

# The way forward

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**Ian Sutton outlines the progress of building information modelling in the UK**

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In May 2011, the Cabinet Office published the [Government Construction Strategy](#), which had the goal of cutting the cost of government construction projects by 15%-20% by reducing waste, reforming industry practice and securing better value through procurement. Central to achieving these ambitions is promoting building information modelling (BIM).

[Introducing BIM in 2012](#), the then Cabinet Office minister Francis Maude stated:

'This government's four-year strategy for BIM implementation will ... unlock new, more efficient and collaborative ways of working. This whole sector's adoption of BIM will put us at the vanguard of a new era and position the UK to become the world leader in BIM'.

It was an ambitious goal to set ? but is it an achievable one? One year later, an [update to the strategy](#) included a progress review, the results of which confirmed the beliefs of BIM advocates across the industry: it reported that

'cost reductions of ?72m have been achieved in one year and whole project life cost reductions of ?279m have been identified on new contracts awarded and projects registered during 2011/12'.

From these figures, it is clear that BIM has enabled significant savings on public capital projects. So what is stopping BIM being used more widely in building surveying?

## Financial benefits

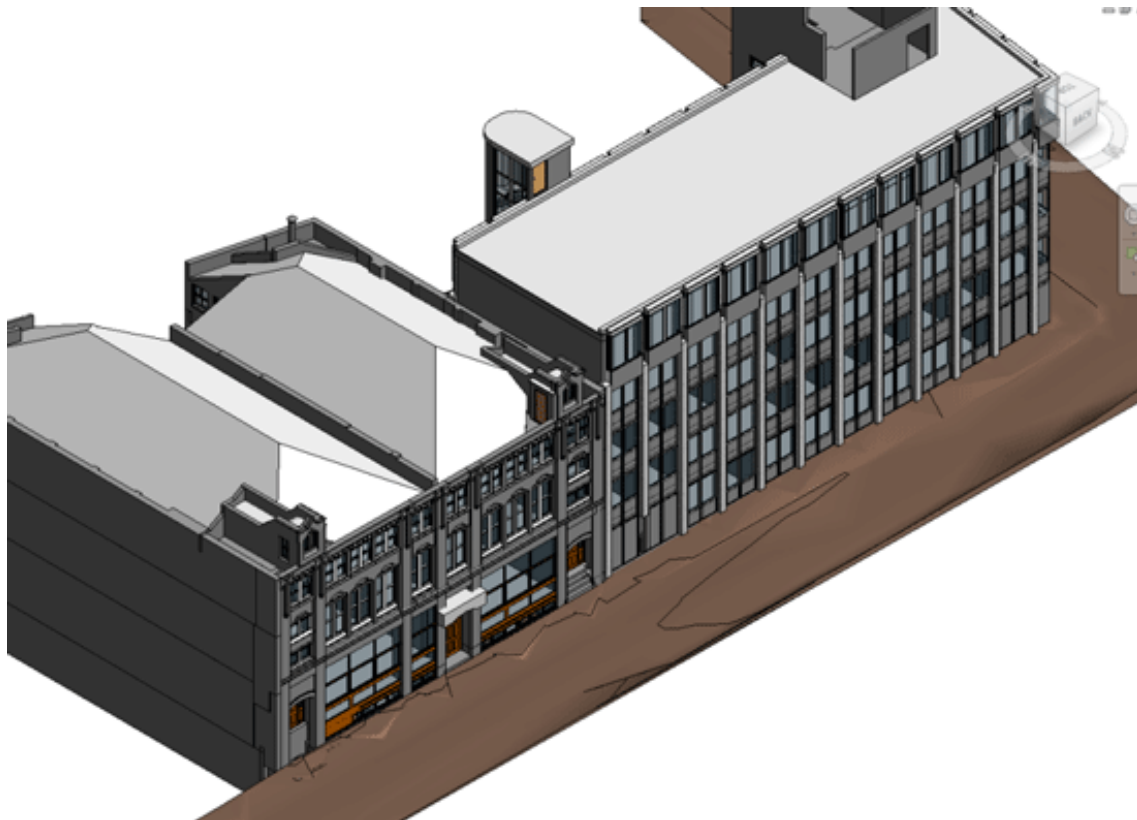
Governments are often among the first client groups to favour BIM. As stated, they not only identify direct savings to programmes financed by public capital, but as a result, also seek to enhance efficiency.

Facilities management (FM) is often cited as the stage in the property life cycle that BIM offers the greatest return on investment. However, for commercial developers, with whom the building surveyor is often engaged, this is of little value if those assets are to be sold on practical completion.

Building surveyors should be guiding these clients to see BIM as a marketing tool, potentially delivering assets as turnkey investments with a ready-made FM solution as part of the handover and close-out.

However, some private-sector clients have already recognised the financial benefits that BIM can provide; the UK university sector is one example where there are clear advantages in establishing a digital view of the entire estate and handing it over after design and construction. Technically, the state still regards universities as private-sector and they must comply with all the relevant fiscal rules.

An adequate asset information model can be used to automate large elements of any planned preventative maintenance schedule, and even flag potential cost savings by replacing elements that are nearing the end of their serviceable life and are difficult to access.



**Figure 1: Revit model produced by CBRE for the One Crown Place, London, BIM project**

## **A lack of understanding**

The introduction of BIM is often compared to the industry's move from paper drawings to CAD during the 1990s. However, where CAD computerised a single process, leaving macro-level processes largely the same, BIM workflows fundamentally change the way that professionals interact. Perhaps unsurprisingly, a lack of knowledge about BIM's benefits has stymied wider adoption.

RICS polled its members on their current understanding of BIM, and in response, commissioned a model of its Parliament Square headquarters, to share the challenges and benefits of the process and broaden understanding.

Subsequently, between 2013 and 2015, the Chartered Institute of Civil Engineering Surveyors BIM Action Group carried out a heat map survey that determined levels of understanding and awareness of BIM across the built environment industry at large.

The results show that the industry is still heading in the right direction, but perhaps not as quickly as some would like. There also continues to be a lack of understanding of the BS/PAS 1192 family of documents and the acronyms associated with them.

The Publicly Available Standards (PAS) suite of documents are fundamental to achieving the government's 2016 level 2 targets, but the BIM Action Group believes that, while most individuals on a project should know the basics of the BS/PAS 1192 family, it would be too much to expect every employee to have a thorough working knowledge of every standard and specification.

This is a huge opportunity for building surveyors to secure themselves a more central role.

## **Key BIM documents**

For the layperson, the entire BIM process is underpinned by the information delivery cycle set out in [PAS 1192-2](#).

At the capital expenditure stage, the first key document setting a strategy to meet the client's needs and underpinning the entire BIM process is known as the employer's information requirements (EIRs). The EIRs set out the information that the client requires to run their new facility and make decisions about its development throughout the delivery process. It is the client's responsibility to produce this document so clearly the building surveyor conversant with these documents can do so on their behalf.

Once this strategy is in place, procurement can take place, and a BIM execution plan (BEP) can be created based on the EIRs; these may also form the basis of the supply chain information execution plan, commonly referred to as the supply chain capability summary.

The key components of the BIM and who is responsible for them needs to be agreed.

The BEP explains how the information modelling aspects of the project will be carried out, and should address the following 4 areas:

- project information: listing project description, scope, foreseeable challenges, the main stakeholders and key BIM personnel
- project objectives and goals: listing BIM objectives as set out by the client in the EIRs, and the specific tasks for each professional or team engaged by the client, programming, and key performance indicators
- collaborative working: listing project BIM standards, project coordinates, modelling standards, communication and meetings, data exchange protocols, model/data validation protocols, model/data subdivision, modelling units, BIM mock-ups and area calculation methodology
- project resources and IT requirements: listing stakeholder BIM software expertise, common data environments, hardware/technology infrastructure requirements for all stakeholders, software requirements for all stakeholders and any project-specific BIM content.

Following the tendering process, the master information delivery plan (MIDP) is produced,

setting out the information that is to be prepared, who needs to put it together and how it should be produced and circulated.

Once the MIDP is produced, the design team can begin delivering the project following the 6 stages set out by RIBA, creating their information model in full accordance with the client's requirements.

These stages are governed by PAS 1192-2 and end with a project information model, which can then be handed over at the operating expenditure stage.

It is at this point that the asset management phase begins. This is governed by [PAS 1192-3](#) and results in an asset information model, which the client can use in the life-cycle management of the building.

It is clear that building surveyors are ideal candidates for the management, audit and/or production of these BIM documents, as these duties go hand in hand with surveyors' more traditional roles, such as contract administration, development and project monitoring.

## **Threat to workloads?**

A small proportion of the quantity surveying profession, however, believes that the prospect of automated quantitative take-offs, as promised with the introduction of '5D BIM', is a threat to their workloads.

This '5D BIM' refers to the intelligent linking of individual 3D CAD components with schedule/time constraints (4D) and then cost-related information (5D), which can enable automated take-offs.

As a result, some quantity surveyors are reluctant to adopt BIM, which raises the question of whether building surveyors should adopt a similar stance.

But can BIM processes actually help inform and empower them?

For example, when acting in a development monitoring capacity, the building surveyor can to a degree protect a bank that is providing development finance by keeping it abreast of costs and issues along the way. If something goes wrong, the building surveyor is expected to notify the bank, which in turn may be able to reduce or terminate its funding for the project. However, this relationship can sometimes break down or fail to work as intended, potentially leaving both financier and surveyor exposed to financial risk.

In the case of *Lloyds Bank Plc v McBains Cooper Consulting Limited* [2015], a number of irregularities were recorded by both sides, which led to the amount of funding provided by the bank for the entirety of the development being nearly exhausted after 21 months, leaving the development far from complete.

If this project had been following BIM procedures, it is more than likely that the irregularities on both sides would have been identified and recorded much earlier on, even before commencement on site. As such, there would have been an auditable paper trail, clearly protecting and informing both parties and potentially negating their losses.

BIM processes might not be a best fit for all projects; however, our industry is evolving, and in providing our clients with the most up-to-date and informed advice, BIM can only benefit our profession.

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### **Further information**

- Image ? CBRE
- Related competencies include [Design and specification](#) , [Data management](#) , [Teamworking](#)
- This feature is taken from the RICS *Building surveying journal* (March/April 2016)