

Create MyVirtual Machine

Digital Twin for engineering and reselling

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Agenda

Trends

Product overview

From engineering to machine operation

Top highlights at a glance

Technical details

Added value aspects

Migration and compatibility

Service and ordering data

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Challenges in machine engineering



Dependency on the hardware components



Detected failures in the final stage of machine development



Unexpected scenarios during commissioning at the customer

Sequential working and lack of flexibility

High costs and delivery delay

Time pressure and customer dissatisfaction

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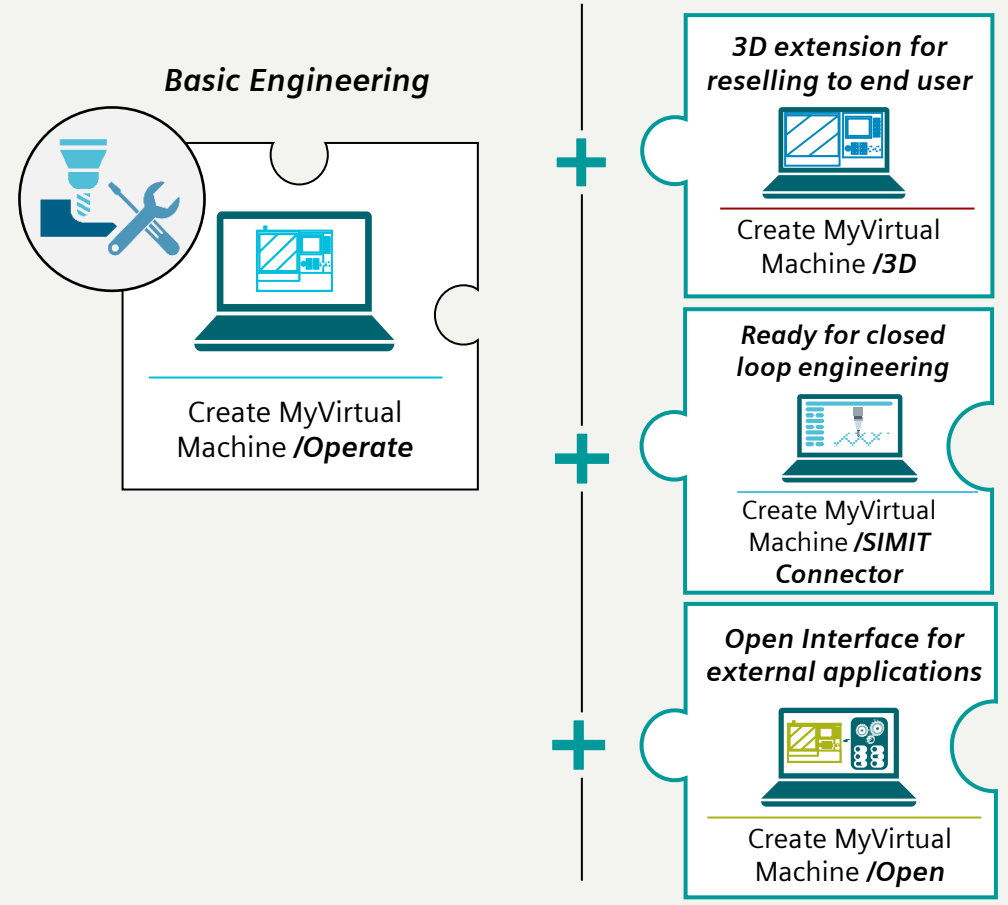
Product overview

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Create MyVirtual Machine

SINUMERIK ONE engineering with Create MyVirtual Machine Software

- Digital Twin for NC, PLC and HMI engineering & testing
- Closed-Loop engineering workflow from machine design to commissioning
- Enable connectivity to external application



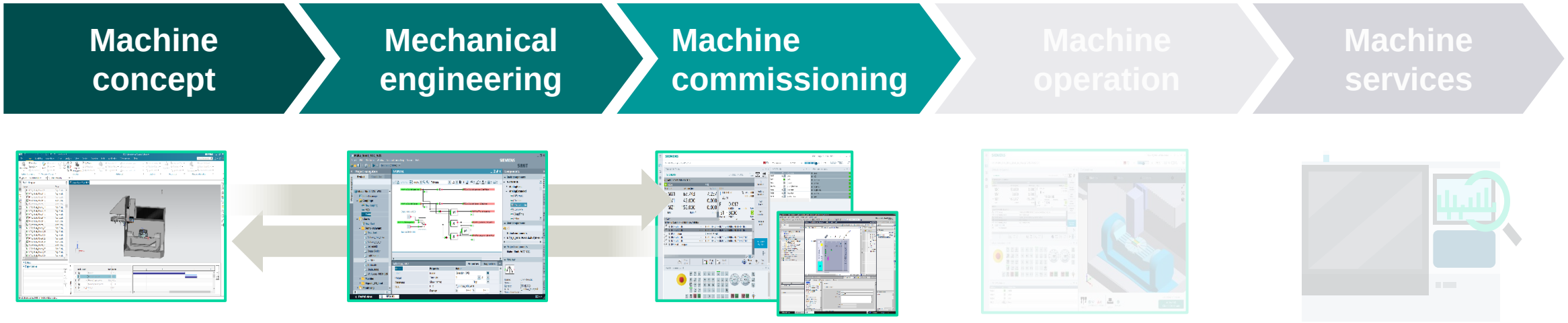
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From engineering to machine operation

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The entire Siemens product portfolio for machine tools is aligned with the digitalization chain

Usual Machine Life Cycle

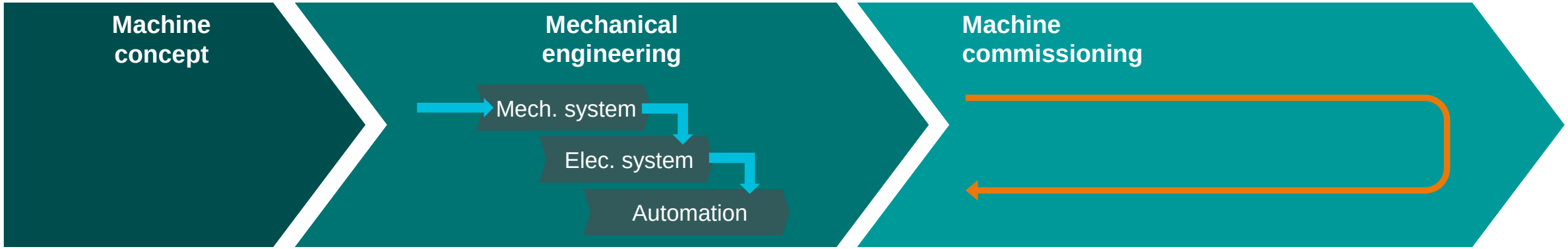


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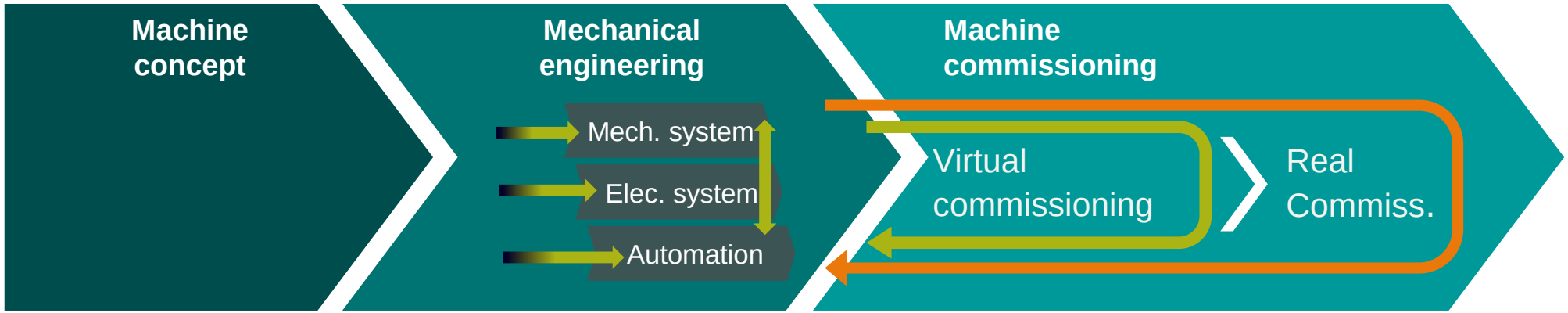
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How can the engineering process be made more flexible?

Conventional machine development: Sequential engineering



Machine development with virtual commissioning: Increasing parallelization in engineering

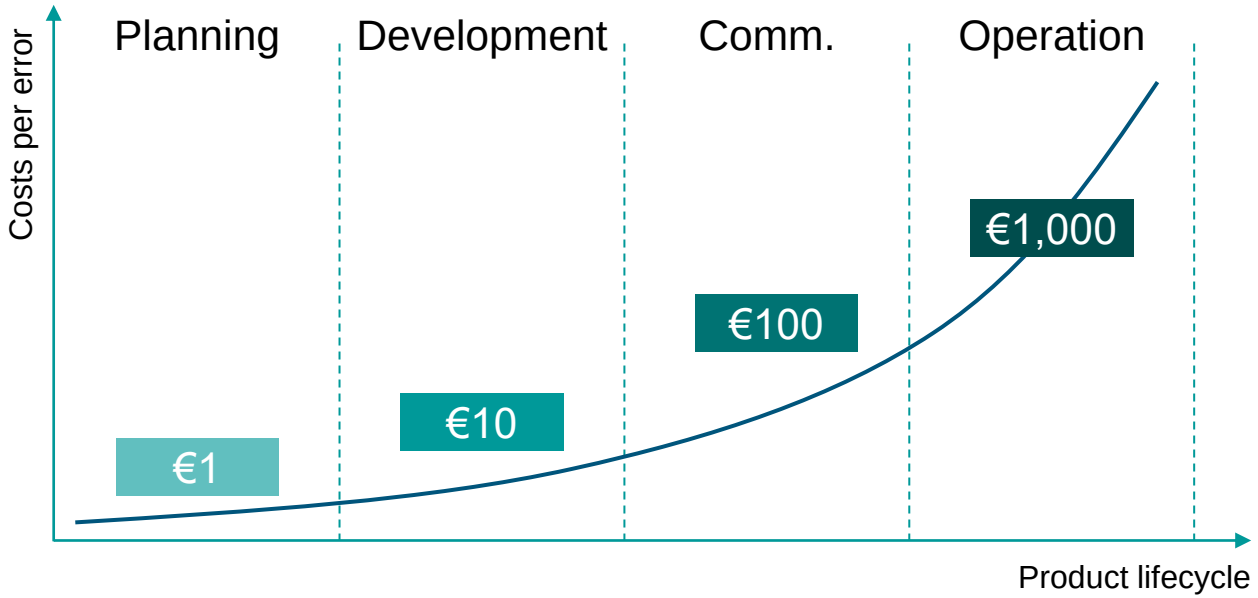


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Errors can be detected early in the product life cycle through simulation

Six Sigma/Quality rule
Rule of Ten

"The Rule of Ten for error-related costs states that the cost of an undetected error increases by a factor of 10 from one stage of value creation to the next. The sooner an error is discovered and eliminated, the more cost-effective it is for the organization. (...)"



Conclusion

The quality of the engineering project must be increased as early as possible in the product lifecycle!

1) Assuming that the error would otherwise only be detected during operation

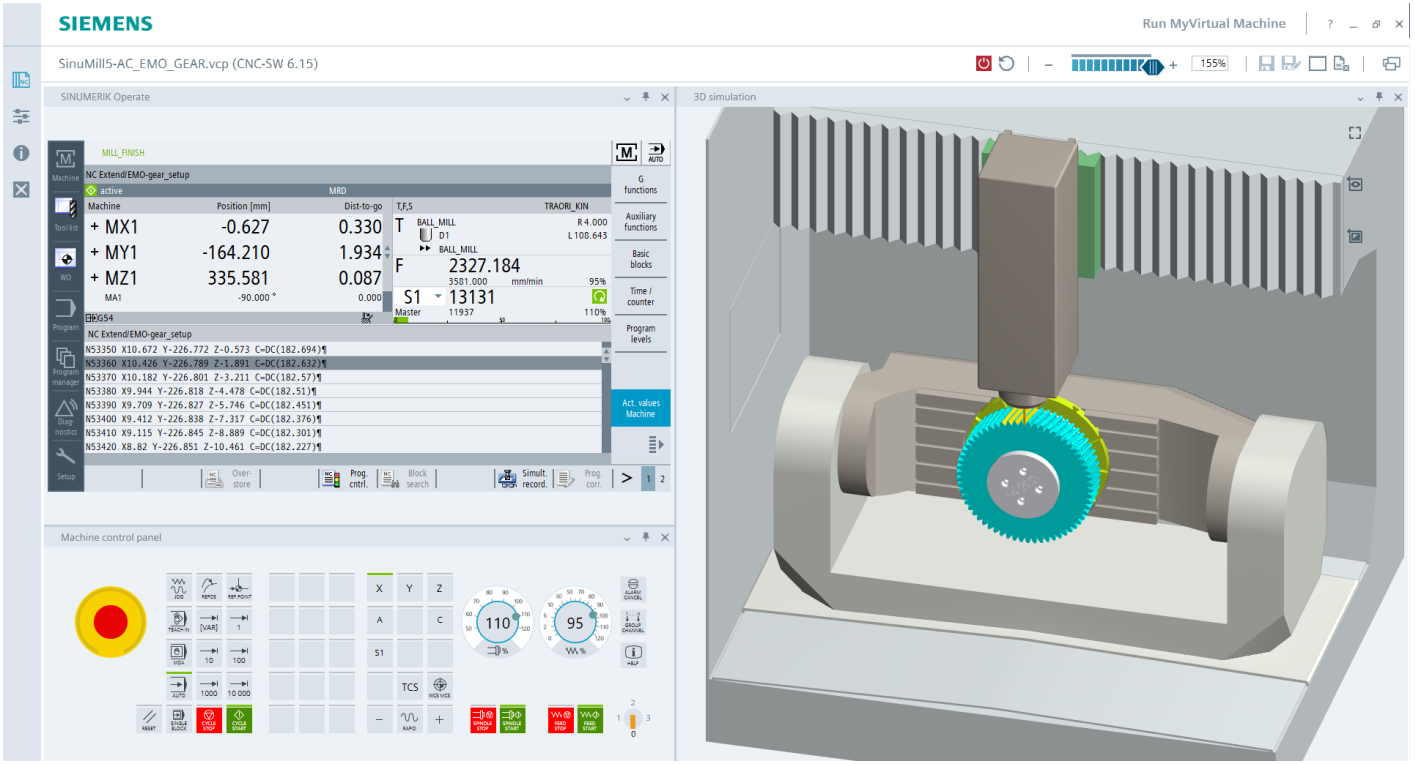
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Top Highlights at a glance

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Run MyVirtual Machine
Integrated simulation without CAD-CAM environment

- NC program check and machining time estimation
- Collision detection and analysis
- Library with tools, clamping, blanks
- Ideal for trainings



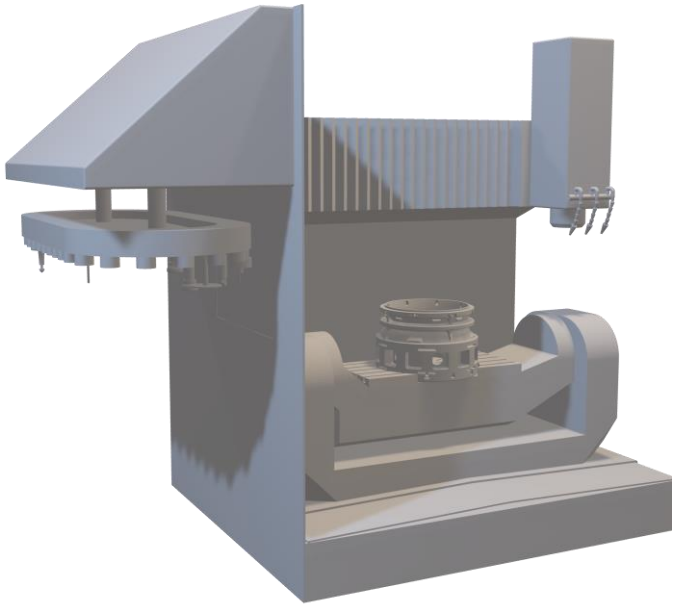
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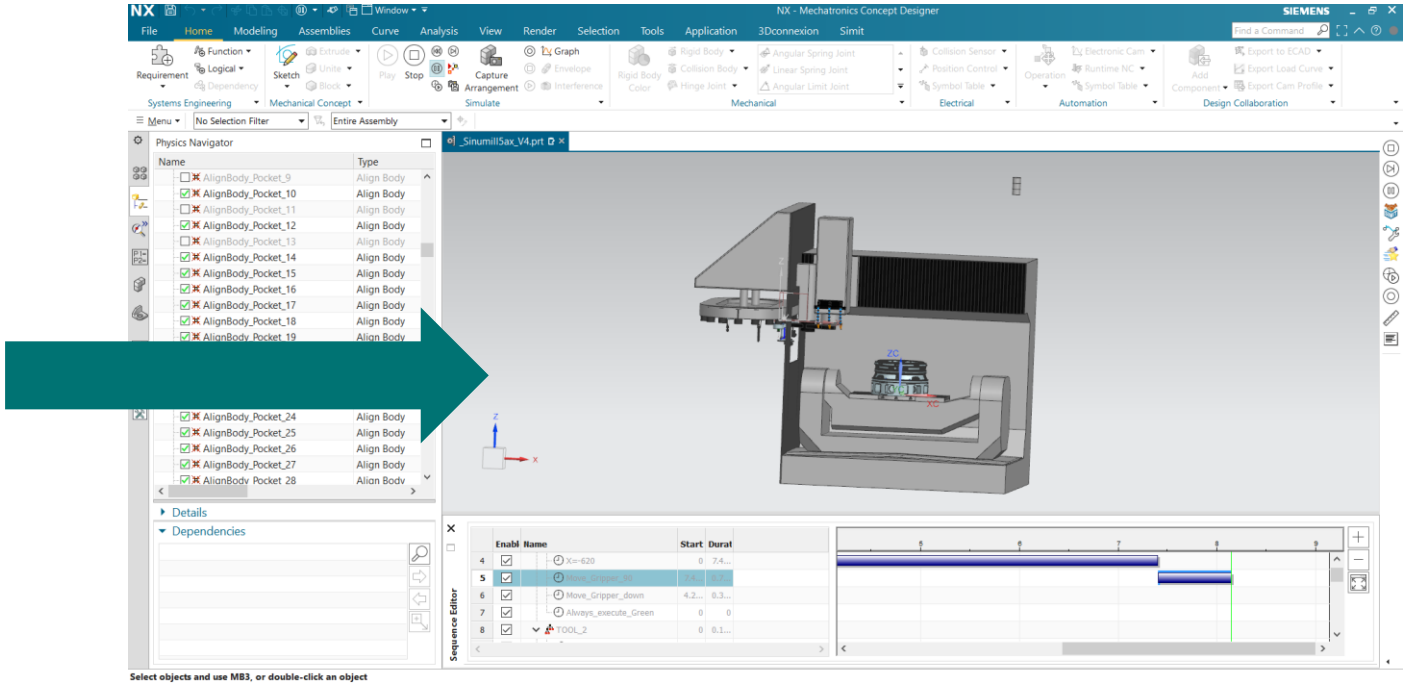
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Technical details

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Machine concept
Integration into CAD systems





Mechatronic Concept Designer

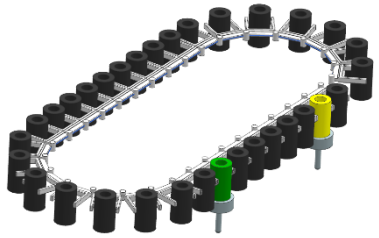
3D CAD data

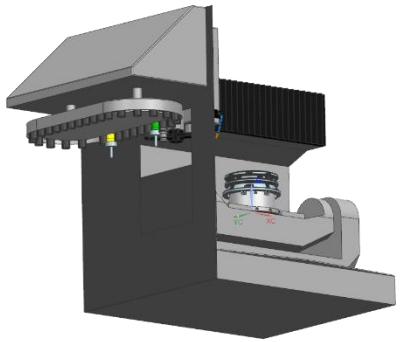
Mechatronics simulation

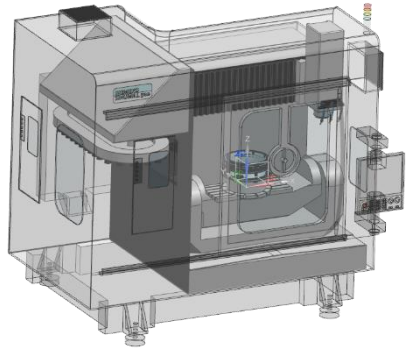
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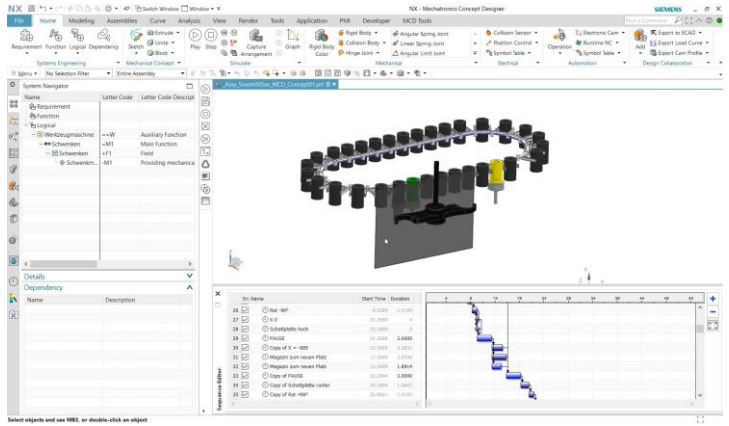
Machine concept
Continuous detailing and communication

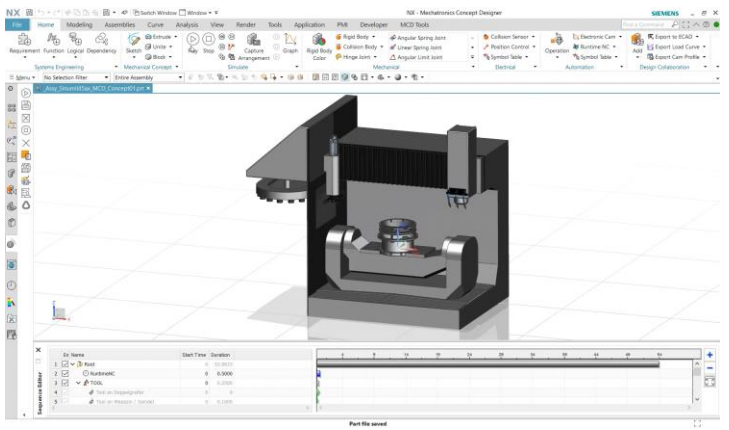


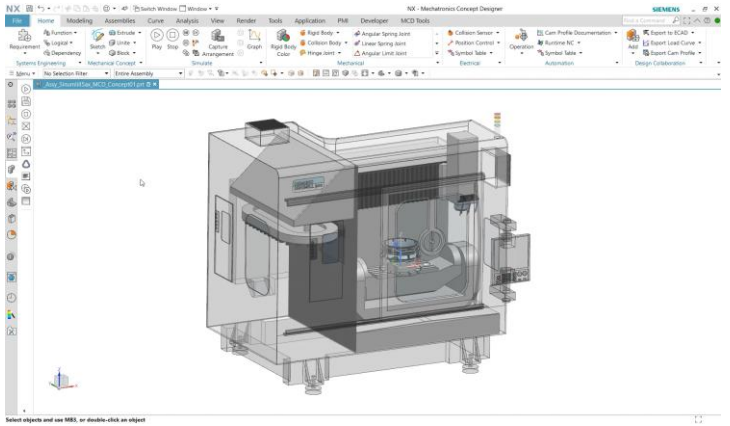




Continuous mechatronic machine development



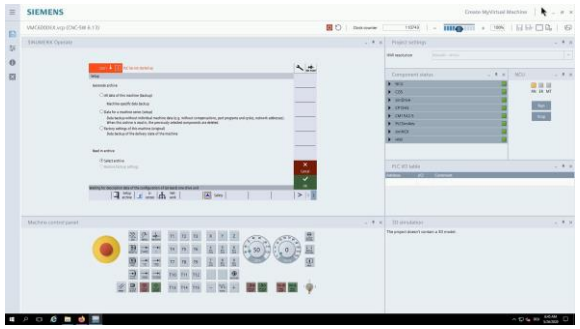


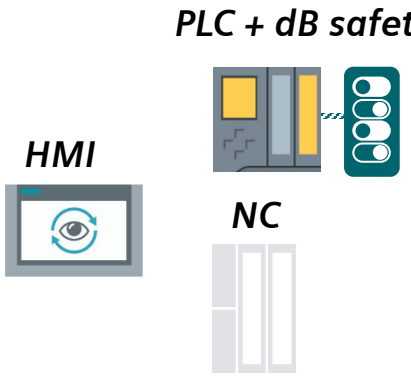


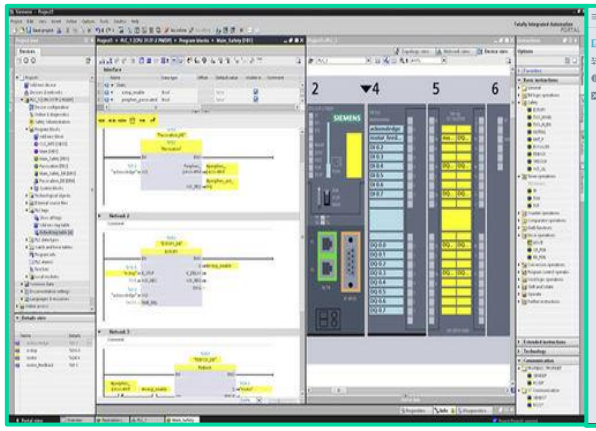
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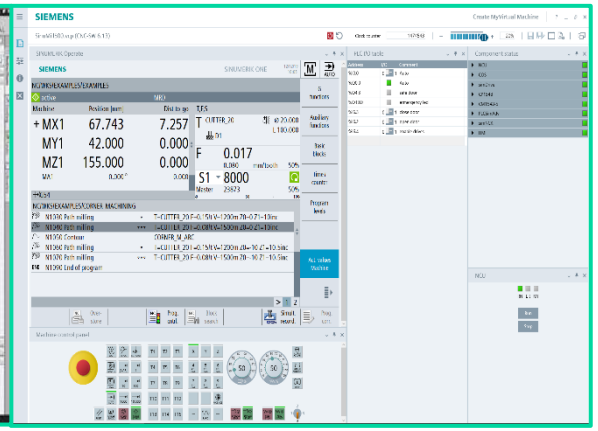
Mechanical engineering
Modeling of control technology







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Create MyVirtual Machine

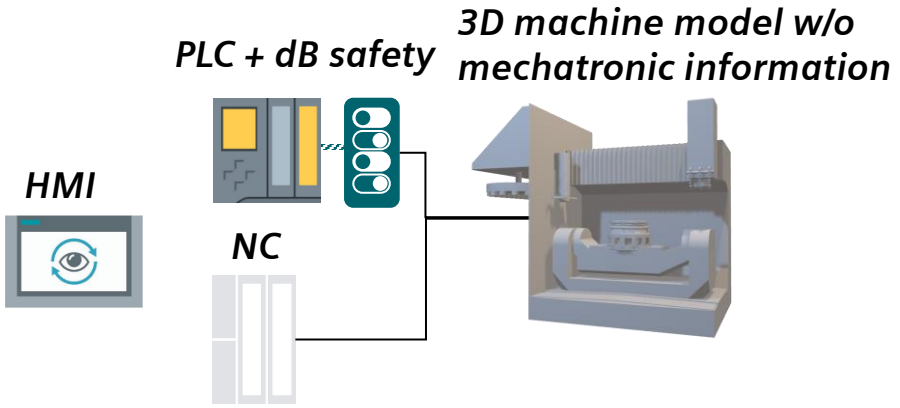
PLC configuration

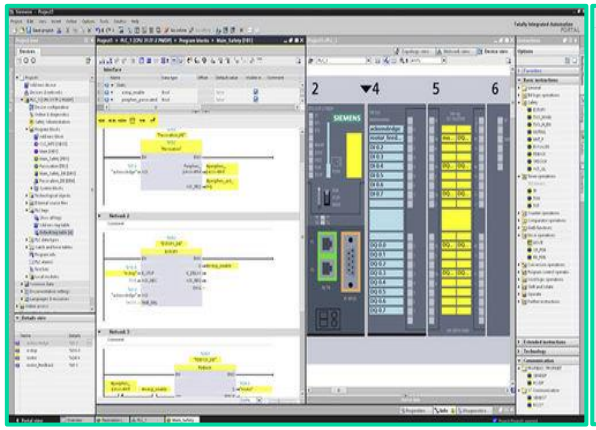
NC/PLC/HMI simulation

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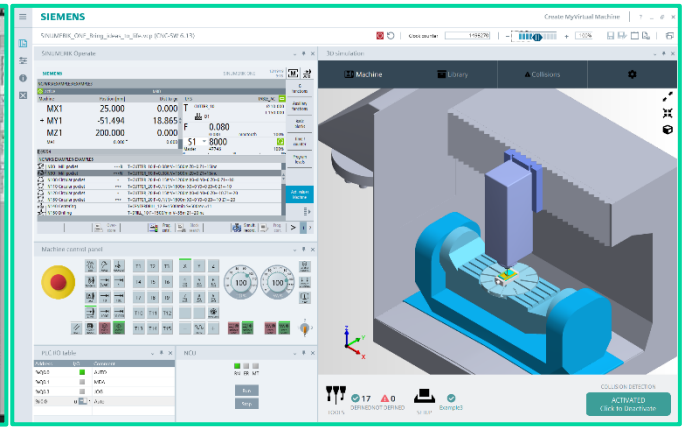
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Mechanical engineering
Modeling of control technology





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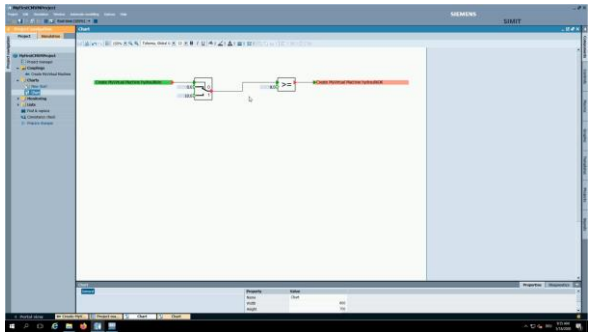
Create MyVirtual Machine /Operate + /3D

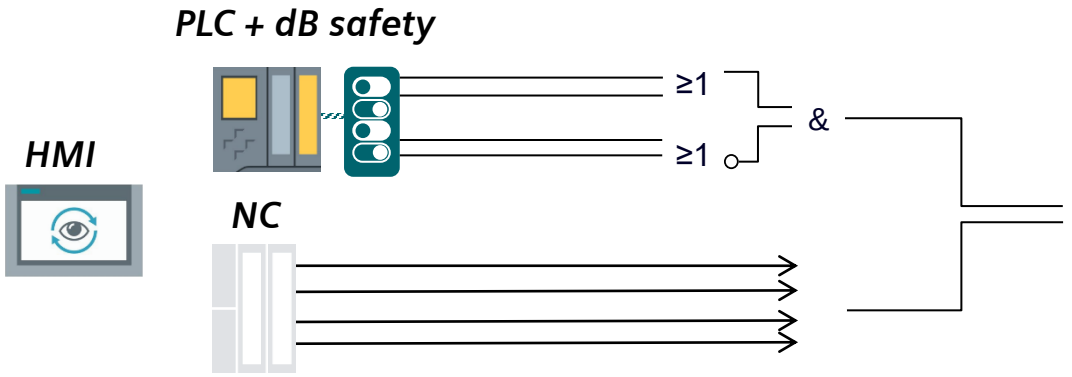
PLC configuration **NC/PLC/HMI + kinematic simulation**
simulation

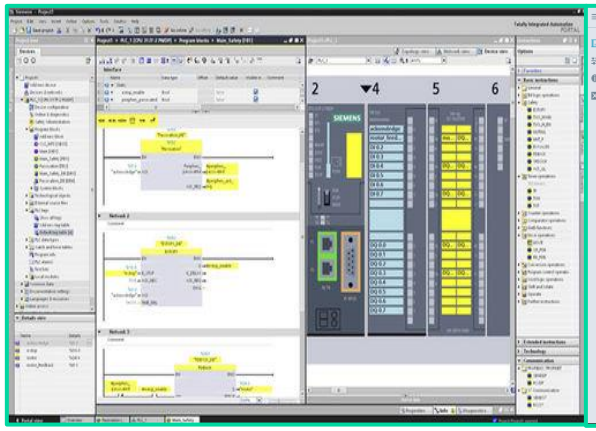
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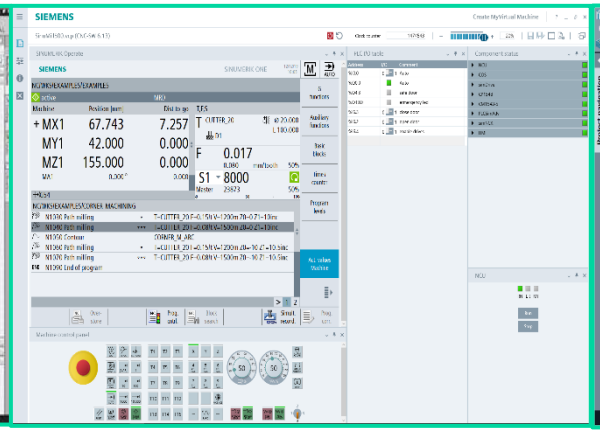
Mechanical engineering
Extension of behavior models



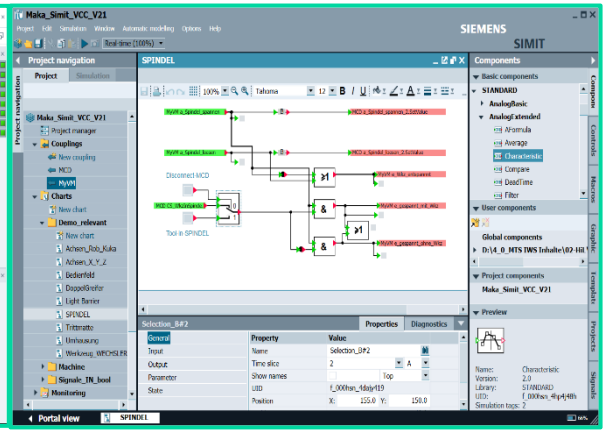




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Create MyVirtual Machine



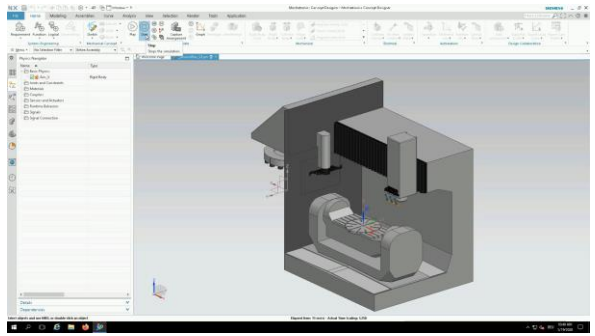
SIMIT Simulation Framework

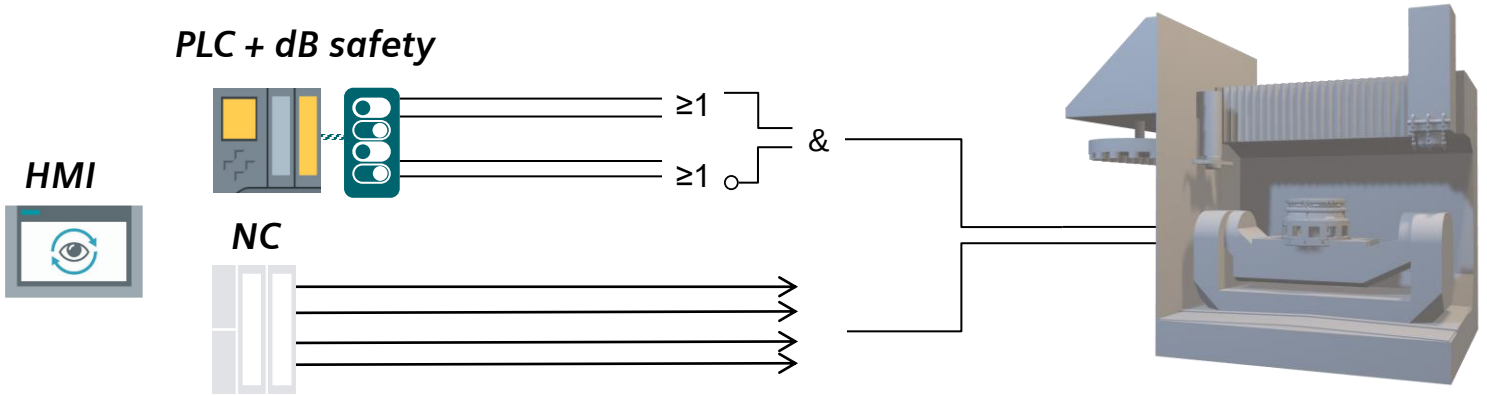
PLC configuration | **NC/PLC/HMI** simulation | **I/O** simulation

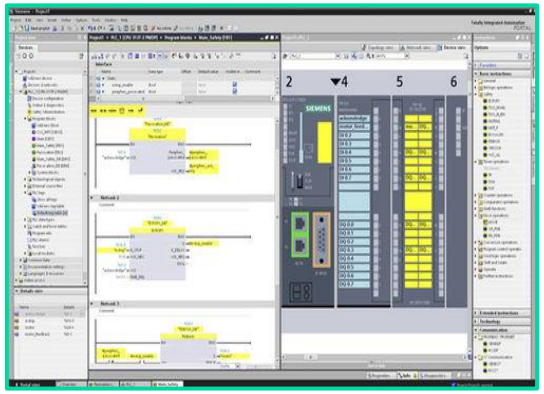
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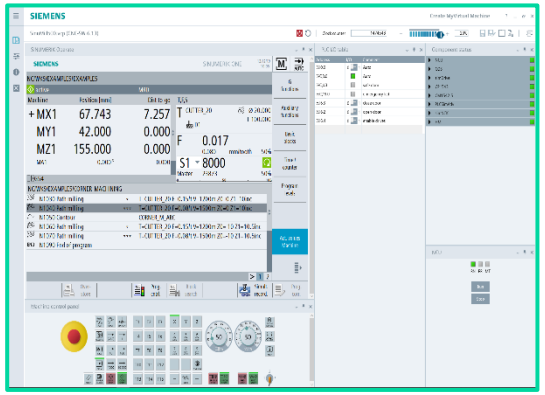
Machine commissioning
Complete machine simulation



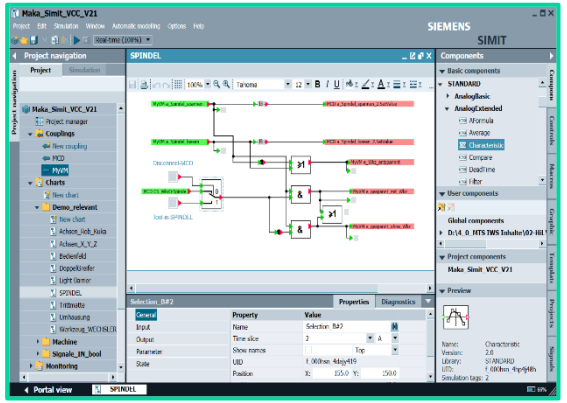




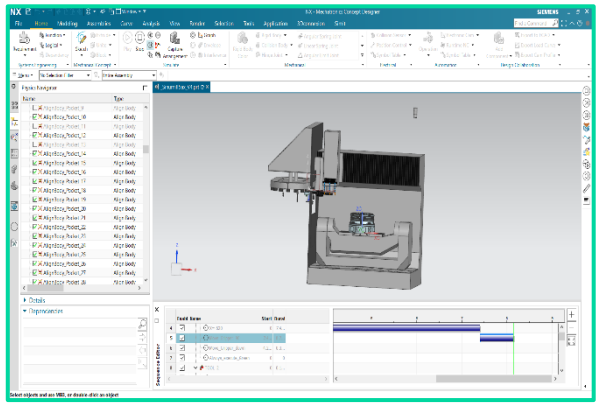
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Create MyVirtual Machine



SIMIT Simulation Framework



Mechatronics Concept Designer

PLC configuration | **NC/PLC/HMI** simulation | **I/O** simulation | **Mechatronics** simulation

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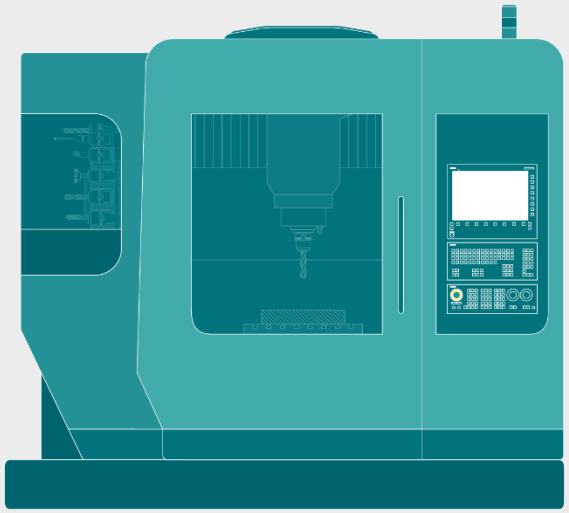
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Added value aspects

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Machine sales
The digital twin for sales

Machine purchase
(physical delivery)



Value add

Machine manufacturer

- ✓ Implement new business models
- ✓ New sales approaches due to simulations
- ✓ Digital Twin as a sales tool



Customer

- ✓ Get familiar with the new machine before physical delivery
- ✓ Simulate future production process
- ✓ Minimize overall setup time
- ✓ Risk minimization
- ✓ Opportunity for new business models



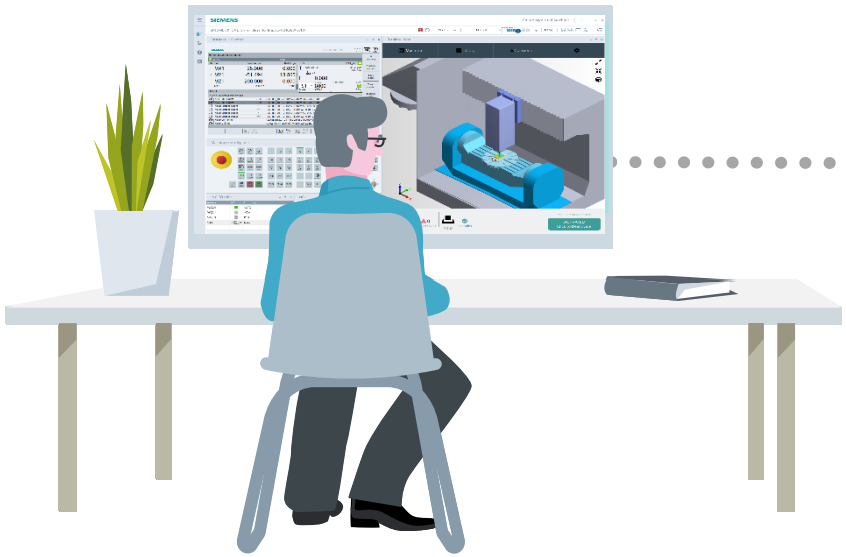
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Machine operation
The digital twin as the training environment

Machine manufacturer

- ✓ Time & place independent training via Teams, Skype & co.
- ✓ Safe training environment also for self-learning
- ✓ Learning without real machine or production interruption



Machine operator



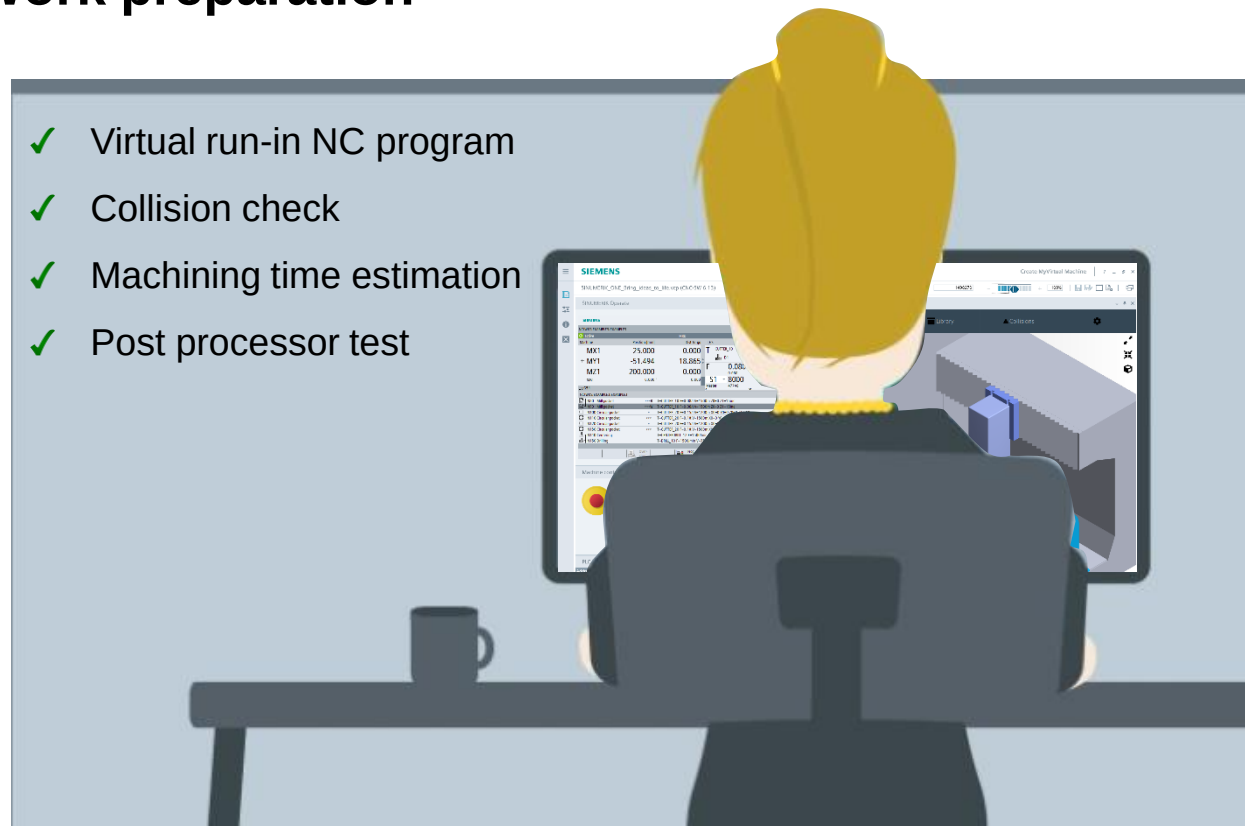
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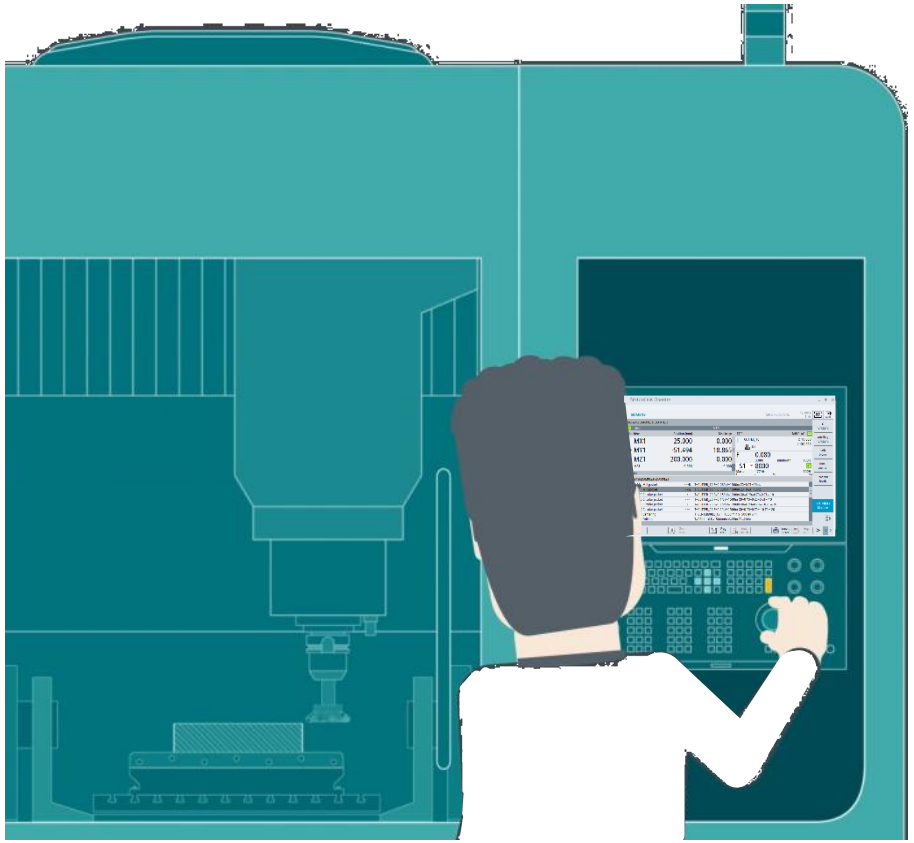
Machine operation
Export of a digital twin for work preparation

Work preparation

- ✓ Virtual run-in NC program
- ✓ Collision check
- ✓ Machining time estimation
- ✓ Post processor test



Work execution



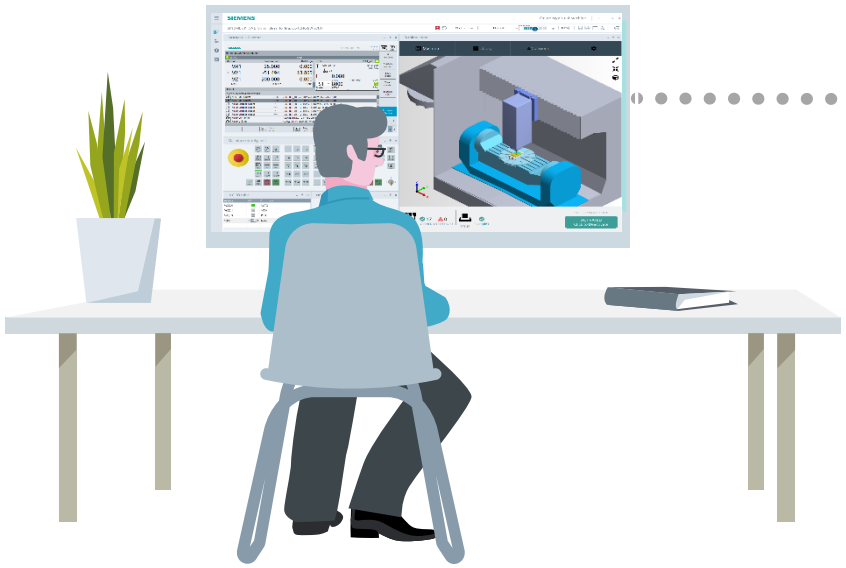
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Machine services
The digital twin for servicing

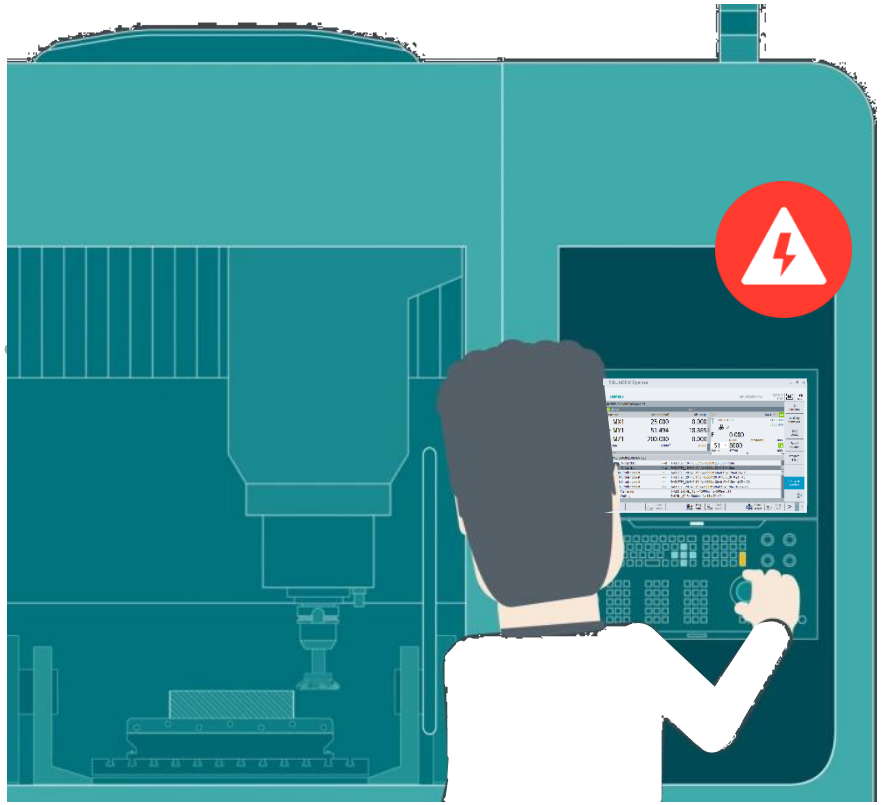
Machine manufacturer

- ✓ Reuse existing machine model to reproduce customer's problem
- ✓ Aftersales: Evaluating the implementation of customer requests with the help of digital twin





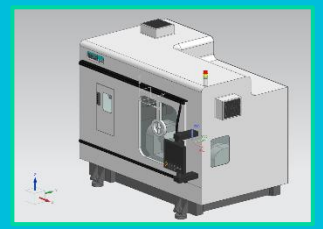
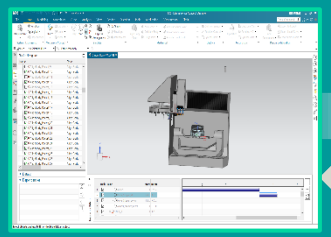
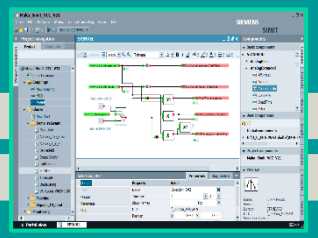
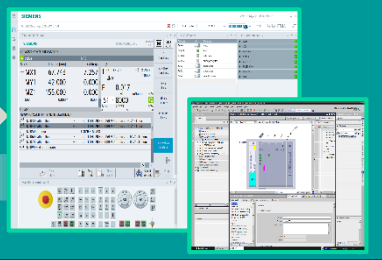
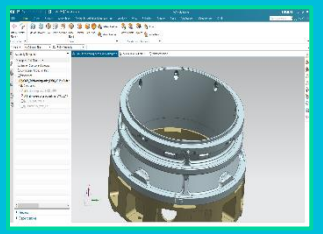
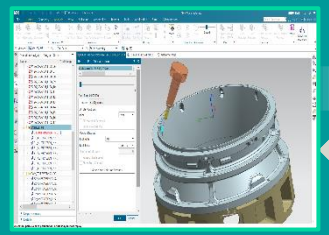
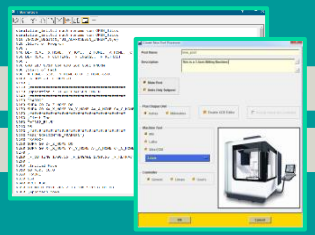
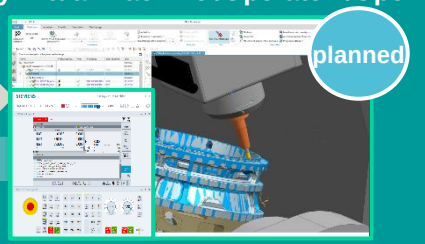
Machine operator

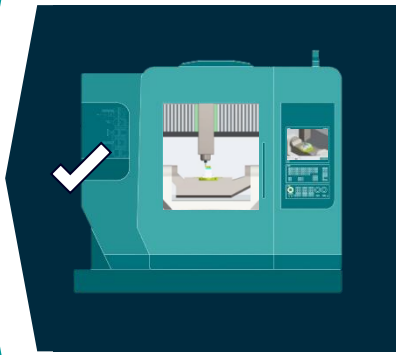


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Value creation with the digital twins in machine engineering and operation

CAD design of the machine	Kinematization, mech. concept, phys. behavior model	Dig. control cabinet as behavior model of the I/O devices	Virtual CNC with NC, PLC, HMI
Commissioning	**NX CAD**	**NX MCD**	**SIMIT**	**Create MyVirtual Machine** /Operate + /SIMIT Connector
				
Teamcenter				
Work preparation	**NX CAD**	**NX CAM**	**Post processor**	**NX Virtual Machine** Run MyVirtual Machine /Operate +/Open
				
CAD design of the workpiece	Generation of tool path and production strategy	Compilation of tool path into specific G code	Integr. simulation in NX CAM based on org. control behavior



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Product overview

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Shopfloor level digitalization is achieved with digitalization platforms at different levels

Examples:

In Cloud

- Fleet management
- Service management
- Condition monitoring
- ... others

Applications (Mind Apps)

MindSphere



In Line

- Resource management and optimization
- OEE monitoring
- Shop floor programming
- ... others

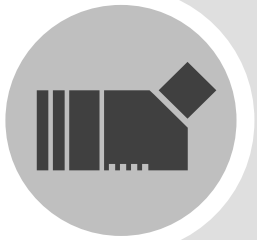
Applications

SINUMERIK Integrate



In Machine

- Process monitoring
- Machining process optimization
- Extended machine functionality
- ... others



Applications (Edge Apps)

SINUMERIK / Edge



Connectivity

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Portfolio Overview
Positioning within Portfolio

840D sl

SINUMERIK ONE

Machine builder

Create MyVNCK
Setup of Run MyVNCK



SINUMERIK virtual commissioning
Virtual Com. with HiL *1)



Create MyVirtual Machine /Operate
Virtual test rack



Create MyVirtual Machine /Open
Open virtual test rack



Create MyVirtual Machine /3D
Virtual machining



Create MyVirtual Machine /SIMIT Connector
Closed loop engineering*2)



Machine user

SinuTrain
NC-programming station



Run MyVNCK
for simulation integration



NX Virtual Machine *3)
CAM integrated virtual machine



Run MyVNCK /Operate
NC-programming station



Run MyVirtual Machine /Open
for simulation integration



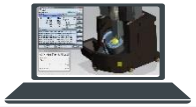
Run MyVirtual Machine /3D
Virtual machine for JobShopper



Run MyVirtual Machine /SIMIT Connector *3) (planned)
PLC behavior simulation



NX Virtual Machine *4) (planned)
CAM integrated virtual machine



*1) Hardware-in-the loop

*2) in Context with SIMIT and NX MCD

*3) Deppendencies to availability of SIMIT Runtime

*4) Product from DI SW

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Portfolio Overview
Positioning within Portfolio

SINUMERIK 840D sl

Machine manufacturer

- Virtual PLC is not available (only as hardware test rack simulation)
- No direct transfer from OEM engineering to enduser job preparation (no compatible project files but real machine archive)
- Many different license models (ALM, Dongle, ISV, customer dedicated license model)
- Complete new software environment installation for each CNC software version (e.g. VNCK 4.5 → VNCK 4.7)

Machine user

- Fast simulation performance of the digital twin (VNCK)
- Comprehensive CAM integration (NX Virtual Machine, CheckItB4, etc.)
- Many different license models (ALM, Dongle, ISV, customer specific license model)
- Complete new software environment installation (e.g. SinuTrain 4.5 → SinuTrain 4.7)

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Portfolio Overview
Positioning within Portfolio

SINUMERIK ONE

Machine manufacturer

- Simulation of Safety Integrated projects (e.g. safe break test)
- Virtual PLC connected to and programmable with TIA Portal
- Digital Twin project file exchange between Create MyVirtual Machine (OEM) and Run MyVirtual Machine (Enduser) (.vcp file)
- Common license mechanism – FlexLM for Create and Run
- Scalable product setup (e.g. start with /Operate and extend with /3D, SIMIT, etc.)
- Continuous and regular updates and upgrades with new features
- One frontend for different CNC software versions
- State of the art openness for 3rd party integration (API .dll)

Machine user

- Comprehensive machine simulation including NC, PLC, HMI
- Virtual “SD card” for user / oem data exchange (part programs, HMI data, 3D machine data, etc.)
- Built-in 3D simulation with collision detection incl. tool, fixture and part visualization (RMVM /3D)
- CAM integration currently in development

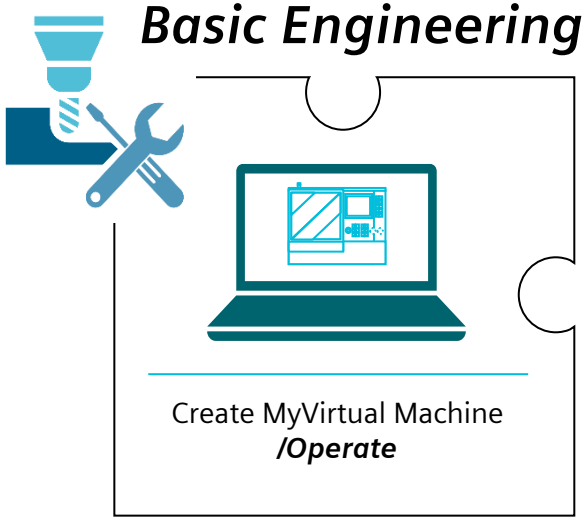
<u>NX Virtual Machine improvements:</u>

- Individual machine control panel as known from the real machine
- Jog Mode in NX Virtual Machine
- PLC control via NX Virtual Machine
- Improved simulation performance
- One common license model (FlexLM)

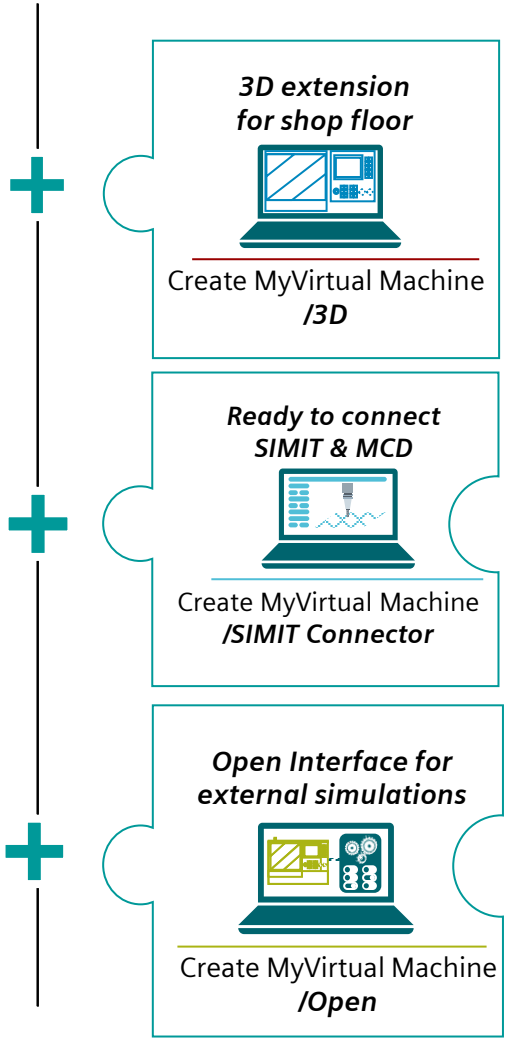
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SINUMERIK ONE engineering with Create MyVirtual Machine Software

Basic Engineering



- ***NC engineering & testing:*** kinematic chain, collision avoidance, NC cycles, tool management
- ***PLC engineering & testing:*** Safety, PLC projects, TIA
- ***HMI engineering & testing:*** HMI-OA, Operate (alarms, control, etc.)
- ***Reuse*** (sell) for end customers as job preparation



Add-On Engineering

- ***NC engineering:*** using a 3D machine model for machine movements and kinematics evaluations
- ***Machine tests:*** Acceptance of test workpieces, test of tool change, etc.
- ***Same 3D model*** for collision avoidance option (outlook)

- ***Closed-Loop workflow:*** From the idea to the final machine
- ***Machine behavior*** (SIMIT required)***:*** Process automated testing
- ***Machine modelling with MCD*** (MCD required)***:*** Physical interaction with the 3D machine model

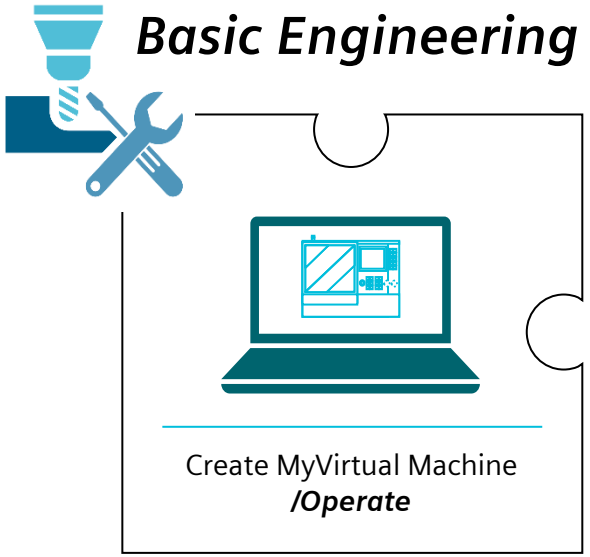
- ***Enable connectivity to external application:*** e.g. 3rd party simulation software
- ***Enable automated software testing w/ Original:*** NCK, PLC, HMI code

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SINUMERIK ONE Closed Loop Engineering with Create MyVirtual Machine Software & SIMIT & MCD

Basic Engineering



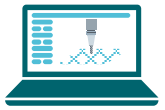
Create MyVirtual Machine
/Operate

Add-On Engineering

3D extension for shop floor

Create MyVirtual Machine /3D

Ready to connect SIMIT & MCD



Create MyVirtual Machine
/SIMIT Connector

Open Interface for external simulations

Create MyVirtual Machine /Open

Coupled Machine Simulation

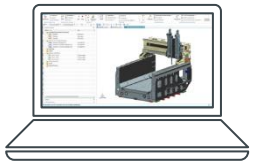
- ***Closed-Loop workflow:*** From the idea to the final machine
- ***Machine behavior*** (SIMIT required)***:*** Process automated testing
- ***Machine modelling with MCD*** (MCD required)***:*** Physical interaction with the 3D machine model



SIMIT Engineering S (mostly sufficient)

SIMIT Engineering M

SIMIT Engineering L



Mechatronics Concept Designer for NX

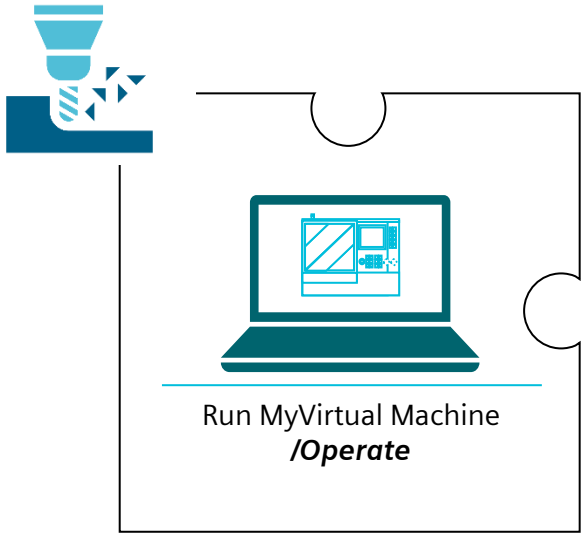
Mechatronics Concept Designer (standalone)

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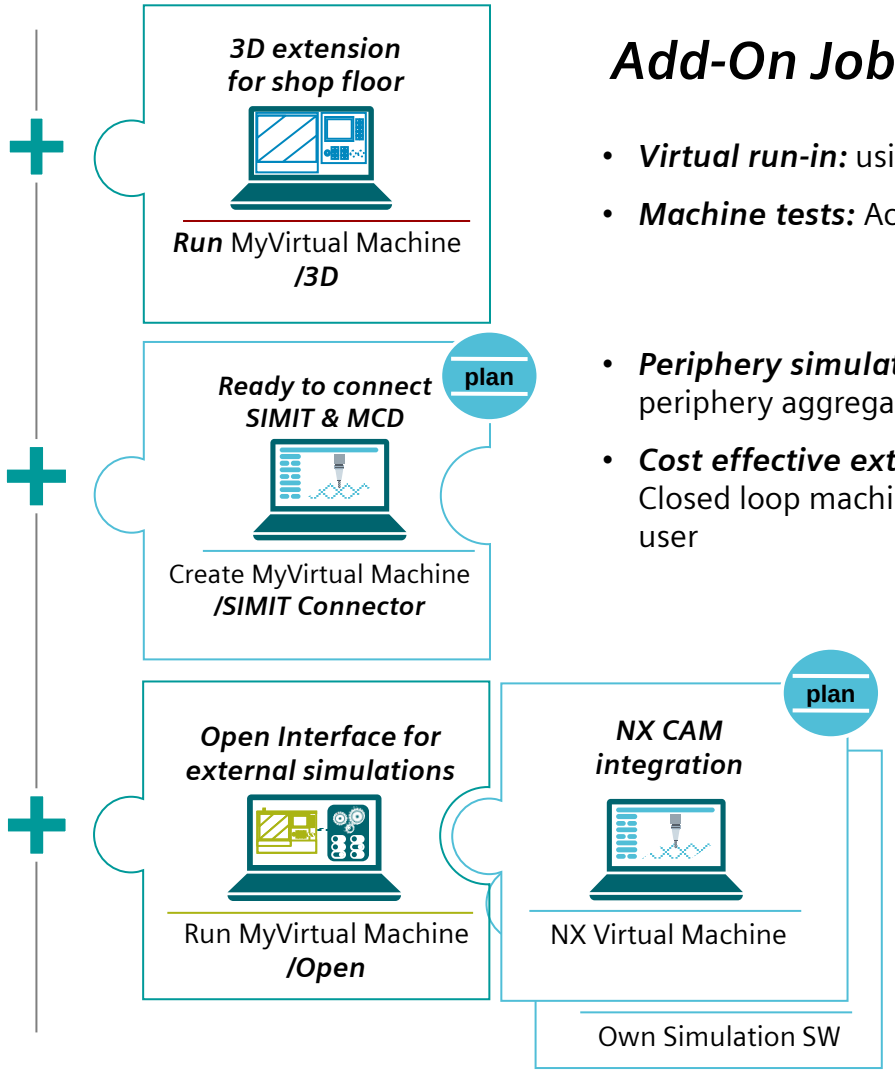
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SINUMERIK ONE job preparation with Run MyVirtual Machine Software

Basic Job Preparation



- ***NC programming & testing:*** MPFs/SPFs, NC cycles, tool mgmt.
- ***CNC training:*** 1:1 operation
- ***SINUMERIK presentation:*** new functionalities, features, etc.



Add-On Job Preparation

- ***Virtual run-in:*** using a 3D machine model with collision detection
- ***Machine tests:*** Acceptance of test workpieces, test of tool change, etc.

- ***Periphery simulation in job preparation:*** behavior simulation of periphery aggregates
- ***Cost effective extension with MCD Player and SIMIT Runtime:*** Closed loop machine simulation incl. physical machine model for end user

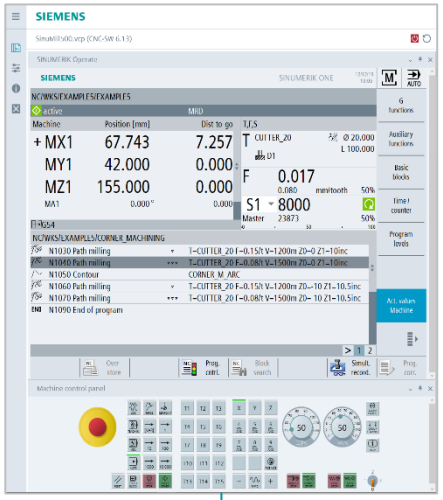
- ***Closed-Loop CAD/CAM-CNC chain:*** From the design part to the final NC program
- ***Machine simulation:*** Data preparation and import of CAD Data – STL, Solid Edge, Solid Works, JT, Parasolid, STEP, IGES, DXF

- ***Enriches 3rd party simulation with original SINUMERIK:*** NCK, PLC, HMI code

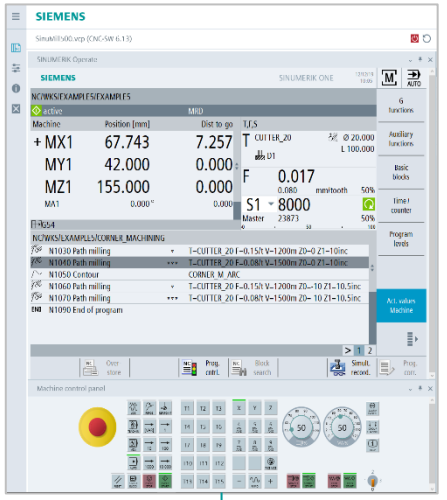
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From Create MyVirtual Machine to Run MyVirtual Machine w/ SIMIT Connector

Create MyVirtual Machine /Operate



Run MyVirtual Machine /Operate



Basic Machine Engineering
(NC, PLC, HMI)

Basic job preparation
(NC, HMI)

VCP project w/ PLC
project modification

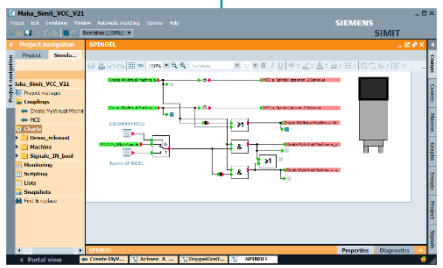
+ bahvavior simulation
(periphery)

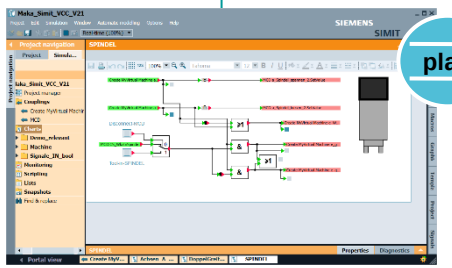
Create MyVirtual Machine
/SIMIT Connector

Run MyVirtual Machine
/SIMIT Connector

plan

+ bahvavior simulation
(periphery)





plan

VCP project w/o PLC
modification (existing
feedback of the periphery
to the PLC project)

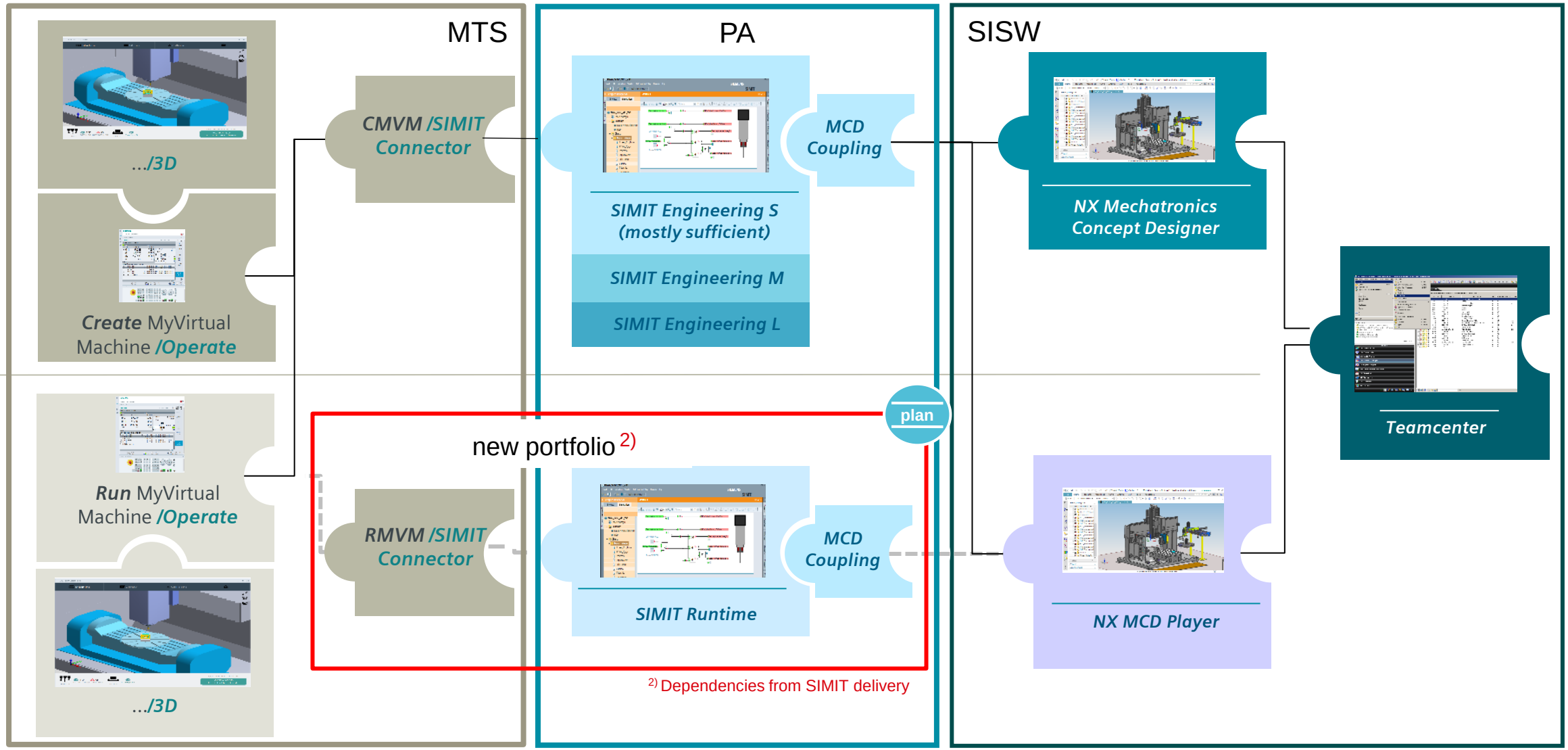
SIMIT

SIMIT Runtime

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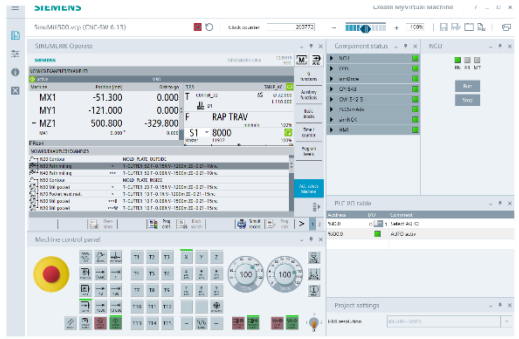
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Flexible Engineering Tool Chain



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Run & Create MyVirtual Machine /Operate
Functions and exclusions





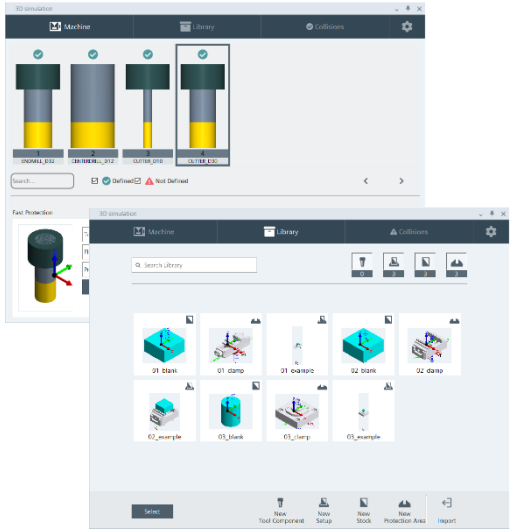
Supported functions

- Frontend framework
  - Manage different machine configurations
  - Manage different SINUMERIK CNC-SW versions
  - Exchange machine projects (.vcp)
  - Display of the component status and trace capability
  - Adaptation of the simulation speed and pause mode
  - Virtual machine control panel
  - Operational Emergency Stop on MCP
- PLC simulation based on S7 PLCSIM Advanced (SIMATIC S7-1500F) including
  - Engineering in the TIA Portal
  - F-capability and communication mechanisms
- NCK simulation simNCK
  - NCK access to PLC I/O
- HMI user interface SINUMERIK Operate with machine control panel simDRIVE substitute drive component to simulate various safety functions
  - Simultaneous recording in automatic mode
  - Safety diagnostic functions
  - Safe Break Test
  - HMI PRO support
  - Display of PLC alarms
- Peripheral simulation
  - read and write peripheral inputs/outputs

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Run & Create MyVirtual Machine /3D
Functions and exclusions





Supported functions

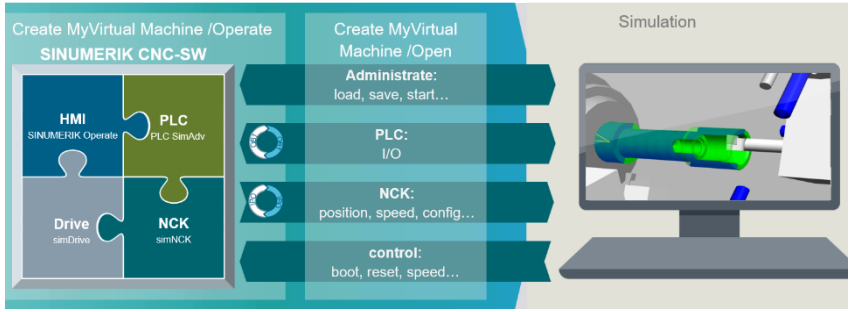
- 3D simulation of machine movements based of kinematic machine model (.stl) and NC axis movements
  - Material removal for first-channel machining
  - Simulation of drilling and milling operations
  - One tool in operation
  - Reset the workpiece to the original blank geometry
- Monitoring for collision detection
  - Display a log of detected collisions
- Display of tools from SINUMERIK tool management based on their geometry values
- Support of milling and drilling tool types (110, 120, 121, 200, 220, 230 other types are displayed as 120)
- Matching tool holders (.stl or primitive model) with tools from SINUMERIK tool management
- Components library for blanks and fixtures
  - Creating, deleting and editing (.stl)
  - Parametric change of position and orientation
  - Manage and edit setup (one fixture ←→ one blank)
  - Arrangement of library components Clamping means and blank on SINUMERIK zero offsets within one clamping
  - Activation of a selected clamping regarding 3D simulation
- Data import/ export in zip archive (library, tool data, machine model, configurations)

Compare with “Create MyVirtual Machine System Manual”

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Run & Create MyVirtual Machine /Open
Functions and exclusions

Functional description



The open interface allows one external application to control the Create MyVirtual machine system and to communicate with Create MyVirtual Machine during runtime. The task scope of the open interface addresses various use cases (selection):

- Remote control of the Create MyVirtual Machine application for example, in automatic inspection and test units
- Cyclic exchange of runtime information for example, to connect external simulation systems (I/Os, virtual machine applications etc.)

Supported functions

- Start/exit Create MyVirtual Machine
- Upload / download part programs / workpieces
- Selection of a part program / workpiece
- Implementation of probe simulation and travel to fixed stop
- Create/open/save/close a machine project
- Start/stop control simulation
- Register for cyclical events of the virtual SINUMERIK ONE (OB1 clock cycle of the PLC and/or IPO clock cycle of the NC)
- Read NC data in the IPO clock cycle
- Read / write PLC outputs / inputs in the OB1 clock cycle

- Read /write PLC outputs / inputs via symbols
- Start /stop external peripheral simulation synchronously with the Create MyVirtual Machine simulation
- Read config out of .vcp file
- Slice modes (STATECHANGED , ANGLESLICEPOSITIONING, ANGLESLICEORIENTATION, LENGTHSLICEPATH, LENGTHSLICEPOSITIONING

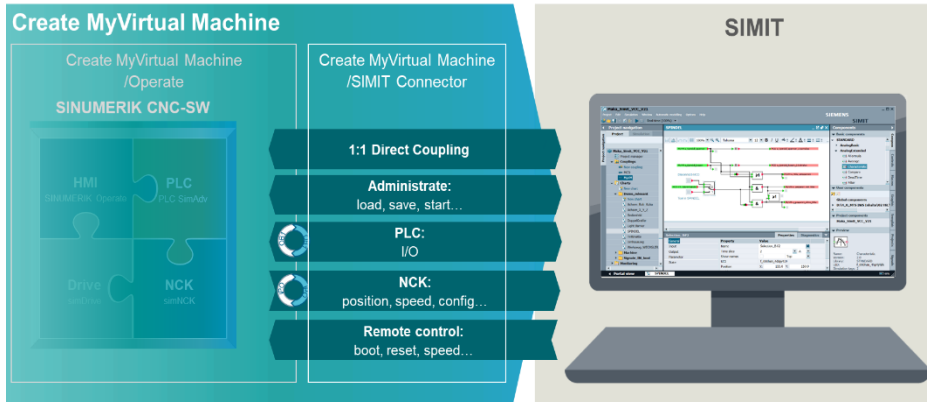
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Compare with “Create MyVirtual Machine System Manual”

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Create MyVirtual Machine /SIMIT Connector
Functions and exclusions

Functional description



Create MyVirtual Machine /SIMIT Connector is a Add-on Software, that allows the direct coupling between a Create MyVirtual Machine /Operate (virtual controller) and SIMIT (Machine behavior Simulation Platform).

SIMIT Connector support an easy project coupling and synchronized signal exchange.

The ongoing compatibility support of the toolchain with added content (First step guide + Library components) realized a closed loop test environment during machine engineering.

Supported functions

- Direct coupling between Create MyVirtual Machine and SIMIT
- Support of Run MyVirtual Machine (RMVM)
- Import of PLC IO symbol table from TIA
- Subscription of PLC IO symbols direct from CMVM
- Automatic subscription NC axis (position and speed signals)
- Synchronized signal exchange
- Optional management of CMVM project in one SIMIT project container
- Incl. First Step Application example (incl tutorial CMVM, SIMIT and MCD project)
- Including MCP 483 and MPP 1500 and MPP 483 SIMIT components
- SIMIT Connectivity enable Closed Loop Engineering between CMVM – SIMIT – NX MCD
- Configurable synchronized start/stop of Toolchain (CMVM, SIMIT, MCD)

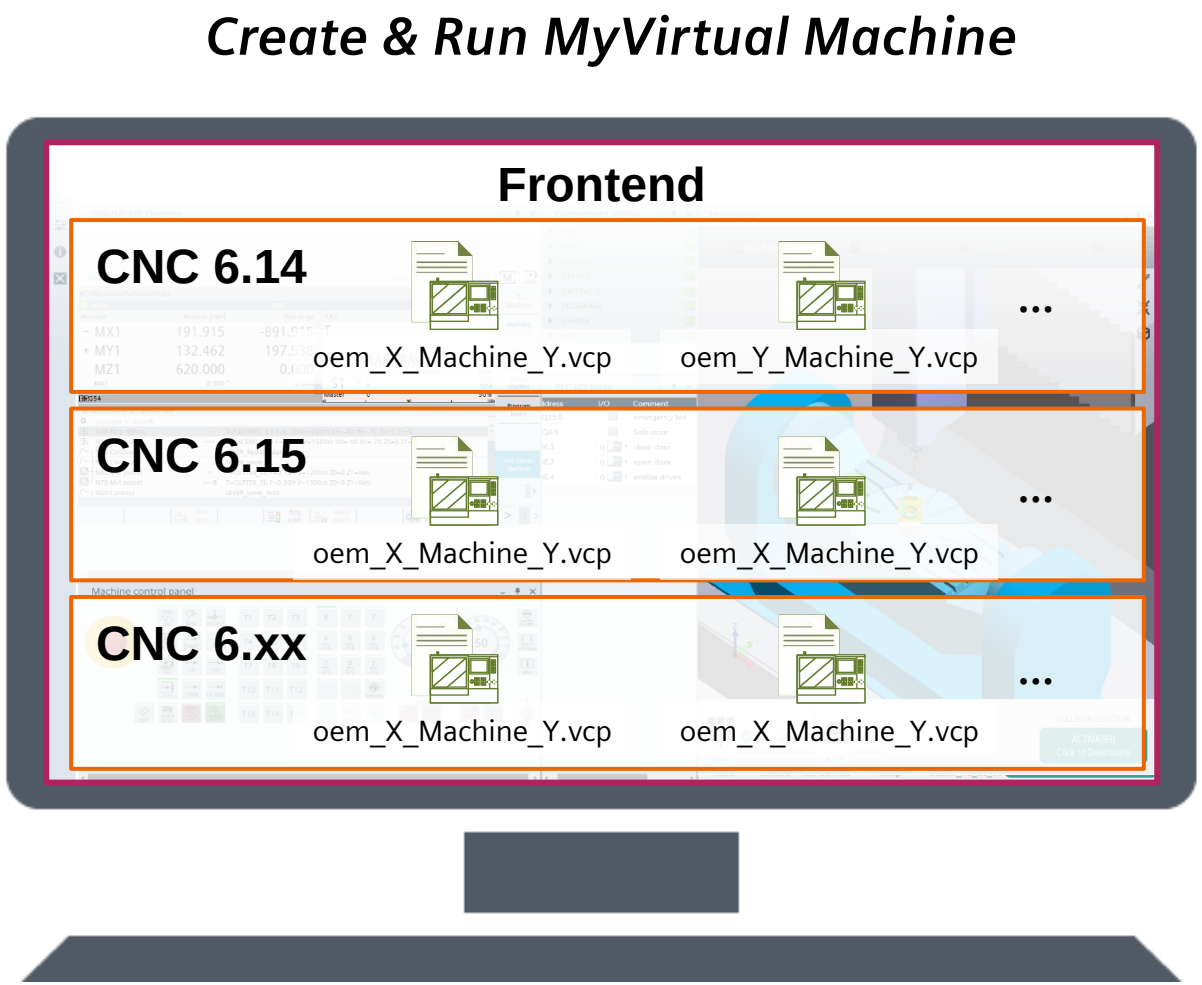
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Create MyVirtual Machine vs. Run MyVirtual Machine
Functional difference - Summary

Function	Create My…	Run My…
Project management		
• Create new project	✓	
• Open project	✓	✓
• Create Project from template	✓	✓
• Save / save as	✓	✓
Access level		
• 0 - 3	✓	✓
• 4 - 7	✓	
Frame application		
• Control elements of simulation	✓	✓
• Manual periphery simulation (PLC I/O table)	✓	✓
• Component status	✓	✓
• NCU control board	✓	
• Project settings	✓	✓
• MCP	✓	✓
Commissioning / Diagnosis		
• TIA Portal online	✓	✓
• PLC Project upload	✓	
• PLC Project download	✓	
• Generate archive (.dsf)	✓	
• Read in archive (.dsf)	✓	

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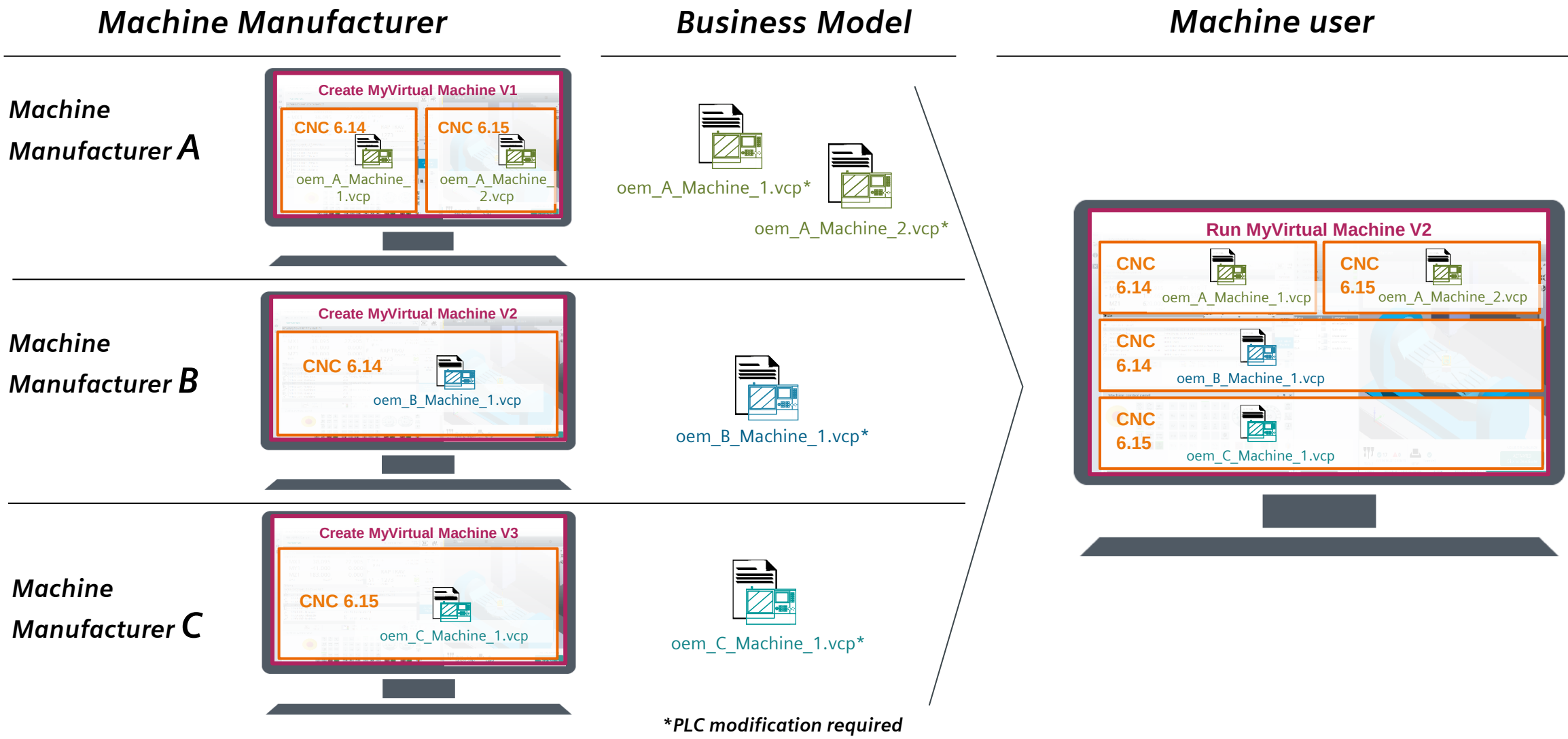
Execute digital twins Independent from CNC software version and machine manufacturer



- The frontend Run MyVirtual Machine or Create MyVirtual Machine are separated from CNC software version
- Machines with different CNC software versions can be executed in the same frontend (just install the required CNC software version)
- Different machine projects (.vcp) can be executed in one frontend independent from machine tool manufacturer

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Engineer machines and sell digital twins - independent from CNC software version and machine manufacturer (Example)

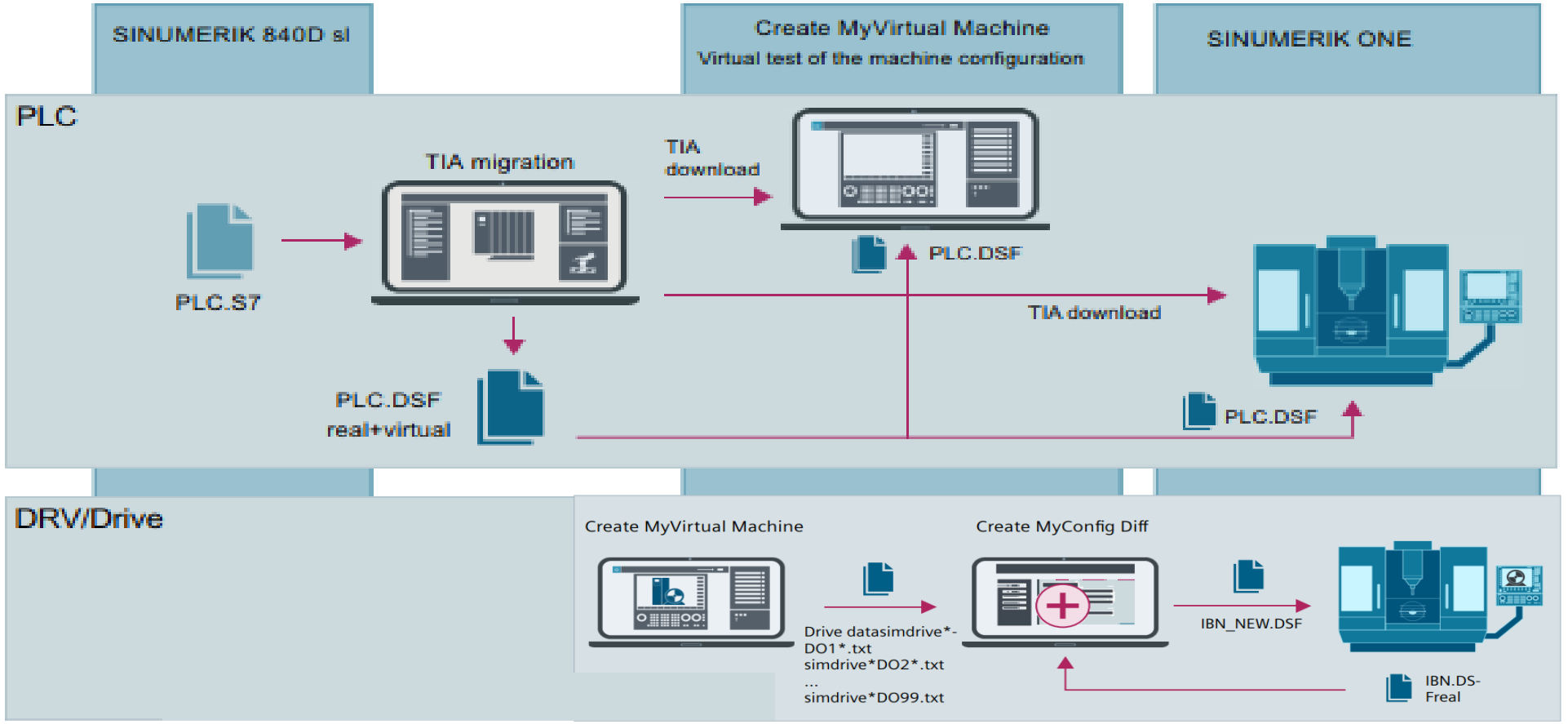


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Migration and compatibility

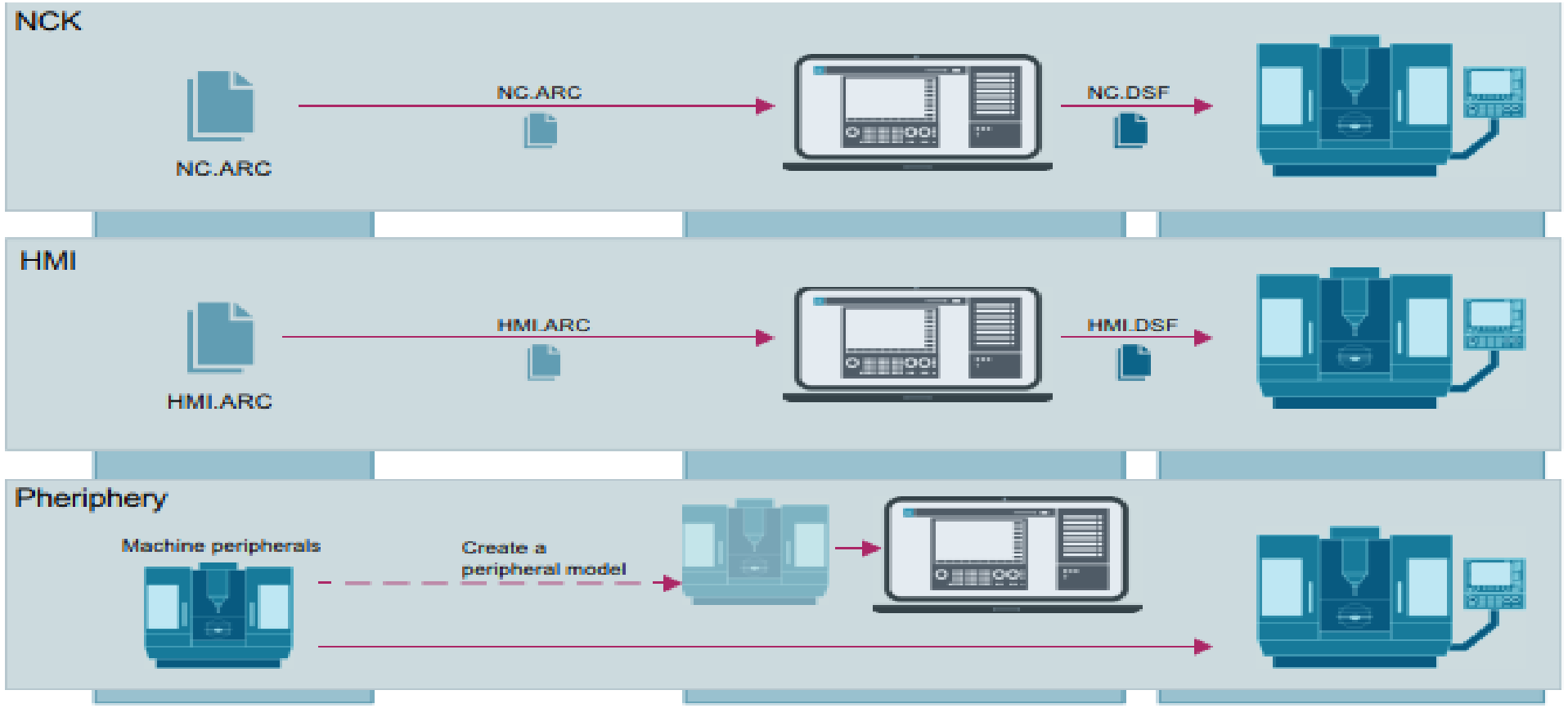
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Migration from existing 840Dsl project into SINUMERIK ONE with Create MyVirtual Machine /Operate (1/2)



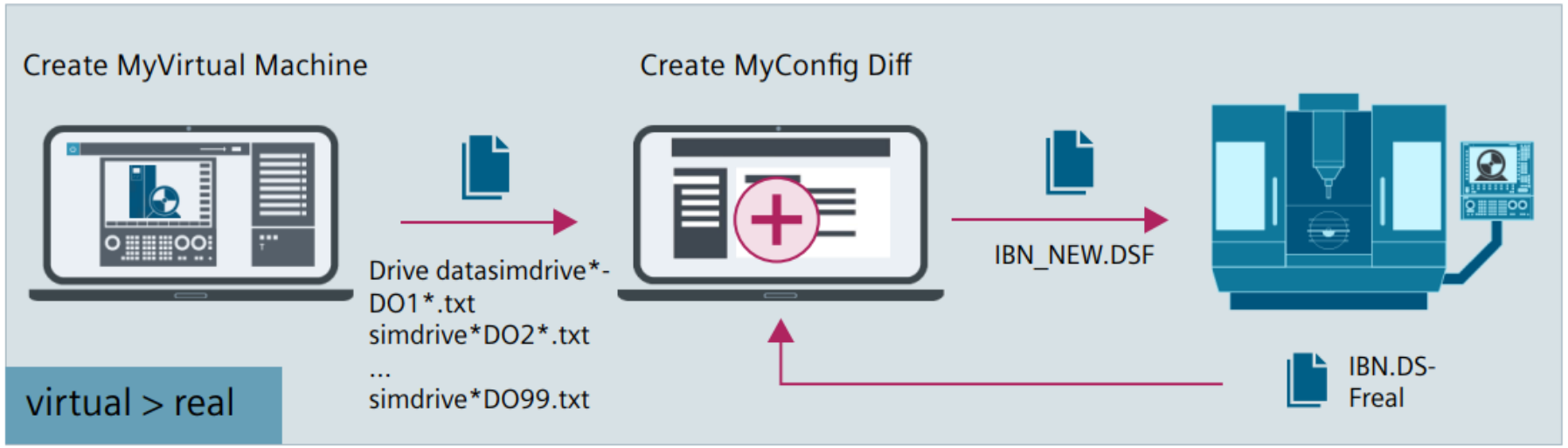
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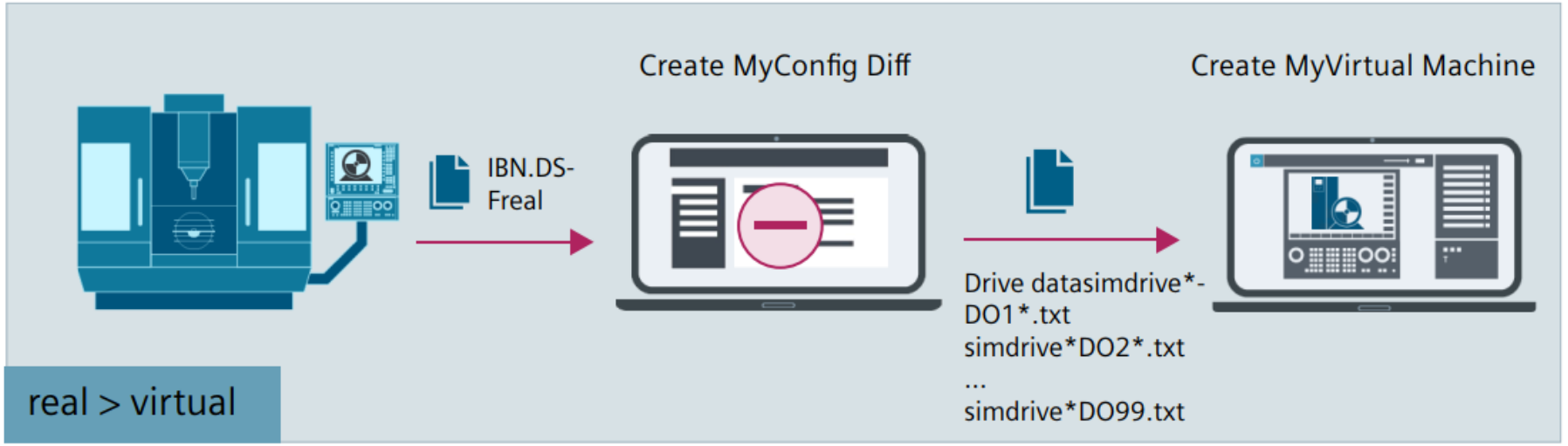
Migration from existing 840Dsl project into SINUMERIK ONE with Create MyVirtual Machine /Operate(2/2)



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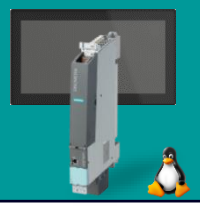
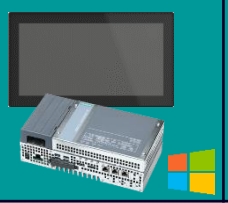
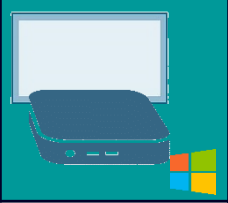
Exchange drive parameter





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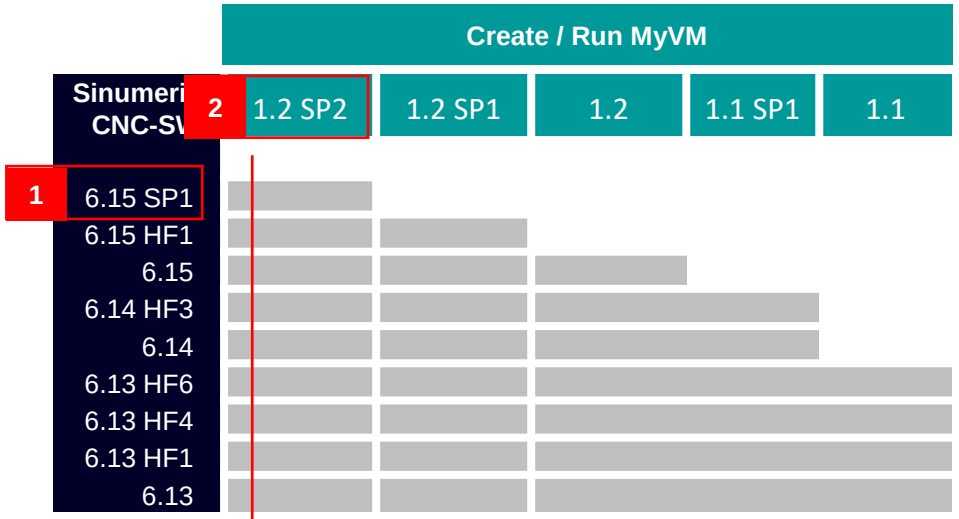
HMI Compatibility

				SINUMERIK 828D	SINUMERIK 840D sl		SINUMERIK ONE				SINUMERIK MC
		HMI Visualisierung läuft auf →		PPU	NCU	IPC 427E IPC 477E	3rd Party PC*	PPU	NCU	RMVM / CMVM	MCU
											
Engineering	TIA projektieren	Create MyHMI /WinCC				Run MyHMI /WinCC				work around	Run MyHMI /WinCC
	Offen – programmieren	Create MyHMI /3GL	C++			Run MyHMI /3GL				work around	Run MyHMI /3GL
			.NET							work around	
			Qt**								
	Powertrain	Create MyHMI /PRO			Run MyHMI /Pro				Run MyHMI /Pro		
	Einfach – Interpreter *(ASCII-Editor)*	MyScreens**/ ***			Run MyScreens***						
		EasyXML** / ****			*ohne Runtime-Lizenz*						
	Einfach – Interpreter *(ASCII-Editor)*	Side Screen			*ohne Runtime-Lizenz*						
		Display Manager			**Display Manager** (Empfehlung 22“ & FullHD)						
				SINUMERIK Operate							
				Runtime							

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Compatibility list Create & Run MyVirtual Machine



NX MCD (according to SIOS Compatibility Tool)

Create MyVM /SIMIT C.						NX Family						
SIMIT						NX12 Family	NX1847 Family	NX1872 Family	NX1899 Family	NX1926 Family	NX1953 Family	NX1980 Family
10.3 Upd. 1	3 1.2 SP2									4	1953	
10.3	1.2 SP1	1.2 SP1										
10.3	1.2	1.2	1.2	1.1 SP1	1.1 Upd.1	-	-	-	-	-	1953	-
10.2 Upd. 2	1.1 SP1	1.1 SP1	1.1 SP1	1.1 SP1	1.1 Upd.1	-	1847	-	1907, 1911, 1915	all versions	1953	-
10.2 Upd. 1	1.1 SP1	1.1 SP1	1.1 SP1	1.1 SP1	1.1 Upd.1	-	1847	-	1907, 1911, 1915	all versions	1953	-
10.2	1.1 SP1	1.1 SP1	1.1 SP1	1.1 SP1	1.1 Upd.1	-	1847	-	1907, 1911, 1915	all versions	-	-
10.1	1.1 SP1	1.1 SP1	1.1 SP1	1.1 SP1	1.1 Upd.1	12.0.2	1847	-	1907, 1911, 1915	-	-	-
10.0	1.1 SP1	1.1 SP1	1.1 SP1	1.1 SP1	1.1 Upd.1	12.0.2	-	-	-	-	-	-

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Service and ordering data

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Create MyVirtual Machine
Services and trainings

Product	Content	Service type	Contact
Create MyVirtual Machine /Operate	Same look&feel as SINUMERIK Rack but in a virtual environment	No dedicated training necessary	Stefan Windhausen
Create MyVirtual Machine /Open	Training (Intern/Extern)	customized	Stefan Windhausen
Create MyVirtual Machine /3D	Webbased Training (Intern/Extern)	customized	Stefan Windhausen
Run MyVirtual Machine /Operate	Same look&feel as SinuTrain	No dedicated training necessary	Stefan Windhausen
Run MyVirtual Machine /Open	Training (Intern/Extern)	customized	Stefan Windhausen
Run MyVirtual Machine /3D	Webbased Training (Intern/Extern)	customized	Stefan Windhausen

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Create MyVirtual Machine /SIMIT Connector + SIMIT + MCD
Services and trainings

Product	Service	Service type	Contact
Create MyVirtual Machine /SIMIT Connector + SIMIT + MCD	SINUMERIK ONE Virtual Commissioning Consulting	Standard service	Stefan Windhausen
	SINUMERIK ONE Virtual Commissioning Implementation	Standard service	Stefan Windhausen
	SINUMERIK ONE Virtual Commissioning Training (Intern/Extern)	Standard service (training)	Stefan Windhausen
SIMIT	Training (Intern/Extern)		SITRAIN
NX MCD	Training (Intern/Extern)		Nexeo (external)

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Create MyVirtual Machine
Ordering data

Product	License-type	Product-ID
Create MyVirtual Machine /Operate	Floating Node-locked[1)] Academics[2)]	MCS4250f MCS4250n MCS4250a
Create MyVirtual Machine /Open	Floating Node-locked[1)] Academics[2)]	MCS4255f MCS4255n MCS4255a
Create MyVirtual Machine /3D	Floating Node-locked[1)] Academics[2)]	MCS4210 MCS4210n MCS4210a
Run MyVirtual Machine /Operate	Floating Node-locked[1)] Academics[2)]	MCS4220 MCS4220n MCS4220a
Run MyVirtual Machine /Open	Floating Node-locked[1)] Academics[2)]	MCS4230 MCS4230n MCS4230a
Run MyVirtual Machine /3D	Floating Node-locked[1)] Academics[2)]	MCS4240 MCS4240n MCS4230a

Floating: server based licenses, can be used with several working stations (not simultaneously). Recommend to order

[1)]**Node-locked Server:** Server license, that is locked to specific Clients (work stations / PC)

[1)]**Node-locked Standalone:** Local license file, that is locked to a specific Client (work stations / PC)

[2)] **Academics:** for non commercial use. Available as floating only

- Fore more information request detailed license description

We recommend to use floating licenses

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Create MyVirtual Machine /SIMIT Connector + SIMIT + MCD
Ordering data

Product	License-type	Product-ID/MLFB	Offer from
Create MyVirtual Machine /SIMIT Connector	Floating Node-locked* Academics	MCS4212 MCS4212n MCS4212a	SISW MC
SIMIT Simulation Platform (S V10.3)	Single-user license	6DL8913-0AK30-0AB5	RC
SIMIT Simulation Platform SUS (S)	Software Update Service	6DL8913-0AX00-0AL8	RC
Mechatronics Concept Designer (standalone)	Floating	NX91113	SISW
Mechatronics Concept Designer on NX	Floating	NX30535	SISW
SINUMERIK ONE Virtual Commissioning Consulting		MC4R27VC33	SISW MC
SINUMERIK ONE Virtual Commissioning Implementation		MC4R27VC11	SISW MC
SINUMERIK ONE Virtual Commissioning Training		MC4R27VC22	SISW MC

Floating: server based licenses, can be used with several working stations (not simultaneously). Recommend to order
***Node-locked Server:** Server license, that is locked to specific Clients (work stations / PC)
***Node-locked Standalone:** Local license file, that is locked to a specific Client (work stations / PC)
- Fore more information request detailed license description

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