

AI and Digital Manufacturing @ Siemens

IEID Conference Shanghai | September 18th, 2019

Prof. Dr.-Ing. Dieter Wegener | Vice-President
Corporate Technology, Siemens AG

Digital Enterprise 2019

Thinking industry further!

Data
usage

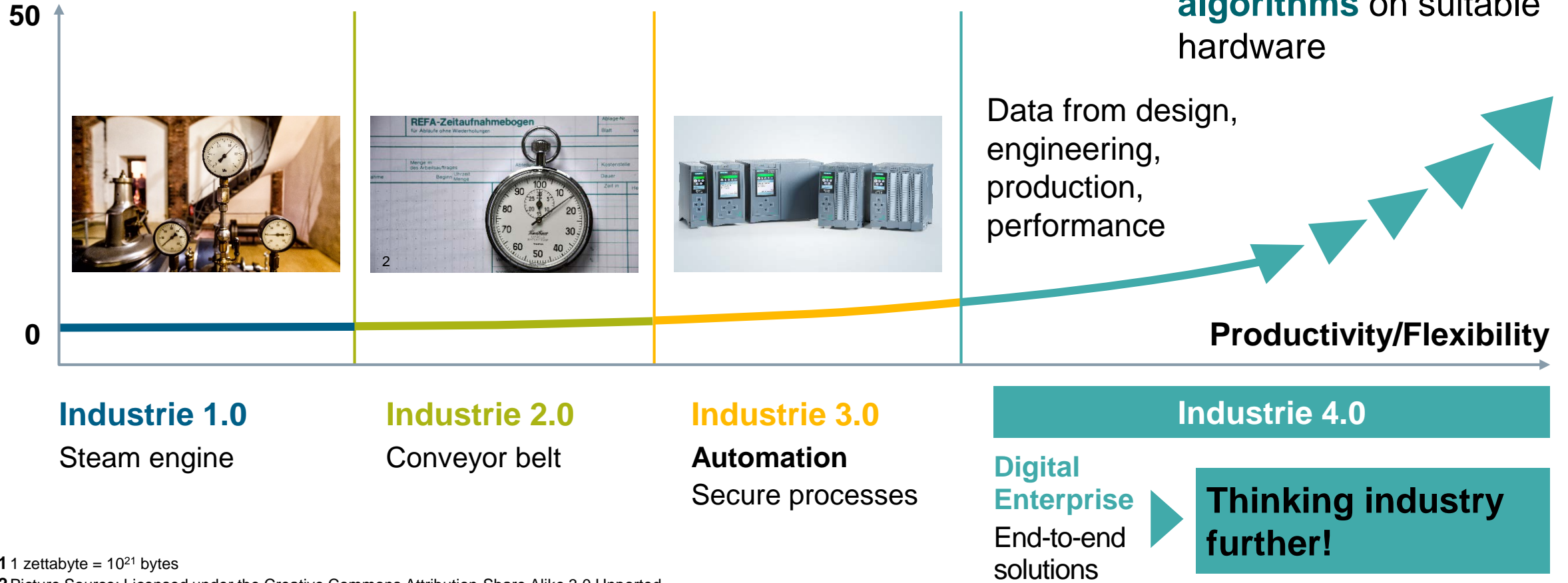
Plat-
forms

Cutting-edge
technologies

Growing volumes of data in the digital transformation are opening up new productivity potential and greater flexibility

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Ingenuity for life

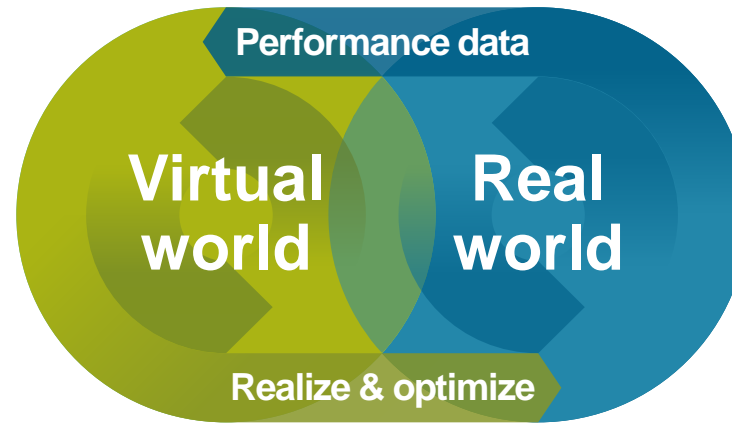
Data volume (in zettabytes¹)



¹ 1 zettabyte = 10^{21} bytes

² Picture Source: Licensed under the Creative Commons Attribution-Share Alike 3.0 Unported, 2.5 Generic, 2.0 Generic and 1.0 Generic license.

Digital Enterprise software platforms – comprehensive, constantly expanding software portfolio

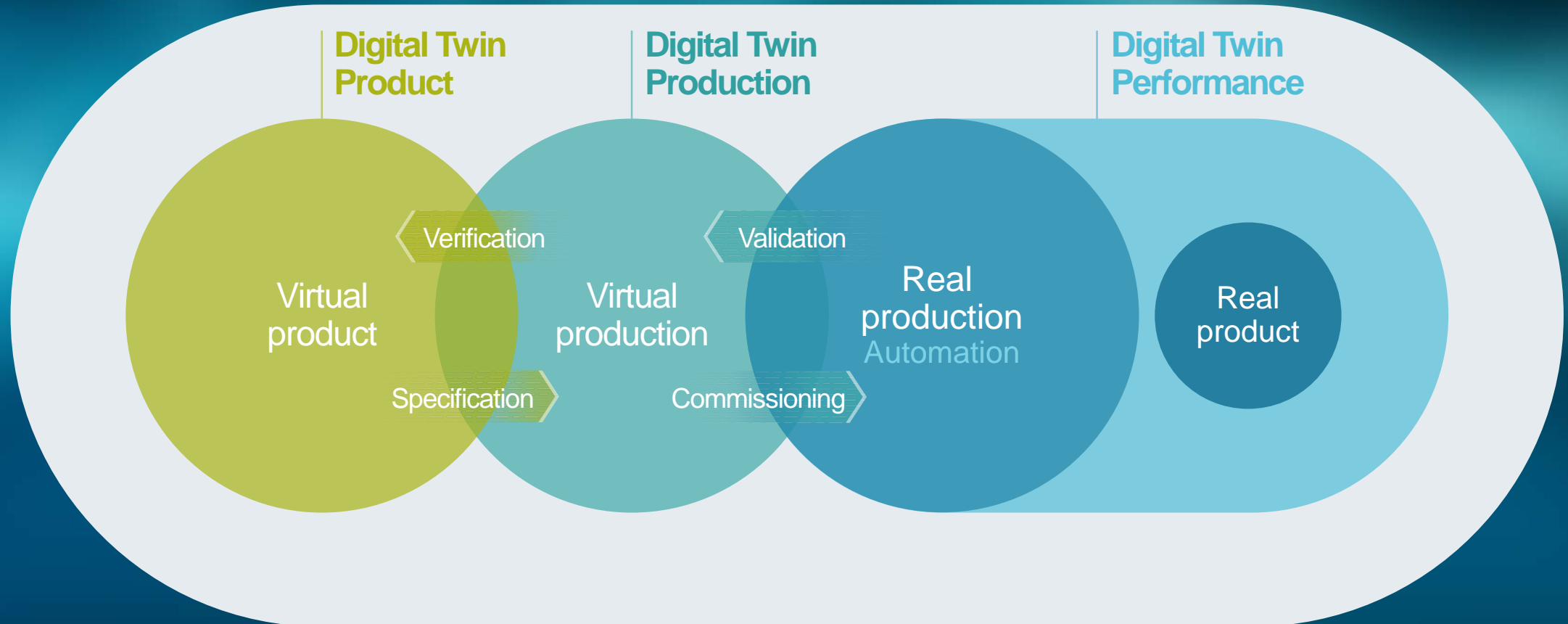


MindSphere

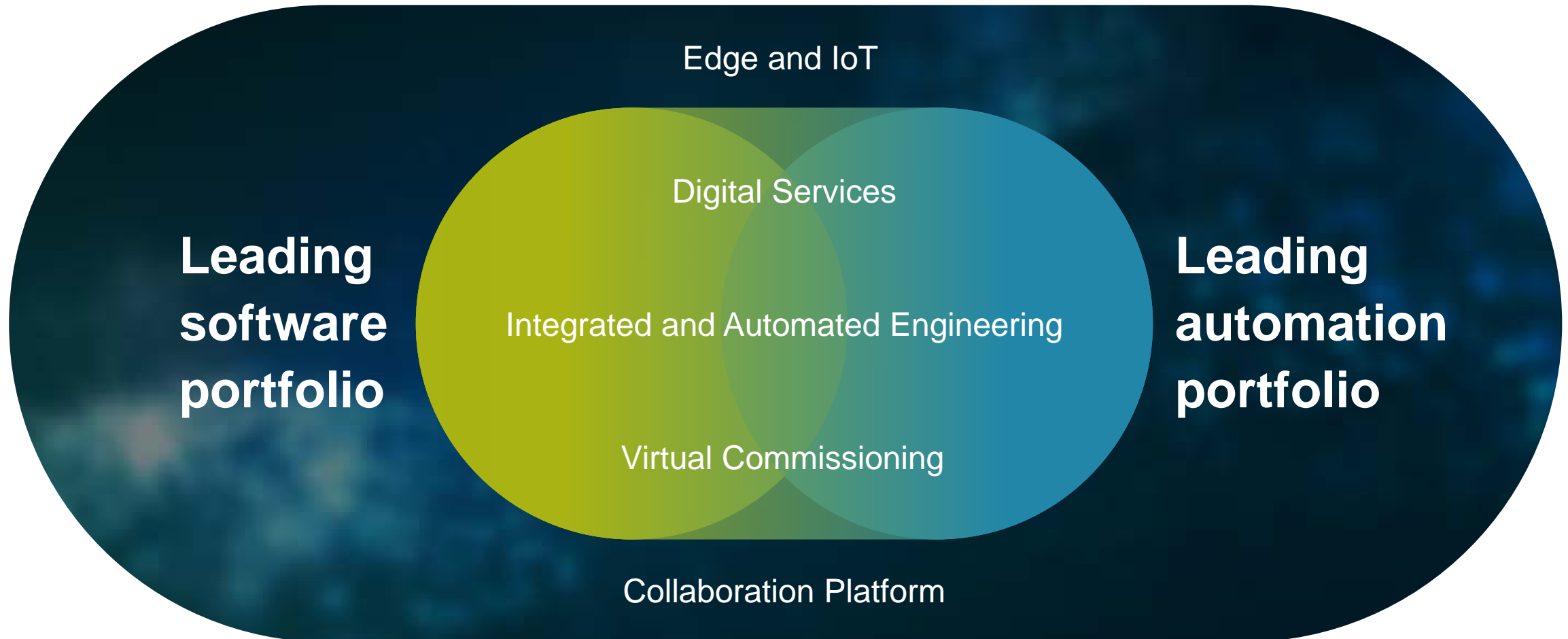
NX CAD	Teamcenter	NX Line Designer/MCD/	Simatic IT	MindSphere Apps
Polarion	Manufacturing	Automation Designer	Camstar	Digital Lifecycle Service
Simcenter	NX CAM / Additive	Simit	WinCC/SCADA	Asset Performance
Mentor Xpedition	Tecnomatix	TIA Portal	CNC Shop floor Mgt SW	Suite
Mentor Capital	Mentor Valor	Simatic PCS7	Edge Apps	

Teamcenter, Comos, PlantSight

The most holistic Digital Twin

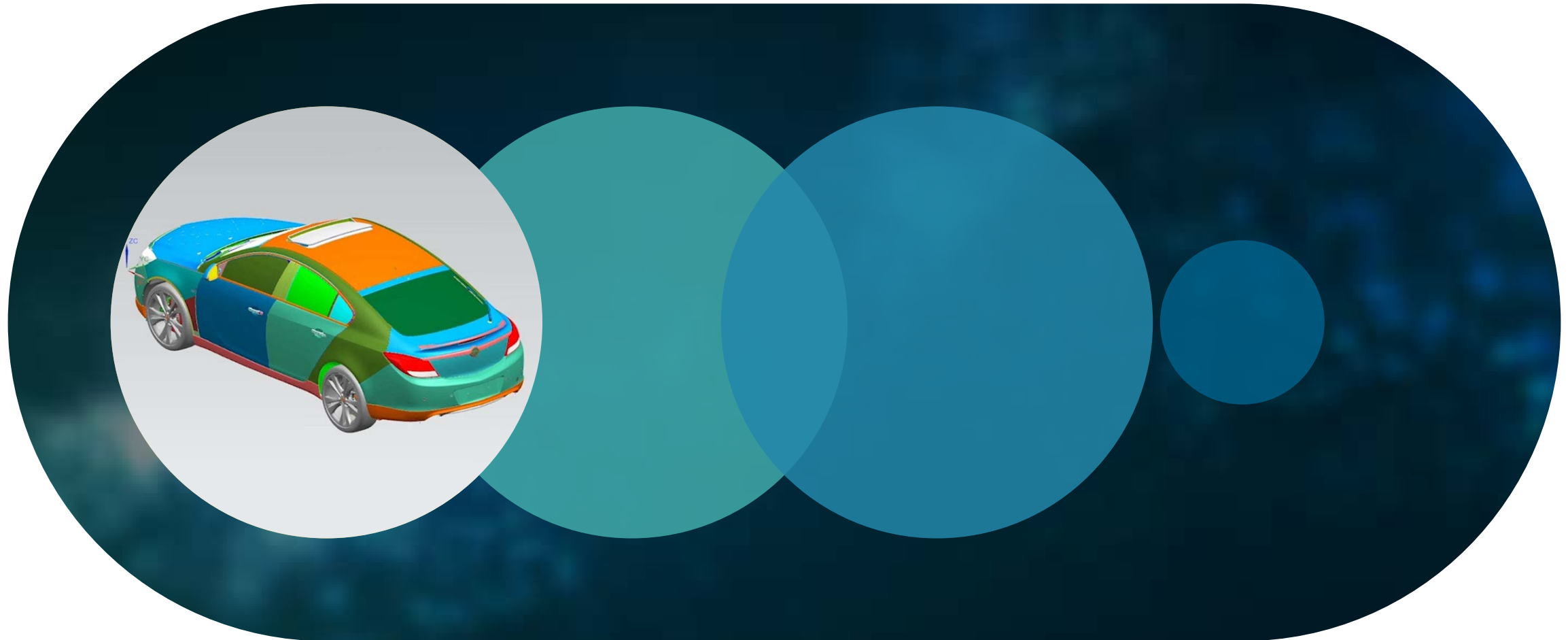


Innovations through integration of software and automation,
based on deep domain know-how



The Digital Twin of the product reduces time to market

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Mechanics and multi-physics

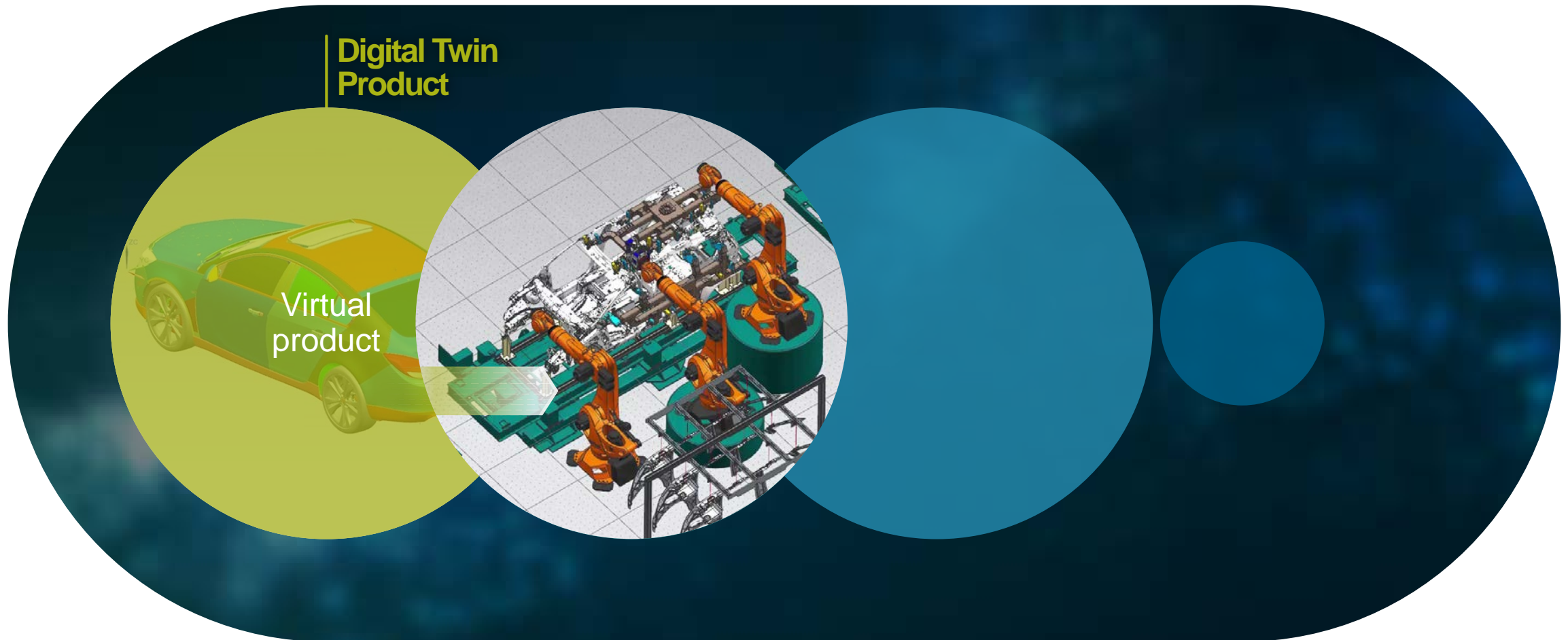
Electrical systems



Embedded software

The Digital Twin of the production accelerates planning, setup, and optimization

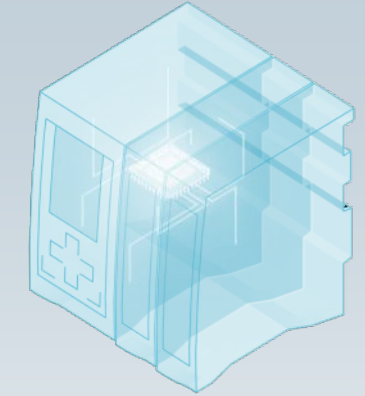
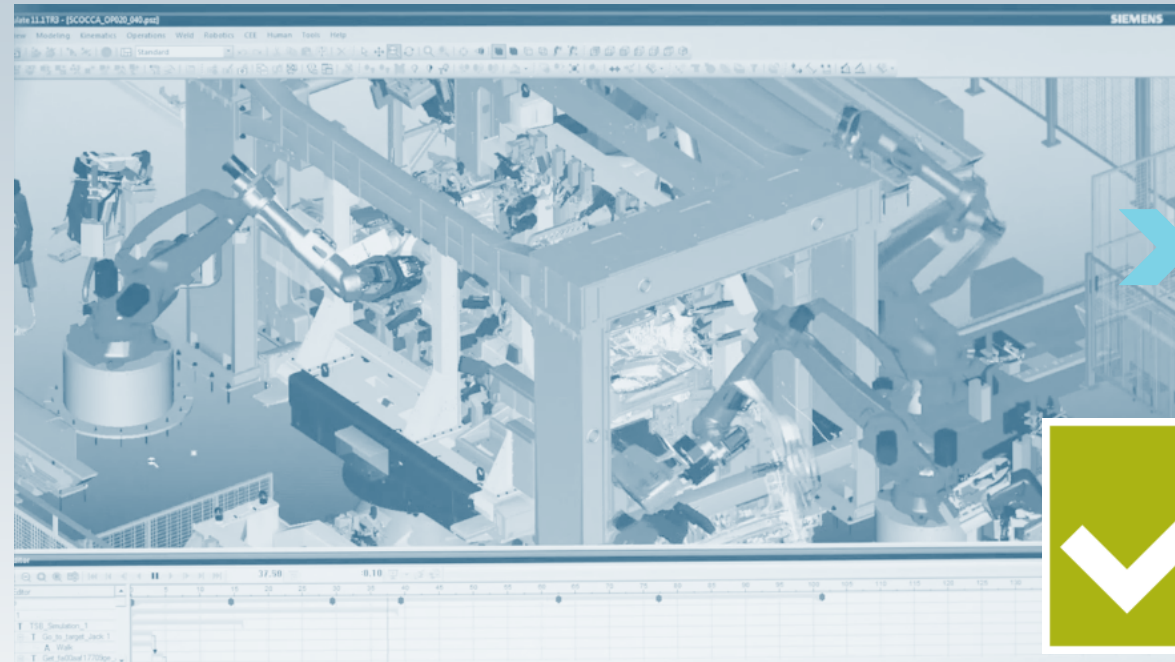
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Production process

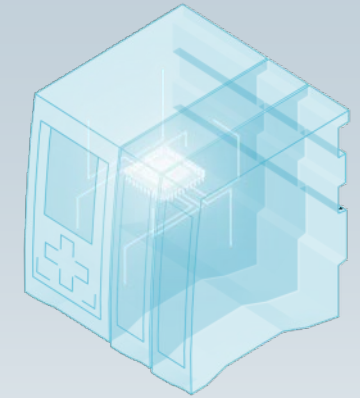
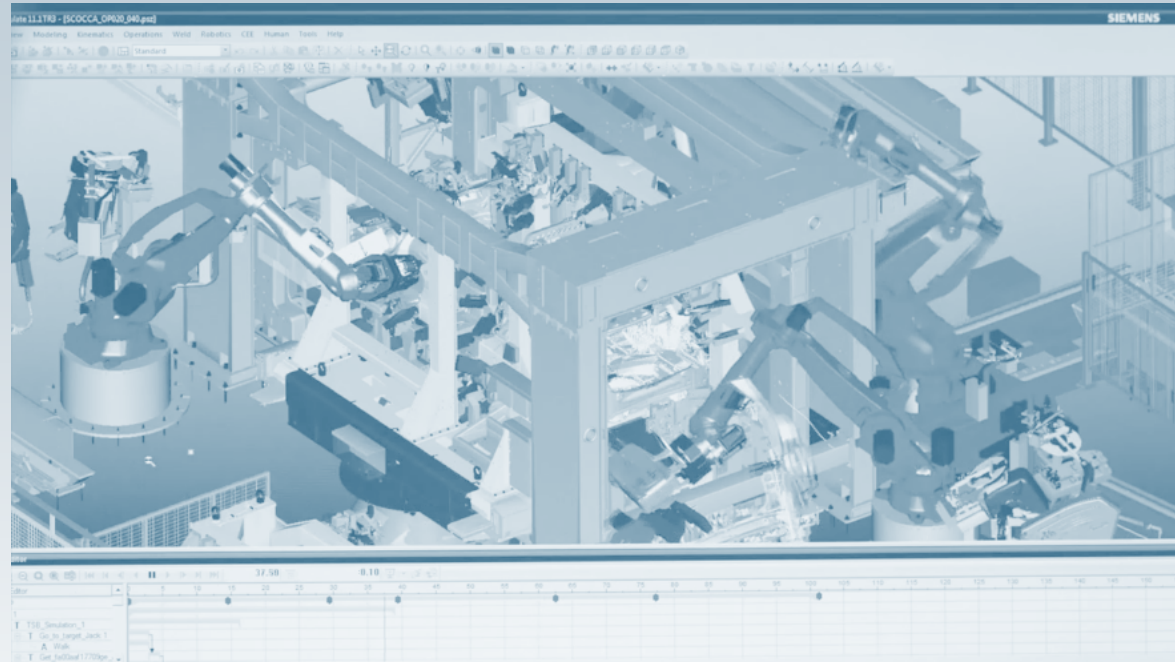
Production line

Entire factory



Digital Twin
of SIMATIC
S7-1500

Virtual Commissioning



**SIMATIC
S7-1500**

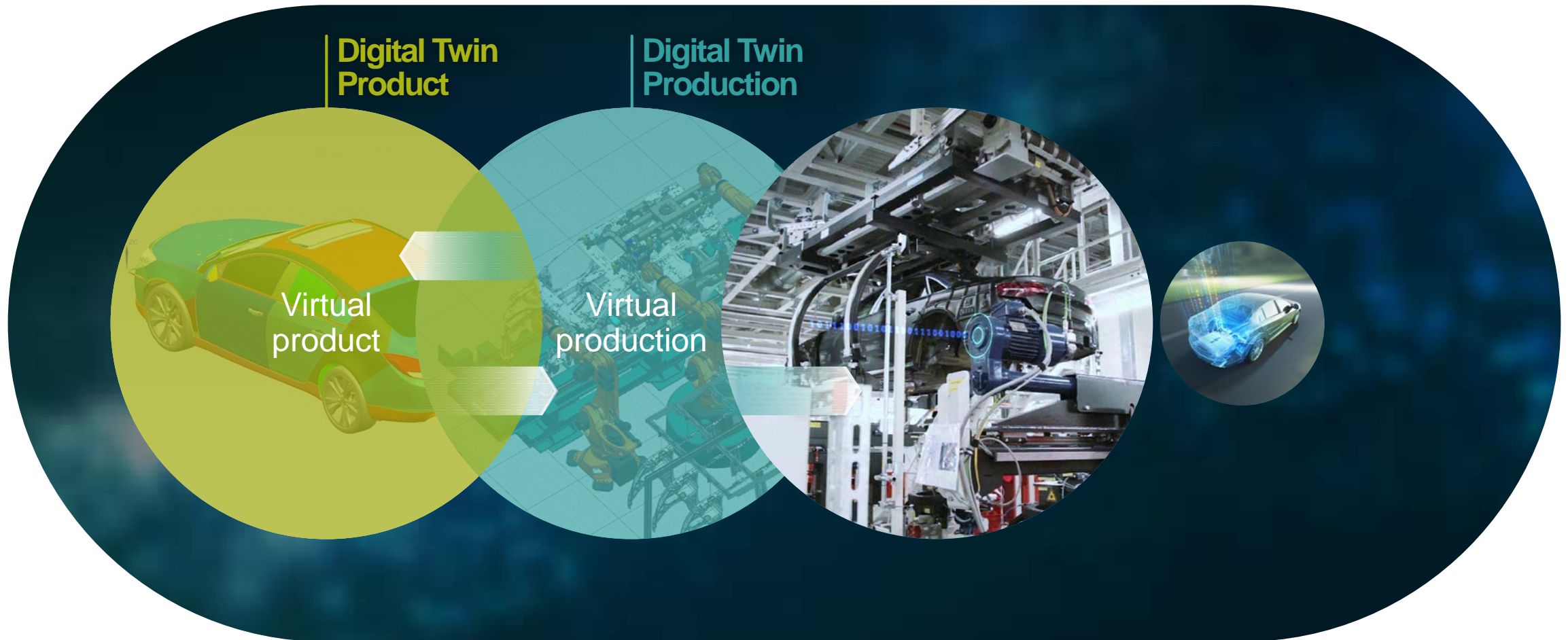


Real Commissioning



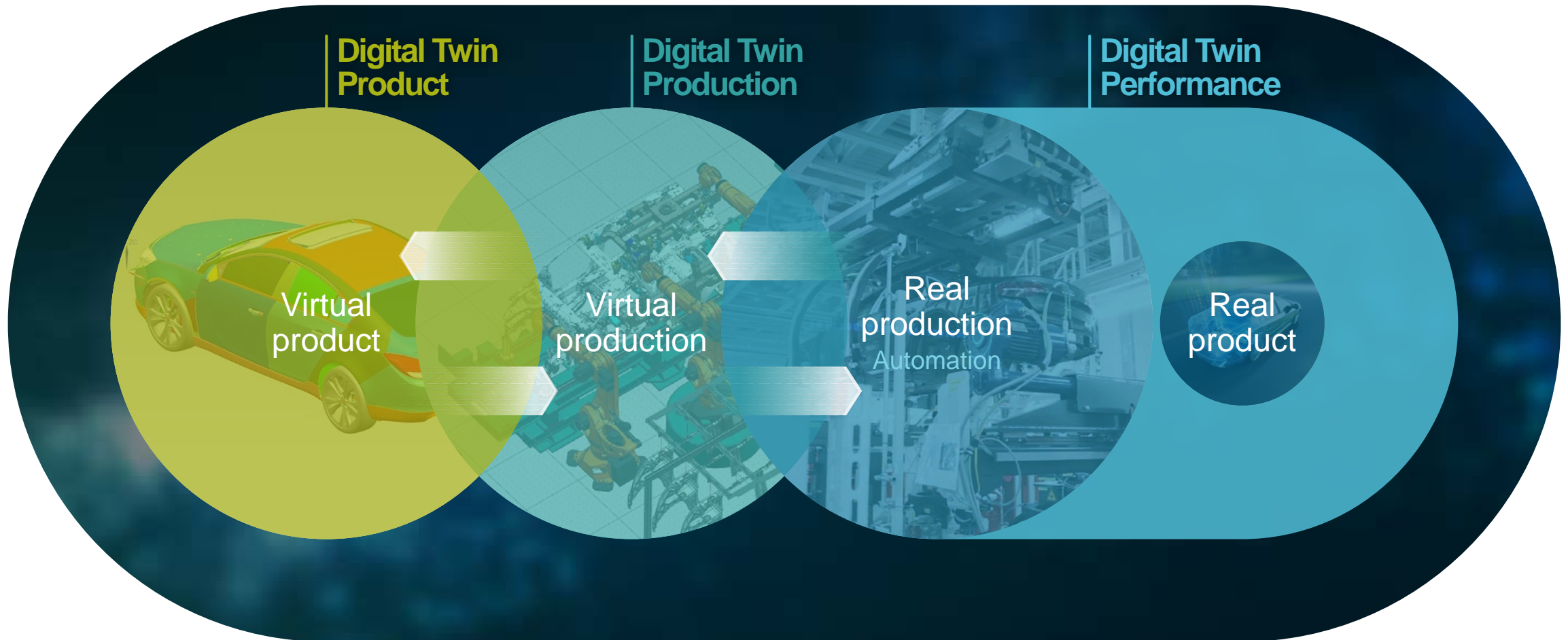
Holistic automation portfolio increases productivity on the shop floor

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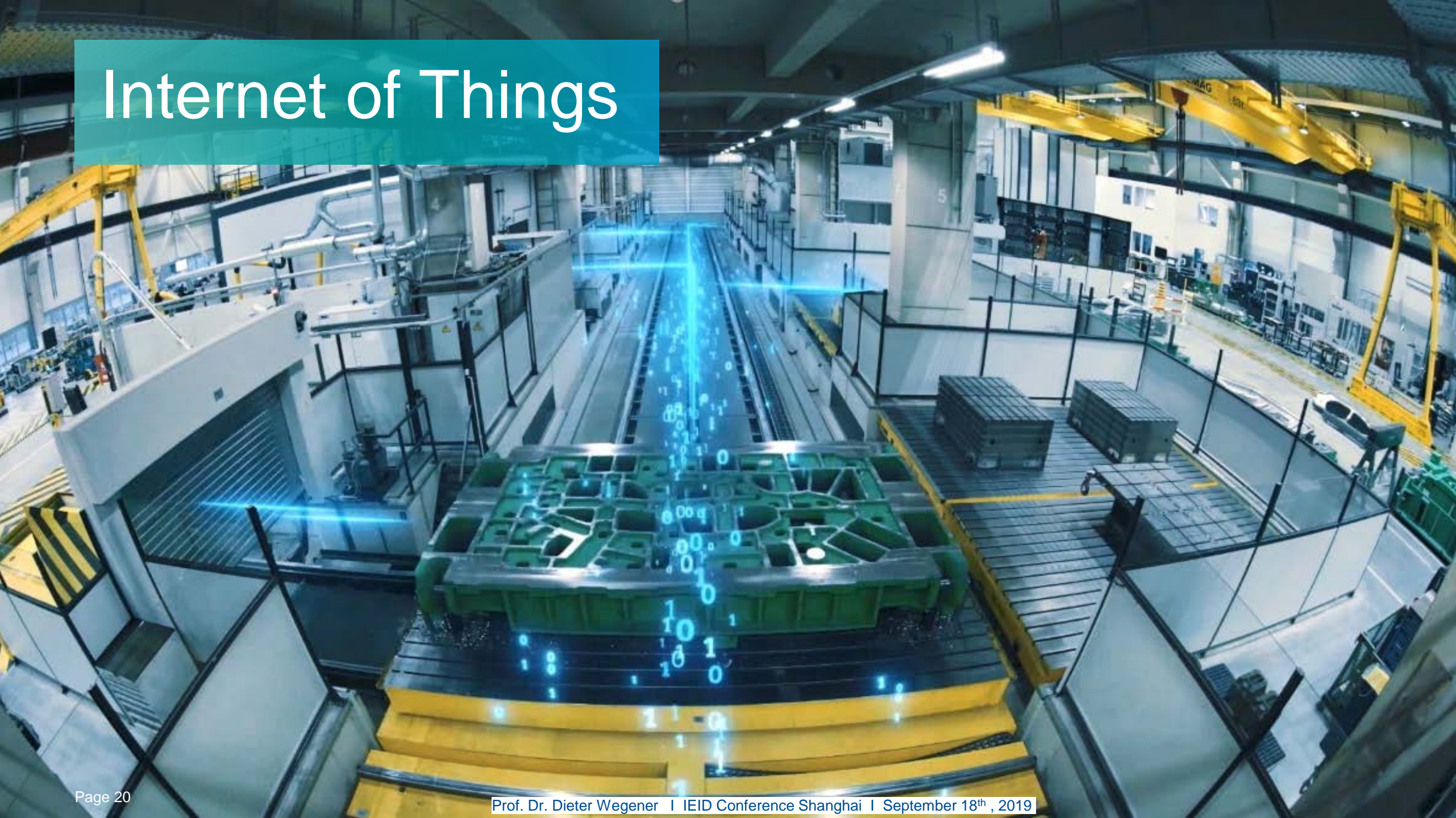


Real production

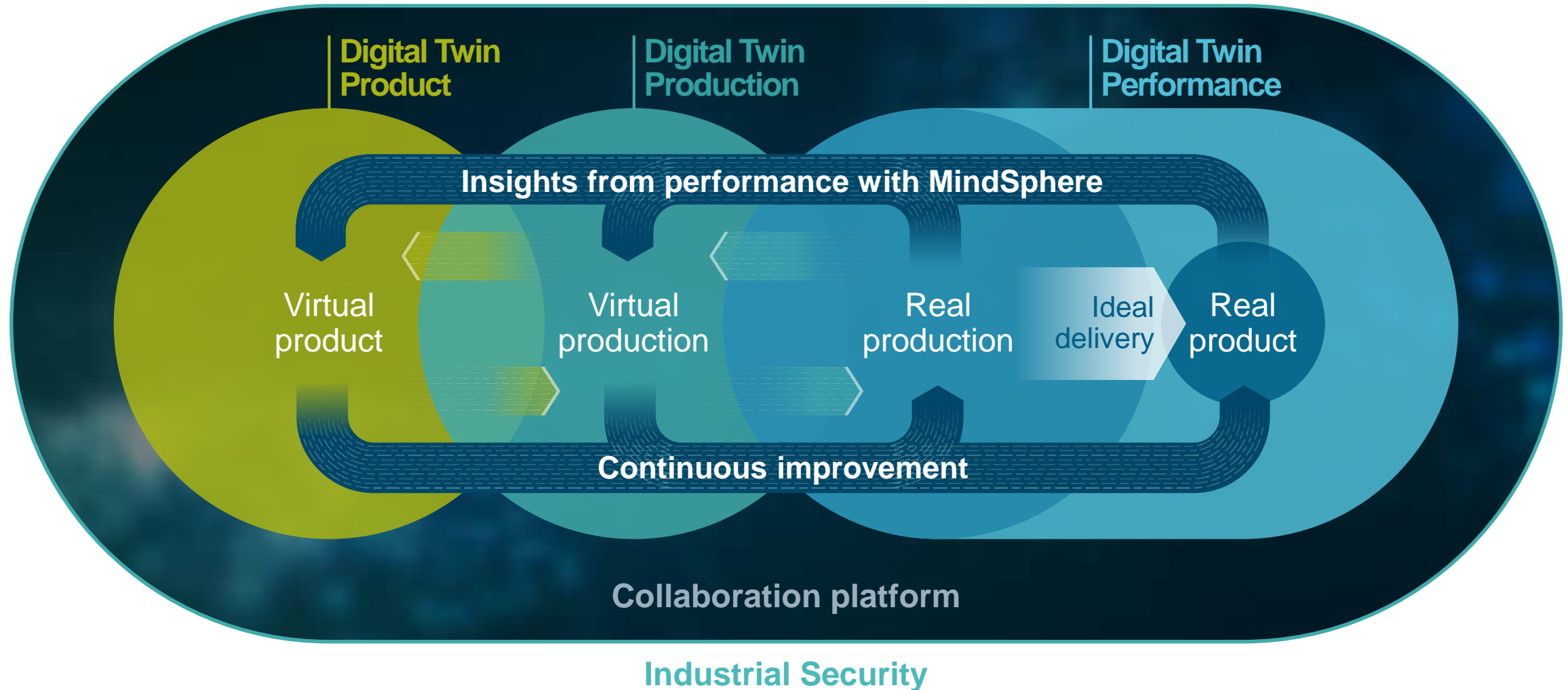
The Digital Twin of the performance enables continuous analysis of both product and production



Internet of Things



Feeding back insights enables continuous optimization of product and production



Our IoT operating system MindSphere – enhanced by Edge and Mendix low code app development



Applications

Powerful industry solutions with advanced analytics



Open PaaS

Develop robust industrial IoT solutions faster with global scalability

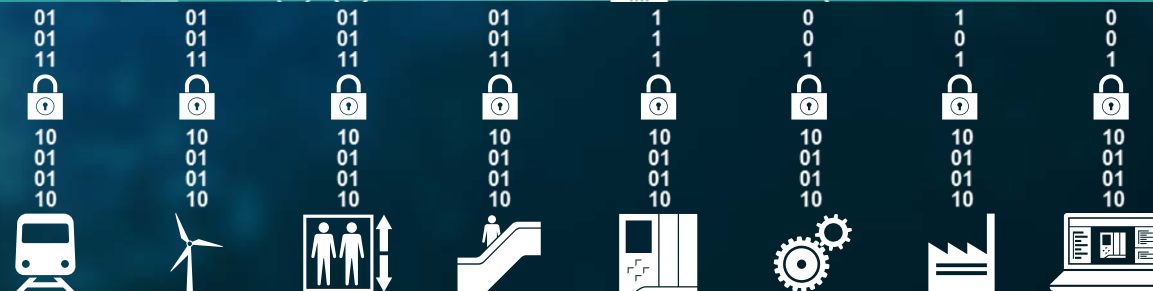
MindSphere

Edge Management

Edge Device Management,
Edge App Management,
and Edge App Store

Connectivity

Connect products, plants, systems, machines and enterprise applications



Edge Apps

Applications for intelligent data use

Edge Devices

Secure, future-proof basis for running edge applications

X-RAY ON

X-ray-based PCB quality assurance

Siemens Electronics Factory Amberg, Germany

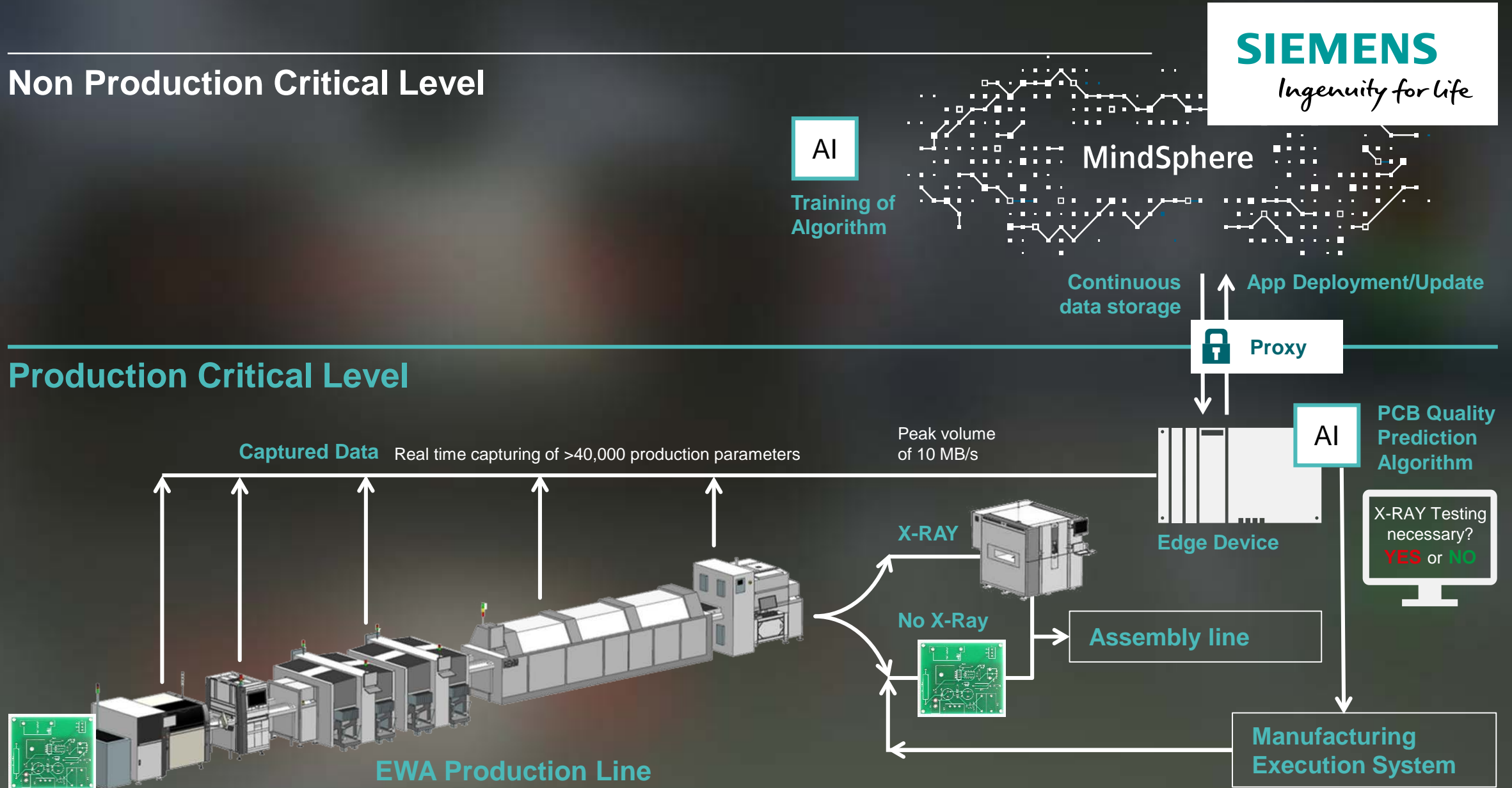
Challenge

Production output of SMT line limited by time consuming X-ray Quality tests

Every further X-ray machine requires additional invest of €500,000

Non Production Critical Level

Production Critical Level



Minimization of
necessary X-ray tests
by up to

30%

Quality rate of

100%

Reduced capital
invest for further
X-ray machines of

€500,000



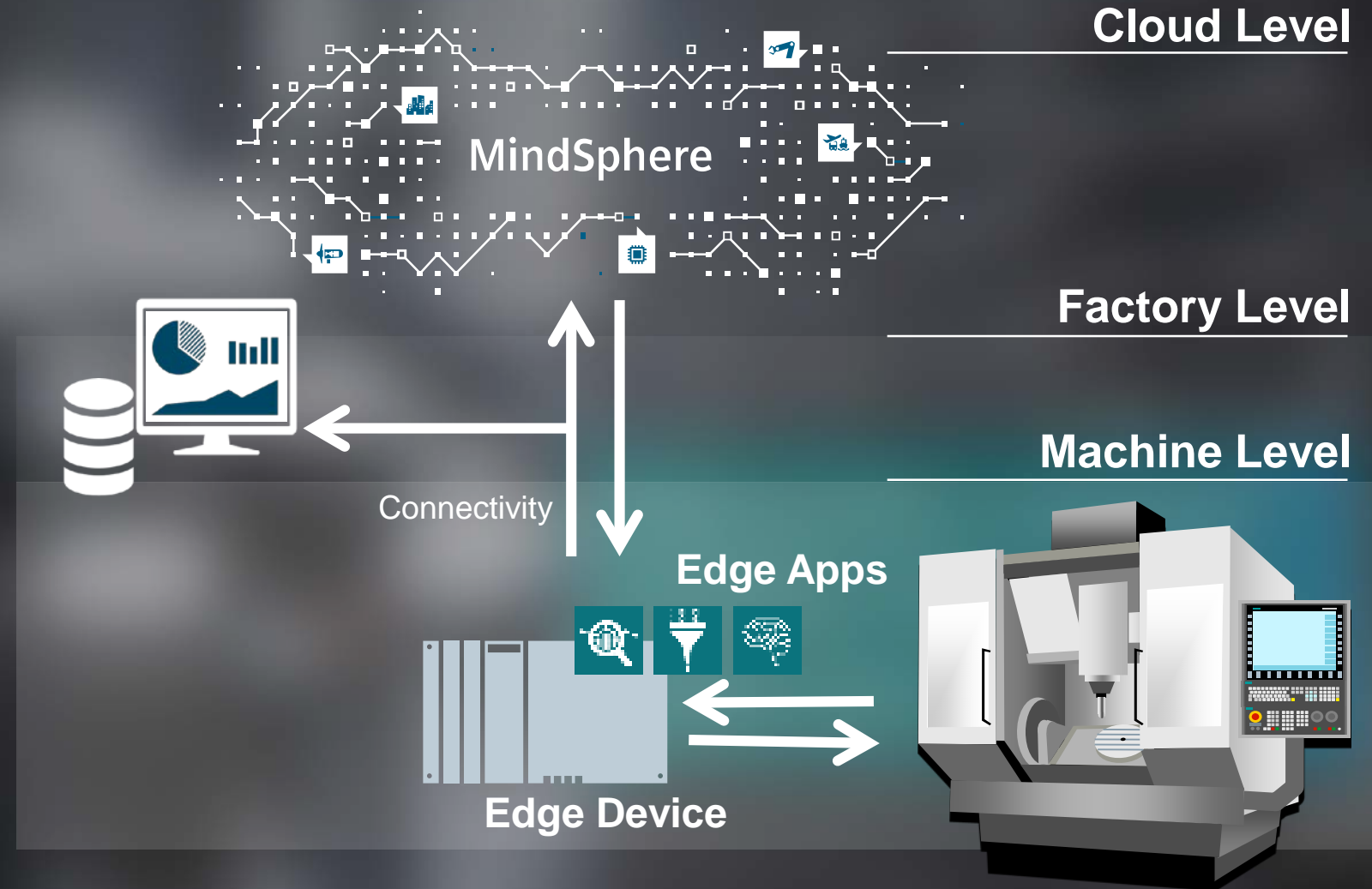
Magazine optimization

HELLER GmbH

Magazine
optimization

HELLER GmbH

Cycle-time reduction enabled by program focused optimization of tool magazine right at the machine



Your questions

Siemens Corporate Technology – Contact and further information



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