Improve your building's IQ with IBM solutions for Smarter Buildings

Better buildings for a better bottom line

Highlights

- Connect building systems and equipment to collect data in real time

- Add intelligence with performance and optimization tools that show how and where to save money

- Gain insight from comprehensive energy, facilities and space dashboards

- Integrate with asset-management systems such as IBM Maximo® Asset Management

In today's building management environment, organizations are stretching the budgets of capital improvement projects and delaying upgrades. Yet, they still must maintain their existing assets and ensure tenant satisfaction. They are looking for opportunities to consolidate space and improve space planning.

At the same time, energy costs are rising. Commercial buildings consume 40 percent of all electricity[1]—more than any other type of physical asset or structure—and they generate approximately 15 percent of all greenhouse gas emissions.[2] Excluding staffing costs, energy costs alone can represent as much as 30 percent of an office building's total operating costs.[3]

To meet these challenges, building owners and managers need to increase their building's IQ with a smarter approach to managing buildings—an approach that provides greater instrumentation at all levels, improves interconnectivity of all building systems, and promotes collaboration with external groups such as environmental and government agencies and partner organizations. To achieve effective facilities operations on today's smarter planet, building managers need to create smarter buildings—better buildings for a better bottom line.
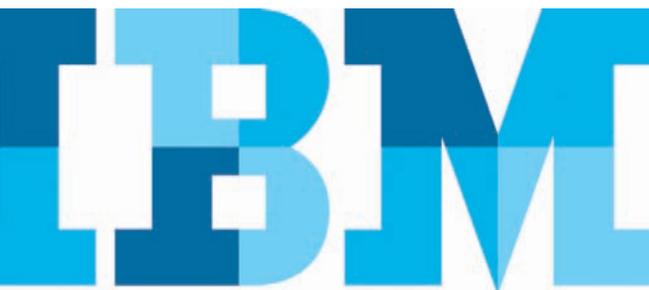
IBM solutions for Smarter Buildings integrate and optimize physical and digital infrastructures to create buildings and portfolios of buildings that are more cost effective because they reduce energy and operating costs. They deliver techniques to enable efficiency and environmental responsibility. They provide the ability to interact with occupants and the surrounding environment, and communicate needs and status information to supporting infrastructures, such as smart grids.

Smarter buildings have interconnected facilities and IT systems

What does a smarter building do? Improving a building's facilities and IT systems can increase efficiency and bottom line. Consider these examples: A smarter building can detect simultaneous heating and cooling in the same building and send alerts for repair or remediation.

It can discover equipment running outside normal operating hours. It can give technicians detailed information from sensor data so staff can spend less time searching for problems. These are all cost-effective improvements that come from a smarter building.

How does a smarter building do it? Recent developments enable building operators to collect real-time information from multiple building management systems, analyze the data in a central location and identify operational anomalies and opportunities for new efficiencies. When facilities and IT systems are interconnected, building managers can significantly improve management of energy, operations and space.

IBM provides answers for core building issues

IBM solutions for Smarter Buildings combine real-time monitoring and facilities management capabilities in three core solution capabilities:

- **Advanced energy and environmental analytics:** IBM solutions provide advanced rules to analyze the energy usage of building systems in real time. Solutions identify opportunities for energy savings in areas such as energy consumption, carbon management and greenhouse gas emissions.
- **Automated operations management:** IBM solutions provide automated controls that create and route corrective work orders based on aggregated and processed information that can include a broad range of sources from a specific piece of equipment operating at a specific physical location, to solutions for monitoring building conditions and maintenance.
- **Advanced space management:** To enhance worker productivity, IBM solutions help manage the physical area occupied by tenants. Capabilities include planning for the optimal use of space in a manufacturing floor, a data center, offices or other areas.

These three solution capabilities are enabled through the following core functions:

- **Event management:** This capability enables building managers to receive events from various alerting sources and to filter, correlate and identify a potential root cause based on rules that understand the relationships between the resources. It also provides the ability to open service requests and/or send notifications for critical events.

- **Aggregation and warehousing:** This capability allows building managers to aggregate data from sources including building management systems, and to populate a warehouse to enable analytics, thresholding and reporting.
- **Analytics and optimization:** This capability allows building managers to use advanced rules that use sensor-based data to track real-time data for energy, utilities and emissions. It also provides the ability to identify areas for improving and potentially optimizing building operations with advanced statistical analysis and best practices.
- **Service request:** This capability provides a platform for receiving service requests and converting them into work orders based on predefined rules and/or manual intervention.
- **Equipment and systems monitoring:** This capability provides information on specific equipment at physical locations that results in service requests, including details such as maintenance history, installed date, warranty status and preferred vendor.
- **Reporting and dashboards:** This capability provides quick, role-based views of critical operating alerts and key performance indicators for managing day-to-day operations and improving longer-term planning. It also includes global, regional or local views and a single sign-on platform to interface with different smart building components.
- **Security:** This capability features role-based single sign-on to the building management system.

Introducing IBM TRIRIGA Energy Optimization

As part of the IBM solutions for Smarter Buildings, IBM TRIRIGA® Energy Optimization is integrated environmental and energy management software that combines real-time systems monitoring with facilities and event management to help analyze and optimize facilities operations, reduce energy expense and improve asset management and reliability. The solution gives building owners and managers the ability to accelerate the collection of vital real-time energy and operational data, automate enterprise-wide analysis to identify operating anomalies, and automate the creation and routing of corrective work orders to support energy optimization.

A better building with a better bottom line

IBM solutions for Smarter Buildings can deliver significant benefits, including:

- **Improved facilities and asset management:** Asset utilization can increase by 10 to 20 percent with the reduction of downtime and elimination of duplicate or unused assets.[4] Building maintenance costs can also be reduced.
- **Reduced energy usage:** Monitoring and analyzing best practices across the property portfolio, identifying anomalies in operations and tracking and identifying the best energy investments can dramatically reduce energy consumption.
- **Improved space utilization:** Integration of major building systems on a common network helps optimize use assignment and space configurations, eliminating unused or underperforming space, as well as raising user satisfaction. LEED and Energy Star-compliant buildings typically have higher occupancy rates, with less turnover.
- **Enhanced user productivity:** A variety of studies have demonstrated significant productivity increases in smarter buildings.

Why IBM?

IBM TRIRIGA Energy Optimization is part of a portfolio of IBM solutions for Smarter Buildings and is built on a combination of IBM technology innovation, real-world experience in business analytics and optimization, and IBM's extensive partner ecosystem. The combination of real-time monitoring and event management technologies delivers robust analytics, visualization and management capabilities.

For more information

To learn more about IBM solutions for Smarter Buildings, please contact your IBM representative or IBM Business Partner, or visit the following website:
ibm.com/ibm/green/smarter_buildings

[1] "Diamonds in the Rough: Uncovering Opportunities in the $277 Billion Green Buildings Market," Lux Research. March 2010. https://portal.luxresearchinc.com/research/document_excerpt/6113

[2] IBM Smarter Buildings Survey: *Customers Rank their Office Buildings*, page 2. April 29, 2010. http://www-03.ibm.com/press/attachments/IBM_Smarter_Buildings_Survey_White_Paper.pdf

[3] Flex Your Power. Best Practices Guide: Commercial Office Buildings. Retrieved May 1, 2012, from http://www.fypower.org/bpg/index.html?b=offices

[4] *Smart Buildings: Business Case and Action Plan*. Technical report prepared for General Services Administration by Ernest Orlando Lawrence. Berkeley National Laboratory, April 2009. www.osti.gov/bridge/product.biblio.jsp?osti_id=962466

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