**How to Maintain Constantly Evolving Smart Buildings**

Modern building systems must support devices from yesterday, today, and tomorrow. Here are some best practices for how to make that all work.

When we look at the future of building systems, they are no longer static. Owners expect flexibility to meet their evolving needs and to continually optimize business outcomes. As a result, access to building data and smart technology that drives results is the new baseline.

According to the Building Services and Research Information Association (BSRIA), “only 1-2% of commercial buildings deploy truly cutting-edge smart technologies with fully integrated products and services.” And, with global revenue attributed to building automation systems intended to increase a total of 4.5% compounded annually over the next 10 years, there is immense opportunity to deliver greater connectivity and intelligence to the existing building environment.1

**Connected Technologies Are the New Energy Efficiency Equipment**

Smart buildings leverage connected technologies and intelligence to continually optimize performance to be as energy efficient as possible. Engineers are increasingly relied on as strategic collaborators guiding decision-making through the design and implementation of a smart building solution. But with every building at a different point in its lifecycle and owners having a variety of goals, knowing where to start can be challenging.

An engineer can best support the evolution of a smart building when an owner’s strategic needs and business goals are well understood. From there, a tailored approach can be created to keep the budget, timeline, and current environment at the forefront of a proposed solution. Consider multiple angles and chase outcomes, as opposed to chasing technology.

Many factors influence building system decisions, from market trends like energy efficiency and decarbonization to technology trends like cloud services and cybersecurity. Everyday demands such as productivity, lack of skilled labor, and meeting financial and ESG goals must be factored in. It is time to stop talking only about the opportunities *within* a smart building and start talking about the outcomes the smart building will achieve. An engineer’s goal should be to design a system that supports devices from yesterday, today, and tomorrow.

**Being Energy Efficient Requires Flexibility**

It is common for buildings to have controls and equipment from different vintages and a variety of building communication protocols, so integration flexibility is key. Integration flexibility accommodates the use of existing technologies and paves the way for smart building growth in the future. It enables data-driven decision making and serviceability. Designing a system with robust, open, standard protocol communications like BACnet Secure Connect can lay the groundwork for future technology growth and support the process by following IT best practices. Additionally, leveraging both wired and wireless technologies can simplify implementation and connect to existing infrastructure--without pulling new wire. Together, these create an infrastructure that is reliable, cost efficient, and easy to upgrade, while also allowing for secure deployment of IoT devices and cloud connectivity without IT security dependence.

Most facilities need to meet codes, standards, guidelines, energy efficiency goals, and local legislation. As a result, automation is required to coordinate the mechanical HVAC systems and complementary systems. Taking a phased approach with a proper system design will support automation and optimization, without requiring everything in the building to be replaced. Working with a dependable contractor to help balance these inputs and deliver consistency is key.

While an engineer can design the most optimal system, it must be handed off to the operator for daily use. Operators must understand the system and its complexities. Comprehensive help, training, documentation, and system safeguards can improve daily operations and minimize inefficiencies.

System maintenance is the last piece to the puzzle for maintaining a continuously evolving smart building. Complex systems need ongoing hardware and software updates by trained technicians to benefit from evolving technology. Informing owners about the expectations and best practices for responsibly managing their assets will set them up for long-term success and build a trusting relationship. A reliable maintenance plan with a trusted service partner will keep the system that you designed in operation for years to come.

As technology rapidly evolves, keeping a pulse on smart building trends and advances will help you deliver the best outcomes on projects and provide the best results for your customers.

**Frequently Asked Questions about Smart Buildings**

1. **For a building owner who’s just beginning their smart building journey, what’s the first decision they should make?**
The first decision a building owner should make is choosing an experienced partner who can provide integrated HVAC systems, controls, and services tailored to their goals. A provider with a comprehensive portfolio and proven outcomes can simplify the journey, reduce risk, and deliver scalable, future-ready solutions that enhance comfort, efficiency, and long-term value.
2. **What are some common misconceptions building owners have about smart technology integration?**

Common misconceptions include the belief that smart technology requires a complete overhaul of existing systems, when in fact many solutions can integrate with what’s already in place. Another is thinking that smart systems are overly complex or only for large buildings, when scalable, user-friendly options exist for buildings of all sizes. Owners may also assume smart upgrades don’t offer immediate value, when in reality, they often deliver quick wins in comfort, efficiency, and operational insights.

1. **What are your go-to products or systems for integration flexibility and futureproofing?**

For integration flexibility and futureproofing, Trane’s Tracer® SC+ building automation system is a go-to choice. It supports open standard protocols like BACnet®, making it easy to integrate with existing systems while providing a solid foundation for future upgrades. Paired with Trane® connected controllers and [Air-Fi® Wireless](https://www.trane.com/commercial/north-america/us/en/products-systems/building-management---automation/air-fi.html) zone sensors and communication, this ecosystem enables scalable, non-disruptive enhancements and remote connectivity—ensuring the building stays adaptable as needs evolve.

1. **What type of IoT devices are most impactful right now in existing buildings? Any that customers frequently overlook?**

IoT-enabled solutions for temperature, occupancy, CO2 concentration, and energy metering are among the most impactful in existing buildings. They provide real-time insights that drive smarter HVAC control and energy savings. Owners often overlook demand-based ventilation sensors and advanced analytics applications, which can uncover hidden inefficiencies and optimize performance with minimal disruption.

1. **What types of training or documentation are most helpful for facility operators after the system is implemented?**

Hands-on training tailored to the specific system setup is most helpful, along with clear, role-based documentation that includes system navigation, troubleshooting guides, and routine maintenance tasks. Interactive resources—like videos, quick-start guides, and on-screen help within the user interface—empower facility operators to confidently manage the system and respond quickly to issues.

1. **Which smart building technologies are gaining the most traction right now and why?**
Technologies gaining the most traction include cloud-based building management systems, wireless sensors, and AI-driven analytics platforms. These solutions offer faster deployment, easier access to real-time data, and actionable insights that improve comfort, reduce energy use, and streamline maintenance. Owners are embracing them for their scalability, lower upfront costs, and ability to drive measurable outcomes across portfolios.