Smart Buildings

The workplace of tomorrow, today
What is a “Smart Building”? 

A building that provides the owner, operator, and occupant with an environment which is efficient, productive, comfortable, and secure through the use of technology, integrated building systems, communications, and advanced controls.

CABA Smart Building Roadmap
Trending - Home Automation
Trending – Smart Buildings

Intel Inside Buildings!

The Smartest Building in the World
Inside the connected future of architecture

The Edge, Amsterdam
The Benefits of a Smart Building…

- Market differentiation
- Uses technology to attract top talent and change the nature of the workplace
- Represents the client’s brand and values
- Offering competitive amenities and services
- Energy savings, comfort, convenience, and productivity
- Responds to the demands of today’s high-tech mobile workforce
- Creates a better workplace!
Smart Building Value Proposition = 3-30-300

**Building Efficiency & Energy Management**
- $3.00/s.f.
- Using **smart building technology** to improve your building’s **energy** efficiency by 10% would yield $0.30 per square foot in cost savings.

**Space Utilization & Workplace Strategy**
- $30.00/s.f.
- Using **smart sensors** to gather **occupancy** data and inform your workplace strategy decisions to increase space occupancy by 5% would yield cost savings of $1.50 per square foot.

**Employee Productivity & Occupant Experience**
- $300.00/s.f.
- Having the ability to customize and **control the office** environment from a mobile device—improving **productivity** by 2%—would yield cost savings of $6.00 per square foot in increased productivity!
Smart Buildings and Workplace Strategy

Productivity
• 10%-25% reduction in absenteeism
• 10%-40% increase in operational hours without commute

Satisfaction and Retention
• Work-life balance and flexibility ranks above pay
• Increased employee satisfaction by 25%-40%

Real Estate
• Reduce space per person
• More comfortable environment
• 30%-40% reduction in real estate costs.

A study by BOMA, Johnson Controls, Steelcase showed that comfortable, well-ventilated, and well-lit, safe workplaces increase productivity as much as 16%, and job satisfaction as much as 24%, while also reducing absenteeism.
What is the Internet of Things (IoT)?

The Internet of Things (IoT) is the network of physical objects, devices, vehicles, buildings and other items which are embedded with electronics, software, sensors, and network connectivity, which enables these objects to **collect and exchange data**.
Businesses will be the largest IoT users

The three entities using IoT ecosystems include businesses, governments, and consumers.

<table>
<thead>
<tr>
<th>Consumers</th>
<th>Governments</th>
<th>Businesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>5B devices installed by 2020</td>
<td>7.7B devices installed by 2020</td>
<td>11.2B devices installed by 2020</td>
</tr>
</tbody>
</table>
The Internet of Things (IoT)

By 2030, 500 billion devices and objects will be connected to the Internet...  

Cisco Internet of Things
Smart Buildings = The IoT for Buildings

Old - Legacy Systems
Separate Systems and Controls

NEW! Integrated Systems
Common Building Network, Shared Data

- Integrated building network
- System optimization
- Data and analytics
- Web-based access and control
- Open protocol
“Smart buildings provide the next generation in business and operational intelligence derived from the analysis of data integrated from multiple sources for the purpose of system understanding, performance, and optimization.”

Data, Data, Data…

The standard operating range is wrong more than 50% of the time…
Real-Time Monitoring

IntelliCommand™

- Bi-directional data flow
- Real time reports and communications
- Data and analytics, trending, fault detection
- Optimal control through remote adjustment capability and proactive equipment testing

=Greatest energy cost reduction

Buildings from all over the world are monitored from a central location where data is gathered.

1. When an anomaly is detected, the data is analyzed by a Subject Matter Expert (SME).

2. A decision is made, and the proper course of action is taken.

Buildings talk

We Can Talk Back
**Smart Lighting Software and Controls**

- Front end central control software
- Facility manager can set system settings and configurations
- Integration and data sharing with other building systems
- Energy monitoring and reporting capabilities
- Individual lighting control by employees
- Web-based platform can be accessed and controlled remotely
Occupancy Data and Space Usage

Smart building sensors provide valuable information on real time occupancy and use of space:
- Integration with lighting and HVAC contribute to energy savings
- Space usage information informs corporate workplace strategy
Smart Building Data and Reporting
End User Interface – Mobile App

- **Lighting Control**
- **View Select Video Cameras**
- **Music or Background Noise**
- **Climate Control**
- **Security**
Thank You

Darlene Pope
Sr. Vice President, Energy and Sustainability Services
Director, Smart Building Program
(703) 444-5720
darlene.pope@am.jll.com