APPLICATION EXAMPLE

Integration and Usage of the WinCC OA Panel Topology Framework

SIMATIC WinCC Open Architecture

SIEMENS

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Contents

1. Introduction

1.1. Overview

This document describes the WinCC OA Panel Topology Framework and its integration with WinCC OA projects. The framework provides a structured approach to managing panel configurations and ensures seamless navigation and visualization of distributed HMI systems. By leveraging pre-configured faceplates and a modular topology-based layout, the framework simplifies the development of WinCC OA projects, enhancing usability and operational efficiency. It supports various industrial applications by offering a smart navigation mechanism, predefined visualization elements, and flexible configuration options. This document outlines the concept, application, and visualization capabilities of the framework, along with details on its implementation and benefits in SCADA environments.

1.2. Mode of operation

This document describes the WinCC OA properties of integrating the WinCC OA Panel Topology Framework.

1.3. Components used

This application example has been created with the following hard- and software components:

Component	Number	Article number	Note
WinCC OA 3.20 Server Basis	1	6AV6355-1AA50-0BA0	
WinCC OA V3.20, Para Standard	1	6AV6355-1AA50-0CH0	

Table 1-1

You can purchase these components from the Siemens Industry Mall.

This application example consists of the following components:

Component	File name	Note
WinCCOAFrameworkAppExample help file	WinCCOAFrameworkAppExample.pdf	This document
Example Project WinCC OA	WinCCOAFrameworkAppExample.zip	Pre-configured project for testing the example in WinCC OA
Subproject WinCC OA (The Framework)	PT_SIE_FRAMEWORK_3_20.zip	Subproject for WinCC OA

Table 1-2

2. Engineering

2.1. Project integration

2.1.1. System requirements

- WinCC OA Version 3.20 P1 or higher installation and license (incl. Para)
- Minimal system requirements for WinCC OA (see WinCC OA Documentation)

2.1.2. Installation WinCC OA

To carry out the installation of WinCC OA, please follow the steps in the WinCC OA documentation.
You can find the documentation under following link: Installation of WinCC OA

2.1.3. Preparation

Unpack the supplied ZIP archive "FrameworkApplicationExample.zip" into the folder where the project is to be created.
The ZIP-archive contains the folder:

- WinCCOAFrameworkAppExample.zip: The example project which is integrated into the framework
- PT_SIE_FRAMEWORK_3_20.zip: The WinCC OA Panel Topology framework subproject

2.1.4. Create Project

Follow the steps below to create the new legacy standard project (without standard security features) and integrate the framework subproject into the newly created project.

1. Start the WinCC OA Project Administrator and click on “New project” Icon

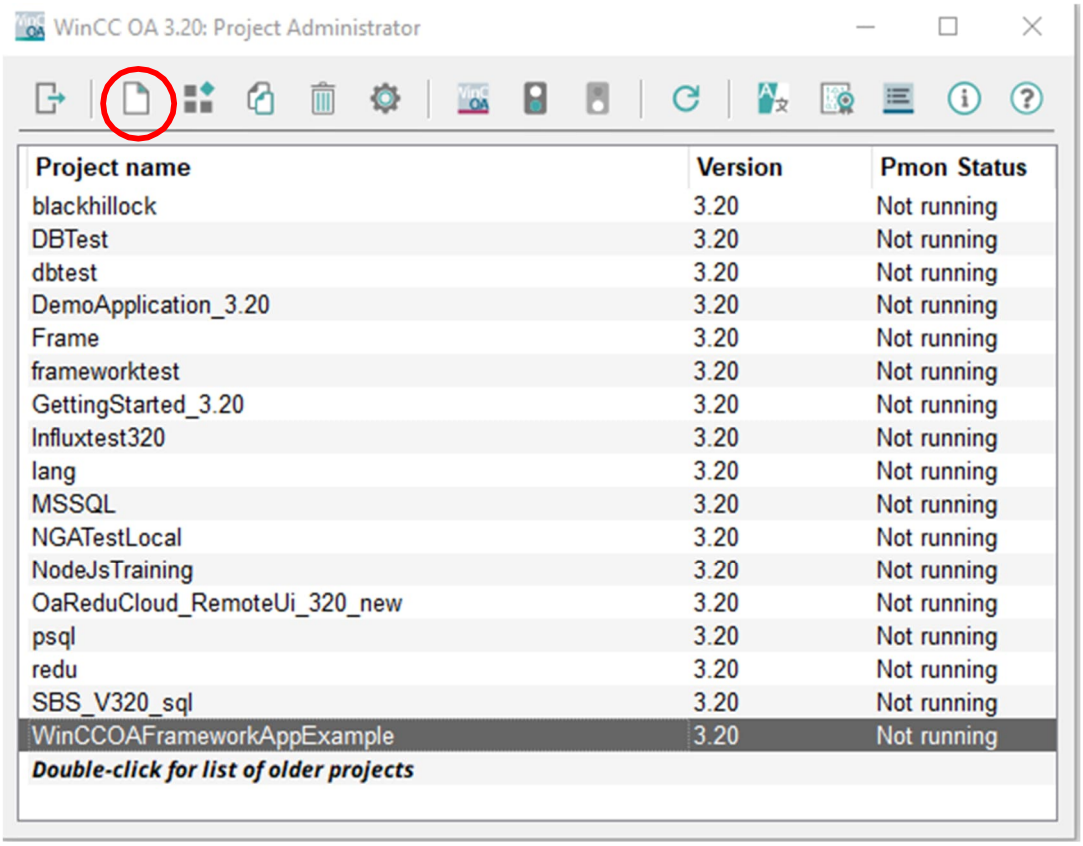

Figure 2-1 Project Administrator

2. Select the project type as a “Legacy Standard project” and click “Next”

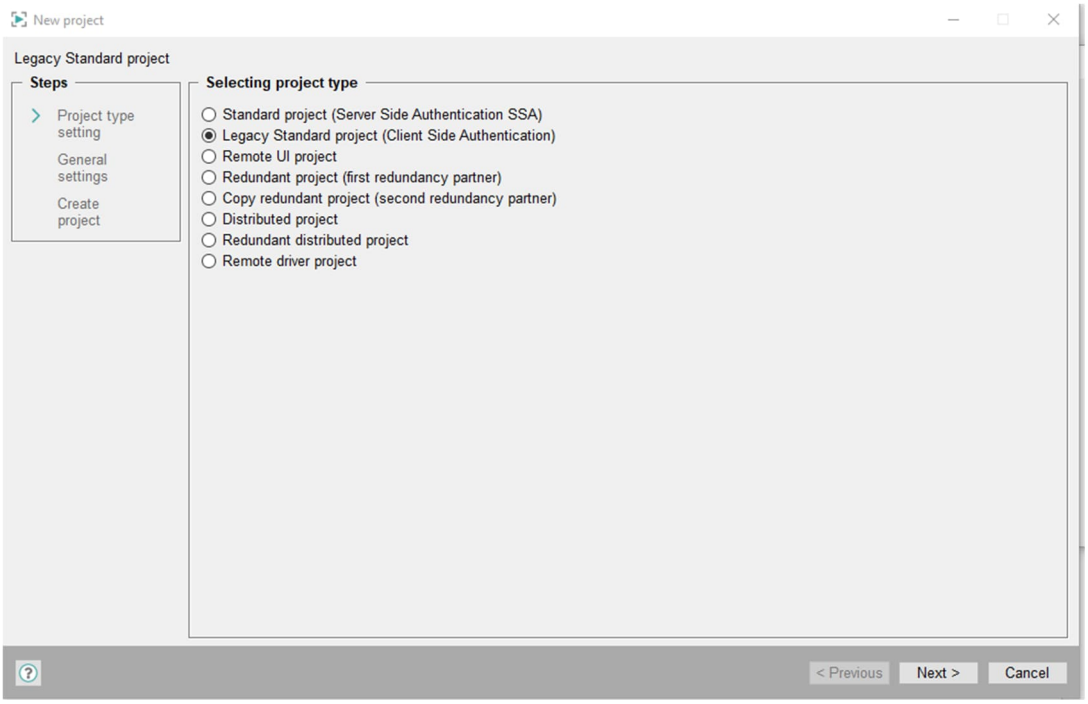

Figure 2-2 Project type selection

3. Enter a project name and select the languages you need as project languages. After that select the project path folder, select “Use SQLite”, and click “Next“

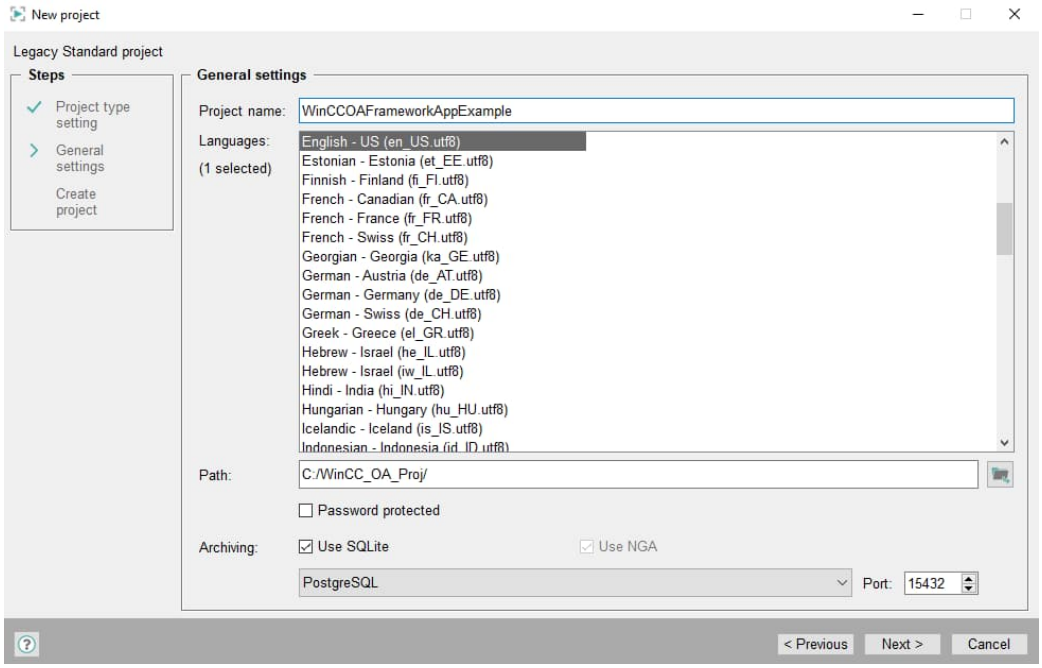

Figure 2-3 General settings

4. Click on “OK” to finish the creation of the new project

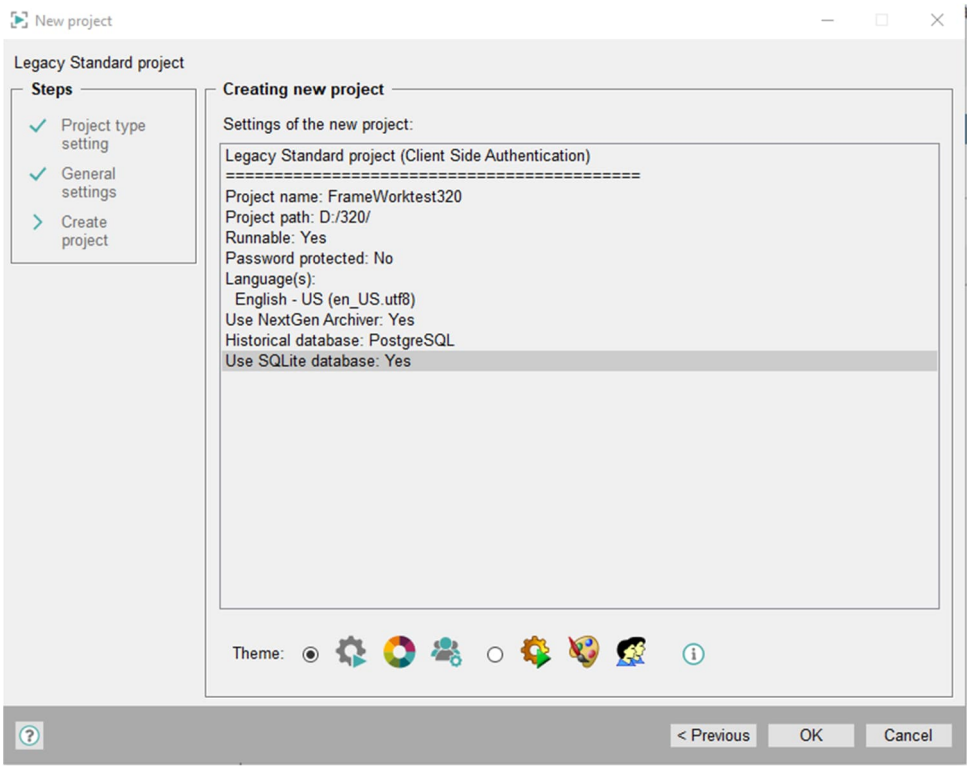

Figure 2-4 Project creation overview

5. Enter After clicking on “OK” a dialog opens in which you can select if you want to set a password for the “root” user or not. When “Yes” is selected, another dialog opens, where you can enter the desired password Selecting “No” created the password as empty string, which is not secure.

Figure 2-5 Dialog to set the "root" password

6. Now you will be able to see the newly created project in the “Project Administrator”

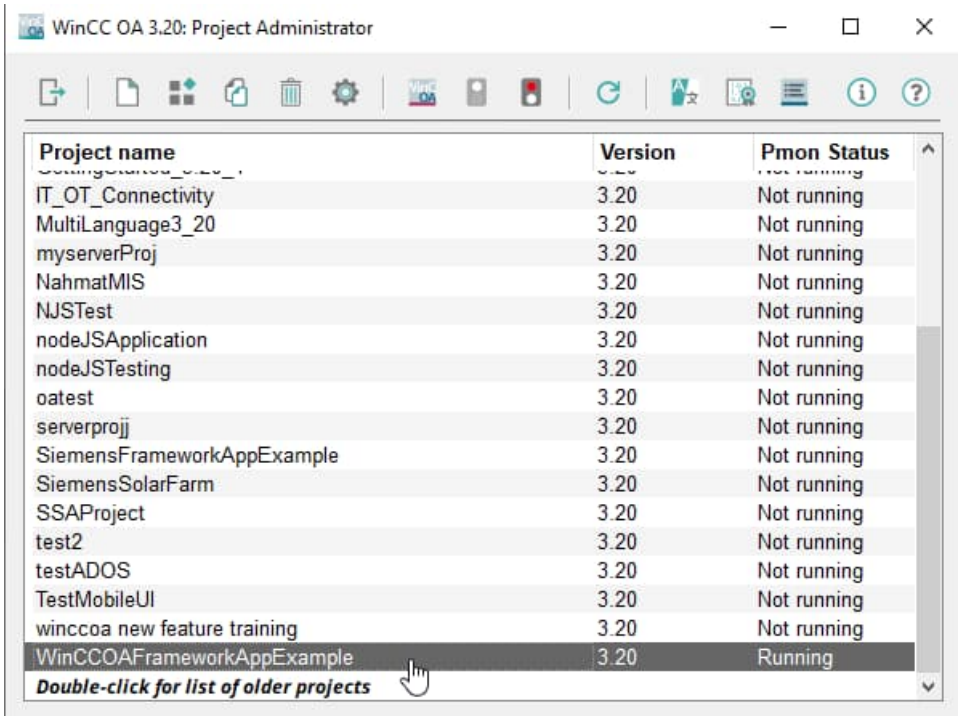

Figure 2-6 Project administrator with new project

2.1.5. Registering and integrating the framework template as a WinCC OA subproject

1. In the WinCC OA Project Administrator click on  to register a new project. From the previously created folder in the section 2.1.3 select the "PT_SIE_FRAMEWORK" folder
2. Deselect the checkbox "runnable" and click on OK.

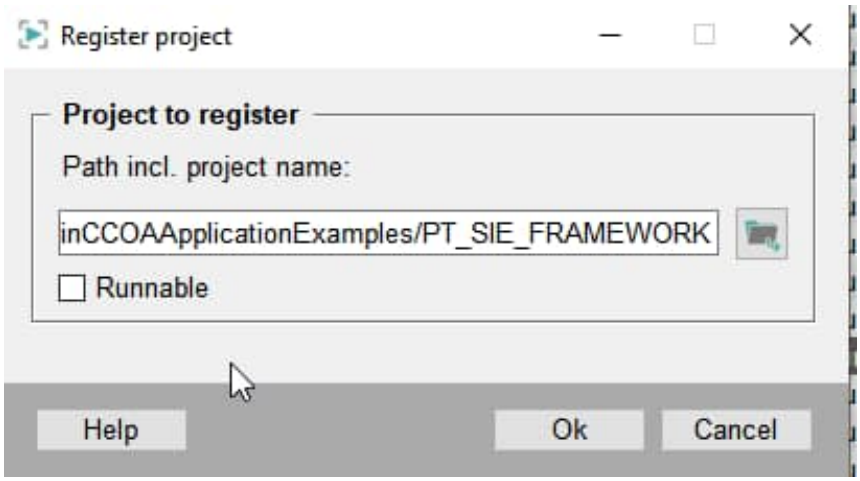

Figure 2-7 project registration dialog

The subproject is now registered.
Attention: Subprojects do not appear in the WinCC OA Project Administrator!

3. Assign the registered subproject to your project click in the WinCC OA project administrator on  to open the project properties.

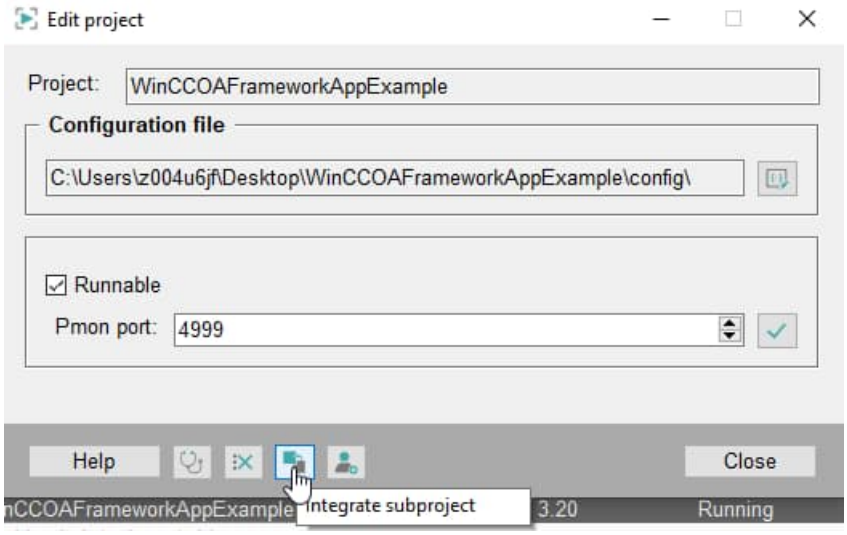

Figure 2-8 Project editing dialog

Now click on  to display the available subprojects.

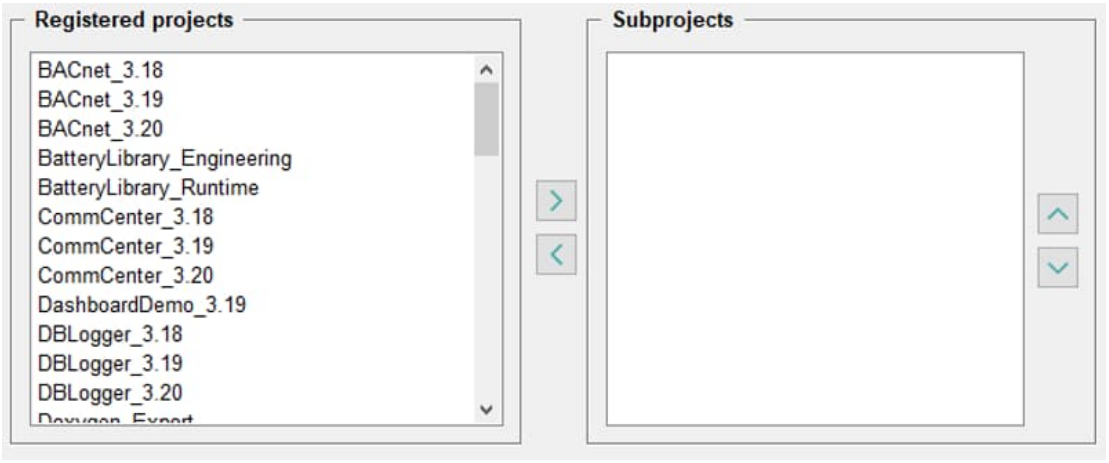

Figure 2-9 Manage subprojects

4. Select the subproject "PT_SIE_FRAMEWORK" and “Stdlib_3.20” then move them by means of  to the right list

Figure 2-10 Include the subproject into the project

Click "OK" and then click "Close".

Note that:
- Be sure that this is the correct order of the subprojects in the config file of “WinCCOAFrameworkAppExample”

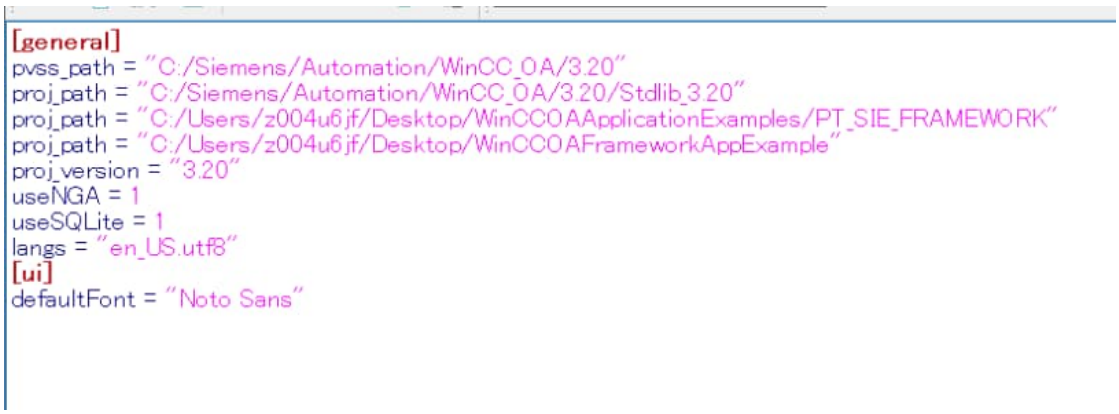

Figure 2-11 The subprojects order in “WinCCOAFrameworkAppExample” config file

2.1.6. Starting and Configuring the WinCC OA project

In the WinCC OA “Project Administrator” select your created project (WinCCOAFrameworkAppExample) and click on the “Start project” button 

2.1.6.1. Loading WinCC OA Panel Topology Framework as default

1. Open the Panel Topology panel through this icon  in GEDI icon bar

Then select Template

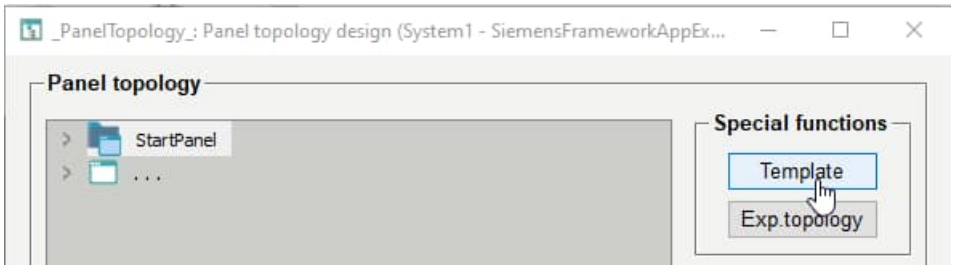

Figure 2-12 Panel topology panel

2. Choose “SIE” template, click ok, and save

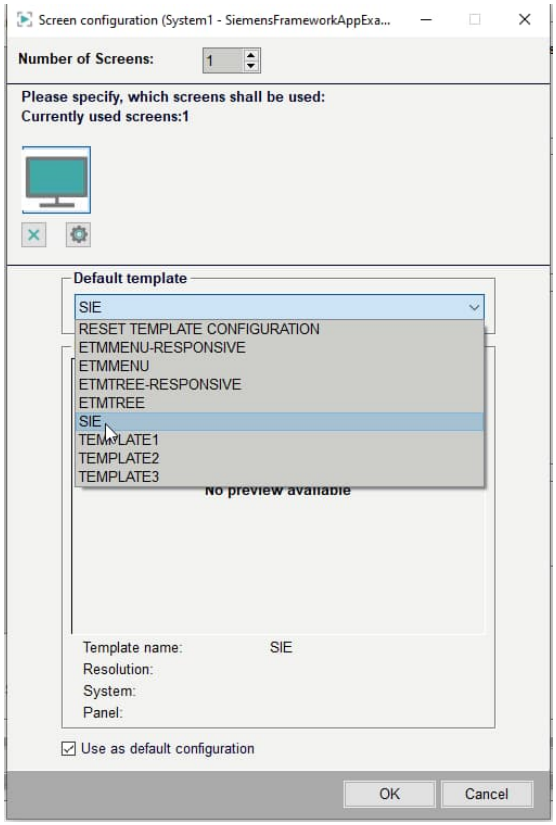

Figure 2-13 Panel Topology screen configuration panel

3. Add a new UI manager to Console with options "-p vision/login.pnl"

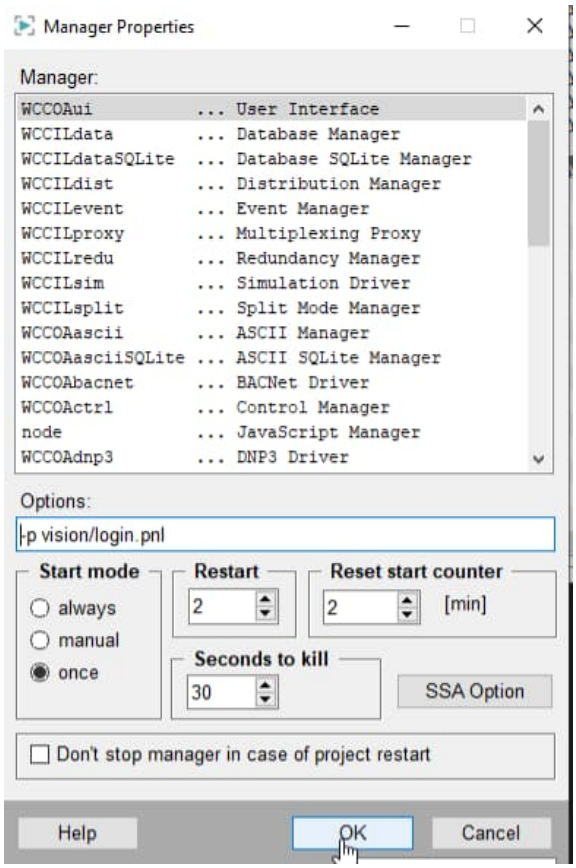

Figure 2-14 Adding a new Manager in the Console

4. Start the new Manager. A login panel will appear

Note that:

- The default credentials for login in our example project are (username: root, and no (empty) password)

5. After successful login, the new template is being used and running

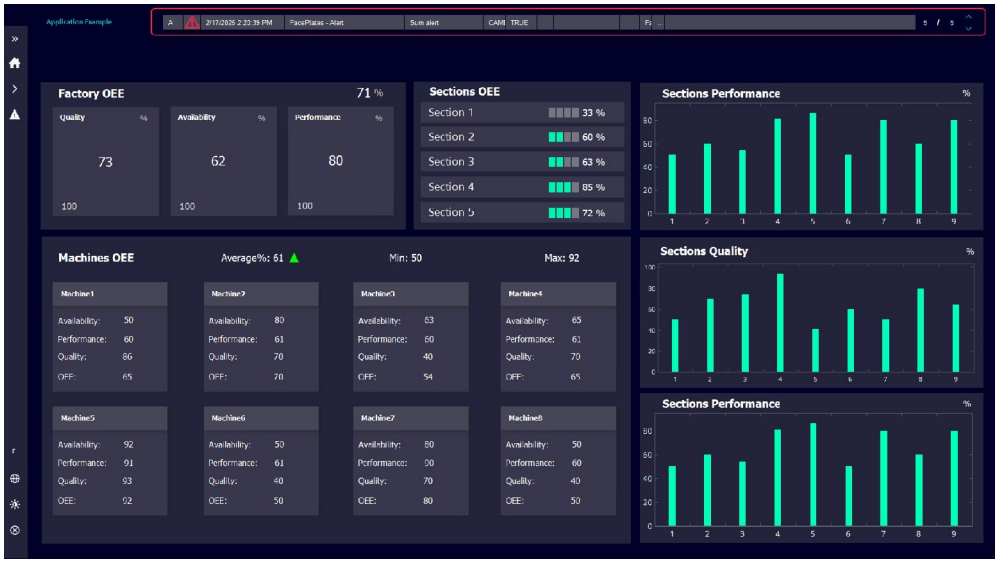

Figure 2-15 Starting screen of the template

Note that:

- All values in the previous Dashboard panel in Figure 2-15 are static (not changing), as there was no simulation or driver connectivity implemented in this example.
- The name of the project appearing in the header of Figure 2-15 (which is in our case “Application Example”) can be set up by changing the “projectTitle” keyword value in the project.cat file under the path “Message Catalogs/project.cat” in the framework project.

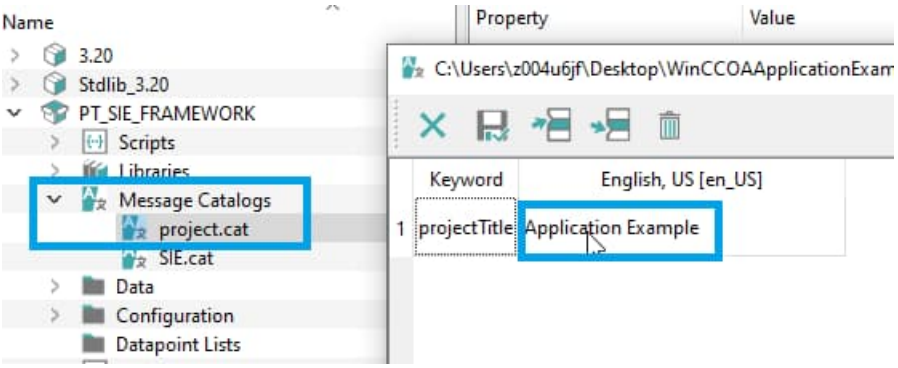

Figure 2-16 Changing the project title name

2.1.6.2. Integrate the project panels in the navigation of the template

To add your own project panels into the navigation bar of the template:

1. Open Panel Topology configuration panel must be opened via the GEDI.

2. For assigning the main starting panel double click on it 

and choose the path of the panel

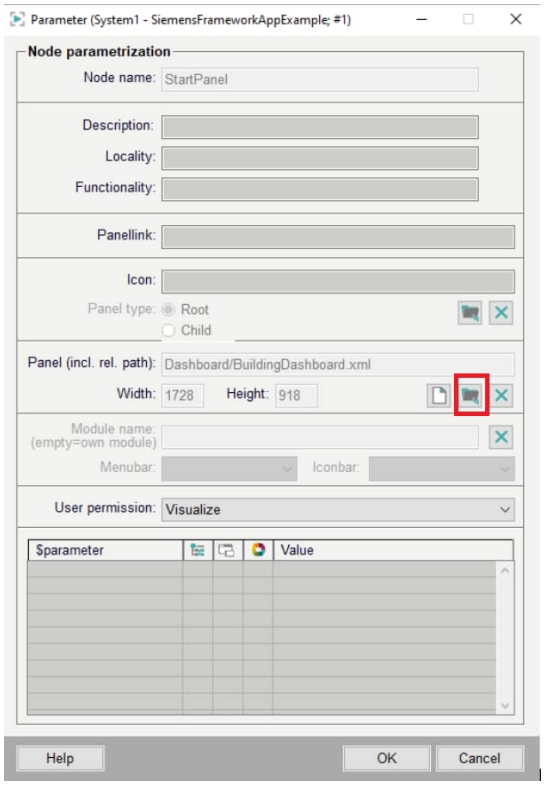

Figure 2-17 panel topology panel's properties

Note that:
- For the main panel, the icon is automatically chosen as a home icon  , no need to assign it.

3. To add additional panels to the navigation bar of the template. From the Panel Topology panel right click on the main panel icon and select insert child node.

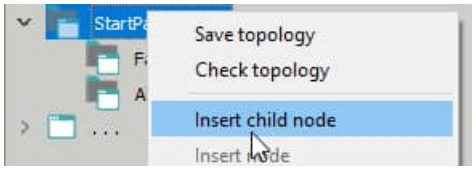

Figure 2-18 Inserting a new panel in Panel topology

4. Choose the panel name, panel path, icon path, The icon is mandatory as it will be used in the navigation bar

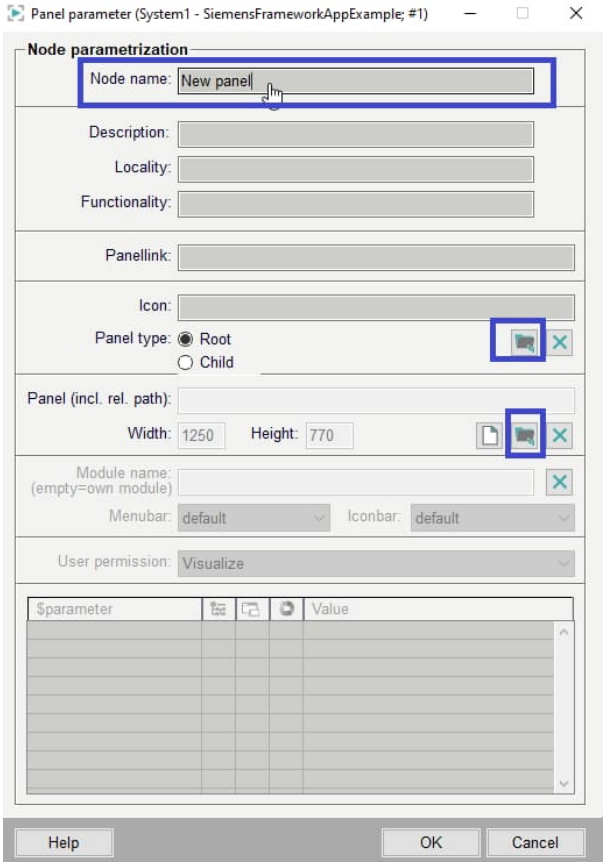

Figure 2-19 Panel properties configuration in panel topology

2.1.6.3. Color Theme notes

- The template offers two color themes: dark mode and light mode. You can switch between these themes by clicking the “Theme” button located at the bottom of the navigation bar of the template.

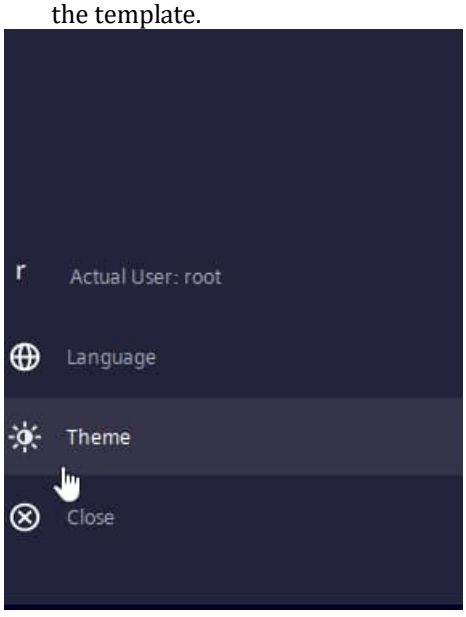

Figure 2-20 Navigation bar of the template

- During theme transitions, the template automatically adjusts colors and icons when switching between dark and light modes.
- Below is the process for configuring your project's colors and icons to respond to theme changes effectively.
  - Colors:
    - The framework project's “Color Databases” folder contains two color schemes: "Siemens_Dark" and "Siemens_Light."
    - Each scheme has its own set of color values, organized into two color databases: "Brand_Dark" and "Brand_Light."
    - While both color databases use the same color names, their actual color values differ between the schemes.

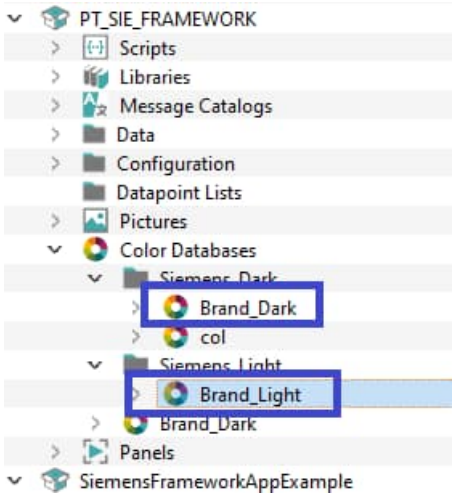

Figure 2-21 Snapshot of the color schemes’ paths of the template

For example, “color-1” in the dark color scheme has the value color-1 and “color -1” in the light color scheme has the value color-1. When switching the theme, any object colored with color-1 will change the color to the color-value of the other scheme.

  - Icons: Two icons for the same panel must be used, one for the dark color theme and one for the light color theme.
    There are two folders in the template to store the icons with the same name but for different color schemes.
    The paths are:
    - “PT_SIE_FRAMEWORK\pictures\Siemens_Dark\white”
    - “PT_SIE_FRAMEWORK\pictures\Siemens_Light\white”
    - Each icon must be put in both folders with the same name but different coloring. When choosing the panel icon in the Panel Toplogy configuration, the icon for dark coloring, in “PT_SIE_FRAMEWORK\pictures\Siemens_Dark\white” must be selected.

2.2. Operation

The operation of the WinCC OA Panel Topology Framework within WinCC OA is designed to provide a user-friendly interface for navigating and managing complex process visualizations. The framework utilizes a panel structure navigation, enabling operators to efficiently access and control various system components.

2.2.1. Startup of the Runtime project

1. Start the UI with options "-p vision/login.pnl" which was created previously in section 2.1.6.1.

2. Login with user "root" and an empty password.

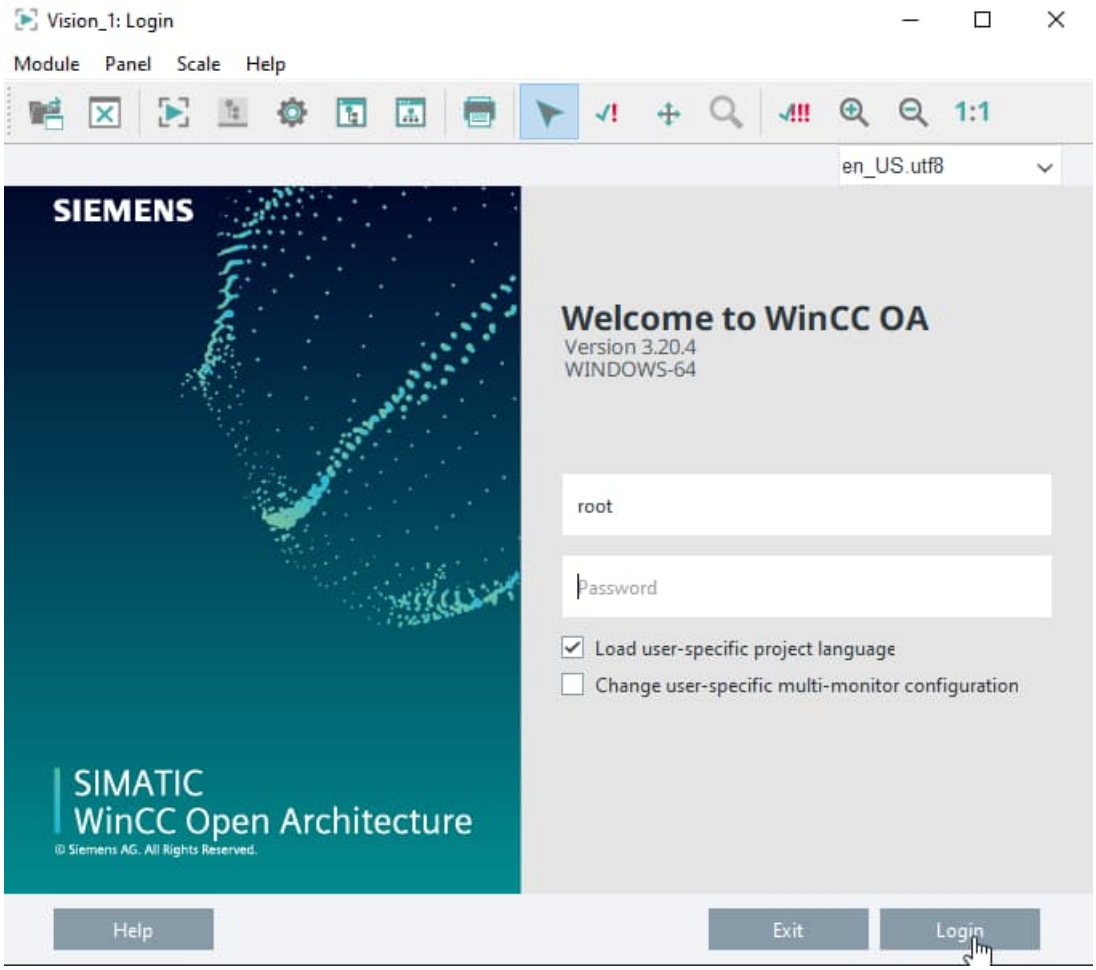

Figure 2-22 WinCC OA Login panel

3. After successful authentication and login, the runtime UI is opened, using the WinCC OA Panel Topology framework as configured previously.

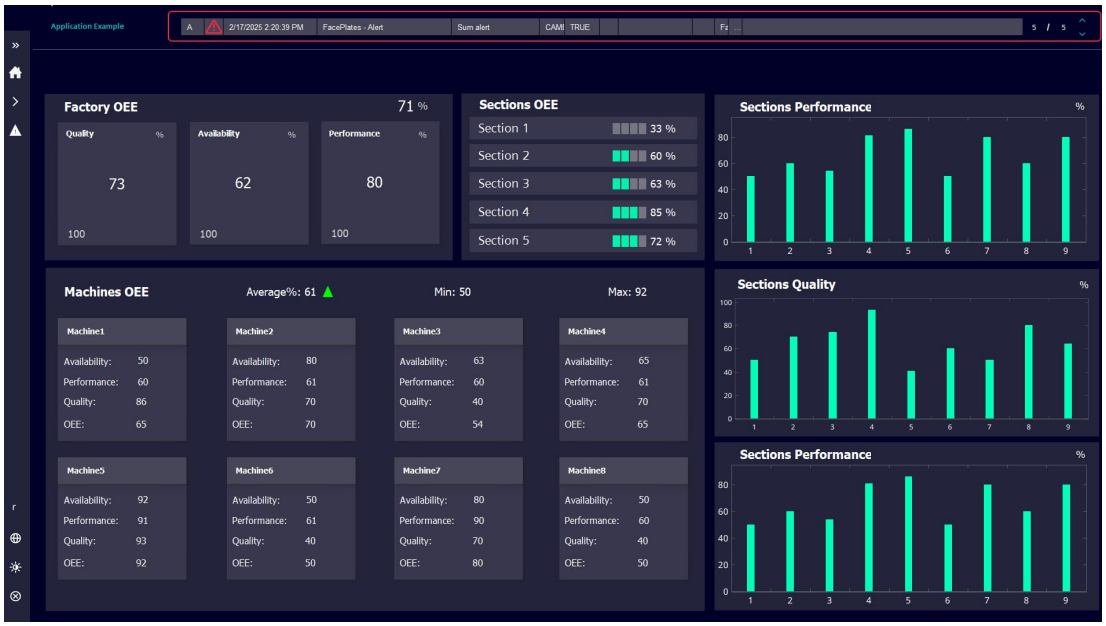

Figure 2-23 Main view of the framework in dark theme

4. For navigation, the panel icons appear at the top part of the navigation bar on the left side of the window.

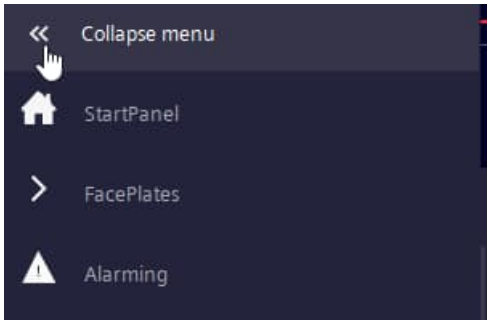

Figure 2-24 Top part of the navigation bar

5. The options for logging in/out, language change, switching color theme, and closing the UI, the icons appeared at the bottom part of the navigation bar.

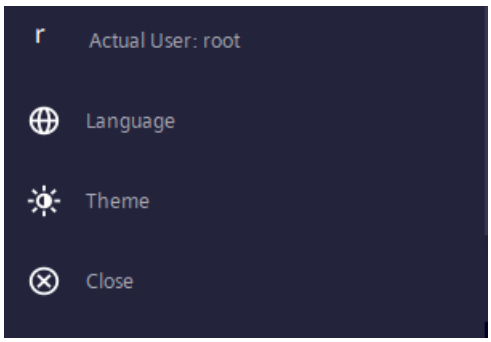

Figure 2-25 Bottom part of the navigation bar

2.2.2. Using the faceplates mechanism with the standard objects

By default, the standard library template and symbols are working out of the box with the framework faceplates mechanism. The path of these symbol templates is “Stdlib_3.20\panels\objects\STDLIB_template”

If you create a non-standard symbol using your own faceplates, logic, and dollar parameters, the faceplate mechanism will not work automatically with this new symbol. To integrate it with the framework, you need to implement additional code to pass the new symbol's structure and data. (not working out of the box with the non-standard symbols)

For more info about loading and configuring the standard library, please refer to the WinCC OA Documentation

the use of standard library objects with the faceplates are prepared on a dedicated panel in the Application example project.

You can navigate to it using the second navigation button  .

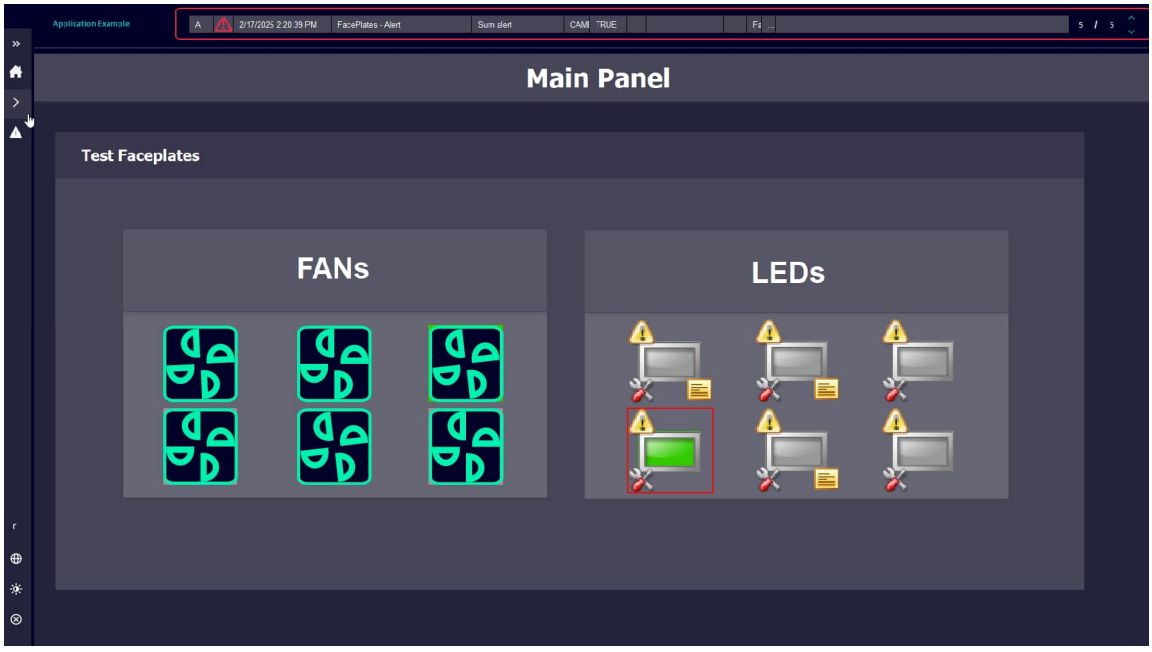

Figure 2-26 Faceplates panel

To open a face plate: A left click on the symbol can be done. E.g., one left click on a Fan and one left click on an LED. The faceplate opens on the right side of the window.

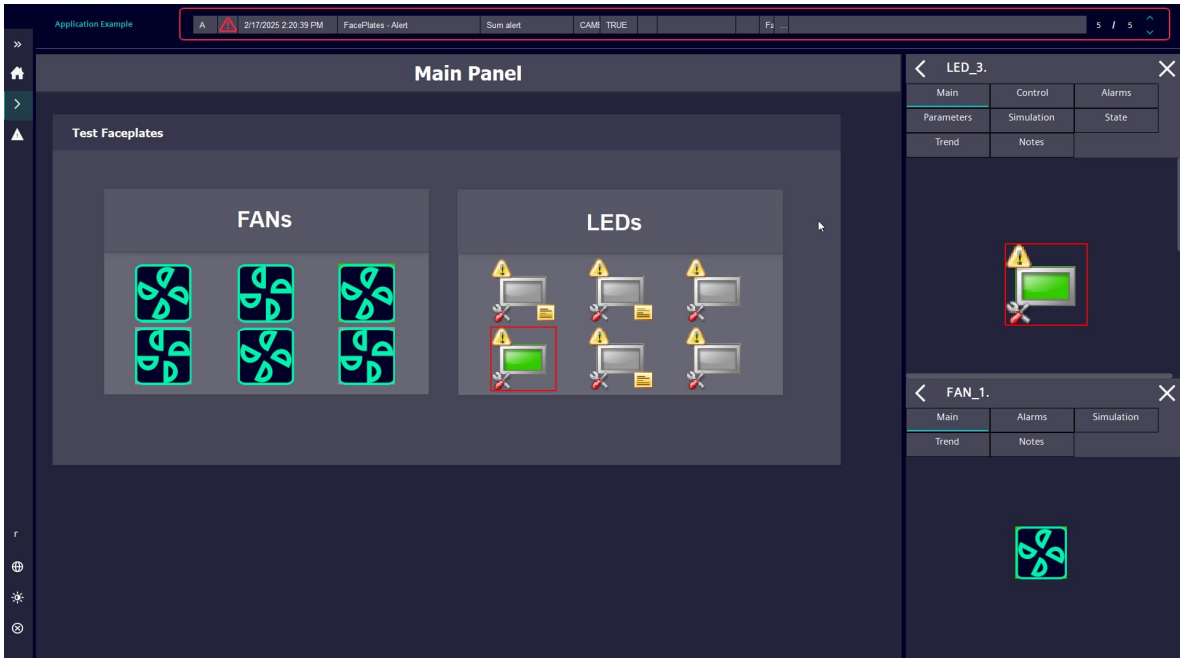

Figure 2-27 Faceplates panel with faceplates open

3. Appendix

Important WinCC OA specific abbreviations

Acronym	Long form	Meaning
WinCC OA	Simatic WinCC Open Architecture	A SCADA system for visualizing and operating of processes, production flows, machines and plants in all lines of business. Distributed systems enable any number of stand-alone systems, from 2 to 2048, to be linked via a network. Each subsystem can be configured either as a single-user or multi-user system, redundant or not, in each case.
DPT	Data point type	Object definition (class) of a structured data object as mapping of a real device. Single data points (instances) are derived from the DPT. Therefore, the data point type is a form of template.
DP	Data point	Structured, device-oriented data object as representation of a real device within the control system. A data point contains one or more data point elements (process variables).
DPE	Data point element	Single process information within a device-oriented data point. Each DPE corresponds to a value/state. In addition to the value, there are DPE attributes like time stamp, quality information or origin.
GEDI	Graphic Editor GEDI	Graphic Editor. It is used both for drawing of process images ("panels") as well as for designing of symbols, dialogs, and scripting.
PARA	Configuration Tool	Editor for the creation and configuration of data point types, data points, and data point elements as well as their configs.
ASCII	American Standard Code for Information Interchange	Standardized protocol for storage and transfer of characters/text. In WinCC OA, the acronym also refers to the database import/export manager. It is a module to export and import configurations as ASCII files. Mass configuration can therefore be carried out in a spread sheet program (for example MS Excel), file editor, or in an external database.
D	Driver Manager ("Driver")	Interface for connecting controllers (PLC, DDC, ...) fieldbuses and telecontrol systems. A driver handles the communication via an external protocol and enables the exchange of information with WinCC OA. The processing of data from the “field” to WinCC OA contains event orientation, old/new comparison, transformation, conversion, and smoothing. The protocol of the Driver must be the same as the protocol of the “field” device. Furthermore, the connection (how to reach the device) must be configured in WinCC OA. For exchanging data, a periphery address must be configured on a corresponding DPE.
CTRL	Control Manager ("Scripting")	Processing unit that allows to process user specific logic / business logic (control scripts). Control possesses an easy to learn syntax (similar to ANSI-C) and is processed by an interpreter (CTRL Manager).

Table 3-1 WinCC OA specific abbreviations

Service and support

WinCC OA Extended Services

Do you have questions about WinCC OA projects, need additional features, or require technical assistance? ETM provides 24/7 access to our complete service and support expertise for WinCC OA.

Our range of services includes the following:

- Extended Services provide tailored support for your evolving needs
- All kind of analysis/troubleshooting for older WinCC OA versions than our current mainline
- Project startup workshop
- Architecture definition
- Project engineering assistance with dedicated contact person
- Special project developments (special requirements, web widgets, gateways, etc.)
- WinCC OA library development assistance
- Project or architecture reviews with report
- Project-specific problem or performance analysis
- Project upgrade (analysis with report, assistance during upgrade, etc.)
- Assistance for complex error reproduction scenarios
- On-site assistance for any tasks related to WinCC OA and their components
- 24/7 on-duty assistance or priority callback for certain time range
- Database support Oracle®, InfluxDB®, PostgreSQL® and MS SQL®
- Raima/HDB to SQLite/NGA migration
- Setup and consulting for WinCC OA Add-ons e.g., APM, AMS, DRS, …
- WinCC OA Security services (as per the WinCC OA Security Guideline, NIS2)
- Tests on unsupported platforms (e.g., unsupported OS)
- Individual Workshops (driver workshop, UI workshop, business logic, etc.)
- Factory Acceptance Test (FAT)/Site Acceptance Test (SAT) assistance
- Creating of prototypes, proof of concepts, demos, etc.
- Project tender analysis and evaluation of projects

  You can find detailed information on our range of services in the service catalog web page:

www.winccoa.com/documentation/WinCCOA/latest/en_US/Support/topics/support_extendedServices.html

SiePortal

The integrated platform for product selection, purchasing and support - and connection of Industry Mall and Online support. The SiePortal home page replaces the previous home pages of the Industry Mall and the Online Support Portal and combines them.

- Products & Services
  In Products & Services, you can find all our offerings as previously available in Mall Catalog.
- Support
  In Support, you can find all information helpful for resolving technical issues with our products.
- mySieportal
  mySiePortal collects all your personal data and processes, from your account to current orders, service requests and more. You can only see the full range of functions here after you have logged in.

You can access SiePortal via this address:

sieportal.siemens.com

Technical Support

The Technical Support of Siemens Industry provides you fast and competent support regarding all technical queries with numerous tailor-made offers.
– ranging from basic support to individual support contracts. Please send queries to Technical Support via Web form:

siemens.com/SupportRequest

WinCC OA – Training and Certification

To fully leverage the flexibility and openness of WinCC OA, we offer a wide range of training courses, from beginner to expert levels. Our modules cover various topics, with options for individual training. For WinCC OA partners, completing specific courses is required to obtain or maintain partner status, ensuring the highest level of expertise and support.

For more information on our offered trainings and courses, as well as their locations and dates, refer to our web page:

www.winccoa.com/support/training.html

Change documentation

Version	Date	Modifications
V1.0	4/2025	First version
V1.1	5/2025	Format Changes, Typos, General Content Adaptions

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