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Continuously optimizing with the Digital Enterprise

Magnus Edholm

siemens.com/digital-enterprise-suite

How?

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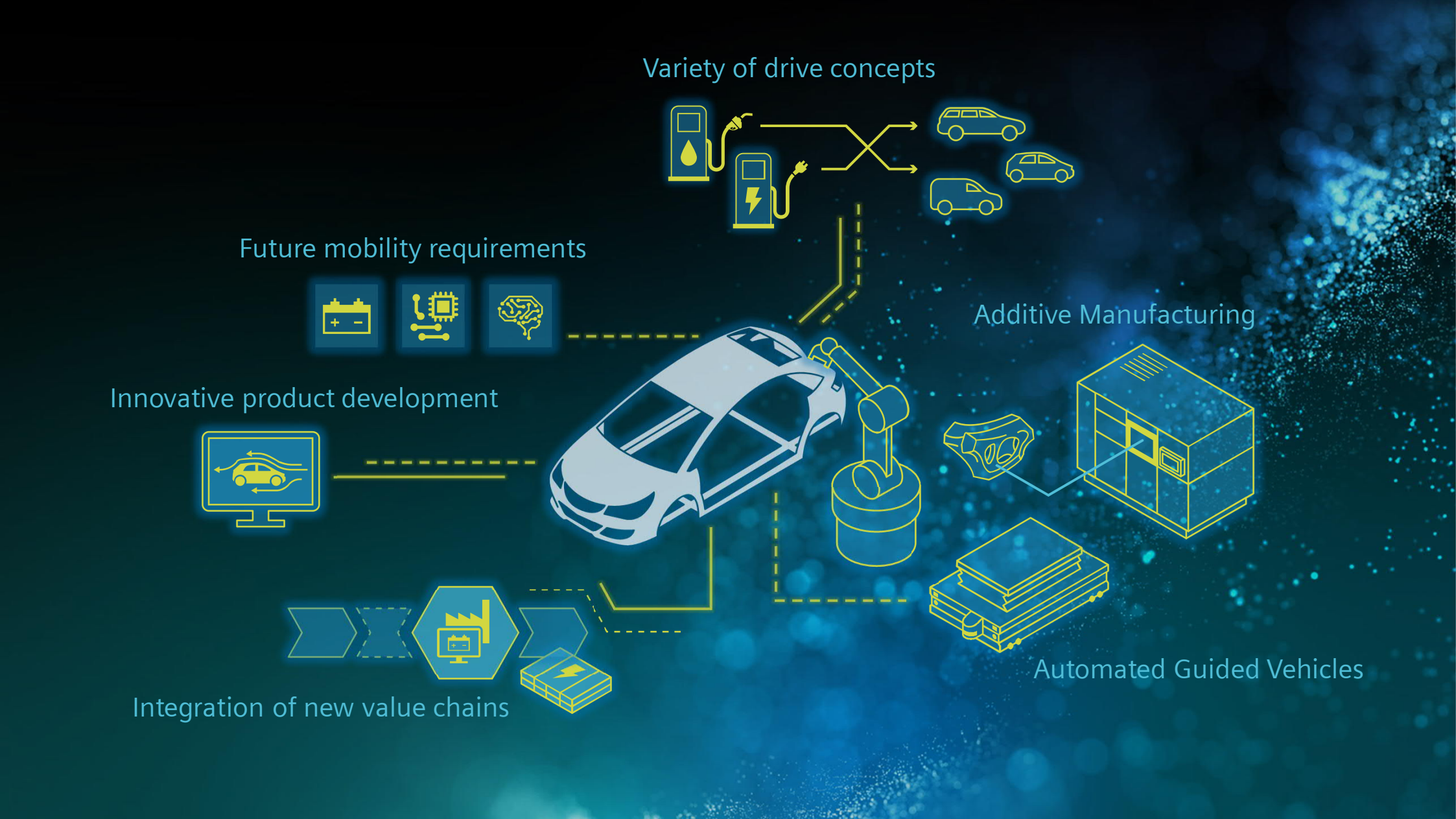
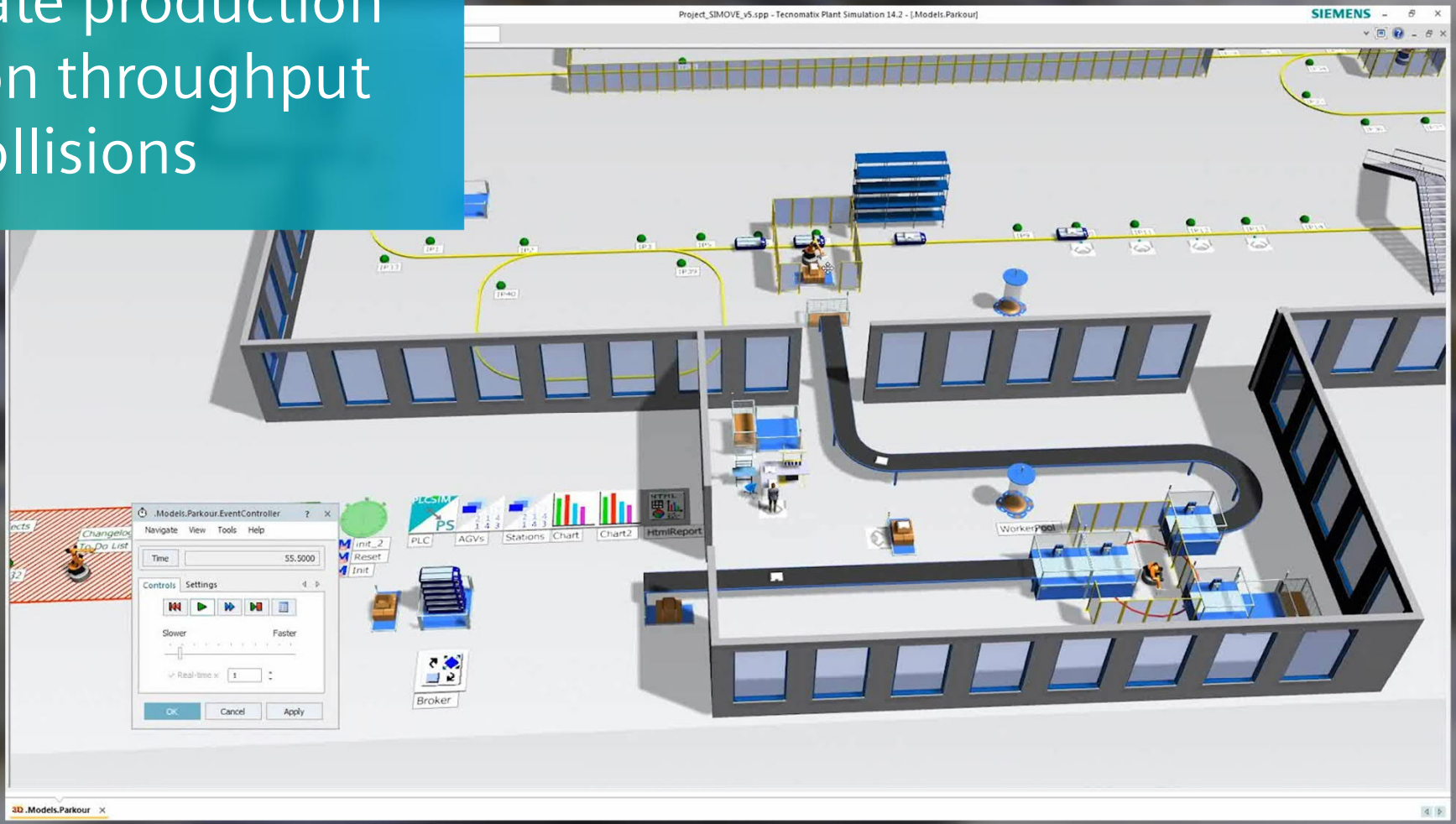
With a holistic digitalization approach


Variety of drive concepts
Future mobility requirements
Additive Manufacturing
Innovative product development
Automated Guided Vehicles
Integration of new value chains

Addressing production complexity

Flexible production concepts with Automated Guided Vehicles (AGVs)

Simulate production lines on throughput and collisions



Standardized and open system package

Complete automation, communication, and functional safety

Simulation and flexible production concepts

Faster validation and verification

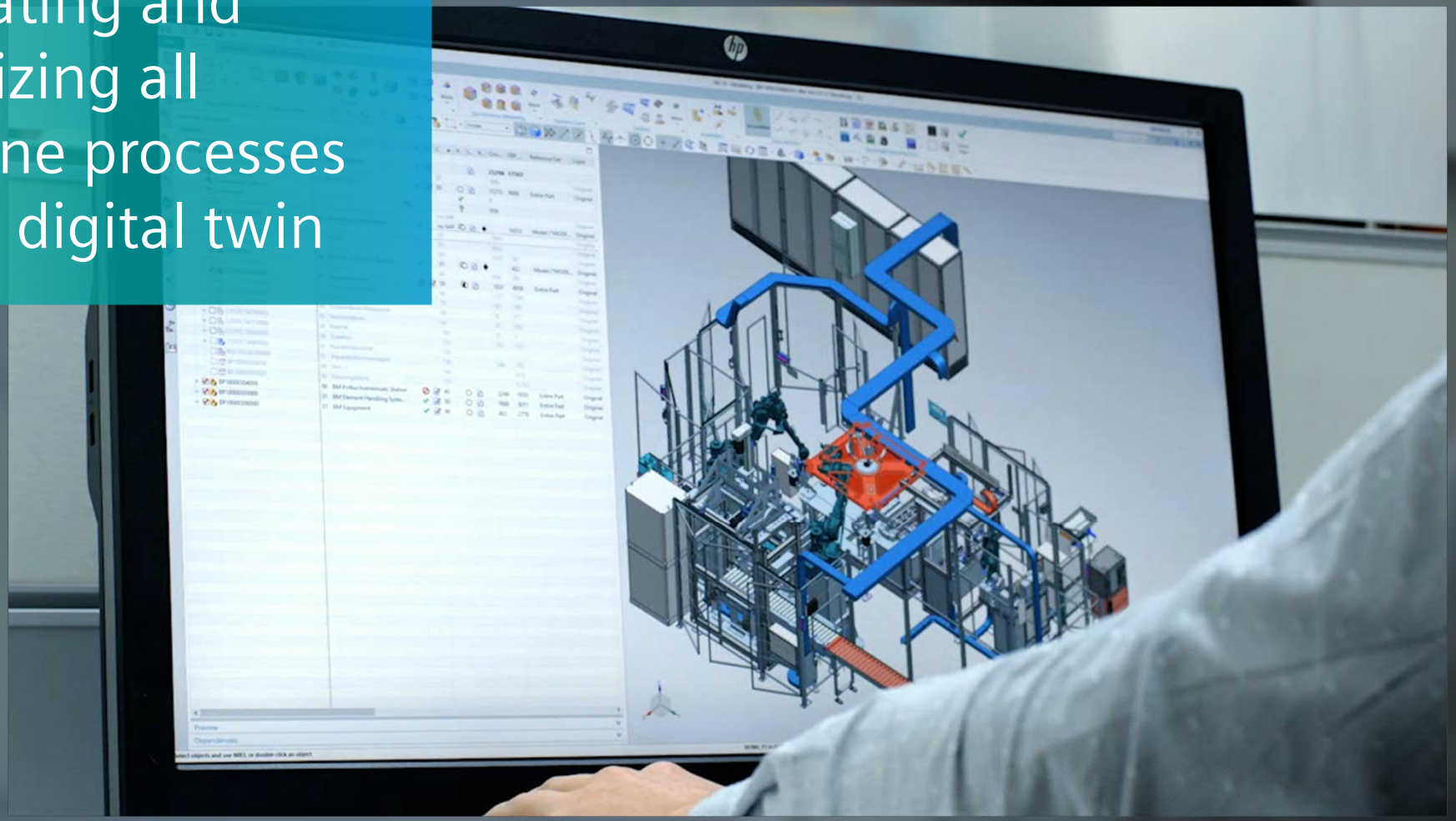
Economic manufacturing of different car models

Easy scalability of production capacity

For some 30 years, industry believed it had reached the physical limits when casting lead poles for classic lead-acid batteries.

Siegfried Altmann
CEO Rosendahl Nextrom GmbH

Simulating and optimizing all machine processes with a digital twin




"
We achieve a totally new level of output, quality, and performance. None of this would be possible without a digitalized and digitally controlled workflow in the factory.
Siegfried Altmann
CEO Rosendahl Nextrom GmbH
ROSENDAHL
NEXTROM
KNILL GRUPPE


From up to 24 months
of developing time
down to
12

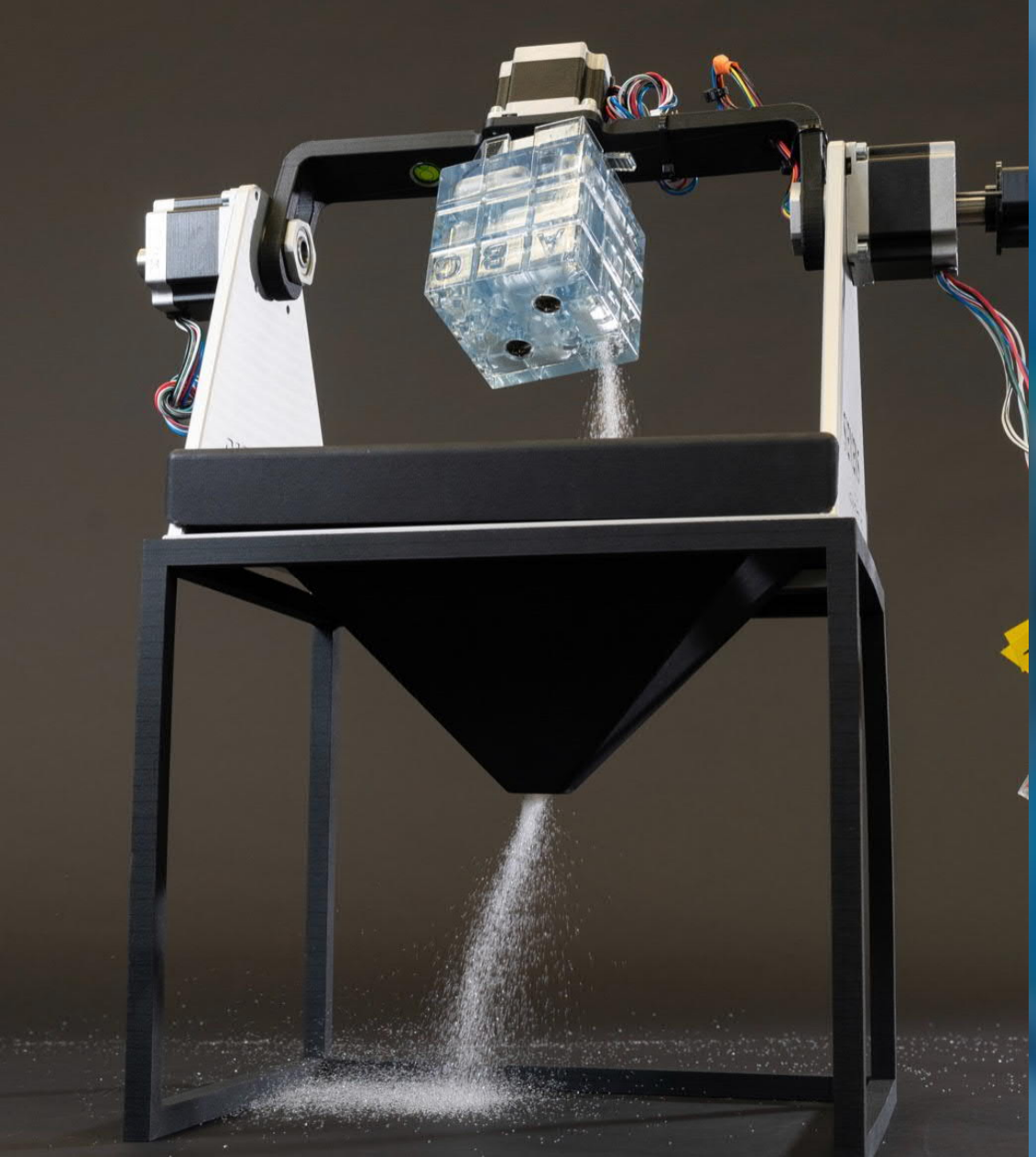
The digitalization effect

50% shorter development time

95% machine efficiency rate

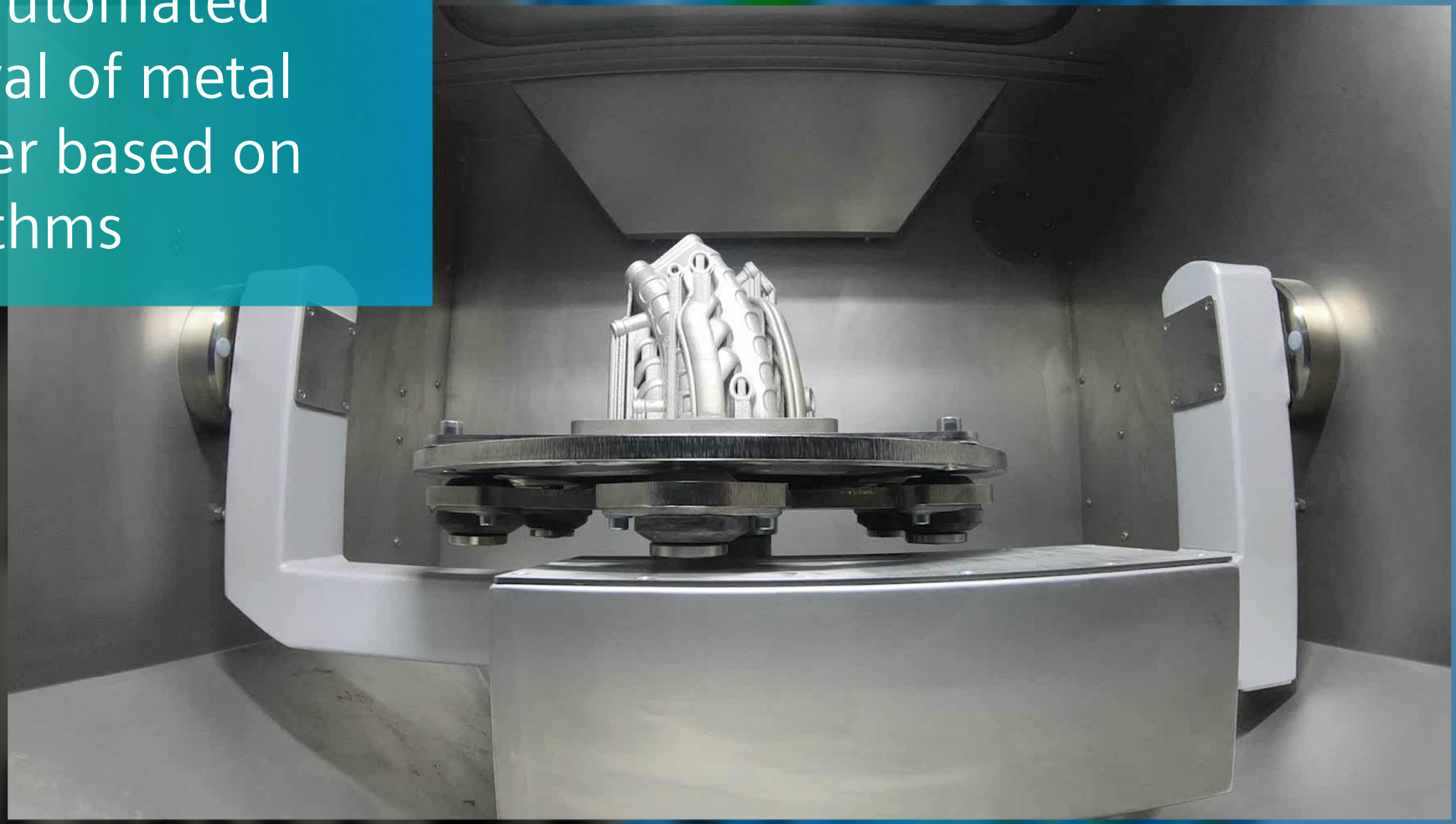
25% higher production output

Non-value-adding-time and waste of resources



Algorithm for a depowdering chamber

Fully automated removal of metal powder based on algorithms



Automated depowdering

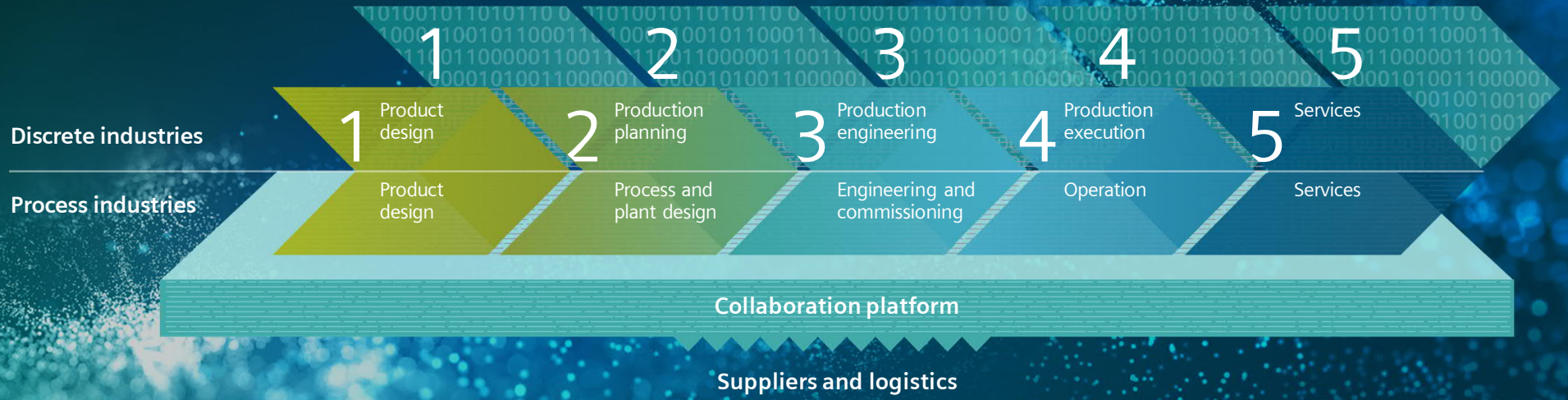
No harm for human workers

Reusing metal powder

Less environ-mental impact

Continuous optimization

Integrating and digitalizing the entire value chain



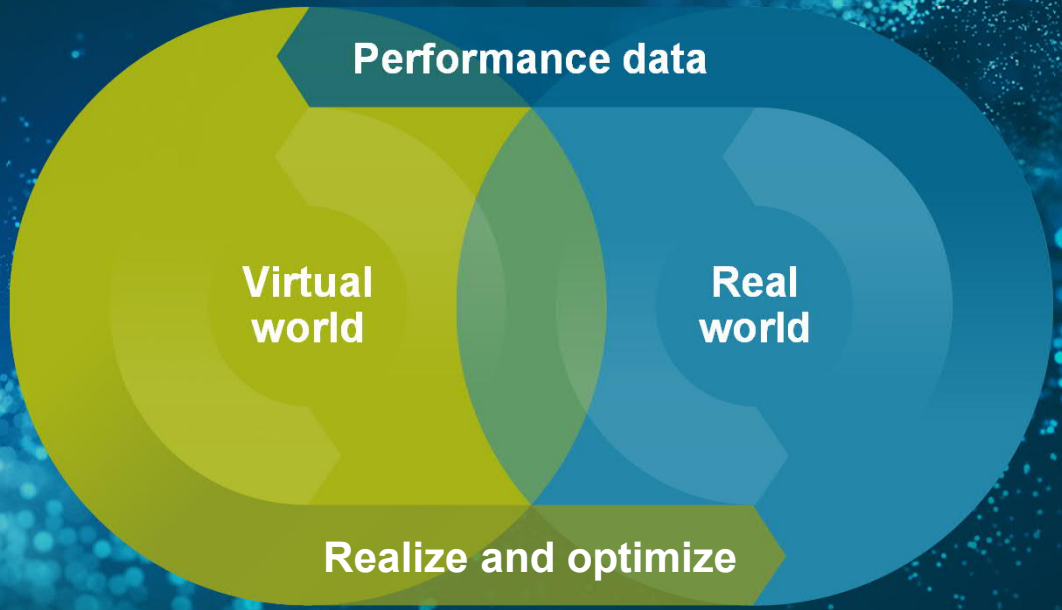
End-to-end solutions for all industries

Numerous starting possibilities

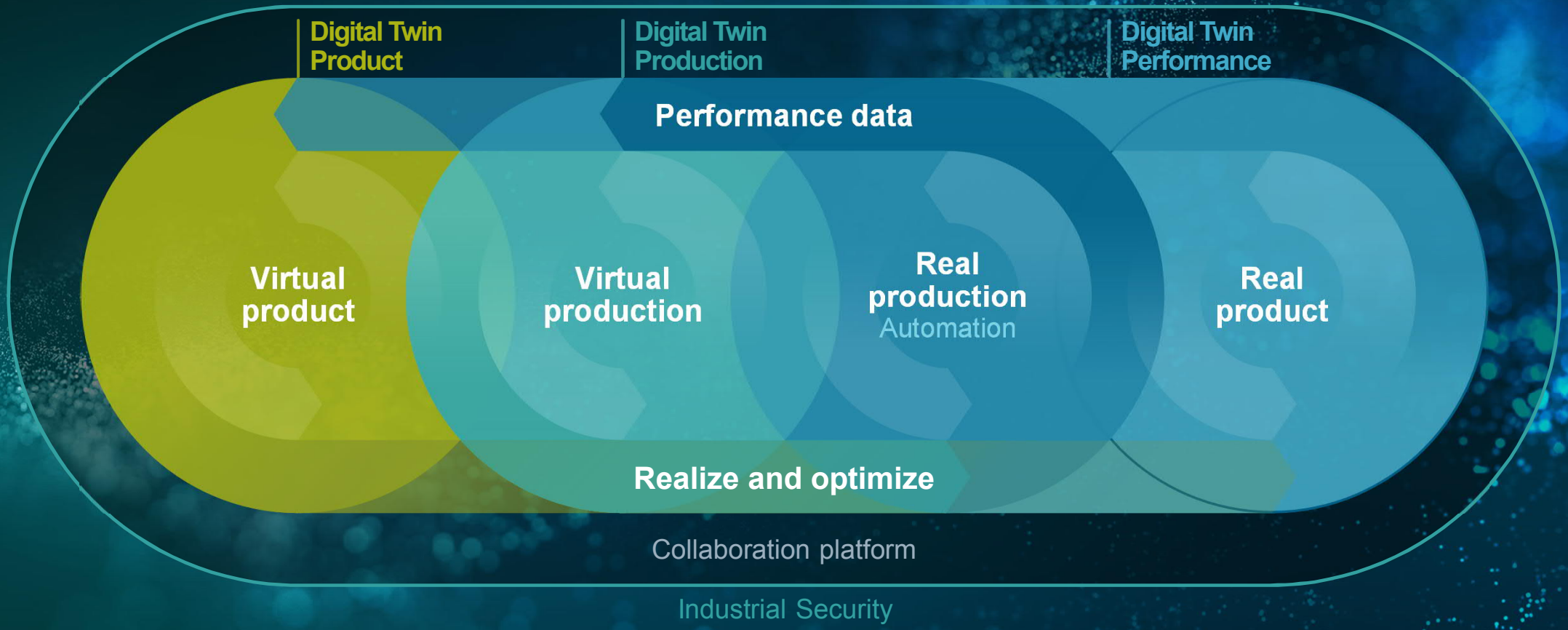
Brownfield or greenfield

Standardized and open interfaces

The basis for continuous optimization



The basis for continuous optimization



The basis for continuous optimization

Portfolio

Services for the Digital Enterprise

Consulting

Implementation

Optimization

Driving the digital transformation in focus industries

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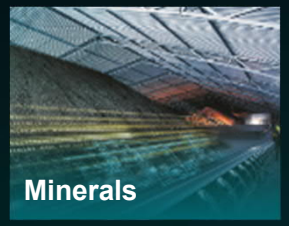
Process Industries — Hybrid Industries — Discrete Industries



Digitalization is key to achieving next-level productivity

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>10bn investment

Selection of acquisitions

Virtual world
Software

Real world
Automation

1 Cooperation

2007 → 2019

“With an integrated digital twin platform, we see major potential in speeding up the product development process, reducing prototypes, increasing traceability and thus improving quality and reduce development cost.”

Juha Pankakoski, Executive VP,
Technology at Konecranes

KONECRANES®

“The most important is the competence of the people. We can ask technical questions and they are helping us to solve our challenges, and that makes their systems far more powerful.”

Olav Tronrud, CEO at Tronrud Engineering

- Shortened commissioning phase by 20-25%
- Reduced design phase by 10% through parallel working of electronic, mechanical and automation departments

TRONRUD ENGINEERING

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"We have incredible manufacturing flexibility where we can produce specialty paint batches in 1/50th of the size."

Kevin Worrell,
Project Director at Dulux Australia

- >50% less time from testing to paint production
- 8x faster production process

This way they can meet the essential market and customer requirements

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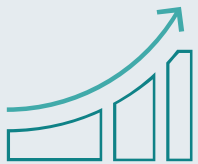
Speed

Flexibility

Quality



Efficiency

New business models

Security

The most holistic Digital Twin

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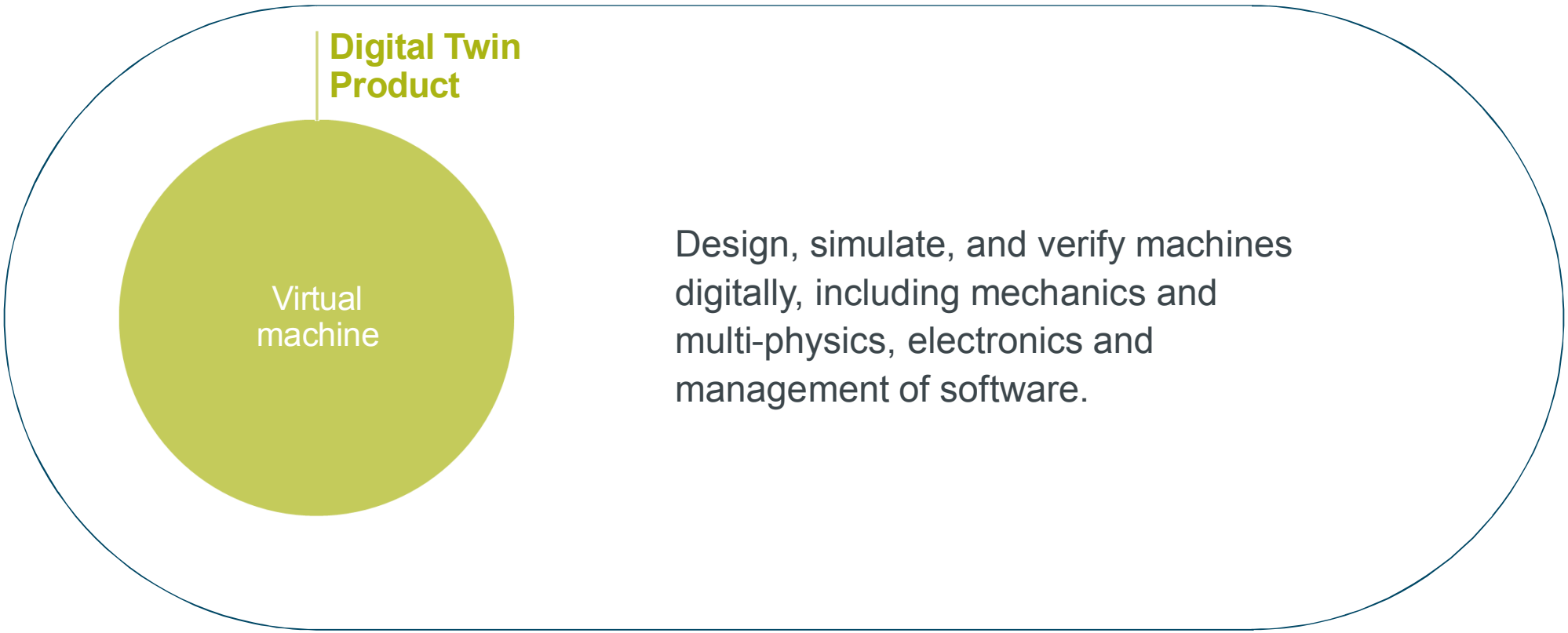

Design, simulate, and verify machines digitally, including mechanics and multi-physics, electronics and management of software.

Digital Twin Product – Virtual machine

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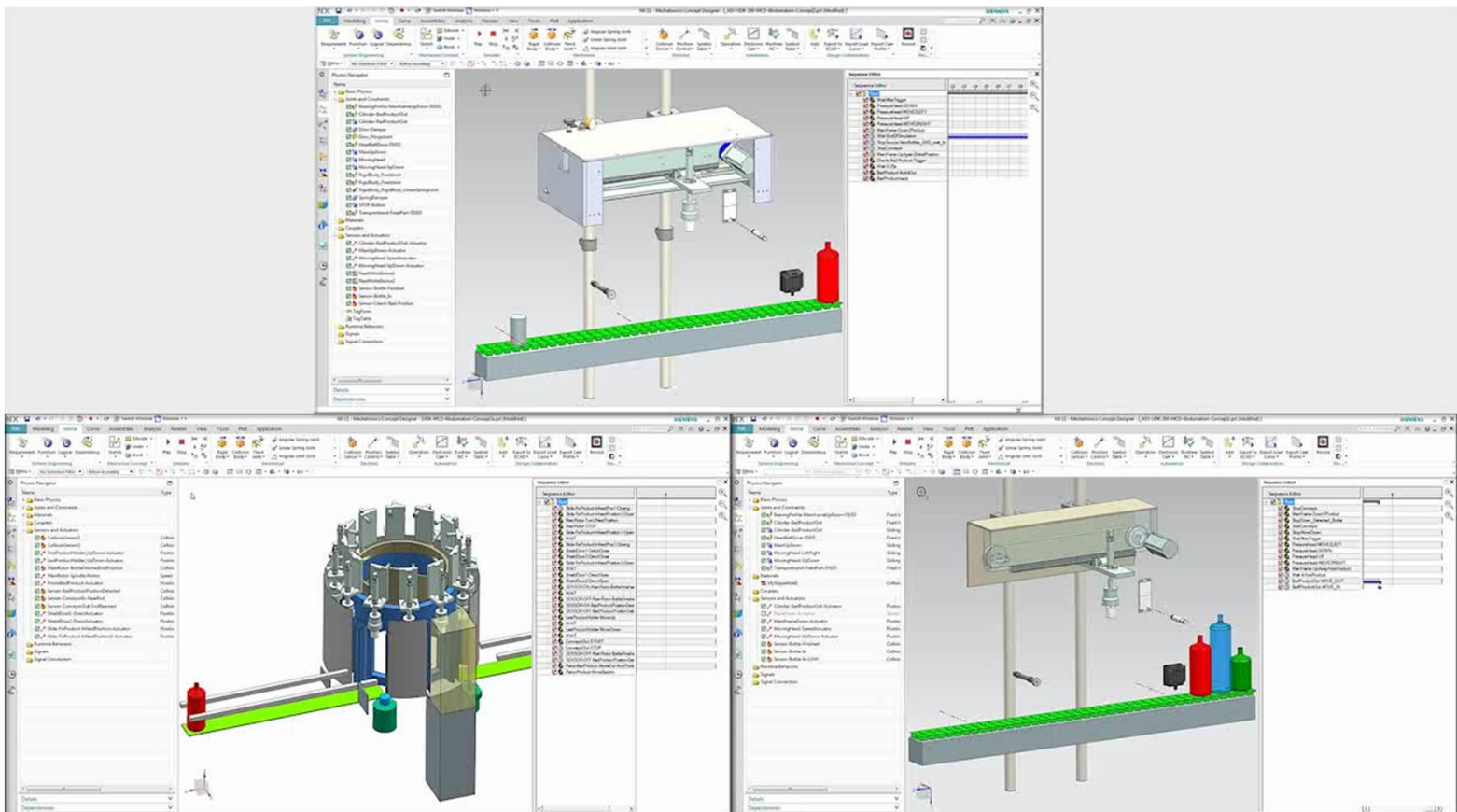
Easy evaluation of different machine concepts

NX Mechatronics Concept Designer



Digital Twin Product – Virtual machine

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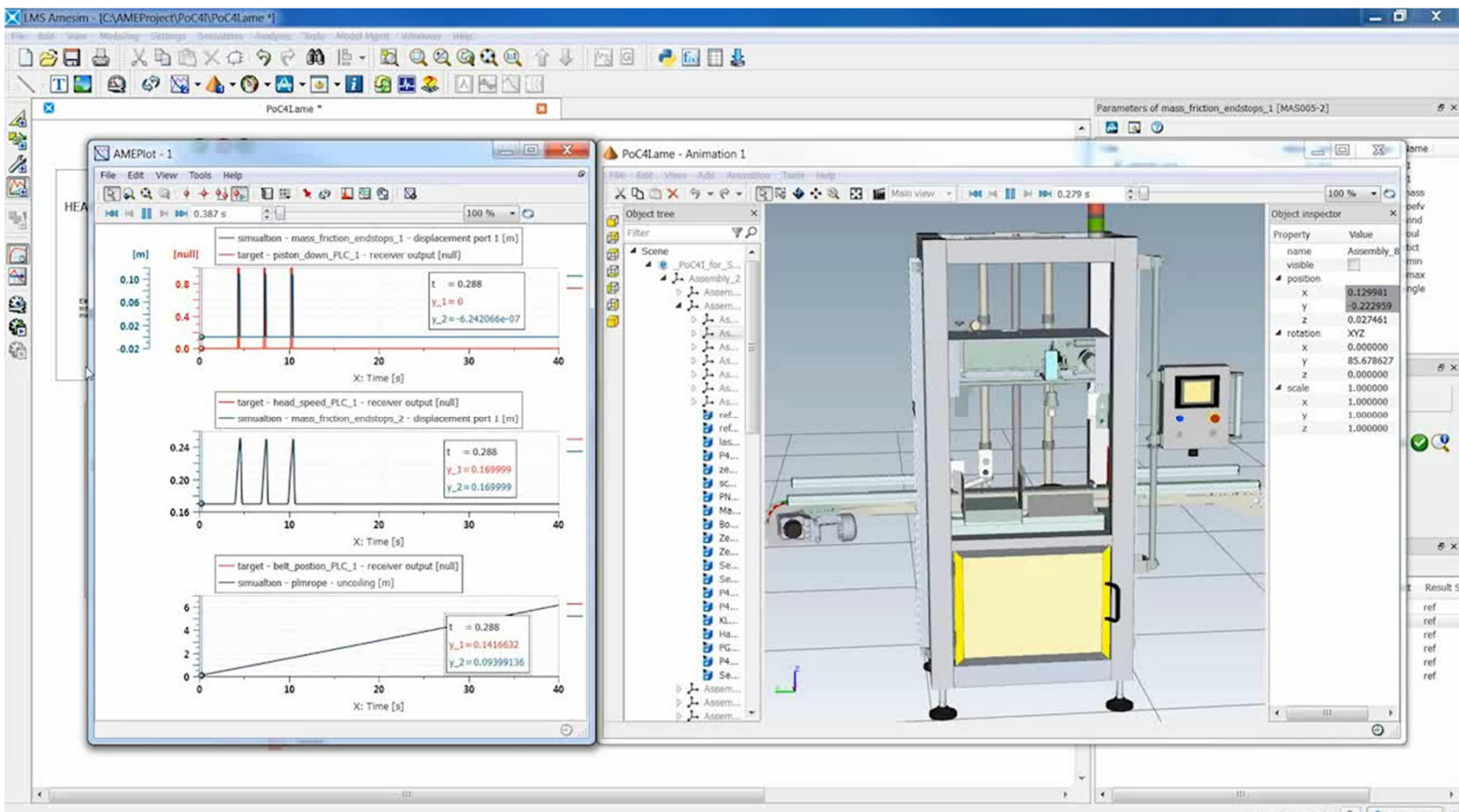
Validate machine concepts with multi-physics simulation

NX Mechatronics Concept Designer, Simcenter



The most holistic Digital Twin

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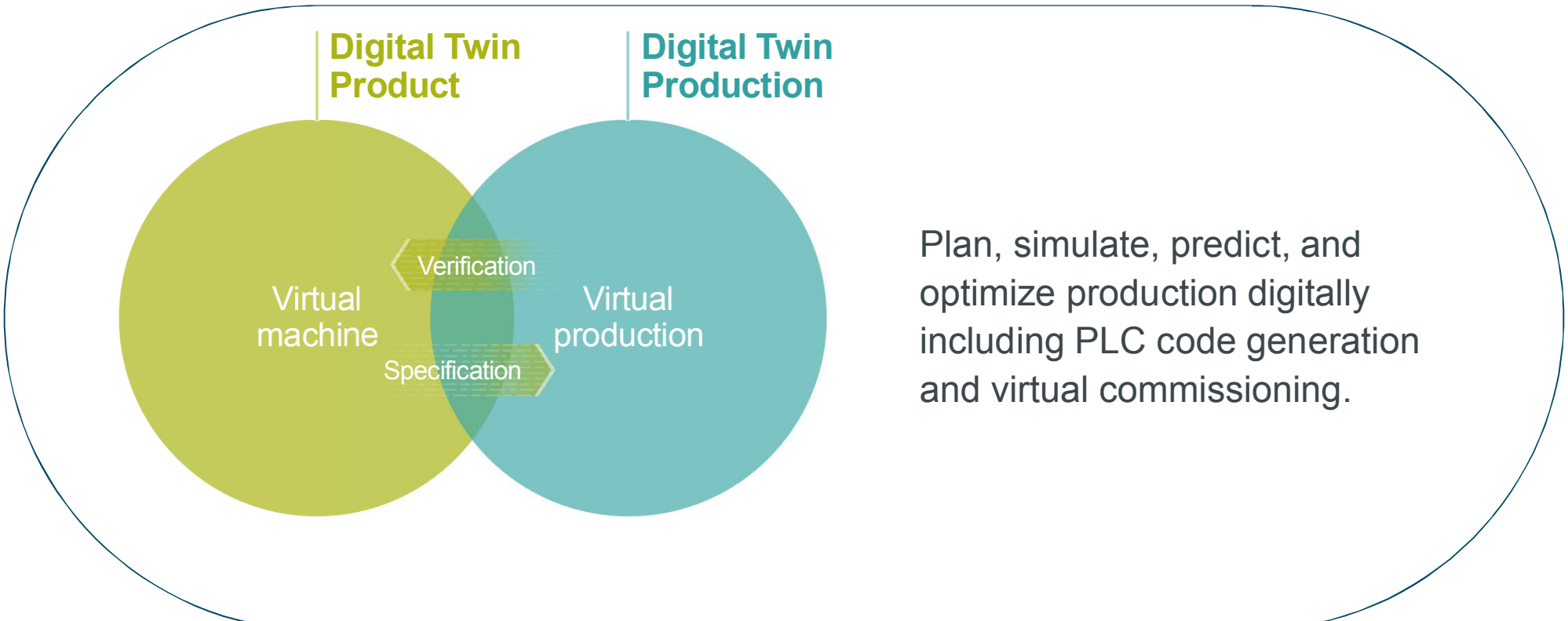

Plan, simulate, predict, and optimize production digitally including PLC code generation and virtual commissioning.

Digital Twin Production – Virtual production

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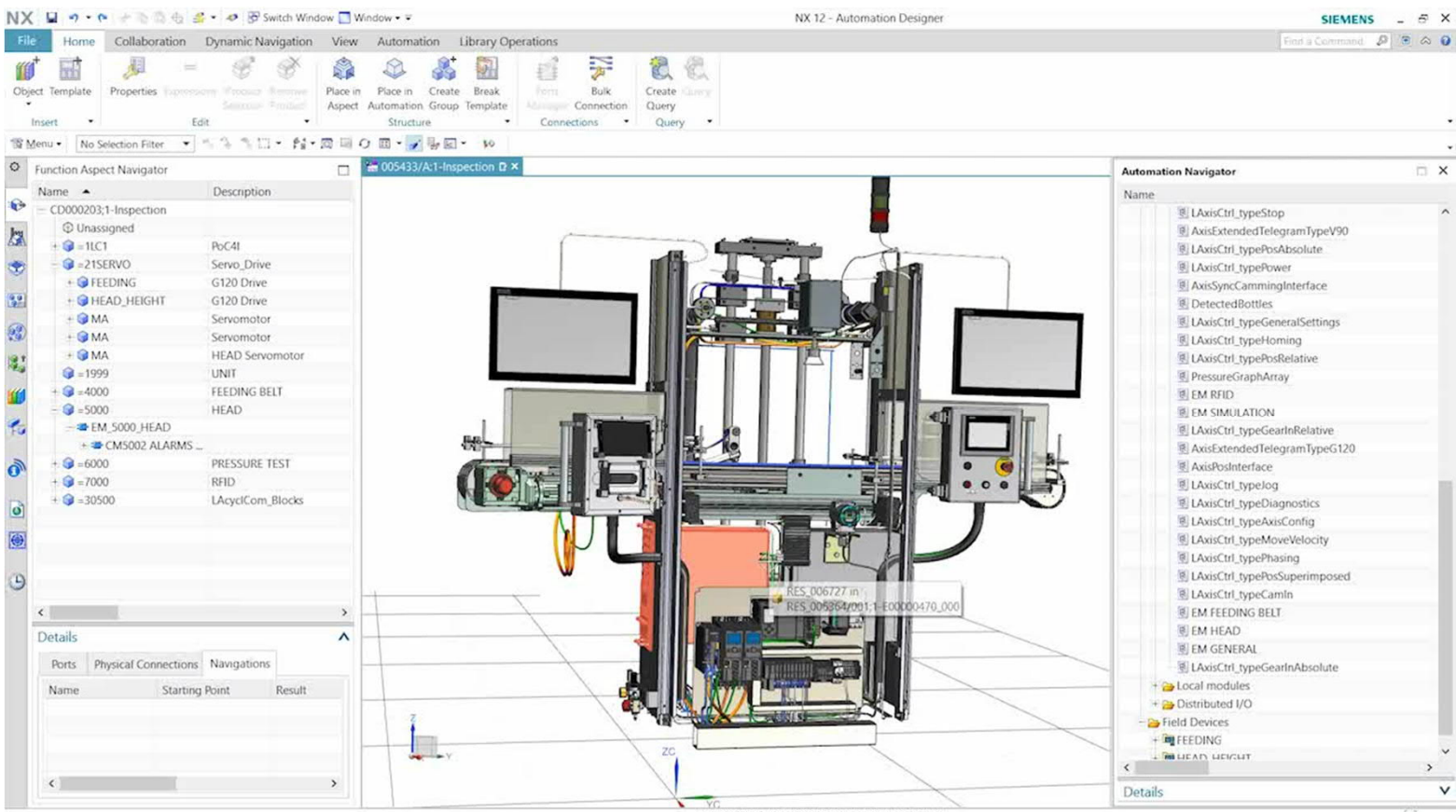
Generate the PLC code in collaborative automation design

Automation Designer



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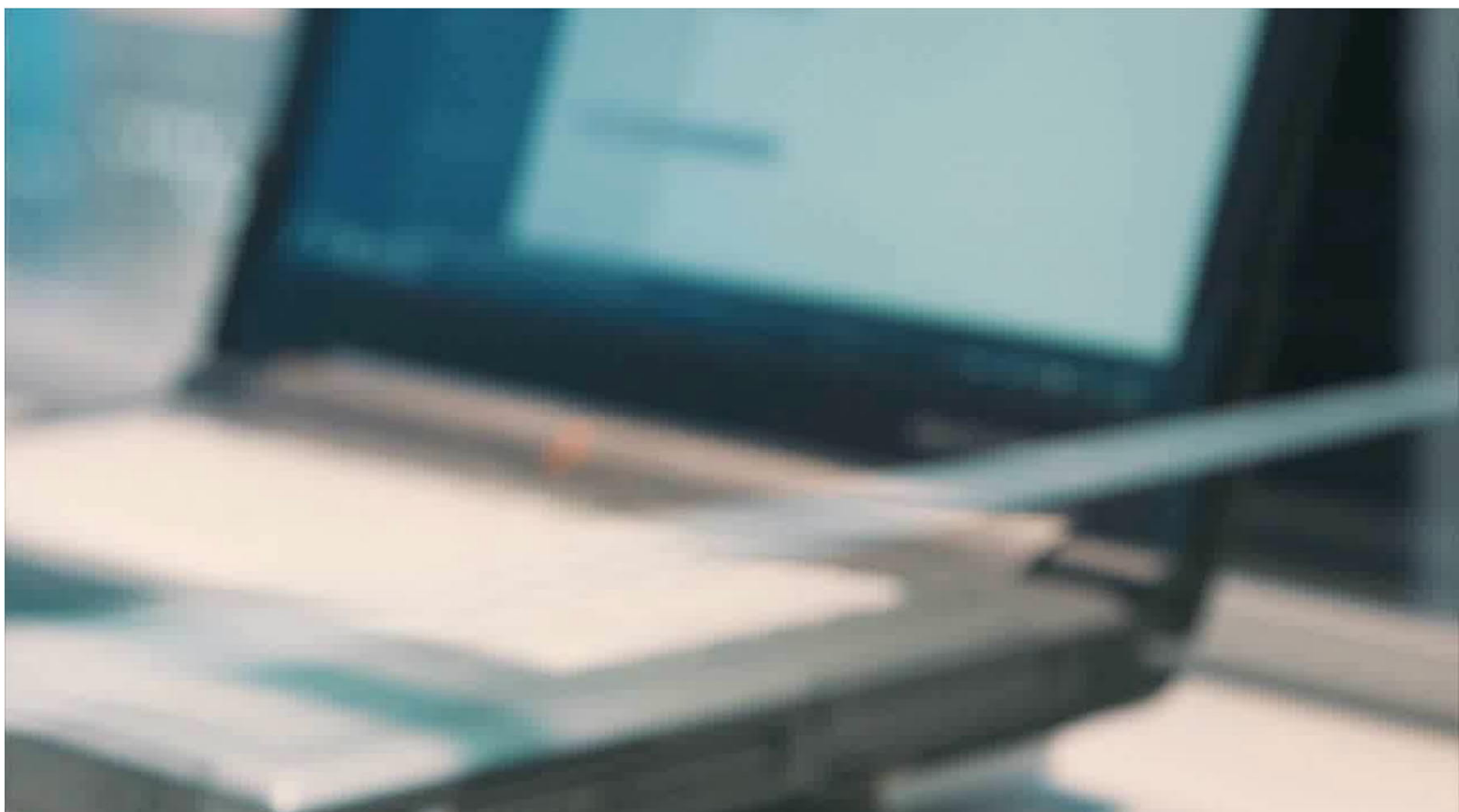
Fast and efficient engineering and commissioning

TIA Portal with PLCSim Advanced



Digital Twin Production – Virtual production

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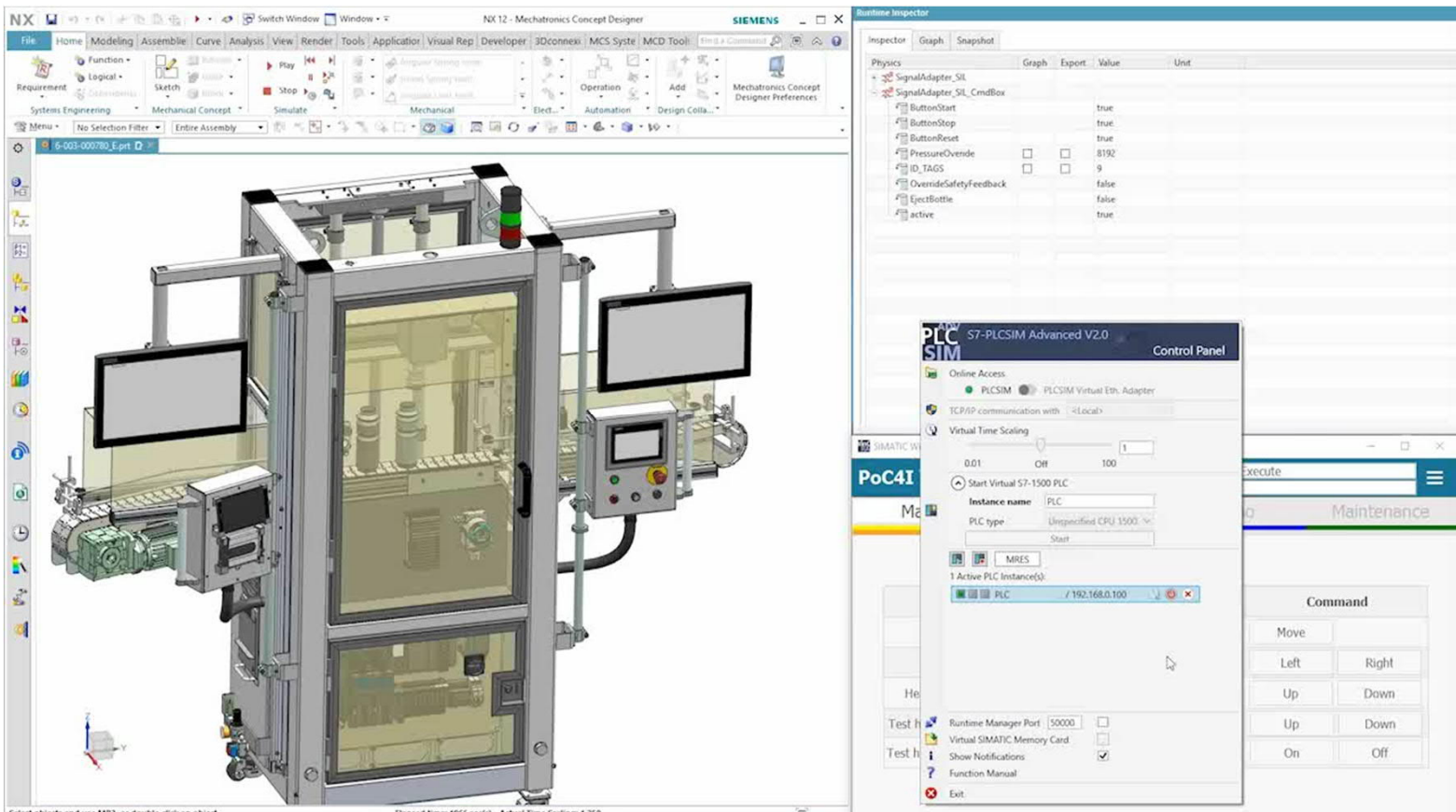
Time-saving validation of automation code and machine in the virtual world

NX Mechatronics Concept Designer, PLCSim Advanced, TIA Portal, SIMIT



Digital Twin Production – Virtual production

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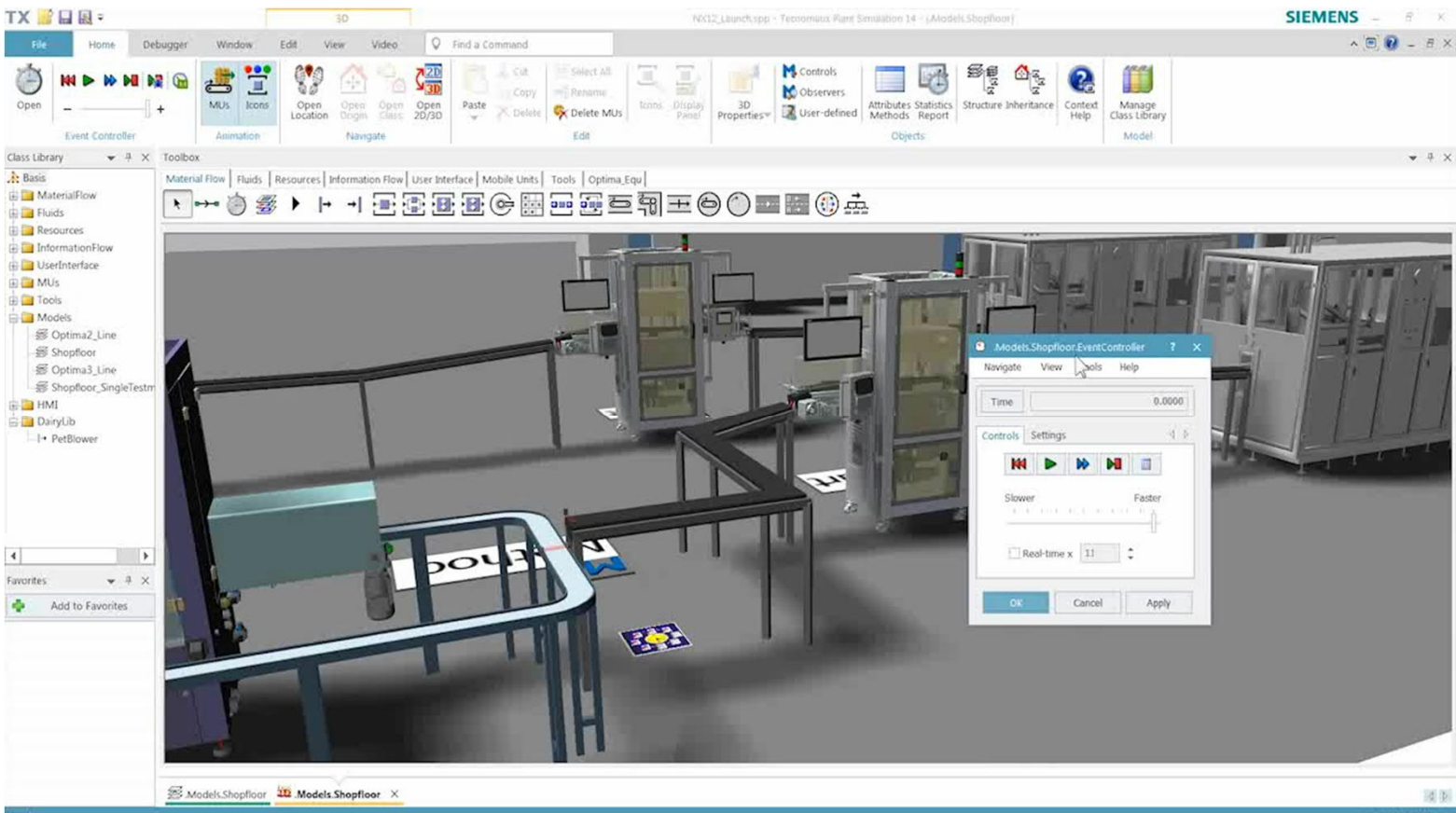
Simulate production line concept to ensure throughput and avoid bottlenecks

Tecnomatix Plant Simulation



Digital Twin Production – Virtual production

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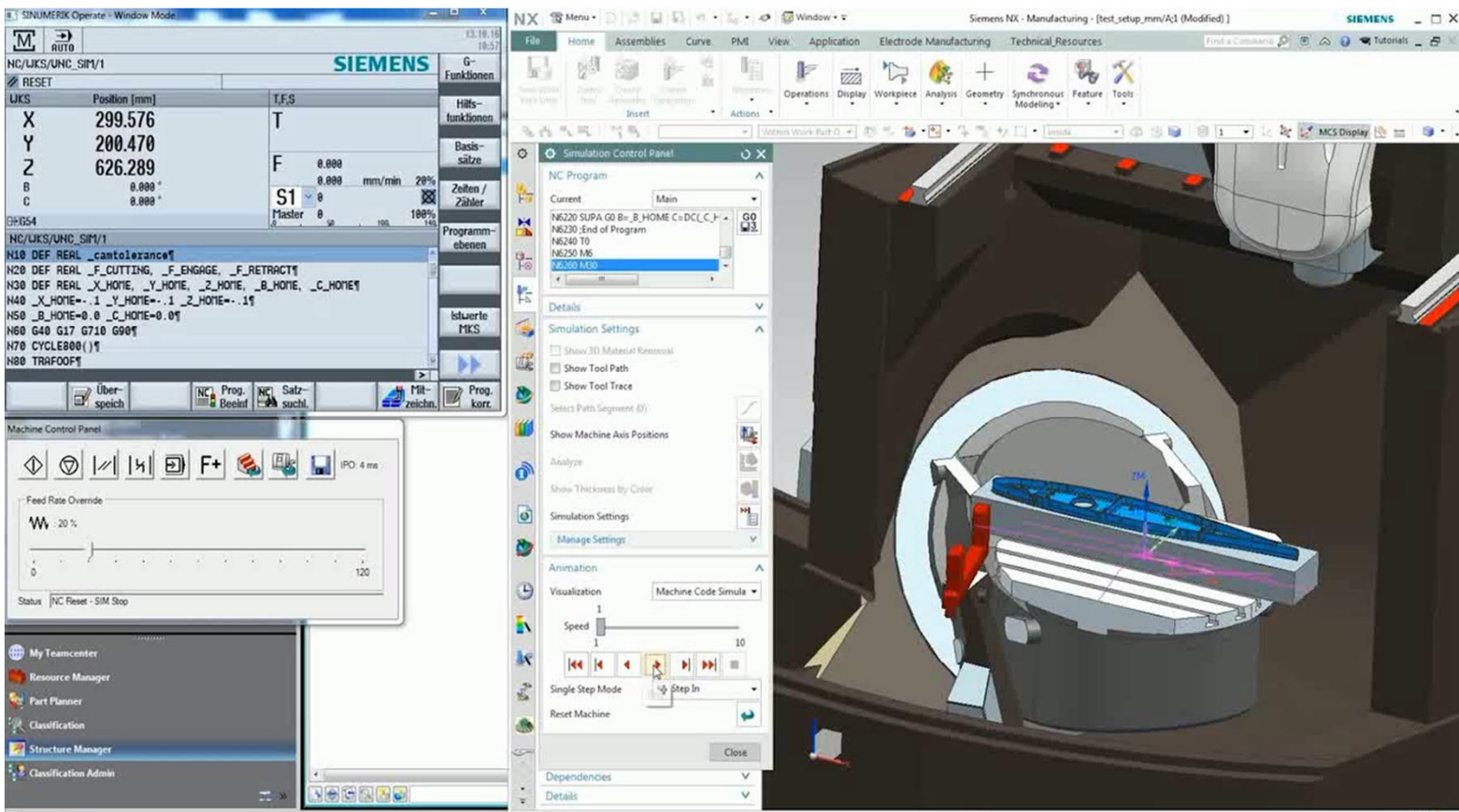
Validation of G-code in the virtual world

NX CAM, SINUMERIK VNCK



The most holistic Digital Twin

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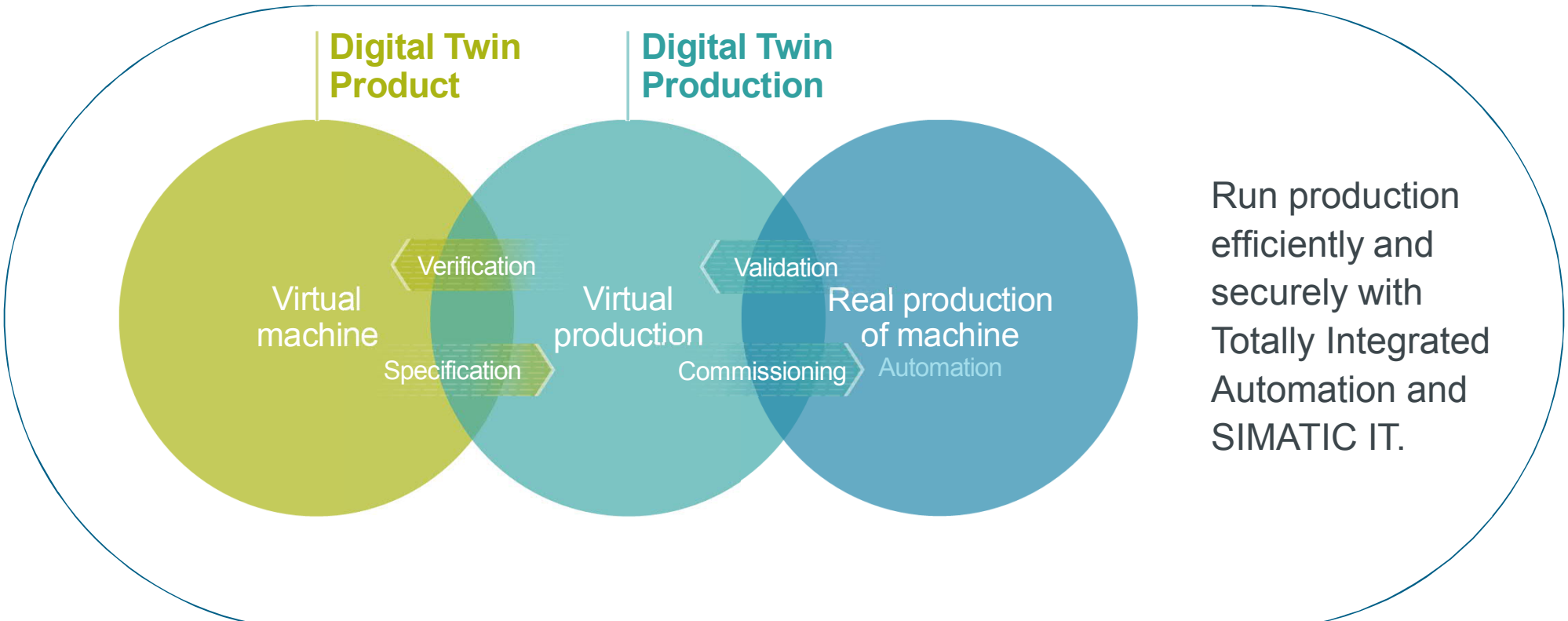

Run production efficiently and securely with Totally Integrated Automation and SIMATIC IT.

Digital Twin Performance – Real production of machine (Automation)

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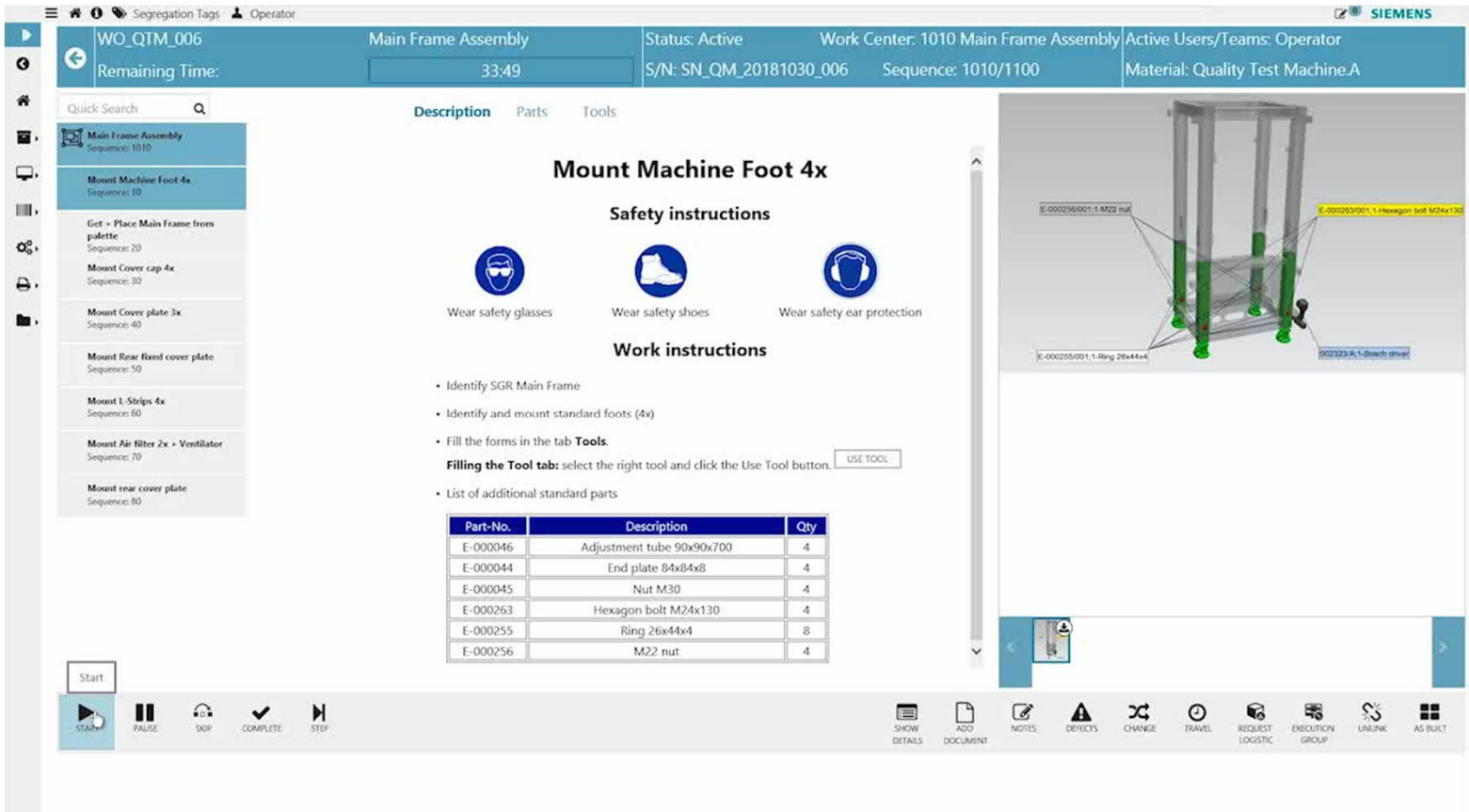
Schedule and execute work instructions and quality inspections

SIMATIC IT UA Discrete Manufacturing, QMS Professional, Preactor APS



Digital Twin Performance – Real production of machine (Automation)

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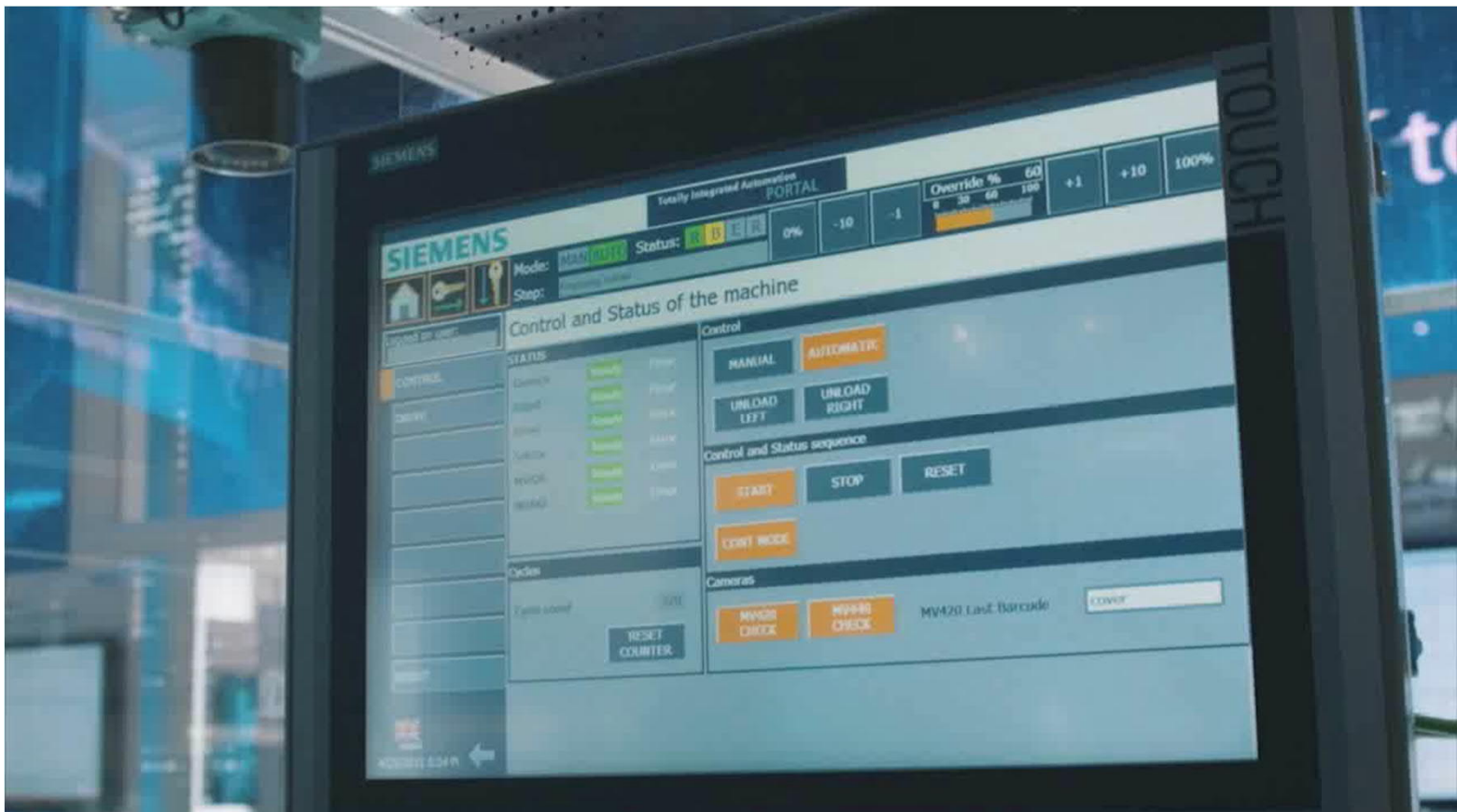
Efficient and secure production with Totally Integrated Automation

SIMATIC, SINUMERIK, SIMOTION, SIMOTICS, SINAMICS, SIRIUS, TIA Portal



Digital Twin Performance – Real production of machine (Automation)

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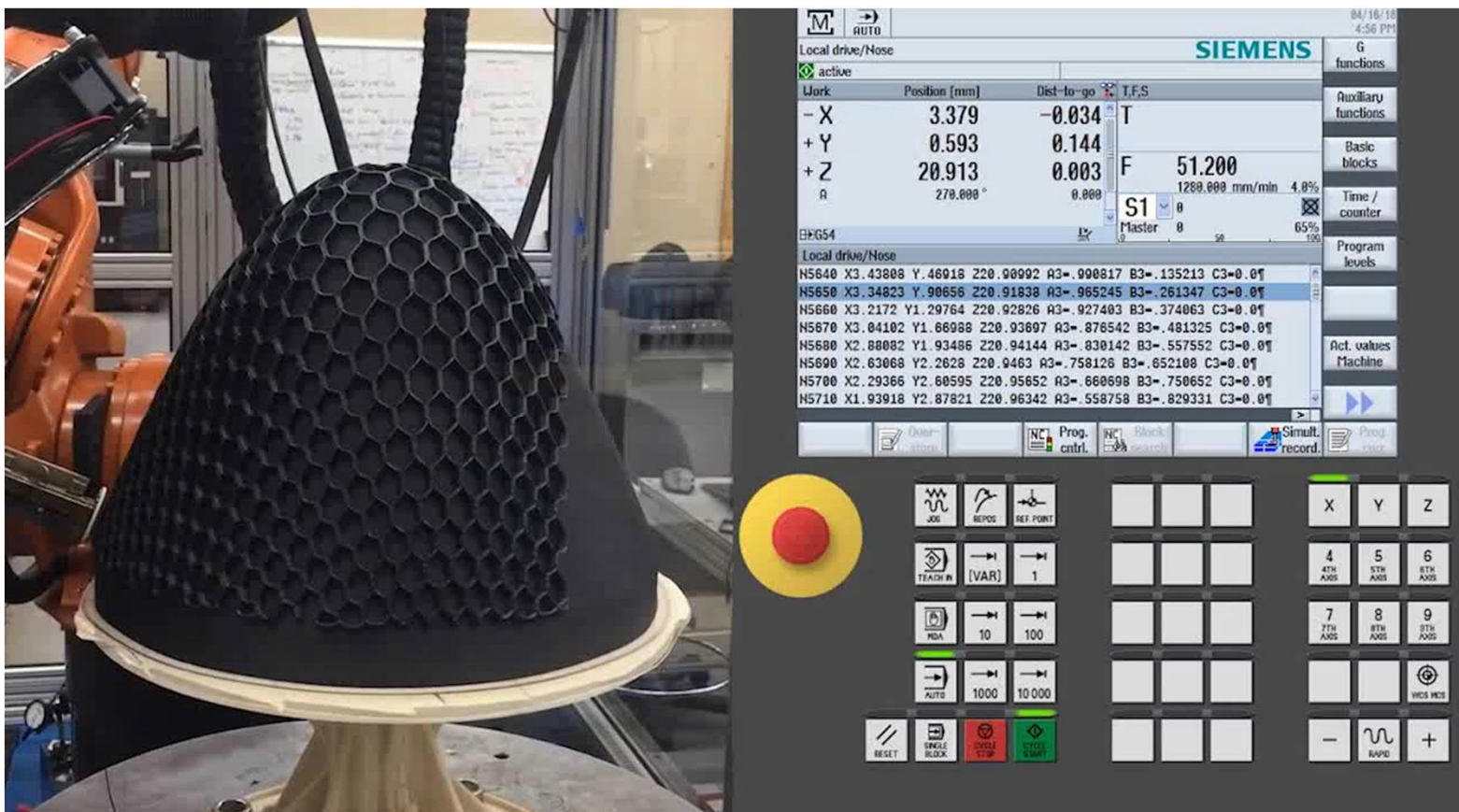
Realize revolutionary designs with Additive Manufacturing

Robot control with SINUMERIK and SIMATIC



Continuously improve product and production in the real world

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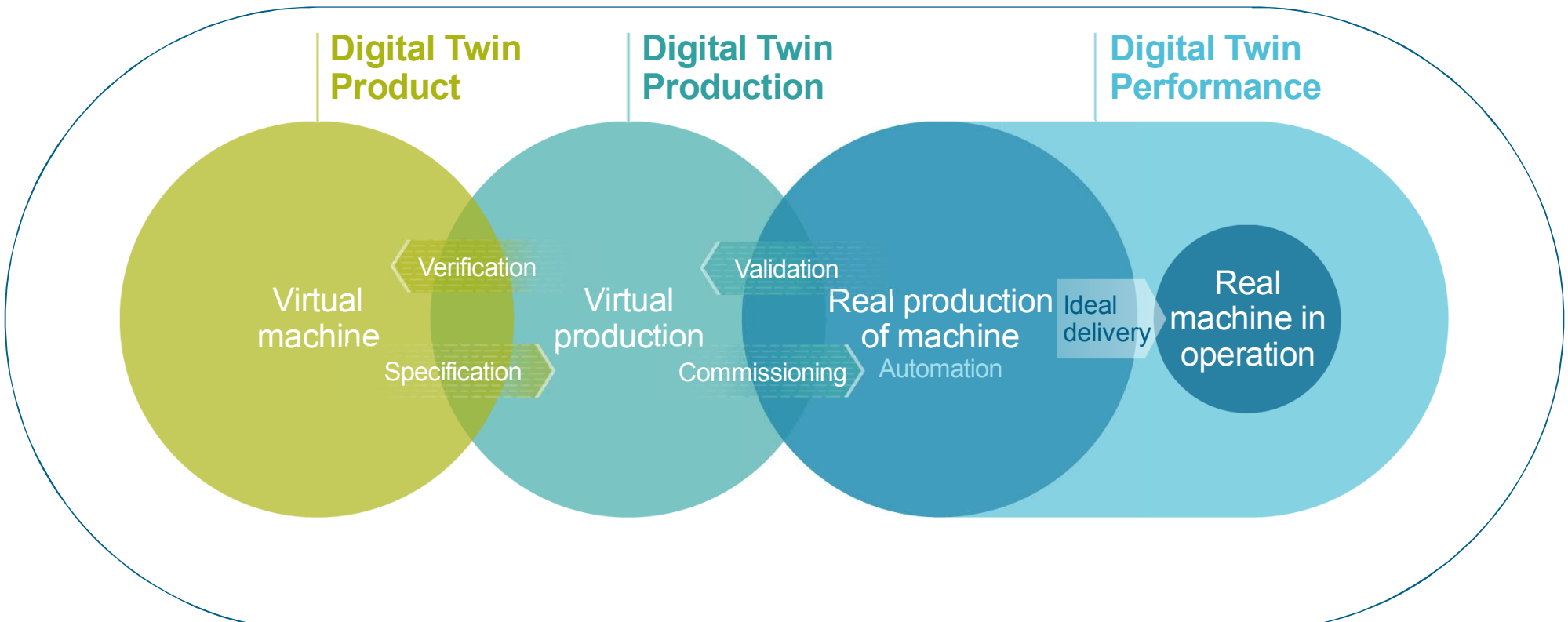

Digital Twin Performance – Real machine in operation

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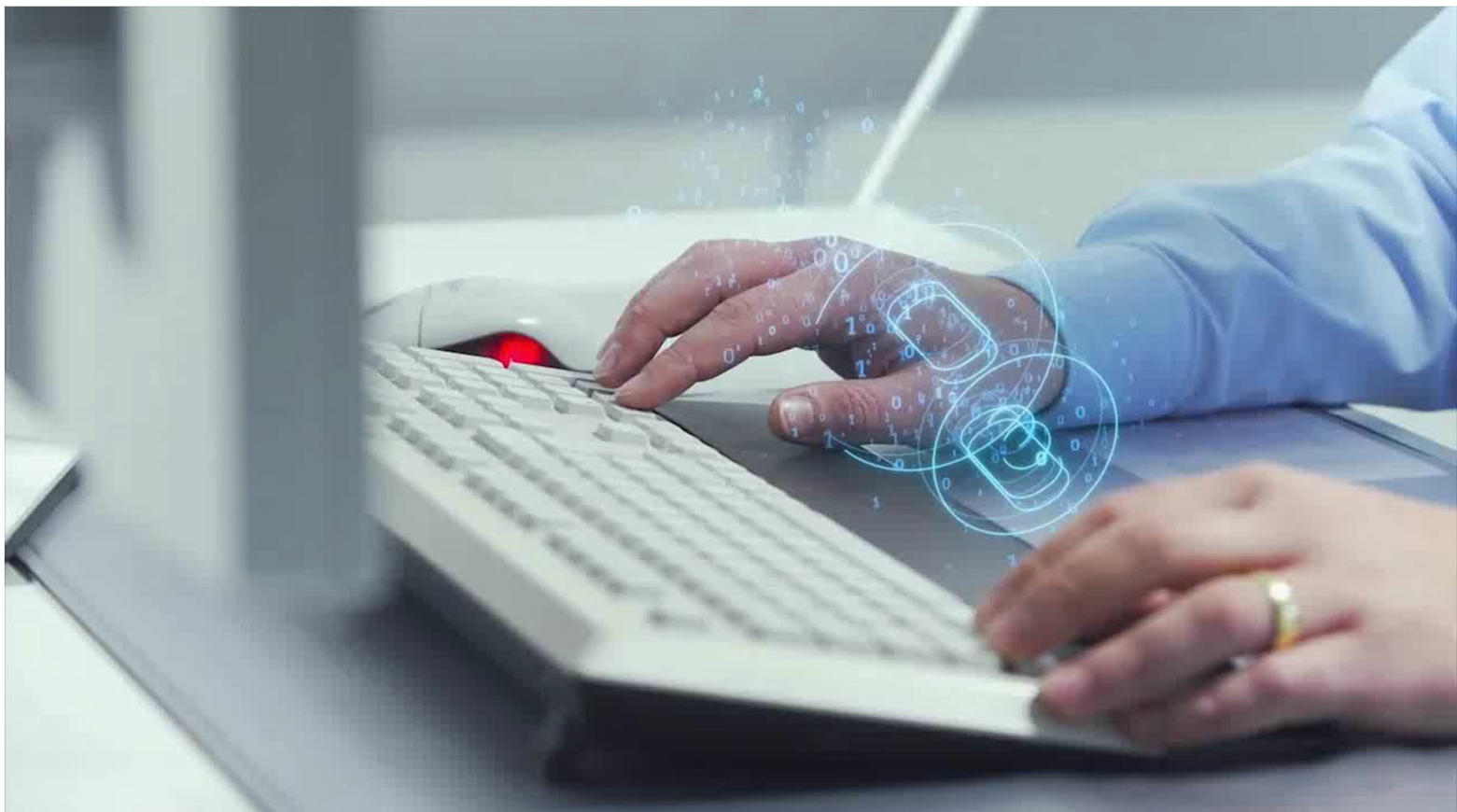
Monitoring of all machines – everywhere and anytime

MindSphere application – Manage MyMachines



Digital Twin Performance – Real machine in operation

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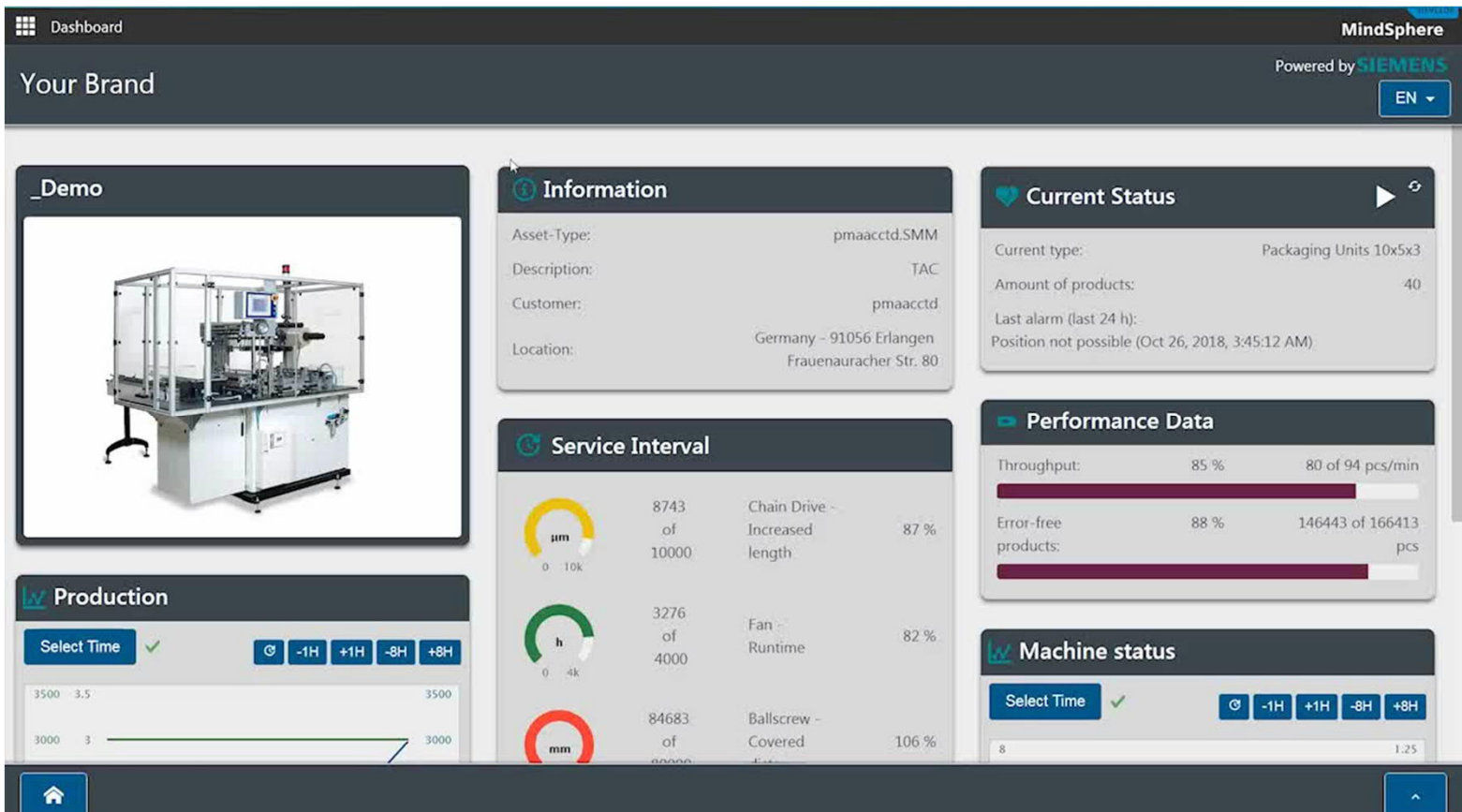
Optimize maintenance intervals by tracking machine condition

SIMATIC MindSphere application – Machine Monitor



Continuously improve product and production in the real world

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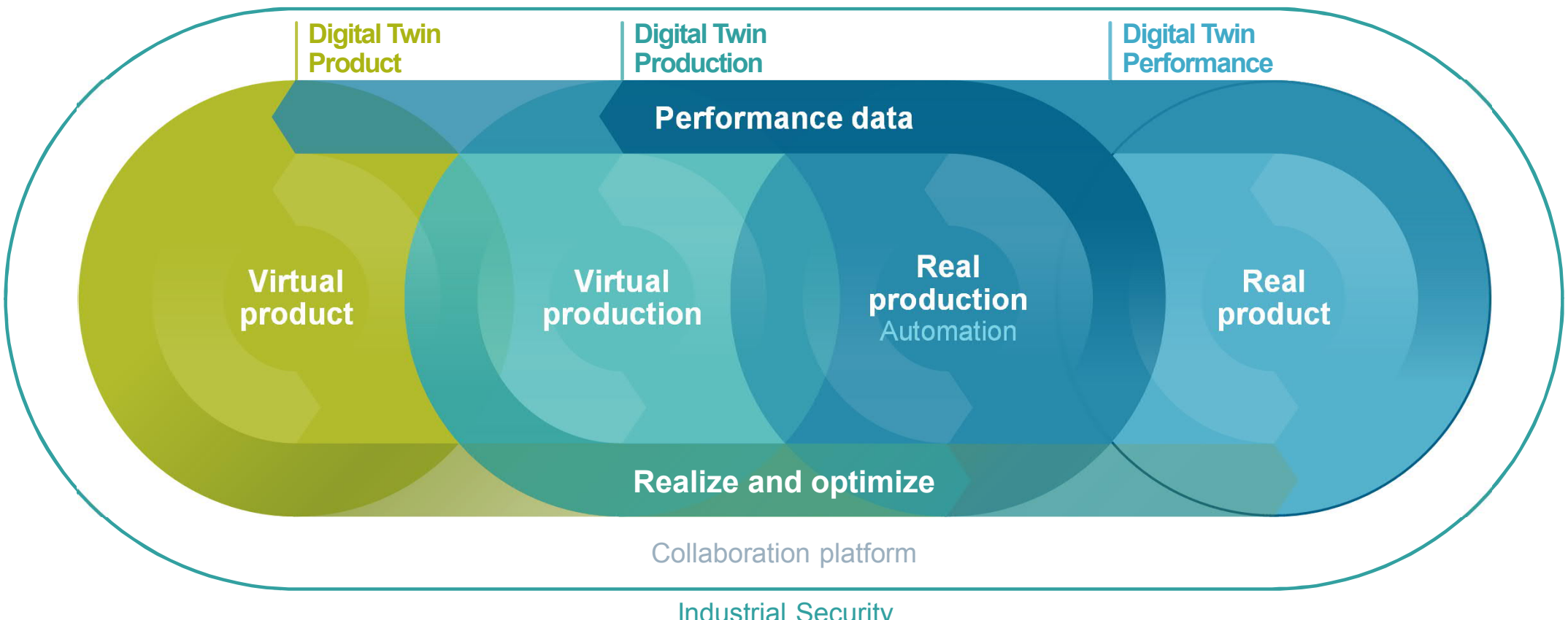

We help our customers beyond portfolio to master their digital transformation

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Consulting

Making sure our customers' way towards digital transformation is the right one

Implementation

Helping customers implement and optimize the digital enterprise

Optimization

Continuous improvement by analyzing ongoing operations

Financing

Supporting customers with smart financing solutions

The experts from Digital Enterprise Services

Fast delivery

Systems that make decisions on their own

Individual products

Produce as flexibly as possible, anywhere, anytime

Sustainable products

Knowing the exact CO_2 footprint of anything we build

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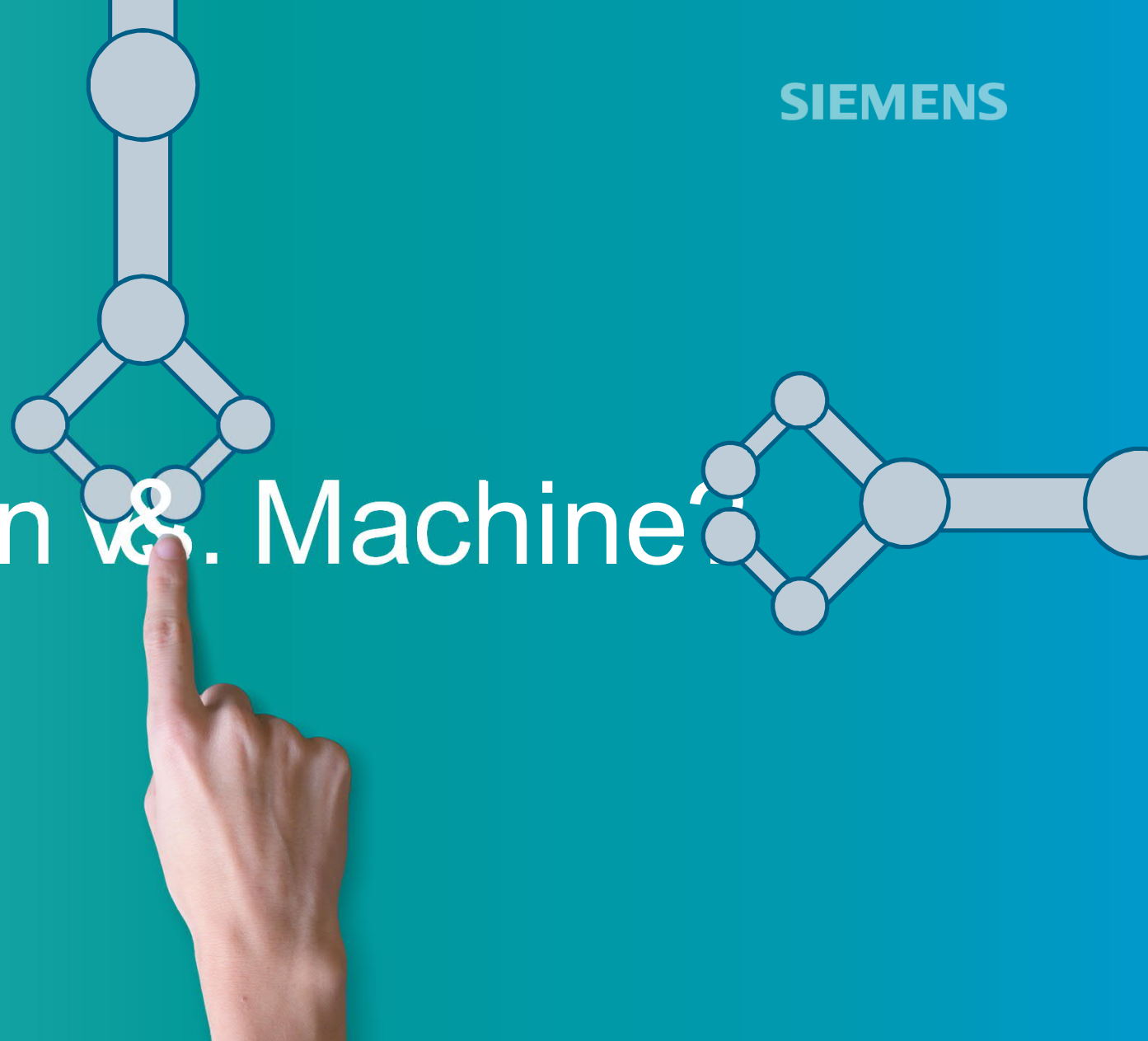
Human vs. Machine?



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The digital future starts **today.**