

## Spotlight on 'Intelligent Buildings'

# 'Smart Buildings' don't just satisfy ... they inspire!



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In the second of two articles looking at intelligent buildings, Brian Coogan, Ethos Digital and Stephen Weir, Hereworks, detail how the new roles of Digital Building Consultant (Ethos Digital) and Master System Integrator (Hereworks) help deliver smart, intelligent buildings.

**At its core**, a building's main function is to provide a structurally-sound and environmentally-controlled space in order to house and protect its occupants and contents. A building serves several basic societal needs, including shelter, security, privacy, storage and space to comfortably live and work.

But the world is changing, and new and existing buildings must accommodate these changes. To put it simply, issues like climate change and water shortages, paired with energy challenges and enhanced occupant

demands, need to be taken into consideration for the built environment of tomorrow.

### A future with intelligence

So, how do we ensure that the buildings of the present and future will continue to meet these societal needs and allow for any additional needs we could incur? Enter the "Smart Building" – an essential answer to the growing challenges we will face ahead. Smart buildings offer a critical solution to the evolving needs of occupants and the environment. Smart buildings promise to deliver the following:

**Lower lifetime costs** – By investing in digital resources, smart buildings will be the most cost-effective because time and capital was spent at the beginning. Building performance will effectively reduce costs and thus prevent the building from becoming a stranded asset.

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*The future of intelligent buildings is an exciting space where the possibilities are endless to develop and implement, not only intelligent buildings but intelligent cities.*

**Healthier buildings** – The overall health of a building's environment is a crucial priority for occupants today. Studies have shown that occupants are more comfortable in an environment that they can understand and control. Smart buildings are continuously gathering data and assessing how the space can be healthier for its occupants, while also providing a platform for occupants to share their needs for the environment.

**Wastage reduction** – Smart buildings have the ability to continuously assess the building's performance, meaning excess and waste within can be identified and eliminated. In turn, this will be more cost-effective and more sustainable for the environment.

**Meeting sustainability goals** – In a truly Intelligent space, the building's performance can be assessed through a sustainability lens. With the upcoming legislation on EU Taxonomy and EPBD regulations, this is more important than ever before. Building owners will soon be required to disclose their emissions and incorporate renewable energy into their buildings to truly become net zero.

**Enhanced user experiences** – With the constant monitoring and assessment of the building's environment, it is tailored to the user's needs and preferences.

**Higher productivity** – Because a smart building can cater to users' needs, studies show that, with an environment users can understand and control, comes greater comfort and capability for higher productivity.

### Data equates to power

With data comes power ... smart buildings are continuously collecting and analysing data, which can then be shared and utilised in future applications.

Overall, an intelligent building delivers these outcomes through:

- leveraging the latest tech advances that allow the building to operate as one ecosystem;
- during the design stage, having greater user experiences (UX) and understanding of how the building will be used;
- applying intelligent automations that react in real-time aligned to real-world happenings;
- continuous monitoring providing insights aiding continuous optimisations;

- user feedback loop ensuring the continuous evolution of the building's operations and services.

**Building for the future**

To make intelligent smart buildings a reality takes a considerable amount of collaboration, planning and management of the implementation. They require highly-collaborative implementation with smart building design involving many parties connected through the Digital Building Consultant (DBC). These parties should include the project stakeholders, client IT and information security (InfoSec) teams, business management, base-build design team, fitout design team, general contractor(s), Master System Integrator (MSI), sustainability and wellness consultants, commissioning agent.

The detailed planning and technical project management is undertaken by the DBC who has expertise in determining the user experiences (UX) to be designed for, the workplace technologies best suited to support these requirements, the data generated by the building systems and workplace technologies, and how these can be used to deliver sustainable, wellness, productivity and optimisations outcomes.

Also critical is the technology foundation required to support the aggregation of the data on-prem, the transfer of the data to the cloud, the cloud structures required to secure, store, manage and integrate the data, the development of MSI specification and the required MEP technical guidance documents, along with the technical project management to ensure success through each construction stage and throughout to commissioning.

Furthermore, it is important that the building tuning phase post-completion enables greater data-driven decision-making based on the real-time

performance of the systems and happenings within the it.

The implementation of the digital design and management across the trades is undertaken by the MSI. The MSI brings project management expertise, along with the software, network, controls and MEP system knowledge and skills to successfully integrate the systems (via the designed for technology foundation) and the migration of the building system data (utilising a building ontology schema) into the cloud. Thereafter, the deployment of the analytical and maintenance management tools, supporting the facilities management operations, completes the process.

Some critical elements of the MSI role are:

**Smart buildings offer a critical solution to the evolving needs of occupants and the environment.**

- (1) device qualification that ensures all IP devices connecting to the network are secure;
- (2) management of the system suppliers such as BMS, lighting, fire alarm, etc.

By implementing a truly intelligent space via a highly-collaborative implementation process, we can better understand a building's use and optimise the conditions in the space. For instance, depending on the number of people using the building at any one time, we can direct them to a part of the building that will be comfortable. We can also close specific areas when they are not busy and design appropriately-sized workspaces for the agile environment. This provides a human centric space where employees feel inspired rather than simply satisfied.

**'Smart' is best choice**

Overall, the benefits of smart buildings result in saving energy, streamlining building management and preventing expensive equipment failures. While the upfront cost to build is higher than average initially, over the long run, smart buildings cost less than

conventional buildings over time as a result of how efficiently they run. The added benefits of increased safety and a higher quality of life for those inside make smart buildings the best choice for the future.

The future of intelligent buildings is an exciting space where the possibilities are endless to develop and implement, not only intelligent buildings but intelligent cities. This sharing of information between buildings will develop a truly human centric space. ■

