The Smartness

Of Smart Buildings

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Introduction (What)

Buildings play a vital role in our life. They provide shelter, temperature control, and safety. Buildings are changing, becoming more digital, and becoming shrewd. This has opened new avenues for increasing efficiency and production. We were able to turn old structures into smart buildings with agility and under budget thanks to advancements in software and IoT technologies.

Structures that employ automation to regulate functions such as heating, lighting, and security, among others, are known as intelligent buildings. A smart building uses sensors to collect data and manage it according to business functions and services. Our solution will assist facility managers in improving the building's dependability and performance, including reduced energy consumption, maximizing space use, and improving the overall user experience. The remainder of this paper focuses on how Persistent Systems can help you make your existing structures smart with a software-driven approach.

Why Smart buildings

People spend almost 90% of their time in buildings. The Why of Smart buildings is obvious.

In this present COVID epidemic, smart buildings can provide the confidence to reopen establishments. Contactless arrival and departure, for example, can help with running on changing capacities and adhering to new standards, as well as physical distance and space efficiency.

From reducing the time, a guest spends looking for a parking place to improving the experience at the entrance with services like greeting and printing visitor permits, there's something for everyone. Users can locate food stalls and food truck availability, check the menu available in different cafés, and book cabs, interoffice shuttles to commute. Crowd tracking and indicators can help maintain social distancing.

Smart buildings can help the Facility Managers to manage lighting and temperature in an energy-efficient way and help track people count, that can help in an eventuality like fire or emergency. All of this can be beneficial to facility managers to make the buildings more comfortable, safe, productive, energy-efficient, and secure while maintaining the business focus. The emphasis on operational efficiency combined with people-centric features may help all building occupants be more productive and have a better experience.

The why of Smart buildings is evident.
A software-driven agile development approach loosely coupled with hardware and
Azure services like digital twin can help kick start a journey to turn your existing structures smart.

IoT Integrated Structures will enhance the building's productivity and efficiency, transforming it into a Smart Building.

Smart Services Tech Deep dive (The How)

Decoupling hardware from software along with cloud base IOT services can help you build smarter services that can make most operations of building smart. For illustration purposes, three such services are explained in this paper.

The centrally controlled dashboard can help you illuminate your entire building from a desktop or mobile app. This can help track faulty lights, initiate maintenance, and more. Many services can also run as programs on Kiosks but can read data filledby the sensors in central databases

Access card readers capturing arrival and departure data. A Dashboard built over this can help cafés plan the food need for the day.
Smart lifts, fire extinguishers, fire panels, cameras, vents generate a lot of data. Gathering it in a Central application helps us learn and gather actionable insights which can help predict false alarms, detect faults, initiate maintenance, conserve energy and maximize savings.

The services can be created to be self-contained and pushed out in stages. Some services, such as Kiosks, can be configured to run on standard hardware.

We have explained few services below which can be conveniently developed for starters.

Arrival

Kiosk-based service that allows visitors to print a visitor pass,key in meeting details and authenticate themselves. It is a straightforward service that connects to IoT and can be deployed with minimal configuration.

Departure

A kiosk-based service that help visitors find shuttle service, book cabs, find cafés nearby. The service just needs a simple connection to the IoT to function on interconnected systems, and the system can be updated incrementally.

People Counting

A real time people counting system to get accurate tally of individuals in a particular area in a building. Can be used for cafeteria planning, implementing security measures and get the count of people in a meeting room.

Services & Benefits

Service	Service details	Benefits
Arrival	An airport-like arrival experience for all the guests. Once authenticated with a QR code and pin, the visitor gets a welcome kit with Wi-Fi password, and the dispenser also dispenses an access card with instructions. The system is tied to the central attendance system of the building to track the presence.	• Airport like arrival experience • 50% reduction in time taken • 50% reduction in security overhead
Departure system	Hotel lobby-style technologies that assist all inhabitants in finding maps, shuttle service,shuttle timings, book cabs, find cafés nearby, return access cards.	• Security checkpoint • 50% reduction intime taken • 50% reduction in security overhead
Wayfinding	Helps users find the way from point A to pointB within the campus	• Huge saving intime and productivity
People counting	Help get accurate count of people in the building	• Helps in security • Food planning
Lighting control	Central dashboard to check lighting in entire premises and centrally control the same.	• Huge improvement in operations • Power saving
AC Control	Central dashboard to check air-conditioning and temperature in entire premises and centrally control the same	• Huge improvement inoperations • Power saving
Video analytics	The utilization of sensors and cameras gives accurate data on how the building is being used, to make informed decisions. Space utilization can be improved based on the actual data, as the building generates actionable, living intelligence automatically.	• Building analytics • New feature design • Personal requirements tracking

Conclusion

Smart buildings go far beyond saving energy and contributing to sustainability goals. They extend capital equipment life and impacts the security and safety of all resources – both human and capital. They enable innovation by creating a platform for accessible information.

Customers may use an agile and software-driven strategy to experiment and progressively make current structures Smart. We at Persistent, as a partner who understand your business and with over 10+ IoT years of expertise, have built accelerators, to implement seamless smart migration projects to address business continuity requirements.

We hope to leverage the experience and skills by first helping you in evaluating & choosing suitable alternate IoT platform, and then designing services that are completely tailor-made to your needs

Get in Touch

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About Persistent Systems

Persistent Systems (BSE & NSE: PERSISTENT) builds software that drives our customers' business; enterprises and software product companies with software at the core of their digital transformation. For more information, please visit: www.persistent.com

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