



Case study

David Hockney Building, Bradford College

Background

Bradford College is one of Britain's largest further education colleges, located in Bradford in West Yorkshire, with around 25,000 students. Until recently it was housed in buildings dating from the 1970s, which were ugly, over-large and expensive to run because they were thermally inefficient. Replacement premises were needed, not least to reflect new approaches to teaching. The building is named after David Hockney, the influential British painter who studied at the college in the 1950s.

Designed to evoke the textile mills and warehouses of Bradford's past, the six-storey building replaces three existing teaching blocks and opened in September 2014.

The project

With good experience of the educational sector and a reputation for design and delivery, Bond Bryan Architects won the opportunity to design the David Hockney Building at Bradford College. Bond Bryan created a model at the outset, initially creating a site context model which was used to develop massing strategies and early design concepts. The project was started in 2010, before the UK government BIM programme was announced, so the modelling was originally done in isolation. This changed with the involvement of BAM Construction who had seen the benefits of using BIM on their previous BIM project for Leeds Arena. Bond Bryan had worked with BAM Construction on a number of projects, and the Bradford College project represented an opportunity to explore the issues surrounding IFC exchange. It aimed to use the model wherever possible and IFC was to play a part in a wider BIM approach.

The Bradford College model was initially exchanged with the contractor with an out-of-the-box translator, when problems with file exchange emerged. The main issues were model location, geometry and colour exchange. How could they be resolved?

Research

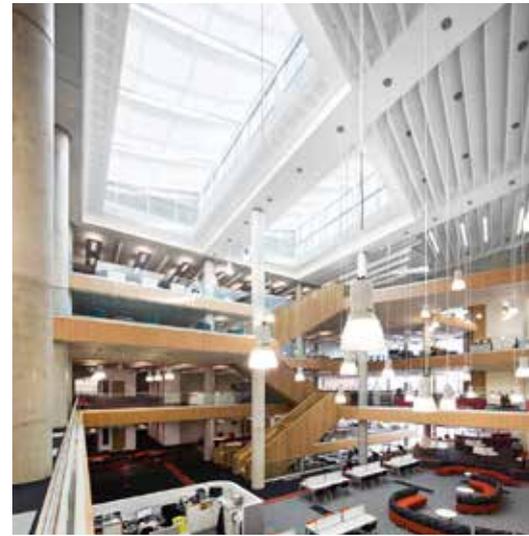
Bond Bryan decided that investing time and money in testing and research was essential in order to establish whether the issues could be resolved or whether they would have to change authoring platforms, which would have a significant cost impact on the business. However, they believed that IFC was a method that could deliver the requirements of the main contractor, consultants and client.

So they created test files from their authoring platform, exporting them with different settings and using a variety of proprietary solutions and IFC-compatible software to test the file exchange. The tests allowed the company to optimise the export process and identify solutions on the import side. They also identified issues in the method whereby models were being constructed.

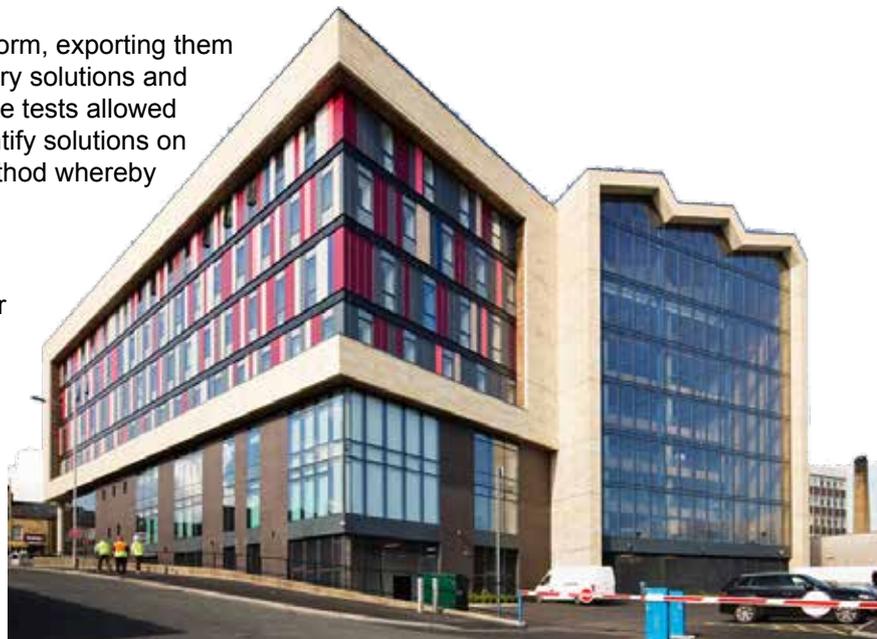
Software improvements

Not all issues could be resolved directly by the author or the receiver. Bond Bryan passed on their findings to BAM Construction who in turn liaised with their software provider to develop solutions. This led to major improvements in subsequent versions of the software, which would in turn benefit all IFC users.

As part of their drive to improve exchange, Bond Bryan also pushed their own software vendor for further improvements to the software. The lessons learnt from the Bradford College project have led



Top: Main entrance to the college; above: central media space; below: view from Randall Well Street



to improvements in the last two releases, including improvements to geometry, colour and data exchange.

Model for sequencing

Following on from the model testing, Bond Bryan were asked to produce a model to demonstrate the sequencing of the building construction. They discussed the data requirements with the main contractor, building the model accordingly and then exchanging the files. The IFC file exchange was successful in providing BAM Construction with the required data requirements and allowing them to produce a 4D model. The building was completed two weeks early, despite delays due to bad weather, thanks to the efforts of the contractor. IFC played its part in providing data that could support the analysis of the sequencing and therefore give a greater understanding of progress.

Bond Bryan approach to BIM

Bond Bryan believe that BIM, including open file exchange, should be fully embedded into project work over time and understood by their teams. A central BIM team have put in place standard methodologies, together with translators, that allow optimum exchange. Users are trained and supported by the central BIM team across all offices.

Benefits of open technology

- The main contractor was able to utilise the exported IFC data for spaces to produce quantity data at an early stage giving them cost certainty, particularly around room finishes. This certainty allowed the costs to be understood thoroughly and it meant that high-quality finishes could be retained within the final building.
- The collaboration between architect and main contractor on IFC file exchange contributed to the development of a model that could be used in the field. Providing the model to BAM Construction allowed them to continue their own personal progress, as they were able to explore further uses and benefits.

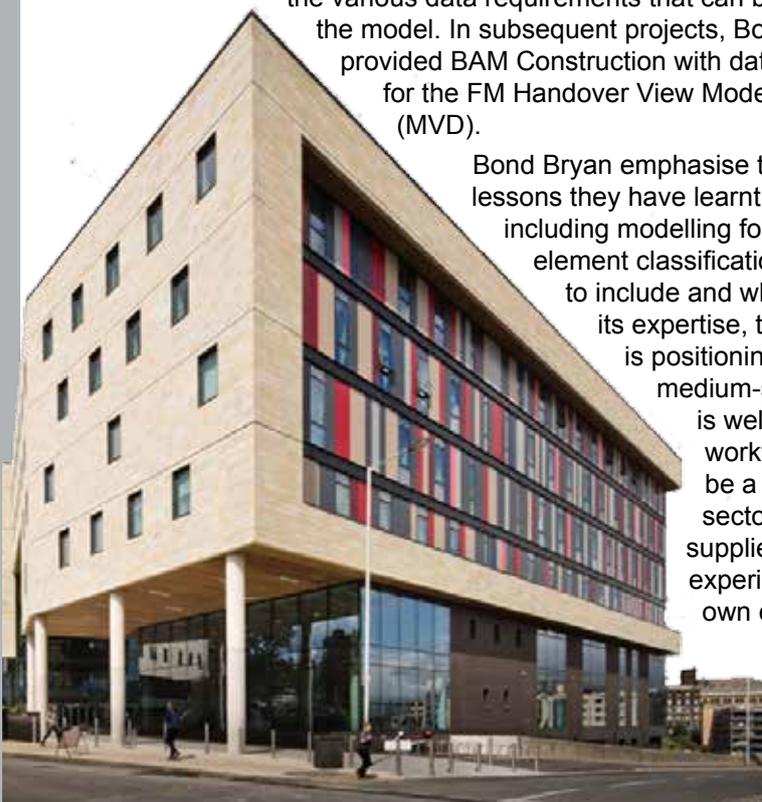
Going forward

From 2016, the UK government will require suppliers on all public sector projects to work collaboratively, at what is known as Level 2. The Bradford College project allowed both Bond Bryan and BAM Construction to learn more about what IFC file exchange entails – part of a continuing process whereby the two companies, who work together regularly, are exploring the various data requirements that can be extracted from the model. In subsequent projects, Bond Bryan have provided BAM Construction with data for costing and for the FM Handover View Model View Definition (MVD).

Bond Bryan emphasise the many detailed lessons they have learnt from the project, including modelling for IFC exchange, element classification and what data to include and when. Building its expertise, the company is positioning itself as a medium-sized practice that is well versed in open workflows. This will be a benefit to public sector projects seeking suppliers with BIM experience and to their own competitive future.



Clockwise from top: Michelle Sutton lecture theatre; eating zone; meeting point; main entrance from Great Horton Road



Heroes of Interoperability

This project gained a special mention for its IFC exchanges in the 2014 Business Gain through Open Technology awards.



Acknowledgments

Thanks are made to Rob Jackson, Bond Bryan for the content of this case study.

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