The digital change constant
Siemens Digitalization enables our customers to convert threats into opportunities

Siemens customers facing challenges

- Decentralized & fluctuating power generation
- Mass personalization and build-to-order
- Interactive collaboration in virtual designs
- Data driven predictive maintenance
- Self-optimizing machines and remote maintenance

Siemens Digitalization delivering answers

**Digital services**

**Vertical software**

**Digitally enhanced electrification and automation**

**Customers benefit**

- Increased productivity & flexibility
- Shorter time-to-market
- Improved uptimes and lifetimes
Business opportunities offered by digitalization – Creating value by combining the physical and virtual worlds

Digital services

- €0.5 billion in FY 2014
- +15% market growth
- 280k+ connected systems
- ~30 digital service offers

Vertical software

- €2.4 billion in FY 2014
- +9% market growth
- Largest offering among peers, continued M&A LMS, CAMSTAR, eMeter

Digitally enhanced electrification and automation

- #1 Automation player in industry, buildings, grids, power plants and rail
- Differentiation and basis for digitalization

The trusted partner for critical processes

Large installed base and customer access

Deep vertical know-how
Consequent transformation of Siemens towards digitalization

Siemens Digitalization Strategy

Business opportunities

- Digital services
- Profitable growth
- Digitally enhanced electrification and automation
- Vertical software

Digital foundation

- Digital capabilities
- Digital technology platforms and enablers
- Digital partner ecosystems
- Siemens as a digital company
Siemens continuously invests in the future which is increasingly Digital

Example: Manufacturing

From Vision to Reality – with the holistic Digital Factory Software portfolio

1958 - Start of production automation: Siemens receives the patent for SIMATIC
1996 - Totally Integrated Automation (TIA) enables inter-operability between all automation components
2009 - TIA Portal provides access to all automation tasks
2013 - Siemens is currently the only company whose technologies combine the real and the virtual production world under one roof

Future - virtual and real production worlds increasingly merge. On a “Digital Enterprise Platform”, product development and production are integrated step-by-step through industrial IT and Industry software

€4+ billion in investments since 2007

Production engineering and execution
Beginning ca. 2000 – software for product and manufacturing design becomes increasingly important

Product development
2007

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Siemens’ solid Digital Foundation

Siemens Digitalization Strategy

Business opportunities

Digital services
Vertical software

Digitally enhanced electrification and automation

Profitable growth

Digital foundation

Digital capabilities
- Digital technology platforms and enablers
- Digital partner ecosystems
- Siemens as a digital company
Innovation capabilities are the foundation of our Industrial Digitalization leadership position

**Depth of skills**
- **28,800** researchers
- **220** data Scientists
- **17,500** software engineers
- **150** R&D locations

**Financial**
- **$100m** Future Industry Fund
- **$150m** joint Atos Innovation
- **$4.1bn** R&D in 2014

**Creativity**
- **30** patent first filings per day
- **60,000** patents held
- **1000** research partnerships launched annually
Siemens’ solid Digital Foundation

Siemens Digitalization Strategy

- Digital services
- Vertical software

Profitable growth

Digitally enhanced electrification and automation

Digital foundation
- Digital capabilities
- Digital technology platforms and enablers
- Digital partner ecosystems
- Siemens as a digital company
Siemens advanced analytics platform enabling digital services

Remote connectivity of 300,000 machines connected

Cloud based or on premise

Industrial grade security

Flexible integration of structured and unstructured data

Advanced analytics
Siemens’ solid Digital Foundation

Siemens Digitalization Strategy

Business opportunities

- Digital services
- Vertical software

Profitable growth

Digitally enhanced electrification and automation

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Digital partner ecosystems – Leveraging external innovation

Expanding powerful partner ecosystem

- Strong IT partner ecosystem
- Complementary strengths
- Partnering with start-ups

IT partners

Examples

Siemens Venture Capital

180+ projects

Start-up partnerships

via Technology to Business

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Siemens Industry Analyst Conference Boston 2015
Siemens’ solid Digital Foundation

Siemens Digitalization Strategy

Profitable growth

Digitally enhanced electrification and automation

Business opportunities

Digital services
Vertical software

Digital foundation

Digital capabilities
Digital technology platforms and enablers
Digital partner ecosystems
Siemens as a digital company
Siemens is driving digitalization by using the tools we sell extensively in our own production plants with lighthouse sites in Germany and China
Now to look at the concrete portfolio Siemens is offering in digitalization to our customers.

### Siemens Digitalization Strategy

**Digital foundation**
- Digital capabilities
- Digital technology platforms and enablers
- Digital partner ecosystems
- Siemens as a digital company

**Business opportunities**
- Digital services

**Vertical software**
- Profitable growth
- Digitally enhanced electrification and automation
Vertical software –
Maserati relies on Siemens software to produce the Ghibli model

Digital twin of the product and the production line

Comprehensive integration of data from the entire value chain including suppliers
Vertical software –
Predictive malaria flag integrated in hematology system helps save lives

Smart data analytics simplifies malaria identification in blood and adds value to existing information

Customers profit from cost reduction, reliable results and improved patient care
Vertical software – Process industry leaders rely on XHQ Operations Intelligence

Idemitsu proves that XHQ Operations Intelligence delivers measurable value

“We estimate that per site, on an average, XHQ is responsible for a profit differential of USD 10.5 Million. Over six manufacturing sites, it adds up to USD 63 Million per year.”

Yoshio Ohashi
General Manager
Information Systems
Dept. Idemitsu, Japan
Digitally enhanced electrification and automation – Virtual power plant with up to 500 megawatts

Decentralized generation units, small hydro and solar energy sources bundled on a virtual platform to be used as one single power plant

Multi-year agreement to integrate smart grid technology into Canadian New Brunswick’s electrical system, called “Reduce and Shift Demand (RASD)” modernization plan
Digital services –
Innovative service programs meeting customer demands

Individualized digital services improve asset availability and increase operating efficiency

Portfolio examples:
- Flexible maintenance for power generation infrastructure
- Flexible remote healthcare equipment services
- Remote analytics based for rail operators
So far that is what you might expect from a global technology leader, but now let’s look one step further.
By 2020 there will be five times as many connected devices as connected people

**User generated data**

**Internet users**
- 3bn (2013)
- 4bn (2020)

**Generated data**
- 2,9 ZB (2013)
- 26 ZB (2020)

**Machine generated data**

**Connected devices**
- 8bn (2013)
- 20bn (2020)

**Generated data**
- 1.5 ZB (2013)
- 18 ZB (2020)

Source: CEO Digitalization Summit 2015; IDC
Today substantial value from user generated data – first nuclei and huge potential for machine data

User generated data

**60bn** revenue
Targeted advertising

**13bn**
Share economy

**11bn**
Social/Advertising

? Health analytics

Machine generated data

Service optimization
Increased plant security
Usage, utilization & workflow

Data Platforms

Google
Airbnb
Facebook
IBMWatson
DriveNow

Data Sources

Search data
Usage data
Personal data
Text data

Siemens sensor & machine data/ day
25 GB Gas turbine
30 GB Smart grid platform
60 GB Computer tomograph
100 GB Controllers for CERN
6 TB Traffic mgmt system

All values in EUR / Source: Google / Facebook; Share economy: PwC analysis 2014; Siemens Digital Services FY14

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Customer platforms such as Healthcare ‘teamplay’ leverage network effects to create significant value to doctors and patients alike.

- Network for healthcare professionals and patients
- Enables sharing of imaging data, e.g. for second opinion, analytics
- Siemens imaging equipment installed at ~75% of all healthcare providers worldwide
- Successful pilots underway

**Benefit**

- Dose quality
- Usage, utilization & workflow
- Collaboration network

**Data Platforms**

**Data Sources**
Customer platform ‘Plant Cloud Services’ enable the optimization of plants and machines as well as energy and resources

- Industrial cloud platform that collects and analyzes machine data
- Open ecosystem approach for customer and partner applications
- Open connectivity approach
- Flexible platform deployment (on premise, private, public cloud)
- 300 customers on existing cloud services

**Benefit**
- Increased plant security
- Increased uptime
- Decreased energy cost
- Service optimization
- New business potential

**Data Platforms**
- Plant Data Services
  - Plant Security Services (PSS)
  - Plant Analytics Services (PAS)
  - Plant Cloud Services (PCS)

**Data Sources**
- Siemens machine data
  - PCS7
  - Simatic
- Third party machine data
One more thing...
Factory Automation Engineers + Gamers + Oculus Rift = Digitalization
Thank you!

Dr. Horst J. Kayser