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SIEMENS

Guideline – Virtual Commissioning with SIMIT, NX MCD and S7-PLCSIM Advanced

SIMIT / NX MCD / S7-PLCSIM Advanced

<https://support.industry.siemens.com/cs/ww/en/view/109963864>

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1 Virtual Commissioning and Digital Engineering

1.1 Terminology

Digital engineering describes an approach in which state-of-the-art technologies and digital tools are used to optimize the development, design, and production of products and systems. It combines various disciplines from engineering, computer science, mathematics, and data analysis to solve complex problems and develop innovative solutions. By using these digital tools, virtual prototypes can be created, product performance and behavior can be simulated, design changes can be made quickly, and production processes can be optimized. Digital engineering enables engineers and technicians to perform their work more efficiently and precisely by allowing them to experiment virtually and test different scenarios before creating physical prototypes. This can lead to cost savings, shorter production times, and improved quality. Additionally, digital engineering facilitates better collaboration and communication among different teams and disciplines, as everyone can work on a shared digital platform.

Overall, digital engineering can enhance the innovation and competitiveness of companies by enabling them to bring products to market faster, reduce costs, and improve performance.

According to VDI/VDE Guideline 3693 Part 1 and Part 2, virtual commissioning deals with the "detection and elimination of engineering errors in the automation system" [\[3\]](#) during the commissioning of production machines and manufacturing plants. For this purpose, virtual models are used to depict reality. In general, there are three main components of virtual commissioning:

- Automation model
- Behavioral model
- Kinematics and material flow model

In the automation model, the behavior of the programmable logic controller (PLC) is simulated. The behavioral model represents the behavior of the participants connected to the PLC. In order to depict movements in three-dimensional space and their influences on the behavioral and automation models, kinematics and material flow models are used.

In practise, it is not mandatory to use all three components for virtual commissioning. Depending on the test configuration, certain components of the simulation setup may be present in reality or may only be integrated in simulation. A distinction is made here between the following configurations (see [Figure 1-1](#)):

- Hardware-In-The-Loop (HiL)
- Software-In-The-Loop (SiL)
- Model-In-The-Loop (MiL)

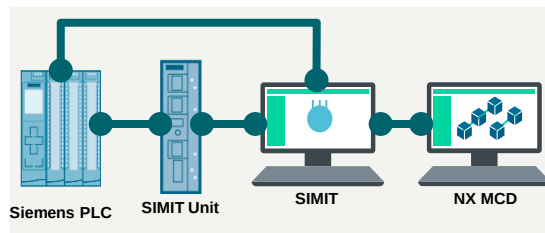
In the context of virtual commissioning, hardware-in-the-loop simulation primarily refers to the integration of a real controller (PLC) into the simulation setup. A virtual automation model is not used. However, all other simulation components can be simulated. In rare cases, a hardware-in-the-loop simulation with a simulated automation model and real behavioral models, such as drives or cameras, can also be useful.

The Software-In-The-Loop solution refers to a completely software-based simulation setup without physical components. Thanks to the holistic simulation solution, all the advantages of digitalization can be used and, for example, time scaling or complex manipulations can be carried out in the model.

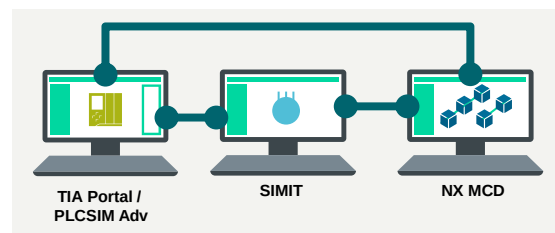
Model-In-The-Loop abstracts the automation model so that no real control program is integrated into the simulation setup. In particular, the Model-In-The-Loop methodology is used for concept development and functional testing of the simulation model.

Figure 1-1 Hardware-In-The-Loop vs. Software-In-The-Loop vs. Model-In-The-Loop

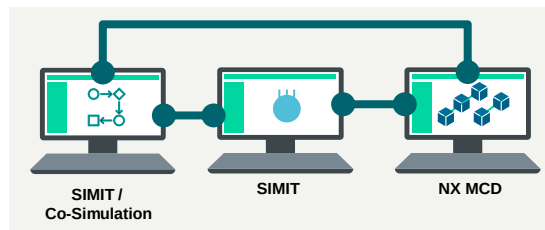
Hardware-in-the-Loop (HiL)



Software-in-the-Loop (SiL)



Model-in-the-Loop (MiL)



The term real-time capability is often mentioned in connection with virtual commissioning. Real-time capability describes the „*capability of a computing system to keep the tasks in a runnable state in which they can react to technical process events within a pre-determined time interval*“ [adapted from DIN IEC 60050-351] “ [\[3\]](#).

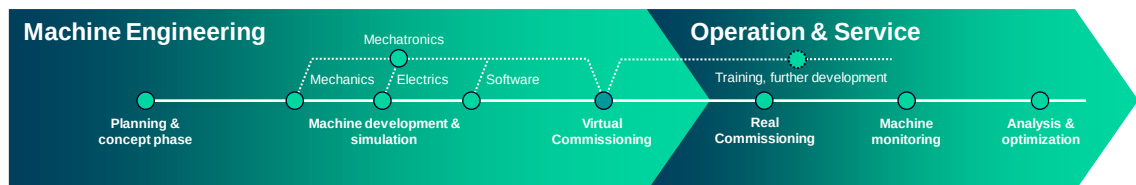
If the processes are synchronized in the software-in-the-loop setup, these real-time requirements can be met, even though the simulation does not always occur in real time due to time scaling. By synchronizing the process cycles, the „*run of a (periodically started) application program*“ [\[3\]](#) is projected onto the simulation of the behavioral and kinematic models, thus creating synchronization.

Hardware-In-The-Loop Simulation places additional demands on the simulation tools in terms of synchronization, as a deterministic behavior of the entire simulation solution can only be achieved if the time base of the simulation matches that of the real CPU. With the help of the synchronization mechanism of the SiL environment, these challenges are overcome without special hardware.

1.2 Potential and goals

The actual commissioning usually takes place after the assembly of the production machine or production plant. With the help of digital engineering and virtual commissioning, commissioning processes can be carried out on the digital twin before the real system is even assembled. Parts or a complete system model can be put into operation.

Figure 1-2 Digitalization of the product life cycle



By shifting the commissioning process to the engineering phase of the product life cycle, errors in engineering can be solved cost-effectively and without time-sensitivity. At the same time, operating processes and functions can be developed and tested risk-free and without material expenditure in the automation program, which leads to a higher quality of the automation program at the beginning of real commissioning. Work that has already been done leads to a significant acceleration of the commissioning process.

Since commissioning, to a large extent, can take place in an office environment or the home office, the attractiveness of the job profile as a commissioning engineer is increasing.

After successful commissioning, created digital twins can continue to be used for operator training or as digital shadows. Digital shadows are virtual models that are operated in parallel with the real machine in order to detect deviations from the expected behavior. In addition, verified digital twins are suitable for carrying out a retrofit. As a result, downtimes can be kept to a minimum.

1.3 Real machine vs. digital twin

Virtual commissioning is a type of simulation. Simulation generally refers to a model-like, realistic replication or imitation of complex models, processes, or facts [\[4\]](#). Simulation always goes hand in hand with a simplification of real behavior. As the level of detail increases, so do the performance requirements for the executing hardware. Therefore, model simplifications for virtual commissioning are unavoidable.

The simulation of physical processes should be avoided as much as possible for virtual commissioning, or greatly simplified. These include, among other things, material forming, material accumulation and removal, cutting and joining processes, bonding processes, complex or extensive material flow, the behavior of fluids, dynamic friction processes, thermal processes or other multiphysical processes.

For a more detailed examination during commissioning, replacement models can be created, which can be integrated into the simulation environment. Depending on the hardware used, the influence on the simulation performance must be taken into account.

1.4 Criteria for carrying out a virtual commissioning

Before the virtual commissioning of a production machine or manufacturing plant is to be carried out, it must be considered whether the advantages of virtual commissioning can be exploited. The following factors must be taken into account before performing virtual commissioning:

- Employee know-how: Are there enough qualified employees?
- Hardware, software and licenses: Can the hardware requirements be met? Are the required software tools and licenses available and operational?
- Processes: Do all processes need to be simulated? Can these be implemented in the digital twin? Are there replacement models?
- Behavioral modeling: Are specific behavioral models required? Do new behavioral models need to be created for simulation? Is this affordable within the time frame of virtual commissioning? Is it possible to dispense with the creation of various behavioral models?
- Automation projects: Are there any automation projects that have been commissioned on similar plants? Can parts of existing automation projects be reused?
- Goals: Have goals been defined to be achieved with the help of the digital twin? Are the goals achievable with virtual commissioning?

1.5 General conditions

1.5.1 Hardware preconditions

The simulation tools for virtual commissioning are usually single-core applications, each of which utilizes one processor core. Therefore, there are higher demands on the single-core performance of the processor. A dedicated graphics card is required for graphical display.

The minimum requirements for each tool are listed in the manuals. It is important to ensure that the minimum requirements described do not exceed the requirements of a synchronous simulation with several simulation tools.

A desktop computer with an up-to-date Intel® Core i7 or Intel® Core i9 processor is recommended for the simulation application. Furthermore, 64GB of RAM and an up-to-date NVMe M.2 SSD (solid-state-drive) hard drive are recommended for higher simulation performance. Certified graphics cards can be found in the support center of the SIEMENS Digital Industries software [\[5\]](#). For simulations with kinematics and material flow models, 3D visualization is essential. Therefore, an NVIDIA Quadro RTX is recommended in order to be able to display even more extensive models without any problems.

Depending on the test configuration (hardware-in-the-loop, software-in-the-loop or model-in-the-loop), other hardware components could be required for the simulation in addition to a computer.

1.5.2 Software preconditions

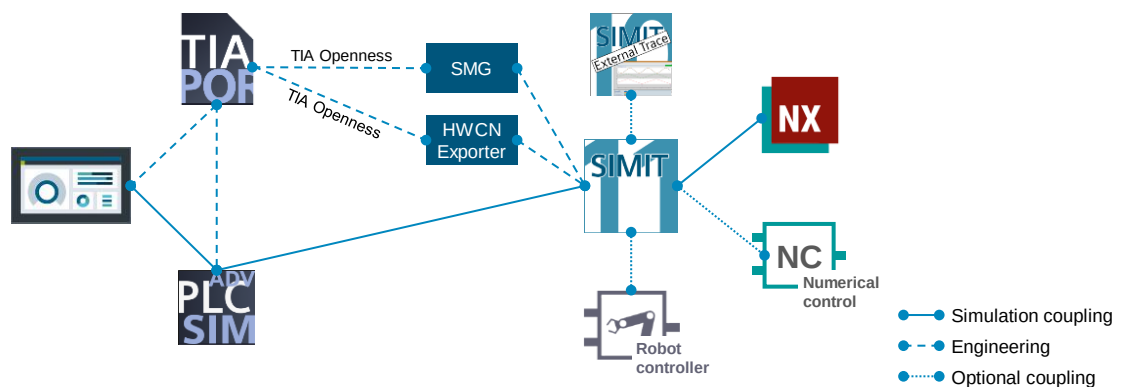
Basically, three software tools are required in virtual commissioning using a software-in-the-loop simulation:

- S7-PLCSIM Advanced (PSA)
- SIMIT
- NX Mechatronics Concept Designer (NX MCD)

Optionally:

- Totally Integrated Automation Portal (TIA Portal)
- SIMATIC WinCC Advanced Runtime
- SIMATIC Runtime Manager (SIMATIC WinCC Unified Runtime)
- Run My Virtual Machine
- Create My Virtual Machine

Figure 1-3 SiL configuration for virtual commissioning



S7-PLCSIM Advanced simulates the automation system, SIMIT the behavioral model, and NX MCD the kinematics and material flow model. If no kinematics or material flow model is required, simulation is also possible only with SIMIT and S7-PLCSIM Advanced. The isochronous coupling ensures deterministic behavior of the simulation (see [2.2.3 Synchronization](#)). Optionally, additional co-simulation participants can be integrated via the available external couplings [111](#). The programming of the PLC and the creation of the HMI (Human-Machine-Interface) is carried out via the TIA Portal. HMIs are simulated using WinCC Advanced or the WinCC Unified Runtime. In order to read information from the TIA Portal using [SMG](#) (Simulation Model Generator) and [HWCN Exporter](#), [TIA Portal Openness](#) is required. The complete simulation concept can be found in [Figure 1-3](#).

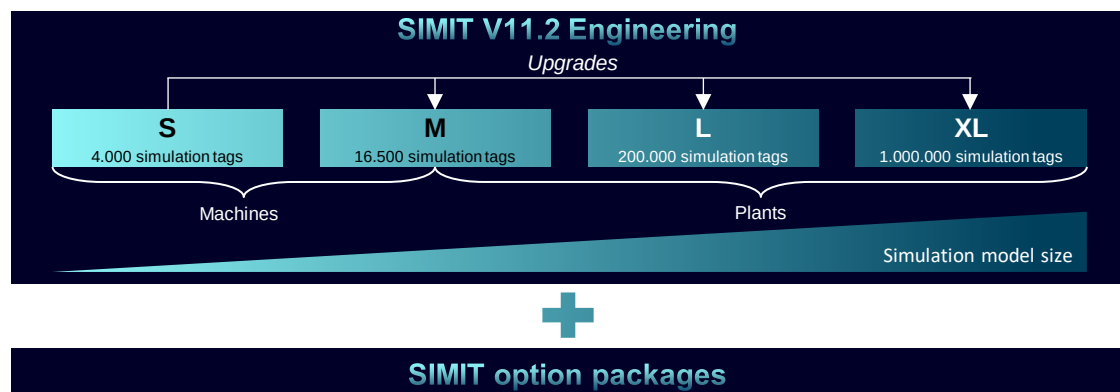
1.5.3 Licenses

Engineering Licenses

The licensing models of the individual software tools differ significantly. To ensure that product updates and innovations can be used, it is recommended to use the Software Update Service (SUS). This is where the latest updates and licenses are always made available.

The licenses for SIMIT are obtained via the license configurator in the SIEMENS Industry Mall [16](#). The required license size depends on the requirements of the project (see [Figure 1-4](#)).

Figure 1-4 SIMIT V11.2 Engineering Licenses



There are no software licenses available for SIMIT, so physical dongles are shipped. The dongle is configured using the WIBU Systems CodeMeter [17](#) software. Additional licenses in SIMIT are required for the following features:

- Update to a new SIMIT version (SUS is recommended here)
- Other libraries (CHEM-BASIC, FLOWNET, CONTEC)
- [Component Type Editor \(CTE\)](#)
- SIMIT Virtual Controller (VC)

S7-PLCSIM Advanced licenses can also be obtained from the sales representative or the SIEMENS Industry Mall [16](#). Purchased licenses are made available via the Online Software Delivery Tool [19](#) or sent by post as a license carrier (USB stick). License management is done via the software Automation License Manager [20](#) which is installed on the system together with the S7-PLCSIM Advanced installation. Each license is valid for two S7-PLCSIM Advanced instances.

Licenses for NX MCD are ordered through the sales representative. The license, which is transmitted as a file, is integrated via the Siemens License Server [21](#).

Runtime Licenses

So-called player licenses are available for NX, MCD and SIMIT. No engineering is possible with these licenses, but simulation models can be parameterized and started.

Runtime licenses for S7-PLCSIM Advanced are equivalent to engineering licenses (see above).

Trial and Demo Licenses

S7-PLCSIM Advanced offers a 21-day trial that can be activated via the Automation License Manager. If no license exists, a pop-up opens when a PLC instance is started, which can be used to activate the trial license.

In SIMIT demo mode, the basic functions of SIMIT can be tested. However, the running time is limited to 45 minutes. Further restrictions can be found in the manual [130](#).

Demo licenses are also available for NX MCD, which can be obtained from the sales representative.

1.5.4 Prerequisites for software development on the Digital Twin

Software development on the digital twin requires a representation of the machine's behavior and feedback that is as realistic as possible from the automation system's point of view. This assumes that the CAD data corresponds to the real model if possible. If the real setup does not yet exist, or if it is in the process of being set up, necessary changes (e.g. sensors moved during commissioning, changed axis lengths, changed robot positions and types) can be taken into account at an early stage and implemented cost-effectively.

The basic prerequisite for the creation of the automation program are the definitions of the hardware configuration and the symbolism in the TIA Portal. These can change during commissioning, but ground states are necessary to enable the model to be controlled. It is not always possible to assign the signals, as the names in the automation project usually differ from the names in the CAD model. A document or the coordination between the electrical and mechanical design is absolutely necessary to assign the symbolism to real components.

In addition, the circuit diagram, pneumatic and hydraulic diagram are used in the project planning phase in order to realistically depict the behavior. Often, it is only possible to map assignments of signals and circuits with these documents.

1.5.5 Support

The SIEMENS contact persons can help you quickly and easily if you have any questions. If problems arise with SIMIT or S7-PLCSIM Advanced, there is the possibility to create support requests via the SiePortal, which will then be processed promptly by support [122](#).

If you have any questions about NX MCD, you can open a case via the SIEMENS Digital Industries Software Support Center [123](#).

1.5.6 Training

Training courses for getting started with the topic of virtual commissioning with SIMIT, S7-PLCSIM Advanced and NX MCD can be booked via SITRAIN [18](#) [19](#).

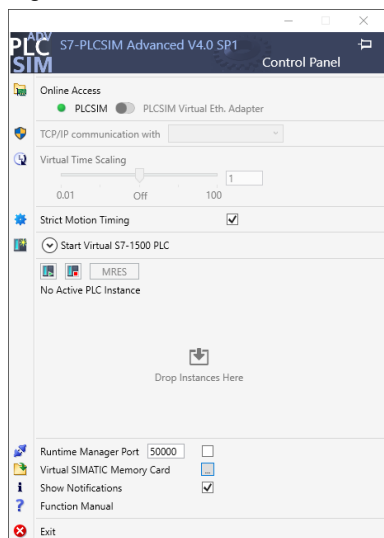
For a deep dive in NX MCD, there is also the Xcelerator Academy, through which online training courses can be booked [124](#).

2 Software

2.1 S7-PLCSIM Advanced

S7-PLCSIM Advanced (see [Figure 2-1](#)) simulates up to 16 PLC instances on a PC. Each active instance uses a CPU core. The real image of the firmware is used for the simulation. The configuration of the PLC and the development of the PLC program with STEP7 is carried out with the help of the TIA Portal, just like with a real hardware PLC. A connection to the simulated PLC instance is established either via TCP/IP or via an internal, local connection (Softbus).

Figure 2-1 PLCSIM Advanced User Interface



Supported CPU families are (from S7-PLCSIM Advanced V6.0):

- S7-1500 (C, T, F)
- S7-1500 R/H
- SIMATIC Drive Controller
- ET200 SP (F) & ET200pro (F)
- SIPLUS CPUs
- Software/Open Controller

Unlike S7-PLCSIM, S7-PLCSIM Advanced supports TCP/IP, OPC-UA, and S7 communication, among others.

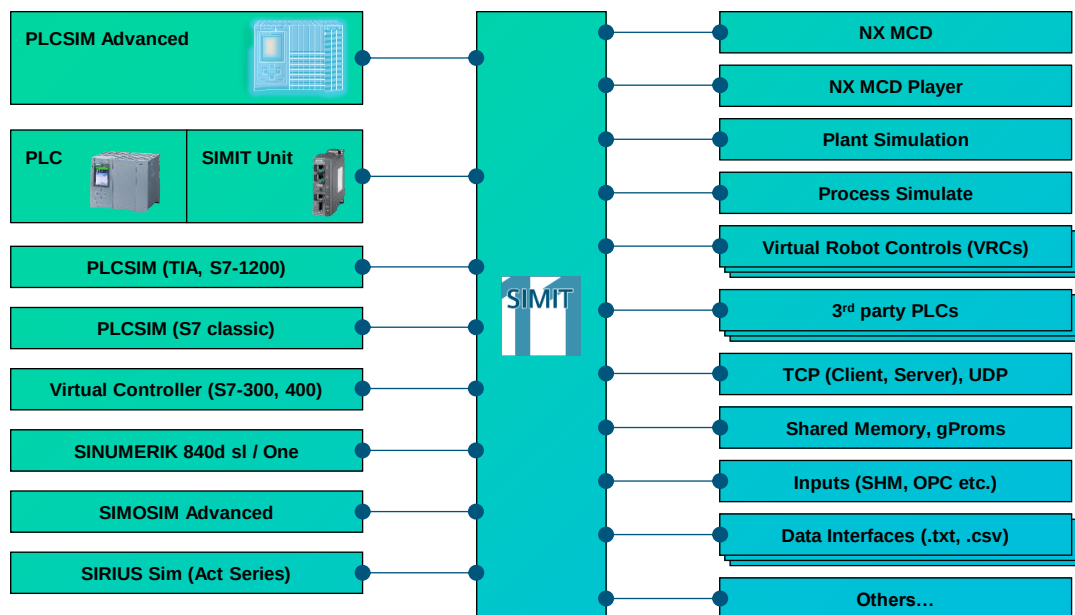
S7-PLCSIM Advanced is primarily used for the following use cases:

- Verifying the TIA Portal Setup
- Testing the STEP7 program
- Software-In-The-Loop Setup for virtual commissioning
- HMI operator training

2.2 SIMIT

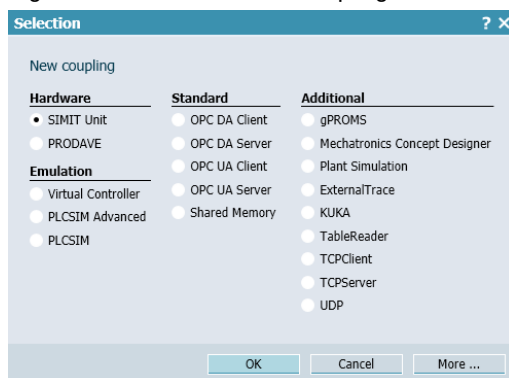
SIMIT simulates the behavior of the hardware in the control cabinet. As part of the simulation setup for virtual commissioning, SIMIT also serves as an orchestrator and central connection point for all co-simulation tools such as NX MCD, S7-PLCSIM Advanced or virtual robot controllers (see [Figure 2-2](#)).

Figure 2-2 Available SIMIT couplings



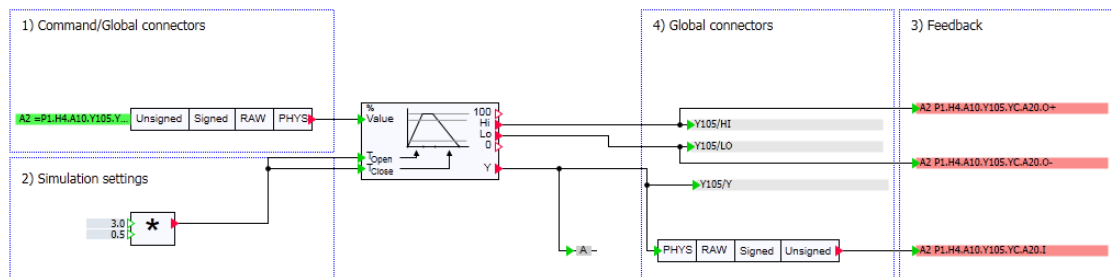
Installed couplings are displayed in the coupling creation dialog box (see [Figure 2-3](#)).

Figure 2-3 Creation of new couplings in SIMIT



Connections of signals and behavioral models are carried out on charts. Wire connections or signal flags can then be used to build simulation models with corresponding links (see [Figure 2-4](#)). Red and green signal flags are used for connections to external couplings such as S7-PLCSIM Advanced or NX MCD. Gray signal flags of the same name also connect each other across charts. Simulation modules are connected to other components and signals via the triangles with suitable data types.

Figure 2-4 SIMIT chart



2.2.1 Additional engineering tools

TIA Portal Openness

TIA Portal Openness makes it possible to automate engineering tasks and read information [\[28\]](#) via the freely accessible API of WinCC, STEP 7 and Startdrive. To do this, the user must be added to the "Siemens TIA Openness" user group [\[25\]](#).

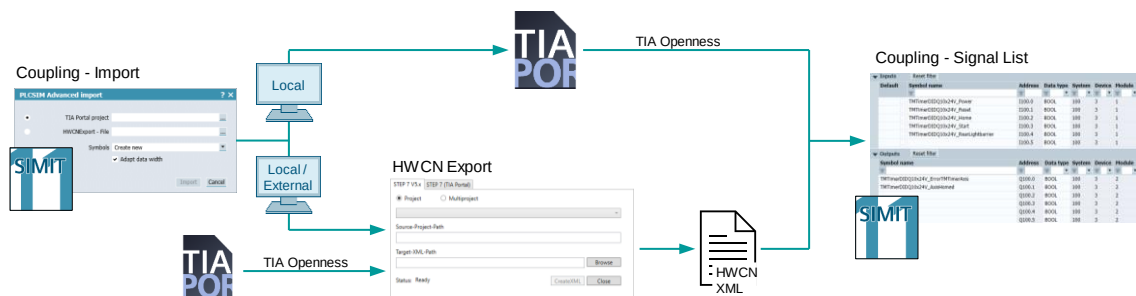
Automated engineering steps for creating couplings or behavioral models from the TIA Portal use this TIA Portal Openness interface.

HWCN Exporter

The HWCN Exporter creates an HWCN export file in .xml format from a STEP 7 Classic, PCS7 or a TIA Portal project. In SIMIT, the S7-PLCSIM Advanced coupling allows you to import either directly from the TIA Portal or from a HWCNExport file (see [Figure 2-5](#)). As a result, both the hardware configuration and the signals from the automation project are transferred to SIMIT and can be used. In order to read the information from the TIA Portal, [TIA Portal Openness](#) is required.

If the TIA Portal is not installed on the same computer as SIMIT, a .xml file can be exported via the HWCN Exporter and these can be integrated into the SIMIT computer.

Figure 2-5 Workflow for the import of the hardwareconfiguration and symbols to SIMIT



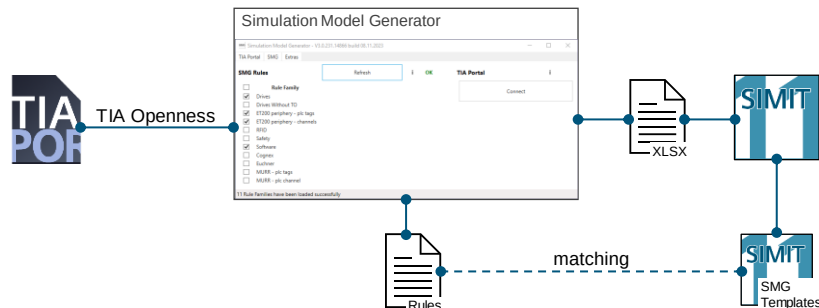
The current HWCN Exporter can be downloaded via the SiePortal [\[13\]](#).

Simulation Model Generator

The Simulation Model Generator analyzes the automation project via the [TIA Portal Openness](#) interface, collects relevant data and generates an xlsx file with a configuration of the required behavioral models. This file is imported into SIMIT and the behavioral models are automatically created and parameterized based on SMG templates.

In addition to the existing rules for creating SIMIT charts and behavioral models, these can also be created manually for your own components. Associated SMG templates must be created to match the rules.

Figure 2-6 Simulation Model Generator Mechanismus

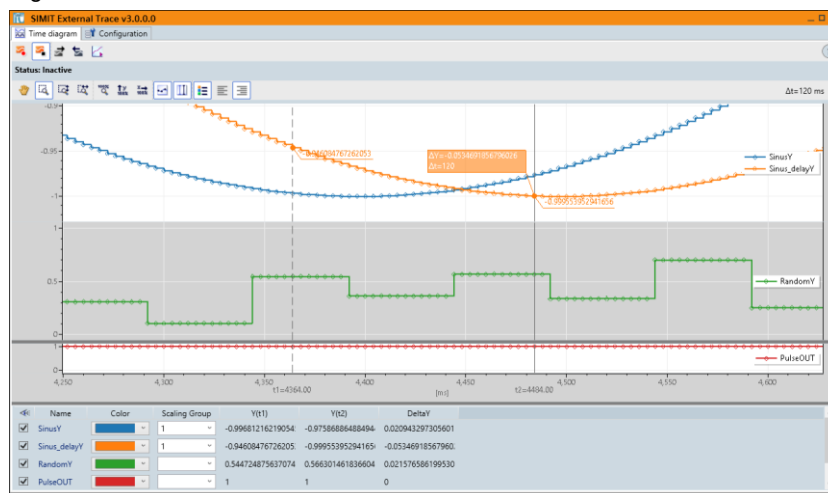


The current Simulation Model Generator can be downloaded via the SiePortal [14](#).

External Trace

Optionally, the external trace can be integrated into the simulation with SIMIT. Signals can be recorded cyclically and synchronously in millisecond intervals (see [Figure 2-7](#)).

Figure 2-7 External Trace



Hinweis

SIMIT's built-in trend function also offers the ability to record signals, but the External Trace provides a much finer resolution and advanced analysis capabilities.

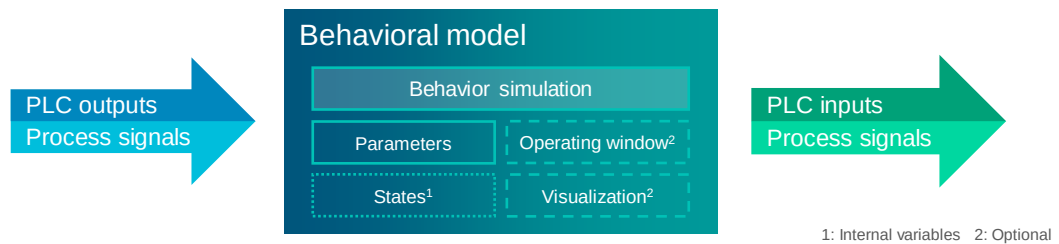
The current version of the External Trace can be downloaded from the SiePortal [15](#).

2.2.2 Behavioral models

Behavioral models are necessary to simulate the behavior of actuators and sensors. Feedback on the controller must be mapped realistically. Behavioral models can basically be considered as a black box.

PLC outputs and process data are processed in the behavioral model, and PLC inputs and process data are cyclically written out (see [Figure 2-8](#)). Parameters are static variables that are usually not written cyclically at simulation runtime. States are processed within the behavioral model and stored across cycles. Depending on the scope, behavioral models include additional panels and visualizations to observe behavior during simulation and influence simulation results.

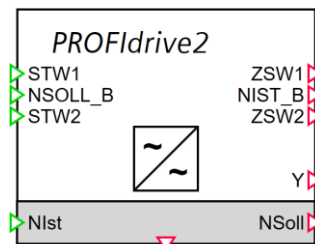
Figure 2-8 Behavioral model



SIMIT behavioral models

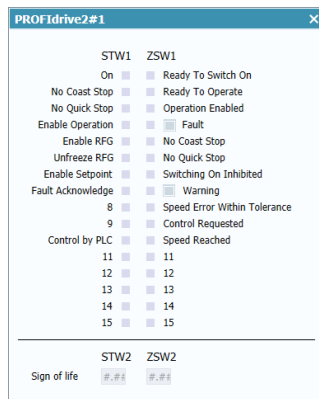
SIMIT includes behavioral models that can be instantiated via the component task card via drag-and-drop (see [Figure 2-9](#)).

Figure 2-9 SIMIT component PROFdrive2



Double-clicking on a component opens the operating window, if available for that component (see [Figure 2-10](#)).

Figure 2-10 SIMIT component PROFdrive2 – operating window



SIMIT Behavioral Model Libraries

Additional behavioral models to those already integrated into SIMIT can be obtained from the SiePortal [16](#).

For example, components for RFID, drives, technology modules and many other libraries are available for different applications.

To extend the standard SIMIT building block library, we recommend the Auxiliary Library [17](#).

SIMIT Component Type Editor

New SIMIT components and behavioral models are created using the integrated development environment SIMIT Component Type Editor (CTE).

Variables are defined as inputs and outputs, parameters, and states. A graphical user interface can be used to create the module representation as well as a control window and an additional visualization (called link view). The modules are programmed using a programming language that has been simplified for the CTE.

Created components can then be imported into SIMIT and instantiated.

Functional Mock-Up Interface

The Functional Mock-up Interface (FMI) defines a standardized interface that makes it possible to couple different simulation tools with little effort. The FMI interface included in SIMIT enables compiled models from external simulation tools, the so-called Functional Mock-up Units (FMU), to be integrated into the SIMIT runtime environment and executed.

FMUs that are compatible with the basic SIMIT simulation paradigm can be packaged into a SIMIT component type using the CTE (see [SIMIT Component Type Editor](#)). One criterion of the simulation paradigm, for example, is that dynamic real-time capable executability in discrete time steps must be given.

DriveSim Designer

The SINAMICS DriveSim Designer offers easy-to-use models for PROFIdrive-capable SINAMICS converters. The models are validated and tested against real SINAMICS converters and are provided in the form of standardized FMUs, which are imported into SIMIT via the CTE. Further information can be found in the SiePortal [10](#).

Simcenter AMESIM

The multi-physical simulation in AMESIM offers the possibility to view physical processes in detail [29](#). Simulation models are exported as FMU and used in SIMIT. Alternatively, results from complex simulation models can be used for virtual commissioning and easily modeled in SIMIT (e.g. a simulated force based on the stroke of a press). This improves both simulation performance and engineering effort.

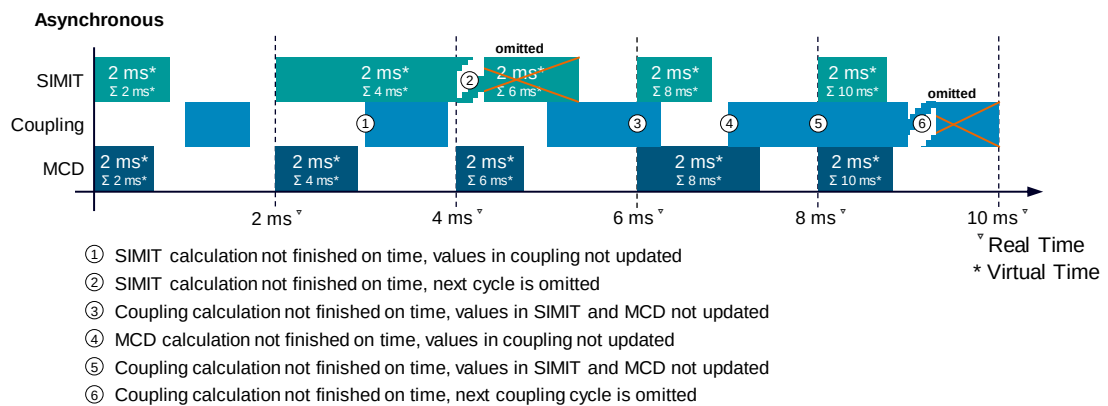
2.2.3 Synchronization

As a central simulation interface and orchestrator, SIMIT offers the option of selecting the operating mode and synchronization with the existing simulation participants. The operating modes that can be selected in SIMIT differ as follows:

Asynchronous

All simulation participants run independently of each other and do not wait for each other. Signals are read in and output via the coupling sequentially, but independently of the model calculation in SIMIT. Calculation steps can be skipped if previous steps cannot be processed in time.

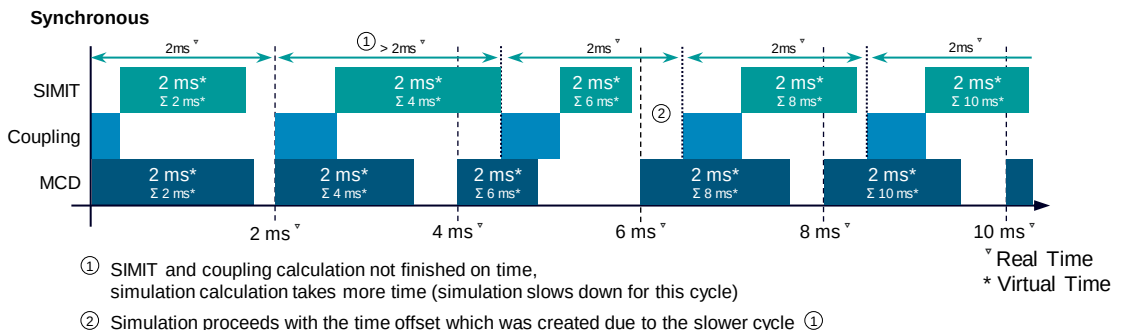
Figure 2-11 Asynchronous operation mode in SIMIT



Synchronous

SIMIT synchronizes the execution and data exchange between the simulation participants. The model calculation in SIMIT always takes place between reading input and writing output signals. The system waits for a complete calculation of the simulation model in SIMIT and the calculation of the coupling if the calculation takes longer than specified. All simulation participants continue to run independently of each other and do not wait for each other.

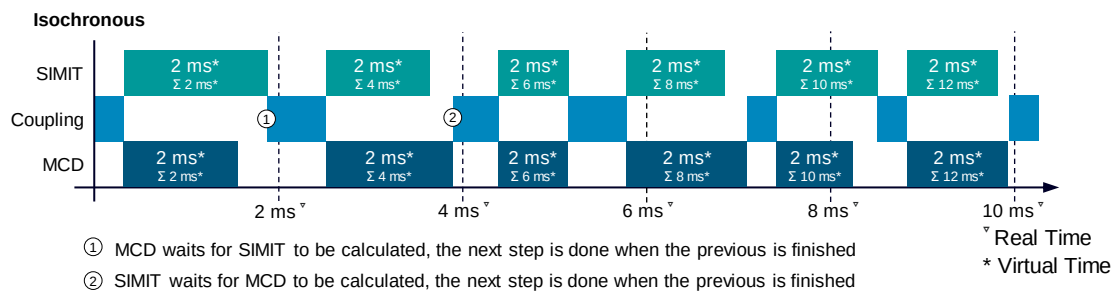
Figure 2-12 Synchronous operation mode in SIMIT



Isochronous

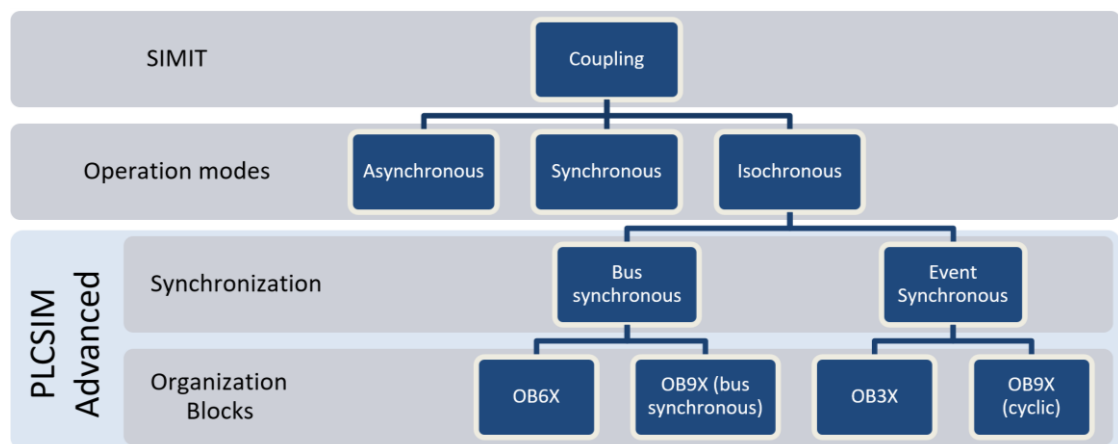
All simulation participants simulate the same virtual time progress, regardless of the real time. The simulation steps of all simulation participants are executed together. This also ensures that the time base (or the simulation progress over time) of all simulation participants matches. This type of simulation is preferred in the context of virtual commissioning in order to achieve deterministic simulation results.

Figure 2-13 Isochronous operation mode in SIMIT



The options for synchronizing SIMIT and S7-PLCSIM Advanced depend on the configuration of the control program in the TIA Portal (see [Figure 2-14](#)). Depending on the OBs used and the assignment of the sub-process images, either bus-synchronous or event-synchronous synchronization is offered for selection in SIMIT in the case of the clock-synchronous operating mode.

Figure 2-14 Synchronization mechanisms with S7-PLCSIM Advanced and SIMIT

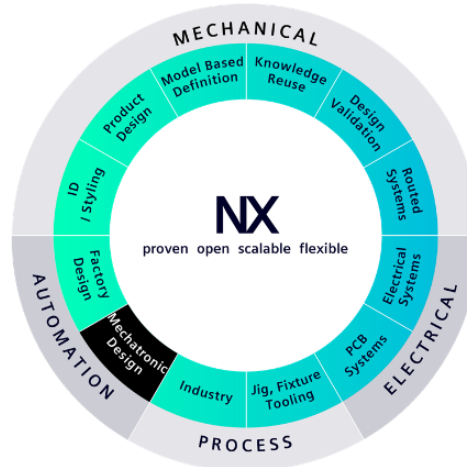


For the majority of simulation cases, bus-synchronous synchronization to an MC servo OB91 is sufficient. For all other cases, a precise distinction must be made. This FAQ serves as a guide for this [12](#).

2.3 NX Mechatronics Concept Designer

The kinematics and material flow model is mapped using the NX Mechatronics Concept Designer. Mechatronic Design (Mechatronics Concept Designer) is an application within the CAD tool NX (see [Figure 2-15](#)).

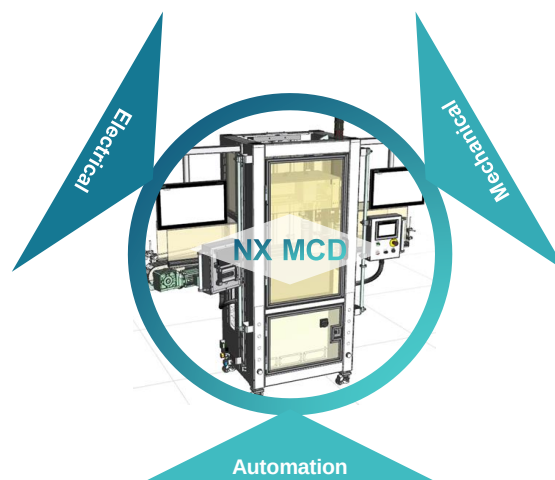
Figure 2-15 NX Applications



The rigid body simulation with physics engine integrated into the CAD system is used as part of a standalone simulation to validate a machine in an early concept phase of the development process. For this purpose, the MCD provides an automation level in which processes, mechanics and material flow can be tested and verified at an early stage of product development without external simulation tools (see [Figure 2-16](#)).

In later development phases, NX MCD is used as a co-simulation for virtual testing and virtual commissioning. Mechanical and electrical properties already created in the standalone simulation can continue to be used. The control and feedback signals are then sent to the control cabinet simulation in SIMIT.

Figure 2-16 NX Mechatronics Concept Designer



It should be noted that the real physical behavior differs from that in the simulation. Multiphysical problems must therefore be considered separately in suitable software (e.g. [Simcenter AMESIM](#)).

2.4 Co-Simulations-Tools

Co-simulation tools are software tools that are used to model and simulate complex systems by integrating and synchronizing several different simulation environments. These tools allow different simulation programs to be run in parallel and linked together to analyze the interaction and behavior of the system in real time.

One example of a co-simulation tool is KUKA OfficeLite, which can be used to simulate a KUKA robot controller. This allows the behavior of the robot to be reproduced in detail in the simulation and the simulation setup to be completed.

2.5 External couplings

External simulation tools are always connected to the simulation environment via SIMIT. For this reason, further coupling mechanisms are provided for SIMIT as downloadable add-ons via the SiePortal [111](#). External robot interfaces (KUKA, ABB, Stäubli, etc.) as well as standard communication channels (UDP, TCPIP, etc.) and other co-simulation tool interfaces are available here.

2.6 Example Projects

An overview page with sample projects from the field of virtual commissioning is available on the SiePortal on the topic of virtual commissioning in mechanical engineering [118](#). These are projects that show how to get started with virtual commissioning and PLC libraries from various industries in use.

The following application example is particularly suitable for getting started:

- Virtual commissioning with SIMIT and S7-PLCSIM Advanced [126](#)
(Application example with SIMIT and S7-PLCSIM Advanced)

3 Appendix

3.1 Service and support

Industry Online Support

Do you have any questions or need assistance?

Siemens Industry Online Support offers round the clock access to our entire service and support know-how and portfolio.

The Industry Online Support is the central address for information about our products, solutions and services.

Product information, manuals, downloads, FAQs, application examples and videos – all information is accessible with just a few mouse clicks:

support.industry.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

SITRAIN – Digital Industry Academy

We support you with our globally available training courses for industry with practical experience, innovative learning methods and a concept that's tailored to the customer's specific needs.

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

siemens.com/sitrain

Service offer

Our range of services includes the following:

- Plant data services
- Spare parts services
- Repair services
- On-site and maintenance services
- Retrofitting and modernization services
- Service programs and contracts

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

support.industry.siemens.com/cs/sc

Industry Online Support app

You will receive optimum support wherever you are with the "Siemens Industry Online Support" app. The app is available for iOS and Android:

support.industry.siemens.com/cs/www/en/sc/2067

3.2 Industry Mall



The Siemens Industry Mall is the platform on which the entire Siemens Industry product portfolio is accessible. From the selection of products to the order and the delivery tracking, the Industry Mall enables the complete purchasing processing – directly and independently of time and location:

mall.industry.siemens.com

3.3 Application support

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3.4 Links and literature

Table 3-1

Nr.	Thema
1\1	Siemens Industry Online Support https://support.industry.siemens.com
1\2	SIMIT Simulation Platform - Overview https://support.industry.siemens.com/cs/ww/en/view/109963864
1\3	VDI / VDE Guideline 3693 Part 1 and Part 2
1\4	Der deutsche Wortschatz von 1600 bis heute https://www.dwds.de/wb/Computersimulation
1\5	SIEMENS Digital Industries Software – Hardware and Software Certifications https://support.sw.siemens.com/en-US/product/209349590/knowledge-base/PL8017193?pid=sc%3Asearch&pid_context=%22Hardware%20and%20Software%20Certifications%22&index=content-external&audience=external
1\6	SIEMENS Industry Mall https://mall.industry.siemens.com/
1\7	WIBU Systems CodeMeter https://www.wibu.com/us/support/user/downloads-user-software.html
1\8	SITRAIN Schulung – SIMIT in der Diskreten Automatisierungstechnik für Einsteiger https://www.sitrain-learning.siemens.com/DE/en/rw8439/SIMIT-in-der-Diskreten-Automatisierungstechnik-f%C3%BCr-Einsteiger

Nr.	Thema
\9\	SITRAIN Schulung – Virtuelle Inbetriebnahme für Maschinen https://www.sittrain-learning.siemens.com/DE/en/rw96673/Virtuelle-Inbetriebnahme-f%c3%bcr-Maschinen
\10\	SINAMICS DriveSim Designer https://support.industry.siemens.com/cs/ww/en/view/109812859
\11\	SIMIT Couplings, applicative expansions of the interface https://support.industry.siemens.com/cs/ww/en/view/109795246
\12\	How do you project an isochronous simulation with SIMIT and PLCSIM Advanced? https://support.industry.siemens.com/cs/ww/en/view/109808735
\13\	HWCN Exporter https://support.industry.siemens.com/cs/ww/en/view/109770995
\14\	Simulation Model Generator https://support.industry.siemens.com/cs/ww/en/view/109780391
\15\	SIMIT External Trace https://support.industry.siemens.com/cs/ww/en/view/109810949
\16\	SIMIT libraries with behavior models of devices and systems https://support.industry.siemens.com/cs/ww/en/view/109793203
\17\	Auxiliary Library for SIMIT https://support.industry.siemens.com/cs/ww/en/view/109815648
\18\	SIMIT/MCD/AMESIM - Virtual commissioning in machine building https://support.industry.siemens.com/cs/ww/en/view/109777165
\19\	Online Software Delivery https://www.automation.siemens.com/swdl/
\20\	Handling programs for authorization or licensing of SIMATIC products (ALM, Authors) https://support.industry.siemens.com/cs/ww/en/view/114358
\21\	SIEMENS Support Center - SW Siemens License Server https://support.sw.siemens.com/en-US/product/1586485382
\22\	mySupport Links and Tools https://support.industry.siemens.com/cs/ww/en/my
\23\	SIEMENS Digital Industries Software Support Center https://support.sw.siemens.com/en-EN/
\24\	Siemens Xcelerator Academy https://training.plm.automation.siemens.com/
\25\	Adding users to the "Siemens TIA Openness" user group https://support.industry.siemens.com/cs/ww/en/view/109773802/101778035467
\26\	SIMATIC Machine Simulator - Virtual Commissioning with SIMIT and PLCSIM Advanced https://support.industry.siemens.com/cs/ww/en/view/109799724
\27\	Virtual commissioning of machines with S7-PLCSIM Advanced, SIMIT and NX MCD https://support.industry.siemens.com/cs/ww/en/view/109758943
\28\	TIA Portal Openness: Introduction and Demo Application https://support.industry.siemens.com/cs/ww/en/view/108716692

Nr.	Thema
129\	Simcenter Amesim / SIMIT – Virtual Commissioning with Multiphysics Models https://support.industry.siemens.com/cs/ww/en/view/109814061
130\	SIMATIC SIMIT Simulation Platform https://support.industry.siemens.com/cs/ww/en/view/109823650

3.5 Change documentation

Table 3-2

Version	Date	Modifications
V1.0	04/2024	First version