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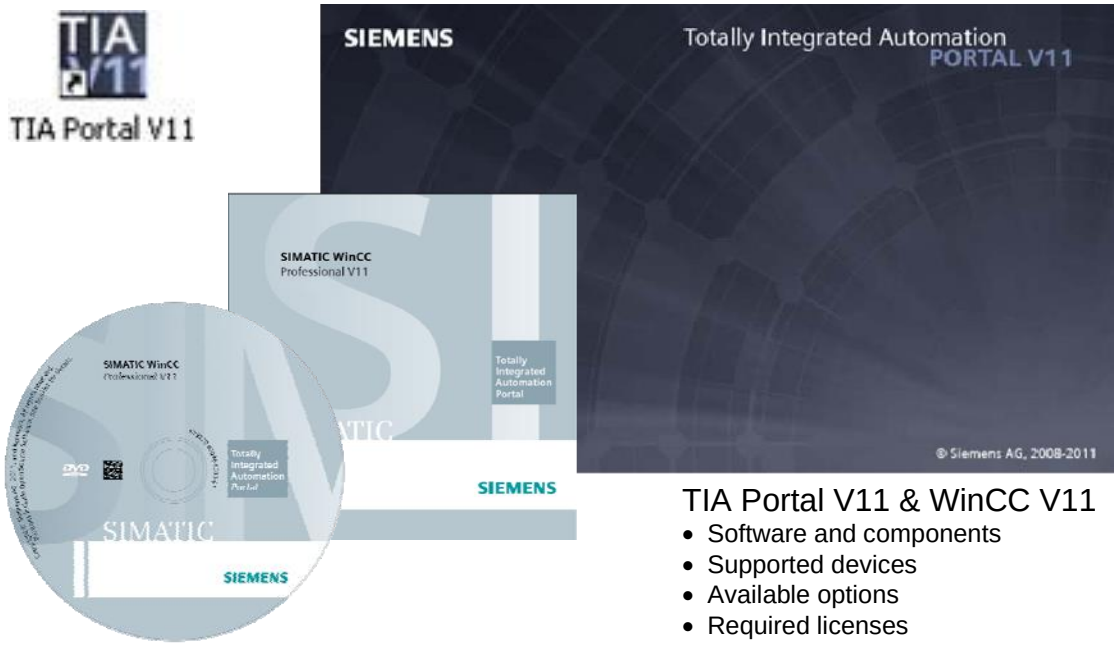
Andhra Pradesh State Skill Development Corporation

System Overview

1. System overview



TIA Portal V11 & WinCC V11

- Software and components
- Supported devices
- Available options
- Required licenses

This section provides an overview of the engineering framework "TIA Portal" and focuses on the options of configuring PC-based SCADA systems (control systems).

Participants will get to know the options available for configuring user interfaces. They will get an overview of the software, supported devices and required licenses.

1.1. Main components of the engineering system "TIA Portal"

TIA Portal

This is a working environment **» central engineering framework «** to achieve total integration of independent software packages throughout the system.

- Uniform operator control concept for all automation tasks with common services (for example configuration, communication, diagnostics)
- Automatic data and project consistency
- Powerful libraries covering all automation objects

Benefits

Centralized engineering for all tasks in the automation system. Thanks to the identical representation, working in different editors presents no problem.

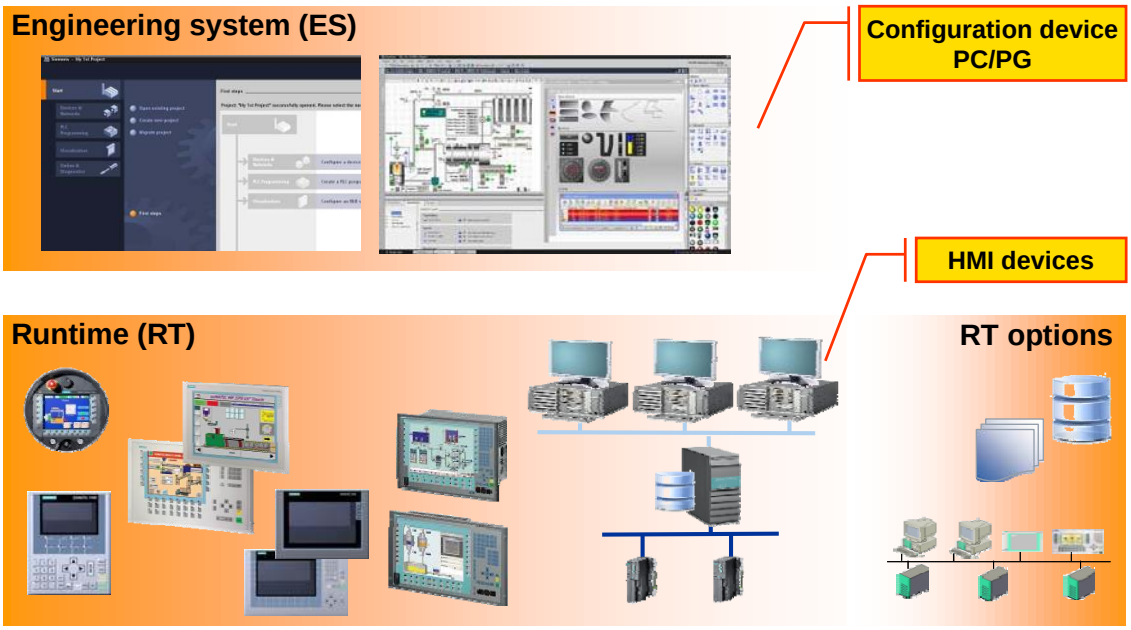
- All editors in the TIA Portal have an identical basic layout
- Overview of the entire project structure
- Features and information are always at the same place
- The work environment is easy to customize
- One database and the cross-reference list provide a project-wide overview of where tags and objects are used

WinCC Basic, Comfort Advanced or Professional

The appropriate WinCC edition must be installed depending on the HMI device being used.

- Basic → only Basic Panels
- Comfort → all panels
- Advanced → all panels and PC-based single user solutions
- Professional → configuration of PC-based SCADA systems (control systems)

1.2. Components of WinCC



WinCC consists of two components that can be expanded with options.

Engineering system

The engineering system is the software with which you can carry out all the configuration tasks required to create a user interface for operator control and monitoring of machines and plants.

Runtime

WinCC Runtime is the software for process visualization on the HMI device. With Runtime you run the project in process mode.

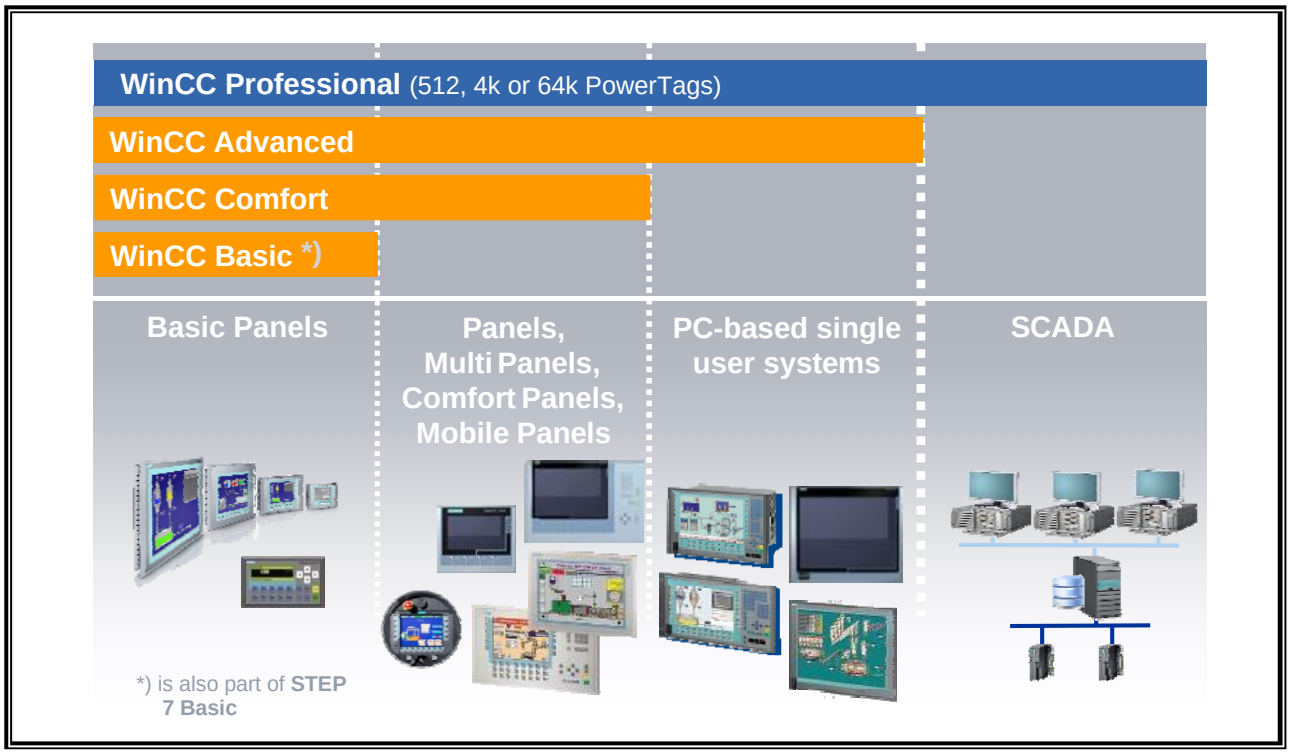
RT options

Runtime can be expanded by optional functions (licenses).

The Runtime options depend on the target system used. If an HMI device does not support a particular optional functionality, the option cannot be configured.

Not all the options available today are available yet in the TIA Portal. These are planned for the next service packs.

1.2.1. Engineering system → Editions



The engineering system of WinCC has a modular design, graded in different editions. The edition decides which operator panels in the SIMATIC HMI range can be configured.

With each higher edition, you expand the range of supported target devices and functionalities. The configuration data is compatible.

- WinCC Basic
  → Configuration of the Basic Panels (KPxxxx Basic)
- WinCC Comfort
  → Configuration of the Basic Panels (KPxxxx Basic)
  → Configuration of the panels / Multi Panels (OP73, OPxx7, TPxx7, MPxx7)
  → Configuration of the Mobile Panels (Mobile Panel xx7)
  → Configuration of the Comfort Panels (KTPxxxComfort, TPxxxxComfort, KPxxxComfort)
- WinCC Advanced
  → Configuration of the Basic Panels (KPxxxx Basic)
  → Configuration of the panels / Multi Panels (OP73, OPxx7, TPxx7, MPxx7)
  → Configuration of the Mobile Panels (Mobile Panel xx7)
  → Configuration of the Comfort Panels (KTPxxxComfort, TPxxxxComfort, KPxxxComfort)
  → Configuration of the PC-based single user systems (HMI IPCxxxC, standard PCs)
- WinCC Professional
  → Configuration of all Basic Panels and PC-based single user systems
  → Configuration of PC-based SCADA systems (control systems)
  SCADA = **S**upervisory **C**ontrol and **D**ata **A**cquisition
  normally networked multiple user systems

1.2.2. Engineering System → option

Not all the options available today for WinCC V7.0 are available yet in the TIA Portal. These are planned for the next service packs.

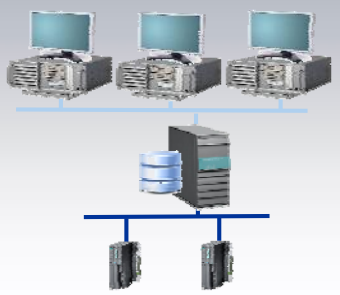
1.2.3. Engineering System → system requirements

WinCC has been released for the following (32-bit) operating systems:

- Microsoft Windows XP Home SP3 (WinCC Basic only)
- Microsoft Windows 7 Home Premium (WinCC Basic only)
- Microsoft Windows XP Professional SP3
- Microsoft Windows 7 Professional
- Microsoft Windows 7 Enterprise
- Microsoft Windows 7 Ultimate
- Microsoft Windows 2003 Server R2 Standard Edition SP2
  (WinCC Advanced, WinCC Professional only)
- Microsoft Windows Server 2008 Standard Edition SP2
  (WinCC Advanced, WinCC Professional only)

For multiple language configuration, use the MUI version (Multilingual User Interface) of your operating system → Homepage of Microsoft "http://www.Microsoft.com".

1.2.4. Runtime → versions

Panel Runtime:	WinCC Advanced Runtime:	WinCC Professional Runtime:
250 – 4096 tags (device-dependent, see Technical specifications)	128 – 4096 tags	128 – 64 k tags
Basic Panels, Panels, Multi Panels, Comfort Panels, Mobile Panels 	WinCC Advanced RT PC-based single user systems 	WinCC Professional RT SCADA 

PowerTag

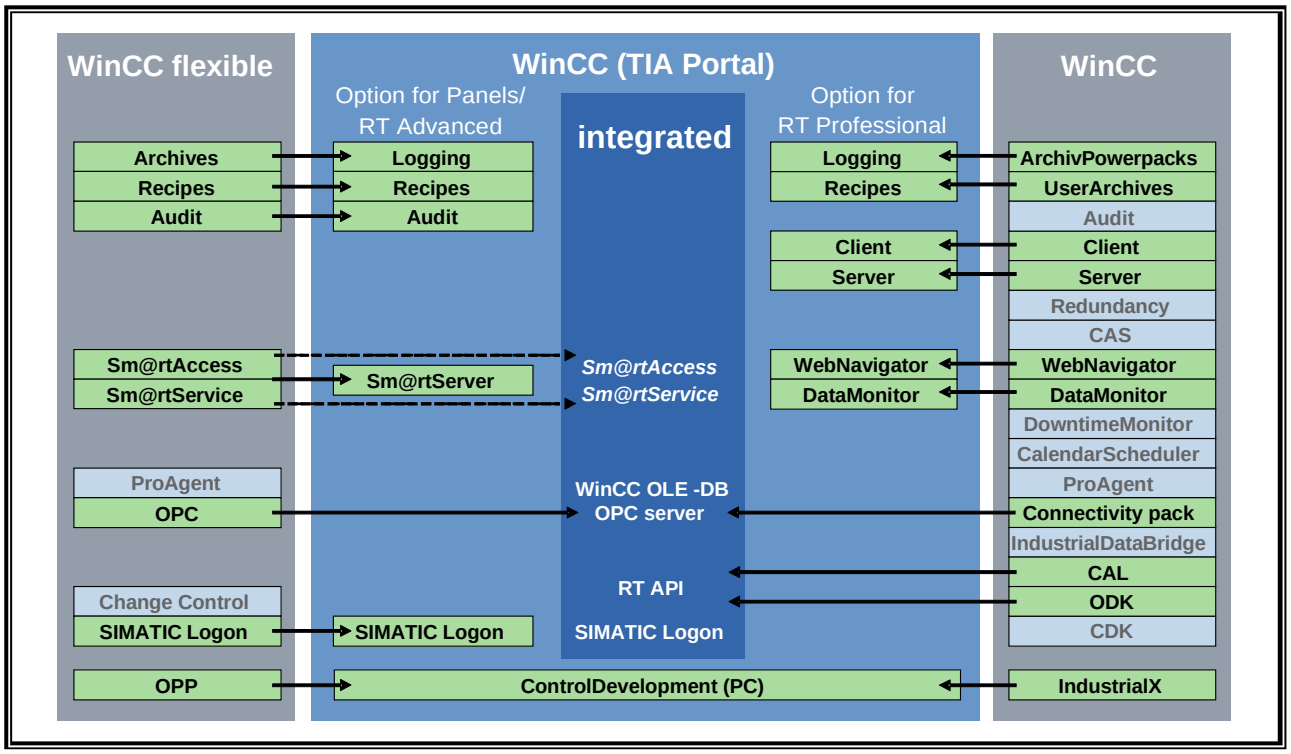
A created process variable only becomes a PowerTag when used in a configured display (I/O fields, parameters of graphic objects, trends etc.) or for logging process values.

Changing versions WinCC Runtime Advanced / WinCC Professional

The Runtime version must be upgraded when the maximum number of PowerTags has been exceeded. The existing configuration does not need to be adapted.

You can change to a higher Runtime version with a "**Powerpack**".

1.2.5. Runtime → options



The basic functionality of WinCC Runtime is expanded by the Runtime options. However, not every option is supported by every target device. The engineering for the RT options is part of the basic package of WinCC Engineering

All WinCC options require a license!

A special option for recipes and logging is only available for PC-based HMI devices. This is an integral component of the panel functionality assuming it is one of the panel's features.

WinCC SmartServer

Remote access to an HMI device

WinCC Audit

For creating plants requiring validation

Recording of operator actions in an Audit Trail

Electronic signature for regulated applications

1.2.6. Runtime → system requirements

Panels

The HMI devices already have a suitable operating system when delivered. The required Runtime components are transferred (downloaded) to the HMI device by the engineering system along with the project.

PC-based HMI devices

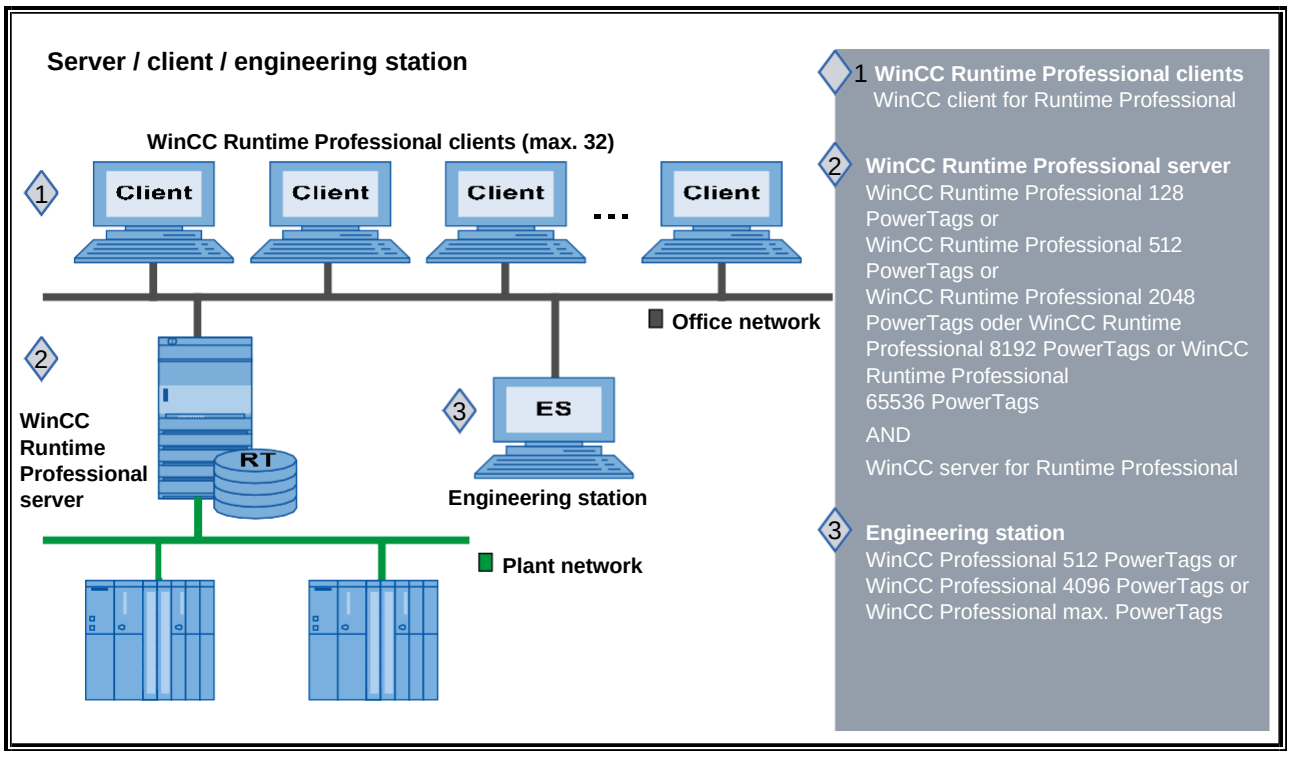
A suitable Runtime version (PC Runtime Advanced / WinCC Professional Runtime) must be installed.

- Operating system
  - Microsoft Windows XP Professional SP3
  - Windows Embedded Standard 2009 (for IPC / HMI IPC 4x7C)
  - Microsoft Windows Server 2003 R2 StdE SP2
  - Microsoft Windows Server 2008 StdE SP2
  - Microsoft Windows 7 Professional
  - Microsoft Windows 7 Enterprise
  - Microsoft Windows 7 Ultimate
  - Microsoft Windows Embedded Standard 7 (for IPC / HMI IPC 4x7C)
- Free storage space for PC-RT WinCC Advanced: on the hard disk: 250 Mbytes or more
  Free storage space for WinCC Professional: on the hard disk: 1.5 Gbytes or more
  (not including the space required for logs)
- USB interface or Ethernet connection for transferring license(s)

For multiple language configurations
→ Use the MUI version (Multilingual User Interface) of the operating system

For detailed information on the system environment, please refer to the technical specifications of the Runtime versions.

1.3. Licensing of engineering editions, Runtime versions and options



What is a license?

A license is a key that is supplied on a read-only USB stick  . This license key releases a particular software component for use.

License model

All WinCC software requires a license.

When purchasing a software package, a specific license contract  is obtained in paper form. The license entitles the user to install and use the purchased software on one PC or HMI device.

With the exception of WinCC Basic, a USB licensing stick belongs to each license contract. This USB licensing stick contains the corresponding license key.

If client/server concepts or a service/diagnostics concept (Sm@rtServer) are installed and configured, a license is required for each HMI device involved.

1.3.1. Licensing of software components

Utility: Automation License Manager

This license key must be transferred from the licensing diskette to the target device (engineering PG/PC or HMI device) using a utility program. This utility is part of the engineering software:

For the procedure and more information, refer to the documentation of the utility.

1.3.2. Without licensing

When replacing a device (e.g. because of a fault), it is possible that a suitable license is not immediately available.

Runtime - licensing principle

Without the required license, the use of the WinCC software is restricted: Messages (regarding the missing license) appear frequently on the screen/display and must be acknowledged. The HMI device nevertheless remains functional.

Engineering - licensing principle

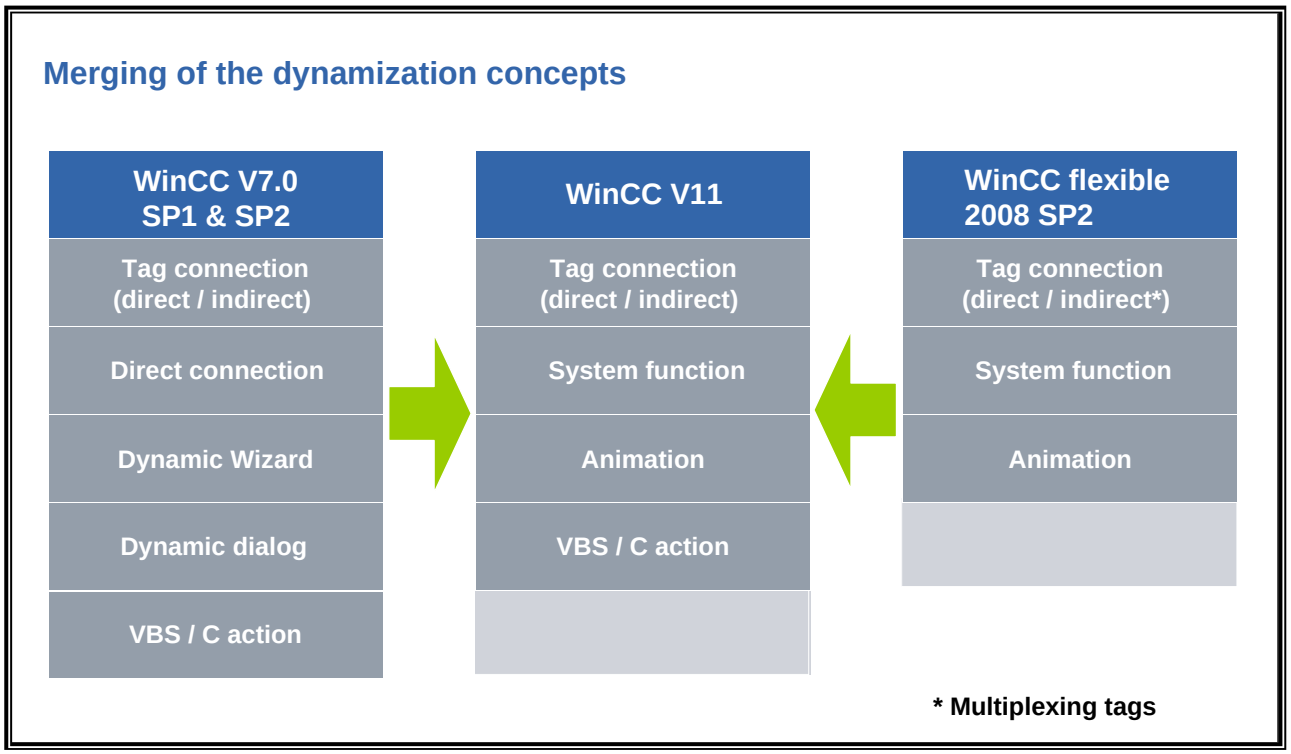
When the engineering system is started, the automatic activation of a 14-day trial (time) is offered.

The Engineering software has an emergency licensing function that can be activated. This is intended to cover servicing periods.
→ Validity: 14 days!

Restoring a license

Request a new license from support.

1.4. Functional changes: dynamics



During migration from WinCC V7 to WinCC Professional some dynamizations will be replaced/modified:

- direct connections > system functions
- dynamic dialogs > animation or VBS / C action
- dynamic wizard > C actions created by dynamic wizard will be modified to TIA-Portal syntax
- VBS / C action > VBS / C actions will be modified to TIA-Portal syntax

1.5. System limits

WinCC V11 Professional for medium-sized projects

	WinCC V7.0 SP2	WinCC V11 Prof.
Tags	265 K	64 K[1]
Archive Tags	80,000	5,000
Screens / screen objects	unlimited / unlimited	1,000[2] / 3,000
Messages	150,000	20,000
Recipes / recipe elements	unlimited / 3,000	1,000 / 3,000

[1] Max. 80,000 tags per project (incl. logging tags)

[2] Max. 1,000 screens per HMI device, max. 3,000 screens per project

1.6. System requirements: hardware

Recommended hardware ES

	Processor (min)	RAM (min)	Graphics (min)
All operating systems	Core Duo, 2 GHz or comparable	2 GB	1280x1024

Recommended hardware single user system

	Processor (min)	RAM (min)
Windows XP SP3	2.5 GHz P4 or comparable	2 GB
Windows 7	3.5 GHz P4 or comparable, Dual Core	2 GB
Windows Server 2003 SP2	3 GHz P4 or comparable	2 GB
Windows Server 2008 SP2	3 GHz P4 or comparable, Dual / Multi Core	2 GB