Unlocking the full benefits of the IoT

The IoT ecosphere continues to rapidly evolve in terms of both technology and ubiquity. This is creating new opportunities for business owners to not only improve their facilities' operations and efficiency, but also to make life more comfortable, convenient and enjoyable for the buildings' occupants.

However, a new type of 'joined-up' thinking and approach to IoT implementation is essential to realise this promised potential. Here, we look at what is possible, and the reality of achieving it.

Commercial and industrial facilities today are host to a myriad of electromechanical monitoring and control systems devoted to managing the building's environment and operation, and the health and wellbeing of its occupants. Typically, such systems are described by their suppliers as 'IoT enabled' because they have sensors and software that gives their users visibility of how well the equipment is performing, its efficiency, and whether maintenance is needed.

However, the systems are usually siloed, and unaware of one another's existence. Imagine, for example, heating being wasted in an empty room because a window has been left open. A security system can probably detect the open window, but does not recognise its impact on the heating load, or have the ability to raise an alert accordingly.

This is a very simple example, but it gives an idea of the opportunity waiting if multiple systems could be brought into a unified, overarching IoT environment. One that could gather data from high volumes of sensors and process it into useful, actionable information for display on a single pane of glass. Artificial Intelligence (AI) software could correlate data from unrelated sensors in different systems to spot trends, generate insightful recommendations for action, and possibly perform control functions.

This new level of insight is a compelling concept, because an extended ability to improve the built environment can bring benefits at two levels: for the facility's owner, improved operation can reduce carbon footprint, reduce costs and possibly create income streams. Meanwhile, the building's occupants can enjoy a more comfortable, safe, convenient, and enjoyable environment.

Yet, until now, unified IoT systems have not become widespread, for a number of reasons. Different systems are separated by totally different technologies and standards; an HVAC installer is unlikely to have expertise in luminaire systems, for example. Larger corporations have the resources to span the technologies, yet their solutions are limited in that they are not device-agnostic, and users can be tied into significant subscription charges. This means that they cannot achieve the flexible strategies they really want, or choose the best-in-class products for their applications. Flexibility and expansion is also limited if installation costs are unacceptably high.

IoT developments and opportunities

However, industry developments have been paving the way for more successful and cost-effective unified IoT systems. IoT technology is maturing and becoming more advanced and cost-effective, making it more accessible to a wider range of businesses and consumers. As IoT deployments become more widespread, the focus on security is also increasing, leading to more secure IoT solutions.

Modern IoT implementations are allowing premises owners to improve occupants' wellbeing and satisfaction – which is fortunate, as tenants' expectations have been elevated by the growing pervasiveness of smart home and smart building technologies. Indoor temperatures used to be the pivotal metric for occupancy comfort, but this is no longer the case. Air quality, lighting and humidity now all play into the ideal climate conditions for occupants' wellbeing and productivity. In this regard, wireless IoT sensors are powerful instruments to help maintain a healthy and optimal indoor environment.

Capitalising on motion data, managers can also accurately assess traffic and usage of different building areas to accordingly prioritise cleaning activities. This ensures high-standard sanitation and adequate amenities are maintained across the facility.

Information extracted from motion data can also be displayed on screens, or sent to occupants' phones, advising them of busy areas they may wish to avoid. Similarly, a smart parking system contributes to a positive tenant experience while eliminating productivity lost through hunting down an elusive parking slot. Occupants and their visitors can also be given QR codes, allowing access to EV charging points; a valuable service for them, and a revenue stream for the building operator.

IoT-connected assets such as elevators and security systems can be monitored and controlled remotely, leading to faster response times and improved maintenance. Additionally, IoT-enabled predictive maintenance can help facilities managers pro-actively address potential issues before they become major problems, reducing downtime and maintenance costs. One retailer found that they could save £250,000 a year in energy costs – after factoring in the maintenance charge - by timely maintenance of their chiller, which kept it running at optimum efficiency.

Using these and other strategies to make the building IoT more valuable to its owners and users alike depends heavily on the sensors available and the ability to integrate them into a unified system.

Easily installed and highly functional sensors

Battery-operated wireless IoT sensors are inexpensive, self-contained and easy to install and maintain. Coupled with robust, scalable and low-power IoT connectivity, they can be deployed across the facility to capture comprehensive insights into diverse building functions and distributed assets. Aggregated at the IoT gateway(s), sensor data can be then forwarded to a building management system server leveraging open interfaces such as MQTT and REST API.

Such an IoT-powered architecture bypasses expensive, obtrusive modifications to the existing wired infrastructure while adding a new data layer for more efficient facility management. Plus, insights into disparate building aspects can be unified in a single platform to enable streamlined and integrated management activities. Besides significant economic advantages, the use of IoT wireless connectivity infuses great flexibility to the network architecture. You can easily relocate existing sensors or install additional ones along the line as new business requirements and renovation needs arise.

Sysical Solutions' unified approach

Sysical Solutions is a company that truly joins the dots. Our mission is to help customers migrate from their traditional, multi-system siloed environment to a new, unified platform that not only integrates all existing systems but also enables deployments of the newer, lower cost IoT sensors, and benefits from the wealth of extra information they can provide.

Overall, Sysical Solutions' approach gives their users the best possible access to modern IoT technology. With no ties to specific manufacturers, they can choose the most appropriate sensors for each monitoring requirement, and make every aspect of the built environment visible on a single pane of glass. In addition to unified realtime monitoring and control, the system provides new insights which allow meaningful and ongoing incremental gains across a user's entire property portfolio.

Most importantly, these gains bring benefits not only to the buildings' operations and efficiency, but also to the comfort and wellbeing of their occupants.