

How to Integrate Smart Building Functionality into Construction Projects >

By planning early and adapting your strategy, you can take the headache out of implementing the latest technologies.

Improving employee environments, energy efficiency and workspace flexibility are three issues on the minds of commercial property owners and property management companies. The traditional rigid patterns and expectations are being shaken up, and property owners are looking for opportunities to differentiate their buildings, office complexes, campuses, and technology centers. Evidence shows flexible, human-centric environments can increase worker satisfaction and productivity. At the same time, these improvements can lower cost, strengthen security and improve speed of sale or lease. Innovation in Internet of Things (IoT) devices is providing the tools to achieve the goals.

However, changing from a traditional network architecture to one that supports this type of intelligent connectivity requires a shift in mindset, particularly around purchasing. The product-selection methodology that works effectively for sourcing materials like steel, concrete and glass is poorly suited for technology adoption, making the process inefficient and potentially preventing the desired outcome.



Human-centric workspaces improve employee comfort, satisfaction and productivity

Regardless of whether the project is a new build, a deep renovation or migrating an existing facility to an IoT platform, it's important to take the time to reevaluate current organic processes that may impede your technology goals.

ESSENTIAL ELEMENTS: IP AND POE

IoT architecture has the potential to offer significant cost savings, increased functionality and much greater flexibility. The key catalysts (disruptive technologies) behind IoT are Internet Protocol (IP) convergence and Power over Ethernet (PoE).

Today, there are many IoT fixtures and devices available from hundreds of manufacturers. The nature of IP convergence means a wide range of devices will integrate easily with any PoE architecture that provides enough power, offering a huge range of options.

The cost of installing a PoE fixture usually represents a significant reduction versus an uncontrolled high-voltage (HV) system install. These savings are only going to increase as the efficacy of power distribution and fixtures improve.

A side effect of these cost savings

is that standalone control systems, wired and wireless, are becoming increasingly obsolete as they simply do not create the granularity of data or offer the performance, and they are always a cost-plus effort.

The more base-building systems put on the PoE network, the more cost is driven out of the project. Core components (core switches, enterprise security, structured cabling, power support) can be paid for while still lowering the overall project cost.

This approach is much more cost-effective than building a disparate

collection of base-building systems, which is what often happens organically.

HOW TO GET THERE: REVISING YOUR STRATEGY

A different type of strategy is needed to define how you leverage and exploit technology to gain that competitive advantage: a technology adoption plan. This plan should not impact how traditional materials such as steel, concrete, glass and wood are procured.

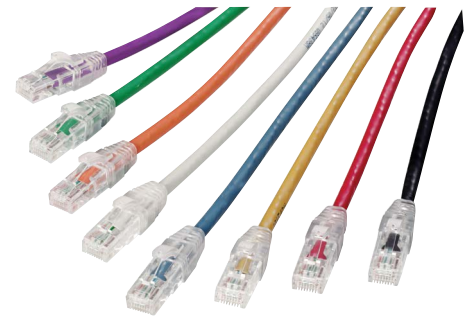
A proven approach that limits overall project disruption is to work within the current construction processes. If architects, engineers and property management teams rely too heavily on guidance from outside consultants and vendors, the result can be that they continue to accidentally “bid and build” or “replace in kind” a disparate collection of smart systems that are easy to acquire but are not forward thinking in their approach to technology. Early in the process you will need to pull all the technology-focused areas out of the plan, modify the content and put it all back. Focus on identifying opportunities and modifying specifications and drawings.

In this way, you can procure everything through the normal bid process and get it built through the normal build processes, while using as much traditional labor as possible. By fitting into the current build/migration process, you can prevent uncertainty arising with designers. The goal should be to create a methodology to help the team execute as smoothly as

always, acquiring a consolidated IoT architecture in the process.

Critical content like optimal architecture diagrams, technology series drawings and integration, architecture and security guidelines will be required. Instead of trying to create new biddable documents, aim to create content to be absorbed into existing documents, resulting in enhanced specifications and drawings. By understanding the design, bid and build process, you can insert your efforts at the appropriate times, allowing architects, mechanical, electrical and plumbing (MEP) engineers and lighting and specialty consultants to continue to do what they do best.

If you are working with consultants for lighting and other devices such as security, door controls and AV, explain that these devices will be powered and controlled on a PoE infrastructure. Limit your suggestions to efficacy and performance. The consultants should continue to do their job, determining things like fixture type, aesthetic considerations, and light levels. Once the reflected ceiling plan has been drafted, instead of handing it to the electrical engineers to place high voltage behind it, you will work with them to define the IoT platform



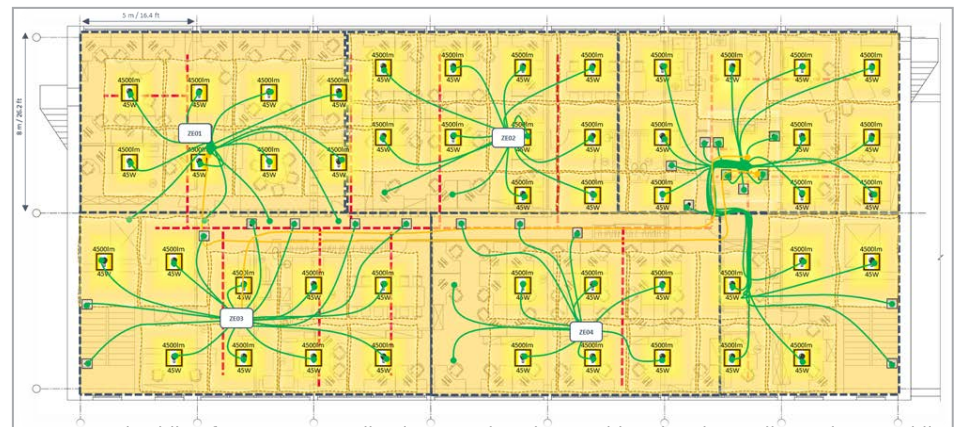
Safe and easy to implement, PoE runs on standard copper twisted-pair cables. Category 6A is recommended for most applications.

to support it. By adopting a solution that is not fixture-specific, you can enable consultants to design as they always have, but using PoE devices.

Remaining open-minded about device options removes a significant obstacle to technology adoption. This type of opportunity exists within any base-building system.

THE ELEMENTS OF SUCCESS

The most successful projects commit to a consolidated architecture and use enhanced specifications and drawings that clearly define materials, roles and responsibilities. They also leverage combined project management and administration for larger profits on the project.



Structured cabling for PoE / IoT applications needs to be considered early on. Illustration: a cabling plan for smart lighting in a zone cabling / PoE architecture.

A desire for a better result, investing in the right people and methodology, knowing what to put in and take out, developing a project-specific plan and committing to the plan from design to operation is what you need to succeed.

So how could you fail? By doing nothing, by allowing the organic process to keep you building a disparate collection of smart systems and by integrating them after the fact, which will always be a complicated cost-plus effort.

DESTROYING THE MYTHS

Don't believe the myths that smart buildings are costly or unsecure or that IoT technology is unproven. The reality is that a consolidated PoE platform is simpler and requires less material and labor than traditional architectures. A single integrated infrastructure is cost-effective and provides holistic enterprise security, whereas a disparate collection of smart systems is complex and expensive to manage and keep secure. PoE for building systems such as lighting, automated window shades, temperature, security



Smart building systems can integrate a wide range of data, devices and functions, from lighting control to occupancy monitoring

access, A/V equipment, and bathroom conveniences is where the real return-on-investment can be realized.

By embracing disruptive technologies, it will be property management teams and owners with a vision and passion for the future-state of their commercial properties that will lead the path to the next generation of buildings.

This is an updated version of an article that was originally published in cablinginstall.com, May 2018

More information:

CoreSync Smart Building Solution molexces.com/solutions-overview/smart-buildings/

Molex Power over Ethernet Solutions molexces.com/solutions-overview/poe/