **Enables the user to configure CRA enabled device version.**
- **Upgrade and downgrade of device versions**
- **Migration of TIA project from lower to higher version and vice-versa**
  - Consistent device version handling ensuring existing projects remain compatible

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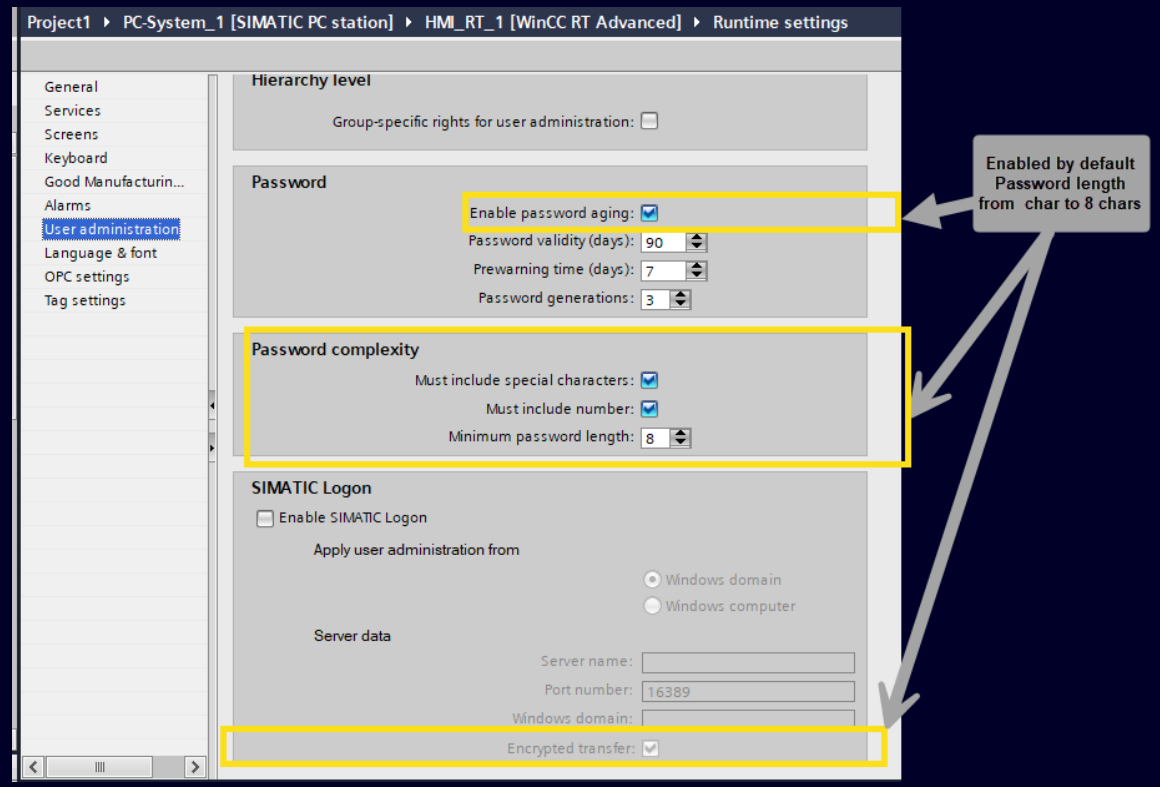
WinCC RT Advanced – Security
”Secure by Default" Configuration for RT Advanced project



User Administration settings in engineering.

Secure by Default automatically applies recommended security settings to RT Advanced projects, reducing cyberattack exposure, preventing configuration errors, and helping customers achieve a more secure HMI deployment with less engineering effort.

- **Properties that are made secure by default**
  - HTTPS communication,
  - Secure SMTP configuration,
  - Secure project transfer settings
- **Stronger password policies**
  - Stronger password enforcement.
  - Minimum password length increased to 8 characters in V21.1

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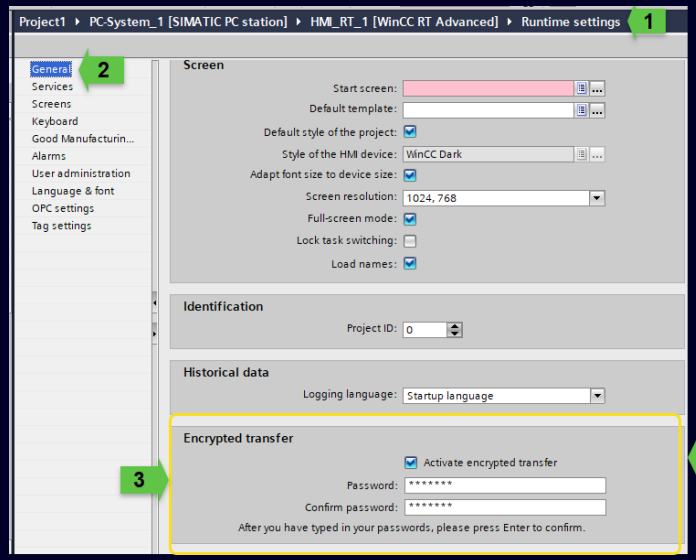
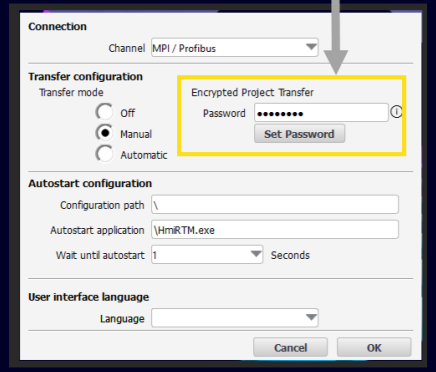
WinCC RT Advanced – Security
Secure Project Transfer for SIMATIC HMI RT Advanced from TIA Portal



Runtime Settings in Engineering.

TIA Portal Secure Project Transfer settings Device Version : 21.1

Secure Project Transfer Settings on Device



Settings on PC Runtime.

Secure Project Transfer helps customers protect engineering projects from unauthorized access and data tampering during deployment.

- **Secure Project Deployment**
  - Customer can see the encrypted project transfer option under runtime settings like unified systems.
- **Controlled Access to Project Download**
  - Authorized users are allowed to access and download the projects to IPC panels with RT Advanced installed in it

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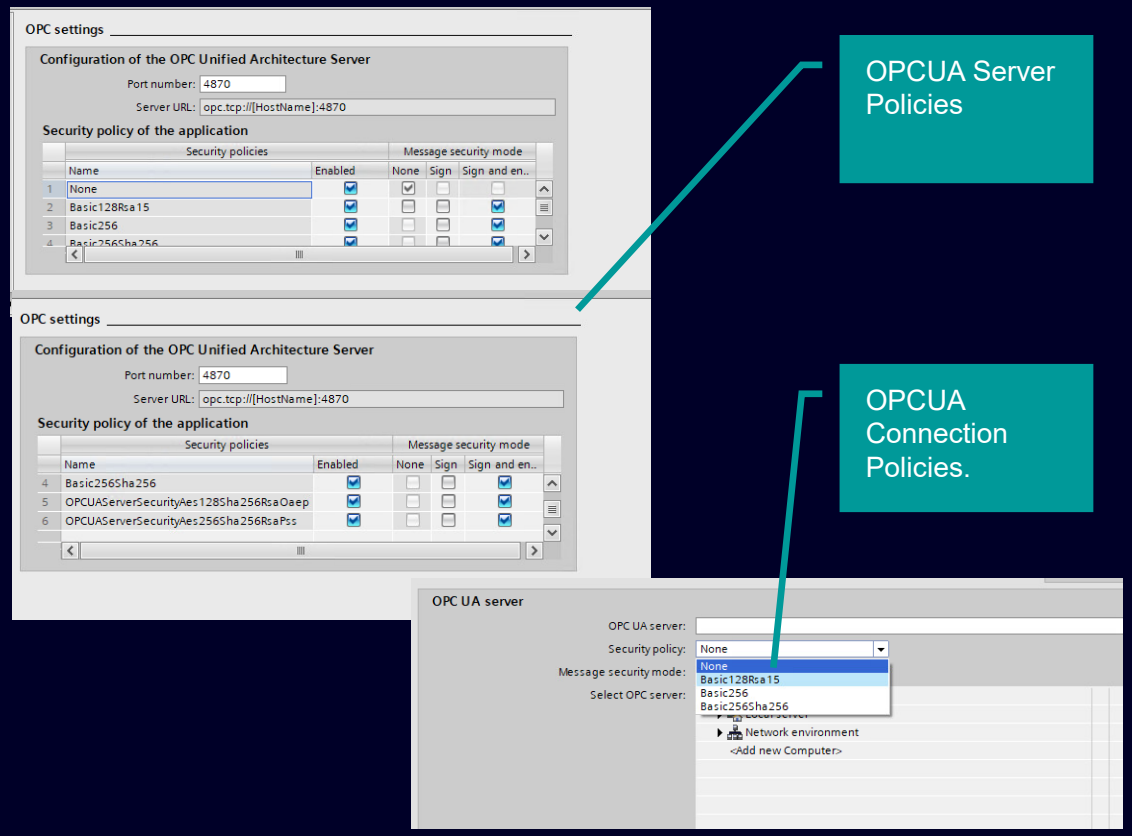
WinCC RT Advanced – Security
New OPC UA Security Policies for OPC UA Server and Connection



OPC UA Security Settings in Engineering.

Secure connectivity, seamless interoperability, and future-ready industrial communication through standards-compliant OPC UA integration.

- Customers can securely connect HMI systems to OPC UA servers and clients that require newer security profiles and stricter security policies.
- Customers can choose between **Sign** and **Sign & Encrypt** modes based on their security and performance requirements.
- Allows deployment in both highly secured production environments and compatibility-focused brownfield installations

Note: The security policies are aligned with the unified systems.

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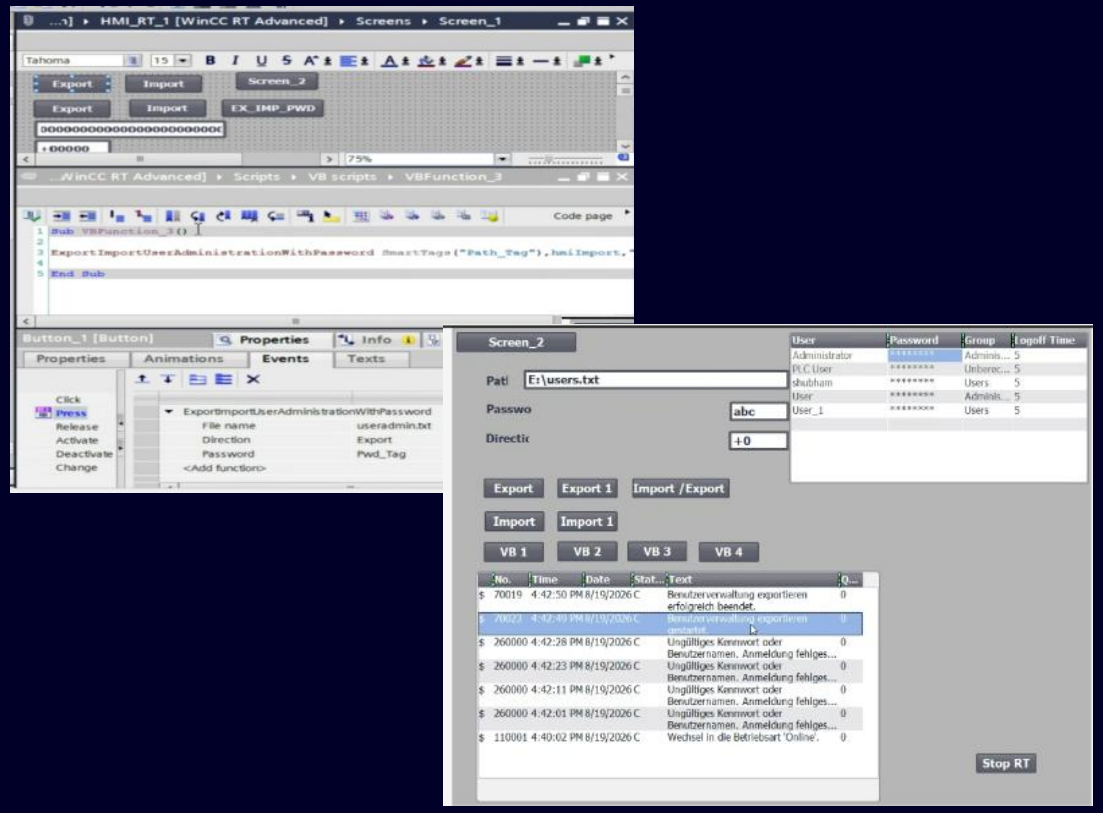
WinCC RT Advanced – Security
Secure Export / Import of User Administration Data from RT Advanced

Create button with system function in Engineering.



Execute system function (button) in Runtime.

Customers can securely back up, transfer, and restore RT Advanced user administration using password-based encryption, reducing the risk of exposing sensitive user and access information while supporting CRA-aligned confidentiality requirements.

- **New system function:**
  ExportImportUserAdministrationWithPassword.
  - Secure Backup of User Administration Data
  - Secure Migration or Transfer user data between Runtime Systems
  - CRA Compliance-Oriented Handling of User Data
  - Password shall accepted from tag-redirection

Note: Customers using RT Advanced device version **21.1.0.0 and above** can use the new system function to protect exported user administration data and avoid plain-text exposure, supporting the CRA confidentiality objective.

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WinCC Runtime Professional



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WinCC Runtime Professional – Overview
Modern, secure and web-ready HMI



Secure, intuitive operation on site and via web

- **Modern UI**
  - Enhanced Trend Control with icon-based display of string tags
  - Advanced Drag & Drop of tags into Trend Control
- **Cybersecurity and Standardization**
  - Support for the Certificate Management Protocol (CMP)
  - Enhanced authentication: mobile and RFID card
  - EU CRA ready and SQL Server 2025
- **WebUX**
  - Combined IIS hosting for WebUX and Web Navigator
  - Improved customization (fonts, icons, picture scaling)
  - Adaptive design and configurable screen scaling via scripts
- **Licensing**
  - New license for Web Monitor and Operate
- **Runtime**
  - Client context awareness via scripts
  - Configurable dynamic SVGs (animations, events)

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TIA Portal V21.1 - Table of contents

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SIMATIC WinCC RT Prof. – Innovations
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- Smooth Forward Online handling
- Keep DB online values on structural changes – 2nd step

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- New SIMATIC Drive Controller Redesign
- Kinematics & Interpreter innovations
- Cam Enhancements
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- Access PLCs via Fully Qualified Domain Name (FQDN)

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STEP 7 – Innovations
Smooth Forward online handling

ONE continuous TIA Portal:

Switch from TIA Portal V21 to V21.1 during live production with **zero disruption**.

Features:

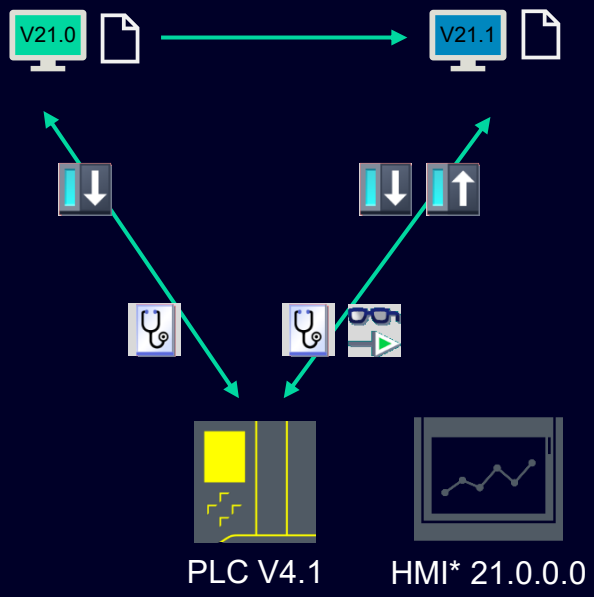
- Real PLC & HMI delta compile
- Real PLC & HMI delta download in RUN
  (new version does not change Safety program → No F-download)
- Improved PLC online compatibility across TIA Portal versions:
  - Monitoring, Online & Diagnostics
  - Upload PLC from V21.0 to a V21.x TIA Portal project



Online Functions

Benefits for customers:

- **No** need to maintain **different** TIA Portal **versions** in long-term
- **No parallel** TIA Portal **versions** to manage
  - Allowing incremental runtime updates of machines in the plant
  - **No downtime**



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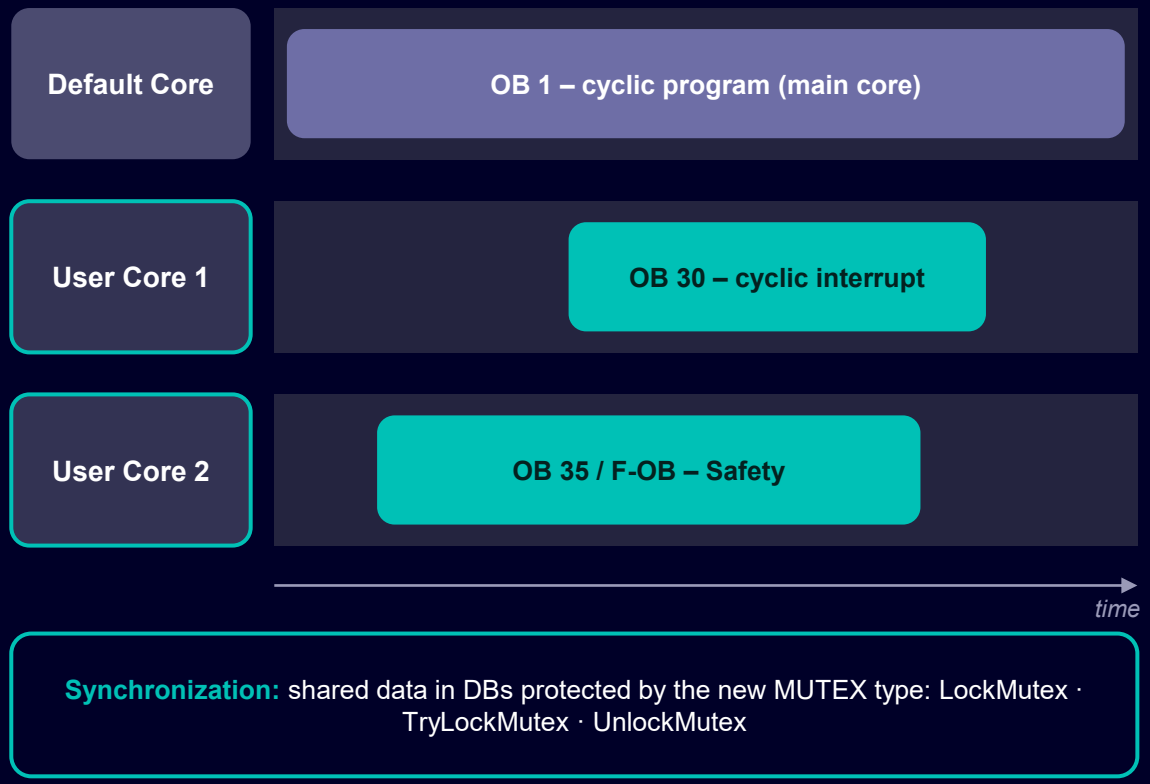
STEP 7 – Innovations
Multicore support in the PLC program for S7-1500

Parallel processing: distribute OBs across the CPU cores



Features

- Parallel OB execution on **additional user cores** – up to 2 on the CPU 1518, up to 4 on the S7-1500 Software Controller (CPU 1508S)
- Supported: CPU 1518-3 PN / 1518F/T/TF-3 PN (FW V4.2) and S7-1500 Software Controller CPU 1508S
- Assignable OBs: cyclic, time-delay and time-of-day interrupts plus the Safety program
- Per-OB core assignment directly in TIA Portal (Default / User Core 1 / User Core 2)
- New **MUTEX** data type and instructions: LockMutex, TryLockMutex, UnlockMutex
- Dedicated multicore diagnostics incl. Mutex deadlock detection
- Configurable via Openness and VCI; profiling with multicore support

Benefits

- **Higher user program performance** on existing 1518 hardware – no hardware change required
- Parallel OB processing **reduces cycle times, reaction times and jitter**
- More **computing headroom for future growth** and better determinism of the application
- Familiar engineering with integrated synchronization, diagnostics and profiling

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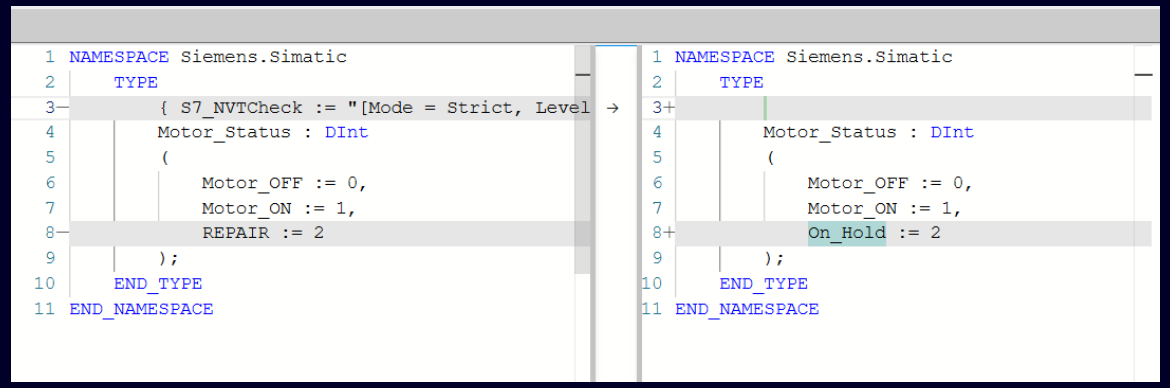
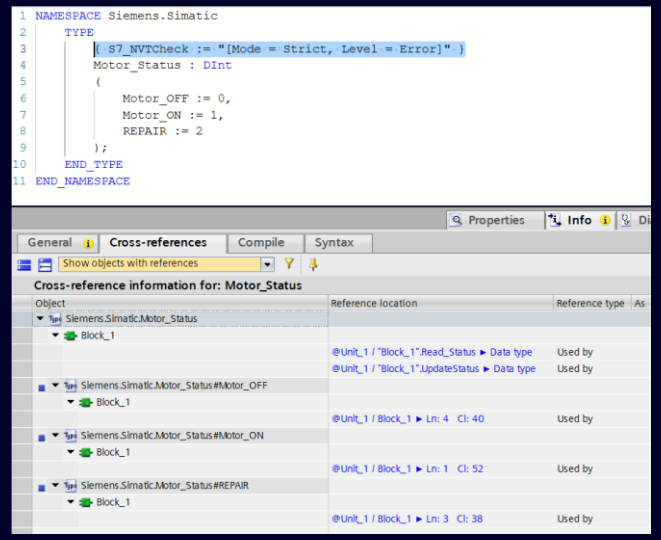
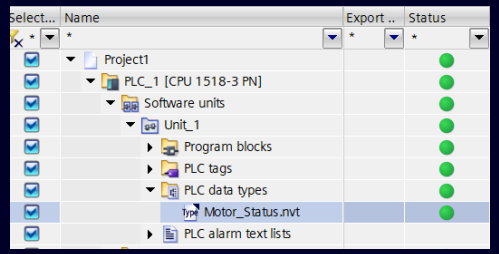
STEP 7 – Innovations
Named value data types within Software Units – Feature roundup







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

- Detailed Compare & Print the result
- Strict assignment, “ENUM-like” behavior
- Cross Reference Information
- Improved VCI support
- Download & Upload improvements
- Shared Commissioning

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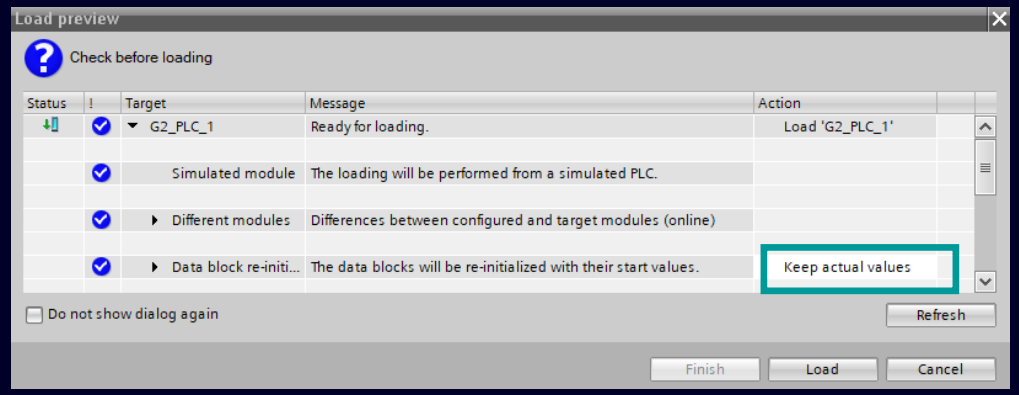
STEP 7 – Innovations
Avoid Data Block reinitialization for structural changes



Initial recipe

FillingStationControl_DB

	Name	Data type	Start value	Monitor value
	Input			
	Enable	Bool	false	FALSE
	Output			
	StringVerify	String[30]	'DefualtStringV...'	'RuntimeString'
	InOut			
	Static			
	RetainCounter	Int	0	15622
	RetainFlag	Bool	false	FALSE
	CycleCounter	DInt	0	15622
	SetPointValue	Real	100.0	7911.0
	CalibOffset	Real	3.14	159.3517
	RunHours	DInt	0	15622
	HeartBeat	Bool	false	FALSE
	Motor	Struct		
	MainRecipe	"RecipeParameters"		
	SetPoint	Real	0.0	3905.5
	Tolerance	Real	0.0	2.5
	Active	Bool	false	TRUE
	DataLog	Array[0..13] of Int		

Updated recipe

FillingStationControl_DB

	Name	Data type	Start value	Monitor value
1	Input			
2	Enable	Bool	false	FALSE
3	Output			
4	StringVerify	String[30]	'DefualtStringV...'	'RuntimeString'
5	InOut			
6	Static			
7	RetainCounter	Int	0	15622
8	RetainFlag	Bool	false	FALSE
9	CycleCounter	DInt	0	15622
10	SetPointValue	Real	100.0	7911.0
11	CalibOffset	Real	3.14	159.3517
12	RunHours	DInt	0	15622
13	HeartBeat	Bool	false	FALSE
14	Motor	Struct		
15	MainRecipe	"RecipeParameters"		
16	SetPoint	Real	0.0	3905.5
17	Tolerance	Real	0.0	2.5
18	Active	Bool	false	TRUE
19	MinLimit	Real	0.0	0.0
20	MaxLimit	Real	0.0	0.0

Features

Provides the possibility to retain the actual values of unmodified variables when download is performed with any structural changes in data blocks

- S7-1500 CPUs FW 4.1+ and S7-1200 G2 CPUs FW 4.2
- Available via Openness interface
- Extended Optimized Instance and Global data blocks with structural changes
  - Modifications to UDT structure at any nesting level
  - Modifications to DB structure (Adding/deleting variables) at any nesting level inside structs/nested structs
  - Keep values for unmodified variables

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)

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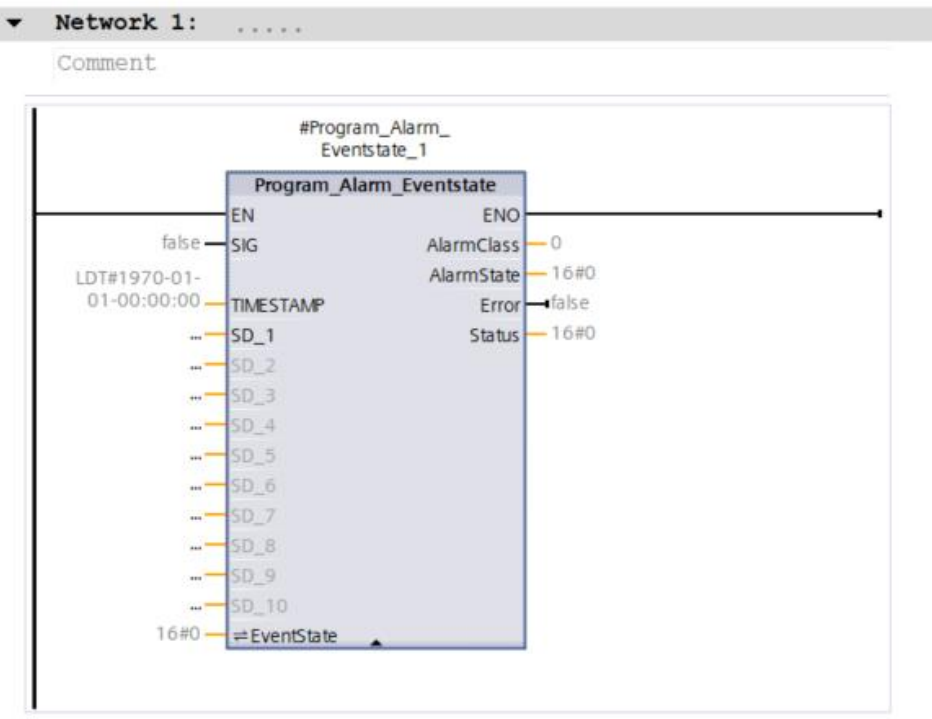
STEP 7 – Innovations
Program_Alarm with Event-State: S7-1500 states for Basic Process Control



Features

- **New instruction —** Program_Alarm_Eventstate extends Program_Alarm with an event-state input/output.
- **EventState InOut —** 32-bit value per alarm for PCS 7 / WinCC V7.x/V8 measuring-point information.
- **AlarmState output —** 8-bit value per alarm for status, information validity and signal overflow.
- **Visualization —** WinCC V8 Basic Process Control group displays.
- **Controller —** S7-1500 or S7-1200 G2.

Benefits

- **Group displays —** Nested Program_Alarms on overview pictures, including alarm class.
- **Click-to-source —** Jump directly from the overview picture to the alarm reason.
- **Standard state —** Follows the Basic Process Control specification, with no extra license or firmware required.

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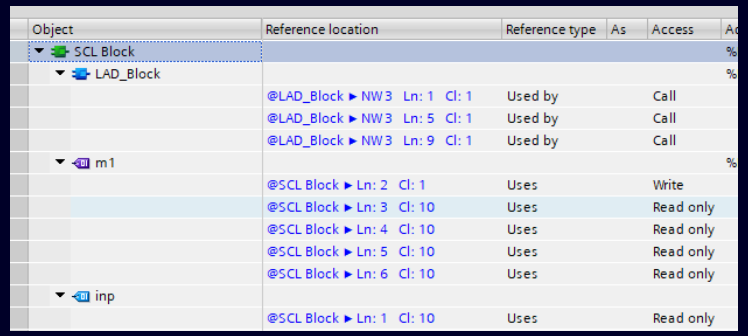
STEP 7 – Innovations
General Improvements

SCL line number in Cross Reference Information

Usages of operands in SCL-blocks and -networks are displayed with line and column number.



Object	Reference location	Reference type	As	Access
SCL Block				
LAD_Block				
	@LAD_Block ▸ NW 3 Ln: 1 Cl: 1	Used by		Call
	@LAD_Block ▸ NW 3 Ln: 5 Cl: 1	Used by		Call
	@LAD_Block ▸ NW 3 Ln: 9 Cl: 1	Used by		Call
m1				
	@SCL Block ▸ Ln: 2 Cl: 1	Uses		Write
	@SCL Block ▸ Ln: 3 Cl: 10	Uses		Read only
	@SCL Block ▸ Ln: 4 Cl: 10	Uses		Read only
	@SCL Block ▸ Ln: 5 Cl: 10	Uses		Read only
	@SCL Block ▸ Ln: 6 Cl: 10	Uses		Read only
inp				
	@SCL Block ▸ Ln: 1 Cl: 10	Uses		Read only

This SCL specific location information can also be seen in:

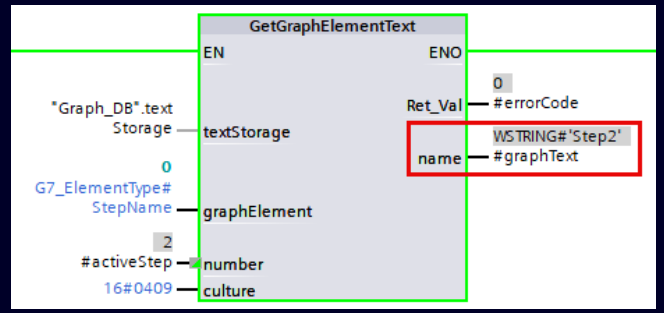
- Call and dependency structure
- Call path dialog while monitoring
- Go to read/write access in code editors

Read GRAPH step name during runtime

S7-Graph users can now read the name of the active step – as well as transition-names, interlock, and supervision texts – at runtime as a WString in the user program. Ideal for step history buffers, diagnostics, or logging.

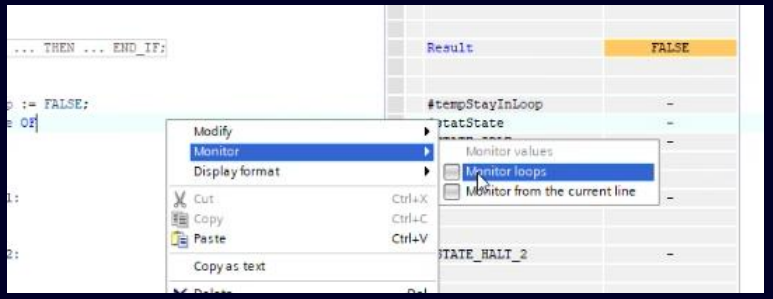
Highlights

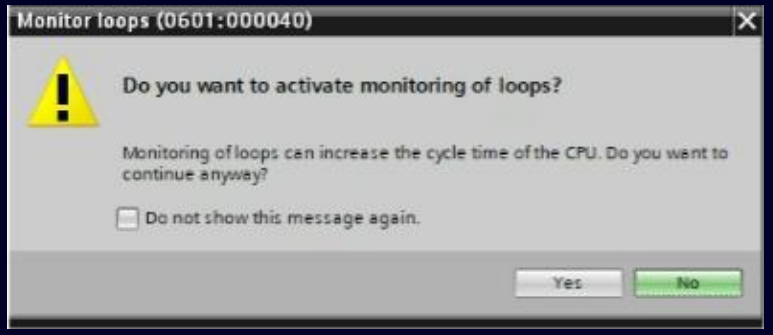
- New system blocks: **GetGraphElementText** (FC325, comfort) and **GetTextlistEntry** (SFC170, generic access to any text list)
- Multilingual: language selection via MS-LCID identifier (e.g. 16#0409 = en-US)
- Usable in Graph-Extension block also



Monitoring loops

- "Monitor loops" is only activated once – and active as long as the TIA Portal project is open.
- "Do not show this message again" works correctly





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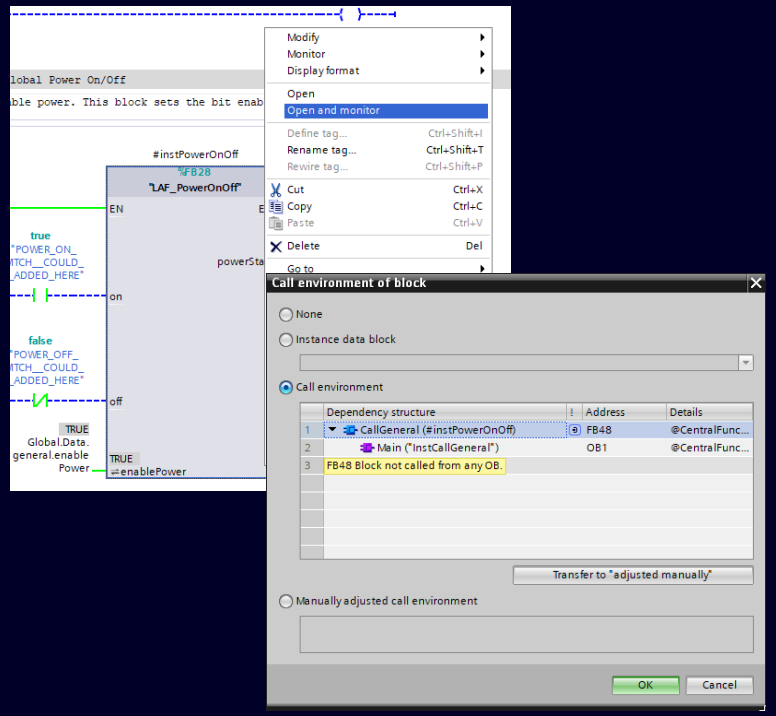
STEP 7 – Innovations
General Improvements

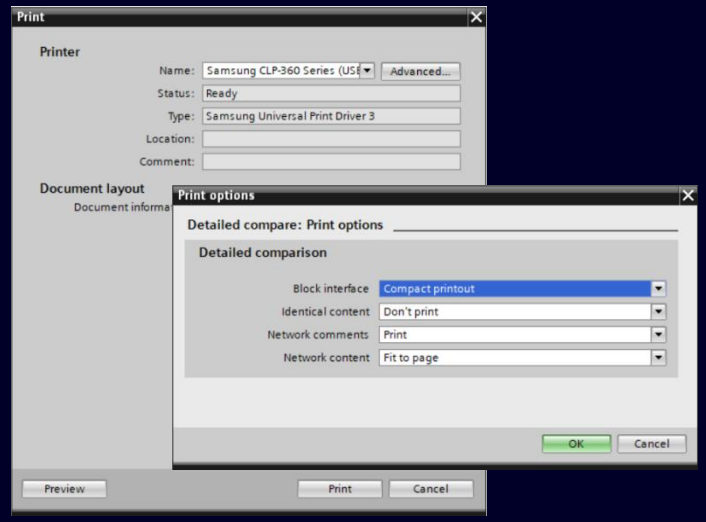
Open and monitor blocks

- Call environment is now shown directly in the editor
- “Open and monitor” function works now under any conditions



Improvements Detailed Compare

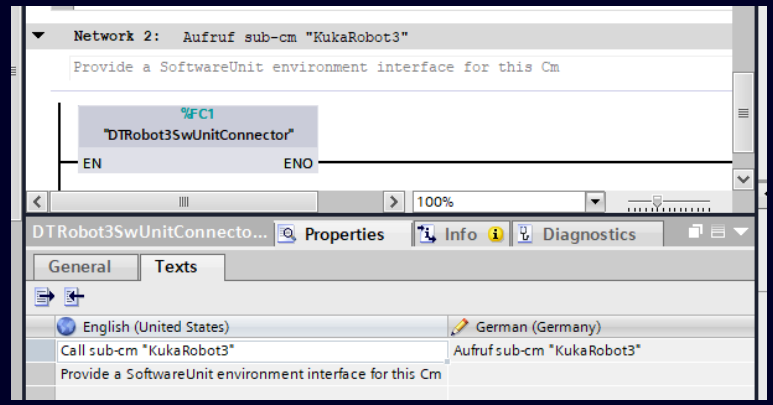
- Printing of the Detailed Compare Editor is now possible
- Allows easy documentation and traceability of changes
- Improves auditing capabilities of TIA Portal



Show reference language if no translation exists

- Improved readability and maintainability of the program even with incomplete translations





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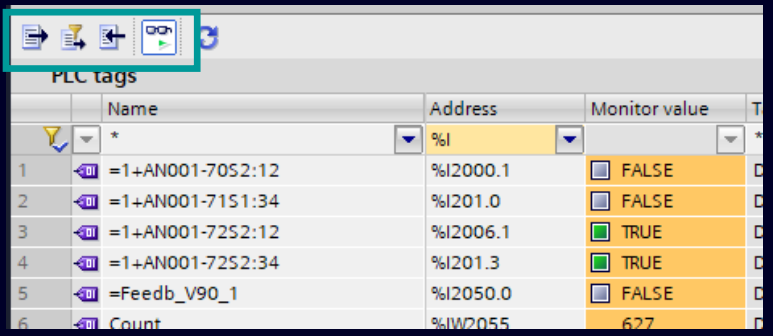
STEP 7 – Innovations
General Improvements

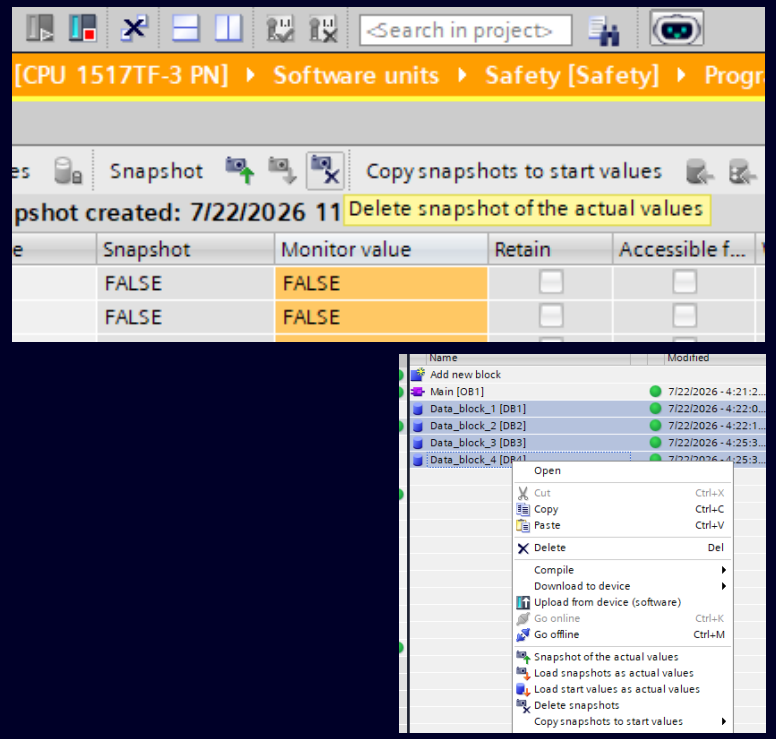
Improvements for PLC-Tagtable

- Monitoring in filtered tag table:
  easily reduce amount of monitored tags using filtering
- Export of filtered tag table:
  export a subset of a tag table only using filtering



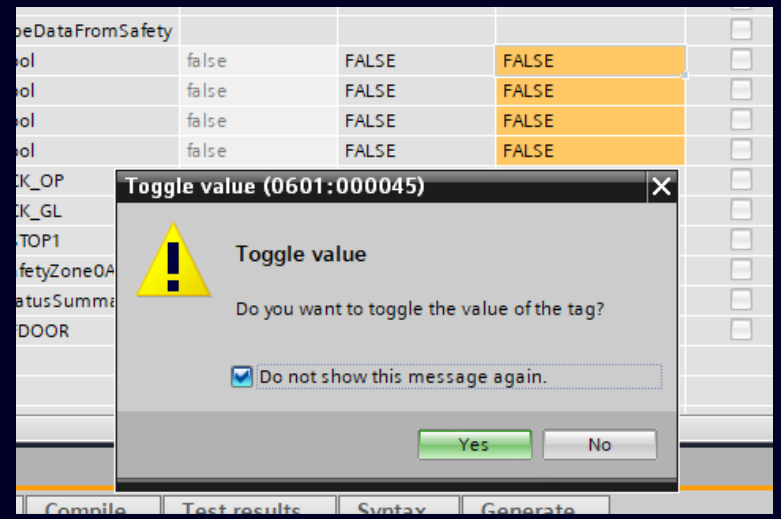
Delete Snapshots

- Outdated snapshots can be easily removed
- For single or multiple DBs



Changed behavior for Toggle value dialog

- “Do not show this message again.” is persisted for the current TIA Portal installation



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STEP 7 – Innovations
General Improvements

Setting system know-how protection at code blocks using Openness

- To avoid the password dialog when opening a know-how protected code block, the code block can be set to **system know-how protected**
- using the Openness API only
- The system know-how protection at a code block **cannot be reverted** by the user or Customer Support

```
var systemProtectionProvider = codeBlock
    .GetService<Siemens.Engineering.SW.Blocks.PlcBlockSystemProtectionProvider>();

// Enable system protection with password
systemProtectionProvider?.Protect(securePassword);
```

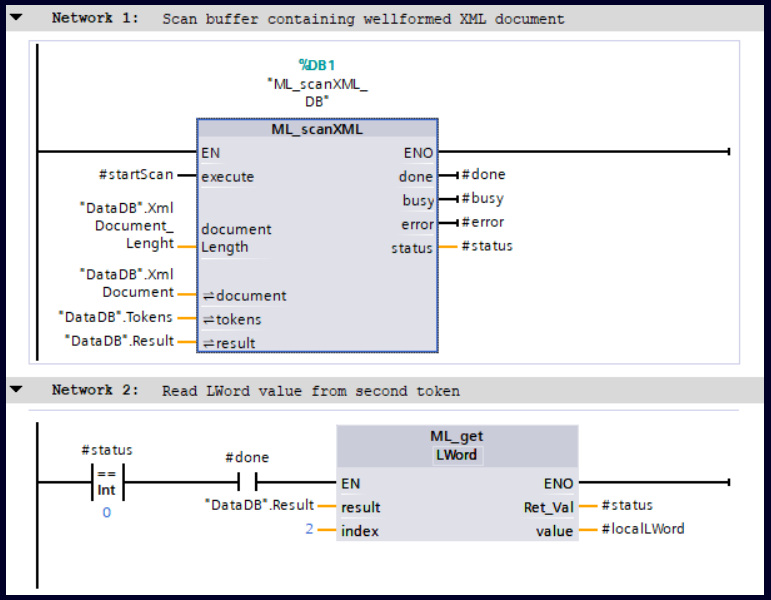
Performance improvement in Know-How Protection

- Improved performance in the know-how protection of multiple blocks via Openness using newly introduced API “KnowHowProtectBlocks”.
- “KnowHowProtectBlocks” accepts list of blocks as parameter. It returns overall result of the operation and per block result as well.

```
var blocksProtectionProvider = plcSoftware
    .GetService<PlcBlocksProtectionProvider>();
BlocksProtectionResult khpResult = blocksProtectionProvider.
    KnowHowProtectBlocks(plcBlocks.ToList(), knowHowProtectionPassword);
```

Parser/Lexer instructions

- Instructions to parse XML buffer and convert UTF-8 encoded values into elementary data types to fill structured UDTs
- This is a flexible, human-readable way to exchange data with PLCs



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Delivery Release
expected Q1 2027

New SIMATIC Drive Controller Redesign

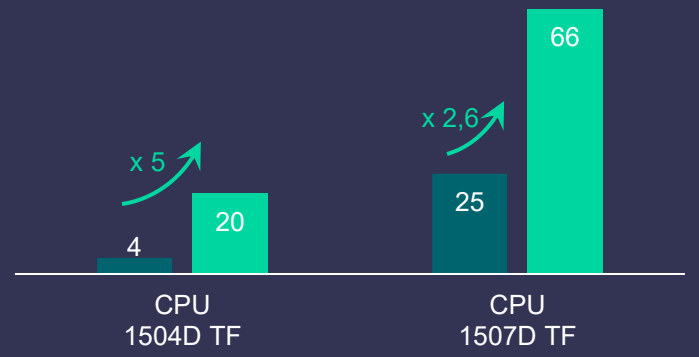
Strengthening CPU 1504D TF and CPU 1507D TF by innovating the integrated Motion PLC



Performance

Substantially enhanced Motion Control and PLC performance, enabling a broader range of machine building applications on the drive-based platform.

Synchronous axes (2ms / 50% CPU-Load)



Innovative Motion Control

Supporting latest SIMATIC PLC FW 4.2 and Motion Control Technology V11.0

SINAMICS S120 Integrated

Proven SINAMICS S120 technology based on version V5.3

Connectivity

Two PROFINET IO IRT Interfaces for modern networking

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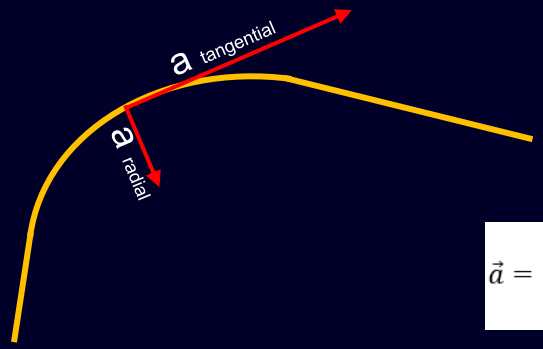
Kinematic Innovations

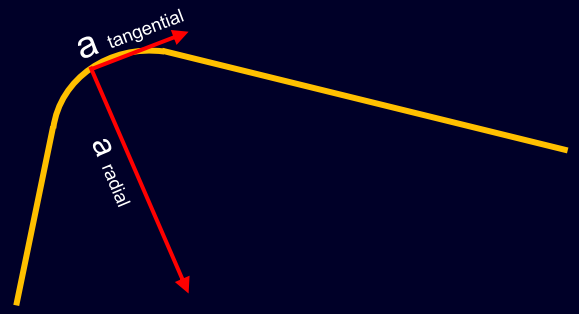
Decoupling blending dynamics enables stable motion at small radii

Customer challenge

large radius



small radius

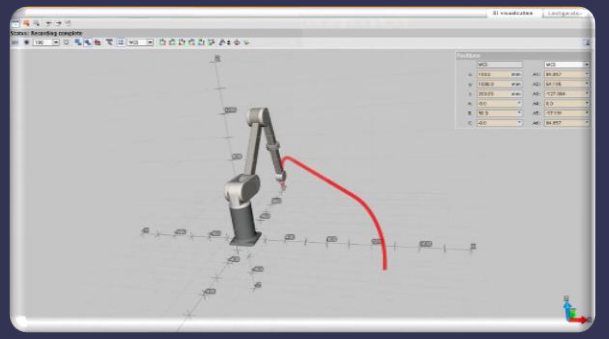


$$\vec{a} = \begin{bmatrix} a_x \\ a_y \\ a_z \end{bmatrix} = \vec{t} \cdot a_p + \vec{\kappa} \cdot v_p^2$$

Small radii cause torque peaks

- Radial acceleration increases with square of velocity
- Small radius lead to high radial acceleration
  - → torque peaks in tight curves
  - → Unstable Motion & limited speed

Solution



Flexible specification

- ✓ Specific blending dynamics
- ✓ Minimum blending distance

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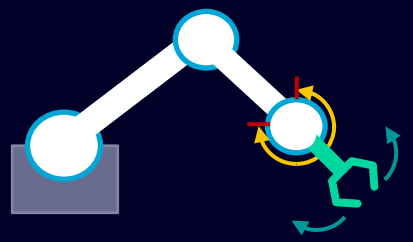
Kinematic Innovations
S7-1500T Motion Control KinPlus

NEW FEATURE

- Joint limits are considered automatically during orientation planning
- The orientation direction is automatically selected to avoid crossing a joint limit
- Reduces risk of cable twisting and mechanical stress



SIMPLIFIED ORDERING

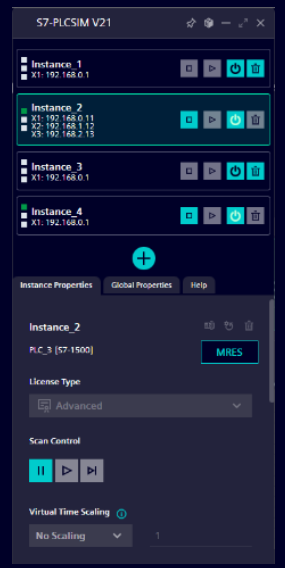
- One product number for all versions based on PLC FW V4.x
  6ES7823-0KE04-1AA0
- Worldwide distribution via Online Software Delivery (OSD)

KinPlus V11.0 now supports

- ✓ **CPU 1504D TF** *new*
- ✓ **CPU 1507D TF** *new*
- ✓ CPU 1516 T(F)
- ✓ CPU 1517 T(F)
- ✓ CPU 1518 T(F)

SIMULATION

- Full KinPlus simulation with PLCSIM Advanced V9
- Validate 5D/6D robotics applications before commissioning
- KinPlus simulation extension available as downloadable DLL



The latest DLL-file can be downloaded at:

https://support.industry.siemens.com/cs/ww/de/view/109999782

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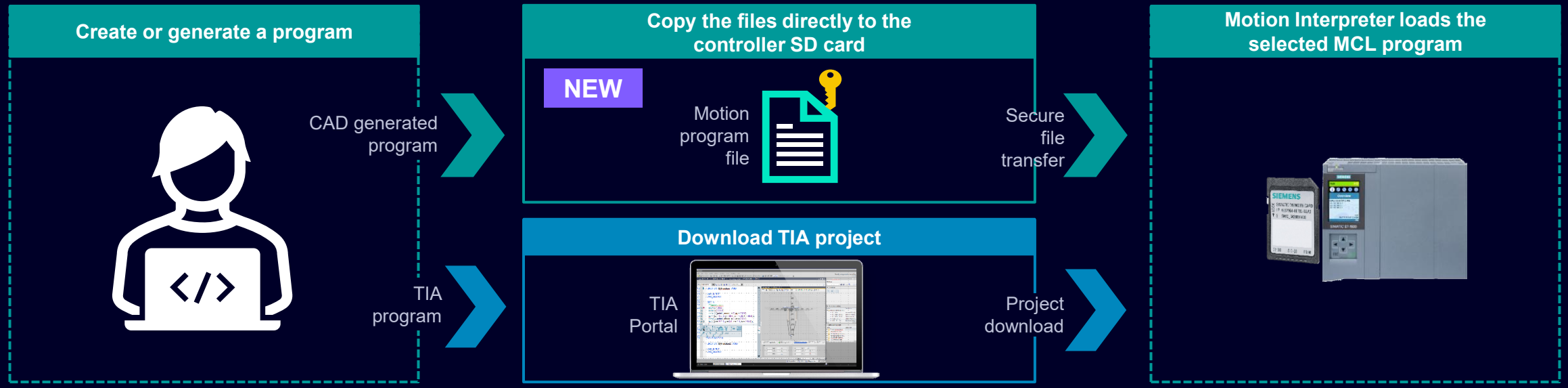
Interpreter innovations
Edit and deploy robot programs without TIA Portal

MCL programs stored directly on the controller SD card

MCL programs are stored as independent files on the controller SD card. Programs can be created, edited and transferred without changing the TIA Portal project.



BENEFITS FOR CUSTOMERS

NO TIA PORTAL REQUIRED
Edit or replace robot programs during commissioning and operation.

NO PROJECT DOWNLOAD
Transfer new programs as files instead of modifying the engineering project.

FASTER UPDATES
Exchange programs between machines and restore variants with less engineering effort.

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Interpreter innovations
Compressor function for increased performance

Customer challenge



Generated code (CAD /CAM)

- Trajectory description by multiple points
- More points
  → higher path accuracy
  → small segments
  → Limits dynamics

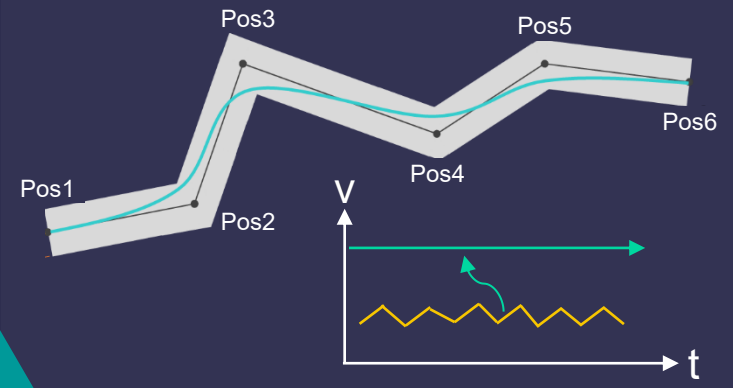
Current limitation



Limited Look-Ahead

- Controller calculates up to 10 commands
- Resulting path distance is limited
- Path dynamics are constrained

Solution



Path Compression

- ✓ Specification of compressor tolerance
- ✓ Combine points to polynomial segments
- ✓ Reduced number of commands for look-ahead → higher constant velocity

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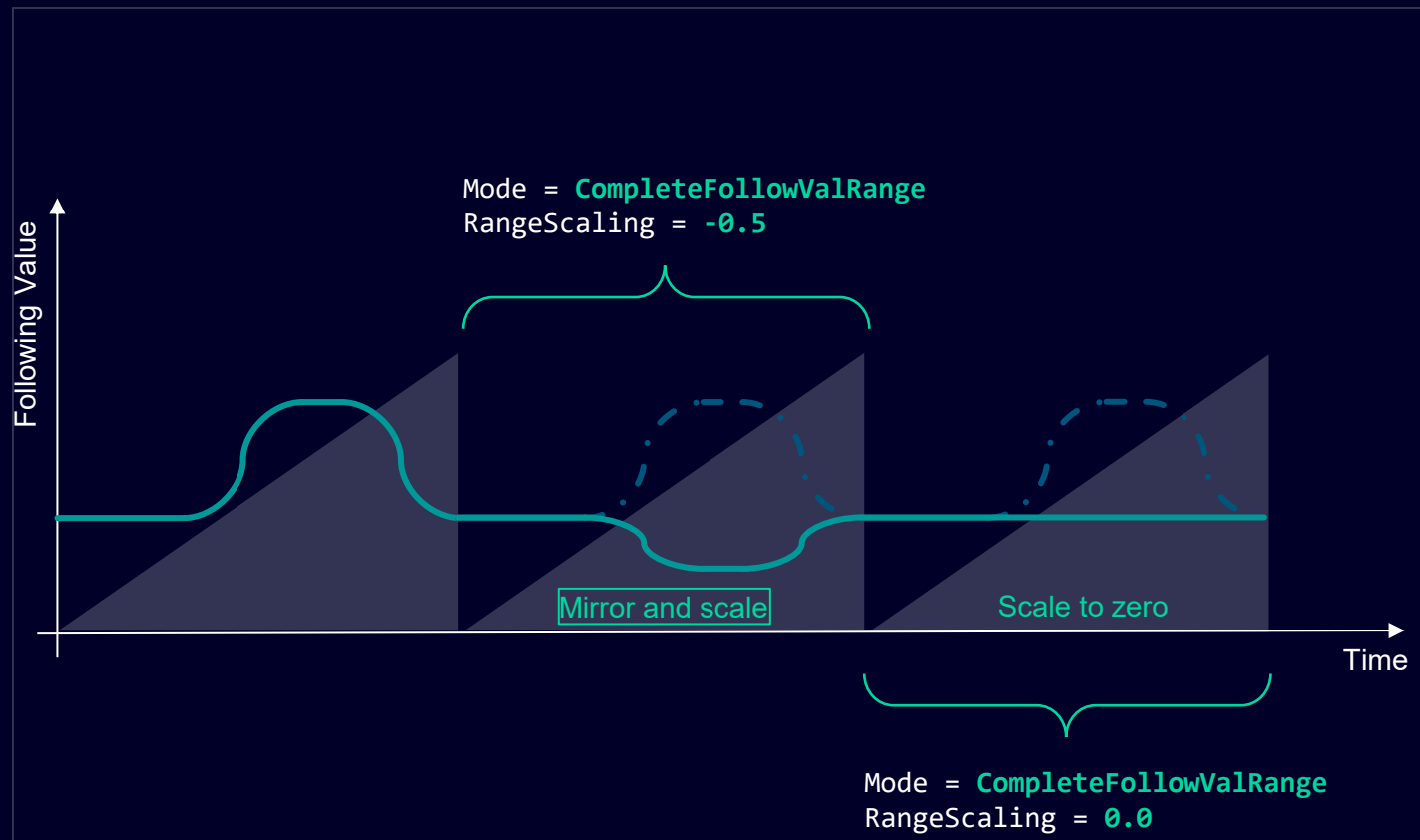
Cam Enhancements
Select full range with MC_SetCamRangeScaling



Full Range Mode

The new mode ***Complete Following Value Range*** at the command ***MC_SetCamRangeScaling*** extends the range scaling functionality for camming applications. It enables scaling across the complete cam profile, including scaling to zero and cam mirroring through negative scaling factors.

Benefits

- Skip cam-controlled motion segments without restarting the active camming command
- Easily adjust correction and compensation movements through dynamic cam scaling and mirroring
- Increase application flexibility while maintaining continuous cam synchronization

➔ Reduce cycle times and engineering complexity

Example

In packaging applications, products may be transported using a continuous base movement while a cam-controlled motion performs a process step. If a product is missing, the cam motion can be set to zero. Similarly, correction movements with a cam can be scaled and mirrored. Both is possible now without stopping the active camming.

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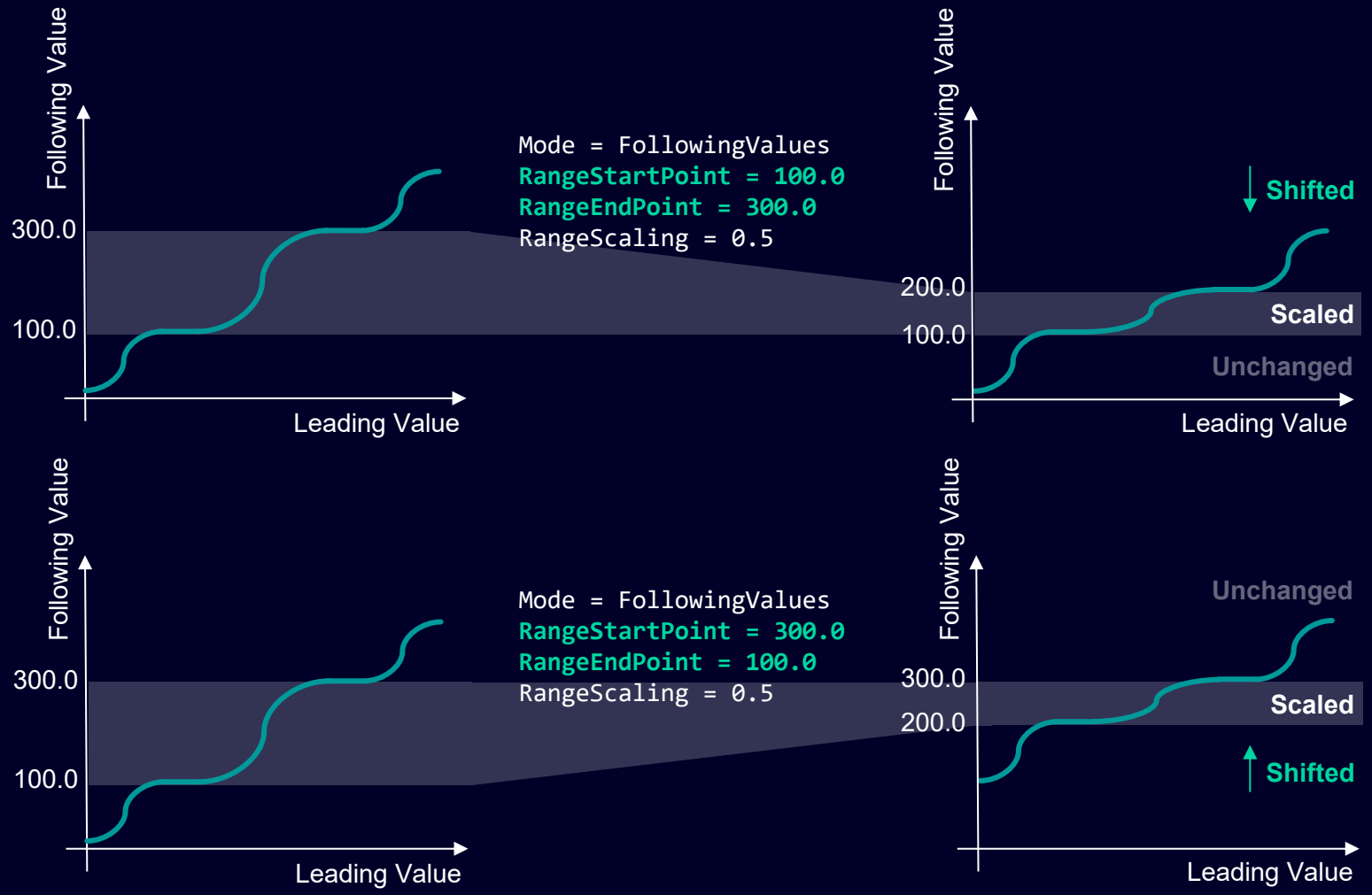
Cam Enhancements
Select shifted range with MC_SetCamRangeScaling



Select shifted range

Select the range that will be shifted during range scaling implicitly with the relationship between the start and end point of the scaled range. If the end point is greater than the start point the range after the end point will be shifted. If the start point is greater than the end point the range before the start point will be shifted.

Benefits

- Easily adjust correction and compensation movements through dynamic cam scaling
- Increase application flexibility while maintaining continuous cam synchronization

➔ Reduce cycle times and engineering complexity

Advise

The start and end points should coincide with dwell times. Otherwise, velocity jumps will occur, which may lead to high mechanical stress. This is left to the engineer and not enforced by the system.

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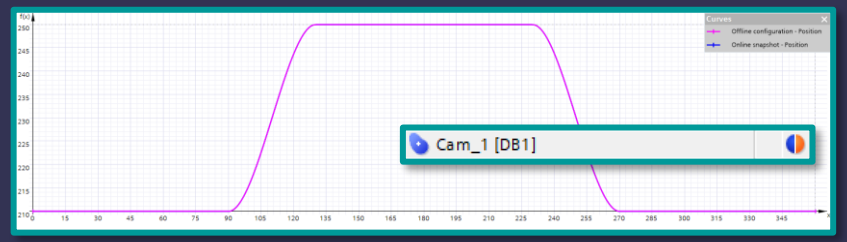
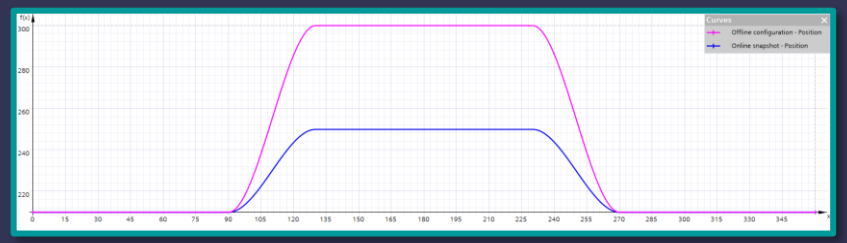
Cam Enhancements
Upload of online generated cams in the *TO_Cam Diagnostics*

TIA Portal – TO_Cam Diagnostics



Write to offline project



Download

Modify TO_Cam



Monitoring on

Update online curve

Upload of online cams

Cams that were changed online can now not only be uploaded and saved for visual inspection and comparison in the ***TO_Cam Diagnostics*** but also directly copied into the offline project and start values of the corresponding ***TO_Cam***.

Benefits

- Online cam data can be saved to the offline project.
- The cam data is consistent with the next download.

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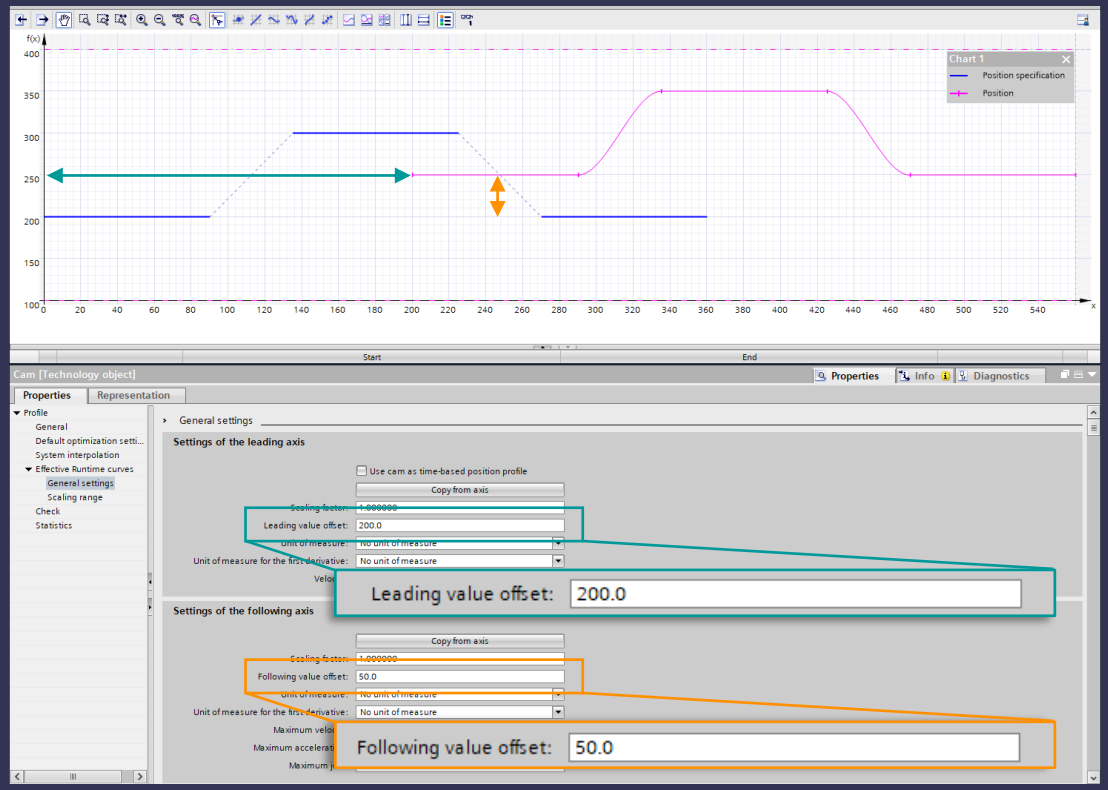
Cam Enhancements
Visualization of offsets in the TO_Cam editor

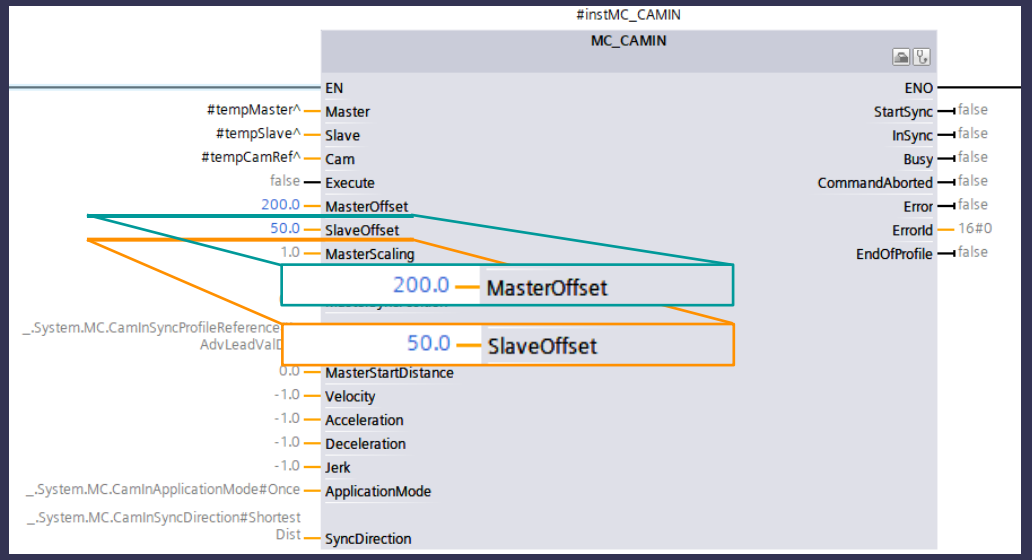
Engineering

➔ Visualize and test offsets in the ***TO_Cam Editor***



Runtime

➔ Activate offsets with ***MC_CamIn***



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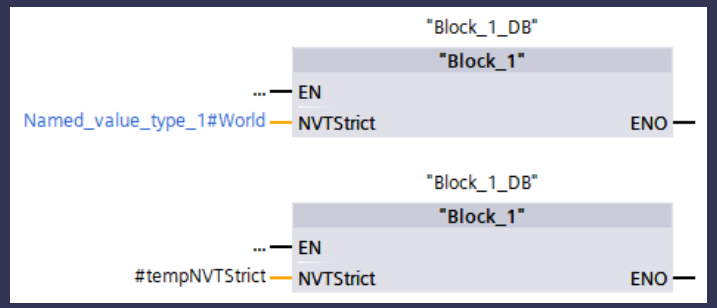
Named Value Data Types Enhancements
Strict Mode

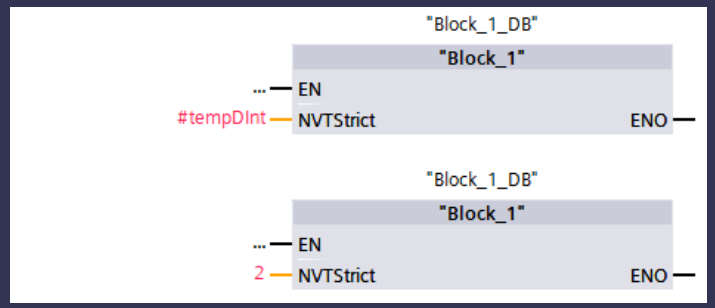
Definition

```
TYPE
    {S7_NvtCheck := "[Mode = Strict, Level = Error]"}
    Named_value_type_1 : DInt
    (
        HELLO := 0,
        WORLD := 1
    );
END_TYPE
```

Valid



Invalid



Strict Mode for NVTs

Only the matching named value type can be assigned to inputs or variables with strict NVT as type. For example, assigning a 2 to a variable of the named value type to the left is caught by the compiler.

Benefits

- **Prevent** accidental misuse of named value assignments.
- Catch errors **during compilation** instead of at run time.

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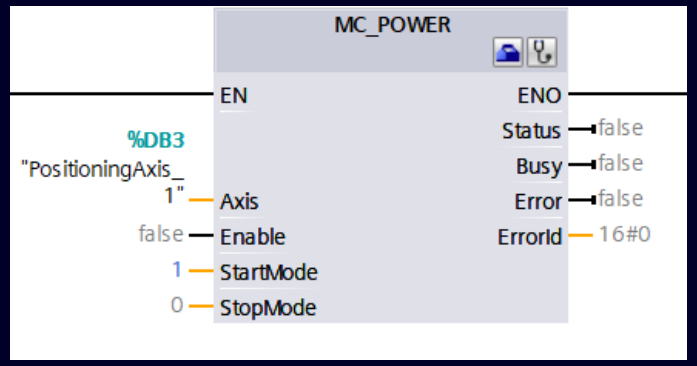
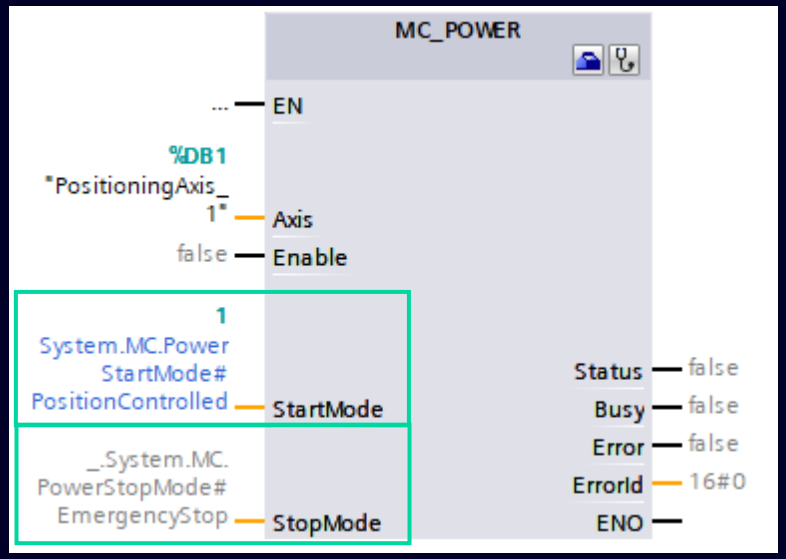
Named Value Data Types Enhancements
NVTs for PLCopen blocks

Before



New



Use NVTs in PLCopen blocks

Selected DINT input parameters of motion control function blocks support Named Value Types. For that 100 system NVTs are introduced with V21.1.

Benefits

- **More readable** source code.
- **Simplified engineering** with code completion support for Named Value Types in KOP, FUP and SCL.

Format

```
System.MC.<MC Command Name><Input Parameter Name>#<Parameter Value>
Example: System.MC.PowerStopMode#EmergencyStop
```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- TIA Simulation Cloud
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- Panel Portfolio Extension: Unified Outdoor, ...
- Enhanced Connectivity: Tag Collaboration, OPC UA HA, ...
- EU CRA Preparation … and more!

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- …

SIMATIC STEP 7 – Innovations
- Smooth Forward Online handling
- Keep DB online values on structural changes – 2nd step

SIMATIC Motion Control – Innovations
- New SIMATIC Drive Controller Redesign
- Kinematics & Interpreter innovations
- Cam Enhancements
- Named Value Data Types Enhancements

SINAMICS Startdrive & DCC – Innovations
- Support SINAMICS G210,G210C, G210X, G200 Stand, and basic
- Openness new automation interfaces for commissioning mode
- Export DCC chart as a DCC Library and Subchart monitoring
- FW5.3 and SIMATIC DC Redesigned FW 5.3 support

SIMATIC Hardware
- SIMATIC Controller
- SIMATIC Webserver
- Bus Adapter G2
- ET 200SP & MP

TIA Portal Hardware Configuration
- Ex-/Import of HW configuration via Hardware Declaration Data
- PROFINET Security: Data Record Access Limitation
- PROFINET: Reporting security-relevant auditable events
- Access PLCs via Fully Qualified Domain Name (FQDN)

PROFINET & Communication
- IPv6 support for S7-1500 OPC UA and Webserver
- PROFINET: Topology based device name assignment
- PROFINET: Optional shared device

System functions
- TIA Portal Updates
- Open, upgrade and migrate TIA Portal projects
- Project & Software Integrity
- TIA Portal Openness & Add-Ins
- SIMATIC Source Documents (SimaticSD)
- Version Control Interface (VCI)
- CAx: AutomationML & Publication Tools
- TIA Portal Usability

TIA Portal options and more…
- SIMATIC STEP 7 Safety
- SIMATIC Safe Kinematics
- TIA Portal Multiuser Engineering
- SIMATIC Robot Library
- OPC UA
- SIMATIC S7-PLCSIM / S7-PLCSIM Advanced
- SIMATIC Target™ for Simulink®
- TIA Portal Test Suite
- SIMATIC STEP 7 CFC
- 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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SINAMICS Startdrive V21.1 Highlights

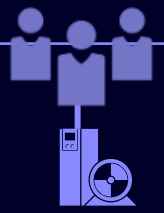
One step further in efficient drive engineering



Integration of new devices

SINAMICS S120 and SINAMICS Integrated with firmware V5.3

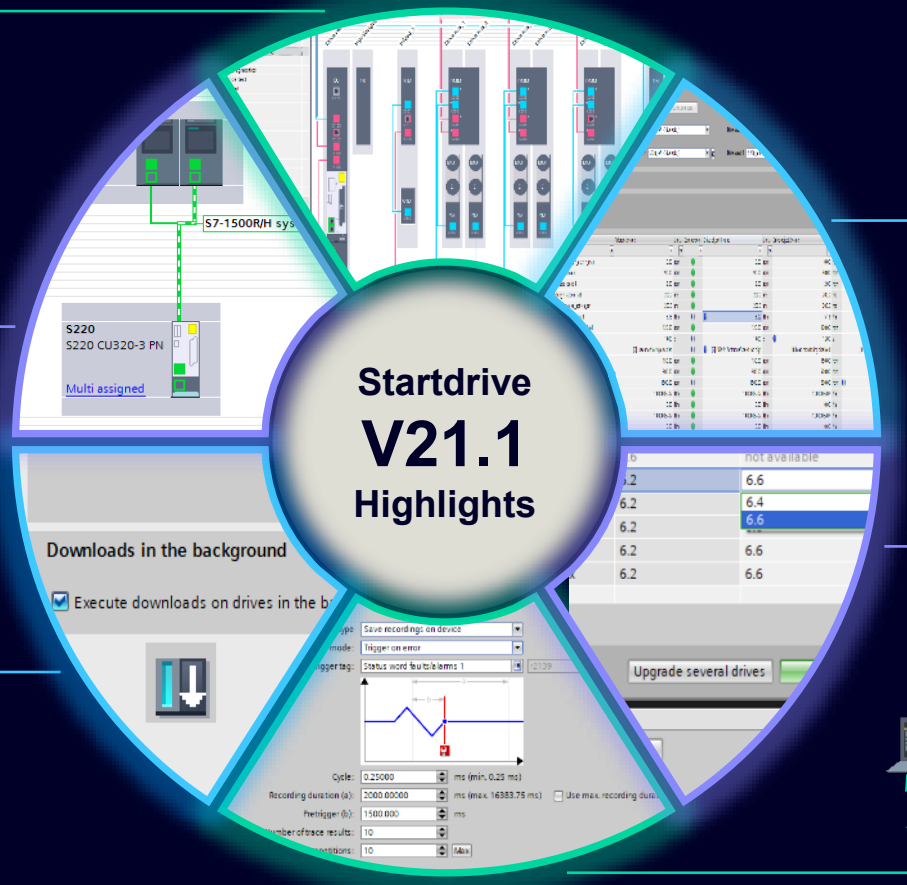
SIMATIC Drive Controller with firmware V4.2



Multiuser support 3rd Gen Drives

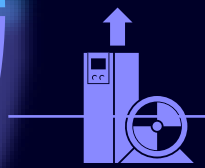


Offline licenses overview





Splitting and combining Motor Modules



Custom Restore Points



Import backup files

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Stardrive V21.1 (released 11/2026)

Introduction of new devices:
+ Support for SINAMICS S120 and SINAMICS Integrated with firmware V5.3
+ Support for the redesign of the SIMATIC Drive Controller with firmware V4.2

Introduction of new features:
+ Multiuser support – working in local sessions and merging with the server project (as of firmware V6.x)
+ Splitting Double Motor Modules and combining Single Motor Modules for multi-axis drives
+ Importing backup files as an upload to an existing device (as of firmware V6.x)
+ Saving and restoring custom I/O templates for single-axis drives (as of firmware V6.x)
+ Creating and restoring custom restore points (as of firmware V6.x)
+ Configuring application templates for SINAMICS G210X in offline mode
+ Displaying the required RT licenses in the offline project (not available for all RT licenses)
+ Enhancements for Startdrive Openness:
  + Enabling/disabling commissioning mode (as of firmware V6.x)
  + Defining the topology comparison level for multi-axis drives
  + Configuring inverted logic for BICO connections (as of firmware V6.x)
  + Generic function for enabling/disabling drive functions (as of firmware V6.x)
  + Support for shared device configuration

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Multiuser support

working in local sessions and merging with the server project (as of firmware V6.x)

- **First multiuser support for drives in TIA Portal:** Before V21.1 it was available only for PLCs. Now several engineers can configure and commission 3rd-gen SINAMICS drives in the same project at the same time.
- **Parallel commissioning:** Several engineers commission at the same time in separate local sessions, and their changes merge into the server project.
- **Work split by drive:** Different engineers work on different drives in the same project.
- **Work split by axis:** Different engineers work on different axes of the same multi-axis drive (S218, S220).
- **Hardware changes stay controlled:** Hardware changes happen in the server project view or Exclusive mode. The project stays consistent.
- **Shorter project time:** Drives and axes are processed in parallel instead of one after another.
- **Conflicts visible in the project tree:** Drives show colored flags (gray, blue, yellow, red) in-line with the TIA Multiuser flag concept.
- **Online work in a local session:** Going online, diagnostics, alarm and fault monitoring, parameter tuning and RAM-to-ROM save.
- **Parameter compare:** Local session values against the server project or the online drive.
- **User access control per drive:** Existing project user profiles can be assigned to individual drives.
- **User-defined parameter lists tracked per drive and axis:** Changes mark the right object for check-in.
- **Synchronous commissioning:** A download also checks in and refreshes, so the local session, server project and drive hold identical data.
- **Supported drives:** All 3rd Gen Sinamics Drives (S200, S210-3, S218, S220, G200, G210, G210X, G220, G220C etc.). 2nd-gen drives (S120, S150, S180, G110, G120, G130, S210-2) are not supported.

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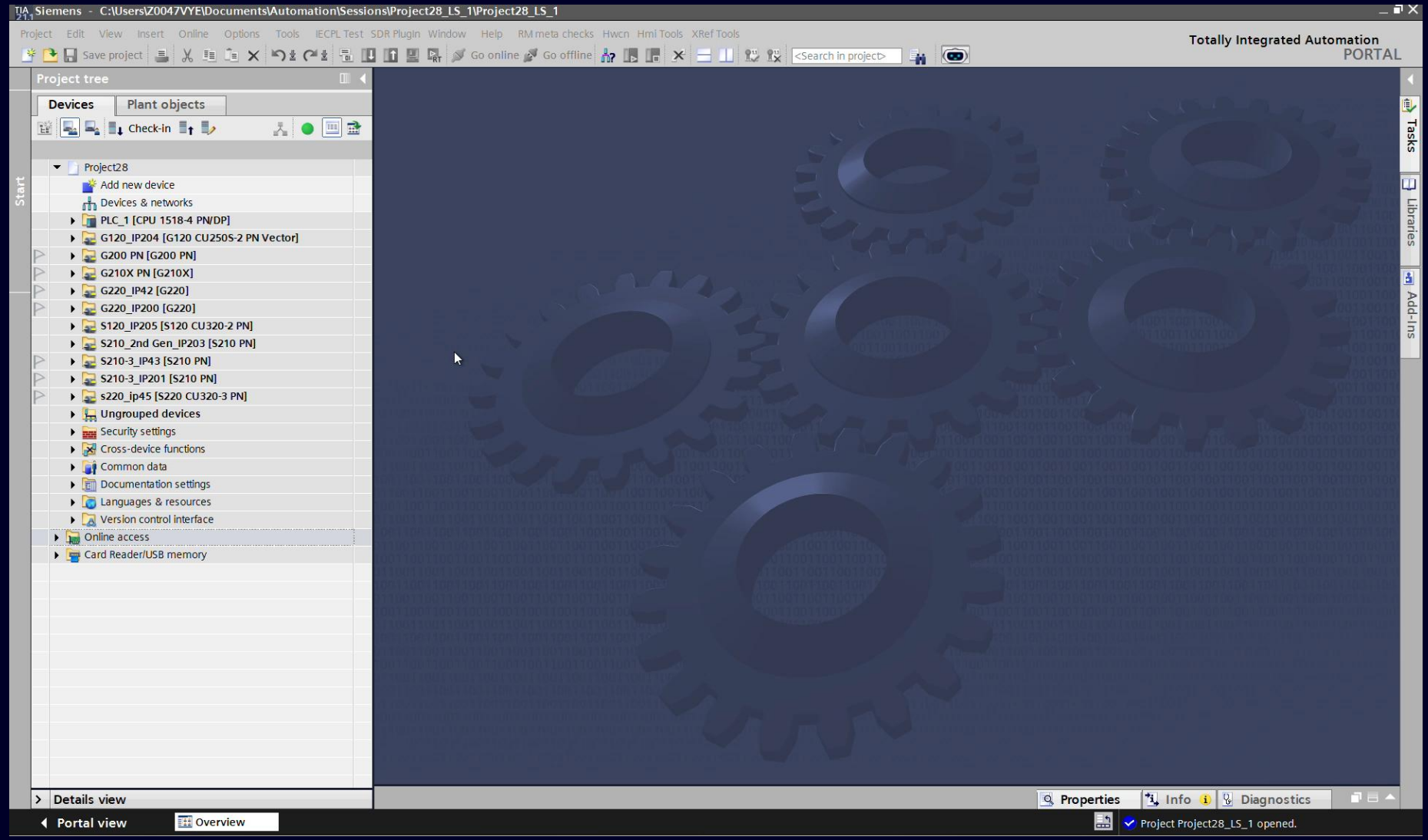
Multiuser support

3rd Gen Single-axis drive Parameterization



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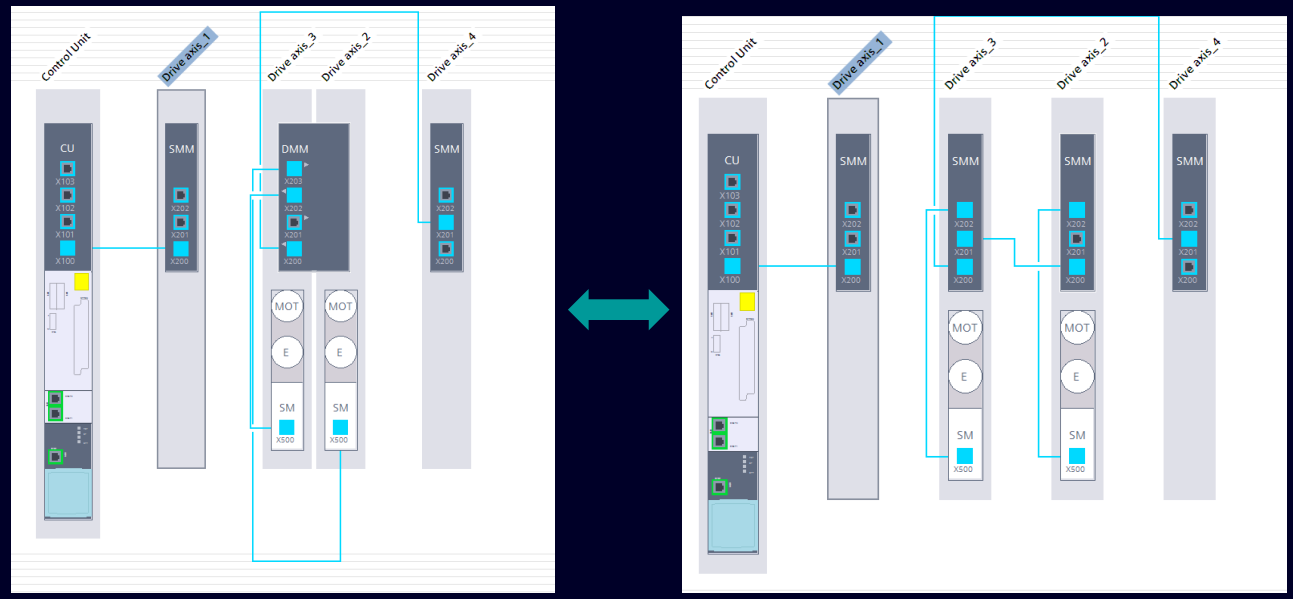
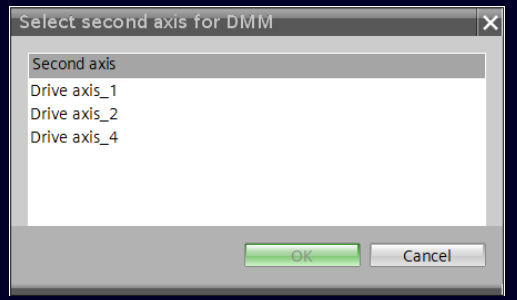
Splitting Double Motor Modules and combining Single Motor Modules for multi-axis drives

Key Benefits:
Flexibility in motor configuration:
Exchange Double Motor Modules to Single Motor Modules and vice versa
Space optimization: Split Double Motor Modules into two Single Motor Modules when space constraints exist
System scalability: Quickly adapt motor setup to accommodate increased load or new operational needs

Capabilities:
Automatic detection and validation of compatible motor module configurations
Seamless conversion between Single and Double Motor Module setups
Preservation of existing motor parameters and settings during exchange





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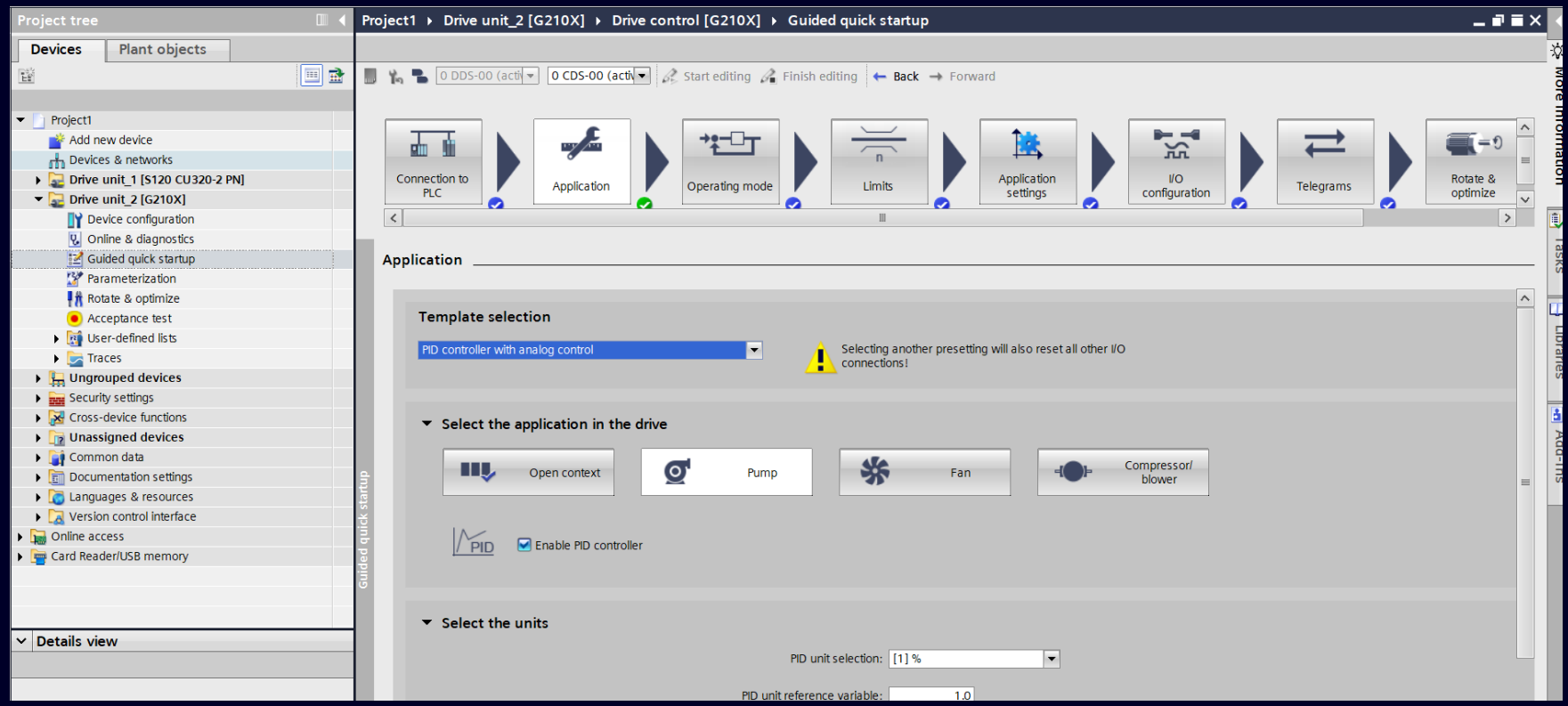
Configuring application templates for SINAMICS G210X in offline mode

Till version 21.1 changing the application templates in G210X via Startdrive was only possible in Online mode



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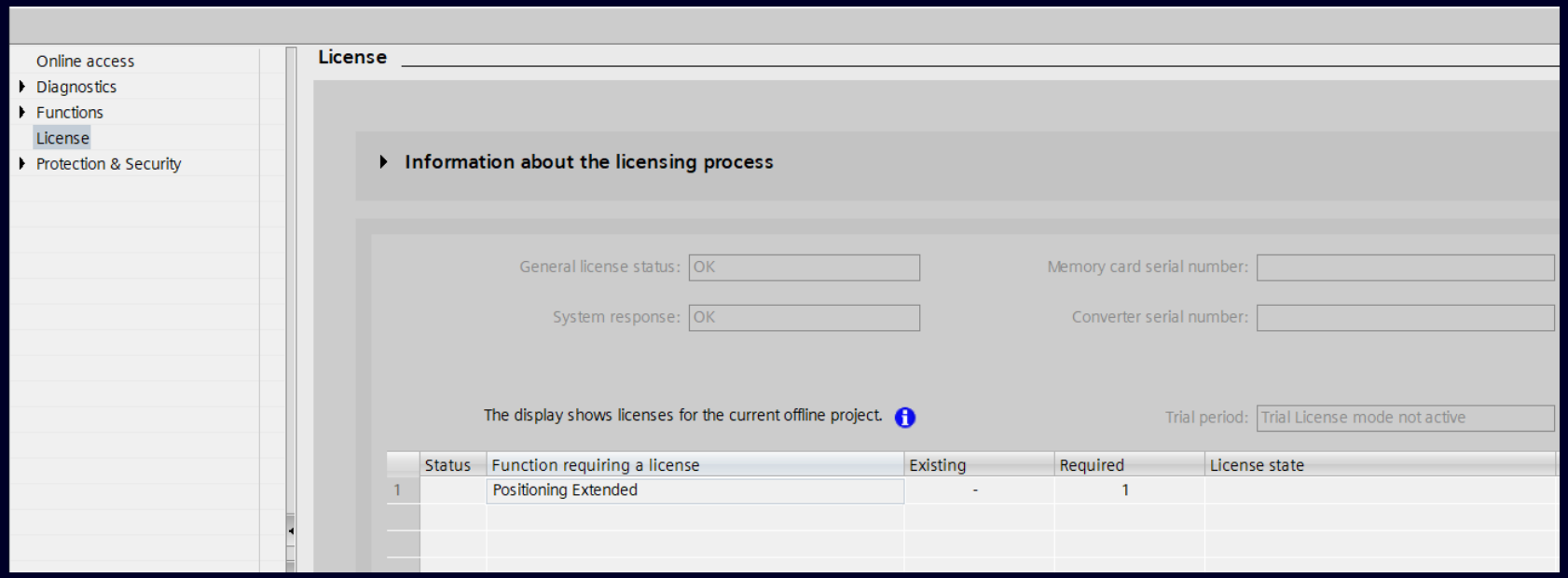
Displaying the required RT licenses in the offline project

Required licenses for your project will be visible in offline project during creation as soon as functions required licensing will be activated in the project.



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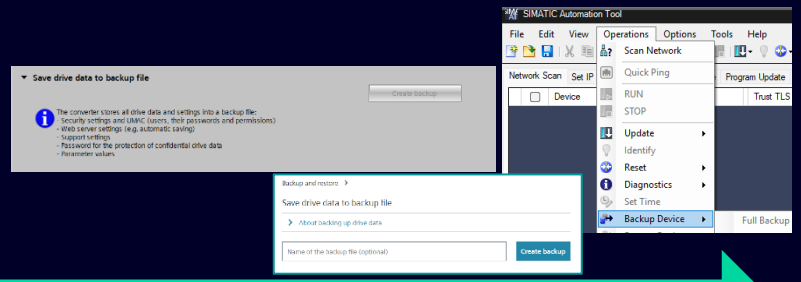
Backup file handling
Same file for all use cases





Create backup file via SAT, webserver or Startdrive

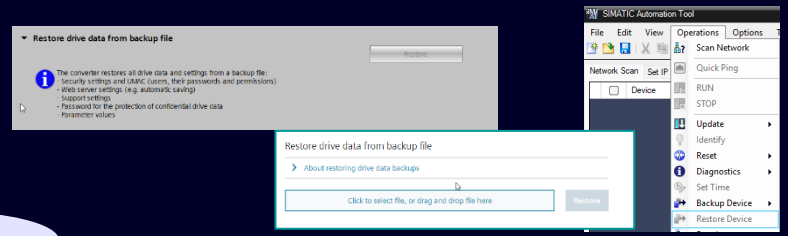
Backup file.zip

Copy to card folder



Folder: BACKUPFILE_NEXT_START

Plug into drive & reboot drive



Restore backup file via SAT, webserver or Startdrive



Online environment

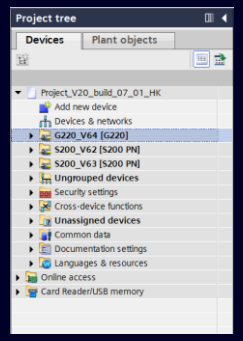
Offline environment

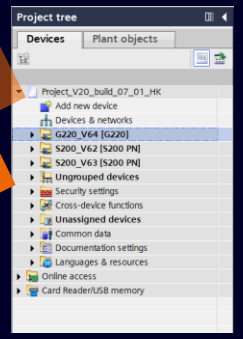
Export backup file from SDR project (to file system)

Export backup file from SDR project (directly to card)

Import to SDR project (directly from card)

Import backup file to SDR project (from file system)





New in 21.1
Importing backup files as an upload to an existing device

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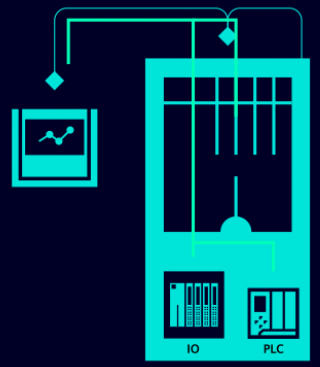
SIMATIC Automation Tool
Introduction

SIMATIC Automation Tool



- Efficient handling of automation components including online mass operations and scheduling
- Perfect fit for Service and machine maintenance use cases
- No TIA installation / project needed

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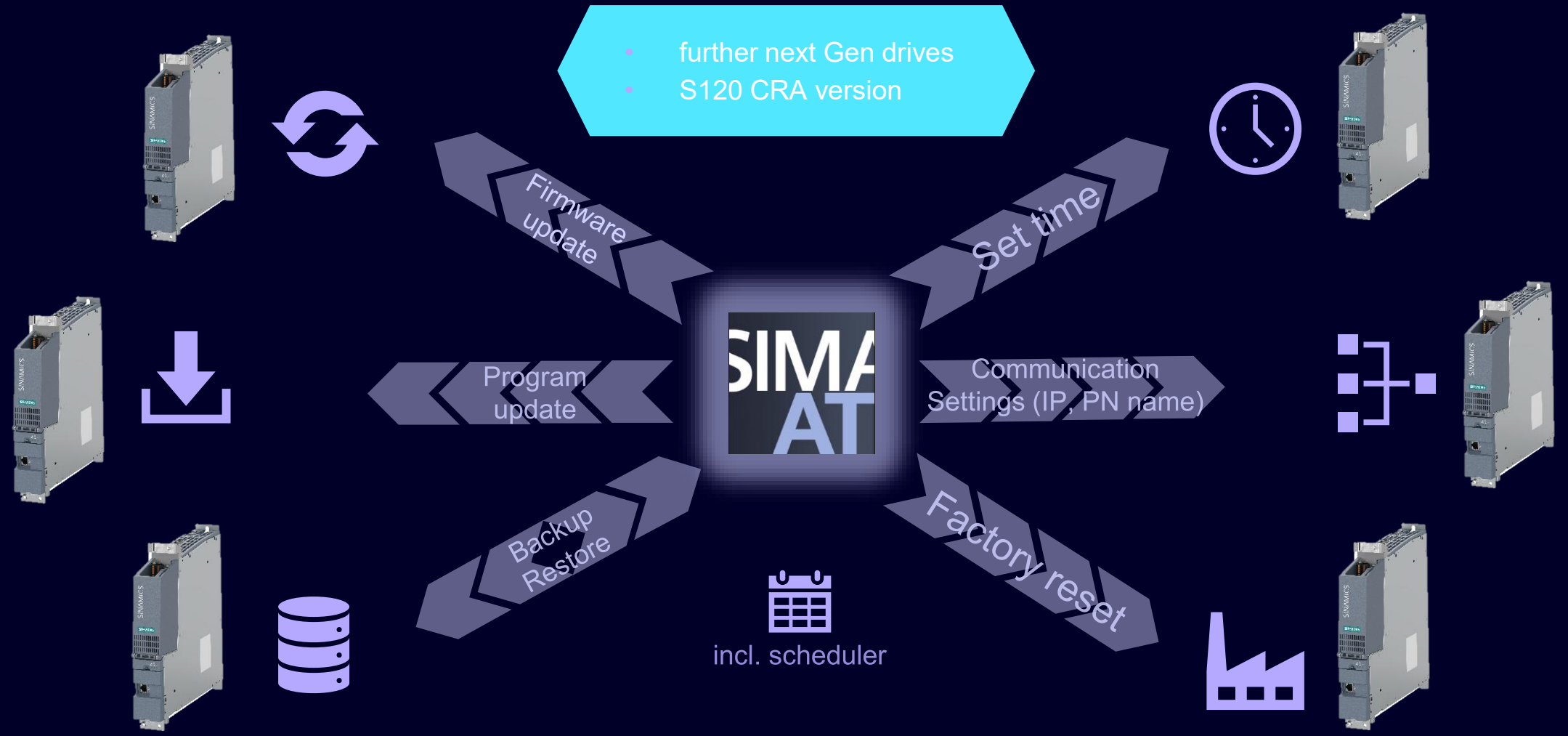
Integration of SINAMICS drives into SAT
Supported features



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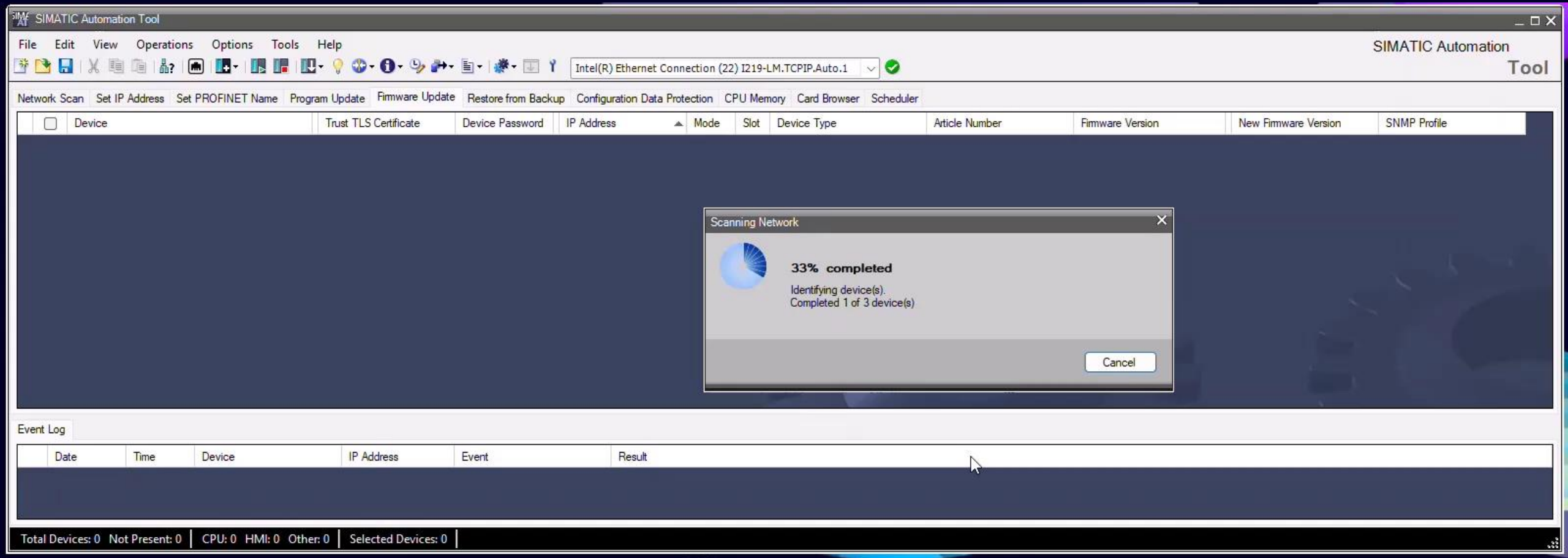
SAT demo



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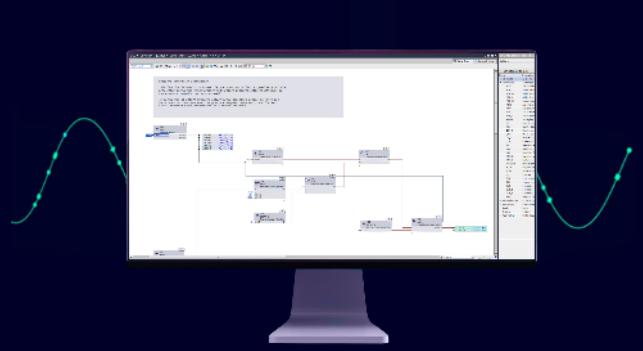
SINAMICS DCC (Drive Control Chart)

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.

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SINAMICS DCC V21 Upd1, V21.1 Highlights

Continuing and seamless integration in next generation SINAMICS drives

SINAMICS S220 CU320-3-PN support firmware RT V6.7

SIMATIC G220 support firmware RT V6.7

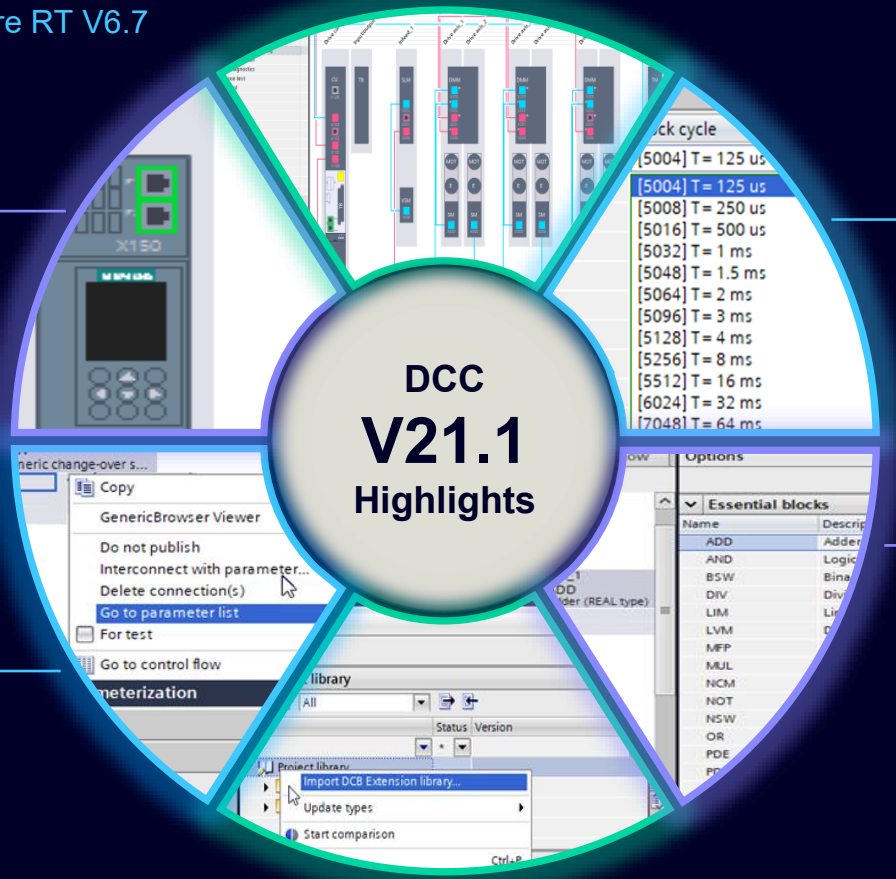
SIMATIC G210,G210C, G210X
First time integration from firmware RT V6.7

SIMATIC G200
First time integration from firmware RT V6.7

SIMATIC G200 basic
Support firmware RT V6.7 *

SINAMICS S120 support firmware RT V5.3

SIMATIC Drive Controller support RT V5.3



Enhanced Diagnostics and Trace Handling

Subchart interface monitoring Observe signals at published subchart interfaces during engineering and commissioning.

DCC Library (Typicals)

introduction of DCC Libraries .
Turn proven DCC charts into reusable engineering assets for S120 and S220/G220.

*Restriction: only available in China

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SINAMICS Startdrive & DCC – Innovations
- Support SINAMICS G210,G210C, G210X, G200 Stand, and basic
- Openness new automation interfaces for commissioning mode
- Export DCC chart as a DCC Library and Subchart monitoring
- FW5.3 and SIMATIC DC Redesigned FW 5.3 support

SIMATIC Hardware
- SIMATIC Controller
- SIMATIC Webserver
- Bus Adapter G2
- ET 200SP & MP

TIA Portal Hardware Configuration
- Ex-/Import of HW configuration via Hardware Declaration Data
- PROFINET Security: Data Record Access Limitation
- PROFINET: Reporting security-relevant auditable events
- Access PLCs via Fully Qualified Domain Name (FQDN)

PROFINET & Communication
- IPv6 support for S7-1500 OPC UA and Webserver
- PROFINET: Topology based device name assignment
- PROFINET: Optional shared device

System functions
- TIA Portal Updates
- Open, upgrade and migrate TIA Portal projects
- Project & Software Integrity
- TIA Portal Openness & Add-Ins
- SIMATIC Source Documents (SimaticSD)
- Version Control Interface (VCI)
- CAx: AutomationML & Publication Tools
- TIA Portal Usability

TIA Portal options and more…
- **SIMATIC STEP 7 Safety**
- **SIMATIC Safe Kinematics**
- **TIA Portal Multiuser Engineering**
- **SIMATIC Robot Library**
- **OPC UA**
- **SIMATIC S7-PLCSIM / S7-PLCSIM Advanced**
- **SIMATIC Target™ for Simulink®**
- **TIA Portal Test Suite**
- **SIMATIC STEP 7 CFC**
- **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**

SIEMENS

SIMATIC Controller S7-1200 G2 standard & F

SIEMENS

What‘s new in FW V4.2 and TIA Portal V21.1?

Software

- Configuration Control
- Copy Protect (CPU)
- OPC UA: Advanced security with GDS and Access control (users and roles)
- IP V6 support via DHCP (OPC UA server, Web server)
- NFC App v2.0

- BMC:
  - CommandTable_ PTO
  - Support CPU 1216C & 1217C
- SMC/AMC:
  - Use of local IO (Measuring Input, HSC, fast Outputs for output CAM)
  - Multicore 1216C/1217C
  - Roller picker
  - MotionIn: MC_MotionInVelocity, …Position, ….Superimposed
  - MC_KinematicsMotionSimulation MC_LeadingValueAdditive MC_OffsetAbsolute MC_OffsetRelative MC_SetCamRangeScaling MC_SynchronizedMotionSimulation

Hardware

CPU – enhanced performance

- CPU 1216C DC/DC/DC
- CPU 1217C DC/DC/DC



Signal Modules (SM) 1223

- SM 1222 8x DQ Relay Changeover
- SM 1223 8x DI 120/230 V AC / 8x DQ Relay
- SM 1231 4x AI 16Bit
- SM 1231 8x AI RTD
- SM 1238 energy Meter (late 2026)

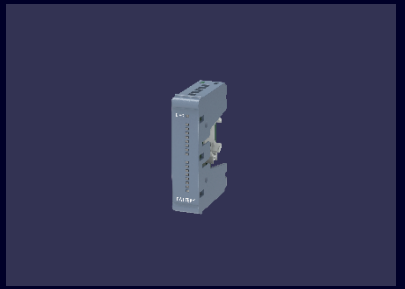


CM 1247 IO Link Master Module

(Feb 2027)

SB 1225 HS

- Differential RS485 IO 4 ch

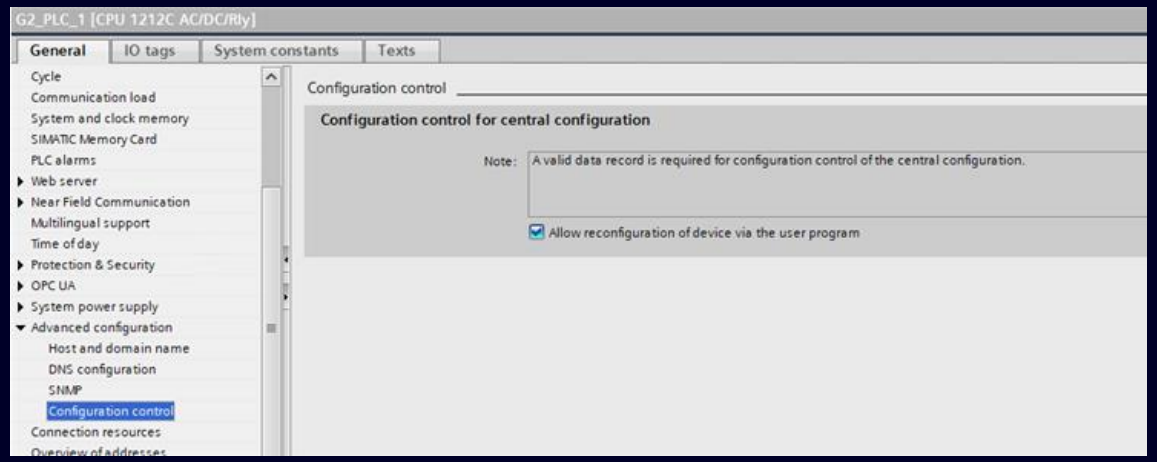


SIEMENS

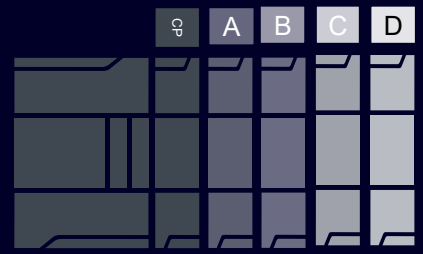
Efficient engineering
Configuration control (option handling) in the central setup - V4.2

Configuration control in the central setup

- Different hardware configurations provided in the controller:
  - Configuration modified in the user program (OB100 startup)
- Support for CM/CP/SB/CB/SM with S7-1200
  - SB: only disabling, no moving
  - CP: no moving, no disabling



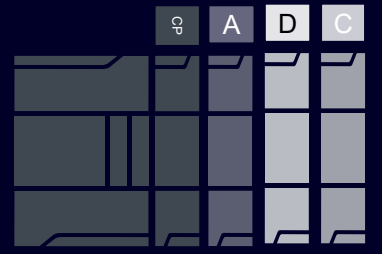
Maximum configuration:
Options:
A, B, C, D



Configuration upon delivery:
Options:
A, D



Machine update:
Options:
A, D, C



SIEMENS

Enhanced CPU portfolio

	CPU 1212(F)C	CPU 1214(F)C	CPU 1216C	CPU 1217C
RAM Data	500 k	750 k	1.5 MB	2.5 MB
RAM Progr.	150 k / 200 k	250 k / 300 k	300 kB	600 kB
Retentive Memory	20 kB	20 kB	50 kB	50 kB
Bit performance	37 ns	37 ns	9 ns	9 ns
W x H x D (mm)	70 x 125 x 100	80 x 125 x 100	120 x 125 x 100	120 x 125 x 100
Integrated DI/DO	8/6	14/10	14/10	14/10
PROFINET/Modbus TCP	2 ports IRT	2 ports IRT	2 ports IRT	2 ports IRT
Communication Modules	3 max	3 max	3 max	3 max
Total SMs + CMs	6 max	10 max	10 max	10 max
Total SBs	1 max	2 max	2 max	2 max
Position axes *Typical (1/2/4/8 ms)[1] *Maximum[2]	-/2/7/10 10	-/2/7/10 10	5/11/16/16 16	5/11/20/32 32
Motion Control (MC) Resources[3]	800	800	3040	6080
Extended MC Resources[4]	40	40	60	120
NFC	✓	✓	✓	✓
SIMATIC Memory card	Optional	Optional	Optional	Optional
Variants	DC/DC/DC & DC/DC/RLY & AC/DC/RLY (Std. only)		DC/DC/DC (Std. only)	



1 At 1 / 2 / 4 / 8 ms Servo/IPO cycle time and 50 % CPU load due to Motion Control. Estimated values are subject to implementation of use case.
2 No further TO´s applicable
3 Resources for Motion Control technology objects: Speed axis = 40 | Positioning axis = 80 | Synchr. Axis = 160 | Output cam= 20 | Output cam track = 160 | Measuring input = 40 | Ext. Encoder = 80
4 Resources for Extended Motion Control technology objects: Cams (1.000 points and 50 segments) = 2 | Cams (10.000 points and 50 segments) = 20 | Kinematic objects= 30 | Interpreter = 60 | Leading axis proxy = 3

SIEMENS

SIMATIC Controller S7-1500 standard & F

SIEMENS

SIMATIC S7-1500 CPUs (incl. ET 200 CPUs)
New Functionality with FW V4.2 and TIA Portal V21.1

Multicore (CPU 1518)
- Parallel processing with 2 extra cores.
- Significant reduction in cycle times.
- Decoupling of Safety OBs

Enhanced quantity structure
- CPU 1518-3 PN
  - Data memory: 512 MB
  - Nesting depth for Blocks: 200
- Number of cycle/startup OBs: 256

New functionalities
- Backup in RUN 1st Step
- XML parser
- Download of OSS-Information from the CPU

TIA Portal V21.1



FW V4.2

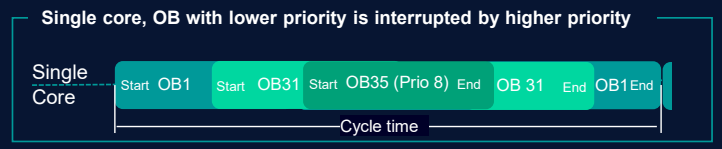
Security
- Auditable Events for central IOs and PROFINET IO-Devices
- Reset to factory settings for central IOs and PROFINET IO-Devices
- Data encrypting/decrypting in the user program

Communication
- IPV6 for OPC UA Server & Web API
- Crosswise exchange of PROFINET devices
- Optional shared device

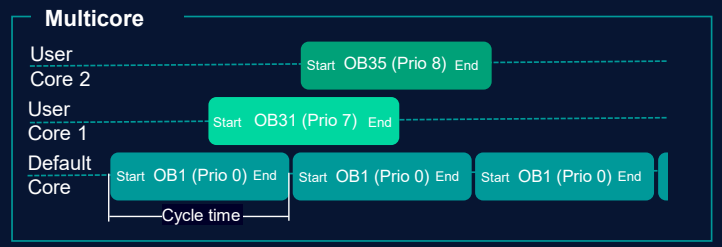
SIEMENS

SIMATIC S7-1500 CPUs
CPU 1518 (St/F/T/TF) - Multicore for PLC user programs, Overview

Single Core Mode
Sequential Processing



Multicore Mode
Parallel Processing



User | System + User | User

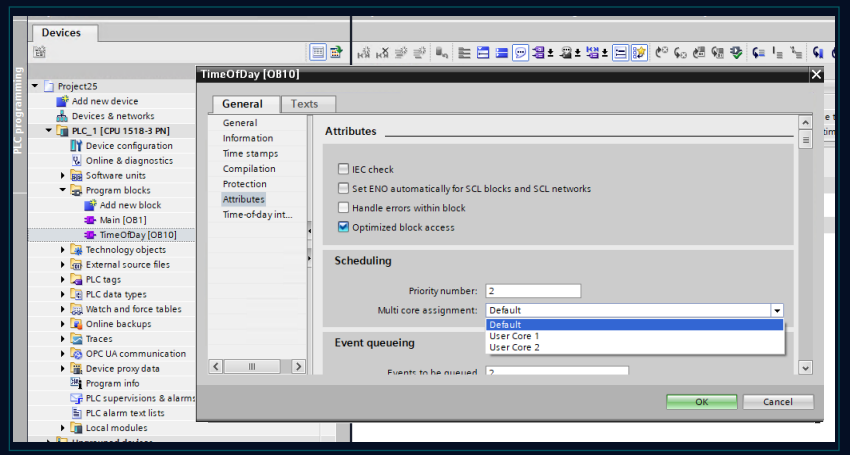
Base: 2 Cores — **Up to 2 additional User Cores**

CPU 1518 always utilizes 2 base cores (User + System Services/Comm).
Expandable by up to 2 cores for user program parallelization.

Configuration and Scope

Initial implementation state V4.2
Assignment of cyclic interrupt, time-of-day and time-delay OBs

Easy setup via TIA Portal OB configuration



Key Benefits

Significant reduction in cycle times through parallel processing of tasks (OBs).

Enhanced parallel processing for demanding applications.

Safety Decoupling: Assignment of Safety Interrupt OBs to separate cores.

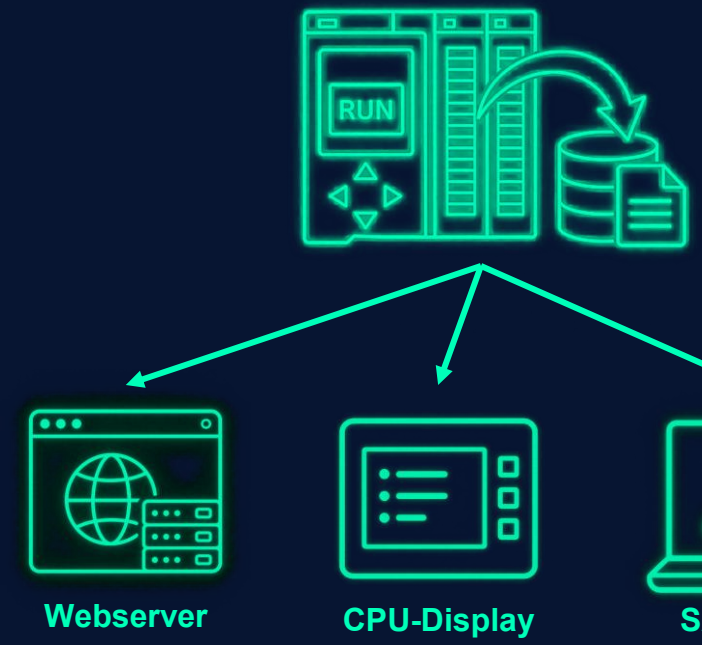
Scalability: Assignment of **up to 2 additional cores** for user programs.

SIEMENS

SIMATIC S7-1500 CPUs (incl. ET 200 CPUs)
Backup in RUN

Create a secure backup during operation, including cycle-consistent current retentive values.

✓ **No CPU stop**	The machine remains in RUN while the backup is created.
✓ **Actual values secured**	Retentive runtime values are captured cycle-consistently.
✓ **Simple service workflow**	Start via WebServer, Front Panel, or SAT Tool. Restore remains in STOP.



Good to know

- Cycle time briefly increased – move the machine to a defined position first
- R/H CPUs in RUN Redundant not supported: workaround via STOP of one CPU
- Multicore (CPU 1518): not supported

FW V4.2 scope

S7-1500 / ET 200	**S7-1200 G2**	**PLCsim**

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Redundant Controller S7-1500R/H

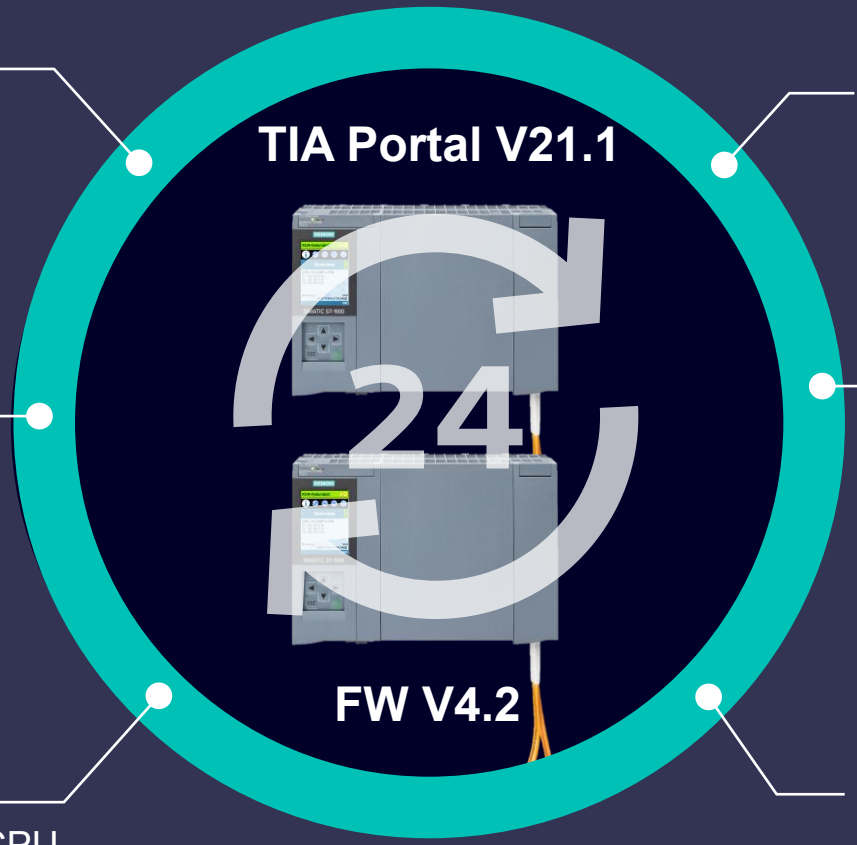
SIEMENS

SIMATIC S7-1500R/H-CPUs
New Functionality with FW V4.2 and TIA Portal V21.1

Configuration-in-RUN (CiR)
- Change hardware configuration during operation (2nd step)

Enhanced quantity structure
- For CPU 1518-4HF PN:
  Data memory: 512 MB
  Nesting depth for Blocks: 200
- For R/H-CPUs:
  Number of cycle/startup OBs: 256

New functionalities
- Backup in RUN 1st step (RUN-Solo)
- XML parser
- Download of OSS-Information from the CPU



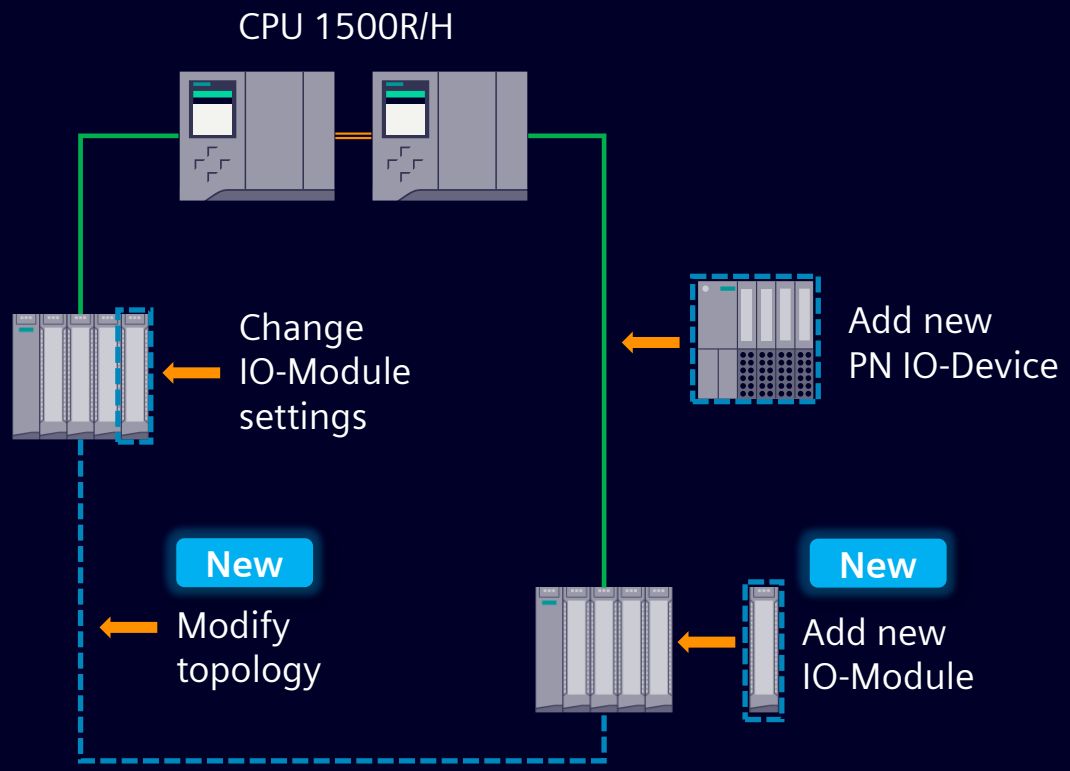
Webserver
- Extended System Web Pages

Security
- For PROFINET IO-Devices:
  Auditable Events and Reset to factory settings
- Data encrypting/decrypting in the user program

MRP-Interconnection
- Integration into TIA Portal

SIEMENS

SIMATIC S7-1500 Redundant Systems
TIA Portal V21.1 expands hardware changes in RUN-Redundant



Configuration in RUN (CiR)
allows hardware changes while the redundant system remains in Run-Redundant.

Already available with TIA Portal V21:
- Add a new PN IO-Device
- Change IO-Module settings

New in V21.1:
- Modify the topology between IO-Devices
- Add new IO-Modules to an existing station

Configuration in Run is not just a controller feature. It is an ecosystem capability that enables continuous operation.

SIMATIC S7-1500 Redundant Systems

Configuration-in-RUN – Make changes without stopping the controller



Configuration in RUN support

	CiR-Capable PN-Device	Non-CiR-Capable PN-Device
	ET 200MP (S2) ET 200SP (R1) ET 200SP HA (S2/R1) ET 200iSP (S2/R1) SCALANCE Switch CFU CIO HART (S2) CiR-Capable Device (Siemens specification or GSDML CiR_Supported="true")	All other PN-Devices e.g., ET 200SP (S2)
CPU 1513R-1PN CPU 1515R-2 PN CPU 1517H-4 PN CPU 1518HF-4 PN	R/H-system remains in RUN-Redundant Affected PN-Device continues operation*	R/H-system remains in RUN-Redundant Affected PN-Device restarts briefly
Other CPUs	Controller STOP is required	

PN-Controller

* Topology MRP with S2-Devices ➔ Adding new IO module causes a brief PN-Device restart

Configuration in RUN is an ecosystem capability designed to support continuous operation.

SIEMENS

S7-1500 Software Controller
ET 200SP Open Controller

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SIMATIC S7-1500 Software Controller
Highlights V40.2 – The Next Level of Performance & Security

SW-C V40.2
Planned Dec 2026

Multicore Performance

- Parallel processing with up to 5 user cores.
- Significant reduction in cycle times.
- Decoupling of Safety OBs.

Dynamic Windows Boost

- Intel® Turbo for maximum performance
- BoostGuaranteed PLC real-time and determinism
- For BX-39A, BX-54A and BX-59A
- for WinCC Unified & IT applications

Secure Boot Support

- Software integrity verification by default.
- Protection against manipulation.
- Technical foundation for EU-CRA.



SIMATIC S7-1500 Software Controller V40.2

Hardware & CPs

- New CP 1625-2 M.2 (PN IO IRT).
- BX/PX-39A support for CP 1625-2 PCIe.
- Dual Onboard IE/PN for BX-54A/BX-59A.

Massive Memory

- 512 MB Data Memory (CPU 1508S).
- 100% Retentive Coverage for all.
- Doubled Load Memory (SSD-based, no SIMATIC Memory Card required).

Portfolio & OS

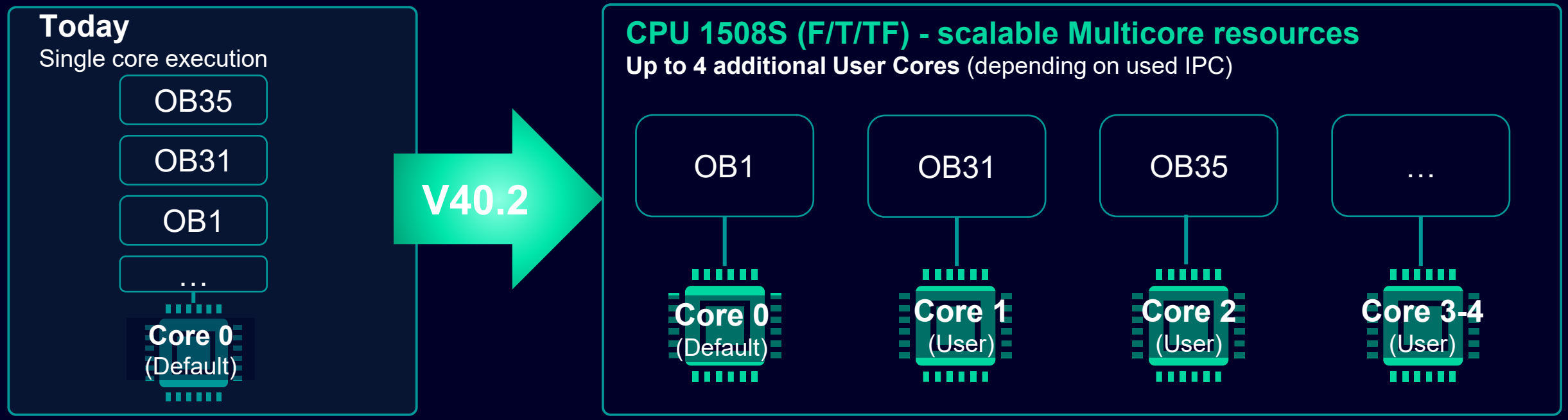
- Support of BX-21A, IPC227G/277G and BX-54A.
- Industrial OS V5.0 (PREEMPT_RT).
- Standalone BIOS Auto Config Tool.

SIEMENS

SIMATIC S7-1500 Software Controller V40.2
Multicore for PLC user programs

SW-C V40.2
Planned Dec 2026

Same Multicore concept as CPU 1518 – **up to 4** additional User Cores depending on the IPC.



More capacity
Execute suitable workload in parallel

Less interference
Decouple Safety from the Standard User Program

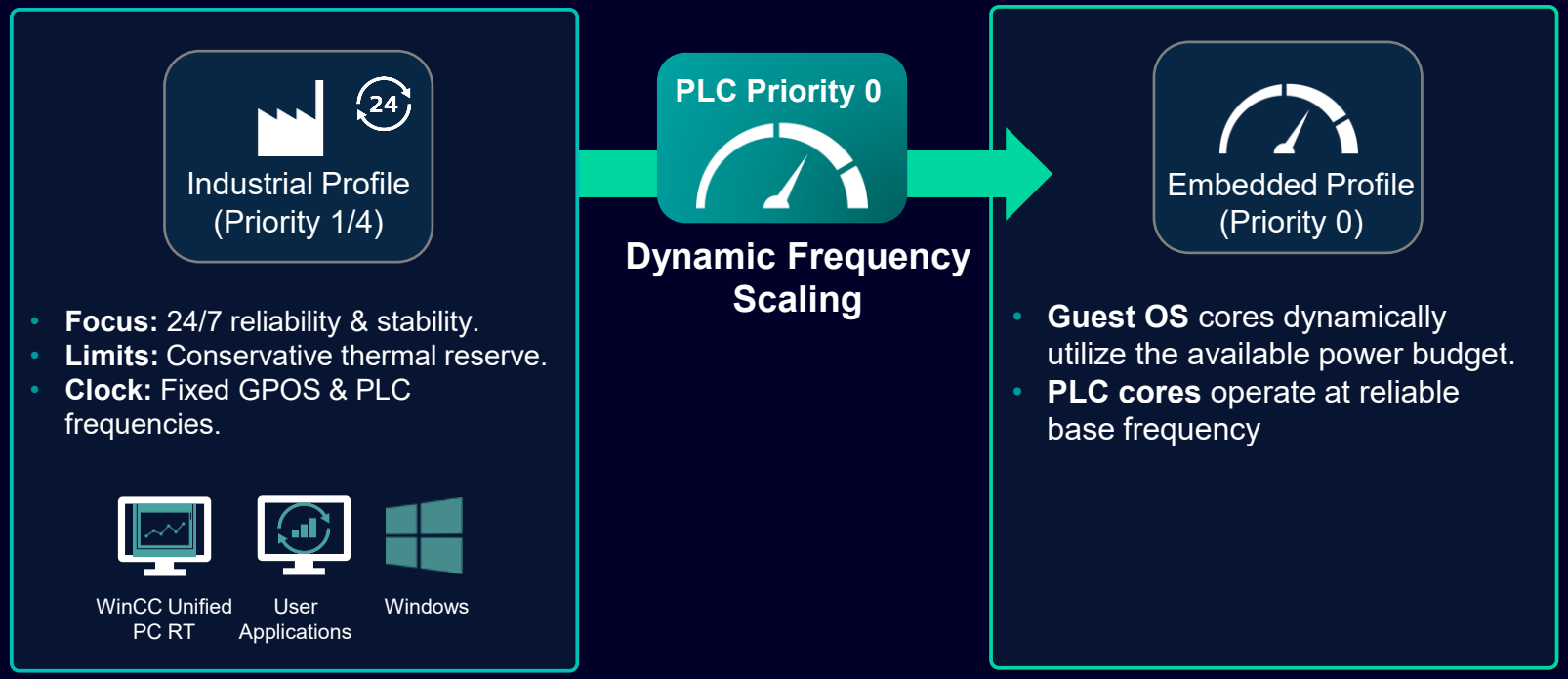
Assign suitable OBs to additional cores in TIA Portal.

SIEMENS

SIMATIC S7-1500 Software Controller V40.2
PLC Priority 0 – More Performance for Windows

SW-C V40.2
Planned Dec 2026

The new option: PLC priority 0



- **Focus:** 24/7 reliability & stability.
- **Limits:** Conservative thermal reserve.
- **Clock:** Fixed GPOS & PLC frequencies.

- **Guest OS** cores dynamically utilize the available power budget.
- **PLC cores** operate at reliable base frequency

Supported on SIMATIC IPC BX-39A, BX-54A and BX-59A.
⚠ Only available without CP 1625-2 PCIe/M.2

Key Benefits

More Performance for Guest OS Applications
- Full utilization of Intel® Turbo Boost for Windows.
- Significant speed increase for HMI, AI models and IT-tools.

Guaranteed PLC Determinism
- Deterministic PLC operation remains the primary design target.
- Stable real-time execution ensured at reliable base frequency.

User Choice & Hardware Protection
- Choose the optimal operating mode according to your specific application profile.
- Balanced power management ensures long-term processor stability and hardware longevity.
- Currently exclusive for Windows 11. Industrial OS support planned for next version.

Maximum Guest OS Performance. Reliable PLC Determinism.

PLC Priority 0 increases the performance available to Windows while ensuring the proven deterministic real-time performance of the S7-1500 Software Controller.

SIEMENS

SIMATIC S7-1500 Software Controller V40.2
More memory, more platforms, more options

Built for your application – today and tomorrow.

SW-C V40.2
Planned Dec 2026

MORE MEMORY

512 MB
DATA MEMORY
CPU 1508S

up to 2 GB
LOAD MEMORY

Complete retentive coverage for all variants on SSD

MORE PLATFORMS

Additional IPC support:

BX-21A	BX-54A
IPC 227G	IPC277G

Dual onboard PN/IE option
for BX/PX-39A, BX-54A and BX-59A

CP 1625-2 PCIe
with BX/PX-39A

MORE OPTIONS



CP 1625-2 M.2
for IPC BX-59A

NVIDIA GPU + PN IO IRT in parallel
M.2 keeps the PCIe slot available

Availability: Q1/CY2027

A more powerful and flexible platform for your future applications.

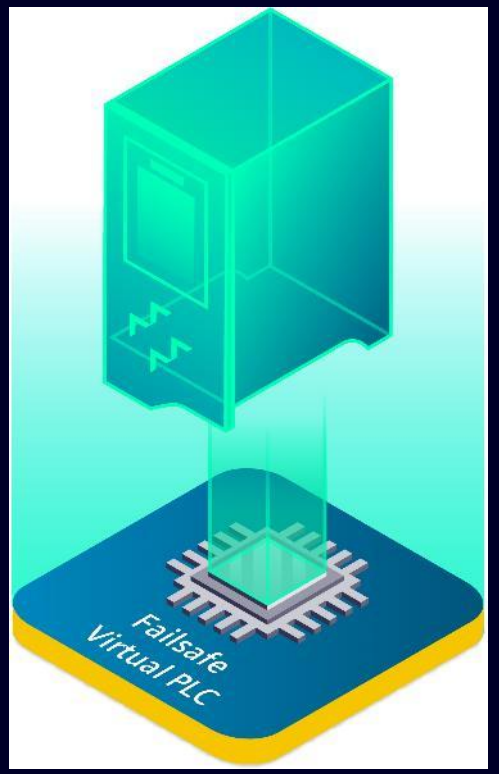
SIEMENS

SIMATIC S7-1500V

SIEMENS

SIMATIC S7-1500V(F)
Virtual failsafe PLC

We bring SIMATIC on the Industrial Edge!



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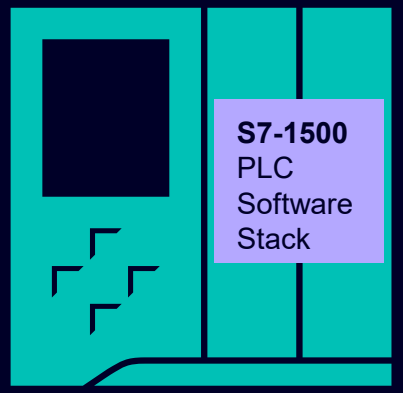
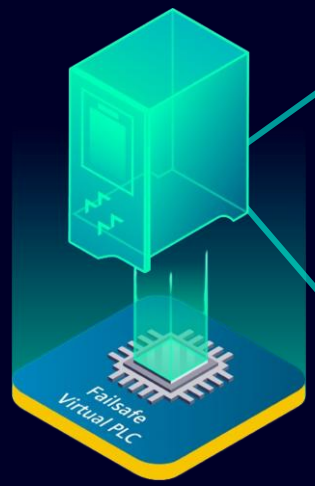
SIMATIC S7-1500 virtual Failsafe PLC

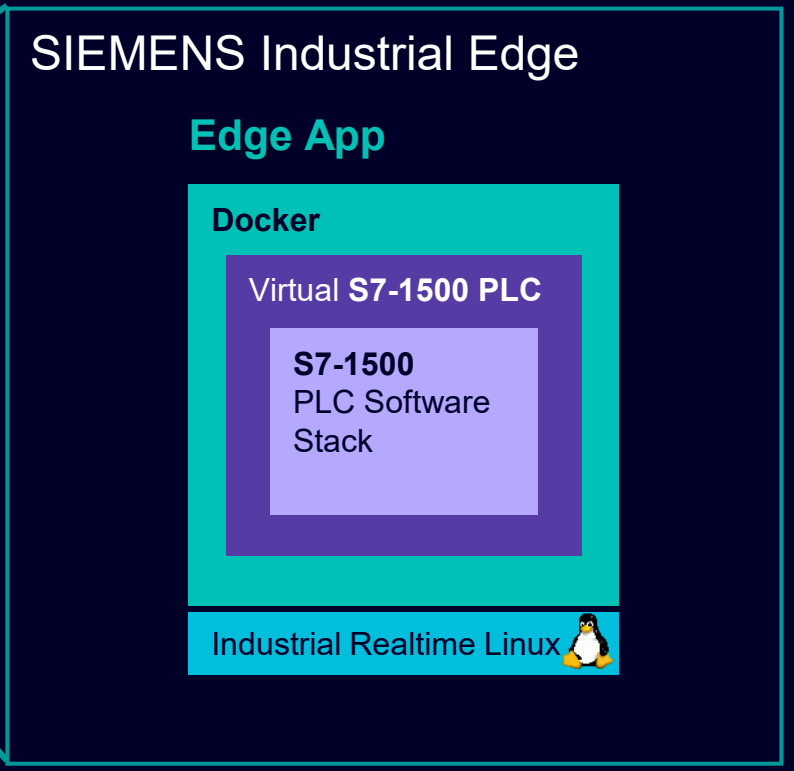
S7-1500F PLC



S7-1500V F - virtual SIMATIC PLC



- Hardware independence
- TIA Portal compatible
- App Management over IT/Edge



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SIMATIC S7-1500V
Variants/Business Model

App

Large: CPU 1517V(F)
(based on FW 4.2)

Small: CPU 1511V(F)
(based on FW 4.2)

Different variants of the App for small/large applications

Performance depends on the Hardware Environment

Subscription Business Model

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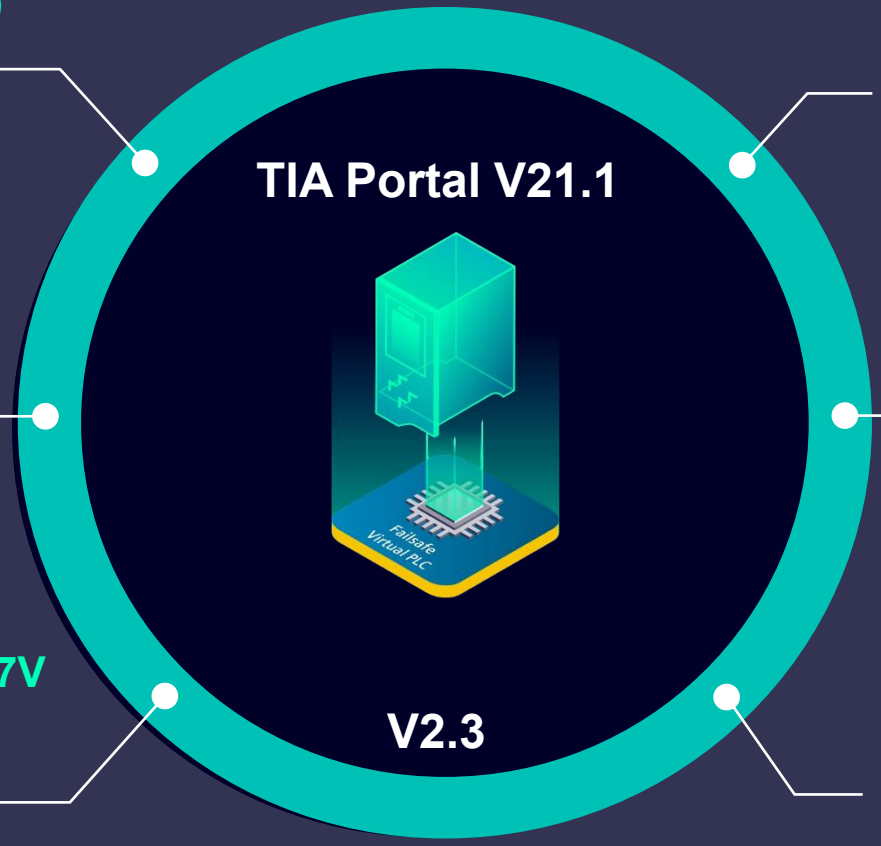
SIMATIC S7-1500V
V2.3 and TIA Portal V21.1 expand scale, deployment choice, and network isolation

Optional 2nd Core - CPU 1517V(F)
- Parallel processing with 2 cores.
- Increase of PROFINET Device Quantity

Enhanced quantity structure
- CPU 1517V(F)
  - Data memory: 512 MB
  - Nesting depth for Blocks: 200
- Number of cycle/startup OBs: 256

Optional 2nd Interface – CPU 1517V
- Separation of Networks
- IT/OT Convergance
- Increase of Security



Licensing Mechanism
- On Premise Licensing with local license server
- Air gapped running option for vPLC

RedHat OpenShift support
- Infrastructure independence
- Enterprise IT integration
- Standardised operations
- IT/OT convergence

Industrial Edge Own Device support
- Flexible deployments
- Centralized management
- Broader hardware choice

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SIMATIC Webserver

SIEMENS

SIMATIC Controller Webserver – Web UI (System Web Pages)
New Functionality with FW V4.2 and TIA Portal V21.1

User Interface
- Theme Change (Light/Dark) via Web-UI

PLC Program Info
- PLC Runtime Information – visualization & prognosis

Maintenance Functions
- Backup & Restore

Communication
- IPv6 support
- Connection Resources (including HMI Resources)
- Network parameters



R/H CPUs
- System Operator Panel: Change System State
- HW Configuration & Status
- Service Data Download
- Functional parity with PLC product family

Motion Control
- Motion Package Information
- Diagnostics: Service Overview

SIMATIC Drive Controller
- Version Info for System Update and SINAMICS Integration Firmware
- Display of status LEDs

SIEMENS

SIMATIC Controller Webserver – General- and Web API Improvements
New Functionality with FW V4.2 and TIA Portal V21.1

Communication Information
- Interface/Port/DNS Parameters
- Active Connections

Checksum
- Retrieve checksum information of program blocks and text lists for automatic validation

Performance Improvements
- Jitter free keep-alive connections

Firmware handling
- Perform firmware update for the PLC and other modules

Security
- Additional Syslog events



TIA Portal Improvements
- Download User Web Applications (No PLC STOP required, no recompile of HW/SW)
- PNV[1]: Set Web Application as default

CPU 1216C/1217C
- Support of Backup & Restore

SIMATIC Drive Controller
- Retrieve LED status

R/H Controller
- Functional parity with PLC product family

1) Project Navigation View

SIEMENS

SIMATIC
ET 200MP & S7-1500 IO



SIEMENS

SIMATIC ET 200 MP
Flexibility. Security. Performance.

ET 200MP Interfacemodules with Firmware V6.0

Full support of Configuration in Run (CiR)
Supported use cases:
- Reparameterization during operation
- Adding and removing complete IO stations in the running PROFINET network
- ***NEW:*** Adding and removing individual I/O modules within an ET 200MP / S7-1500 IO station

CRA-ready Interfacemodules
- Interfacemodule IM 155-5 MF HF is fully CRA-ready (PROFINET Application Class Core) and can be used in a protected zone

MORE FLEXIBILITY DURING OPERATION!

CYBERSECURITY & CRA READINESS!

ET 200MP Highlights - 2026 -



CYBERSECURITY & CRA READINESS!

MORE PERFORMANCE FOR MACHINE BUILDERS!

S7-1500 IO-Modules with Firmware V3.1

CRA-ready S7-1500 IO portfolio
- All S7-1500 IO-Modules are now released with the final HW needed for CRA compliance and by 11/26 will be also equipped with the final FW V3.1
  - Secure Boot
  - Signed FW Update
  - Secure Full Erase of remanent Data
  - Data integrity
  - Security Event Logging

Cam Control & TO Cam Shaft
- DQ 8x24VDC/5A HS 6ES7522-5BF00-0AB0 Integrated Cam Control for precise output switching based on position values & Technology Object “Cam Shaft” for easy use

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Safety Integrated

SIEMENS

PROFIsafe BaseID
Unique safety connections, anywhere in the network

Scenarios repeatedly create coordination and reuse effort.

Multi-vendor plants

Suppliers must coordinate unique PROFIsafe addresses across a shared installation.

Series machines

Each machine instance needs unique PROFIsafe addressing within the same network.

Virtualized systems

Virtual PLC, Networks, VPNs and dynamic IT infrastructure can make the communication scope less transparent. Challenging to argue unique PROFIsafe Addresses



SIEMENS

PROFIsafe BaseID
Steps into the market

planned
in work
released

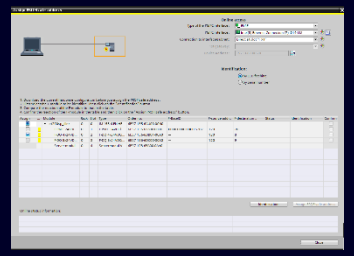
January 2026
PLC FW Version V4.1
Supported PLC
- S7-1200 G2 ≥ V4.1
- S7-1500(V)F ≥ V4.1
- S7-1500S(P)F ≥ V40.1



08//2026
Enabling PNO/PI PROFIsafe Test Laboratories
- Certified Test Systems

Q1 / 2027
Update FAQ
- Unique Network Addresses with PROFIsafe

Updating the complete active SIMATIC F-IO Portfolio



TIA V21
Address assignment with BaseID

Q1 / 2027

Update ET 200SP F-DI 8x, F-DQ 4x – V5.0

New Hardware with FW V5.0, incl. BaseID



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Maschinenverordnung (EU) 2023/1230

Anforderung an das Protokollieren von Daten nach MVO (Auszug)

1.1.9 Schutz gegen Korrumpierung

Maschinen bzw. dazugehörige Produkte müssen Nachweise für ein rechtmäßiges oder unrechtmäßiges Eingreifen in die Software oder eine Veränderung der in Maschinen bzw. dazugehörigen Produkte installierten Software oder ihrer Konfiguration sammeln.

1.2.1 Sicherheit und Zuverlässigkeit von Steuerungen

f) das Rückverfolgungsprotokoll der Daten, das im Zusammenhang mit einem Eingreifen generiert wurden, und der Versionen der Sicherheitssoftware, die nach dem Inverkehrbringen oder der Inbetriebnahme der Maschine oder des dazugehörigen Produkts hochgeladen wurden, bis zu fünf Jahre nach dem Hochladen ausschließlich für den Nachweis der Konformität der Maschine oder des dazugehörigen Produkts mit diesem Anhang auf begründete Anforderung einer zuständigen nationalen Behörde zugänglich ist.

Was heißt das als Anforderung ans Logging:

- Wenn nach dem Inverkehrbringen eine neues Safety Programm heruntergeladen wurde, dann muss dies nachvollziehbar sein.
  (F-Gesamtsignatur und Downloadzeitpunkt)
- Es muss die letzte Änderung innerhalb des Zeitraums von fünf Jahren nachvollziehbar sein! (nicht notwendigerweise alle!)

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Maschinenverordnung (EU) 2023/1230 / Minimalst Anforderung

Einfache Maschine mit einer SIMATIC F-PLC
Einfache Nachweisführung Möglichkeiten

Ablage und Nachweiskette

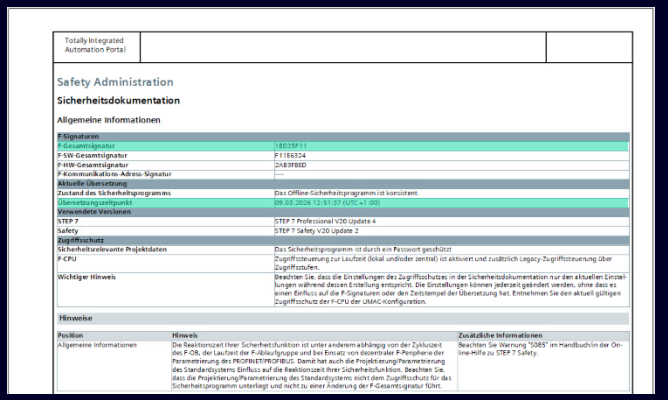
Ablage:

- Der Kunde kann die Dokumentenablage selbst auswählen (Server, Ausdrucke, ...).
- Eine Behörde darf die Nachweise bis zu 5 Jahre nach der Erstellung zum Zweck der Cybersicherheitsüberwachung anfordern.
- Für Sicherheitsnachweis im Rahmen der Produkthaftung gelten ggf. längere Laufzeiten.

Nachweis:

- Anhand der Sicherheitsdokumentation können die F-Gesamtsignatur und der Übersetzungszeitpunkt ermittelt werden.
- Mithilfe der F-Gesamtsignatur, die beispielsweise vom Webserver abgerufen werden kann, lässt sich ein Abgleich mit der Sicherheitsdokumentation durchführen. Zusätzlich wird die „Letzte F-Änderung“ direkt in der PLC angezeigt.
- Bei Manipulationsverdacht liefern die F-Gesamtsignatur und die „Letzte F-Änderung“ den erforderlichen Nachweis

Sicherheitsdokumentation


Totally Integrated Automation Portal

Safety Administration

Sicherheitsdokumentation

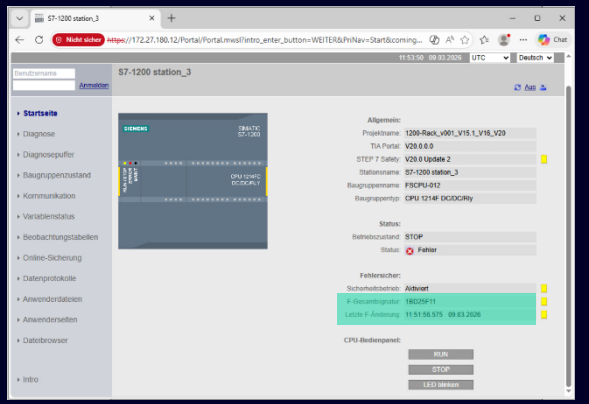
Allgemeine Informationen

F-Signaturen	
F-Gesamtsignatur	18D25F11
F-SW-Gesamtsignatur	F1166324
F-HW-Gesamtsignatur	2AE3FBED
F-Kommunikations-Adress-Signatur	---
Aktuelle Übersetzung	
Zustand des Sicherheitsprogramms	Das Offline-Sicherheitsprogramm ist konsistent.
Übersetzungszeitpunkt	09.03.2026 12:51:37 (UTC+1:00)
Verwendete Versionen	
STEP 7	STEP 7 Professional V20 Update 4
Safety	STEP 7 Safety V20 Update 2
Zugriffsschutz	
Sicherheitsrelevante Projektdaten	Das Sicherheitsprogramm ist durch ein Passwort geschützt
F-CPU	Zugriffssteuerung zur Laufzeit (lokal und/oder zentral) ist aktiviert und zusätzlich Legacy-Zugriffssteuerung über Zugriffsstufen.
Wichtige Hinweis	Beachten Sie, dass die Einstellungen des Zugriffsschutzes in der Sicherheitsdokumentation nur den aktuellen Einstellungen während dessen Erstellung entspricht. Die Einstellungen können jederzeit geändert werden, ohne dass es einen Einfluss auf die F-Signaturen oder den Zeitstempel der Übersetzung hat. Entnehmen Sie den aktuell gültigen Zugriffsschutz der F-CPU der UMAC-Konfiguration.

Hinweise

Position	Hinweis	Zusätzliche Informationen
Allgemeine Informationen	Die Reaktionszeit Ihrer Sicherheitsfunktion ist unter anderem abhängig von der Zykluszeit des F-OB, der Laufzeit der F-Ablaufgruppe und bei Einsatz von dezentraler F-Peripherie der Parametrierung des PROFINET/PROFIBUS. Damit hat auch die Projektierung/Parametrierung des Standardsystems Einfluss auf die Reaktionszeit Ihrer Sicherheitsfunktion. Beachten Sie, dass die Projektierung/Parametrierung des Standardsystems nicht dem Zugriffsschutz für das Sicherheitsprogramm unterliegt und nicht zu einer Änderung der F-Gesamtsignatur führt.	Beachten Sie Warnung "50857" im Handbuch/in der Online-Hilfe zu STEP 7 Safety.

Screenshot vom Webserver



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Maschinenverordnung (EU) 2023/1230 / SysLog F-CRC

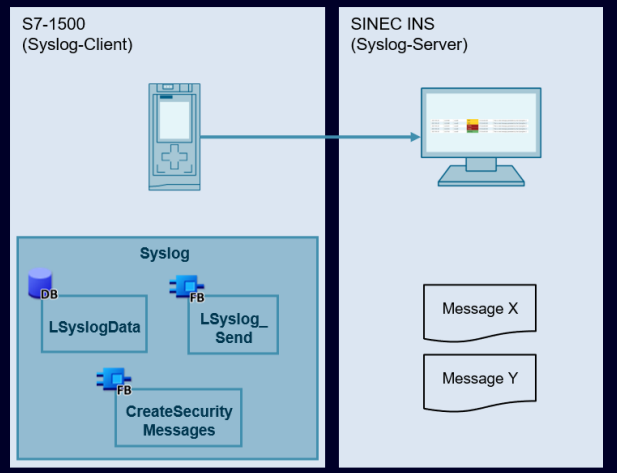
Machinery Regulation Effectiveness 20.01.2027 (Repeal of the Machinery Directive)

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



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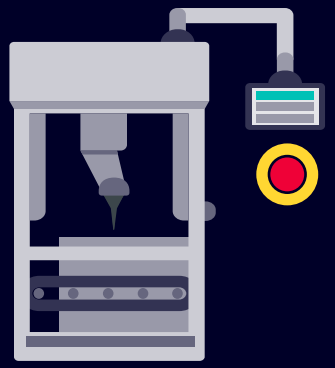
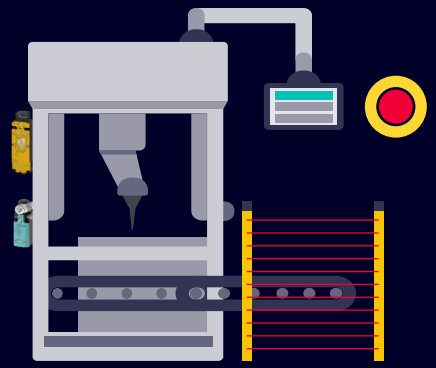
Flexible machine safety – Space-saving machine safety for basic automation



From a **single** safety function…

…to **multiple** safety functions



F-SB





SIMATIC S7-1200F G2 with F-SB



SIMATIC S7-1200F G2 with F-SBs and F-SMs

Solution

SIMATIC S7-1200F G2 with improved fail-safe hardware portfolio allows for centralized control and monitoring of all safety functions.

- Flexible expansion of fail-safe I/Os with fail-safe signal boards directly on the CPU or fail-safe signal modules (also available with mixed I/Os)
- Unified engineering environment (TIA Portal) with fail-safe engineering integrated in STEP 7 Basic (no safety license necessary)
- Flexible machine safety with multiple operating modes (e. g., Safely-Limited-Speed - SLS) to ensure high productivity

Safety integrated in SIMATIC S7-1200F G2, together with standard machine control and motion control as well as the associated communication (PROFIsafe).

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TIA Portal V20
STEP 7 Basic

Support of SIMATIC S7-1200 (G2) standard and fail-safe hardware

- S7-1200 (G2) Std.- & F-CPU’s
- S7-1200 (G2) Std.- & F- I/O
- ET 200SP Std.- & F-I/O





+

Supports engineering for standard and fail-safe application

SIMATIC
STEP 7 Basic



- STEP 7 Basic
  - One engineering package for standard and fail-safe
- S7-1200 (G2) standard & fail-safe incl. ET 200 (F) periphery

STEP 7 Basic
One engineering for standard and fail-safe S7-1200 (G2)

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Hardware Configuration

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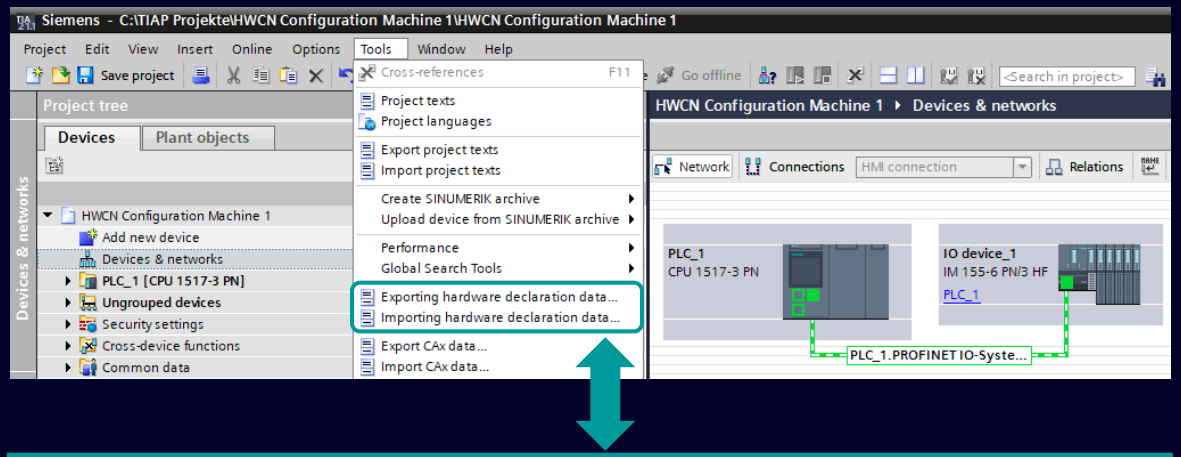
Export/Import of Hardware configuration via Hardware Declaration Data



HwdExport_HWCN Configuration Machine 1.hwl.yml

```
- Name: 'Machine1'
  Modules:
  - Name: 'PLC_1'
    Slot: 1
    TypeIdentifier:
      OrderNumber: '6ES7 517-3AQ10-0AB0'
      Version: 'V4.2'
    Interfaces:
    - Name: 'PROFINETinterface_1'
      Label: 'X1'
      Addresses:
      - Type: 'IPv4'
        Address: '192.168.0.1/24'
      Parameters:
        AlternativeRedundancy: True
        Author: 'HW Engineer'
        Comment: ""
        DCPReadOnlyDefaultSettingActive: True
        ...
```

```
- Name: 'ET200SPstation_1'
  Modules:
  - Name: 'IOdevice_1'
    Slot: 0
    TypeIdentifier:
      OrderNumber: '6ES7 155-6AU30-0CN0'
      Version: 'V4.2'
    Interfaces:
    - Name: 'PROFINETinterface'
      Label: 'X1'
      Addresses:
      - Type: 'IPv4'
        Address: '192.168.0.2/24'
      Parameters:
        AlternativeRedundancy: True
        Comment: ""
        IECV22LLDPMode: False
        IsochronousMode: False
        ...
```

Scope & Features

- Starting with STEP 7 V21.1, hardware configurations can be **exported** as Hardware Declaration Data (HWD) and **imported** into new TIA Portal projects.
- HWD uses a **human-readable** YAML-based representation that can be **stored**, **version-controlled**, and **processed** by external tools.
- The initial scope includes **S7-1500 CPUs with central modules**, **PROFINET IO devices**, **Industrial Ethernet**, and **IO systems**.

Benefit

By enabling the exchange of hardware configurations between projects, HWD helps **streamline engineering workflows** and allows hardware data to be used for **version control**, **documentation**, and **integration into other workflows**.

Outlook

Future TIA Portal versions will support additional hardware families and integrate this functionality into SIMATIC Source Documents.

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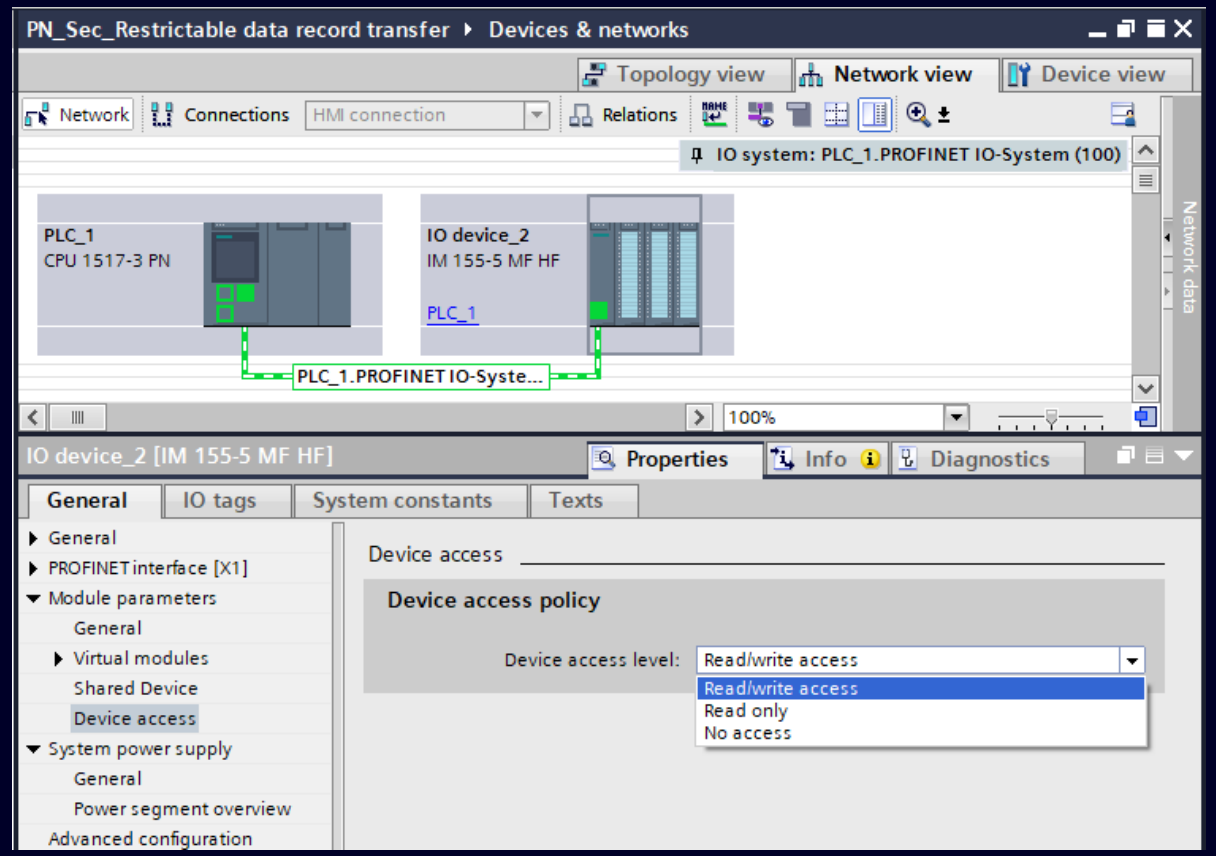
PROFINET Security: Data Record Access Limitation



Scope & Features

- Configure the access level for data records for the IO device (Read/write, Read only, No access).
- The configuration takes effect only when there is an active communication connection between the IO controller and the IO device.
- The system's real-time communication remains unaffected, and availability is ensured.

Benefit

- Reduce the attack surface for cyberattacks on data traffic.
- Protects your system, for example, from unauthorized configuration changes that could compromise system integrity.

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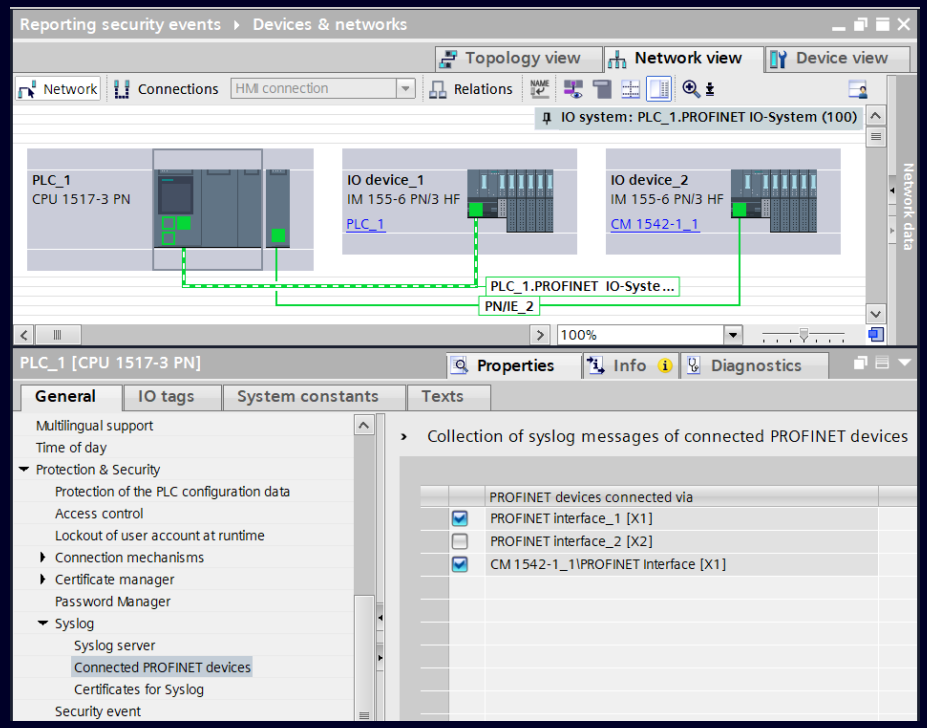
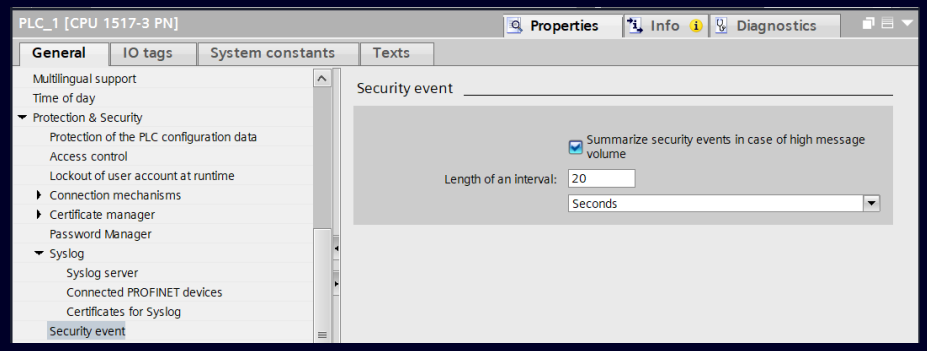
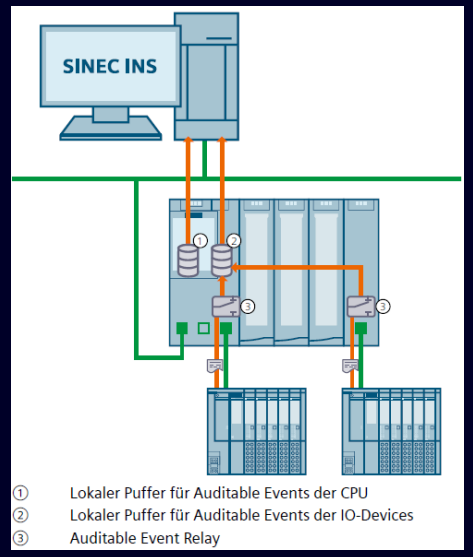
PROFINET Security: Reporting security-relevant auditable events







Scope & Features

CPUs with FW V4.2 or higher can record additional security-relevant auditable events. Connected devices must support event recording and forwarding via PROFINET:

- Centrally plugged modules
- Devices connected to the CPU or a CM within the PROFINET IO system

Benefit

Analyzing collected events helps identify cyberattacks and security breaches and enables appropriate countermeasures.

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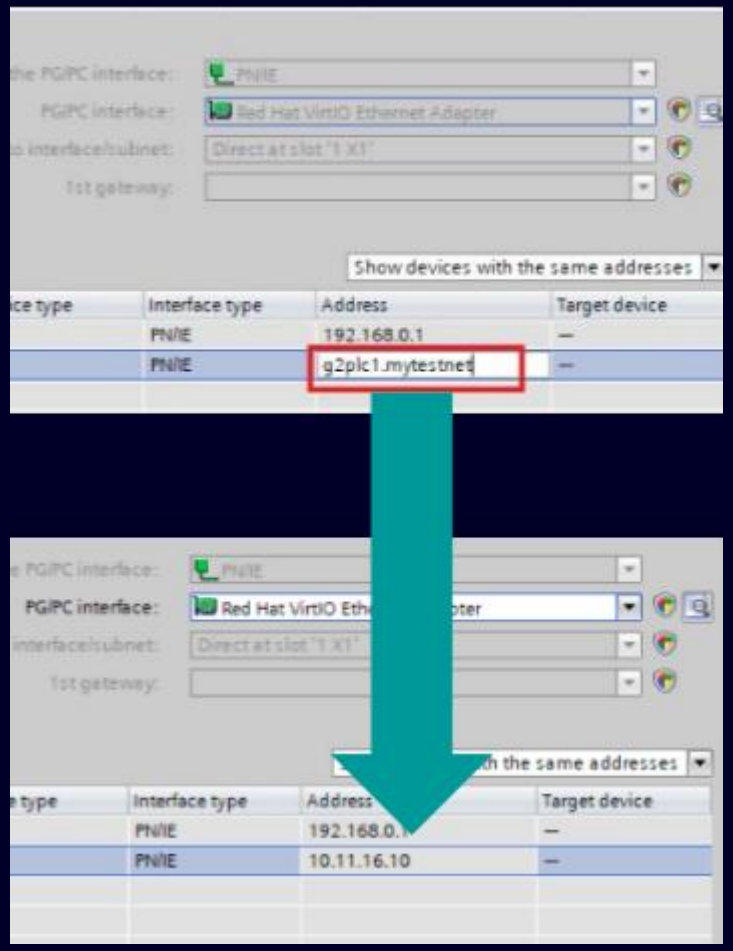
Access PLCs via Fully Qualified Domain Name (FQDN) for Go Online and Download



Scope & Features

- The PLCs can be reached via FQDN (Fully Qualified Domain Name) in expended Go Online and Download dialog.
- After entering an FQDN, TIA Portal automatically resolves it to the corresponding IPv4 address.

Benefit

- Supports users who operate PLCs with DHCP in domain-based networks..
- Reduces the effort required to manually determine the PLC's IPv4 address.
- Provides IT departments with greater flexibility in network configuration.

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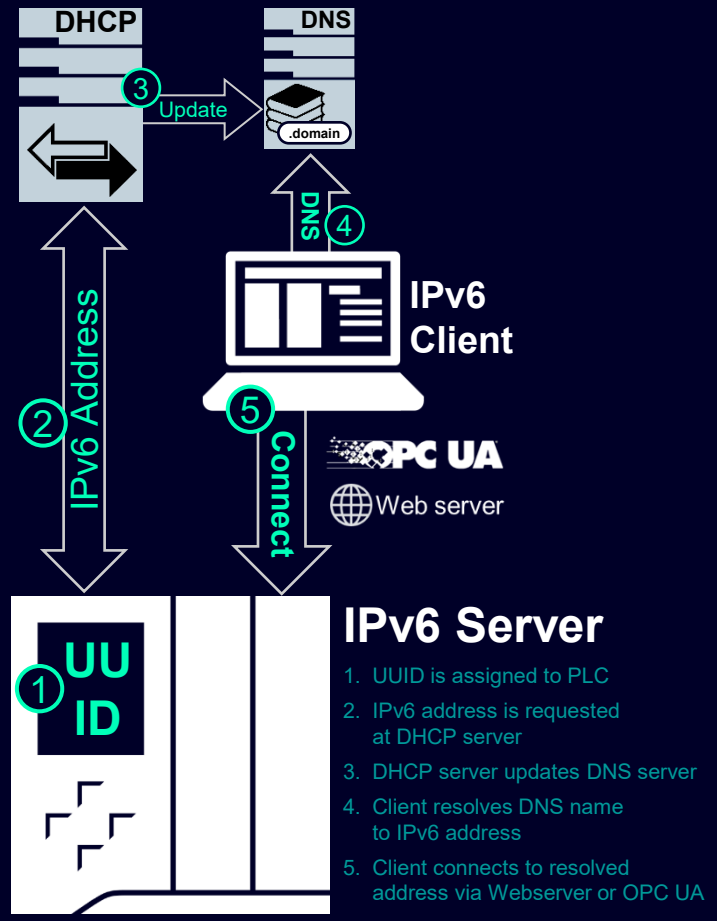
IPv6 for S7-1500



Supported IPv6 scope:

- IPv6 address assignment is supported exclusively via DHCPv6
- Device identification is done via DUID
- DNS server with static entries required for FQDN based addressing (Static DHCP leases therefore recommended)

Supported Protocols:

- OPC UA Server via FQDN based addressing
- Webserver via FQDN based addressing

Supported Platforms:

- S7-1200 G2 V4.2, S7-1500 V4.2, Drive Controllers V4.2, SW Controller/Open Controller V40.2, PLCSIM Advanced V9, vPLCs App version 2.3 + FW V4.2
- Currently no support in R/H Systems

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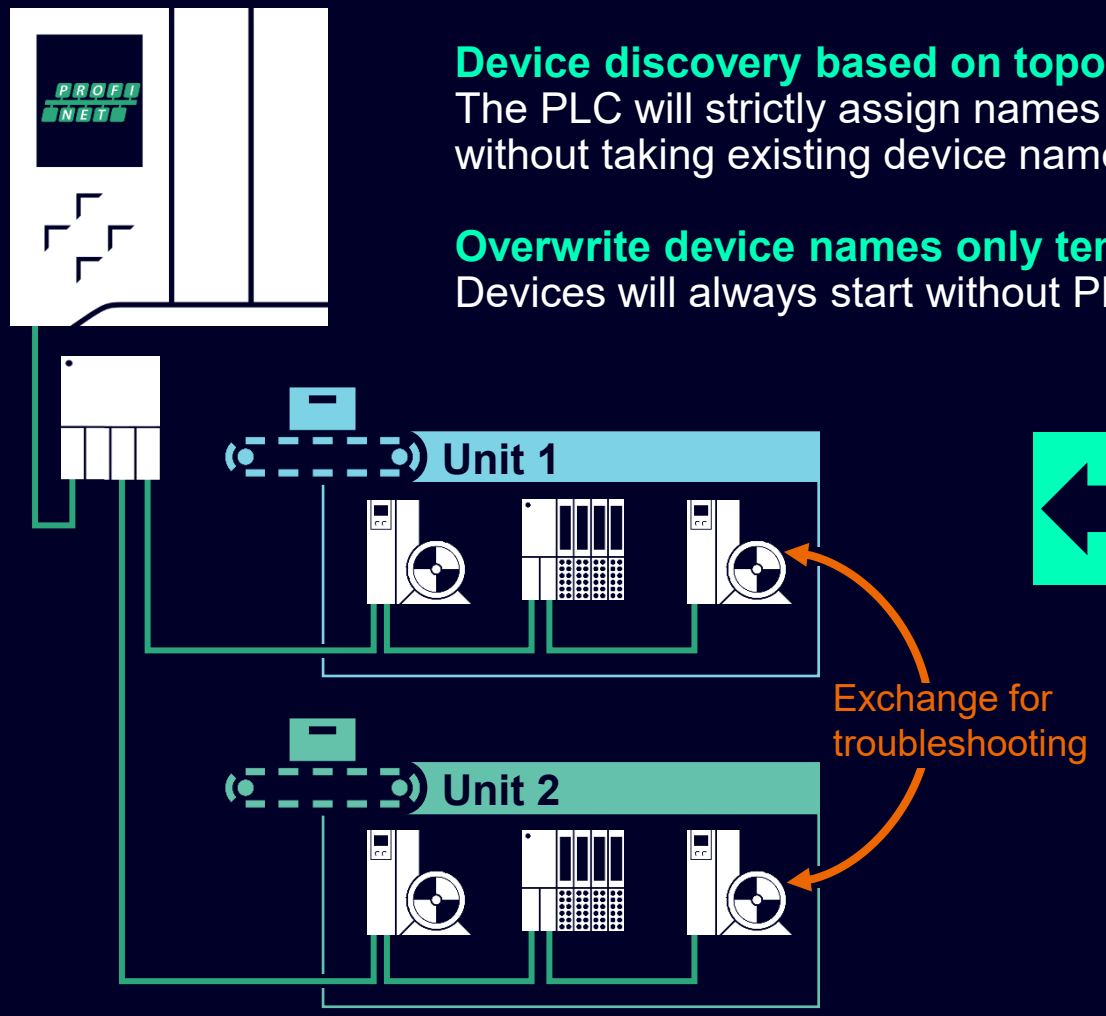
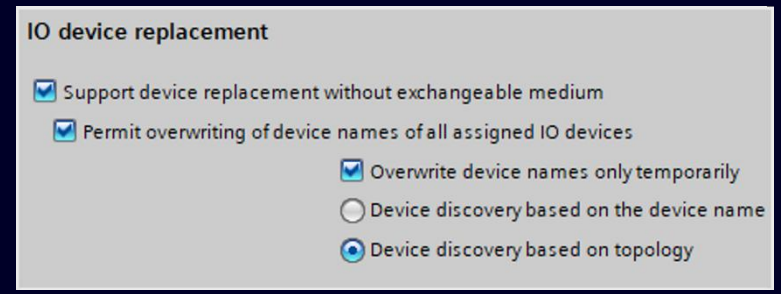
PROFINET Machine Builder Upgrade 1/3
Crosswise exchange of PROFINET devices



Device discovery based on topology:
The PLC will strictly assign names based on the topology without taking existing device names into account.*

Overwrite device names only temporarily:
Devices will always start without PROFINET device names



These features result in the possibility to crosswise exchange similar devices (e.g. for troubleshooting)

Supported Platforms:

- S7-1500 V4.2, Drive Controllers V4.2
- SW Controller/Open Controller V40.2
- vPLCs App version 2.3 + FW V4.2
- Currently no support in S7-1200 G2 and R/H Systems

*: Device type checks behave as in previous versions

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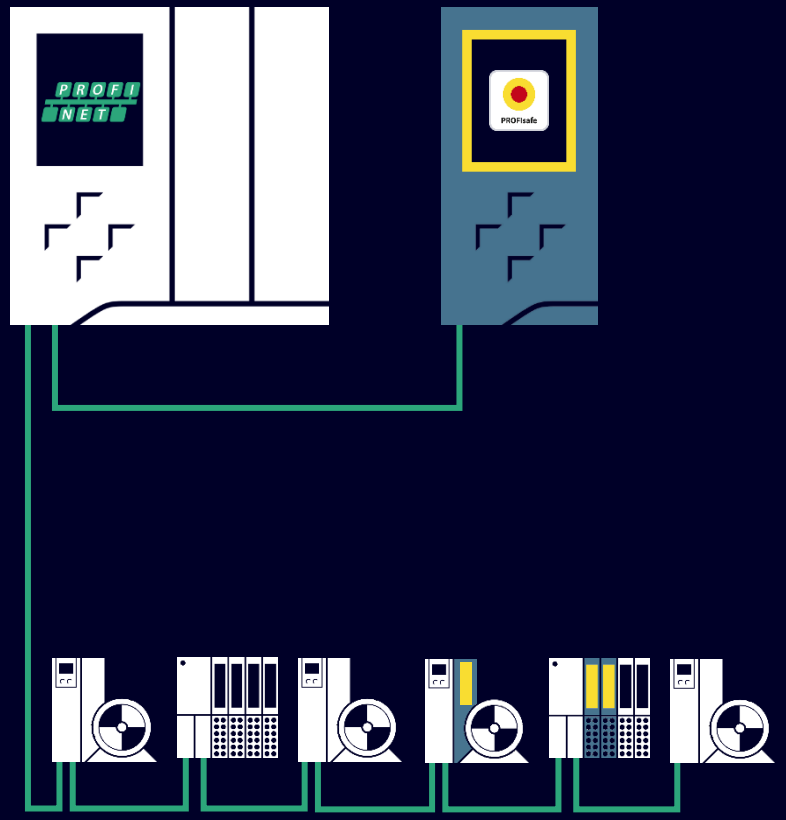
PROFINET Machine Builder Upgrade 2/3
Optional Shared Device – Use Case



Typical Use Case

Fieldbus Devices in flexible machine environments can now be shared across multiple PROFINET Controllers.
Failsafe modules in Drives and Ios can be assigned to a dedicated failsafe controller, while a Standard Controller takes care about anything related to the actual automation solution.

Supported Platforms:

- S7-1500 V4.2, Drive Controllers V4.2
- SW Controller/Open Controller V40.2
- vPLCs App version 2.3 + FW V4.2
- Currently no support in S7-1200 G2 and R/H Systems

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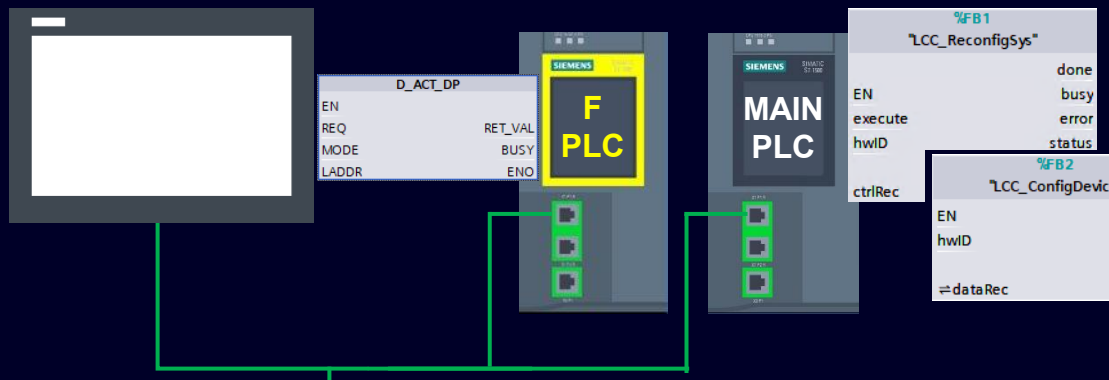
PROFINET Machine Builder Upgrade 3/3
Optional Shared Device – Program Instructions



ET200SP Head and PN Interface are assigned to the Main PLC to be able to configure the topology needed for PROFINET IRT with the LCC_ReconfigSys function. The Failsafe PLC is not assigning any device name and is just searching via device name without topology information

LCC_ConfigDevice is used on the Main PLC to individually activate and deactivate individua standard modules in a device

D_ACT_DP is used on the Failsafe PLC to enable or disable all failsafe modules in a station (by simply deactivating the whole device in the failsafe PLC)



Standard modules can be activated and deactivated individually

It‘s possible to deactivate all or no safety modules in a device

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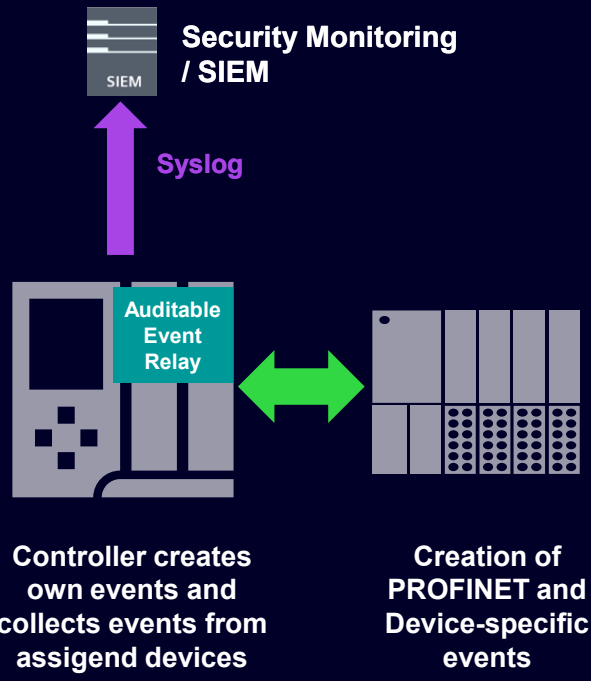
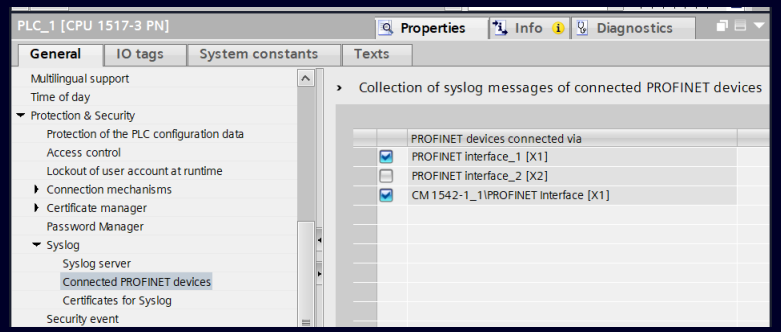
PROFINET: Auditable Events





Use Case: Monitoring along the entire system

PROFINET Auditable Events enable standardized event generation, collection, aggregation and forwarding across the automation portfolio.

Scope & Features

CPUs with FW V4.2 or higher can record additional security-relevant auditable events.
Connected devices must support event recording and forwarding via PROFINET:

- Centrally plugged modules
- Devices connected to the CPU or a CM within the PROFINET IO system

Benefit:

- With this release, customers can significantly improve transparency, traceability, and monitoring within industrial automation environments.
- By analyzing the collected PROFINET and device-specific events, cyberattacks and security incidents can be detected at an early stage, allowing organizations to take appropriate mitigation measures.

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- Responsive Design: Flexible Layouts for different screen sizes
- Panel Portfolio Extension: Unified Outdoor, ...
- Enhanced Connectivity: Tag Collaboration, OPC UA HA, ...
- EU CRA Preparation … and more!

SIMATIC WinCC RT Prof. – Innovations
- …

SIMATIC STEP 7 – Innovations
- Smooth Forward Online handling
- Keep DB online values on structural changes – 2nd step

SIMATIC Motion Control – Innovations
- New SIMATIC Drive Controller Redesign
- Kinematics & Interpreter innovations
- Cam Enhancements
- Named Value Data Types Enhancements

SINAMICS Startdrive & DCC – Innovations
- Support SINAMICS G210,G210C, G210X, G200 Stand, and basic
- Openness new automation interfaces for commissioning mode
- Export DCC chart as a DCC Library and Subchart monitoring
- FW5.3 and SIMATIC DC Redesigned FW 5.3 support

SIMATIC Hardware
- SIMATIC Controller
- SIMATIC Webserver
- Bus Adapter G2
- ET 200SP & MP

TIA Portal Hardware Configuration
- Ex-/Import of HW configuration via Hardware Declaration Data
- PROFINET Security: Data Record Access Limitation
- PROFINET: Reporting security-relevant auditable events
- Access PLCs via Fully Qualified Domain Name (FQDN)

PROFINET & Communication
- IPv6 support for S7-1500 OPC UA and Webserver
- PROFINET: Topology based device name assignment
- PROFINET: Optional shared device

System functions
- TIA Portal Updates
- Open, upgrade and migrate TIA Portal projects
- Project & Software Integrity
- TIA Portal Openness & Add-Ins
- SIMATIC Source Documents (SimaticSD)
- Version Control Interface (VCI)
- CAx: AutomationML & Publication Tools
- TIA Portal Usability

TIA Portal options and more…
- SIMATIC STEP 7 Safety
- SIMATIC Safe Kinematics
- TIA Portal Multiuser Engineering
- SIMATIC Robot Library
- OPC UA
- SIMATIC S7-PLCSIM / S7-PLCSIM Advanced
- SIMATIC Target™ for Simulink®
- TIA Portal Test Suite
- SIMATIC STEP 7 CFC
- 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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TIA Portal Updates

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TIA Portal Updates:
Version numbering and faster support through hotfixes

Hotfix

Rapid improvements for critical issues (security, stability) delivered as needed, without waiting for the next scheduled update.

Update

Regular improvements delivered on a planned schedule, as before.

No more service packs.

Compatibility

Both hotfixes and updates maintain full compatibility with your existing projects and workflows.

Updates may introduce new devices. Projects with these new devices can only work with the updated version.

How it works:

The technical version numbering has been updated since V21 to reflect this new approach.
Example for TIA Portal V21.1:

- 21.1.0.0 = V21.1 Release – The first two blocks (21.1) designate the TIA Portal version
- 21.1.0.1 = V21.1 Hotfix 1 (critical improvements)
- 21.1.1.0 = V21.1 Update 1 (regular improvements)
- 21.1.1.1 = V21.1 Update 1 Hotfix 1 (critical improvements after Update 1)

Since TIA Portal V21 we have introduced a new approach to help you keep your systems running smoothly and secure. Alongside regular updates, we now provide hotfixes: Fast, targeted improvements whenever critical issues arise.

Key benefits:

- Cumulative updates: Each update includes all previous improvements – no manual combining needed
- Hotfixes auto-integrated: Critical improvements from between updates are automatically included in the next update
- Always current: Get improvements immediately when they matter most – no waiting for scheduled releases
- Easy access: One-click update for all products and options via new **TIA Installer**, or use TIA Administrator, or manually download from SiePortal

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Open, upgrade and migrate TIA Portal projects

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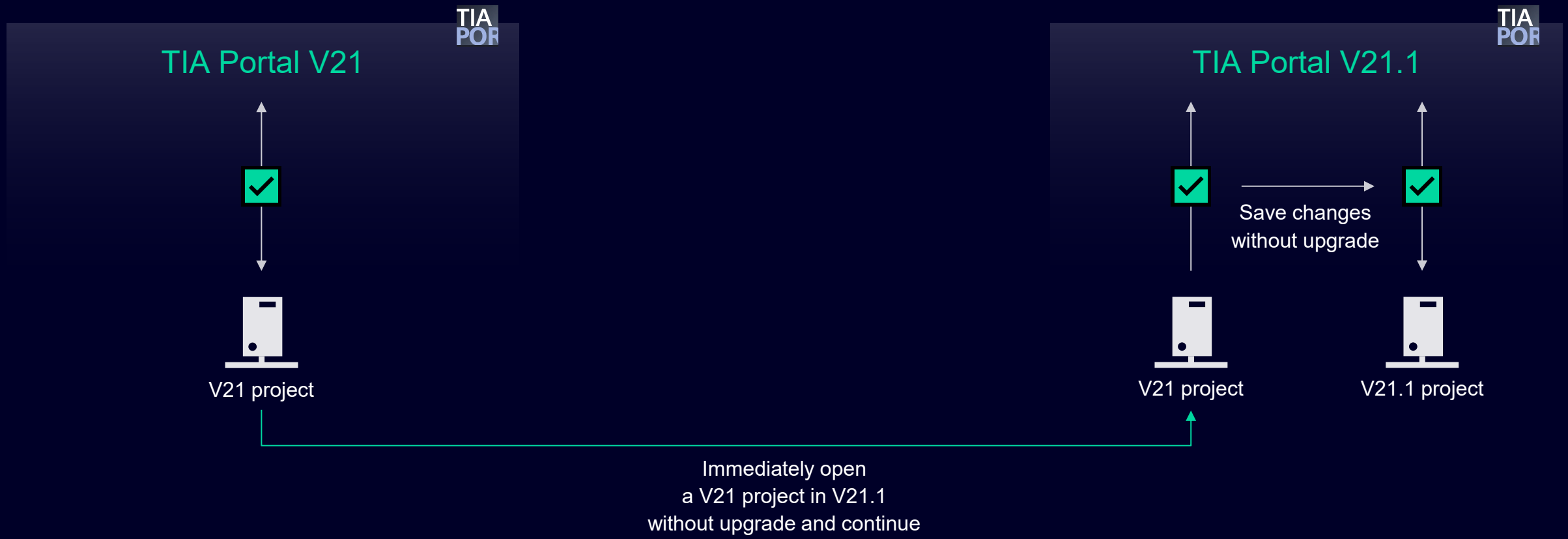
Opening TIA Portal projects from V21



Side-by-side installation of **V13** up to **V21.1** allows access to all project versions.

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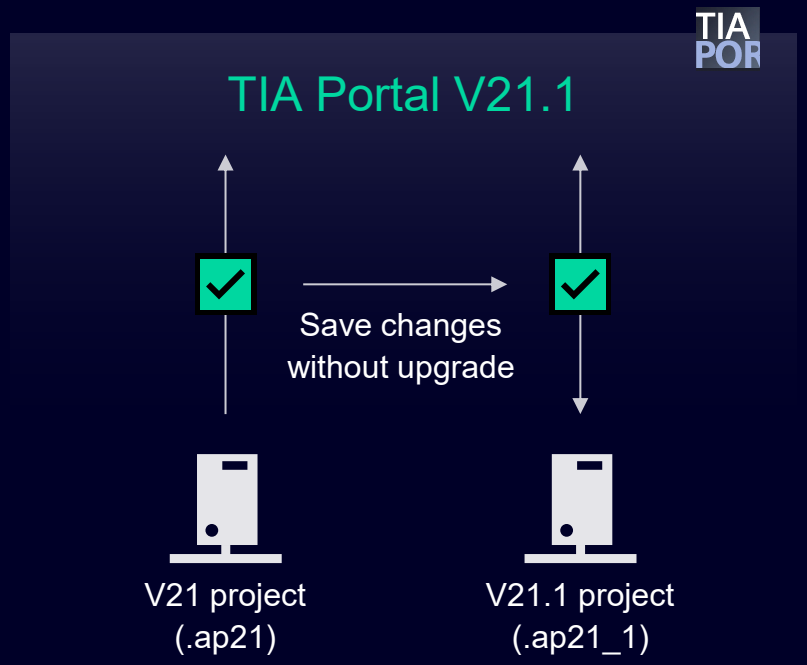
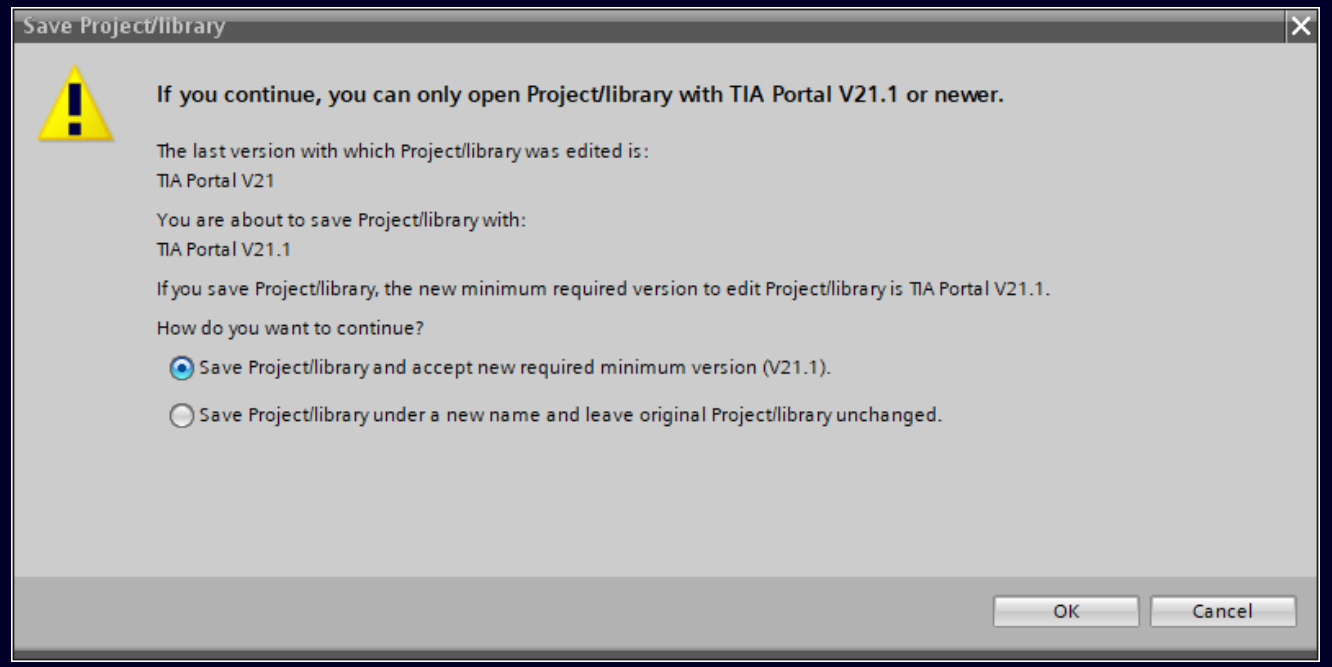
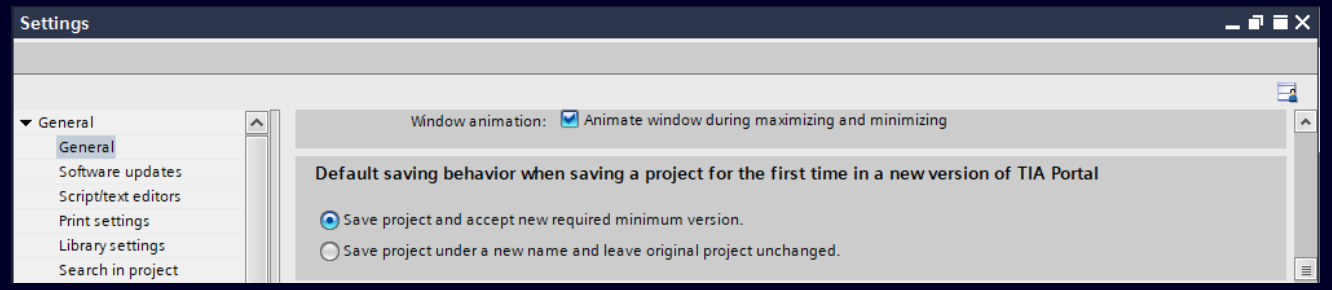
Opening TIA Portal projects from V21





The first save after modifying the project shows a dialog to decide:
- Save (and override) existing project
- Save under a new name (save as)

The default option can be configured in the TIA Portal settings.



If you continue, you can only open the project with TIA Portal V21.1 or newer.

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Upgrading TIA Portal projects from V14 - V20



Side-by-side installation of **V13** up to **V21.1** allows access to all project versions.

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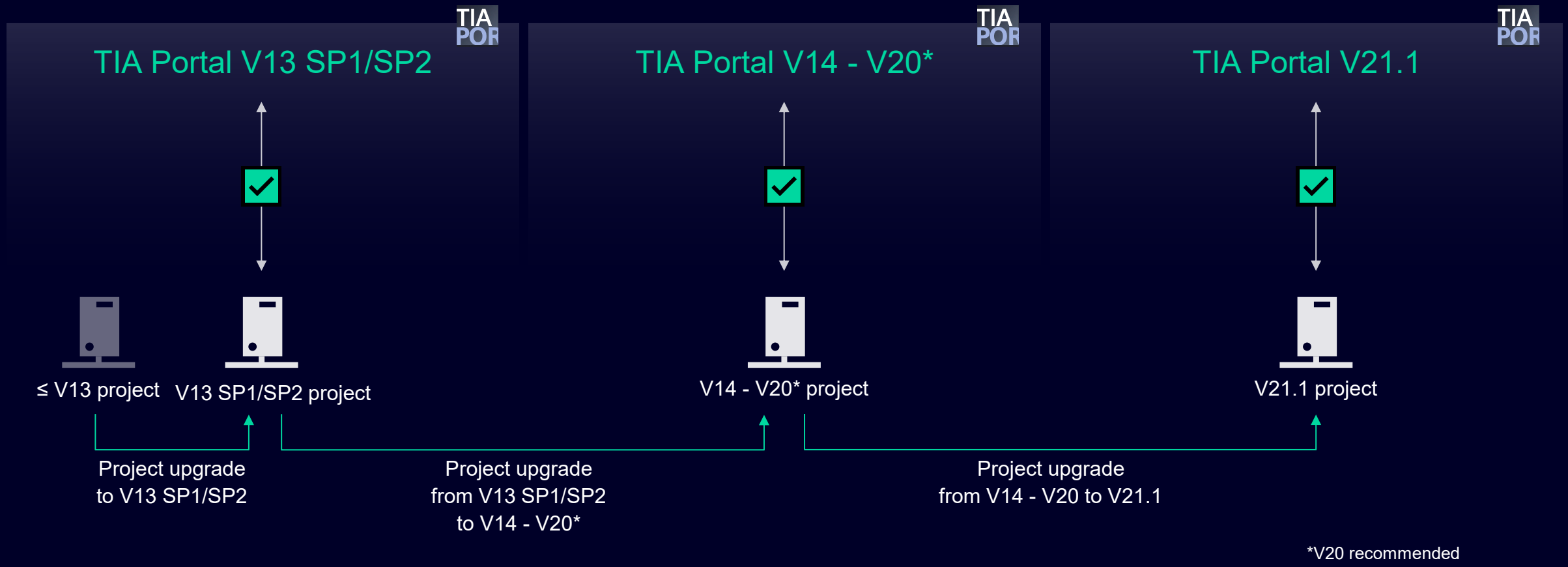
Upgrading TIA Portal projects from < V14



*V20 recommended

Side-by-side installation of **V13** up to **V21.1** allows access to all project versions.

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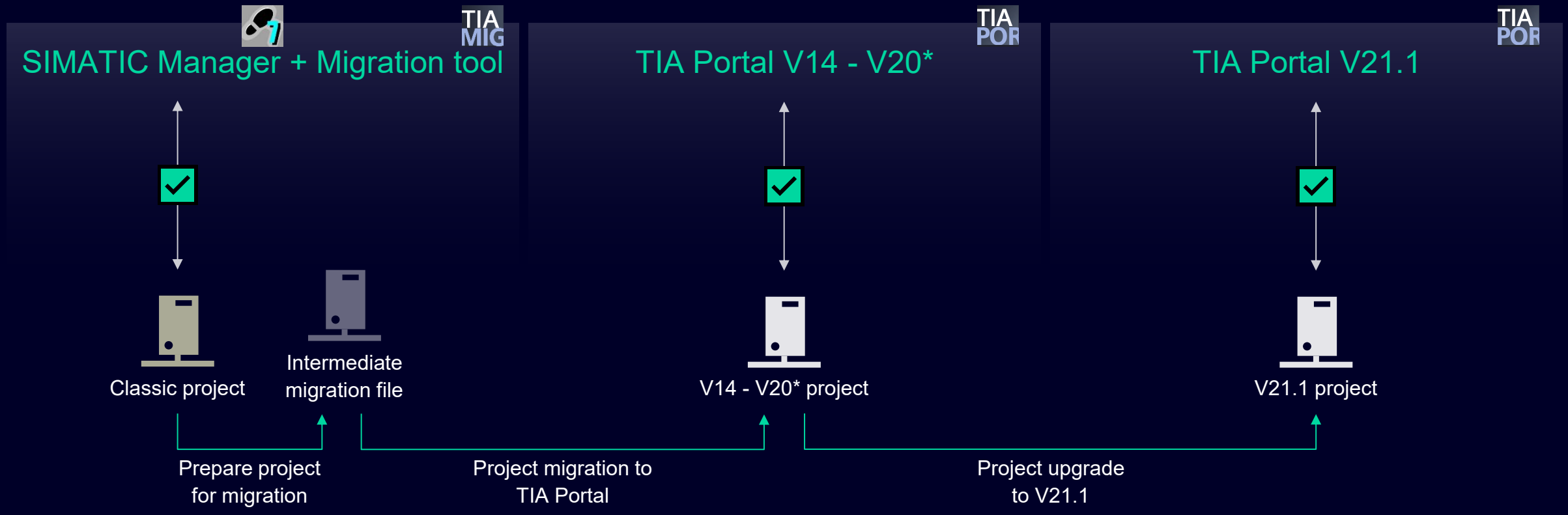
Migrating classic projects to TIA Portal



*V20 recommended

Side-by-side installation of **V13** up to **V21.1** allows access to all project versions.

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Project Integrity: Validate & Repair

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Project Integrity: Validate & Repair
at a Glance

Overview

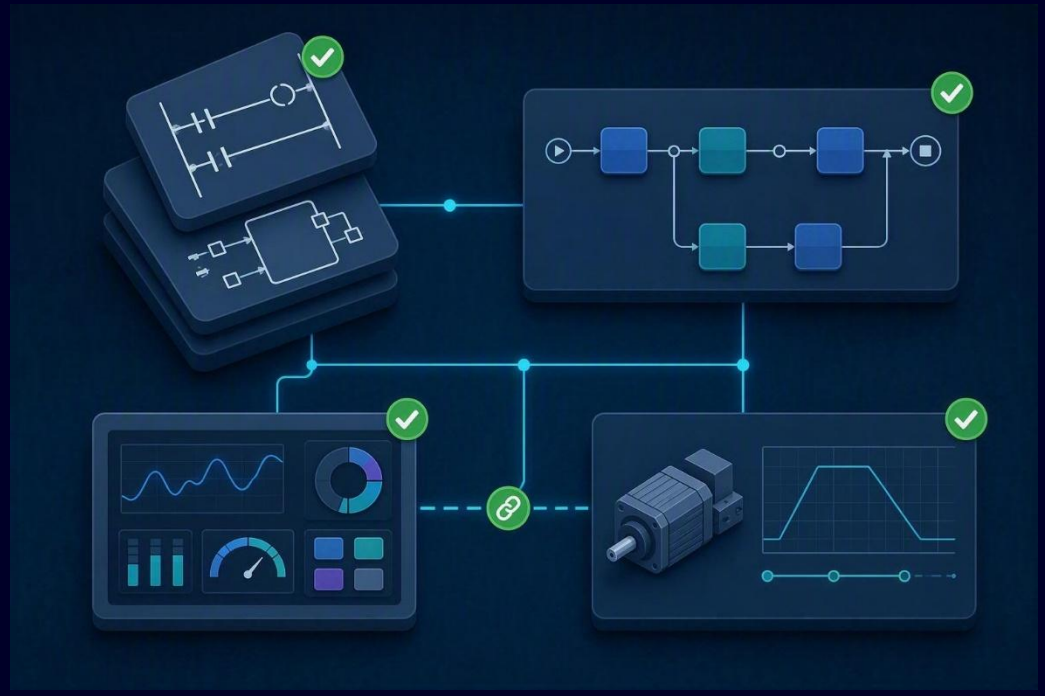
- Checks TIA Portal projects for data integrity and inconsistencies – for stable behavior and fast compilation.
- Found problems are automatically fixed via repair – including a backup copy and report.

Automated Quality Assurance

- Covers TIA Portal data, PLC blocks and HMI objects based on known error patterns.
- Pattern recognition is continuously being expanded.

Comprehensive support

- Problems that cannot be solved automatically are solved by Siemens Customer Support – accessible directly from the function.



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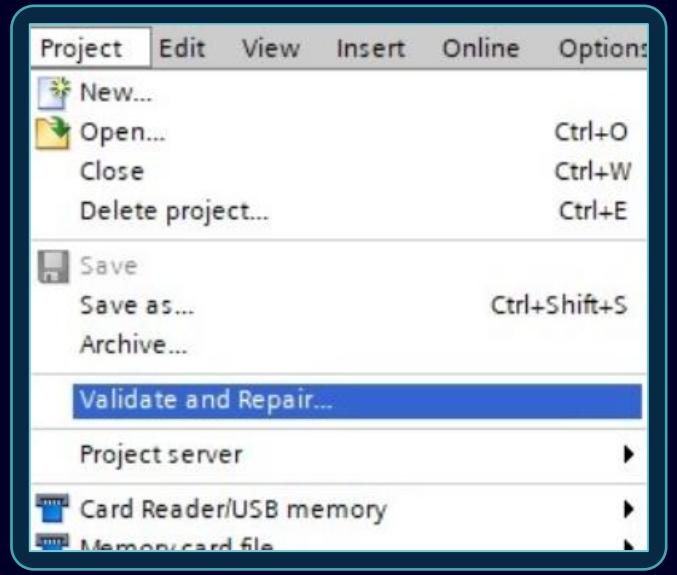
Project Integrity: Validate & Repair
How it works

New: Validate & Repair detects and fixes inconsistencies in TIA Portal projects

- Access via the project menu: "Validate and Repair..." with the project open
- Validate performs all registered integrity checks on the project data
- The user decides whether and when problems found are fixed
- Repair applies all registered automatic fixes



1 Open Project → 2 Validate → 3 Review Issues → 4 Auto-Backup → 5 Repair → 6 Support

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Project Integrity: Validate & Repair
Your benefits

- ✓ **Easy access:** Detect and resolve inconsistencies at any time directly in the TIA Portal.
- ✓ **Easy fix:** One-click function directly from TIA Portal engineering.
- ✓ **Full transparency:** All problems including affected objects at a glance.
- ✓ **User-controlled repair:** The repair run is only carried out after confirmation by the user.
- ✓ **Maximum data security:** A backup copy is automatically created before each correction.
- ✓ **Higher project performance:** Stable project, faster compiling and shorter response times in the project.
- ✓ **Openness API:** The function is also available via the Openness API.



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TIA Portal Software Integrity

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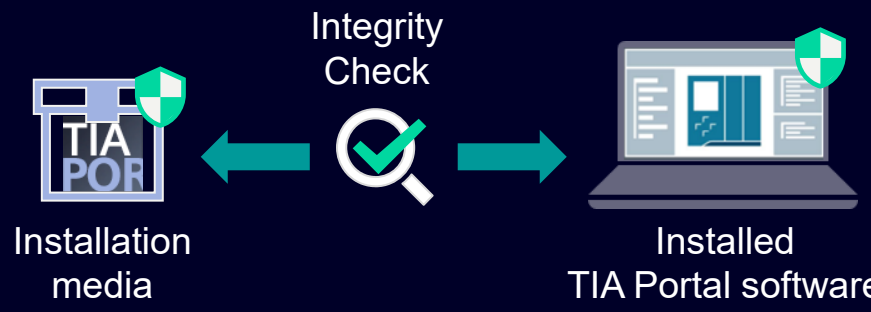
Enhanced Software Integrity Protection in TIA Portal V21.1

NEW IN V21.1

Automatic integrity checks at startup



Also available: Installation media checks and on-demand validation using the Installation Integrity Validator command-line tool

01 **Validation at startup**
TIA Portal automatically performs an installation integrity check when the application starts, reducing the need for manual checks.

02 **Warning and diagnostics**
Background file check improve the detection of modified, missing, or unexpected installation files. If integrity errors are detected warnings appear, with details recorded in the logs and Windows Event Log.

03 **Improved compatibility**
Extended compatibility with more products and option packages including previous versions improves interoperability.

04 **Independent Installation integrity validator**
The validator is available as standalone component and can be updated independently. More information:
https://support.industry.siemens.com/cs/ww/en/view/110001559

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TIA Portal Openness

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TIA Portal Openness
at a glance

TIA Portal Openness is our API for automating your engineering workflows

SiePortal: 109792902

Highlighted API innovations in TIA Portal Openness V21.1 across

Long-term support and compatibility	Projects	Libraries
Hardware configuration	Security	Hardware modules
CAx data exchange	PLC user programs	Safety engineering
Safety Validation Assistant	Technology objects	WinCC Unified
Alarming and ProDiag	SIMATIC Visualization Architect	OPC UA
Version Control Interface	SINAMICS Startdrive	



The complete list of all new features is available in the TIA Portal Openness system manual, chapter “What's new”.

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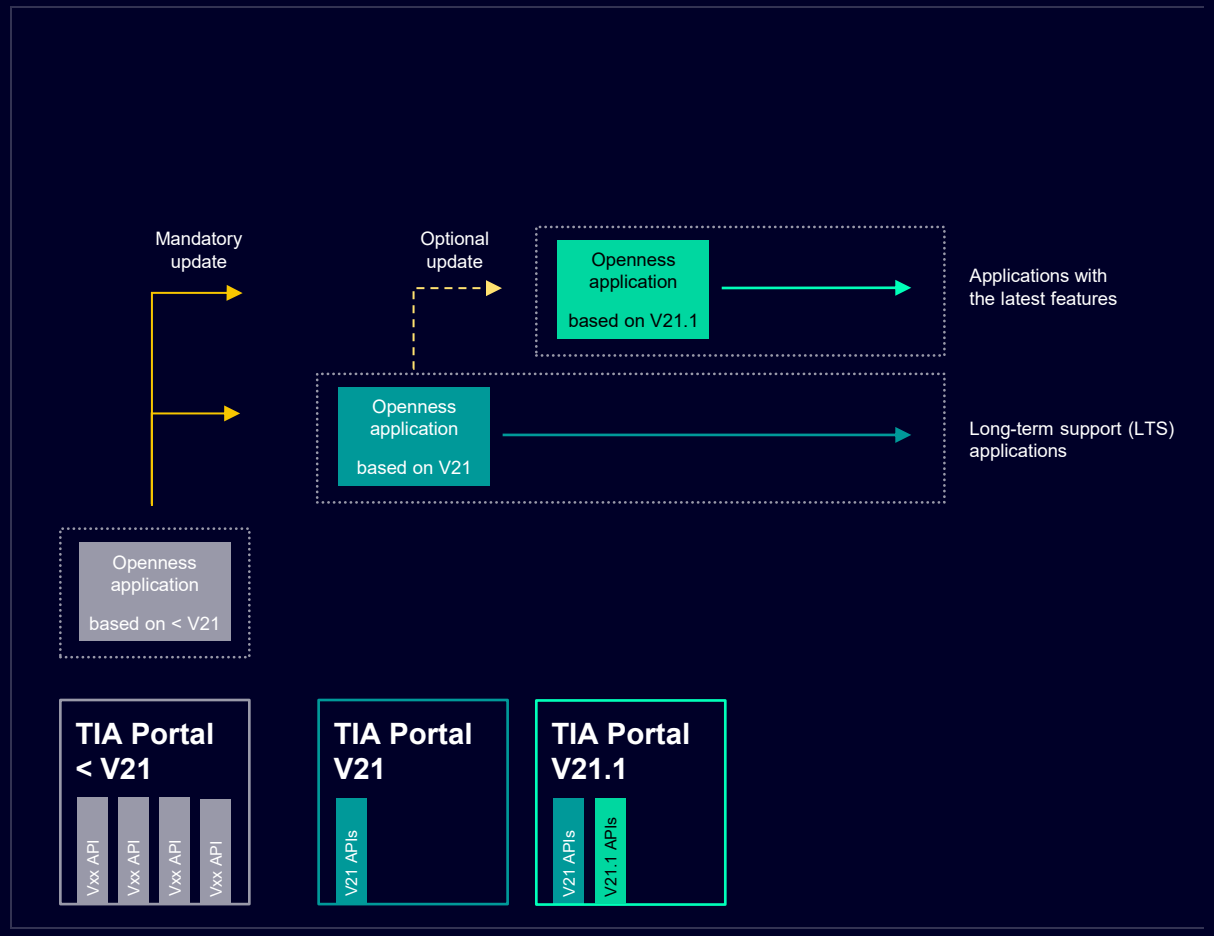
TIA Portal Openness
Long-term support and compatibility



Long-term support (LTS)
- Existing TIA Portal Openness applications since V21 will continue working.
- TIA Portal V21.1 delivers the LTS APIs for V21.

New API version
- TIA Portal V21.1 delivers the new API version V21.1 to use the latest TIA Portal Openness features.

SimaticML file format compatibility
- The APIs in TIA Portal V21.1 will create SimaticML files of engineering version V21.1.
- The APIs in TIA Portal V21.1 can import SimaticML files from engineering versions V19, V20, V21, and V21.1.

.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.

Recap: Changeover to V21
- 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".

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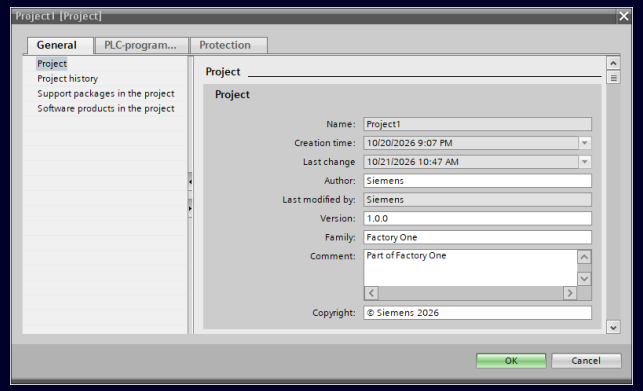
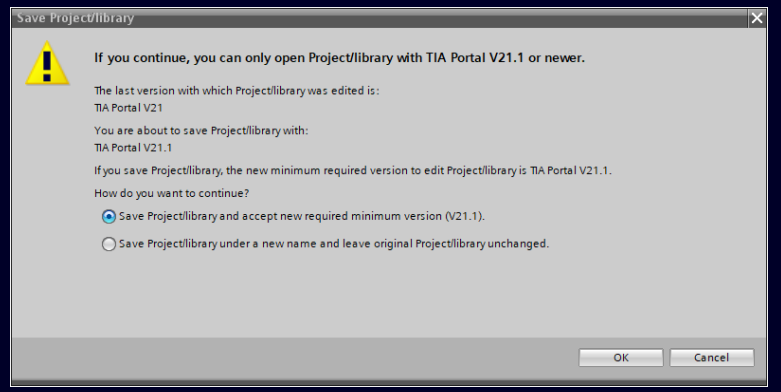
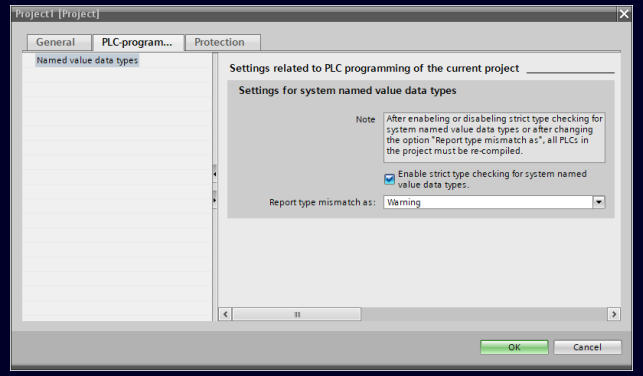
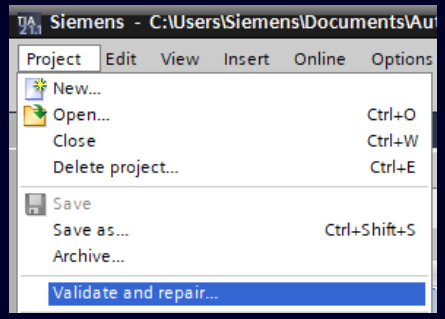
TIA Portal Openness
Projects









Projects

Project handling is extended in TIA Portal Openness with

- Writable project attributes
- An additional save method: Use ProjectSaveMode SaveAsNewVersion when saving a Project would change its minimum required TIA Portal version
- Project validation/repair functionality

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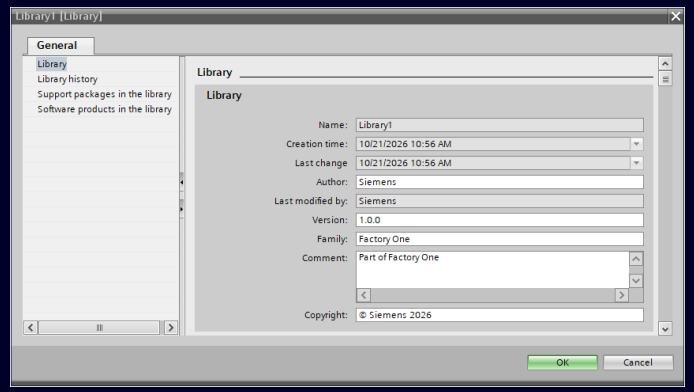
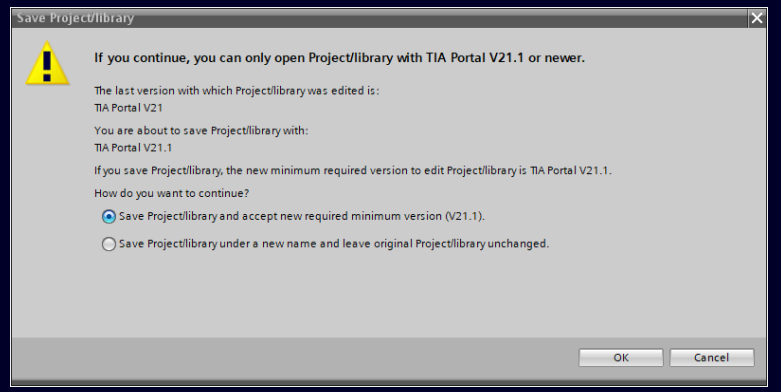
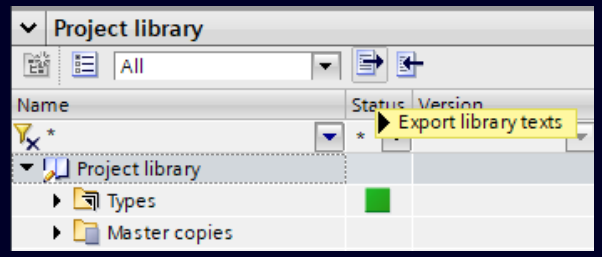
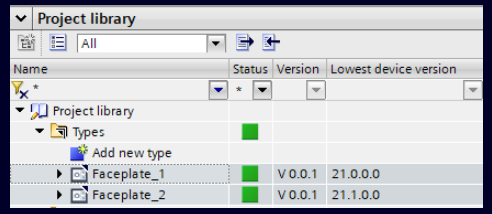
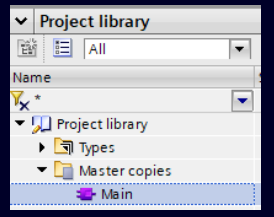
TIA Portal Openness
Libraries











Libraries

Project Libraries and User Global Libraries in TIA Portal Openness gain

- Export and import Library Texts
- Query all device versions supported by an HMI library type
- Upgrade the device version of HMI library types to a higher version
- Create master copies from an object in a read-only or secondary project

Additionally, User Global Libraries in TIA Portal Openness gain writable attributes.

An additional save method for User Global Libraries is provided: Use ProjectSaveMode SaveAsNewVersion when saving a User Global Library would change its minimum required TIA Portal version.

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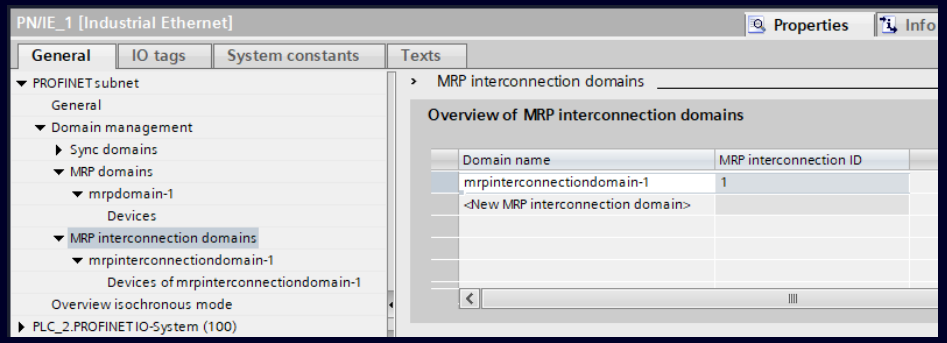
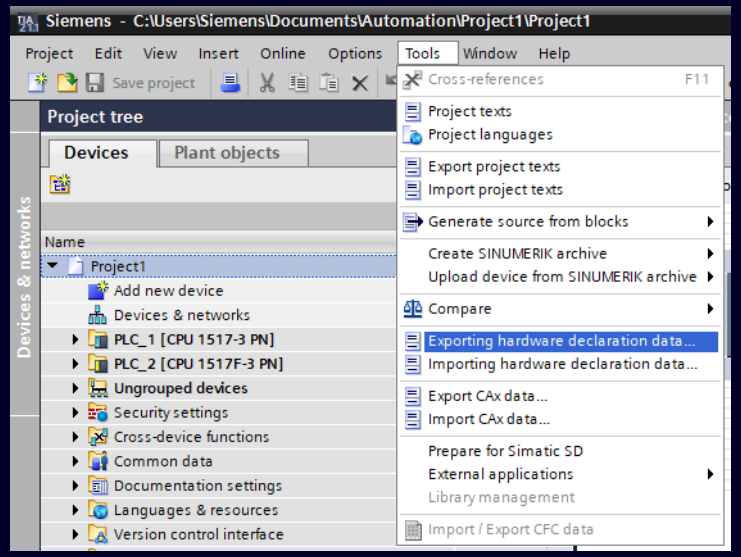
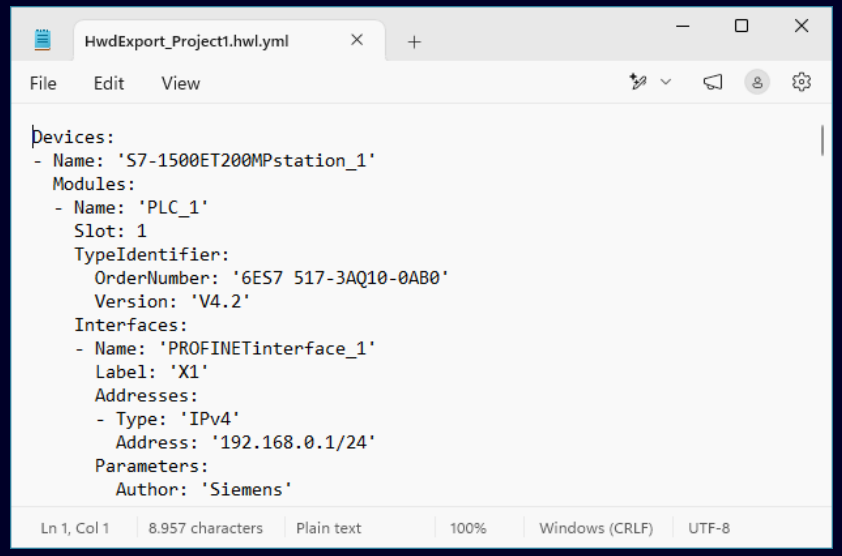
TIA Portal Openness
Hardware configuration







Hardware configuration

Hardware configuration in TIA Portal Openness is enhanced with

- Create and configure MRP Interconnection domains
- Export and import hardware declaration data from a project as human-readable YAML-based representation
- Create Telecontrol connection and access datapoints for S7-1500

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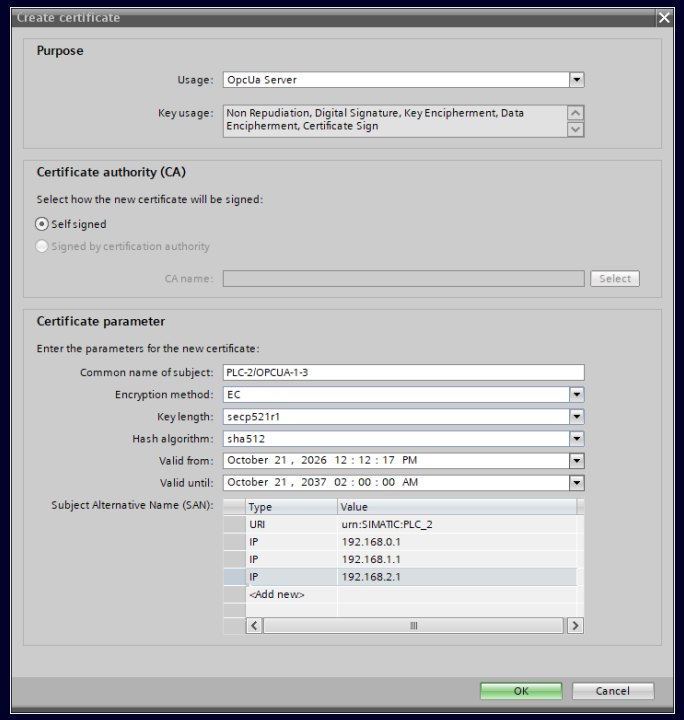
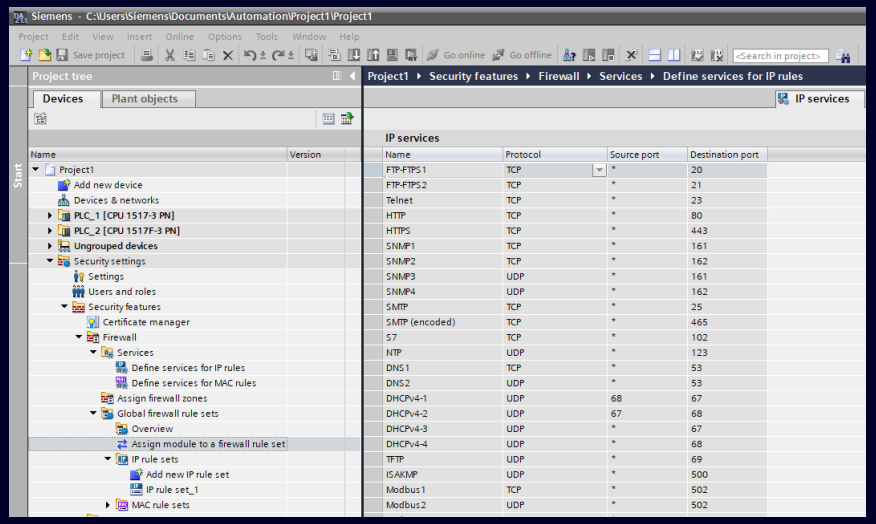
TIA Portal Openness
Security





Security

Security configuration in TIA Portal Openness is expanded with

- Read/Write access to Signature algorithm, RSA key length and ECCurve Names
- Support for additional signature algorithm and access to certificates
- Configure firewall service definitions
- Support for Global IP Rules
- Support for device local Firewall IP Rules
- Configure secure PG/HMI Communication certificate via the Certificate Management Configuration

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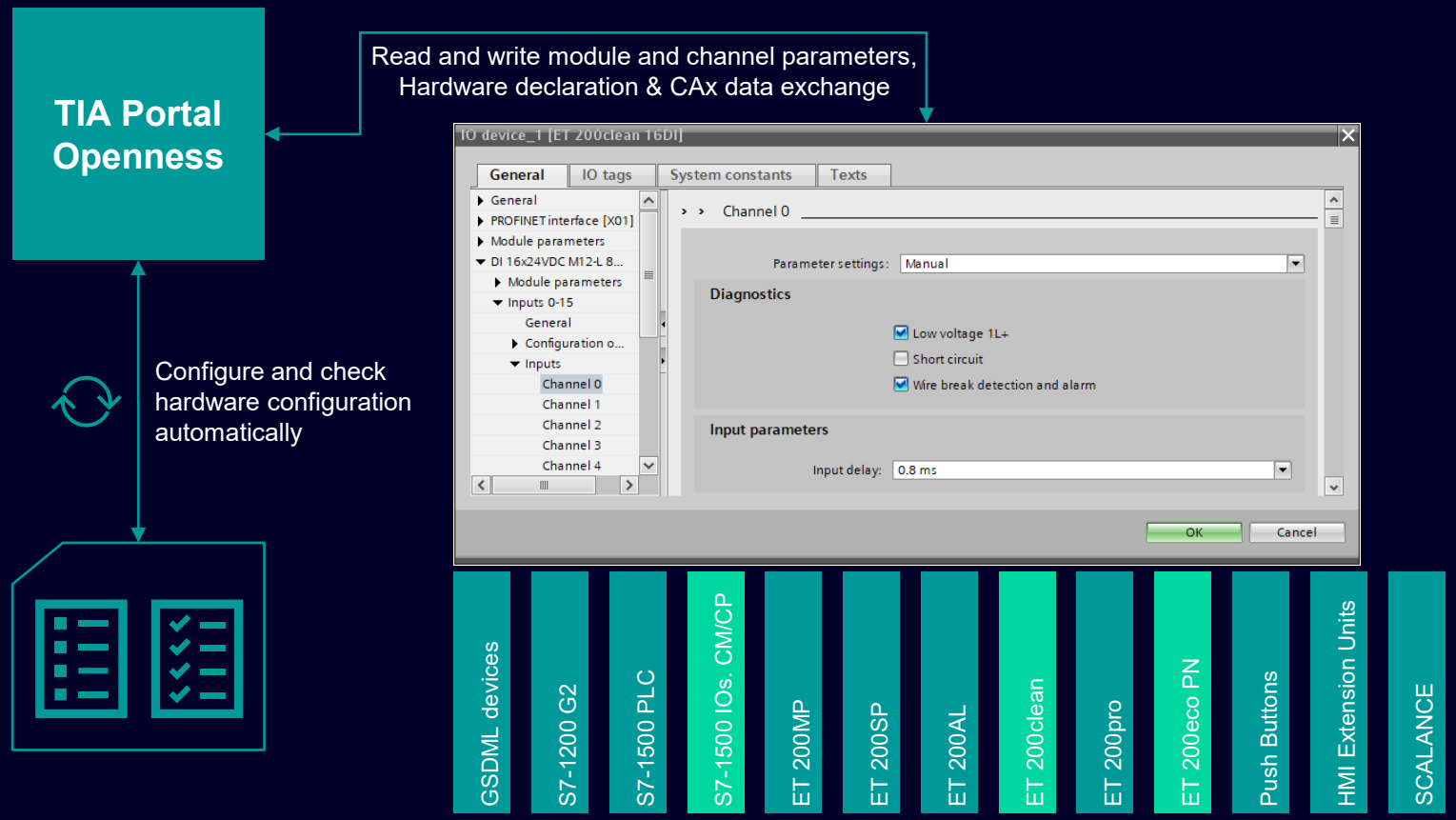
TIA Portal Openness
Hardware modules



Existing New/Extended in V21.1

Hardware modules

Additional hardware module coverage* in TIA Portal Openness is added for

- CP1243-5 G2 - Access entire device
- CP1243-1 G2 V1.0/V1.1 - DNP3 protocol (telecontrol) and main parts of options
- CP1243-1 G2 /V1.1 - IEC 60870 protocol (telecontrol) and main parts of options
- Telecontrol - Data point editor for ST7, DNP3 and IEC 60870 protocols
- TIM 1531 IRC V2.7/V3.0 - main parts of options
- CM 1500 - PN operating mode as IO-Controller and as IO-Device with transfer areas
- S7-1500 IOs - All S7-1500 IOs V3.1 modules
- IP65/67/69 - All ET 200eco PN V6.0 modules and ET 200clean V2.0 modules

** Detailed list of supported modules, channels and parameters: C:\Program Files\Siemens\Automation\Portal V21.1\PublicAPI\V21.1\HW Parameter description*

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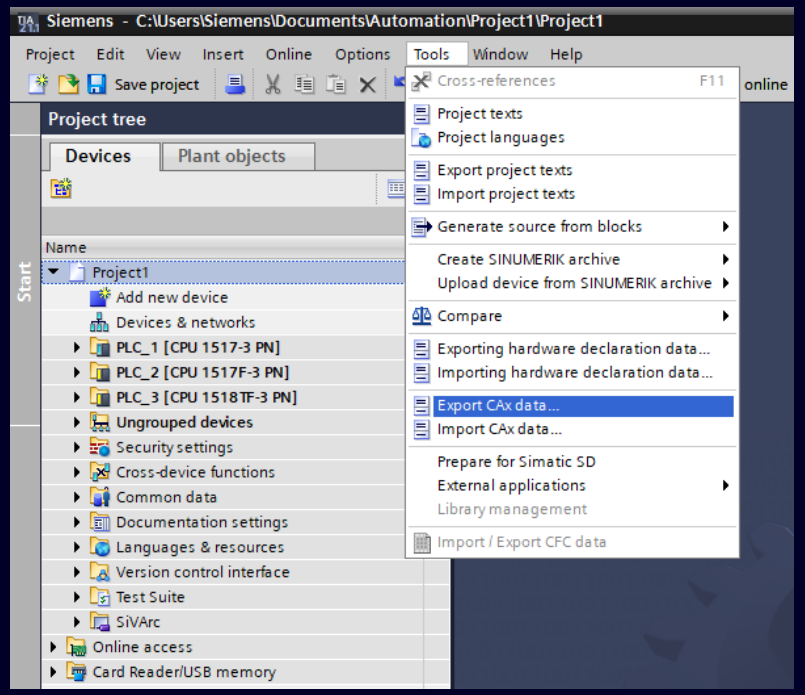
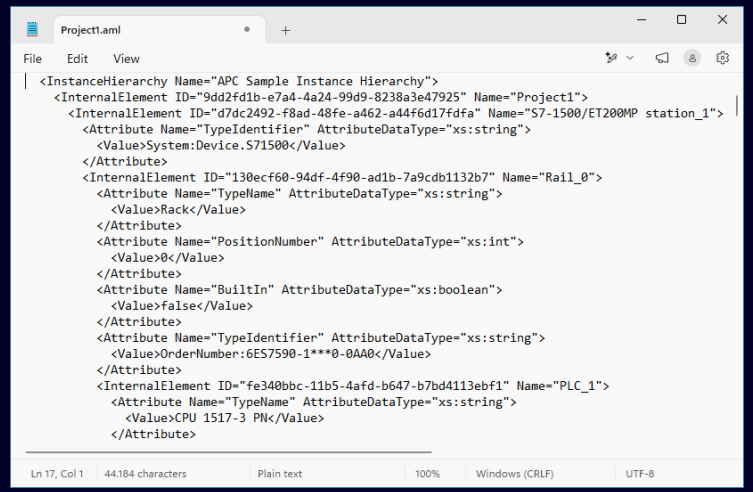
TIA Portal Openness
CAx data exchange





CAx data exchange

CAx workflows receive

- improved name exchange
- PLC tag validation
- support for custom IO attributes
- Windows Event Log tracing
- updated CAx Publication Tools
- additional documentation

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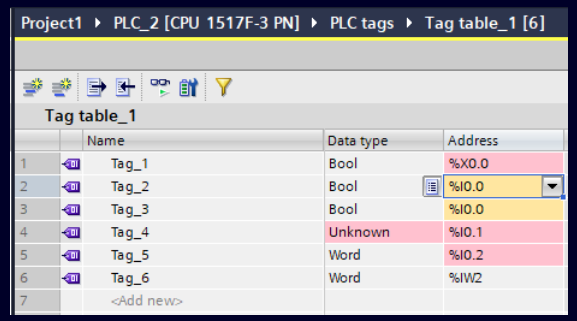
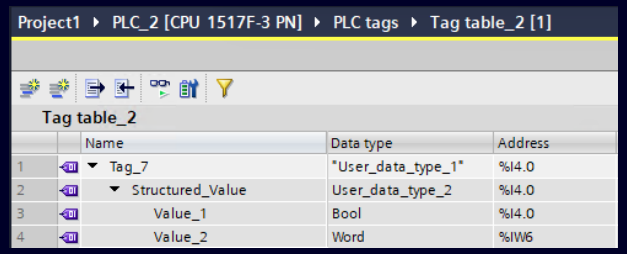
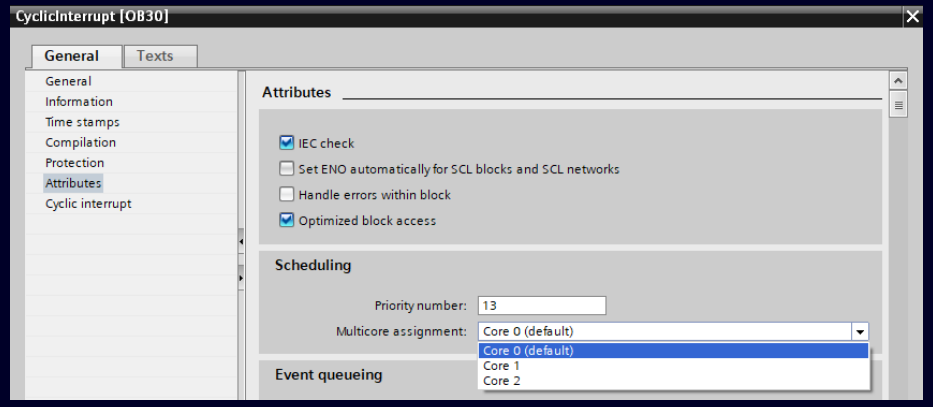
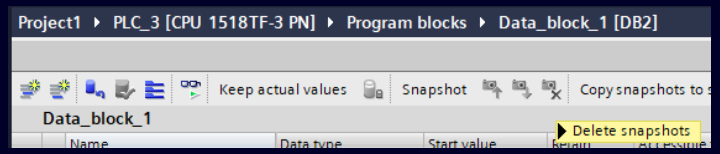
TIA Portal Openness
PLC user programs









PLC user programs

PLC programming support in TIA Portal Openness is enhanced with

- Validate the data type and logical address of PLC tags
- Access information about subelements of PLC tags
- Manage CPU core assignment for Organization Blocks
- Access new GRAPH FB setting to provide the GRAPH textlist IDs
- Delete existing snapshots from data blocks in the project

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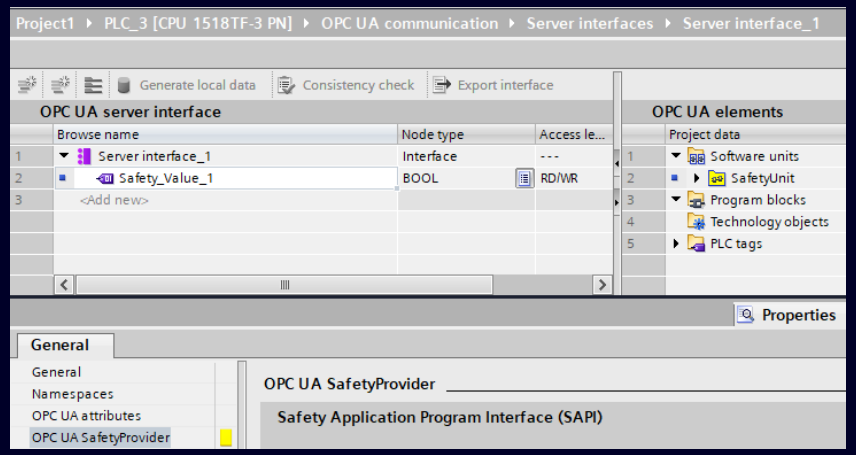
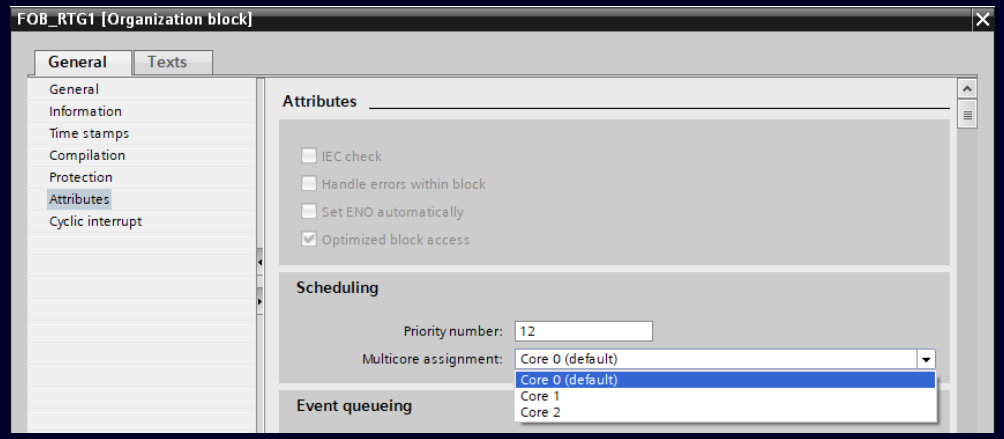
TIA Portal Openness
Safety engineering





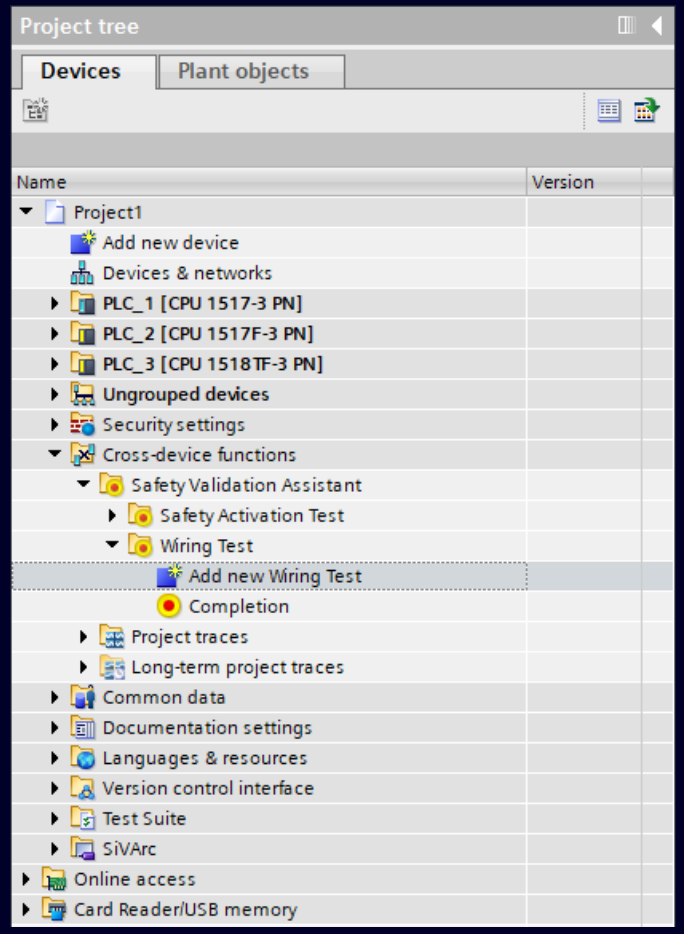
Safety engineering

Safety automation in TIA Portal Openness is extended with

- Manage OPC UA Safety connections
- Assign Failsafe Runtime Groups to specific CPU cores on supported F-CPUs

SIEMENS

TIA Portal Openness
Safety Validation Assistant



Safety Validation Assistant

Wiring Tests can now be accessed and configured via TIA Portal Openness for the Safety Validation Assistant.

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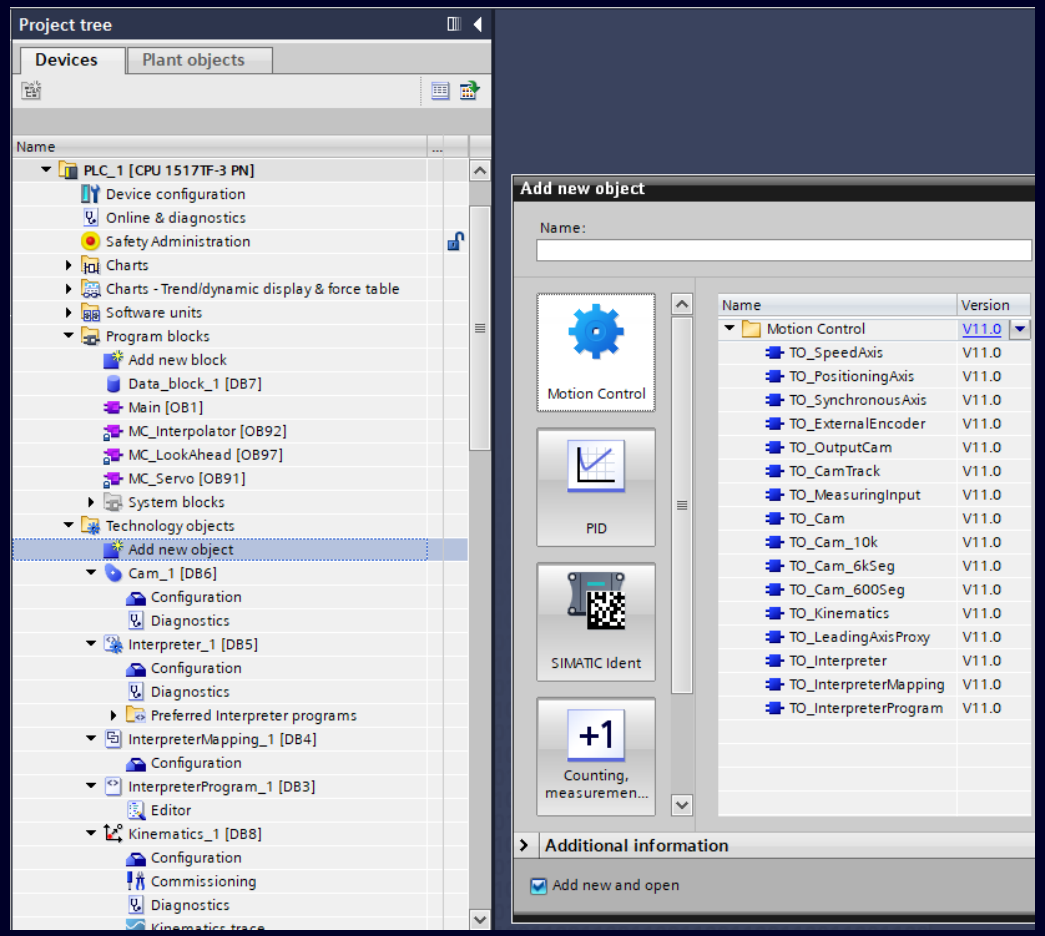
TIA Portal Openness
Technology objects



Technology objects

Motion functionality in TIA Portal Openness is extended for

- On CPUs S7-1500, the new functionality of Motion Version 11.0 is supported
- On CPUs S7-1200 G2, the new functionality of Motion Version 10.0 is supported
- Save online generated cams into offline project for TO_Cam
- Support for filebased interpreter for TO_Interpreter

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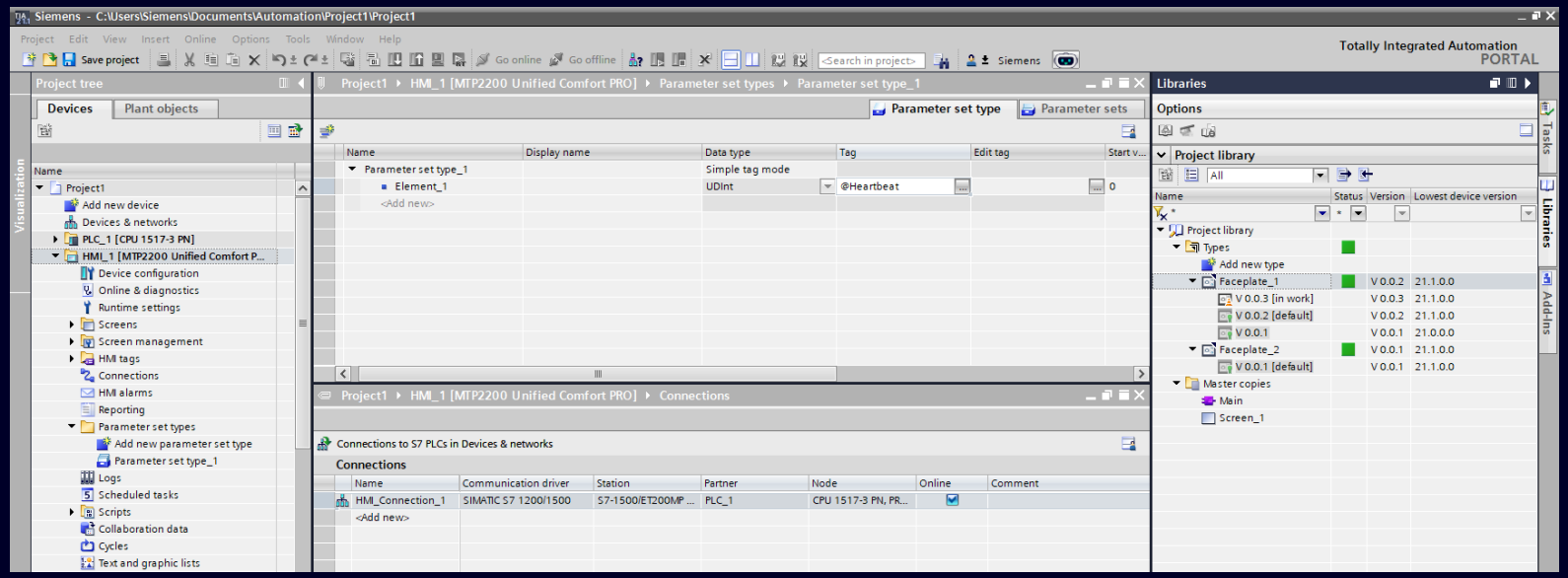
TIA Portal Openness
WinCC Unified



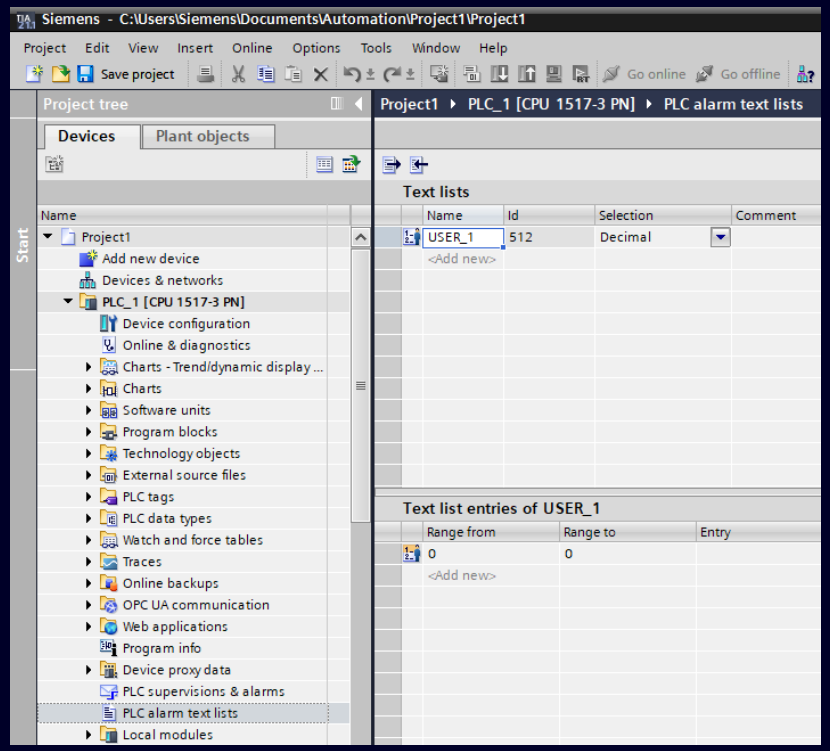
WinCC Unified

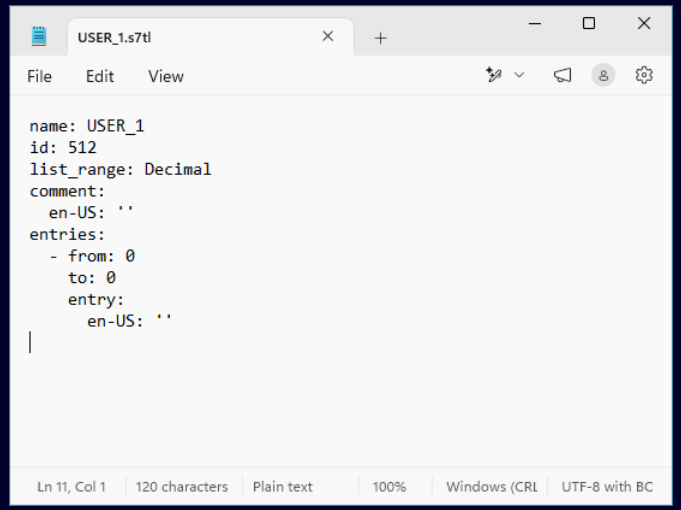
TIA Portal Openness support in WinCC Unified is expanded for

- Upgrade the device version of library types (Screens, Faceplates, Scripts etc) to a higher version
- Support of master copy handling (creating and usage) for the objects Screen, Tag, Parameter Set Type, Script Module/Function, Scheduled Task, Project Graphic, Text List, Graphic List
- Configure Audit Class property of HMI Connections
- Configure Screen History property of HMI Runtime Settings
- Configure Function Key properties in Screens
- API support for Parameter Set Types

SIEMENS

TIA Portal Openness
Alarming and ProDiag





Alarming and ProDiag

PLC alarm text lists can now be imported and exported as SIMATIC Source Documents in TIA Portal Openness.

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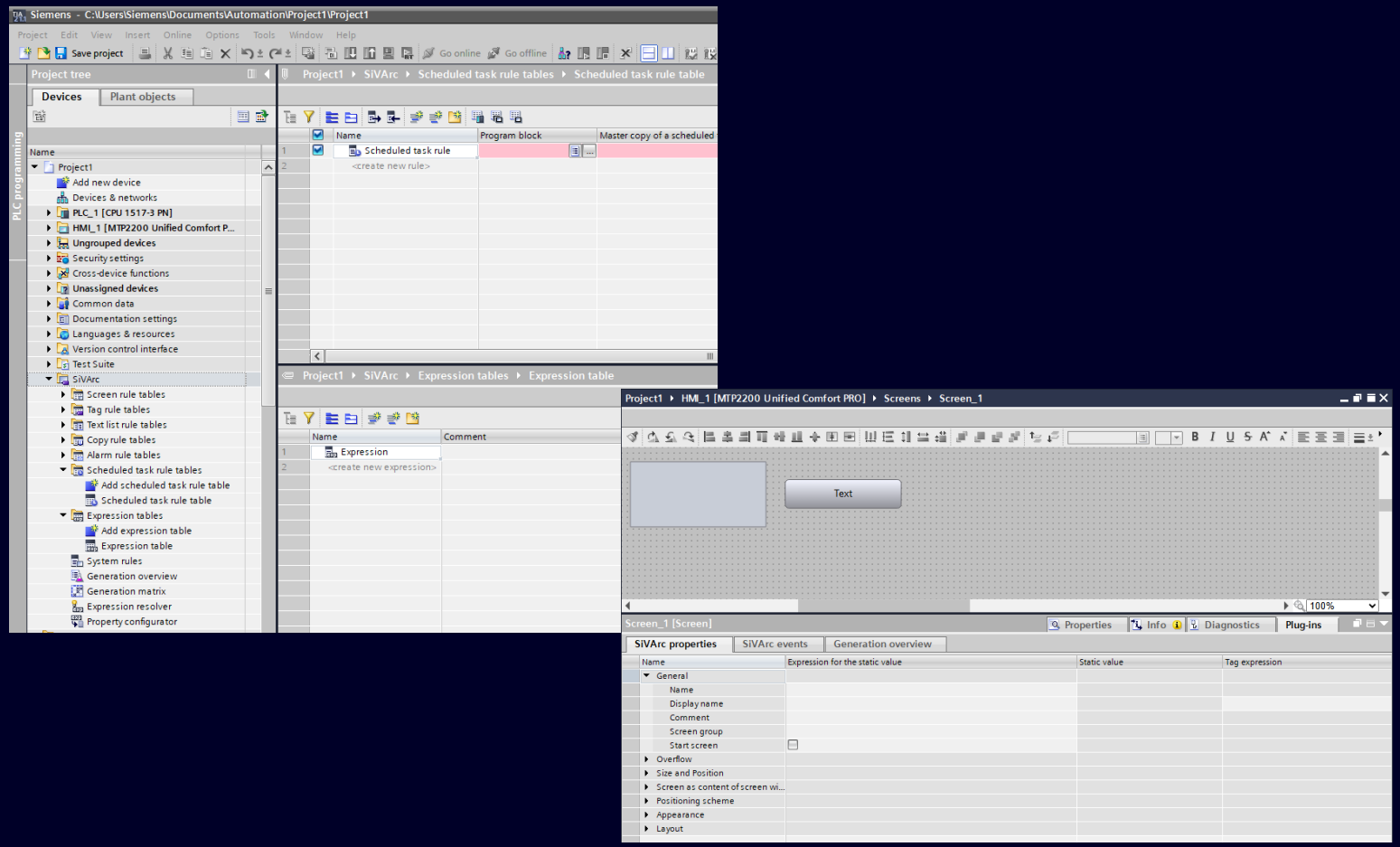
TIA Portal Openness
SIMATIC Visualization Architect



SIMATIC Visualization Architect

SiVArc in TIA Portal Openness gains support for

- Configure SiVArc plug-ins for WinCC Unified objects
- Support for scheduled tasks generation
- Support for SiVArc Expression objects
- Support for Layout field configuration

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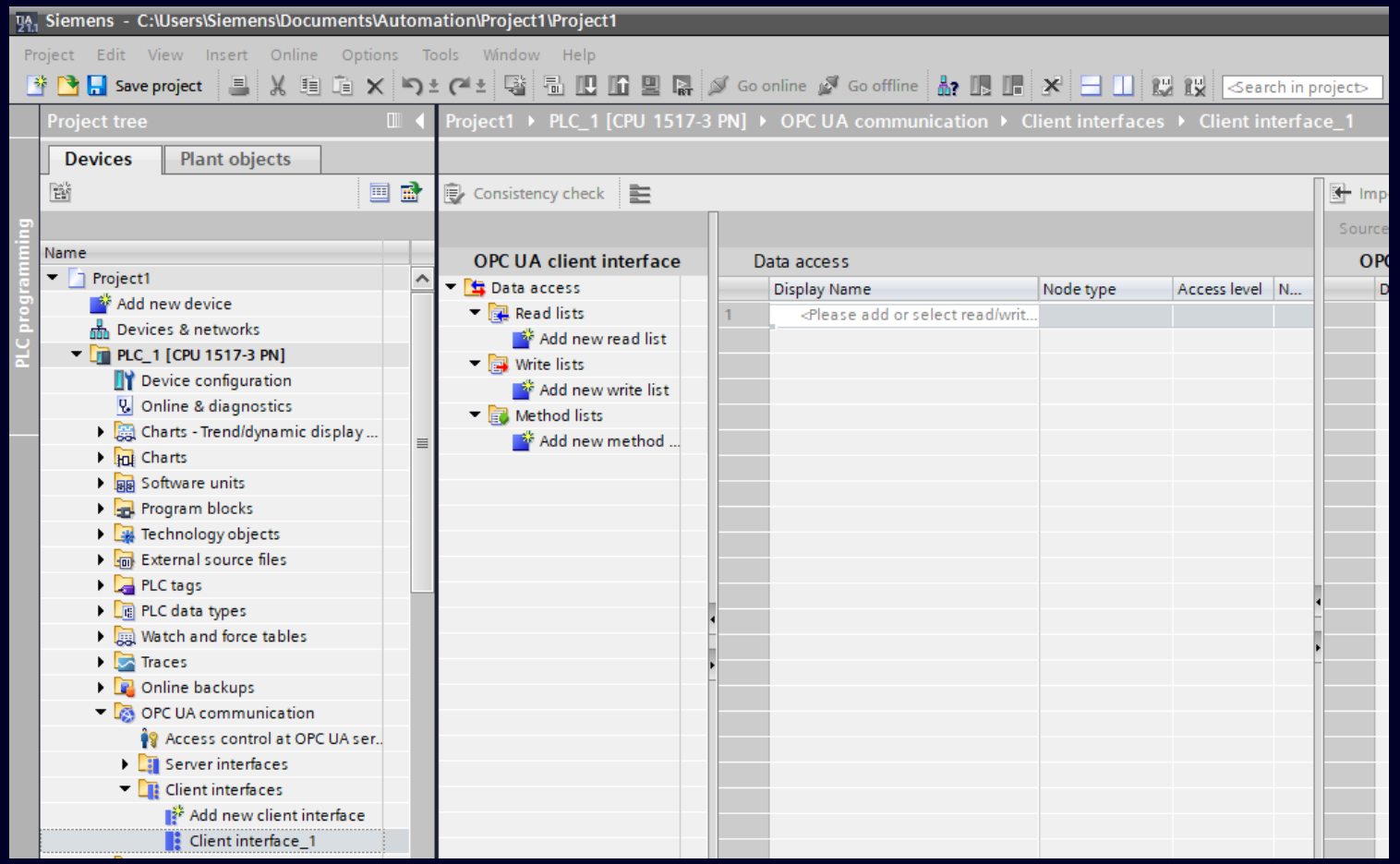
TIA Portal Openness
OPC UA



OPC UA

OPC UA Client Interfaces can now be created and configured via TIA Portal Openness.

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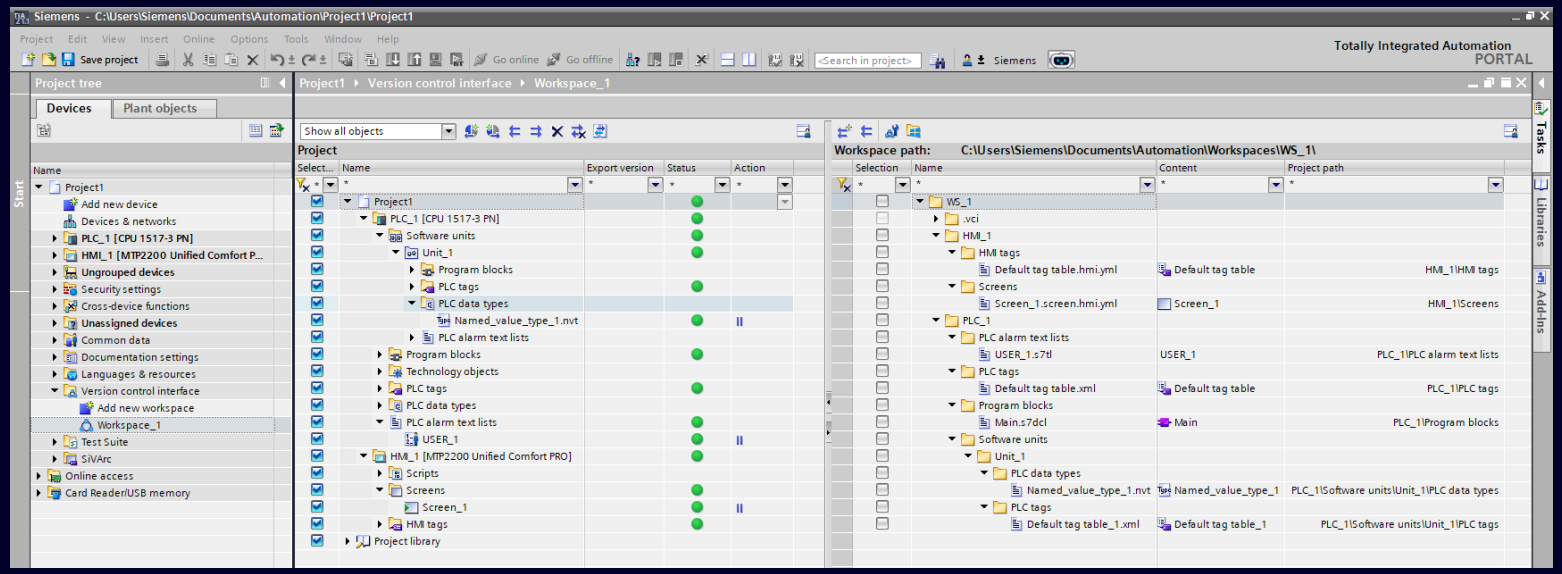
TIA Portal Openness
Version Control Interface



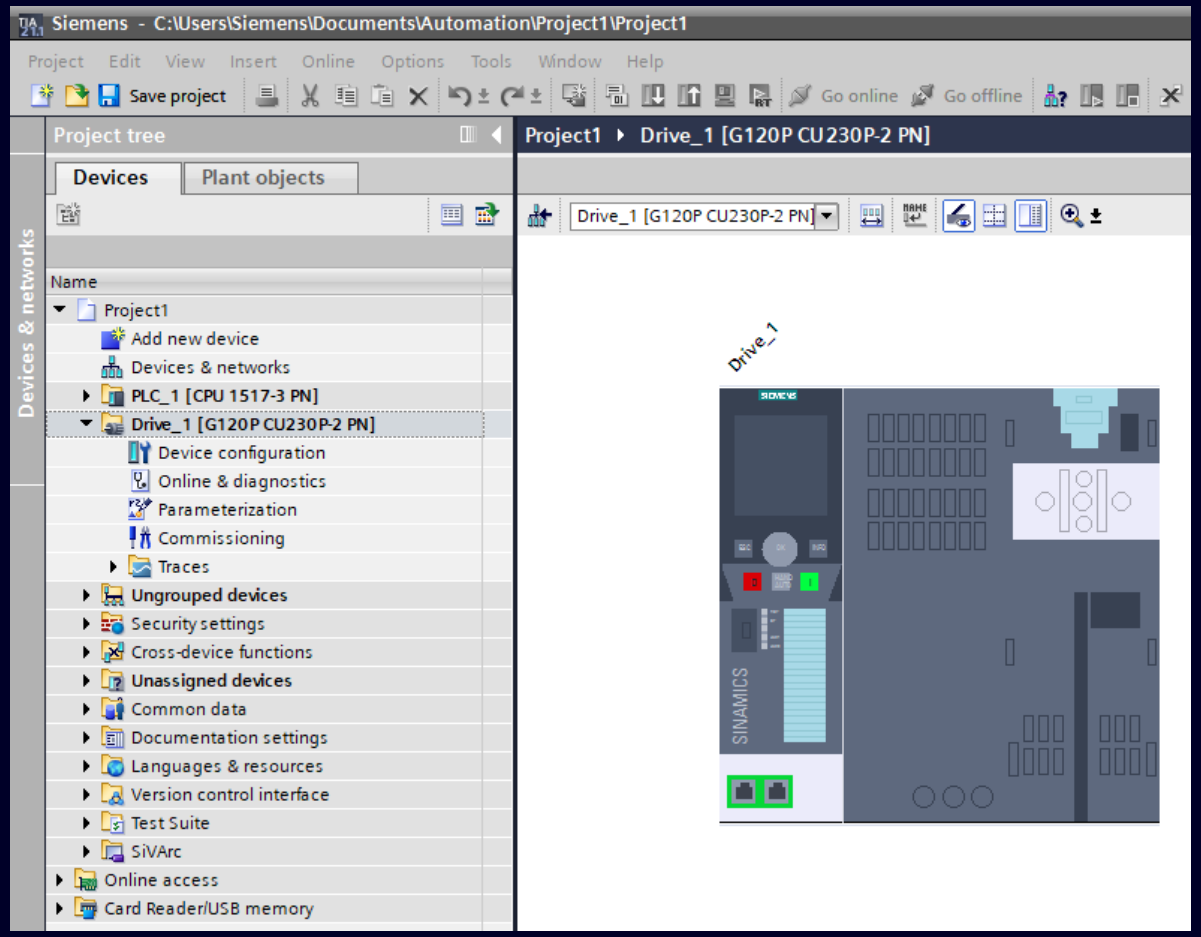
Version Control Interface

VCI support is extended to

- HMI screens for WinCC Unified
- Named Value types
- PLC alarm text lists

SIEMENS

TIA Portal Openness
SINAMICS Startdrive



SINAMICS Startdrive

SINAMICS Startdrive automation in TIA Portal Openness is expanded with

- Shared device configuration
- (De)activate drive commissioning mode (online)
- Configure BiCo connections with inversion logic
- Set topology comparison level for multi axes drives

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TIA Portal Add-Ins

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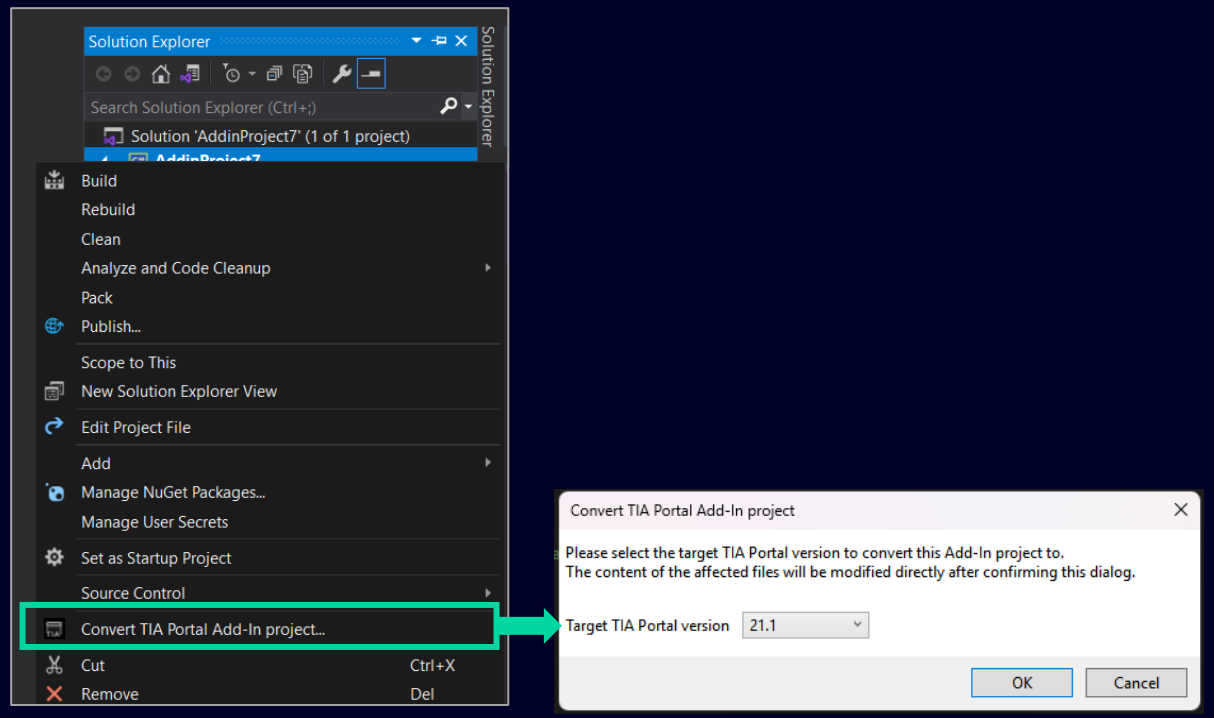
TIA Portal Add-Ins
Add-In Tools Updates in V21.1



TIA Portal Add-Ins

- Add-Ins offer a convenient way to expand TIA Portal functionality via the Openness API. Add-Ins are written as .NET programs and can be easily redistributed within an organization and also shared with third-party providers.

New in TIA Portal V21.1

- **Convert V21 Add-Ins to V21.1:**
  The Add-In Development Tools now include a ‘Convert Add-Ins’ feature to convert V21 Add-Ins to V21.1 Add-Ins. This is available in the Add-In Development Tools for Visual Studio 2019, Visual Studio 2022 and Visual Studio Code.

- **Add-In Tools now on SiePortal:**
  Information and downloads for the TIA Portal Add-In Tools (Add-In Development Tools and Trusted Add-Ins Certification Tool) are now available on SiePortal.
  https://support.industry.siemens.com/cs/ww/en/view/110005604

Benefits:

- V21 Add-Ins convert to V21.1 through built-in conversion, with no manual migration.

- A single source for all Add-In tooling: Add-In developers get all the Add-In Development Tools and the Trusted Add-Ins Certification Tool from one page, which helps with easy discovery and faster onboarding.

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SIMATIC Source Documents

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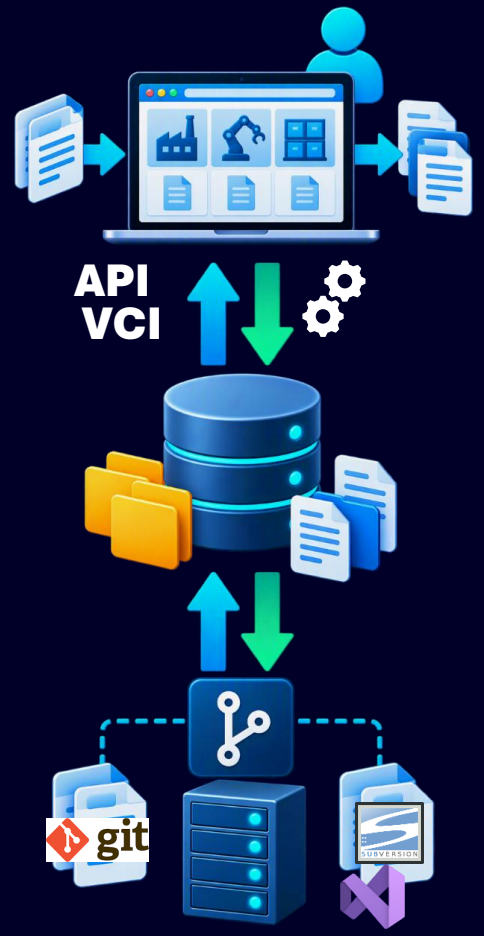
STEP 7 – Innovations
SIMATIC Source Documents - The Bridge to Modern Version Control

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



3rd Party Apps
Project generation,
extension,
validation, …

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 Screens and Tags
- Alarm text lists
- Export of Hardware configuration (1st step)

* V21.1

STEP 7 – Innovations
SIMATIC Source Documents - Multilingual comments, readable in source

Understand comments and titles beside the code - with translations linked by ID.

BEFORE / V20 - V21

Find the ID. Open the resource file.

```
{
  S7_BlockComment := "MLC_4hY"
}
```

Block header: look up the comment text in .s7res.

AFTER / PLANNED V21.1

Read the text. Keep the translation link.

```
{
  S7_Comment := "Motor Handling Block";
  S7_Culture := "en-US";
  S7_MLC := "MLC_4hY"
}
```

Block header: Reference language inline; ID links to .s7res.

Review with context

See reference-language text in the source file and in Git diffs.

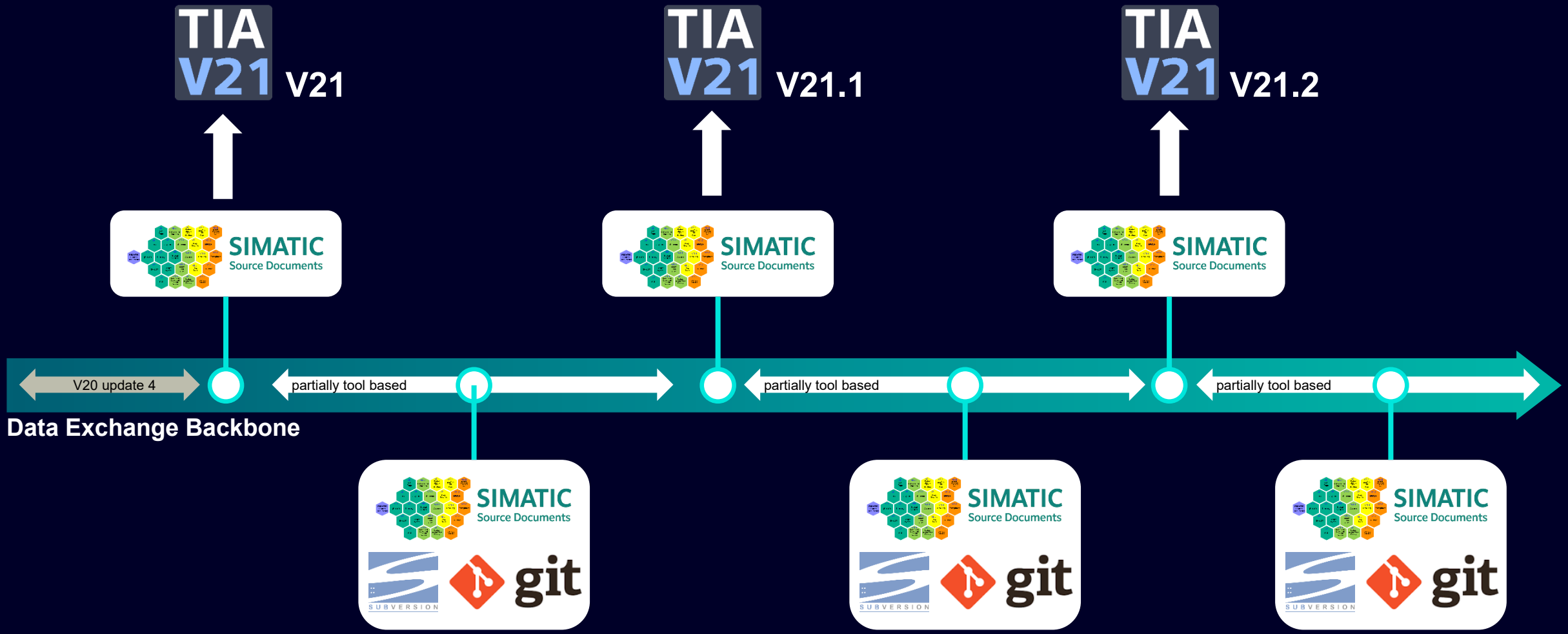
One language? Keep it simple.

Export inline text in .s7dcl - no generated MLC IDs or .s7res file.

Several languages? Stay linked.

IDs link to all languages in .s7res, including the reference language.

Continuous Integration – SIMATIC Source Documents Compatibility via Data Exchange Backbone



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STEP 7 – Innovations
SIMATIC Source Documents – Supported Objects overview

Objects	V20 (12/24)	V20 Update 4 (09/24)	V21 (12/25)	V21.1 (12/26)
(F-)LAD	x	x	x	x
(F-)FBD		x	x	x
SCL		x	x	x
Mixed (LAD/FBD/SCL)		x	x	x
DB	x	x	x	x
(F-)UDT	x	x	x	x
WinCC Unified Global Scripts	x	x	x	x
WinCC Unified Script Types		x	x	x
WinCC Unified HMI Tags (API only)	x	x	x	x (incl. VCI-Support)
WinCC Unified Screens				x
WinCC Unified Update from Library				x
Alarm Textlists				x
Hardware configuration				x (Export only - 1st step)

Version Control Interface (VCI)

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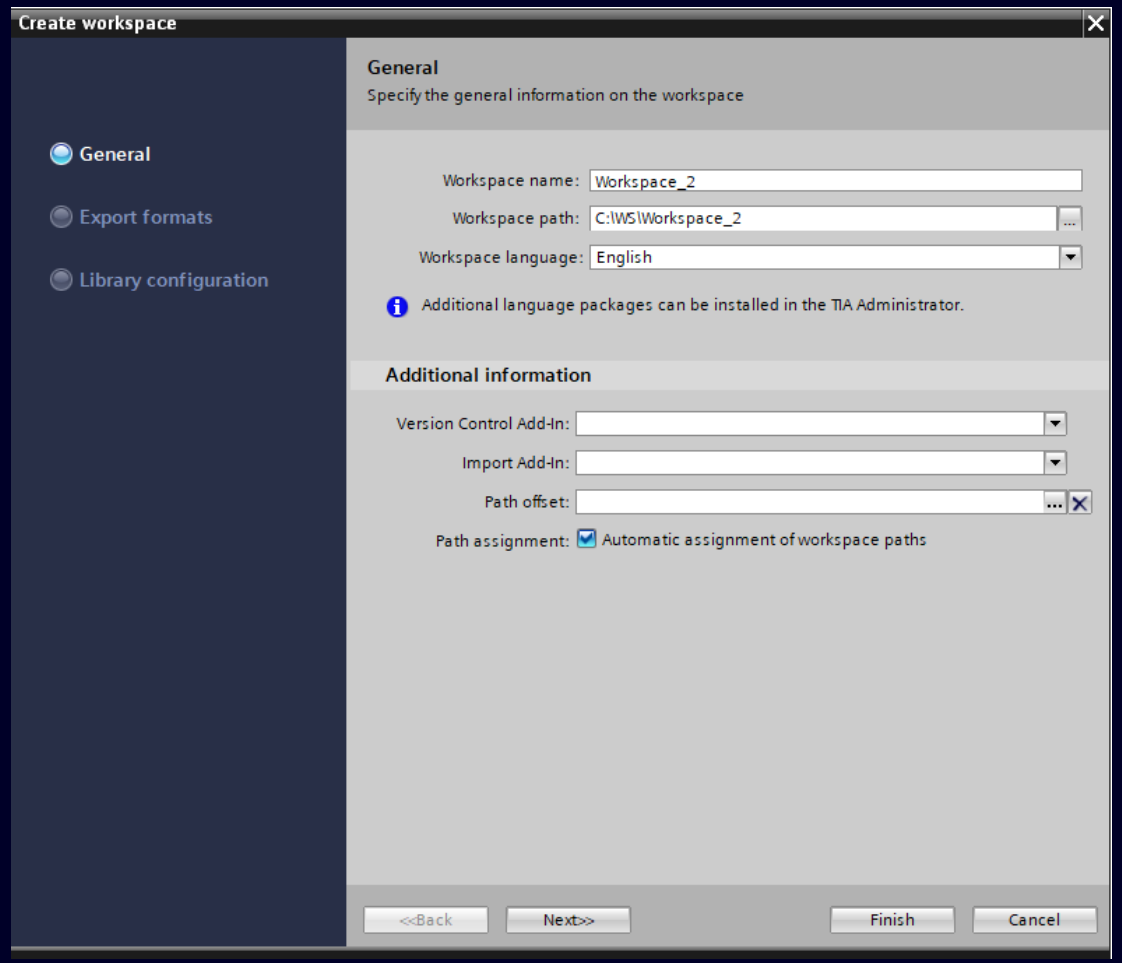
Version Control Interface (VCI)
Faster, more intuitive workspace setup



Support of guided workspace creation wizard

- A guided workspace creation wizard now centralizes key settings and streamlines the overall workspace setup process.

Benefits:

- Workspace can be set up with as few as five clicks, reducing overall setup effort.
- Centralizing options and first steps improves usability and makes workspace creation more intuitive.

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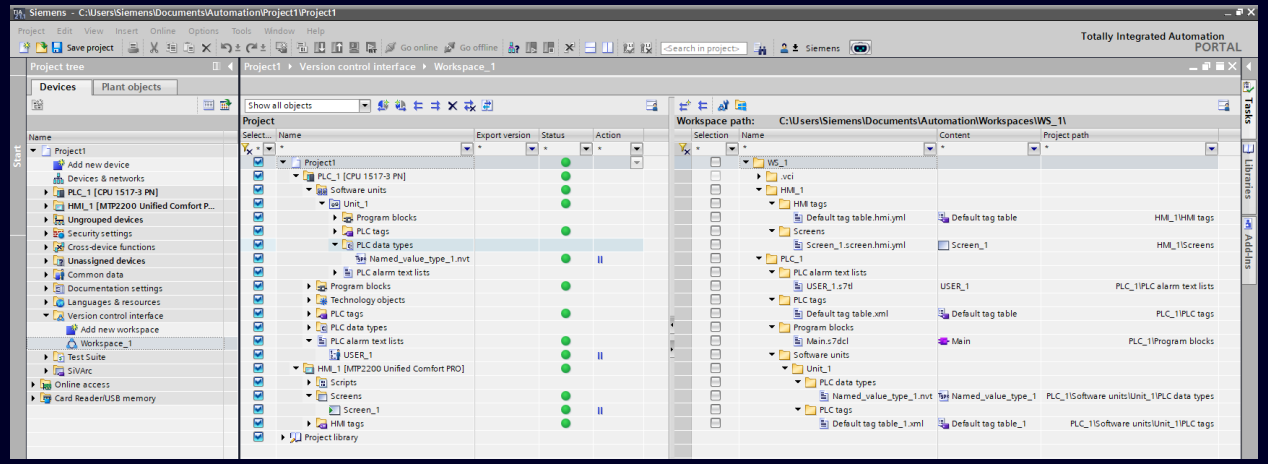
Version Control Interface (VCI)
Broader project coverage for versioning



Extend support of Simatic SD formats in VCI

- SIMATIC SD format export/import in VCI is now also supported for Named Value Data Types (NVT), PLC Alarm Text Lists, HMI Unified Screens, HMI Unified Tag Tables and HMI Unified User Data Types.

Benefits:

- Broader object coverage, more of the project can now be versioned through VCI, in SIMATIC SD format.

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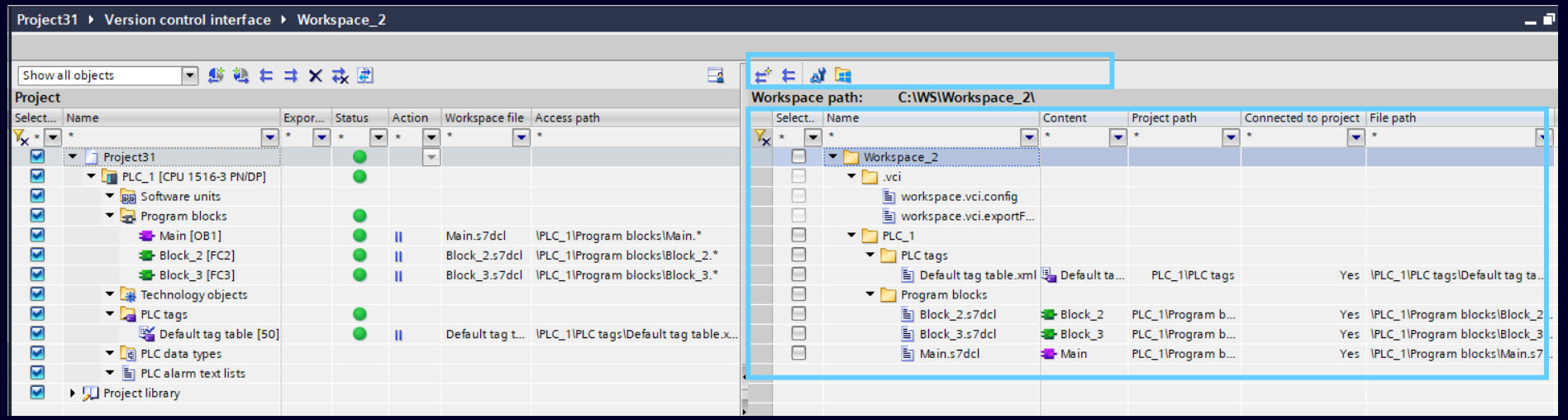
Version Control Interface (VCI)
Faster, easier access to the latest source code

Enhanced workflow for getting latest source code from workspace

- Getting the latest source code from workspace to the TIA Portal project is streamlined with a unified tree view that consolidates linked and unlinked files and enables faster navigation through deep repository structures.

Benefits:

- Latest source code can be pulled into the project easily.
- A single consolidated tree view removes the need to switch between linked and unlinked views, making deep repository structures easier to navigate.



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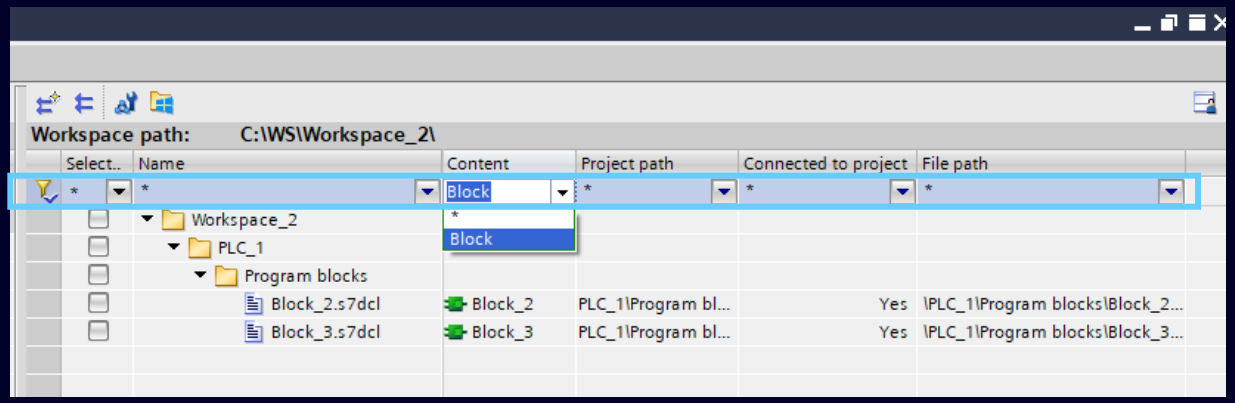
Version Control Interface (VCI)
Faster file discovery in large workspaces



Column filters in VCI workspace view

- Column filters are now available in the VCI workspace view.

Benefits:

- Files can be located faster by filtering on any column.
- Handling and managing large workspaces becomes easier with the new filtering options.

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CAx: AutomationML & Publication Tools

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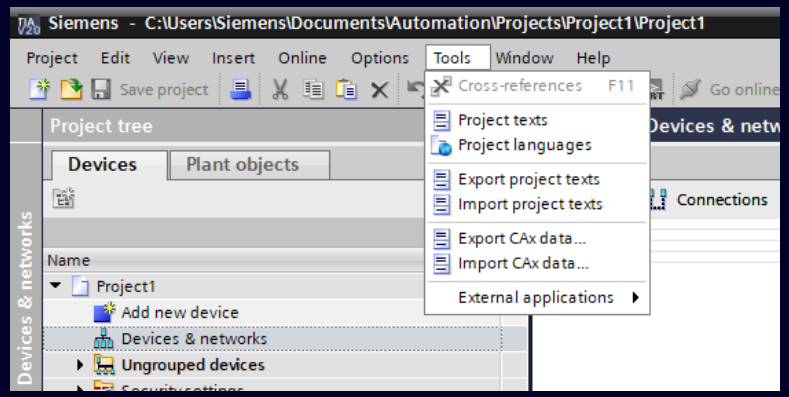
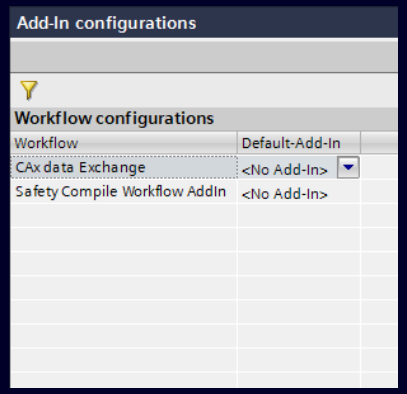
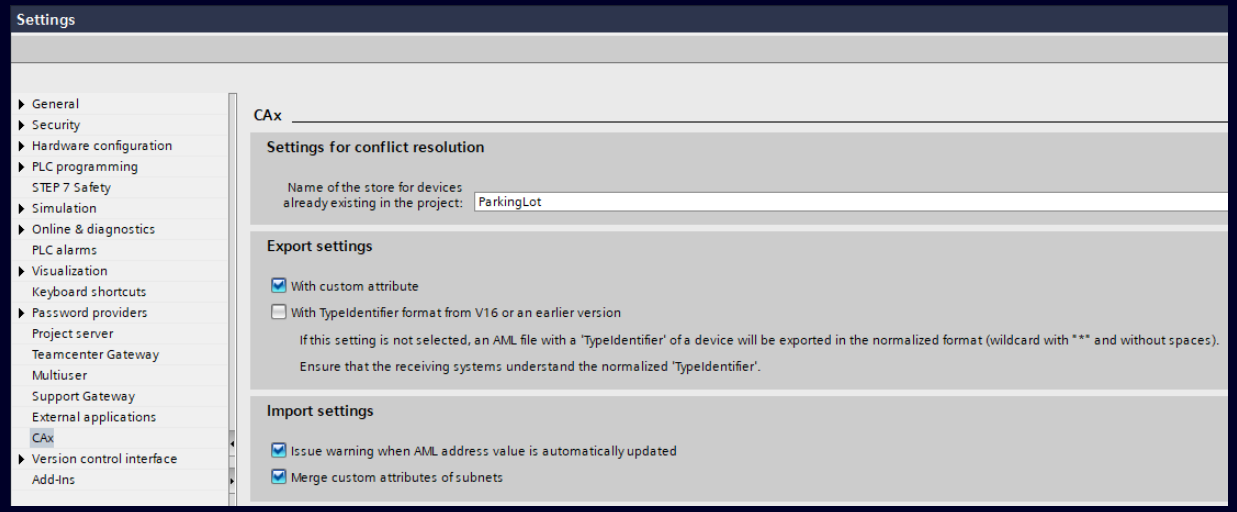
CAx
AutomationML data exchange in TIA Portal V21.1







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 V21.1

- Support of the name exchange (both export and import) on integrated modules.
- Improved detection and validation of tag inconsistencies during the import.
- Extended configuration coverage with support of user-defined attributes on IOController and IOConnector (e.g. PnDeviceNumber).
- The CAx import processes are logged in the Windows event logs in order to improve the traceability, accountability and safety monitoring.
- The CAx PCT Add-In for usage with TIA Portal is only available in SiePortal under TIA Portal Add Ins (no longer available in the DVD2 folder).

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”

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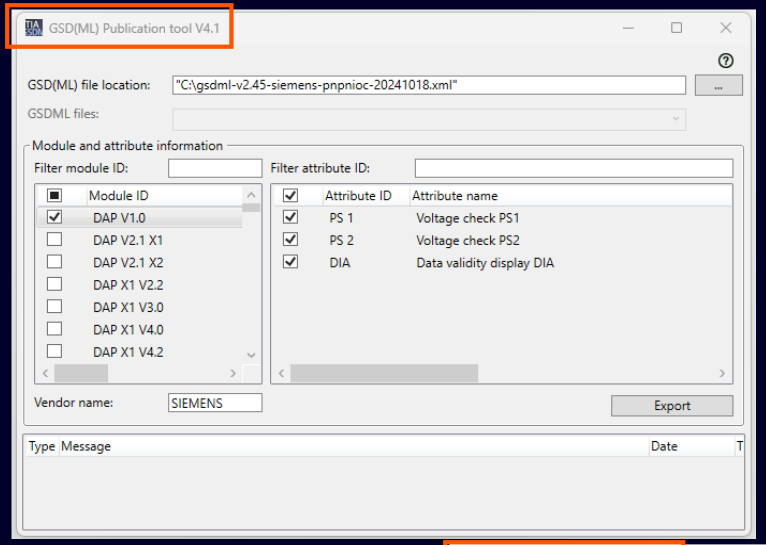
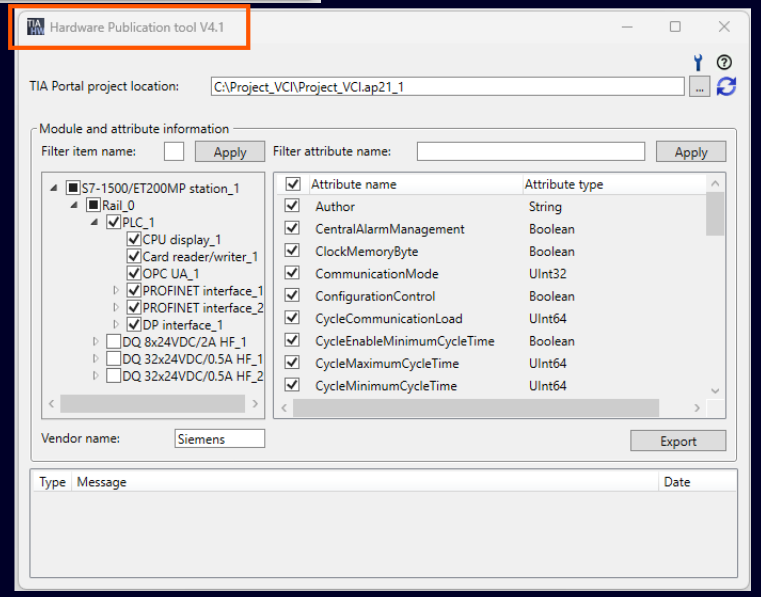
CAx
TIA Portal CAx Publication Tools V4.1





TIA Portal CAx 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 4.1

- Publishing of the CAx Publication Tools for the hardware data management, compatible with TIA Portal V21.1.
- GSD(ML) Publication Tool and Hardware Publication Tool V4.1 require a "TIA Portal CAx Publication Tools" license, Version 4.0 or higher.
  Extended configuration coverage with support of user-defined attributes on IOController and IOConnector (e.g. PnDeviceNumber).
- The user documentation is additionally available in German and French languages.

Benefits

- Easy retrieval of available custom attributes via CAx 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 V21.1 installation and require an own license:
  - Version 4.1: 6ES7823-1JE05-0EA5
  - Upgrade to version V4.1: 6ES7823-1JE05-0EE5
  - Software Update Service (SUS): 6ES7823-1JE03-0EL5

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TIA Portal Usability

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TIA Portal Usability
Heavy performance speedups in TIA Portal V21.1

up to
97 % faster
Navigating the project and library tree

up to
96 % faster
Expand/collapse the full library tree

up to
70 % faster
Running the hardware comparison editor

up to
63 % faster
Launching the Help viewer

up to
28 % faster
Searches in the Help viewer

up to
50 % faster
Opening the VCI editor with thousands of objects in sync

Plus, smaller performance boosts in

- Querying cross-references
- Project texts import/export
- Going online for the first time

Measurements taken between TIA Portal V20 and V21.1

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TIA Portal V21.1 - Table of contents

Start of a new era: TIA Portal V21.x
- A new era for your project lifecycle
- Concept & Details: One continuous version line
- TIA Installer

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

SIMATIC WinCC Unified – Innovations
- Responsive Design: Flexible Layouts for different screen sizes
- Panel Portfolio Extension: Unified Outdoor, ...
- Enhanced Connectivity: Tag Collaboration, OPC UA HA, ...
- EU CRA Preparation … and more!

SIMATIC WinCC RT Prof. – Innovations
- …

SIMATIC STEP 7 – Innovations
- Smooth Forward Online handling
- Keep DB online values on structural changes – 2nd step

SIMATIC Motion Control – Innovations
- New SIMATIC Drive Controller Redesign
- Kinematics & Interpreter innovations
- Cam Enhancements
- Named Value Data Types Enhancements

SINAMICS Startdrive & DCC – Innovations
- Support SINAMICS G210,G210C, G210X, G200 Stand, and basic
- Openness new automation interfaces for commissioning mode
- Export DCC chart as a DCC Library and Subchart monitoring
- FW5.3 and SIMATIC DC Redesigned FW 5.3 support

SIMATIC Hardware
- SIMATIC Controller
- SIMATIC Webserver
- Bus Adapter G2
- ET 200SP & MP

TIA Portal Hardware Configuration
- Ex-/Import of HW configuration via Hardware Declaration Data
- PROFINET Security: Data Record Access Limitation
- PROFINET: Reporting security-relevant auditable events
- Access PLCs via Fully Qualified Domain Name (FQDN)

PROFINET & Communication
- IPv6 support for S7-1500 OPC UA and Webserver
- PROFINET: Topology based device name assignment
- PROFINET: Optional shared device

System functions
- TIA Portal Updates
- Open, upgrade and migrate TIA Portal projects
- Project & Software Integrity
- TIA Portal Openness & Add-Ins
- SIMATIC Source Documents (SimaticSD)
- Version Control Interface (VCI)
- CAx: AutomationML & Publication Tools
- TIA Portal Usability

TIA Portal options and more…
- **SIMATIC STEP 7 Safety**
- **SIMATIC Safe Kinematics**
- **TIA Portal Multiuser Engineering**
- **SIMATIC Robot Library**
- **OPC UA**
- **SIMATIC S7-PLCSIM / S7-PLCSIM Advanced**
- **SIMATIC Target™ for Simulink®**
- **TIA Portal Test Suite**
- **SIMATIC STEP 7 CFC**
- **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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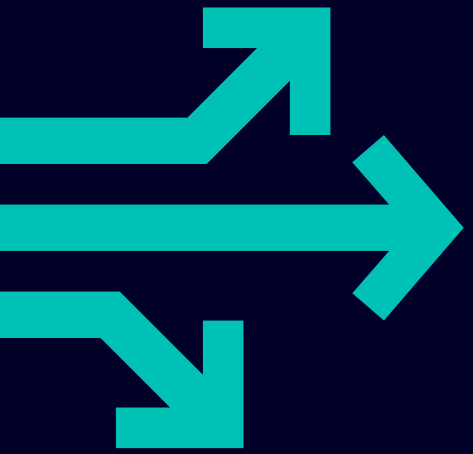
TIA Portal V21.1
TIA Portal Options

Content



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02	SIMATIC Safe Kinematics
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04	SIMATIC Robot Library
05	OPC UA
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TIA Portal V21.1
TIA Portal Options

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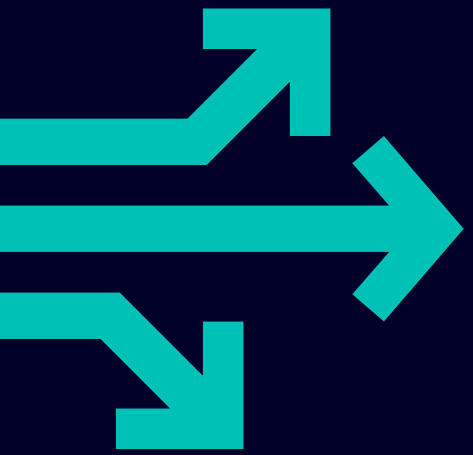

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SIMATIC STEP 7 Safety
OPC UA Safety

New engineering capabilities for **OPC UA Safety** with TIA Portal V21.1

SUPPORTS

Openness

OPC UA Safety configurations can be accessed and configured via Openness.

BENEFIT

Supports customized engineering workflows and tool integration for more efficient OPC UA Safety configuration.

SUPPORTS

Station Upload

Projects containing OPC UA Safety configurations now support consistent station upload from a PLC into TIA Portal.

BENEFIT

Removes previous workflow limitations and enables established upload and recovery scenarios for OPC UA Safety projects.

SUPPORTS

Master Copies

OPC UA Safety configurations can be stored, managed, and reused as master copies in libraries.

BENEFIT

Extends established library workflows to OPC UA Safety and enables efficient reuse of validated configurations.

Expands engineering support for **OPC UA Safety** across key TIA Portal workflows.

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SIMATIC STEP 7 Safety

Safety-specific multicore extensions with TIA Portal V21.1

SUPPORTED CONFIGURATION

- CPU **1518F-3 PN** and **1518TF-3 PN** with firmware **V4.2**
- S7-1500 software controller CPU **1508FS**
- **F-Runtime groups** of event type **cyclic**

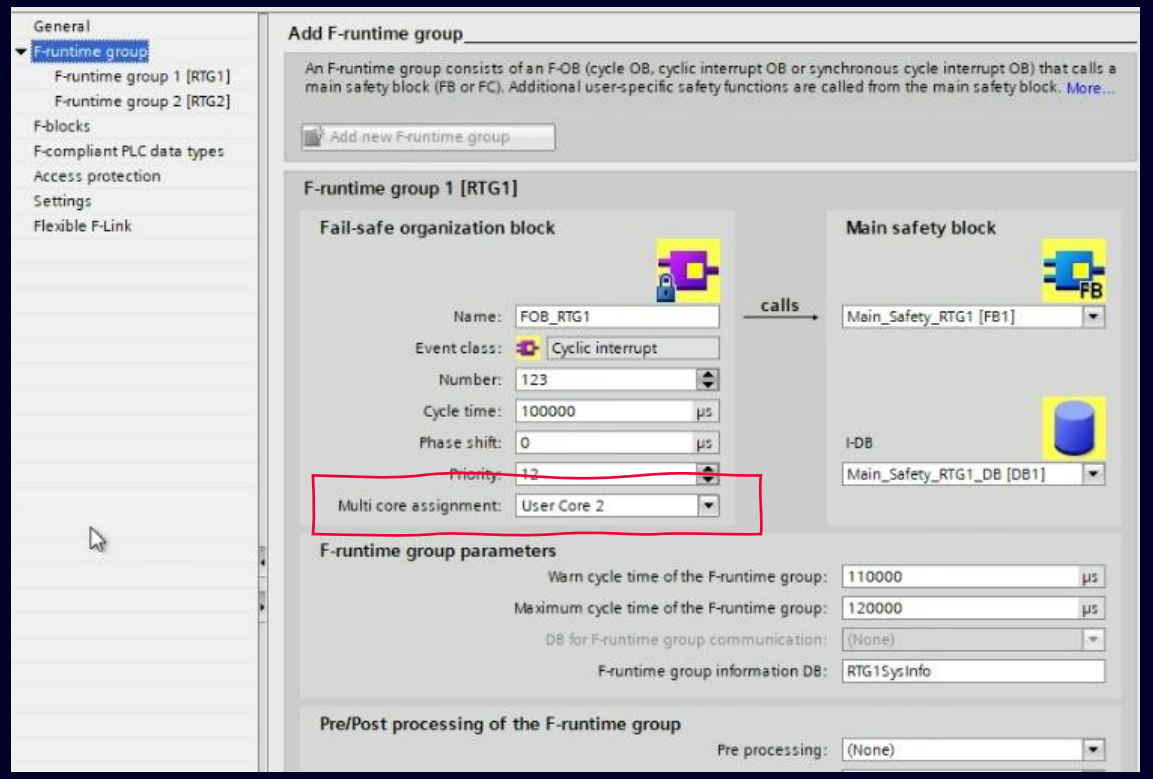
ENGINEERING

- Configuration in the **Safety Administration Editor** or **F-RTG property window**
- Openness support

COMMISSIONING

- Safety system **version** and functional **signature remain unchanged**

Safety Administration Editor — core assignment for an F-runtime group



Unsupported CPUs or event classes: Multi core assignment will remain read-only.

Distribute safety workloads across CPU cores — while maintaining validated safety configuration

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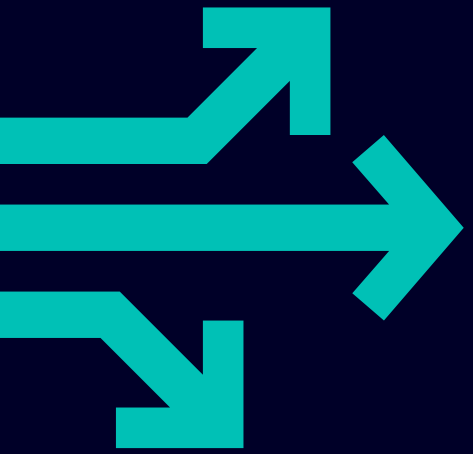
TIA Portal V21.1
TIA Portal Options

Content



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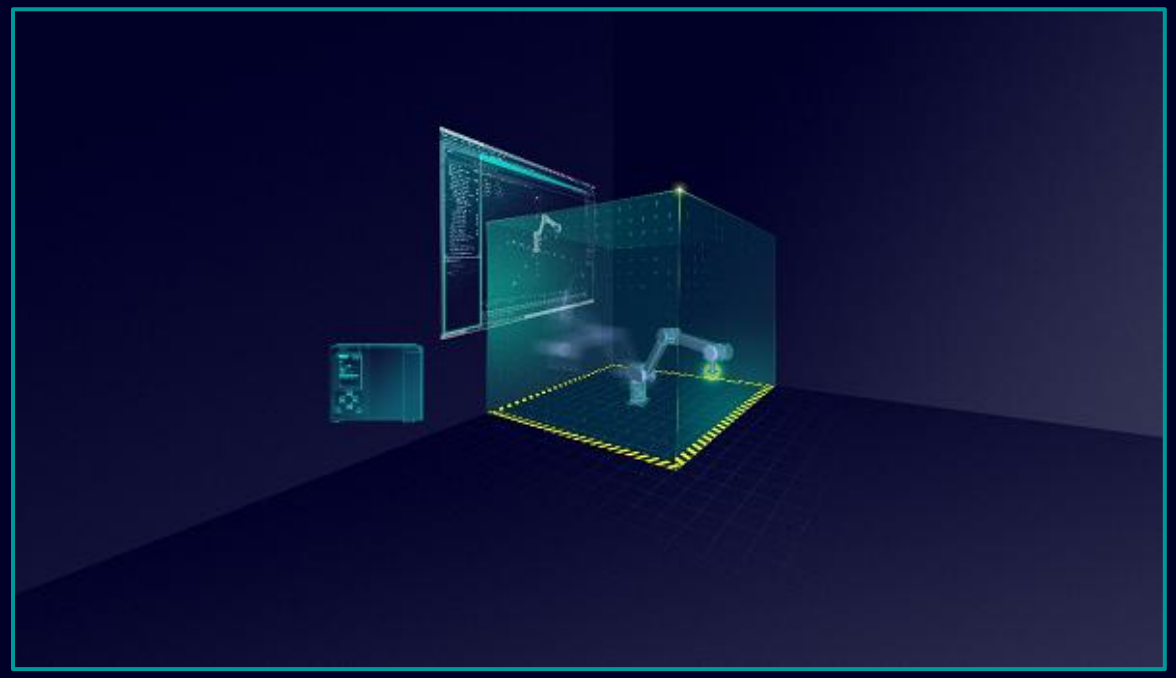
SIMATIC Safe Kinematics Overview

Application Example



Function

SIMATIC Safe Kinematics enables fail-safe monitoring of the movement of kinematics with up to 12 interpolating axes in cartesian space. The following monitoring functions are supported

- Safe velocity monitoring
- Safe zone monitoring
- Safe orientation monitoring

Supported kinematics

- Cartesian portal
- Delta picker
- Articulated arm
- Roller picker
- SCARA
- User-defined serial kinematics

Benefits

- Modern and future-proof solution for kinematic/robotic applications
- Compact and flexible machine design
  - Reduced space requirement for machine
  - No more costly and inflexible safety fences
- Fulfills safety requirements for industrial robots according to EN ISO 10218

Hardware requirements

- CPU 1516 TF-3, CPU 1517 TF, CPU 1518 TF or CPU 1515SP PC2/3 TF,
- CPU 1508S TF, SINAMICS S120 drive system

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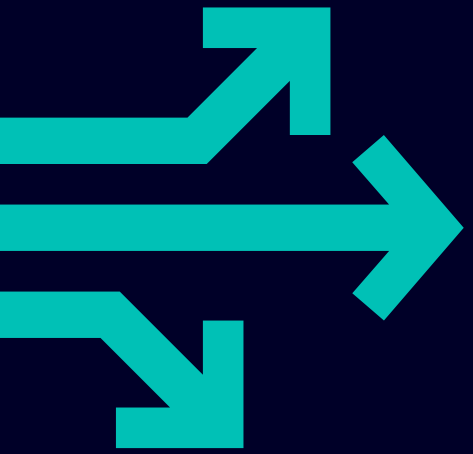
TIA Portal V21.1
TIA Portal Options

Content



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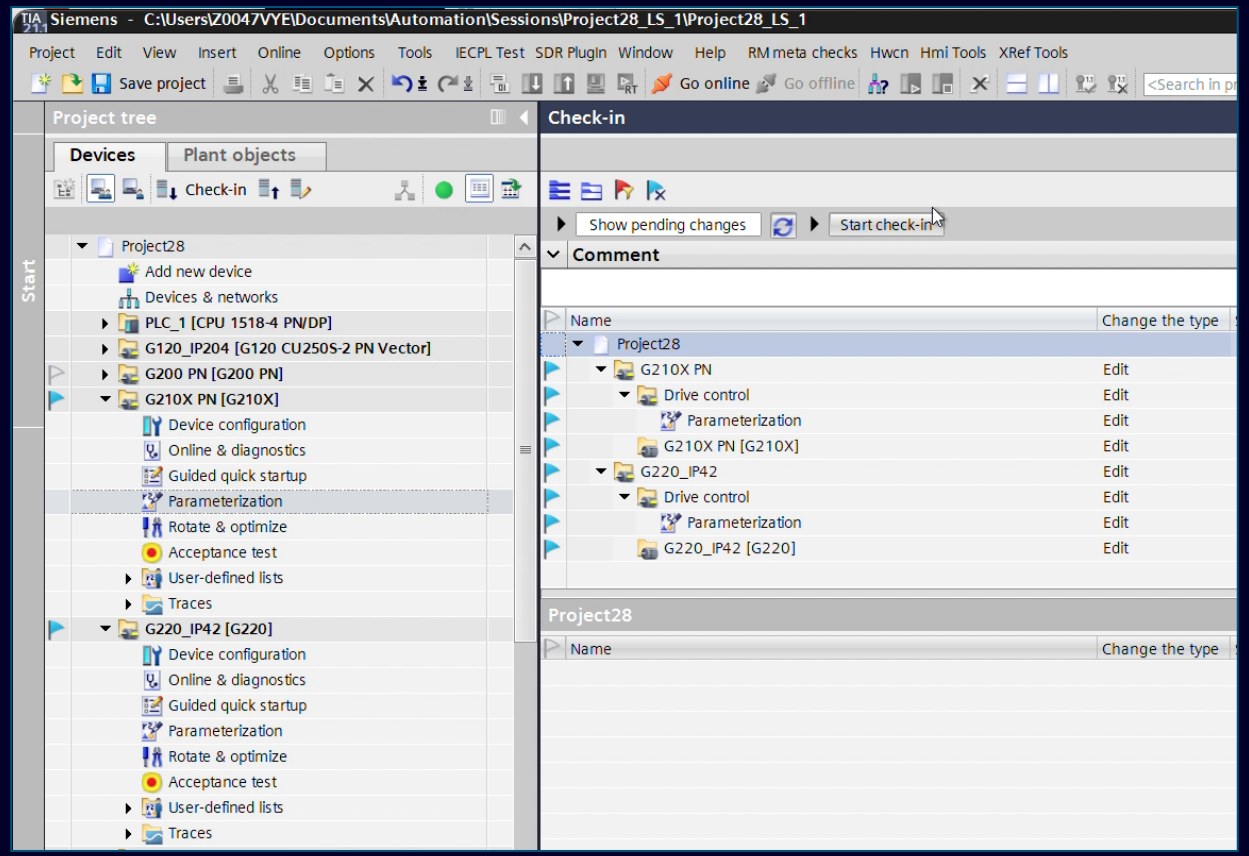
TIA Portal Multiuser Engineering
New Support of Drives



Function

- **Multiuser Engineering support for drives:** Several engineers configure and commission 3rd-gen SINAMICS drives in the same project at the same time.

Benefit

- **Parallel engineering:** Work by drive or by axis – shorter project time.
- **Conflicts visible in the project tree:** Drives show colored flags in-line with the TIA Multiuser flag concept.
- **Online work in a local session:** Diagnostics, monitoring, tuning, RAM-to-ROM save.

Overview

- Hardware changes only in server project view or exclusive mode, so the project stays consistent.
- Parameter compare of local session values against the server project or the online drive.
- Synchronous commissioning: A download also checks in and refreshes, so the local session, server project and drive hold identical data.
- Supported: all 3rd-gen SINAMICS

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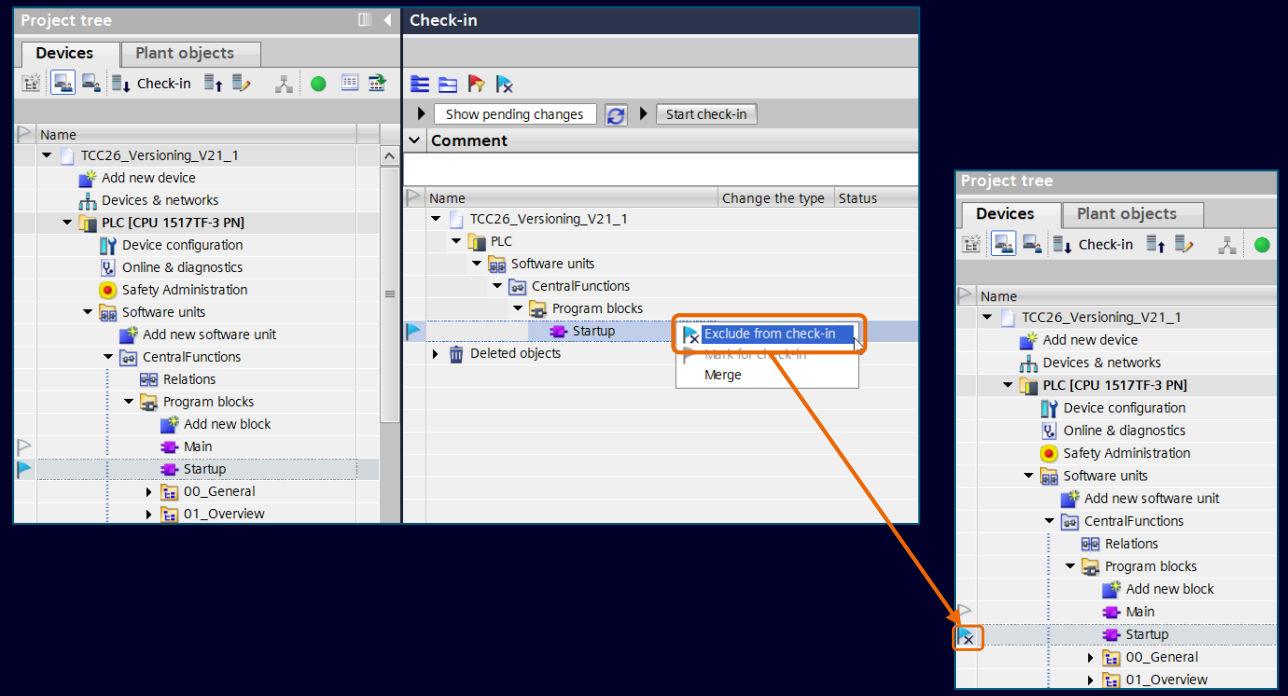
TIA Portal Multiuser Engineering
Exclude changed objects from check-in



Exclude Changed Objects from Check-in

- Full control over which changes are transferred to the project server.

Function

- Targeted selection: Exclude specific uncompleted objects (such as STEP 7 blocks or HMI screens) from the check-in process.
- Clear labeling: Excluded objects are explicitly marked in the editors and project navigation by an "x" in the status flag.

Benefit

- Targeted provision: Determine precisely which work statuses are made available to the team on the server.
- Full control: Prevent unfinished or faulty intermediate statuses from affecting the shared project basis.

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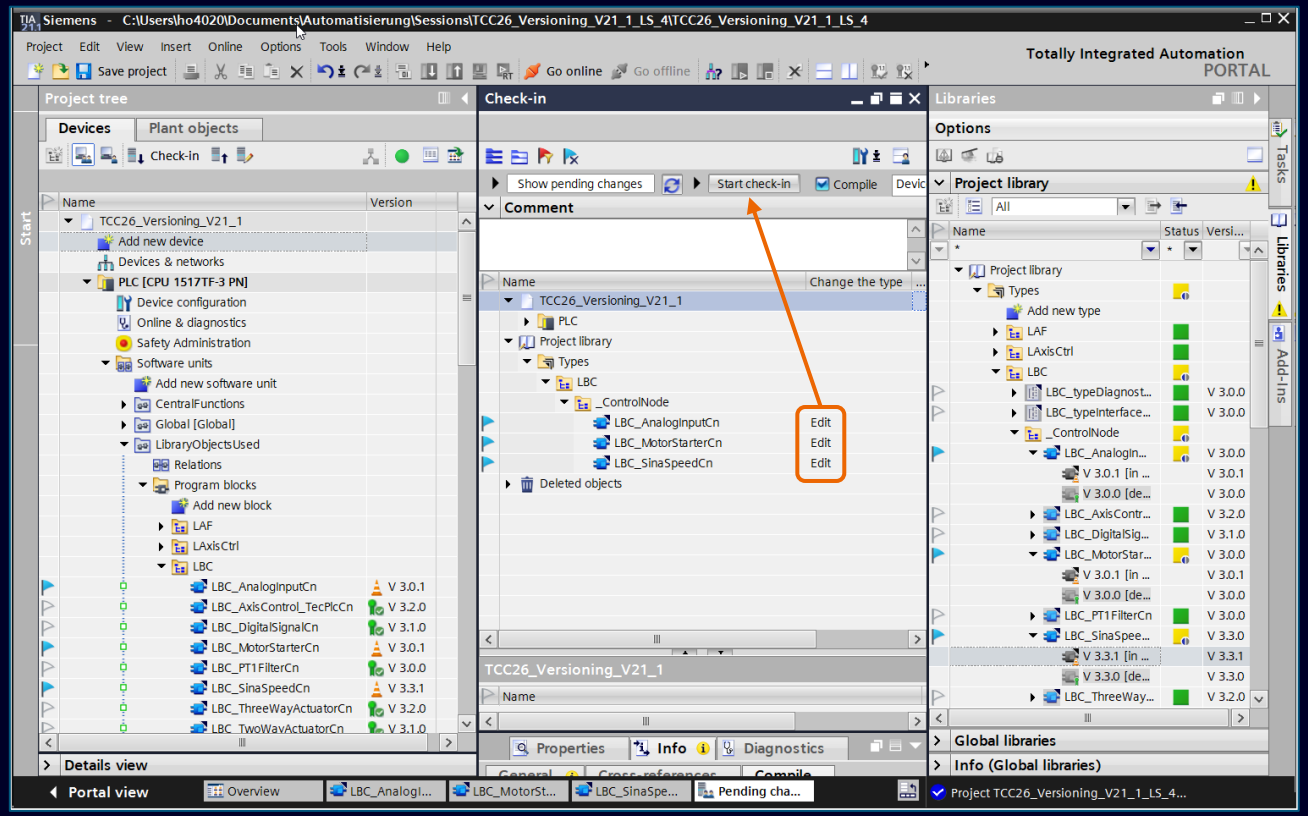
TIA Portal Multiuser Engineering
Efficient exchange of library objects



Efficient Exchange of Library Objects

Collaborative work on libraries is significantly simplified by a more flexible release process.

Function

- **Status-independent check-in:** Library types can be checked in even while in the "in test" or "in progress" status.
- **Cross-session updating:** Unreleased library types can be seamlessly updated across other local sessions.

Benefit

- **Early exchange:** Enables the early exchange of ongoing developments within the team prior to a formal release.

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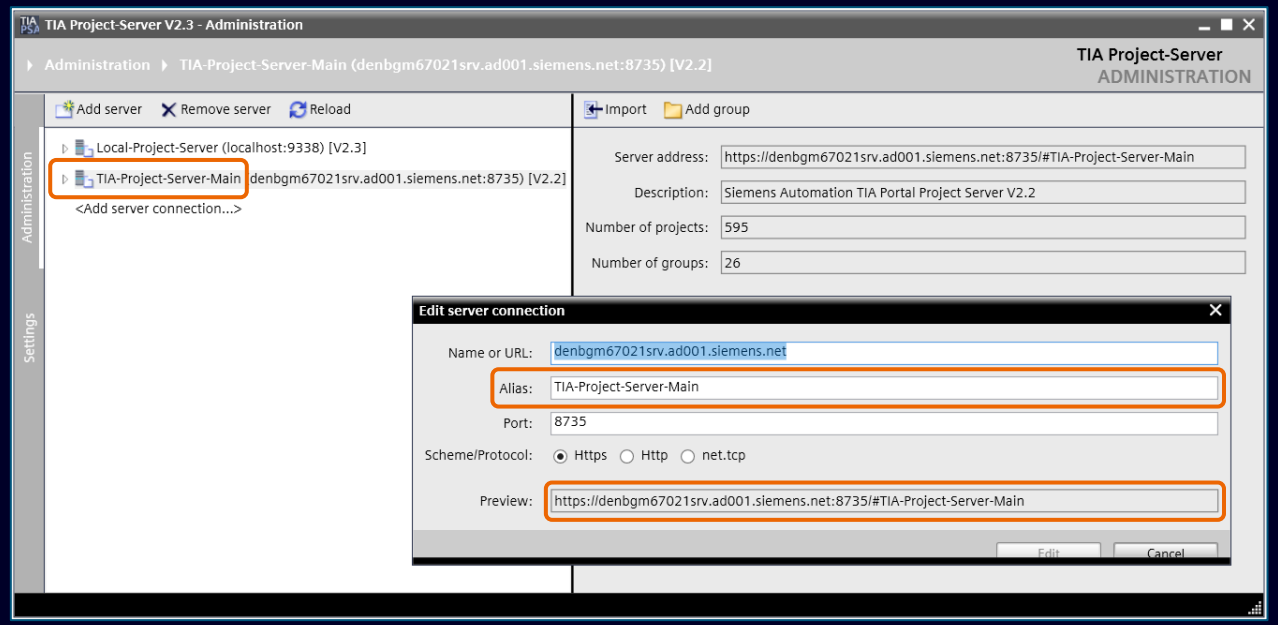
TIA Portal Multiuser Engineering
Project server: Alias names for a better overview

https://denbgm67021srv.ad001.siemens.net:8735/#TIA-Project-Server-Main

TIA Projcet-Server URL

Alias Name



Project Server: Alias Names for Better Overview

TIA Project-Servers can be assigned an individual, meaningful alias name.

Function

- **Flexible setup:** Define and edit the alias name easily in the Configuration Tool or Administration Tool—even for existing configurations.
- **Complementary display:** The alias name complements the TIA Project-Server URL and is clearly displayed in the server overview within the Administration Tool.

Benefit

- **Easy identification:** Project servers can be recognized immediately through individual, descriptive names instead of technical TIA Project-Server URLs.
- **Fast differentiation:** Different server instances and environments can be clearly distinguished at a glance.

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TIA Portal Multiuser Engineering
Compare & Merge based on SIMATIC SD - Overview

Preview version



Function

- Optimized Multiuser Workflow:
  - ➢ Supported by SIMATIC SD, the new Compare feature enables granular comparison and structured merging of delta changes between the local multiuser session and the central server project.

Benefit

- Granular Delta Analysis:
  - ➢ Precise comparison between local session and server project.
- Proactive Conflict Resolution:
  - ➢ Early detection of parallel editing conflicts.
- Structured Merging:
  - ➢ Controlled integration to ensure project consistency.

Overview

- The compare function is enabled via the TIA Portal project settings.
- Once enabled, a merge can be triggered during a refresh if changes have been made to an object in both the local Multiuser session and the server project.
- For mergeable changes (e.g., modifications to different networks) an automatic merge is performed.
- The merge result is saved in the same folder as a new object with the same name and timestamp.
- If an automatic merge is not possible due to conflicting changes, a compare is initiated using the compare editor. The user can then perform the merge manually.

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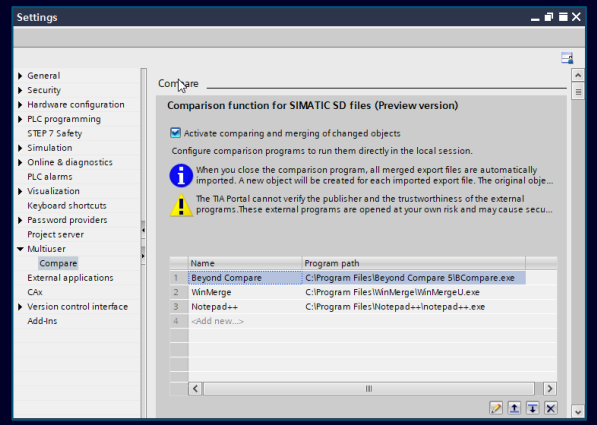
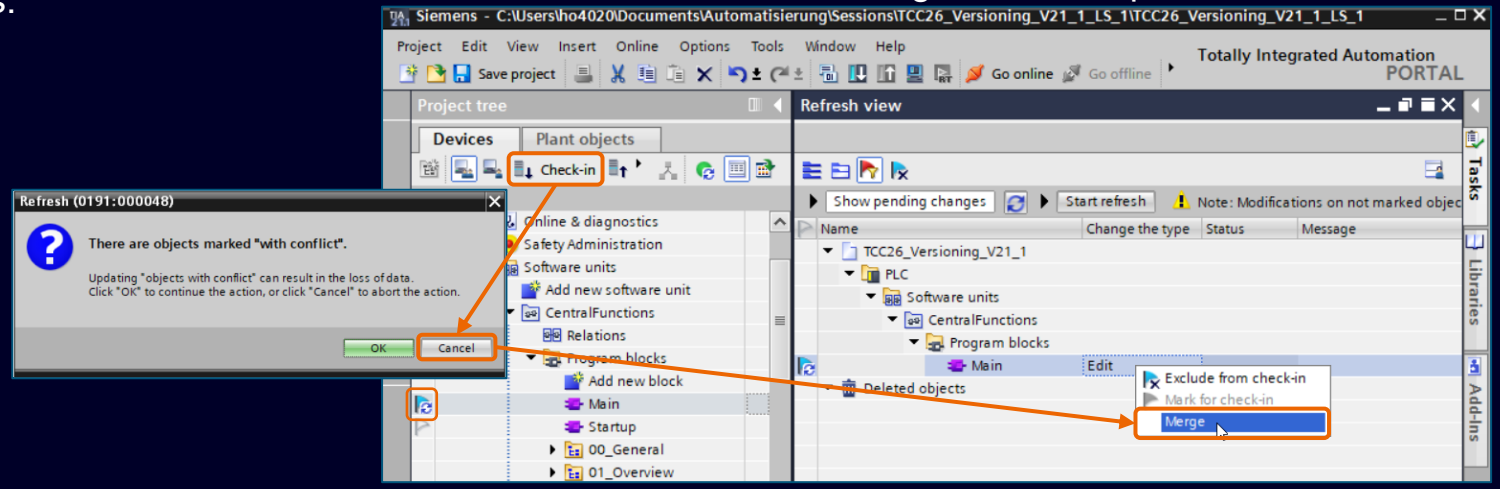
TIA Portal Multiuser Engineering
SIMATIC SD-based Compare & Merge - Workflow

Preview version

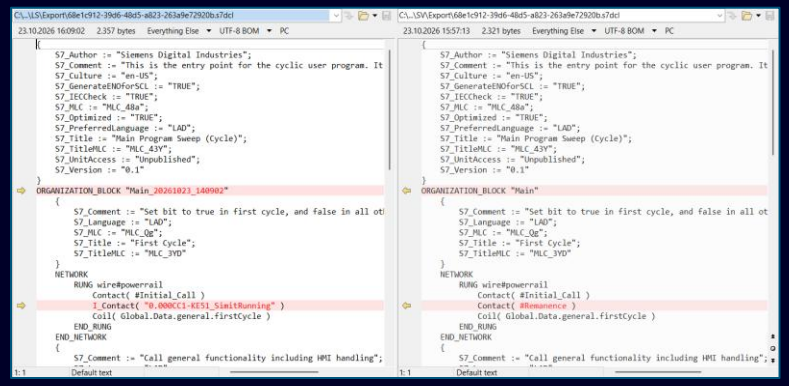
1. Enable comparison function in TIA Portal settings.



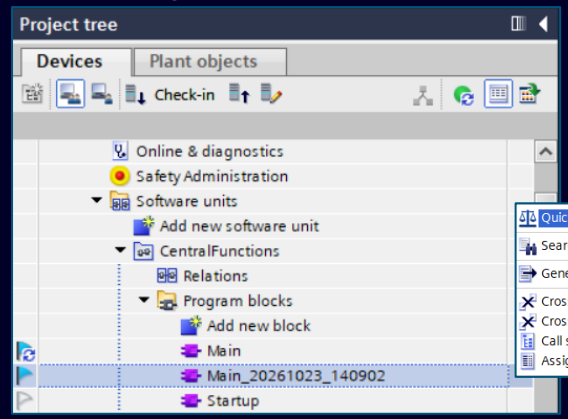
2. In the event of a conflict, a merge can be requested.



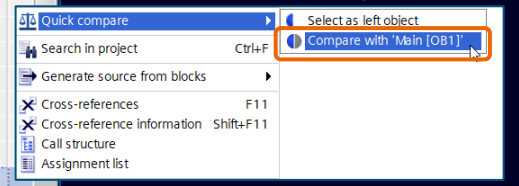
3. If possible, an automatic merge is performed.
If this is not possible, a manual merge is available.



4. The merge result is saved as a new object in the folder.



5. Review merge result.



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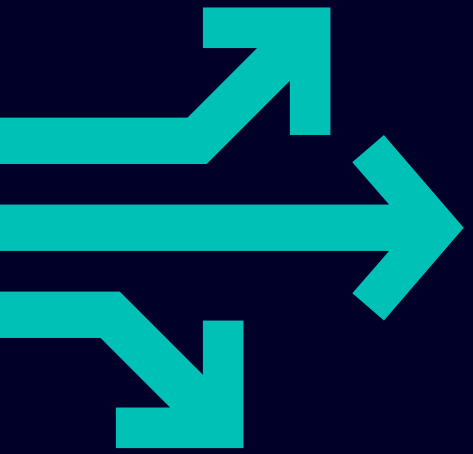
TIA Portal V21.1
TIA Portal Options

Content



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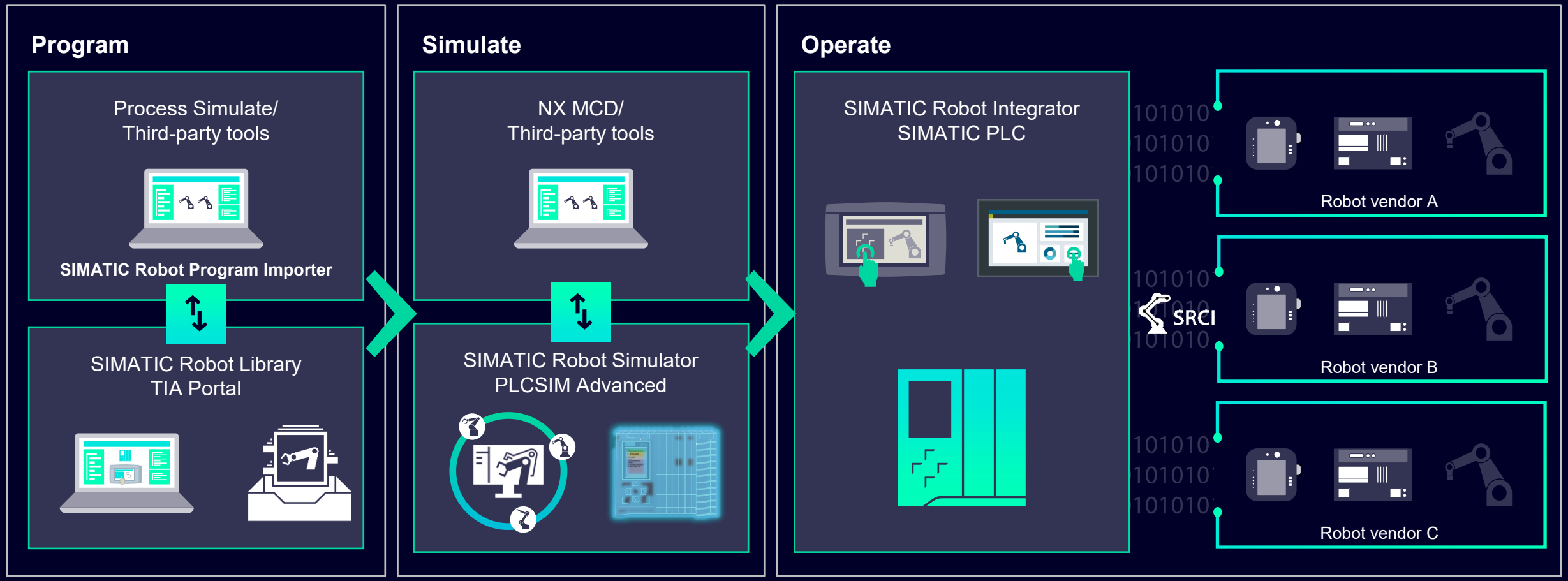
Robotics Gateway for SIMATIC Customers



Enabling SIMATIC customers to handle robots and growing the robotics market

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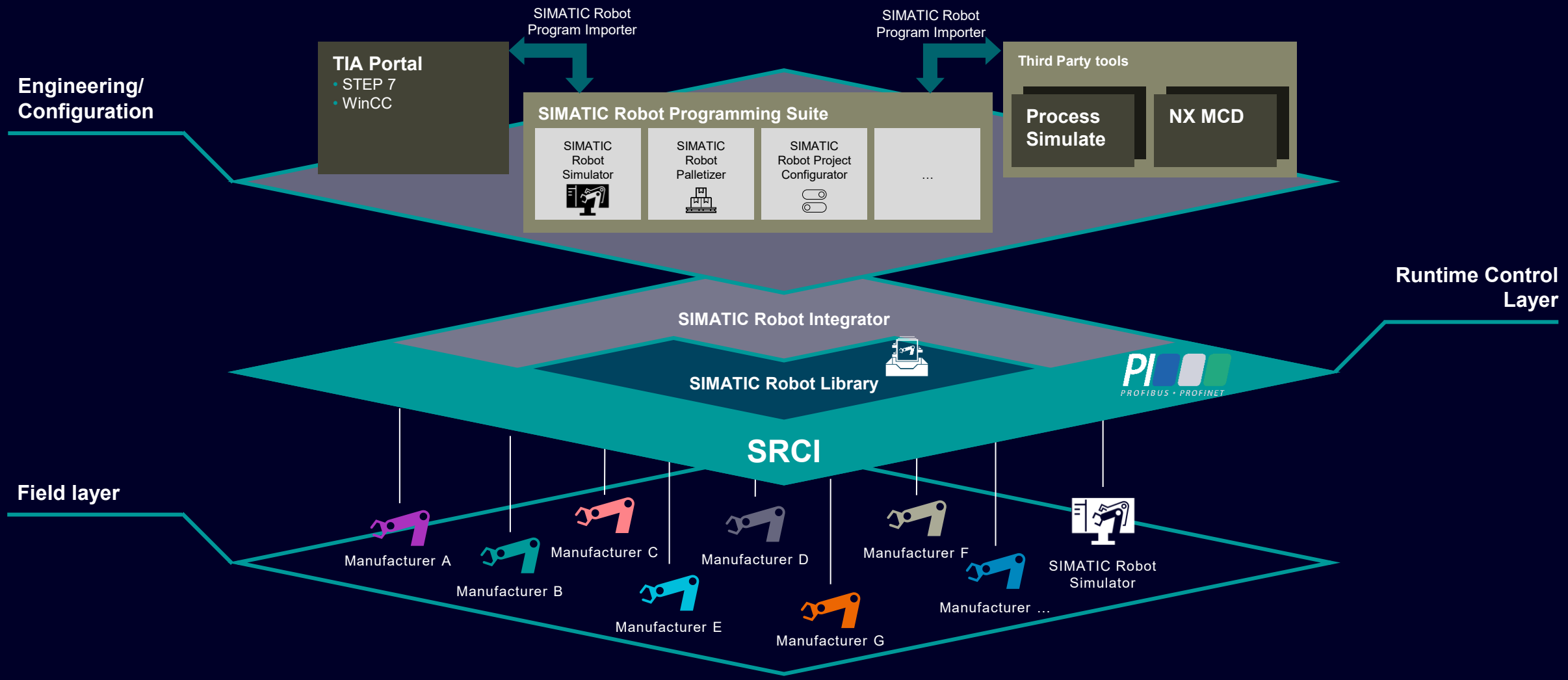
Smart Robotics Portfolio
Making robotics more accessible for our customers



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Smart Robotics
SRCI supporting manufacturers



Broad release

Limited release

In progress

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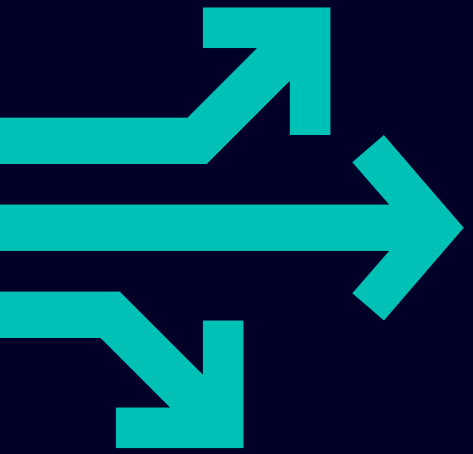
TIA Portal V21.1
TIA Portal Options

Content



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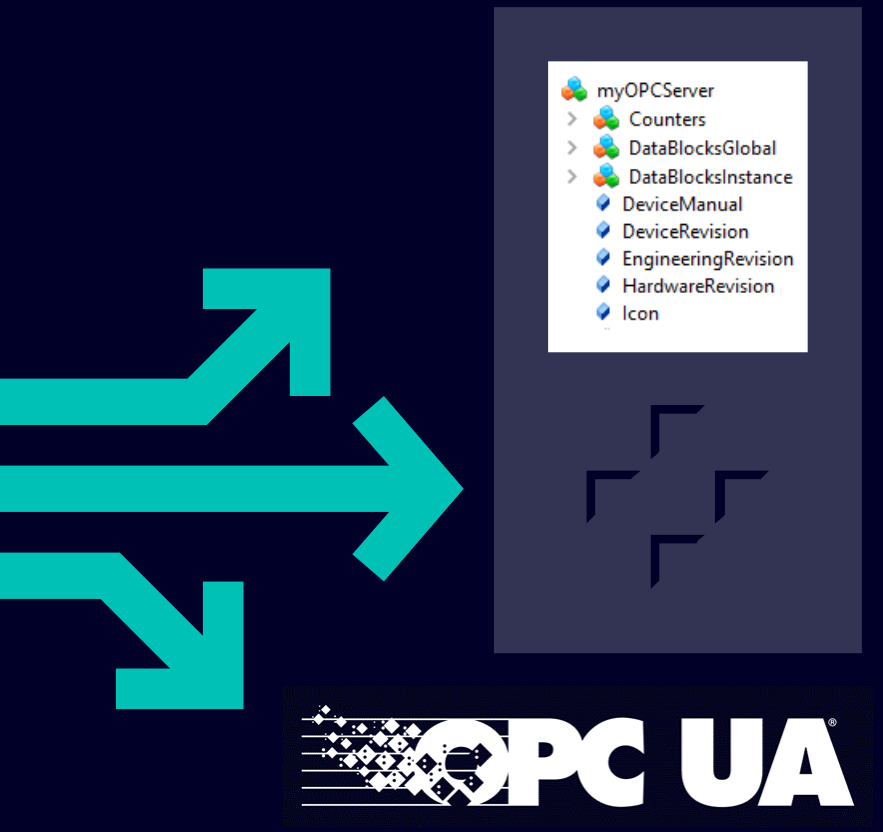
OPC UA – improvement with V21.1 / FW V4.2

Overview of new planned OPC UA features for SIMATIC PLCs



User defined server interfaces	• Array child nodes can be switched off
	  • Leaner information model, less memory
	• Multi-line editing in the server interface
	  • Bulk editing instead of row-by-row work
	• Protection against lock-out

Client editor	• Support OPC UA Client via TIA Portal Openness • Max. string length support
Server restart behavior	• avoid server restart in case of changed not OPC UA accessible DB
S7-1200 G2 with OPC UA	• Users & roles @ S7-1200 G2 • Access rights per individual OPC UA user

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OPC UA information model – user defined server interfaces
Server interfaces: control array child for OPC UA array per variable

Child nodes ON (default)

```
myArray  ARRAY[0..3]
   └ myArray[0]
   └ myArray[1]
   └ myArray[2]
   └ myArray[3]
```

5 nodes – more memory

→ **each element readable**

Browse name	Value
myArray	[T,F,T,F]
myArray[0]	TRUE
myArray[1]	FALSE
myArray[2]	TRUE
myArray[3]	FALSE

Child nodes OFF (new)

```
myArray  ARRAY[0..3]
   (no child variables)
```

1 node – lean model

→ **only the whole array readable**

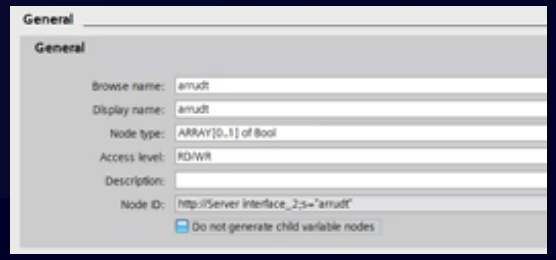
Browse name	Value
myArray	[T,F,T,F]
(no elements)	–

Function

- Individual control of the OPC UA array representation in the server interface
- Per array variable: choose whether separate OPC UA child variables are created for each element

Benefit

- Lower complexity of the information model
- Reduced memory requirements
- Less engineering effort and administrative overhead
- Better scalability of large projects



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OPC UA information model
User-defined server interfaces

Server Interface Editor support for multi-line-operations



- Multi-line operations in the OPC UA Server Interface Editor
- Select several rows and copy & past lines
- Select several rows / entries at once and edit shared properties in one step

Customer benefit

- Faster variable editing
- Better usability, especially in large OPC UA projects

TIA Portal actively prevents lock-outs from the OPC UA Server



- **Namespace validation**
  Automatic checks during configuration

Customer benefit

- **Protection of Namespaces 0 & 1**
  No deletion or removal of read rights
- **Compile-time feedback**
  Early error detection

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OPC UA information model
OPC UA Client editor enhancements

Support OPC UA Client via TIA Portal Openness



- Automated creation, configuration and maintenance of OPC UA connections within the OPC UA client

Customer benefit

- Less engineering effort through automation
- Fewer manual errors and more consistent results
- Easier integration with existing tools and workflows

Max. string length support in OPC UA client interface editor



- OPC UA Client Interface Editor imports available server length information
- Project-specific string and array sizes on the SIMATIC side
- Settings persist and apply to client data block generation

Customer benefit

- Reduces manual engineering effort when creating OPC UA client interfaces
- Prevents the loss of customer-specific adjustments after recompilation

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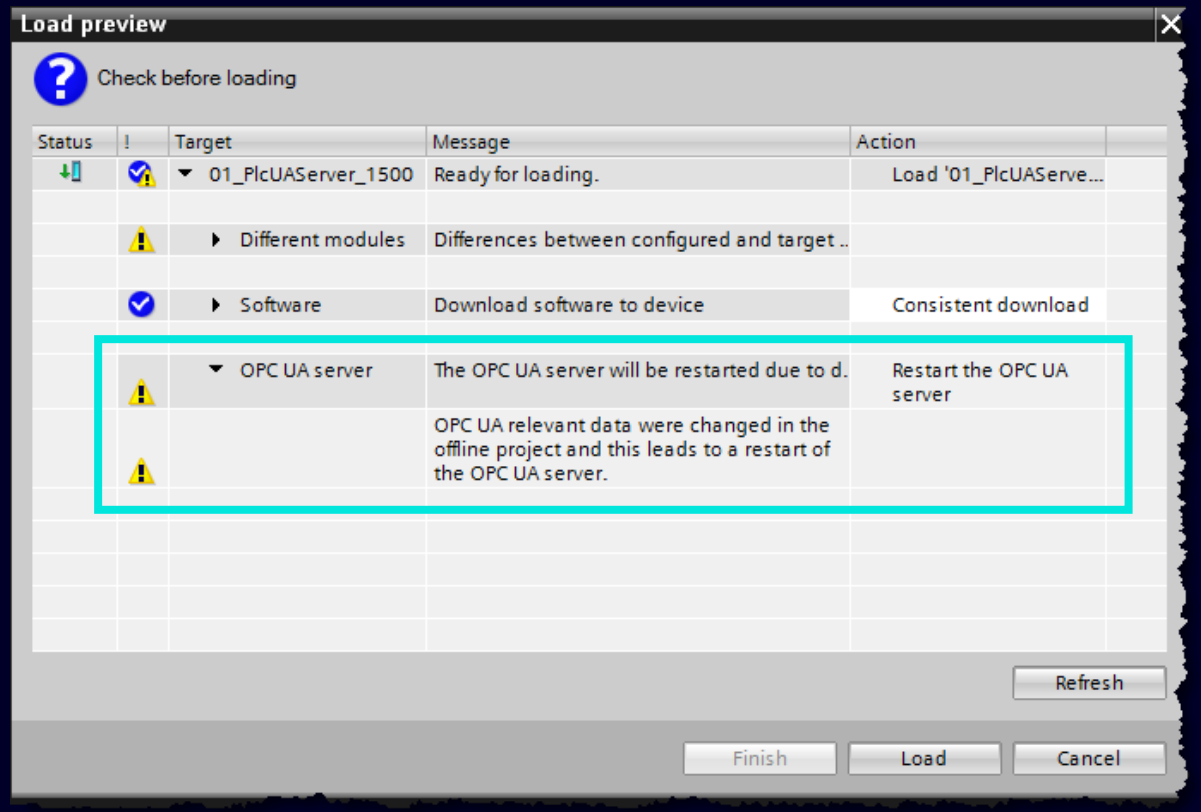
OPC UA Improvements with TIA Portal V21.1 (& V21 Upd 1)
Engineering in runtime with S7-1500

OPC UA server RESTART behavior

	Download new	Change existent	Remove existent
Change code in FBs, FCs, OBs	-	✓	-
not OPC UA accessible DBs	✓	✓ NEW	✓ NEW
OPC UA accessible DBs [1]	↺	↺	↺
OPC UA accessible instance DB changes limited to its start values or comments [2]	↺	✓ NEW	↺

✓ OPC UA Server keeps running during download ↺ Download will restart the OPC UA server

1) With activated attribute "DB accessible from OPC UA" & at least one member is accessible from OPC UA
2) The defining UDT or FB has not been modified and is not part of the download set.



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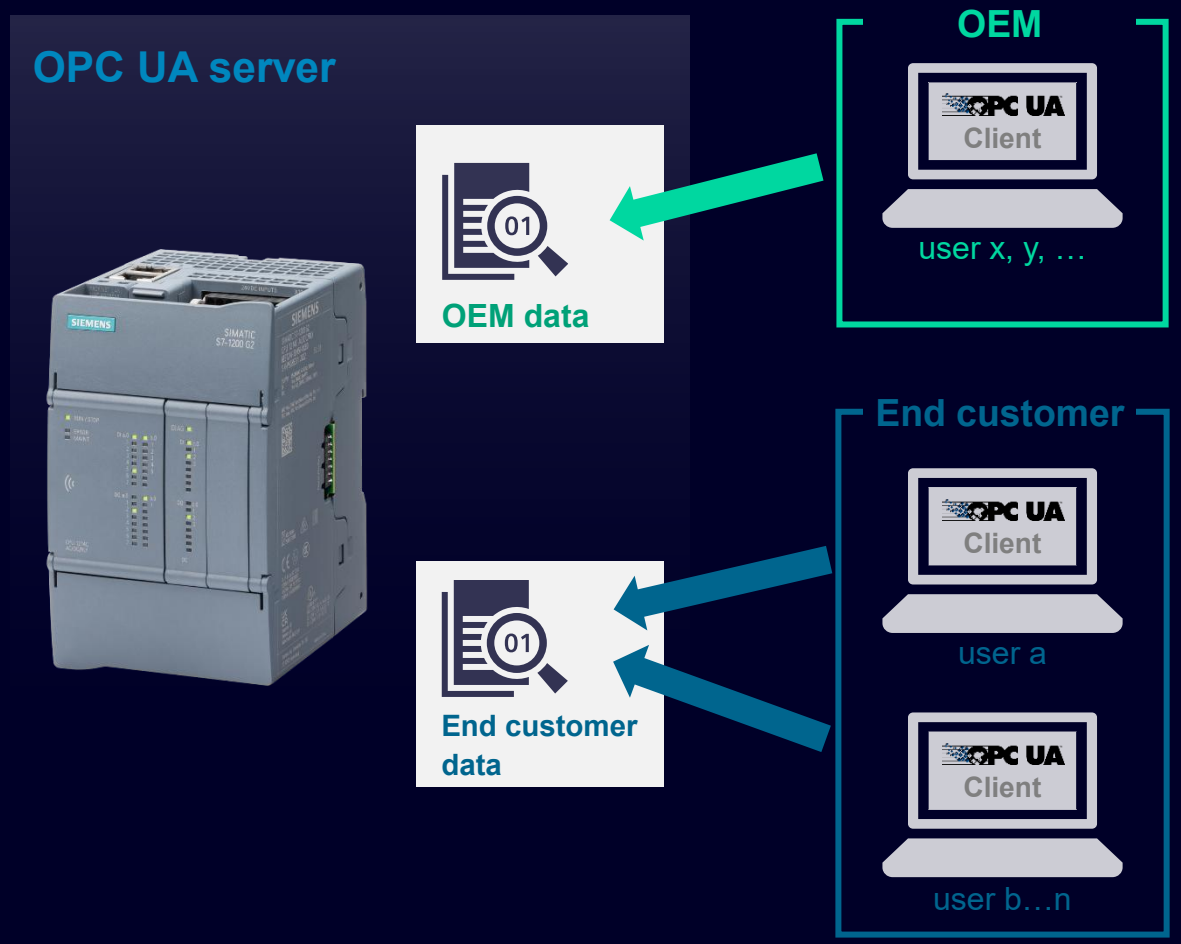
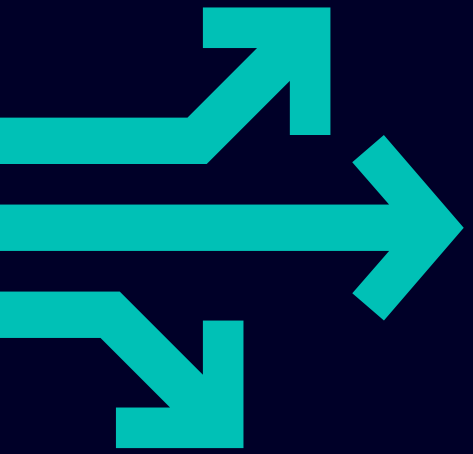
OPC UA – User & Roles @ S7-1200 G2
Defined access to variables by different OPC UA users



- Definition of access rights at the OPC UA server
  - for each OPC UA client individual
  - based on node set
  - pre-defined in user information model (e.g. Companion specs, using SiOME)
- High flexibility to make data available to authorized users only
- Quick & easy engineering within TIA Portal
- Access management based on UMAC concept (local and central user management)

TIA Portal V21.1
TIA Portal Options

Content



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SIMATIC S7-PLCSIM Standard & S7-PLCSIM Advanced
One unified setup for all users

WHAT CHANGES WITH V9

Read more Product Information



Single installer

Installation runs exclusively via SIMATIC S7-PLCSIM Advanced V9.



No separate installs

Separate Standard and Advanced installations are discontinued.



Standard setup retired

A standalone PLCSIM Standard setup ends with this versions.



One process

A single, consistent installation and update process.

The change affects setup and integration only — not the functionality available in each mode.

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SIMATIC S7-PLCSIM Standard & S7-PLCSIM Advanced
Facts: modes, licensing, delivery and supported PLCs

FACTS AT A GLANCE

Read more Product Information

Modes & licensing

- Standard Mode: included with a valid TIA Portal STEP 7 license
- No Advanced license required - same functionality as before V21
- Advanced Mode: requires a PLCSIM Advanced license
- Advanced Mode: provide multi-instance simulation; API / co-simulation, virtual time, ODK
- One product, one unified UI, one documentation - each PLC instance runs in either mode, switchable at any time

Delivery & supported PLCs

- PLCSIM setup no longer delivered directly with STEP 7, supported by new TIA Installer for automatic installations
- Provided as S7-PLCSIM Advanced V9 - single installer, one consistent install/update process
- Separate download & install via Siemens Online Support (SIOS); existing projects remain usable
- S7-1500 and S7-1200 G2: full simulation in V9
- S7-1200 G1: not supported in V9 - keep using PLCSIM Standard V21; G1 firmware updates ship via V21 updates

BOTTOM LINE

Separate PLCSIM and PLCSIM Advanced setups are discontinued - the change affects setup and delivery only, not the functionality in each mode. Standard stays free with STEP 7, Advanced unlocks more by license, and the Essentials View replaces the Control Panel.

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SIMATIC S7-PLCSIM Standard & S7-PLCSIM Advanced
One UI — with the new Essentials View

USER INTERFACE

Common interface for both modes

Advanced features are enabled based on licensing.

Essentials View

Compact create, start and monitor of PLC instances.

Replaces the Control Panel

Succeeds the Advanced Control Panel at comparable scope.

Smaller footprint

Keeps the overview at a glance — ideal for co-simulation.



Essentials View — instance management

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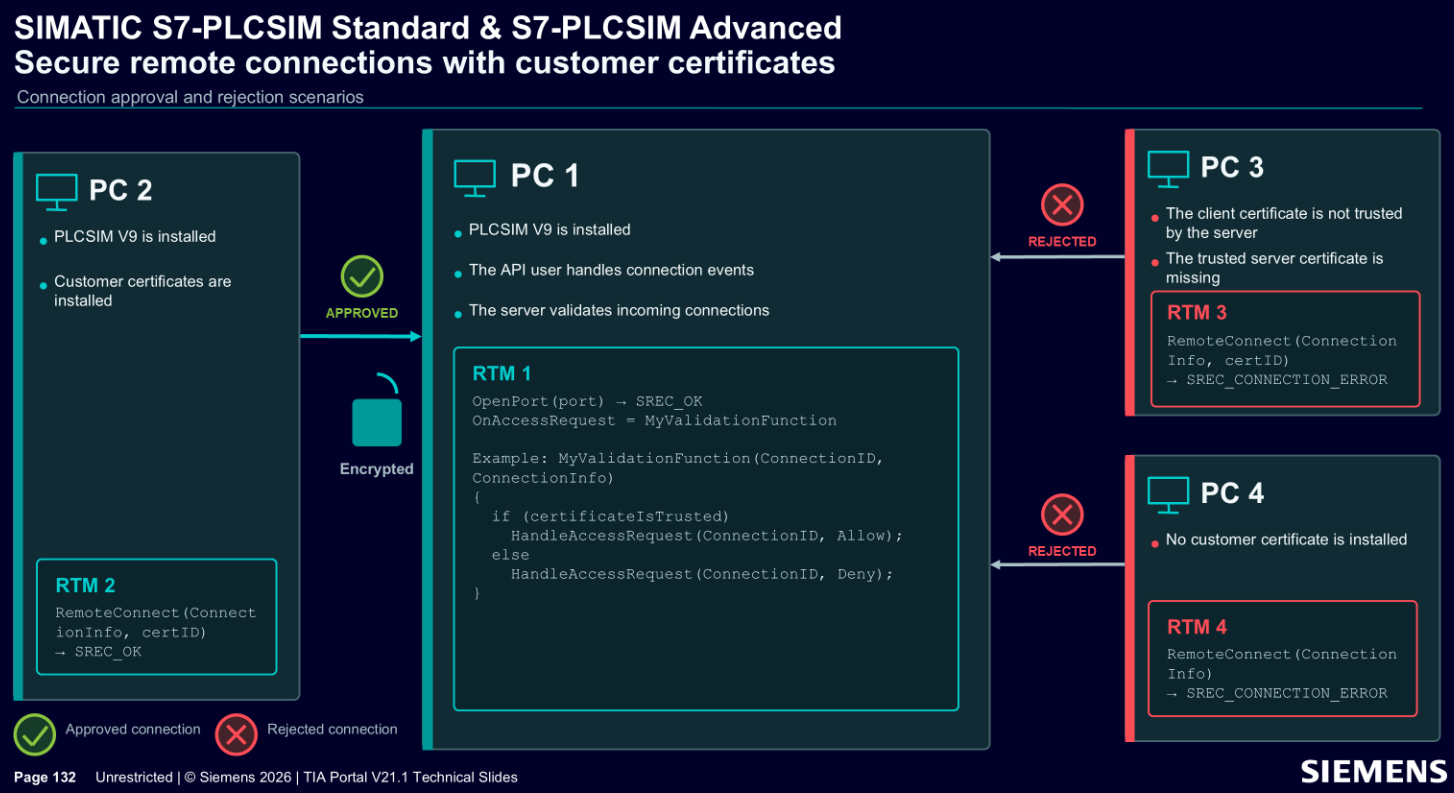
SIMATIC S7-PLCSIM Standard & S7-PLCSIM Advanced
New: Authenticated & Authorized Remote Access

SECURE REMOTE ACCESS

PLCSIM Advanced distributes simulation across several PCs. Communication between them, handled by the RemoteRuntimeManager, is now encrypted and protected by authenticated and authorized remote access.

The host decides who gets in

- Each remote client identifies itself with a **digital identity** — a customer-owned certificate, like an ID badge.
- The host application sees **every connection request** — who, from which PC and network — and decides before access is granted.
- Every attempt gets an explicit **allow or deny**, tying access to a verified identity and encrypted communication.
- Opt-in and fully backward compatible — nothing changes for existing users, real value for security-conscious customers.



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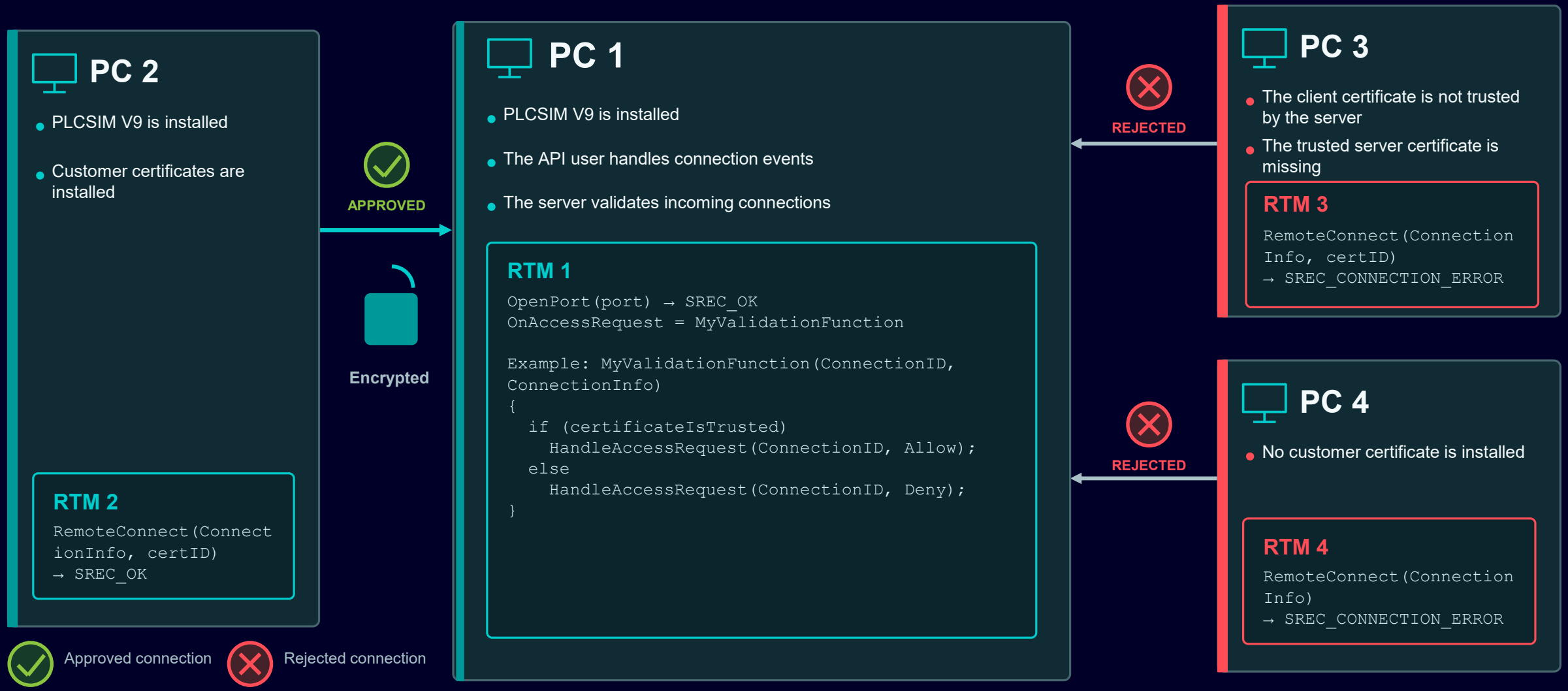
SIMATIC S7-PLCSIM Standard & S7-PLCSIM Advanced
Secure remote connections with customer certificates

Connection approval and rejection scenarios



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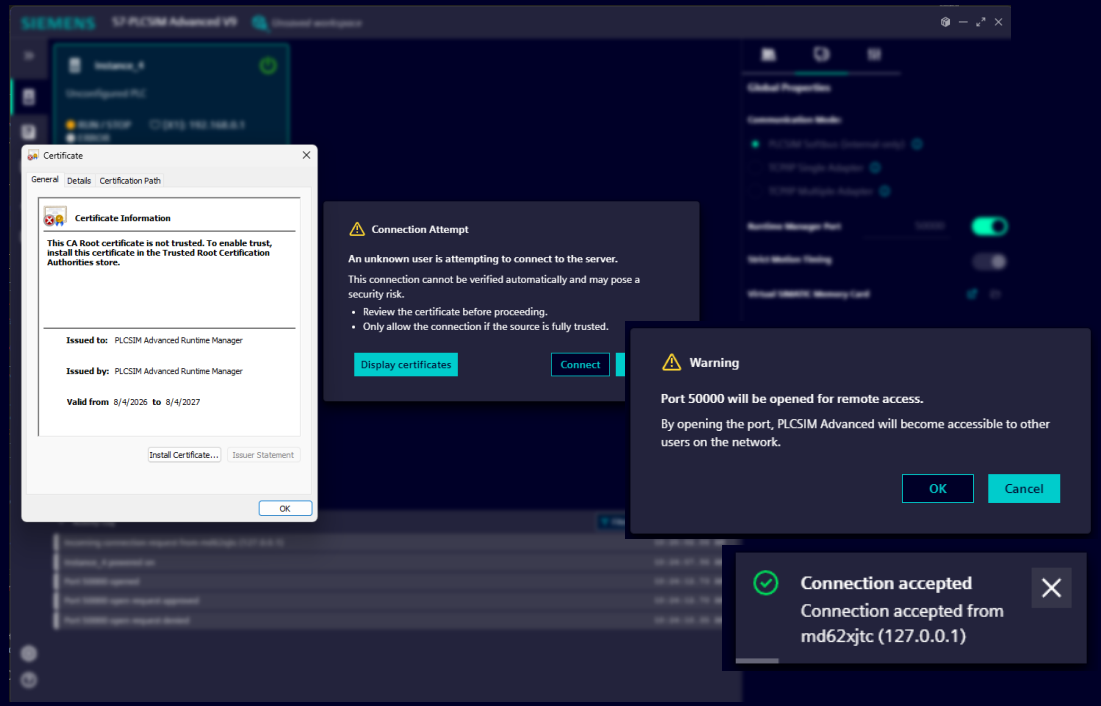
SIMATIC S7-PLCSIM Standard & S7-PLCSIM Advanced
User Interface enhancements

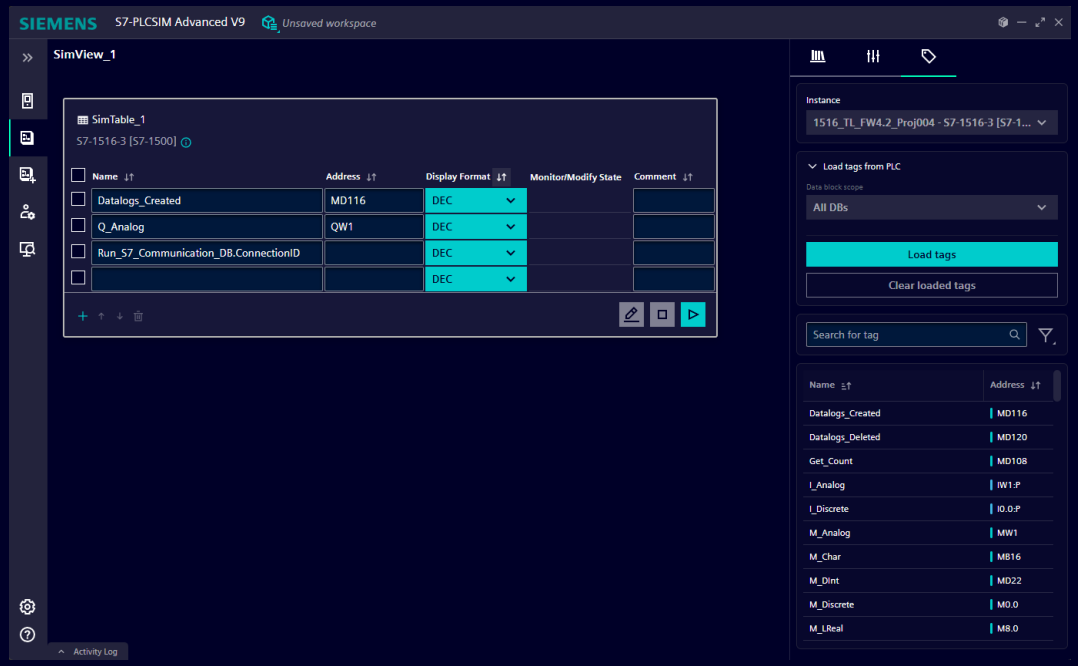
User Interface supports Secure remote connections with some additional dialogues

Users can set up secure remote connections to a simulated PLC directly in the dialogues. Certificate Management lets users import, view, assign and check device certificates. Trusted partners and connection settings can be reviewed before a session starts:



The redesigned Tag Panel makes it easier to find, load, and work with PLC tags in a simulation.

Users can search or import for tags, sort them by name or address, and filter them by tag area. The key enhancement is the new Data Block Scope selection. Users can choose the level of detail that fits their current task:



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SIMATIC S7-PLCSIM Standard & S7-PLCSIM Advanced Enhancements at a glance

Simplified installation and licensing

PLCSIM Standard and Advanced in a shared setup; the appropriate mode is used automatically based on the license. The new Essentials View replaces the previous Control Panel.

New S7-1200 G2 generation

All controller types of the S7-1200 G2 family are supported, including their Motion Control functionalities, and can be tested directly in the simulation.

Firmware V4.2

The new features of the S7-1500 Firmware V4.2 are supported. Projects can be loaded from the TIA Portal into the simulation without adjustments.

Enhanced front panel simulation

The API of the S7-1500 front panel simulation can now be controlled remotely over the network – for virtual commissioning, training, and remote test environments.

New controller types

New CPU variants and article numbers (MLFBs) from TIA Portal V21.1 are supported, including Software Controller V40.2.

IPv6 support

Simulated S7-1500 controllers now support IPv6, so that web server and OPC UA communication can also be tested in IPv6 networks.

Central isochronous IO systems

Projects with a central isochronous IO system (Clock Synchronous Backplane Bus) can be loaded and successfully brought into RUN.

ET 200SP with fiber optic bus adapter

Projects with ET 200SP CPUs and fiber optic bus adapters can now be loaded into PLCSIM Advanced and brought into RUN.

Simulating multicore programs

Download and RUN of multicore-configured TIA projects, including Motion performance improvements; execution is carried out in a sequentially compatible manner.

Improved API performance

Masked writing with WriteBytes() reduces the communication overhead for large data accesses – a plus for SIMIT integrations.

Older controllers

S7-1200 G1 controllers are no longer supported as of PLCSIM Advanced V9. Existing projects remain simulatable with PLCSIM V21.

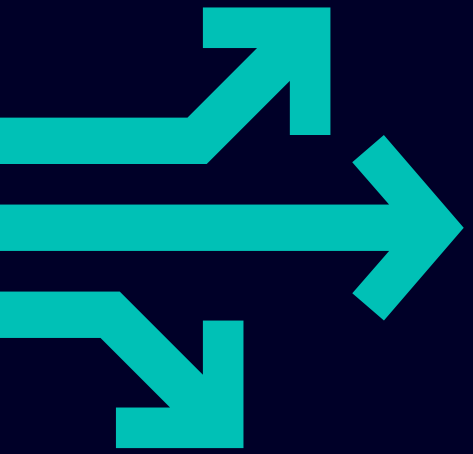
Summary

- Unified setup with new Essentials View
- S7-1200 G2, Firmware V4.2, IPv6, and new CPU types
- Enhanced front panel, multicore, and performance scenarios

SIEMENS

TIA Portal V21.1
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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08	TIA Portal Test Suite
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10	SIMATIC Visualization Architect (SiVArc)
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12	Central User Management (UMC)
13	Modular Application Creator
14	SIMATIC ProDiag / SysDiag
15	TIA Portal Teamcenter Gateway
16	TIA Package Manager
17	TIA Portal Safety Validation Assistant

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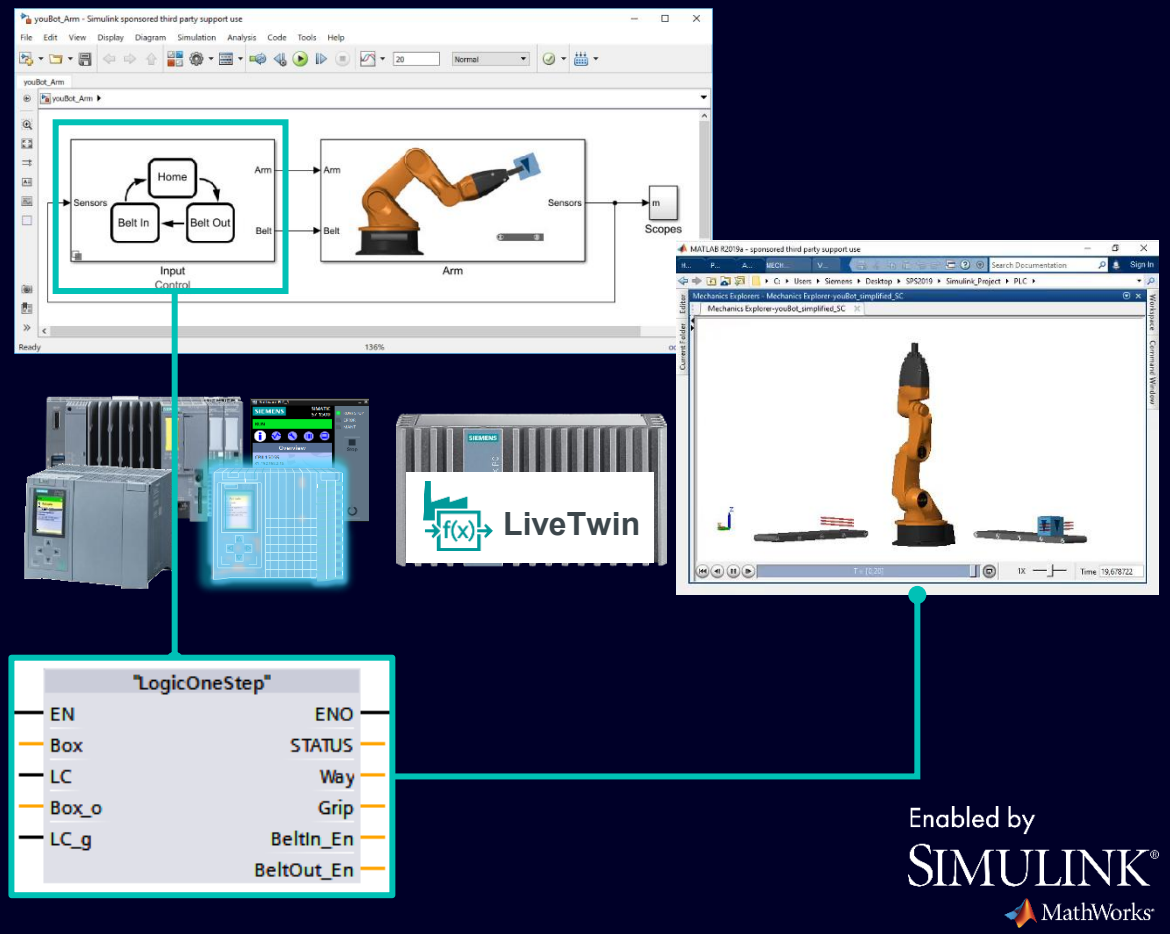
SIMATIC Target™ for Simulink®
Model-based design with SIMATIC Target for Simulink



Enabled by SIMULINK® MathWorks

Overview

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

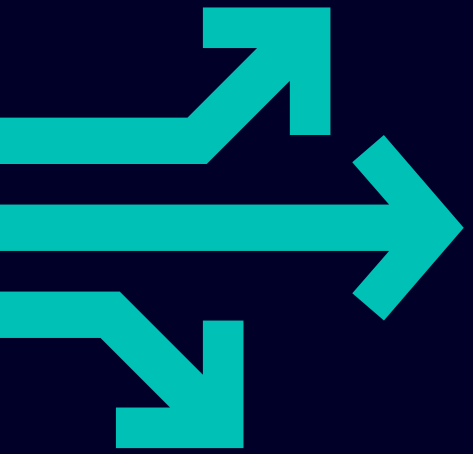
Executable on

- 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

SIEMENS

TIA Portal V21.1
TIA Portal Options

Content



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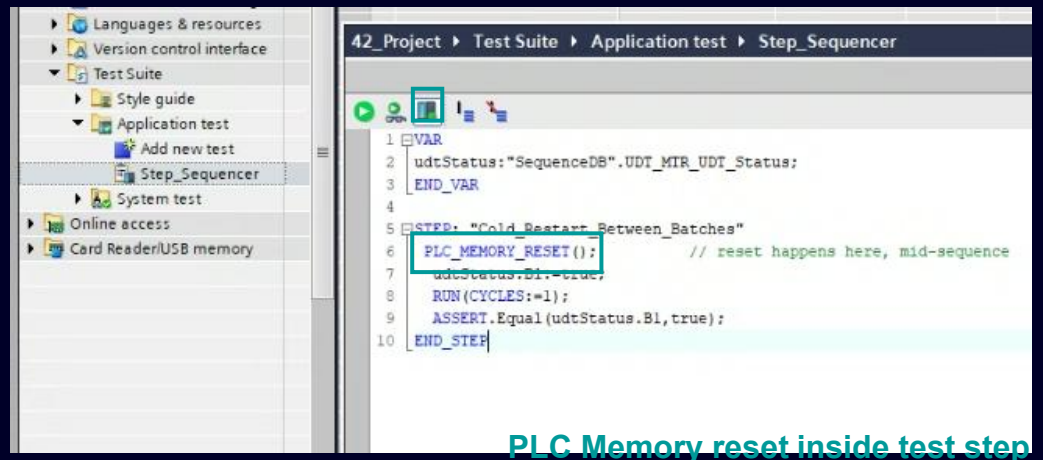
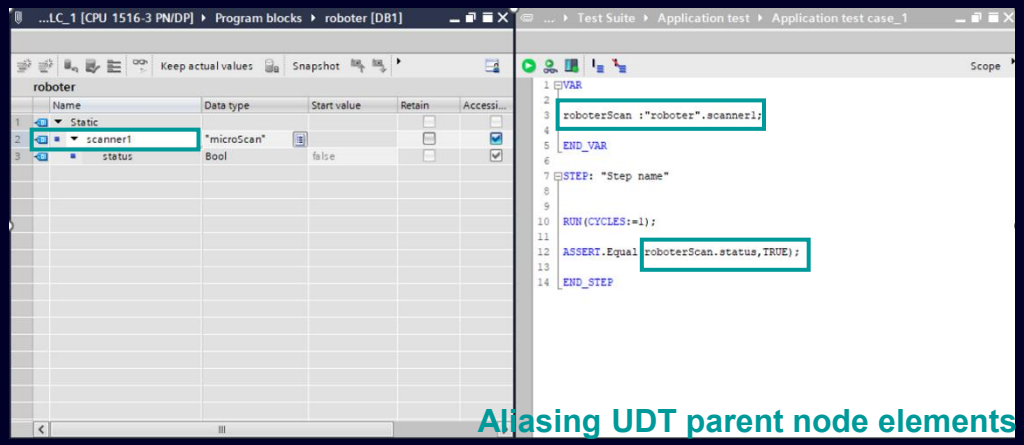
TIA Portal Test Suite
Enables automated testing of PLC programs



PLC Memory reset inside test step



Aliasing UDT parent node elements

Overview

- Application test : Enables automated testing of PLC programs with PLCSIM Advanced
- System test : Supports Hardware in the loop (HiL) testing via OPC UA
- Styleguide : Ensures PLC code compliance and coding standards

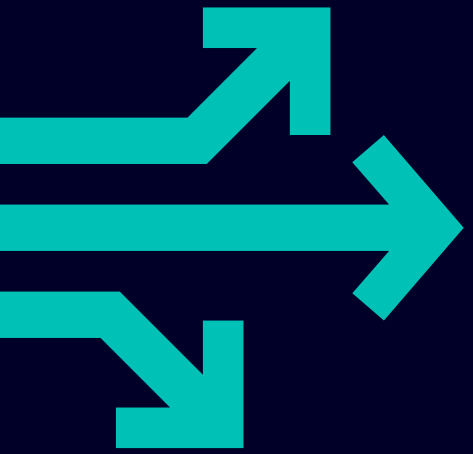
New in V21.1

- Optional PLC memory reset inside test step gives the user the flexibility to create clean startup conditions.
- UDTs aliasing for easier reference and improved readability within test case.
- SystemManagedPLCSIMInstance mode works with PLCSIM Advanced V9 or future higher versions.
- Enhanced integration with Eigen Engineering Agent : Autonomously creates and executes test cases during PLC code generation process.

SIEMENS

TIA Portal V21.1
TIA Portal Options

Content



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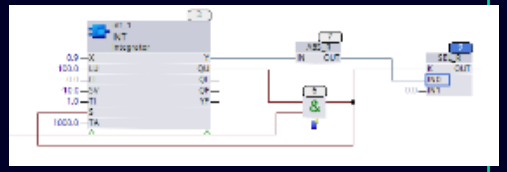
SIMATIC STEP 7 CFC
Comfortable graphical engineering in TIA Portal

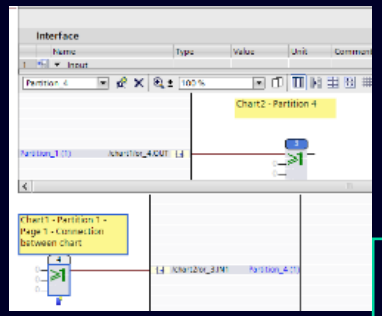
Graphical Program



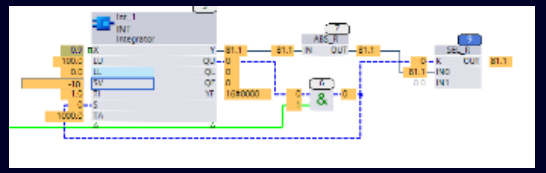
Re-use CFC logic



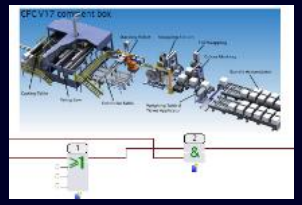
Connect different charts



Observe online



Use pictures as comments



Overview

- Available as optional package since V17
- Graphical programming for S7-1500
- Parameters interconnections of blocks and cross-charts via drag-and-drop
- Up to 36 sheets per chart
- Chart-in-Chart technology for hierarchical structures
- Pictures in comment boxes to document the code
- Online monitoring and signal flow tracking using trend with no separate download

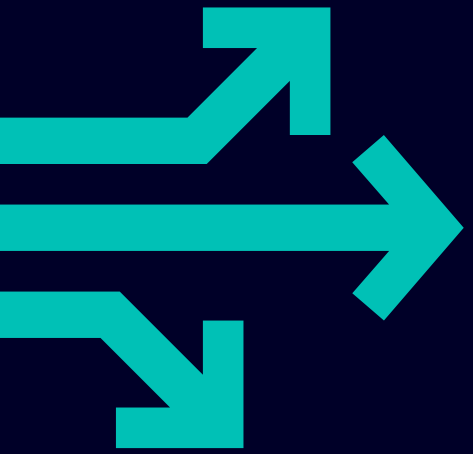
Benefits

- Configure instead of program
  Reuse blocks, interconnect and parametrize them
- Transparent and easy to read
  Signal flow makes the logic clear to everyone
- Faster commissioning
  Find and fix issues directly in the chart while online
- Fewer engineering errors
  Proven, standardized blocks reduce error sources

SIEMENS

TIA Portal V21.1
TIA Portal Options

Content



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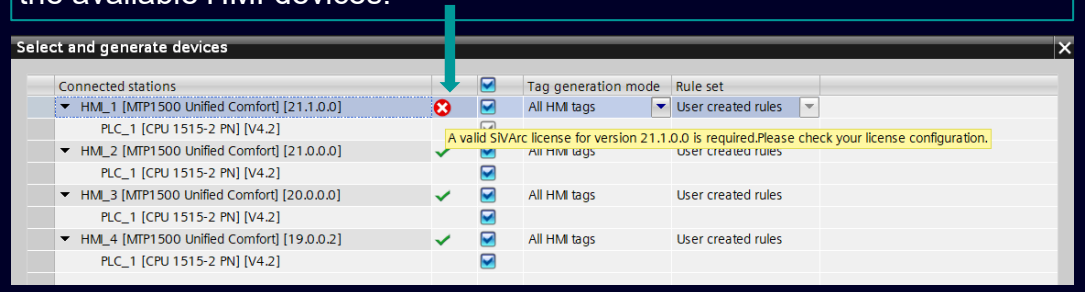
SIEMENS

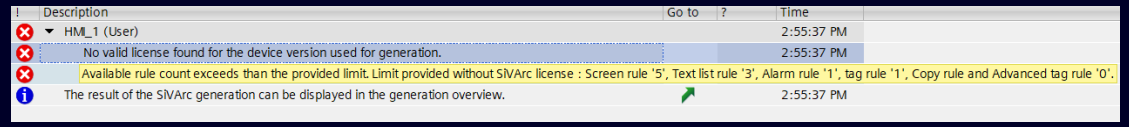
SiVArc V21.1
New license concept

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✓	✓

Generation Dialog:
License availability shown with icons along with tooltip description against the available HMI devices.



SiVArc generation feedback:
Information about the needed license is shown to the user and the limited functionality mode if it is allowed against the rule limits



New license concept with smooth forward functionality.

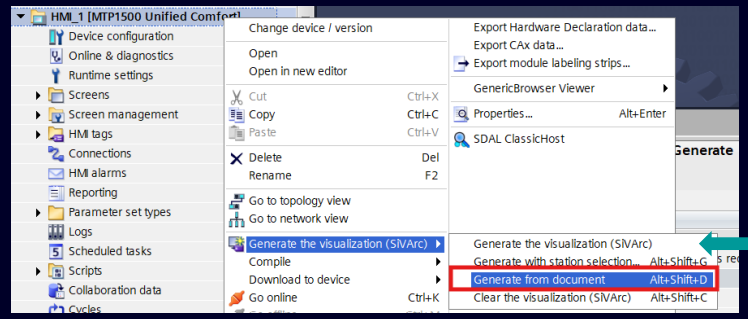
- New license concept enables the SiVArc (In line with TIA Portal concept) user to install the latest version V21.1 and continue to generate HMI on their device versions V21.0 with a V21.0 license.

SiVArc Licenses present in the machine	TIAP Installation	HMI device version the Project	Features granted to the user
No licenses	V21.1	V21.0 / V21.1	Limited Mode V21.1 will work
V21	V21.1	V21	Only the generation of <= V21.0 Devices will work
V21	V21.1	V21.1	Allow Limited functionality mode for V21.1 Devices
V21.1	V21.1	V21.0 / V21.1	The generation of all Devices <= V21.1 will work

SIEMENS

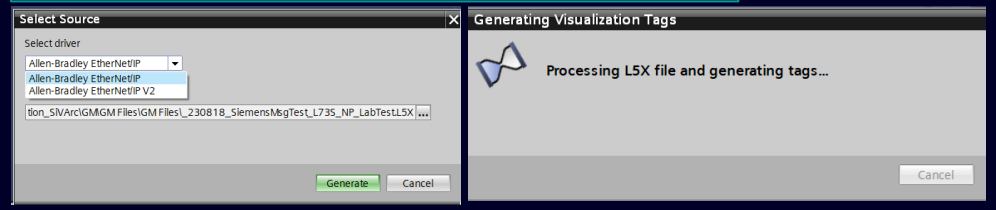
SiVArc V21.1
SiVArc Connect – Generation based on third party PLCs (Allen Bradley)

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✗	✗

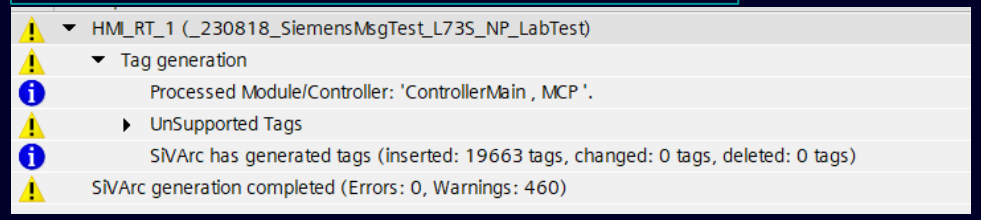


Invoke SiVArc connect via new Generation menu option

Browse and select .L5X files



SiVArc Connect generation results for HMI Tags.



User shall be able to generate HMI tags on unified devices for Allen Bradley controllers.

- SiVArc now supports generating HMI tags for Unified HMIs from Allen Bradley controller source files (.L5X).
- This enables seamless HMI panel generation, helping engineers save engineering effort and streamline project development own comment.

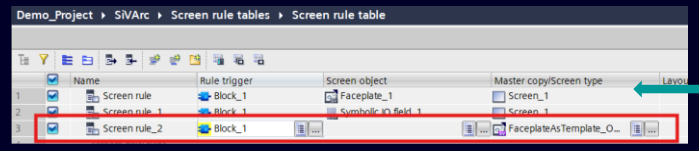
Benefits for users:

- This enables user to enhance the automation level via automated generation of HMI tags for Unified HMIs using .L5X as source (Export file from LogixControl software)

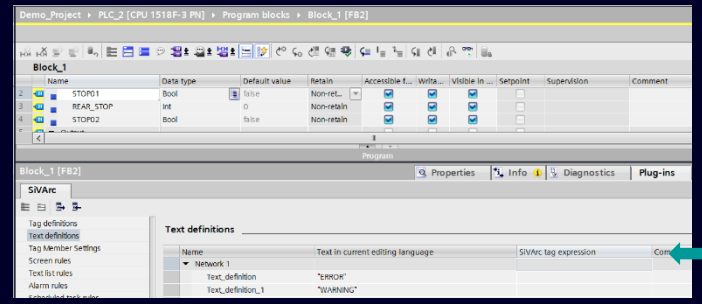
SIEMENS

SiVArc V21.1
Generation based on S7 Safety blocks

Unified System ✓ | WinCC Basic/Comfort/Advanced ✓ | WinCC Professional ✓

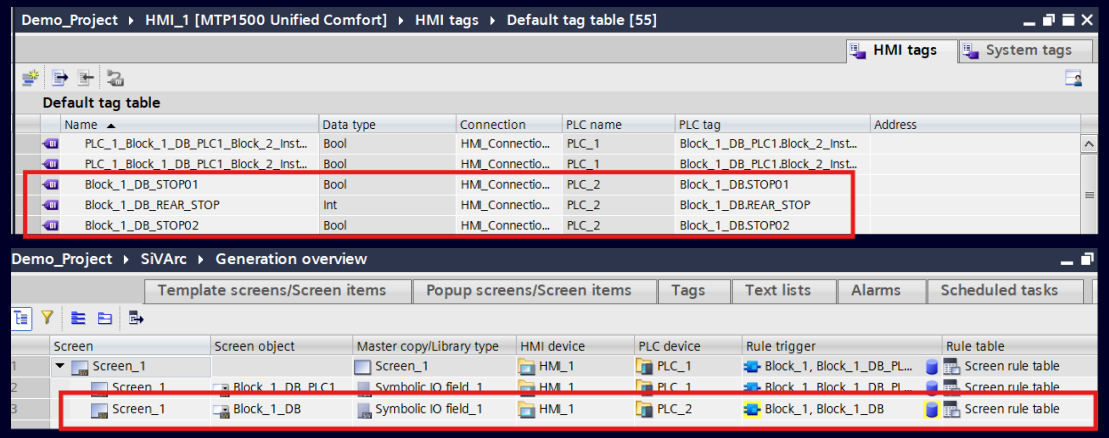


SiVArc rule configuration with S7 blocks as trigger



SiVArc configuration in IECPL editors for S7 blocks

Generation Results



User can now generate HMI Objects (Screens, screen objects, faceplates etc.) & HMI tags based on S7 safety blocks, that are called in PLC call hierarchy.

- SiVArc now supports generating HMI tags & HMI Objects for Unified HMIs from S7 blocks as source.
- The feedback and the generation results shall be displayed to users.
- User can use Expression Resolver tool to prepare & trouble-shoot the needed SiVArc expressions.

Benefits for users:

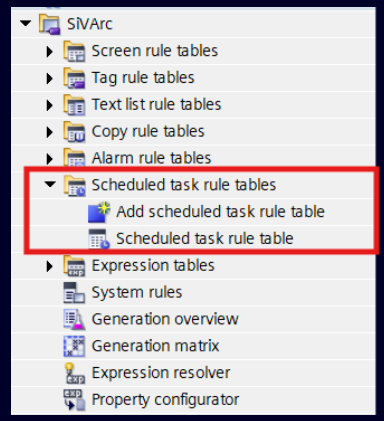
- This enables user to enhance the automation level via automated generation based on S7 blocks.

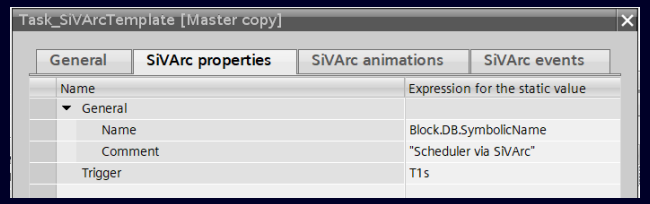
SIEMENS

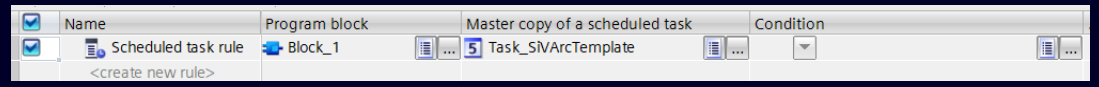
SiVArc V21.1
Generation of scheduled task

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✗	✗

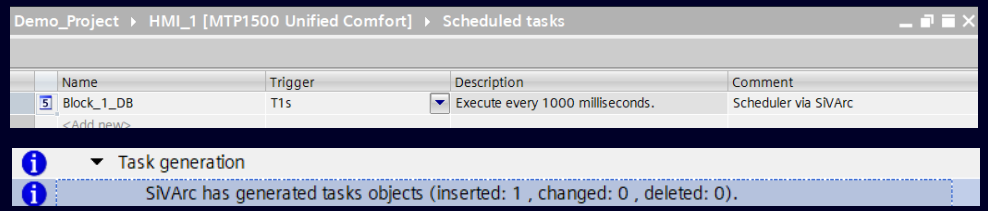
SiVArc configurations: Plug-ins, rule tables, rules







Generation Result & Feedback



User shall be able to generate Schedulers for unified devices via SiVArc.

- SiVArc now supports generating scheduled tasks for Unified HMIs.
- It is possible to define scheduled tasks templates with SiVArc plug-in configuration with SiVArc expressions.
- New rule table & rule support: Scheduled task rule table and Scheduled task rules are possible to define.
- System generates the scheduled tasks based on the configuration from templates & rules defined.

Benefits for users:

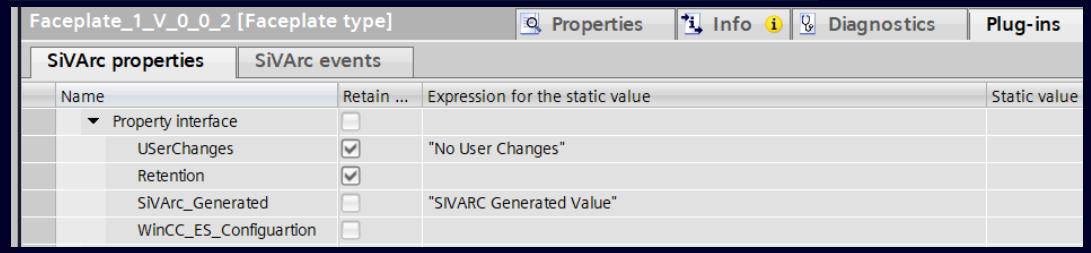
- This enables user to enhance the automation level via automated generation of tasks for Unified HMIs.

SIEMENS

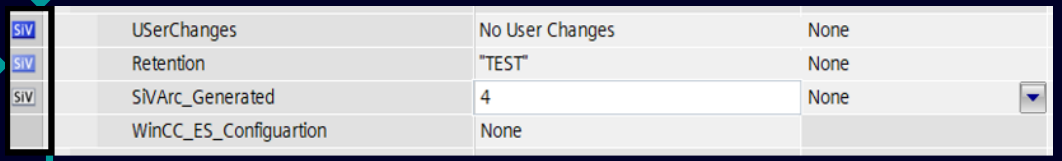
SiVArc V21.1
Visual identification of SiVArc-generated properties for HMI objects

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✗	✗

Faceplate – SiVArc plug-in configuration



This property is generated by SiVArc



The value changed by user, will not be retained.

The user changes are retained for this property

User should be able to visually get the indicators within the WinCC Unified Engineering environment to clearly show the origin of faceplate instance properties.

- The indication highlights which interface property is SiVArc generated.
- The indication highlights the interface property that will be retained when user changes in WinCC ES.
- The indication highlights if the interface property will not be retained in subsequent SiVArc generations.

Benefits for users:

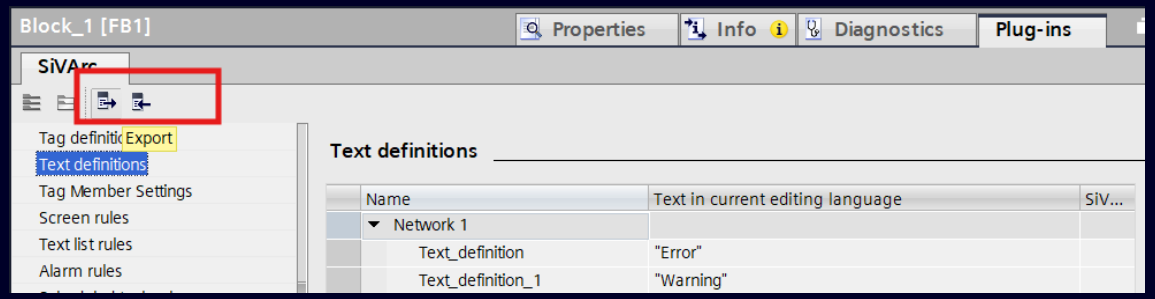
- This enables configuration engineers to quickly verify compliance with contractual agreements without having to sift through a detailed audit trail.

SIEMENS

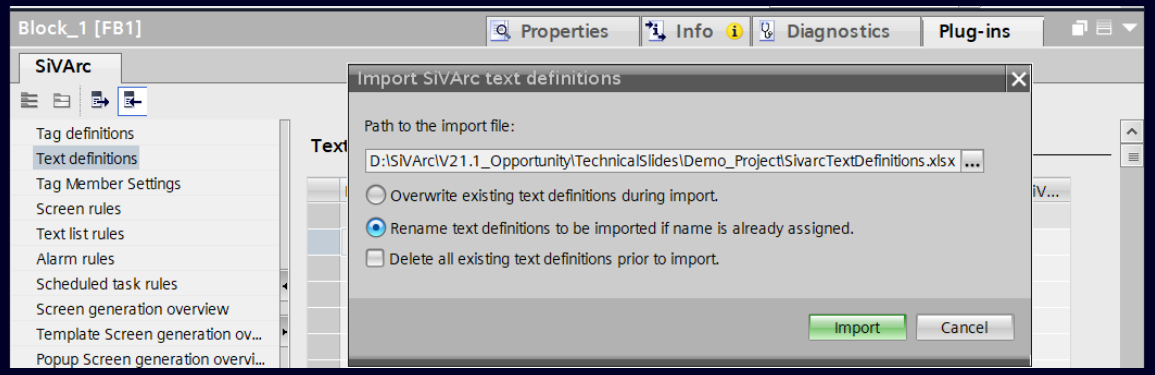
SiVArc V21.1
Export and Import of Text definitions configuration of S7 blocks

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✓	✓

Export/Import feature – New Menu icons for text definitions



Import of excel files to make bulk configuration at once



User shall be able configure large number of text definitions via Export/import into Excel.

- SiVArc now supports export of text definitions from a S7 block into Excel files.
- Import allows user to import modified/updated text definitions on to the S7 blocks in bulk.

Benefits for users:

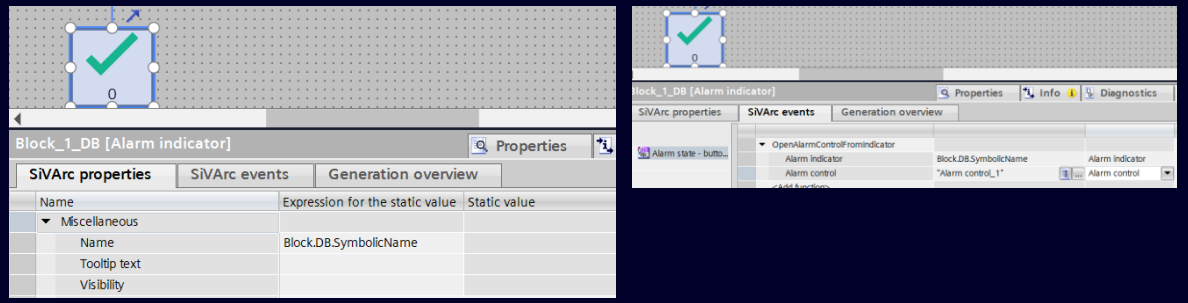
- This enables user to make bulk modifications of text definitions in Excel files and import them instead of clicking on each text entries individually in TIA Portal IECPL editor.

SIEMENS

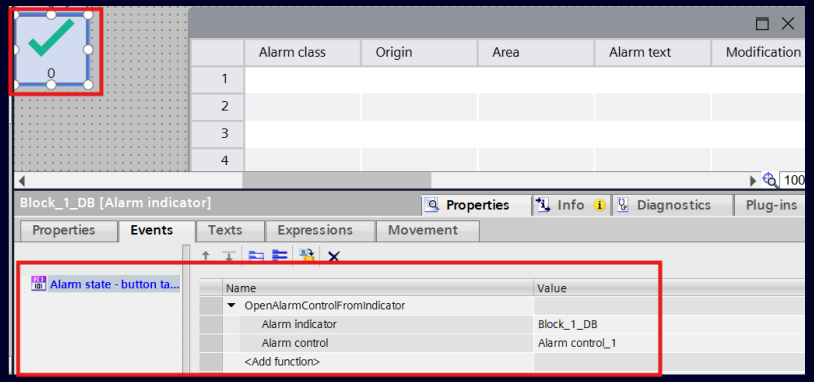
SiVArc V21.1
Alarm indicator support via SiVArc

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✗	✗

Configuration: Alarm indicator – SiVArc Plug-in



Generation Results: Alarm indicator with event



SiVArc now supports Unified HMI Alarm Indicator objects throughout the engineering workflow.

- Users can configure Alarm Indicator properties, store them as Master Copies, use them in Screen Rules, and automatically generate fully configured alarm indicators on target HMIs.
- The system supports event generation that includes “OpenAlarmControlFromIndicator”, enabling standardized and scalable alarm visualization across large automation projects.

Benefits for users:

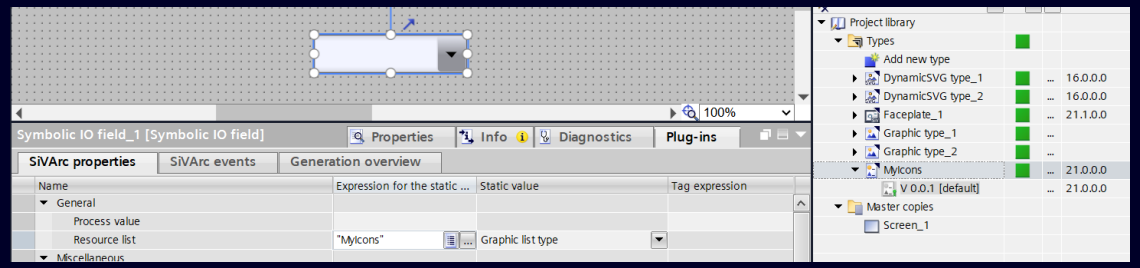
- Standardize alarm handling across the entire application.
- Reduce repetitive configuration tasks & Minimize engineering errors

SIEMENS

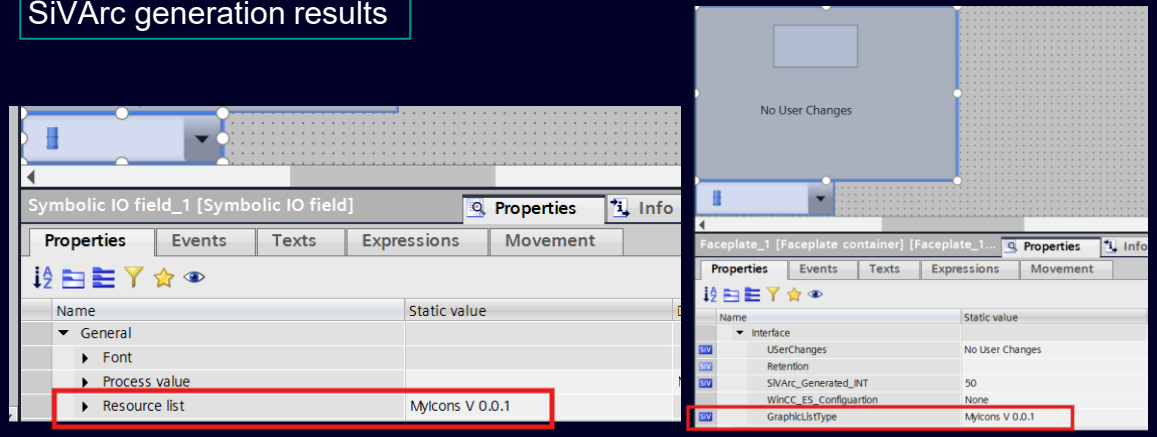
SiVArc V21.1
Support for Graphic list types

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✗	✗

SiVArc plug-in configuration with Graphic list types



SiVArc generation results



User shall be able connect Graphic List types to Symbolic IO Field & faceplates via SiVArc generation.

- User shall be able to configure SiVArc expressions for “Resource list” property of Symbolic IO Field and Faceplates.
- The system generates & connects the Graphic List type objects from library to “Resource list “ property of HMI objects Symbolic IO Field and faceplates on screens.

Benefits for users:

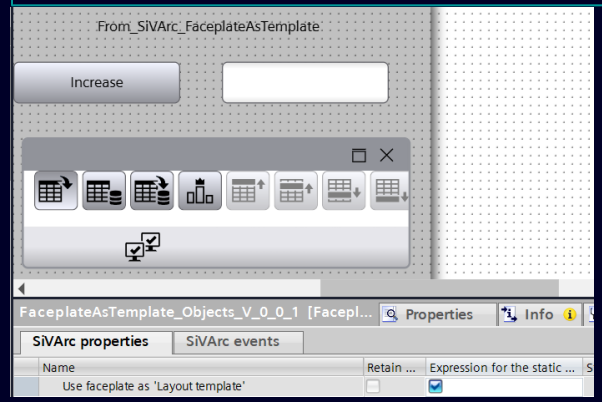
- Increase in level of automation and supports the customer in standardization.

SIEMENS

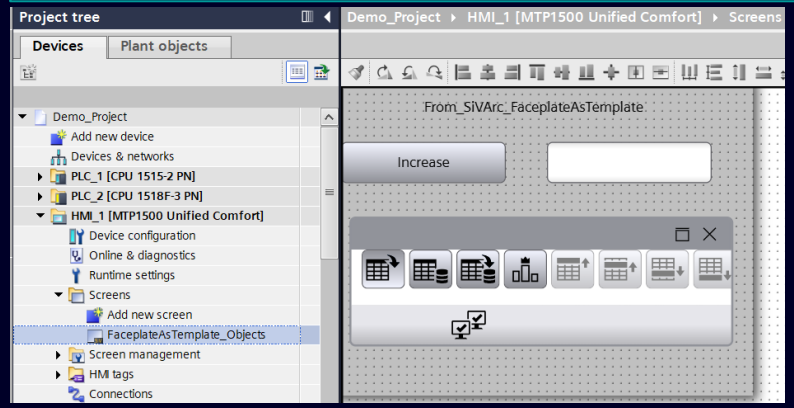
SiVArc V21.1
Generation of screen objects within faceplate layout templates

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✗	✗

Configuration: Faceplate as Layout Template with HMI objects in it.



Result: Generated Screen with configured HMI Objects



Generation of objects within faceplate layout templates for SiVArc.

- User shall be able to configure supported HMI Objects on Faceplates & use the faceplate as SiVArc Screen Template.
- The system generates the configured HMI Objects from faceplate as template to unified screens.

Benefits for users:

- User don't need to create several new screen rules for separate generation of these objects, and it increases engineering efficiency.

SIEMENS

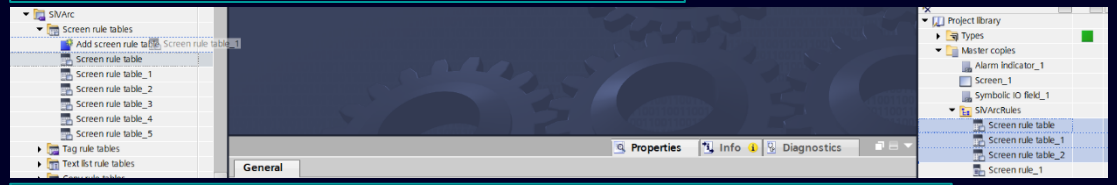
SiVArc V21.1
Drag-drop and copy-paste of multiple SiVArc rules from library to rule table

Unified System ✓

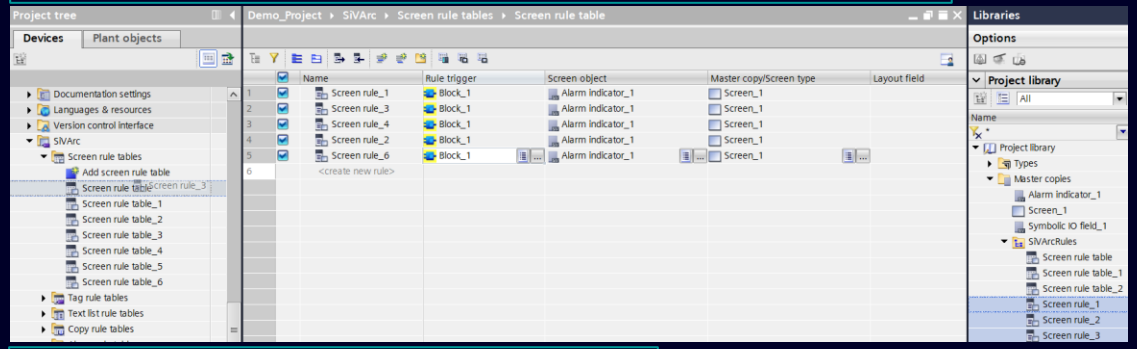
WinCC Basic/Comfort/Advanced ✓

WinCC Professional ✓

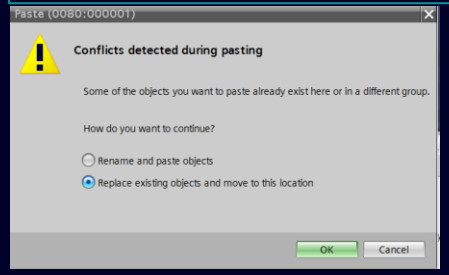
Multi select & Drag-drop of rule tables on PNV



Multi select & drag-drop the rules from library onto the rule tables



Name conflicts handled and decided by user



Accelerate HMI engineering by reusing proven rules directly from your rule library.
Simply drag-and-drop or copy-paste master rules into your project rule table to instantly create new working copies.

- User shall be able to bring rules, rule tables from Library-> Master copies to Rule editors and rule tables.
- Copy-paste of rules, rule tables is possible from Library -> Master copies to PNV.

Benefits for users:

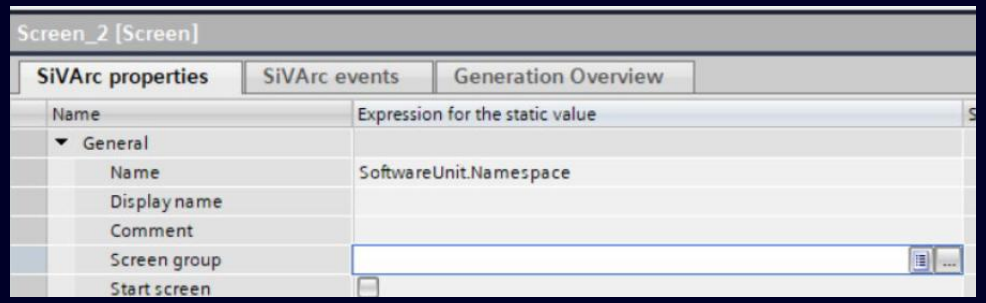
- Increases user experience.

SIEMENS

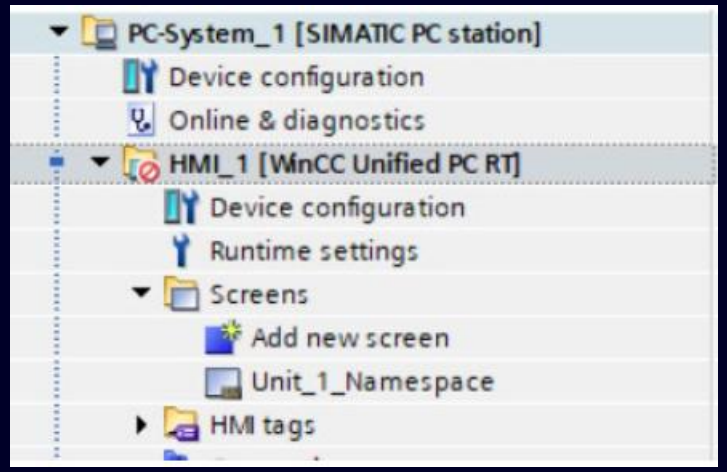
SiVArc V21.1
Improvements in SiVArc expressions

Unified System ✓ | WinCC Basic/Comfort/Advanced ✓ | WinCC Professional ✓

SiVArc Expression to readout Namespace of an unit.



Expression resolved & configured as needed,



Now customers can access the namespace of the Software Unit with SiVArc expressions unlocking Software Unit Integration for HMI Engineering.

- Customers using the Software Units shall use this expression in designing tag rules to generate needed HMI Tags.
- System handles the generation based on the expression resolved values based on Erroneous or valid values.

Benefits for users:

- Increases user experience.
- Improves consistency across machines.

SIEMENS

SiVArc V21.1
Improvements in Openness API

Unified System	WinCC Basic/Comfort/Advanced	WinCC Professional
✓	✓	✗

Examples: SiVArc event configuration

```
HmiScreen hmiScreen = GetHmiScreen();
HmiScreenItemBaseComposition screenitems = hmiScreen.ScreenItems;
Console.WriteLine(screenitems[0].Name);
PluginProvider pluginProvider = screenitems[0].GetService<PluginProvider>();

EventHandlerComposition events = pluginProvider.Events;
var clickLeftMouseEvent = events.Find(name: HmiScreenEventType.ClickLeftMouseButton);
```

System returns the respective event handler 'ClickLeftMouseButton'. When the provided event is not supported for the given screen item, then system returns 'null' and user needs to handle this case.

```
// Access functions
SivarcFunctionComposition functions = clickLeftMouseEvent.Functions;

// Create a new system function
SivarcFunction changeScreenSystemFunction = functions.CreateSystemFunction(SystemFunctionName.ScreenChangeScreen);

// Access and configure parameters
FunctionParameterComposition parameters = changeScreenSystemFunction.Parameters;
foreach (var parameter in parameters)
{
    Console.WriteLine($"Parameter name: {parameter.Name}");
}

FunctionParameter screenName = parameters.Find(name: "Screen name");
screenName.ValueExpression = "\"Screen_1\"";

FunctionParameter screenWindowPath = parameters.Find(name: "Screen window path");
// Get supported data types for a parameter
var dataTypes: IList<ParameterDataType> = screenWindowPath.GetSupportedDataTypes();
screenWindowPath.DataType = dataTypes.First().Value;
screenWindowPath.ValueExpression = "\"MainScreen\"";
```

System creates system function under selected event type and also sets the parameter for newly created system function.

Now customers can access the namespace of the Software Unit with SiVArc expressions unlocking Software Unit Integration for HMI Engineering.

- Extended SiVArc plug-in configuration support to Unified Basic objects, Elements, and Control objects, providing consistent API access across supported HMI objects.
- Introduced Openness APIs for Expression objects, enabling creation and management of Expressions, Expression groups, Expression tables, and Expression folders.
- Added Openness support for Layout Field configuration, allowing engineering of generation-based positioning settings through APIs. And many more API extensions

Benefits for users:

- Increase in automation level.

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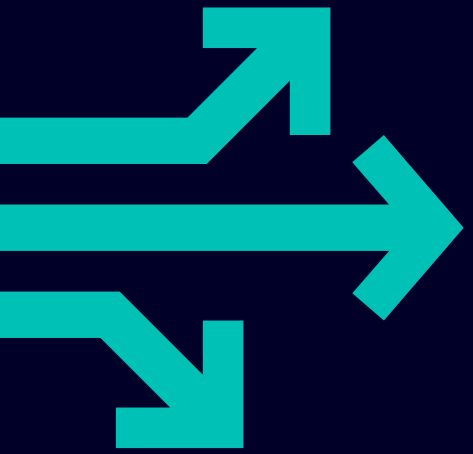
TIA Portal V21.1
TIA Portal Options

Content



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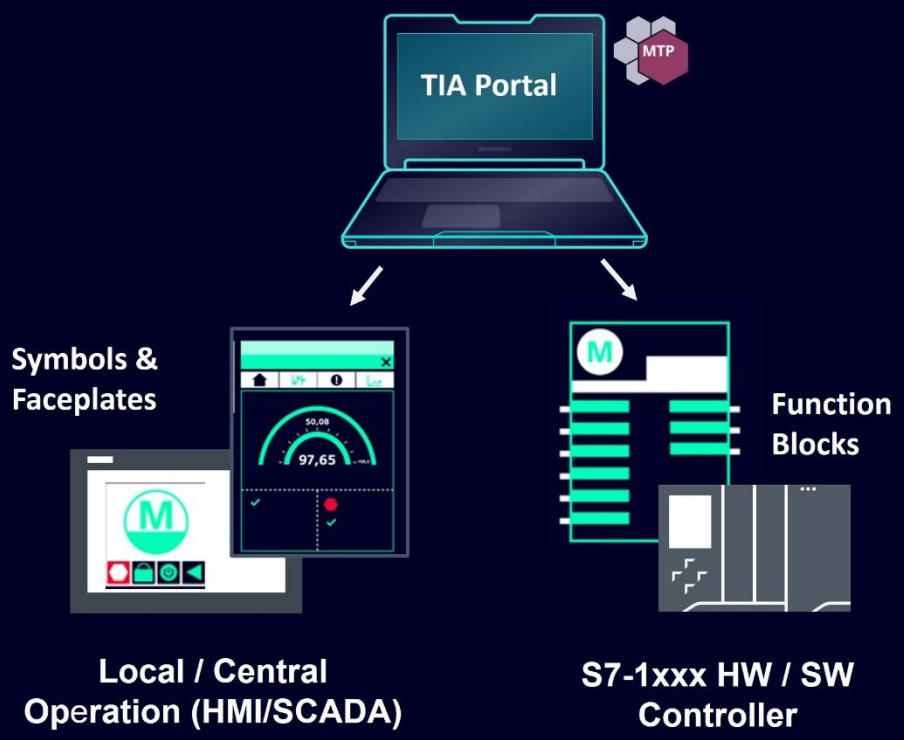
SIMATIC Control Function Library
Standardization across the entire PLC, HMI and SCADA Landscape

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓



Stay flexible through standardization and focus on what makes you unique.

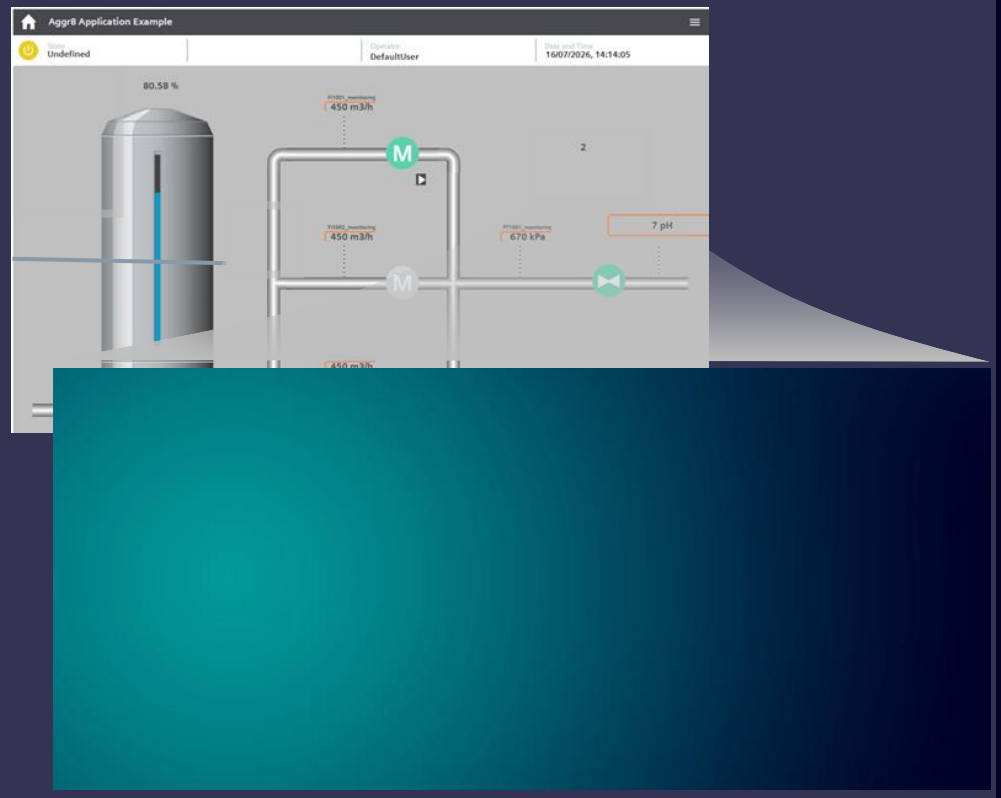
- Modular and memory optimized library
- Support of S7-1xxx HW / SW / Virtual controller
- Support from the WinCC Unified Panel up to the SCADA Systems **WinCC Unified / V8 / OA** New
- **Supports virtual commissioning** based on PLCSIM Advanced and SIMIT
- **Support of Module Type Package (MTP)** for the Integration in PCS 7 / PCS neo as well as 3rd party SCADA / DCS System

SIEMENS

SIMATIC Control Function Library
New Industry Use Cases and Competition of the MTP V2.0 Feature Set

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓

OEM
Process Equipment Assembly (PEA)



Pumping station using Aggr8 Application Example with Control Function Library

CFL - Industry-specific blocks

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

Drives
- MonBinDrv FP FP
- MonAnaDrv FP FP
- MonBinVlv FP FP
- MonAnaVlv FP FP
- MonTriPosVlv FP
- MonDsLVlv New FP

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

Channel Blocks
- ChAnaIn FP
- ChAnaOut FP
- ChDigIn FP
- ChDigOut FP

Interlock
- LockView4 FP FP
- LockView8 FP FP

Counter
- AnaCounter FP
- DIntCounter FP

Operate
- AnaManInt FP FP
- BinManInt FP FP
- DIntManInt FP FP

Control
- PIDCtrl FP FP
- Aggr8 FP
- TimeSwitch8 FP
- SetCrv FP
- Polygon FP

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

MTP Service Framework New
- Procedure
- Config Parameter
- Procedure Parameter
- Process Values
- Report Values
- Service Interactions
- Position text

FP

New
WinCC V8 FP
WinCC Unified FP

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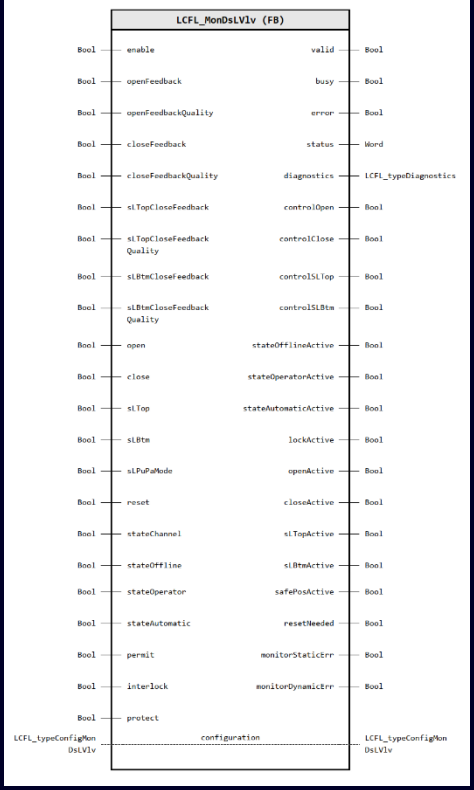
SIMATIC Control Function Library
Double Seat Value - Applications Requiring Safe Separation of Process Media

Unified Basic ✓ | Unified Comfort ✓ | Unified Edge RT ✓ | Unified PC RT ✓



A double-seat valve is used to ensure the safe separation of two incompatible media in piping systems while enabling simultaneous process control and minimizing the risk of cross-contamination, particularly in hygienic and industrial applications.

- Modular and memory optimized Block
- Support of S7-1xxx HW / SW / Virtual controller
- Support from the WinCC Unified Panel up to the SCADA Systems **WinCC Unified**
- **Supports virtual commissioning** based on PLCSIM Advanced and SIMIT

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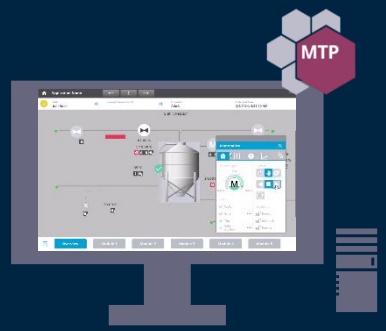
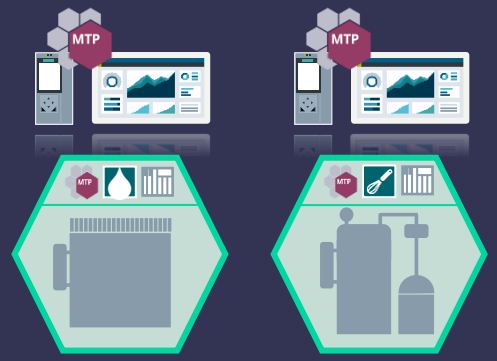
SIMATIC MTP Studio
ONE TOOL for all Use Cases from the PEA to the POL

End customer & System Integrators
Process Orchestration Layer (POL)

SCADA



OEM
Process Equipment Assembly (PEA)



Option 1: MTP based on SIMATIC PLC and HMI

Option 2: MTP based Gateway on PLC / Edge

Modules / Skids

Engineering

SIMATIC MTP Studio

TIA Portal libraries:
POL
MTP Studio POL Library
PEA:
MTP Studio PEA Library
Control Function Library (CFL)
Process Function Library (PFL)
Customer Library (OEMs)

SIMATIC MTP Studio and TIA Portal deliver end-to-end MTP design / engineering from PEA to POL.

- **PEA Engineering** based on SIMATIC PLC / HMI also for gateway use cases (SIMATIC PLC / HMI or Edge)
  - SIMATIC Control Function Library
  - SIMATIC Process Function Library New
  - Customer Libraries
- **POL Engineering** based on WinCC Unified
- **MTP Editor** for creating und editing of MTP File (rMTP Use Case) New
- Supports the following MTP versions:
  - VDI/VDE/NAMUR 2658 (V1.1.0)
  - **MTP Specification; 2025; PI Specification no. 30.X (V2.0.0)** New

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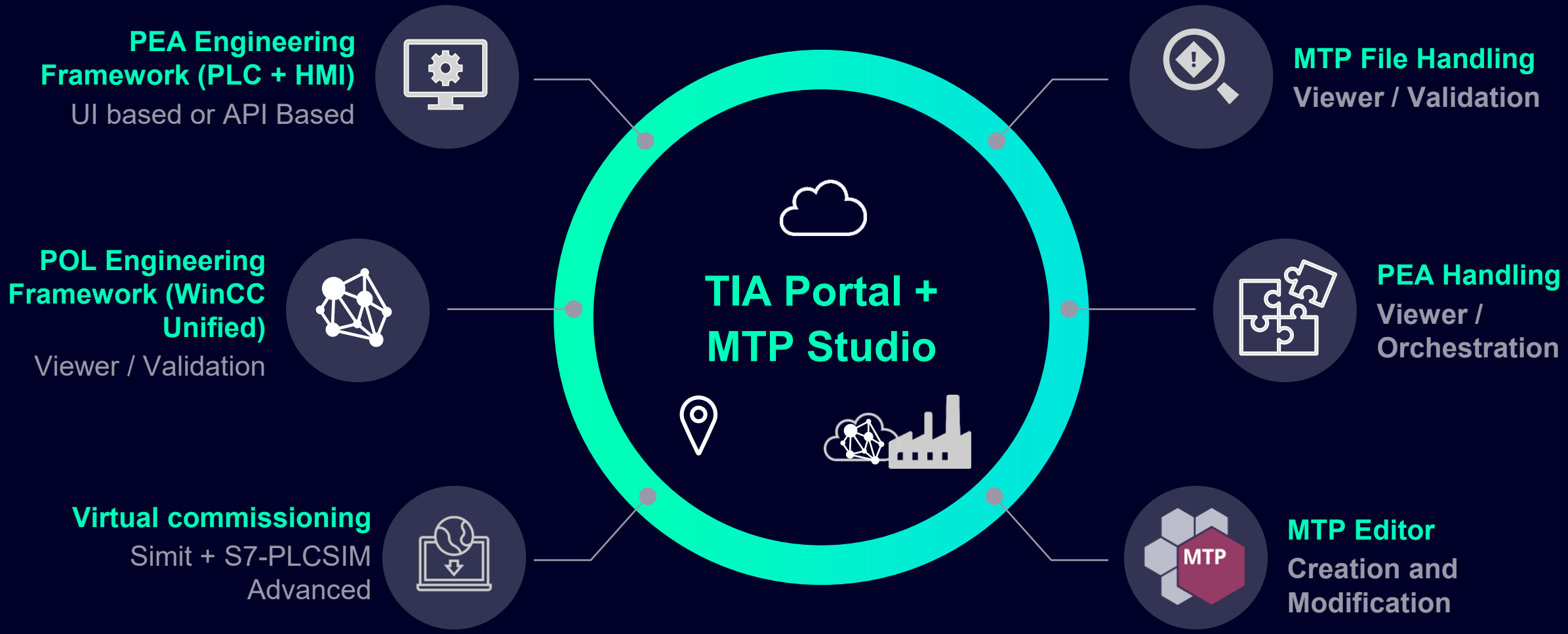
SIMATIC MTP Studio
ONE TOOL for all Use Cases from the PEA to the POL



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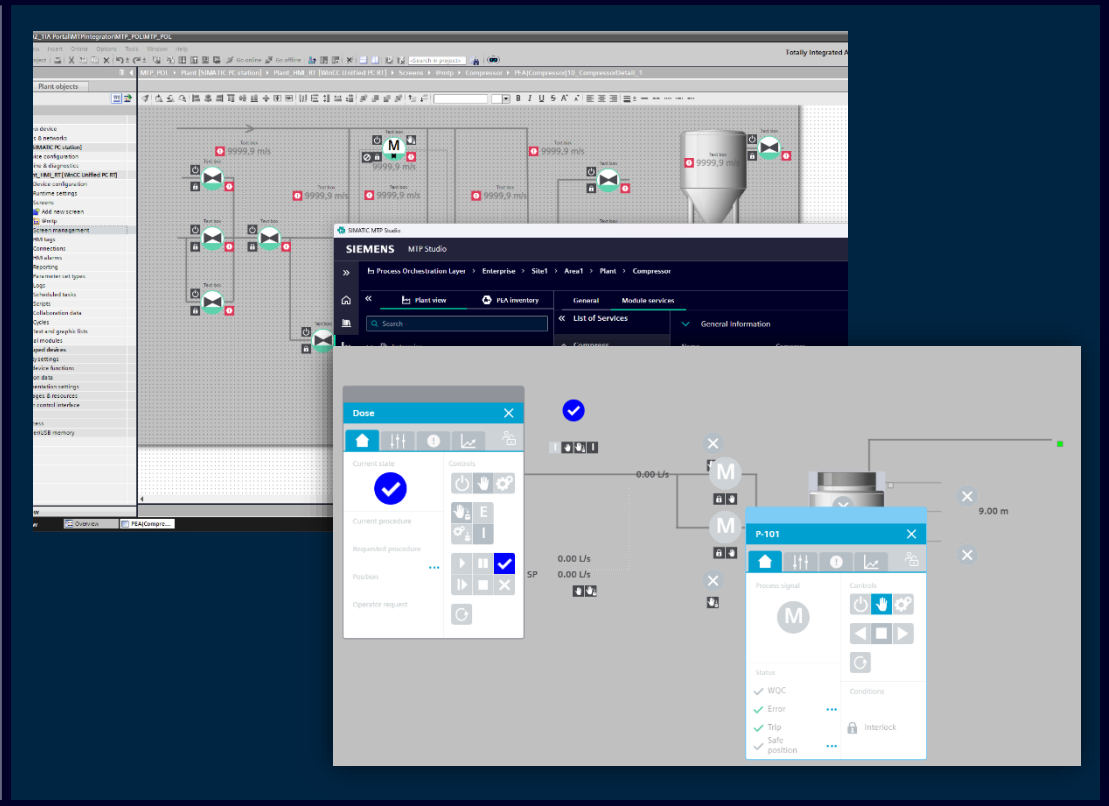
WinCC Unified - Process Orchestration

Reduce engineering effort by -70% [1] and Increase flexibility by +80% [1]

End customer & System Integrators
Process Orchestration Layer (POL)



WinCC Unified Process Orchestration Layer (POL) is a software-based orchestration layer that enables the operation and monitoring of modular production plants based on the Module Type Package (MTP) standard.

- WinCC Unified POL Engineering via the **MTP Studio** New
- Supports the following MTP versions:
  - VDI/VDE/NAMUR 2658 (V1.1.0)
  - **MTP Specification; 2025; PI Specification no. 30.X (V2.0.0)** New

[1] Source: ZVEI, 2022

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WinCC Unified - Process Orchestration
Runtime

MTP

…

Automation Services & Process Values

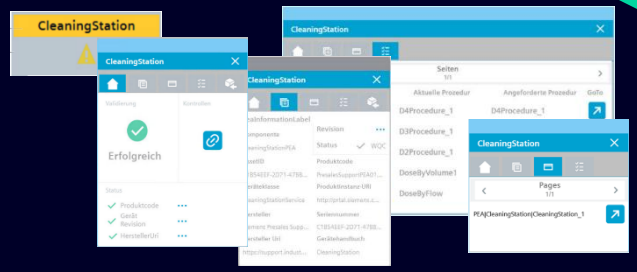
Process Displays

Commu-nication

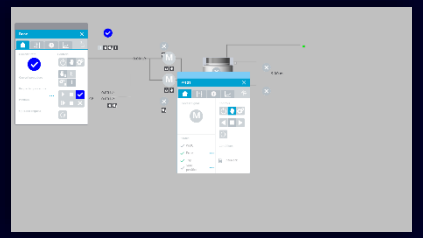
Basic Library

Alarm Management

MTP Part 1

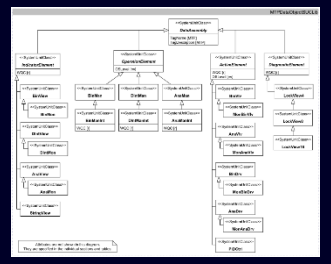


MTP Part 2

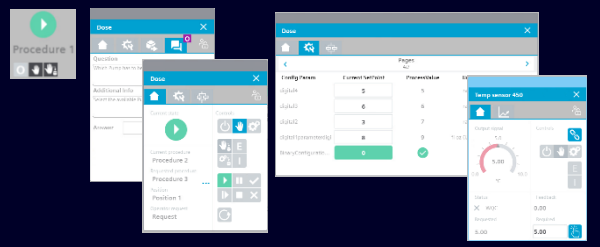


MTP Part 3





MTP Part 4



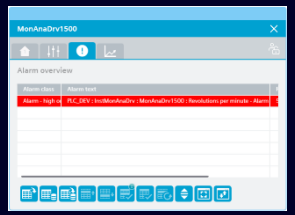
MTP Part 5

New

OPC UA

MTP Part 6

New



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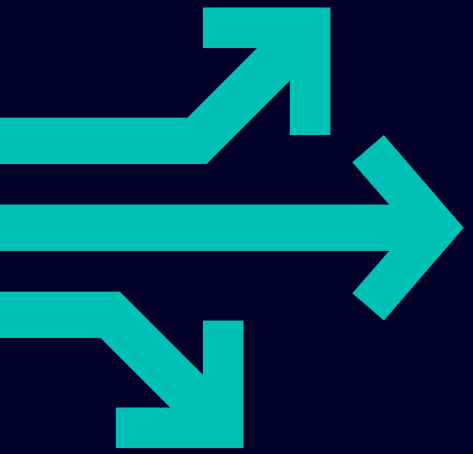
TIA Portal V21.1
TIA Portal Options

Content



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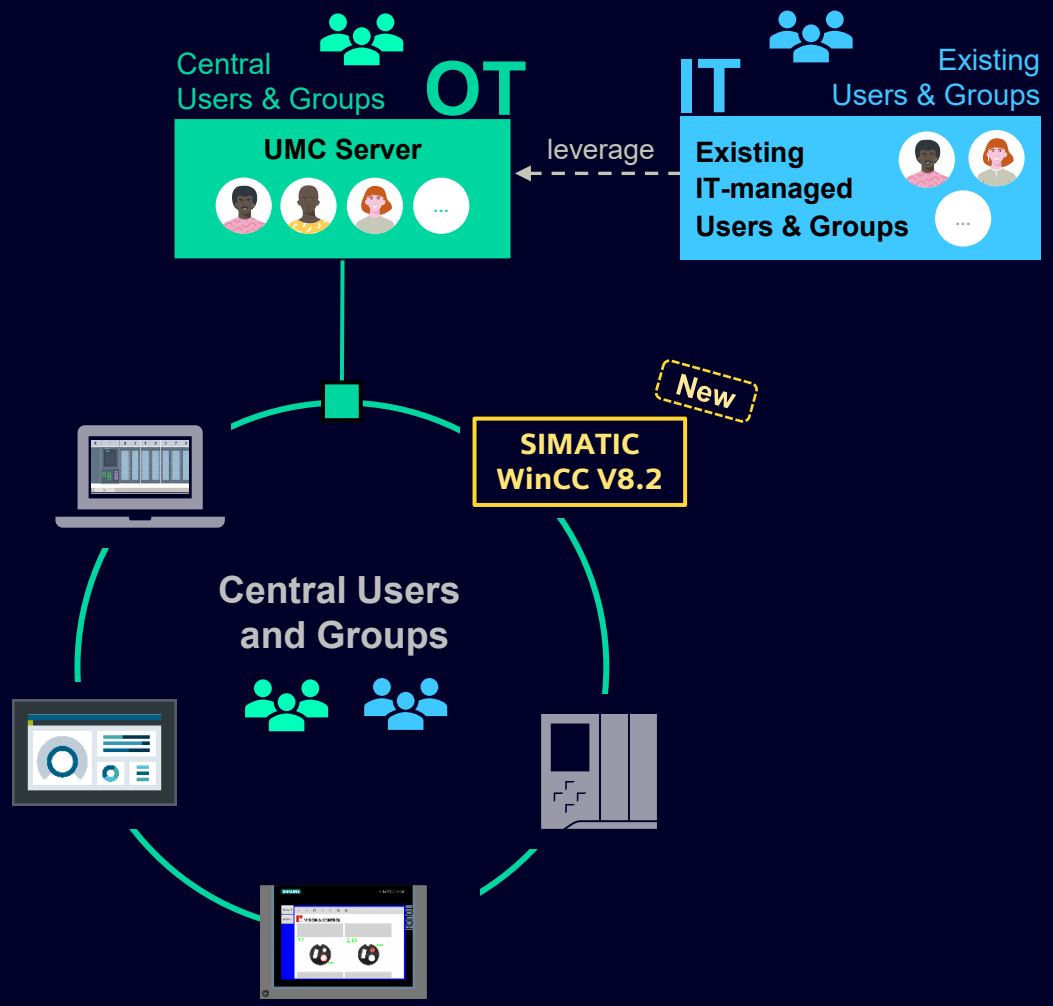
SIMATIC WinCC V8.2 supports Central User Management and Authentication with UMC



Central User Management with UMC is now also available for SIMATIC WinCC V8.2

- Use OT users and groups centrally managed with UMC
- Use existing IT-managed users

Benefit

Central User management (UMC) is available for a growing supported product portfolio, allowing an efficient user management within the OT

Supported products include:

TIA Portal Engineering | WinCC Unified Runtime | WinCC Unified Panels WinCC V8.2 | WinCC Runtime Advanced | SIMATIC Comfort Panel WinCC SiQence | SIMATIC S7-1500 | SIMATIC S7-1200 G2 | SINUMERIK ONE | SINUMERIK 828D | SINEMA Remote Connect | SINEC NMS SINEC INS | selected SCALANCE devices (via SINEC INS)

SIMATIC PCS neo* | OpCenter Execution Foundation | OpCenter BPX*

(*) with separate configuration

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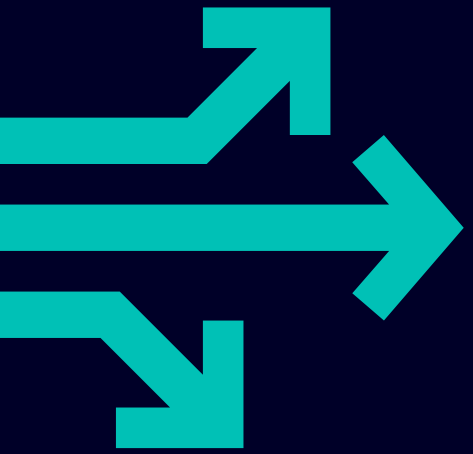
TIA Portal V21.1
TIA Portal Options

Content



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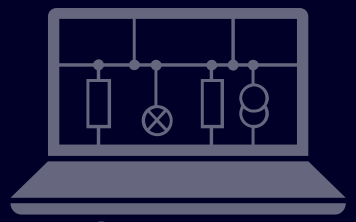
Modular Application Creator generating instead of programming

HW Config in TIA Portal



ECAD (AML) / TIA Project

EPLAN TIA V21 <AutomationML/>

Modular Application Creator



- Generating instead of programming TIA Portal projects
- Easy configuration with technological view and graphical guided assistance as well as automatic validation
- Management of projects and versioned/signed equipment modules

+

Equipment Modules



LAlarmHdl | Weihen-stephan | OMAC | Intel. Belt | TO Gen. | Robotics | MCS | Printing | Converting

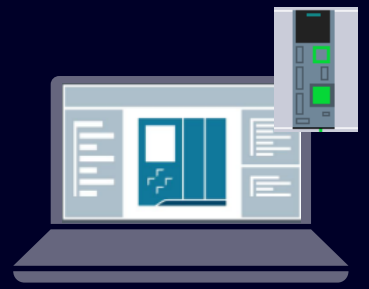
+

Module Builder



Visual Studio Extension to create your own **custom modules** (github repo)

Generation of the TIA Portal project incl. drives:



TIA Portal project

SIMIT HMI (Openness)



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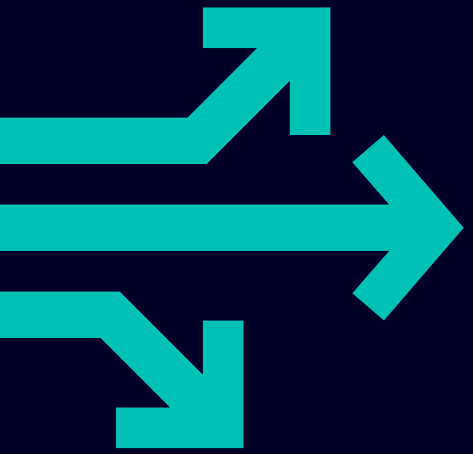
TIA Portal V21.1
TIA Portal Options

Content



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ProDiag & GRAPH: Additional, Multilingual Alarm Text Fields

The Challenge

- Up to **15,000 alarms per machine** — symbol and FB names only in English or German
- Operators worldwide need **localized alarm texts** — without duplicating engineering effort
- A single long comment could **crowd out** all other info (255-byte limit)

What's New in V21.1
6 new fields, added via drag & drop

Field	Description
PLC comment	Multilingual description of the PLC/station
ProDiag / GRAPH FB title	Multilingual title of the function block
Instance comment/title path	Multilingual comments/titles along the full instance hierarchy
Unit name	Instantly shows which machine unit/section raised the alarm
Unit comment	Multilingual description of the unit
Field length limit	Caps length so every field stays visible in the message

Customer Benefits

- **Faster fault diagnosis** — operators see unit, function & meaning in their own language
- **One engineering effort, many languages** — translated once via text lists
- **Predictable, readable alarms** — length limit keeps all fields visible
- **No extra license or firmware** — included with the existing ProDiag license

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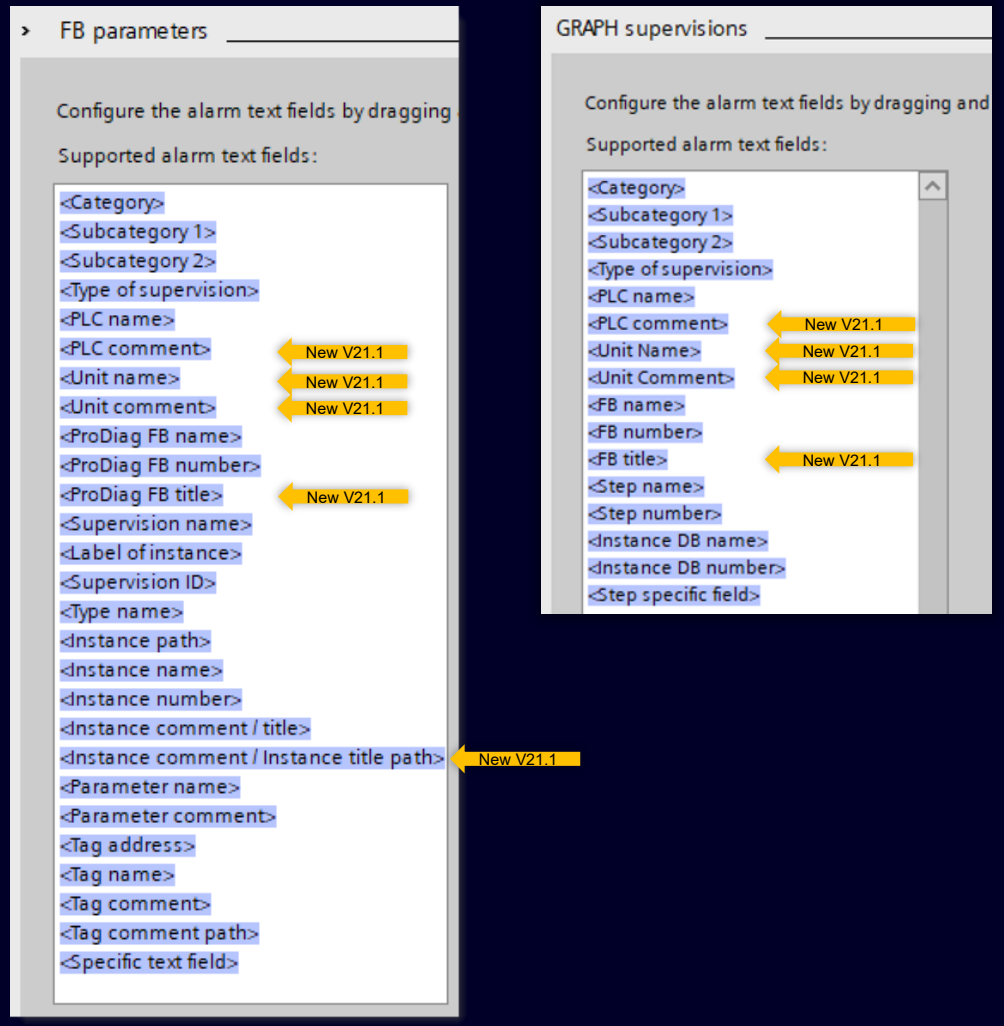
SIMATIC ProDiag: New Feature V21.1: Additional Alarm Text Fields



Extension of the ProDiag and Graph supervision alarm configuration with six new alarm text fields: PLC comment, ProDiag FB title, Graph FB title, Instance comment/title path, Unit name, and Unit comment. Each field is realized either through new system-generated text lists or by direct insertion into the alarm text.

- **PLC comment (ProDiag + Graph)**
  # Multilingual PLC description via text list
- **ProDiag FB title (ProDiag only)**
  # Multilingual FB title via text list
- **Graph FB title (Graph only)**
  # Multilingual FB title via text list
- **Instance comment/title path (ProDiag FB Parameters only)**
  # Multilingual comment path via text list
- **Unit name (ProDiag + Graph)**
  # Monolingual, directly in alarm text
- **Unit comment (ProDiag + Graph)**
  # Multilingual unit description via text list

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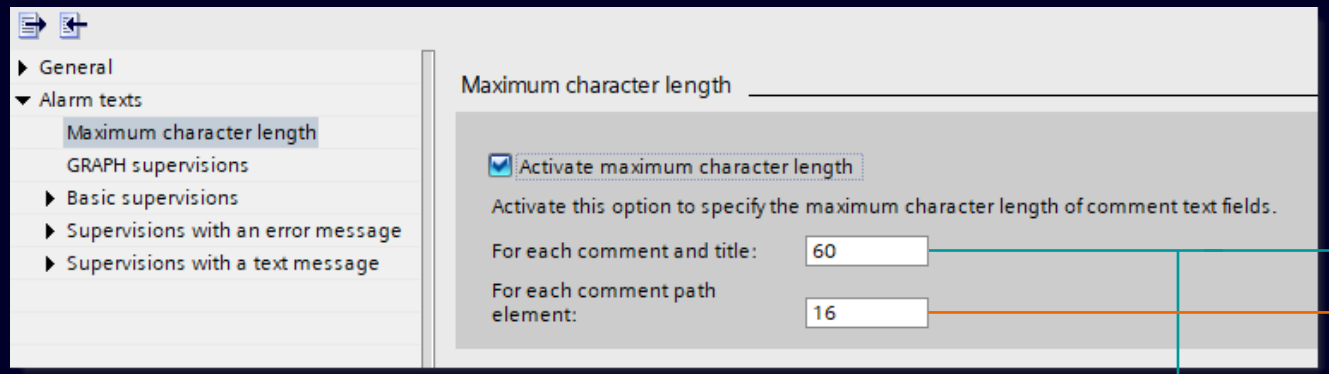
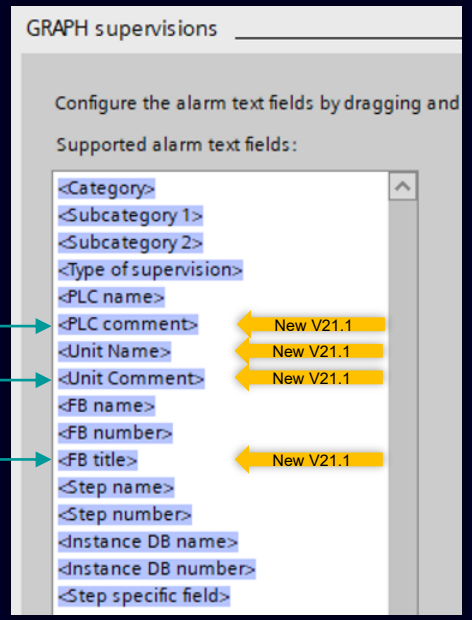
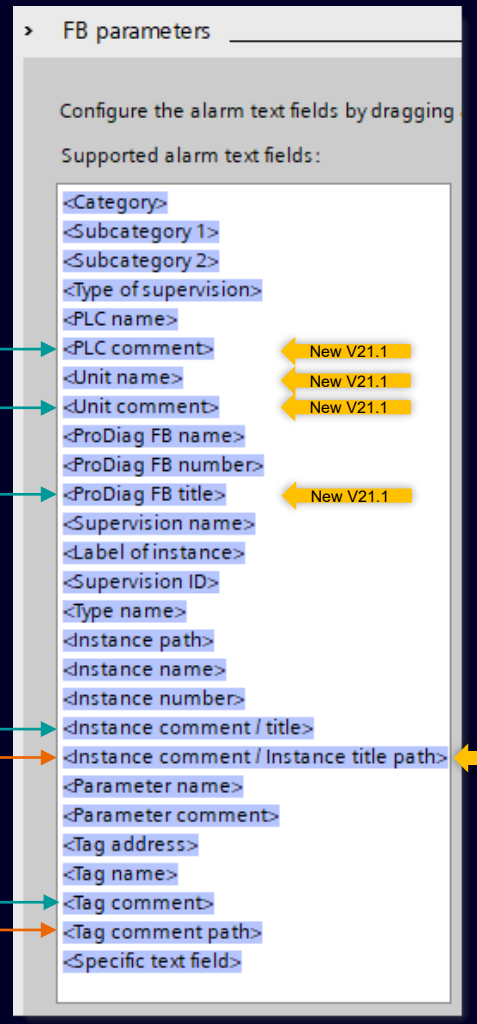
SIMATIC ProDiag: New Feature V21.1: New UI Setting: "Field Length Limit"



- **Checkbox** to enable/disable the manual length limit setting
- **Text box 1** — Maximum length per alarm text field (only for comments/titles)
- **Text box 2** — Maximum length per path element (for Tag comment path and Instance comment path)

Default state	Checkbox unchecked
Default field length	60 characters
Default path element length	16 characters
Valid range	1–255 (or empty = no limit)





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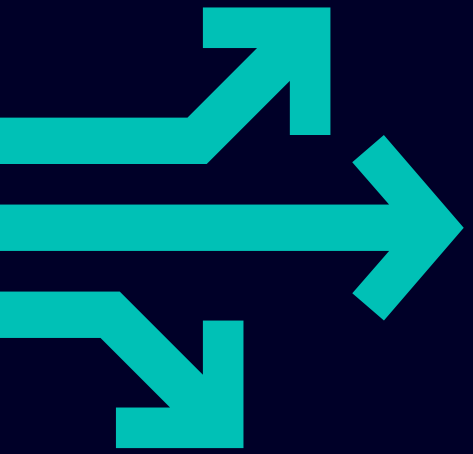
TIA Portal V21.1
TIA Portal Options

Content



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16	TIA Package Manager
17	TIA Portal Safety Validation Assistant

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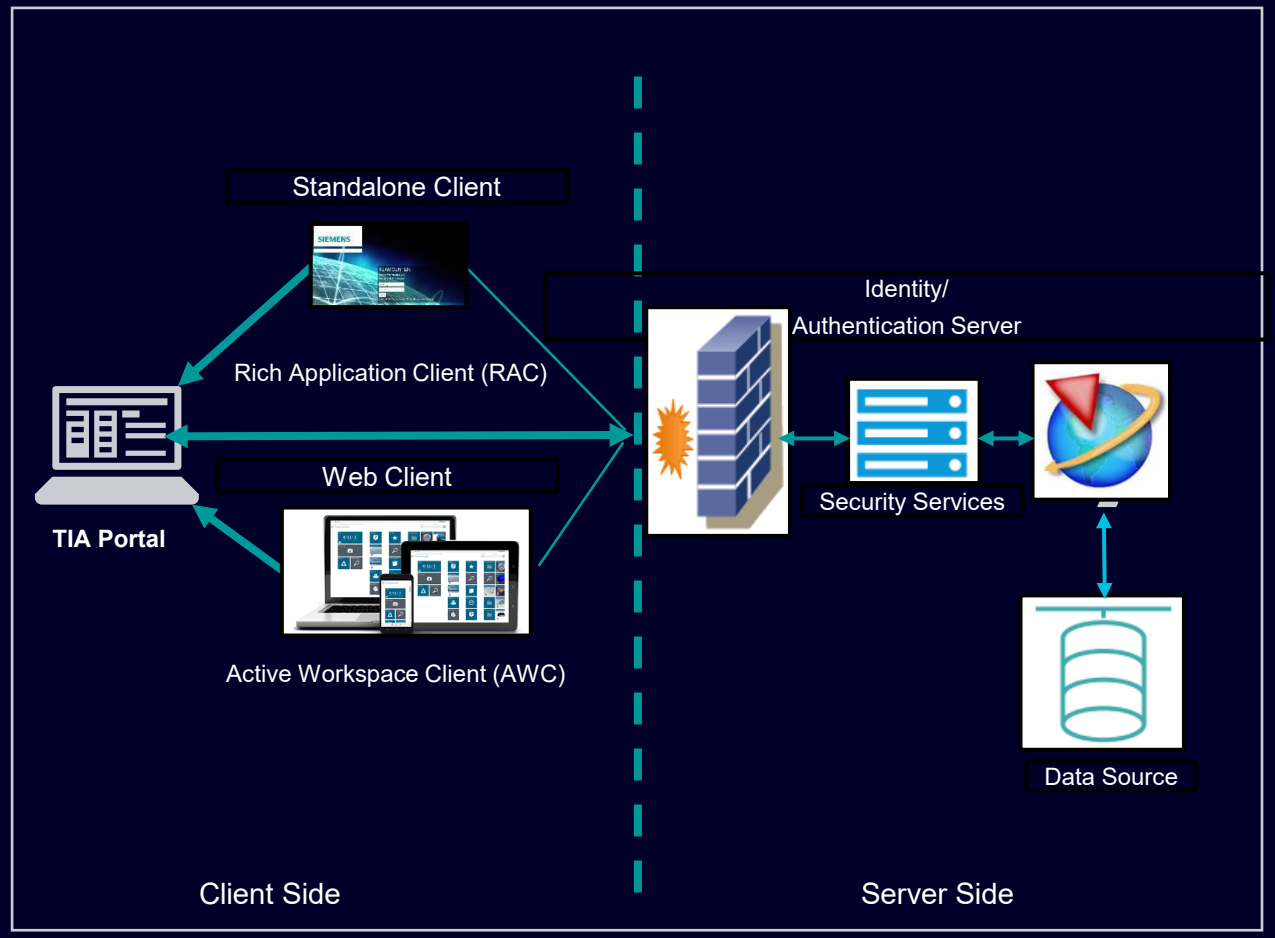
TIA Portal Teamcenter Gateway (TCG)
Integration of new Teamcenter versions



Integration of new Teamcenter versions

- Teamcenter Gateway now supports Teamcenter versions 2512 & 2606.

Note:

- Version-specific Teamcenter Server Setup resources for TIA Portal integration are now available on: https://support.industry.siemens.com/cs/pa/en/view/110005508

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.

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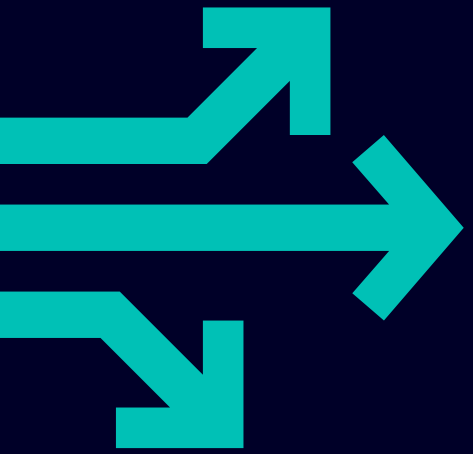
TIA Portal V21.1
TIA Portal Options

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 STEP 7 CFC
10	SIMATIC Visualization Architect (SiVArc)
11	SIMATIC Modular Automation (MTP)
12	Central User Management (UMC)
13	Modular Application Creator
14	SIMATIC ProDiag / SysDiag
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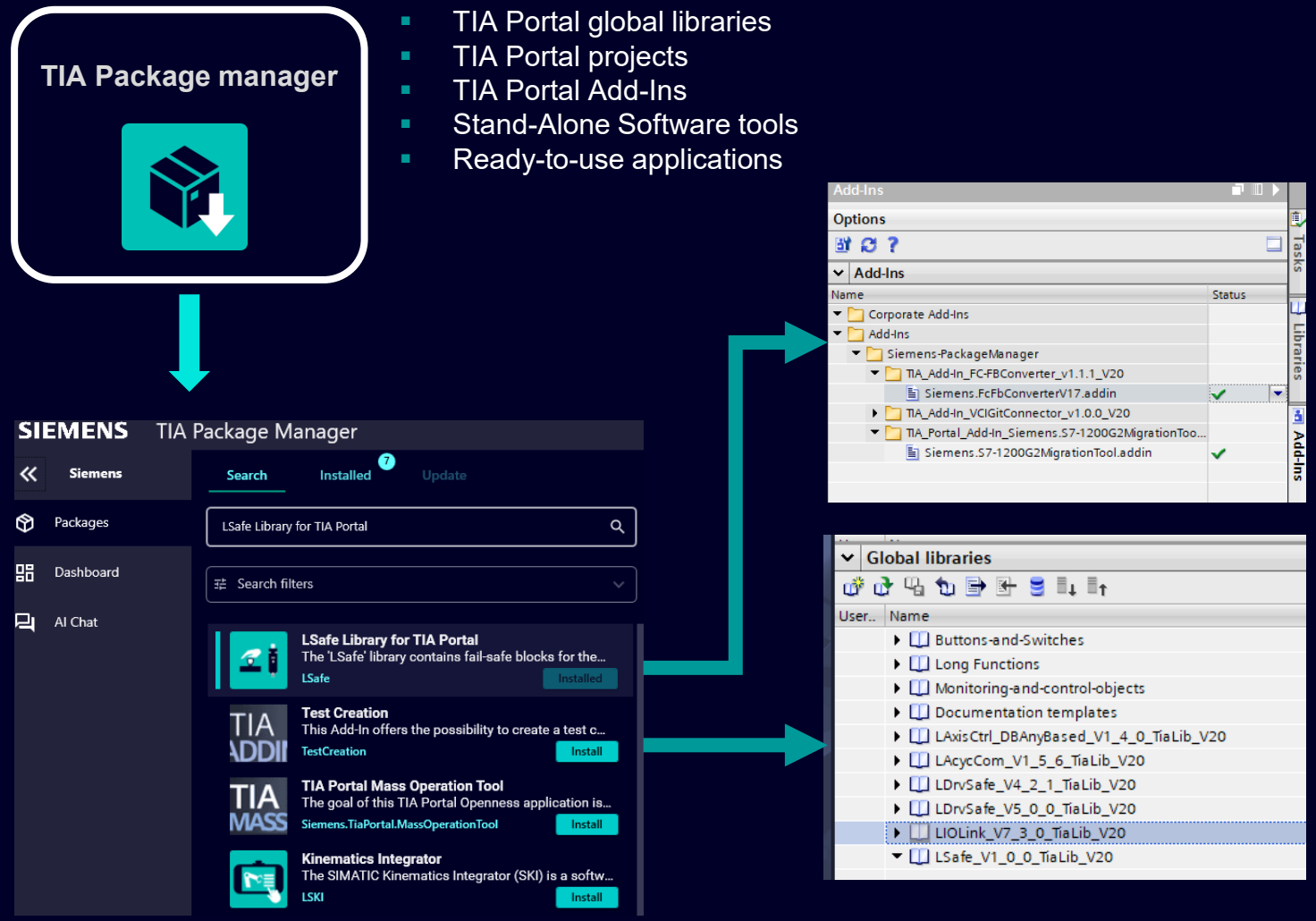
TIA Package Manager
Automatic management of software assets for TIA Portal







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

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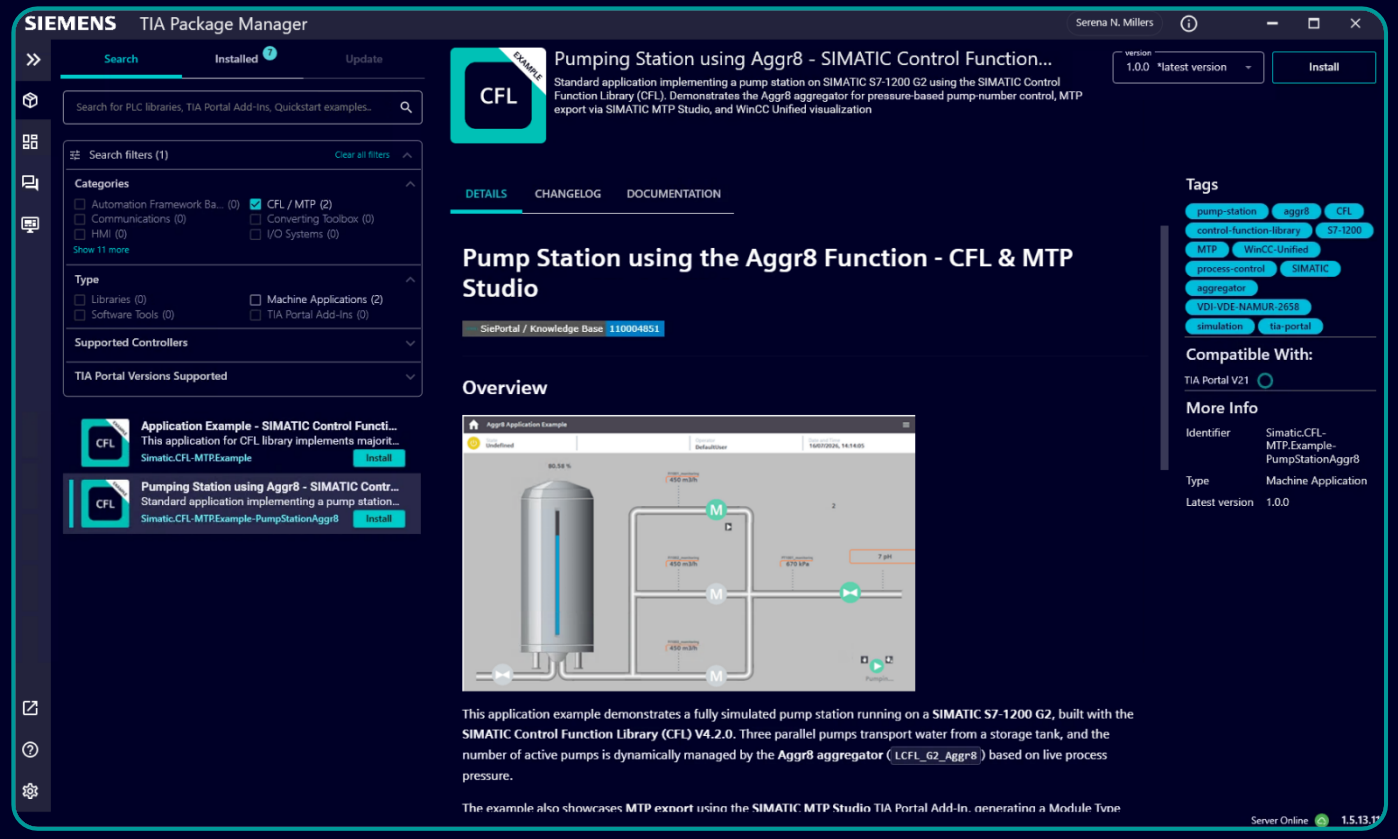
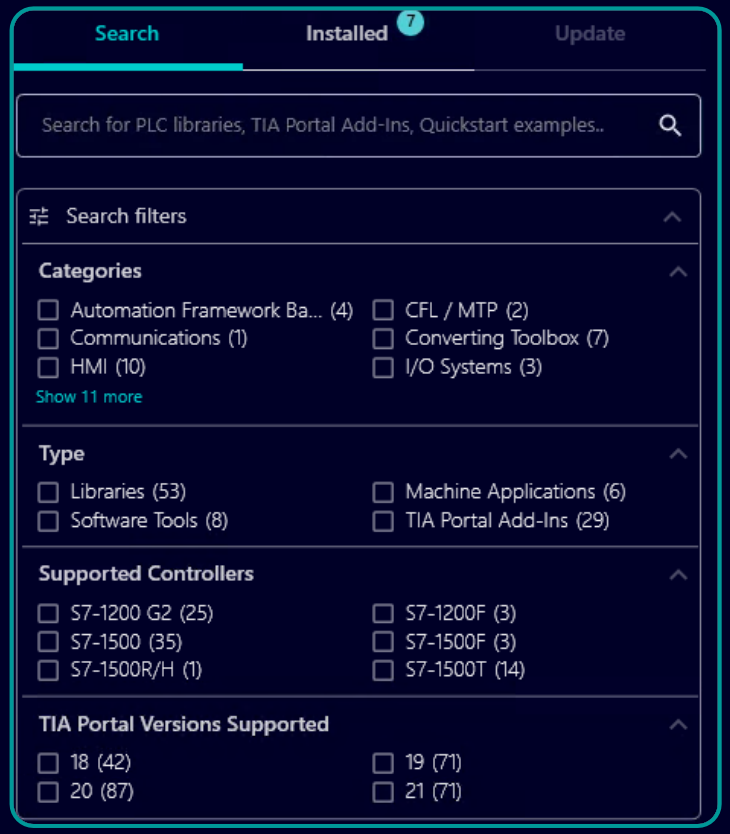
TIA Package Manager
Application overview

Interface which one-click install button



Advanced filtering



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TIA Package Manager – 100+ Apps

60+ **Ready-to-Use** Libraries for Machine automation



30 **Add-Ins** for TIA Portal

10 **Machine Apps.**

8 **Software Tools**



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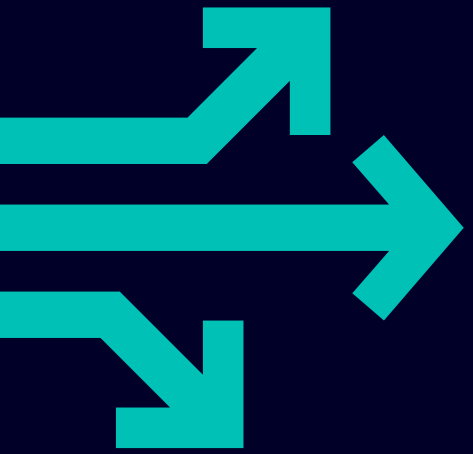
TIA Portal V21.1
TIA Portal Options

Content



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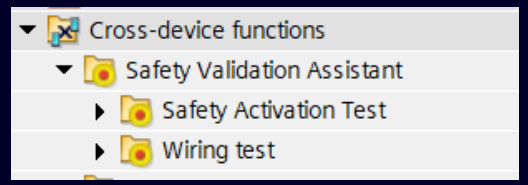
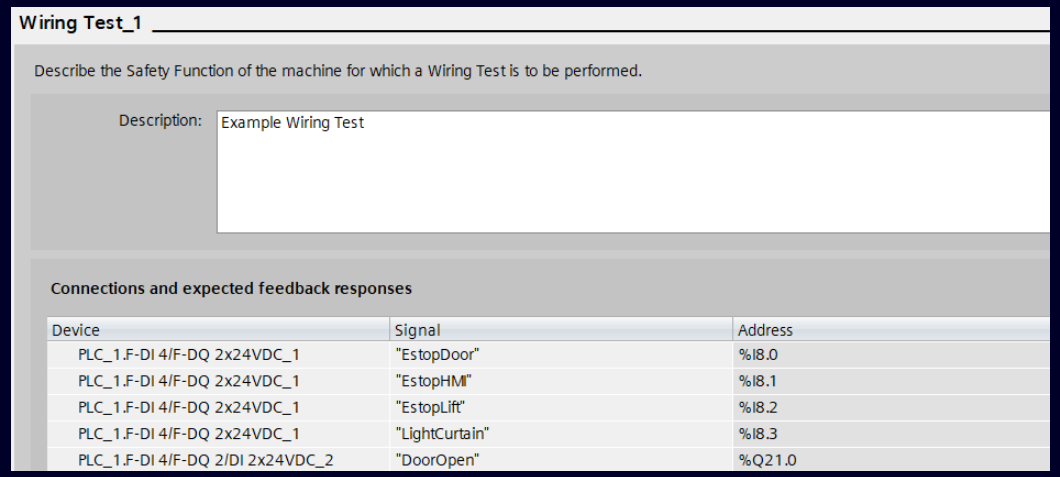
TIA Portal Safety Validation Assistant





Wiring Test

- Quick and easy testing of sensors and actors connected to a PLC
- For failsafe and standard signals
- Automatic documentation just like in Safety Activation Test for the machine documentation

Analog values in Safety Activation Test

- Support of analog values in Safety Activation Test
- Conditional evaluation with “<“, “>”, “=“
- Seamless integration into the existing concept with test setup, test execution and documentation

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Download and Trial

One-click download & install & update TIA Portal engineering products and options via the new TIA Installer
https://siemens.com/tia-installer

Try without installation effort via TIA Portal Cloud
Activate your 21 days TRIAL access for TIA Portal V21.1:
https://support.industry.siemens.com/cs/ww/en/view/109772248

Download TIA Portal V21.1 and try it for free for 21 days
https://support.industry.siemens.com/cs/ww/en/view/110004178

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