

# Realizing a virtual commissioning project in practice

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### **Presenters**

# HACKER<sup>™</sup> Creates business value.



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### Agenda

- Modeling the device level by using the simulation model generator
- Extending the mechanical model to simulation use
- Testing with simulation models
- Connecting simulation models to each other
- Utilization and opportunities of the virtual commissioning environment



### Simulation use cases Overall



Simulation is more than just virtual commissioning!

### Virtual Commissioning project Warehouse

**Reasons to start?** 

# 

Automation engineer Develop automation program in a virtual environment

> Mechanical engineer Collision analysis Virtual prototype testing

Trainings Less debugs to fix during warranty period = more competitive prices

Aftersales

Safety engineer

Test in advance Customer trainings

Tools for implementation?



**Product manager** 

Sales and marketing

Product development

**Project manager** 

Enhance communication with customer

### How to build virtual commissioning environment?



### How to build virtual commissioning environment?



### **1. IO import and testing** TIA Portal + PLCSIM Advanced + SIMIT



### **2. SMG and testing** TIA Portal + PLCSIM Advanced + SIMIT





### **3. Extend the mechanical model for simulation use - Modeling** NX MCD





### **4. Extend the mechanical model for simulation use - Testing** NX MCD



Select objects and use MB3, or double-click an object



### 5. Combine the simulation models NX MCD + SIMIT



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### 6. Test everything together - Virtual commissioning TIA Portal + PLCSIM Advanced + SIMIT + NX MCD



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### **Tips & tricks**



### **SINAMICS DriveSim Basic**

- Open, validated, free
- Model for PROFIdrive-enabled SINAMICS drives



#### Open interfaces:

- SiL / HiL
- PLCSIM / PLCSIM Advanced
- DB access
- NX MCD, Plant Simulation, ...
- Virtual Robot Controls (VRC)
- OPC, Shared Memory, TCP, UDP, ...



https://support.industry.siemens.com/cs/document/109795246

### LiveTwin Edge App



- Over 100 engineering tools compatible with FMI/FMU are supported
- Virtual sensors, model predictive controllers, state observers and more



https://support.industry.siemens.com/cs/document/109797820

SIMIT/MCD/AMESIM - Virtual commissioning in machine building: https://support.industry.siemens.com/cs/document/109777165

Functional Mock-up

Interface

### **Contact details**

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