Innovation at speed and scale

Roland Busch, CTO and Member of the Managing Board of Siemens AG
We delivered more than we promised

<table>
<thead>
<tr>
<th>Siemens Innovation Day 2016</th>
<th>Siemens Innovation Day 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase R&amp;D investment to over €5 bn</td>
<td>€5.2 bn R&amp;D investment in Electrification, Automation, and Digitalization</td>
</tr>
<tr>
<td>Create new digital offerings, roll-out of MindSphere</td>
<td>More than 250 digital offerings (digital services and industrial applications), 1 million connected assets (+25%)</td>
</tr>
<tr>
<td>Achieve double-digit annual growth in digital businesses</td>
<td>20% revenue growth from software and digital services</td>
</tr>
</tbody>
</table>
Spending for research and development in billions of euros

- FY 2014: 4.0
- FY 2017: 5.2
- FY 2018e: ~5.6

€1.2 bn R&D in digital business in FY 2017

20% R&D intensity for digital business

Currently 24,500 software engineers
Siemens Healthineers visualization experts nominated for the 2017 German Future Prize
3D printing of gas turbine blades
Atellica: ultrafast and flexible diagnostics platform
Mireo: innovative platform for premium-class mass transit
1,100 kV: record-breaking HVDC
NX for additive manufacturing
## Innovation with a clear focus – Siemens Company Core Technologies

<table>
<thead>
<tr>
<th>Additive Manufacturing</th>
<th>Autonomous Robotics</th>
<th>Blockchain Applications</th>
<th>Connected (e)Mobility</th>
<th>Connectivity and Edge Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cybersecurity</td>
<td>Data Analytics, Artificial Intelligence</td>
<td>Distributed Energy Systems</td>
<td>Energy Storage</td>
<td>Future of Automation</td>
</tr>
<tr>
<td>Materials</td>
<td>Power Electronics</td>
<td>Simulation and Digital Twin</td>
<td>Software Systems and Processes</td>
<td></td>
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Improving innovation speed and capital allocation with Siemens Company Core Technologies

Full innovation cycle:
- university collaboration
- applied research
- advanced applications and prototyping

Covering technological as well as business model innovations

Output-driven and market-oriented

Tapping outside innovations with partners/ecosystem and next47

~€500 million focused investments
Our innovation and digitalization agenda

Speed and scale
Digitalization is a key driver of innovation and growth.

<table>
<thead>
<tr>
<th>Digitalization</th>
<th>Revenue FY 2017</th>
<th>Market growth CAGR FY 18 – 22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siemens software</td>
<td>~€4.0 bn</td>
<td>+8%</td>
</tr>
<tr>
<td>Digital services</td>
<td>~€1.2 bn</td>
<td></td>
</tr>
<tr>
<td>MindSphere</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhanced automation</td>
<td>~€19 bn</td>
<td>+3%</td>
</tr>
<tr>
<td>Classic services</td>
<td>~€17 bn</td>
<td></td>
</tr>
<tr>
<td>Electrification</td>
<td></td>
<td>+1-3%</td>
</tr>
<tr>
<td>Enhanced electrification</td>
<td>~€43 bn</td>
<td></td>
</tr>
</tbody>
</table>

Revenue digital businesses: €5.2 bn

1) Total growth: +20% (+20% in software, +20% in digital services)
Growth excluding Mentor Graphics acquisition: +11% (+9% in software, +20% in digital services)
Our offering differentiates us clearly from our competitors

- Deep domain know-how in a broad range of markets and industries
- Strong installed base/connected fleet
- Powerful ecosystem
- Unmatched digital portfolio: MindSphere, Software, Services, Security
- Numerous Siemens internal use cases as proof points
Siemens has continuously and strategically invested in its software portfolio and partnerships.

1) Minority equity investment
Siemens ecosystem

Application developers
- Bentley
- Atos
- accenture
- Infosys
- evosoft
- chemtech
- senseye
- TATA
- pwc

Integrators
- Atos
- accenture
- Infosys
- OMNETRIC
- TATA
- Capgemini
- Deloitte
- HCL
- FPO

Technology & Infrastructure partners
- Atos
- Amazon web services
- BluVision
- SAP
- orange Business Services
- OMNETRIC Group
- senseye
- intel
- Fujitsu

Customers

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Closed loop innovation – the digital twin improves development, production and operation

MindSphere connects the virtual with the real world – from factories to infrastructure
MindSphere, open cloud-based IoT operating system

- Connectivity
- Strong partner ecosystem
- Closed-loop innovation
- Advanced analytics and machine learning
- Powerful industrial applications and digital services

Scaling up with AWS
Developments of our digital offerings over the last 12 months

+25% connected assets: 1 million devices and systems

doubled number of customers: plus 2,900

4x increase of digital offerings: more than 250
The digitalization of industries requires a different approach

How to turn data into value?
How to create digital offerings?
MindSphere Application Centers for Siemens digital offerings

20
MindSphere Application Centers

50
Locations in 17 countries across the globe

~900
software developers, data specialists and engineers

Speed and scale
MindSphere Application Centers – Locations around the globe

- Dubai
- Singapore
- Hong Kong
- Riyadh
- Erlangen
- Karlsruhe
- Berkeley
- Munich
- Abu Dhabi
- Frankfurt
- Nuremberg
- Newcastle upon Tyne
- London
- Moscow
- Vienna
- Budapest
- Istanbul
- Dubai
- Gurgaon
- Shanghai
- Perugia
- Noida
- Pune
- Foster City
- Alpharetta
- Atlanta
- Orlando
- Pittsburgh
- Berkeley
- Austin
- Orleans
- Orlando
- Newcastle upon Tyne
- Nottingham
- Dublin
- London
- Seville
- Riyadh
- Bad Neustadt
- Erlangen
- Nuremberg
- Munich
- Moscow
- Vienna
- Budapest
- Istanbul
- Abu Dhabi
- Gurgaon
- Noida
- Pune
- Foster City
- Noida
- Shanghai
- Perugia
- Osaka
MindSphere Application Centers – Creating value for the customer

- **Algonquin College, Canada University building**
  - $3.7 million annual cost savings

- **Amtrak, U.S. Rolling stock**
  - 99% availability and reliability of rail vehicles guaranteed

- **Deutsche Bahn Interlocking Bremen**
  - > 80% failures from blocked or faulty point switches predicted and mitigated
MindSphere Application Centers – Creating value for the customer

U.S. utility, Jacksonville Grid infrastructure
$1 million savings per year with advanced metering

Eletrobrás, Brazil Power supply
50% reduction in non-technical power losses of $150 m

Siemens Electronics Manufacturing, Erlangen
from 25 to <7 days delivery time plus quality enhancement
Siemens is driving digitalization on all levels

Clear and focused R&D capital allocation to drive differentiation
Leverage domain know-how, digital portfolio and customer relationship
Growing digital businesses by more than 10 percent

Speed and scale