Connected Buildings: A Disruptive New Approach to Building Management
WHAT ARE CONNECTED BUILDINGS?

CONNECTED BUILDINGS ARE THE BACKBONE OF THE DISRUPTIVE INTERNET OF THINGS MOVEMENT

Over the last several years, advanced sensor and IP-enabled devices with billion-dollar energy savings potential have begun to proliferate widely. They exist in the form of metering technologies, lighting equipment, thermostats, HVAC systems, plug load controls, and more. They are more cost-effective than previous generations of hardware ever have been. And most importantly, they can connect to the internet wirelessly. As a result, such connected devices are now enabling unparalleled data access and analysis and thereby driving truly intelligent building management decisions.

In order to have a maximum impact, these connected devices require a centralized operating system from which people can connect and control every disparate building system. The forward-thinking professionals that recognize this and succeed in connecting hardware, software and people from one collaborative interface are joining what we at Lucid call the Connected Buildings movement.

Connected Buildings is an empowering approach to building technology in which disparate building systems are connected and controlled via a single operating system, utilizing best-in-breed advanced technology to control and monitor the building. Integrating multiple point solutions into a single connected environment enables system-wide decision making, execution and optimization. The result is a future in which anyone can unlock the power of commercial building data in order to make meaningful changes that effectively optimize energy costs, comfort and productivity.

CONNECTED BUILDINGS TRANSFORM REAL-TIME DATA TO OPTIMIZE OPERATIONAL EFFICIENCY

Connected Buildings bring together all types of data collection mechanisms to gain system-level visibility from a single interface—and that visibility is accessible to all stakeholders, enabling intelligent, data-driven decisions. Combining data with powerful software applications achieves double digit efficiency improvements—not just in energy and water use, but also in employee productivity. The system-level focus allows different building systems to modulate their use relative to other systems, and the same holds true for the people running the building: a system-level view of all operations inside a building brings together sustainability, finance, and operations goals in order to modulate their use based on the needs of the entire company. According to an ACEEE report, the total monetary value of these system-driven savings is over $50 billion dollars.

CONNECTED BUILDINGS DRIVE SMART EFFICIENCY IN THREE CORE AREAS

Connected Buildings power three key systems, which all work together to create opportunities for efficiency. The first is people-based efficiency, wherein people connect with the buildings they occupy on a daily basis. Connected Buildings connects operations, finance, and sustainability teams to the building technologies and workforce they rely on every day, empowering them in building management, planning, and tenant engagement. Second is technology-based efficiency, which happens when buildings bring new devices online that use less energy to power themselves. The third is system-based efficiency, which is attained when buildings connect systems within themselves and connect to other buildings. Systems can work together to change their behavior based on what systems around them are doing. Furthermore, newly attainable system-level trends which were previously impossible to ascertain become visible.
CONNECTED BUILDINGS: A DISRUPTIVE NEW APPROACH TO BUILDING MANAGEMENT

CONNECTED BUILDINGS WILL TRANSFORM THE ANATOMY OF AN OPERATIONS TEAM

The advent of easily accessible building data will transform the primary roles within the building operations team. The emergence of data-driven building operations positions seems inevitable, as someone will need to analyze the data and create meaningful strategies based on it. Armed with real-time information, building managers will spend less time out in the field putting out fires, and more time preparing proactive strategies for contingencies. The potential for decreasing the size of on-site maintenance teams is also real, as maintenance programs can be centralized, and workers will become dispatched to problem sites only as needed. For example, one Lucid client views daily energy reports on their browser in the mornings, and sends maintenance staff out only when abnormalities are apparent.

CONNECTED BUILDINGS WILL MAKE OPERATIONS TEAMS CRUCIAL TO THE SUCCESS OF THEIR ORGANIZATION

Building and facilities teams are already critical to an organization’s success, but executives may not recognize the direct impact they have on the bottom line. Connected Buildings will allow building managers to actually demonstrate their value with data. If given enough executive buy-in, building managers using data can make operational roles within companies very strategic, with defined energy savings goals that are newly attainable. Combined with the ability to cut down on maintenance staff through increased productivity, operational teams will be able to contribute to margin by effectively decreasing a company’s operational costs.
The advent of internet-connected devices and cloud computing is fundamentally changing the business model used to operate buildings. Much like the growth of distributed generation solar is evolving the role of utilities, the growth of IP-enabled devices inside commercial buildings is changing the roles of traditional vendors in the building services space. A business model based on proprietary hardware and software, serviced by the vendor is no longer the required norm. Instead, building and portfolio owners and operators can choose to use inexpensive gateways in some buildings, sub-metering in others, and even have building automation systems in a few buildings. All of these systems are then integrated to a single software layer, providing consistent data, a uniform interface, and features that can be used across the organization, by different roles and departments. This new business model allows owners and operators to engage best-of-breed service vendors who can do anything from managing installation and replacement of building equipment to more long-term services, such as development of an energy reduction roadmap in order to meet corporate emissions requirements.

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CONNECTED BUILDINGS DIRECTLY ENABLE THE PROPAGATION OF SMART BUILDING TECHNOLOGIES

INTERNET-ENABLED DEVICES ARE FUELING THE RISE OF THE ‘INTERNET OF THINGS’

Now that a lightbulb or a temperature sensor can connect to the Internet, the market has unleashed a wave of devices that are collecting and analyzing data about what’s happening inside buildings. These devices are significantly cheaper and easier to procure and deploy than their predecessors.

FULL AUTOMATION ENABLED BY INTERNET-DEVICES TURNS BUILDING MANAGEMENT INTO A PROACTIVE RATHER THAN A REACTIVE FUNCTION

The future of IP-connected devices controlled through a central operating system opens up possibilities for full automation. It is now possible to sit at a desk and create automation rules that gather weather data to turn off HVAC systems when the temperature is predicted to get lower. Or to tell the blinds to close when sunset comes around. Or even to turn building systems off when the sensors have detected inactivity for over 30 minutes. All of this can be facilitated through software, which can be accessed from anywhere via mobile devices.

DEVICES ARE MUCH MORE VALUABLE WHEN THEY ARE CONNECTED

Data are only meaningful when holistic; siloed data causes more harm than good. That’s why connecting the various devices that make up the Internet of Things is so crucial. By themselves, smart devices can have small advantages but in collaboration, they unlock powerful possibilities. Completely automated buildings and enhanced predictive intelligence will only be possible when devices become connected from a single operating system.
Data-driven insights are critical to solving ongoing and hard-to-diagnose problems. Organizations usually contain a variety of levels of expertise in operations management. For organizations at a lower level of maturity, accessing building data can be a powerful way of getting some quick wins. For organizations already collecting data, the next step is finding a platform that can make the most of that data by organizing it, normalizing it and highlighting actionable insights which are then used to identify, quantify, implement and verify efficiency improvements.

Take the case of a university who brought their buildings online, and identified that one of their water chillers was using twice as much water as all of the other ones—a problem that hadn’t been noticed because the water chillers had never been compared to one another. It turned out that there was a water leak which would have continued to go unnoticed if data had not been centralized.

Those data that organizations can now collect are the next frontier in what is possible with buildings. Imagine predicting when equipment is about to break down. Imagine having clarity into which retrofits can get you the highest ROI, before any project has even started. Imagine automating your lights so that when you are approaching peak demand, they dim automatically. Holistic building data are at the heart of the hidden insights which were previously impossible to discern.

A Lucid client is using BuildingOS to measure the consumption and production of their Net Zero office building. Mapping out the consumption and production patterns together in one view allows them to demonstrate the impact of their energy programs.
In today’s interconnected world, building data is the domain of multiple teams within a company. From energy to facilities, building management, maintenance, and sustainability teams, making the right decisions about operating budgets and stakeholder comfort is crucial. The lack of an overarching view of all building systems is akin to walking around in the dark without a flashlight. Unfortunately, this is the norm for many teams: multiple systems of record, some only accessible from a single computer, and others with difficult interfaces that require hours of specialized training.

Easy access to data helps managers make informed strategic decisions, guiding prioritization of resources in order to maximize value for money spent. Managers’ jobs become easier as they are able to focus on activities that have a real impact instead of constantly putting out fires. Using a building’s own data allows a manager to focus on strategic tactics like comparing project ROI and Measurement & Verification, which increases the sophistication level of the team as a whole.

Not only can connecting buildings improve energy cost efficiency, but they increase the productivity of operational functions by eliminating heavily manual or recurring work that eats up valuable hours in a day. With Connected Buildings, teams can troubleshoot problems via their web browser instead of always needing to go on-site. Managers no longer have to compile multiple excel spreadsheets to know what is happening inside their building. Architecture and construction teams can use data to size new energy systems without needing to make wild assumptions. These team productivity enhancements are ultimately where the real monetary savings lie.

This is disruptive because with Connected Buildings, data become extremely accessible: many organizations already collect their buildings’ data via logging devices or even via their own utility. But the data are only meaningful when they are actionable. Connected Buildings doesn’t just enable data collection—it provides actionable data in the form of various purpose-driven applications. Leveraging those insights is ultimately what becomes that critical moment of clarity for many organizations.
CONNECTED BUILDINGS INCREASE THE ROI OF ENERGY EFFICIENCY PROJECTS

CONNECTING AN ENTIRE BUILDING PORTFOLIO MAKES MANAGING RISK EASIER
Connected Buildings enable strong building commissioning processes, as they facilitate measurement and verification of energy projects. Commissioning is a risk-management strategy that allows building owners and managers to ensure they get what they pay for when conducting retrofits. It also ensures targets are being met, and can offer fault-detection services that prevent more costly equipment replacements in the future. Ultimately, Connected Buildings offer owners and managers effective ways to manage the risk inherent in operating properties.

CONNECTED BUILDINGS ALSO HELP TO PRIORITIZE PROJECTS EASILY, MAXIMIZING THEIR VALUE
When building managers get a bird’s eye view of their entire energy portfolio, priorities can clearly materialize based on which buildings or systems are using the most energy, or which buildings are benchmarking below their peers. Not only that, but once the first low-hanging fruit energy savings come through, they will free up capital for other expansion goals or R&D. Energy can stop being a cost center and provide value for other parts of the operations team.

THE DISRUPTIVE POTENTIAL OF CONNECTED BUILDINGS REMAINS HIGH BECAUSE OF ITS TIES TO ORGANIZATIONAL COSTS AND EFFICIENCY
Because Connected Buildings offer so many advantages related to operating costs, the Connected Buildings movement truly is a radical way to transform building operations: not as a pure cost center, but as a platform to squeeze out more revenue from every asset, including the building stock. Moving towards a Connected Buildings mindset involves collecting and analyzing building data—something data teams in the IT department have been doing for years, which has finally been translated to fulfill the needs of building operations teams. of operations teams.
THE CONNECTED BUILDINGS MOVEMENT IS ALREADY DISRUPTING ENERGY MANAGEMENT, AND IT WILL DISRUPT KEY OPERATIONAL BUSINESS FUNCTIONS WITHIN ORGANIZATIONS

SMART ENERGY MANAGEMENT IS NOW WITHIN REACH OF ALL ORGANIZATIONS WHO CONNECT THEIR BUILDINGS

Most commercial buildings today do not have advanced building technology; according to Verdantix research, only about 3% of commercial buildings in the U.S. have building automation systems. This demonstrates that the time for organizations to implement low-cost devices that measure energy use and automate building operations is now.

Systems-driven savings and smart energy management is estimated to bring $50 billion of industry-wide energy cost savings and efficiency gains of 12-22% overall, according to the ACEEE. Through a combination of IP-enabled devices and powerful software to aggregate them, new avenues of cost-cutting and efficiency are now becoming more real, and giving everyday devices new powers and uses.

THE RIGHT TOOLS ARE ALL YOU NEED

Large amounts of data may seem scary and difficult to tackle, but the right software tools will help make insights easy to identify. Once building systems are connected, analytics applications show managers what their worst performing buildings are, which systems are using the most energy, and how they can make low or no-cost operational adjustments to start saving right away. With no prior training, managers who have connected their buildings have seen double-digit energy cost savings, as well as improvements in how their teams function.

Ultimately, the Connected Buildings movement enables the future of intelligent buildings. And the future of intelligent buildings starts now.
Lucid enables the future of intelligent buildings by connecting hardware, software, and people through one collaborative interface. BuildingOS, the operating system for commercial buildings, brings all metering and building systems online, giving entire organizations a single point of access to optimize energy costs, comfort, and productivity. The intuitive suite of BuildingOS applications connects operations, finance, and sustainability professionals to the building technologies and workforce they rely on every day, empowering them in building management, planning, and tenant engagement.

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