



**Konnektivität und Durchgängigkeit
in der digitalen Fertigung**

Prof. Dr. Michael Heiss, Siemens, Digital Enterprise

What is Digitalization / Digital Enterprise?

Optimization of all business relevant processes and tasks

(enabled by digital technologies)
with the potential to disrupt the business model



Automation ≠ Digitalization



Seamless digitalization
enables holistic optimization



Connectivity \neq Seamlessness

RJ45, Ethernet, OPC UA

Data Model

Customer Requirements



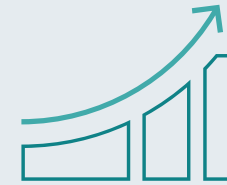
Speed



Flexibility



Quality



Efficiency



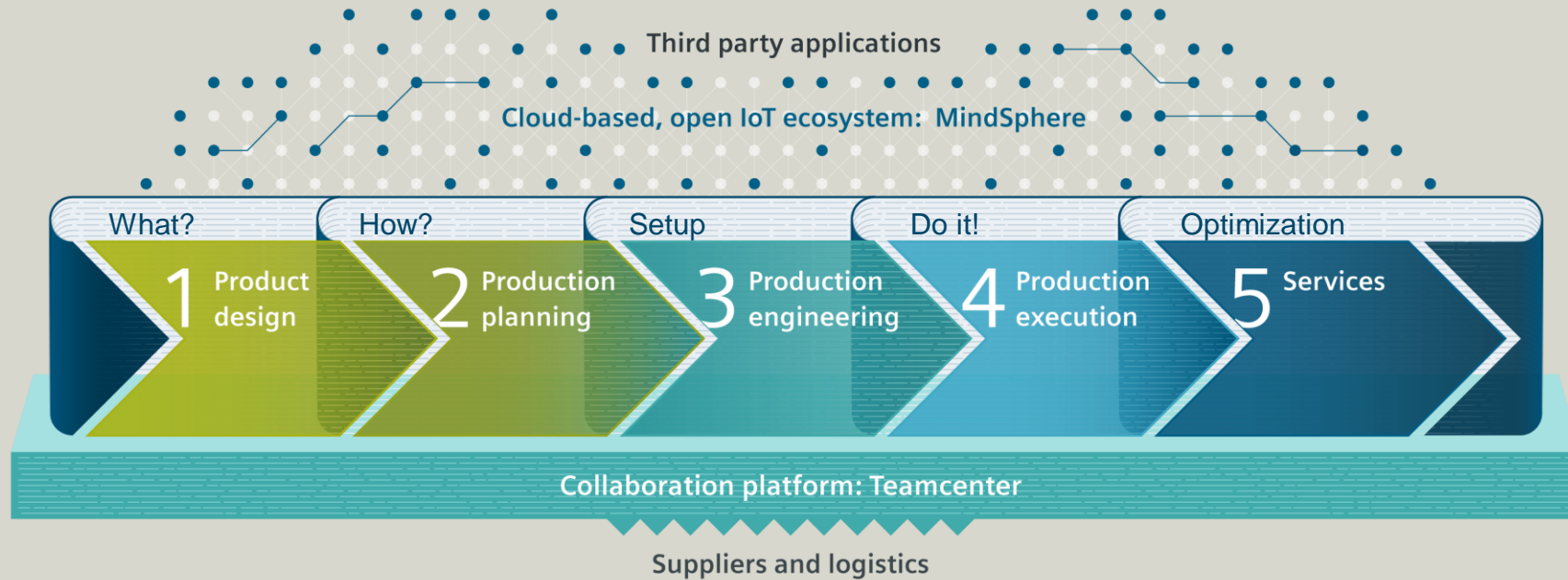
New business models



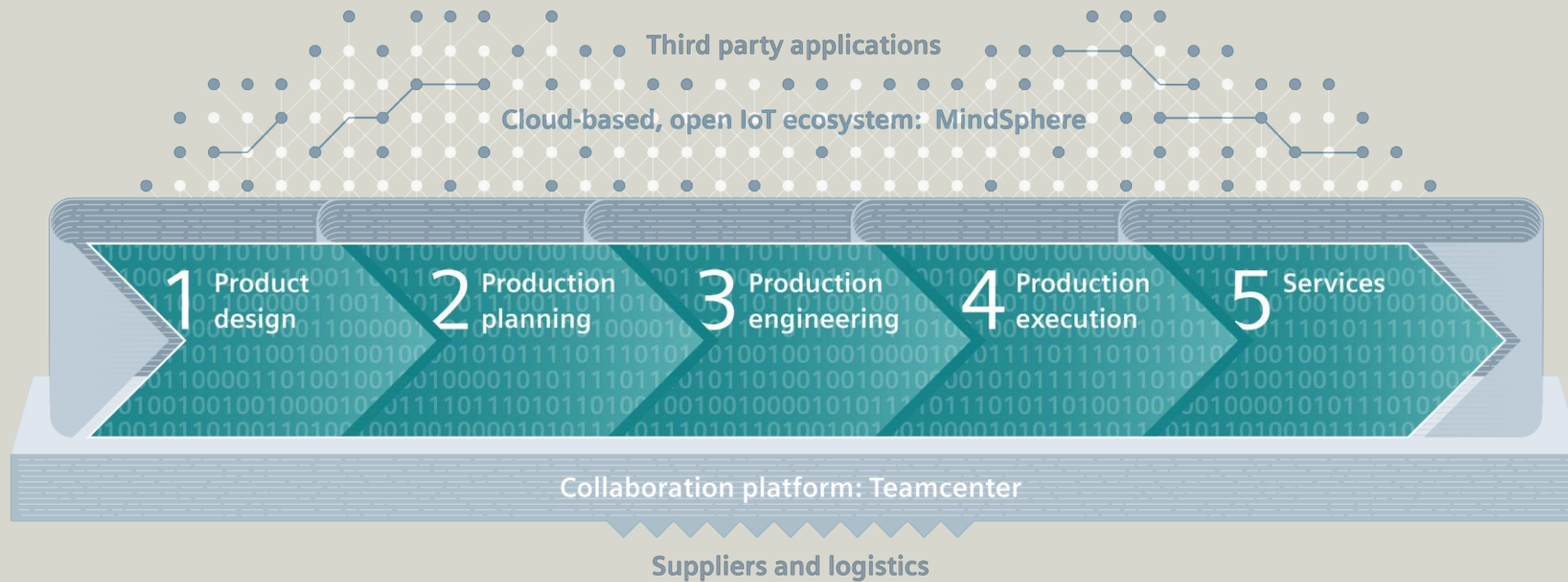
Security

Integrating and digitalizing the entire value chain is key to staying competitive in the future

SIEMENS



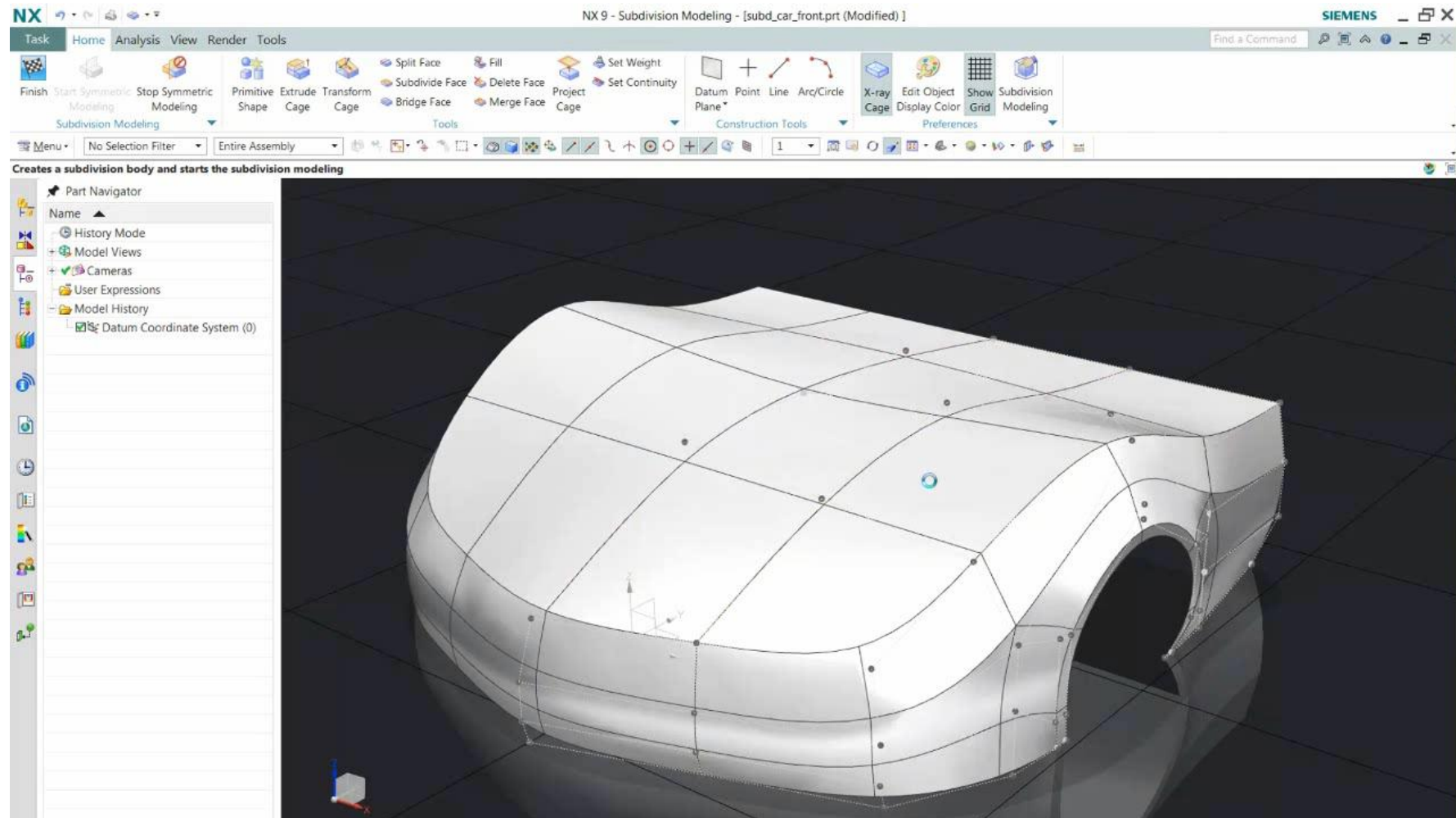
Creating a Digital Twin of the entire value chain



Product design

Design the product

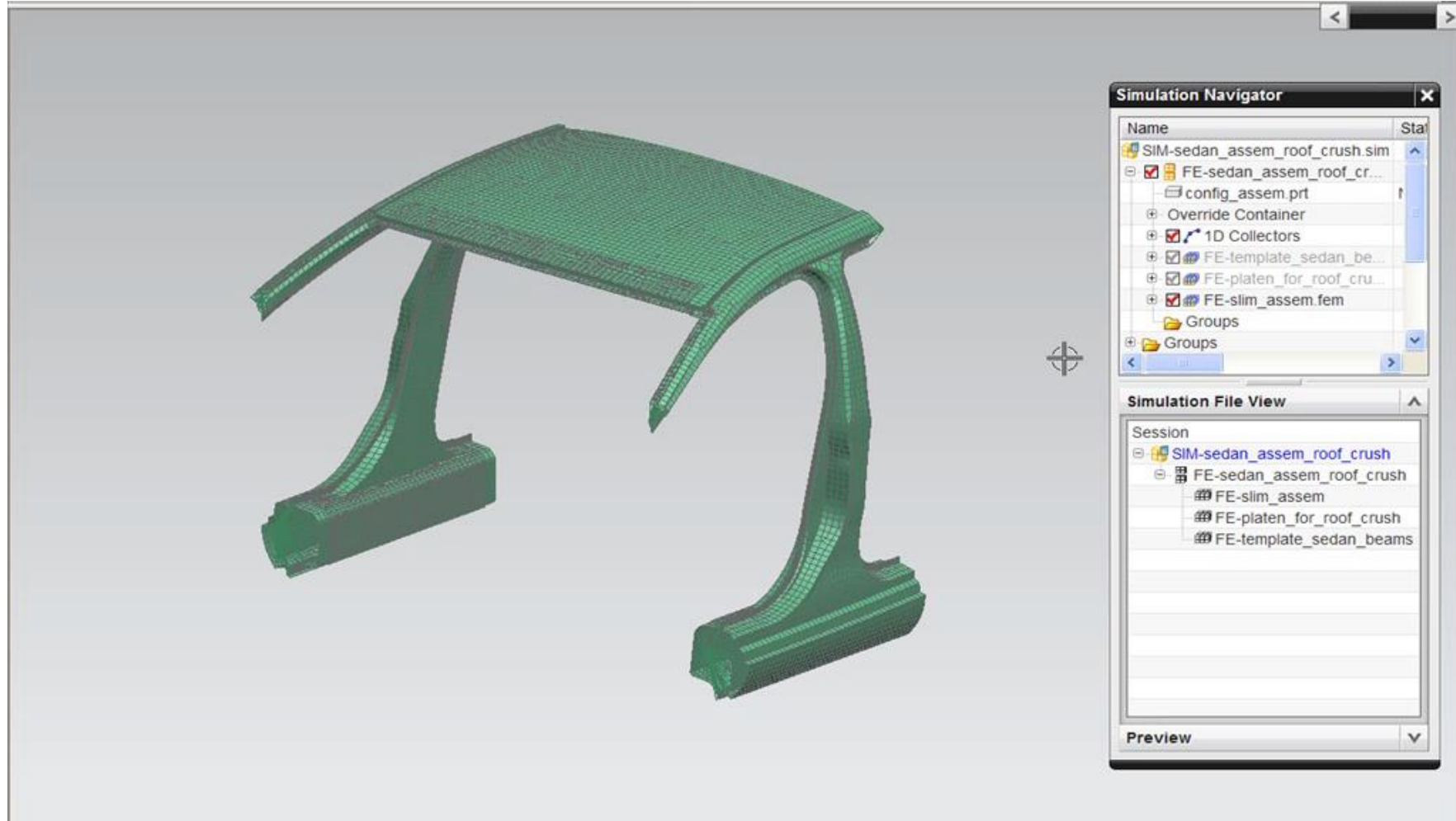
NX CAD



Product design

Simulate
the physical
behavior

Simcenter

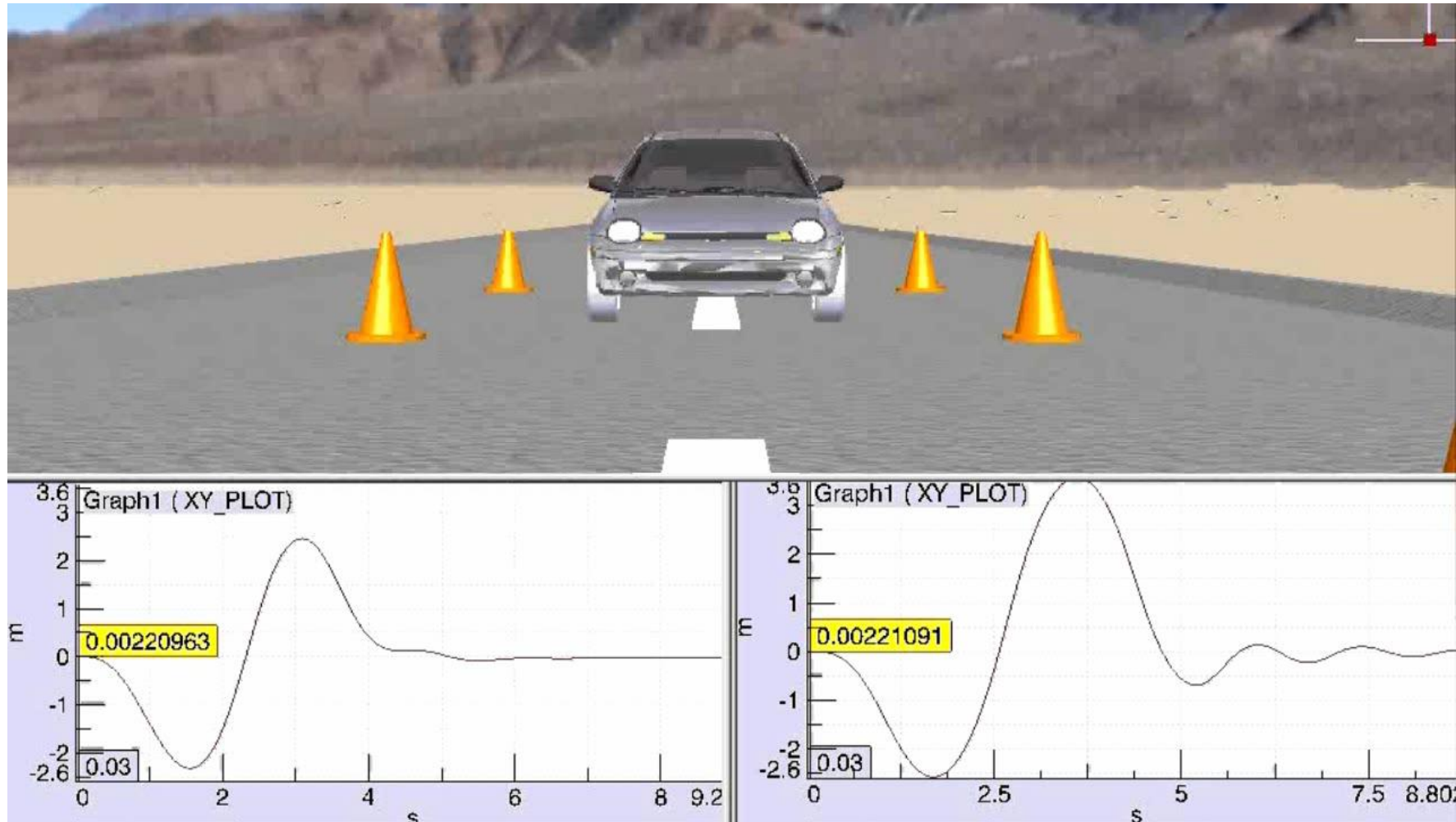


Product design

Simulate the product

Simcenter

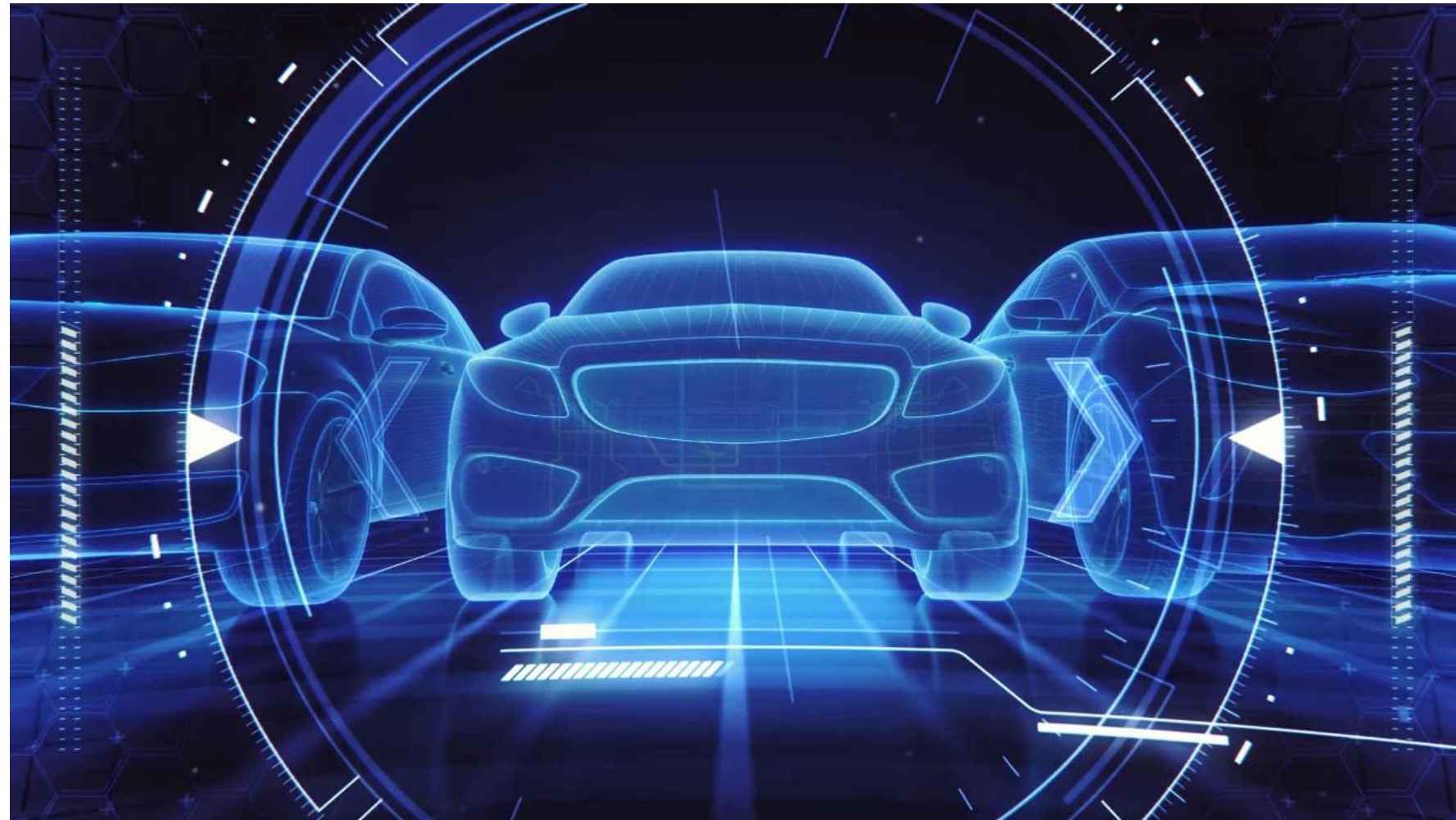
- 1
- 2
- 3
- 4
- 5



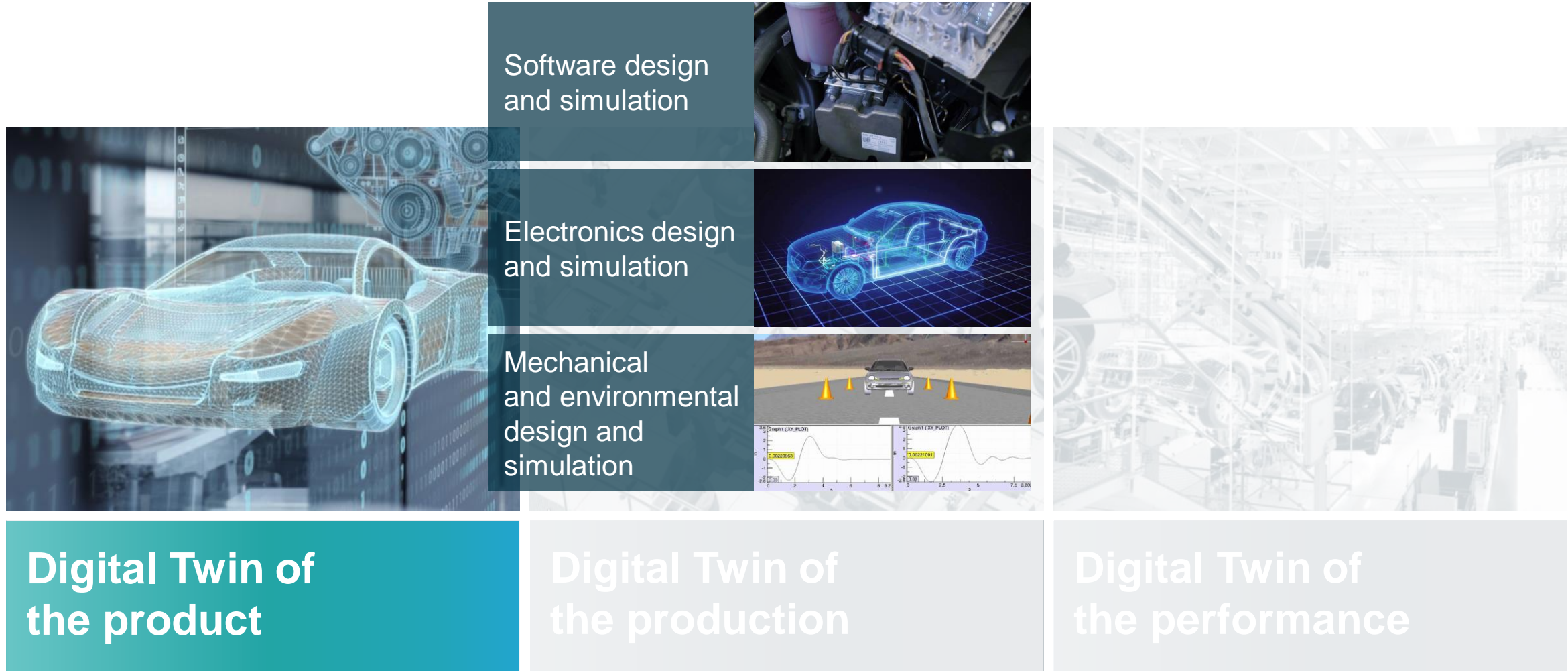
Product design

Design and
simulate
electronic
systems

Mentor Graphics



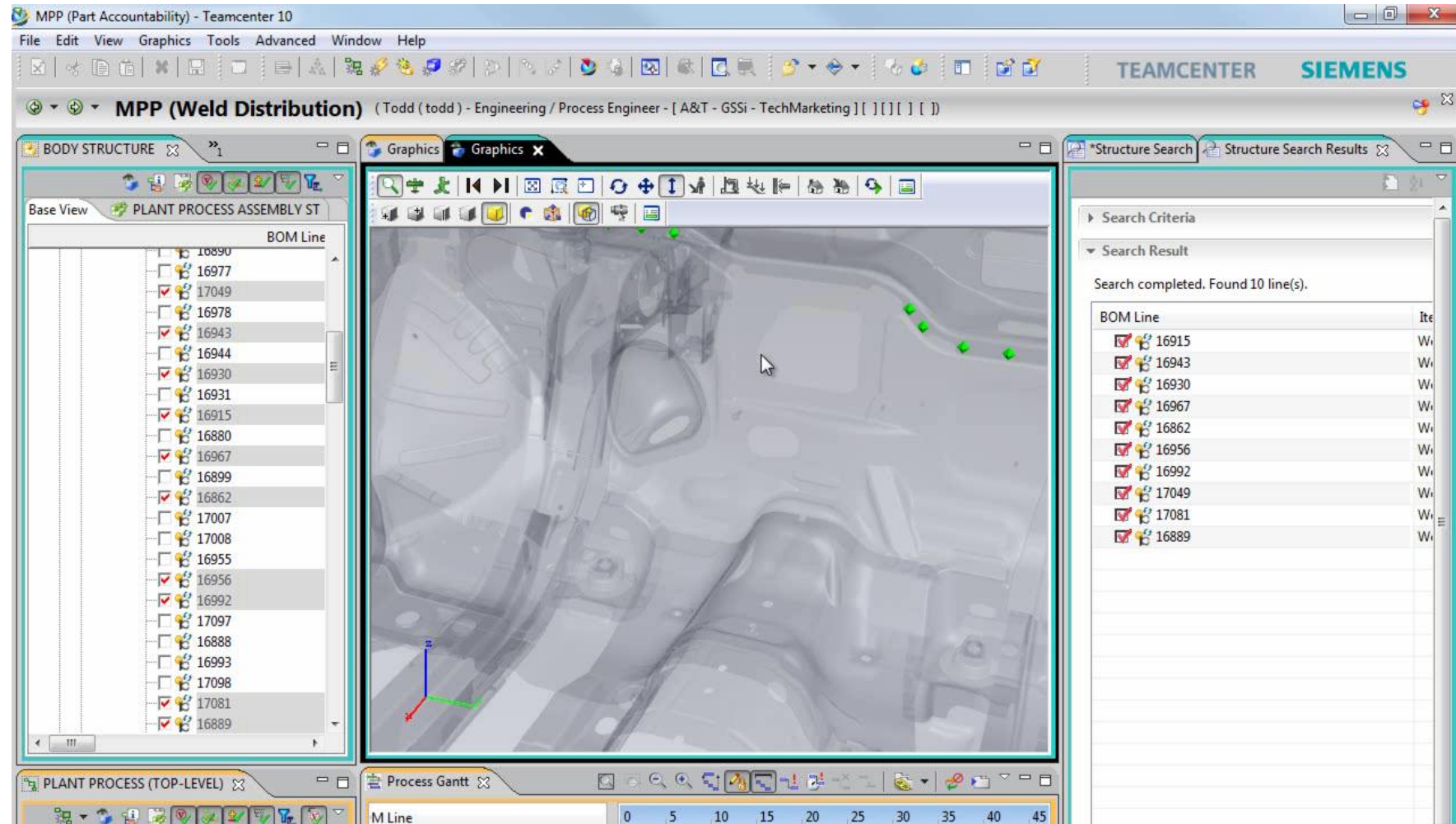
Digital Twin



Production planning

Plan your
production
process

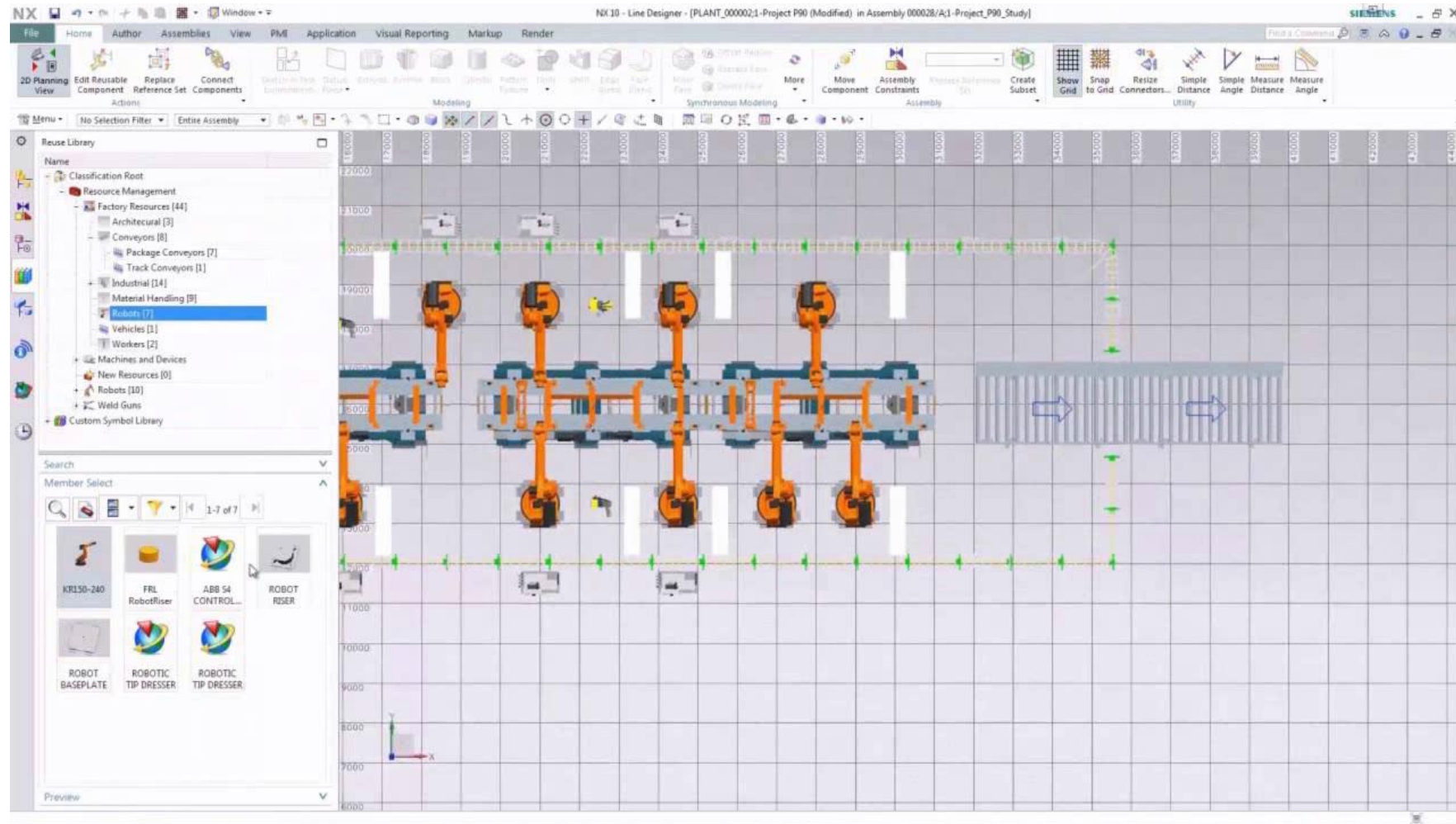
Teamcenter
Manufacturing



Production planning

Create the layout and select the equipment

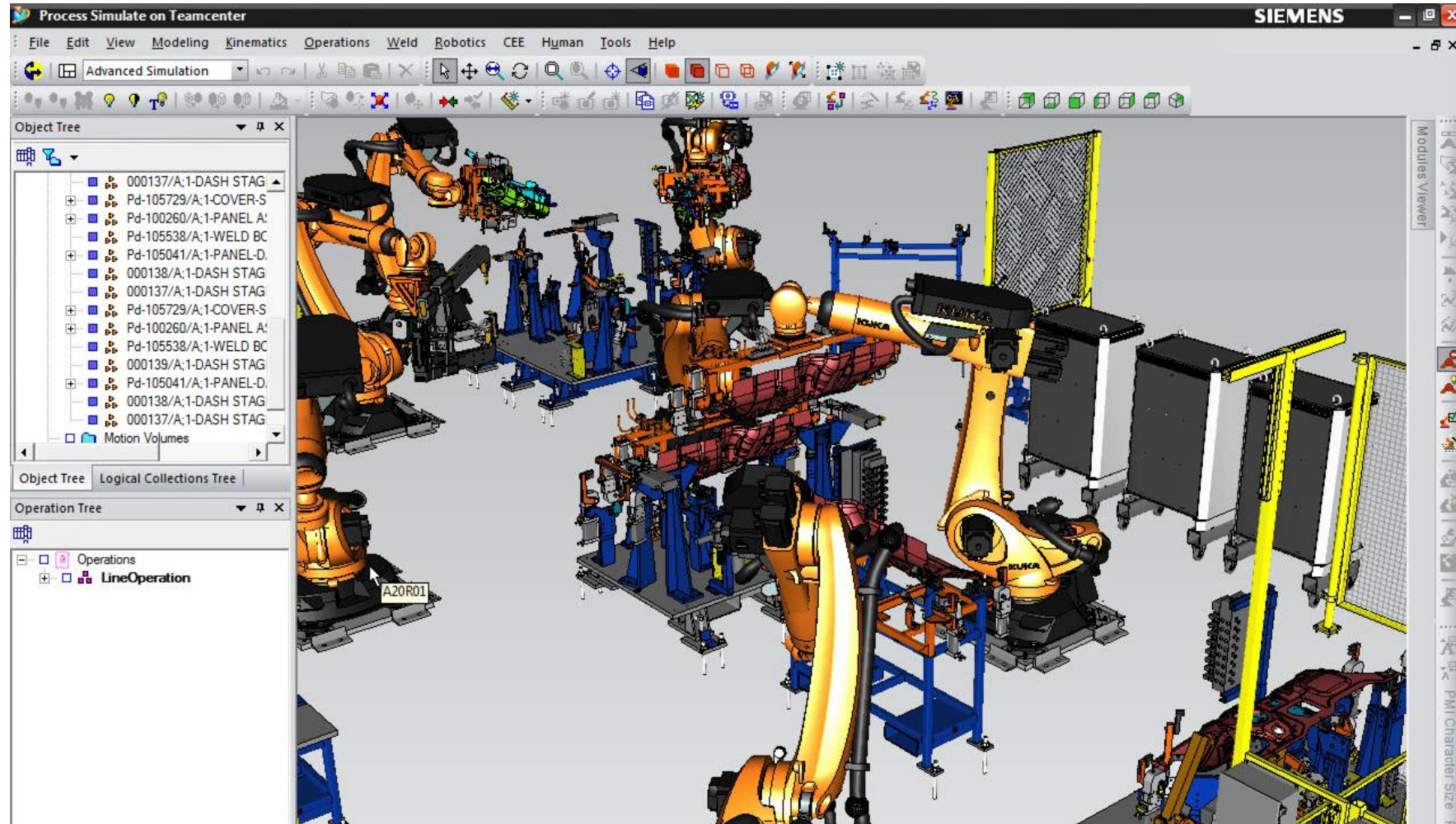
Line Designer



Production planning

Simulate and optimize your production process

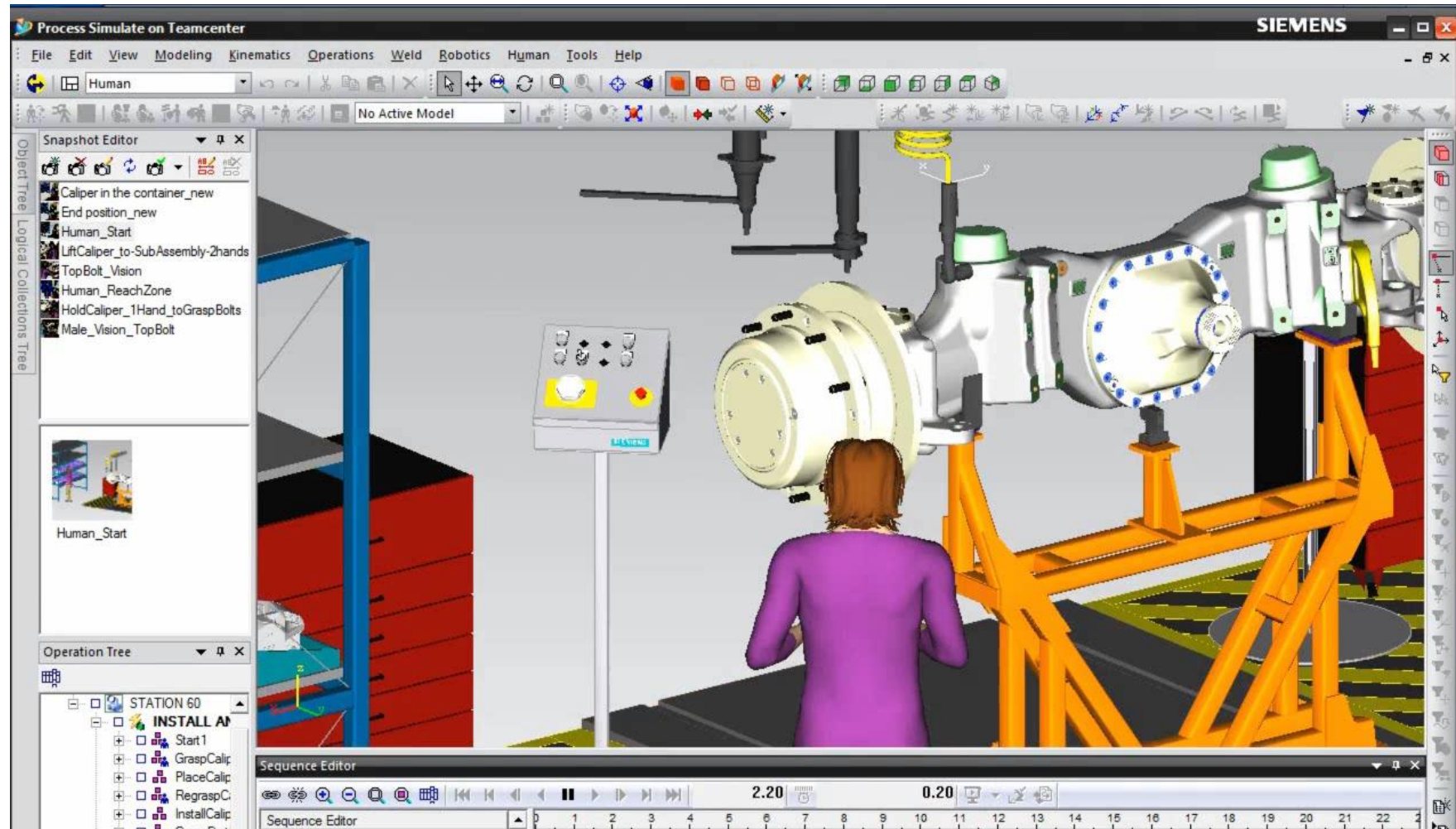
Tecnomatix
Process Simulate



Production planning

Simulate working conditions for humans

Tecnomatix Process Simulate



Production engineering

Automatically generate the PLC code for TIA Portal

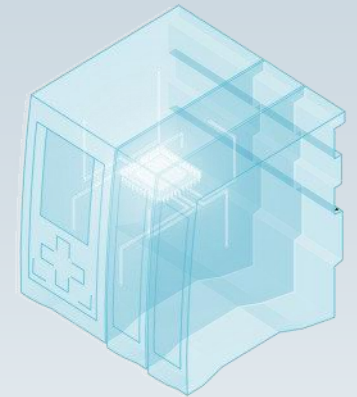
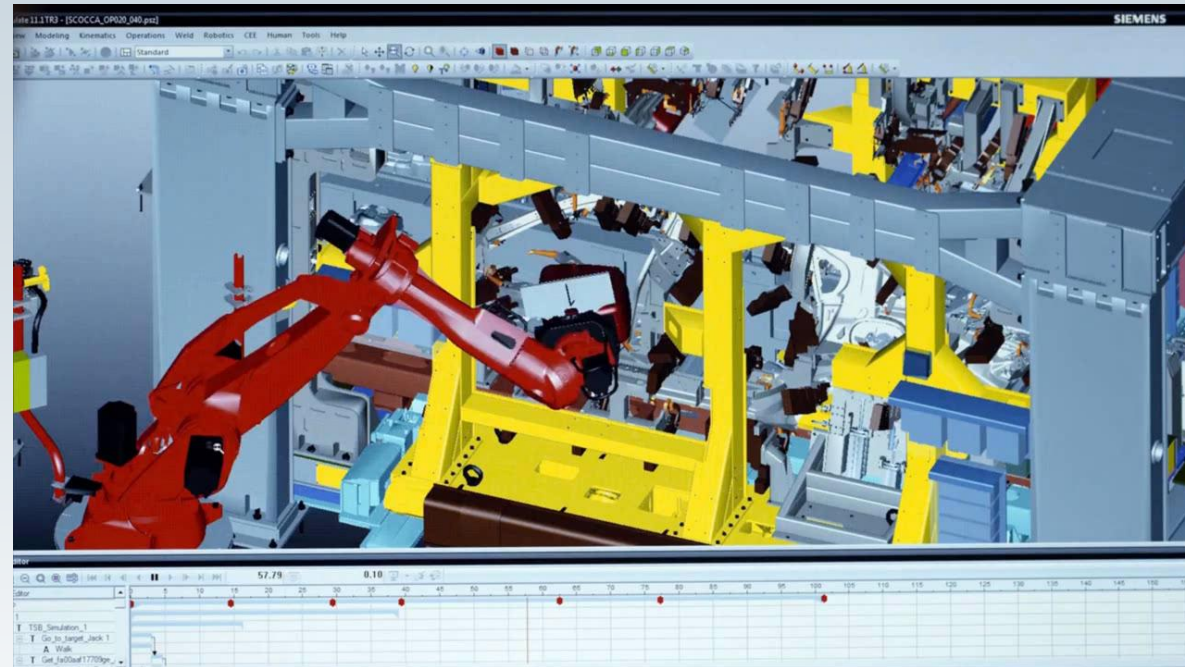
Production Systems Engineering



Production engineering

Validate the
PLC code
in the virtual
world

Tecnomatix
Process Simulate,
PLCSIM Advanced



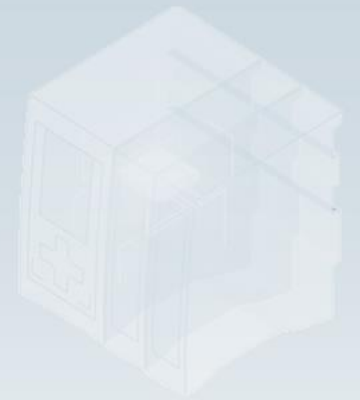
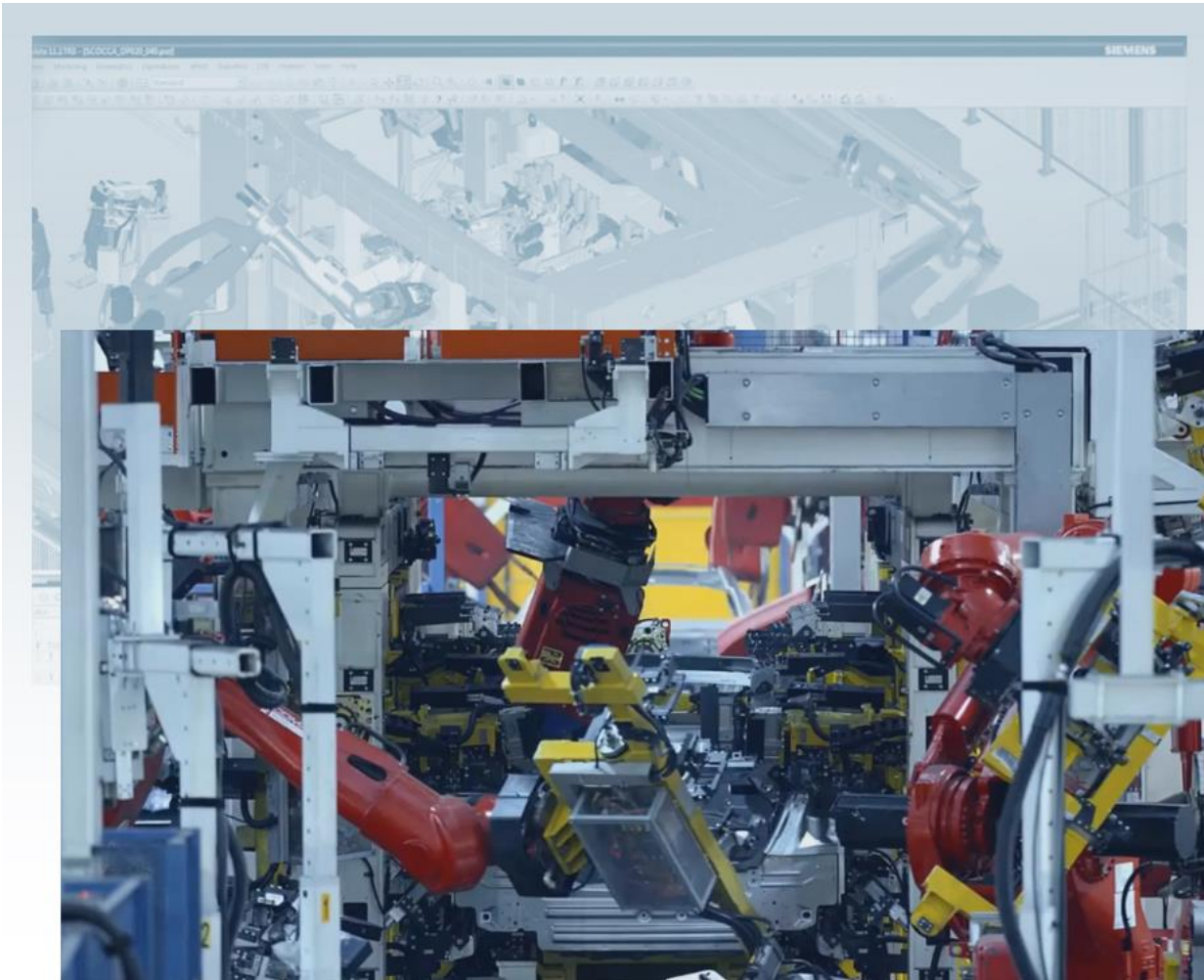
Digital Twin
of SIMATIC
S7-1500



Production engineering

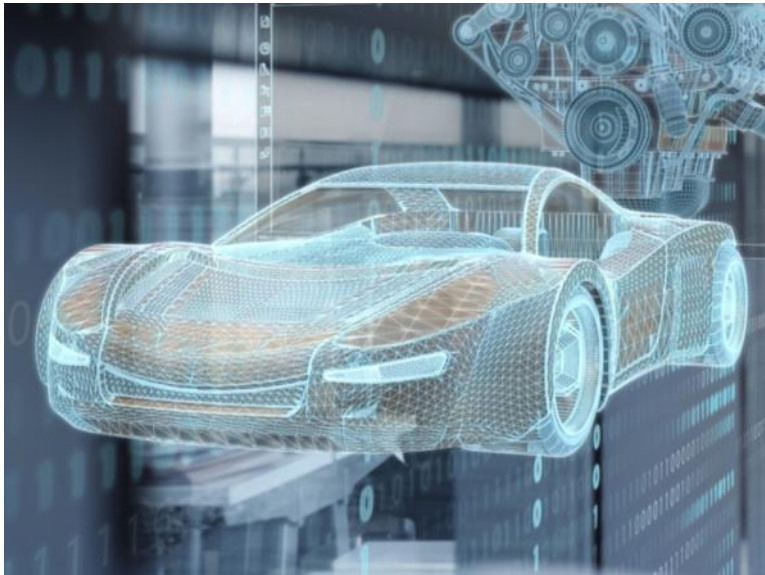
Fast and efficient engineering and commissioning

TIA Portal

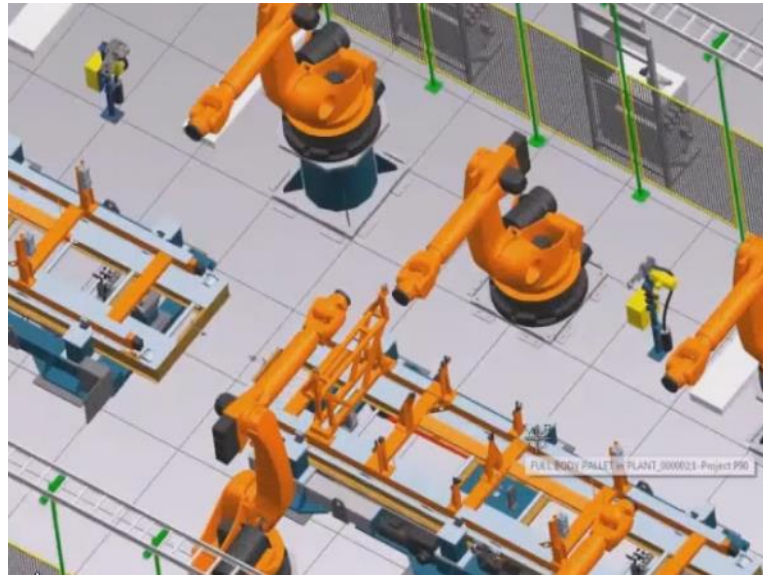


SIMATIC S7-1500





Digital Twin of the product



Digital Twin of the production

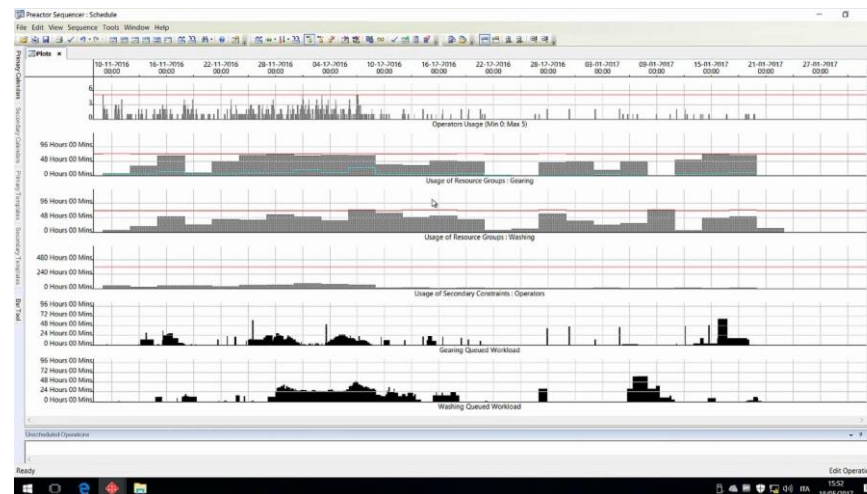
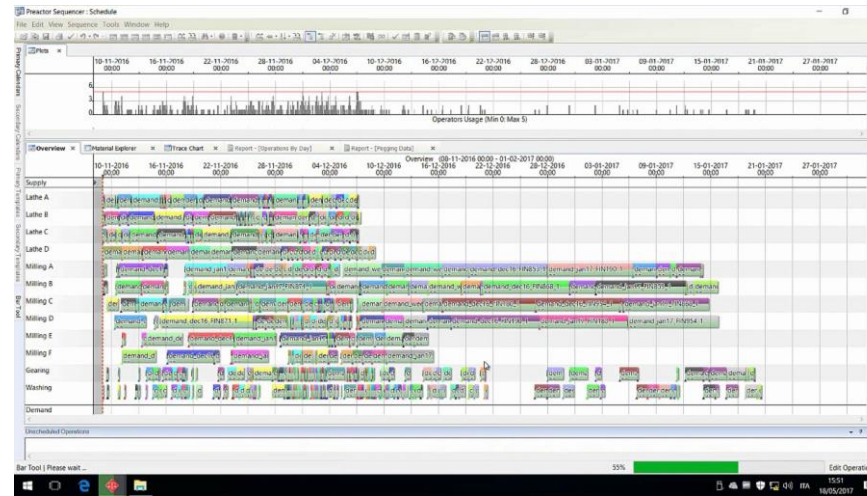


Digital Twin of the performance

Production execution

Schedule and process work operations, run quality inspection operations

SIMATIC IT, Camstar, R&D Suite, QMS



Production execution

Efficient
and secure
production
with TIA

SIMATIC, SINUMERIK,
SIMOTION, SIMOTICS
SINAMICS and SIRIUS



Services

Let your products and your production speak to you

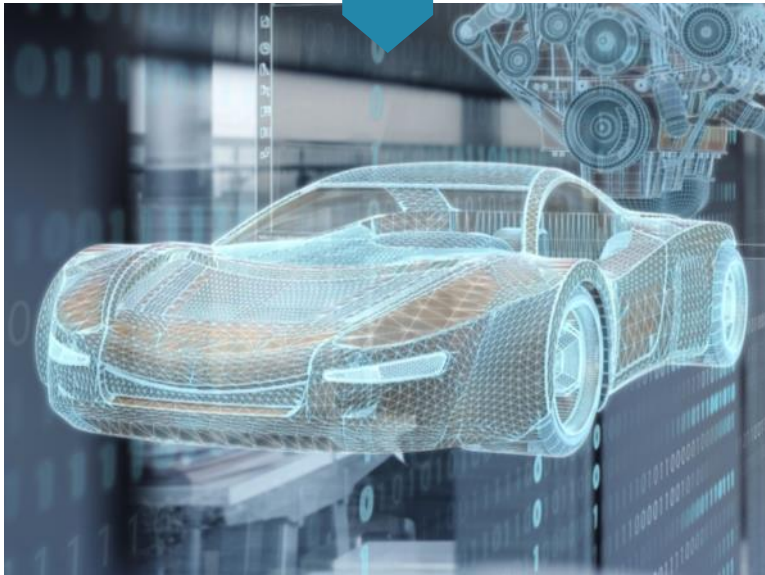
MindSphere – the cloud-based, open IoT operating system



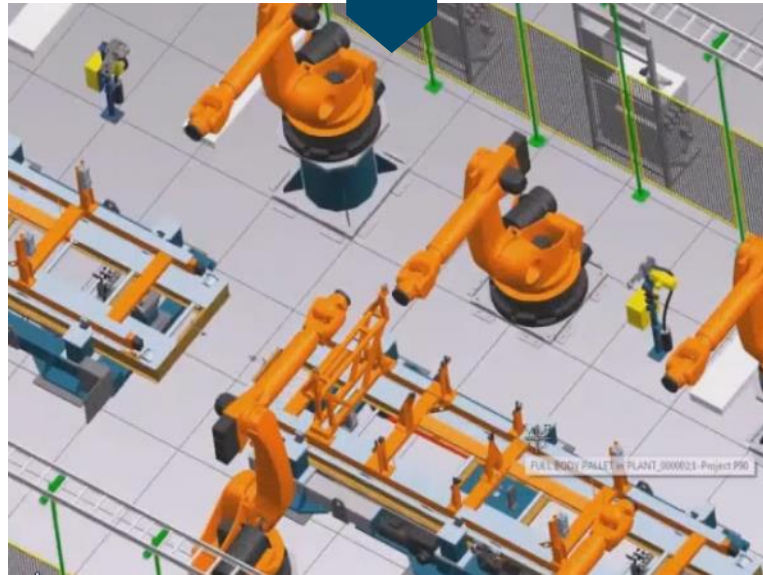
Digital Twin



feed back insights to continuously optimize product and production



Digital Twin of the product



Digital Twin of the production



Digital Twin of the performance

Digital Twin of the infrastructure

With Siemens' integrated technologies, Maserati reduced development time while increasing production output

SIEMENS

30% shorter
development time

More than **70,000**
combinations
available

3 times more
cars produced





ER-754AR

Pilot Factories „Industry 4.0“ in Austria

Vienna Aspern Pilot factory Industrie 4.0

Production processes & logistics
Since 2019 operation phase



Graz Smart factory

Agility & IT Security
2018-2020 installation phase



Linz LIT factory

Compound material production
& recycling
2018-2020 installation phase



Innovation with customers

Research

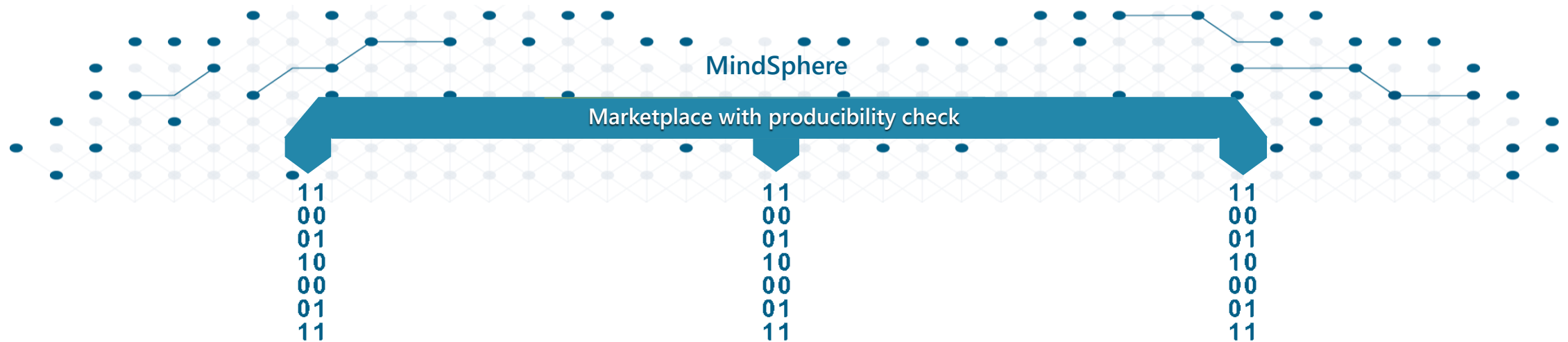
Education

Innovation

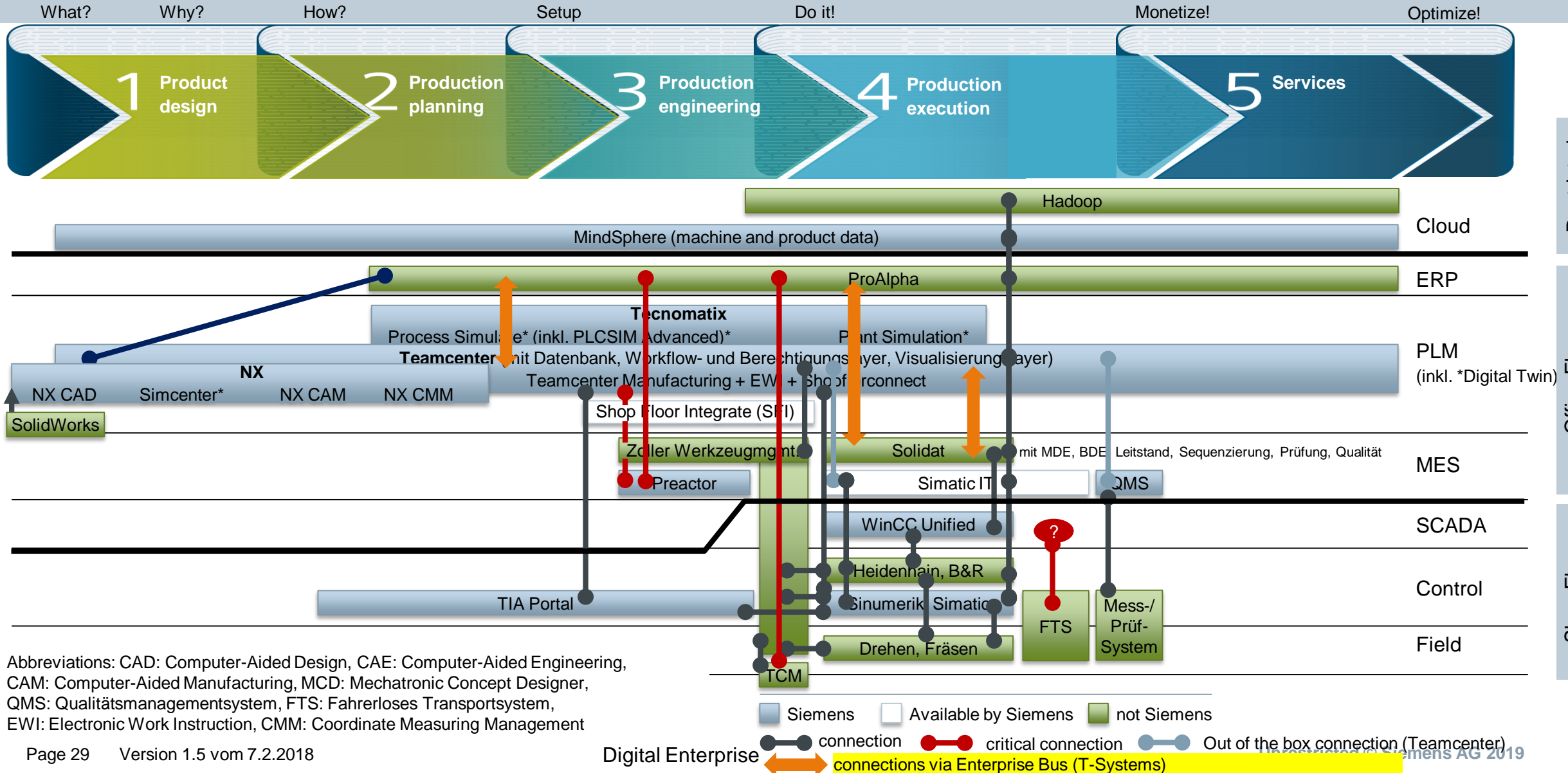
Collaboration

Living Labs

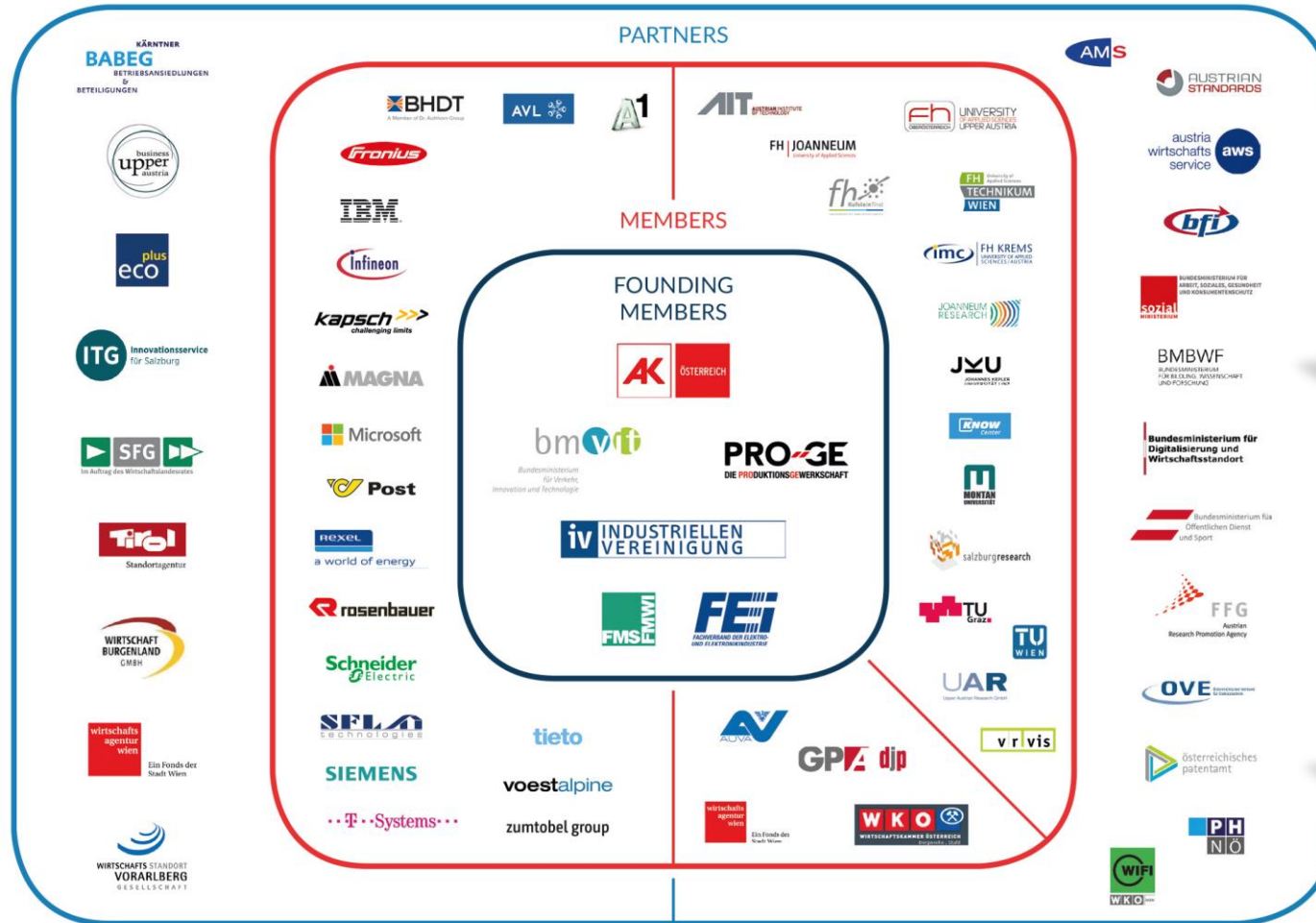
Use Case: multi-factory management via MindSphere



Siemens/SISW-Software and Interaction Needs



Association Industry 4.0 Austria – the Platform for Smart Production



The background of the image is a night-time aerial view of a city, likely in a mountainous region, with lights from buildings and streets illuminating the landscape. Overlaid on this scene are various digital and technological motifs, including glowing blue lines that resemble circuit traces or data paths, and vertical columns of light points that look like data streams or fiber optic cables. The overall color palette is dominated by deep blues and bright whites, creating a futuristic and high-tech atmosphere.

Digital Enterprise

a Strategy