

WHY ARE SMART BUILDINGS IMPORTANT?  
THE SAFE OPTION FOR SUSTAINABLE  
BUSINESS GROWTH



THOUGHT LEADERSHIP FROM BLP

## EXECUTIVE SUMMARY

**When the word ‘smart’ is applied to a description of anything, it automatically precludes discussion about the value of whatever it is the word ‘smart’ describes. It’s a positive word, conveying a collection of ‘feel good’ connotations. The most appropriate antonym is probably ‘stupid’. Indeed, any basic comparison between the capabilities of a smart building and those of any older building that lacks intrinsic intelligence would conclude that the compelling logic of ‘smart’ benefits signals the last days of the old breed.**

The construction industry is heading for a period of significant change as it responds to the smart trend; addressing the increasingly stringent customer, user, and societal demands of a digitally-driven and connected world.

In this white paper, BLP shares thoughts on the significance of ‘smart’ in the construction sector and why smart buildings are so important to the industry’s future.

### THE CONTEXT: NATURAL EVOLUTION

Technology alone is not the only driver behind more intelligent buildings. Environmental issues create both additional pressures and more opportunities; pressures to demonstrate and practice responsibility towards the environment, combined with the potential to reduce costs purely by consuming energy more responsibly and in a more planned and controlled manner.

Nor is technology the only enabler of more intelligent buildings. In its simplest form, a smart building relies on automation for efficiency. Analytical tools predict the needs of both the building’s occupants (for more ventilation or heat, for example) and the component parts that service them (for maintenance, upgrade or replacement, for example).

Technology can only deliver its benefits if architects, construction companies and manufacturers recognise the value of these benefits and work closer together to realise them. Owners must play their part too; allocating appropriate levels of investment at the commencement of a project in the understanding that new ways of thinking will deliver greater long term returns across the life of the building.

### A CLEAN BREAK WITH THE PAST

Optimal system and component configuration of a smart building results from the natural coming together of several enabling mega-trends that now characterise the world we live in. Each of these trends is in itself the culmination of developments, ingenuity and invention across an endless array of technology-driven subsets.

These trends include the Internet of Things (IoT); where sensors enable machines and systems to communicate with each other without human intervention. They also include the ‘Fourth Industrial Revolution’, the much-heralded transformation of society as we know it into an even more digitised society, largely powered by the IoT. Within and beyond each of these trends lie others which have been partly triggers, and partly outcomes, of the compound effect of technologies contributing to the mega-trends.

These technology advances include mobility, the rise in Big Data and the analytics capabilities that enable organisations to make sense of vast volumes of information for more reliably informed decisions and planning (predictive maintenance in a building, for example). Also of compelling and transformative value to businesses of every description is the coming of age of cloud computing, hugely reducing the costs of computing and accelerating the agility of any organisation.

What does all this progress signify? There are limitless answers to this question but the one most applicable to the importance of the smart building discussion is that we have broken away from our past, and we continue to break further away, faster, every day.

### WE EXPECT EVERY BUILDING TO DO ITS DUTY

We, now, are all smart. Even if we don’t believe ourselves to be so, we have access to the technology that makes us so. Smart people make smart buildings. More than that, however, smart people expect buildings to be smart; so do companies, occupiers, regulators, governments, and stakeholders.

We are collectively no longer working towards the future; we are in it. It’s time – long overdue perhaps – that the buildings in which we live and work reflect a ‘future now’ view of the world. We have the technology to make buildings smart; effectively, we no longer have the choice, either commercially or ethically, not to do so.

The UK Government has committed to reduce carbon emissions by at least 80% of the 1990 levels by 2050. Buildings are significant contributors to greenhouse gas emissions. As the incorporation of sensors into a building’s fabric and as-built infrastructure ensures that systems function in accordance with need, less energy is consumed.

Before such automation, many systems functioned in response to no more an intelligent driving force than apathy. Summer arrives, the air-conditioning is activated, and often stays activated for far longer periods than it needs to. During Winter the heating is turned on. Night-time falls and occupants overlook the most basic of energy-saving measures by not switching off lights and powering down computers.



### THE SECRET OF ETERNAL YOUTH

Apathy has made life comfortable; always-on systems even if not always needed. Yet a causal relationship between the systems and the conditions they are designed to moderate (if temperature drops, heat automatically increases) not only makes life even more comfortable, it also reduces costs and helps protect the environment.

Now a new strain of apathy can prevail. As long of buildings do their duty and take care of essential operational processes, occupants can indeed have no concern about what to switch off or on, and when; it will simply get done anyway.

The commercial sector has before it an enormous opportunity to increase profitability and increase loyalty from its corporate customers, with smart buildings at the heart of a new approach to construction. To understand the opportunity further, it can be considered that there are two main pillars on which this potential sits; perception, and practicality.

### PERCEPTION: THE EMOTIONAL ASPECTS OF HIGH PERFORMANCE

Popular opinion holds that smoking is both socially far less acceptable than it ever has been, and irresponsible on many counts. Much the same can be said of pre-smart buildings. With the technology readily available to improve their performance, comfort, safety, security and operational costs, why would they represent a viable option to any organisation in the modern world?

**Why would society continue to accept traditionally functioning edifices which dominate the skyline and continue to harm the environment as if to demonstrate that the builders or owners don't care?**

Such practices will increasingly attract the attention of regulators and, perhaps of equal importance, increasingly have a negative impact on stakeholder, shareholder, and public opinion. Lest it be thought that such opinions will not affect the profitable letting of the building, it should be considered that occupying companies of any stature also have their own reputations to safeguard. They wish to be associated with landmark developments, where the allure of occupancy comes not just from architectural flourish and forward-thinking but from the very functioning of the building itself.

A smart building offers smart and extremely favourable connotations to its occupiers; that they too are future-savvy, responsible and concerned about what people think and what motivates a dedicated workforce. It may sound like a contradiction in terms, but the smart building has become, primarily in the commercial sector, a 'no-brainer'.

### PRACTICALITIES: EVERYBODY WINS

From the operational perspective, significant savings in both maintenance costs and time stand to be made in facilities management. Predictive analytics will deliver robust maintenance schedules across all components

in the building. Real-time monitoring capabilities will provide a level of visibility into performance which would not have been possible prior to the advent of sensor technology, and the increasing sophistication of actuators and microcontrollers.

There are many other considerations beyond the ability of the building to function more efficiently and cost-effectively through automated systems. These lie predominantly in the areas of safety, security and occupier business support.

#### • Safety

In the event of fire within a building, or other emergencies such as gas leaks, the smart building can immediately trigger alarms, activate sprinklers and indicate evacuation routes. Occupiers can react faster and more calmly by simply listening to what the building tells them.

Integrated systems (at main point of entry for example) can advise managers and emergency services on numbers of people within a building, to ensure that all who need to leave do leave. Sensors can locate the specific area of the incident to drive faster responses. They can also deliver reports analysing the event for future learning.

#### • Security

Security is an increasing concern on two fronts; the detection and blocking of unauthorised entry, and the preponderance of cyber threats. For physical security, the use of CCTV systems and screening facilities at the building's entry are invaluable and the use of biometric entry systems is growing. Biometric or security coded entry systems also provide information of building occupancy at any moment in time, while allowing access only to authorised areas (as in the case of multi-occupancy, for example).

Cyber threats are also a top agenda issue in the smart building, more so than in the pre-smart building. Parties with malicious intent now have the potential to cause chaos within a connected building whilst each occupant is both concerned, and in many cases answerable to regulators for, its information assets.

### CONCLUSION: BUILDING THE FUTURE NOW

An unconnected building is no longer a viable proposition in a connected age. This does not imply that grand scale demolition is required across the country to enable a new commercial landscape to rise from the rubble. Retrofitting is an entirely plausible alternative for ensuring greater efficiencies in older structures.

The smart building is important to the construction industry because it signals a dynamic approach to sustainability of the functioning asset, at lower costs, and with less effort than has ever been the case. It will allow organisations to manage physical assets more cost-effectively and will contribute towards midterm carbon emission reductions. Viewed as an overall package, the smart building is what people want and society needs. It solves its own problems. It enhances the experience of its occupiers. It is the future, now.



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