

TIA Portal V15.1 – Technical Slides

October 2018

TIA Portal – Highlights of TIA Portal V15.1

Hardware configuration

- S7-1500R/H redundant systems
- MRP domain management across project boundaries
- Change firmware version for IO devices



Startdrive – Innovations

- Integration of SINAMICS S210 and SIMOTICS 1FK2 motors
- Startdrive Advanced: Safety Acceptance test for S120 and S210 drives
- Openness extensions for G120, S120, S210
- Integration of Drive Control Charts (DCC)



STEP 7 – Innovations

- Software units: Splitting of user program into separately loadable units
- Textual interface for SCL blocks
- Improvements in online monitoring of blocks



System functions

- Trace: Simplified chart configuration
- TIA Portal Openness add-ins (ET 200SP read/write parameters, watch tables, extended functionality for block import)
- User-defined shortcut keys












WinCC – Innovations

- Support of OPC UA Server Alarm and Condition
- ProDiag Control functional add-ins



TIA Portal options

-  **STEP 7 Safety**
Flexible F Link, DP_DP_ID, Openness add-ins
-  **Multiuser**
commissioning mode
-  **OPC UA**
S7-1500 client, SiOME configuration tool
-  **ProDiag**
Usability add-ins, such as hierarchical comments
-  **PLCSIM Advanced**
Floating window, max. cycle time handling through the API
-  **Target 1500S for Simulink**
Model on Web server, transfer of SO files
-  **Teamcenter Gateway**
Multiuser engineering, reference projects
-  **SiVArc**
Access protection, SCL blocks, template screens, Openness add-ins
-  **Energy Suite**
Energy screens, reports, SINAMICS, usability improvements



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Hardware Configuration – SIMATIC High Availability S7-1500R/H – Product Strategy

SIEMENS
Ingenuity for life

✓ Based on standard S7-1500 CPUs

Basic hardware standard CPUs / fail-safe CPUs



✓ Transparent programming (like Standard)

Standard engineering tools with all programming languages

- No deep redundancy know-how required
- Simple porting of Standard → R/H



✓ Extensive scaling

- Scaling the switching time
- Scaling the redundancy architecture
- Scaling the performance from CPU 1513R to 1517H



✓ Focus on Profinet

Based on PROFINET system redundancy



The screenshot shows the Siemens TIA Portal software interface. The main window displays a hardware configuration project for 'Projekt V15.1 Inc18'. The 'Devices & networks' view shows a network topology with several devices connected via PROFINET. The devices include HMI_1 (TP900 Comfort), S7-1500R/H-System_1 (S7-1500R/H-System), IO-Device_1 (IM 155-6 PN/3 HF), and PNP Coupler (PN/IP Coupler). The 'Properties' window is open for 'PROFINET-Schnittstelle_2 [X2]', showing the 'General' tab with the following settings:

- IP protocol: IP address: 192.168.1.1, Subnet mask: 255.255.255.0, Use router:
- System IP address for switched communication: Enable the system IP address for switched communication, IP address: 192.168.1.3, Subnet mask: 255.255.255.0, Virtual MAC address: 00-00-5E-00-01-1



Hardware Configuration – SIMATIC High Availability S7-1500R/H – System Overview 1st Delivery Phase

Integrated concept –
Identical synchroni-
zation method

Scaling of the switching
performance using the
available bandwidth
of the sync connection

CPU type

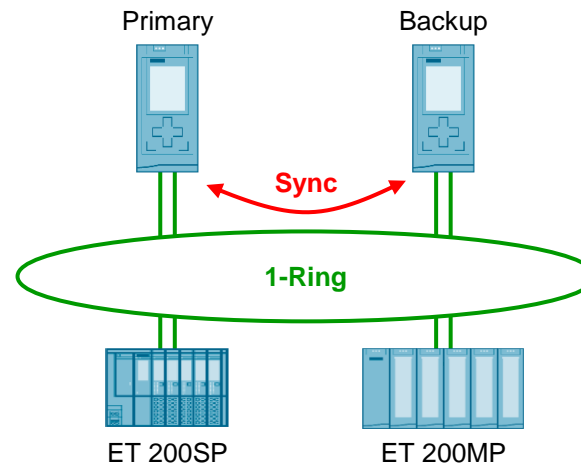
Synchronization

Switching time

I/O systems

Type of connection

Redundant – S7-1500R



CPU 1513R/CPU 1515R

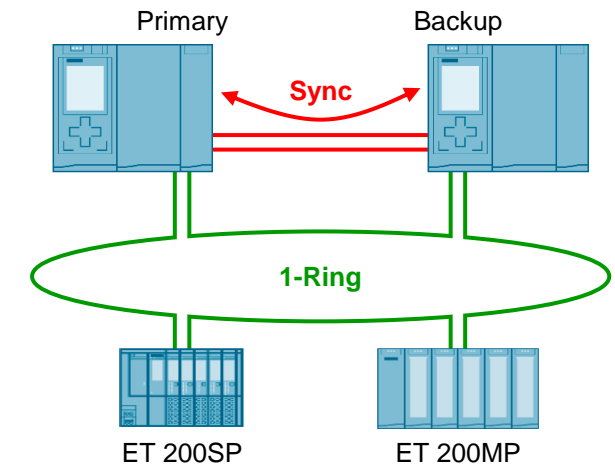
via **Profinet Ring (MRP)**

200 – 500 ms

ET 200SP and ET 200MP

Single connection (PN redundancy S2)

High availability – S7-1500H



CPU 1517H

via **Sync Modules**

<100 ms

ET 200SP and ET 200MP

Single connection (PN redundancy S2)

Hardware Configuration – SIMATIC High Availability S7-1500R/H Features

Feature/Function

Full S7-1500/TIA system integration

Engineering like Standard in TIA Portal V15.1

- One project
 - One program
 - Easy handling
-

Programming and handling like Standard

- Redundancy functions are FW system functions
 - No special redundancy programming rules
-

Scaling in terms of switching time, redundancy architecture and CPU performance

Consistent redundancy concept for 1500R and 1500H

New communication type (system IP address) for easy communication with non-redundant devices



Benefits

S7-1500 features (security, diagnostics, test, etc.) can be used

- No special redundancy know-how required
 - Simple porting of Standard ↔ R/H
-

System can be precisely adapted to customer requirements

Standard devices can communicate with R/H systems without add-ons or adaptations



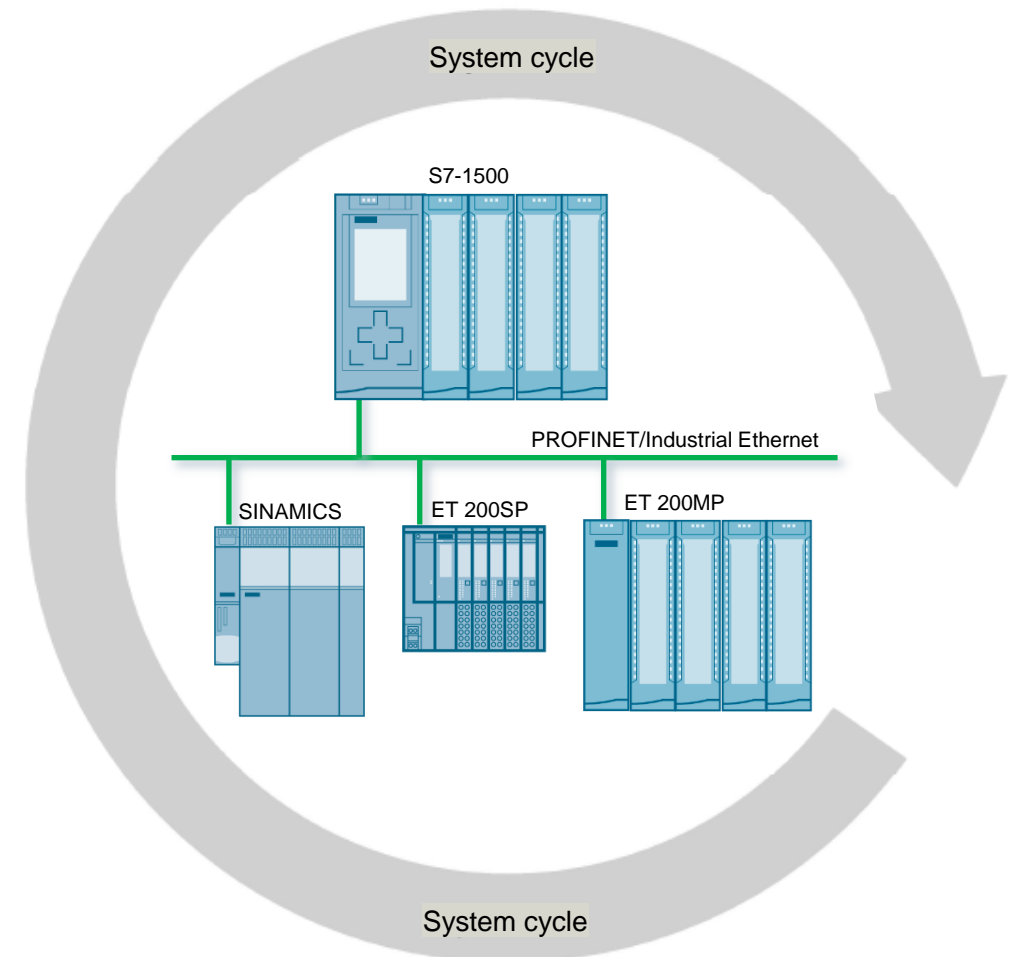
Hardware Configuration – Isochronous Mode with the central backplane

Application Examples

- Dynamic closed-loop control, with the need of a constant dead time
- Measuring Input
- Cam control
- Dosing application
- High speed analogue inputs with oversampling, e.g.:
 - To recognize extremely short peaks for an analogue signal (peaks shorter than PLC cycle)
 - To record analogue signals which need very high sample rates

Benefit of isochronous mode with central backplane

Cost saving, compact implementation of demanding technology tasks in central rack configuration



Hardware Configuration – Isochronous Mode with the central backplane

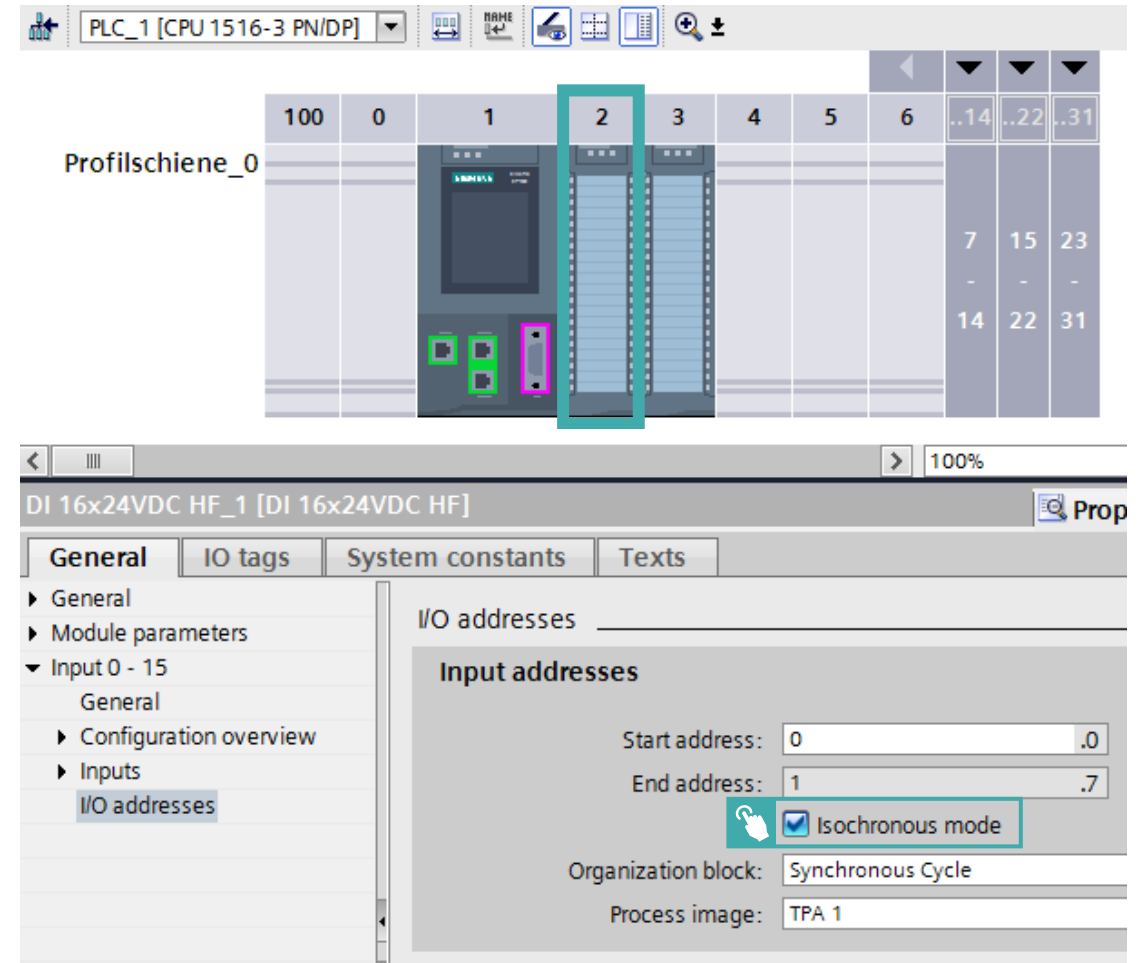
Function

- Operating of isochronous modules directly at the central backplane of the S7-1500 CPU
- Combination of isochronous modules and non-isochronous modules is possible
- Synchronization of central plugged modules with modules which are connected via PROFINET is possible
- All modules which support isochronous mode decentral can be used central, too. (no firmware update needed)

Pre-Conditions

- TIA Portal V15.1, S7-1500 CPUs starting with FW 2.6, not supported CPU types:
 - S7-1500C CPUs (planned) / SIMATIC S7-1500R/H CPUs
 - ET 200SP CPUs (planned), OpenController (planned)
- Minimum isochronous mode for central use: 1 ms
- The use of Ethernet/PROFINET/PROFIBUS modules is only possible **without** periphery

For updated projects to TIA Portal V15.1 it is necessary to update the module description for using this feature



Hardware Configuration – Isochronous Mode with the central backplane

Supported CPU types for isochronous mode central

CPU type	Article number
CPU 1511-1 PN	6ES7511-1AK01-0AB0 6ES7511-1AK02-0AB0
CPU 1511F-1 PN	6ES7511-1FK01-0AB0 6ES7511-1FK02-0AB0
CPU 1511T-1 PN	6ES7511-1TK01-0AB0
CPU 1511TF-1 PN	6ES7511-1UK01-0AB0
CPU 1513-1 PN	6ES7513-1AL01-0AB0 6ES7513-1AL02-0AB0
CPU 1513F-1 PN	6ES7513-1FL01-0AB0 6ES7513-1FL02-0AB0
CPU 1515-2 PN	6ES7515-2AM01-0AB0
CPU 1515F-2 PN	6ES7515-2TM01-0AB0
CPU 1515T-2 PN	6ES7515-2UM01-0AB0
CPU 1516-3 PN/DP	6ES7516-3AN01-0AB0
CPU 1516F-3 PN/DP	6ES7516-3FN01-0AB0

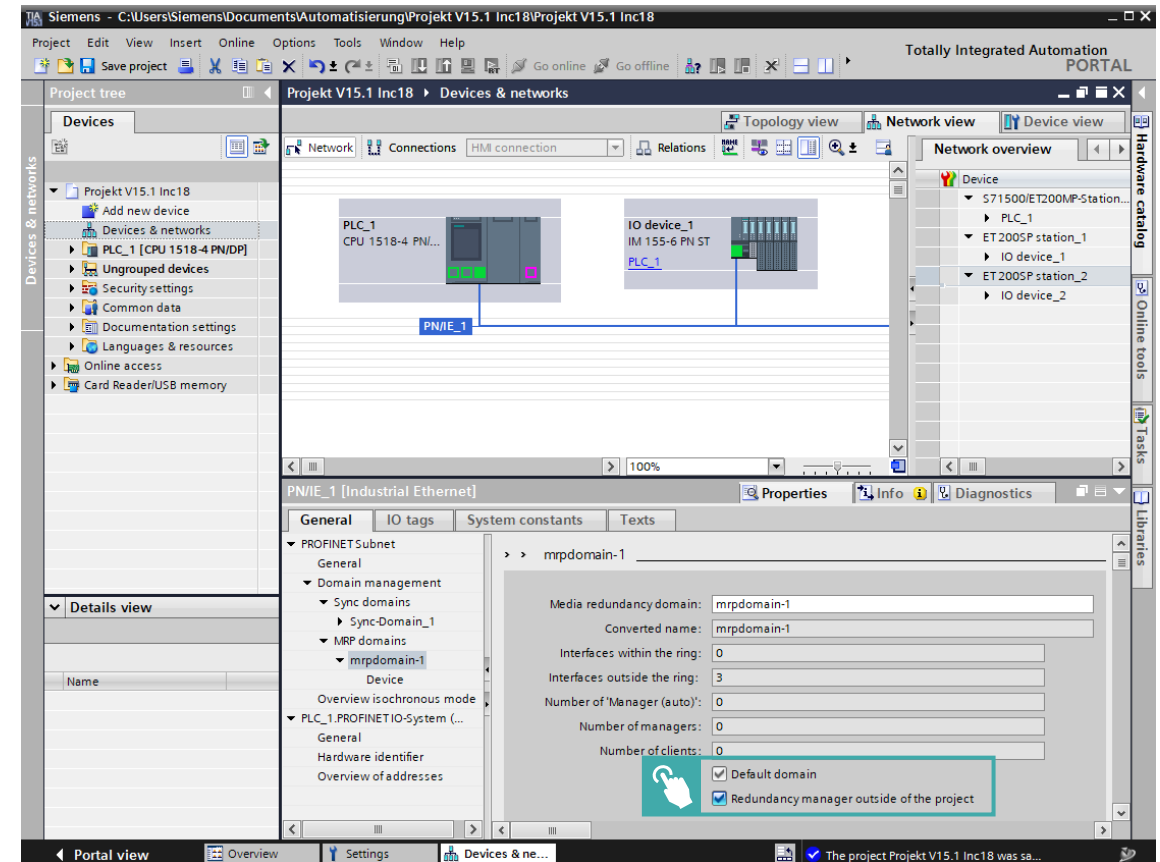
CPU type	Article number
CPU 1516T-3 PN/DP	6ES7516-3TN00-0AB0
CPU 1516TF-3 PN/DP	6ES7516-3TN00-0AB0
CPU 1517-3 PN/DP	6ES7517-3AP00-0AB0
CPU 1517F-3 PN/DP	6ES7517-3AP00-0AB0
CPU 1517T-3 PN/DP	6ES7517-3TP00-0AB0
CPU 1517TF-3 PN/DP	6ES7517-3UP00-0AB0
CPU 1518-4 PN/DP	6ES7518-4AP00-0AB0
CPU 1518F-4 PN/DP	6ES7518-4FP00-0AB0
CPU 1518-4 PN/DP ODK	6ES7518-4AP00-3AB0
CPU 1518F-4 PN/DP ODK	6ES7518-4FP00-3AB0
CPU 1518-4 PN/DP MFP	6ES7518-4AX00-1AB0
CPU 1518F-4 PN/DP MFP	6ES7518-4AX00-1AB0

Hardware Configuration – MRP domain management across project boundaries



MRP Domain Management across project boundaries

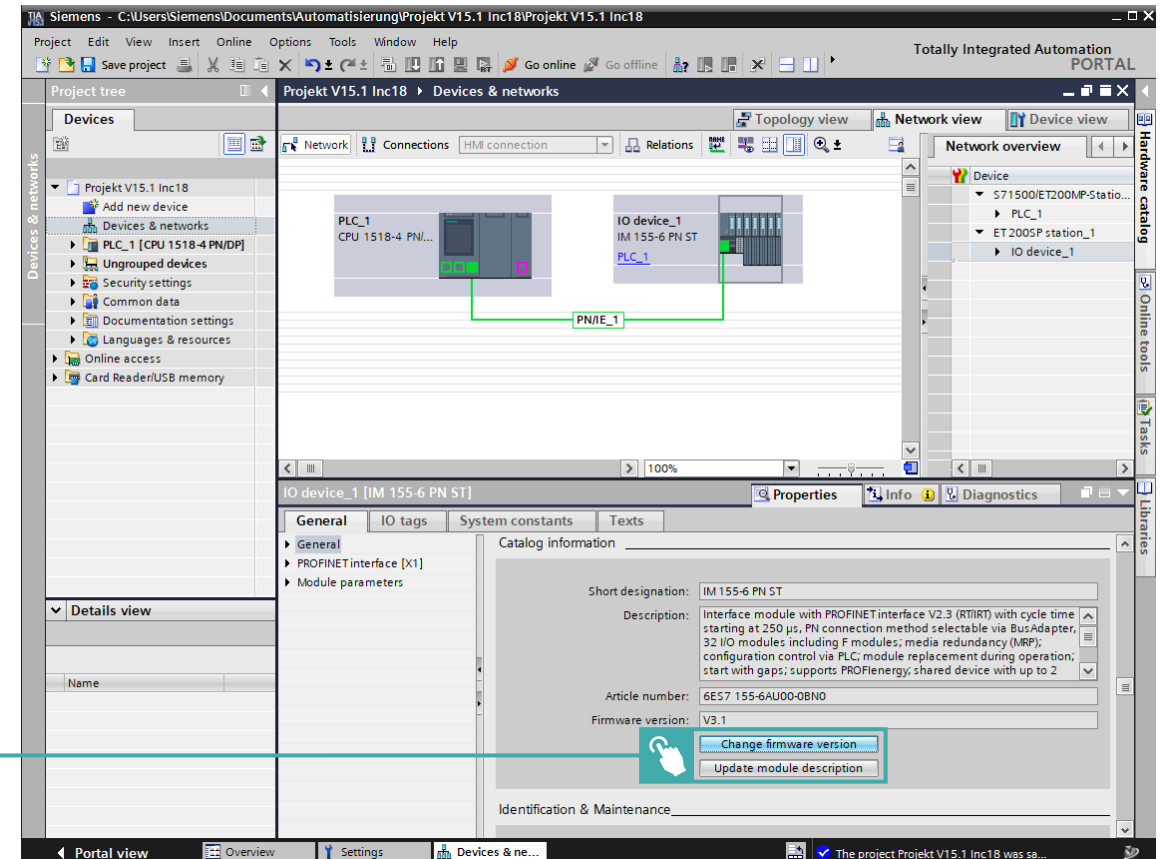
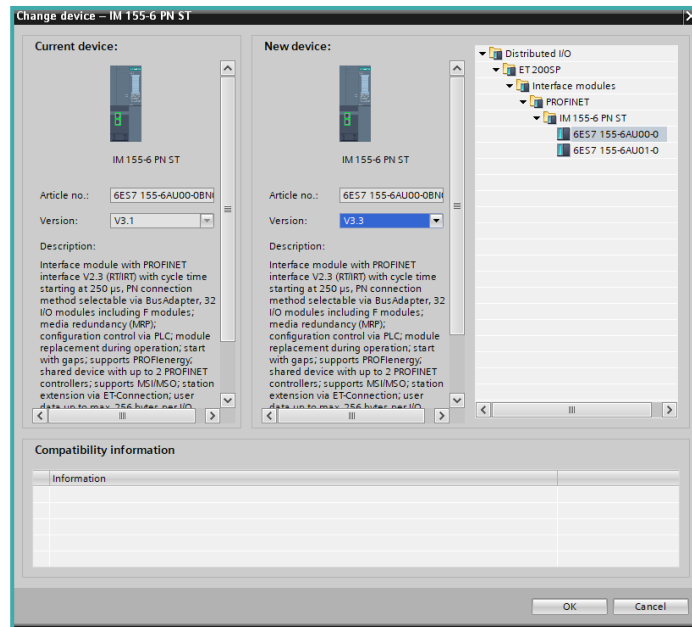
Redundancy managers and redundancy clients of an MRP domain can be configured in different projects



Hardware Configuration – »Change firmware version« for IO devices

»Change firmware version« for IO devices

Quick change of the configured firmware version in the device view using preselection



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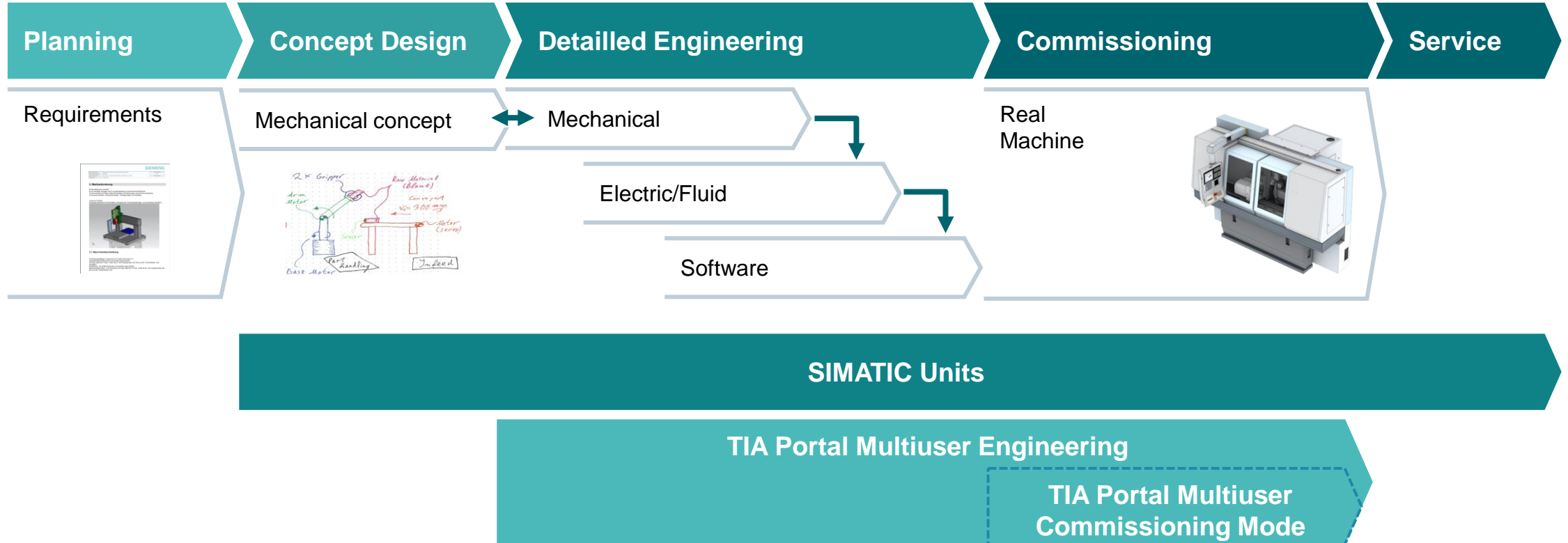


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Working in a team (Multiuser) SIMATIC Units



STEP 7 Innovations – Software units for programming structuring

Function

S7-1500 ✓

S7-1200 ✗

S7-300/400/WinAC ✗

- Free splitting of the program into software units
- Separate loading of the software units into the PLC
- Defined interfaces between the software units
- Purely optimized programming and data storage

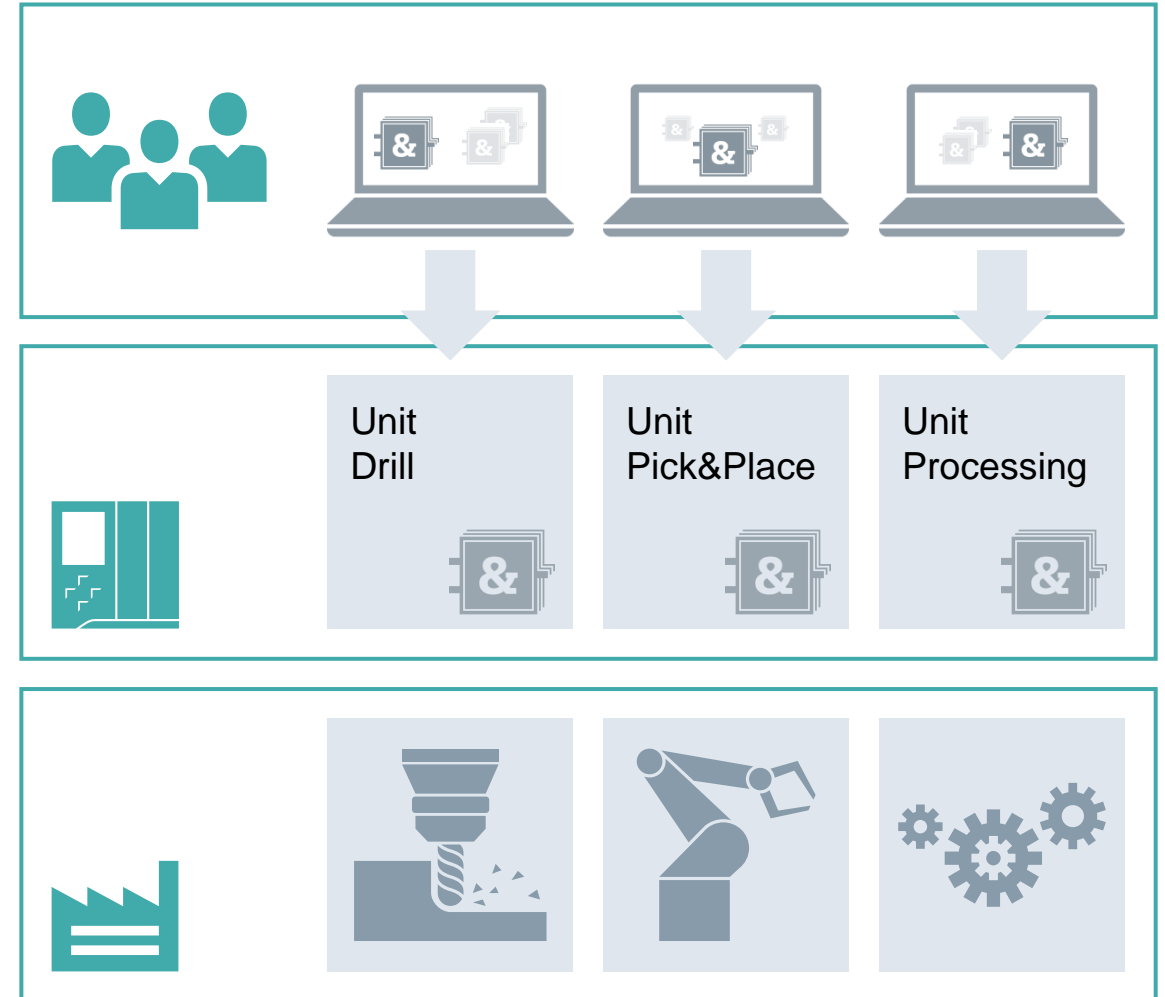
Benefits

Offline

- Program structuring (including OBs, FBs, FCs, DBs, UDTs and tags)
- Storage and exchange of software units via libraries

Online

- Every user can load his software units into the PLC independently of other users/units
- Minimization of download times for team engineering



STEP 7 Innovations – Properties of software units

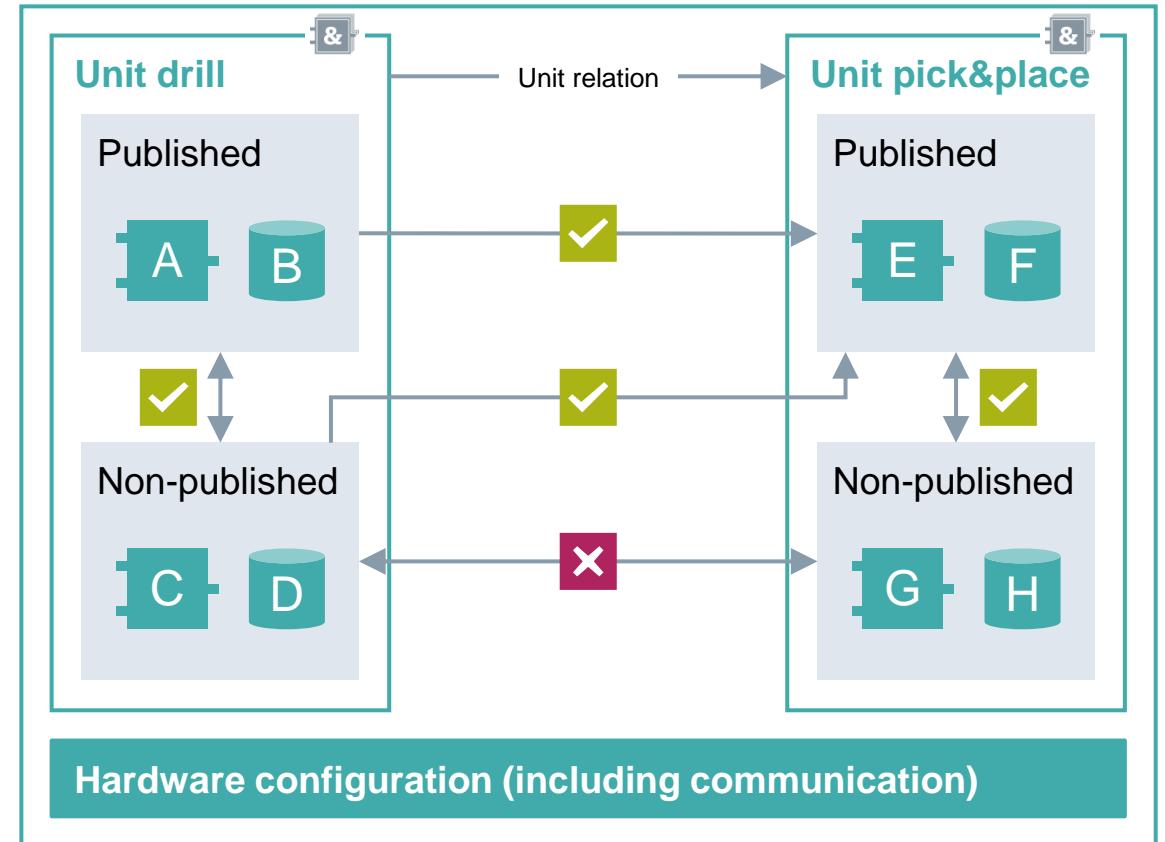
Components of software units

- Program blocks
- Data blocks
- Data types
- Tag tables
- Supervisions (ProDiag)
- Text lists

Published

PLC global configuration

- Hardware configuration
- OPC UA interfaces
- Failsafe program
- Watch tables, trace, etc.

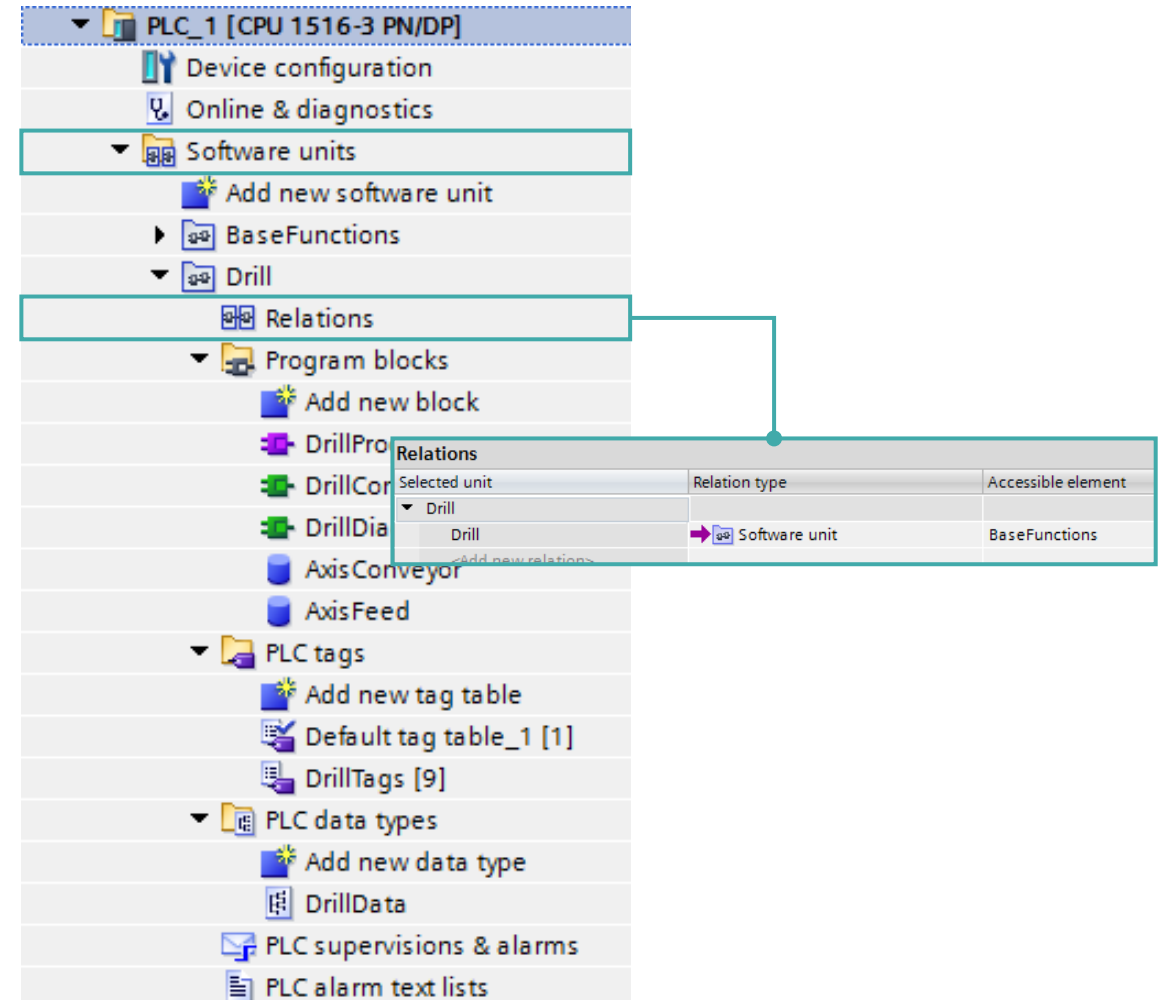
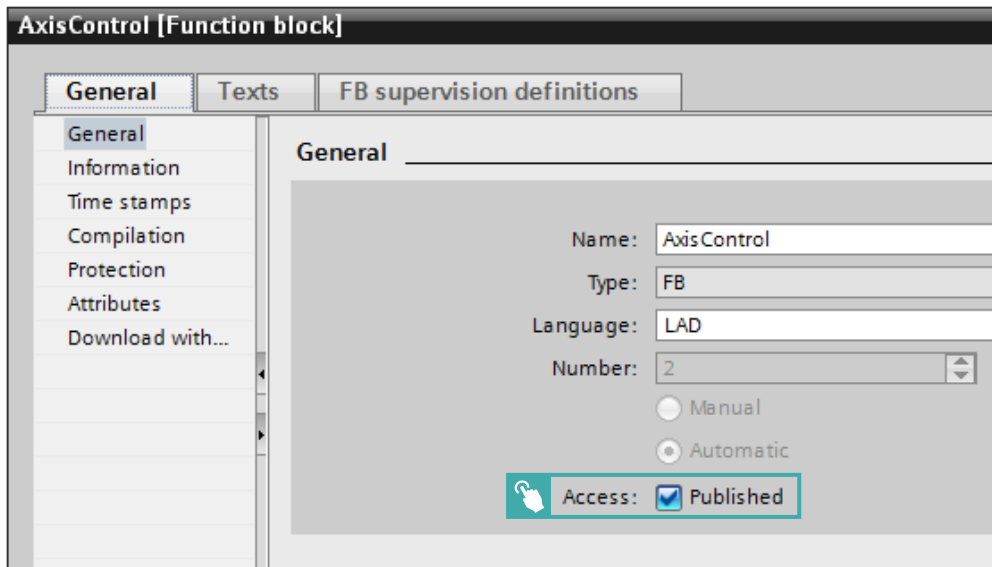


User-defined unit relationships for clear structuring and modularization of the program

STEP 7 Innovations – Software units structure

Function

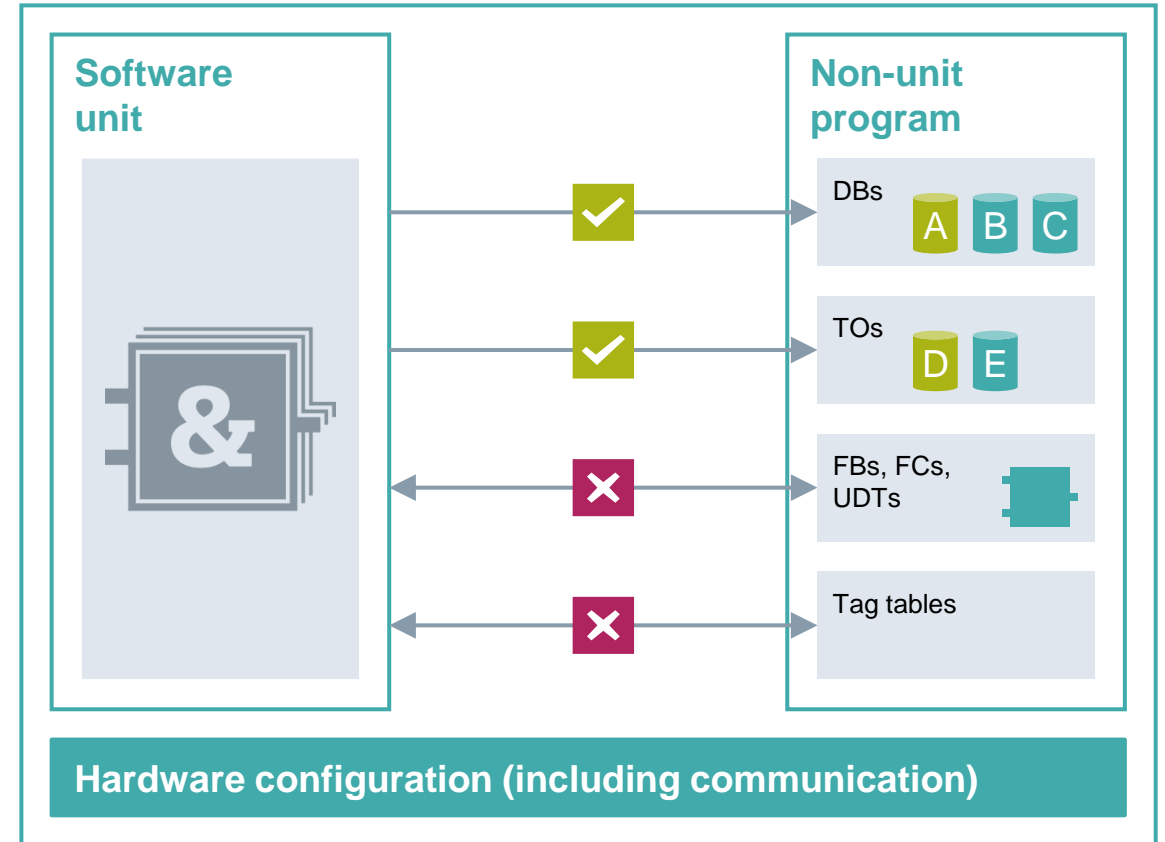
- New system folder for software units (in addition to the previous program, for S7-1500 from FW V2.6)
- Definition of relations for the block call between units
- Setting the »Published« access attribute in the object properties or as a bulk operation in the block overview (detail view)



STEP 7 Innovations – Software units – Interaction with non-unit program

Function

- Access to optimized DBs of the non-unit program defined via relations. No user data types can be used in these DBs.
- Access to TOs of the non-unit program defined by relations
- No block calls between software units and the non-unit program
- No access to PLC tags of the non-unit program



STEP 7 Innovations – Textual interface for SCL blocks

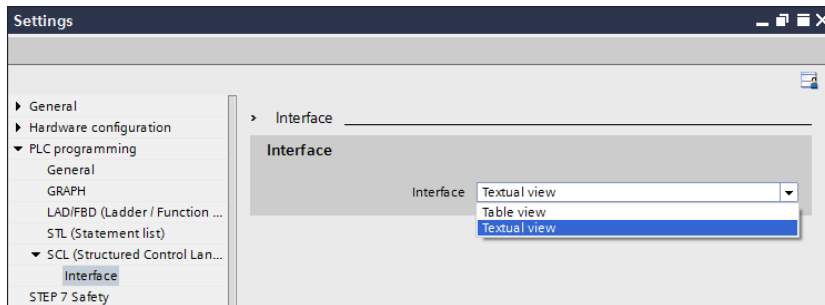
Function

S7-1500 ✓

S7-1200 ✓

S7-300/400/WinAC ✓

Selection between tabular and textual interface
when creating new SCL blocks



Benefits

- Familiar programming environment from STEP 7 V5.x
- Additional comment sections and line comments can be added to the interface
- Easy exchange with other text editors

```
Systemdiagnose_Signalgenerator_TypeOFDB_V15.1 > PLC_2 [CPU 1517-3 PN/DP] > Program blocks > SignalGenerator [FB71]

1 //-----
2 // Siemens AG
3 // (c)Copyright (year) All Rights Reserved
4 //-----
5 // Engineering: TIA Portal V15.1
6 // Requirements: S7-1200 / S7-1500
7 // Functionality: sawtooth, triangle and sinus signal generator
8 //-----
9
10 FUNCTION_BLOCK "SignalGenerator"
11
12 VAR_INPUT
13 // Inputparameter
14 reset : Bool; // Resets the output value
15 amplitude : Real; // Amplitude of the signal
16 offset : Real; // Offset added to signal
17 periodicTime : DInt; // Time from one period of the output signal, set in ms
18 obYycle : Int; // Time of the cycle interrupt of the OB, set in ms
19 END_VAR
20
21 VAR_OUTPUT ... END_VAR
22
23 VAR
24 (* Local Variables - NON-Retain:
25 After a cpu power cycle, signal generator starts with default values again
26 *)
27 statLoopMax : DInt; // number of steps for the signal in one period -> Sinus
28 statLoopHalf : DInt; // half OF the number for the signal in one period -> Rectangle, Sawtooth
29 //Loop Counters
30 statloop : DInt; // loop counter
31 statCountSaw : DInt; // step counter used for the sawtooth signal
32 statCountTri : DInt; // step counter used for the triangle signal
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```



STEP 7 – Innovations – Collection of useful functional extensions

SCL – alignment of actual parameters

For a better readability of programs in SCL blocks, you can left-align the actual parameters for block calls.

View

Keyword highlighting:

Left-align actual parameters

Global setting for the SCL editor

```

15 "InstSignalGenerator1" (reset:="GlobalSignals".reset,
16     amplitude:="GlobalSignals".amplitude,
17     offset:="GlobalSignals".offset,
18     periodicTime:="GlobalSignals".periodicTime,
19     obCycle:="GlobalSignals".obCycle,
20     valRectangle=>"GlobalSignals".rectangle,
21     valSawtooth=>"GlobalSignals".sawtooth,

```

```

15 "InstSignalGenerator1" (reset      := "GlobalSignals".reset,
16     amplitude      := "GlobalSignals".amplitude,
17     offset         := "GlobalSignals".offset,
18     periodicTime  := "GlobalSignals".periodicTime,
19     obCycle       := "GlobalSignals".obCycle,
20     valRectangle => "GlobalSignals".rectangle,
21     valSawtooth  => "GlobalSignals".sawtooth,

```

Retention of the array structure

The array structure is retained when a constant used for the array boundary is deleted.

→ Start values and comments of individual array elements are not lost.

Name	Data type	Start value	Comment
Static			
No	Array[1.."MAX_AXES"] of *typeTOAxisControl*		
No[1]	*typeTOAxisControl*		
mcPower	*typeMcPower*		
mcHome	*typeMcHome*		
mcMoveVelocity	*typeMcMoveVelocity*		
execute	Bool	false	Axis 1: Execute
velocity	LReal	500.0	Axis 1: Position
acceleration	LReal	100.0	Axis 1: Velocity
deceleration	LReal	-100.0	Axis 1: Acceleration
direction	Int	0	Axis 1: Dircetion
mcMoveAbsolute	*typeMcMoveAbsolute*		
No[2]	*typeTOAxisControl*		
No[3]	*typeTOAxisControl*		

Despite missing constant MAX_AXES, all array elements are retained



STEP 7 – Innovations – Collection of useful functional extensions

DB snapshot

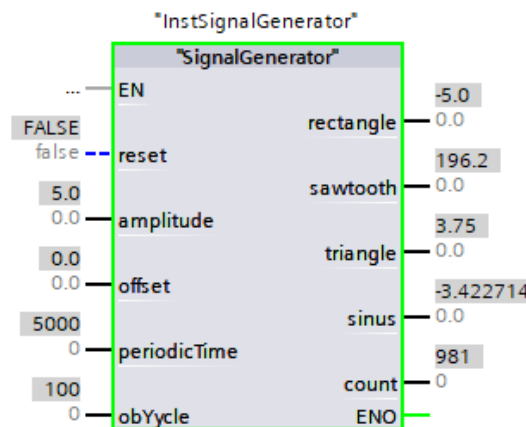
Stored snapshots are not lost even after a structural change of the DB

InstSignalGenerator (snapshot created: 6/20/2018 5:04:54 PM)			
	Name	Data type	Snapshot
1	▼ Input		
2	reset	Bool	FALSE
3	amplitude	Real	5.0
4	offset	Real	0.0
5	periodicTime	DInt	5000
6	obYycle	Int	100
7	▼ Output		
8	rectangle	Real	-5.0
9	sawtooth	Real	41.4
10	triangle	Real	—
11	sinus	Real	3.852562
12	count	DInt	207

Snapshots still available after adding another output

Monitoring unconnected outputs

When monitoring blocks online, the actual values for unconnected outputs are now also displayed.



Changing setting values for tags of the UDT data type

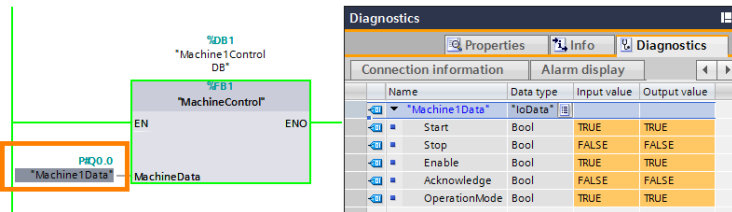
The settings pre-defined in a user-defined data type can be selected or deselected for the instance used.

	Name	Data type	Start value	Setpoint
	▼ Static			
	▼ motor1	"typeMcMoveVelocity"		<input checked="" type="checkbox"/>
	execute	Bool	false	<input type="checkbox"/>
	velocity	LReal	0.0	<input type="checkbox"/>
	acceleration	LReal	200.0	<input checked="" type="checkbox"/>
	deceleration	LReal	-200.0	<input checked="" type="checkbox"/>
	jerk	LReal	50.0	<input checked="" type="checkbox"/>
	direction	Int	0	<input type="checkbox"/>
	busy	Bool	false	<input type="checkbox"/>
	▼ motor2	"typeMcMoveVelocity"		<input type="checkbox"/>
	execute	Bool	false	<input type="checkbox"/>
	velocity	LReal	0.0	<input type="checkbox"/>
	acceleration	LReal	200.0	<input type="checkbox"/>
	deceleration	LReal	-200.0	<input type="checkbox"/>
	jerk	LReal	50.0	<input type="checkbox"/>
	direction	Int	0	<input type="checkbox"/>
	busy	Bool	false	<input type="checkbox"/>

STEP 7 – Innovations – Collection of useful functional extensions

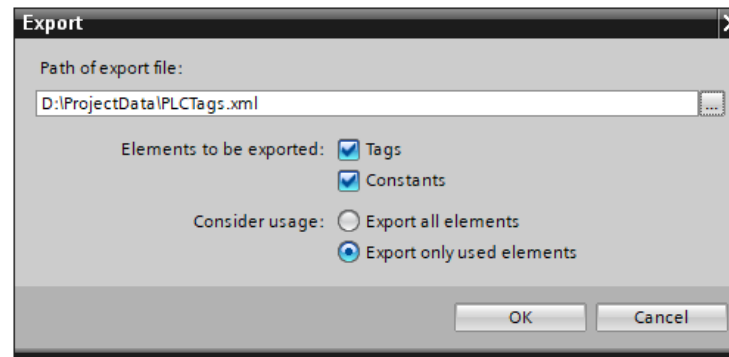
Monitoring UDT in the I/O area

Direct monitoring of UDT on the I/O area in program blocks is supported.



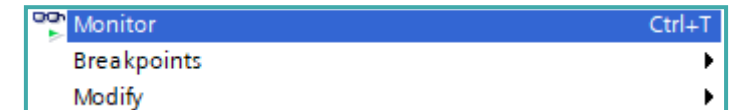
Only export used elements from tag tables in XML format

For tags used exclusively in the program, the export function in the tag table also supports the XML format.



Quick start of observation with Ctrl + T

Available in all editors (tag table, watch table, DB editor, etc.)



STEP 7 – Innovations – Collection of useful functional extensions

Enhancement of the cross-reference display for interface parameters of function blocks

For interface parameters of a function block, the cross-reference list displays both the block-internal accesses and the accesses from outside via the corresponding individual instance data blocks.

Benefits

- All internal and external access to block parameters at a glance

The screenshot displays the 'DriveCtrl' parameter table and its cross-reference information. The 'error' parameter is highlighted in the parameter table. The cross-reference information below shows two categories of references:

Object	Reference location	Reference type	As	Access
Alarming	@Alarming ▶ Program code	Used by	"InstDrive1Ctrl".error	Read only
	@Alarming ▶ Program code	Used by	"InstDrive2Ctrl".error	Read only
DriveCtrl	@DriveCtrl ▶ Program code	Used by		Write

External parameter access via instance data blocks

Internal parameter access in program code

TIA Portal – Highlights of TIA Portal V15.1

Hardware configuration

- S7-1500R/H redundant systems
- MRP domain management across project boundaries
- Change firmware version for IO devices



Startdrive – Innovations

- Integration of SINAMICS S210 and SIMOTICS 1FK2 motors
- Startdrive Advanced: Safety Acceptance test for S120 and S210 drives
- Openness extensions for G120, S120, S210
- Integration of Drive Control Charts (DCC)



TIA Portal options

- STEP 7 Safety**
Flexible F Link, DP_DP_ID, Openness add-ins
- Multiuser**
commissioning mode
- OPC UA**
S7-1500 client, SiOME configuration tool
- ProDiag**
Usability add-ins, such as hierarchical comments
- PLCSIM Advanced**
Floating window, max. cycle time handling through the API
- Target 1500S for Simulink**
Model on Web server, transfer of SO files
- Teamcenter Gateway**
Multiuser engineering, reference projects
- SiVArc**
Access protection, SCL blocks, template screens, Openness add-ins
- Energy Suite**
Energy screens, reports, SINAMICS, usability improvements



STEP 7 – Innovations

- Software units: Splitting of user program into separately loadable units
- Textual interface for SCL blocks
- Improvements in online monitoring of blocks



System functions

- Trace: Simplified chart configuration
- TIA Portal Openness add-ins (ET 200SP read/write parameters, watch tables, extended functionality for block import)
- User-defined shortcut keys



WinCC – Innovations

- Support of OPC UA Server Alarm and Condition
- ProDiag Control functional add-ins



WinCC V15.1 - SIMATIC HMI Panels

Activate/Deactivate „Persistent Message Buffer“

New setting: Persistent Message Buffer in Control Panel and TIA Portal

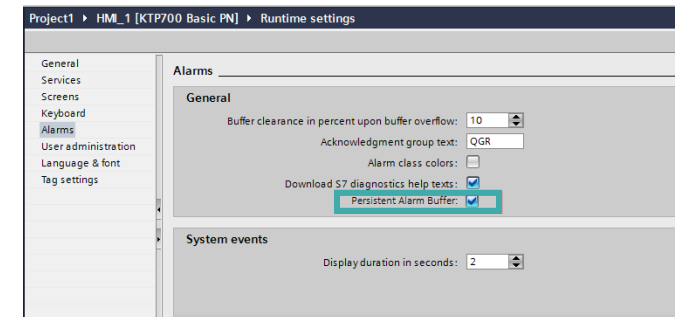
Persistent Message Buffer – Enable

Retentive message buffer is activated, the messages occurring in the project are saved in the internal flash memory. The internal flash memory is more stressed by high number of alarms. When the panel is restarted, the message buffer is still filled with alarms.

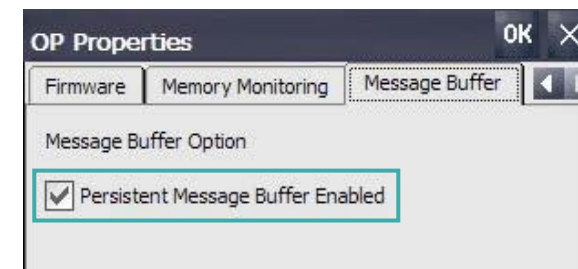
Persistent Message Buffer – Disable

Retentive message buffer is deactivated, the messages occurring in the project are not saved in the internal flash memory. The internal flash memory is less stressed by high number of alarms. When the panel is restarted, the message buffer is empty which means no message buffer alarms are available.

TIA Portal setting for Basic Panels, Comfort Panels and Mobile Panels



Control Panel setting for Comfort Panels and Mobile Panels



Store important messages in archive and switch off »Persistent Message Buffer« to extend lifetime

WinCC V15.1 - SIMATIC HMI Panels

KTP Mobile Images available

KTP Mobiles images available in V15.1

Images available for download onto device

Images can now be downloaded from TIA Portal onto the following devices

- KTP400F
- KTP700 and KTP700F
- KTP900 and KTP900F

Configuration as a V15 device

- Configuration as a V15 device is now possible
- The TIA project can subsequently be transferred for the V15 image.



KTP400F Mobile



KTP700(F) Mobile



KTP900(F) Mobile



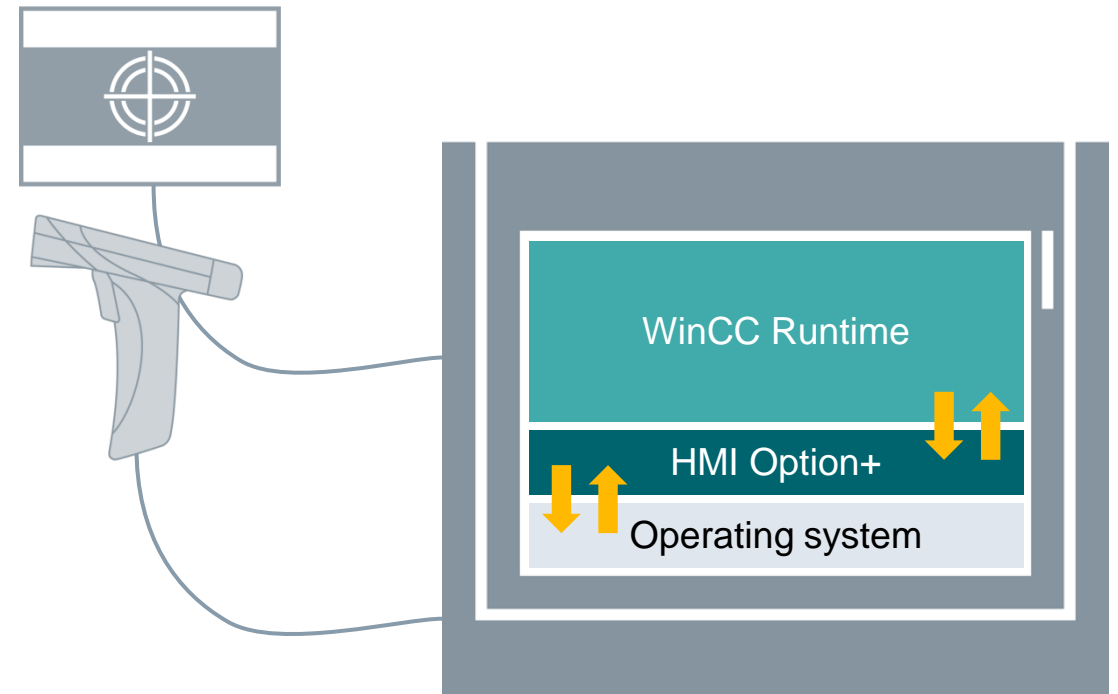
KTP Mobile Images V15.1 available for device configuration



WinCC V15.1 - SIMATIC HMI Panels

HMI Option+ V2

- + QR code reader**
Code will be written directly into a tag
- + Support for Mobile Panel 2nd generation**
7", 9"
- + Communication via OPC UA**
Conversion from SOAP to OPC UA
- + Expansion of the service file**
Adaptations and expansions
- + SIMATIC Logon**
Optimization of the certificate handling
- + Windows CE Desktop**
Hiding individual desktop icons
- + CPU load**
Display the CPU load directly in the HMI Runtime



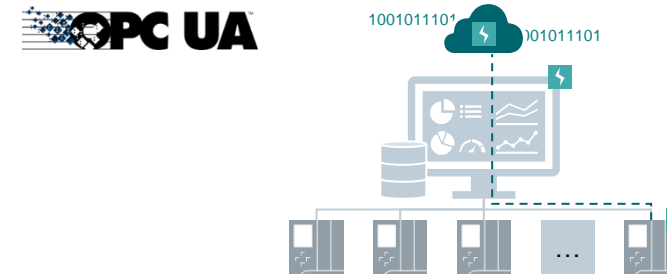
WinCC RT Professional 15.1

Functional Enhancements



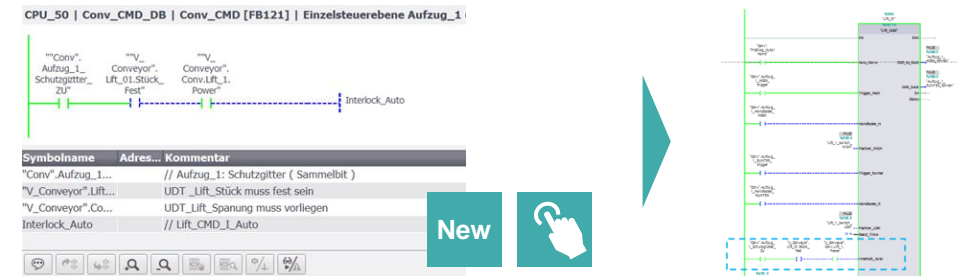
Functionality extensions in OPC UA server

- Support of OPC UA Server Alarm and Condition
- WinCC alarms can be sent via the OPC UA server to a third-party application



Functionality extensions in ProDiag Control

Display of the entire call interface block



Additional smaller functional extensions

- Setting of the WebUX/WebNavigator user rights in Runtime
- Automatic logon for operator role
- HMI compiler provides additional information for users (e.g. number of compiled HMI objects)
- Software controller with WinCC Professional on a shared computer



User	Password	Group	Logoff ti...



TIA Portal – Highlights of TIA Portal V15.1

Hardware configuration

- S7-1500R/H redundant systems
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Startdrive – Innovations

- Integration of SINAMICS S210 and SIMOTICS 1FK2 motors
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- ProDiag Control functional add-ins



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commissioning mode
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Access protection, SCL blocks, template screens, Openness add-ins
-  **Energy Suite**
Energy screens, reports, SINAMICS, usability improvements



Agenda

- 1 **Highlights for all SINAMICS**
- 2 SINAMICS S210
- 3 SINAMICS S120, G130, G150, S150, MV
- 4 SINAMICS DCC
- 5 SINAMICS G120
- 6 SINAMICS V90 HSP
- 7 SIMATIC MICRO-DRIVE



SINAMICS drive in TIA Portal ... the optimum drive system for every application

SIEMENS
Ingenuity for life



SINAMICS S120 and Large Drives¹

The flexible, modular drive system over a large power range for sophisticated and demanding applications in the production industry

Dec. 2017 w/ V15 general release

Dec. 2018 w/ V15 .1 new functions



SINAMICS S210

Single axis AC/AC drive with high dynamic and performance for motion applications in the mid range segment

Dec. 2017 via GSD

Dec. 2018 w/ V15.1



SINAMICS V90 with PROFINET

Basic servo control system for standard motion control applications

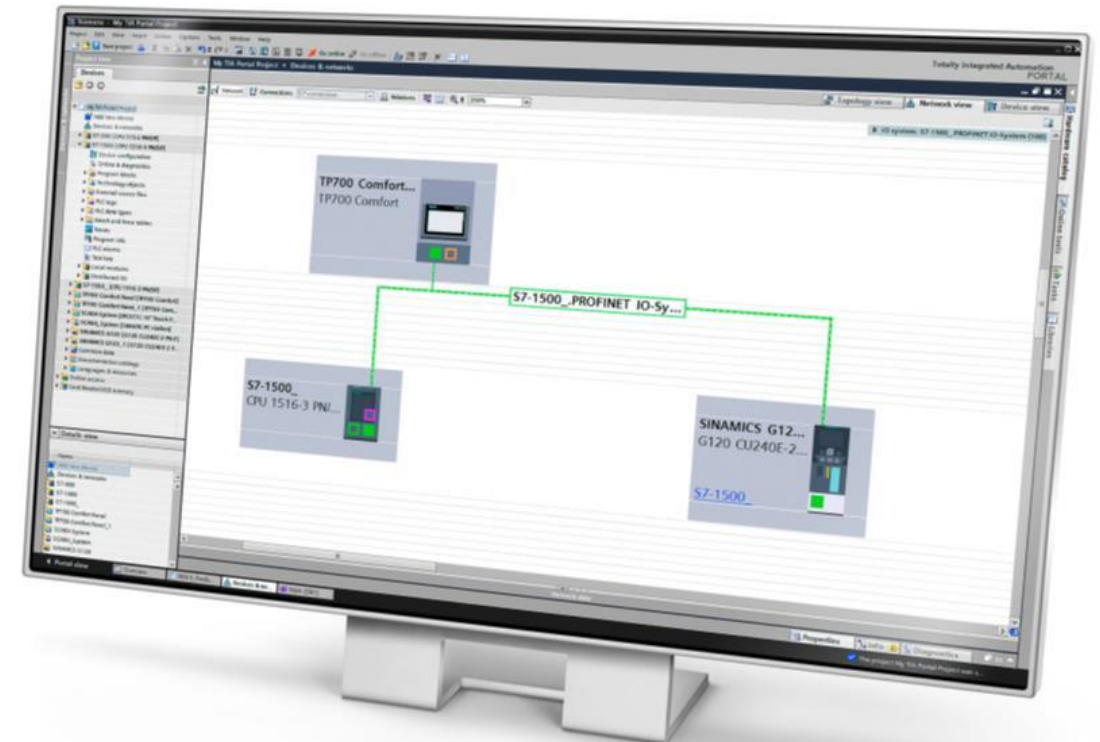
Dec. 2018 w/ V15 .1 new functions



SINAMICS G120

Drive system for general performance applications and distributed drive system for conveyor applications

Dec. 2018 w/ V15 .1 new functions



All SINAMICS can already be used in TIA Portal

SINAMICS Startdrive V15.1 Highlights for all drives

Startdrive Advanced V15.1 – Extension of Safety Acceptance Test

- **Safety Acceptance Test for S120 and S210:**
 - Guided Safety acceptance test for all drive-based Safety Integrated functionalities (Basic, Extended and Advanced Safety)
 - Automatic and Safety functionality-specific creation of traces for the analysis of the machine behaviour
 - Generation of protocol as Excel file (xlsx format, also useable with OpenOffice)

[Startdrive Safety Acceptance Test](#)

[Startdrive Safety Abnahmetest](#)

The screenshot displays the Siemens Startdrive software interface for configuring a Safety Acceptance Test. The left pane shows the 'Project tree' with the following structure:

- Devices
 - ▼ TechinfoScreens
 - Add new device
 - Devices & networks
 - ▼ Drive unit_1 [S120 CU320-2 PN]
 - Device configuration
 - Online & diagnostics
 - Acceptance test
 - Drive control
 - Drive axis_1
 - Drive axis_2
 - Input/output object_1
 - Traces
 - Ungrouped devices
 - Security settings
 - Unassigned devices
 - Common data
 - Documentation settings
 - Languages & resources
 - Online access
 - Card Reader/USB memory

The main window shows the 'Acceptance test' configuration for 'Drive axis_1'. The 'Function selection' panel is active, allowing the user to select functions to be tested. The selected functions are:

- Stop functions:** STO, SS1, SS2, SS2E, SOS
- Brake functions:** SBC, SBT, Brake 1, Sequence 1, Sequence 2, Brake 2, Sequence 1, Sequence 2
- Motion monitoring:** SLS, Level 1, Level 2, Level 3, Level 4, SSM, SDI, Positive, Negative, SLA
- Position monitoring:** SLP, Range 1, P_min, P_max, Range 2, P_min, P_max

Below the function selection, there are instructions and controls:

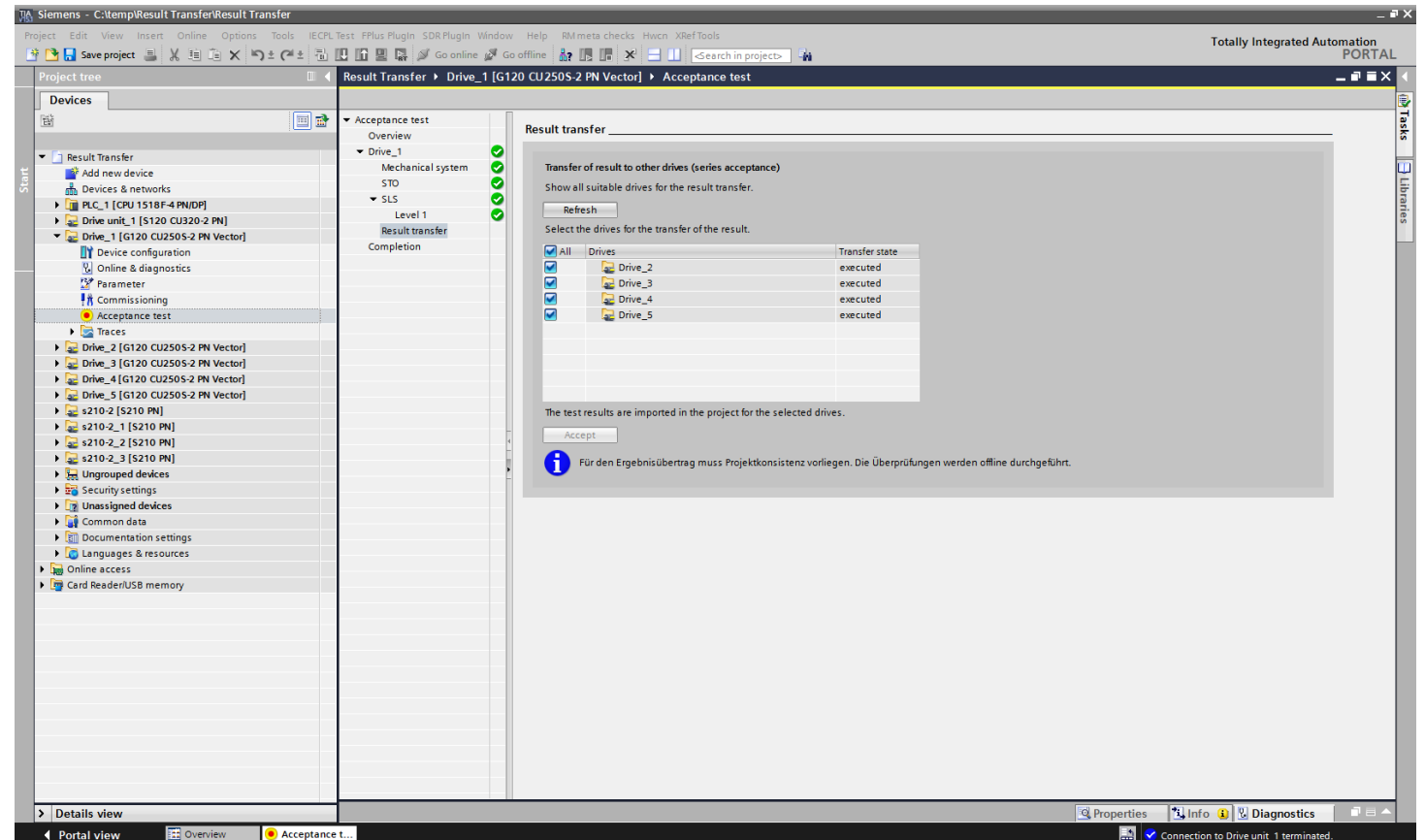
- Take over the function selection:**
- Information:** For the first test, the functions are assigned enable bits. Functions that do not have separate enable bits can additionally be selected for the test.
- Information:** The acceptance test takes into account the current drive settings (HW configuration, parameter settings). Subsequent changes will not be taken into account.
- Reset test results:**
- Information:** The test results can be reset and the test performed again.



SINAMICS Startdrive V15.1 Highlights for all drives

Startdrive Advanced V15.1 – Extension of Safety Acceptance Test

- **Result transfer**
 - Automatic transfer of test results to other drives with same Safety functionality with one mouse-click
 - Inclusion of the transferred drives into the protocol



SINAMICS Startdrive V15.1 Highlights for all drives

Startdrive Advanced V15.1 – Extension of Safety Acceptance Test

- **Function table**
 - Documentation of the machine-specific Safety functionality as part of the test protocol
- **Multiple protocol generation**
 - Automatic generation of the test protocols for all drives in the project
 - Customer value: Higher efficiency for large projects

The screenshot displays the Siemens TIA Portal interface for configuring and executing a Safety Acceptance Test (SAT). The left pane shows the project tree with the SAT configuration for a G120 drive. The main workspace shows the 'Acceptance test' configuration for the drive, including a 'Function table' and a 'Completion' report.

Function table

Operating mode	Description	Protection equipment	Specification	Axis	Monitoring
Maintenance	Regular maintenance	Laser scanner		G120_240E-2	SDI positive
All operating modes		Emergency stop		G120_240E-2	SS1
Cleaning		Enabling switch		G120_240E-2	SLS level 1
Inspection		No selection		No selection	No selection

Completion

Select the drives for report creation:	Test status	Time of completion
<input checked="" type="checkbox"/> All Drives		
<input checked="" type="checkbox"/> G120_240E-2 [G120 CU240E-2 PN-F]	✓	8/27/2018 2:54:18 PM
<input checked="" type="checkbox"/> G120_240E-2_instance_1 [G120 CU240E-2 PN-F]	✓	
<input checked="" type="checkbox"/> G120_240E-2_instance_2 [G120 CU240E-2 PN-F]	✓	
<input checked="" type="checkbox"/> G120_240E-2_instance_3 [G120 CU240E-2 PN-F]	✓	
<input checked="" type="checkbox"/> G120_2505-2 [G120 CU2505-2 PN Vector]	✓	8/27/2018 1:29:39 PM
<input checked="" type="checkbox"/> G120_2505-2_1 [G120 CU2505-2 PN Vector]	✓	
<input checked="" type="checkbox"/> links [S210 PN]	✓	9/3/2018 2:53:43 PM
<input checked="" type="checkbox"/> rechs [S210 PN]	✓	9/3/2018 3:04:49 PM
<input checked="" type="checkbox"/> S120_links [S120 CU320-2 PN]	✓	8/27/2018 8:31:03 AM

After a change of this drive unit or assigned drives for the result transfer, the acceptance test must be repeated and the report updated.

SINAMICS Startdrive V15.1 Highlights for all drives

Startdrive Advanced V15.1 – Extension of Safety Acceptance test

- **Overview**

- Shows the test status across all drives in the project including time stamp

The screenshot displays the Siemens TIA Portal interface. The left pane shows the project tree with the 'Acceptance test' folder expanded. The right pane shows the 'Overview' window, which contains a table listing drives and their test status.

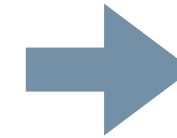
Drives	Test status	Time of completion
G120_240E-2 [G120 CU240E-2 PN-F]	✓	8/27/2018 2:54:18 PM
G120_250S-2 [G120 CU250S-2 PN Vector]	✓	8/27/2018 1:29:39 PM
G120_250S-2_1 [G120 CU250S-2 PN Vector]	✓	
G120_250S-2_2 [G120 CU250S-2 PN Vector]	✓	
links [S210 PN]	✓	9/3/2018 2:53:43 PM
rechts [S210 PN]	✓	9/3/2018 3:04:49 PM
S120_links [S120 CU320-2 PN]	✓	8/27/2018 8:31:03 AM
S120_rechts [S120 CU320-2 PN]	✓	8/24/2018 3:56:05 PM

SINAMICS Startdrive V15.1

Highlights for all drives

Extension of the Startdrive Openness interface

- Further functional interfaces for important openness use cases
 - Adding drive hardware components with fully specified MLFB for all drives
 - PROFIsafe telegram configuration for all drives
 - Entering motor and encoder data for G120
 - Hardware configuration for S210
- Generation of a TIA Portal project by an AML-based import from EPLAN resp. data import/export from/to EPLAN
 - G120: Control Unit and Power Module supported with EPLAN V2.8
 - S120: Only Control Unit
- Access to further drive parameters by openness (EPos, Extended setpoint channel, SINAMICS DCC, ...)



TIA Portal V15.1



SINAMICS Startdrive V15.1

Highlights for all drives



Startdrive App »Edit parameters in several drives«

- Comparison of offline parameter values of several drives with each other
- Automatic copying »RAM to ROM« after changing parameter values
- Support of SINAMICS S210

[Startdrive Openness App \(en\)](#)
[Startdrive Openness App \(de\)](#)

The screenshot displays the Startdrive App interface with the following components:

- Devices:** A tree view on the left showing 'Drive_1' and 'Drive_2'.
- Parameters:** A central table comparing parameters for Drive_1 and Drive_2. The table includes columns for Active status, Number, Value, Drive_1, Drive_2, Description, Unit, Minimum, and Maximum.
- Messages:** A log at the bottom showing system messages such as 'Drive_1 - parameter p1217 value: 100' and 'Drive_2 - parameter p1217 value: 100'.
- Parameter lists:** A sidebar on the right with 'Add new', 'Import', and 'Save' buttons, and a table of parameter lists.

Active	Number	Value	Drive_1	Drive_2	Description	Unit	Minimum	Maximum
<input checked="" type="checkbox"/>	r18	0	0	0	Control Unit firmware version			
<input checked="" type="checkbox"/>	r208	400	400	400	Rated power unit line supply voltage	Vrms		
<input checked="" type="checkbox"/>	p210	400	400	400	Drive unit line supply voltage	V	1	63000
<input checked="" type="checkbox"/>	p615[0]	180	180	180	Mot_temp_mod 1 (I2t) fault threshold	°C	0	220
<input checked="" type="checkbox"/>	p730	r52.3	r52.3	r52.3	CU signal source for terminal DO 0		0	42949...
<input checked="" type="checkbox"/>	p840[0]	r2090.0	r2090.0	r2090.0	ON / OFF (OFF1)		0	42949...
<input checked="" type="checkbox"/>	p971	0	0	0	Save parameters			
<input checked="" type="checkbox"/>	p1120[0]	10	10	10	Ramp-function generator ramp-up time	s	0	999999
<input checked="" type="checkbox"/>	p1121[0]	10	10	10	Ramp-function generator ramp-down time	s	0	999999
<input checked="" type="checkbox"/>	p1135[0]	0	0	0	OFF3 ramp-down time	s	0	5400
<input checked="" type="checkbox"/>	p1216	100	100	100	Motor holding brake opening time	ms	0	10000
<input checked="" type="checkbox"/>	p1217	100	100	100	Motor holding brake closing time	ms	0	10000
<input checked="" type="checkbox"/>	p2000	1500	1500	2000	Reference speed reference frequency	rpm	6	210000
<input checked="" type="checkbox"/>	p2001	1000	1000	1000	Reference voltage	Vrms	10	100000
<input checked="" type="checkbox"/>	p2002	100	100	100	Reference current	Arms	0,1	100000
<input checked="" type="checkbox"/>	p2003	1	1	1,25	Reference torque	Nm	0,01	2E+07

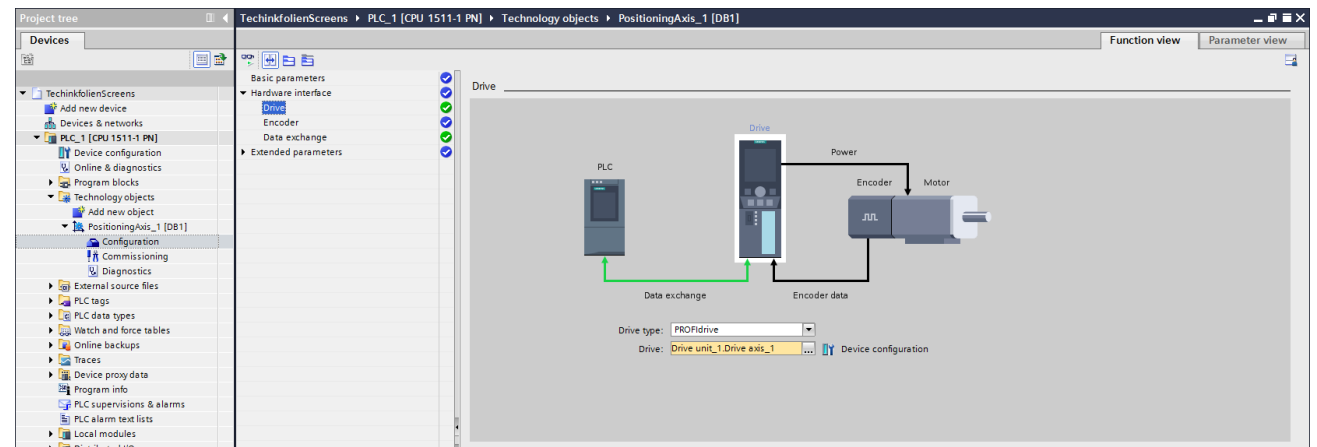
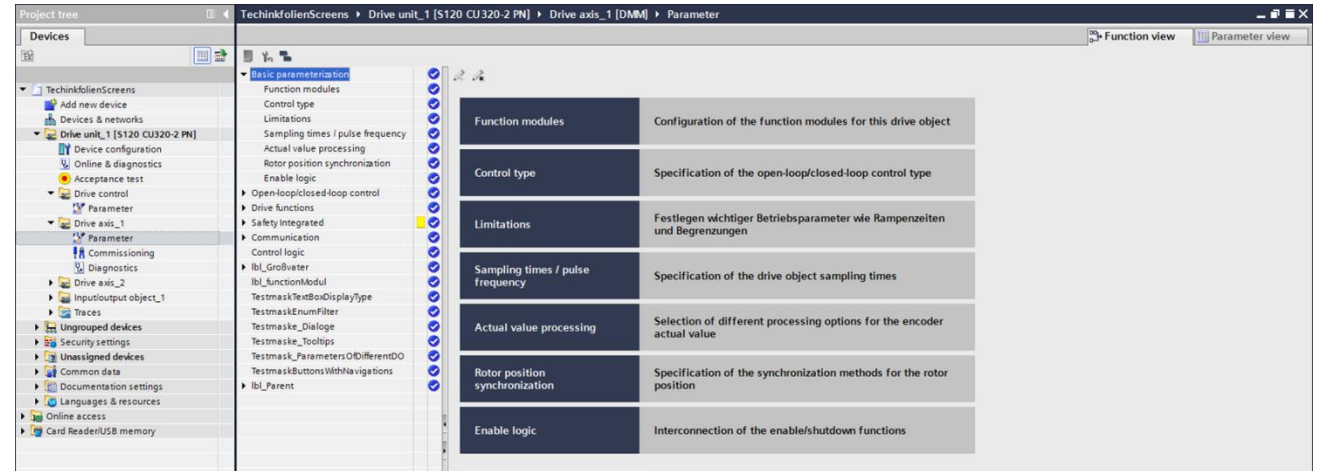


SINAMICS Startdrive V15.1 Highlights for all drives

Offline data synchronisation between the drive and the SIMATIC S7-1500 Technology Object in the project

Synchronisation from drive to Technology Object of

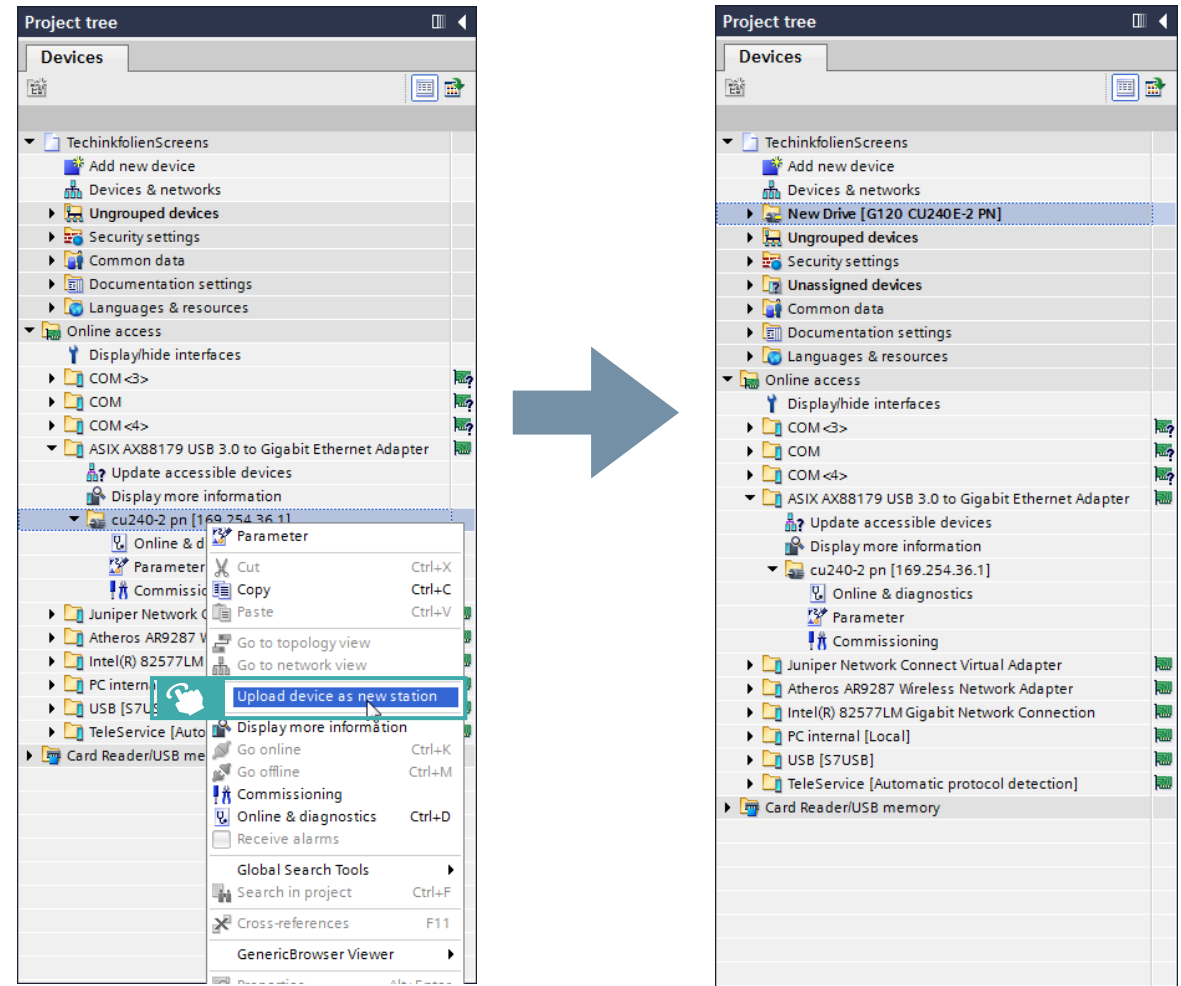
- Speed/torque data (reference speed, reference torque, maximum speed)
- Encoder data (sensor type, sensor system, sensor resolution, steps per revolution, shift factor, determinable revolutions)



SINAMICS Startdrive V15.1

Highlights for all drives

- Adding a drive to the project from the list of accessible devices via context menu



Agenda

- 1 Highlights for all SINAMICS
- 2 **SINAMICS S210**
- 3 SINAMICS S120, G130, G150, S150, MV
- 4 SINAMICS DCC
- 5 SINAMICS G120
- 6 SINAMICS V90 HSP
- 7 SIMATIC MICRO-DRIVE

SINAMICS Startdrive V15.1

Integration of SINAMICS S210 and SIMOTICS 1FK2 motors

SIEMENS
Ingenuity for life

- Integration of SINAMICS S210 drives with 200V and 400V and SINAMICS Firmware V5.2
- Support of SIMOTICS 1FK2 motors
- Ease of use
 - Simple and efficient configuration and commissioning workflow
 - Online and offline commissioning
- Trace incl. pre-defined trace template with typical parameters
- Firmware update via TIA Portal
- Automatic servo tuning with One-Button-Tuning
- Support of technology data block telegram 750
- Parameter view structured by drive functions (parameter groups)
- Safety parameterization supported by graphical views

The screenshot displays the Siemens TIA Portal interface for configuring and tracing a drive. The top window shows the 'Device view' for 'Drive unit_3 [S210 PN]' with a 3D model of the drive unit. The 'Options' panel on the right shows the 'Catalog' with a search filter and a list of SINAMICS S210 drive models (200-240V 1AC, 0.1kW to 0.75kW) and 'Motors' (1FK2 synchronous motors). The bottom window shows the 'Traces' configuration for 'Drive unit_2 [S210 PN]'. The 'Signals' table lists the following parameters:

Name	Address	Data type	Color	Comment
Speed setpoint after the filter	#62	FLOAT	Red	Red
Drumhalsstrom ungeglättet(Geber 1)	#61[0]	FLOAT	Light green	Light green
Torque actual value	#80	FLOAT	Pure cyan	Pure cyan
Diagnostics encoder position actual value G.	#479[0]	INTEGER32	Magenta	Magenta
			RGB(0, 0, 0)	

The 'Recording conditions' section shows a 'Trigger mode' of 'Start recording immediately' and a graph of the recording cycle. The cycle duration is set to 0.12500 ms (min. 0.0625 ms) and the recording duration is 512.000 ms (max. 512 ms). There is a checkbox for 'Use max. recording duration'.



SINAMICS Startdrive V15.1

Highlights for SINAMICS S120, G130, G150, S150, MV



Parameter view structured by drive functions (parameter groups)

Number	Parameter text	Value	Unit	Data set
p840[0]	ON / OFF (OFF1)	<input type="checkbox"/>	0	CDS
p844[0]	No coast-down / coast-down (OFF2) signal source 1	<input type="checkbox"/>	1	CDS
p845[0]	No coast-down / coast-down (OFF2) signal source 2	<input type="checkbox"/>	1	CDS
p848[0]	No Quick Stop / Quick Stop (OFF3) signal source 1	<input type="checkbox"/>	1	CDS
p849[0]	No Quick Stop / Quick Stop (OFF3) signal source 2	<input type="checkbox"/>	1	CDS
p852[0]	Enable operation/inhibit operation	<input type="checkbox"/>	1	CDS
p854[0]	Control by PLC/no control by PLC	<input type="checkbox"/>	1	CDS
p864	Infeed operation	<input type="checkbox"/>		
p1135[0]	OFF3 ramp-down time		0.000 s	DDS
p1226[0]	Threshold for zero speed detection		20.00 rpm	DDS
p1227	Zero speed detection monitoring time		4.000 s	
p1228	Pulse suppression delay time		0.000 s	
p2166[0]	Off delay n_act = n_set		200.0 ms	DDS
p2167[0]	Switch-on delay n_act = n_set		200.0 ms	DDS



SINAMICS Startdrive V15.1

Integration of SINAMICS S210 and SIMOTICS 1FK2 motors

- Ease of use
 - Simple and efficient configuration and commissioning workflow

The screenshot displays the 'Basic parameterization' window in the SINAMICS Startdrive V15.1 software. The interface is divided into a left-hand navigation pane and a main configuration area.

Navigation Pane:

- Basic parameterization (selected)
- Safety Integrated
- Inputs/outputs
- Communication
- License
- Istwerte
- Statusbits

Motor Configuration:

- Article number: ???
- Encoder: ???
- Bremse: ???
- Zwangöffnung Bremse: [Button]
- Rated voltage: 0 Vrms
- Rated current: 0.00 Arms
- Rated power: 0.00 kW
- Rated speed: 0.0 rpm
- Rated torque: 0.00 Nm
- Drive unit line supply voltage: 600 V
- Ambient temperature: 20 °C
- Direction of rotation: [0] Clockwise

Begrenzungen (Limits):

- Positive speed limit: 210,000.000 rpm
- Negative speed limit: -210,000.000 rpm
- Torque limit motoring: 0.00 Nm
- Torque limit regenerating: 0.00 Nm
- Ramp-down time (OFF3): 0.000 s

The speed limit graph shows a trapezoidal profile with a positive limit at 210,000 rpm and a negative limit at -210,000 rpm. The torque limit graph shows a step function with a positive limit at 0.00 Nm and a negative limit at 0.00 Nm.

SINAMICS Startdrive V15.1

Integration of SINAMICS S210 and SIMOTICS 1FK2 motors

- Automatic servo tuning with One-Button-Tuning

The screenshot displays the 'Automatische Regleroptimierung' (Automatic Controller Optimization) interface. The main area is divided into several sections:

- Steuerungshoheit:** Includes 'Aktivieren' and 'Deaktivieren' buttons.
- Optimierung:** Includes 'Starten' and 'Stoppen' buttons.
- Warnung:** A warning icon and text: 'Innerhalb der Weggrenze muss der Antrieb ohne Gefährdung von Personen und Mechanik frei verfahren können. Dabei wird der Motor in beide Richtungen, bis zur Maximaldrehzahl und bis zu 80% des Motor-Stillstandmoment bewegt.'
- Dynamikeinstellungen:** Radio buttons for 'Konservativ', 'Standard', and 'Dynamisch'.
- Konfiguration:** A 'Wegbegrenzung' dropdown menu set to '500' and an 'Erweiterte Einstellungen' button.
- Status:** Checkboxes for 'Autom. Regleroptimierung erfolgreich beendet' and 'Reglerparameter durch Fehler zurückgesetzt'.
- Ergebnis der Optimierung:** A table showing the results of the optimization.

Nummer		Vorheriger Wert	Aktiver Wert	Einheit
p1460[0]	P-Verstärkung	0,0056	0,0038	Nms/rad
p1462[0]	Nachstellzeit	10,00	3,15	ms

Below the table, an information icon and text state: 'Die automatische Regleroptimierung findet im Antrieb statt. Zur Sicherung der Daten ist das remanente Speichern erforderlich. Um die Daten ins Projekt zu übernehmen ist ein Upload erforderlich. Dabei werden auch die eingestellten Filterwerte übernommen.'

The bottom of the screenshot shows a 'Meldungsanzeige' (Message Display) window with a table of messages:

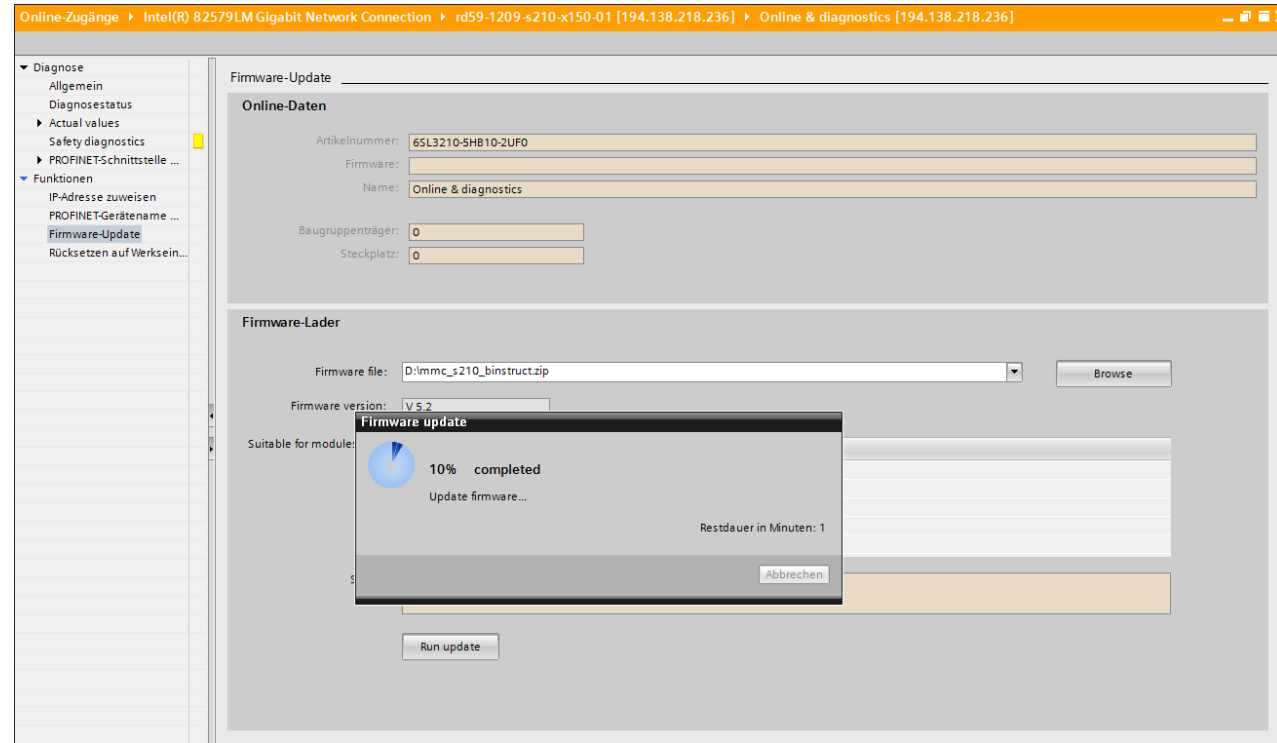
Quelle	Datum	Uhrzeit	Status	Quittieren	Name der Meld...	Ereignistext	Hilfe	Infotext
RD59-1209-5 210-X150-01 [S210 PN]	04.02.2000	12:02:29:864	Kommand	--	--	A07095: Antrieb: One Button Tuning aktiviert		



SINAMICS Startdrive V15.1

Integration of SINAMICS S210 and SIMOTICS 1FK2 motors

- Firmware update via TIA Portal



Agenda

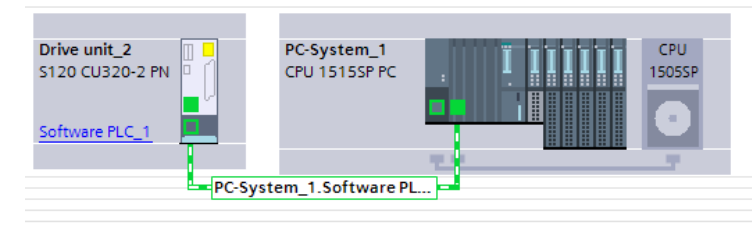
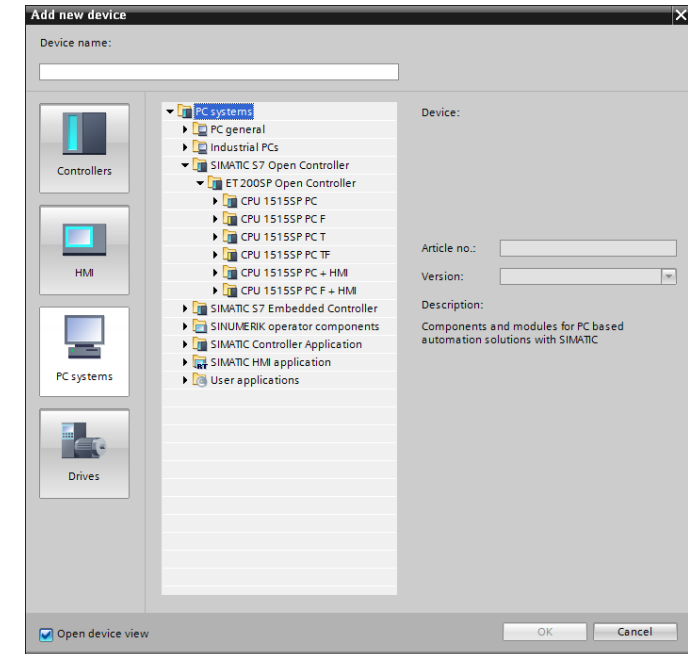
- 1 Highlights for all SINAMICS
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- 3 **SINAMICS S120, G130, G150, S150, MV**
- 4 SINAMICS DCC
- 5 SINAMICS G120
- 6 SINAMICS V90 HSP
- 7 SIMATIC MICRO-DRIVE

SINAMICS Startdrive V15.1

Highlights for SINAMICS S120, G130, G150, S150, MV



- Support of SINAMICS firmware V5.1 SP1 and V5.2
- Support of SIMOTICS 1FK2 motors
- Use with S7-1500 software and open controllers
- Support of technology data block telegram (telegram 750)
- Support of Isochronous Safe Position (support for the PLC function »SIMATIC Safe Kinematics«)
- Automatic servo tuning with One-Button-Tuning
- Support of Free Function Blocks
- Parameter view structured by drive functions (parameter groups)



SINAMICS Startdrive V15.1

Supported hardware for drives based on CU320-2

Topic	Feature		Effect	
Integrated hardware	SINAMICS drives	S120	✓	Motion control drives and large drives
		G130, G150, S150, MV	✓	
	Control unit (CU)	CU320-2	✓	<ul style="list-style-type: none"> • Sinamics firmware ≥V4.8 • All Sinamics drives based on CU320-2 • CBE20 only as a Sinamics link
		CU310-2	✗	
	Infeed and power units	Booksize (compact)	✓	<ul style="list-style-type: none"> • Single- and multi-axis drive systems incl. chassis/cabinet • Protection category IP20 (control cabinet) • 3AC power supply
		Blocksize (e.g. PM240-2)	✗	
		Chassis/cabinet	✓	
	Applicable SIMATIC controllers	S7-1500/1500T/ET200SP	✓	Only with S7-1500/1500T/ET200SP CPU and with software/open controllers
		Software/open controller	✓	
		S7-1200	✗	
S7-300 and S7-400		✗		
Applicable motors	SIMOTICS	✓	All SIMOTICS motors and 3 rd motors (with the exception of SIMOGEAR and linear motors)	
	External motors	✓		

New

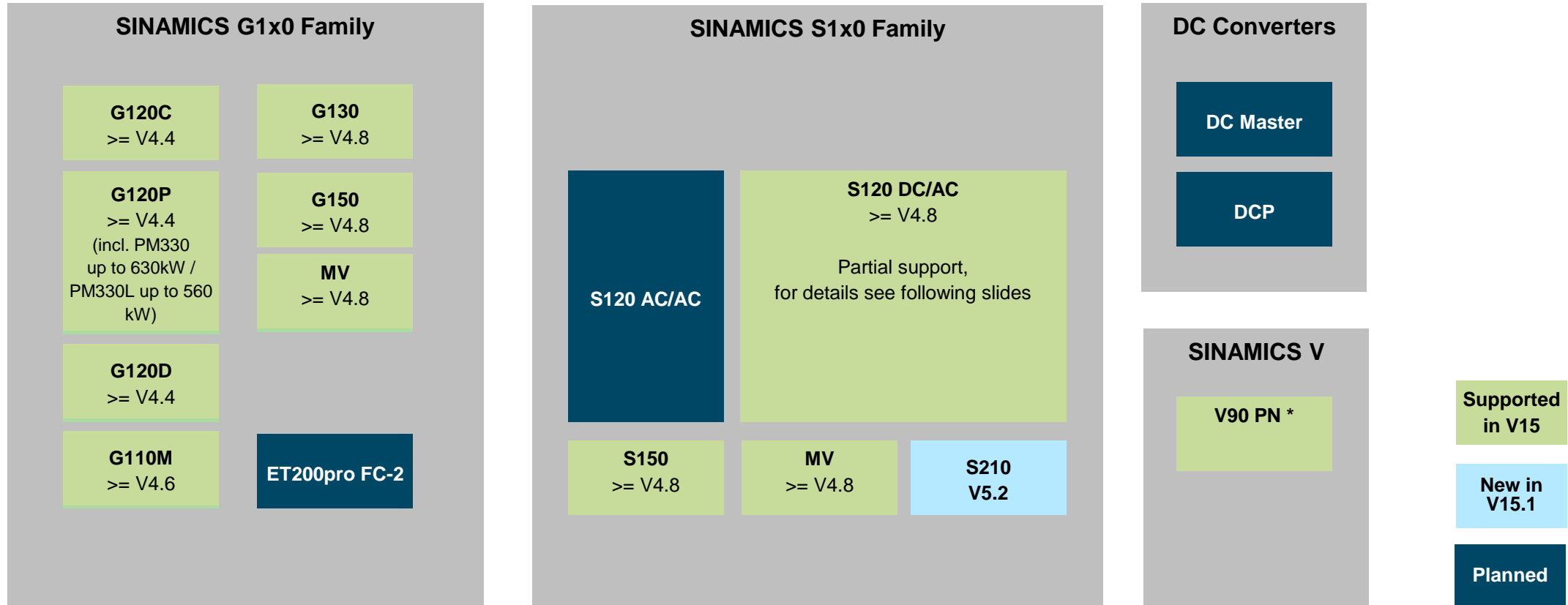


SINAMICS Startdrive V15.1

Supported functions for drives based on CU320-2

Topic	Feature		Effect		
Integrated functions	Drive control	Servo	✓	All drive control modes (servo, vector and U/f)	
		Vector	✓		
	SAFETY functions	Basic	✓	<ul style="list-style-type: none"> • STO, SS1, SBC • SS2, SOS, SBT, SLS, SSM, SDI • SLP, SP, SCA 	
		Extended	✓		
		Advanced	✓		
		Safety Acceptance Test	✓		Startdrive Advanced licence required
	Communications	PROFINET	✓	<ul style="list-style-type: none"> • PN with IRT (clock-synchronized communications) • PROFINET only 	
		PROFIBUS	✗		
	Telegrams	PROFIdrive telegrams	✓	All telegram configurations	
		PROFIsafe	✓		
Siemens telegrams		✓			
Telegram extension		✓			
Additional functions	EPos	✓	<ul style="list-style-type: none"> • Central and decentral motion control possible • Drive Control Charts supported (separate installation and licence required) 		
	DCC	✓			New

SINAMICS Startdrive V15.1 - Supported drive families



* Hardware Support Package available for TIA Portal, but not integrated into Startdrive



SINAMICS Startdrive V15.1 - Supported hardware components for CU320-2 based drives



S120 Control Units

CU310-2 PN/DP	CU320-2 PN V4.8 – V5.2	CU320-2 DP V4.8
--------------------------	-----------------------------------	----------------------------

S120 Auxiliary System Components

CBE 20 PN (SINAMICS Link)	CUA 31	DMC 20 DQ Hub	DME 20 DQ Hub	VSM 10 Voltage S.M.		
TB 30 Terminal Board	TM 15 Terminal Module	TM 31 Terminal Module	TM 41 Terminal Module	TM 54F Terminal Module	TM 120 Terminal Module	TM 150 Terminal Module
SMC 10 Sensor M. Cab.	SMC 20 Sensor M. Cab.	SMC 30 Sensor M. Cab.	SME 20/25 Sensor M. Ext.	SME 120/125 Sensor M. Ext.	SMC 40 Sensor Modul for EnDat 2.2 (only for direct measuring systems)	

S120 Line Modules

BLM Booksize	SLM Booksize/Comp.	ALM Booksize	BLM Chassis	SLM Chassis	ALM Chassis
-------------------------	-------------------------------	-------------------------	------------------------	------------------------	------------------------

S120 Motor Modules

Single Motor Module Booksize Compact 3A – 18A	Single Motor Module Booksize 3A – 200A	Double Motor Module Booksize Compact 1,7A – 5A	Double Motor Module Booksize 3A – 18A	Motor Module Chassis	S120 Power Modules (AC/AC) Blocksize (PM240-2)
					S120 Power Modules (AC/AC) Chassis

**Supported
in V15**

**New in
V15.1**

Planned



SINAMICS Startdrive V15.1

Supported hardware components for CU320-2 based drives



Parallel connection of HW components

Parallel LM connection

Parallel MoMo connection

Parallel connection of motors

Motors

Siemens synchronous motor

1FK7, 1FK2, 1PH8, 1FT6, 1FT7, 1FE1, 1FE2, 1FW3, 1FW6, 2SP1

Linear motors -
1FN1, 1FN3, 1FN6

Unspecific DRIVE-CLiQ motor (upload of motor data via DQ)

Rotatory

Siemens geared motors

1FG1

SIMOGEAR geared motors

Siemens reluctance motors
1FP1

Siemens customer-specific motors

Siemens asynchronous motor

1LE1, 1LE2, 1PC1, 1PH2, 1PH4, 1PH7, 1PH8, 2SP1

Non-Siemens Motor / LD motors (manual data entry)

Rotatory

Linear

Machine Encoders

Siemens encoders

Rotary
(with and w/o DRIVE-CLiQ)

Unspecific DRIVE-CLiQ encoders (Siemens and 3rd Party) (Upload of encoder data via DRIVE-CLiQ)

Rotatory

Linear

Non-Siemens encoder (manual data entry)

Rotatory

Linear

Several encoders per axis

2nd encoder

3rd encoder

Siemens machine encoder with and without DRIVE-CLiQ
(separate encoder DO)

Supported in V15

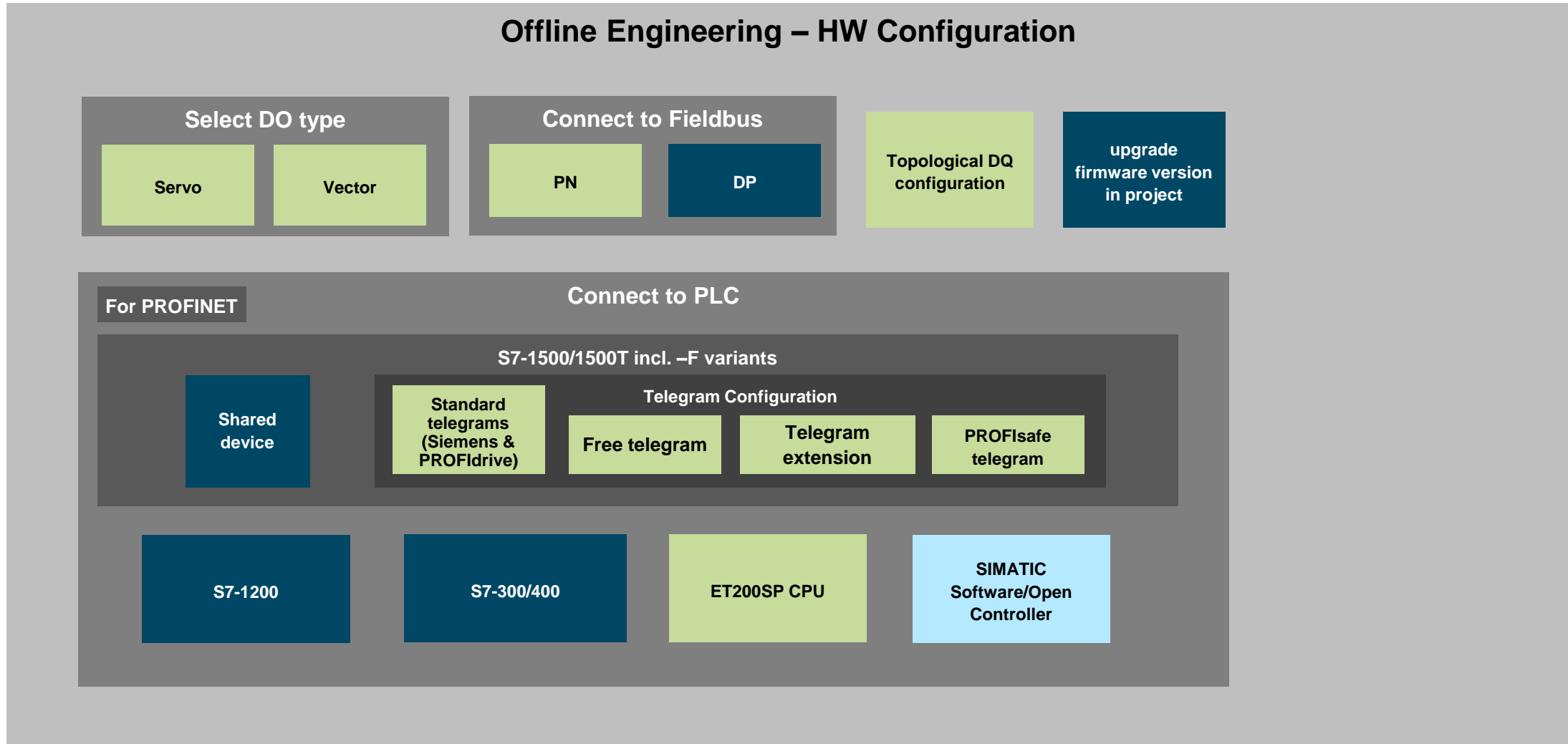
New in V15.1

Planned



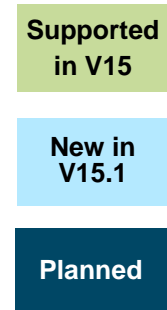
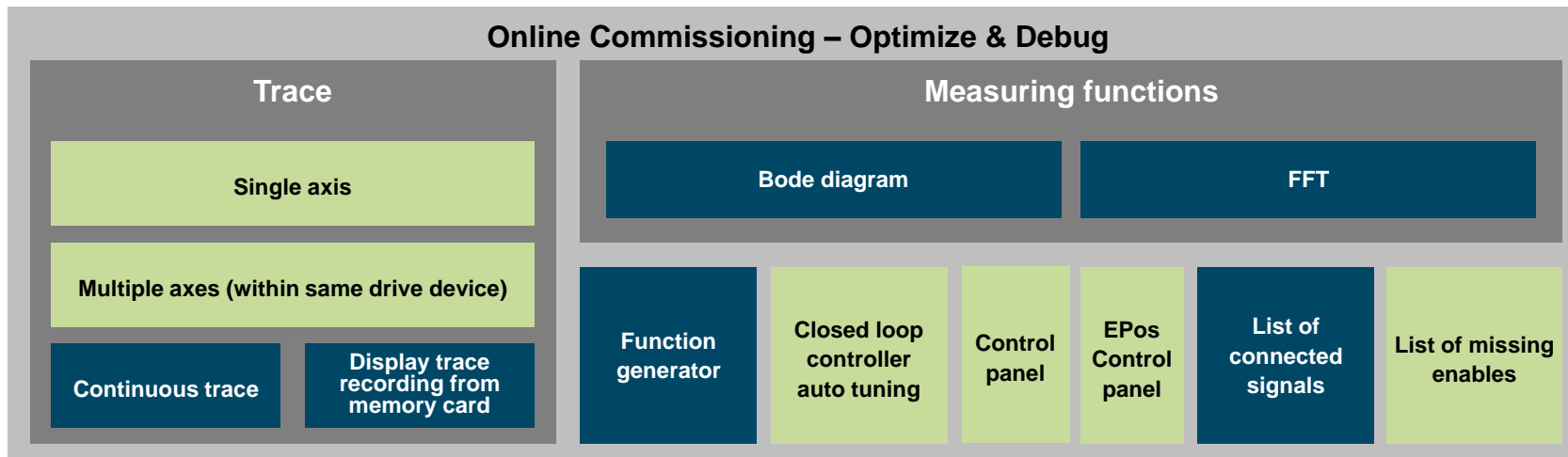
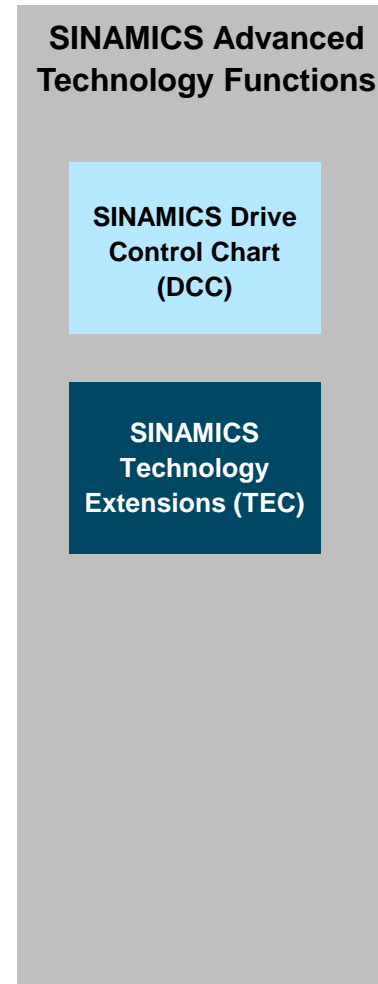
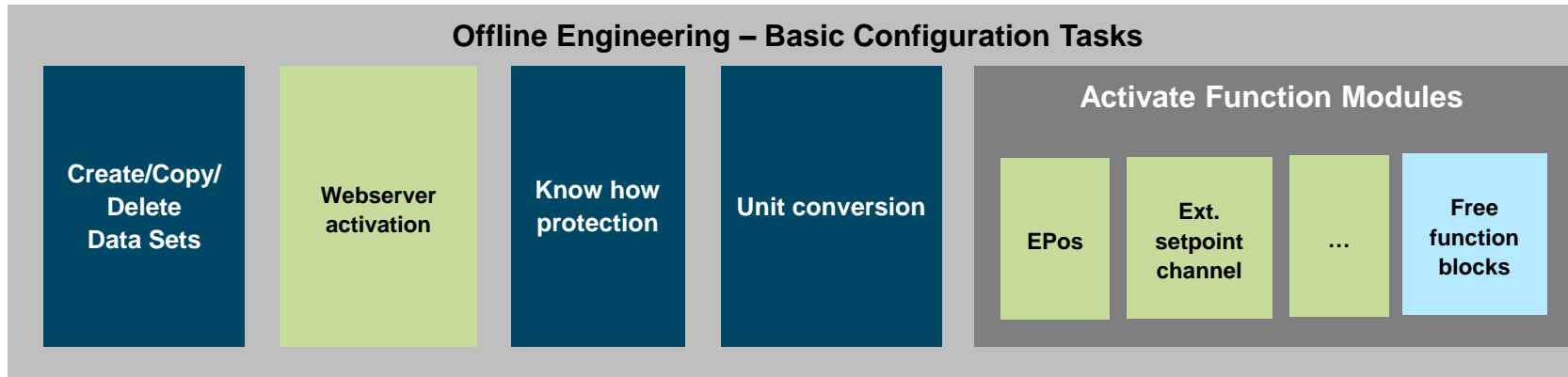
SINAMICS Startdrive V15.1

Supported engineering functions for CU320-2 based drives



SINAMICS Startdrive V15.1

Supported engineering functions for CU320-2 based drives



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- 1 Highlights for all SINAMICS
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- 4 **SINAMICS DCC**
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- 7 SIMATIC MICRO-DRIVE



SINAMICS DCC V15.1

Highlight for SINAMICS S120, G130, G150, S150, MV



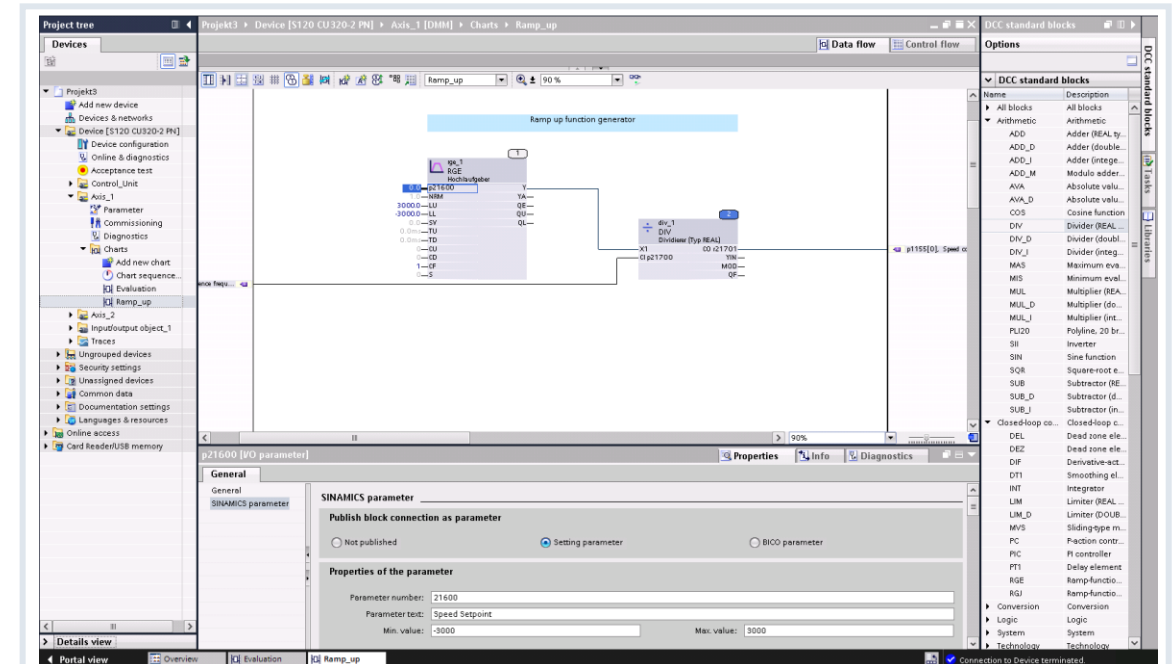
SINAMICS DCC V15.1 available

New

- SINAMICS Drive Control Chart (DCC) is a tool for graphical configuration via Drag&Drop of blocks for the creation of technological functions
- Blocks of DCB Standard and DCB Extension libraries usable
- Simple creation of own SINAMICS parameters
- Support of trace function and online monitoring devices in DCC plan
- Modularization of functions through multiple DCC plans per drive object

Customer benefit

Extension of your own technological functions in the drive unit through graphic configuration.



Requirements:

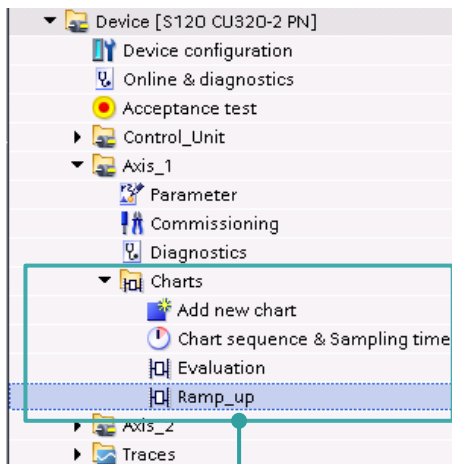
- Option package to Startdrive V15.1
- Support from SINAMICS firmware V5.2
- Engineering license required

SINAMICS DCC V15.1

Workflow of the configuration – steps 1 bis 3

1 Add chart

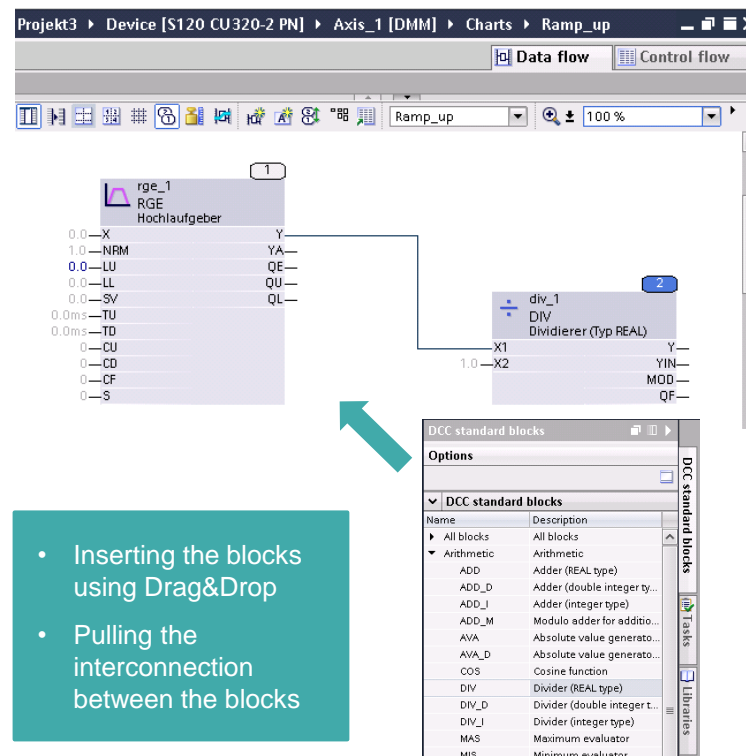
The extensions are configured graphically in the chart.



Charts for the technological extensions inserted under the drive object

2 Configure function

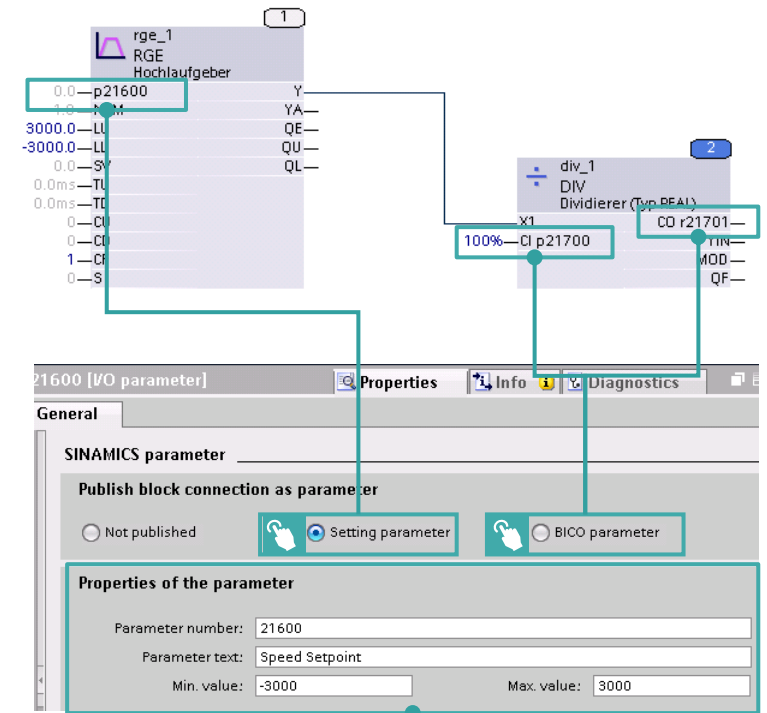
The function is created with blocks and interconnections.



- Inserting the blocks using Drag&Drop
- Pulling the interconnection between the blocks

3 Create SINAMICS parameter

SINAMICS Parameters are created (published) to parameterize the function.



Define properties of the new parameter

SINAMICS DCC V15.1

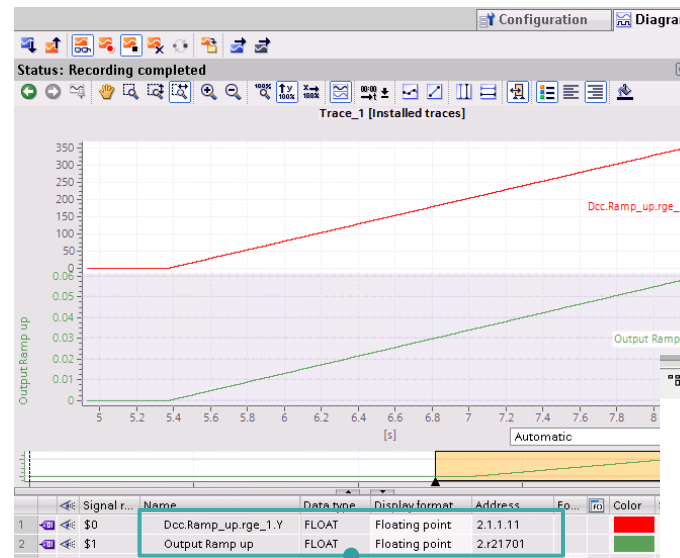
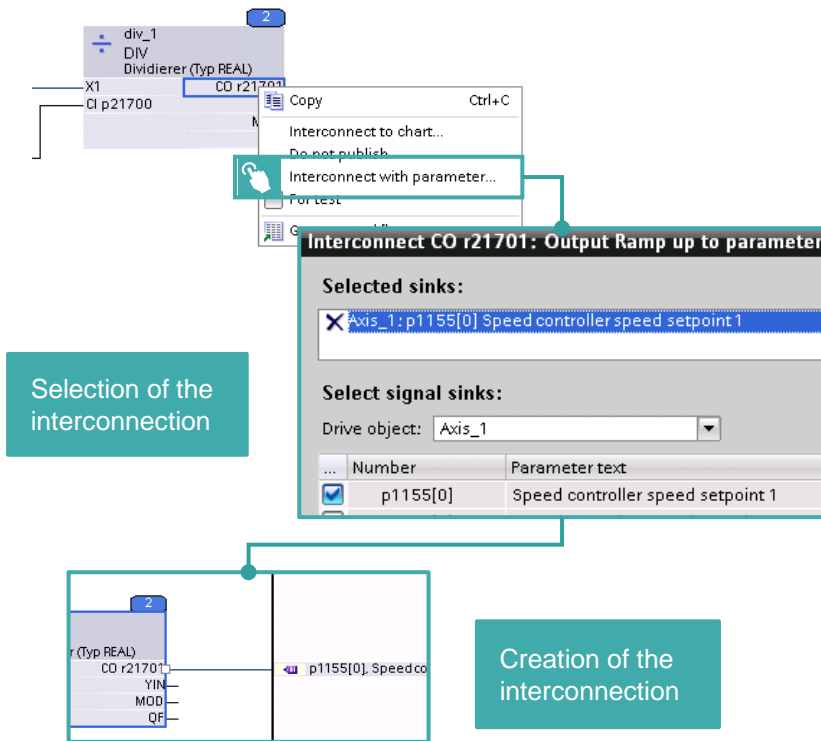
Workflow of the configuration – steps 5 bis 6

4 Interconnection with parameter

The interconnection create to parameters in the DCC chart.

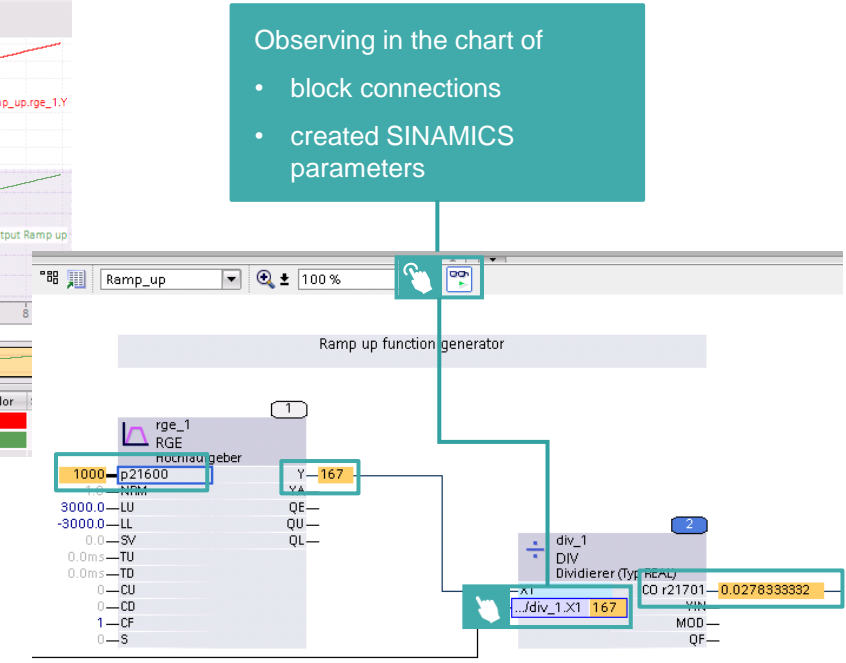
5 Test

After the download, the configuration is tested by recording in the trace or observing the values.



Trace from

- block connections
- created SINAMICS parameters



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- 6 SINAMICS V90 HSP
- 7 SIMATIC MICRO-DRIVE



SINAMICS Startdrive V15.1

Highlights for SINAMICS G120

- Overview mask for G120 configuration (incl. Control Unit, Firmware, Power Module, motor data, encoder data)

Configuration summary

Export

Control Unit

Device name:	Antrieb_1	Control type:	[0] U/f control with linear characteristic
Short designation:	G120 CU240E-2 PN	PROFIdrive telegram:	[1] Standard telegram 1, PZD-2/2
Order number:	6SL3244-0BB12-1FA0	PROFIsafe telegram:	[998] Compatibility mode (as for firmware versi
Firmware:	4.7.9	Safety Integrated Functions:	No Safety Integrated Function
Serial number:			

Power unit

Power module:	[114] PM240 (SINAMICS G120 / S120)
Order number:	6SL3210-1PE11-8ALx
Input voltage:	400 Vrms
Power:	0.55 kW

Motor

Motor type selection:	[0] No motor
Rated motor speed:	0.0 rpm
Rated motor current:	0.00 Arms
Rated motor power:	0.00 kW
Rated motor voltage:	400 Vrms
Rated motor frequency:	50.00 Hz

SINAMICS Startdrive V15.1

Highlights for SINAMICS G120

- User-defined parameter lists with/without parameter values incl. import/export option

The screenshot displays the SINAMICS Startdrive V15.1 software interface. At the top, there is a dropdown menu set to "Display standard parameters" and a toolbar with icons for import, export, and save. Below this is a table with two tabs: "Parameter List" and "Temp List1". The "Temp List1" tab is active, showing a table with columns for "Number", "Label", "Value", and "Unit".

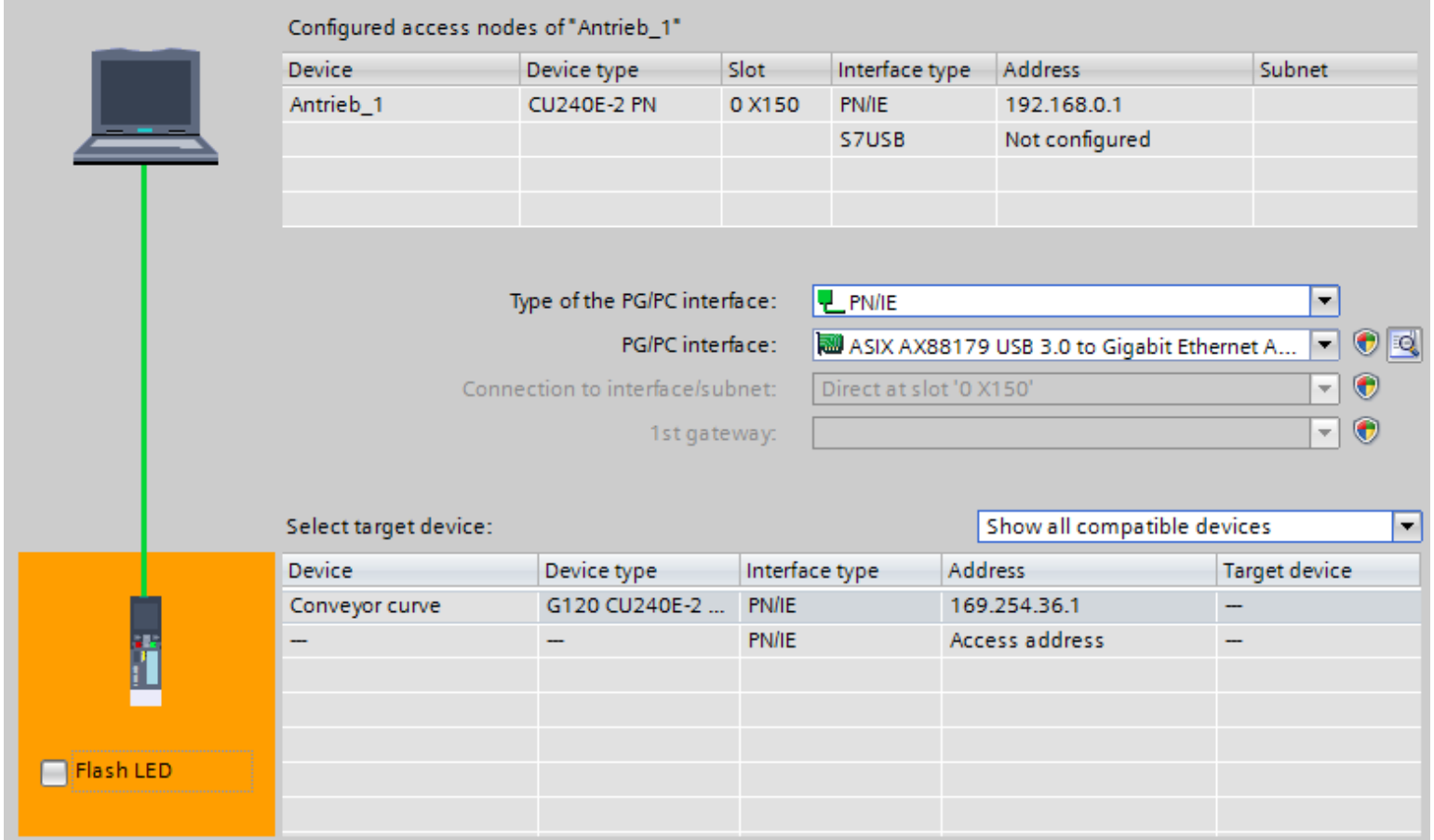
Number	Label	Value	Unit
p100	IEC/NEMA mot stds	[0] IEC-Motor (50 Hz, SI units)	
r200[0]	Power unit code number actual	0	
p300[0]	Motor type selection	[0] No motor	
Enter Paramet...			

Below the table, a dialog box titled "Save result - Temp List1" is open. It contains two radio button options: "User defined parameter list without values" (which is selected) and "User-defined parameter list with values". At the bottom of the dialog are "Yes" and "No" buttons.

SINAMICS Startdrive V15.1

Highlights for SINAMICS G120

- Simplified device identification via »Flash LED« in the »Go online« dialogue



The screenshot displays the 'Configured access nodes of *Antrieb_1*' dialog box. On the left, a laptop icon is connected via a green line to a physical device (CU240E-2 PN) which has a 'Flash LED' indicator. The main interface includes several configuration fields:

- Type of the PG/PC interface: PN/IE
- PG/PC interface: ASIX AX88179 USB 3.0 to Gigabit Ethernet A...
- Connection to interface/subnet: Direct at slot '0 X150'
- 1st gateway: (empty)

Below these fields is a 'Select target device:' section with a 'Show all compatible devices' button. A table lists the available target devices:

Device	Device type	Interface type	Address	Target device
Conveyor curve	G120 CU240E-2 ...	PN/IE	169.254.36.1	--
--	--	PN/IE	Access address	--

At the top of the dialog, another table shows the 'Configured access nodes of *Antrieb_1*':

Device	Device type	Slot	Interface type	Address	Subnet
Antrieb_1	CU240E-2 PN	0 X150	PN/IE	192.168.0.1	
			S7USB	Not configured	

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- 7 SIMATIC MICRO-DRIVE

SINAMICS V90 HSP

Selection “Supplementary Telegram 750, PZD 1/3”

SIEMENS
Ingenuity for life

The screenshot shows the Siemens TIA Portal interface for configuring a drive. The main workspace displays a 3D model of the drive. The properties window at the bottom is open to the 'Cyclic data exchange' section. A blue arrow labeled '1' points to the 'Supplementary telegram' dropdown menu, and another blue arrow labeled '2' points to the dropdown menu. An orange callout box highlights the dropdown menu with the text 'A new dropdown to choose supplementary telegram'. The dropdown menu is open, showing options: 'None', 'Supplementary telegram 750, PZD 3/1', and 'None'.

Description:

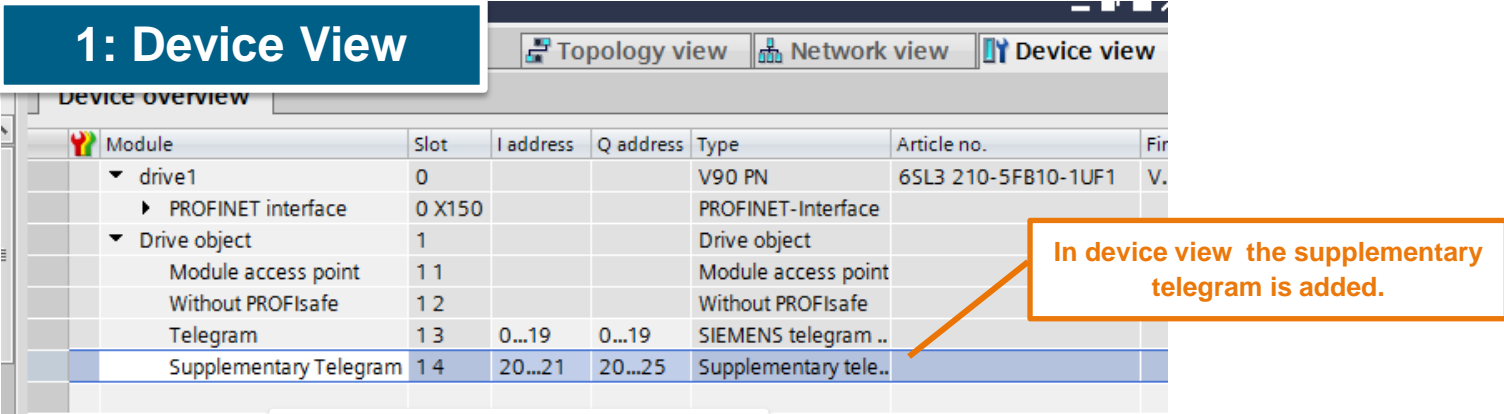
- Catalog:**
Device [Module] –
PROFINET interface [X150]
– Cyclic data exchange -
Telegram
- Add :** “Supplementary
telegram 750, PZD 3/1”

- The supplementary telegram support transmitting additional torque + torque limit set-point and feedback.
- Standard telegram of V90 e.g. 105 and 3 in conjunction with supplementary telegram 750 can extend the control words and status words.

SINAMICS V90 HSP

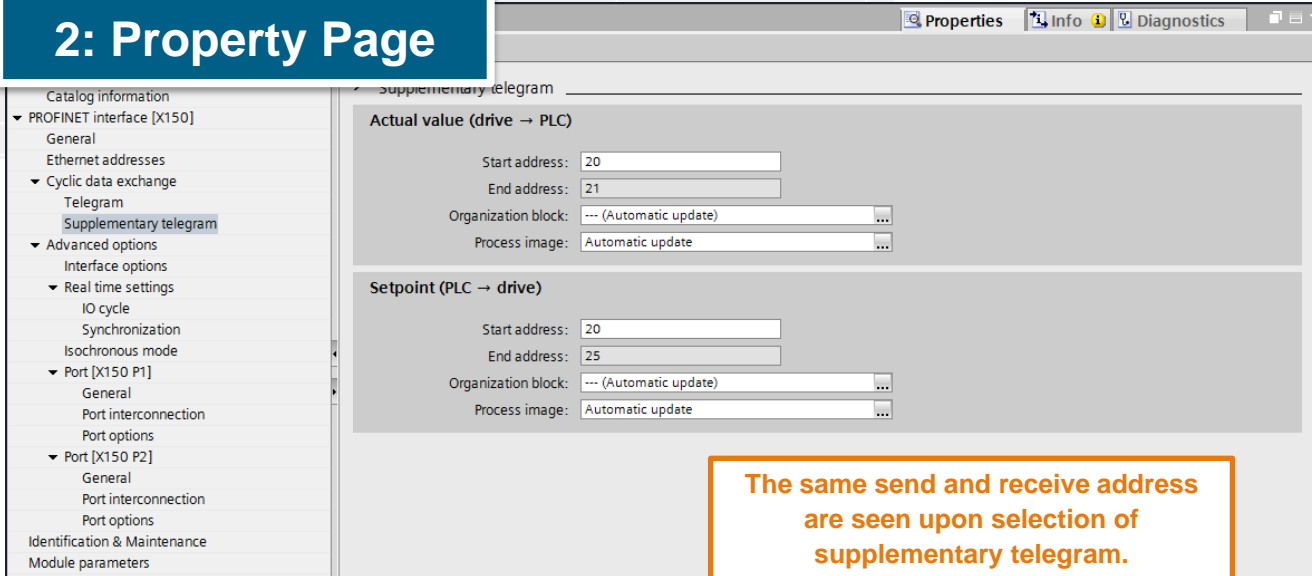
Device view and property page after adding telegram

1: Device View



Module	Slot	I address	Q address	Type	Article no.	Fir
drive1	0			V90 PN	6SL3 210-5FB10-1UF1	V.
PROFINET interface	0 X150			PROFINET-Interface		
Drive object	1			Drive object		
Module access point	1 1			Module access point		
Without PROFIsafe	1 2			Without PROFIsafe		
Telegram	1 3	0...19	0...19	SIEMENS telegram ..		
Supplementary Telegram	1 4	20...21	20...25	Supplementary tele..		

2: Property Page



The same send and receive address are seen upon selection of supplementary telegram.

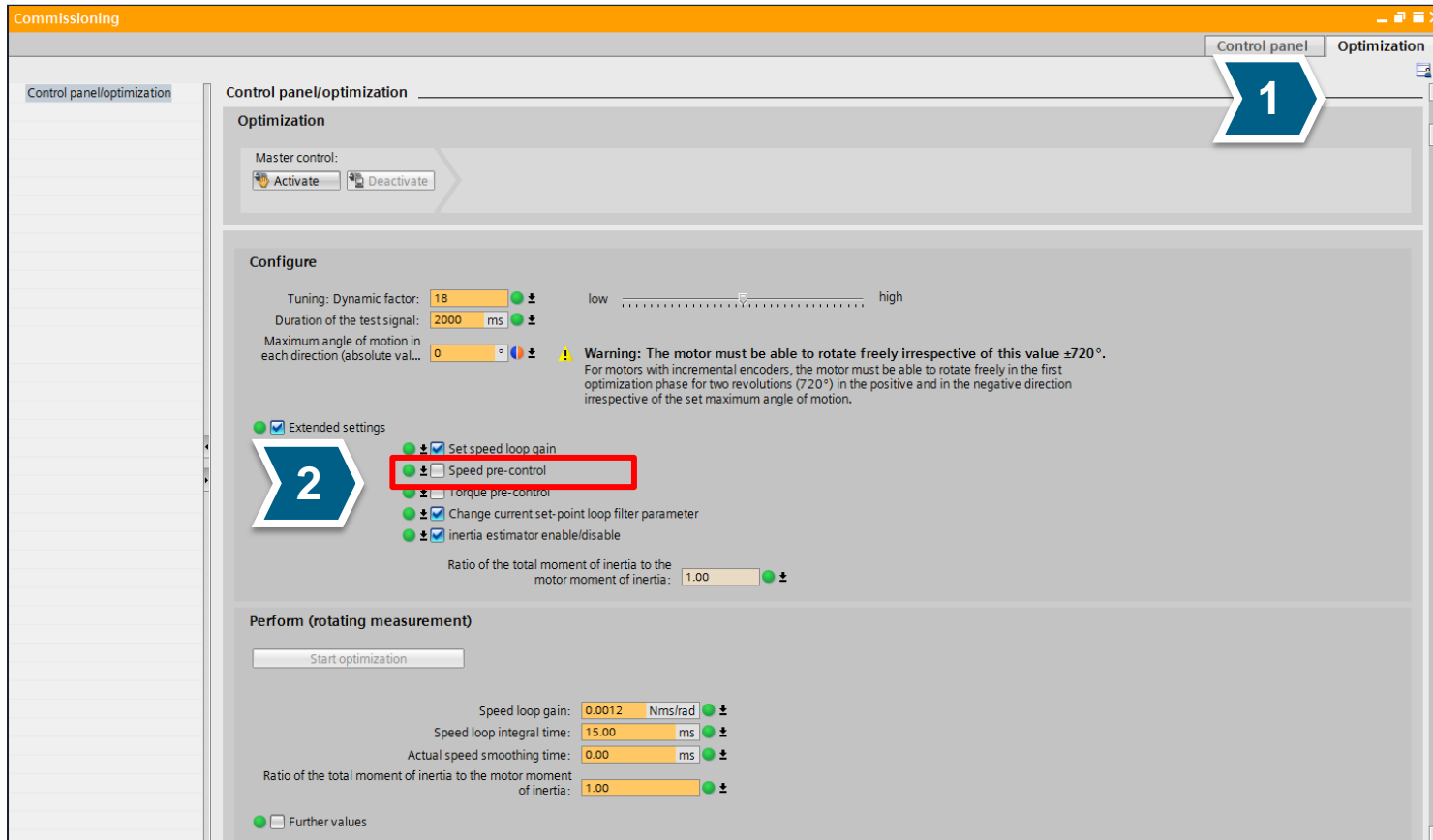
Description:

Device overview:
Supplementary telegram will be added.

Property page:
Address of send and receive for supplementary telegram is updated and shown.

1. Drive to Controller:
Actual torque
2. Controller to drive:
Additional torque + torque limitation

SINAMICS V90 HSP Commissioning - Speed pre-control available



Description:

- **Catalog:**
Drive – Commissioning – Optimization - Extended settings
- **Speed feed forward:**
is available in TIA (Not as default setting in TIA, because default setting for LI has been already done in new firmware 10300).

*In new firmware 10300:

- **Speed feed forward** active for LI (Low Inertia) by default for fast dynamic response and high precision positioning without user's setting.
- **Torque forward** active for LI in speed mode (decrease the follow-error by acceleration and deceleration without user's setting).
- Torque and speed feed forward **not active** for HI.

Agenda

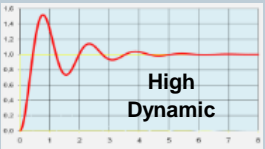

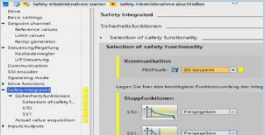


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SIMATIC MICRO-DRIVE

Features and Benefits: The top highlights of the system

NEW



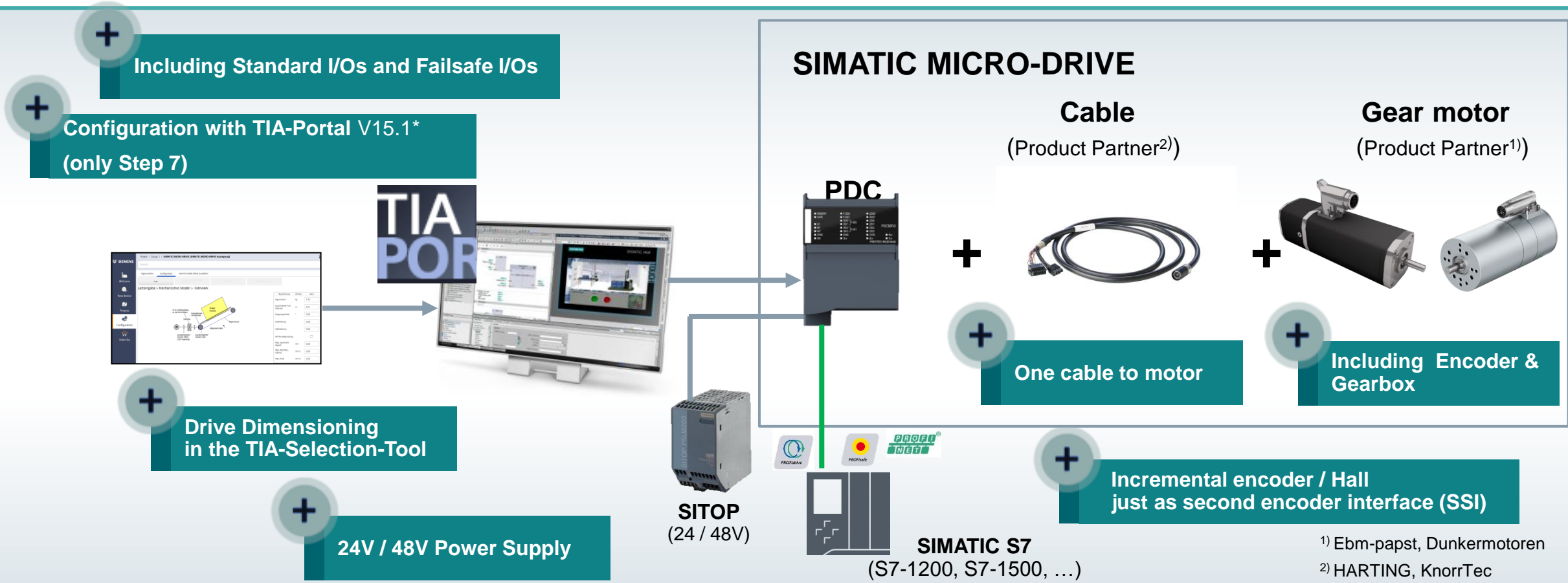
Feature / Function	Benefit
<ul style="list-style-type: none"> Flexibility & combinability of system components* PROFINET IRT (1ms) 	 <ul style="list-style-type: none"> Universally applicable Increased performance
<ul style="list-style-type: none"> Safety Integrated: STO, SS1, SLT, SLS, SBC, SSM via PROFIsafe 	 <ul style="list-style-type: none"> Fulfills high demands for safety
<ul style="list-style-type: none"> TIA Portal integration “One Button Tuning” 	 <ul style="list-style-type: none"> Easy engineering
<ul style="list-style-type: none"> One cable to motor** Integrated C1 EMC-Filter 	 <ul style="list-style-type: none"> Saves time on installation
<ul style="list-style-type: none"> 24-48 V: 0,05-1kW Battery supply incl. energy recovery UL & Marine certification*** 	 <ul style="list-style-type: none"> Ready for various markets

* Product partner: Dunkermotoren & ebm-papst (motors) / HARTING & KnorrTec (connecting cables)
 ** Dunkermotoren up to 200W & ebm-papst up to 400W
 *** only for PDC

SIMATIC MICRO-DRIVE 24V/48V DC&EC Drive System



System overview



1) Ebm-papst, Dunkermotoren
2) HARTING, KnorrTec



SIMATIC MICRO-DRIVE HSP for TIA Portal

SIEMENS
Ingenuity for life

Devices and networks
PDC selection

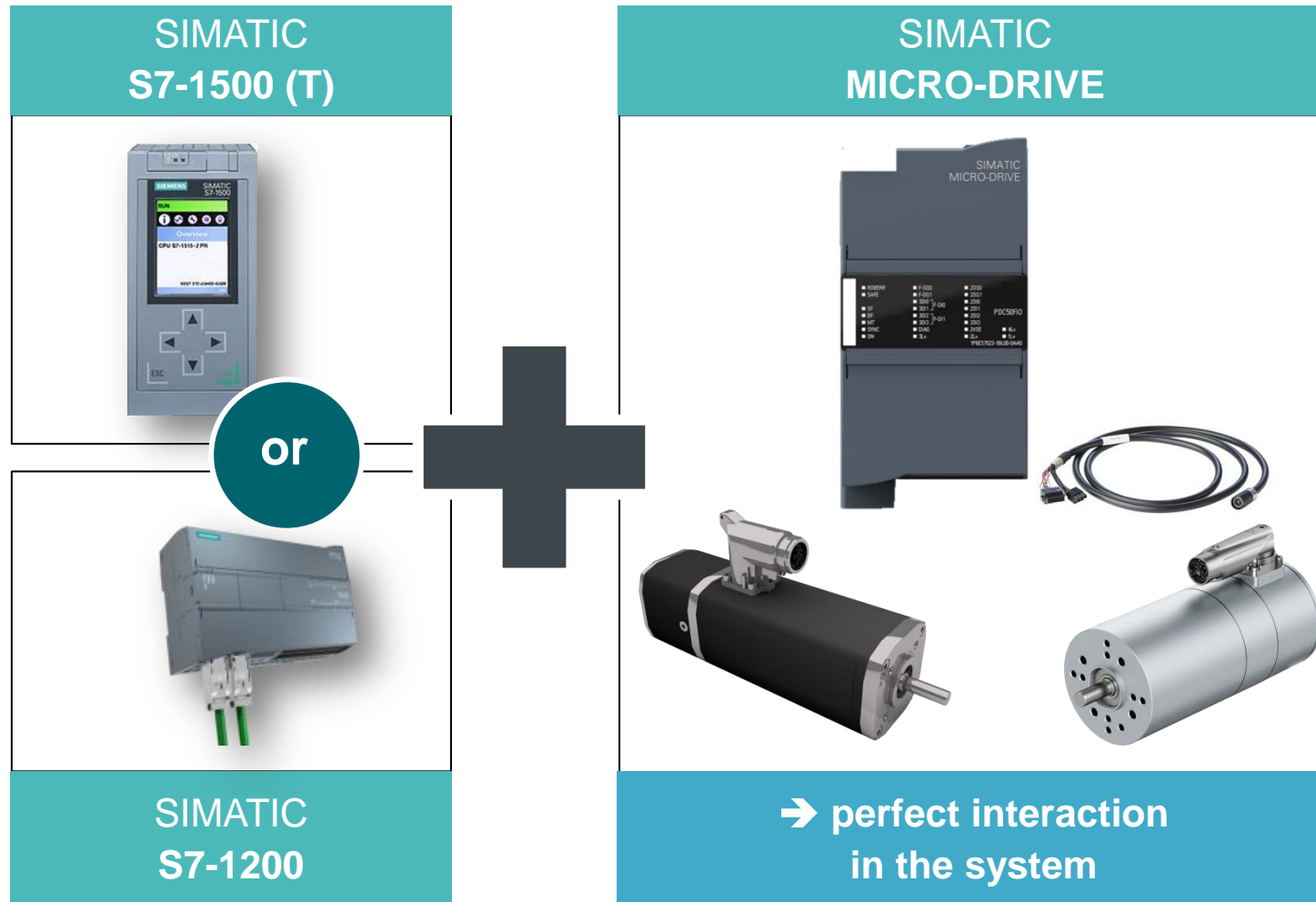
Device diagnostics

Device configuration

Device parameter assignment

SIMATIC MICRO-DRIVE

Perfect interaction in the system



Advantages of the servo drive system

- ✓ Efficient engineering
- ✓ Seamless and straightforward drive control
- ✓ Harmonized and coordinated portfolio
- ✓ Integrated safety technology
- ✓ System diagnostics

TIA Portal – Highlights of TIA Portal V15.1

Hardware configuration

- S7-1500R/H redundant systems
- MRP domain management across project boundaries
- Change firmware version for IO devices



Startdrive – Innovations

- Openness add-ins for G120, S120, S210
- Integration of SINAMICS S210 and SIMOTICS 1FK2 motors
- Startdrive Advanced:
Safety acceptance test for S120 and S210 drives



TIA Portal options

- STEP 7 Safety**
Flexible F Link, DP_DP_ID, Openness add-ins
- Multiuser**
commissioning mode
- OPC UA**
S7-1500 client, SiOME configuration tool
- ProDiag**
Usability add-ins,
such as hierarchical comments
- PLCSIM Advanced**
Floating window, max. cycle time
handling through the API
- Target 1500S for Simulink**
Model on Web server, transfer of SO files
- Teamcenter Gateway**
Multiuser engineering, reference projects
- SiVArc**
Access protection, SCL blocks,
template screens, Openness add-ins
- Energy Suite**
Energy screens, reports, SINAMICS,
usability improvements



STEP 7 – Innovations

- Software units: Splitting of user program into separately loadable units
- Textual interface for SCL blocks
- Improvements in online monitoring of blocks



System functions

- Trace: Simplified chart configuration
- TIA Portal Openness add-ins (ET 200SP read/write parameters, watch tables, extended functionality for block import)
- User-defined shortcut keys

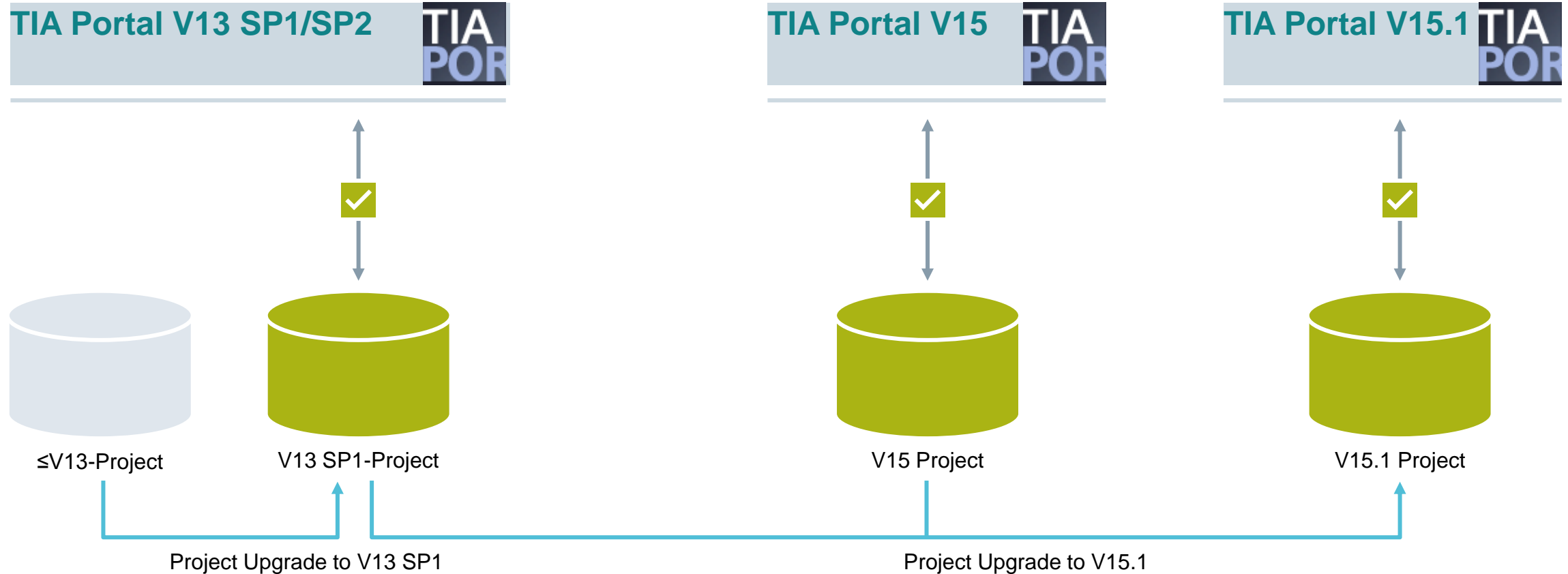


WinCC – Innovations

- Support of OPC UA Server Alarm and Condition
- ProDiag Control functional add-ins



System Functions – Project Upgrade



Side-by-side installation of V13 SP1/SP2, V14 SP1, V15 and V15.1 enables access to all project versions.
V15 license for all available TIA Portal versions including V15.1 usable.

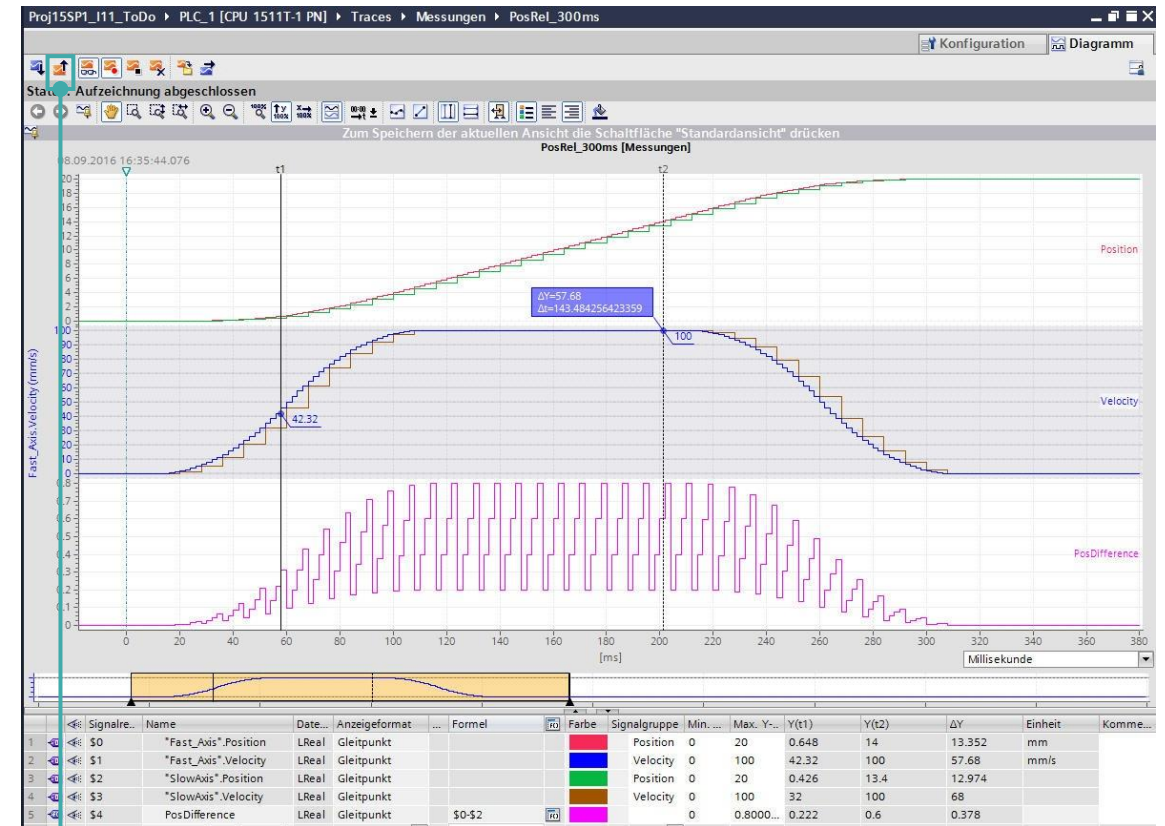
TIA Portal Trace Innovations – Simplified handling of chart configurations

Expansions

- Settings can already be made during configuration
- Changes made in online mode can be retained
- When changes are made to the trace configuration (signals, OBs, triggers, etc.), the settings are no longer lost.

Affected functions (examples)

- Signal grouping
- Color picker
- Display format
- Creating formulas



Change in online mode can also be entered in the project

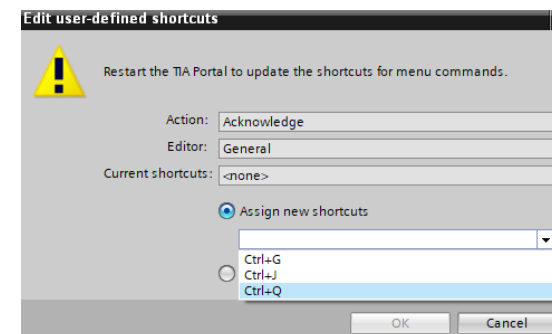
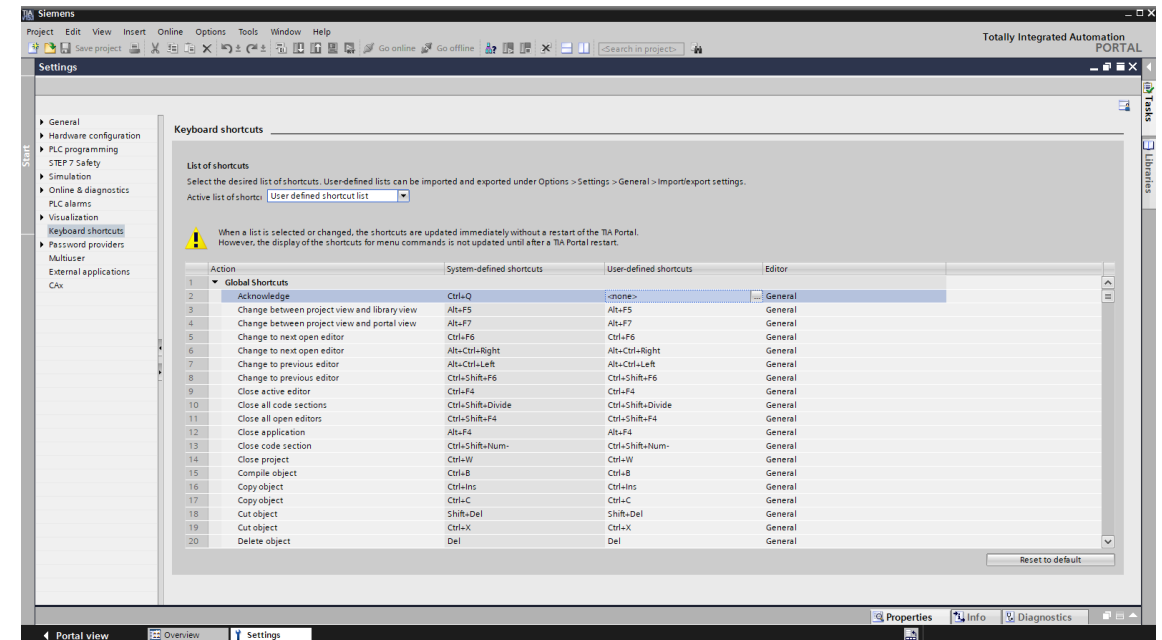
System Functions – User-defined shortcut keys

Function

- Adaptations of keyboard shortcuts in the TIA Portal settings
- Existing functions with keyboard shortcuts can be assigned new keyboard shortcuts
- User-defined keyboard shortcuts can be imported and exported

Benefits

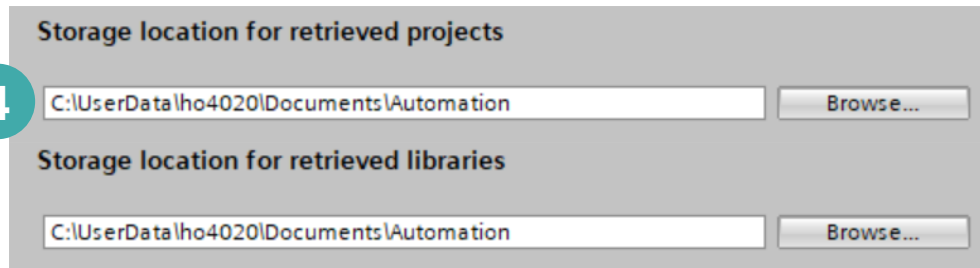
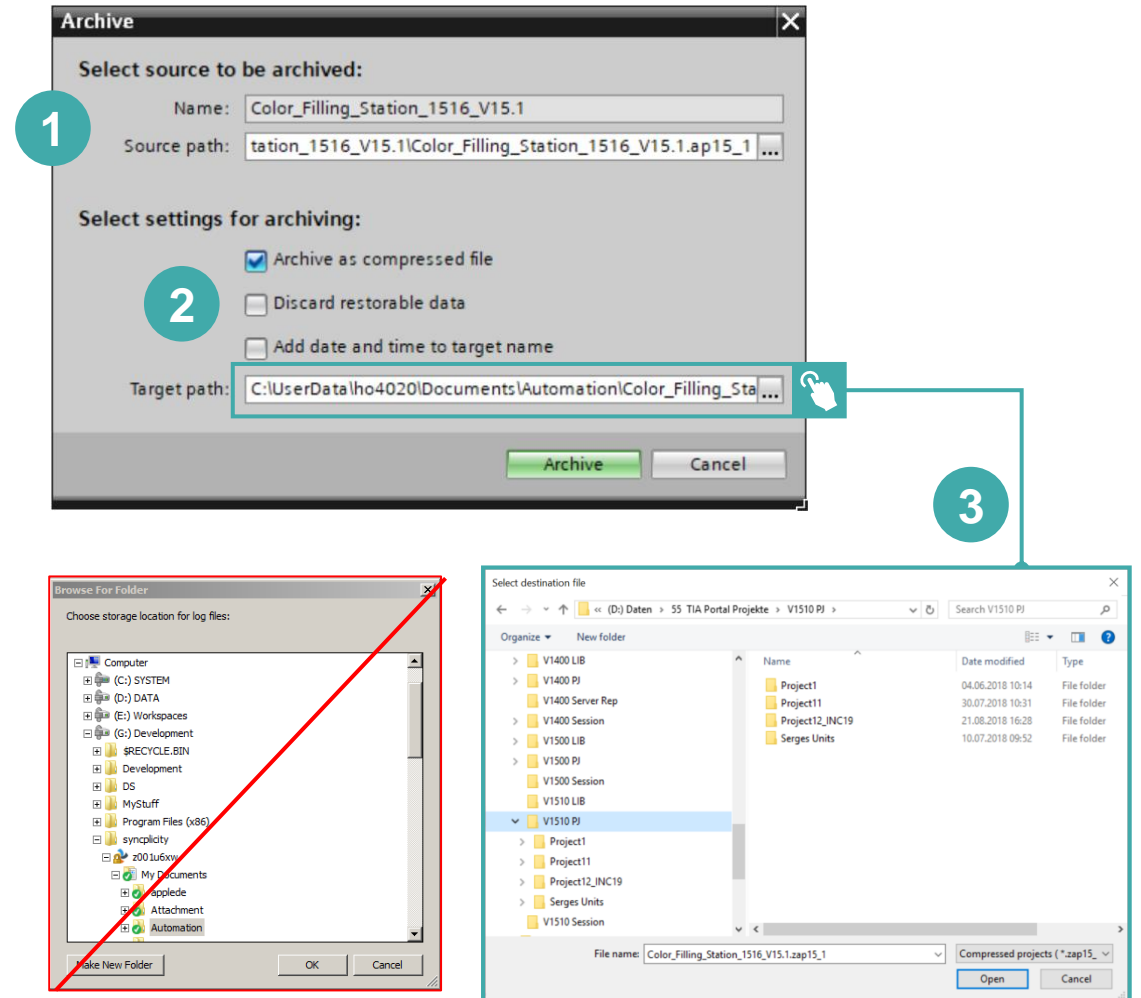
- Faster and more intuitive working with the keyboard, keyboard shortcuts familiar to the user
- Using the user-defined keyboard shortcuts, another installation of the TIA Portal with export/import



System Functions – Improved usability for archiving projects

Benefits

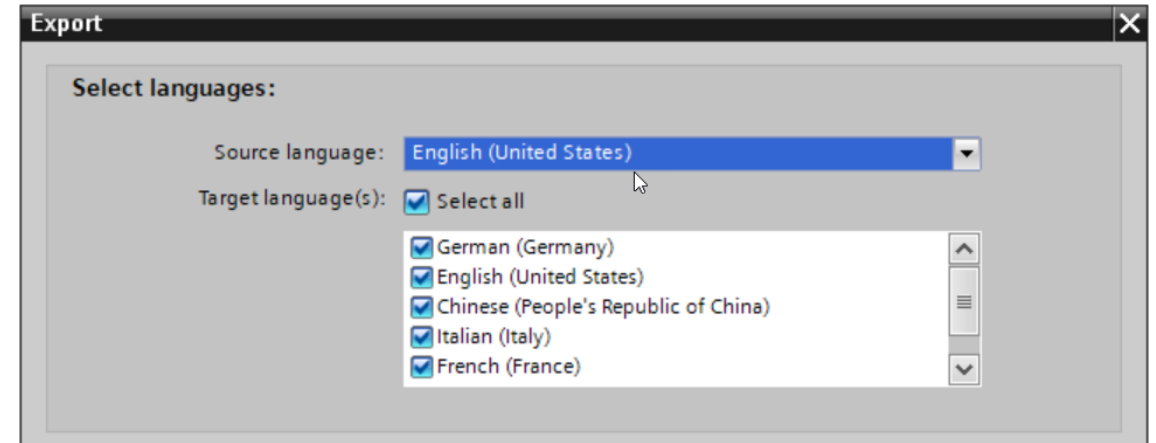
1. Projects no longer need to be explicitly opened for archiving.
2. By default, the projects are completely archived with all data, so that it is not necessary to recreate them.
3. Integration of the current file selection dialog for archive selection. Better overview, simplified path selection with history, display of the existing file, direct editing option.
4. Extension of TIA Portal settings to include a default path for storing retrieved projects and libraries.



System Functions – Export and import of project texts

Benefits

- For texts in the project and libraries it is possible to export and import several languages in one operation.



	A	E	F	G	H	I	J	K
1	Category	en-US*	de-DE	en-US	zh-CN	it-IT	fr-FR	es-ES
102	<HMI screen>	Diagnosis	Diagnose	Diagnosis	诊断	Diagnostica	Diagnostic	Diagnóstico
103	<HMI runtime>	Different jobs	Different jobs	Different jobs	Different jobs	Different jobs	Different jobs	Different jobs
104	<HMI runtime>	Different jobs	Different jobs	Different jobs	Different jobs	Different jobs	Different jobs	Different jobs
105	<HMI screen>	Display CMYK values	Anzeige der CMYK-Werte	Display CMYK values	显示 CMYK 值	Vista dei valori CMYK	Afficher les valeurs CMYK	Mostrar valores CMYK
106	<HMI screen>	Display color selection	Anzeige der Farbauswahl	Display color selection	显示颜色选择	Vista della selezione del co	Afficher le choix des coule	Mostrar selección de colo
107	<HMI screen>	Display version	Version anzeigen	Display version	显示版本	Visualizza versione	Afficher la version	Mostrar versión
108	<HMI screen>	Display version	Version anzeigen	Display version	显示版本	Visualizza versione	Afficher la version	Mostrar versión
109	<HMI runtime>	Drive Conveyor Exists	Antrieb Band vorhanden	Drive Conveyor Exists	可用的传送带驱动装置	Per nastro trasportatore p	Pour convoyeur disponible	Por cinta transportadora p
110	<HMI runtime>	Drive Conveyor Fault	Antrieb Band Fehler	Drive Conveyor Fault	传送带组错误	Errore cumulativo nastro t	Erreurs groupées convoye	Error colectivo cinta trans
111	<HMI runtime>	Drive Mixer Exists	Antrieb Mischer vorhande	Drive Mixer Exists	可用的搅拌机驱动装置	Per miscelatore presente	Pour mélangeur disponible	Por mezclador presente
112	<HMI runtime>	Drive Mixer Fault	Antrieb Mischer Fehler	Drive Mixer Fault	搅拌机组错误	Errore cumulativo miscela	Erreurs gorupées mélange	Error colectivo mezclador
113	<HMI screen>	ETHERNET	ETHERNET	ETHERNET	以太网	ETHERNET	ETHERNET	ETHERNET



System Functions – TIA Portal Openness – Block export with snapshot

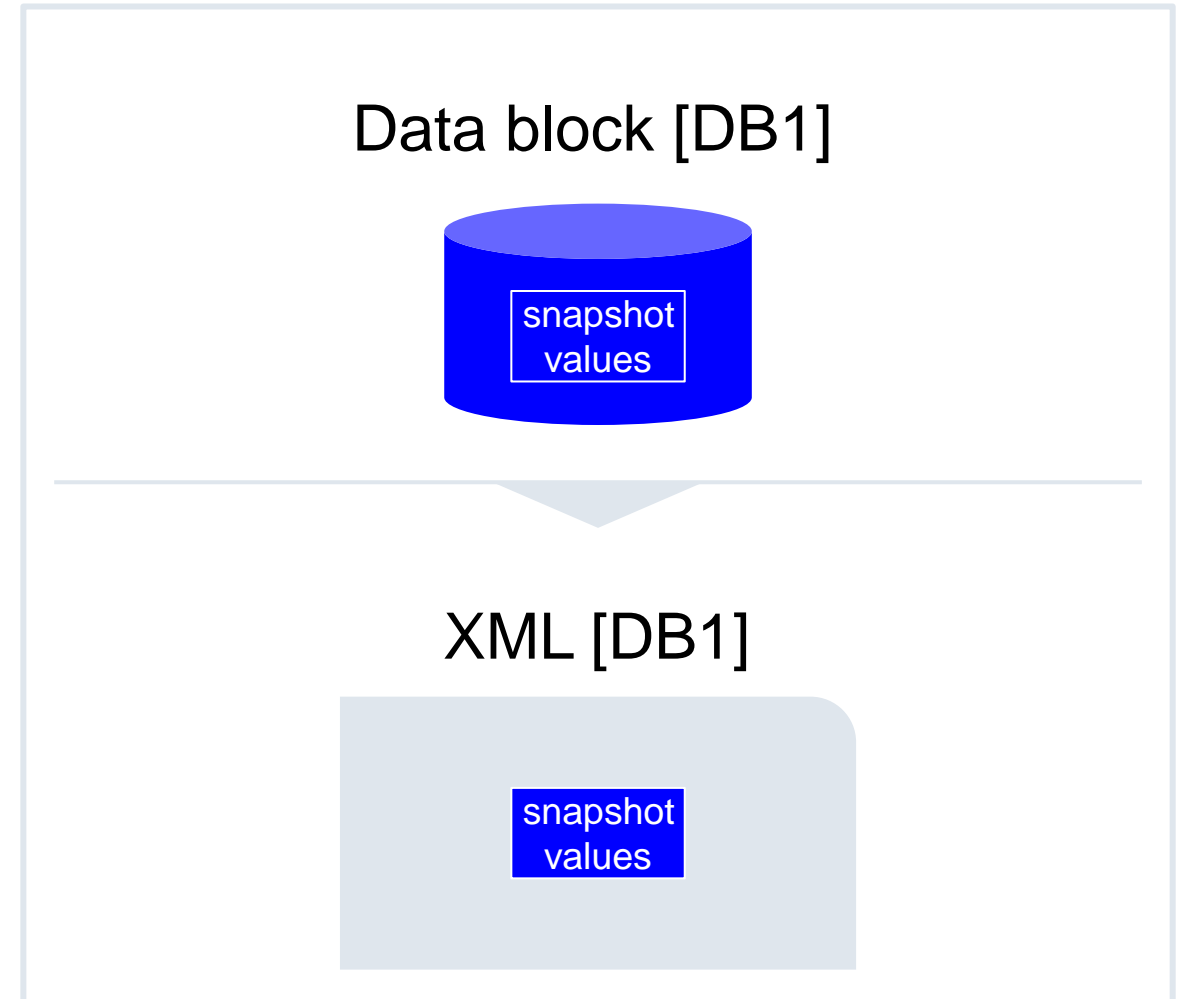
XML export of the snapshot of actual values

New

The snapshot of the actual values is stored in the XML file during export via Openness.

Benefits

Different snapshots can be compared via XML files



System Functions – TIA Portal Openness – Reading snapshot values from DB export

XML export of the snapshot

New






The snapshot values of a DB can be read from its XML export file via Openness.

Benefits

Important parameters that typically do not change frequently, such as controller parameters, can be

- Uploaded from one and the same DB
- at different times
- After the respective DB XML export
- read out and compared from there

GlobalSignals (snapshot created: 3/18/2018 9:48:32 PM)

	Name	Data type	Start value	Snapshot
	▼ Static			
	■ rectangle	Real	0.0	-5.0
	■ sawtooth	Real	0.0	4.5
	■ triangle	Real	0.0	-1.0
	■ sinus	Real	0.0	-1.545086

...

```
<Snapshot ReadOnly="true"><SnapshotValues  
  <Value Path="rectangle" Type="Real">-5.0</Value>  
  <Value Path="sawtooth" Type="Real">4.5</Value>
```

...



System Functions – TIA Portal Openness – Fault-tolerant XML import

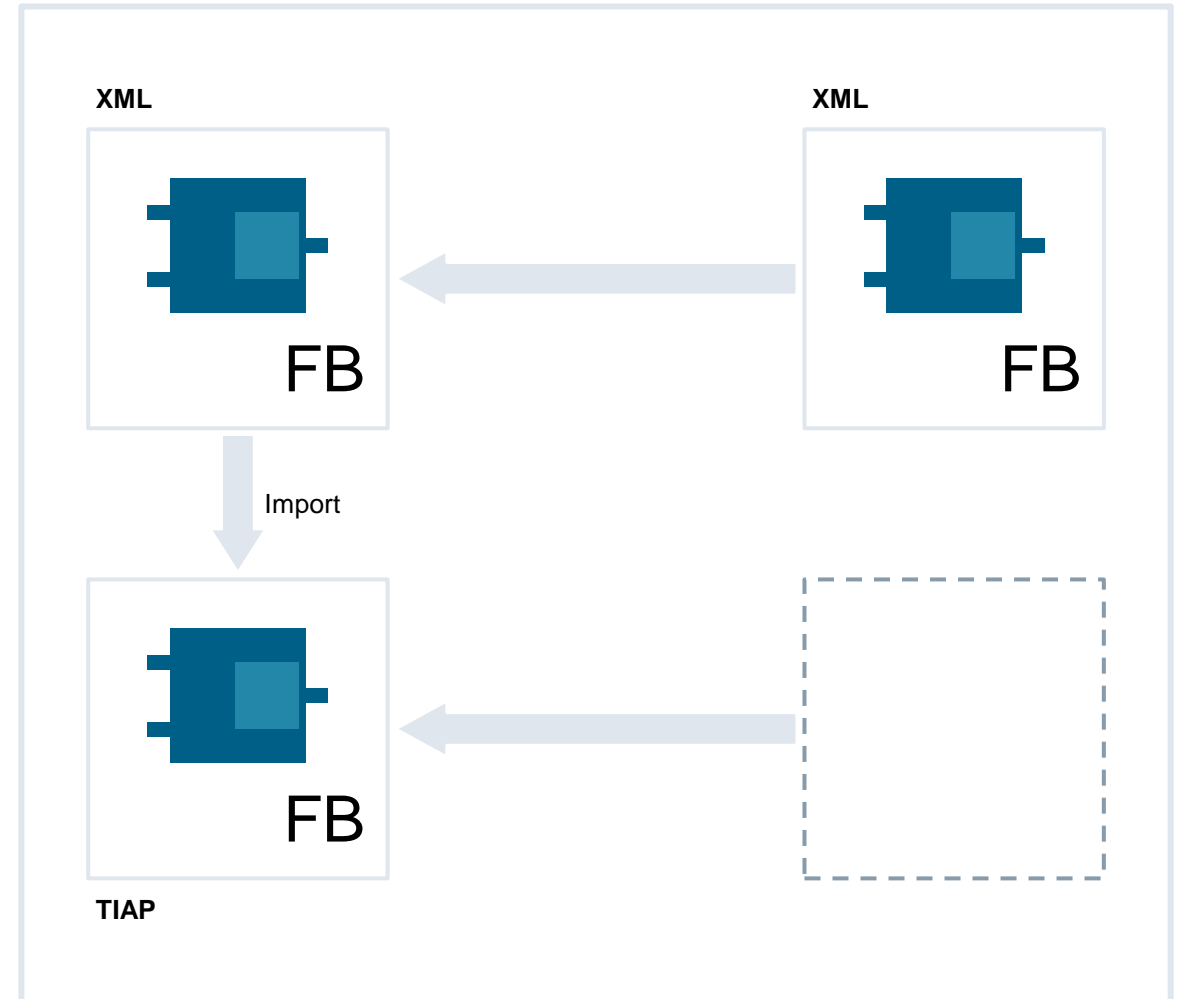
Fault-tolerant XML import of inconsistent blocks

New

Block XMLs can be imported, even if used UDTs or called blocks are not available or not matching in the target project

Benefits

The XML import is not terminated as before and displays the inconsistent places to the user. In certain situations, the import rules can mean the loss of instance-specific attributes, such as start values.



System functions – TIA Portal Openness – Station Upload

F-/PLC station upload via Openness

New

At runtime, a station upload to an empty project can be triggered from an F/PLC via Openness

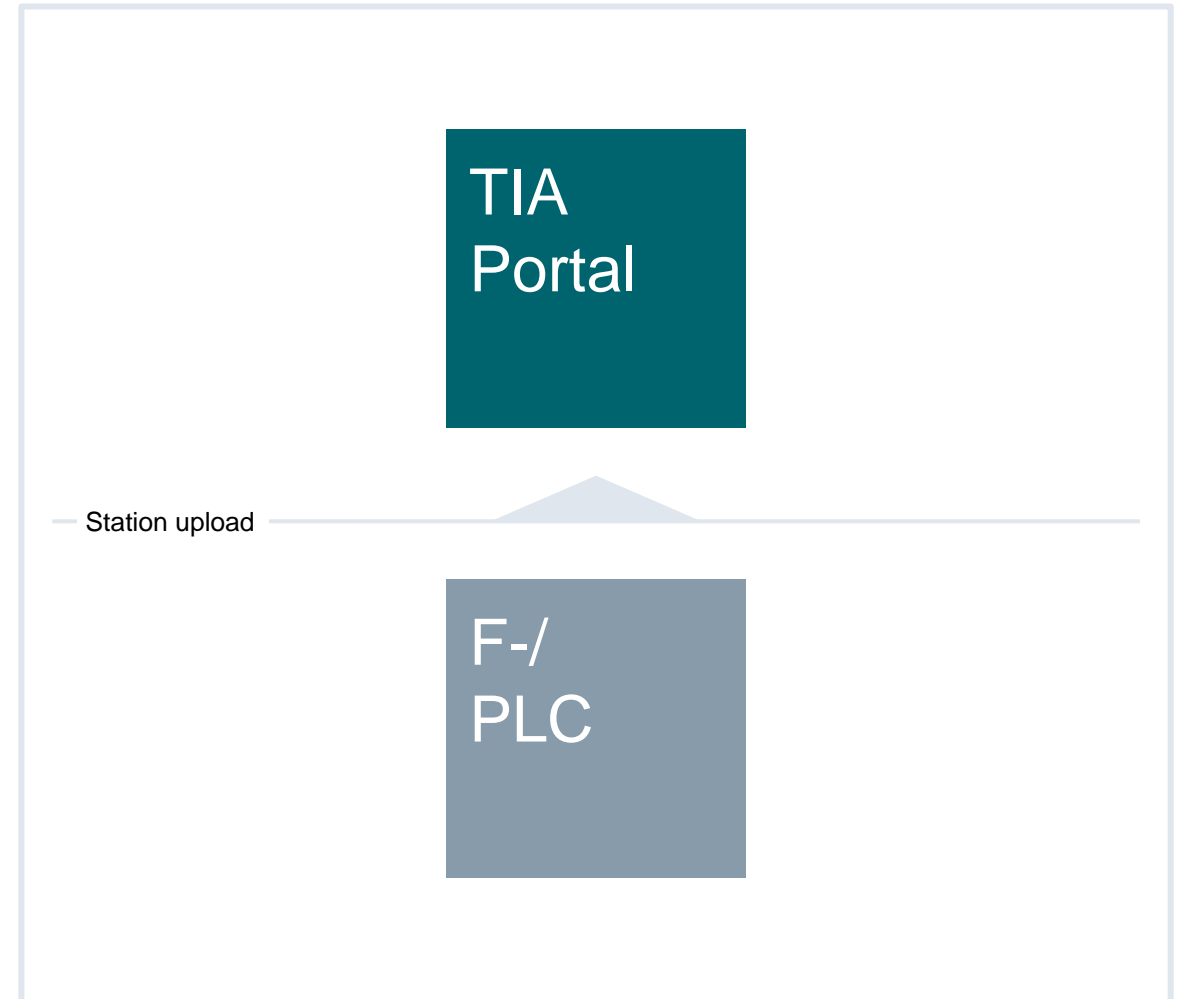
The station upload is extended by file data: recipes, data logs and user files

Benefits

A customer can automatically obtain and manage station uploads

For the station upload can be handled:

- F-/PLC protection level passwords,
- connections, also via NAT routers.



System Functions – TIA Portal Openness – Offline/offline comparison

PLC offline/offline comparison

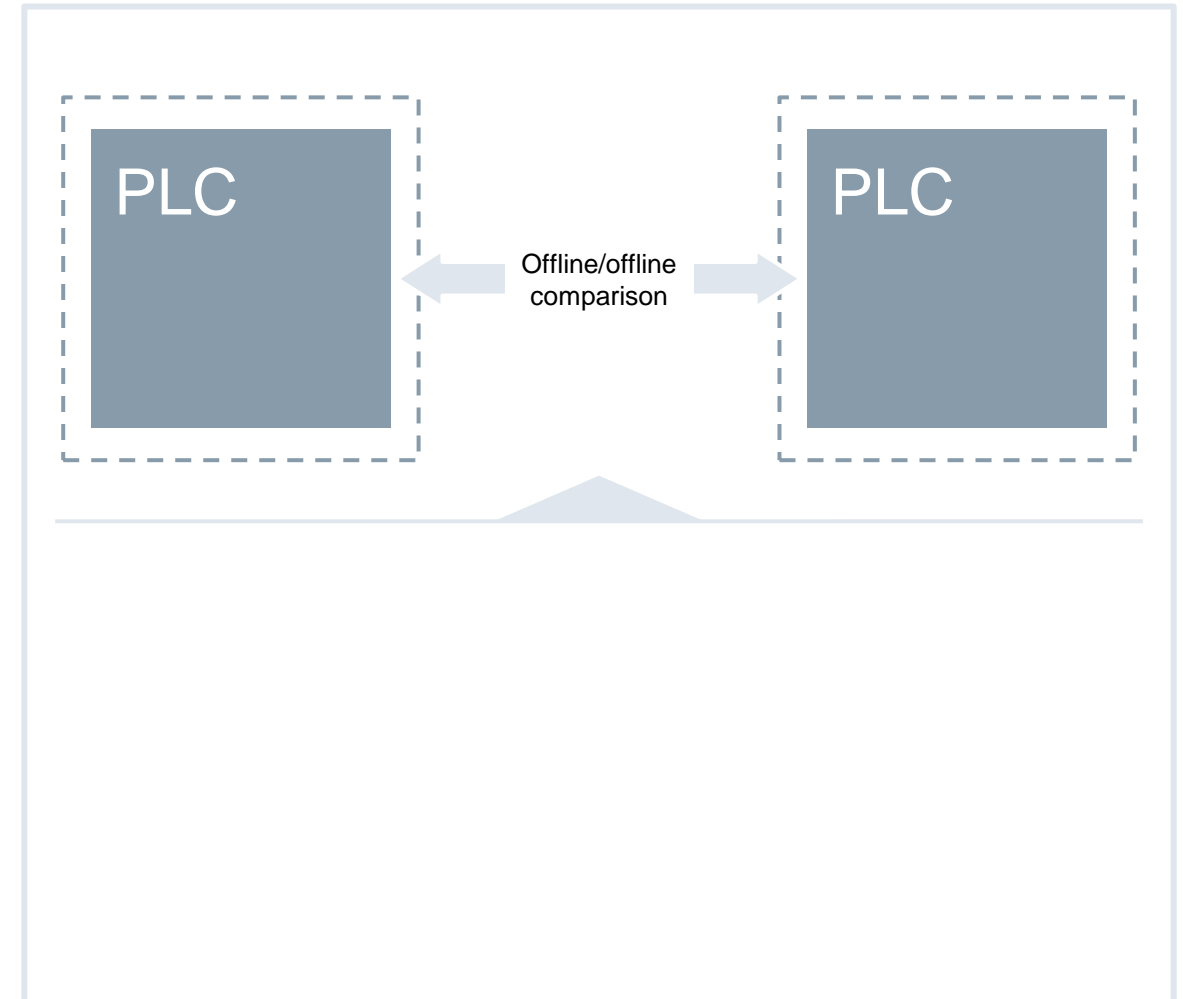
New

Automatically triggered comparison of 2 PLCs
which can be in different projects

Benefits

Data of a PLC in the last offline project
and in the uploaded project can be compared.

The differences indicate changes that
may be merged manually.



System Functions – TIA Portal Openness – Reset/set know-how protection

Automatic protection of blocks

New

A block can be know-how protected via Openness API

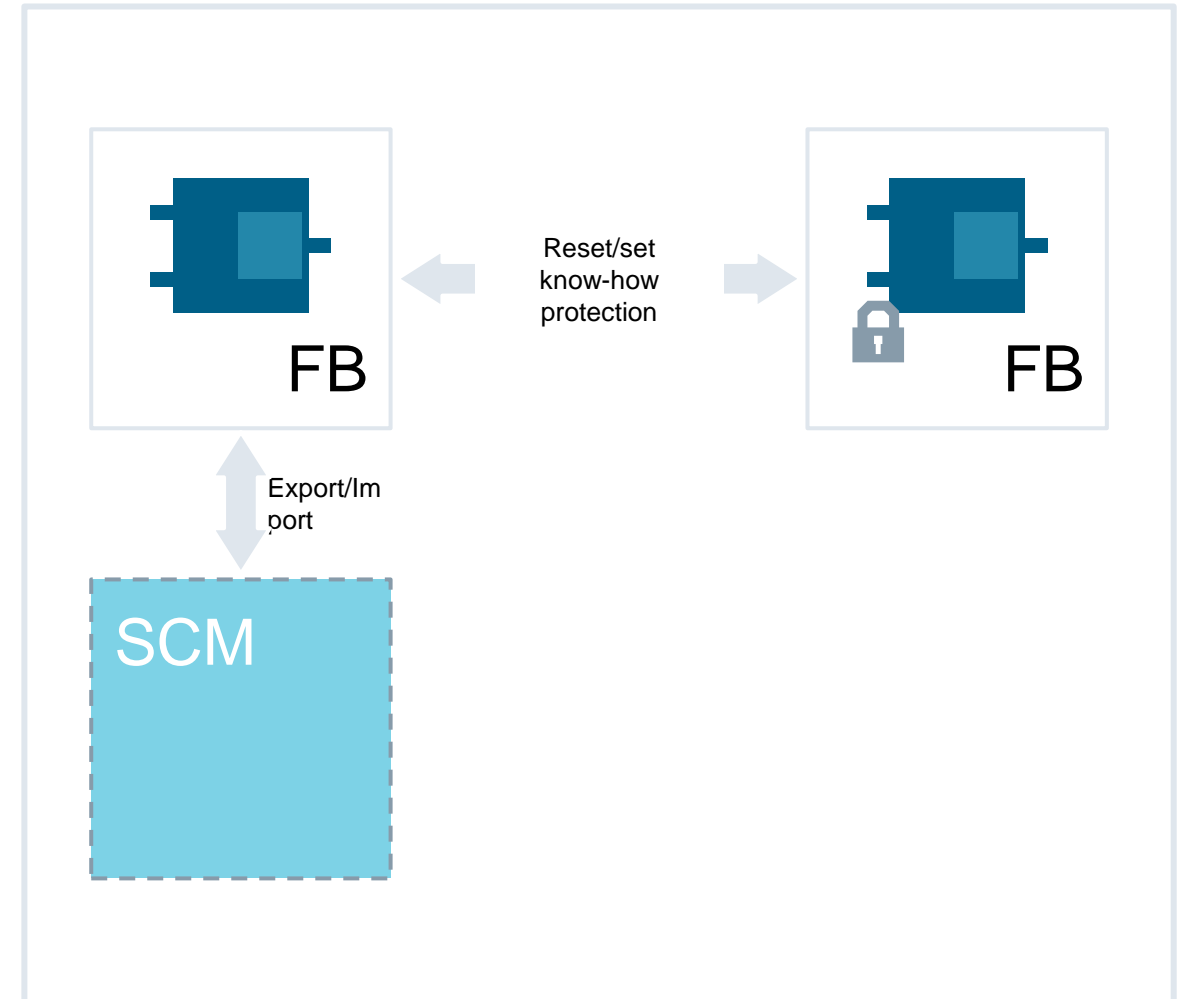
Conversely, a know-how-protected block can be unlocked via Openness

Benefits

Know-how-protected blocks can be modified in an automated workflow

KHP blocks can be...

- Unlocked | Fully exported to/from a source code management system
- Fully imported
- Provided with know-how protection



System functions – TIA Portal Openness – Download

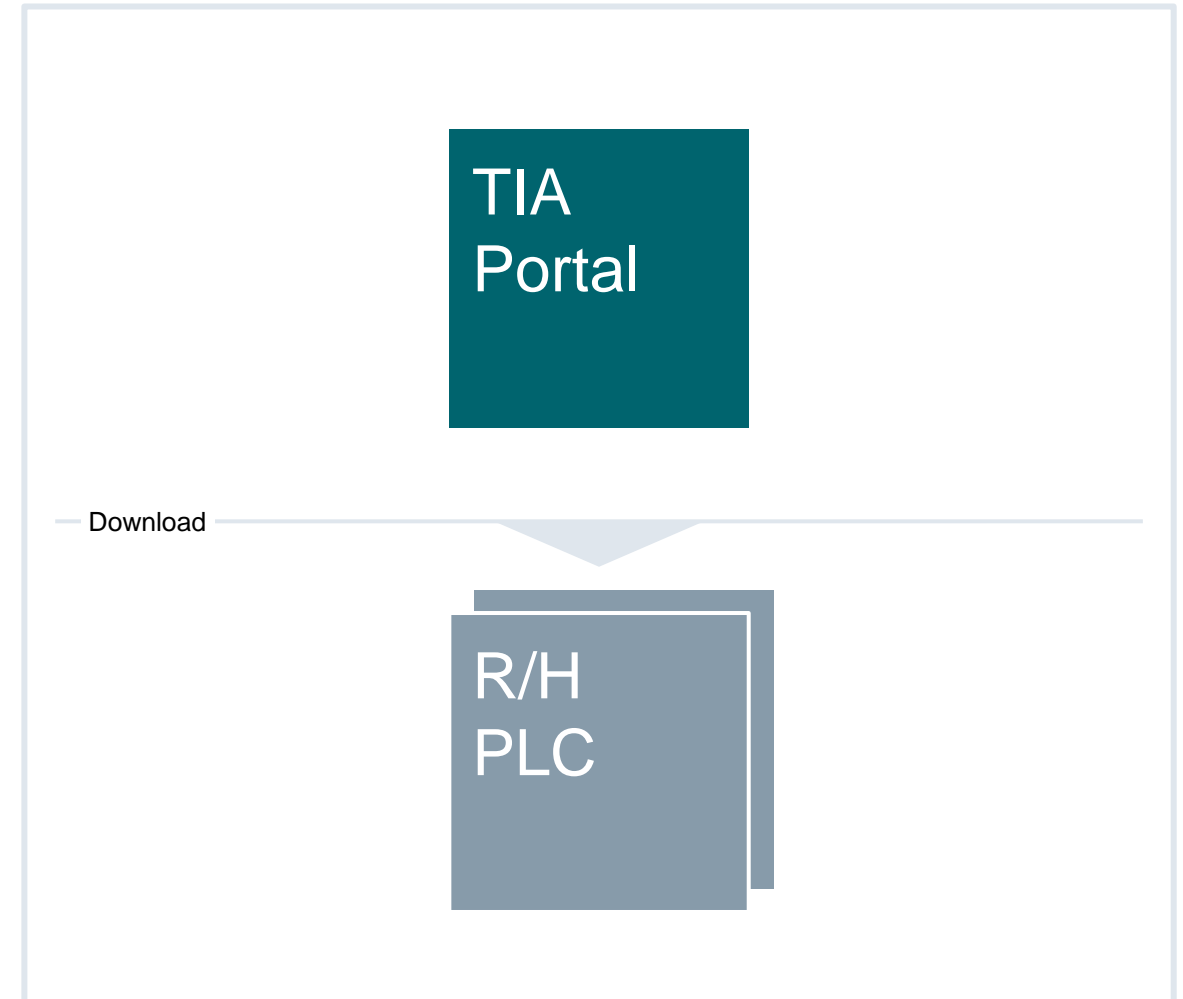
Download to an R/H PLC

New

Automated loading of the R/H PLC, which can be operated redundantly in V15.1, consisting of the primary and backup PLC

Benefits

In addition to downloading standard PLCs, new R/H PLCs can also be automatically loaded.



System functions – TIA Portal Openness – Watch tables

Export/import of watch tables

New

Import of watch tables from XML

Export of watch tables to XML

Benefits

In an automated workflow, watch tables can be

- Created externally and imported
- Exported, modified and imported
- Versioned in SCM



System Functions – TIA Portal Openness – Determining block checksums

Reading of block checksums

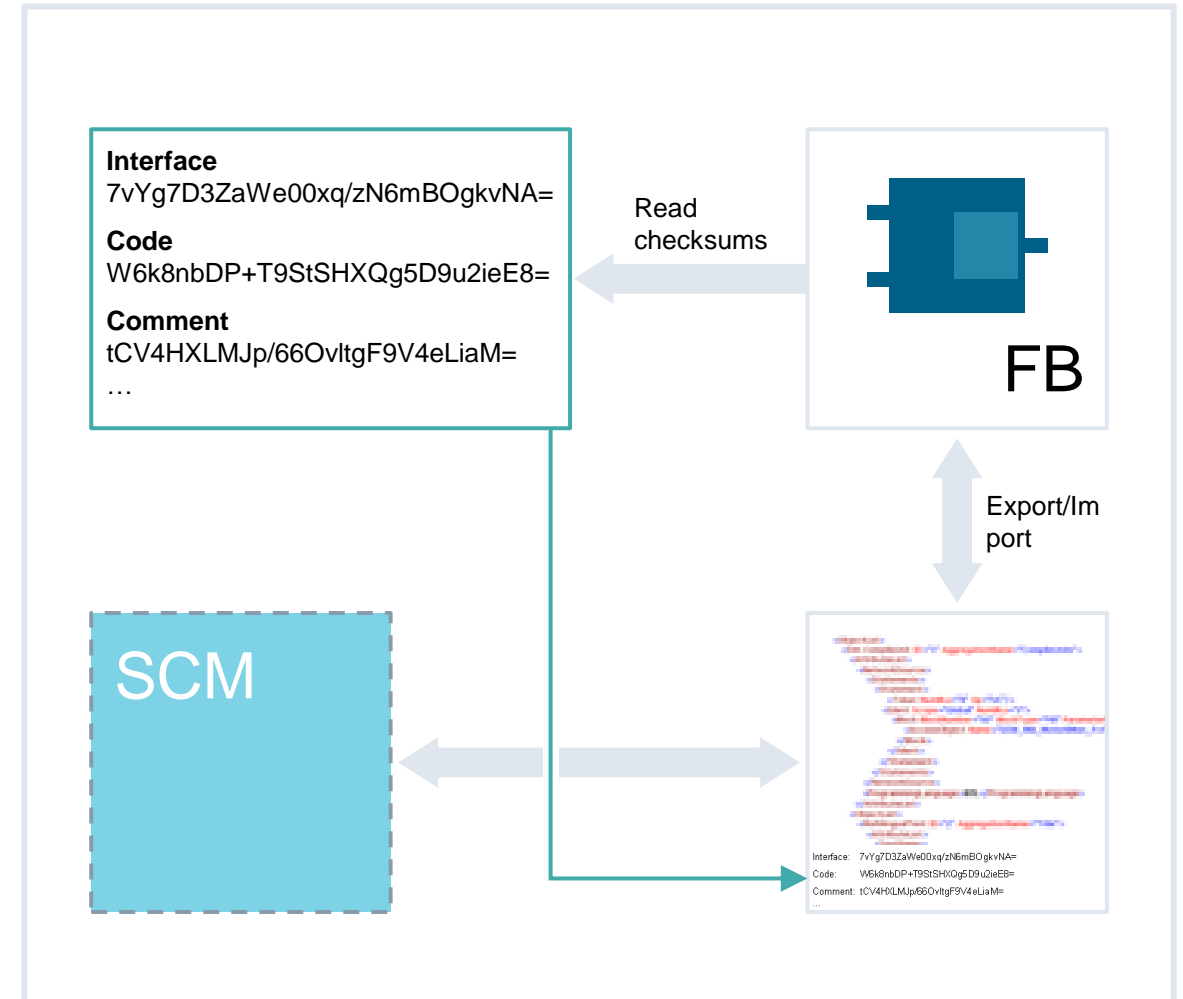
New

Checksums of blocks can be determined by code, interface, comment, etc.

Benefits

Checksums can be determined for a block that is to be exported. A user can add the checksums to the exported XML on his own.

This allows a high performance identity check of external block XMLs with blocks in the TIA Portal. The previously required XML import with consistency check is no longer needed.



System functions – TIA Portal Openness – Access to HW parameters

Parameter-specific access to ET200SP modules

New

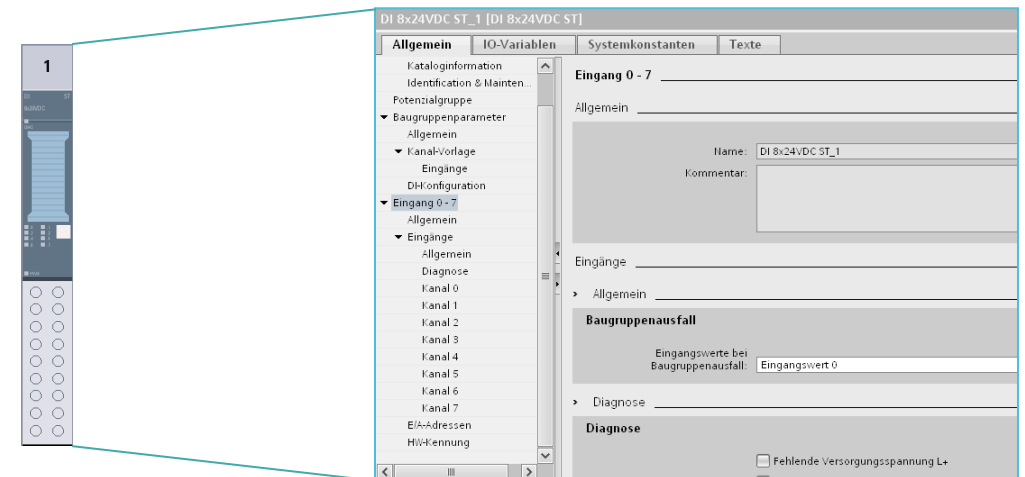
Read/Write of ET200SP hardware module parameters of elementary data type is supported

Benefits

In addition to the automated placement of devices/modules in a networked configuration, most of the module parameters of the ET200SP modules can now also be read/written programmatically.

Openness API

Read/Write module parameters of elementary data type



System Functions – TIA Portal Openness – Opening two projects

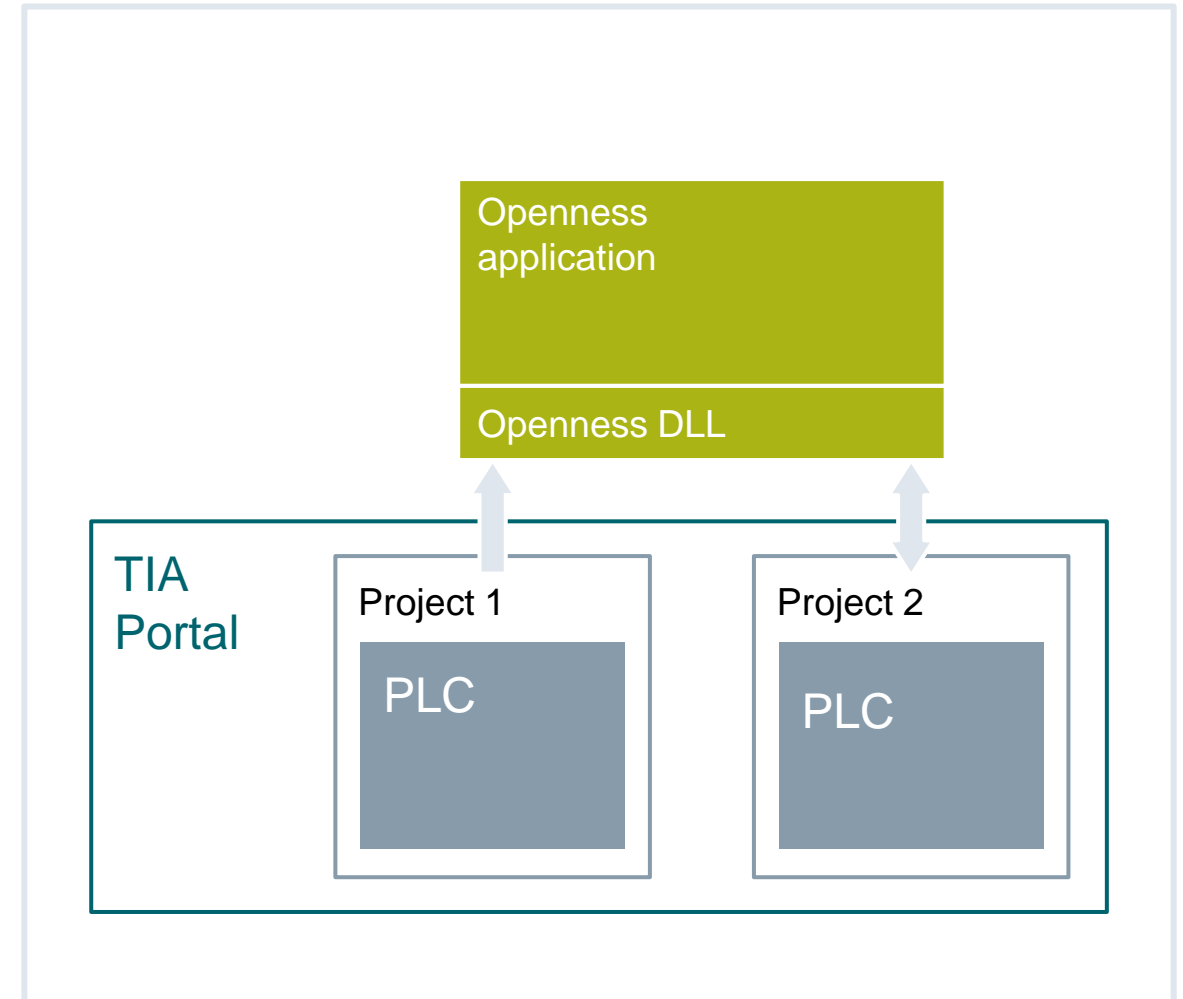
Opening two projects in the TIA Portal

New

Two projects can be opened simultaneously in a TIA Portal instance, one of them in read mode

Benefits

This allows cross-project PLC comparisons to be performed, for example.



System Functions – TIA Portal Openness – Archiving/retrieving a project

Archiving/retrieving a project

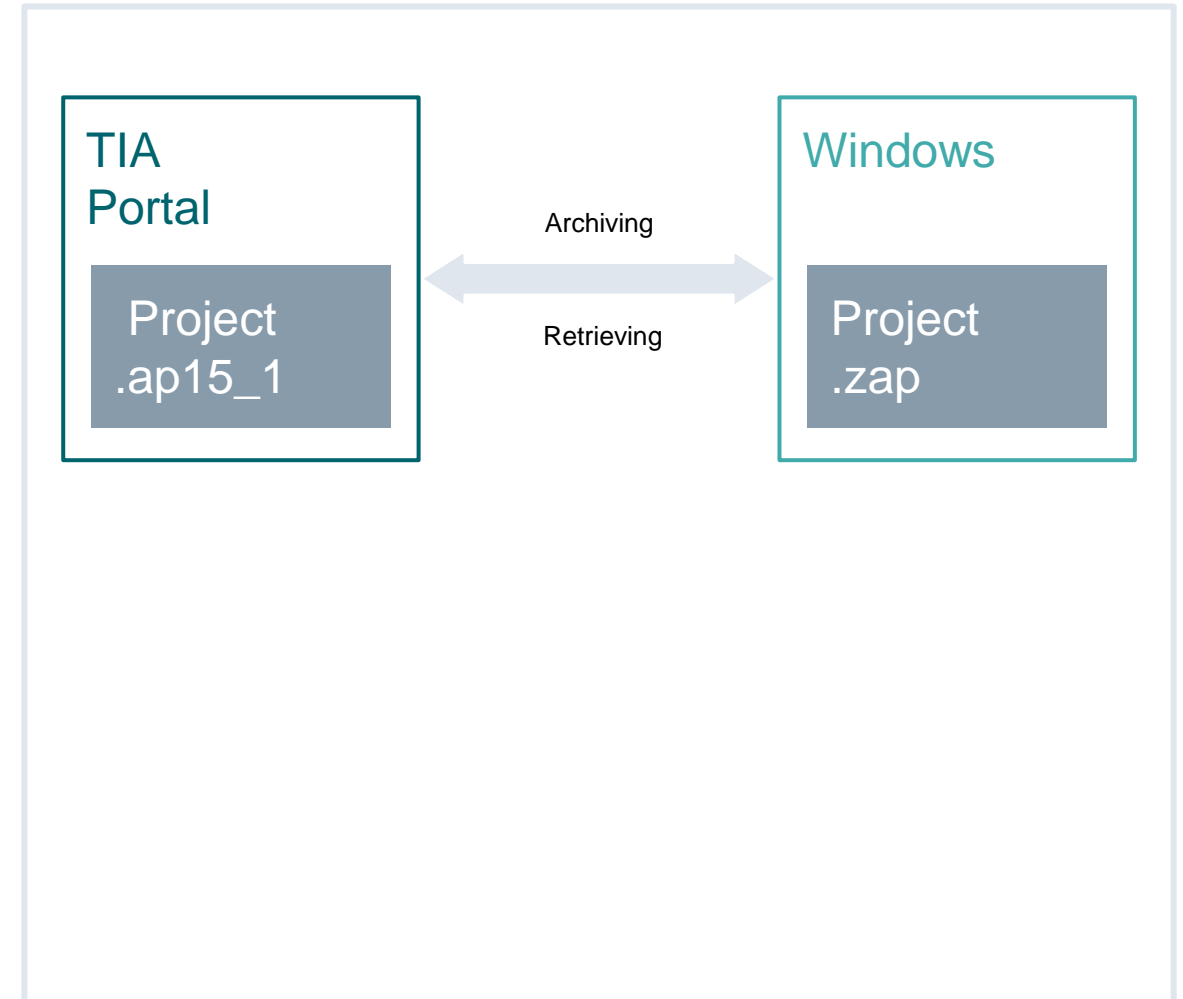
New

API-controlled access to UI function project archiving or project retrieval

Benefits

Workflows can be set up that ...

- Move compressed projects into an externally organized project management or
- Bring them back again from there decompressed into the TIA Portal environment



System functions – TIA Portal Openness – Global libraries

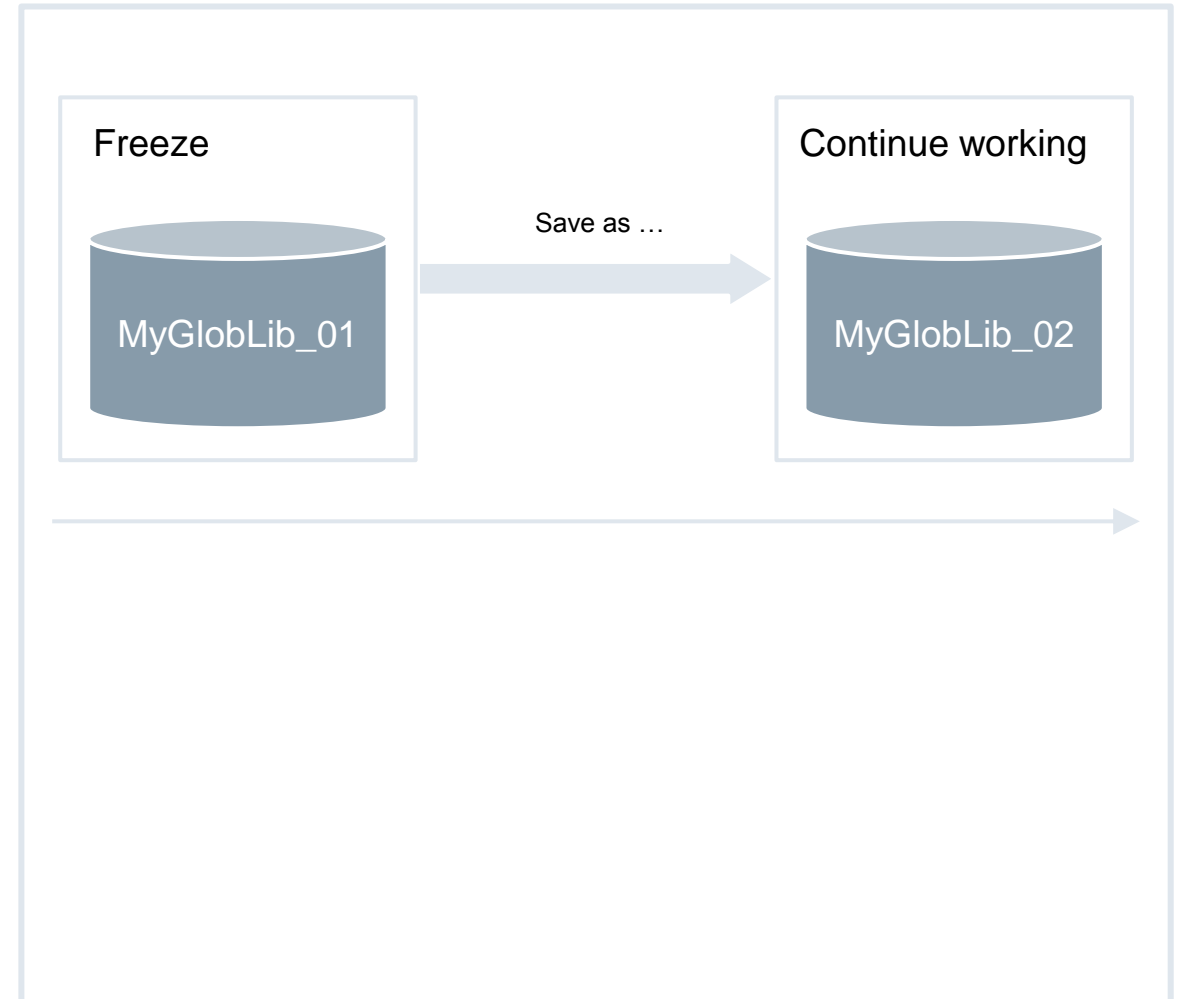
Saving global libraries under different names

New

Creating copies of a global library

Benefits

Customers can freeze versions of a global library and develop them further with a copy under a different name



System functions – TIA Portal Openness – Compatibility

Openness libraries of previous versions are available in V15.1

New

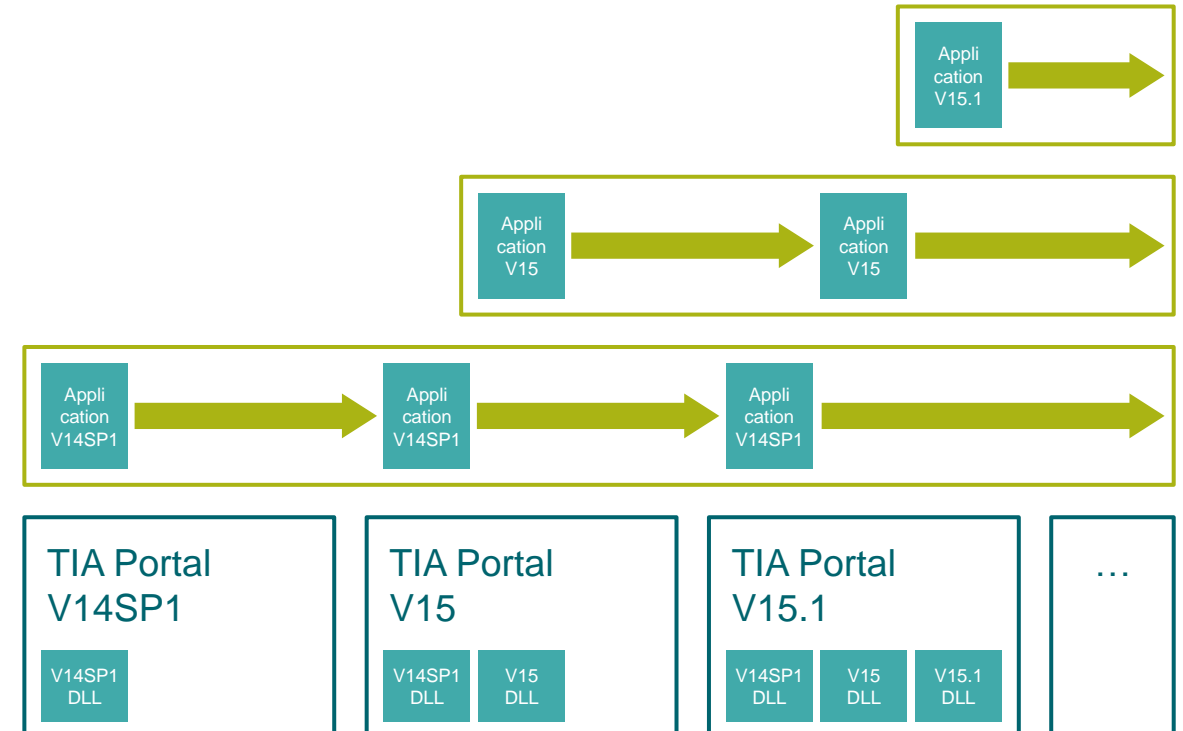
The Openness DLLs from V14SP1 and V15 are available in V15.1, besides the new DLL V15.1

Benefits

Openness applications based on V14SP1 or V15 can run unchanged with the TIA Portal V15.1 environment

New Openness functions can be

- Expanded by exchanging the earlier Openness DLL for the V15.1 DLL and
- Used after a re-compile



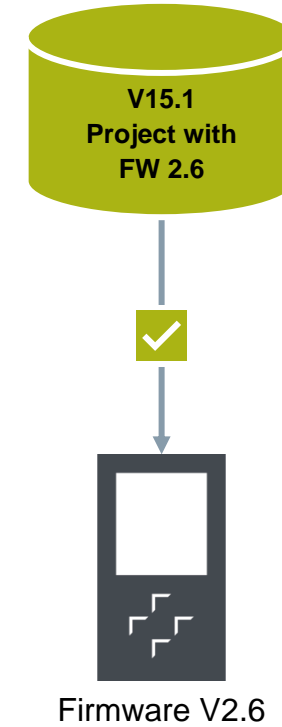
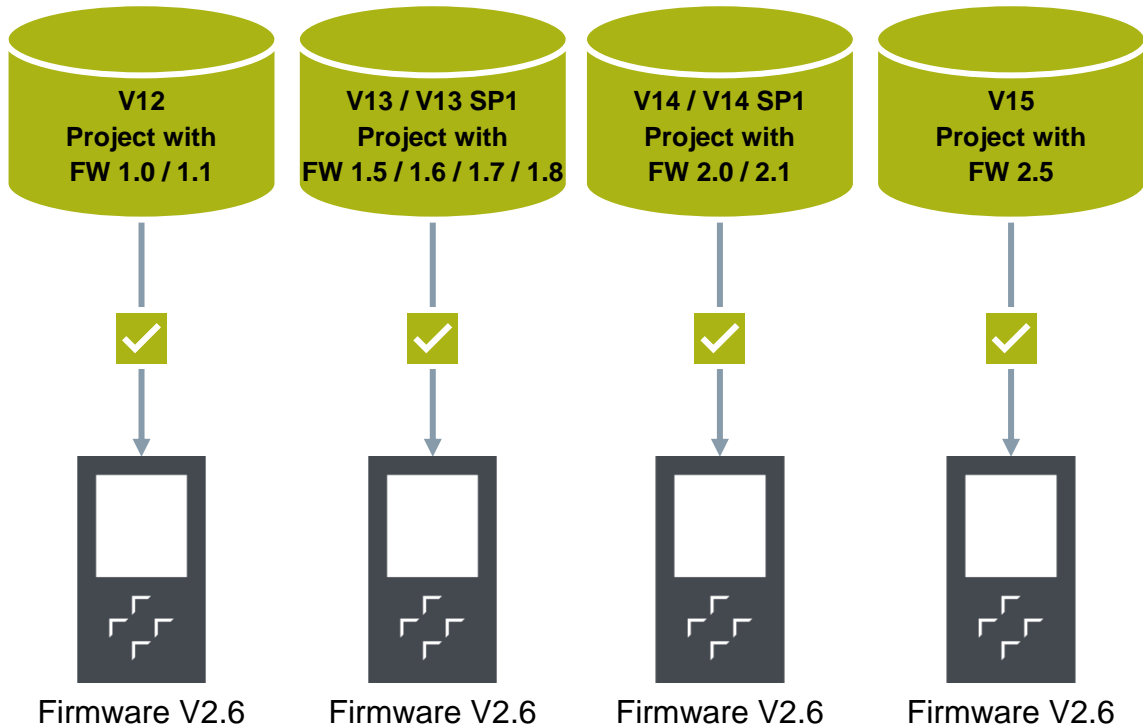
Spare Part Compatibility S7-1500 and ET 200 CPUs Usage of FW 2.6 with former TIA Portal Versions



V12 / V13 / V14 / V15 Engineering Software



V15.1 Engineering Software



Complete Spare Part Compatibility

Onlinesupport: ID 109744163

**New functionalities require
TIA Portal V15.1 and firmware V2.6**

TIA Portal – Highlights of TIA Portal V15.1

Hardware configuration

- S7-1500R/H redundant systems
- MRP domain management across project boundaries
- Change firmware version for IO devices



Startdrive – Innovations

- Integration of SINAMICS S210 and SIMOTICS 1FK2 motors
- Startdrive Advanced: Safety Acceptance test for S120 and S210 drives
- Openness extensions for G120, S120, S210
- Integration of Drive Control Charts (DCC)



STEP 7 – Innovations

- Software units: Splitting of user program into separately loadable units
- Textual interface for SCL blocks
- Improvements in online monitoring of blocks



System functions

- Trace: Simplified chart configuration
- TIA Portal Openness add-ins (ET 200SP read/write parameters, watch tables, extended functionality for block import)
- User-defined shortcut keys












WinCC – Innovations

- Support of OPC UA Server Alarm and Condition
- ProDiag Control functional add-ins



TIA Portal options

-  **STEP 7 Safety**
Flexible F Link, DP_DP_ID, Openness add-ins
-  **Multiuser**
commissioning mode
-  **OPC UA**
S7-1500 client, SiOME configuration tool
-  **ProDiag**
Usability add-ins, such as hierarchical comments
-  **PLCSIM Advanced**
Floating window, max. cycle time handling through the API
-  **Target 1500S for Simulink**
Model on Web server, transfer of SO files
-  **Teamcenter Gateway**
Multiuser engineering, reference projects
-  **SiVArc**
Access protection, SCL blocks, template screens, Openness add-ins
-  **Energy Suite**
Energy screens, reports, SINAMICS, usability improvements



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Energy screens, reports, SINAMICS, usability improvements



STEP 7 Safety V15.1

Detail New fail-safe communication »Flexible F-Link«

Detail F-OB pre-processing and post-processing

Detail Flexible F-Link communication address signature

Detail Variable communication ID (DP_DP_ID)

Detail New Openness functionalities

Simulation mode for SENDDP / RCVDP

- Detail** Support of new fail-safe hardware
- ET 200eco PN 8x F-DI/3x F-DQ
 - ET 200SP 4x F-AI (I)

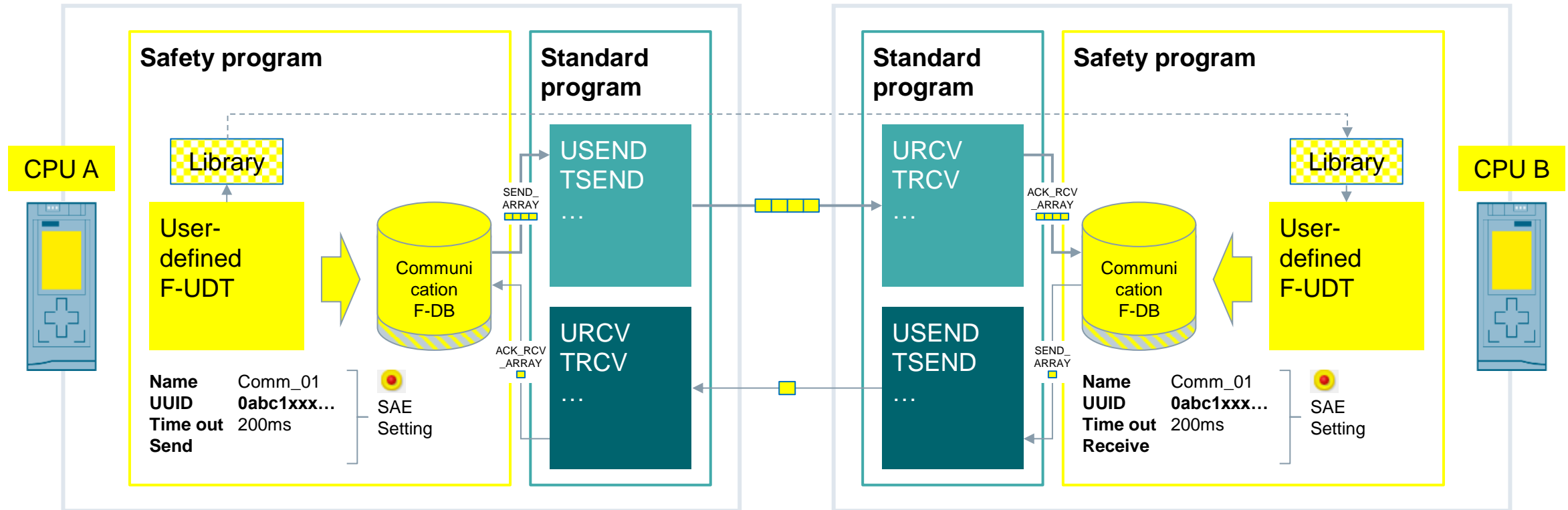
Innovations



STEP 7 Safety V15.1 – New fail-safe communication »Flexible F-Link«

S7-1500 ✓

S7-1200 ✓



Send up to 100 bytes (per F-UDT) of F-data with standard communication mechanism

System-generated



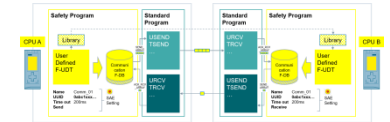
Flexible F-Link – Highlights

User-defined **F-UDT** for all TIA Safety data types (Bool, Word, Int, DINT, TIME)

Up to **100 bytes** per F-UDT supported

Easy parametrization of the communication within Safety Administration Editor (SAE)

S7-1500 ✓ S7-1200 ✓



Flexible F-Link settings

	Name	PLC Data Type	Direction	F-monitoring time: (ms)	F-communication UUID	Output data variable	Input data tag
1	Com_1	F_COM	Send	500	1f82f270-b46d-40b3-ad1c-ad2374afe616	*Com_1*.SEND_ARRAY[]	*Com_1*.ACK_RCV_ARRAY[]
2	Com_2	F_COM	Receive	500	f00dab98-955d-4a42-9b26-f3a10f5739a0	*Com_2*.ACK_SEND_ARRAY[]	*Com_2*.RCV_ARRAY[]
3	<Add new>						

Safety Administration

System-generated communication **F-DBs** makes it easy to send/receive data

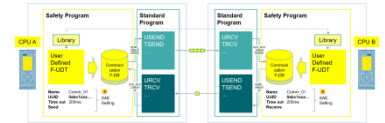
How do you ensure a world-wide unique safety addressing of communication partners?

→ We, TIA Safety, generate a **Universally Unique Identifier (UUID)** for distinct **identification of communication partners** including different subnets

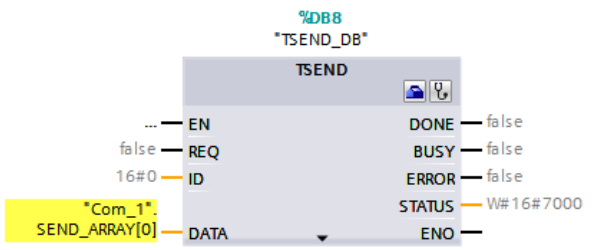
Flexible F-Link – Highlights



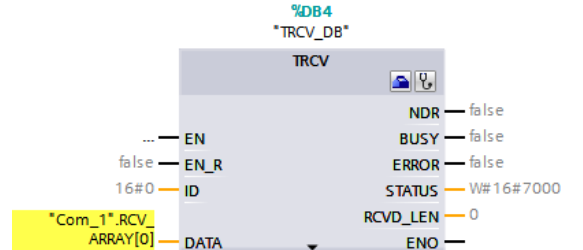
Generated coded **safety data can be sent via any standard communication mechanism** which supports a consistent data transfer (TSEND, TRCV, USEND, URCV, ...).



Netzwerk 4: SEND - CPU A to CPU B
Kommentar



Netzwerk 1: Receive - CPU B from CPU A
Kommentar

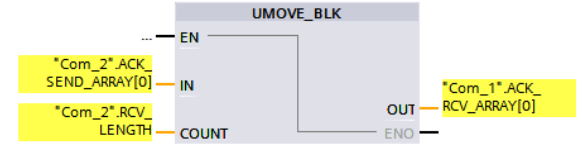


Runtime group communication can be realized by using the standard »**UMOVE**« instruction

Netzwerk 7: RTG-Com F-Data
Kommentar



Netzwerk 8: Acknowledge
Kommentar

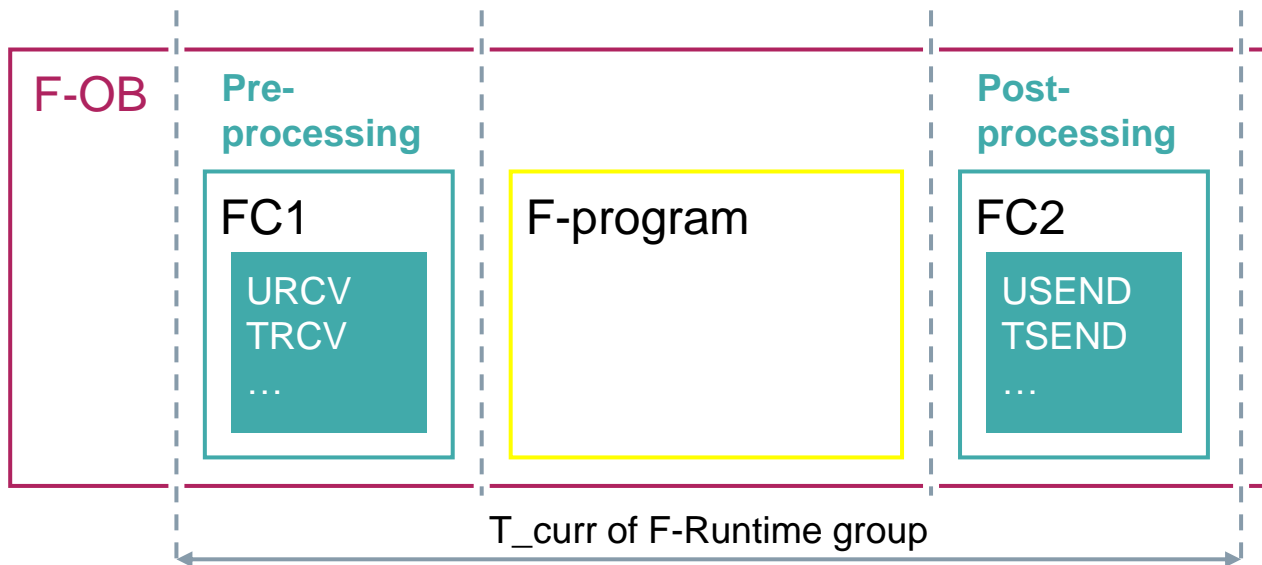


F-OB pre-processing and post-processing

S7-1500 ✓

S7-1200 ✓

Process data, for instance Flexible F-Link communication, can be handled using the pre-processing/post-processing functionality of Safety V15.1



Safety Administrator New

Pre/Post processing of the F-runtime group

Pre processing	Baustein_2 [FC1]
Post processing	Baustein_3 [FC2]



Flexible F-Link communication address signature – Discrete F-signatures for a better classification of changes

- Differentiation between **hardware/software** and **communication** (Flexible F Link) related changes
- **Documentation** within Safety printout

New

S7-1500 ✓

S7-1200 ✓

General

Safety mode status

Current mode: (No online connection)

Disable safety mode

Safety program status

Offline program: The offline safety program is consistent.

Online program: (No online connection)

F-signatures

Description	Offline signature	Time stamp
Collective F-signature	8B4EAB19	9/20/2018 4:12:21 PM (UTC +2:00)
Software F-signature	E9FAA5A6	
Hardware F-signature	13C03A6F	
F-signature communication address	8D93CB04	

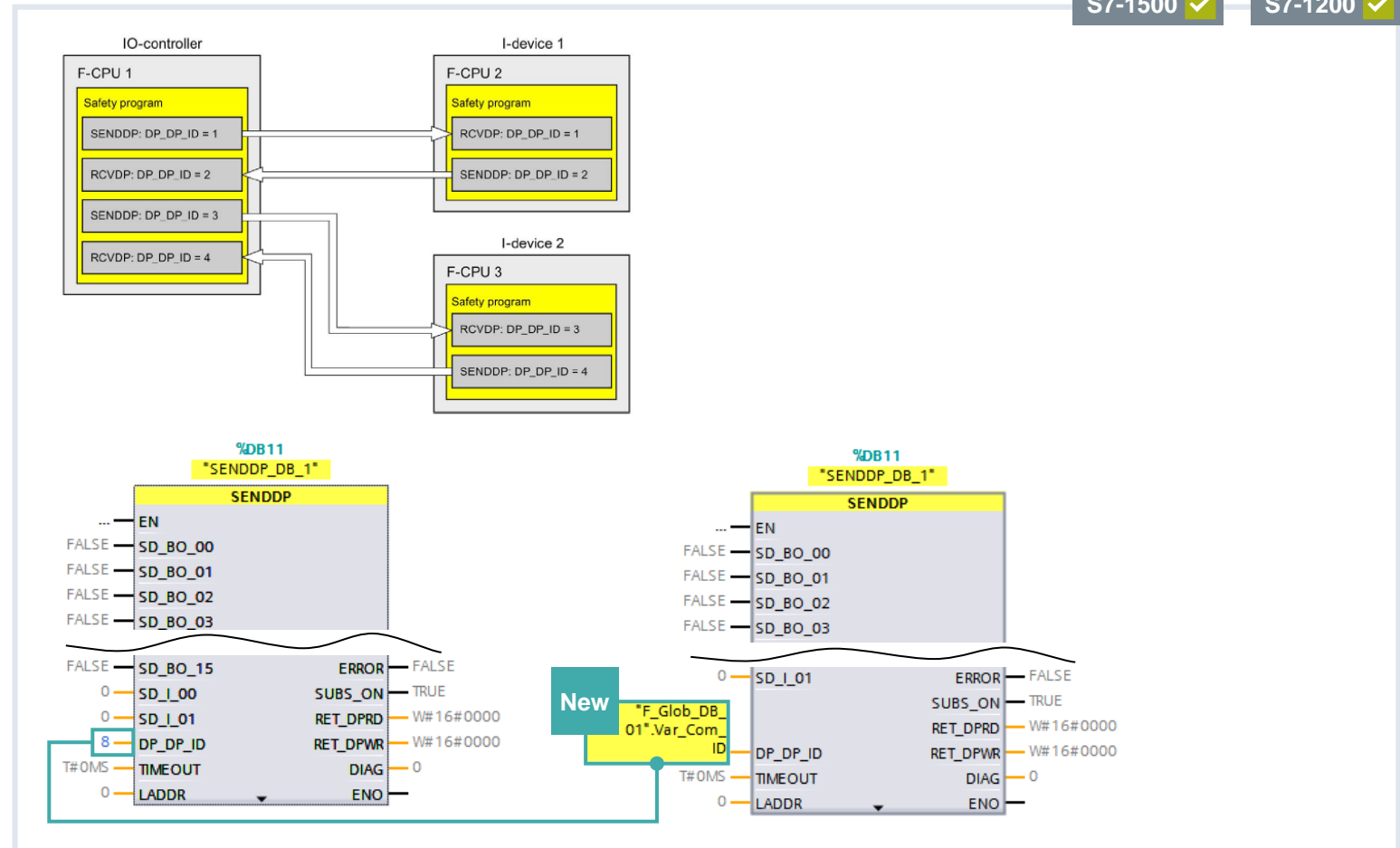
New



STEP 7 Safety V15.1 – Variable communication ID (DP_DP_ID) for flexible system designs

- Variable communication IDs¹ enable **high flexible Safety automation solutions**
- With variable communication IDs, the **same safety program** (same collective F-Signature) can be used **in systems with a large number of identical I-devices** (for example overhead monorail conveyors, high rack warehouses, AGVs)
 - **Faster commissioning**
 - **Easy maintenance**

S7-1500 ✓ S7-1200 ✓



¹ User has to ensure that the values for the communication IDs are unique across the physical network (applicative safety solution)



STEP 7 Safety V15.1 – Openness functionality

Safety V14 to V15

- Inserting/removing **F-blocks from the library** (F-FC/F-FB/F-UDT)
- **Inserting/removing F-CPU**s and **F-I/O**s
- **Copying/deleting F-CPU**s and **F-I/O**s from master copies
- **Configuring networks**
- **Compiling software** (including safety program)
- Reading/configuring **F-parameters** of the F-CPU/F-I/Os
- Reading, declaring or deleting fail-safe **tags in the PLC tag table**
- **Updating projects** to the latest type versions of F-blocks

Safety V15.1 improvements

- Reading/configuring **I-parameters** of the **ET200SP F-I/O**s
- **Consistent Station upload**
- **HW/SW compare (offline/offline)**
- **Import/export of consistent F-blocks**

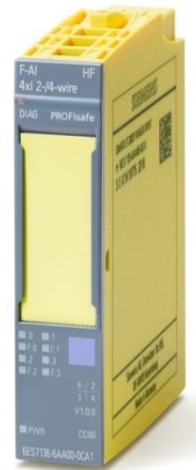
New fail-safe modules for IP20 and IP67

SIEMENS
Ingenuity for Life

ET 200SP F-AI

- 4 analog inputs for 0(4)..20 mA
- 2 or 4 sensors (2xSIL3, 4xSIL2)
- Resolution 16-bit including sign
- Usable up to SIL 3 (IEC 62061)/PL e (ISO 13849)
- Diagnostic information
- Channel granular passivation

Released



ET 200eco PN F-DI/DQ

- IP65/67 module with integrated PROFINET switch
- 8 F-DI 24VDC/3 F-DQ 24VDC/2A
- Usable up to SIL 3 (IEC 62061)/PL e (ISO 13849)
- Diagnostic information
- Channel granular passivation
- Easy module exchange with F-coding element



Released



TIA Portal – Highlights of TIA Portal V15.1

Hardware configuration

- S7-1500R/H redundant systems
- MRP domain management across project boundaries
- Change firmware version for IO devices












Startdrive – Innovations

- Integration of SINAMICS S210 and SIMOTICS 1FK2 motors
- Startdrive Advanced: Safety Acceptance test for S120 and S210 drives
- Openness extensions for G120, S120, S210
- Integration of Drive Control Charts (DCC)



TIA Portal options

-  **STEP 7 Safety**
Flexible F Link, DP_DP_ID, Openness add-ins
-  **Multiuser**
Commissioning mode
-  **OPC UA**
S7-1500 client, SiOME configuration tool
-  **ProDiag**
Usability add-ins, such as hierarchical comments
-  **PLCSIM Advanced**
Floating window, max. cycle time handling through the API
-  **Target 1500S for Simulink**
Model on Web server, transfer of SO files
-  **Teamcenter Gateway**
Multiuser engineering, reference projects
-  **SiVArc**
Access protection, SCL blocks, template screens, Openness add-ins
-  **Energy Suite**
Energy screens, reports, SINAMICS, usability improvements



STEP 7 – Innovations

- Software units: Splitting of user program into separately loadable units
- Textual interface for SCL blocks
- Improvements in online monitoring of blocks



System functions

- Trace: Simplified chart configuration
- TIA Portal Openness add-ins (ET 200SP read/write parameters, watch tables, extended functionality for block import)
- User-defined shortcut keys

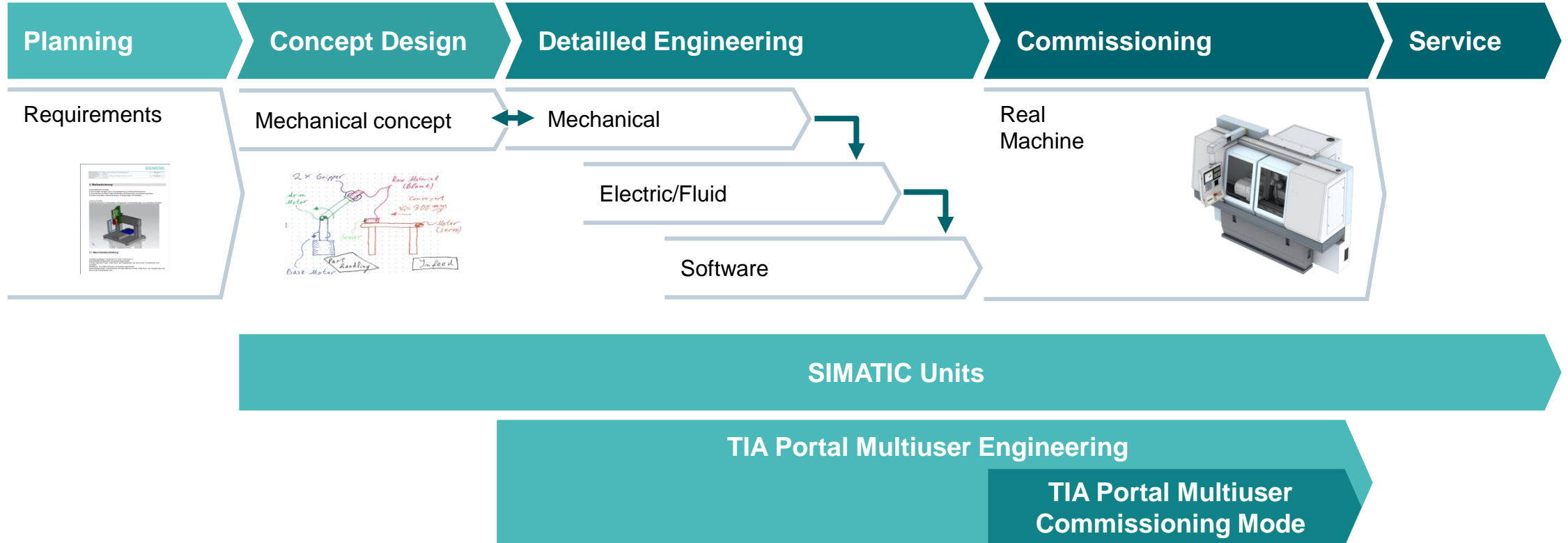


WinCC – Innovations

- Support of OPC UA Server Alarm and Condition
- ProDiag Control functional add-ins



Working in a team (Multiuser) Multiuser Commissioning Mode



TIA Portal Multiuser – »Commissioning mode«

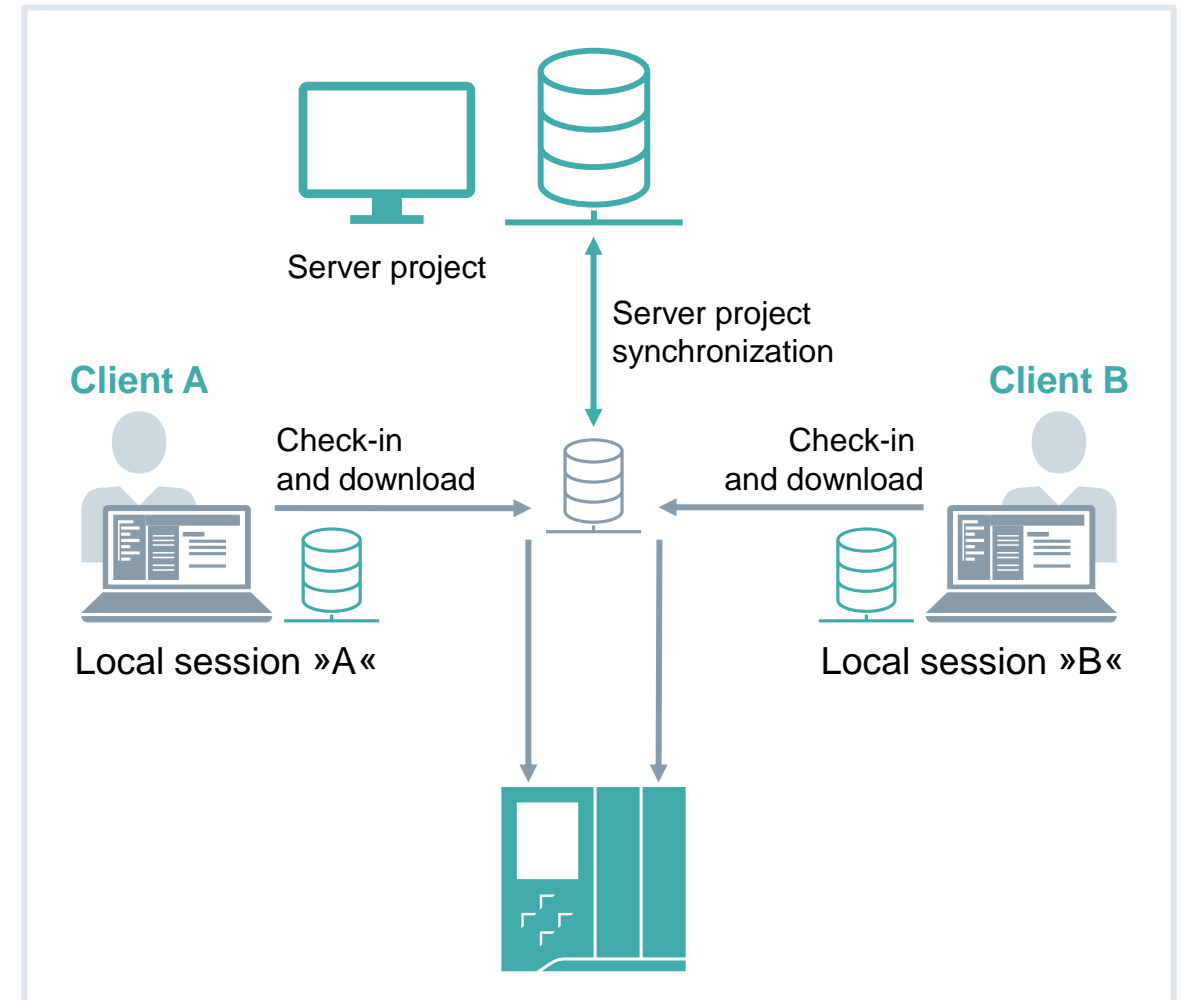
Shared commissioning in a team

Downloads are synchronized via the server project.
This enables a consistent status between device
and server project.

Characteristics of the commissioning mode

In commissioning mode, the changes are automatically checked into the server project, compiled and loaded into the device when downloaded from the local session.

- Selectable project-granular via the multi-user administration tool
- A selected commissioning mode applies to all connected multiuser clients
- No change of the download workflow
- Local session, server project and the device having the same version after downloading



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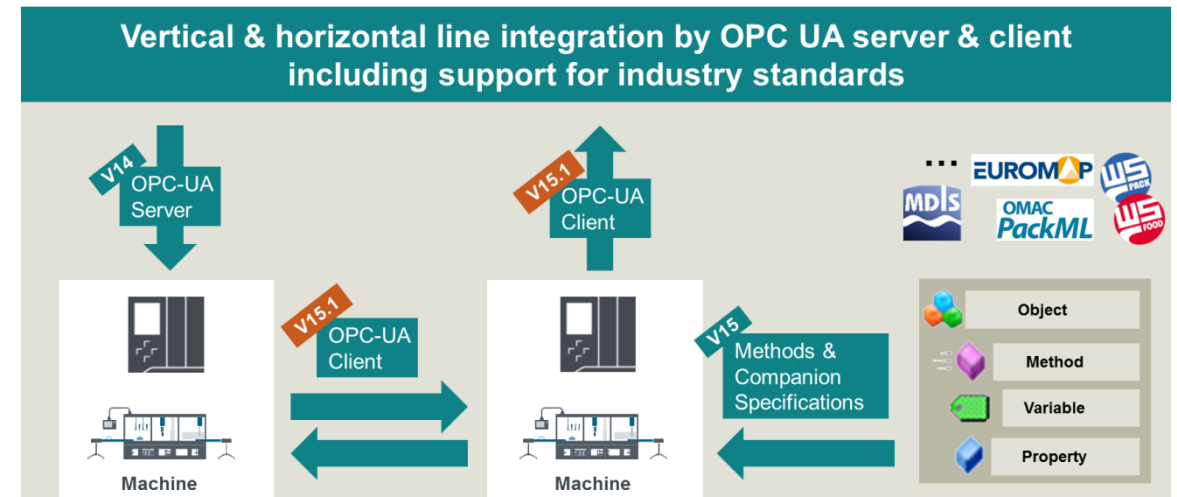
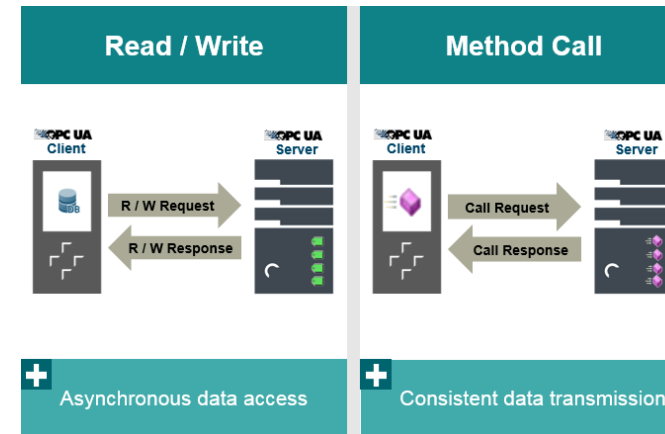


TIA Portal Options – OPC UA – OPC UA client in the S7-1500

New functions

In addition to the OPC UA server, an OPC UA client is integrated in the CPU and offers the following functions via corresponding OPC UA communication instructions

- Method calls
- Reading and writing data



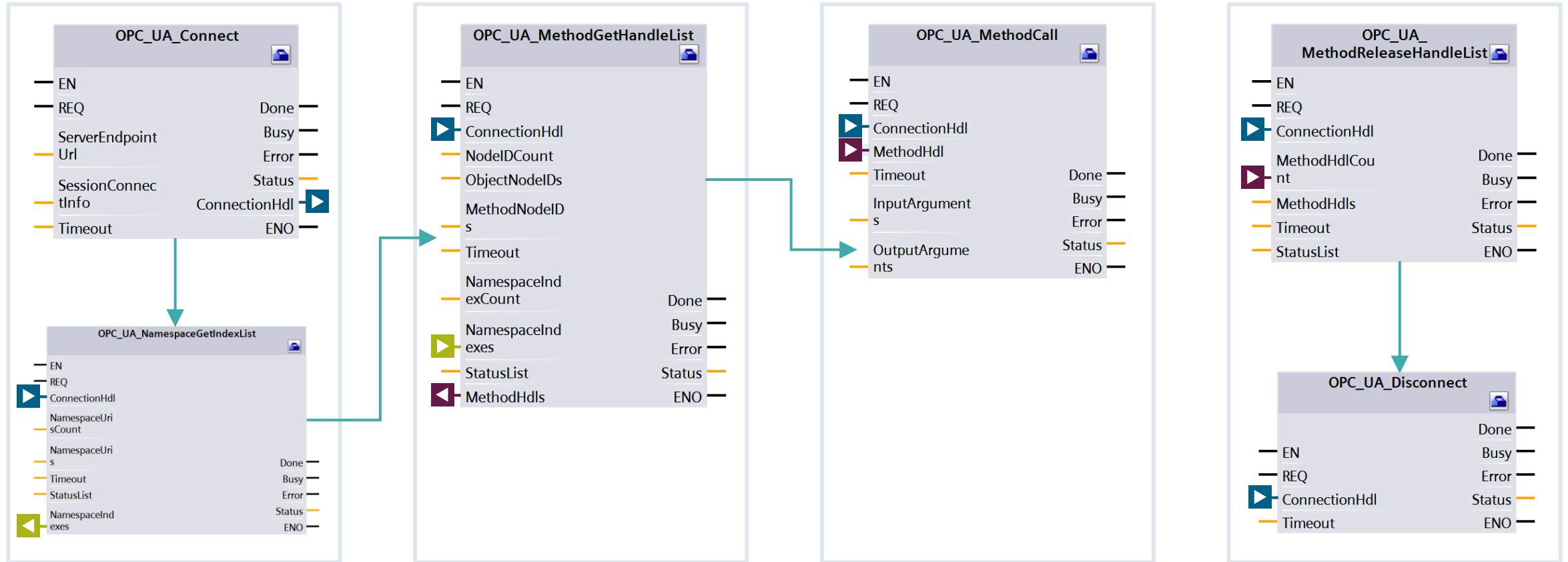
Benefits

The client enables

- Vertical communication to MES systems or cloud services
- Controller-controller communication



OPC UA client S7-1500 program blocks for method call – Workflow

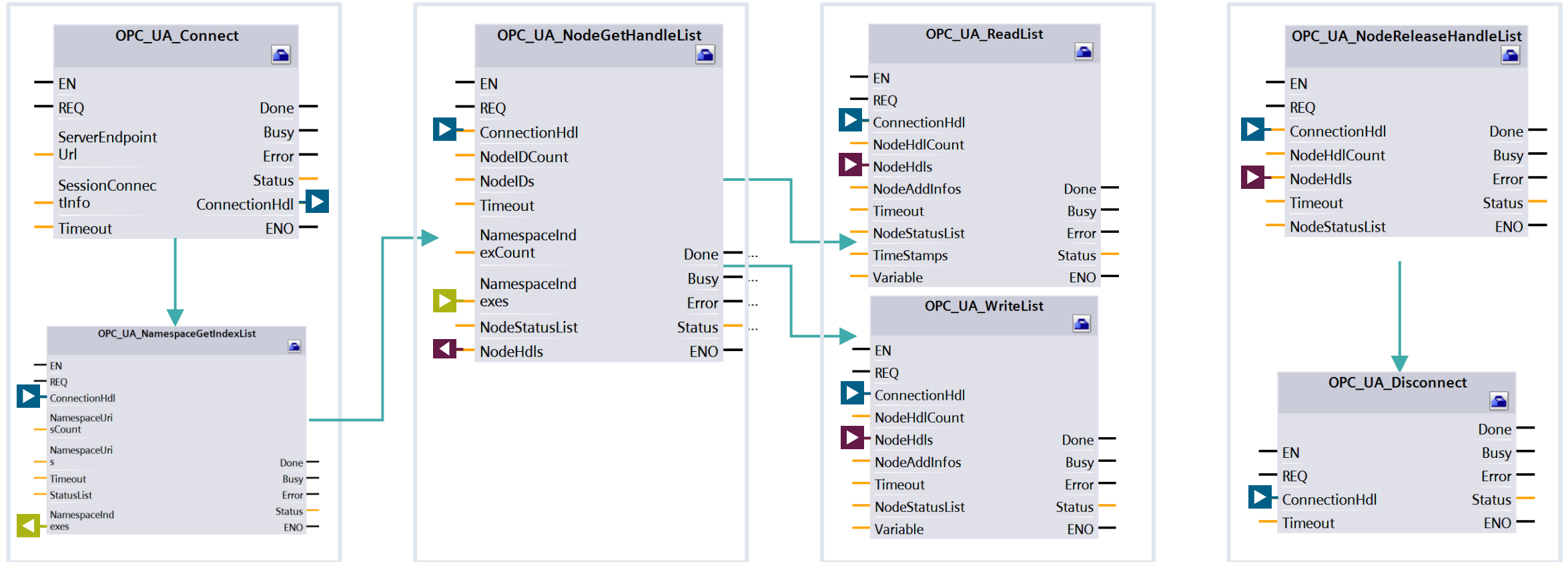


Preparation

Action

Cleanup

OPC UA client S7-1500 program blocks for data access – Workflow

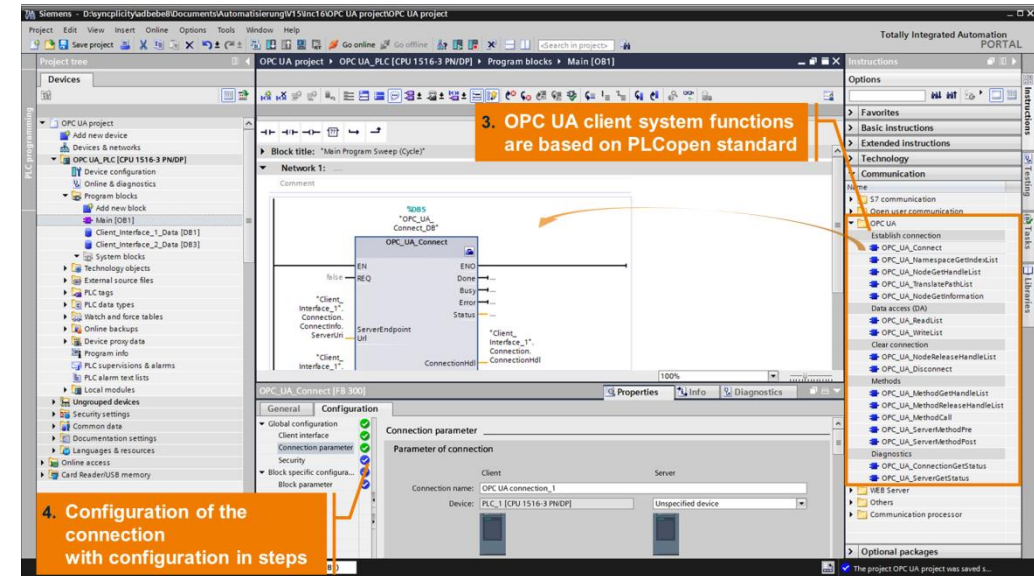
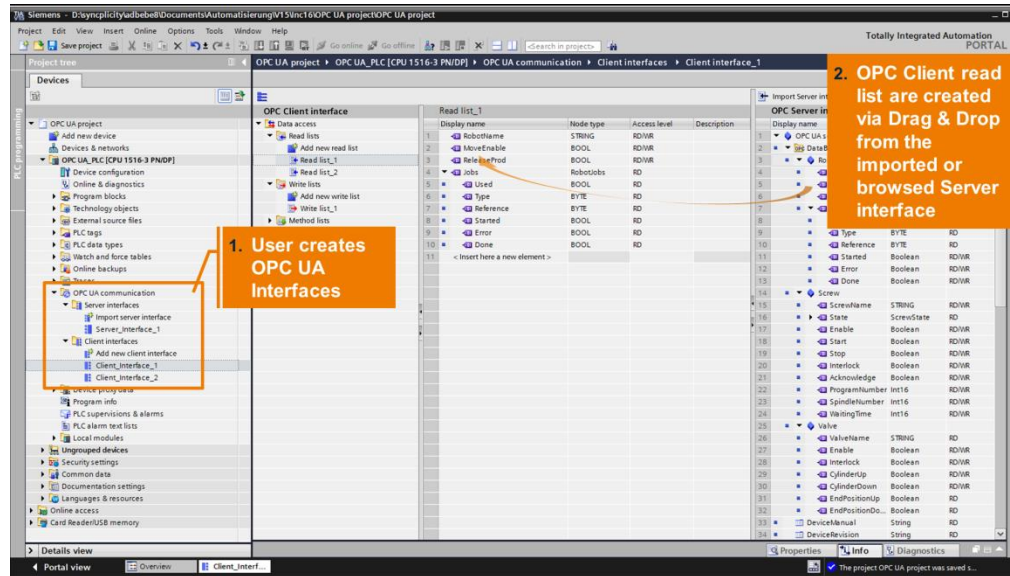


Preparation

Action

Cleanup

OPC UA client configuration in the S7-1500



- Create client interface
- Set connection parameters and create or select certificate
- Import server XML file / browse online
- Generate read, write and method lists
- Fill lists with nodes using drag-and-drop

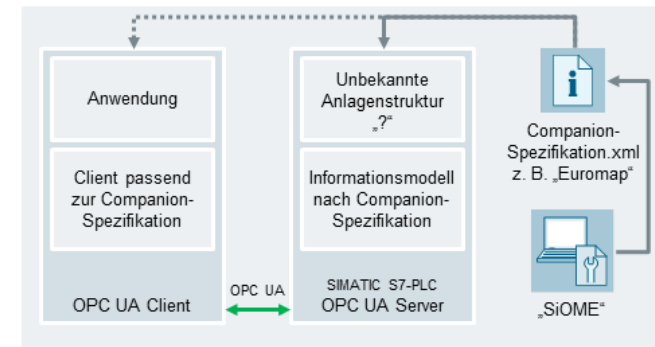
- Insert function blocks for OPC UA in user program
- Configuring blocks with the help of the wizards
- Assign remaining input parameters to the blocks



TIA Portal Options – OPC UA – OPC UA Companion specification – SiOME configuration tool

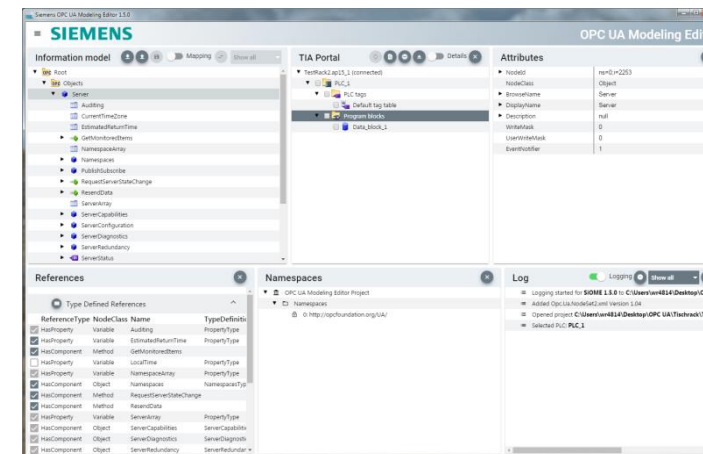
Function

With the free SiOME tool, we have created an editor for defining your own OPC UA information models or mapping existing companion specifications on your SIMATIC PLC.



Benefits

Using this tool, you can import and edit information models as XML files or generate and export customized models.



Siemens OPC UA Modelling Editor



SIMATIC S7-1500 Starter kit including Licenses for OPC UA small & ProDiag 250 Supervisions

SIEMENS
Ingenuity for life

Components of the starter kit SIMATIC S7-1500:

- SIMATIC S7-1500 CPU 1511C-1 PN
- SIMATIC Memory Card, 4 Mbyte
- Rail 160mm
- STEP7 Professional V15.1, 365 day License
- Power supply PM 70W 120/230 V AC
- Standard Ethernet CAT 5-Kabel
- Screwdriver

In addition with TIA Portal V15.1*:

- SIMATIC ProDiag S7-1500 for the use of 250 supervisions
- SIMATIC OPC UA S7-1500 Small, Single Runtime License



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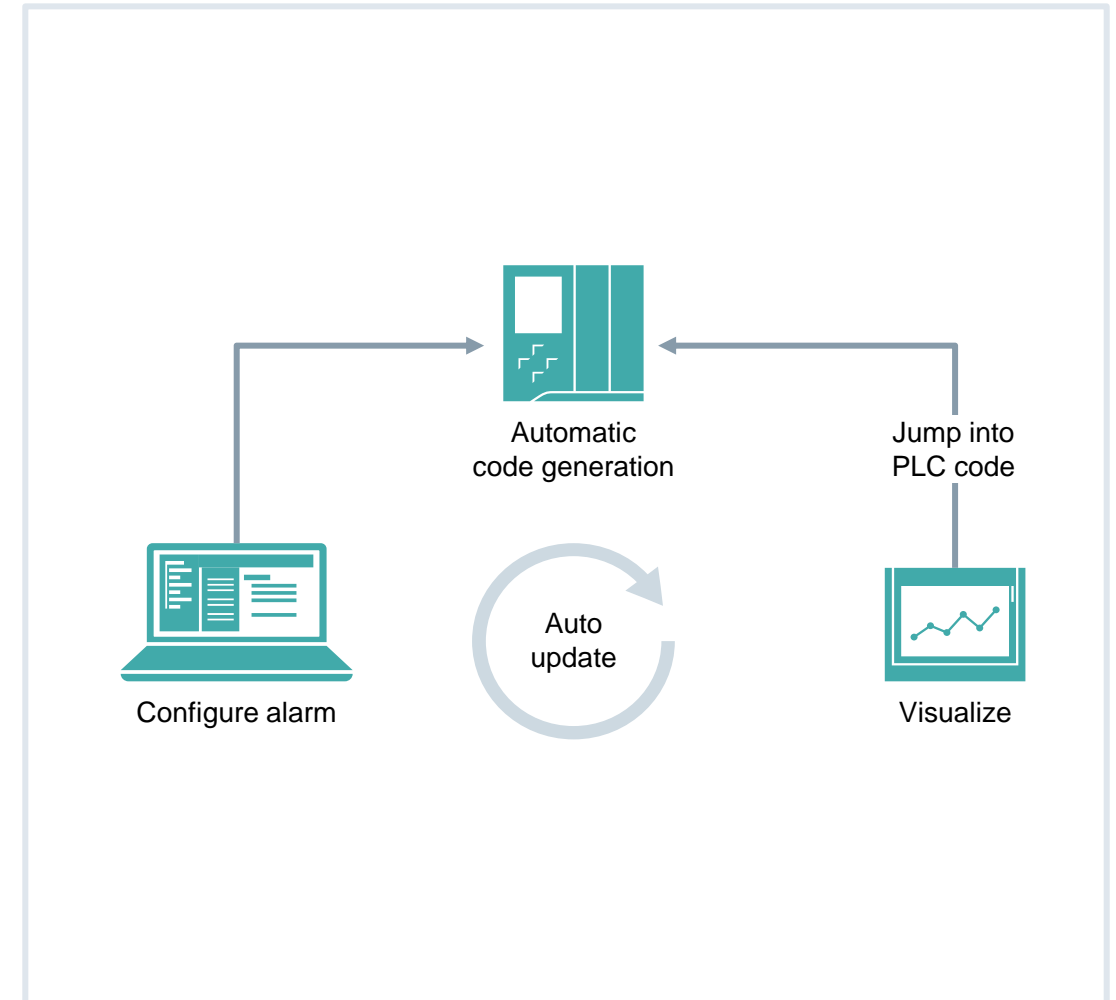
TIA Portal options – ProDiag – overview of the new functions

Function

- Text export for ProDiag/S7-GRAPH relevant texts including the text lists used for fast translation
- Optional display of the entire block in the HMI PLC Code Viewer for fast error analysis
- Jump into the TIA Portal in read-only mode or read-write mode from WinCC Advanced
- Including hierarchical comments in ProDiag messages
- Subcategories are now also available for S7-GRAPH

Benefits

Simple diagnostics during operation with **SIMATIC ProDiag**



TIA Portal options – ProDiag – Specific text export for translations

Function

All texts relevant to ProDiag or S7-GRAPH can be exported with one action, e.g. for translations

Message texts

- PLC message text lists
- S7-GRAPH display names for step/transitions
- Comments of all monitored tags
- Comments of all monitored parameters of a block
- Instance name and instance comment in the context of a multi-instance

HMI-relevant texts

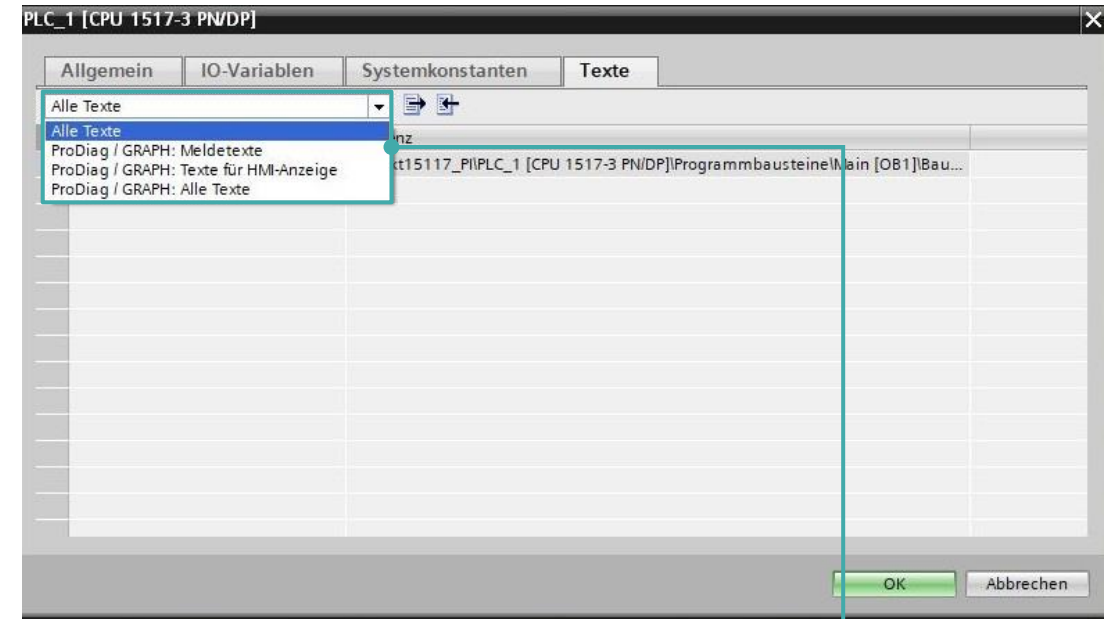
- Tag comments in transition and interlock
- Title, comments of monitored networks/tags

Benefits

Translation-relevant texts are available immediately

Save time

Easy export for translations



Alarm texts

- User text lists
- Step/transition display names
- Step-specific alarm text for supervision interlock
- Comments of all tags (including DB members)
- Comments of all IN, OUT, STAT parameters
- Title of I-DBs, in case of multi-instance of the instance comment

TIA Portal Options – ProDiag – Optional – Displaying entire block in the PLC Code Viewer

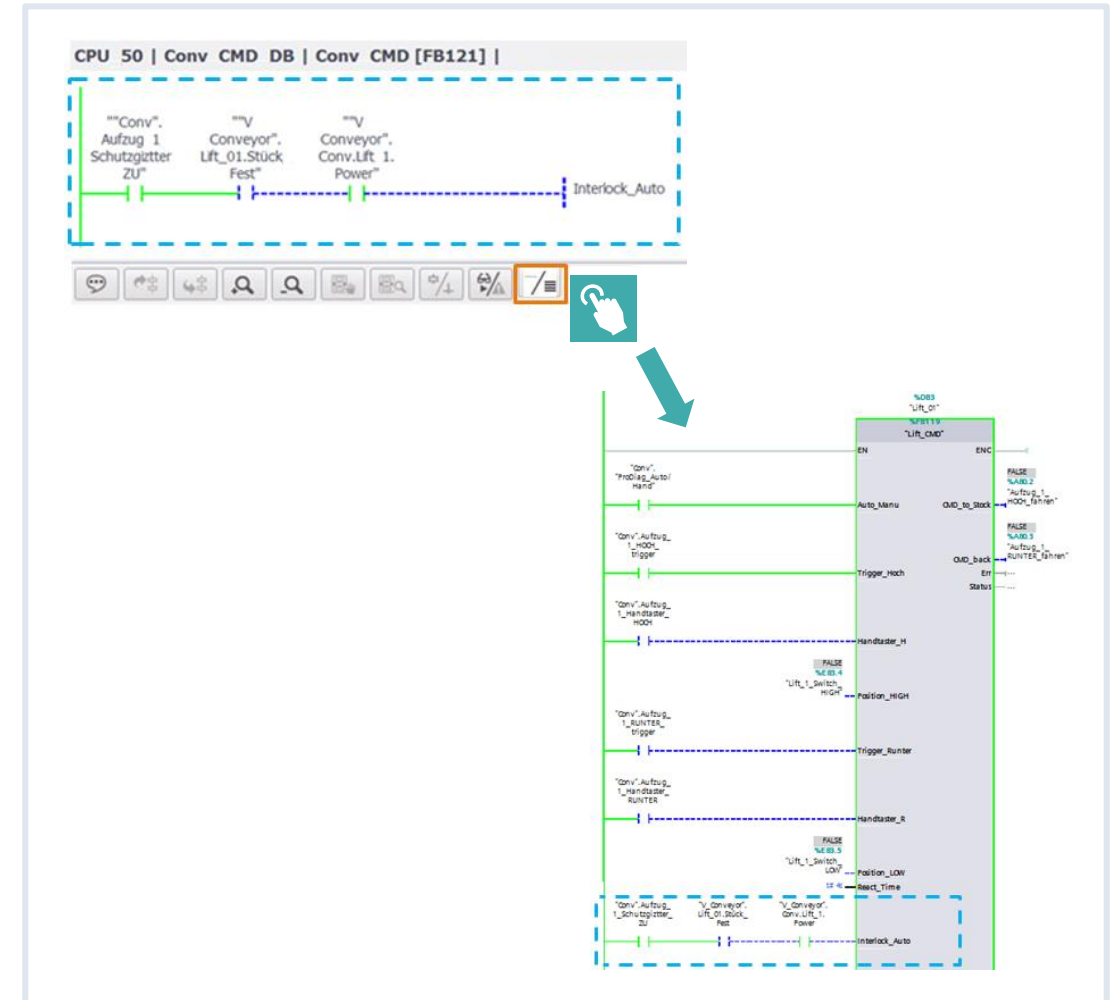
Function

- Advanced diagnostics view for missing conditions
- PLC Code Viewer can also be used if STAT/OUT parameters of a block are monitored (user blocks with their own monitoring logic)

Benefits

Extended system-guided error diagnostics

Extensive diagnostic options even in case of simple operand monitoring



TIA Portal Options – ProDiag – Jumping into the TIA Portal from WinCC Advanced

Function

- System-supported access to the TIA Portal in the context of an S7-GRAPH or ProDiag message
- Relevant block is opened automatically
- Read mode or read/write mode possible
- Automatic status display yes/no

Benefits

Extended system-guided error diagnostics for PC-based systems

Extensive diagnostic options
with support of the TIA Portal

The image shows a two-part screenshot. The top part is a WinCC Advanced window displaying an error message: "Error: Interlock: 3_Conveyor: Lift_01: Interlock_Auto: F7: F7: F7:". Below the error message, there is a button labeled "GoTo -> TIAPortal [RW]". A hand cursor icon is positioned over this button. Below the screenshot, a teal arrow points down to the text "Go to TIA Portal ...". The bottom part of the image shows the TIA Portal interface. On the left, a project tree is visible with a "Read-only" label. The main area displays a ladder logic diagram for "Network 9: Einzelsteuerebene Aufzug_1 (mit automatischer PDIAG-Anteil :)))).". The diagram includes logic for "Lift_01" and "Lift_CMD", with various interlocking conditions and status checks.

TIA Portal Options – ProDiag – Consideration of hierarchical comments in ProDiag messages

New functions

Mapping the plant view in messages

Benefits

Easy mapping of the plant view of the machine/plant via hierarchical comments, whereby the path is generated automatically

System-supported message text generation

<Tag comment path>

Name	Instanzwert	Übersicht	Kommentar
GEN			HYDR Steuerdruck
SWF			Status Fehlerwort zur VIS
FL			Fehler min
FM			Fehler max
PLL			Fehler min min
FHH			Fehler max max
F3L			Fehler min 3
F3H			Fehler max 3
F4L			Fehler min 4
F4H			Fehler max 4
P11			Fehler 1
P12			Fehler 2
_res10			reserviert
_res11			reserviert
_res12			reserviert
_res13			reserviert
_res14			reserviert
_res15			reserviert
_res16			reserviert
_res17			reserviert
_res18			reserviert
_res19			reserviert
_res20			reserviert
_res21			reserviert
_res22			reserviert
_res23			reserviert
_res24			reserviert
_res25			reserviert

→ Output in message via tag comment path
»HYDR ControlPressure.Status error word for VIS.Error 1«

TIA Portal options – ProDiag – Subcategories in S7-GRAPH

Function

- Same message structure as ProDiag configurable
- Particularly relevant for control systems in which a follow-up action is derived using additional information in the message text

Benefits

Simple possibility to encrypt follow-up actions on the control system in messages

Systematics, uniformity

Meldungen

Meldungen aktivieren

Wählen Sie das Freigabekriterium der Kategorie und die Anzeigeklasse für jede Kategorie aus, die in diesem GRAPH-Funktionsbaustein verwendet werden. Wenn Sie kein Freigabekriterium der Kategorie definieren, lösen alle GRAPH-Supervisionen in diesem Baustein eine Meldung aus. Wenn Sie ein Freigabekriterium der Kategorie definieren, wird nur dann eine Meldung ausgelöst, wenn das Freigabekriterium den Signalzustand ...

Kategorie	Freigabekriterium der Kategorie	Anzeigeklasse
Fehler		0
Warnung		0
Information		0
Kategorie 4		0
Kategorie 5		0
Kategorie 6		0
Kategorie 7		0
Kategorie 8		0

Meldungstext: <Kategorie> - <Überwachungsart> - <PLC-Name> - <FB-Name> - <Schritt-Name> - <Schritt-Nummer> - <Schrittspezifisches Textfeld>

Category for interlocks: Fehler

Subcategory 1 for interlocks:

Subcategory 2 for interlocks:

Category for supervisions: Fehler

Subcategory 1 for supervisions:

Subcategory 2 for supervisions:

Kategorie für GRAPH-Warnungen: Warnung

Subcategory 1 for GRAPH warnings:

Subcategory 2 for GRAPH warnings:



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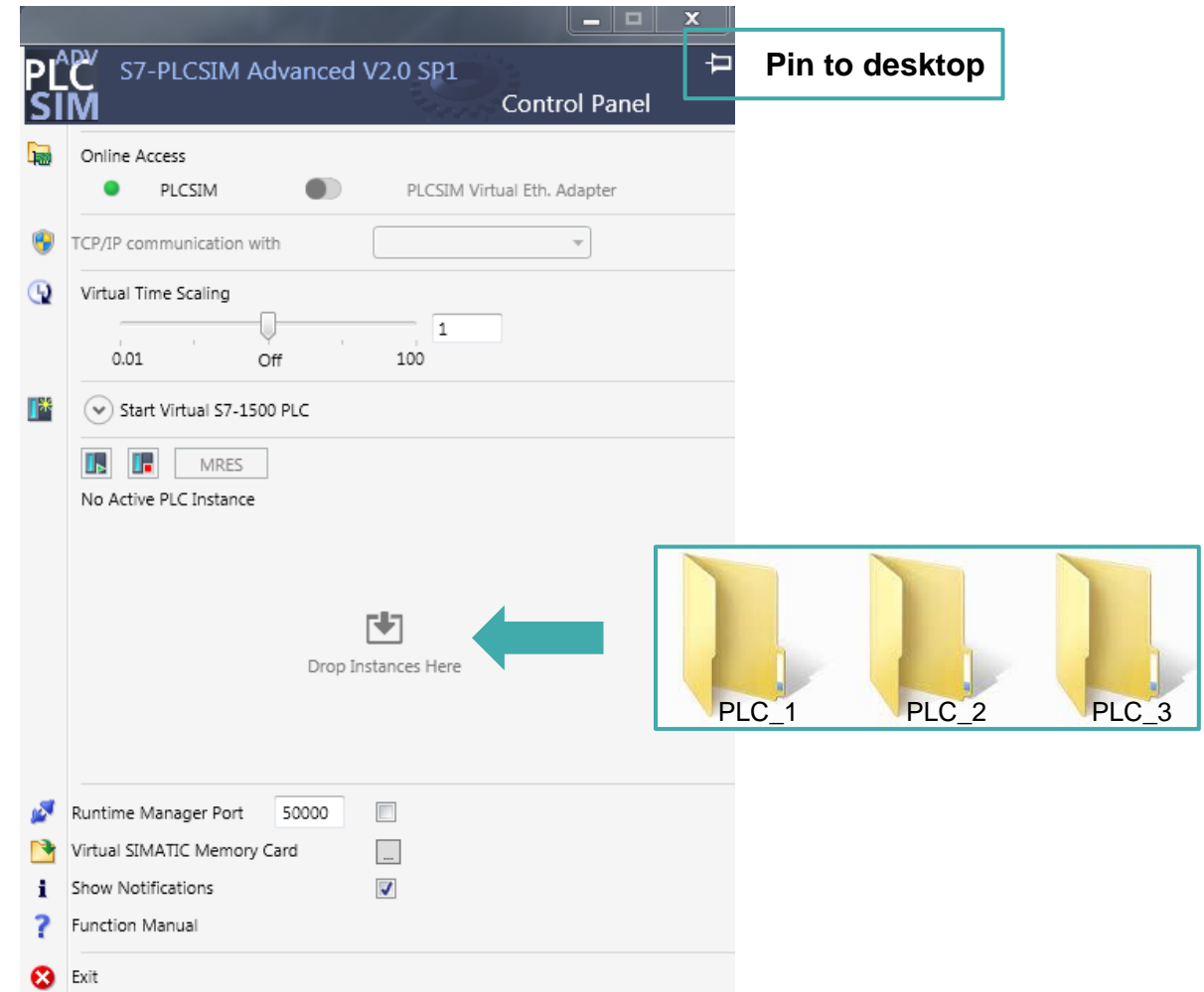


S7-PLCSIM Advanced – Control Panel enhancements

Function

The Control Panel can be used in two different ways

- A right-click on the tray icon opens the Control Panel as before (quick view)
- A double left-click on the tray icon opens the Control Panel as a floating window, which allows you to
 - Move the floating window around freely
 - Drag-and-drop instances from an Explorer window to the Control Panel
 - Pin the Control Panel to the desktop (always on top)



S7-PLCSIM Advanced – Max. cycle time handling through the API

Function

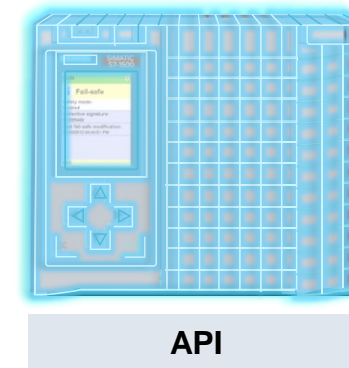
Through the API the maximum cycle time can be either ignored or taken into account, depending on the goal of the simulation

In general there are three operating modes:

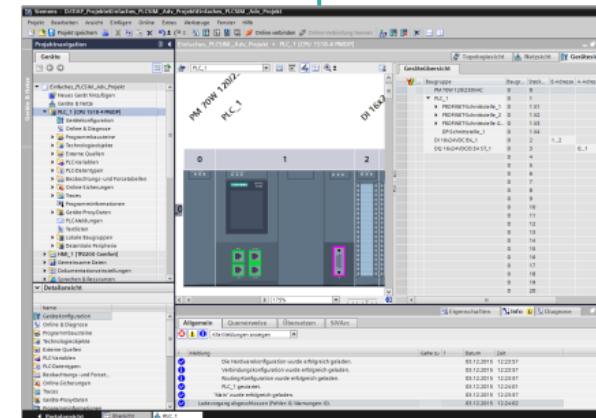
- Ignore the max. cycle time; ignore = 1 minute max. cycle time (default)
- Keep the max. cycle time of the downloaded project
- Define another max. cycle time which can be set through the API

Customer value

- This feature helps prevent the virtual controller from changing to stop if the max. cycle time is exceeded in a virtual environment.
- No change of the max. cycle time of the TIA Portal project necessary.



Adapt the max. cycle time
of the virtual controller through the API



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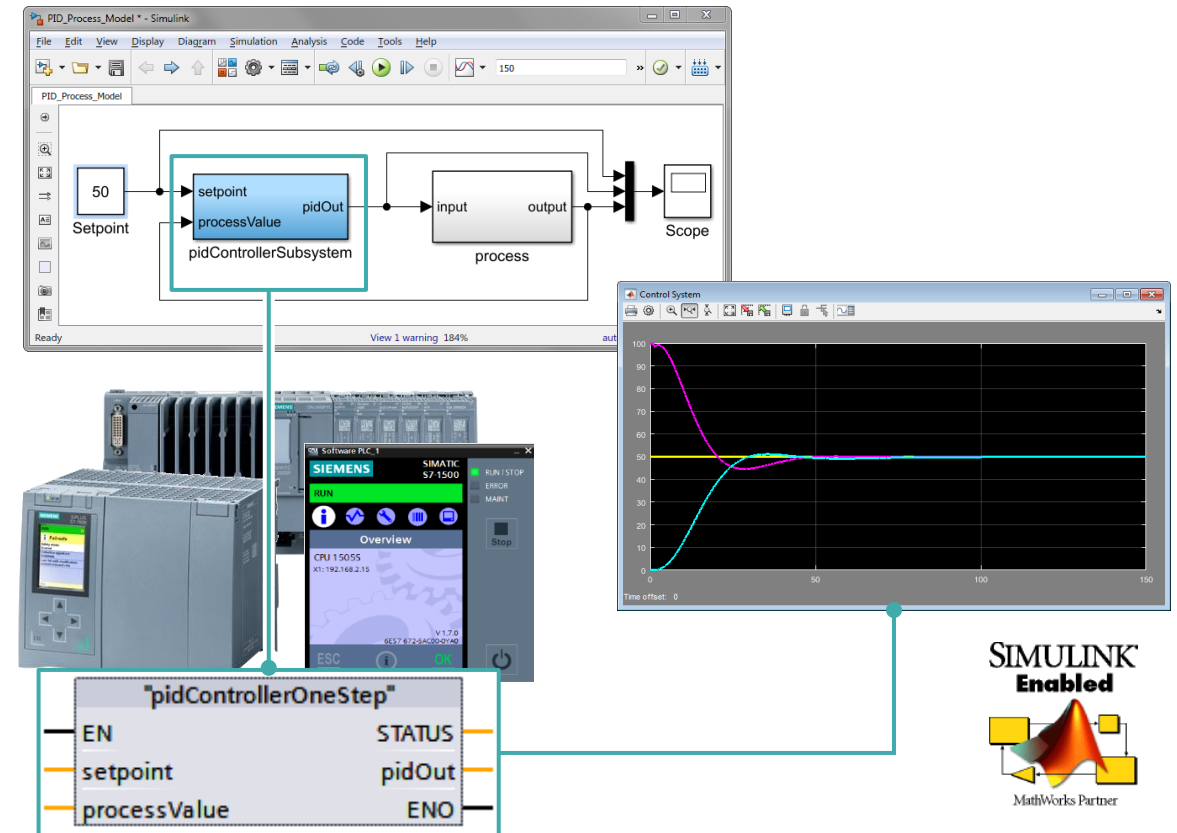
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Target 1500S™ for Simulink® – Overview



- An add-on for Simulink from MathWorks
- Model-based design with MATLAB® and Simulink
- Automatic generation of executable code from Simulink
- Executable on the standard and fail-safe version of
 - S7-1500 software controller
 - ET 200SP Open Controller
 - CPU 1518 MFP/ODK



Target 1500S™ for Simulink®



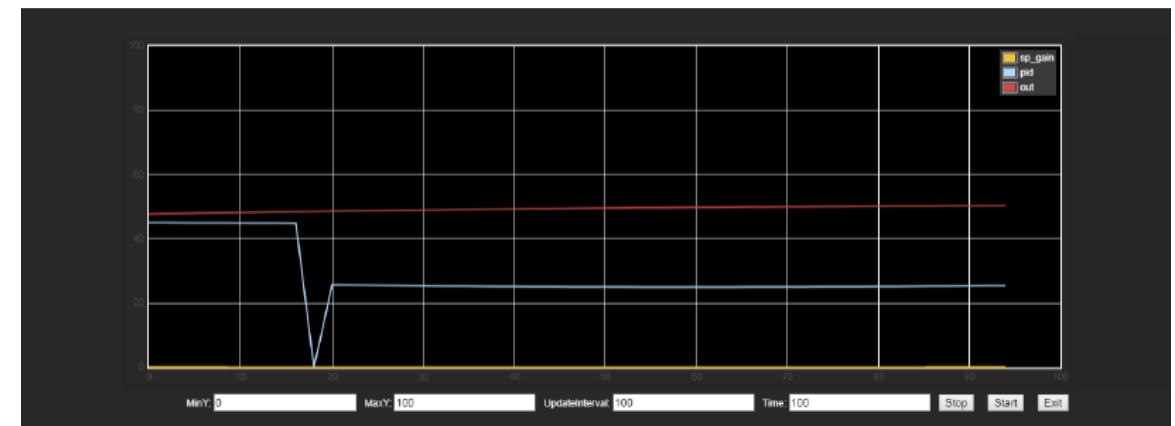
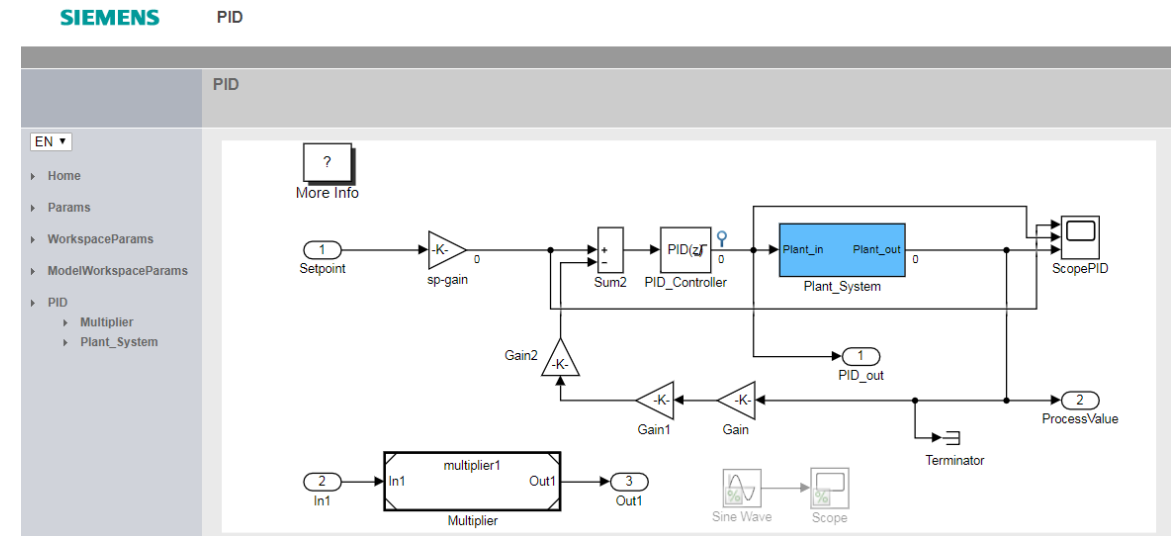
Target 1500S™ for Simulink® V3.0 – Displaying the model on the CPU Web server

Function

- Export Simulink model graphics to a user-defined Web page on the CPU Web server
- Easy navigation through the sub-systems of a model
- Display and change of model parameters
- Display of signal trends in a scope

Benefits

- Using the Simulink model directly for an HMI via the CPU Web server
- Monitoring model behavior without Simulink
- Can also be used for remote maintenance



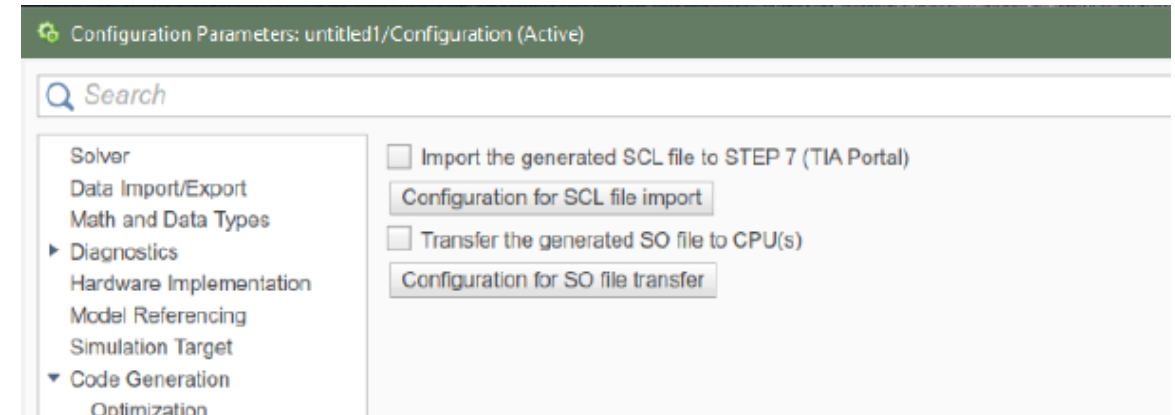
Target 1500S™ for Simulink® V3.0 – Automatic transfer to the CPU

Function

- Automatic transfer of the generated SO file to the Web server of the CPU after each generation process directly from Simulink
- Including handling for access protection to the CPU (user name/password)

Benefits

- Acceleration of the workflow through automation of manual steps (manual transfer via the CPU Web server no longer necessary)
- Combination with the Openness connection for TIA Portal for maximum benefit



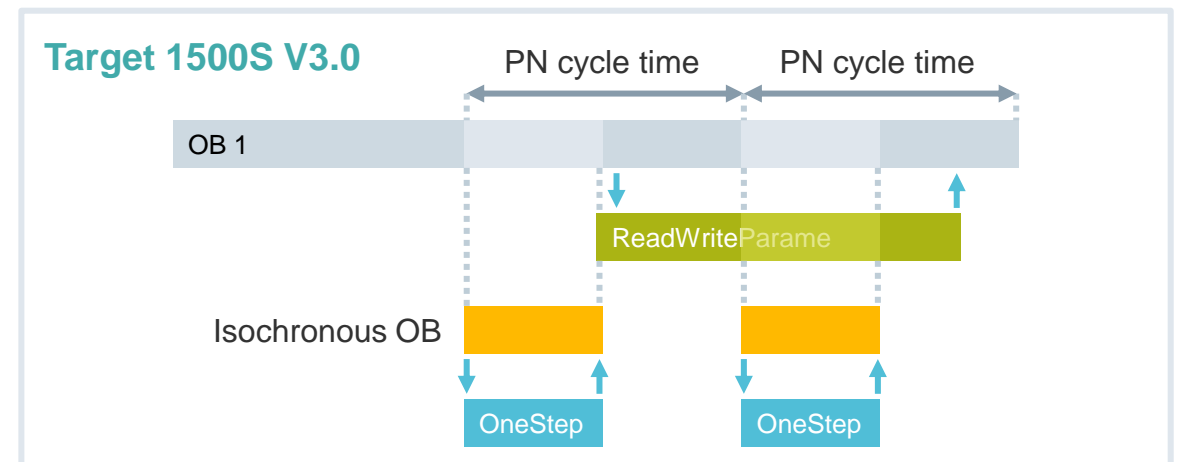
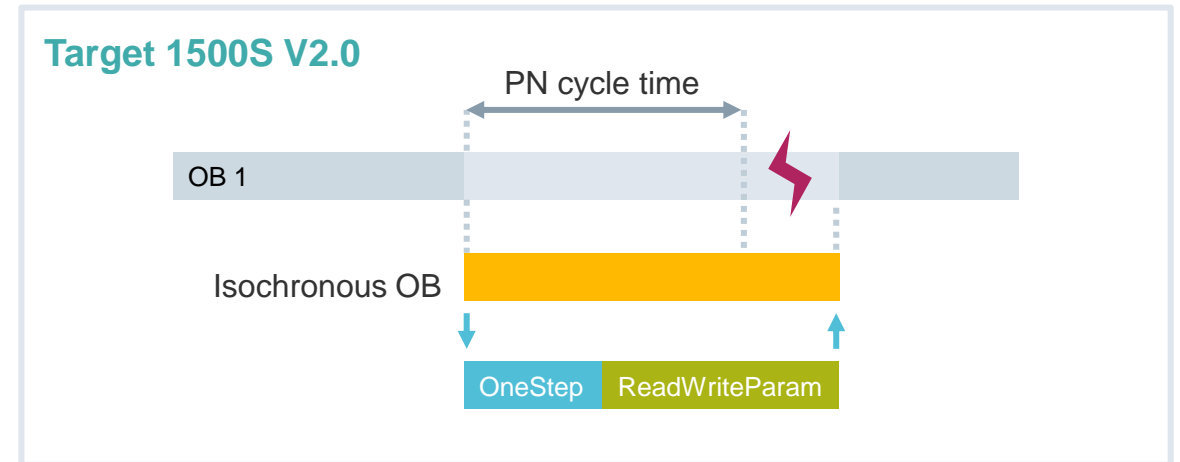
Target 1500S™ for Simulink® V3.0 – Parameter access

Function

- Execution of the model and reading/writing of the model parameters in different OBs possible
- Ensuring consistent data exchange between the call levels (thread safety)

Benefits

- Reduced influence on cycle time by reading/writing parameters
- Call of the model in isochronous OB, read/write parameter in low-priority, cyclic OB
- Parameter access with reduced influence on time-critical applications



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S7-1500 client, SiOME configuration tool


 **ProDiag**
Usability add-ins, such as hierarchical comments

 **PLCSIM Advanced**
Floating window, max. cycle time handling through the API

 **Target 1500S for Simulink**
Model on Web server, transfer of SO files

 **Teamcenter Gateway**
[Multiuser engineering, reference projects](#)

 **SiVArc**
Access protection, SCL blocks, template screens, Openness add-ins

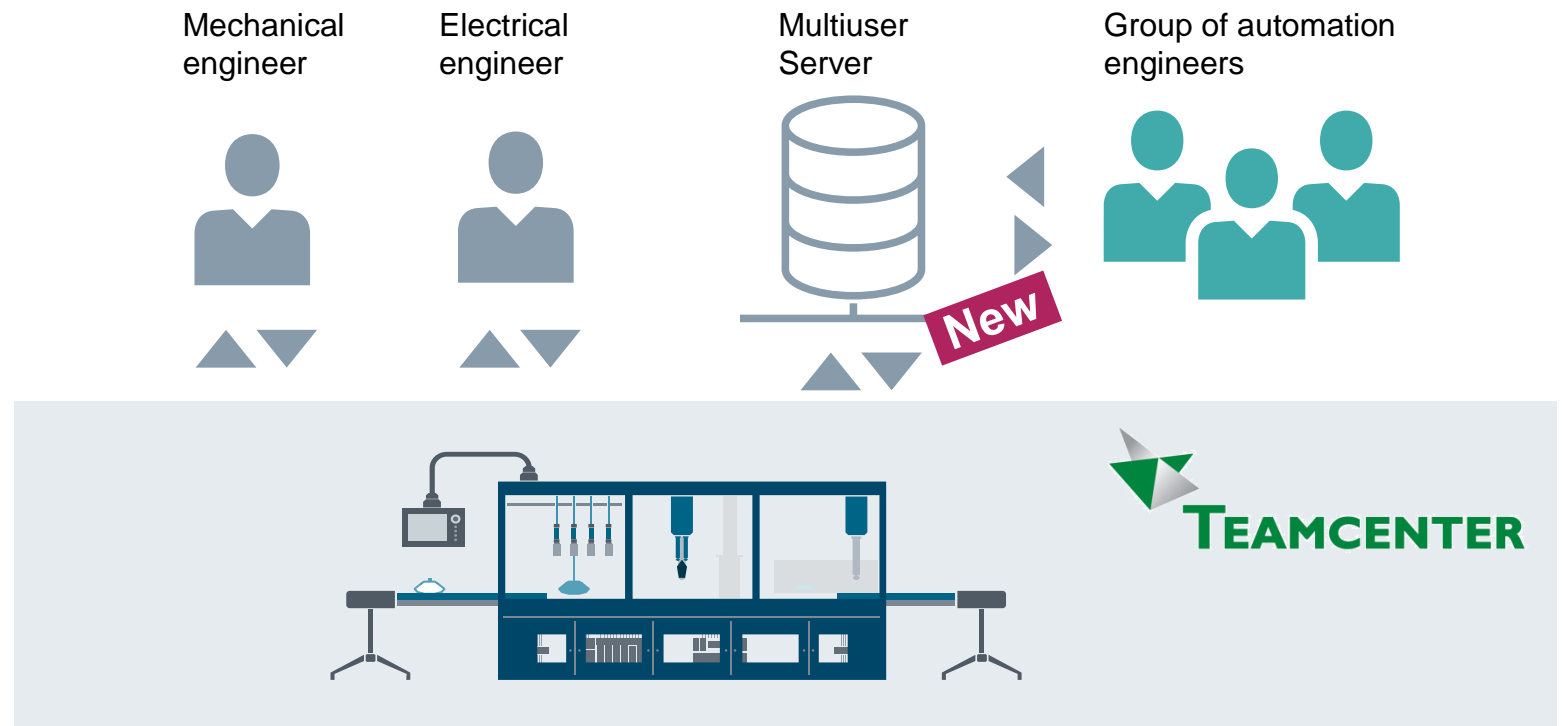
 **Energy Suite**
Energy screens, reports, SINAMICS, usability improvements



TIA Portal Teamcenter Gateway – Working with multiple users on Teamcenter projects

Enhanced collaboration on Teamcenter projects

- **Collaborative engineering** of an automation team working on one TIA project stored in Teamcenter **using both TIA Portal Multiuser and TIA Portal Teamcenter Gateway**
- **Compare and Merge** of TIA projects stored in Teamcenter using the reference project functionality
- **Reconnect** manually extracted Teamcenter projects by saving to an already existing Teamcenter item



TIA Portal – Highlights of TIA Portal V15.1

Hardware configuration

- S7-1500R/H redundant systems
- MRP domain management across project boundaries
- Change firmware version for IO devices



Startdrive – Innovations

- Integration of SINAMICS S210 and SIMOTICS 1FK2 motors
- Startdrive Advanced: Safety Acceptance test for S120 and S210 drives
- Openness extensions for G120, S120, S210
- Integration of Drive Control Charts (DCC)



STEP 7 – Innovations

- Software units: Splitting of user program into separately loadable units
- Textual interface for SCL blocks
- Improvements in online monitoring of blocks



System functions

- Trace: Simplified chart configuration
- TIA Portal Openness add-ins (ET 200SP read/write parameters, watch tables, extended functionality for block import)
- User-defined shortcut keys












WinCC – Innovations

- Support of OPC UA Server Alarm and Condition
- ProDiag Control functional add-ins



TIA Portal options

-  **STEP 7 Safety**
Flexible F Link, DP_DP_ID, Openness add-ins
-  **Multiuser**
commissioning mode
-  **OPC UA**
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SIMATIC Visualization Architect V15.1 – New functions at a glance

Access protection to the SiVArc rule editors by UMAC

X/Y position can be set by expressions

Support for STEP 7 SCL blocks

Generate on template screens

SiVArc – Openness

- Copying rules/rule groups from the library to the project
- Starting SiVArc generation

SiVArc – SIMATIC Visualization Architect
HMI projects in the TIA Portal

simple

fast

flexible

TIA Portal – Highlights of TIA Portal V15.1

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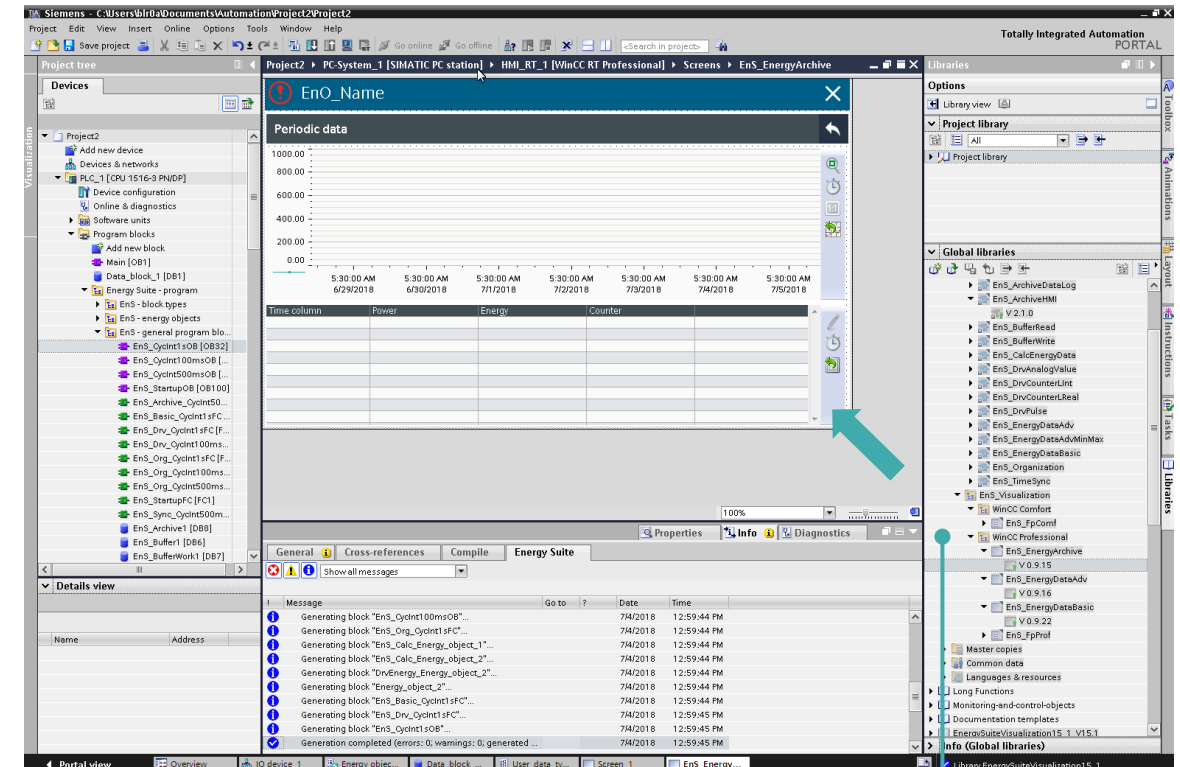


SIMATIC Energy Suite V15.1 – New functions at a glance



New functions

- **Energy screens**
Now included as part of the Energy Suite V15.1 product package
- **Reports**
New: Cost center report including tariffs
- **SINAMICS**
The configuration of SINAMICS devices via MDD¹ is supported (previously only GSDML was supported)
- **Usability improvements**
Various small improvements in usability



Energy Screens now included in scope of delivery, easy to use by drag-and-drop

¹ MDD – Meta device description (integrated devices in the HW catalog)



Thank you for your attention!

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Ingenuity for life



TIA Portal Market Launch Team

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