

JBIM

Fall 2008

Journal of Building Information Modeling
An official publication of the National BIM Standard (NBIMS) and the National
Institute of Building Sciences (NIBS)

buildingSMARTalliance™

The BIM Balancing Act: Tilt the Scales in Your Favor

Towards Interoperable Building Product Content

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THE VISION OF BIM as the future global standard for all design, construction and operations critically relies on an ability to electronically extract relevant information from one or more core design models (architectural, structural, MEP, etc) to perform useful analyses and other lifecycle workflow activities. In order to realize that vision the objects with which the core design models have been created need to provide sufficient data about their attributes to power these activities. Currently, there isn't enough readily available BIM-enabled building products content to meet this need. And as the universe of BIM-related tools continues to increase in number and sophistication, the need for intelligent objects of building products will grow exponentially.

Recent McGraw-Hill Construction research with architects that are highly experienced using BIM indicates a preference to initially construct a BIM using generic components as place holders for the building products. BIM software vendors are trying to address this need by providing object libraries of generic building components and products in their software.

These generics typically carry enough information to serve as a graphical place holder in a building model, but not enough data to represent specific products available from particular building product manufacturers (BPMs). In fact some generics analyzed by McGraw-Hill Construction don't represent any product commercially available. Also, they don't easily convert to represent actual products

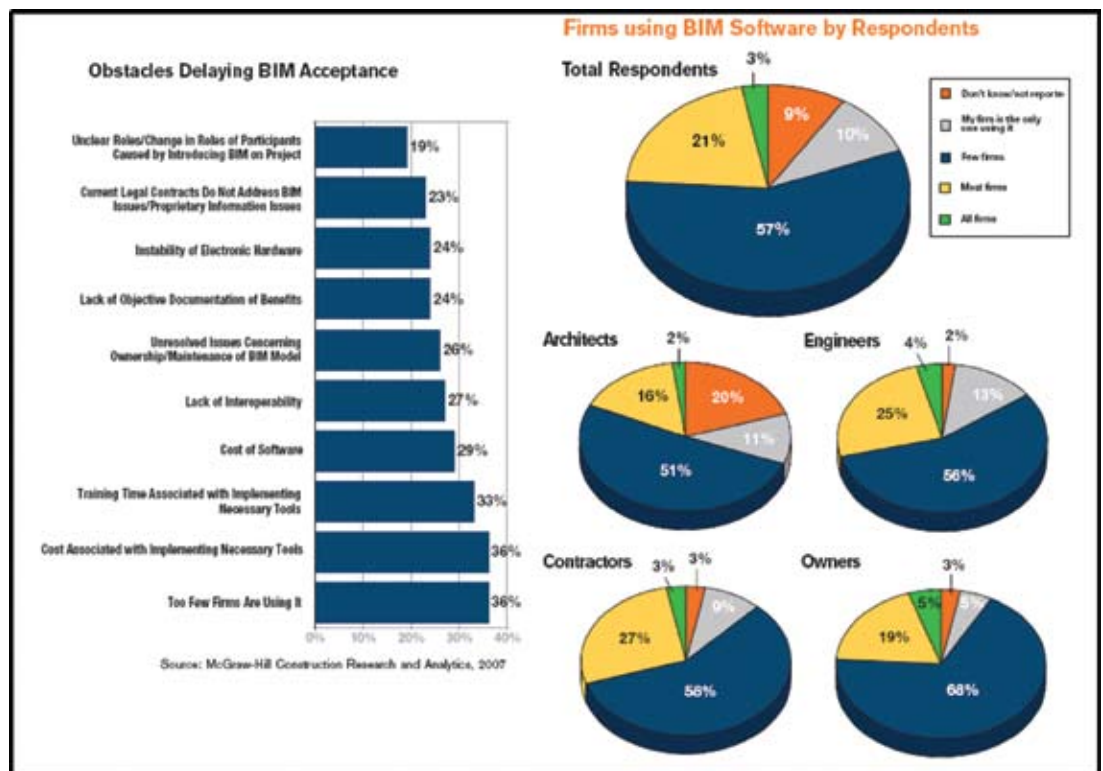
that meet the need of the project. So there is still a gap in the ideally seamless process from design, through the marketplace and into installation and operation. There is a growing need for proprietary (product-specific) BIM content for building products.

Of the approximately 60,000 BPMs in the US, only a small number have created proprietary BIM objects, which are typically distributed through their web sites and a few public, free building product content distribution sites. One challenge these manufacturers face is anticipating the pace of BIM adoption; they can't justify reducing their spending on traditional content in order to pay for creation of new kinds of content. So BIM content is a completely incremental cost for them. As a result many BPMs are expressing reluctance to invest until adoption increases.

McGraw-Hill's Smart Market Report on Interoperability published in November 2007 measured the then-current adoption of BIM and the obstacles delaying its acceptance.

But we strongly believe that is a temporary obstacle. The Smart Market Report on Interoperability also forecasted a tipping point for BIM adoption in 2008. A few innovative BPMs are investing now to be industry leaders, and as adoption inevitably and quickly spreads, more BPMs will be willing to invest, if for no other reason than to match their competitors' BIM offerings.

To fill the void in the interim, some subscription sites featuring privately-built content and a variety of peer-sharing sources are becoming available online with both generic and proprietary objects, but the reported quality varies widely. In McGraw-Hill Construction's research, a majority of the respondents expressed a



Source: McGraw-Hill Construction and AIA Large Firm Roundtable, 2008.

preference to build their own content, many having experienced serious problems created by content from un-vetted external sources.

But importantly, McGraw-Hill Construction research also indicates that if a reliable and comprehensive source of building product objects was available, a large number of respondents would be comfortable accessing them through such a source.

Many BPMs are also concerned about the apparent lack of a globally accepted standard for creating BIM content; they don't want to have to make multiple investments. This is certainly a more complex challenge.

But the manufacturing sector has successfully met this challenge with initiatives starting in the mid-late 1980s. According to a veteran of the manufacturing content space, David Bandi, currently Director of Business Development for Content Search Solutions at Autodesk, "While manufacturers refer to this change as Design-for-Manufacture, and the AEC sector references Integrated Project Delivery and BIM, the concepts are similar; how to leverage modeling technology to improve 'buildability' earlier in the design phase and bring efficiency to the full design, source, build and service continuum. This can only be realized with a depth of data that is specific to each product (non-generic), accurate and multi-faceted. Much of that was achieved through data and performance standards which eventually were globally adopted. It certainly wasn't done overnight."

than that. By examining the exchanges already defined we can predict some uses such as automated code checking. To support exchanges the content, or BPM products, must be defined in common terms. OmniClass and IFD provide a framework for doing so.

The Construction Specifications Institute (CSI) is leading the way by bringing together public and private entities on its OmniClass Development Committee. CSI states that OmniClass is "a standard for organizing all construction information". Some OmniClass tables are mature and well known since they are adoptions of existing standards such as MasterFormat and UniFormat. But other tables key to defining BPM products, namely table 23 (Products) and table 49 (Properties), are new to the industry, and are still in "Draft" status, requiring broad participation in their development.

How do we participate? We can drive standards from both ends. That is by definition and by implementation. Definition comes early in the process where requirements and perspectives are shared and harmonized. But only through implementation do we learn whether or not the standards we are creating are on target. Feedback from implementations into the standards is critical for our success.

EXAMPLE OF THIS APPROACH

Autodesk, McGraw-Hill and others recently participated in the launch of Autodesk Seek, a web service that allows designers to search and find generic or manufacturer-specific

with OmniClass Products, which is in "Draft" status. MasterFormat organizes products by work results and consequently a product may legitimately be categorized many ways. With OmniClass Products, a product must belong to a single category. As McGraw-Hill applied OmniClass Products to its Sweets content, errors were identified within the table that broke this rule. This new standard is still in development and McGraw-Hill actively participates on its development committee. But simultaneously, McGraw-Hill is trying to drive its adoption by using it with its partners in its services. In fact, this initiative leveraging OmniClass Tables 23 and 49 was one of the first attempts to commercially apply what has heretofore been a largely academic exercise. McGraw-Hill is feeding its work to the CSI to apply to the IFD (International Framework Dictionary) an important element of global taxonomy for the building industry.

CONCLUSION

On May 10th, 1869 two locomotives faced each other at Promontory Summit, Utah, celebrating the first transcontinental railroad. Different companies, with different teams and techniques, had successfully worked the same problem from different angles. (Never mind they were celebrating an incomplete solution. It would be 3 years before a railroad bridge was built over the Missouri River, truly completing the effort.)

We in the BIM community, perhaps not by design, are taking a similar approach. On one side we are moving forward with what we know today. Applications and tools already in the marketplace are being extended and modified with BIM in mind. Companies are forming alliances around common goals, improving interoperability between their products and improving the productivity of their customers. Simultaneously, via the buildingSMART Alliance, we are coordinating our efforts and driving standards. We are improving and continuing to define those standards by using them right now and providing feedback.

BIM is big, has many players and will be evolving for years, probably forever. Companies are laying rails by placing solutions in the marketplace today. But only through participation and communication around standards can we insure that the rails will line up when we're done.

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	Always	Frequently	Sometimes	Rarely	Never
Make them ourselves	26	82	17	0	1
From free online object libraries or user group sites	2	41	39	37	7
From manufacturers' websites	0	21	48	40	17
Internally Managed Outsourcing	1	14	38	37	36
From a paid subscription service	1	3	12	29	79

Source: McGraw-Hill Construction Research & Analytics, 2007.

APPROACH TO A SOLUTION

In the two previous issues of JBIM, BIM is often referred to as a container for data or an information repository—that is, emphasis is placed on the content of the model. Historically, in content management systems, the content was not often stored for delivery to multiple channels. The content was aggregated and stored with a single purpose in mind—perhaps a catalog, installation instructions or warranty information.

Information in a BIM needs to be more agile

building products and associated design content. Content delivered via this web service is organized according to OmniClass table 23, Products. McGraw-Hill has integrated its entire Sweets database of building products content (2D, 3D and BIM) with Autodesk Seek and developed a set of design selection attributes for each of the products. These attributes were developed by McGraw-Hill in conjunction with OmniClass Table 49, Properties.

Although McGraw-Hill has a long history with MasterFormat, this was its initial effort