At the Georgia Institute of Technology in Atlanta, Georgia, USA, students are encouraged to challenge themselves and think about what’s next. What’s the next business idea or invention, where is society and its demands leading industry? Students were recently challenged to research what is next in facilities management. To understand the industry’s future, students researched building system history.
Most major building technologies in use today in commercial facilities was invented between 1870 and 1905. During this 35-year span, present-day systems the telephone and air conditioning were conceptualized and implemented. Technologies such as the light bulb and electrical distribution systems created in 1878 totally transformed not only the quality of human life but revolutionized the world. Their material components have changed, and the sequence of their operations have created efficiencies, however, the concept and function remain the same. A chiller is still a chiller and its main function is to cool the building.

Most breakthroughs in technology have been derived by the needs and issues in that present-day society. Air conditioning was created because there was a loss in production time at a printing company due to high heat and humidity in New York. The lack of HVAC technology created limited building footprints due to window ventilation being required. The sprinkler system was created by a piano manufacturer, Henry Parmelee, to preserve his products, materials and building from total loss due to the extreme response time for firefighters. It was also motivated by the attempts to reduce high insurance rates due to total loss of products and buildings from fires.

In examining history, building systems have also integrated and compiled upon each other and with other systems. It was Warren Johnson’s invention of the thermostat and controls system that integrated with Willis Carrier air conditioning equipment to form into what is known as the modern-day Building Automation System. It was the combining of the telephone system of Thomas Edison’s AT&T with the Holmes Burglary Company and American District Telegraph (ADT) to create what is known as the modern security system.

Without these building systems, many modern-day businesses could not function. However, it is the FM’s duty to maintain these new building systems to promote a functioning and safe company environment. However, where do they go from here?

With the emergence of the computers, tablets, the internet, Wi-Fi and smartphones, building systems have soared to new heights and have created high performing buildings.

High performing buildings are defined as “A building that integrates and optimizes on a life cycle basis all major high-performance attributes, including energy [and water] conservation, environment, safety, security, durability, accessibility, cost-benefit, productivity, sustainability, functionality and operational considerations…” Although there is no true definition for high performance systems, building systems have been classified as smart systems geared to reduce operating and utility cost and limit the probability of failure through a series of notifications.

The next level and building advancement from high performing buildings is transforming into intelligent buildings or artificial intelligence. IFMA defines an intelligent building as, “A building designed with extensive use of sensors, microprocessor controls and automated systems and able to detect, diagnose and control the response to varying environmental conditions or operational requirements.”

This particularly means that buildings must have some level of AI to think for itself in situations that could yield cost savings but would not pose safety hazards. For instance, if an advanced building had solar panels and most of the exterior cladding was glass, the building would automatically raise shades, turn off lighting and capitalize on energy shedding from solar panels while keeping solar heat loads into consideration. Balancing energy from both lighting and a cooling perspective without human interaction.

For the building to achieve this level of intelligence, the building must have Intelligent Building Systems, which IFMA defines as an integrated building automation system for a physical plant that is linked with corporate business systems so that management is kept fully briefed on cost, efficiencies and trends in operating systems.

The problem that the FM industry is having with achieving IBS is interoperability and the inability to integrate building software and platforms. Each building system is smart, however, there has not been a successful or emergent platform to have everything integrated to talking to each other, unless it is bound by a proprietary system and its offerings. Even when most companies find an integration platform that comes close to this theory, there has always been other building systems that do not integrate or meet the quality standard of integration that the facility requires.

This leaves the FM stuck with learning three or four complex building system programs to review, manage and modify. Not only will the manager have to extrapolate different meanings but compare these system platforms with financial software and work order management systems. Additional cost is also a concern as each system needs licensing and upgrades to their proprietary systems.

The main solution to this issue is creating an integrated platform that communicates, analyzes, manages and controls each system not by manufacturer, but by another unified protocol.

This platform should also include integration with work order, financial, energy management and building system automations. With the creation of Building Automation and Control networks, which is a communications protocol, equipment and systems can share information with each other. However, commanding each proprietary software to share to fully integrate has not reached its full potential.

Only time will tell which integration approach will succeed, however it is evident with minimization of staff, budget constraints, the rise of utility cost and the advancement of technology, IBS will be the next step in building modernization. The biggest question is what will be the FM’s role and how will they adapt to the new change and challenges?

This is why the IFMA Foundation and IFMA accredited colleges and universities are so important. Existing and incoming facilities professionals will need to become retooled not only with new skills to manage IBS, but on gaining a new perspective on how to analyze and apply the data that IBS has learned. Will new trends or social habits become apparent with the data? Will particular space utilization display a decrease or increase of use? What will that mean and how can the data be extrapolate to its optimal use? These new skills will allow facilities to become an invaluable part of the company as more facilities age and affect the financial bottom line. The IFMA Foundation provides these learning tools through scholarships to conferences and post-secondary learning to access invaluable resources.

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