

SIMATIC WinCC Unified V16 Session 1. General overview.

WinCC Unified V16 Components



- **Core functionality**
basic functionalities, both for HMI and PC
- **Basic options**
additional functional enhancement, both for HMI and PC
- **SCADA options**
special functional enhancement, only for PC

WinCC Unified V16

Core functionality



Core functionality	Description	Unified Comfort Panels	Unified PC Runtime
User Interface	Scalable for all devices	✓	✓
Connectivity	Connecting automation and IT via standard interfaces	✓	✓
Alarming	Know what's happening at your facility	✓	✓
Reporting	Reporting functionality (based on Microsoft Excel)	✂	✓ ¹
Scripting	Extensive scripting possibilities for Runtime	✓	✓
Openness Engineering	Shorten Time to Market using automated engineering	✓	✓
Openness Runtime	Expand runtime functionality and serve as integration platform	✓	✓
Technological Hierarchy	Modular and standardized machine and plant concepts	✂	✓
User Administration	Local user management and access control	✓	✓

¹ Automated reports optional

Available
 Available (limited)
 In work
 Not available

Unrestricted © Siemens 2020

WinCC Unified V16

Basic Options



Basic Options	Description	Unified Comfort Panels	Unified PC Runtime
File-based Logging	Local data logging for small to medium applications	✓ (Logging Tags included)	✓ (Logging Tags optional)
Parameter Control	Consistent handling and operation of machine or production parameters	✓ (included)	✓
Collaboration	Establish distributed configurations	✗	✓
Clients	Flexible web-based, remote Monitoring and Operation	✗	✓
Audit	Documentation and validation according to legal requirements e.g., 21 CFR Part 11	✗	✗

Available
 Available (limited)
 In work
 Not available

WinCC Unified V16 SCADA Options



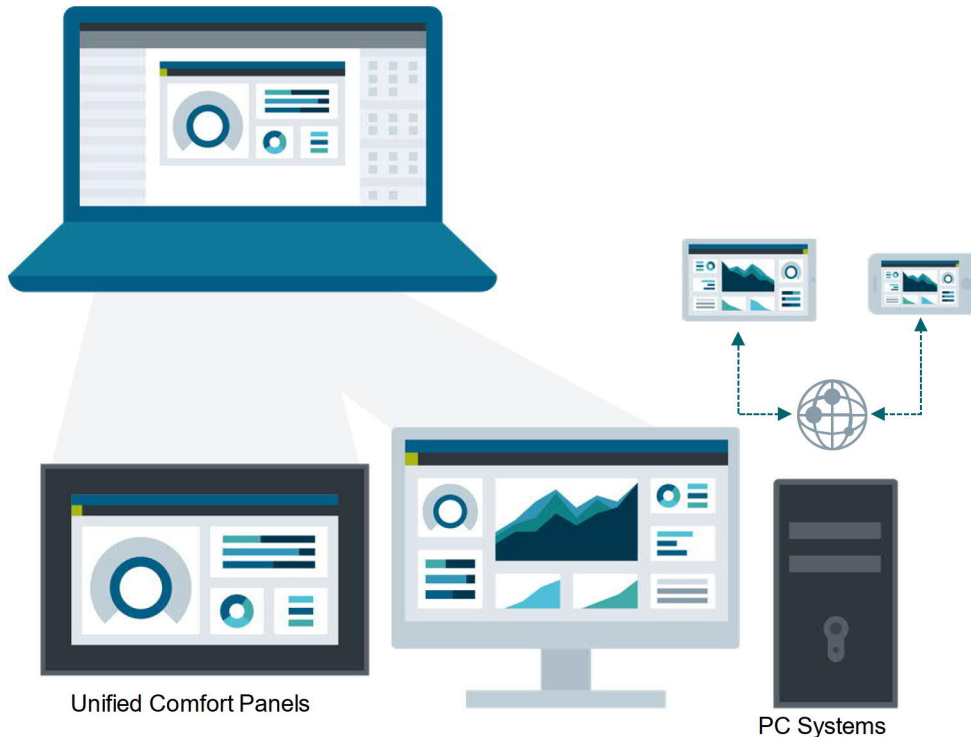
SCADA Options	Description	Unified Comfort Panels	Unified PC Runtime
Database Option	Performant, large-scale and long-term managed logging	✘	✓
Redundancy	Increased availability	✘	✂
Central Logging	Central long-term database logging	✘	✂

Available
 Available (limited)
 In work
 Not available

WinCC Unified V16 – User Interface Scalable for all devices

Unified Comfort Panel ✓

PC ✓



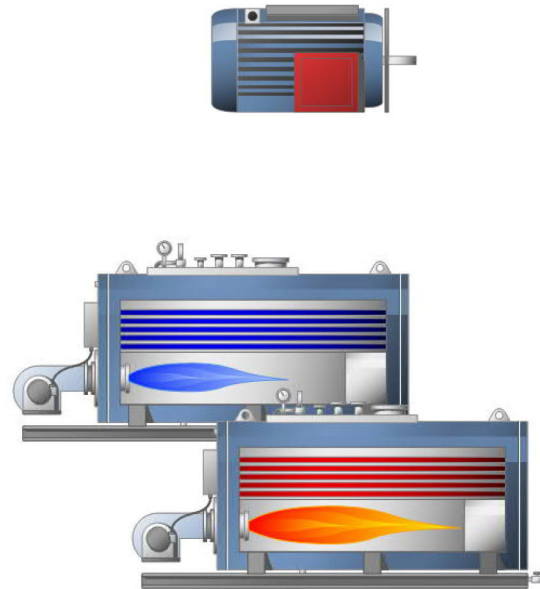
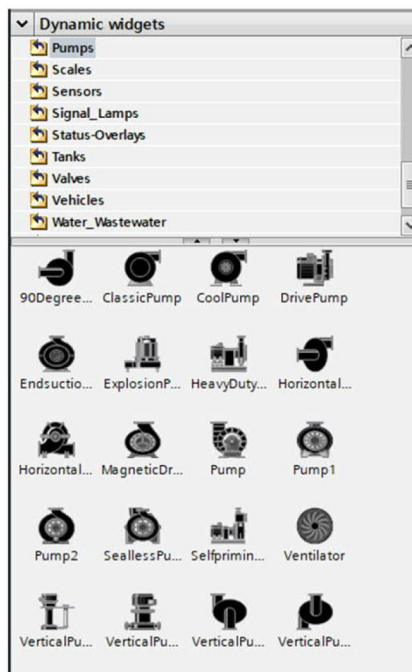
Homogeneous design, usability and functionality for Panel and PC systems

- Identical User Interface for Panel- & PC-Systems
- **Zero installation client (PC Systems)** based on native web technology
- **Homogenous engineering** of consistent visualizations, independent from technology e.g., Unified Comfort Panel or web-browser

WinCC Unified V16 – User Interface Scalable Vector Graphics

Unified Comfort Panel ✓

PC ✓



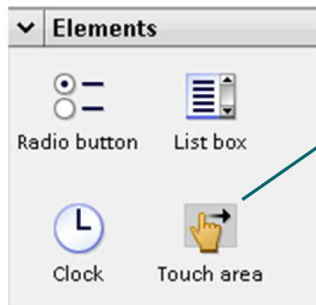
Scalable Vector Graphics (SVG) for all resolutions without loss of quality

- **Animate (dynamic) SVG files** according to the process state
- **Ready to use industry library** with static and dynamic SVGs

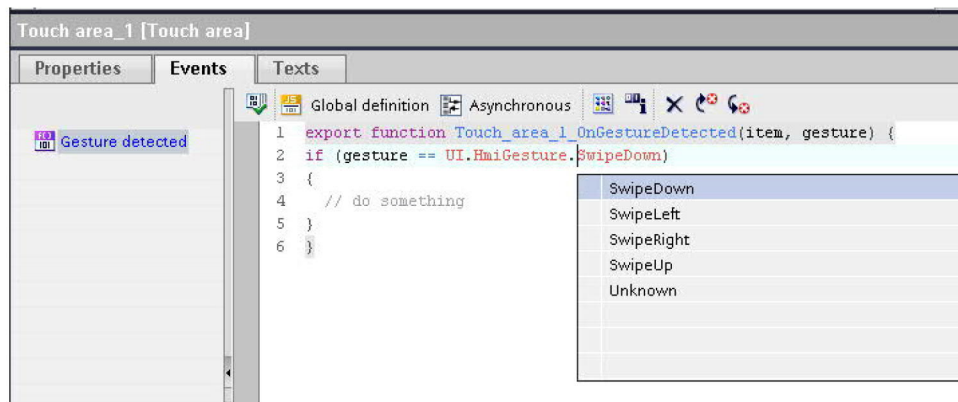
WinCC Unified V16 - User Interface Touch area

Unified Comfort Panel ✓

PC ✓



Touch area



Gesture detection object
to define actions e.g. for screen change



Zooming and panning
for more details, e.g. trend control,
web control and document viewers



Scroll in lists e.g. Alarm Control



WinCC Unified V16 – Controls overview



Unified Comfort Panels

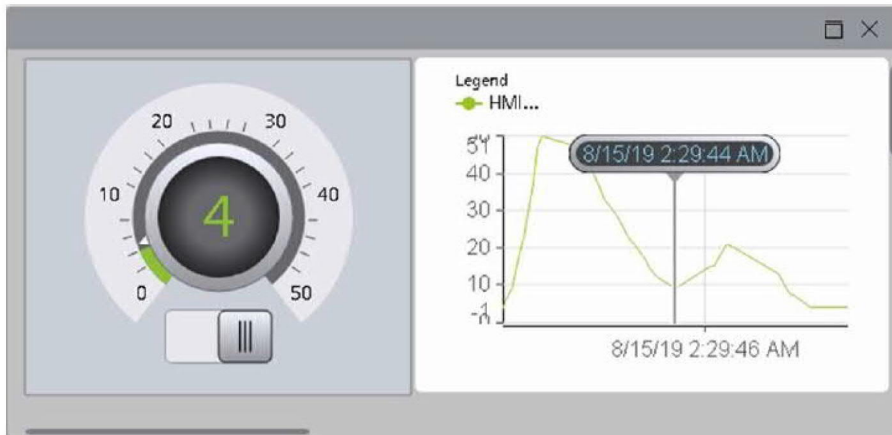
Unified PC Runtime

✓	Screen Window	✓
✓	Faceplate Container	✓
✓	Web Control	✓
✓	Alarm Control	✓
✓	Trend Control	✓
✗	Process Control	✓
✗	Trend Companion	✓
✗	Function Trend Control	✓
✗	Media Player	✓

✓ Available ✗ In work



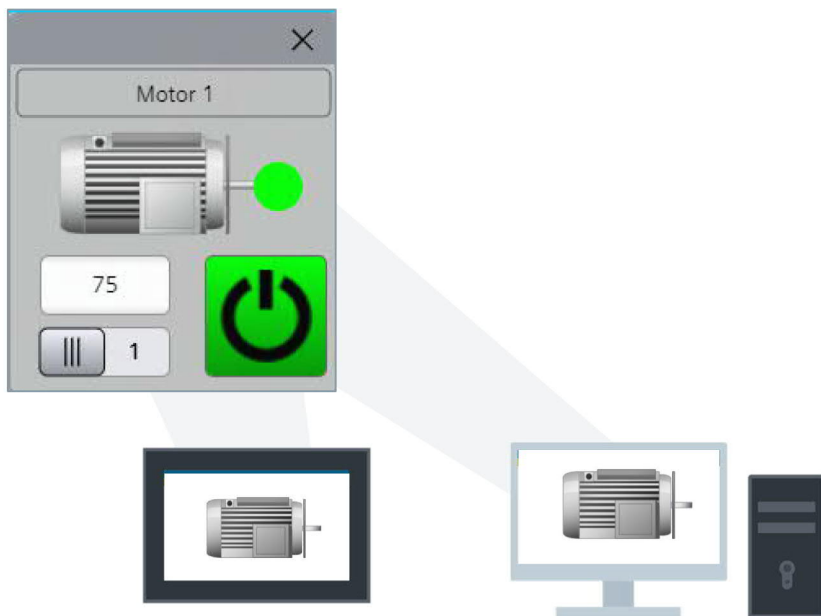
WinCC Unified V16 – Controls Screen Window



- Screen windows offer many possibilities to create images.
- A screen window is used to display another screen in a screen. Possible uses are as follows:
 - Pop-Up's
 - Slide-In's
 - Fixed navigation areas
- The screen window content of an screen window can be toggled during runtime. It is also possible to place screen windows in screen windows.

WinCC Unified V16 – Controls Faceplate Container

Unified Comfort Panel ✓ PC ✓



Create individual library templates (master copies) with dynamic process connection

Use the same faceplates

for panel and PC systems using a faceplate container control

Standardized operation elements for **flexible reuse** in all Unified devices and projects

Efficient operation window (popup) for assets e.g., motor, pump

WinCC Unified V16 – Controls Alarm Control

Unified Comfort Panel ✓

PC ✓

ID	Name	Meldeklasse	Priorität	Herkunft	Bereich	Ereignistext	Meldezustand	Zeit des Auftretens
12	Bit_Valve_out	Notification	4	Ventile	HMI_RT_1::Alarming	Valve OUT closed	Raised	7/30/19 10:16:42
10	Bitmeldung_1	Notification	4		HMI_RT_1::Alarming	BIT 1 Steigend	Raised	7/30/19 10:16:48
11	Bitmeldung_2	Notification	4		HMI_RT_1::Alarming	BIT 2 fallend (0)	Raised	7/30/19 10:16:49
3	Analog_alarm_3	Warning	8	Tank	HMI_RT_1::Alarming	Fill lever above 900	Raised	7/30/19 10:17:20
4	Analog_alarm_4	Alarm	12	Tank	HMI_RT_1::Alarming	Tank full	Raised	7/30/19 10:17:27
13	Bitmeldung_3	Alarm	12		HMI_RT_1::Alarming	Achtung, es ist irge	Raised	7/30/19 10:17:37

Know what's happening at your facility depending on your personal demand (operator, supervisor, maintenance, ...). Multilingual alarm view to support commissioning phase and international operators.

Free configurable alarm view
e.g., column order, toolbar buttons

Select alarms according to production unit or user demand e.g., plant unit in technological hierarchy, maintenance

Alarm control user interface for e.g., select time-range, sort, filter, print, hide and lock, acknowledgement

WinCC Unified V16 – Controls Trend Companion

Unified Comfort Panel  PC 



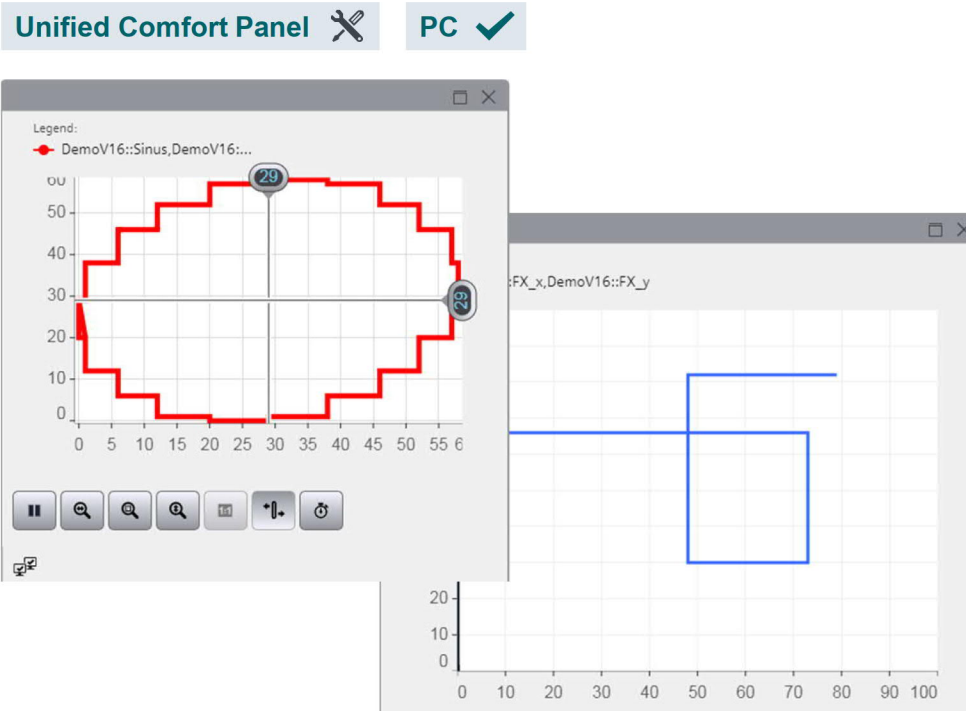
Flexible statistical evaluation of process data depending on your personal demand (operator, supervisor, maintenance, ...)

Free configurable statistic view in relation to the selected range of the corresponding trend control

User defined evaluation regarding sum, average, max, min, integral

Trend Companion user interface e.g., print (hardcopy) or the export statistical data

WinCC Unified V16 – Controls Function Trend control f(X)



Function trend control refers to online and historical data.

Analysis of data **without time-based relationship**

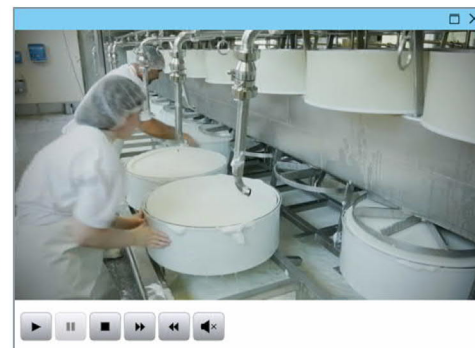
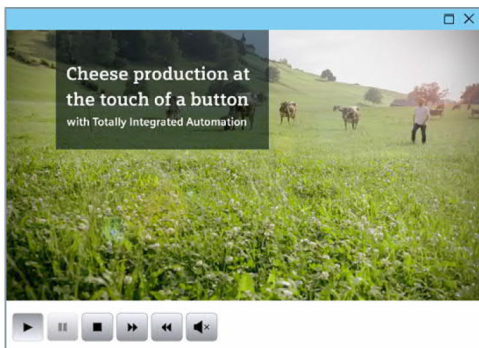
Typical use cases are e.g., batch evaluations (pressure vs. temperature) or quality evaluations (availability vs. performance)

Graphical presentation of **mathematical formulas** e.g., target – performance comparison or reactions at chemical processes

WinCC Unified V16 – Controls Media Player

SIEMENS
Ingenuity for life

Unified Comfort Panel  PC 

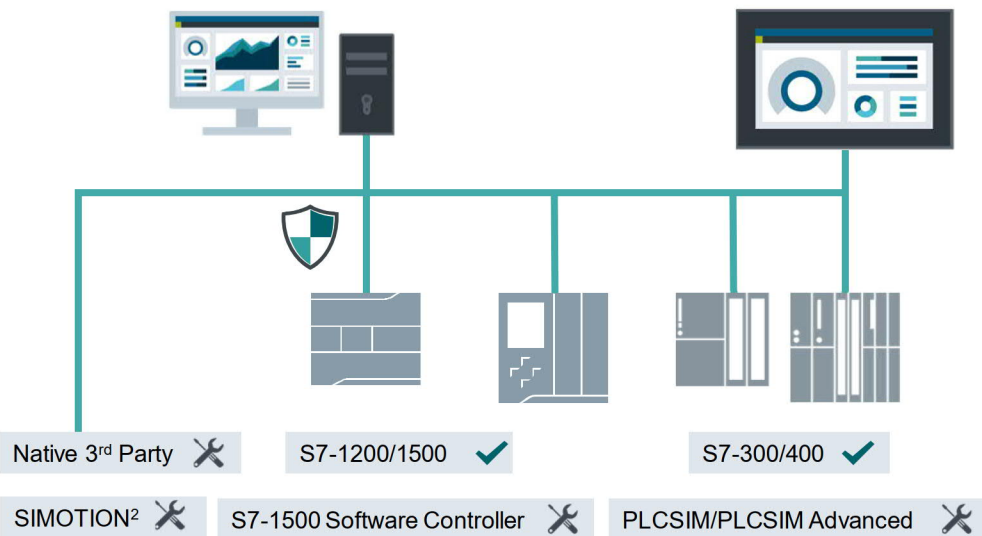


Direct integration of videos e.g., maintenance instructions or manuals

Integration of **existing camera recordings** e.g., of security video archive

WinCC Unified V16 – Connectivity

Unified Comfort Panel ✓ PC ✓



Native 3rd Party¹ communication via Channel Support Package
e.g., Modbus TCP, Allen-Bradley EtherNet/IP, ...

¹ In preparation ² only tag communication via OPC UA DA

Perfect integration of SIMATIC PLCs
(TIA Portal)

High number of connections
for PC systems, up to 128 PLCs
(>10 with extra Softnet-IE license)

Increased number of connections
for Panel systems, up to 16 PLCs



WinCC Unified – Reporting

Flexible reporting based on Office tools



Unified Comfort Panel  PC 



Flexible assignment and planning of report execution at runtime.
 Consistent documentation of production data for all levels of production (product or quality report)

Create **fully customized report templates** with a tool you already know – Microsoft Excel¹

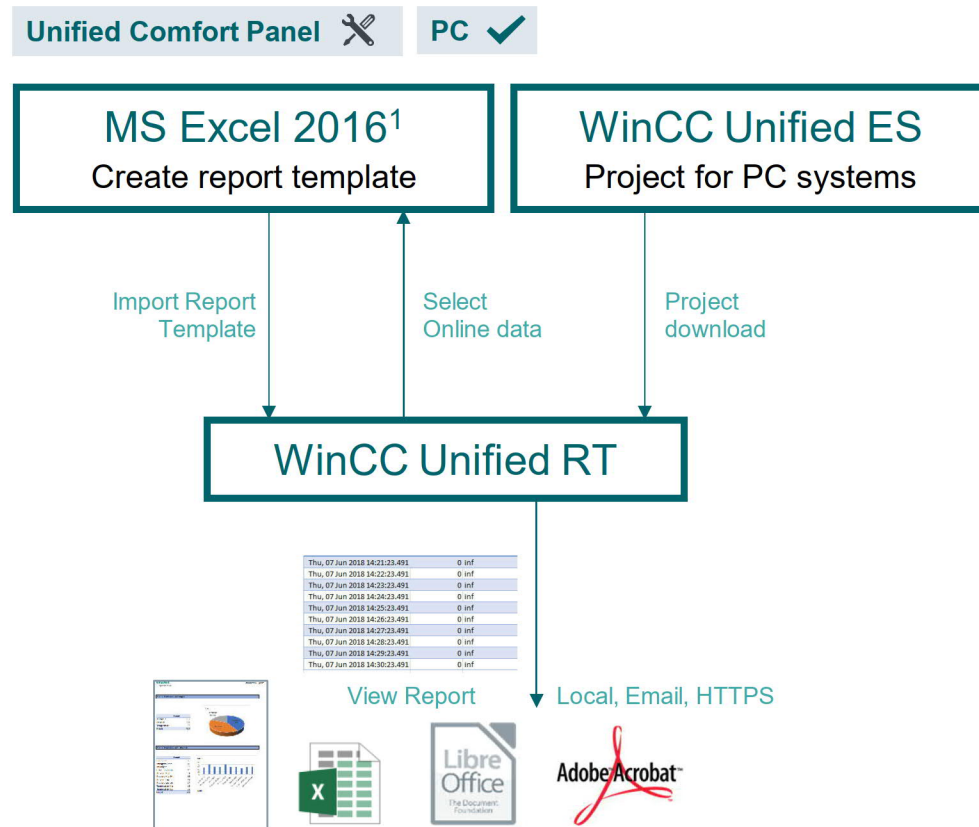
On Demand Generation – Trigger a report manually whenever you need it

Automated generation – Time-scheduled or event-triggered reports – fully automatic (optional)

¹ Please note the system requirements



WinCC Unified – Reporting – Installation and usage



¹ Please note the system requirements

WinCC Unified ES

- Engineer WinCC Unified Screen with Report Control
- Download Project to WinCC Unified PC Station

MS Excel 2016 (WinCC Unified Report Excel Addin)

- Create Report Excel Template
- Select data (tags, ...) from WinCC unified RT
- View Report using manual trigger function in Excel

WinCC Unified RT (Report control)

- Import report template and configure execution (Time, Event, File)
- Time and event triggered Report execution, e.g., per day, shift, ...
- Report execution and save Report as XLSX
- Create automatically PDF files via installed Excel or Libre office



WinCC Unified – Scripting

Unified Comfort Panel ✓

PC ✓

```
1 function Button_1_OnTapped(item, x, y, modifiers, trigger) {
2   let myDate = new Date(); //create a Date object
3   let strTime, strDate, tagVal, strToWrite;
4   strDate = myDate.toLocaleDateString(); //get Local date to script internal tag
5   strTime = myDate.toLocaleTimeString(); //get Local time to script internal tag
6   let tag1 = Tags('AnimationTag');
7   let tagValue1 = tag1.Read(); //read the value of tag AnimationTag
8   //Build the string to be written into file
9   strToWrite = strDate + " " + strTime + ": TagValue = " + tagValue1 + "\r\n";
10
11  //write the entry to the file
12  //in case the folder does not exist, an error will occur,
13  //if the file does not exist, it will be created
14  HMIRuntime.FileSystem.AppendFile('D:\\MyFiles\\textfile.txt', strToWrite, 'utf8').then(
15    function() {
16      HMIRuntime.Trace('Write file finished successfully');
17    }
18  ).catch(function(){
19    HMIRuntime.Trace('Error writing File');
20  });
21 }
```

Efficient scripting for custom solutions with direct access to Unified runtime objects (tags, logging tags, alarms, screen objects, technological hierarchy)

State-of-the-art and well-known programming language **JavaScript** (local and global scripts)

Local scripts for e.g., screen dynamics, events and scheduled tasks. Support of global script functions

Direct access to WinCC Unified JavaScript object model e.g., access to file-system or databases

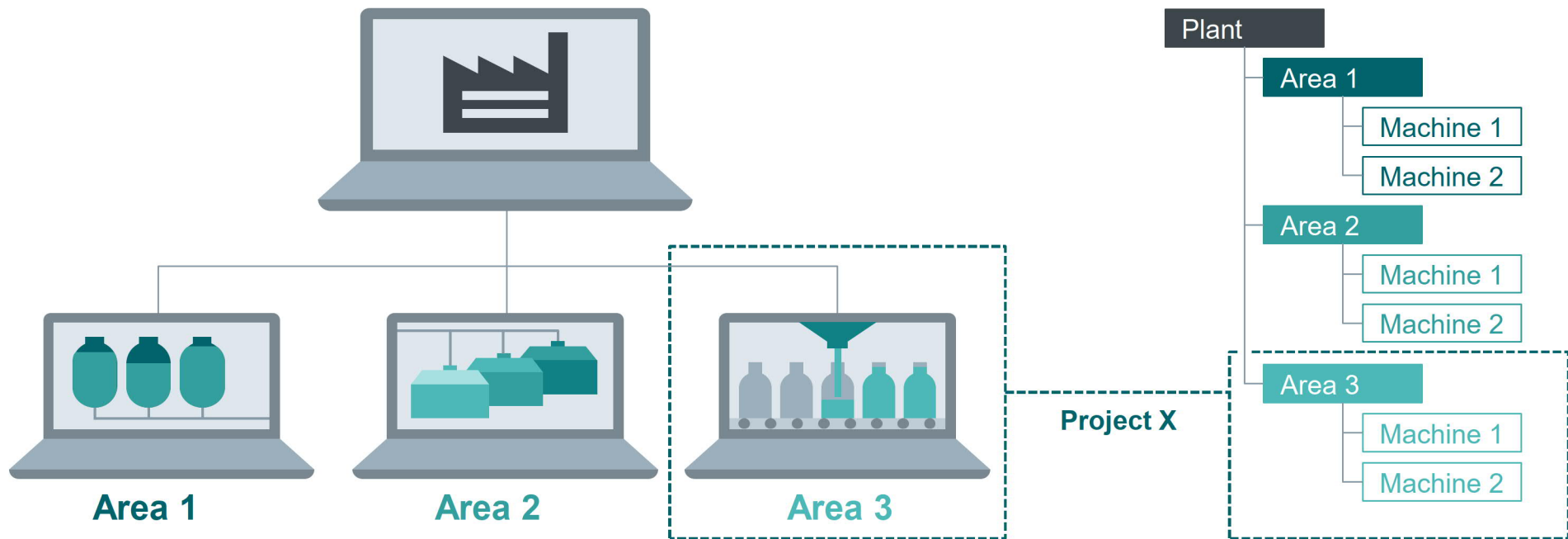


WinCC Unified – Technological Hierarchy

Object oriented plant modelling

Plant

Plant view – Plant project

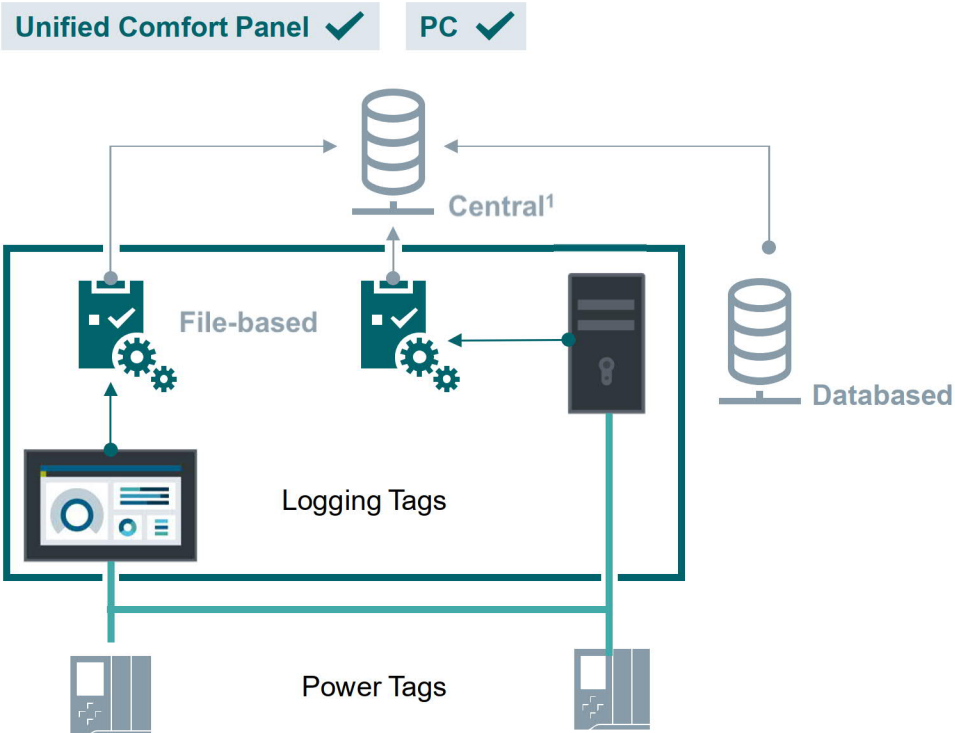


Simple plant expansion through integration of partial models from other projects.



WinCC Unified V16 – Basic Options

File-based Logging



Universal logging functionality for machine-level requirements regarding handling of archive data e.g., copy/paste log files

Unmanaged file-based data archive for **small to medium applications** up to 5,000 Logging Tags

Changeover to databased logging (optional) possible due to identical logging structures

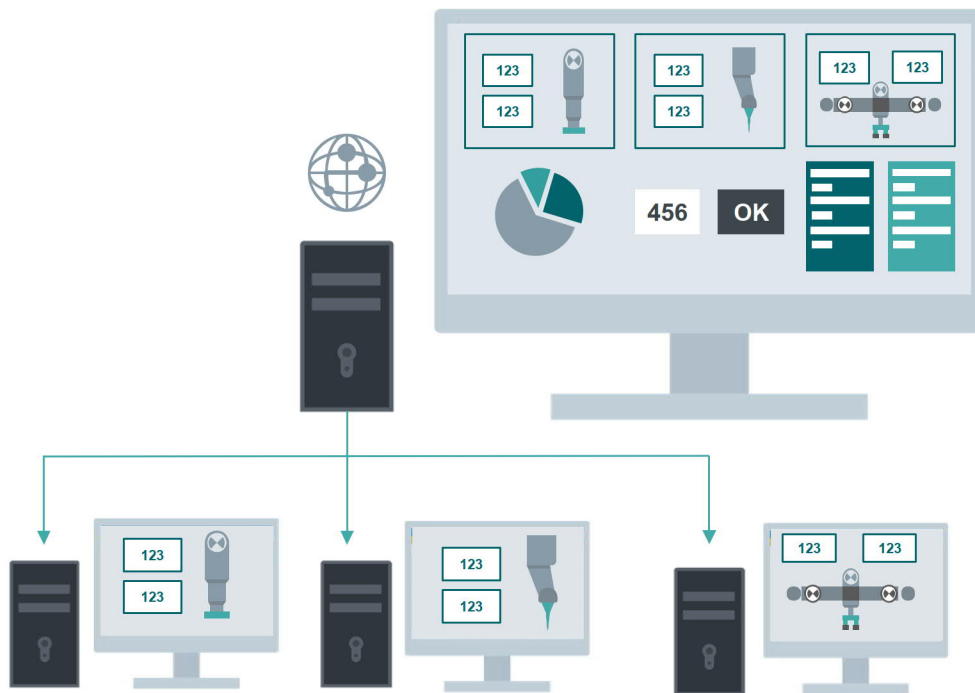
Planned

Central logging as overall plant archiving solution (optional)



WinCC Unified – Basic Options Collaboration

Unified Comfort Panel ✂ PC ✓



Flexible configuration scenarios by sharing screens.

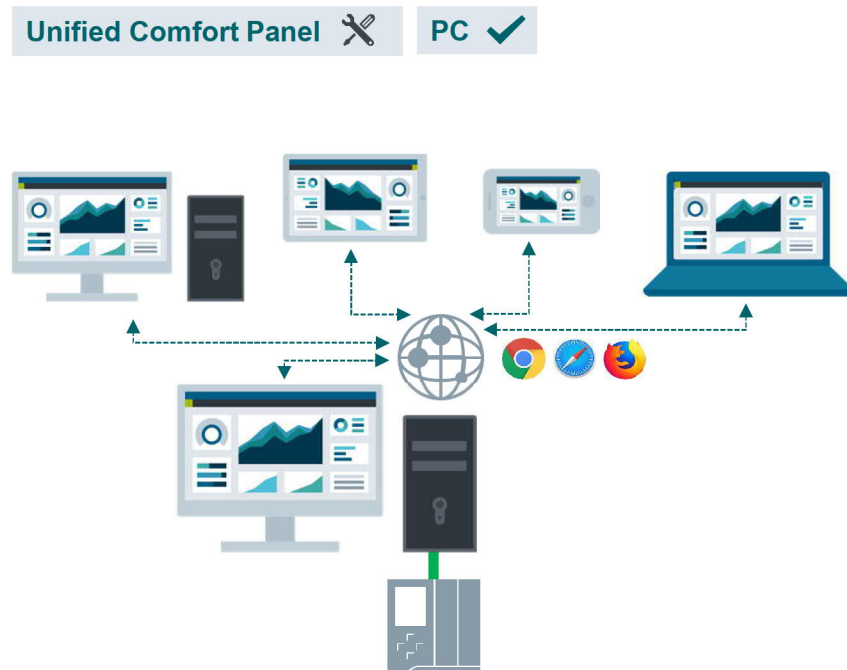
Avoid duplicate engineering
by linking existing screens

Create combined overviews
e.g., for line supervision

Flexible setup of distributed configurations

WinCC Unified V16 – Clients

Flexible web-based, remote Monitoring and Operation



WinCC Unified includes two Clients: One for local visualization **plus ONE Client for remote operation, which is included in every WinCC Unified PC Runtime system.**

Windows 10 Server for more than 5 Clients !

“Zero Installation” Clients, based on native web technology, independent of platform and browser

Flexible, maintenance free 24/7 remote access due to pooled license (concurrent access)
Kiosk mode (Windows 10): [SIOS 109771719](https://www.siemens.com/press/en/2019/07/19/109771719)

Secure remote access using Web standards (https with SSL)

SIMATIC WinCC Unified – Tools Configuration Manager



WinCC Unified – Configuration available after
installation of WinCC Unified PC Runtime

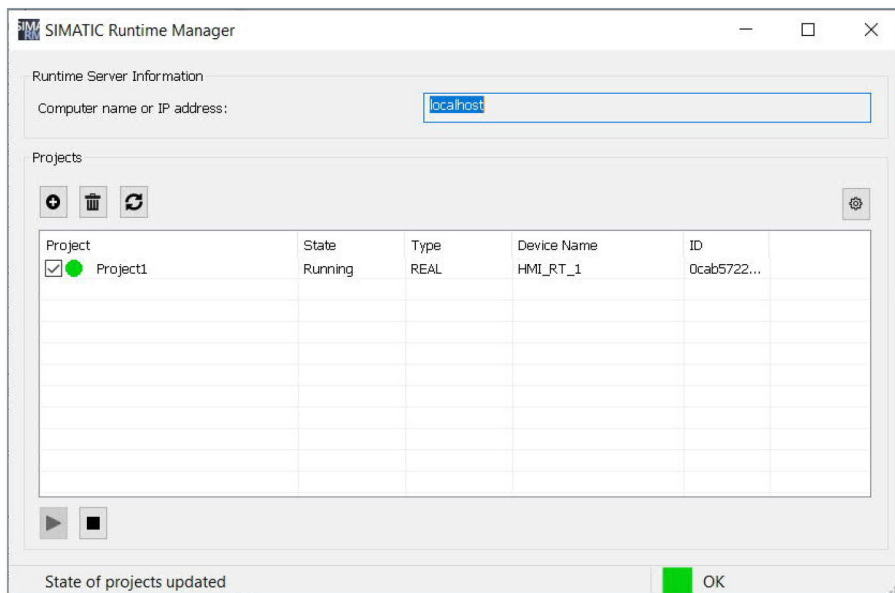
Adjust settings for

- Web UI certificate
- Certificates of the OPC UA server
- User Administration
- Storage location of log databases
- Password-protected download

SIMATIC WinCC Unified – Tools

SIMATIC Runtime Manager

SIEMENS
Ingenuity for life



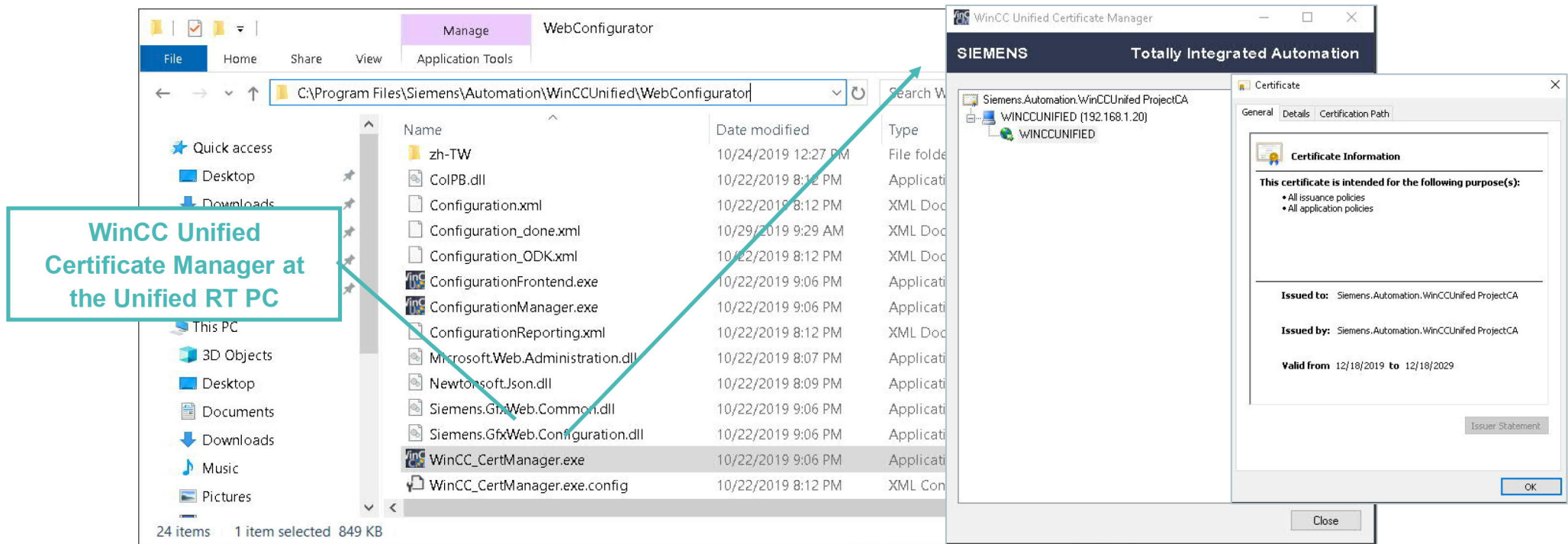
Several WinCC Unified projects can be downloaded to one PC station.

Manage WinCC Unified projects

- Run, stop or switch projects
- Show project state
- Activate / Deactivate Debugging
- OPC UA Export

SIMATIC WinCC Unified – Tools

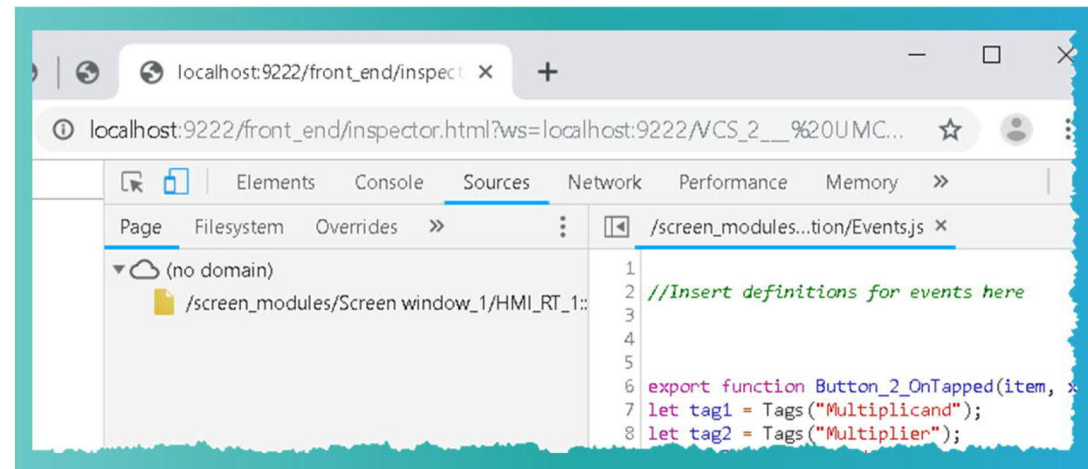
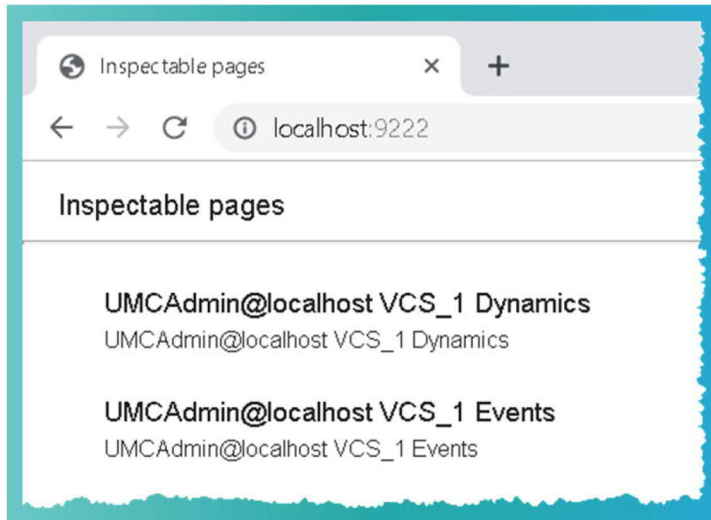
WinCC Unified Certificate Manager



Use the WinCC Unified Certificate Manager to create and transfer certificates.
C:\Program Files\Siemens\Automation\WinCCUnified\WebConfigurator

WinCC Unified – Tools

Script debugger



Start the Debugger via URL <http://localhost:port number> (e.g. <http://localhost:9222>)

WinCC Unified – Tools Trace Viewer

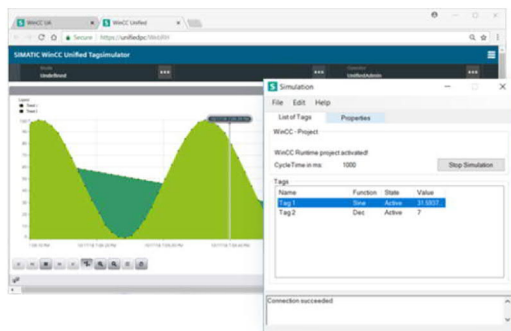
The screenshot shows the Trace Viewer application window. The main pane displays a table of traces with columns for #, Host, System, Application, Subsystem, Module, and Severity. Below the table, a context menu is open over a script function definition. The menu options include: Enabled, Disabled, Press (highlighted), Press key, Release key, Click right mouse bu..., Click left mouse button, and Release. A sub-menu is also visible, containing: Snippets, HMI Runtime, and Logic. The 'Trace' option under 'HMI Runtime' is circled in red.

#	Host	System	Application	Subsystem	Module	Severity
6945	Incubation	workshop	JobSchedulerHost(100)	ScriptFW	ScriptHMIRuntime	Info
6921	Incubation	workshop	JobSchedulerHost(100)	ScriptFW	ScriptHMIRuntime	Info
6912	Incubation	workshop	JobSchedulerHost(100)	ScriptFW	ScriptHMIRuntime	Info
6903	Incubation	workshop	JobSchedulerHost(100)	ScriptFW	ScriptHMIRuntime	Info
6892	Incubation	workshop	JobSchedulerHost(100)	ScriptFW	ScriptHMIRuntime	Info
6486	Incubation	workshop	JobSchedulerHost(100)	ScriptFW	ScriptHMIRuntime	Info
6457	Incubation	workshop	JobSchedulerHost(100)	ScriptFW	ScriptHMIRuntime	Info
6448	Incubation	workshop	JobSchedulerHost(100)	ScriptFW	ScriptHMIRuntime	Info
6041	Incubation	workshop	JobSchedulerHost(100)	ScriptFW	ScriptHMIRuntime	Info
5962	Incubation	workshop	JobSchedulerHost(100)	ScriptFW	ScriptHMIRuntime	Info
5945	Incubation	workshop	JobSchedulerHost(100)	ScriptFW	ScriptHMIRuntime	Info
5510	Incubation	workshop	GFxRTS(101)	ScriptFW	ScriptHMIRuntime	Info
5509	Incubation	workshop	JobSchedulerHost(100)	ScriptFW	ScriptHMIRuntime	Info
5503	Incubation	workshop	JobSchedulerHost(100)	ScriptFW	ScriptHMIRuntime	Info
5115	Incubation	workshop	GFxRTS(101)	ScriptFW	ScriptHMIRuntime	Info
5114	Incubation	workshop	GFxRTS(101)	ScriptFW	ScriptHMIRuntime	Info
5113	Incubation	workshop	GFxRTS(101)	ScriptFW	ScriptHMIRuntime	Info

- RT & ES trace functionality
- Could be used in scripts via
“HMIRuntime.Trace(“Trace Message”)”

The RTIL Trace Viewer is installed together with WinCC Unified !
Trace Viewer: (C:\Program Files\Siemens\Automation\WINCCUnified\bin\RTILtraceViewer.exe)

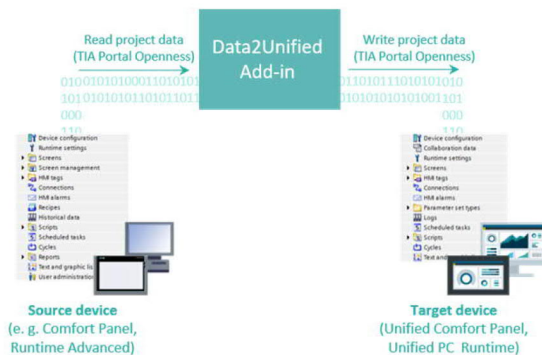
SIMATIC WinCC Unified – Tools Additional tools



Tagsimulator for SIMATIC WinCC Unified

<https://support.industry.siemens.com/cs/ww/en/view/109760641>

Simulate your configured variables in SIMATIC WinCC Unified quickly and easily with the SIMATIC WinCC Unified Tag Simulator.



Data2Unified- AddIn

<https://support.industry.siemens.com/cs/ww/en/view/109770510>

The “Data2Unified” add-in offers you the possibility to convert your configuration contents into a WinCC Unified configuration so that you do not have to recreate the contents of your previous configurations from scratch.

SIMATIC HMI Unified Comfort Panels Portfolio

SIEMENS
Ingenuity for life



Comfort Panels
12 devices (Key and touch)



Unified Comfort Panels
6 devices (Multitouch)

SIMATIC HMI Unified Comfort Panels Multitouch from 7" to 22"

SIEMENS
Ingenuity for life



MTP 700
800 x 480
7.0"



MTP 1000
1,280 x 800
10.1"



MTP 1200
1,280 x 800
12.1"



MTP 1500
1,366 x 768
15.6"



MTP 1900
1,920 x 1,080
18.5"



MTP 2200
1,920 x 1,080
21.5"

MTP = Multi-Touch Panel

SIMATIC HMI Unified Comfort Panel

Increased system performance



	Comfort Panel 7 – 12"/15 – 22"	Unified Comfort Panel 7 – 12"/15 – 22"
PLC-Connections	8	16
Tags	2,048 / 4,096	8,000
Alarms	4,000 / 6,000	9,000
Logs	50	50
Logging Tags	2,048	5,000
Scripts	100 / 200	600
Text-/Graphic list	500	750
Screens	500 / 750	1,200
- Objects per screen	400 / 600	800 / 1,200
- Tags per screen	400	600 / 800

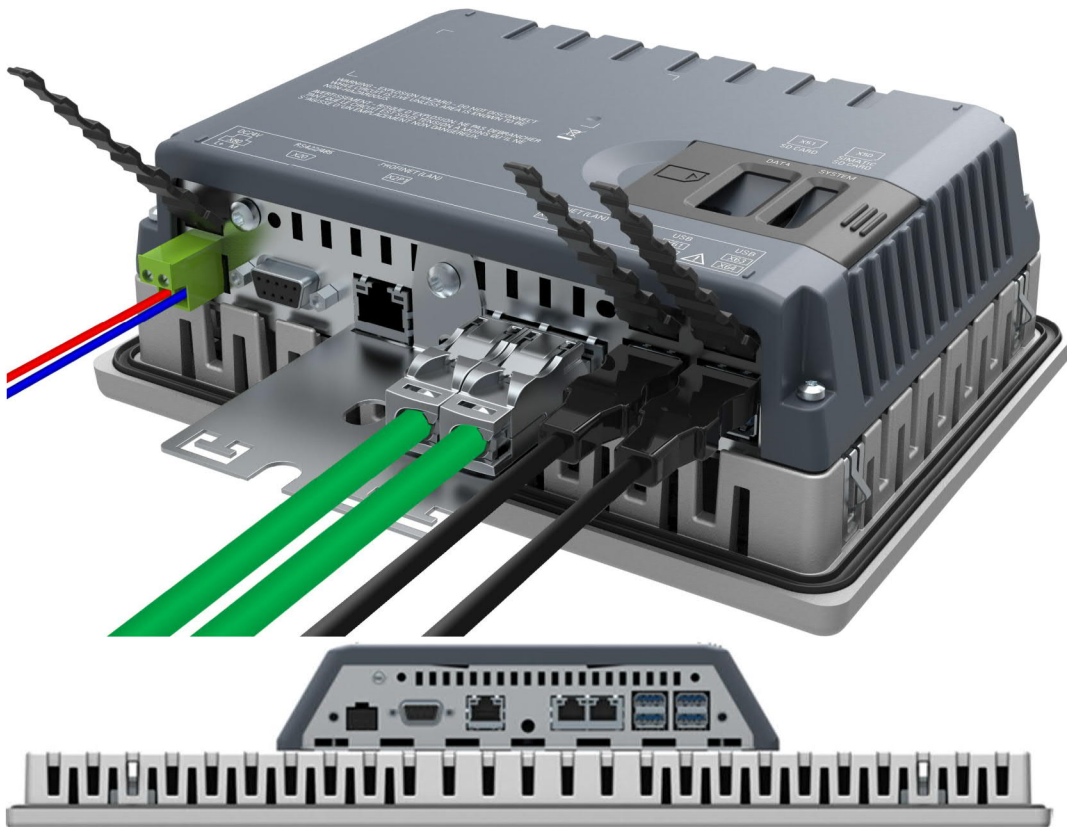
Increased quantity structure
from 7" to 22"

Doubled quantity structure
compared to Comfort Panel

Differentiation only for
tags and objects per screen

SIMATIC HMI Unified Comfort Panels Connectivity

SIEMENS
Ingenuity for life



2 Port PROFINET Switch

1 IP address 100 Mbit

1 Port Ethernet

1 IP address 100 Mbit/1 Gbit

Serial

(422, 485) to support 3rd party PLCs¹

4x USB 3.0

Support of USB Hardware e.g., printer,

2x SD-Card

Data card for files, logs and customer data

System card for automatic backup

Reset Button

Set device to reset mode

¹ Available after device release via CSP

SIMATIC HMI Unified Comfort Panel

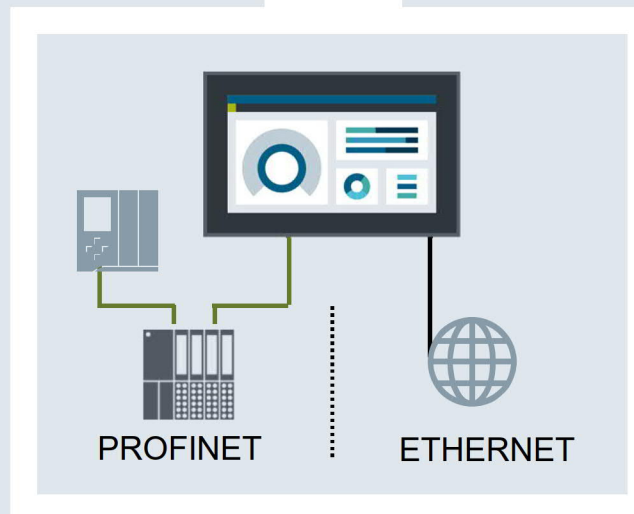
Temporary not all services on all interfaces!



Integrated Switch

2 Ports

- S7/S7+ Communication
- MRP / HSYNC
- PN Basic Services (assign name, IP,...)
- Project Download via PN



Gigabit Interface

1 Ports

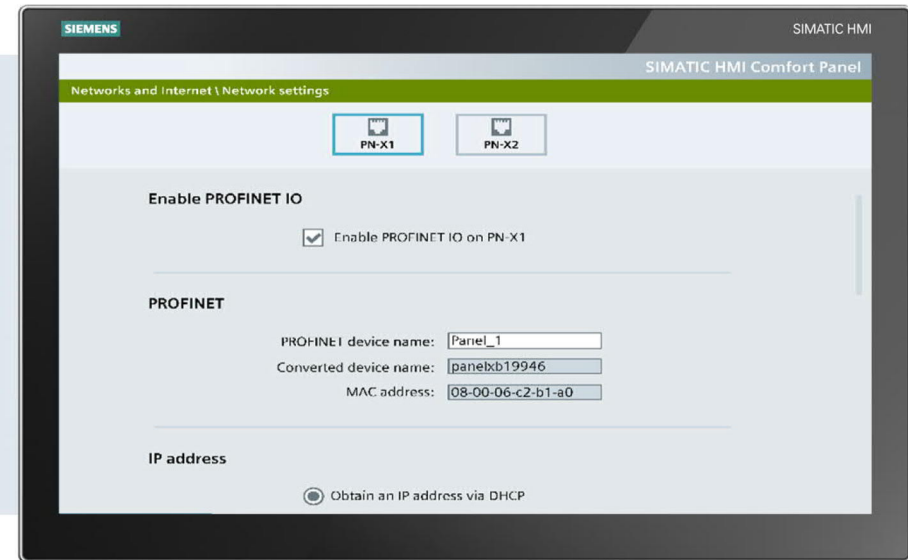
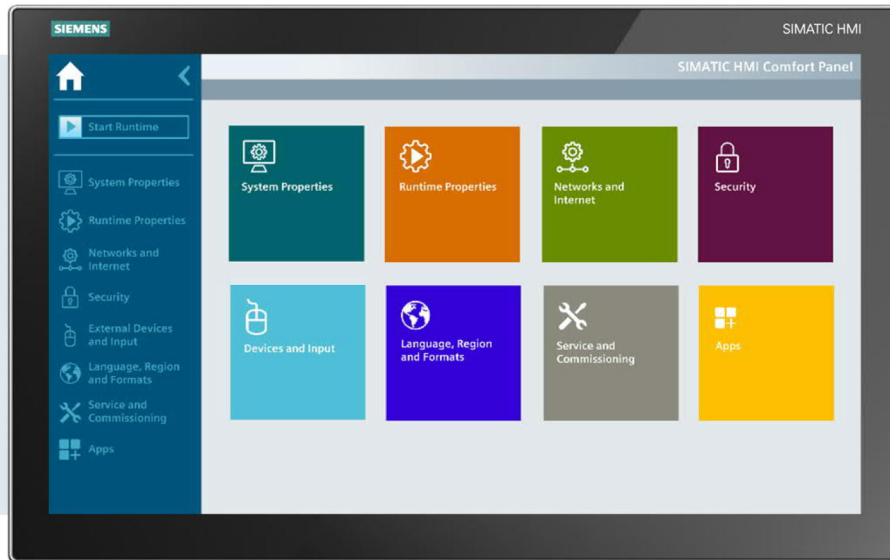
- Project download and Firmware Update via Ethernet
- Sm@rtServer (VNC) Access
- Web Browser
- Network Access
- Edge Management and Apps
- 3rd Party PLC¹ (e.g. Modbus RTU)

¹ Available after device release via CSP

SIMATIC HMI Unified Comfort Panel

Completely new designed control panel

SIEMENS
Ingenuity for life



- New look for the Control Panel - optimized for touch devices
- User has only access to control panel UI – not operating system UI

Contacts



Maksym Shepliakov
Technical Support Specialist
Digital Industry
Automation Systems SIMATIC

Yaroslavska str. 58
04071 Kiev, Ukraine
Mobile: +38 (068) 538 2380
E-mail: as.ua@siemens.com

[siemens.com/wincc-unified-system](https://www.siemens.com/wincc-unified-system)