

sps ipc drives

Digital Enterprise – Implement now!

Klaus Helmrich | Member of the Managing Board
of Siemens AG | sps ipc drives 2018



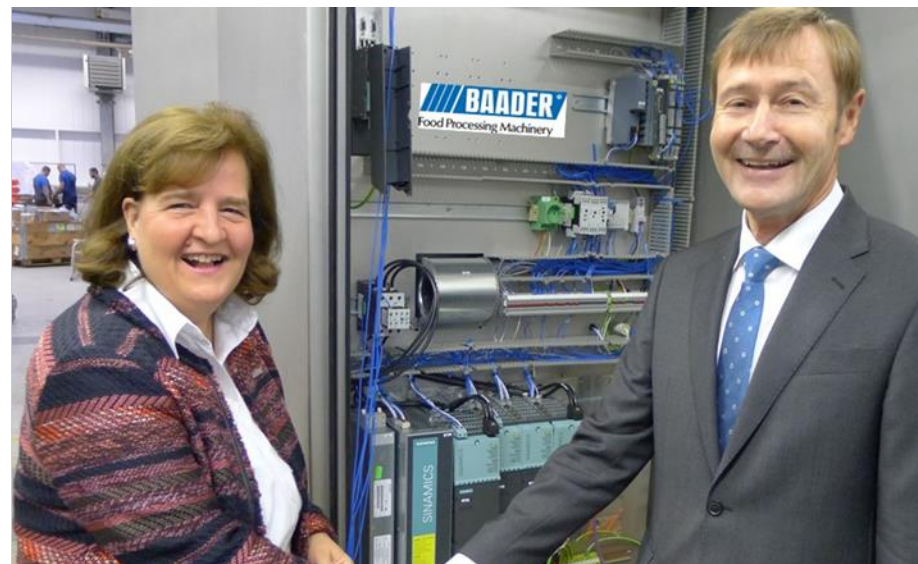
Hannover Messe 2018
“Digital Enterprise – Implement now!”



New forms of cooperation in the
MindSphere World



“The future is digital for small and
medium-sized enterprises”



Our SME customers are turning digital

SIEMENS
Ingenuity for life

**Our message
got through –
German SMEs
are on their way
towards
Industrie 4.0**

Klaus Helmrich,
Member of the Management Board of Siemens AG

Germany needs a strong backbone of small and medium-sized enterprises to remain a viable industrial location



of German
companies



of added value



of jobs



of company
training
placements



of all patent
registrations

Sources:

- Federal Ministry of Economics, Internet page "The German Mittelstand as a model for success"
- Internet portal "Kompetenznetz Mittelstand"

Implement now!

The Digital Enterprise portfolio for Industrie 4.0 is here

**For a shorter time
to market**



**For greater
flexibility**



**For improved
quality**



**For greater
efficiency**



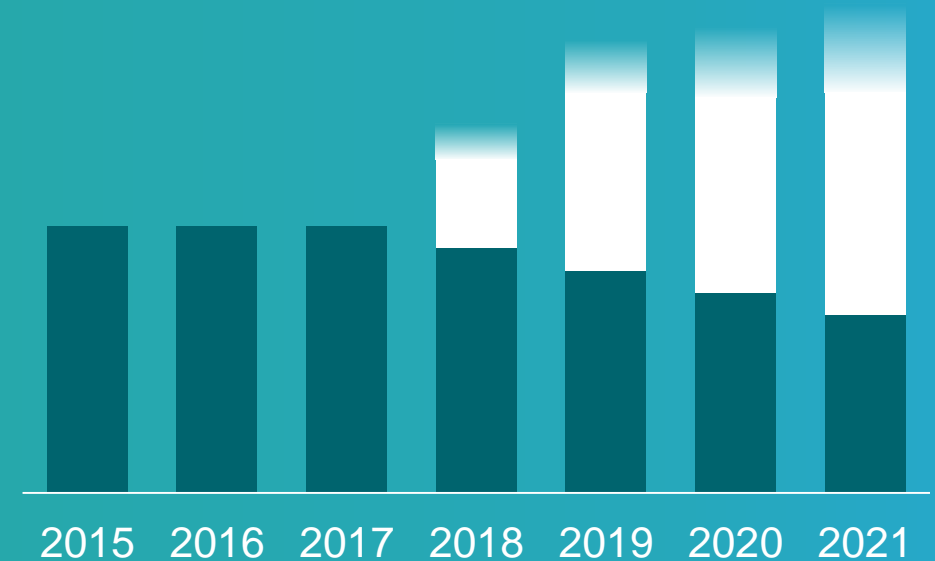
For comprehensive IT security



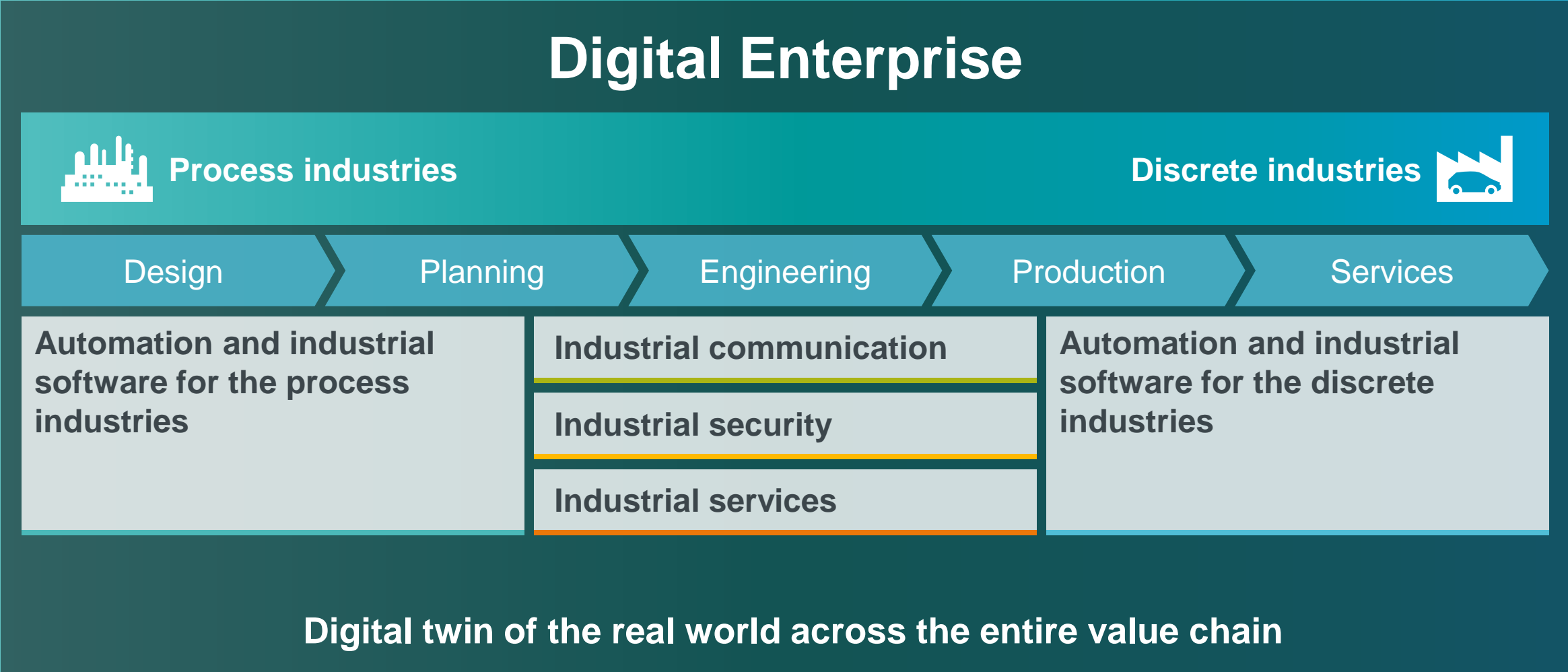
Annual productivity

■ Using
conventional
automation

■ Using flexibilized
automation and
digitalization



Digital Enterprise – our offering for the digital transformation of the process and discrete industries



Digital Enterprise – innovations paving the way towards the future of industry

Digital Enterprise



Process industries



Discrete industries



Automation and industrial software

Edge Computing | Artificial intelligence | PlantSight

Industrial communication

Real-Time Location System | IT/OT networking

Industrial security

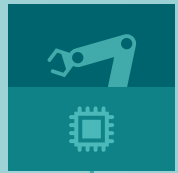
Defense in Depth

Industrial services

MindSphere | mendix | MindSphere Digital Exchange

Automation and industrial software

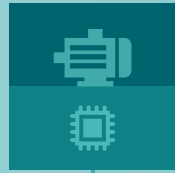
Edge computing – linking the benefits of local computing and cloud computing



Machine



Controller



Machine



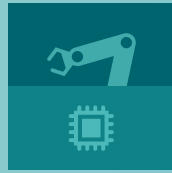
Controller

Local computing

- Once installed – rarely or never updated
- Data transfer by USB stick or over local network



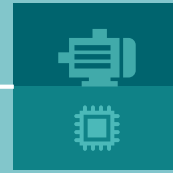
Cloud
Device and
computing



Machine



Controller



Machine



Cloud
Device and app
management



Edge
Data and
computing

Machine and
edge device



Controller



Edge
Data and
computing

Machine and
edge device

Edge computing

- Apps installed and executed on demand
- Local data, local intelligence
- High data volumes/low latency

Programming languages and tools



Matlab

python

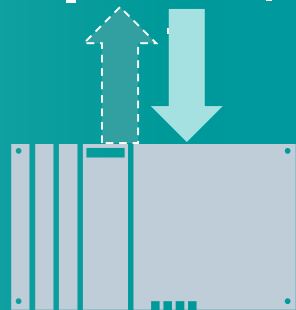


mx mendix

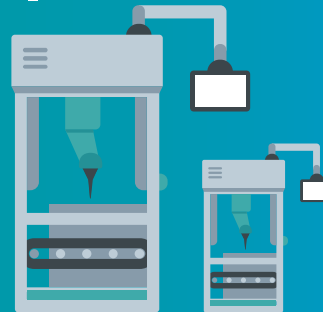
...

Edge
App
Store

MindSphere



Edge



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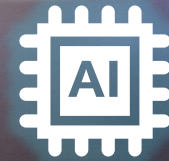
**Siemens Industrial Edge –
brings together software
offerings and automation**

App development open
to all users

Open interfaces for wide range of
different programming languages

Sale and utilization of edge apps
through the Edge App Store

Simatic Edge with artificial intelligence – algorithms improve efficiency of quality testing



Simatic Edge with artificial intelligence

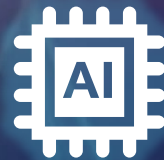
X-ray testing during quality
control down by 30%

Quality testing of PCBs by
artificial intelligence

Algorithms use the machine's
real-time process parameters

Intelligence from the cloud

Artificial Intelligence Module for Simatic S7-1500 – robots solve handling tasks autonomously



Artificial Intelligence Module for Simatic S7-1500



Reliable detection and handling
of unknown workpieces

Simple learning without time-
consuming training

Direct processing of data by
neural networks

Intelligence on field level

PlantSight Cloud Services – more secure web-based access to all plant data



Cloud-based portal for the digital twin of a plant

Aggregation of all relevant
1D/2D/3D data

Visualization of current
plant data at any time

Data consistency even
in case of plant expansion

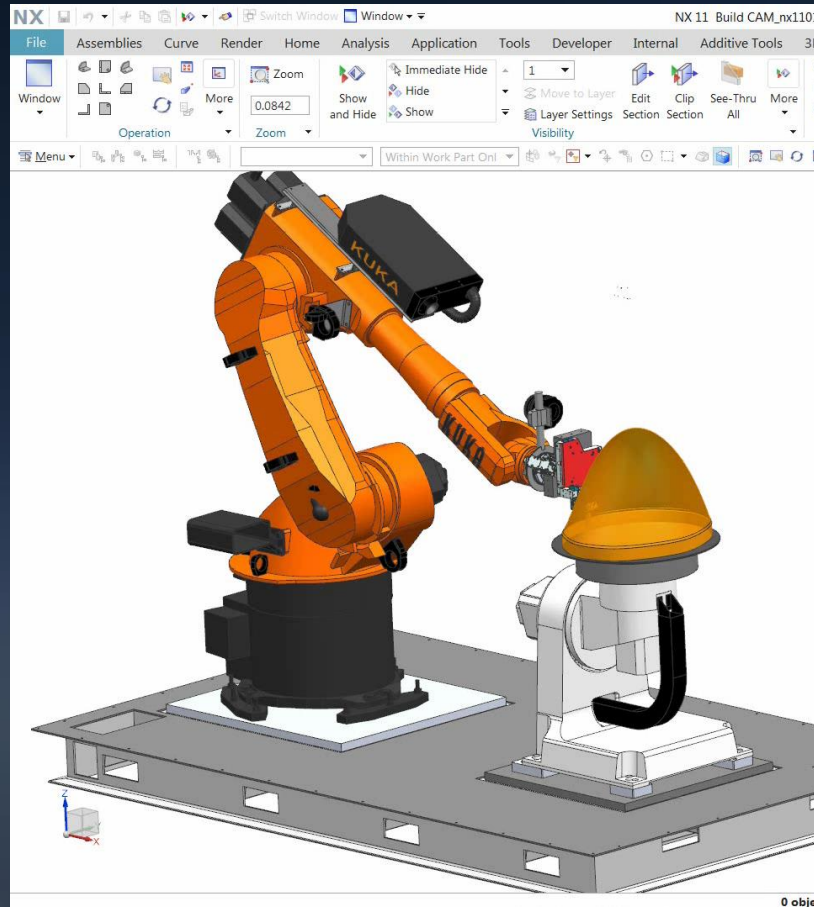
Everything under control with
intuitive web portal

Bentley
Advancing Infrastructure

The Bentley logo is shown in green and black. The background of the slide features a 3D digital twin of an industrial plant with glowing blue wireframe overlays and binary code (0s and 1s) floating in the air.

SIEMENS

The Siemens logo is shown in a bold, teal, sans-serif font.



**New possibilities for
production with the digital
integration of additive
manufacturing**

Design and optimization
of complex structures

Virtual validation of print
processes by simulation

Up to 2/3 reduction in weight

Industrial communication

Simatic Real-Time Location System (RTLS) – localization of facilities precisely to the centimeter



Real-time location for control
of the digital factory

Adaptable integration in the IT
system landscape via
ISO standard interfaces

Localization platform: Can be
extended at will for new
applications and operating areas

Optimized fleet management with RTLS – example: ÜSTRA Hannoversche Verkehrsbetriebe AG

SIEMENS
Ingenuity for life

Automatic provisioning
of the right vehicles

Dynamic response
to short-term events

Automatic communication of
maintenance requirements

The ÜSTRA logo is displayed in a white box. It features a green icon of two dots connected by a line, followed by the word "ÜSTRA" in a bold, black, sans-serif font.

3033b
Üstra

Niedersachsen

Strategic partnership between Siemens and Aruba – realization of integrated IT/OT networks



Integrated communication networks from the factory floor to the office environment

Uninterrupted visibility of data and devices

High level of plant and network availability due to tested reference architectures

Simple installation and secure operation



Industrial services

Steadily growing ecosystem surrounding MindSphere – now running on AWS, Microsoft Azure and Alibaba



MindSphere on AWS

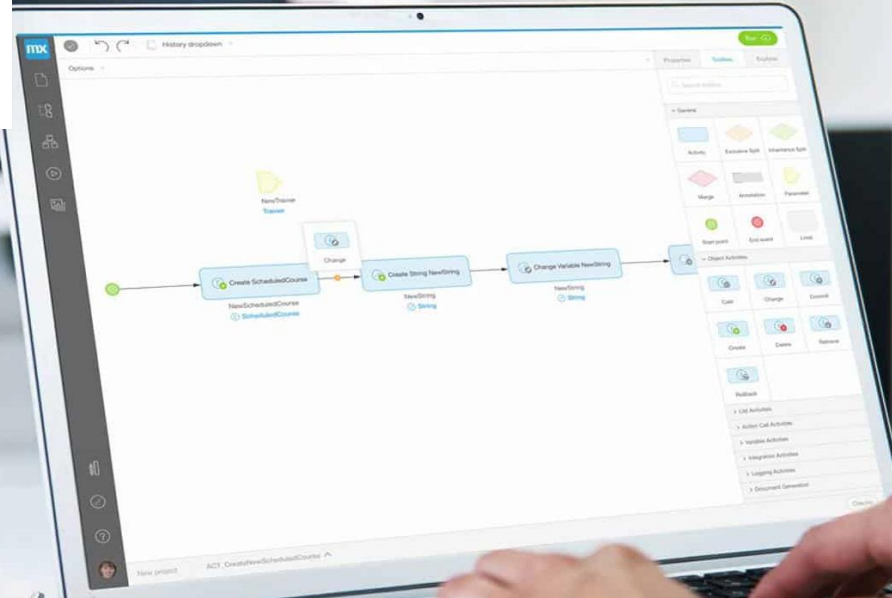
- Since January 2018
- Worldwide

MindSphere on Azure

- Preview since Hannover Messe 2018
- Available from December 2018
- Worldwide

MindSphere on Alibaba

- Announcement July 2018
- Planned from Q1 2019
- In China



Digital innovation platform and low-code programming with MindSphere and mendix

Ten times faster app development

Simpler app programming and deployment

Collaborative platform for faster product and manufacturing innovations

mendix at a glance



Leading in rapid application development



Based in Boston, Massachusetts



~ 400 employees



> 500 customers, > 50,000 development engineers and
> 100 solution partners

The member companies of MindSphere | World are developing the worldwide MindSphere ecosystem



Joint organization activities

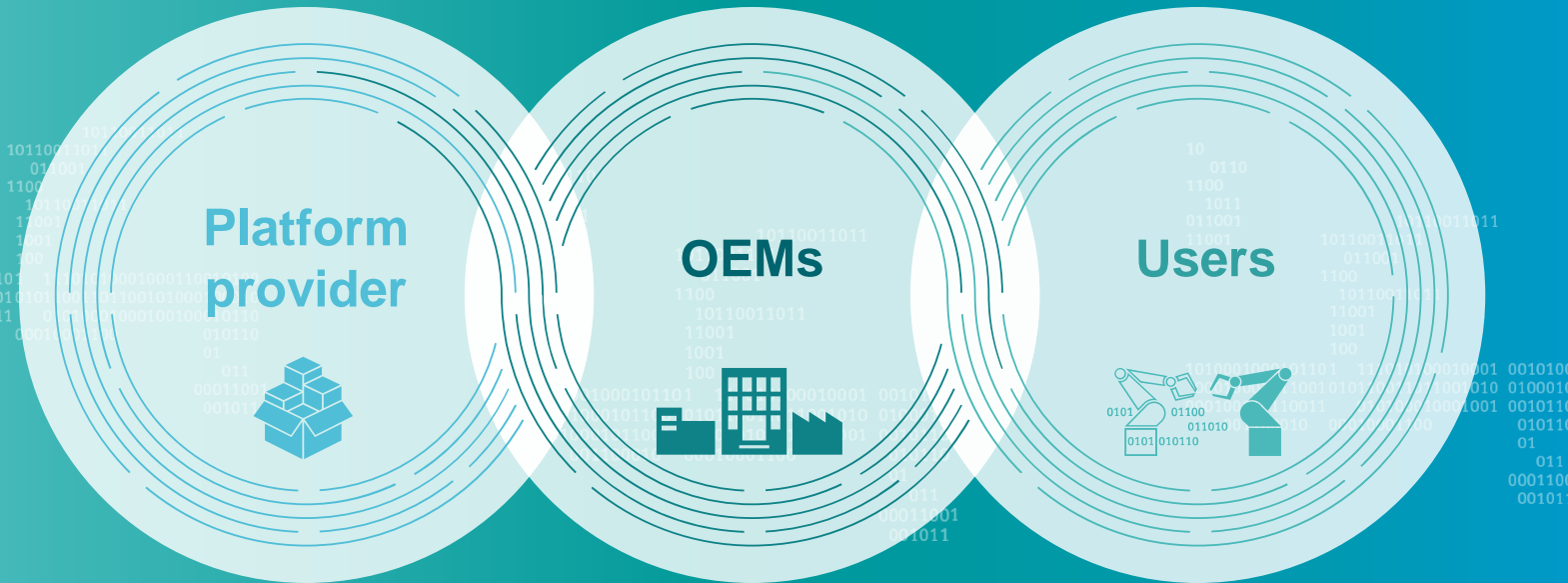
Recommendations for requirements imposed on IoT operating system MindSphere

International rollout of activities (Italy, ...)

Expansion of member companies and user groups (now 37 members in Germany, 18 in Italy)

Support in opening up new digital markets for new data-based business models

New digital business models for OEMs – example of technology supplier Schmalz



SIEMENS
Ingenuity for life

Greater availability through faster error analysis

Condition monitoring and predictive
maintenance on Siemens Industrial
Edge

Plug&Work connection:
Data directly to the operator

Visualization of machine statuses
for early detection of faults

MindSphere Application for further
data analysis



MindSphere Digital Exchange – all app-related services in a single marketplace

SIEMENS
Ingenuity for life



Selection of apps from different
partners and MindSphere
Applications from Siemens

Integrated usage metering
and invoicing

Over 200 partners
and over 250 apps

Available in over 30 countries

MindSphere for the energy sector – energy savings and new business models

SIEMENS
Ingenuity for life

Continuous collection of power
data in digital factories and
buildings

Complete integration into
automation and MindSphere

Sustainable improvement of
energy efficiency and plant
availability

Klaus Helmrich,
Member of the Management Board of Siemens AG

Industrial security

Cybersecurity – an essential business foundation



Defense in Depth: Unique multi-layered security approach

Charter of Trust – currently supported by 16 companies and organizations

Partnership with Claroty for the detection of anomalies in industrial networks

First company to be TÜV certified for secure system integration of process automation and drive solutions

Digital Enterprise
portfolio –
focusing on
specific vertical
industry
requirements



Chemical Industry



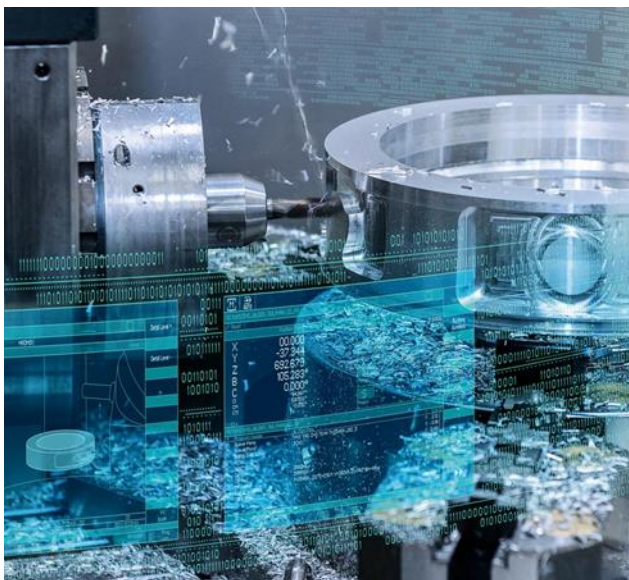
Food & Beverage



Pharmaceuticals



Aerospace



Machine Building



Automotive ...

... and
many more

Implement now! – Digital Enterprise at the SPS 2018



German SMEs are on their way towards Industrie 4.0

- With Digital Enterprise, SME customers are already achieving greater flexibility, a shorter time to market, greater efficiency and improved quality

Siemens is consistently advancing the Digital Enterprise – with innovations for the future of industry

- Edge computing
- Artificial intelligence
- Additive manufacturing

The ecosystem surrounding MindSphere is steadily growing

- Now running on AWS, Microsoft Azure and Alibaba
- Mendix: simpler app programming and deployment

Cybersecurity is becoming an essential business foundation

- Partnership with Claroty: detection of anomalies
- First company with TÜV certification for secure system integration of process automation and drive solutions

A detailed 3D architectural rendering of a large exhibition hall, Hall 11, showing various booth layouts, seating areas, and display zones. The hall is divided into several distinct sections, each labeled with a specific Siemens business area. The layout includes walkways, stairs, and a central open area. The color scheme is primarily white and grey for the booth structures, with blue accents for Siemens branding.

MindSphere

Industrial services

Industrial software

Industrial security

Automation

Industrial communication

**Digital Enterprise for
Aerospace, Batteries,
Chemicals/Pharmaceuticals
and Food & Beverage**

**Experience the future
of industry in Hall 11 –
we look forward to welcoming you!**