Pursuing smart building breakthroughs

Intel and KMC Controls connect building automation systems to the Internet of Things

Building automation technology is undergoing an unprecedented transformation, inspiring owners and tenants alike to rethink the possibilities of building management. As companies pursue the breakthrough opportunities, they are finding that established means for addressing building operation, maintenance, and management are inflexible, inadequate, and increasingly costly.

Today’s economics preclude a “rip and replace” strategy, which is no longer financially prudent. Such a move requires an enormous capital outlay, with a long horizon for payback and little guarantee of achieving the sought-after benefits. Too much has already been invested in existing specialized systems to simply abandon them.

At the same time, owners and tenants are demanding greater insight into and control of their space. They want the ability to adjust building operations and experiences as needed and to optimize the utilization and efficiency. The ultimate aim is to augment existing systems and bring them up to their full operational potential. In most cases, achieving those goals means moving away from single, proprietary systems and avoiding unwanted dependency on a single service provider or long-term service contract.

Implementing a holistic automation system remains a goal for many building owners. Due to challenges of the sort noted above, few are currently able to fully embrace the opportunities made possible by automation. Instead, they must content themselves with finding moderate operational savings at a time when technology promises benefits unimaginable even a few years ago.

The convergence of information technology (IT) and operational technology (OT) is providing a key to addressing these issues. Asset-intensive organizations can no longer afford to keep IT and OT separate because of a number of critical factors, among them the increasing amount of highly actionable data from mobile field workers, equipment, and operational processes. IT and OT have merged to create a new operational paradigm and untold opportunities based on a growing world of connected devices, or what is commonly called the Internet of Things (IoT).
New technologies and trends drive change

Making possible the next generation of advances in building management and tenancy are an array of new and emerging technologies and industry trends, including the rapid expansion of IoT. According to a recent McKinsey Global Institute report, the number of connected machines has grown by 300 percent over the past five years, due largely to the transformational power of IoT technologies and their ability to drive greater efficiency. Another estimate forecasts that the number of connected devices will top 75 billion by the year 2020.

The true value of IoT is realized when those devices communicate and share data with each other and with the cloud. That will enable building owners and operators to securely manage and analyze information and unlock actionable insights that help enhance both building efficiency and the tenant experience.

Security remains a stumbling block in this process for many. The new solutions need to be interoperable, integrating these new devices with the existing legacy equipment the building already relies on. That means resolving any security issues that may be created as these new connections are made. To achieve new business solutions and services, personalized customer experiences, and greater productivity and efficiency requires trustworthy data, and that demands the tight integration of both hardware-assisted and software security.

Perhaps most critical in this modernization equation are intelligent gateways, which help companies address legacy systems and the build-out in communications infrastructure and the datacenter to deliver end-to-end solutions and services. By enabling intelligence at the edge, where data is collected, building owners can address real-time needs by filtering and analyzing massive amounts of data from the growing number of intelligent devices.

The combination of IoT, intelligent gateways, actionable data, and end-to-end security represents the foundation for a truly smart building, one benefiting from predictive analytics and preventative maintenance for building equipment. The smart building era is here, and it is fast becoming an option for big and small companies alike and across industries ranging from commercial to schools to multifamily.

KMC Controls builds on leadership

KMC Controls is committed to helping building owners and operators realize the promise of smart building advances. As automation specialists, the company already helps its customers achieve higher levels of indoor environmental quality and energy efficiency, distinguishing itself from others in the industry through its customizable, flexible products, and its emphasis on and leadership in open (nonproprietary) systems design and development.

As part of that leadership, KMC boasts a number of industry innovations, including a complete line of fully programmable digital hardware and intuitive software for local and remote web-based facility management.

To fully harness the promise of smart buildings, KMC understood that it had to adapt. The company’s core products already provided an optimal architecture for IoT connectivity by gathering, aggregating, and serving up data. In addition, KMC leveraged integrated scheduling and control at the individual device level, but acknowledged that it needed an overlay option to integrate the disparate systems and provide native remote mobile support. Finally, while KMC offered software for legacy web services, it was not mobile- or cloud-friendly, an increasingly critical piece in any IoT solution.

KMC wanted to provide the means for tenants to get information and make informed decisions based on it. It wanted to offer a common interface that is user friendly and secure—even when accessing the cloud, which had been an obstacle. In the end, KMC set its sights on capturing 80 percent of the building owner’s data and analytics needs for 20 percent of the time and labor associated with traditional options. But the company knew it needed the right partner to get there.
KMC spurs innovation with Intel

To help it address these and other goals and to clear the way to achieving a truly smart building, KMC partnered with Intel. The origin of that collaboration starts with Intel’s long-term relationship with IT and the respect it has earned among KMC’s vendors, original equipment manufacturers (OEMs), and other partners. KMC also sought the valuable expertise Intel brings as a leading driver of IoT.

And then there is Intel’s broad portfolio of products. Understanding that data is only as valuable as it is trustworthy, KMC looked to Intel® Security to provide the requisite protection from the device to the datacenter to the cloud and back. Just as critical is the Intel® IoT Gateway, which enables KMC to speed the connection of legacy systems to the cloud, and supports end-to-end analytics to turn big building data into actionable information.

Intel IoT Gateways, for example, are a key piece of the KMC Commander* solution. The enterprise IoT appliance features an Intel® processor, embedded Intel Security components, and multiple connectivity options, including Wi-Fi and 3G/4G cellular.

Partnership in action

Working with Intel, KMC was better able to address three key demands in the fast-changing building automation industry: openness, security, and scalability.

Openness

Both KMC and Intel are committed to providing the most open platform possible. KMC has always been a leader in open system thinking and design, which led it to choose Intel as a partner. Intel offers an open, future-proofed solution that can be flexibly adapted to meet varying application requirements. As a result, KMC avoids undue dependency on a single proprietary system or service provider, and also finds it easier to integrate new verticals.

Intel also gave KMC a simple way to get data from the building to the cloud, while enabling data to be analyzed locally or remotely. By sending only pertinent, long-term data to the cloud, both data and costs can be better managed. That includes extracting meaningful information from legacy systems, thereby extending those investments and allowing owners to determine how much they want to do with regard to new equipment.

Mobility is another important benefit. Intel® technology frees KMC’s systems to be more easily managed remotely from a mobile device, such as a phone or tablet, or from a kiosk. This scenario gives owners faster access to maintenance data, which can mean greater system uptime, improved efficiency, and fewer service calls.

Now, multiple protocol drivers (e.g., BACnet* and Modbus) provide access to existing building networks to quickly begin acquiring data on system performance. Meanwhile, open APIs to the cloud and to KMC Commander BX* hardware provide opportunities for advanced customization, third-party development, and the addition of enhanced equipment and control routines.
Security

Intel Security solutions span both hardware and software, making possible the true end-to-end security that IoT—and smart buildings—require. With the Intel IoT Gateway, KMC customers can securely and seamlessly connect, aggregate, filter, and share data from the edge to the cloud. The secure, scalable compute gateways enable building owners to more easily manage assets and data from anywhere, anytime in a secure environment. They can also rely on the open architecture for advanced ecosystem apps and services.

Intel provides proven, innovative security solutions and services for systems, networks, and mobile devices. Through its hardware-enhanced security and a unique global threat intelligence network, Intel addresses KMC’s expanded requirements for trust, solution integrity, accountability, and privacy at every layer of IoT: device, connection, and cloud/datacenter.

Finally, adding a security layer into the analytics engine means decisions can now be made on that data with confidence. From edge devices to KMC Cloud services and advanced mobile applications, the KMC Commander system provides a connectivity pipeline protected by security features from Intel and Kony.

Scalability

An end-to-end strategy requires making devices more intelligent and secure to reliably filter and manage data locally. Intel provides KMC access to a scalable roadmap of products to power devices at the edge of the network, from the energy-efficient Intel® Quark™ SoC to the high-performance Intel® Xeon® processors.

By seamlessly scaling up the Intel processor family, KMC can protect existing applications and services, while also meeting changing market requirements.

KMC system architecture has always had the ability to scale up within a building, leaving untapped an entirely new category devoted to small commercial building systems. Collaboration with Intel now gives the company that capability, providing the technology to scale out across and among disparate/remote properties and systems. Similarly, it means KMC can now more easily integrate peripheral systems, including lighting, metering, building access, and others.

Through integrated, scalable hardware and software solutions from Intel, KMC is able to accelerate the development and deployment of IoT in its customers’ buildings. The result is that KMC is more equipped to manage the performance demands of capturing, cataloging, and analyzing data across its IoT system, placing it in a better position to unlock the possibilities of the smart building—without compromising existing infrastructure investments. KMC Commander, for example, offers a cost-appropriate solution for data collection and aggregation for buildings and portfolios of any size and type.

A profile in transformation

At a time when companies are more eager than ever to tap the promise of an emerging Internet of Things, Intel and KMC are driving development of a truly end-to-end solution for building automation, addressing the entire network from the device to the cloud.

Bringing together their complementary technology and expertise, the two companies are addressing key market demands such as openness, security, and scalability. In the process, they are inspiring KMC customers and the industry to dramatically rethink what buildings can do when it comes to things like improved kilowatt (kW) per square foot, kW per tenant, resource efficiency, lower peak and base demands, and more.

KMC can now package a system that’s geared for a particular environment, tailoring the solution to meet the customer’s current and evolving needs. Because the technologies are flexible, versatile, and interoperable, the collaboration is also equipping KMC to pursue new opportunities, including the small and medium-sized building market.

Working together with Intel has empowered KMC to build on its industry leadership and success, taking its business to the next level. Today, KMC is once again raising the bar by making building management safer, more comfortable, and more efficient. Because in the end, for KMC it is all about one overriding goal: improve the user experience.
Canadian school looks to technology for answers—and opportunities

Giséle-Lalonde Secondary School in Orléans, Ontario, Canada, wants to become the first Internet of Things-ready school in the province. As part of that goal, they are looking to reduce energy consumption and improve student performance by:

- Metering water and natural gas
- Benchmarking kilowatt hour (kWh) per student
- Actively measuring and managing carbon dioxide levels
- Tracking occupancy in real time
- Creating a safer, more comfortable and highly productive learning environment for students

Bringing together the right partners

KMC system integration partner Lar-Mex planned and executed the school’s IoT upgrade. The existing building automation systems are being augmented with the addition of utility metering. Proprietary communication protocols are integrated via the Intel® IoT Gateway. Data on the health and performance of the building is then aggregated and analyzed in the cloud, and made available to building administrators via mobile applications and to building occupants via educational dashboards displayed on kiosks within the school.

Inspiring greater sustainability

School leaders are hoping to set an example for students and the community by emphasizing sustainable thinking and design, as well as building/occupant health and well-being. The administrative team is excited to have the ability to educate building occupants on how their behaviors directly impact the use of natural resources. Ultimately, as other schools are brought online, the goal is to create and incentivize friendly competition and reward sustainable behaviors.

The district administration and school board recognize an opportunity to differentiate by pioneering new technologies designed to connect building systems to the IoT.

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