

IT-OT Collaboration for Optimizing Commercial Buildings

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Smarter Applications for Building Management

The internet of things (IoT) is shifting the facilities management paradigm. Highly functional yet lower-cost devices can be deployed with minimal business disruption, broader acceptance of cloud-based software is supporting investment in intelligent building analytics, and the growing understanding of the importance of cyber security for networked building systems is affording IT departments to add value to traditional operational and line of business problem solving. These market forces underscore a bullish outlook for IoT in commercial buildings. In fact, Navigant Research's recent report, *IoT for Intelligent Buildings*, forecasts the global IoT for intelligent buildings market to grow from \$6.3 billion in 2017 to \$22.2 billion in 2026.

The idea of convergence between information technology and operational technology systems (IT/OT) has been the cornerstone of intelligent buildings (and other operational areas of the enterprise) since the market's inception. The reality is, however, most teams responsible for information technology and facilities operations and management work in isolation – following separate and distinct goals and mandates thereby losing the opportunity to capitalize on cross discipline capabilities essential to crafting strong IoT frameworks

IBcon 2017 presentations, panel discussions, and demonstrations on the show floor demonstrated how the internet of things (IoT) platform approach to building optimization offers a framework for collaboration that can bridge the gap between IT and OT. A successful IoT intelligent buildings strategy can even help the IT and OT teams align their efforts and more effectively reach their specific corporate objectives – cost savings, tenant satisfaction and retention, business continuity, and cyber security. Furthermore, IT departments can be valuable resources for operations teams looking to understand the technical specifications of IoT offerings and differentiate between ingredient, systems, and solutions options in the market.

IoT for Stronger Bottom Lines

Initially, energy management was the foundational application for the intelligent building technologies. The rationale is that estimating return on investment (ROI) through energy cost savings associated with equipment efficiency is straightforward and transparent. Today the configuration and use of IoT solutions can deliver energy efficiency while helping OT and IT teams meet goals in additional cost savings, business continuity, and cyber security by working together. As a result, OT and IT, the two key influencers on business operations, can find value by investing in IoT solutions.

Cost Savings

Energy management will continue to play a critical role in the business case for investing in IoT in intelligent building solutions because energy savings directly impact the bottom line and support corporate goals for sustainability, resilience, and climate change including a reduced carbon footprint. The data profile of the IoT-enabled intelligent building generates the information for the c-suite about how building performance is supporting or detracting from enterprise goals. This level of insight is critical to positioning IoT offerings as executive-level solutions. However, the success of an IoT deployment requires buy-in from and use by the business units running the facilities, namely operations and IT teams collectively. As a result, vendors are focusing on applications beyond energy management so that they can address the key objectives noted above.

Specific financial metrics have become the backbone of the investment proposition for IoT. Characterized as the 3:30:300 rule of thumb, this guideline was the topic of conversation several times at IBcon because it provides more depth to the analysis of cost savings – a paramount goal for operations teams. The rule explains that if energy costs average \$3 per square foot, then real estate costs average \$30 per square foot, and employee costs run up to \$300 per square foot. IoT vendors aim to demonstrate how their solutions reduce the significantly more impactful costs of space and people.

Speaking to the \$300 per square foot metric, occupant satisfaction has become an influential consideration for investment in IoT intelligent building solutions. With the insight IoT offers, building owners and operators can improve their occupants' experiences in multiple ways, such as:

- Streamlined customer service in retail
- Data-driven “wayfinding” for hoteling or collaboration space in commercial offices
- Optimized repairs, diagnostics, preventive, and even prescriptive equipment maintenance for occupant comfort.

Regardless of which sector a facility supports, occupant satisfaction is a priority for building owners. In education, multi-family residential and commercial/corporate offices, owners want to attract and retain the best students, tenants, and employees. In retail, owners want to keep shoppers happy and in their stores, longer and more often. IoT intelligent building solutions provide the framework for ensuring owners meet these objectives. The argument is that improved customer satisfaction ties to employee cost. When wayfinding and faster support provide a more productive experience, “employee cost” per square foot drops.

Another idea that arose on several occasions at IBcon was healthy spaces as a use case for IoT intelligent building investment, another way to lower the \$300 employee cost. The principal is that if IoT-intelligent building solutions can improve indoor air quality and maximize comfort – and lead to healthier environments – occupants can be more productive employees, more satisfied tenants, better students, or more efficient operations/facilities managers.

Business Continuity

A combination of IT hardware, middleware, communications/networks, cloud/datacenter, and domain specific applications & analytics is the set of ingredients for an IoT solution that can integrate building systems in new ways. These components can be deployed with minimal disruption in comparison to the rip and replace process for traditional automation and controls retrofits. It is important to note that integrating an IoT offering with existing automation and control systems should amplify the ability to optimize facilities and not just simply replace legacy investments. This approach ensures that building owners and manager are making strategic investments in the right technology to utilize and even enhance existing technologies instead of deploying more technology for the sake of more data. The objective should be to invest in the mix of hardware devices and communications infrastructure necessary to support the software analytics that deliver actionable insights with minimal impact on the business operations within the facility.

Cyber Security

IoT is enabling a transformation of the approach to facilities management through networked controls and automation. The ubiquitous connectivity of the IoT intelligent building approach requires that corporate real estate (CRE) make cyber security a top priority. Any breach in security through the IoT solution will impact the other business objectives of cost savings and business continuity. CRE customers, therefore, need to understand the security of the solutions they choose to invest in to protect devices, data, and company IP using a layered security model. IT teams can further support the operations teams through their cyber security expertise rooted in their core responsibilities supervising and maintaining data centers, networks, and devices. The rules, best practices, and metrics IT departments have established can be extended to secure new IoT platforms designed to optimize commercial buildings.

Identifying the Right IoT Intelligent Buildings Solution

IBcon also showcased how investing in the right IoT solution can deliver cost savings, and ensure business continuity and cyber security. In fact, the right solution will be offered by technology partners that bring domain, technology, and service expertise to deliver these integrated OT/IT customer objectives. Furthermore, an IoT approach provides flexibility to deploy applications that meet customer expectations today and can evolve with users over time. IoT intelligent building solutions future proof the automation and controls infrastructure by allowing for enhanced analytics, applications specific to customer challenges, and greater computing power.

At IBcon, Intel was one of the high-profile vendors from the IT industry presenting partnerships that bring market-ready solutions to CRE or offer the critical ingredients to IoT offering development such as networking hardware, middleware, or niche intelligent building software applications. The table below provides links to video snapshots of the partner offerings including the full solutions from Prescriptive Data, Daintree (Current by GE), and Yanzi Networks.

Table 1.1 *Benefits of Representative IoT Partnerships, Intel Ecosystem at IBcon*

Category	Value	Illustrative Partner
Distribution	Market Adoption	Arrow Electronics

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Middleware	Ease of Deployment with Device Provisioning and Data Collection	CANDI Controls
Hardware	Enabling Data Collection and Edge Analytics with Scalability	Dell
Hardware and Software	Monitoring and Analytics plus Ease of Deployment	Yanzi Networks
Software Platform	Ease of Integration plus Analytics	Kodaro
Software Platform	Ease of Integration plus Analytics	Daintree (Current by GE)
Software	Actionable Analytics	Prescriptive Data
Services	Integration and Deployment	Volteo

CRE customers are looking for solutions that demonstrate domain expertise around facilities management, technical specifications that ensure ease of deployment and security, and services capabilities to support implementation and deployment. There is a wide range of technical skills in CRE organizations that may require deeper support from a IoT provider, and if IT and OT departments collaborate on the investment process, the likelihood of success for the project grows.

Siloes that once managed specific aspects of operating commercial buildings can now be broken down into a holistic and cohesive approach to facilities optimization. IT incumbents, including Intel, offer technical solutions—and specifically cyber secure solutions—that translate data into action, which can continuously improve facility operations for bottom-line benefits. These technology players can find a bigger seat in the facilities management market as they partner with other technology and channel partners to showcase market-ready IoT solutions. This year’s IBcon demonstrated the market momentum and the many opportunities customers can leverage through IoT partner platforms for building optimization.

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