

Digitalization in Machine Tool Manufacturing at EMO 2017

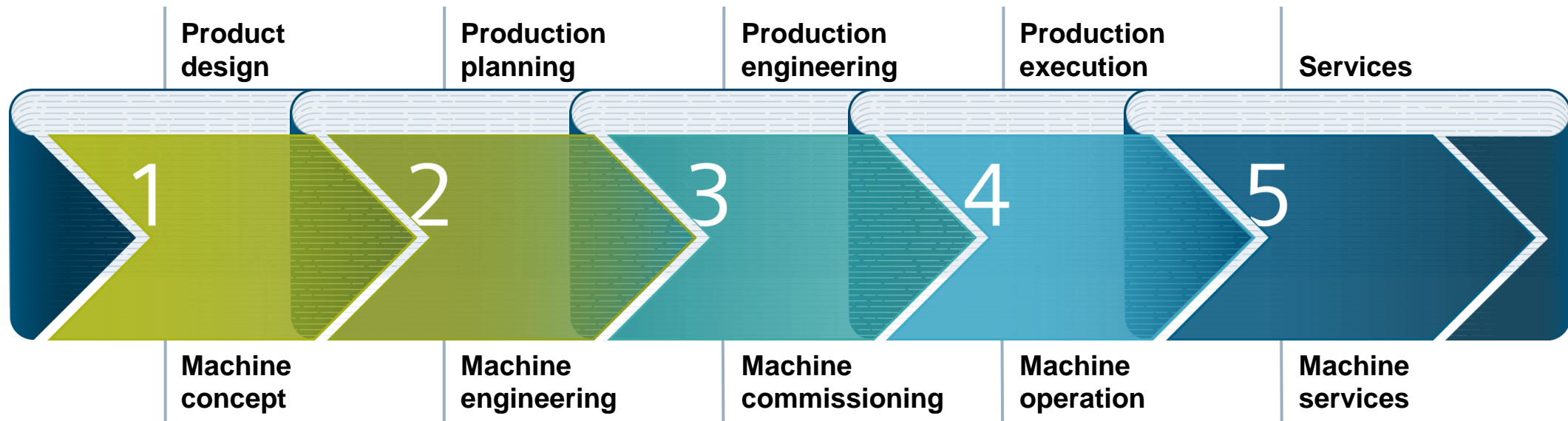
Uwe Ruttkamp | Head of Machine Tool Systems
July 25, 2017 | Bad Neustadt (Saale)
Press conference prior to the EMO 2017

Our holistic approach

Specific for end customers and machine builders



Product manufacturer perspective



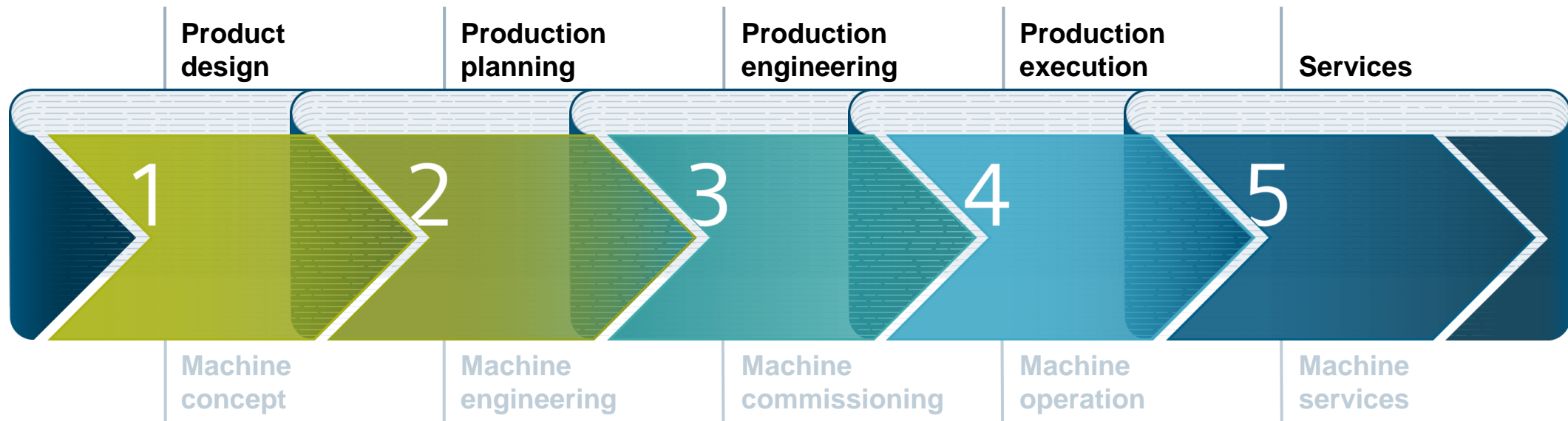
Machine builder perspective

Our holistic approach

Specific for end customers and machine builders



Product manufacturer perspective



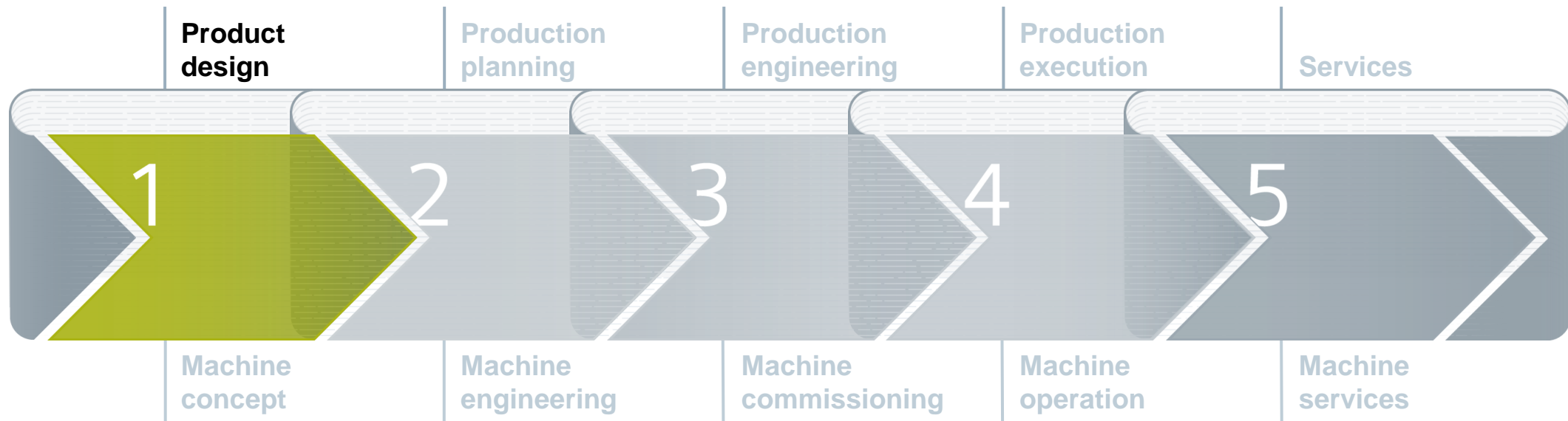
Machine builder perspective

Our holistic approach

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Product manufacturer perspective



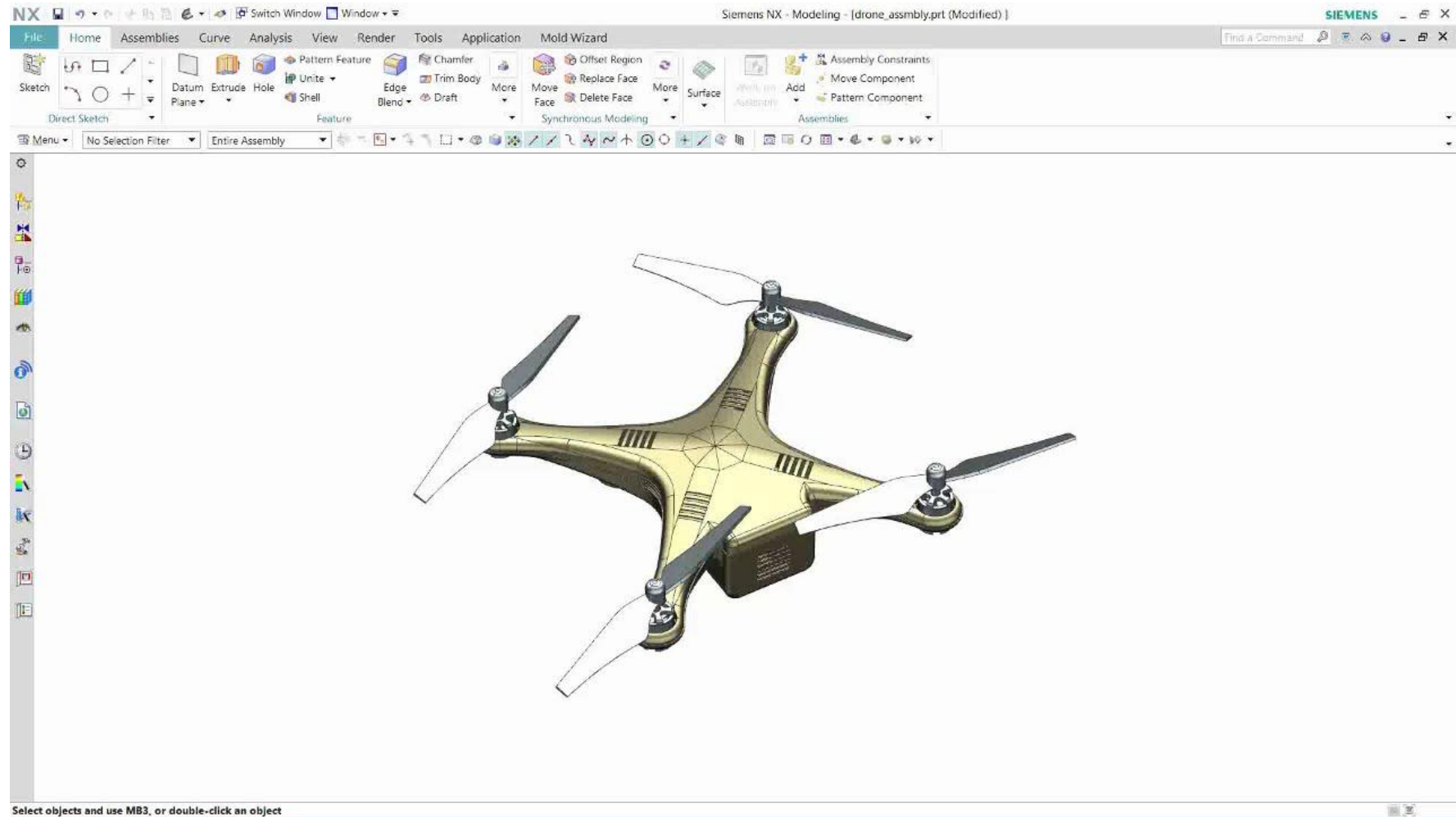
Machine builder perspective

Product design



Design and
simulate
the product

NX CAD/CAE/CAM
NX Mold Design

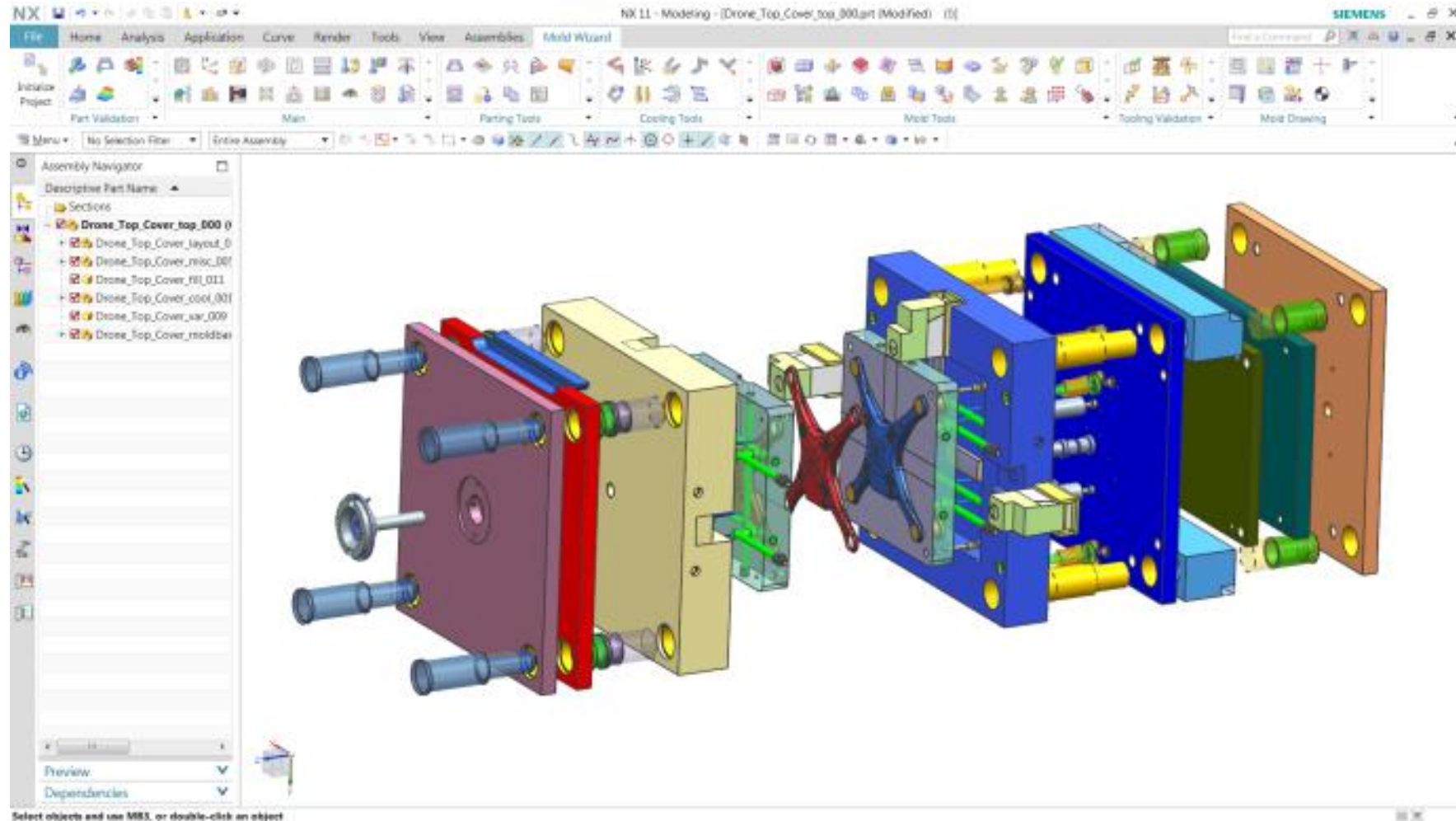


Product design

SIEMENS
Ingenuity for life

Design and
simulate
the product

NX CAD/CAE/CAM
NX Mold Design

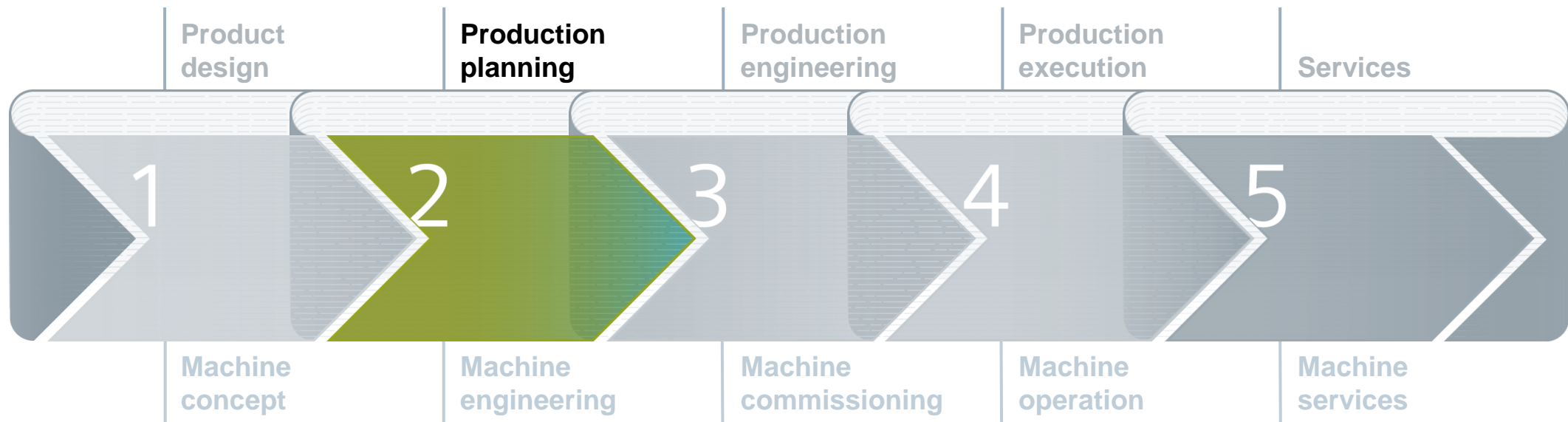


Our holistic approach

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Product manufacturer perspective



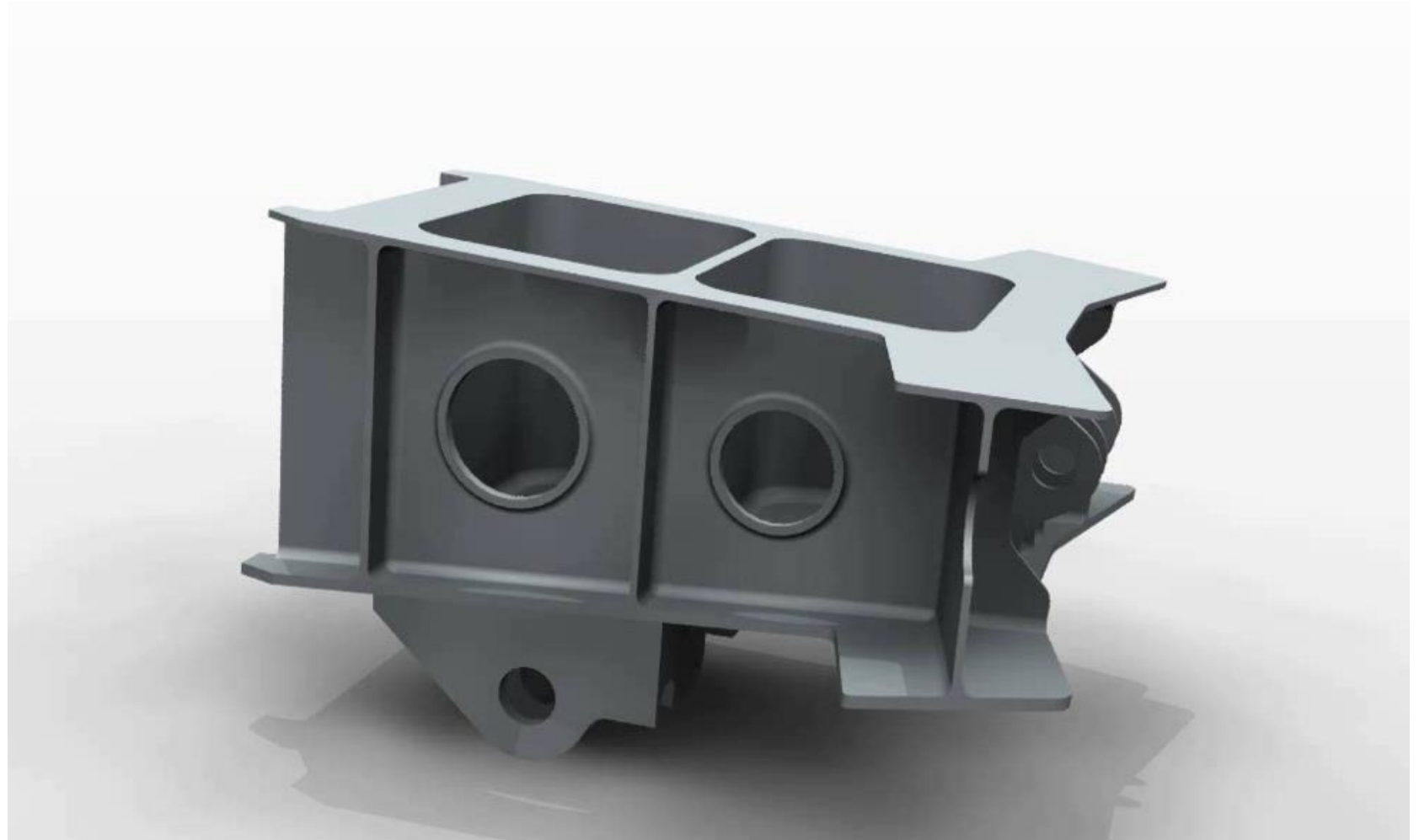
Machine builder perspective

Production planning for part manufacturing



Plan and
validate your
production
process

NX CAM

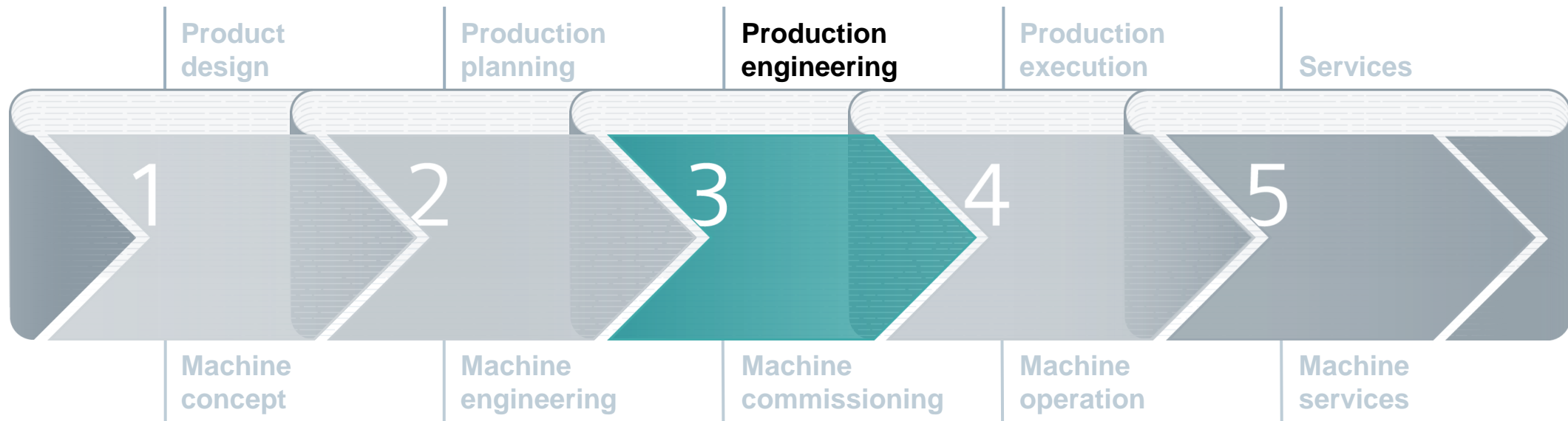


Our holistic approach

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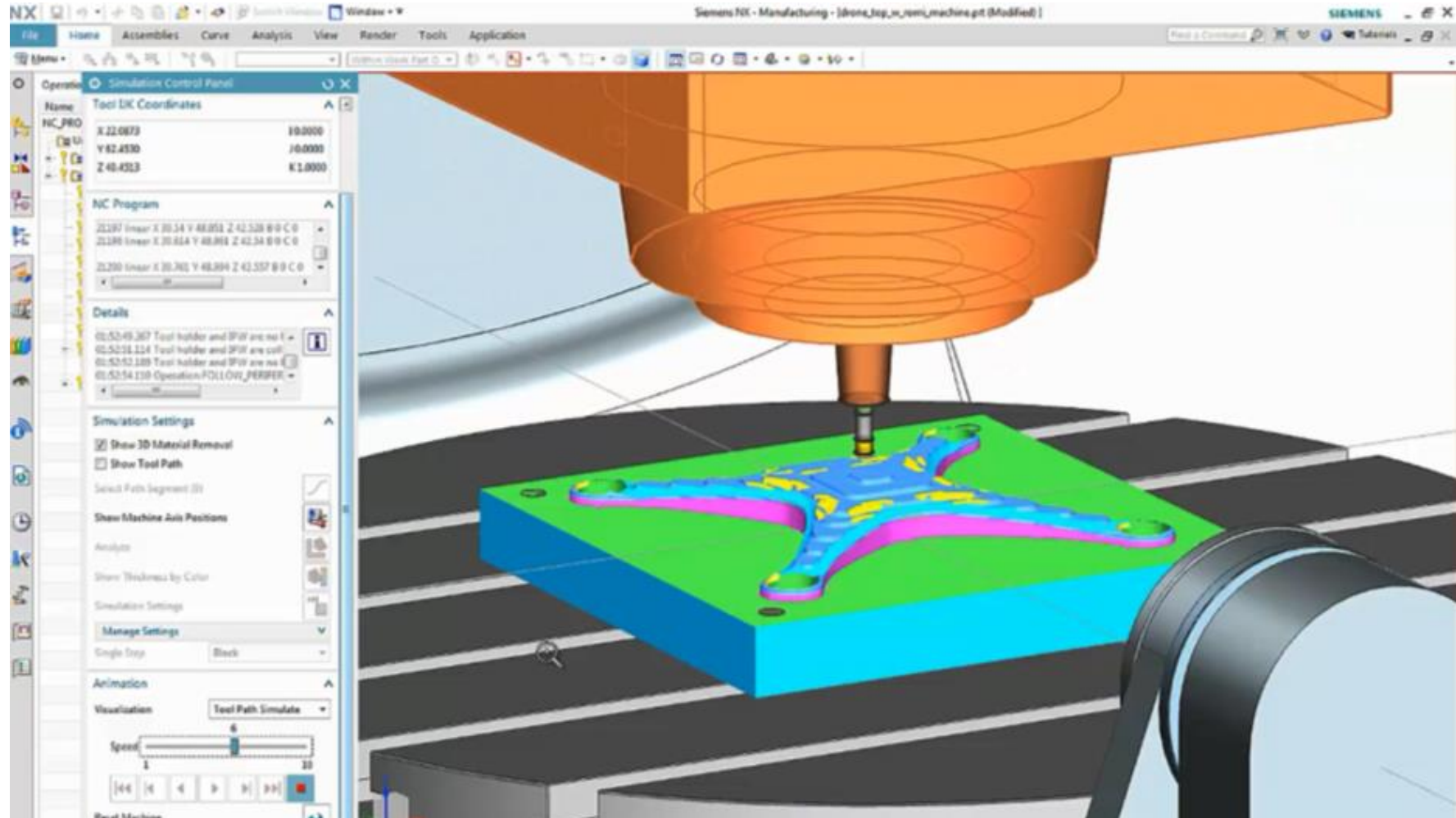
Product manufacturer perspective



Machine builder perspective

Process planning and job preparation

NX CAM
Sinutrain
VNCK

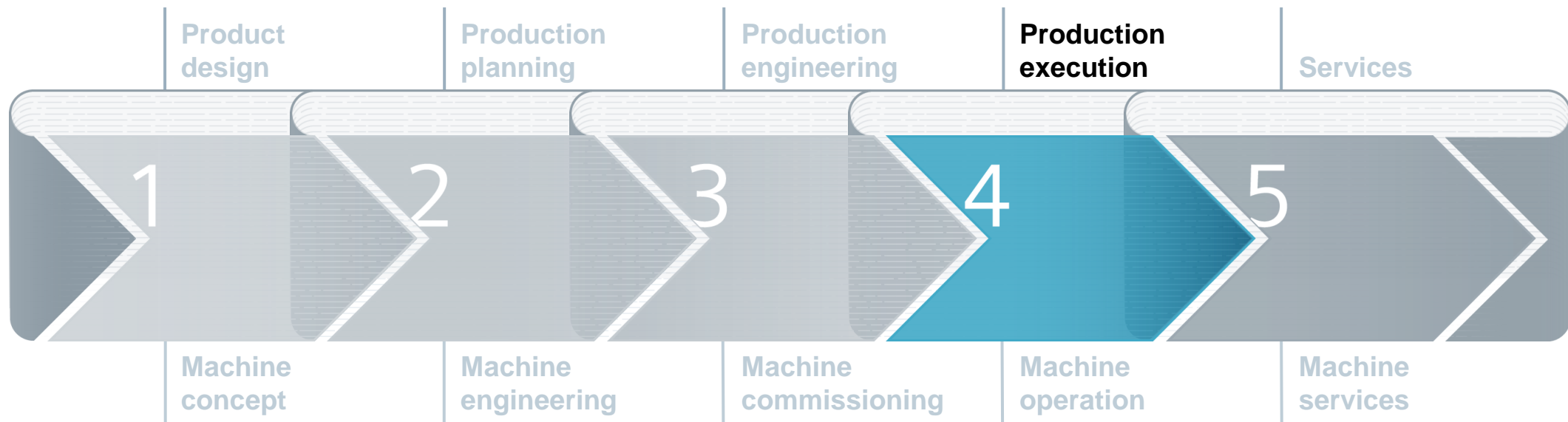


Our holistic approach

Specific for end customers and machine builders



Product manufacturer perspective



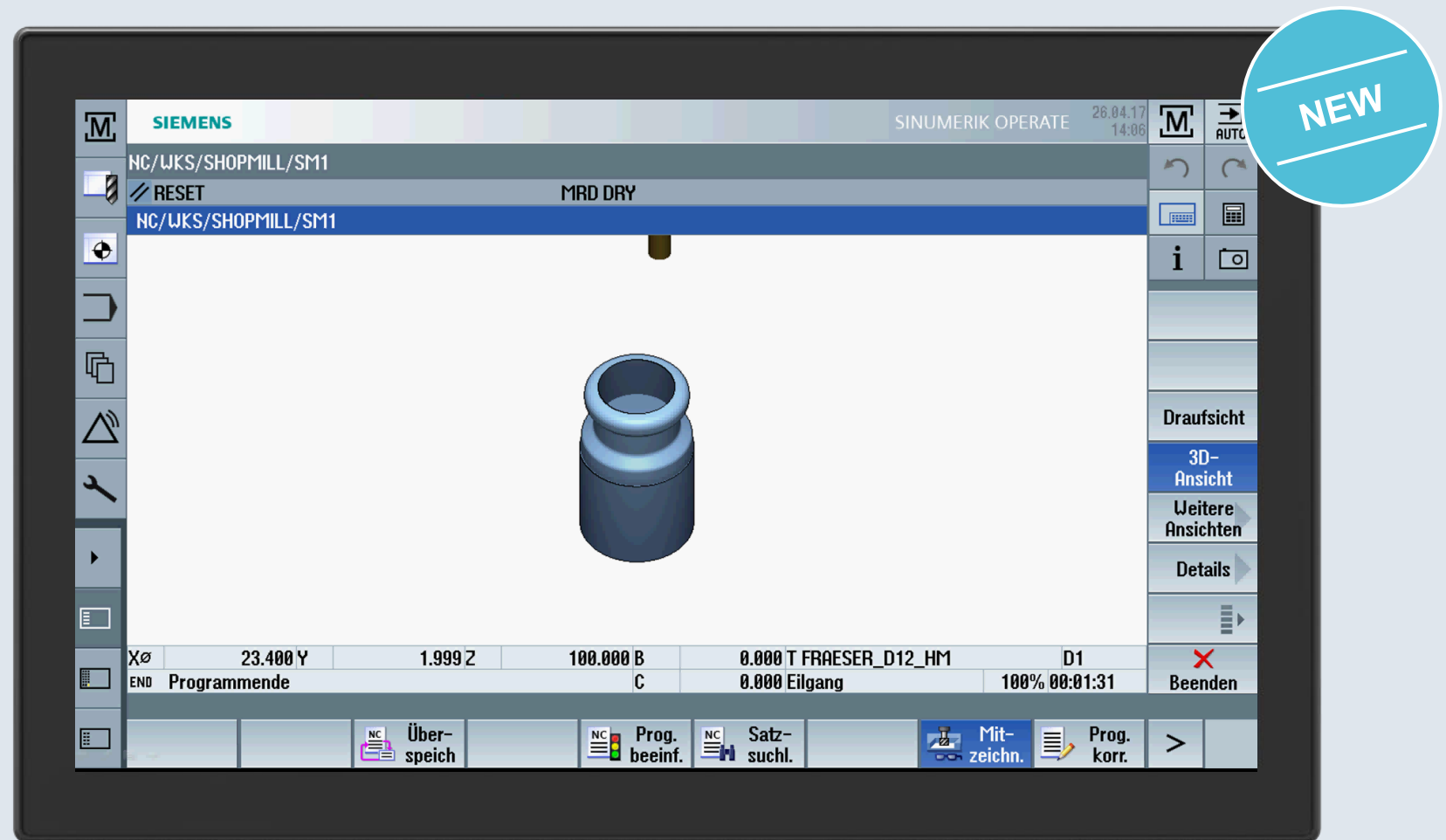
Machine builder perspective

Production execution

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Setting the benchmark with smart solutions in machine operation

SINUMERIK Operate
Sidescreen

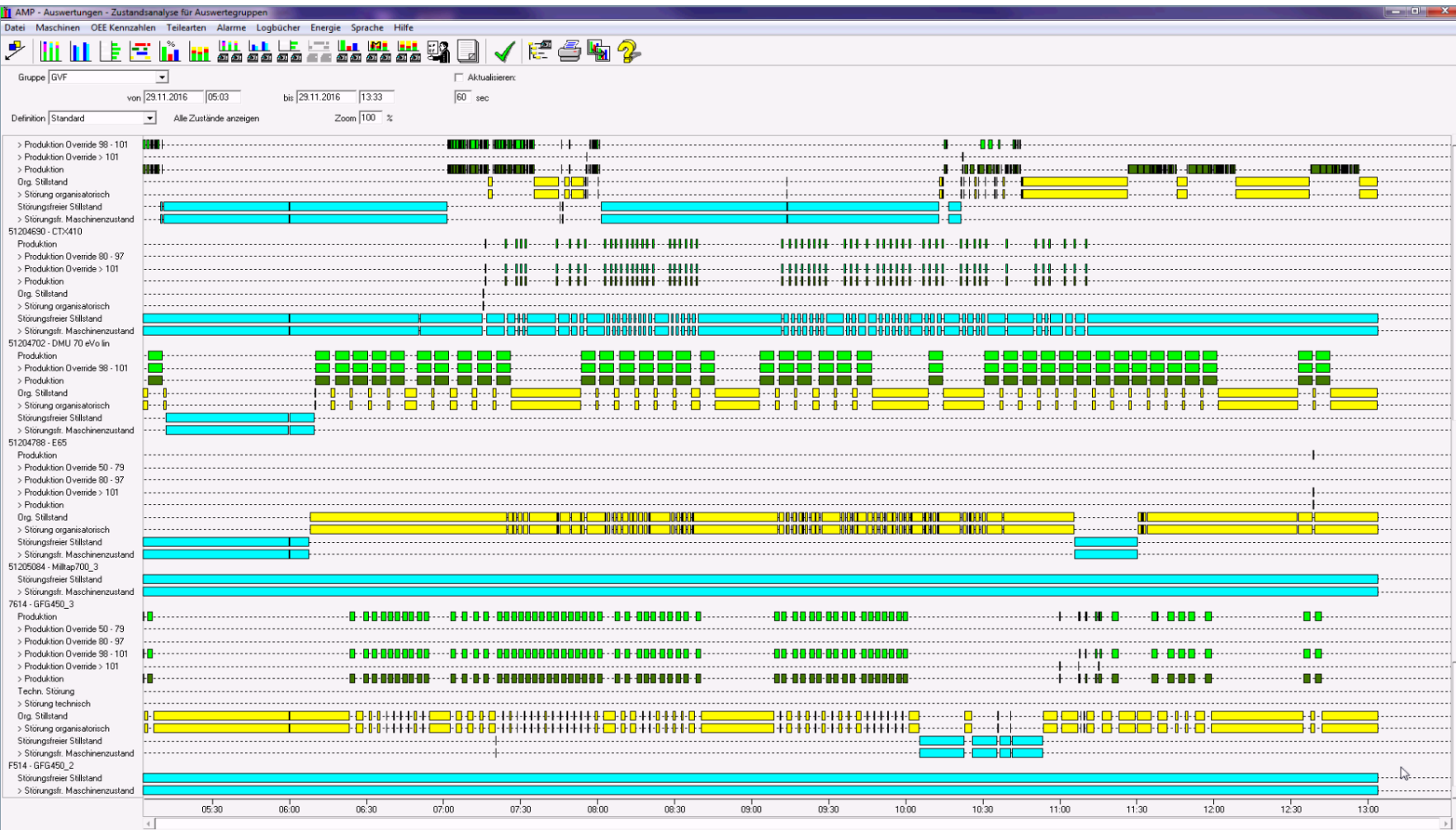


Production execution



Make your
production
more efficient
and flexible

Analyze MyPerformance



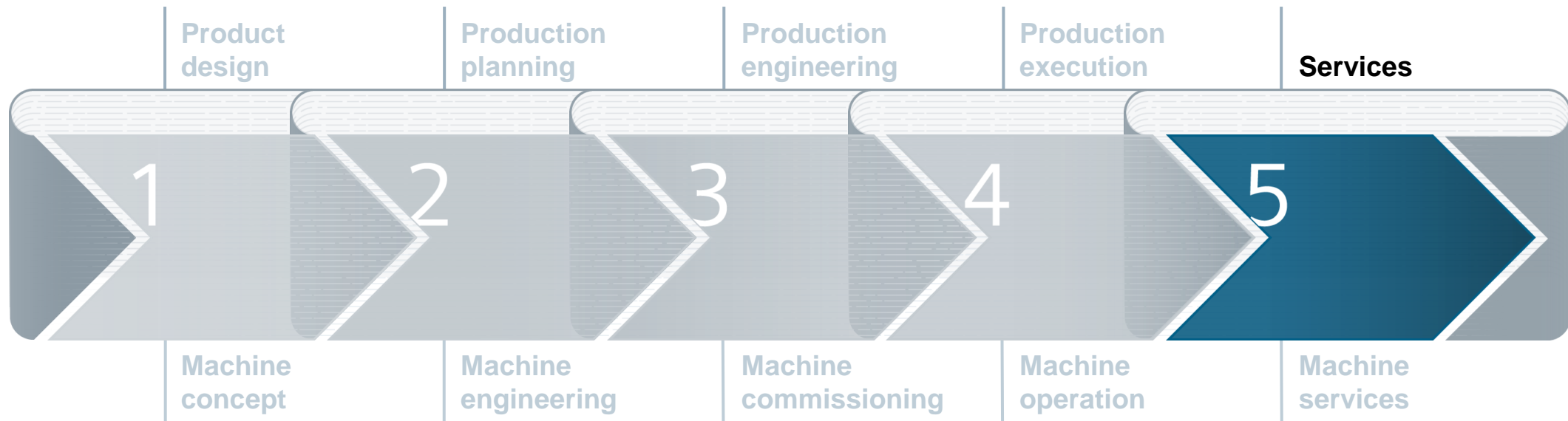
Source: EWN, Analyze MyPerformance

Our holistic approach

Specific for end customers and machine builders



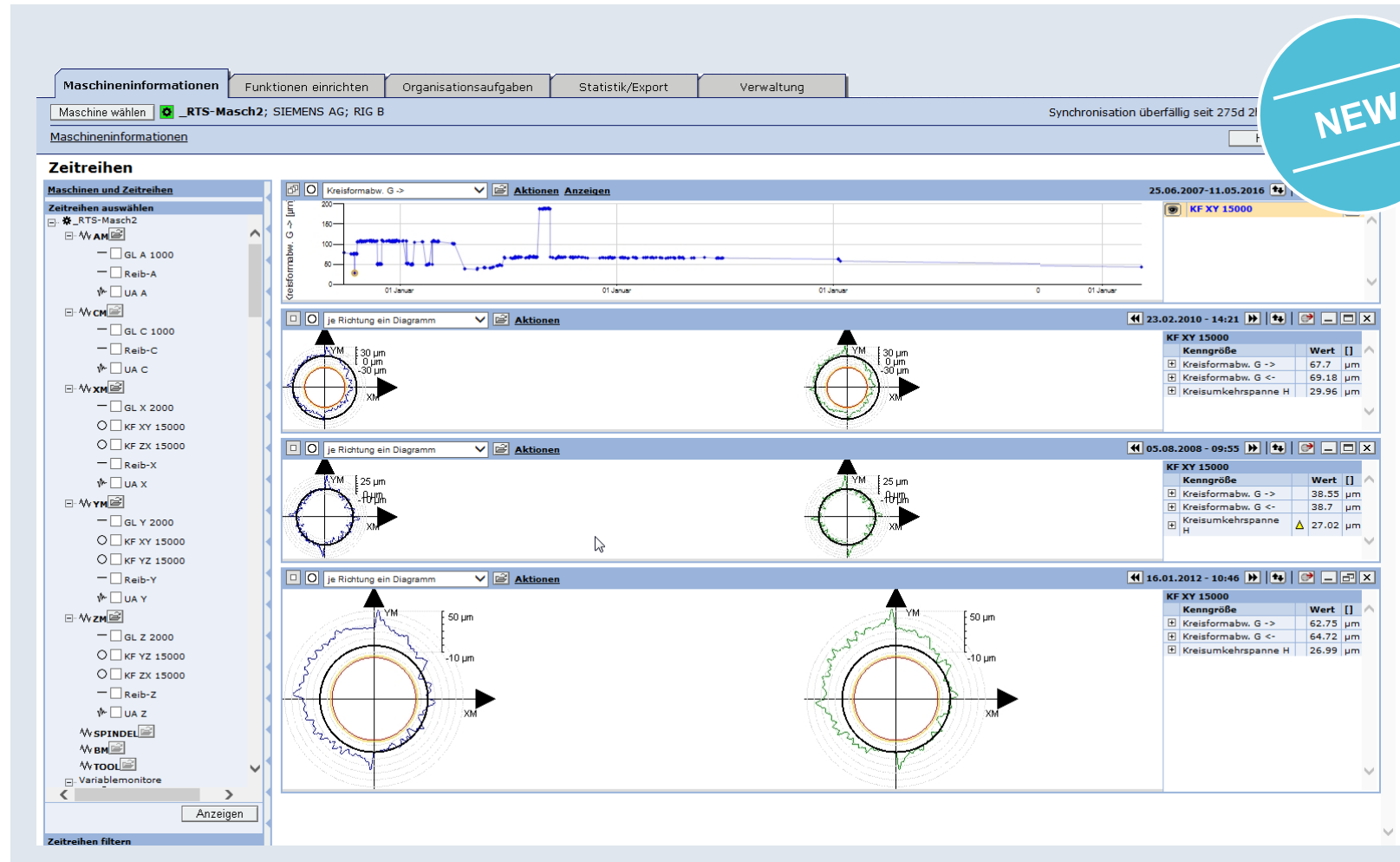
Product manufacturer perspective



Machine builder perspective

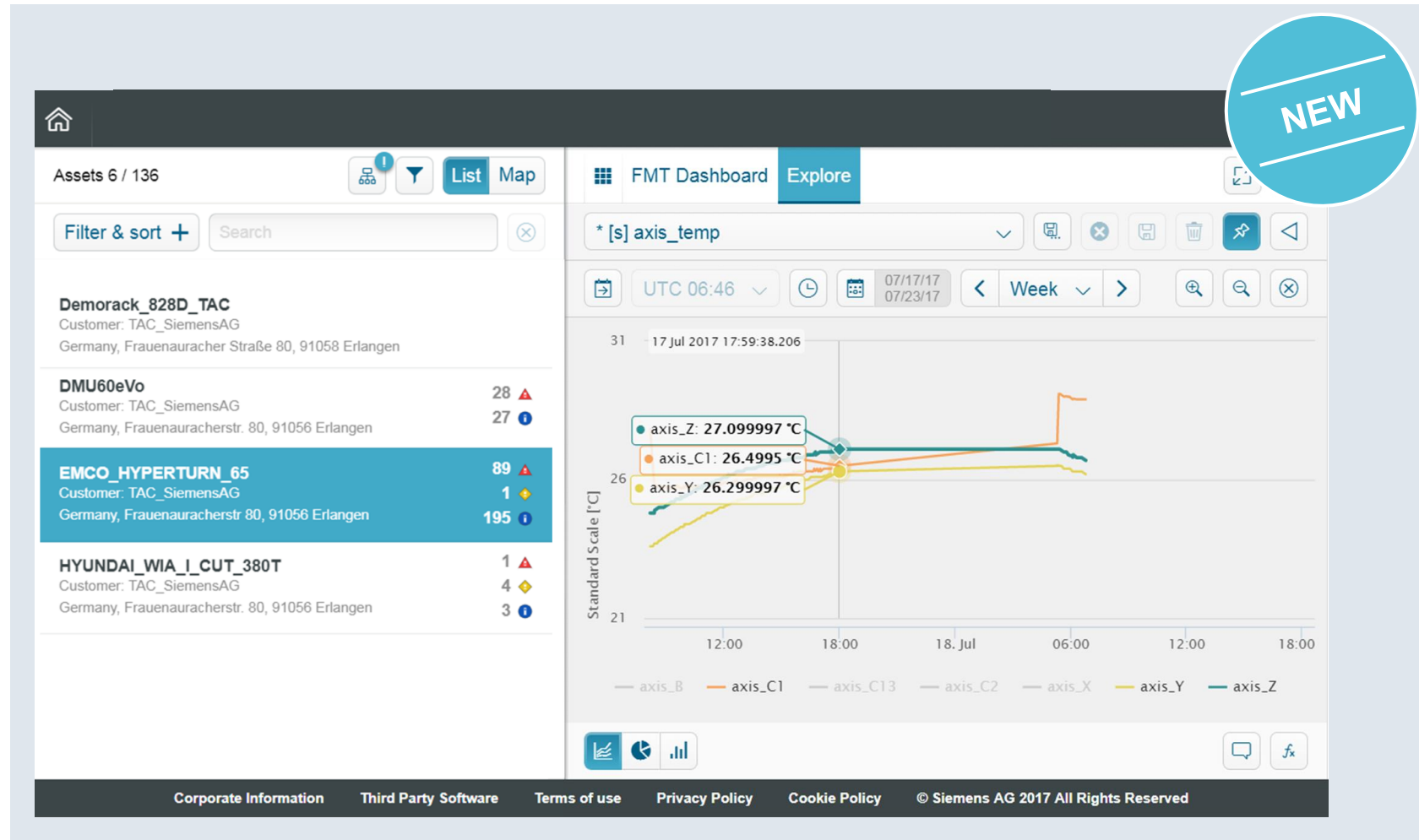
Take over the
control of your
down-time
and service
costs

Analyze MyCondition
In line



Full
transparency
over your
machines
everywhere,
at any time

Manage MyMachines
for MindSphere

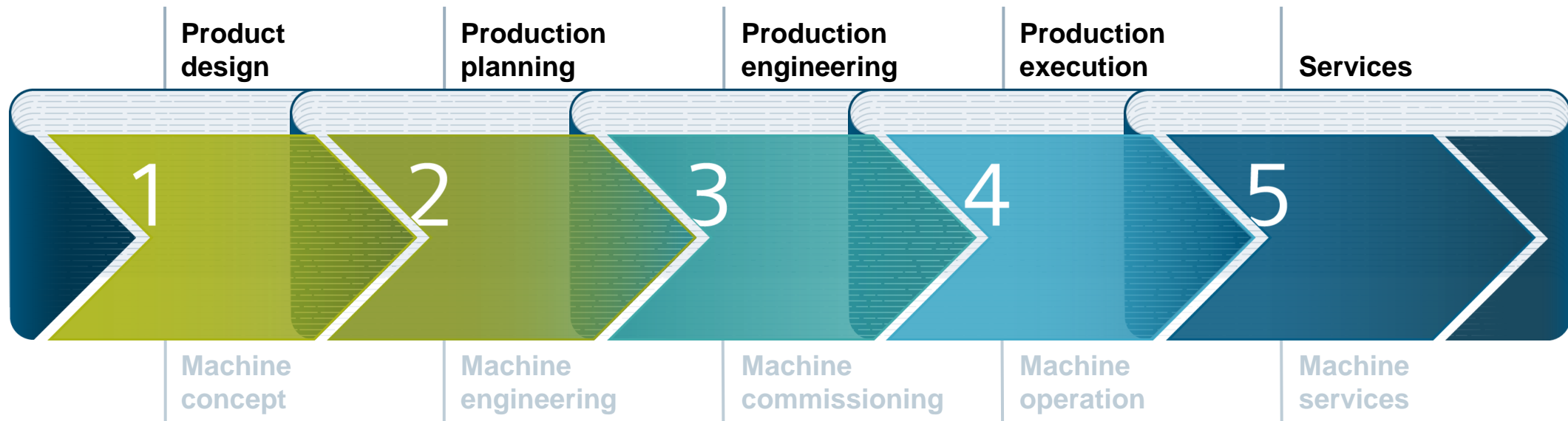


Our holistic approach

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Product manufacturer perspective



Machine builder perspective



MindSphere

Dr. Ralf Michael Wagner | COO MindSphere
July 25, 2017 | Bad Neustadt (Saale)
Press conference prior to the EMO 2017

MindSphere drives new business opportunities



Quickly and easily connecting real things to the digital world.

Creating a strong partner ecosystem with Open Platform as a Service (PaaS)

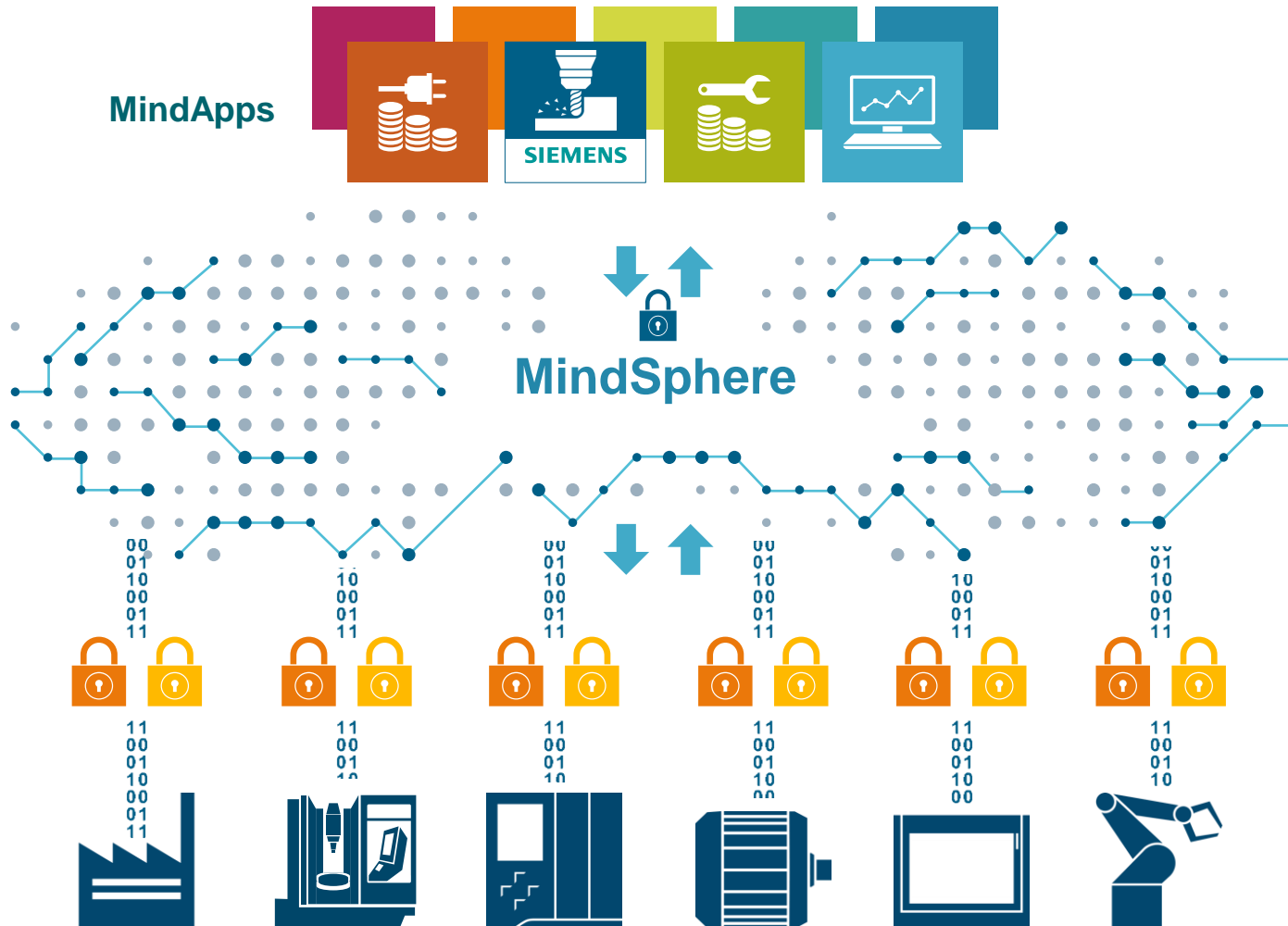
Enabling unmatched closed-loop innovation with complete digital twin



Driving business success with powerful industry applications and digital services

MindApps – MindSphere – MindConnect

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Ingenuity for life



MindApps

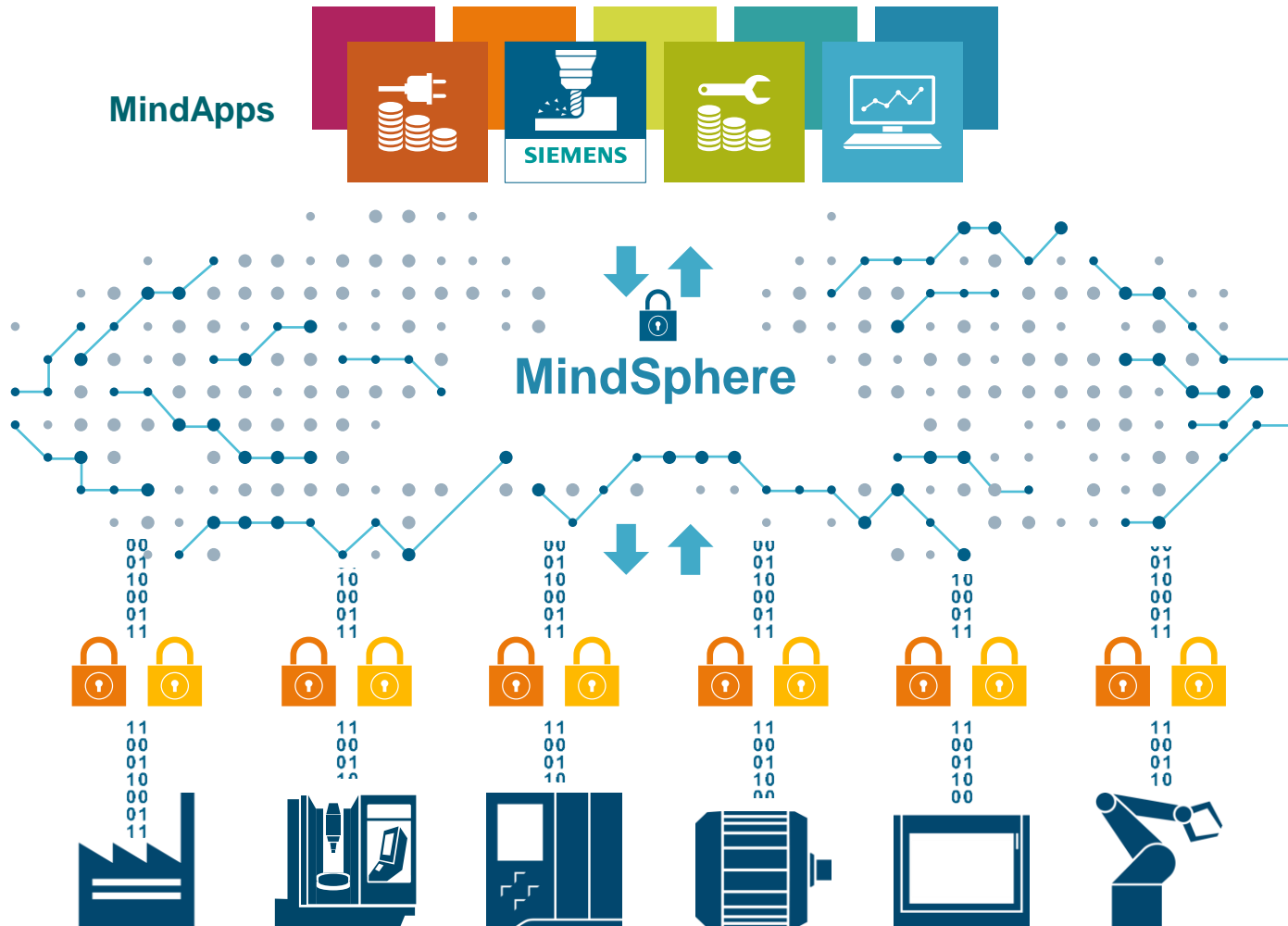
Asset transparency and analytical insights into machines, plants, fleets and systems

MindSphere

Various cloud infrastructures:
Public, private or on-premise

MindConnect

Secure plug and play connection of Siemens and third-party products



Connecting Products, Plants,
Systems and Machines with
MindConnect

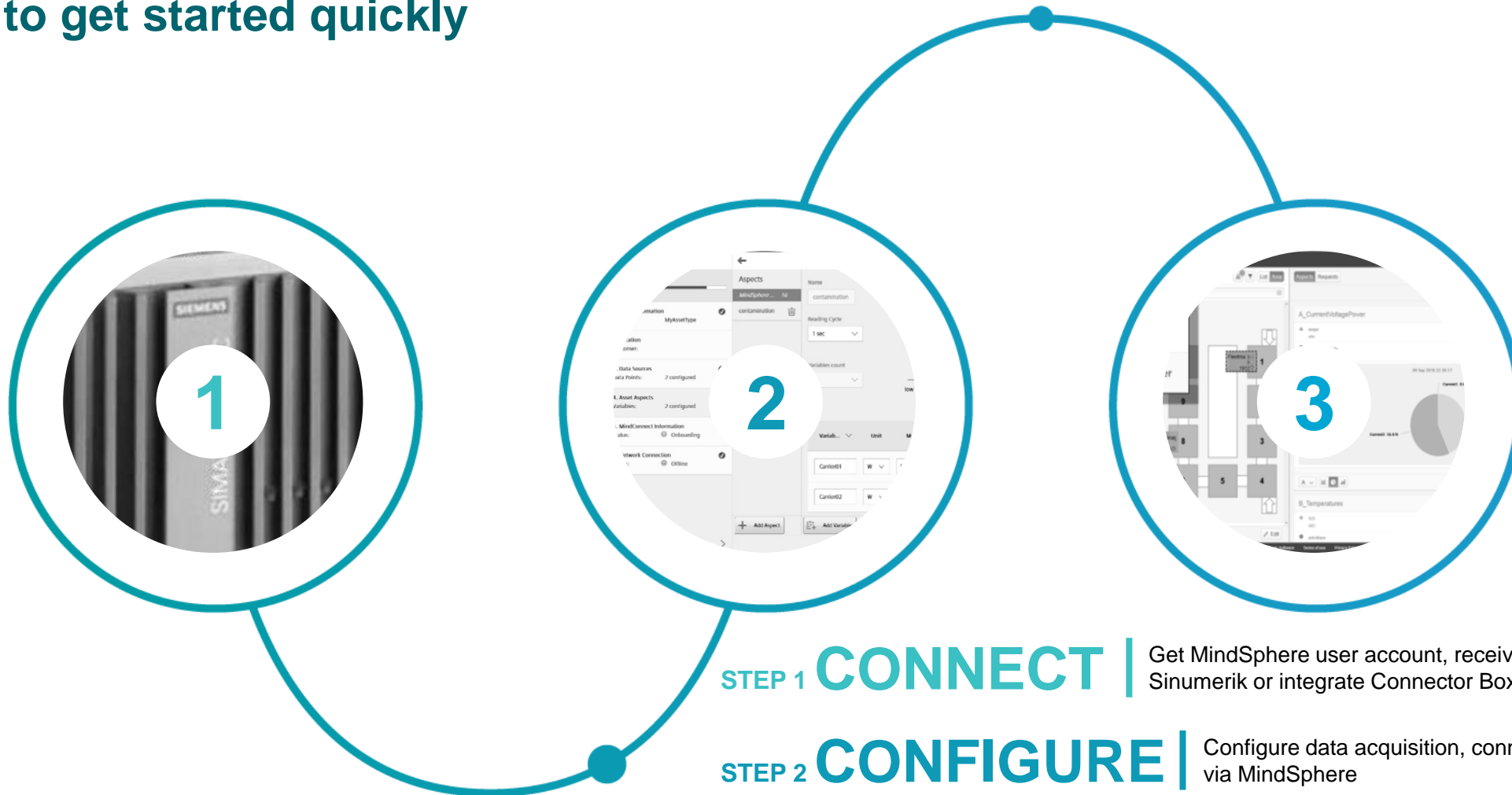
Open standards for connectivity,
e.g., OPC UA

Plug and play connection of
Siemens and 3rd party products

Secure and encrypted data
communication

MindSphere enables customers to get started quickly

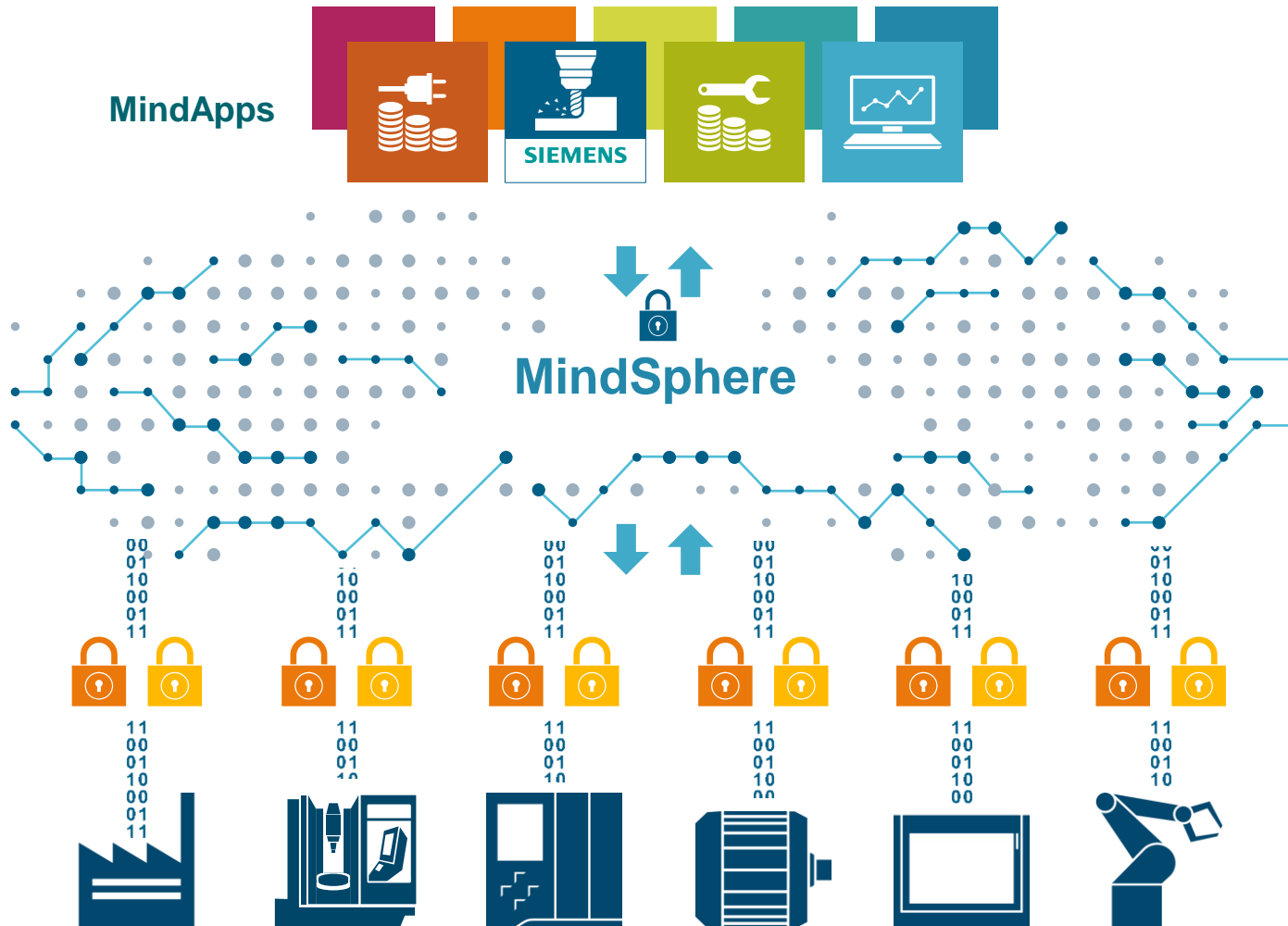
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STEP 1 CONNECT | Get MindSphere user account, receive and integrate directly with Sinumerik or integrate Connector Box into machine / equipment

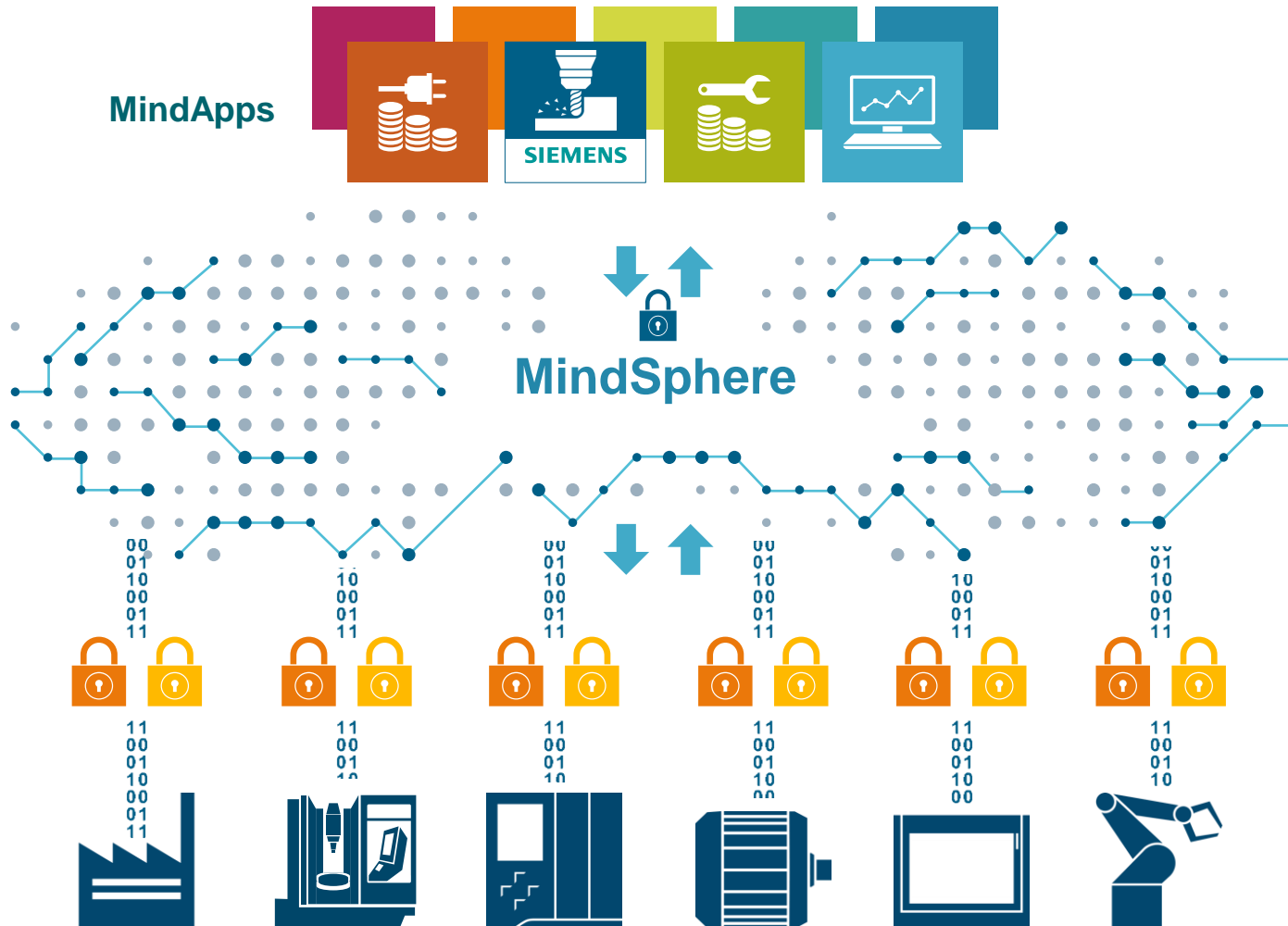
STEP 2 CONFIGURE | Configure data acquisition, connectivity and Visual Analyzer via MindSphere

STEP 3 GO | Monitor e.g. health status of all assets and drill into details using MindApp Manage MyMachines or Fleet Manager



Open interfaces for
development of customer
and industry specific apps

Leading Cloud Infrastructure:
SAP, AtoS, Microsoft Azure
and Amazon Web Services
offered as public, private
or on-premise



Delivering value with asset transparency and analytical insights into machines, plants, fleets and systems

Open Partner Ecosystem with application marketplace

Fleet Management

Always up to date
The key data for your connected components and systems

Product Intelligence

Automate insight from product performance data to create actionable intelligence with the complete digital twin (PLM / IoT integration)

MindSphere Open Partner Ecosystem



Exemplary Set of Partners



Predefined Partner Roles

Consulting/Strategy Partners

Connectivity Developer

Application Developer

Technology Provider

System Integrator

IaaS Provider

MindSphere

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EMO
Hannover
18-23.9.2017

Thank you.

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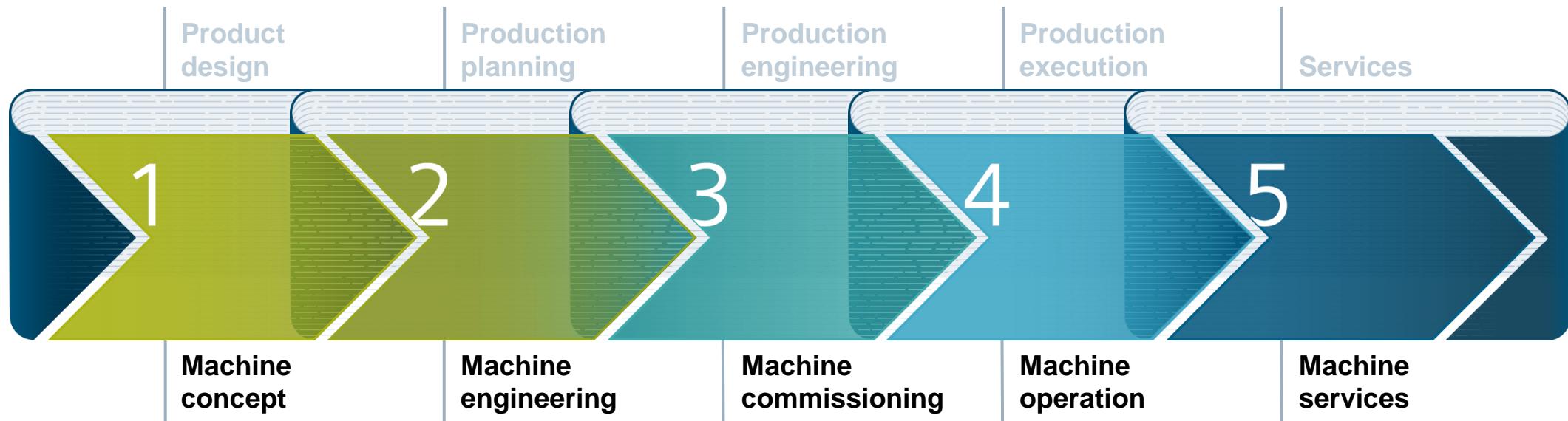
siemens.com

Our holistic approach

Specific for end customers and machine builders



Product manufacturer perspective



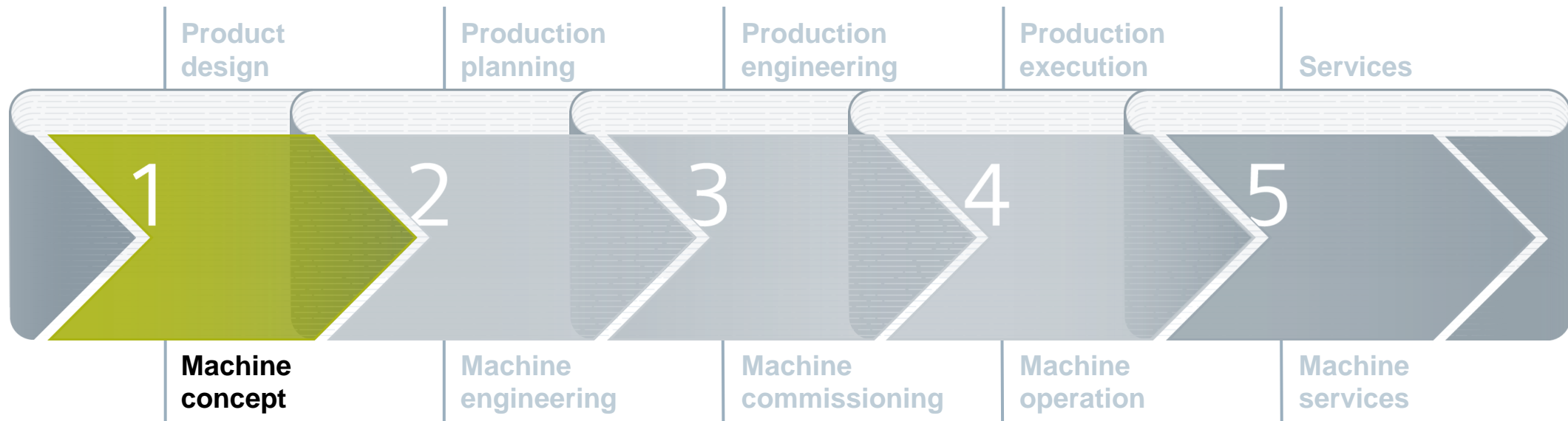
Machine builder perspective

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Product manufacturer perspective

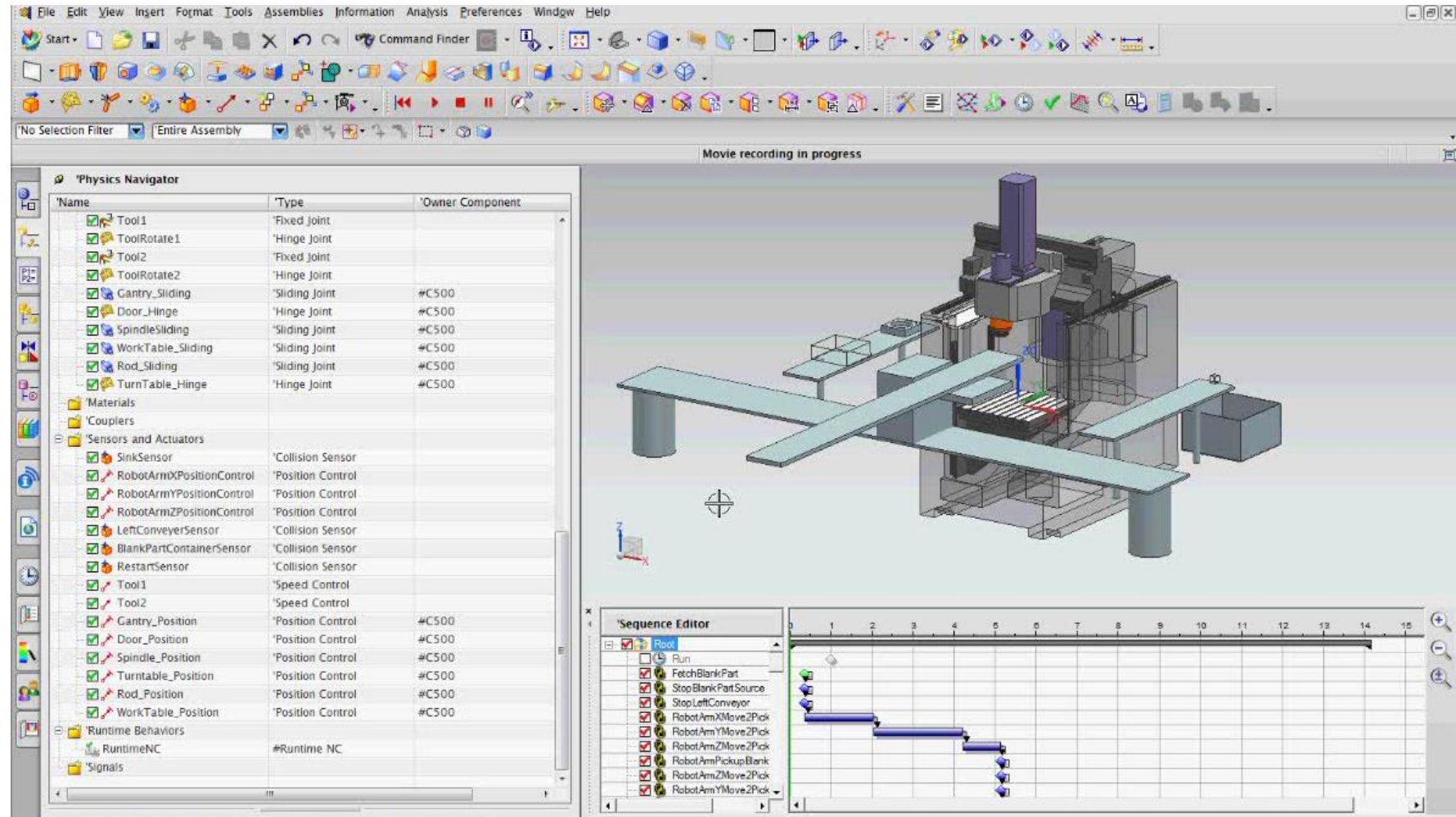


Machine builder perspective

Machine concept

Design and
simulate
the machine
concept

NX Mechatronics
Concept Designer

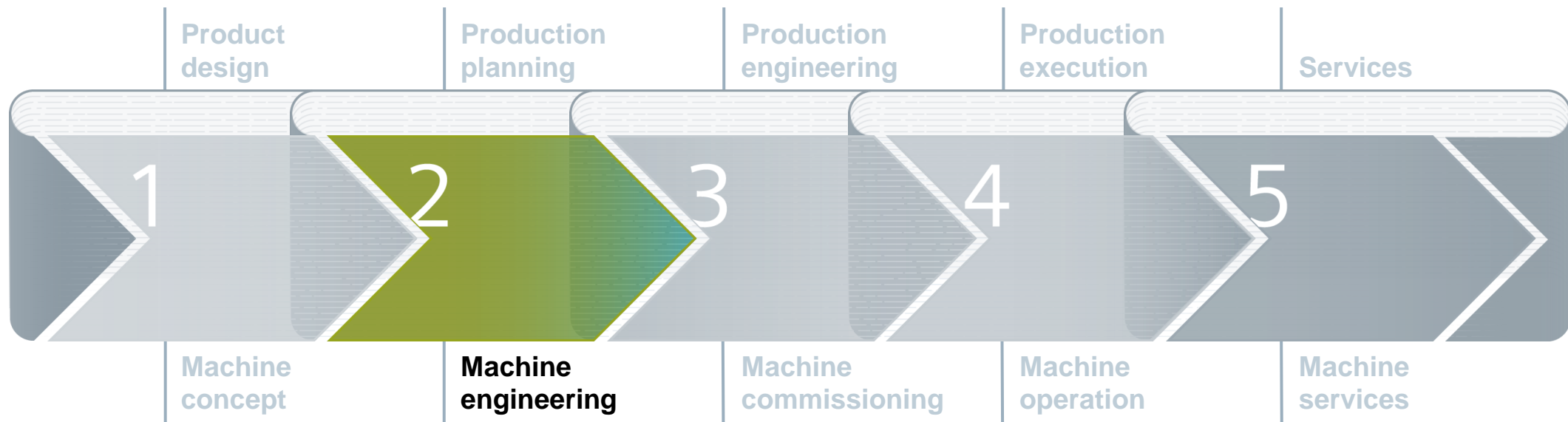


Our holistic approach

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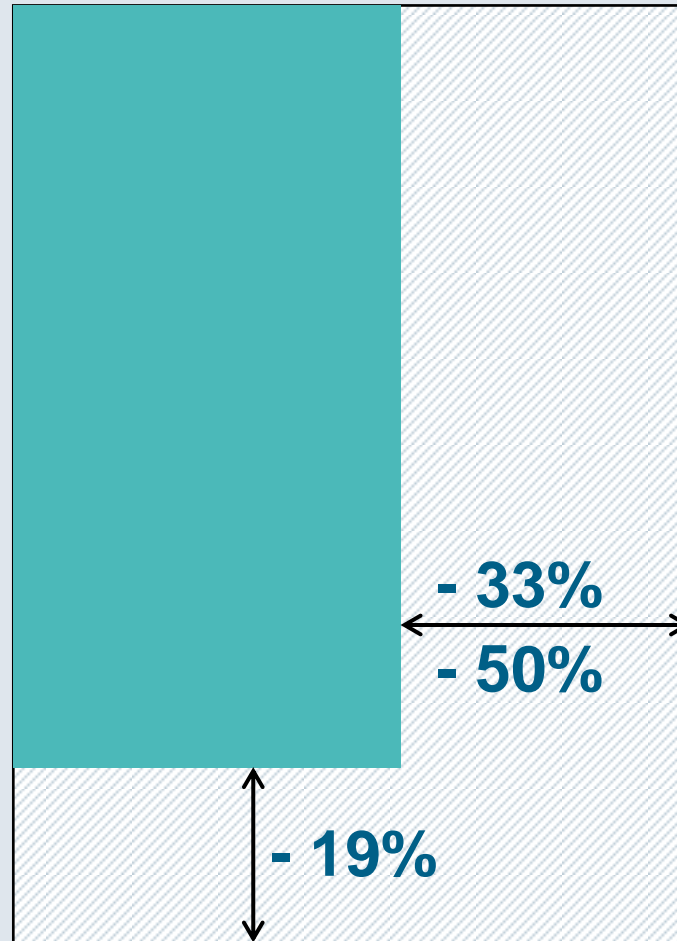
Product manufacturer perspective



Machine builder perspective

Reduce the
footprint of
your machine
with higher
power density

SINAMICS S120
Booksize motor modules
24A, 45A, 60A



Machine engineering and PLC code generation for TIA Portal

Sizer and Step7 / TIA Portal



EPLAN

STEP 7

NC

Achse-Settingdaten				AXIS SPINDEL	
43100	SSA_LEAD_TYPE	1	re		Achse +
43102	SSA_LEAD_OFFSET_IN_POS	0	re		
43104	SSA_LEAD_SCALE_IN_POS	1	re		Achse -
43106	SSA_LEAD_OFFSET_OUT_POS	0	re		
43108	SSA_LEAD_SCALE_OUT_POS	1	re		Direkt-anwahl
43120	SSA_DEFAULT_SCALE_FACTOR_AXIS	1	so		
43200	SSA_SPIND_S	1000	1/min	so	MD wirksam setzen (cf)
43202	SSA_SPIND_CONSTCUT_S	0	m/min	so	
43206	SSA_SPIND_SPEED_TYPE	94		so	
43210	SSA_SPIND_MIN_VELO_G25	0	1/min	so	
43220	SSA_SPIND_MAX_VELO_G26	2	1/min	so	Reset (po)
43230	SSA_SPIND_MAX_VELO_LIMS	100	1/min	so	
43235	SSA_SPIND_USER_VELO_LIMIT	24001	1/min	so	Suchen
43240	SSA_M19_SPOS	0		so	
43250	SSA_M19_SPOSMODE	0		so	Daten verwalten
43300	SSA_ASSIGN_FEED_PER_REV_SOURCE	0		so	
43320	SSA_JOG_POSITION	0		so	
43340	SSA_EXTERN_REF_POSITION_G30_1	0		so	
43350	SSA_RA_OFF_LIMIT	100000000		po	

Programmierbare obere Spindeldrehzahlbegrenzung bei G26

Allgemeine	Kanal-	Achse-	Anzeige-
SD	SD	SD	MD

Machine engineering

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Save up to
50% of your
engineering
time

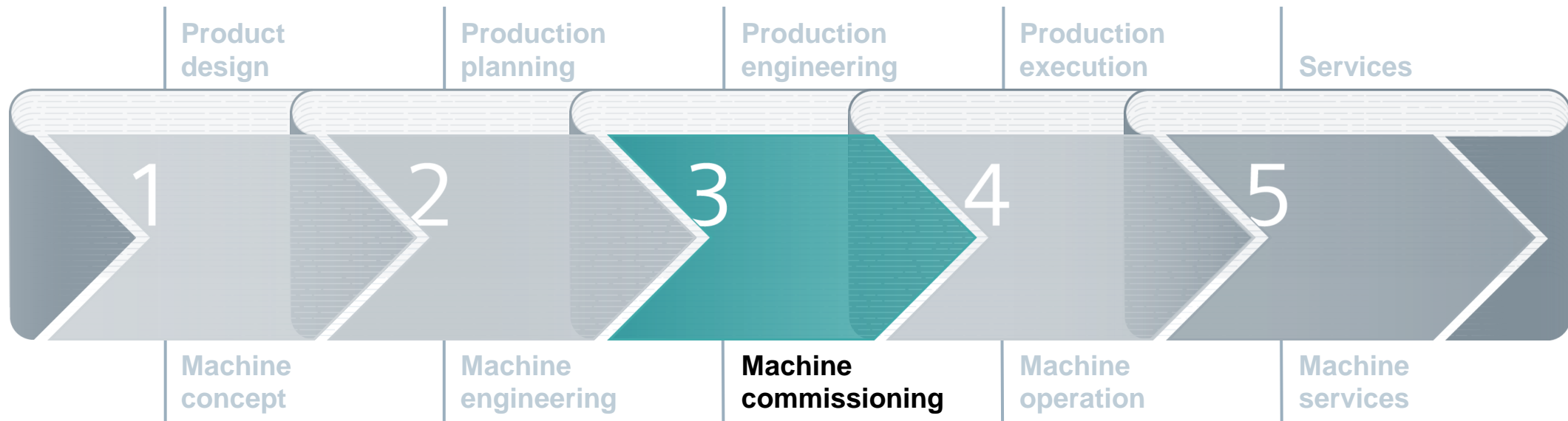
SINUMERIK 840D sl
TIA Portal
Safety Integrated plus



Our holistic approach Specific for end customers and machine builders



Product manufacturer perspective



Machine builder perspective

Machine commissioning

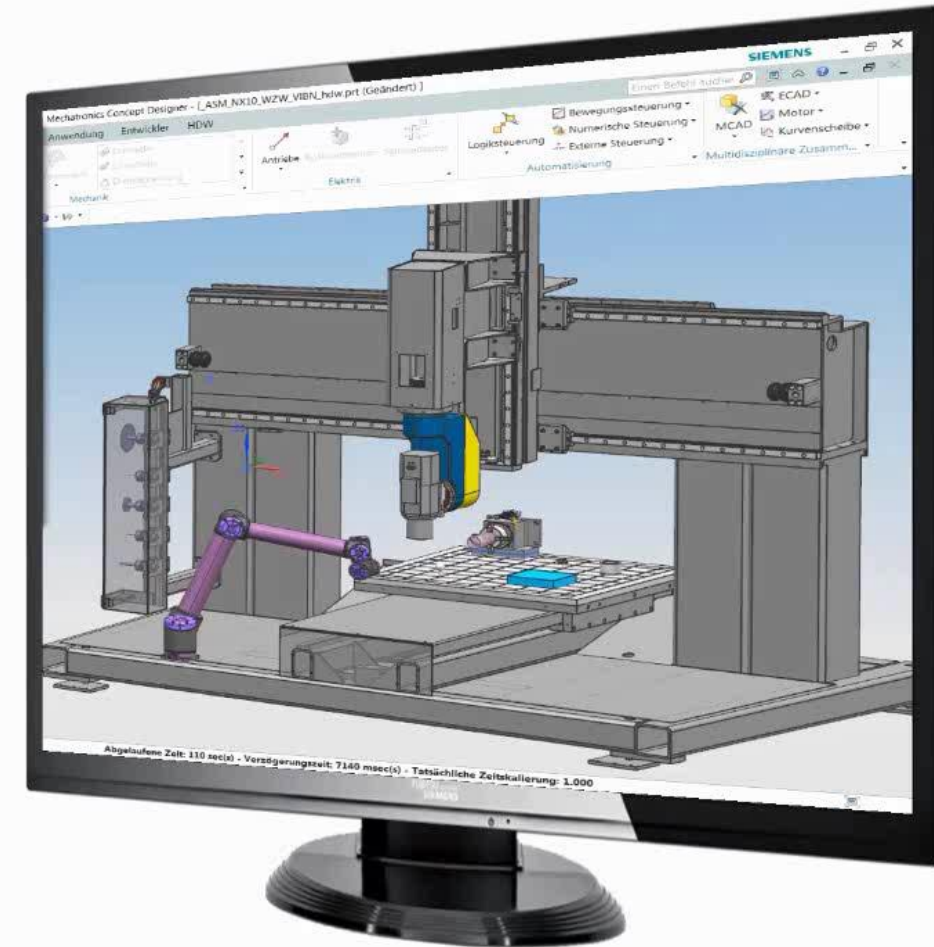
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Virtual Commissioning

Mechatronics Concept
Designer

Hardware in the Loop

SIMIT



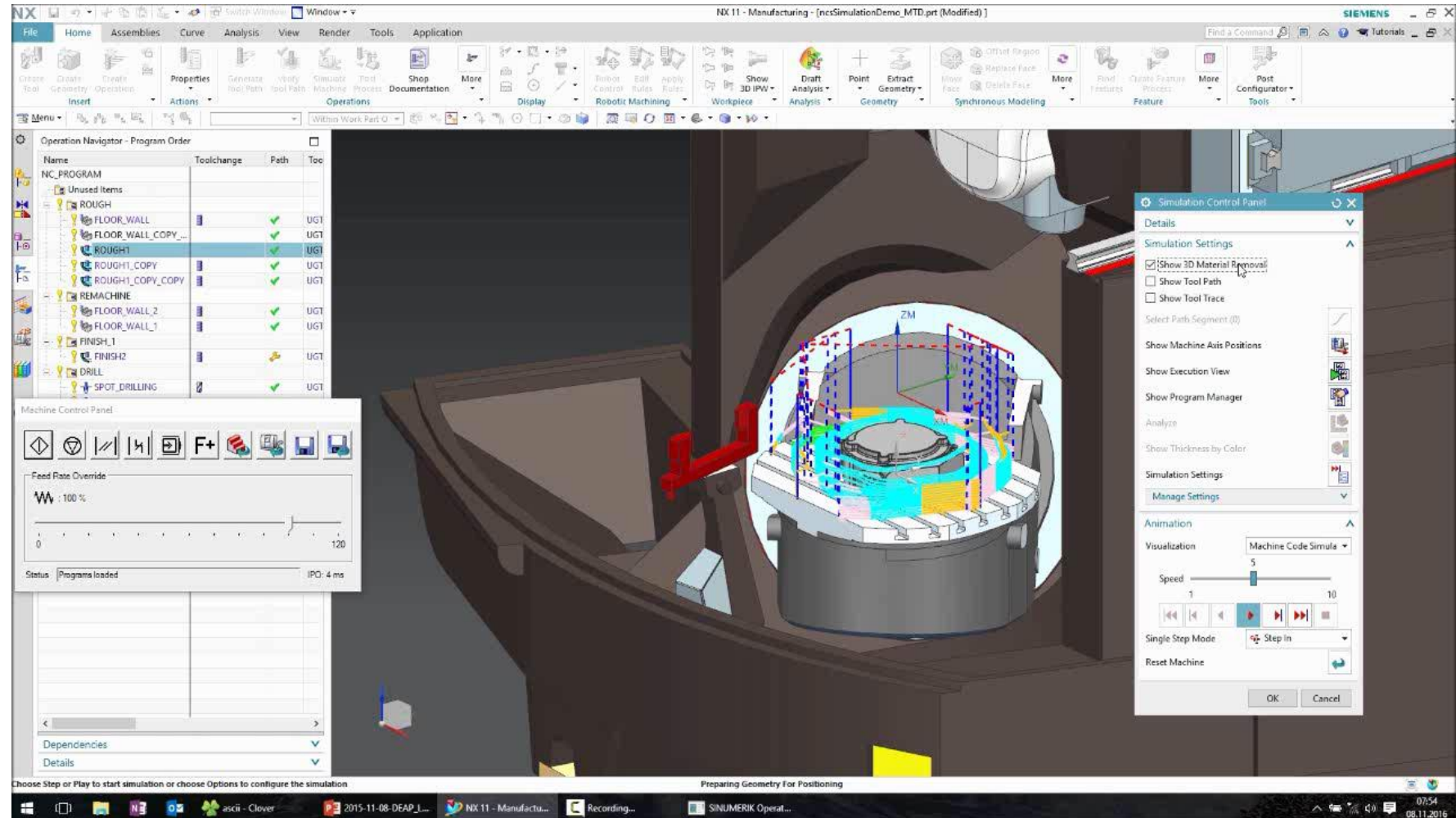
Machine commissioning

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Validate the
machining
process in
the virtual
world

NX Virtual Machine
Run MyVNCK

1 2 3 4 5

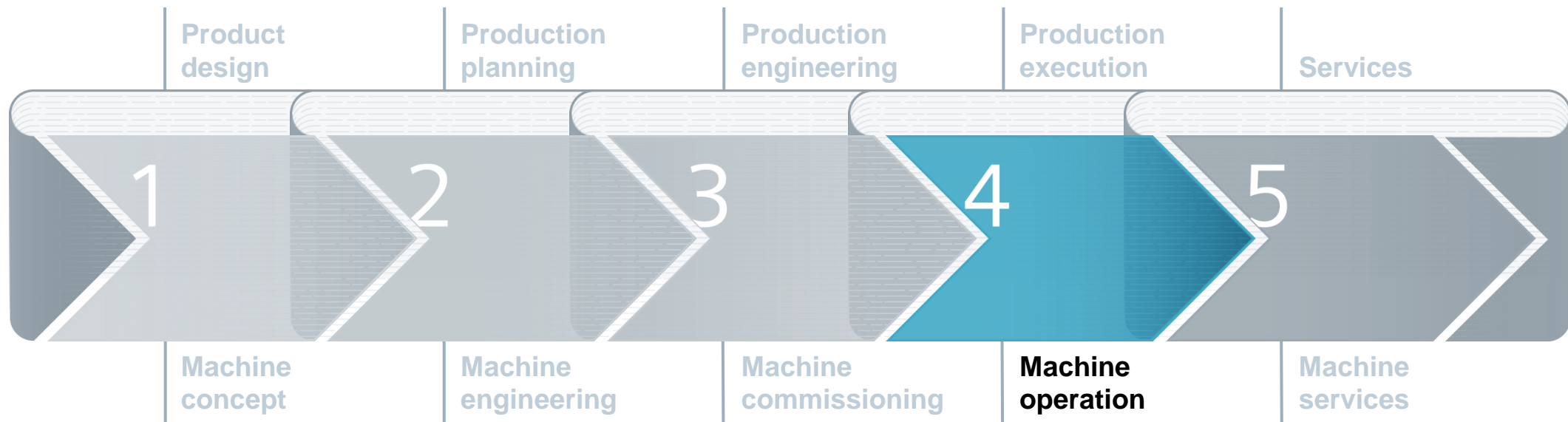


Our holistic approach

Specific for end customers and machine builders



Product manufacturer perspective



Machine builder perspective

Machine operation



Proven
automation
solution &
technology
competence

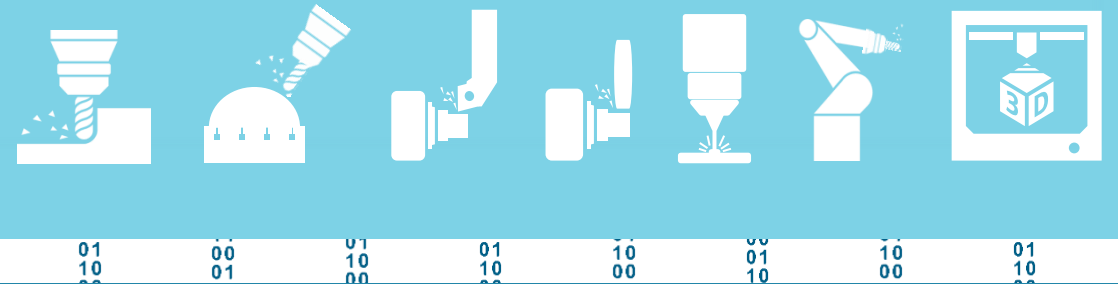
SIMATIC, SINUMERIK,
SIMOTION, SIMOTICS,
SINAMICS and SIRIUS



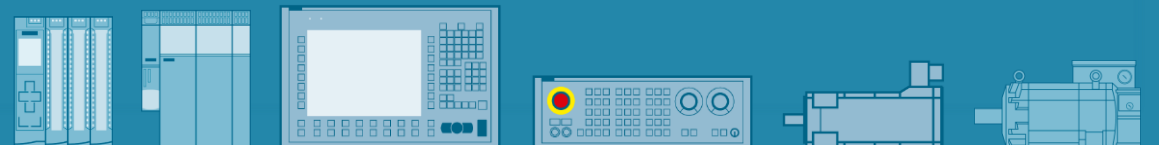
Digitalization



Technology

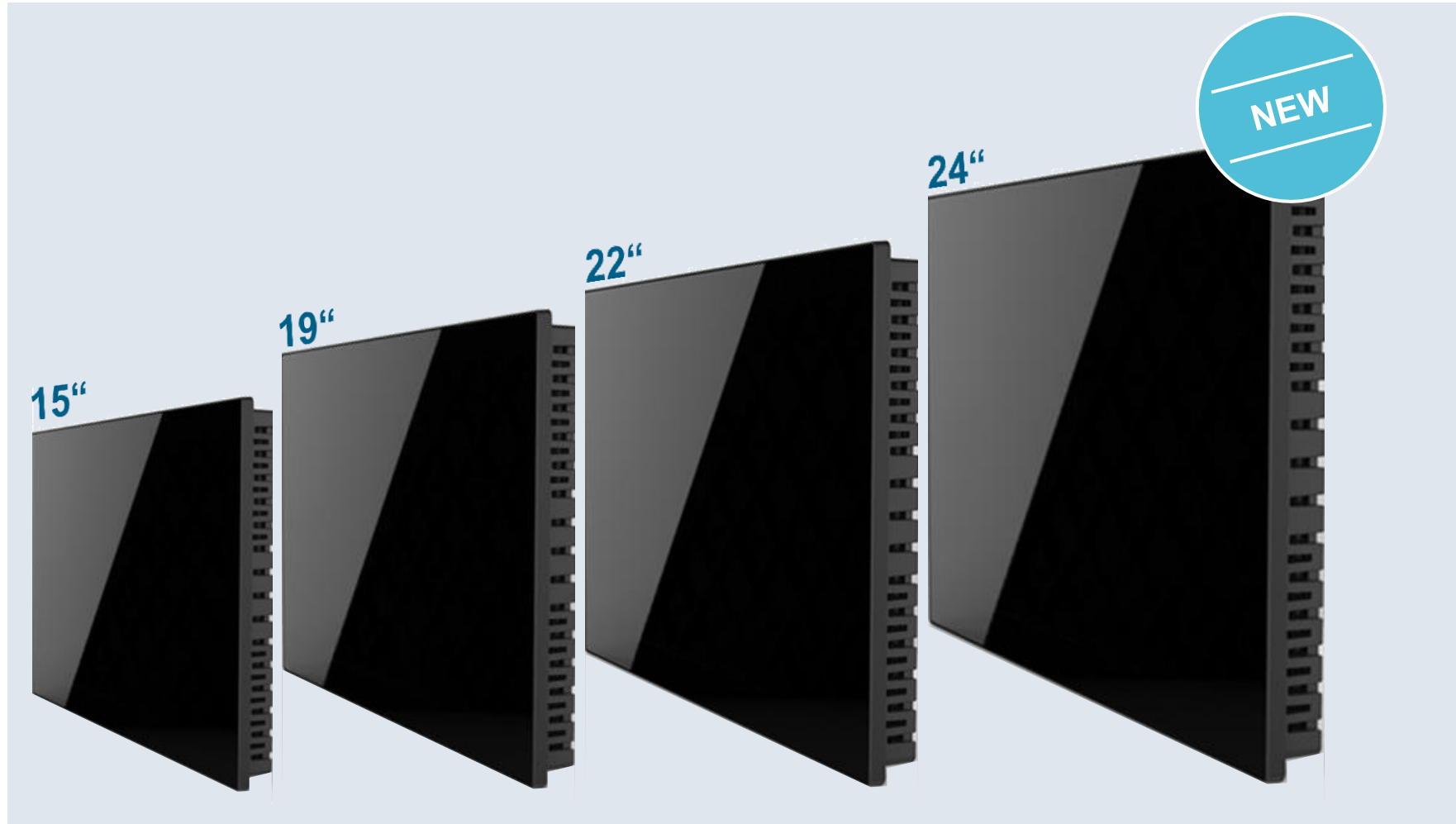


Automation



The new dimension in the human machine interface

SINUMERIK
blackline plus panels

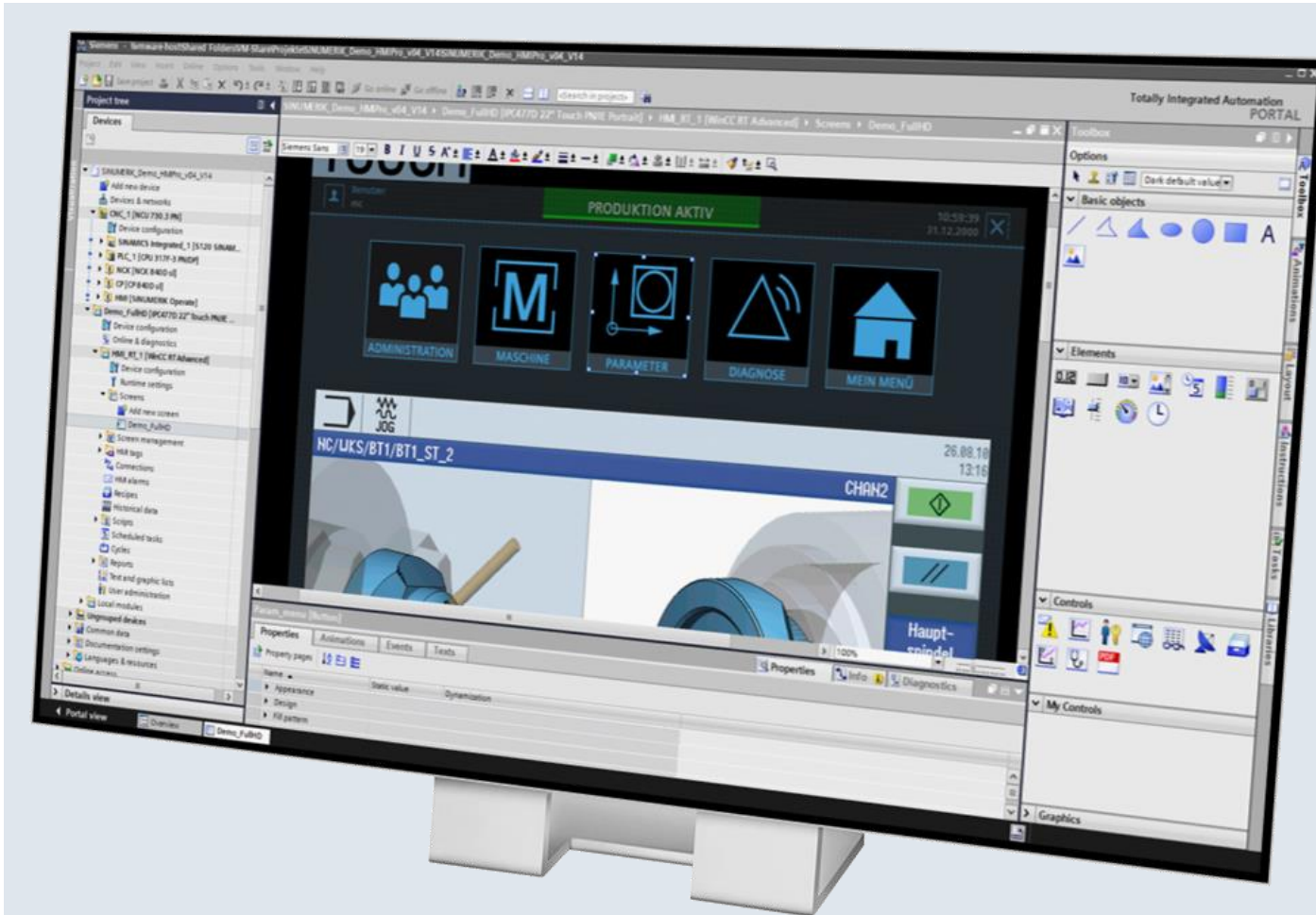


Machine operation

SIEMENS
Ingenuity for life

Make your
machine unique
Faster to your
own machine
interface

SINUMERIK
Create MyHMI / WinCC

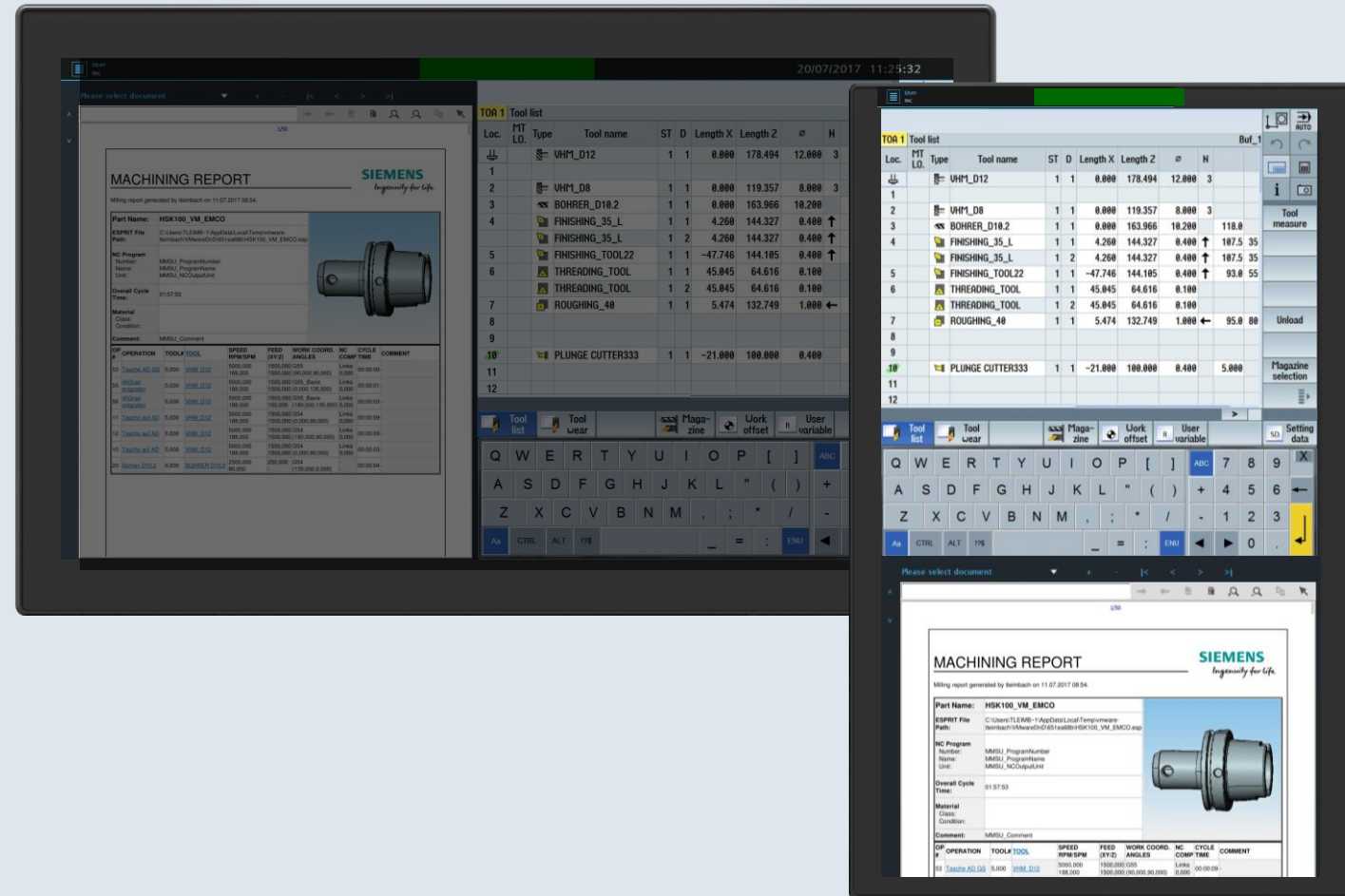


Machine operation

SIEMENS
Ingenuity for life

Make your
machine unique
Faster to your
own machine
interface

SINUMERIK
Create MyHMI / WinCC



Machine operation

SIEMENS
Ingenuity for life

Make your
machine unique

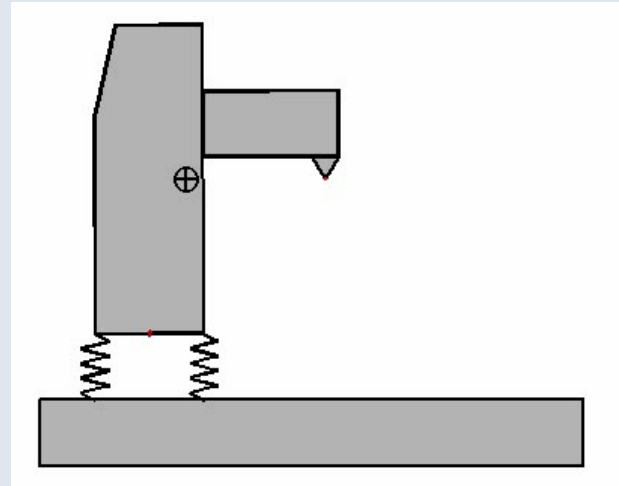
Turn-key
solutions

SINUMERIK
Customized operator
panels

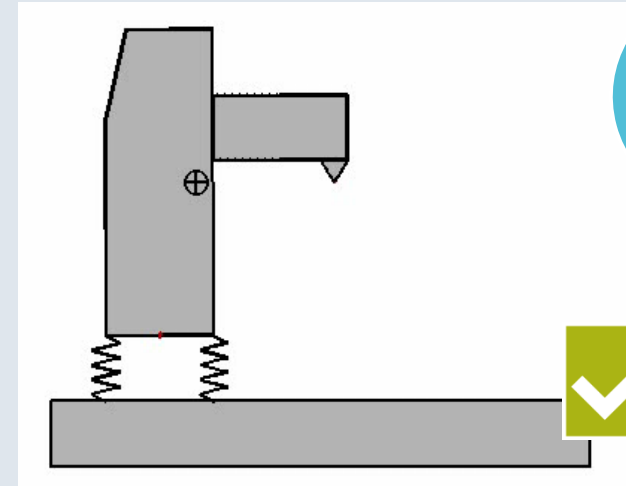


Excellent
surface quality
in shorter
machining time

SINUMERIK
Nodding compensation



Without Nodding compensation



With Nodding compensation

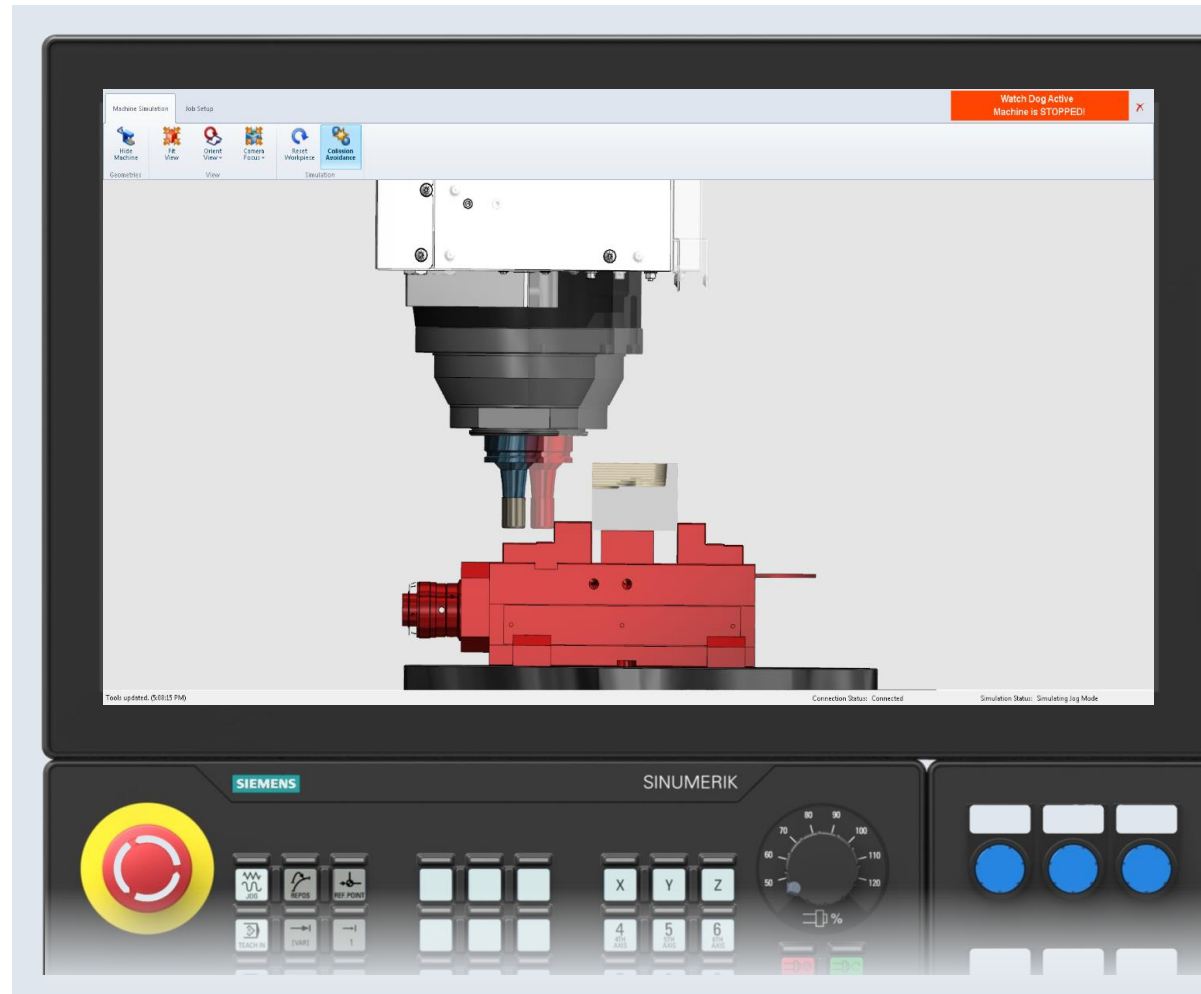


Machine operation

SIEMENS
Ingenuity for life

The armor for
your machine
with incredible
usability

SINUMERIK
Collision Avoidance
ADVANCED

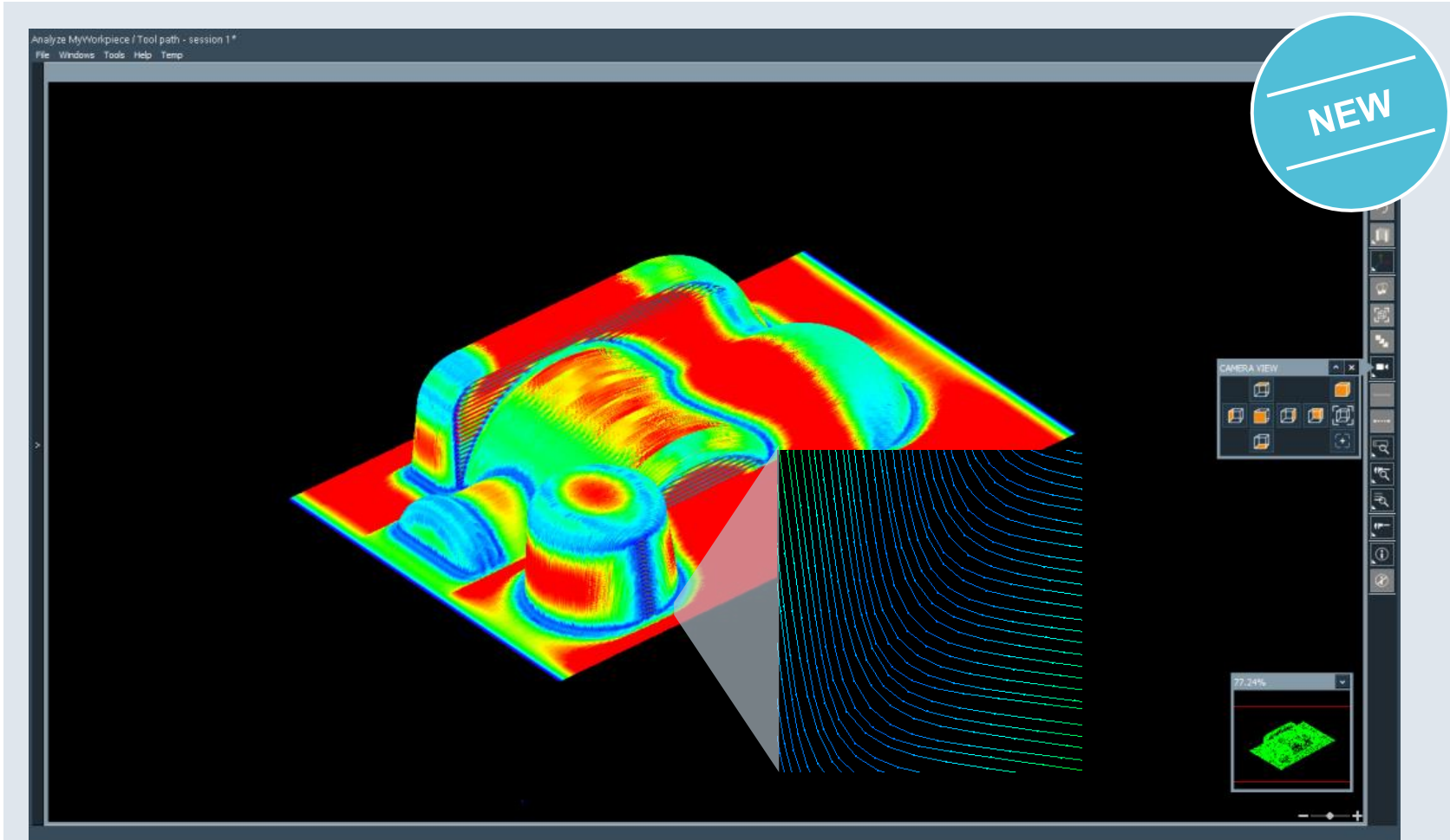


Machine operation

Get the best
out of your
machine tool:

- Surface quality
- Machining time

Analyze
MyWorkpiece/ Toolpath

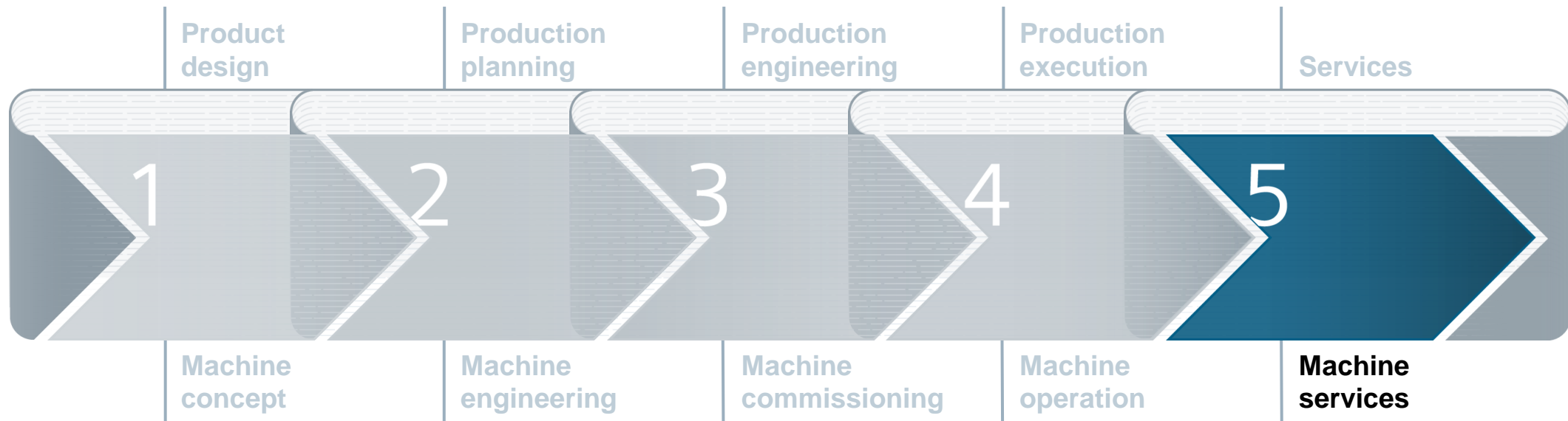


Our holistic approach

Specific for end customers and machine builders



Product manufacturer perspective

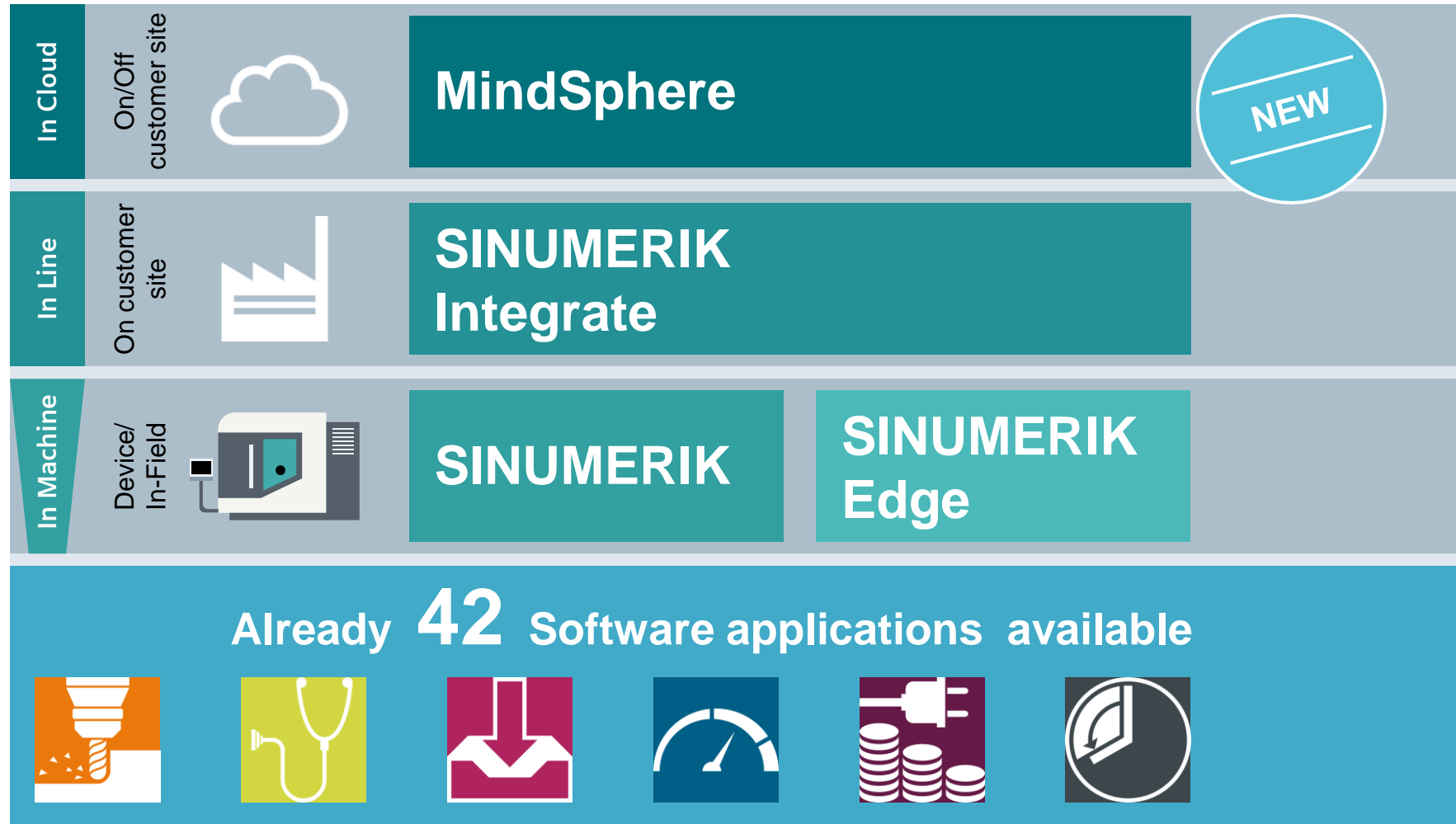


Machine builder perspective

Building an open and attractive ecosystem hosting different kind of applications from different players

Integrated,
open and
future-oriented
digitalization
platform

CNC Shopfloor
Management Software

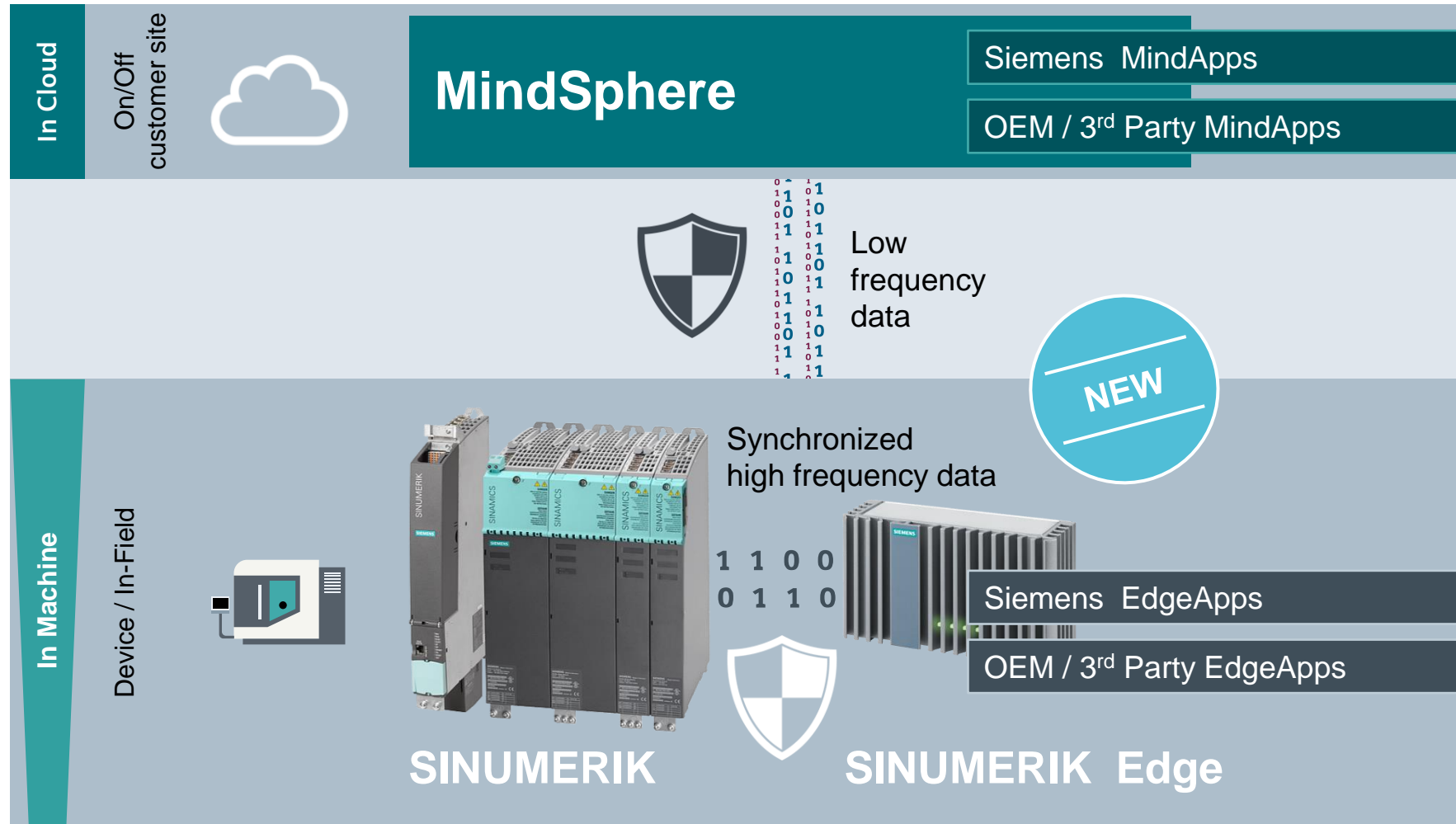


SINUMERIK Edge and IoT connectivity



High speed
data processing
enables
new business
opportunities

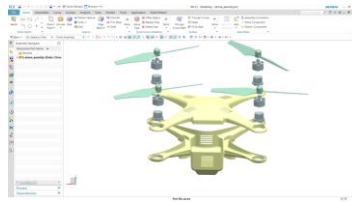
SINUMERIK Edge



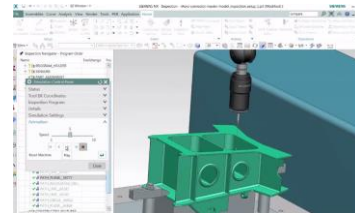
All digital, technology and automation highlights for EMO 2017 are lined up along the digitalization value chain

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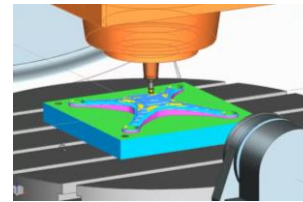
**Product
manufacturer
perspective**



**Product
design**



**Production
planning**



**Production
engineering**



**Production
execution**

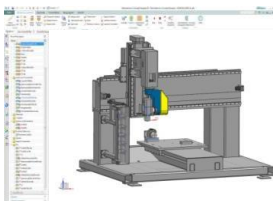


Services



**Machine
builder
perspective**

**Machine
concept**



**Machine
engineering**



**Machine
commissioning**



**Machine
operation**



**Machine
services**



Experience Digitalization
in Machine Tool Manufacturing
a **new dimension** in
machining
machine tool operation
machine tool engineering

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EMO
Hannover
18-23.9.2017

Thank you.

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