Key Considerations for Developing Smart Buildings

SILICON LABS

The worldwide demand for smart building applications continued its incredible growth in 2020, despite large portions of the workforce working from home during the COVID-19 crisis.

This trend isn't expected to slow down, with experts predicting the smart building market will be valued at $108.9 billion by 2025. When you consider the benefits in terms of energy efficiency, safety, convenience, and productivity, it doesn't come as a surprise that manufacturers and developers are rapidly innovating in this space. Energy efficiency, long-term cost savings, and security are top-of-mind for property decision makers, and technology partners that can work with developers to deliver on the promise of connectivity is a large part of the growth equation. We recently hosted a webinar with Omdia and Acuity Brands about the challenges and opportunities facing developers in the smart buildings space, and we will explore the key topics below.

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Energy Efficiency is Now a Requirement

Energy efficiency has jumped from a "nice-to-have" to a "must-have," and it is at the top of the list of requirements for any smart building project, big or small. This is driving adoption for both commercial and residential applications and is just as important in existing buildings that are being updated as it is in new construction. Smart energy management is important for the bottom line in commercial applications, but the user experience of residential customers or professional occupants is also driving this trend. Being able to access real-time energy statistics and predict future usage is another way developers are empowering users, residents, and building personnel to use technology to make better property management decisions.

One way to measure how quickly buildings are being made smarter is by looking at the number of connected devices they utilize over time. This is increasing by about 10 percent year-over-year and is expected to continue for the next two decades. And more than half of all new connected equipment is directly related to energy consumption, including lighting and HVAC applications. These are areas where energy efficiency can be pretty easily quantified, and like most smart device adoption, the more effectively you can demonstrate a financial return, the quicker the market will demand it. One way to show energy savings through connectivity is to bring IT and OT together to make the best use of new industrial

technology. Savings may start with energy efficiency, but when more and more applications are delivering measurable ROI, adoption will accelerate. Energy monitoring is the single most important use case identified by building/facility managers, but it's not the only one.

Connecting Existing Infrastructure

Being able to integrate new systems into existing infrastructure is another gating factor in smart building adoption. Facility managers are often faced with the competing challenges of harnessing available technology to realize energy efficiency and improve user experience, but also adopting tools and technologies that don't require extensive reconstruction or building upgrades. The responsibility of bridging this gap falls to the manufacturers serving this industry. On one hand, it's our ob to innovate in ways that allow customers to be successful with legacy infrastructure or the tools with which they are already comfortable with. We risk alienating the audience when we rely on overly complicated technologies to realize gains. On the other hand, how effectively we can innovate on new solutions that bring minimal disruption is also key to adoption.

The majority of new applications are happening in existing systems, and this is a trend we see across multiple industries. From Silicon Labs' perspective as an IC provider, it's never been easier to add wireless functionality into systems.
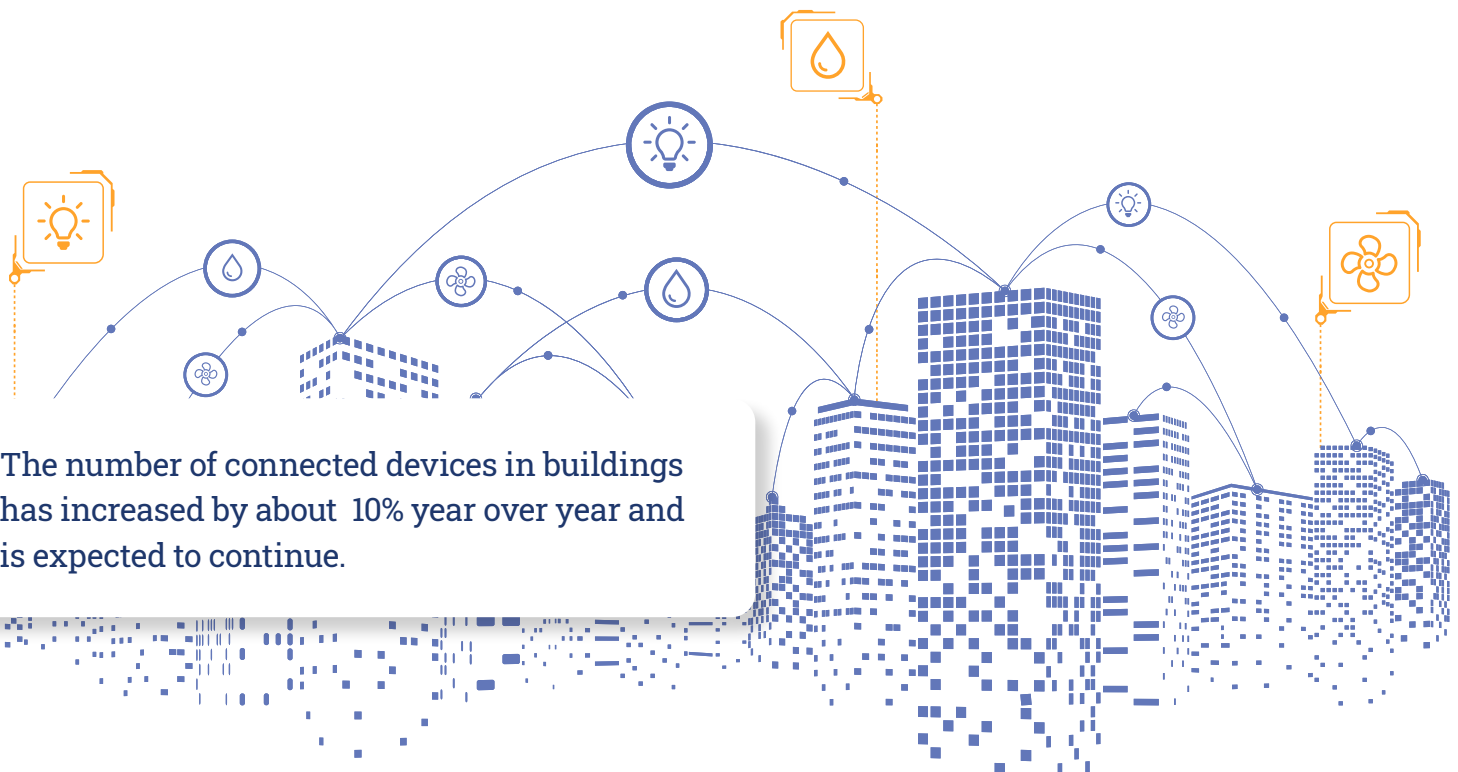
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Systematic Smart Building Planning and Development

Once you create a wireless network for lighting control, the possibilities for that network to bring other value add services open up. Even if you have the right technical solution, you still need to get the most out of it. This is where hardware, connectivity, and software applications need to be considered as a system, instead of its individual components. Any network solution is only as strong as the weakest element, and vendors should think about how the overall system can contribute dramatically more than just making a room more comfortable. In this way, a lighting control system, for example, can be imagined as a constellation of sensors for a connected building to bring smarter, more efficient operation to more than just lighting. n fact, the savings that can be realized through smart lighting can actually be used to fund more ambitious applications aimed at solving business challenges. In a retail environment, for instance, energy savings are important, but increasing sales or effectively managing customer traffic can have a direct impact on the bottom line.

Traditionally, these problems would be beyond the domain expertise of lighting manufacturers, but more and more connectivity is making it possible to address these issues. Of course, none of this would be possible without the simplicity of network technologies like Bluetooth, flexible software, or versatile ICs.

What's in Store for 2021 and Beyond?

The COVID-19 crisis has had a larger impact on how we live and work than anything we've encountered before. Despite the incredible challenges presented by keeping the global workforce safe, it was connectivity that made it possible to stay as productive as we did. Social and professional isolation forced many of us to adopt tools and technology that we'd been putting off, and we'll emerge from 2020 with a new set of skills and proficiency that we'll be able to apply to all kinds of things. Buildings and the spaces where we live and work will be the same way, in many regards. Reintegrating employees into the office safely is driving building managers to look for ways to create healthy environments. Smart devices and sensors can help with occupancy planning, air circulation, and recognizing traffic patterns to optimize social distancing.

Cybersecurity will continue to drive adoption of new technology, as well. Building and residential managers need to stay informed about potential threats and be prepared to take action when there's a security or data breach, which could include remote monitoring, data encryption, or even wireless network intrusion detection.

According to Smart Building Research firm Memoori, the number of connected devices installed in commercial spaces is expected to reach $3 billion over the next five years, with sensors and devices to track movement making up a large portion of that growth. Innovating in this area represents more than a pressing and promising market need, it also has the potential to improve lives in profound ways.

Dive deeper into Smart Buildings trends and considerations with our on-demand panel with Omdia and Acuity Brands.

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