Buildings of the Future

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Buildings of the Future

Introduction

Siemens - Building Technologies

Trends in our Industry

Smart Buildings

Summary
Customer-oriented organization

Global presence and go-to-market of our businesses

Americas  Europe and Africa  C.I.S. 1 and Middle East  Asia and Australia

Managing Board

Power and Gas  Wind Power and Renewables  Energy Management  Building Technologies  Mobility  Digital Factory  Process Industries and Drives  Healthineers (separately managed with global supply chain)  Financial Services

Power Generation Services

Corporate Services  Managing Board  Corporate Core

1 Commonwealth of Independent States.
World leader for building technologies
How Siemens helps building owners

- We sell easily operable products
- We offer reliable products, solutions and services
- We provide comfort, optimized room climate and intelligent concepts
- We offer high return on investment and reduce energy consumption
- We develop flexible products and solutions – regarding the use of buildings and integration possibilities

We are the trusted technology partner for energy-efficient, safe and secure buildings and infrastructure.
Innovative Portfolio to Promote Energy-Efficient and Safe Buildings

- Fire, smoke and gas detection
- Evacuation
- Extinguishing
- Mass notification

Fire safety

- Access control
- Video surveillance
- Intrusion detection

Security

- Building management / automation
- Heating, ventilation, air conditioning
- Lighting and shading

Comfort

- Energy Saving Performance Contracting
- Energy management
- Energy consulting

Energy efficiency

For energy-efficient and safe buildings and infrastructures
Five Megatrends shaping our world

55 billion
The number of devices that will be linked online by 2020

9.7 billion
The earth’s population in 2050 with an average life expectancy of 83 years

800,000 years ago
The last time the Earth’s atmosphere had a higher CO₂ concentration

70%
The percentage of the population that will live in cities by 2050

200%
The growth rate of global trade between 2000 and 2014

Trends in digitalization effect buildings

By 2018 there will be more connected devices than people alive;

Est. 55 billion by 2020

Costs sinking dramatically

($500 per 1 million transistors in 1990;
$0.05 per 1 million transistors in 2012)

Business IP traffic will grow at a CAGR of +20% from 2014-2019

Mobile computing to grow by +57% CAGR from 2014-2019

Large amounts of data can be turned into value for our customers
The enormous global impact of buildings

- They consume **40%** of all energy
- They use **25%** of all water globally
- They emit **33%** of all greenhouse gases
"We shape our buildings and afterwards our buildings shape us."

Winston Churchill
Commons Chamber address, October 1943
Did you Know?

What percent of our lives are spent indoors?

87%

Source: EPA sponsored National Human Activity Pattern Survey (NHAPS),
Did you Know?

How many square feet of commercial building space exists in the US? 87 billion

Source: Commercial Buildings Energy Consumption Survey (CBECS)
The move to the future – smart buildings

63% of all Smart City devices will be in Smart Buildings

51% of Smart Building devices will be in Commercial Buildings

26% of all smart building devices will be in the Smart Home by 2021.

Source: "The IoT in Smart Commercial Buildings", Memoori, 2016
When a building performs the way it should ...

- Funds go to mission critical activities only
- Business is reliable and more resilient to risks
- Public perception improves and customers take notice
- Sustainability objectives are meet or exceeded
- Employees are comfortable and more productive
Achieving these results is only possible through advanced technologies, great people and the right data.
From inefficient

power hungry buildings

...to autonomous buildings
From manual responsive maintenance...proactive & predictive maintenance
From innovation informed by experience outcomes...

...to innovation informed by simulated real world conditions
From disconnected field devices and controllers... to fully networked system components
From inhabitant adapts

to building...

... to building adapts
to inhabitant
The future is about using all the data to .......

When the right building data ...  ... is properly applied ...  ... we help create perfect places

- Comfortable
- Sustainable
- Reliable
- Efficient

People
Technology
Process
**Smart Building**

* Please note – Above is a representation of possible equipment and systems; does not include all systems

**Characteristics**

1. **Connection:**
   Connects systems, equipment and sensing devices (T)

2. **Collection:**
   Collects data from multiple systems / sources (T, P, PR)

3. **Analysis:**
   Analyzes data and generates actionable information (T, P, PR)

4. **Optimization:**
   Optimizes responses and decisions based on actionable information (T, P, PR)
The Future of Buildings

Applications

1. Two-way communication with utilities
2. IBMS – Integrated Building Mgmt Systems
3. On-site energy generation
4. Storage capacity
5. Active information management
The Future Smart Building includes...

- Designed with Digital Twin
- Integrated Building Management System
- IoT (Big Data) Digitalization FDD
- Smart Spaces Bldgs & Occupants Connect
- Cloud Based Building Systems
- Distributed Energy Systems

Autonomous Buildings — predictive maintenance (lower maintenance costs), remote operations (lower operating costs), & improved energy efficiency (lower energy costs)
Slide for future building
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