

● BIM, a decade of innovation

Building Information Modelling
- how far have we come?

bsi.





Contents

- BIM, a decade of innovation..... 3
- Moving to a more digital future..... 4
- The evolution of BIM 5
- BIM: the next generation..... 6
- The power of information..... 8
- Looking ahead..... 9
- Case study..... 10
- Collaboration is key 11

BIM, a decade of innovation

Andy Butterfield, Managing Director, Global Built Environment, BSI, considers the past decade of digital innovation – and looks ahead to the next.

Ten years ago, BSI embarked upon a journey to help the global built environment sector implement digital innovation, in the form of Building Information Modelling (BIM), as a way of driving better productivity, quality, safety, and more sustainable outcomes. With BIM being “use of a shared digital representation of an asset to facilitate design, construction and operation processes to form a reliable basis for decisions”, as defined within ISO 19650-1.

The climate at the time was one of rapid transformation and there was a real determination to embrace new ways of working, but they needed to be adopted in a coordinated and structured way.

In this respect, the emergence of BIM was no different from the environment 122 years ago that saw the birth of BSI itself. That was also a time of great change, fuelled by rapidly evolving technology in the transport sector. BSI recognized the need for coordination for such innovation to succeed, and subsequently developed the world’s first standard, which related to track gauges for tramways.



Andy Butterfield

Managing Director,
Global Built
Environment BSI





Moving to a more digital future

A decade ago, the market was flooded with misconceptions of BIM as it was perceived to be a next level of 3D modelling technology. It was clear that change was needed in the UK built environment sector, by shifting mindsets from a technology focused approach to process driven approach. A lack of project coordination and structured information exchange was causing significant waste. For example, rework and redesign meant that it was quite common for new buildings to be drawn two and a half times over and constructed one and a half times over. Clearly, this was not an efficient or sustainable way to construct buildings.

The potential solution came in the form of an innovative process that would unlock a completely new way of using information to increase efficiency and reduce costs and waste. This process formalized the way in which information is specified, generated, structured, and exchanged. Managing this information across extensive supply chains was no small challenge, and a framework was needed to

introduce consistent BIM processes within the industries of the built environment. At this point, **BSI was able to help in developing the world's first Standard specifically on BIM, PAS 1192-2:2013.** Coming into effect on 28 February 2013, PAS 1192-2:2013 was the specification for information management for the capital/delivery phase of construction projects using BIM. Published by BSI, it was sponsored by the Construction Industry Council (CIC).

To understand the role standards have played in successful implementation of BIM, we need to look at how BSI helps shape new standards generally and how we support the global adoption of wider standardization. While we are well known for being the UK's national standards body, **we also work very closely with many other international standards organizations, including the European Committee for Standardization (CEN) and the International Organization for Standardization (ISO).** Indeed, the PAS 1192 series was actually used as the foundation for the ISO 19650 suite of standards that are commonly used all over the world today.

The evolution of BIM

As with any standards-shaping process there were two fundamental principles to consider. Firstly, as mentioned above, there was an **obvious market need to change the way the built environment sector approached projects**. Secondly, it had to be **collaborative and consensus-driven**, with the standard gaining approval through a rigorous process of public consultation.

Following the creation of PAS 1192-2 and the subsequent parts to form the PAS 1192 series, to further the spirit of collaboration and increase BIM uptake, BSI took the lead in bringing together a community of clients to consider what other initiatives could be introduced to drive desirable change in the sector. **This partnership approach led to the development and launch of the BSI BIM Kitemark in 2015.**

Over the last ten years we have worked with more than 450 organizations across the world, ranging from government,

academia and asset owners to contractors, software companies and manufacturers. We have supported clients in demonstrating best practice, utilizing ISO 19650 series of standards and attaining certification to demonstrate that they are at the forefront of driving innovation.

ISO 19650 series of standards have provided a formula for adopting best practice in information management and creating alignment across the entire spectrum of the built environment supply chain, from governments and other bodies publishing tenders to design and construction companies delivering against the resulting contracts, and in turn to their own extensive supply chains. **There has been much progress over the last decade in driving up global adoption of BIM**, with governments and regulators promoting numerous programmes to increase the uptake of BIM processes using the ISO 19650 series of standards.



BIM: the next generation

As we reflect upon the achievements of the past decade it is important to consider the next stage of the journey and anticipate what the next ten years may hold. There is still much work to do if information management is to become 'business as usual' within the built environment sector. Three key observations stand out:

- 1** Everyone involved in the built environment has a role to play, so we need to engage with the whole supply chain, taking every participant on the information management journey
- 2** BIM is about collaborative working processes that are enabled by people and technology - it is not about the technology alone. People and process are equally important
- 3** For BIM to succeed it is imperative that we focus first upon the outcomes we are striving to achieve. The technology is critical, of course, but first we need to be clear about what is required and how we should set out to achieve it





Let's consider those areas that may offer opportunities to accelerate future change and boost BIM in the next decade:

Procurement

BIM needs to align with project procurement through conscious adoption of procurement narrative and language and integrating it into project contracts. Information management is no longer a specialist subject, and information management is an integral part of any project, just like health and safety. BSI Flex 1965 have been published to tackle this issue by providing support to those to develop specifications which need to reference information management.

Case studies

Early adopters of BIM were quick to embrace change and innovation, but there still needs to be much greater use of it throughout the supply chain. Case studies could highlight its benefits, demonstrating those repeatable tasks that define who stakeholders are and what information they need. Take BS 8644-1, for example. Arising from a recommendation in the Hackitt Review of the Grenfell Tower fire, it is the first standard to address the need to manage fire safety digitally across the life of assets. Its implications for building safety improvement are immense, as long as the sector embraces it.

Convergence of technology

We need to move towards an asset life cycle approach, harnessing information to create smart assets, digital twins and other innovations. Information is the key and will be the enabler of these new technologies.

Digital transformation is much broader than BIM, and BSI has led the way in shaping other standards to support the sector. Working with the Centre for Digital Built Britain (CDBB) to achieve alignment on key concepts through a 'Digital Twin Hub' we have developed BSI Flex 260, a standard that provides a framework for the creation and management of digital twins.

We were also instrumental in shaping the first standards for Smart Cities and Communities, with PAS 181 used to help support the development of ISO 37106. Our Smart City Kitemark has been adopted by numerous cities in South Korea, as well as by clients such as NTT in Japan and Wanda in China for mixed use assets that constitute a community.

The power of information

The lessons learned over the past decade mean we can look forward to the next one with a clear vision about the way forward, starting with the need to better utilize information across the entire asset life cycle. This is undoubtedly the key to driving efficiencies and optimizing asset performance, whereas historically we have tended to focus on individual stages of the asset life cycle.

For example, adoption of BIM has focused predominantly upon design and construction, but we really need to utilize the information captured in these project phases and 'port' it effectively into the operation or asset management phase. Reports suggest that we are currently wasting much of the information captured through information management, losing it in digital silos. This must change. Successful digital transformation will only take place if innovative processes and technologies converge and flow together.





Looking ahead

As with all innovation, pioneers lead the way, and BSI has been privileged to collaborate closely with many organizations around the world on projects using BIM, such as WANDA and its supply chain partners (see page 10).

To meet the challenges of the future we must invest in people and develop the skills necessary to drive positive change. We must take on board the importance of what one of our Dubai-based clients calls the 'three Ps of BIM' – **People, Process and Platforms (technology)**. All too often the focus is centered disproportionately on technology.

However, there is also a fourth 'P' that the past decade has demonstrated is equally important, and that is **Partnerships**. Collaboration is critical to the successful implementation of information management – indeed, BIM's very origins lay in collaborative working.

As a sector we are already facing a well-documented skills shortage and rapid innovation through digital transformation will only further amplify the need to invest in people. To help organizations procure the skills necessary for BIM to succeed, **BSI has been developing training programmes, creating a modular approach to learning and developing the skills required for the different aspects of information management.**



Over the last 30 years Wanda Group has developed into a world-leader in commercial property holding and management. It currently runs over 285 Wanda Plazas through its Commercial Management Group. Each Wanda Plaza integrates retail, hotels, residential, food, leisure and entertainment into a single destination.

CASE STUDY

Wanda benefits from BIM

In June 2018, Wanda Commercial Management Group became the first Chinese company to be awarded dual Kitemark certification under the BSI Kitemark for BIM Level 2 in the design and construction (PAS 1192-2) and operational phases (PAS 1192-3). Since then, it has upgraded its processes and certification to align it with the new ISO 19650 requirements.

Wanda has been helped in its strategic BIM roll-out by the Digital City Infrastructure and Technology Innovation Laboratory (D-CiTi Lab), BSI's strategic partner in mainland China.

Xiongyi Landson Li, BIM Principal & Chief Engineer of Wanda Commercial Management Group, says that

introducing BIM, alongside related British standards, to the wider Chinese market has helped Wanda Group maintain an industry leadership position. "We've had many visits from peers and competitors to share learnings and knowledge, and the impact has been felt across the construction market," he says.

Li continues, "Looking ahead, we believe BIM is going to change the industry – right across the supply chain. There is much work to be done still, however. We are working with BSI to explore new project-specific certification possibilities for the industry on a project-by-project basis and look forward to continuing our strong relationship for the future."

Collaboration is key

As we reflect on how BSI has helped the global built environment sector implement digital transformation, we can see that we have already come a long way. But there is so much more we can achieve together if we subscribe to some very simple principles:



Sharing best practice and celebrating excellence, using case studies to illustrate the way ahead for others to follow



Building communities to work together to focus on key challenges we need to address to drive the sector forward and add value to all stakeholders



Developing solutions in collaboration with industry peers and other stakeholders



Focusing on all elements of change, keeping in mind the four P's – **Process, People, Platforms and Partnerships**

We are driving the global built environment forward together and we need to collaborate if we are to support the sector in successfully addressing future challenges.





BSI's BIM solutions

Find out more about Building Information Modelling and our solutions [here](#).

Visit: bsigroup.com