

# BUILDING INFORMATION MODELLING:

# THE DIGITAL REVOLUTION



BSI (British Standards Institute) launched the BSI Kitemark™ for Building Information Modelling (BIM) Design and Construction in 2016, followed by Level 2 in 2018, allowing construction companies the opportunity to demonstrate their capability and successful delivery of BIM projects. *Quality World* explores how the Kitemark has helped Skanska and SNC-Lavalin Atkins gain a competitive edge

The use of Building Information Modelling (BIM) is causing a digital revolution in the construction sector by enabling collaboration throughout the supply chain. BIM, as described by BSI, brings together all the information that make up a project in the development stage, creating a common language, shared knowledge, and increased transparency between all the parties involved, from the main contractors, specialists and professionals. BIM allows all the parties to manage costs, timescales and material quantities. BIM is used specifically to manage information throughout the lifecycle of buildings and infrastructure assets from design, through to construction and operation.

*Quality World's* Dina Patel speaks to David Throssell, Head of Digital Construction at Skanska, and Neil Thompson, Director of Digital Construction at SNC-Lavalin Atkins, both based in the UK, to find out how their organisations have benefited from the Kitemark and what the Kitemark means for the construction industry, from the construction and design perspectives.





# THE CONTRACTOR DAVID THROSSSELL

## Quality World (QW): What does your role involve?

**David Throssell (DT):** As the Head of Digital Construction at Skanska, I am the process owner for BIM. That means I own the processes, the forms and guidance for BIM for our IMS system. I also provide leadership around BIM and digital construction.

I am the line manager of a central team, in effect a centre of excellence, which supports the business to implement BIM. We act as a project management office, taking the requirements of the business end and delivering support to improve operational efficiency.

## QW: When did you start implementing BIM?

**DT:** People talked a lot about the government's construction strategy, which included BIM

in 2011. [QW: In 2011, the then Cabinet Office planned to co-ordinate with the government's drive to the development of standards enabling all members of the supply chain to work collaboratively through BIM.] In fact, we had already mandated BIM across all of Skanska's design and build projects worldwide in 2009 after a senior management-led team explored how this could help our business.

## QW: How is BIM affecting the construction industry?

**DT:** The industry has been talking about BIM since 2005 – before that it was called Project Modelling and Data Management. Our definition of BIM is that it is a collaborative approach that ensures the right information gets to the right people, at the right time. To that end,

BIM is not just about three-dimensional computer-aided design (3D CAD). It's about better information management. A lot of customers understand that it makes sense to have a digital version of what is being handed over to them. The challenge is to do it better. The hardware has improved to the point where we can handle large datasets and models, and the software is more mature and more robust.

We are definitely seeing the effect BIM is having on the industry. We are looking into potentially calling it Digital Construction – a term that the UK government is using.



# THE CONSULTANT NEIL THOMPSON

## QW: What does your role involve?

**Neil Thompson (NT):** My role is to use new technologies and processes to help develop faster, smarter, more cost-effective ways of delivering and doing business. Through an honorary research role at UCL, I also look at the impact of digital transformation on different business models. I am one of three digital directors at SNC-Lavalin. This global role links up strategy and best practice across the full value chain of our businesses, building an ecosystem for people to innovate. Within this, my particular focus is digital construction and implementing data management.

## QW: When did you start implementing BIM?

**NT:** We started with BIM around a decade ago, and our Principal Head of the

discipline, Dr Anne Kemp, quickly got involved in the development and implementation of what became an international set of standards (ISO 19650 Building Information Modelling).

Anne's work, together with another colleague, Terry Stocks – who is currently seconded as Delivery Director for BIM at the Cambridge Center of Digital Built Britain – enabled us to become the first organisation of our kind to achieve the Kitemark for BIM Level 2.

## QW: How is BIM affecting the construction industry?

**NT:** There have been two major impacts from implementing BIM, first is leadership from our client organisations.

They have started to transform their procurement practices to include the

purchase of data. The second is the expectation of data flow through a project. We had to shift from a stage gate and waterfall style of information management where stakeholders 'throw over' vast chunks of unstructured data, to progressively delivering data with purpose.

Ultimately this makes it easier for our teams as they have less work and can focus on the value-adding tasks.

Photos: Marcus Harvey



### QW: How will the BSI kitemark for design and construction help your company and the construction sector in the future?

**DT:** The Kitemark helps us to give assurance to our customers regarding our capabilities with BIM. When you see a Kitemark, you realise that you are going to be buying into quality. That was important to Skanska. By getting the Kitemark, when it comes to pre-qualifications for tenders and joint ventures, you can claim an exemption to the BIM questions because you have certification. It costs money to answer the questions during every bidding process. It also means we work consistently with our supply chain.

We traditionally see Kitemarks on products, and the ability to put a Kitemark on a service is really important for our customers. It differentiates us from other companies.

### QW: What is your view of digital technology?

**DT:** It's not digital for digital's sake. We take into account whether the technology improves our efficiency, productivity, and our quality and if it enables us to do more for less. We always try to understand our process first and then try to fit the tools to that process. Failures in the past with digital technologies were often the result of allowing the system to drive the process.

### QW: How have you benefited from implementing BIM?

**DT:** Projects that adopt BIM have greater certainty of completion, greater certainty of costs, and improvements in quality and safety. BIM involves a bit more effort earlier on in a project which is why it is thought to be costly.

It certainly costs more if the customer doesn't ask for it until later on in a project. The customer may bring on a contractor halfway through the design stage, and then it costs more to implement BIM. You can maximise the benefits of BIM by doing it right from the start.

### QW: What have been the challenges so far?

**DT:** We always talk about the challenges around people, process and technology. I think that from a process point of view, the processes are pretty mature now and I



don't think there's a major contractor that doesn't have a robust set of processes for BIM. In terms of the technology, the hardware is faster and the software is much more reliable.

The challenge is that people in the construction industry like the way that they have always done their job. Typically they will say: "I will do BIM on my next job or project, but I don't need to do it on this one, and the customer isn't asking for it". We have provided awareness training and one to one training sessions to help with this. We have provided the tools and the technology, but sometimes if

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there's a way to go back to paper, people often will. So I think the challenge for us is to get the people to value the digital information. We have worked hard to provide a smartphone to everyone who needs one and everybody who needs a tablet on site will have an iPad.

### QW: What does the Kitemark mean for your supply chain and customers?

**DT:** I think that from a customer's point of view it represents the quality of delivery. The Kitemark ensures that the customer's information requirements are met, we measure customer satisfaction and we

work closely with our supply chain in order to deliver what the customer wants. To obtain the Kitemark we have to demonstrate continuous improvement, and continuous engagement, with our supply chain.

### QW: How will the Kitemark help you implement cyber security?

**DT:** We have to demonstrate the security measures around our document management system as part of the Kitemark certification process and audit. For us, this involves showing that our document management system provider has the cyber security essentials that require certification, and has the data centre backup and storage required.

We also have to demonstrate, project by project, that the security groups for the system are set up correctly and are administered.

### QW: What does the future hold for BIM at your company?

**DT:** At Skanska, we say that BIM Level 2 should be business as usual. Everyone across the whole of the business working in different sectors is meeting a minimum set of requirements to ensure that we are achieving BIM Level 2.

We also need to continue improving our employees' skills and bring all of our processes into the digital world. We also need to ensure we have trusted data from our supply chain when making decisions, and to make sure that we have the IT infrastructure to support a fully digitalised company. As BIM continues to mature, we will get more and more value from it. ■



### QW: How will the BSI kitemark for design and construction help your company and the construction sector in the future?

**NT:** There are a number of verification schemes out there, however, the BSI Kitemark provides something different. Not only does it check your baseline capability, they also independently check you are implementing BIM on projects and verify companies are delivering what they said they would. Our industry is fragmented. I think the Kitemark is important because it supports the unification of the sector, and our ability to exchange information.

### QW: What is your view of digital technology?

**NT:** Digital technology is not an addition, but an ecological adaption that changes everything. It's something most of us have experienced in our personal lives. How we consume media, watch TV, listen to music and interact with our banks has all changed. Yet, when we step in to our professional roles our user experience of technology is lacking. I believe the next phase of digital transformation will be focused on the user experience and purpose.

### QW: How have you benefited from implementing BIM?

**NT:** A crucial benefit has been the ability to bring our large organisations together – which generally consists of lots of business units that traditionally operate in silos. Through BIM we got them speaking a common language – and that has been really powerful.

Another benefit is that BIM can be used as a platform for innovation. Once you structure your information and align your teams, you can start doing innovative things in partnership with clients. Ultimately, we are able to deliver a better quality service and products because of BIM.

### QW: What have been the challenges so far?

**NT:** The first challenge was shifting the culture in our own organisation. Our organisation employs brilliant people, who come with their particular views of the world. Being able to get them around



one table to communicate was difficult, but worth it. Despite being 10 years into the journey, I never see culture change as a completed science.

Another challenge is how we reconfigure our business model. It is one thing to hand someone a new tool, but it is another to fundamentally shift the time and materials business model.

I guess it is a bit of a cliché, but essentially we overcame these challenges by investing in people, process and technology – you have to invest time in training people and bringing them together.

### QW: What does the Kitemark mean for your supply chain and customers?

**NT:** The Kitemark provides a recognition of quality to our supply chain and customers. As we move further into a digital world, the security and integrity of our data is critical, and the Kitemark addresses this. As we upload data on social and economic infrastructure on the internet we need to ensure we safeguard our customers' data.

### QW: How will the Kitemark help you implement cyber security?

**NT:** It helps us in two parts – first is ensuring our capability is robust. Our digital integrity is going to be a business critical issue for our customers and we want to demonstrate our commitment to ensuring

their data is well managed. The second is the physical audit requirements by the BSI. There is a key physical element to cyber security and the Kitemark provides the assurance that our capability is compliant.

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### QW: What does the future hold for BIM at your company?

**NT:** BIM is a foundation of delivery for us. The future is about consistency and connecting our value chain digitally to enable our working environment to be progressive and dynamic.

In other words, we want to use the next phase of our BIM implementation to focus on user experience of technology and how we collaborate with stakeholders. For example, a key interface for BIM is the digital management of quality.

Our next phase of implementation will be focused on progressive assurance – where assurance is provided progressively through the life of a project. People, process and technology are going to play a huge role in making this a reality. ■