Leadership in industrial automation

ABB Innovation & Technology Day

Ulrich Spiesshofer, CEO
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- business risks associated with the volatile global economic environment and political conditions
- costs associated with compliance activities
- market acceptance of new products and services
- changes in governmental regulations and currency exchange rates, and,
- such other factors as may be discussed from time to time in ABB Ltd’s filings with the U.S. Securities and Exchange Commission, including its Annual Reports on Form 20-F.

Although ABB Ltd believes that its expectations reflected in any such forward-looking statement are based upon reasonable assumptions, it can give no assurance that those expectations will be achieved.

The presentations and the related discussion may also contain or refer to non-GAAP measures of performance. Definitions of these measures and reconciliations between these measures and their US GAAP counterparts can be found in the “Financial information” documents under “Quarterly results and annual reports” on our website at http://new.abb.com/investorrelations/
## ABB: the pioneering technology leader

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<thead>
<tr>
<th>Offering</th>
<th>Pioneering technology leadership</th>
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<td>Products</td>
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<td>Systems</td>
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<td>Software &amp; services</td>
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<td>Transport &amp; Infrastructure</td>
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<th>Geographies</th>
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<td>Globally</td>
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<td></td>
<td>Asia, Middle East, Africa</td>
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<td>Americas</td>
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<td>Europe</td>
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- ~$35 bn revenue
- ~100 countries
- ~136,000 employees

Proforma: 2016 figures including B&R full-year figures
Why are we here today?

#1 economy in the world

#1 automation market globally for the industry sector

#1 market globally for ABB
- ~20,000 employees
- 60 manufacturing sites
- ~$11 bn capital deployed since 2010

Auburn Hills
Cradle of robotics in the US
Purpose of today

Inform
Next Level update
Industrial Automation
Robotics & Motion
ABB Ability™
Innovation – what’s next?

Experience
Robotics solutions and factory tour
ABB Ability™ System 800xA® – intelligent Chemical Projects
B&R – Machine & Factory Automation
ABB Ability™ – mining solution and platform
ABB Ability™ Collaborative Operations™ – digital transformation in Marine

Discuss
Open forum
Executive and business management dialogue
Next Level transformation – update

ABB’s leadership in industrial automation
2017: living Next Level
Clear priorities, implementation well under way

**Profitable Growth**
- Driving growth in four market-leading entrepreneurial divisions
- Shifting the Center of Gravity: competitiveness, growth, risk
- Quantum leap in digital
- Value creating, strategic acquisitions and partnerships

**Relentless Execution**
- World-class operational excellence across the whole organization
  - White Collar Productivity, Net Working Capital, Quality
- Linked strategy, performance management and compensation

**Business-led Collaboration**
- Market focused and lean organization
- Continued leadership development
- Strengthening the global ABB brand
Growth momentum building

### Market growth across industry sectors

<table>
<thead>
<tr>
<th>Share of ABB industry market</th>
<th>2015-17</th>
<th>2017-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;3% p.a.</td>
<td>0-3% p.a.</td>
<td>negative</td>
</tr>
<tr>
<td>0%</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

### PIE “growth machine” working

- **Penetration:** all regions, food & beverage, automotive, service
- **Innovation:** ABB Ability™, digital substation, select I/O
- **Expansion:** B&R, Robotics acquisitions, Africa

### ABB base order growth, yoy, comparable

<table>
<thead>
<tr>
<th>Quarter</th>
<th>2016</th>
<th>2017</th>
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<tbody>
<tr>
<td>Q1</td>
<td>-6%</td>
<td></td>
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<tr>
<td>Q2</td>
<td></td>
<td>-1%</td>
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<tr>
<td>Q3</td>
<td></td>
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<tr>
<td>Q4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q1</td>
<td></td>
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<tr>
<td>Q2</td>
<td>2%</td>
<td>3%</td>
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New division structure working well
Partner of choice for …

<table>
<thead>
<tr>
<th>Power Grids</th>
<th>Electrification Products</th>
<th>Industrial Automation</th>
<th>Robotics and Motion</th>
</tr>
</thead>
<tbody>
<tr>
<td>... a stronger, smarter and greener grid</td>
<td>... electrification of all consumption points</td>
<td>... perfection in automation</td>
<td>... robotics and intelligent motion solutions</td>
</tr>
</tbody>
</table>

Transformation progressing
Closing out legacy risks
Business model transformation
Market-leading profitability

Integration of all ABB LV-/MV-activities
Innovation, e.g. home automation, smart products
Expansion in growth sectors, e.g. e-mobility, renewables, data centers

Integration of all control-based solutions: DCS, PLC/IPC¹
Expansion, e.g. B&R, Pharma
Leading in digitalization, software and service

Focused, simplified portfolio
Robotics: innovation & customer value leader
Motion (motors & drives) bottoming out, early cycle momentum building

¹DCS: distributed control system, PLC: programmable logic controller, IPC: industrial PC
Shifting ABB’s Center of Gravity
Steady action stream driving the transformation

- Service: growth from large installed base
- Partnerships: IBM
- Software / digital: ABB Ability™
- Cable divestiture
- Business model change
- Intrinsic business risk: execution of legacy backlog in offshore wind
- Lowering risk
- Strengthening competitiveness
- KeyMILE acquisition
- Robotics acquisitions, e.g. NUB3D
- Discrete: B&R acquisition
- PIE: expansion in high-growth markets (e.g. Robotics, F&B)
- Driving organic growth

Launch of Next Level Strategy in September 2014, examples shown from last 12 months
ABB Ability™: industry-leading digital solutions
Successful launch in Europe, Americas and AMEA\(^1\) in H1 2017

180+ ABB Ability™ solutions

Utilities solutions
Industry solutions
Transportation & Infrastructure solutions

Platform
(common technologies for device, edge, and cloud)
### ABB’s group targets 2015-20

Ambition confirmed

<table>
<thead>
<tr>
<th>Group targets</th>
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<tbody>
<tr>
<td>Revenue growth&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Operational EBITA %&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Operational EPS growth CAGR&lt;sup&gt;3&lt;/sup&gt;</td>
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<tr>
<td>FCF conversion to net income</td>
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<tr>
<td>CROI %&lt;sup&gt;4&lt;/sup&gt;</td>
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<sup>1</sup>Average annual revenue growth on a comparable basis over 6 years, base year 2014;  
<sup>2</sup>Target is on a full-year basis;  
<sup>3</sup>CAGR: Compound Annual Growth Rate, base year is 2014 and assuming constant exchange rates;  
<sup>4</sup>Temporary reduction possible in the event of larger acquisitions
Next Level – summary

- Next Level transformation well under way
- Topline growth and steady profitability despite market head winds & ongoing transformation
- 2017 crucial transition year
- Market dynamics improving
- ABB returning to profitable growth
- 2018 first year of “new normal”
Next Level transformation – update

ABB’s leadership in industrial automation
Industrial automation
ABB positioned as pioneering innovation and technology leader

**ABB’s leadership in industrial automation**

- Global #1 in process control software
- Global #1 in motion
- Global #2 in robotics, #1 in China
- Innovation & growth leader in machine and factory automation
- Large installed base incl. motion, robotics, process control systems
- ABB Ability™ – leading industrial solutions

**Innovation and technology trends**

- Internet of things / digitalization
- Robotics
- 3D printing
- Blockchain
- Artificial intelligence

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Well positioned in a world of accelerating innovation

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1 Source: MIT
Industrial automation market

A >$200 bn market for ABB expected to grow ~3% p.a.¹

¹Expected growth 2017-20
Our customers’ operations

Example: oil, gas & chemicals
Our customers’ operations – example: chemical plant

ABB has a complete offering for process industries

Central control room & process control system (DCS)
Telecom systems
Safety systems
Power management system
Programmable Logic Controller (PLC)
Motor control center
Analyzers
Sensors
Intelligent field instruments
Operator mobility

ABB Ability™, Software & Services

Motors
Variable-speed drives
Intelligent switchgear
HV / MV / LV power distribution

EXAMPLES
Our customers’ operations

Example: electronics manufacturing plant in discrete industries

- Water treatment
- Polishing and grinding
- Packing, picking, and palletizing logistics
- Off-line assembly
- Laser marking
- Display and battery assembly
- Final assembly and testing
- Packaging
- Incoming component logistics
- Heating, ventilation, air conditioning (HVAC)
- Control room
Our customers’ operations – example: electronics manufacturing plant

ABB has a complete offering for discrete industries

- Intelligent switchgear
- MV, LV power distribution
- Power management system
- Motors, motor control center
- Servo motors and drives
- HVAC and clean room motors and drives
- Variable-speed drives
- Mechanical power transmission
- PLC, IPC, HMI
- Software, incl. automation studio
- Manufacturing Execution System (MES), control room
- CNC machine tending cell
- Polishing cell
- Collaborative robots
- Vision-guided robots
- Assembly robots

ABB Ability™, Software & Services
Our customers’ operations – example: electronics manufacturing plant

B&R – solutions for machine and factory automation

SOFTWARE

- Application store
- Automation Studio
- Visualization software

PLC

- PLC (Programmable Logic Controller)

FIELD DEVICES

- I/O modules

SERVO MOTION

- Servo drives
- Servo motors

IPC / HMI

- IPC (Industrial PC)
Our customers’ operations – example: electronics manufacturing plant

ABB robotic solutions tailored to customers’ process and needs

Examples of processes with ABB robotics solutions

- Material handling & machine tending
- Injection molding
- Polishing
- Deburring
- Assembly
- Testing
- Packaging
- Collaborative
Our customer value proposition for industrial automation

ABB is the partner of choice for value creation through automation and digitalization

[Diagram showing automation maturity over time with industries and segments such as Apparel manufacturing, Mining, F&B, Automotive, Offshore upstream, Electronics, Refining & Chemical, Machinery / discrete, Process, Discrete / hybrid.]
ABB’s unique competitive differentiation

Three building blocks

Leading portfolio

Solution-oriented business model

Innovation dynamics
# ABB’s leading industrial automation portfolio

<table>
<thead>
<tr>
<th>Sensing &amp; analytics</th>
<th>DCS¹</th>
<th>PLC / IPC² servo motion</th>
<th>Industrial motion³</th>
<th>Robotics</th>
<th>Digital platform</th>
<th>Electrification⁴</th>
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¹DCS: Distributed Control System; ²PLC: Programmable Logic Controller, IPC: industrial PC; ³Motors, drives; ⁴LV, MV and power quality; ⁵EP: Electrification Products; ⁶PG: Power Grids
ABB’s leading industrial automation portfolio

Targeted portfolio development results in solid #2 position

- 2010 & organic growth
- Robotics transformation (2010-13)
- Baldor (2011)
- B&R (2017)
- Bolt-ons (ongoing)
- Today

Source: Management estimate, based on revenues, \(^1\)Excl. electrification
Solution-oriented business model for industrial automation

From...

- Distributed Control Systems (DCS)
- Robots
- Motors
- Programmable Logic Controller (PLC)

To...

- Process optimization solutions
- Robotics solutions
- Intelligent Motion™ solutions
- Machine automation solutions

Leading industrial solutions

Physical / digital / software offering

Domain / process expertise

Application / solution engineering

“Products”

“Solutions for customer value”
Solution-oriented business model for industrial automation

Increasing customer value along the entire lifecycle with ABB Ability™

Customer asset lifecycle

- Plan / design
- Build
- Operate

130+ ABB Ability™ solutions for industry

Our enhanced digital value proposition

Our “traditional” value proposition

Our customer relationship

- Planning partner
- Product, solutions, systems partner
- Operations partner
Continuous innovation dynamics for Next Level customer value

ABB innovation dynamics

Artificial intelligence

Expertise / know-how

Hands
Brain
Senses

Nerves

Muscles

Electronics

Copper & iron

Motors
Drives
Sensing & analytics
Control
Robotics
Software / digital: ABB Ability™

Cyber-physical solutions

Automated operations

Digital operations

Autonomous operations

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What to expect from ABB in industrial automation?
Targeted, disciplined combination of all means of growth

**ABB Technology Ventures**

**Partnerships**

**Active portfolio management**

**Organic growth**

- Copper & iron
- Electronics
- Automated operations
- Digital operations
- Autonomous operations

**EXAMPLES**

ABB full service divestitures

Penetration, Innovation, Expansion actions, service growth, digital

Tech Ventures

Partnerships

Active portfolio management

Organic growth
What to expect from ABB?
Unique growth dynamics

- Increasing automation intensity
  - 0-3
  - 3-5
  - 6+

- New solutions for digital industry

- Underlying industry growth
**What to expect from ABB?**

Improved quality of business

**More automation:** lower exposure to underlying industry cycles, secular tailwind

**More recurring revenue:** digital, services – leveraging large installed base

**More high value-add solutions:** attractive economics, less “copper and iron”

**More stability:** more base orders, less EPC\(^1\)
**ABB’s leadership in industrial automation**

**Well positioned**

- Next Level transformation – #2 in industrial automation today
- Strong history of pioneering technology – well positioned for the future
- Large installed base, strong domain and process expertise
- Unique industrial automation portfolio

**Competitive differentiation**

- Targeted solutions-oriented business model
- Leading innovation

**Attractive economics, good growth prospects**