Smart Buildings Automation: The First Steps Are the Most Important

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With over five million commercial buildings in the United States alone, on average, 30 percent of overall energy is wasted annually.[1] In order to combat this waste, we need to think bigger than a building or a single set of corporate assets.

Smart buildings involve far more than energy utilization. They offer an opportunity to propose a standardized approach that can transform an existing building into one that can be characterized as "smart." Whether the building in question is a few years old or on a historical register, the initial steps of the journey are pretty much the same.

Step one

The first step in the process is to understand the desired outcomes and experiences you want from your automation efforts — your to-be state. Albert Einstein once said "If I had an hour to solve a problem, I'd spend 55 minutes thinking about the problem and five minutes thinking about solutions."

This sounds very straightforward; but far too often, building engineers start with a list of technologies and work toward what can be achieved. Building a solution too early can lead to overdesign, unnecessary expenses and a less than optimal outcome.

For example, in order to identify a desired outcome for a hotel upgrade project, several angles need to be considered. Is it a higher priority to reduce energy costs or create a five-star customer experience in terms of water pressure, ambient noise and air temperature control? Energy cost reduction and customer experience may not be fully compatible unless the right strategy is in place.

Another example, which is extremely relevant in today's business climate, is the increase in work-from-home practices. If this is part of your business plan, will you free up enough space to create a revenue-generating opportunity to lease the excess space? And how would that change your list of desired outcomes?

To perform this step in the process, you could gather your best and brightest from across the company to build your list of outcomes and experiences. If this is the first time doing this, you should expect sub-optimal results often linked to a first-time effort. A better approach is to bring in a team with hundreds of projects under their belts and pool their collective experience.

This team will also be needed for the consultative portion of step one — building your initial point of reference and tying it to what you want to achieve. This requires an audit of your facilities to determine the current (as-is) state. This assessment can't be skipped, and each company will have unique aspects to consider based on building age, environmental equipment in place, installed base of building management systems and available IT network and equipment.

Step two

Now that the baseline (as-is state) can be linked to the outcome (to-be state), you can begin step two. In this step, you will need to construct a technology and project timeline that results in the outcomes, time requirements and standard building blocks achieving business case objectives and the desired end result. Each project and technology selection will have a direct tie to the documented outcomes. This fosters the necessary business discussions that determine not only return on investment (ROI) but also relevance to the business itself.

Smart buildings defined

"A smart building is the integration of building, technology and energy systems. These systems may include building automation, life safety, telecommunications, user systems and facility management systems. Smart buildings provide actionable information about a building or space within a building to allow the building owner or occupant to manage the building or space."[2]

— Smart Buildings, LLC

This strategy also allows all stakeholders to see the impact on their organization and the necessary involvement needed to ensure success. For example, ongoing collaboration must occur between the facilities team and the IT staff during a building project. The two groups need to work together to answer important questions about the project such as:

- Will the new capabilities of the building be tied to the current IT infrastructure?
- What will the new security challenges be?
- Who will own the potential wireless access points?
- Will system monitoring and management be centralized?

The collaboration between IT and facilities to design, operate and maintain a smart building is crucial and will only grow in importance as new technology allows building to become even smarter.

Step three

In order to ensure your smart building is future proof, you need to adopt a reference architecture that addresses stakeholders, operational processes, maintenance, technology and sustainability. Reference architectures provide a proven template with a well-defined scope that is used to deliver a set of solutions. These solutions can vary depending on the scenario and need to be proven in a number of successful implementations with high-quality results. In this step, reference architectures are developed and documented for a particular industry or domain and linked to specific outcomes.

Why are reference architectures so critical? By adopting a reference architecture, you accelerate delivery and first-pass quality of the solution. The reference architecture also provides a basis for the consistent application of new, innovative technology — without needing major rework or potentially becoming obsolete. Reference architecture enables you, as earlier stated, to think bigger than a building or corporate facilities. It's important to find a smart building solutions provider for your project. They can help you take advantage of the many benefits of a validated reference architecture, including repeatability.

Step four

The fourth step will take care of itself if you have mindfully completed the first three steps. If so, you will have created a platform-based approach with an industrialized environmental reference architecture that prepares you for future opportunities and challenges.

You will also need to stay updated on open and standards-based solutions as smart building technology continues to mature. Software development kits can help you drive innovative advancements in the intelligence within and among buildings. Work closely with your integration partner to fully understand these future capabilities — they can make the difference in solving your business challenges.

Think smart — integrate systems and drive business outcomes with Dell

These steps may seem straight forward on the surface, but the complexity of disparate systems, new stakeholder relationships and the need for an open and standards-based solution can rapidly overwhelm your current staff.

The complexity of integrating hardware, software and management systems from multiple sources requires scale, which is usually beyond the capabilities of any one company. As a proven system integrator, Dell has decades of experience applying best practices to drive business outcomes that can be used for smart building implementations. Let's take the first steps together.

1 "Facts and Stats," provided by Energy Information Administration and ENERGY STAR program, http://www.energystar.gov/buildings/about-us/facts-and-stats
2 "Eight Definitions of 'smart buildings,'" published on Greenbang May 13, 2011, http://www.greenbang.com/from-inspired-to-awful-8-definitions-of-smart-buildings_18078.html

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