Discover the value of the Digital Enterprise

Klaus Helmrich | Member of the Managing Board of Siemens AG | SPS IPC Drives 2017
New possibilities through digitalization

How products are designed
How we simplify production processes
How we optimize product performance

The Digital Enterprise portfolio for Industrie 4.0 is already here – new flexible solutions for new data-based business models
The conditions are in place
The hour of implementation has arrived!

▷ For shorter time to market
▷ For greater flexibility
▷ For improved quality
▷ For more efficiency
>150 billion € of additional growth for Germany through digitalization

Only one fifth of German SMEs are among the digital pioneers

1 Source: Federal Ministry of Economics | 2 Source: Handelsblatt Research Institute: Analysis “The Myth of SMEs as digitalization objectors” (status2017)
Germany’s powerful SMEs are highly innovative –
The time to leverage the opportunities of digitalization is now

68% of small and medium-sized enterprises in Germany envisage opportunities for new, digital business models¹

38% aim for improved customer support
17% expect increased revenue²
41% have registered sales growth¹
79% envisage potential for production optimization
50% are able to extend their product and service portfolio²

¹ Source: IHK Company Barometer 2016 (1620 companies surveyed) | ² Source: Federal Ministry of Economics: Brochure “SMEs go Digital” (March 2017)
Cooperative partnership based on mutual respect – Vital to the digitalization breakthrough

Large-scale corporations (supply components and platforms)

Small and medium-sized enterprises (utilize platforms to develop their own solutions and business models)

End customers (integrate into their digital value chains)
Digital Enterprise is our portfolio of solutions for digital transformation in the manufacturing and process industries.

**Digital Enterprise**

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**Industrial software and automation for the process industry**

- Industrial communication
- Industrial security
- Industrial services

**Industrial software and automation for the manufacturing industry**

- Digital Enterprise Suite
Digital Enterprise from Siemens – Systematic development of a portfolio for the digitally integrated value chain

... for the process and discrete industries

Totally Integrated Automation (TIA)/No. 1 in automation

1996

EDA-Software

CAE software
e.g. fluid dynamics

PLM software

3D simulation
e.g. reinforcement simulation

Simulation/Test for automated driving

MindSphere 3.0
The cloud-based open IoT operating system

Digital Enterprise
Industrie 4.0 from Siemens

Industrial software and automation

Industrial communication

Industrial security

Industrial services

Cooperation with Bentley Systems

2017

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Digital Enterprise
Industrie 4.0 from Siemens

Industrial software and automation

Industrial communication

Industrial security

Industrial services

Cooperation with Bentley Systems

2017
The digital twin creates the conditions for flexibility in product design, in production and product performance.
Our Digital Enterprise portfolio innovations at the SPS 2017 – A selection of highlights

**MindSphere 3.0**
Now on Amazon Web Services with more efficient open Application Programming Interface (API) for external developers

**SIMOTICS IQ**
Connection of electrical Siemens motors to the cloud

**TIA Portal V15**
Integration of handling functions and robotics

**S7-PLCSIM Advanced 2.0/NX 12**
Virtual commissioning of individual units, machines and whole plants
## Digital Enterprise

### Process industry
- Product design
- Process design
- Engineering
- Operation
- Services

### Manufacturing industry
- Product design
- Production planning
- Production engineering
- Production execution
- Services

### Industrial software and automation for the process industry
- Industrial communication
- Industrial security
- Industrial services

### Industrial software and automation for the manufacturing industry
- Digital Enterprise Suite

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Before
Test of mechanical properties, ergonomic aspects and transport routes using a wooden model

Now
Bausch + Ströbel uses virtualization center for testing and optimizing virtual models of filling and sealing machines for the pharmaceutical industry
Competitive edge for Bausch + Ströbel due to digital twin – Faster engineering and commissioning

+30% engineering efficiency by 2020
+ Virtual commissioning
+ Optimized workflow
+ High level of flexibilization to fulfill additional customer wishes

NX CAD software
TIA Portal
Team-center
NX Mechatronics concept designer

Klaus Helmrich, Member of the Managing Board of Siemens AG
# Industrial communication

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## Digital Enterprise

### Process industry
- Product design
- Process design
- Engineering
- Operation
- Services

**Industrial software and automation for the Process industry**

### Manufacturing industry
- Product design
- Production planning
- Production Engineering
- Production execution
- Services

**Industrial software and automation for the manufacturing industry**

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**Industrial communication**

**Industrial security**

**Industrial services**

**Digital Enterprise Suite**

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Before

Laborious – often manual – stocktaking, time-consuming order processes and cost-intensive controlling

Now

Digital requirements analysis across the entire logistics process at Würth Industrie Service with iBox and RFID technology: rapid consumption-driven delivery with cost savings of up to 20%

Photo: Würth Industrie Service GmbH & Co. KG
Communication from the field level up to the cloud – Siemens designs and implements industrial networks

**Cloud**
Secure data storage and transfer

**Industrial backbone**
Coordinated transition between automation network and IT network

**Machine level/cell level**
Production and automation cells

**One solution partner for industrial networks**

- End-to-end secure data communication
- Industrial networks for widely different sectors of industry
- Training schemes and global partner network
Industrial security

Digital Enterprise

Process industry
- Product design
- Process design
- Engineering
- Operation
- services

Manufacturing industry
- Product design
- Production planning
- Production Engineering
- Production execution
- services

Industrial software and automation for the Process industry

Industrial software and automation for the manufacturing industry

Industrial communication

Industrial security

Industrial services

Digital Enterprise Suite
Siemens Motor Factory in Bad Neustadt

Defense in Depth makes for greater machine security

- Secure production processes due to plant security, network security and system integrity
- IT security from risk analysis through establishment of secure communication to continuous monitoring
- Based on applicable security standards (e.g. IEC 62443 standard)
Comprehensive portfolio of security products and services for current and future cyber security challenges

Defense in Depth

Protection against sabotage

Secure cloud architecture

Protection of know-how
Digital Enterprise

Industrial services

Process industry
- Product design
- Process design
- Engineering
- Operation
- Services

Industrial software and automation for the Process industry

Manufacturing industry
- Product design
- Production planning
- Production Engineering
- Production execution
- Services

Industrial software and automation for the manufacturing industry

Industrial communication

Industrial security

Digital Enterprise Suite

Industrial services
MindSphere

New: Version 3.0 on Amazon Web services

Industry expertise and cloud competence from a single source

Fast development of robust IoT solutions

More powerful development environment with open Application Programming Interface (API)

Extensive device, enterprise and database connectivity

Advanced analytics

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Before
Fluid quality checks required regular sample taking and time-consuming laboratory testing, often only reactively or without any concrete trigger.

Cofac AG monitors the quality of fluids such as oil in steam turbines or hydraulic plants continuously online; in case of contamination, the app, for instance Fleetmanager, proactively issues an alert. The system can also be deployed by small and medium-sized enterprises without major investment.
Cofac stands out from its market competitors with new business models – Developed on the basis of MindSphere

Lower costs
due to distributed monitoring

+ Out-of-the-box security

+ 15 minutes for linking from the field level up to the cloud
Digital revolution for motors

Connection of Siemens electric motors to the cloud
- Higher level of availability
- Optimized maintenance and services
- Greater efficiency and productivity

SIMOTICS IQ

Motor + Connect = IQ Ready + MindSphere + MindApp

- RPM value
- Power consumption
- Servicing information
- Operation times and durations
- Load
- Localization
- Cooling status

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Additional partnership financing service to boost implementation of Industrie 4.0 – Aimed at SMEs

Pay-per-use models and payment plans to simplify implementation of digital solutions, aimed particularly at SMEs

Example: Machine builder EiMa

Fast track to digitalization with customized financing model

- From a single source: hardware and software solutions as well as tailored financing to boost long-term competitive standing
- Cost savings due to digital technologies enable additional investment
- Personalized payment plan from Siemens Financial Services for improved liquidity
- 3-month test phase for software facilitates customer decision
The Digital Enterprise portfolio has put the conditions for Industrie 4.0 into place – The hour of implementation has arrived!

Small and medium-sized enterprises too are already sharpening their competitive edge through digitalization – both in the process and discrete industries

– With our Digital Enterprise solutions for the digital twin across the entire value chain
– With our new open cloud-based IoT operating system MindSphere
– With our world leading automation portfolio

Siemens offers an additional financing partnership service to boost the implementation of Industrie 4.0 – aimed at small and medium-sized enterprises

Industrie 4.0 calls for an extended model of cooperative partnership based on mutual respect

– Large-scale enterprises supply platforms and components
– Small and medium-sized enterprises utilize these platforms to develop their own solutions and business models
– End customers integrate these into their digital value chain
Experience the Digital Enterprise live in Hall 11 – We look forward to your visit!
More detailed information

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All information is preliminary.
Thank you!