



The new business model for design, construction and FM

Conference attracts big international audience

The BuildingSMART conference brought together speakers and delegates from Europe, Asia and the US to explore the many aspects of its theme: the new business model for design, construction and FM. Held at RIBA, London, on 18 April 2007, the event highlighted impressive progress in some parts of the world, more tentative steps in others.

Developments in the US, the Nordic countries and Singapore continue to impress as the use of the Building Information Model or BIM (usually IFC-based) gains ground. In the US, major construction clients and properties agencies – the US Coast Guard, the GSA (General Services Administration), the US Army Corps of Engineers, the Smithsonian and NASA among them – are all using, or planning to use, BIM for their construction programmes and management.

Norwegian property agency Statsbygg is a strong supporter of the BIM: it aims to 'significantly reduce construction and operating costs through use of BIM based on open, international standards (IFC)', according to Diderik Haug, senior engineer at Statsbygg.

Bucking the trend of slower adoption of BIM in Britain, Skanska UK offered a case study of a PFI project for Bart's and the London Hospitals. Together with project architect HOK, they developed key processes and protocols which can be taken forward to future projects. Nicholas Pollard from Skanska UK highlighted the many benefits that a BIM provides, with an enthusiasm shared by other speakers with first-hand experience.

BIM, it was agreed, offers a raft of benefits: speedy optioneering, visualisation to explain the project to clients, clash detection, testing the acoustics, designing for optimum performance. Other disciplines can also draw on the BIM, so that cost consultants, manufacturers and operators can all use the centralised information and design point without the need for rekeying.

With 200 participants, the conference provided a valuable opportunity for networking, and the refreshment breaks were more like a hive of industry than a time to chill out. The breakout sessions – on design integration, product procurement, standards and life-cycle management, business re-engineering, and contracts and insurance – gave further opportunity for interactive discussion.

'This was a highly successful event,' says Nick Terry, chairman, BuildingSMART UK, and chairman, BDP South. 'Interoperability is a major driver for companies performing well financially, and we were able to see the impact it is having all around the world.'



Forthcoming event

The IAI/CITE Summer Event in London on 21 June 2007 takes as its theme 'building smart for a sustainable future'. It will include presentations from members of the EU STAND-INN project and new developments in sustainability and modelling will be covered. Members of CITE will explain progress in eTendering Standards and other activities of the past year.

Contact: Beryl Garcka (beryl.garcka@b-r-t.co.uk)



Conference attracts big audience

- new business model taking off
 - US, Nordic countries and Singapore show strong lead
 - increasing support for BIMs
- see www.buildingsmart.org.uk for conference materials

Diary dates 2007

21 June *AGM and Summer Event BuildingSMART for a Sustainable Future: STAND-INN**, London

12–13 July *IAI International Technical Meetings, Brazil*

10 October *Board meeting, London*

12–16 November *IAI International Meetings, Brisbane*

* Standards for Innovation in Construction and FM

NEW MEMBER

Since the last newsletter, ActivePlan Solutions has joined. Welcome!

Summer Event ... at a glance

- IAI and CITE Summer Event and AGMs on 21 June 2007
- latest technical and process developments across Europe

BuildingSMART in action

Standard Building Evaluation Method

In 2006 the BuildingSMART/BSRIA Building Services Network developed an interface between British Building Regulations Part L and the Building Information Model (BIM). This interface, known as ifcSBEM (with SBEM standing for Standard Building Evaluation Method), went through a successful demonstration and was well received. The next step is practical application, and BuildingSMART UK is planning to work with a leading architectural practice in London to apply the tool to a major building project.

Contact: *Nick Nisbet (nn@aec3.com)*

Products and IFCs

The EU SWOP programme is exploiting the semantic web to create accessible product catalogues, allowing products to be selected via the web using software 'language'.* The project focuses on catalogues of HVAC components, using real-world examples such as diffuser terminals (and other ventilating components). Once fully developed, the platform would allow the customer to put together the optimum system to meet project requirements, with components chosen from different catalogues. The project completes in 2008.

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* *SWOP is an acronym for Semantic Web-based Open engineering Platform. The semantic web is an evolving extension of the world wide web in which web content can be expressed not only in natural language but also in a form that can be understood, interpreted and used by software agents.*

Sydney Opera House BIM – a template for innovation

Sydney Opera House – Australia's most famous landmark – has taken centre stage in producing world-class research for the facilities management (FM) industry.

The research project, known as the Sydney Opera House FM Exemplar Project, has not only helped protect Australia's most iconic building but has also contributed to the body of FM industry knowledge. It was initiated by the Australian Government's FM Action Agenda, as part of a strategic framework for managing the built environment.

The research uses IFC open standards to integrate FM data from a range of software systems into a partial Building Information Model (BIM) of the Sydney Opera House.

'The ability to import and share information from various data sources by means of open software standards has the potential to revolutionise the FM industry,' says Peter Scuderi, education and training co-ordinator, BuildingSMART Australasian Chapter, and acting CEO of the Cooperative Research Centre for Construction Innovation.

And now the FM Exemplar Project has received several industry accolades. In May it received the Facility Management Association of Australia's Rider Hunt Terotech Industry Achievement Award for facility management strategy and practice.

The BIM component of the research also featured in two recent international awards. The first of these was the Jury's Choice category of the American Institute of Architects (AIA) Technology in Architectural Practice 2007 BIM awards. The second was the Bentley Awards for Excellence 2007 award for BIM in multiple disciplines, won by Arup for their 'review and study of the Opera Theatre Interior and new works'.

'Our research has demonstrated that a digital model of a section of the Sydney Opera House which provides a three-dimensional representation of the building and the relationship of objects can also integrate FM functions like condition reporting, energy consumption and room bookings,' concludes Peter Scuderi.

Contact: *Peter Scuderi (p.scuderi@construction-innovation.info)*

SBEM ... at a glance

- interface between BIM and Building Regulations
- plans for pilot being explored

SWOP ... at a glance

- EU project on product catalogues
- web platform being developed

Sydney Opera House ... at a glance

- research project shows how BIM can be used for FM
- BIM wins multiple awards
- IFC standards crucial to Opera House BIM



Certification

IAI certifies 14 software applications for IFC2x3 support



Software vendors with IFC2x3-compliant products can apply for certification from IAI/BuildingSMART. This is a two-step process of independent testing to help vendors to implement high-quality IFC-interfaces, and products that perform satisfactorily will be awarded a certificate to attach to their products.

IAI has certified ten software systems as fulfilling the second step of the Industry Foundation Classes (IFC) 2x3. Three additional software systems have passed the first step certification, and one has received initial second step certification.

A certification meeting was hosted by Tekla Corporation in Espoo, Finland, at the end of May. The meeting continued testing the software supporting the IFC2x3 format for design co-ordination, with a happy outcome for the software vendors. Products from Archimen, Autodesk, Bentley, DDS, Nemetschek, Tekla and Solibri all reconfirmed and received second step certification.

‘These software systems have demonstrated continuous improvements in their IFC implementations and have resolved the outstanding issues from the last certification meeting in the US in March,’ says Dr Thomas Liebich, consultant and chairman of the IAI Model Support Group. Other products passed their first step certification.

IFC certification is based on a facilitated self-certification process and the participating companies are committed to further improve their software. In addition, the meeting in Finland agreed on how to develop IFC-based workflow in the construction industry. IFC certification advances building information modelling (BIM) by enhancing the standardisation of information flow between software systems used in the industry.

Successful certification

The following products passed their second step certification in May 2007:

Active3D (Archimen Group)
AutoCAD Architecture & Revit Architecture (Autodesk), Bentley Architecture (Bentley), DDS-CAD Building Services (DDS), Nemetschek Allplan & Graphisoft ArchiCAD (Nemetschek Group), Tekla Structures (Tekla), Solibri Model Checker (Solibri)

For more information, visit:

<http://www.iai.fhm.edu/how-to-implement-ifc/certification>

STAND-INN starts to deliver

There is good progress on STAND-INN, a two-year EU project to promote innovation, sustainability and the adoption of standards. An analysis of how IFC supports sustainability is now in draft. This guidance report emphasises the diversity and flexibility of the IFC standard. When finalised, it will be publicly available as one of the project deliverables.

‘People outside BuildingSMART are often unaware of the sheer scope of the IFC model,’ explains Jeffrey Wix, joint author of the draft report. ‘The model has several forms: the 3D or geometry model, the cost model representing how much a building will cost at a single point or over the life-cycle, the 4D model uniting time (for planning) and geometry, the Building Information Model and the nD model, an alternative to BIM that considers that information has many dimensions.’

And at a time when sustainability is rising up the agenda, IFC has a major part to play in supporting service life planning.

BuildingSMART is also involved in communicating the work of the STAND-INN project. An ongoing series of newsletters has been well received, with case studies of sustainable housing and the BuildingSMART Summer Event in London features presentations by STAND-INN project members.

For more information, please contact Christopher Groome (chris.groome@b-r-t.co.uk) or Nick Nisbet (nn@aec3.com).

Certification ... at a glance

- increasing uptake from vendors
- 14 applications certified
- future prospects for BIM

In brief

Closer links with Open Geospatial Consortium (OGC)

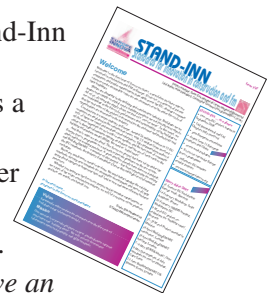
The IAI International Council is exploring how the relationship with OGC might be strengthened through a formal alliance, where IAI would be able to take advantage of their web-based system for user-defined issues and solutions

STAND-INN ... at a glance

- two-year EU project
- pan-European consortium drawn from 11 countries
- BuildingSMART involved through IAI International and individual chapters
- report on IFC support for sustainability now in draft

The Stand-Inn project produces a regular newsletter to chart progress.

To receive an electronic copy, please email [Beryl Garcka](mailto:beryl.garcka@b-r-t.co.uk) (beryl.garcka@b-r-t.co.uk)



Case study: IFCs in practice

Beijing Olympics stadium

The project

The National Stadium will be the main stadium for the 2008 Olympic Games in Beijing.

The brief emphasised the importance both of a landmark building and legacy uses. This £280 million (€410 million) project has a capacity of 91,000 people and has been nicknamed the Bird's Nest because of the web of twisting steel structures that form the steel cover. Construction began in late 2003 but was halted during July–December 2004 to allow design changes that would save money. The project is due for completion in 2008. It is intended to embody the spirit of a green Olympics coupled with technological excellence.

Innovation

Despite the massive construction programmes across China, there is no uniform standard for data exchange – which prompted the Chinese to set up their own Chapter of BuildingSMART/IAI.

For the National Stadium, an IFC-based 4D construction model was established. The model derives from the IFC object model. Around 120 IFC entities have been created and converted to the 'objects' classes of the project's design system. A fourth dimension, time, was developed for the purposes of construction management. This tool, known as 4D-GCPSU 2006, enables the dynamic management of the construction schedule, resources and site layout, at the same time providing a visual simulation as work on the stadium progresses. Other activities include the development of an IFC parser to convert and store files.

Sustainability

The IFC-based systems developed for the National Stadium have application for other engineering projects, especially for the whole-life management, thereby promoting sustainable building practices. Engineering projects and construction management in China stand to benefit from the pioneering work done here.

Lessons for the future

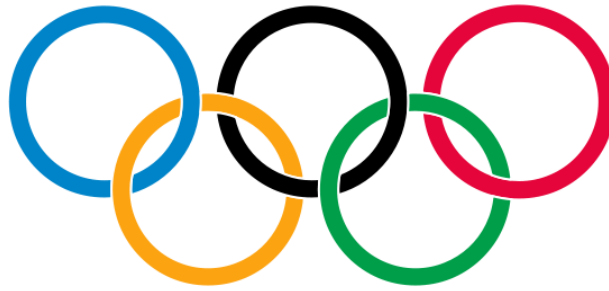
The Beijing experience highlights the advantages of IFC. Participants on the stadium project believe that the IFC standard should be enriched to meet the many and various requirements of AEC. More countries, they say, would benefit from BuildingSMART membership.

Main project participants

Beijing Urban Construction Group (project management); Herzog & De Meuron Architekten, Arup Sport and China Architecture, Design and Research Group (design); Arup (structural and other engineering).

Newsflash

China has just accepted IFC-based standard ISO/PAS 16739:2005 as from 1 November 2007. 'We would like to thank IAI International for their help,' says Li Chushu, BuildingSMART, China.



The Beijing National Stadium ... at a glance

- landmark building for the 2008 Games
- multi-use venue will be used for football, concerts, etc after 2008, with seating reduced to 80,000
- a complex structure: concrete stand and open steel cover with 48 main trusses and over 1,000 substructures
- IFC model created to enable data exchange
- IFC construction management tool assists and illustrates progress

More about the stadium

The stadium will host the opening and closing ceremonies, as well as the track and field events. The innovative structure was designed by the Swiss-based architects, Herzog & De Meuron, who secured the commission after a world-wide competition. Arup is providing a multidisciplinary service to the project, covering sports architecture, structural, mechanical, electrical, and public health engineering; acoustics and fire strategy and sports lighting.

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