Driving Toward an Integrated Solution

BY LUKE FAULKNER

Analyzing the obstacles that an industry must address to implement BIM.

THE A/E/C WORLD CONTINUES TO PROMOTE BUILDING INFORMATION MODELING (BIM) AS A REALISTIC CONTRACTING AND CONSTRUCTION METHODOLOGY FOR THE NEAR FUTURE AND BEYOND. But those tasked with standardizing the BIM process find themselves facing some very intimidating questions. Primary among them: What are the major obstacles that must be addressed and overcome so that BIM may be more readily deployed? The most common response includes a combination of technical and relationship issues, all of which will have to be addressed in order to promote a wider implementation of BIM.

Issue 1: There isn't a BIM-specific standard contract form.

For many, a standardized BIM contract is the most important facet of BIM implementation. A standardized BIM form is recognized by many as the most logical starting point in the integration of BIM as a standard contracting method. The need for a standardized agreement has the attention of several organizations, each of whom are making progress toward the development of agreements.

For example, AISC has published appendix A to the Code of Standard Practice, allowing a model to govern a project; AGC has produced AGC XML for project document exchange as well as the Contractors Guide to BIM, and continues to progress with contract agreements (some companies are even creating their own BIM agreements); and AIA has produced an exhibit to their standard contract form allowing for the use of direct digital exchange in projects. Meanwhile, the AIA California Council has developed its own guide to integrated project delivery.

To some extent, though, the industry is still struggling to get its hands around what BIM really is and what its contractual implications are. Is BIM a completely different way of contracting, wherein all the project stakeholders collaborate and give input, with the lines of design and construction methods slightly blurred? Or is BIM really a technological tool to help do the same thing we have been doing for decades? That is, is a 3D model simply a newer version of the shop drawing that allows for more complex comparisons among disciplines?

Issue 2: Legal help is needed to write BIM contracts.

To sort out these questions the A/E/C industry will have to enlist the help of construction lawyers. While not contributing to a project in the traditional sense (designing or building), the importance of the legal community should not be overlooked or overstated when discussing BIM. In fact, the American College of Construction Lawyers (ACCL) co-sponsored (with AISC) this year's eConstruction Roundtable—a positive step in the relationship between the construction industry and the legal community.

Besides fending off a constant barrage of lawyer jokes, construction attorneys are tasked with a unique challenge: bridging the gap between legal and technical knowledge required to create agreements that sufficiently cover both areas. There is no easy way to do this; construction lawyers will point out that many of the contracts used are based on forms thirty years old. And these forms are written around case law based on decisions 100 years old. While there is a great body of legal knowledge regarding traditional delivery methods, the case history for BIM is almost nonexistent and will have to be built nearly from scratch.

In addition to building a body of BIM-relevant legal knowledge, construction attorneys will have to assess what level of technical knowledge is needed to write a BIM contract. A usable agreement probably can't be created without significant input from the legal community, but is it necessary for the legal community to understand all the ins and outs of the various software packages that may be encountered during the design and construction of a building? Might it only be necessary to have an understanding of the process known as BIM? It might be reasoned that software and technology evolve at such a quick pace that standard contract forms may be woefully outdated by the time they are made public. This would indicate that even with a passing technical knowledge, construction lawyers can make a useful contribution to BIM development.

Issue 3: BIM contracts are still difficult to insure.

Contracting parties are not the only ones affected by a lack of standard agreements. Contract insurers and sureties need more certainty and an accurate gauge of their exposure when writing insurance policies and bonds. Generally, they feel that this comes in the form of standard agreements and historical data. While they are very positive about BIM, there are currently too many unknowns for them to write BIM policies.

Further clouding the issue, the most common place to see BIM in use is on design-build projects. These projects are generally known to significantly reduce the gross number of claims on a project. However, claims that are paid out tend to be three to four times higher that of the average construction claim.

As excited as the A/E/C community has become over BIM, it is still a somewhat intimidating process to the insurance industry. Called a "black hole" at the eConstruction Roundtable, the insurance industry feels that the BIM process blurs the design responsibility lines, which is an additional added risk for an industry that likes to know exactly what its exposure is and where it is coming from. Make no mistake: The insurance industry is going to eventually write BIM policies, but only as they become comfortable doing it, and it's the responsibility of the A/E/C industry to engage the insurers and help them get the information that is needed to write these policies.

Issue 4: The lack of a BIM umbrella group has left BIM without a rudder.

There are many well-intentioned groups that are busy trying

to get their hands around BIM. Some are professional organizations, some are trade groups, and some are conglomerate groups. Most have slightly different missions and slightly different membership, and almost all have some cross-pollination with other groups. Of course, each of these groups has its own interests and agenda to pursue. This is not a bad thing, per se; it allows groups to examine what their particular BIM strategy is and forces an evaluation of their place in the industry. What it doesn't do, though, is foster an environment that includes all the parties needed to advance the use of BIM.

Any large-scale increase in BIM usage is going to be dependent on the industry's ability to unite and bring in all those that have in interest in it. To reach that end, the industry desperately needs one large umbrella group that can oversee the large-scale deployment of BIM and regulate the standards that will dictate how it is used. An umbrella group offers the further advantage of being able to pursue an end goal free of the constraints and concerns that more specific industry groups are forced to take on.

In addition to creating a more united industry, an umbrella group has the potential to end what has become known as the "traveling circus" phenomenon—the tendency for many of the same influential people to travel around the country attending BIM seminars and re-treading similar ground, rather than making a progress towards implementing BIM. This momentum could be better organized and channeled with and umbrella group to monitor progress.

This umbrella organization may evolve from a current group working on a more integrated solution, or it may be an entirely new group generated with the express intent of overseeing BIM development and deployment. How an umbrella group develops will ultimately be secondary to how quickly it develops—and how quickly it can organize the industry.

Issue 5: Interoperability has come a long way, but it's still lacking.

There should be no doubt about the importance of interoperability as it relates to the success of BIM. While there have been degrees of success creating models within single software suites, the level of exchange we truly aspire to achieve will come from exchanges based on neutral file formats, not proprietary data exchanges. The degree of interoperability that is achieved will very much depend on three things: the software industry's willingness and ability

to implement neutral file formats; their discipline in staying away from proprietary exchanges; and the A/E/C industry's ability to engage and help them with this.

As an example, the software industry has been a willing and active participant in development of CIS/2 translators, but the lack of an oversight body and certification process has left a patchwork of import and export capabilities among varying programs.

A translator can only work as well as the two entities for which it is translating. Many, if not most, commercial software applications that are CIS/2 capable have incomplete translators. There are specific functions they can perform, but not to CIS/2's full capabilities. This is due in large part to the lack of a certification process, and to a lesser extent the lack of customer demand for more robust translators.

Rectifying this situation means increased interoperability and a more efficient steel industry. One will have a hard time finding anyone that disagrees in principle with the need for interoperability. Anyone who has read the NIST report on interoperability knows that it's costing the capital construction industry money on all fronts. Bringing about increased interoperability is easier said than done, though. For the industry to get to a point where the expectations of interoperability are standardized, several steps have to be taken. For example, AISC has broadly identified the following steps to be taken to further implement CIS/2:

➜ Map and define the exchange process. It is important that we truly understand what steps are taken at given points in the steel design process.
➜ Validate the process with a users group that can verify the process.
➜ Bring together a users group to ascertain the software shortcomings and gaps relative to the exchange process
➜ Work with the software developers to address and close holes that remain in the implementations of CIS/2.
➜ Eventually, establish a CIS/2 certification process based on the exchange maps. A certification program will result in more thorough industry-wide implementations and more direct digital exchange.

Will addressing CIS/2 implementations solve all interoperability issues for the entire A/E/C industry? Certainly not, but a broad implementation of CIS/2 can serve as an example for the rest of the industry, and a more efficient steel supply chain will

have a positive impact on the BIM world.

A Long-Term Outlook

The impediments to BIM implementation don't stop here. There are myriad factors affecting the use of BIM, from ingrained institutional opinions, to modified compensation structures, to the ability of companies to find proficient BIM users. It's important to realize, though, that the most common project delivery methods are far from perfect themselves; in over a century, we still haven't found the perfect method for delivering a complete built environment. It will take time for BIM to come to the masses—at least in a form that the average user can manipulate.   **MSC**

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