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Why Smart Buildings Are A Smarter Choice

Lori Bessacini Brand Contributor
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Industries are transforming their existing structures into smarter, high-performance buildings using real-time insights via edge technology. Learn how and why.

Edge technology is powering the emergence of intelligent structures through integration with industry-specific OEM solutions. GETTY

James Bond never spent much time in one place. But he always showed up in the coolest–and smartest–buildings. Agent 007's hotels, hideouts and headquarters were other-worldly. Although

enhanced by digital technology, Bond's locations were feats of architectural genius in both form and function.

Now, we can all live a little bit like James Bond since smart buildings are back–but in real life this time. That's because edge technology is powering the emergence of intelligent structures. Often, that edge technology is integrated into industry-specific OEM solutions.

Smart buildings are a smarter choice due to three overarching ways they deliver next-level benefits: savings, security and sustainability. That's why many industries are transitioning existing buildings into smarter, high-performance buildings using real-time insights via edge technology. So much so, that a recent estimate forecasts the global smart buildings market will reach USD 165 billion by the end of 2027[1].

Capturing Savings

Smart buildings make smarter financial sense. Here's why. The technology that powers smart buildings leverages artificial intelligence and machine learning (AI/ML) to improve and optimize the use of resources. For instance, AI/ML can help reduce energy consumption for heating, ventilation and air conditioning (HVAC) and electrical systems. It does this by aligning building preferences and schedules to temperature, lighting and other controls.

Building maintenance costs can also be minimized via intelligent, proactive, predictive maintenance approaches. Sensor data and software-based algorithms help monitor the performance of building systems and help identify impending failures at the lowest cost of repair and before they can escalate into major expenses or events.

In education, for example, smart buildings make smarter classrooms. Siemens, working together with Dell Technologies OEM Solutions group, uses Desigo CC software and edge technology to do just that. These solutions gather and use real-time data to control the lights, reset the temperature and adjust the blinds based on when a classroom is to be occupied. After class, the system returns the settings to unoccupied mode, generating cost savings in both maintenance and reduced energy usage.

Fortifying Security

The capability to save resources and minimize costs provides tangible value across a host of industries. Working in tandem with these smart building savings is a newfound ability to enhance security. That's because edge technology and AI/ML enable 24/7/365 real-time monitoring and analysis. Smart buildings help to proactively secure building occupants with the continual monitoring and automation of access points using, for example, closed-circuit television and badge readers.

In addition to outside threats, advanced security devices and systems can help keep occupants safer from fires, manufacturing events and environmental concerns. Remote access, sensors and cameras using edge technology's real-time data help safeguard employees. Using intelligent information, smart building systems can pinpoint locations and assess event severity before a person attempts to enter a potentially compromised area.

For one major bank, transitioning to a smarter building helped to elevate security levels and save money. Previously, the bank's building used multiple silos of systems, servers, devices and networks. This compromised the security of critical functions such as power supply and fire systems and created unneeded complexity. A solution from Siemens leveraging Siemens Desigo CC software

and built on Dell infrastructure helped the bank integrate into a single cyber secure solution, employing a single pane of glass to simplify controls and bolster security. Read more about the smart bank building here.

Accelerating Sustainability

By enabling smarter buildings, edge technology is paving the way to a greener future. That's because many buildings today are energy inefficient. For instance, in Europe, about 75% of today's existing buildings are inefficient[2], with many relying on fossil fuels for heating and cooling instead of greener power sources, which contributes to emissions in cities. Smart buildings help reduce those emissions by improving the use of resources such as electricity and water.

Edge technology and advanced analytics can transform existing buildings into smarter ones and equip new buildings with more intelligent, greener structures that align with sustainability goals. To further optimize sustainability, smart buildings will also communicate with other buildings, power grids and other ecosystem components to generate higher-order, collective benefits.

These capabilities are working today to help industrial manufacturers. In manufacturing, smart plants—whether stand-alone or as a connected grid-interactive community—use edge technology to bolster sustainability. For example, solutions help operators optimize energy usage during lower demand times. In turn, manufacturers can also return energy to the grid during times of peak demand. This helps to decrease energy costs and reduce carbon emissions.

Getting Smarter Together

The far-reaching impacts of savings, security and sustainability make smart buildings a smarter choice. That's why edge technology solutions are the new bedrock of the infrastructure industry across manufacturing, banking, education, healthcare, retail and beyond. Edge technology solutions, often designed in collaboration with leading technology providers like Dell Technologies OEM Solutions, are accelerating the realization of smart buildings. I think James Bond would say that's quite smart.

[1] Smart Buildings Market Size: Dynamics, Generate Revenue, Research by Absolute Reports, The Impact of Covid-19 2023-2027 - MarketWatch

[2] Buildings are the foundation of our energy-efficient future | World Economic Forum (weforum.org)

Lori Bessacini

Lori Bessacini is the Sr. Director for Dell Technologies OEM Solutions, Global Accounts Sales... **Read More**