Welcome

Welcome to the December issue of the bSI newsletter. It was a busy autumn, with the Korea standards summit in late September one of the highlights.

New rooms

Two new rooms were launched at the summit: the Construction Room and the Airport Room, the result of demand within the industry. The Construction Room is being led by Japanese contractor and SAC member Kajima, while Schiphol Airport in the Netherlands is providing leadership for the Airport Room.

International Awards

Also at Korea, we announced the winners of the buildingSMART International Awards, which recognise use of our standards and the benefits they offer. The winners of the three main categories came from Singapore, Switzerland and the Netherlands. Find out who won and why.

bSI SPECs

An important innovation was the launch of the buildingSMART SPECs – publicly available specifications endorsed by the Standards Committee. Read about the publication of the first two SPECs. And there are a few changes in the leadership of our rooms. Read more.

Other activities

Two MOUs were recently signed. One will enable our work on IFC Bridge to move forward, while the second will support regulatory work. Our professional certification will shortly be ready for adoption by chapters. Also of note is our new bSI member from Spain. And there’s a reminder of a new video explaining what BCF can do for you.

Spotlight on chapters

Some of our earliest chapters are entering their third decade, and in November, the German chapter celebrated 20 years of ‘building smart’ activity. New countries are also planning to join the buildingSMART family – but that is for future issues of the newsletter.

Betzy Dinesen
Editor
Airport Room launched

Powerful players joining forces

A new room dedicated to airports was launched at the Korea summit. The major airports of Schiphol and Paris have already announced their participation, while several others have also joined or expressed an interest. In setting up the Airport Room, bSI has tapped into an unmet need among airport authorities and their suppliers.

Airports – a special case

The buildingSMART standards are applicable to all building types but coverage is not complete, and bSI has a history of liaising with special-interest groups – such as infrastructure owners and regulatory authorities – to identify and meet their needs. Now it is the turn of airports. ‘An airport is more than a collection of buildings,’ says operations director Richard Kelly. ‘It’s a city in miniature, with roads, rail, tunnels – a mix of infrastructure and traditional buildings.’

An airport is an ‘always live’ environment, with huge passenger numbers – London Heathrow and Dubai International both exceed 70 million a year. ‘Projects are also constrained both by space and by security,’ continues Richard. ‘When the tools of the trade have to be taken airside, the requirements of security mean that everything slows down and productive working is curtailed.’

If there is complexity above ground, it is matched by complexity below ground, where projects must deal with a network of fuel mains, pipelines, baggage systems and storage. And airports are dynamic environments, where buildings are regularly repurposed, so no large airport is static in terms of projects.

Grass-roots demand

So how did the new room come about? A few years back, representatives of Schiphol airport entered into a dialogue with Rob Roef from buildingSMART Benelux, who pointed them in the direction of worldwide open standards. ‘We quickly became aware that using the combined knowledge of smart people from across the world is a great idea,’ says Yannick Vos, strategic advisor, BIM and Asset Management, at the Schiphol Group. ‘Asset management is for the entire life-cycle, and open standards determine the “one common language” between all stakeholders during that life-cycle.’

And what would be the benefit? ‘More than we can now imagine,’ he adds.

The interest from Schiphol crystallised the bottom-up demand for a specialist room within buildingSMART. Ahead of Korea, there were virtual meetings with several
airports and a face-to-face meeting with interested parties at Schiphol. ‘Every time we meet airport colleagues, there is a lot of common ground,’ says Yannick. ‘It seems that all challenges are quite similar, no matter how big or small an airport is.’

And when the new room was launched in Korea, it was with ‘a very good vibe and a great kick-off’.

**Next steps**
The Airport Room has now set itself the task of preparing a workplan for 2017, which will be activated at the Barcelona standards summit in April. ‘The definition of a uniform classification for airport assets (ie objects) will undoubtedly be high on the list,’ explains Yannick. ‘Airports have unique assets, such as avio bridges (or jet bridges), security scanners and baggage systems, that no other building has.’

Looking longer term, the Airport Room will be well placed to deliver significant improvements to construction and asset management at airports. ‘The Airport Room is the link between design, building and maintenance of assets,’ continues Yannick. ‘Our goal is to have one common language, embedded in processes and software, for all assets at airports.’

Richard Kelly is also enthusiastic about the possibilities. ‘The use of open data through our standards will bring down cost and schedules, improve quality and safety, and lessen the impact on airport operations and the public,’ he adds.

The commitment from Schiphol is providing a great impetus to the new room, with its knowledge and expertise on BIM and standardisation, and its readiness to be transparent on its own practices. ‘Open is open, and we will lead by example,’ concludes Yannick.
Construction Room to tackle contractor priorities

Ken Endo sets the scene

When the design professionals have completed their work and exported it to a federated BIM, their work is largely done. But the work of the contractor is still to come…

Some contractors are already using BIM on-site but the potential is largely unrealised. A Construction Room was launched at the Korea summit in response to requests from the industry, with a strong impetus from Kajima Corporation. A group of companies and other organisations in Korea, Japan and Switzerland have joined forces to form the core of the new room.

Ken Endo, IT project manager at Kajima who leads the Construction Room, takes questions from Betzy Dinesen, newsletter editor, on his ambitions for the new room.

BD: Can you tell me something about your company Kajima’s use of BIM?

KE: Kajima undertakes nearly 300 projects (excluding civil engineering projects) in a single year. We are focusing on spreading BIM tools across all our projects to improve productivity. That includes user training and changing the workflow of the building construction process with BIM.

One area recently arousing interest is design for manufacture and assembly (DfMA). What are the implications of it?

DfMA is an economical way of constructing buildings and a big enabler of better ways of working, making it quicker and easier to assemble on site.

Would a buildingSMART standard for DfMA (say, an MVD) help Kajima in practice?

Yes, I believe it would help us at Kajima.

How are the trades on a construction project communicating at present? Is there a role for BIM here?

BIM is changing communication on a construction project. Visual presentation can help people understand each other. The standardisation provided by bSi is not limited to the domain of software; it also covers communication and workflow, eg the Information Delivery Manual or IDM defines workflow on a BIM project.

These are what I could call ‘human matters’, so changing our approach to communication will take some time. But improvements in communication will change construction dramatically in the near future.

What is DfMA?

Design for manufacture and assembly is a methodology intended to improve design and manufacturing efficiency and so reduce costs. Long established in the automotive and consumer goods sectors, DfMA is now being recognised by the construction industry. General principles include minimising the number of parts in an assembly and standardising materials and processes. By taking part of the construction activity off-site, schedules can be shortened, quality enhanced and safety improved.

Construction Room members

Kajima, Takenaka, Graphisoft and Secom (Japan); Sungkyunkwan University, GS Electricity and Construction, Hyundai E&C and DoallTech (Korea); and LafargeHolcim (Switzerland).

Below left: Construction Room in Korea
Below: Kajima construction project
What is the single most important area where the new Construction Room can help deliver improvements?

Productivity is the most important. We have to expand the area of BIM from modelling to management. It is building information management that is needed for productivity.

With the exception of LafargeHolcim in Switzerland, Construction Room members are drawn from Korea and Japan. How do you plan to attract participants from other parts of the world?

To be honest, it is difficult to recruit people from other parts of the world, but we would welcome them. What we are chasing is not just the number of members, but the quality of activities. We have just started a local Construction Room here in the Japanese chapter. We want to show how we are using BIM, especially ‘construction BIM’ and stimulate others in different parts of the world.

How will Kajima benefit from the Construction Room?

My role at Kajima combines our use of BIM and IT in Kajima. The information we accumulate from the activities of the Construction Room will be reflected in our own R&D.

Are you planning to link up with other rooms?

I want to have strong bonds with other rooms – I say this from my heart. But first I want to deepen our activities. Then I will knock on the doors of other rooms with issues in my hand and ask them for their advice.
BuildingSMART awards

Best-in-class users recognised

The winners of the buildingSMART International Awards were announced at the autumn summit in Korea in September. Projects from the Netherlands, Singapore and Switzerland took the top three awards for design, construction and operation & maintenance.

‘The purpose of the awards is to showcase projects that use buildingSMART standards and demonstrate the benefits that are being achieved in the real world,’ says Jan Karlshøj, chair of the Nordic chapter, who coordinated the awards.

Design

In the design category, the award was made to Schiphol Airport for the KLM ICA Business Lounge. The project impressed the jury with its excellent processes, multidisciplinary models, visualisations and documentation of the benefits – pushing the boundaries of open BIM.

Despite initial scepticism, enthusiasm for open BIM grew, winning over the players who praised ‘the increase of the quality of the product’, ‘improved… 3D coordination’ and ‘better mutual understanding’. This ‘smart and fast BIM environment’ enabled a more rapid understanding of complex situations, risk limitation and more efficient processes through reuse of information. The project has had an unexpected impact on Schiphol as a whole.

Significantly, the design award was won by Schiphol at the same time as buildingSMART announced the launch of its Airport Room – an indication of the importance of open BIM to this sector.

Who won what?

Category – Design
Winner
Schiphol Airport (Asset Management Schiphol + KLM as tenant)
Project
KLM ICA Business Lounge, Schiphol Airport, Netherlands
Reasons for award
• Use of buildingSMART standards (IFC, BCF, IDM and COBie)
• Open information-sharing among a complex mix of stakeholders
• Clear documentation of benefits
• Likely knock-on effects across Schiphol

Category – Construction
Winner
Tiong Seng Contractors
Project
Tiong Seng Building, Singapore
Reasons for award
• Use of IFC and BCF to empower cross-disciplinary collaboration
• Extension of open standards to manufacture, with quantifiable time and cost savings in certain areas
• 33% reduction in construction time
• Commitment of project team to open exchange of BIM data

Category – Operation & Maintenance
Winner
BAM Swiss AG and BAM Deutschland AG (for client Felix Platter Spital)
Project
Felix Platter Hospital, Basel, Switzerland
Reasons for award
• Forward planning to transfer information collected during design and construction to FM system
• Development of interactive construction management systems to enable BIM-based FM
• Use of IFC formats, a BIM execution plan and good people management to secure commitment as the project moved through its phases
Construction

Tiong Seng Contractors is a Singaporean company with over 50 years’ experience of construction and engineering and, more recently, of developing seamless links with prefabrication. It has supported the use of collaborative BIM for some years, and took the buildingSMART international award in the construction category for the Tiong Seng Building, a mixed-use building comprising an office HQ, VDC (virtual design and construction) centre, logistics hub and dormitory for construction workers. The jury praised the collaborative working, considering it ‘a great example of how open BIM is to be implemented’.

Operation & Maintenance

The Swiss and German subsidiaries of international contractor BAM took the buildingSMART award for operation & maintenance (O&M) for the new Felix Platter Hospital in Basel, where data is being transferred to an FM system. While the two BAM companies are major players in the consortium that is building the hospital, the award is for their contribution to the future O&M of the project, thanks to open BIM based on IFC formats, flexible two-way management systems and laser scanning to create an as-built model.

Student category

The 2016 awards broke new ground by introducing a student category. ‘Our aim in creating this new category was to raise awareness among students and encourage them to look at open BIM,’ says Jan. ‘And we hope that it has provided an independent alternative to vendor prizes.’ The student award was made to Issa Ramaji from Pennsylvania State University, US, for his doctorate, ‘Automated Interpreted Information Exchange in Engineering Analysis – BIM Use’.

Honourable mentions

There were also three honourable mentions, from Korea, Norway and Poland. The Korea-based company, GS Engineering & Construction was praised for its use of BIM in risk management and safety in Lot 9 of the Suseo high-speed railway.

Norwegian architects 4B Arkitekter received an honourable mention for the use of BIM kiosks on the construction site of the Clock Building (the historic Urbygningen

A PhD study has proposed an automated interpretation mechanism called the ‘interpreted information exchange’ (IIE) – this approach builds interpreted information on top of the information extracted from the input file, then semantically transfers it to the destination, augmenting the traditional direct information exchange (DIE) by automating some of the engineering interpretations. The figure above shows the workflow of the IIE process.

Source: Issa Ramaji
Left: Suseo high-speed railway in Korea: Lot No.9 intersects with another line, the Gyeongbu high-speed railway, so that an underpass had to be constructed below the existing bridge piers – supported by pile foundations – without interrupting the Gyeongbu rail services

Below: Suseo railway showing virtual and real construction

Right and below: The refurbishment of the historic Clock Building at the Norwegian University of Life Sciences in Ås near Oslo for contracting client Statsbygg:
(1) Carpenter’s model which visualised both new and existing construction; (2) The project piloted the use of BIM kiosks, designed by Skanska and located on every floor in the building. Tradesmen of all disciplines used the kiosks extensively to understand the complex drawings, identify interdisciplinary issues and build directly from the model.

dating from 1901) at the Norwegian University of Life Sciences (NMBU) in Ås, near Oslo, during a refurbishment project. The BIM kiosks give lower-tier craftsmen on site access to information in BIM models (the contractors and consultants will already have access to the BIM). Finally, Wojciech Fleming, a Polish student at the Poznan University of Technology, was recognised for his study, ‘BIM modelling for structural analysis’.

‘I would like to thank all those around the world who took time to send us their entries,’ concludes Patrick MacLeamy, bSI chair. ‘The spread and quality of the entries show clearly the positive effect that BIM is having on the full life-cycle of building assets.’
Norway and Singapore sign MOU

Norway and Singapore have joined forces to share experience and best practice in the use of open BIM in planning and checking compliance with building codes in the construction industry.

A Memorandum of Understanding was signed in Oslo on 11 November at the HQ of the Research Council of Norway in the presence of the Norwegian King Harald V and Queen Sonja, and Singapore President Tony Tan and his wife Mary. The MOU – one of ten agreements between the two countries – was signed by director and CEO Morten Lie of the Norwegian Building Authority (DiBK) and Dr John Keung, CEO of Singapore’s Building and Construction Authority (BCA).

The agreement outlines areas of collaboration, with proposed, though not mandatory, actions. But it ‘still has an important function,’ according to Morten Lie, director, DiBK. ‘It clearly signals to the market what type of development we want, helping to push industry players in the right direction.’ Collaboration between the two countries goes back ten years, when the emphasis was on the recognition of the importance of IFC. Today the emphasis has shifted to the automation of compliance procedures in planning and building permit processes.

The Regulatory Room at bSI played a key role in getting the MOU in place. ‘We wanted to spell out the priority areas for collaboration and provide an immediate impetus,’ says Nick Nisbet, BS UKI vice chair and member of the room, who was involved in the drafting.

The MOU will provide a fillip to cooperation between the Norwegian and Singaporean authorities, and has a clause on association with other government regulatory bodies. The aim is to get authorities in other countries on board. ‘It is difficult and expensive to develop local solutions from scratch,’ says Øivind Rooth, specialist director of DiBK and co-chair of the Regulatory Room. ‘There is a need to cooperate on the development of basic technology such as standards.’

Dr John Keung, CEO of Singapore’s Building and Construction Authority (BCA) and Morten Lie, director, DiBK

MEMORANDUM
OF UNDERSTANDING
Statement of Intention

Building and Construction Authority

Government regulatory bodies within building control act/regulations

On the importance of open BIM in planning and building applications, the two countries have accumulated many years of experience in the field and are working to share the knowledge and best practices in this field. They have agreed to collaborate on the development of basic technology such as standards and to promote the use of BIM in planning and construction projects.

Back to Welcome
Changes in room leadership

The Korea summit provided the opportunity to welcome new leaders to two of our rooms and to thank the outgoing leaders.

In the Infrastructure Room, Christophe Castaing takes on the role of chair, with Tiina Perttula serving as project coordinator and Laura Mol as room administrator. Henk Schaap has stepped down as project coordinator after five years, during which the first buildingSMART infrastructure standards were fast-tracked to completion.

Ricardo Bittini Miret, head of Innovation at Ferrovial Agroman – the Spanish multinational specialising in transport infrastructure and new bSI member – now leads the Building Room. Jan Karlshøj continues to support the room in the capacity of technical leadership.

The new Airport Room is led by Alex Worp, Yannick Vos and Rob Roef, while the new Construction Room is led by Kazumi Yajima and Ken Endo. The leadership of the other three rooms remains unchanged, with Roger Grant at the helm of the Product Room, Inhan Kim and Øivind Rooth at the Regulatory Room and Leif Granholm at the Technical Room.

New SPECs endorsed by buildingSMART

A new approach to knowledge-sharing was introduced in Korea with the launch of buildingSMART specifications – known as SPECs. Specifications were accepted and published in two areas: IFC Rail and IFC Road.

The aim of these publicly available specifications is to allow IFC development to be shared immediately within the buildingSMART community. Valuable work is being done in individual countries that will provide input into our full international standards.

The Korea Institute for Construction Technology developed a specification for IFC Roads and during the summer submitted it for approval as a bSI SPEC. At the same time, the China Railway BIM Alliance submitted content for an IFC Rail SPEC.

A formal process for the acceptance of the new SPECs has been created: the proposer sends its proposal to the Standards Committee Executive (SCE), who notifies the rooms and working groups to ensure that the SPEC is relevant and explores any issues arising. The proposer is given the go-ahead to prepare a draft in English, which the SCE evaluates and publishes if it meets the requirements.

‘This gives organisations that have produced a significant body of work the opportunity to share it with the wider community,’ says Richard Kelly, operations director. ‘And recipients can be confident that the work has credibility due to our endorsement.’ The publication of the first two buildingSMART SPECs is expected to encourage other organisations to take part in the Infrastructure Room projects to develop international open standards for IFC Road, Rail and Bridge.

The first two SPECs are available at http://buildingsmart.org/standards/standards-library-tools-services/
Spanish multinational joins buildingSMART

The user strengths of buildingSMART have been increased by the decision of Ferrovial Agroman to join bSI as a standard member.

Ferrovial is a global Spanish company, active in construction, infrastructure and asset management. Ferrovial Agroman is the construction arm of the group. ‘BuildingSMART is not only a perfect mirror of Ferrovial Agroman’s geographical diversity with its chapter structure, it also covers our broad range of project types through the different rooms,’ says Teodoro Alvarez-Fadón, global head of Innovation.

With its interests in construction, roads and airport management, Ferrovial Agroman’s activities dovetail exceptionally well with bSI’s priorities. Ricardo Bittini Miret, head of Innovation (Area 2), is already getting involved as he takes over the role of Building Room leader. ‘Ferrovial Agroman has much to contribute, through its geographical reach, wide interests and management expertise,’ says Richard Kelly, operations director.

German chapter celebrates 20 years

BuildingSMART was founded in the mid-1990s, and the earlier chapters are now entering their third decade. In October the German-Speaking chapter celebrated its 20th anniversary at its autumn forum and AGM. The chapter ran eight parallel workshops, allowing the chapter’s 120 members to discuss the impact of the digital revolution – and next steps – in their own fields. In his address, Patrick MacLeamy, bSI chair, praised the leadership of the chapter, which he described as a powerhouse of buildingSMART. ‘We are excited about the prospects here in Germany,’ he said.

Membership of the chapter has increased with the shift in emphasis towards user and process activities, and the chapter is a founding member of Planen-bauen 4.0, a national alliance which promotes digitisation of the industry.

In the evening of the 18 October, guests and members assembled for a celebratory dinner, with good music, wine and the chance to network. ‘Our standards have given us the tools to transform the industry,’ says Rasso Steinmann, chapter chairman. ‘Now our user emphasis is leading us to revitalise our working groups, reach out to the regions and raise public awareness of open BIM.’

Below left: Audience
Below right: German chapter celebrates 20 years in the 40 Second Club, overlooking the Potsdamer Platz
Individual qualification – coming closer

The progress of buildingSMART professional certification was welcomed at Korea, receiving endorsement from the Board, the SAC and the summit as a whole. After much hard work – and a small market survey in the summer showing great interest for the concept – professional certification is nearing the point of launch. The structure of the program is based on a method developed by the Norwegian chapter.

Professional certification is expected to produce an income stream by 2018, benefiting both bSI and the chapters. Mark Baldwin, who is coordinating individual qualification, presented preliminary financial forecasts. ‘We have had positive feedback to the program proposal,’ says Mark. ‘Now we are busy developing the content and technical infrastructure to roll out the program to local chapters.’

Chapters will be able to adopt the program in early 2017, with the first approved training expected to be delivered by mid-year.

Funding for IFC Bridge

Progress on IFC Bridge was given a boost at the Korea summit with the signing of an MOU between bSI and five other parties. Partnering bSI are French national project MINnD, national transport authorities Trafikverket (Sweden) and Liikennevirasto (Finland), the Germany Federal Ministry of Transport and Digital Infrastructure, BMVI, and buildingSMART Japan. The partners are supplying funding and in-kind resources, totalling €180,000.

Have you got two minutes?

A short video explaining how the BIM Collaboration Format (BCF) works in practice has been posted on the bSI website. The two-minute film explains how BCF is used in design coordination. A swift example shows how the use of open BIM is replacing the old cumbersome and error-prone ways of working – keeping a project on track. BCF is an accredited buildingSMART standard.

View the film:
http://buildingsmart.org/bim-collaboration-format-explained/
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