



*ABB Recognized for*

**2021**

**Product Leadership**

Global

Intelligent Buildings Industry

*Excellence in Best Practices*

## Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each Award category before determining the final Award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. ABB excels in many of the criteria in the intelligent buildings space.

AWARD CRITERIA	
<i>Product Portfolio Attributes</i>	<i>Business Impact</i>
Match to Needs	Financial Performance
Reliability and Quality	Customer Acquisition
Product/Service Value	Operational Efficiency
Positioning	Growth Potential
Design	Human Capital

### Market Overview

In response to many current challenges related to rapid urbanization, population growth, energy consumption, pollution, and operational expenses (OPEX), building and facility managers worldwide are

turning to digitalization. Integrating smart building solutions, such as building energy management systems and smart building automation systems (BAS), can drive operational efficiency, reduce energy consumption, minimize costs, and increase occupant comfort. These solutions combine building hardware and software with advanced technologies - including artificial intelligence, machine learning, and cloud services. They allow users to monitor, manage, and optimize building systems and offer analytics capabilities by collecting data from sensors and meters, processing the data, and providing tools that allow users to interact with the data.

*“ABB Ability™ Building Ecosystem allows building and facility operators to achieve an average energy savings of 20 to 25%, and in some cases, up to 40%. These savings justify the initial investments quickly with a sound business case. Essentially, the equipment pays for itself in a very short timeframe.”*

*- Anirudh Bhaskaran, Senior Industry Analyst*

Smart building solutions have tremendous growth potential in the coming years. Frost & Sullivan estimates the revenue generated by digital building solutions will surpass \$25 billion by 2025 at a compound annual growth rate of 23.6%. Frost & Sullivan's own research reveals that the key drivers for the homes and buildings segment concern corporate sustainability goals, reduced OPEX, the proliferation of Internet of Things (IoT) devices, and most recently, taking care of fresh and clean air. These concepts all have an enormous impact on the intelligent buildings space, and Frost & Sullivan anticipates they will continue to do so. However, factors restraining the market include high capital expenditures and lack of interoperability. Initial investments can be quite daunting. Building and facility managers must see investment returns quickly, so providers must create tangible value to justify these large investments. Furthermore, digital building solutions entail cybersecurity risks, so security must remain a top priority. Finally, building systems must be interoperable with existing systems. Otherwise, they will not reach the adoption rates to which market participants aspire.

### ***Company Background***

ABB is a highly-reputed multinational corporation with over 130 years of expertise in electrification, process automation, motion, and robotics, and discrete automation. With a presence in more than 100 countries and more than 105,000 employees, ABB's four main business segments serve as the pinnacle of success, leading toward an increasingly safe, smart, and sustainable future. ABB's smart buildings portfolio includes a range of cloud-based solutions that address critical needs for residential, commercial, and industrial customers. This portfolio earned the company a spot on Frost & Sullivan's "Top 50 Companies Accelerating Digitalization in the Global Homes and Buildings Industry"<sup>1</sup> report, published in July 2021.

The company expanded this portfolio in 2020 when it acquired Cylon Controls (Cylon), a leading international building management systems company based in Dublin, Ireland. Cylon's Active Energy solution, rebranded to ABB Ability™ Building Ecosystem, rounds out ABB's portfolio with a flexible, scalable, cloud-based building energy management platform. More recently, in 2021, ABB invested in BrainBox AI, a Montreal, Quebec-headquartered building automation company dedicated to combat climate change and facilitate the energy transition through AI. With more than 125 employees, Brainbox AI empowers real estate clients in office buildings, airports, hotels, multi-tenant residences, grocery stores, long-term care facilities, and commercial retail buildings to optimize their buildings with its autonomous HVAC technology.

### ***ABB Ability Product Portfolio***

In 2017, ABB launched ABB Ability™, a comprehensive portfolio consisting of more than 180 digital solutions and services. ABB serves clients in the buildings, homes, utilities, industry, transport, and infrastructure segments with solutions that drive operational efficiency, reduce operating expenditures, and minimize energy consumption. They feature capabilities for real-time visibility (remote monitoring), asset management (predictive and prioritized maintenance, access control), optimization (data analytics), safety, security, and reliability. ABB Ability™ combines these capabilities into a single dashboard. Through ABB's partnership with Microsoft, users also have access to advanced tools on Microsoft's Azure cloud

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<sup>1</sup> *Top 50 Companies Accelerating Digitalization in the Global Homes and Buildings Industry* (Frost & Sullivan, July 2021)

platform (e.g., data analytics, artificial intelligence, and cybersecurity).

ABB offers two key automation systems in the smart buildings space: ABB-free@home® and ABB i-bus® KNX. Both solutions are part of the ABB Ability™ portfolio.

*“ABB understands that buildings may already contain different systems that collect their metering data. While other solutions may not be compatible with these systems, ABB Ability™ Building Ecosystem is vendor agnostic and allows building and facility operators to leverage the existing infrastructure irrespective of the manufacturer.”*

*- Jeffrey Castilla, Best Practices Research Team Leader*

#### **ABB-free@home®**

ABB-free@home® simplifies home automation with remote capabilities. The system includes products that enable users to control blinds, lighting, HVAC, door communication, and security systems from their mobile phones, laptops, voice-control, or wall switches. Setup is quick and simple. Installation can be either centralized or decentralized, and configuration can take place entirely via mobile

application. It is also fully customizable at any time.

#### **ABB i-bus® KNX**

ABB i-bus® KNX offers similar products and capabilities as the ABB-free@home® system, but for commercial buildings rather than homes. Guaranteed by a KNX home and building system technology standard, ABB i-bus® KNX simplifies building management and control through a range of building applications such as lighting, heating, security, ventilation, and shutter control. ABB ClimaECO is an intelligent HVAC solution powered by ABB i-bus® KNX that enables central and room automation and management.

### ***Building a Comprehensive Portfolio through a Strategic Acquisition***

ABB acquired Cylon Controls in March 2020 in a strategic move to strengthen its smart building solutions portfolio. The company inherited 100 employees and a best-in-class portfolio of heating, ventilation, and air conditioning (HVAC) and building automation solutions. Frost & Sullivan analysts recognize how this strategic move places ABB in a prime position in the smart buildings market and enables the company to compete with Tier 1 providers in the same space.

Among the solutions gained through the acquisition is ABB Ability™ Building Ecosystem, a vendor-agnostic, scalable, and flexible cloud-based energy management platform that offers capabilities for effective management, active decision making, and streamlined compliance. ABB Ability™ Building Ecosystem allows building and facility operators to achieve an average energy savings of 20 to 25%, and in some cases, up to 40%. These savings justify the initial investments quickly with a sound business case. Essentially, the equipment pays for itself in a very short timeframe.

#### ***Use Case #1: Dublin Airport Authority***

Airports present complex building automation and energy management challenges for millions of passengers and airport personnel each year. They require flexible solutions with enhanced visibility, remote monitoring, and data analytics capabilities so users can respond to various situations timely, efficiently, and effectively. Cylon has implemented the ABB Ability™ Building Ecosystem solution in several

airports worldwide, including the Dublin Airport's Terminal 2, a one-million-square-foot building.

### ***Use Case #2: Easton Town Center***

The Easton Town Center in Columbus, Ohio (United States) includes more than 180 retail and dining establishments, 215,000 square feet of office space, and more than 8,000 parking spaces on a 1.7 million-square-foot plot. In an installation that includes more than 500 meters, 15,000 light-emitting diode bulbs in 1,600 light fixtures, and advanced sensor technology, ABB Ability™ Building Ecosystem enables the center to optimize its energy usage and save more than 2,211,663 kilowatt-hours of electricity annually.

ABB further supplemented its portfolio with an investment in BrainBox AI in October 2021. Through this strategic engagement, ABB's Smart Buildings division enhances its existing portfolio of digital solutions, particularly the ABB Ability™ Building Ecosystem, with BrainBox AI's predictive, self-adaptive, and scalable cloud-based artificial intelligence. This focus will not only bring radical change to new and existing buildings with safe, secure, smart and sustainable solutions, but will help ABB leapfrog current approaches to digital transformation, further reduce energy costs and play its part in addressing climate change. BrainBox AI dovetails perfectly with ABB's mission to support digital transformation, reduce energy costs, and address climate change with innovative and advanced technology.

### ***Data Visualization with ABB Ability™ Building Ecosystem***

A key differentiator for ABB Ability™ Building Ecosystem is adapting to buildings' specific needs and working with almost any pre-existing building energy management systems (BEMS) or metering solutions. ABB understands that buildings may already contain different systems that collect their metering data. While other solutions may not be compatible with these systems, ABB Ability™ Building Ecosystem is vendor agnostic and allows building and facility operators to leverage the existing infrastructure (irrespective of the manufacturer). If required, ABB can perform phased upgrades of legacy systems to ABB Cylon® ASPECT®, a web-based building management technology, or the INTEGRA™-Building Management System based on the Niagara Framework.

ABB collects data from various standard data points such as weather, occupancy, and BAS. However, in order to gain a holistic view, the company also considers other relevant data points. When ABB Cylon® first went to market, the company realized that its multisite customers used different BAS systems at different sites. ABB properly responded by building tools and interfaces to collect data from different systems, then normalize it and display it on its platform. ABB Ability™ Building Ecosystem offers a range of data collection agents that can connect to BACnet networks and access archived data from databases running on a proprietary protocol. ABB also integrates with its own building automation products, which can push data directly to ABB Ability™ Building Ecosystem.

The data collection agents push data to the Amazon Web Services cloud securely through end-to-end encryption. While 10- or 15-minute intervals are typical, users can set data collection to occur at any time frame - even down to one minute.

### ***Data Insights Lead to Effective Building Energy Management***

While data visualization enables users to monitor the assets and buildings they manage, meaningful and actionable data insights are what allow them to optimize their operations and manage their buildings more effectively. ABB built a single dashboard with an intuitive digital interface for users to understand how solutions and systems are performing. This interface is user-friendly and quite simple to learn. It includes various functionalities that allow users to organize, filter, sort, and compare data by time (e.g., day, week), meter (e.g., water, gas, electricity, lighting, and HVAC), run hours, weather, emissions, occupancy, or costs. The dashboard offers various charts (e.g., bar, line, pie) for different types of comparison and analysis (e.g., spectral and regression analysis) in historical or live views. Users can also normalize the data and assess the health of the buildings they manage. Once the analysis is complete, they can leverage the data to optimize their energy management systems.

The platform allows users to set predictive targets (expected versus actual usage) and track buildings' progress on them. They can configure fixed, driving factor, and multiple driving factor targets, mark parameters that correspond with those driving factors (e.g., number of people in a building at a given time), and pick correlations (e.g., rising temperature) to see how they relate to the driving factors. The platform then indicates the extent of the relationship between the driving factors and correlations. From that point, users can compare targets against usage and set alerts. When usage levels approach their targets, users receive email notifications with the details of the alert. They also gain a live view that helps them determine if they need to take immediate action.

The platform also allows users to build and schedule custom reports based on any views they create in their analysis (e.g., charts, targets) in any format they choose (e.g., CSV files). These reports can be shared with relevant stakeholders automatically to prove compliance with regulations and industry standards and show progress on corporate sustainability goals. Recipients do not have to be ABB Ability™ Building Ecosystem users to receive these reports.

As a final optional add-on, ABB offers an awareness display via monitors located in high foot traffic areas. This feature increases public energy awareness by providing live energy data, facts, and tips on a screen. Some examples may include a sample of a building's live energy usage for a given day or ideas on conserving energy at home. This feature reaches a broader audience by showing them short tidbits of information as they pass by inside a building.

### ***Envisioning a Simple Path toward Sustainability through Building Ecosystem***

While ABB only launched ABB Ability™ Building Ecosystem in the United States market in July 2021, the platform has already gained significant interest from ABB's clients, system integrators, and the greater smart buildings technology community. Both Frost & Sullivan and ABB anticipates high growth for the platform in the coming years, with up to 20 buildings in 2022 and hundreds of buildings in the next five years.

ABB's acquisition of Cylon, its portfolio, and ABB Ability™ Building Ecosystem marks an important step toward a much broader concept, which the company calls "ABB Ability™ Building Ecosystem". It is powered by the openBOS, an open building operating system. The company introduced the BE concept in 2021, when it announced intentions to create "the simplest way to a smart building." ABB Ability™

Building Ecosystem offers live visibility, tracking, management, and monitoring on a single, agnostic, cloud-based platform. Over the next few years, the public can expect to see many other releases on how ABB is enhancing and building out its smart buildings solutions portfolio with products and solutions.

## Conclusion

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Smart building products and solutions enable building and facility managers to optimize their building operations. However, high capital expenditures, cybersecurity concerns, and lack of interoperability often cause investors to hesitate in making a purchase.

ABB offers a comprehensive portfolio of smart building solutions that justify their initial investments and addresses industry challenges. The ABB Ability™ product suite, for instance, can reduce energy expenses by up to 20%, operational expenses by up to 30%, and maintenance expenses by up to 40%. ABB complemented ABB Ability™ by acquiring Cylon in 2020. In 2021, ABB brought Cylon's Active Energy cloud-based solution to the United States and rebranded it as ABB Ability™ Building Ecosystem, an agnostic, scalable, and flexible energy management platform. It features capabilities for visualization, effective management, active decision making, and streamlined compliance. For ABB, it marks an important step toward the company's Building Ecosystem concept of finding "the simplest way to a smart building." Over the next few years, the smart buildings community will see several new releases as ABB fulfills this vision.

With its relentless pursuit of excellence and ever-evolving portfolio of best-in-class solutions, ABB earns the 2021 Frost & Sullivan's Global Product Leadership Award in the intelligent buildings industry.

## What You Need to Know about the Product Leadership Recognition

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Frost & Sullivan's Product Leadership Award recognizes the company that offers a product or solution with attributes that deliver the best quality, reliability, and performance in the industry.

### Best Practices Award Analysis

For the Product Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

#### *Product Portfolio Attributes*

**Match to Needs:** Customer needs directly influence and inspire the product portfolio's design and positioning

**Reliability and Quality:** Products consistently meet or exceed customer expectations for performance and length of service

**Product/Service Value:** Products or services offer the best value for the price compared to similar market offerings

**Positioning:** Products serve a unique, unmet need that competitors cannot easily replicate

**Design:** Products feature innovative designs, enhancing both visual appeal and ease of use

#### *Business Impact*

**Financial Performance:** Strong overall financial performance is achieved in terms of revenues, revenue growth, operating margin, and other key financial metrics

**Customer Acquisition:** Customer-facing processes support efficient and consistent new customer acquisition while enhancing customer retention

**Operational Efficiency:** Company staff performs assigned tasks productively, quickly, and to a high-quality standard

**Growth Potential:** Growth is fostered by a strong customer focus that strengthens the brand and reinforces customer loyalty

**Human Capital:** Commitment to quality and to customers characterize the company culture, which in turn enhances employee morale and retention



