TEKTELIC
communications

Utilizing IoT For Smart Building Management

Introduction

One of the primary use cases that has evolved from the emergence of the Internet of Things (IoT) is the automation and analysis of building and facility management. IoT Networks can provide tenants, building operators and facility managers with invaluable information that can be analyzed and acted upon to provide direct cost savings, increased operational efficiencies, enhanced security and improved comfort for building occupants.

A successfully deployed IoT Network for the purpose of building and facility management can be referred to as a Smart Building system. A Smart Building will contain a network of end devices or sensors strategically deployed to collect specific info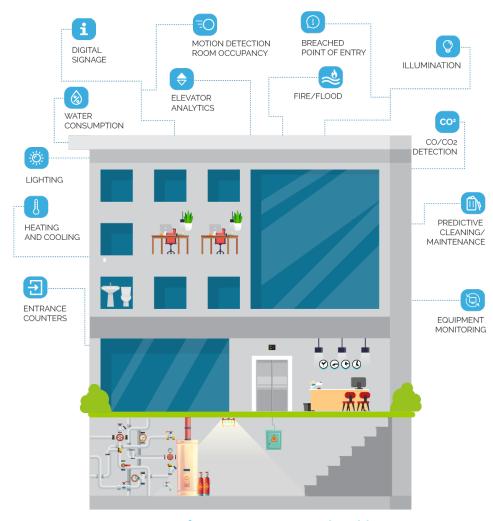rmation that will enhance the end user's knowledge of the building and therefore give visibility to potential issues or inefficiencies allowing for smart decisions to be made. The information collected and made visible by a Smart Building system can provide numerous benefits including:

Figure 1 - IoT for Smart Commercial Buildings

Cost Savings

The implementation of an IoT Network for a Smart Building System can provide immediate cost savings with little up-front capital required. Most IoT networks can be installed on top of existing building infrastructure, eliminating or reducing any requirements for retrofitting or large-scale reconstruction of existing structures and assets. Typical IoT devices are designed for simple, unobtrusive installation, which when combined with the low-cost, long battery life capabilities of the devices allows for a cost-effective, simple deployment solution that can be up and running in very little time.

Below is a list of some of the key areas in which an IoT network deployment can provide cost savings to building managers and operators.

Heating and Cooling - Temperature sensors can be deployed in strategic locations to monitor building air temperature. This can provide visibility to structural issues that may be causing HVAC inefficiencies and ultimately driving up the costs of heating and air conditioning bills (ie. heat escaping, cold chambers being left open, external cold air seeping into a building).

Lighting - Light sensors can be deployed to increase efficiencies of in-building illumination. Lights can be dimmed or turned off when natural light is present during the day or can be strategically turned on only in areas where motion is present at night. This will reduce energy consumption and electricity costs.

Water consumption – Sensors equipped with pulse count metering or moisture detection can track water usage and detect leaks, allowing for visibility to inefficiencies and adjustments to water use practices ultimately leading to cost savings from higher water conservation efforts.

Space Utilization

An IoT Network can be utilized to assist building managers and operators to better understand exactly how their property is being used on a daily basis. Insight into space utilization can be leveraged to ensure tenants are safe and comfortable, and strategic decisions can be made to reduce overcrowding or unused space.

Motion Detection/Room Occupancy – Sensors equipped with motion detection technologies can detect human presence in a room or space. Data from these sensors can provide information about room occupancy patterns or identify security concerns. Companies can use this data to ensure meeting spaces are being used efficiently or simply provide notification when a room is occupied or unoccupied. This functionality can be integrated with an enterprise meeting room booking system such as Microsoft Outlook for an enhanced user experience. Additionally, the sensors can identify space utilization patterns in the building and as a result, drive re-design decisions leading to more efficient use of space.

Elevator Analytics – Sensors can track and report elevator usage and this data can be used to view usage patterns, reduce downtimes, ensure maintenance schedules are followed and ultimately extend the life of the elevators.

Entrance counters – IoT sensors can be used as a digital turnstile to provide data about individuals entering and leaving a defined space. This information can be used for security purposes, space utilization analysis or simply to track patterns and behaviors of building users.

Security/Safety

The implementation of an IoT network can be utilized to increase the overall security of a building or property. Building managers will gain better insight into critical events requiring an immediate attention, as well as slowly growing issues that may not be immediately evident but can cause issues over time (ie. gas leaks or presence of toxins).

Breached Point of Entry – An IoT network can alarm the appropriate individuals when a building access point (door, window, dock etc.) is unexpectedly opened or left ajar. This will notify building staff of a potential security threat, or an infrastructure issue requiring repair.

Fire/flood – Specialized sensors that can detect smoke or water in places that should be void of these materials can be deployed to alert building occupants and management of a potentially dangerous situation.

CO/CO2 detection – Sensors can be deployed to detect the presence of CO or CO2 in a building. The presence of these gases can easily be undetected and human exposure can be potentially fatal.

Illumination – Sensors can be deployed to monitor the level of lighting inside a building and around the premises. This can help to ensure that spaces or corridors are appropriately lit when there are occupants present, reducing the risk of crime or injury taking place due to under illuminated spaces.
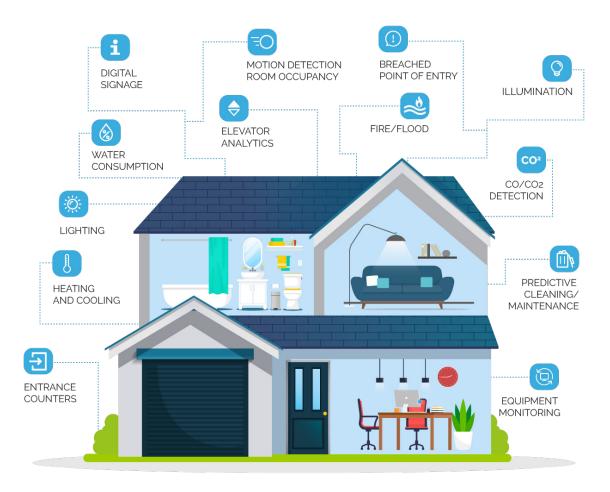
Figure 2 - IoT for Smart Residential Buildings

Operational Efficiencies

One of the most powerful benefits of the implementation of an IoT network stems from the operational efficiencies that can be achieved when building managers gain increased visibility to key metrics about their property and those who are utilizing it on a daily basis. The data being collected can be leveraged into strategic decisions that will help to keep the building maintained adequately, keeping tenants and users happy.

Digital signage – An IoT network can provide building occupants with real-time information via digital signage. A simple sign displaying "Occupied" when a room is in use, or a sign informing occupants of the current floor an elevator is sitting at can be visualized through an IoT solution.

Equipment Monitoring – IoT sensors can be deployed to track and monitor industrial equipment. These sensors can track time in use, count cycles and operating functions or physical characteristics of the equipment such as operating temperature. Ultimately this data can extend the life of the equipment as maintenance schedules can be coordinated and inefficiencies can be corrected.

Comfort – An IoT network can be deployed to monitor and manage various building features essential for the occupant's comfort. This included temperature and humidity monitoring, ambient lighting, noise management, and heating/cooling.

Restroom Maintenance – IoT sensors can be deployed in a restroom to notify building staff about usage and allow for the strategic deployment of cleaning and maintenance services. These devices can detect various events such as stall usage, trash bin status or inefficient plumbing.

Customer Satisfaction – IoT can be utilized to provide connectivity for boards and displays used to measure customer satisfaction. These often take the form of push-button screens with smile indicators giving customers and opportunity to rate their experience about service, cleanliness or wait times.

Conclusion

In conclusion, the future of commercial and residential building management can be immensely improved with the emergence of the Internet of Things. An IoT network will provide stakeholders with invaluable data and information to visualize inefficiencies, analyze key metrics and provide a platform to make smart decisions.

TEKTELIC has developed a complete End-to-End Smart Building Management solution that includes sensors, access points and back-end software that helps landlords and building owners quickly and cost-effectively derive the benefits for a Smart Building. Contact TEKTELIC to learn more about our End-to-End Building Management IoT solution and many others.

About TEKTELIC

TEKTELIC Communications is a premier supplier of complete End-to-End IoT solutions. With a focus on providing 'total solutions' TEKTELIC leverages its world-class IoT gateways, sensors and software to create enhanced value for its clients. With a strong commitment to quality, engineering, and service excellence, clients are assured TEKTELIC's IoT solutions will meet the current and future needs of their business.

Visit www.tektelic.com for more information.