Advances in digital technology are rapidly changing the way contractors, owners and engineers exchange information and streamline efficiency in the construction industry. A key element of this transformation is building information modeling (BIM), the processes and tools that, among other things, digitally represent the physical and functional characteristics of a facility.

Although there are many definitions of BIM generated by various organizations, the Associated General Contractors of America defines BIM as “the development and use of a computer software model to simulate the construction and operation of a facility.” BIM uses three-dimensional modeling and a common data environment to access and share information. Digital modeling allows the representation of a design in three dimensions.
and from different views, facilitating identification of conflicts or “clashes,” thereby reducing design errors and resolving constructability issues much earlier in a project.

BIM is an attractive tool for project owners because its potential extends beyond planning and design. If implemented effectively, BIM can generate cost savings over the entire life cycle of a project. By facilitating collaboration and shared knowledge between users, it can generate more accurate cost estimates before a project even begins. During construction, real-time communication can minimize wasted materials and unnecessary labor.

Finally, BIM can simulate operating costs up to a project’s final decommissioning — producing perhaps the biggest opportunity for cost savings. See BSI Kitemark, Why BIM is a Must For Manufacturers (2018).\(^1\) The potential of BIM is widely recognized, and a recent UK Government Construction Strategy report noted that when fully implemented, BIM can lead to cost savings of 15-20 percent. Id.

It should come as no surprise that project owners are requiring adoption of digital information models. The United Kingdom has even mandated the use of BIM on all centrally procured public sector projects and commissioned a protocol for the standard implementation of BIM. Realizing BIM’s potential, reports in its first three years show it has saved the government $2.1 billion. See Construction Industry Council, Building Information Modeling (BIM) Protocol Second Edition (2d ed. 2018);\(^2\) Stefan Mordue et al., Building Information Modeling For Dummies, 123 (2016).

Given its potential to reduce costs, BIM increasingly is becoming a widespread requirement for construction projects in the United States. But due to its level of maturity in the market and the differing requirements of the states, BIM implementation in the United States is largely ad hoc and differs from project to project. BIM requirements are often stated in vague and ambiguous terms, creating uncertainty about what the owner is buying, what the contractor is providing, and how BIM might affect allocation of responsibility and liability among all parties.

While there are multiple BIM guidelines published in the United States, the industry lacks a standardized protocol. Currently, the closest the United States has to a standardized protocol is the National BIM Standard (NBIM-US). NBIM-US attempts to integrate five different U.S. industry guidelines\(^3\) to create a uniform set of procedures, and it is supported by prostandardization groups, such as BuildSMART. While NBIM-US is a step in the right direction for standardizing BIM implementation in the United States, it is still not close
to serving as a uniform protocol. Indeed, NBIM-US itself specifically notes that standard contracts are not yet available and that “businesses must therefore work with legal counsel to develop and negotiate special contract clauses that include” the following:

- allocation of responsibility for creating information
- appropriate access to, reliance on and use of electronic information provided
- responsibility for the updating and security of the data
- ownership and downstream uses of the information
- compensation for team members that recognizes the costs and risks they incur and the value they deliver.

The U.S. AEC industry would likely benefit from developing a standardized model protocol, such as the CIC BIM Protocol used for the UK’s BIM Level 2 standards. But to do so, certain legal issues presented by BIM should be resolved and addressed. And while the significant benefits of BIM to owners are apparent, the development of a model protocol for its implementation should fairly balance the interests of contractors, service providers and other project participants.

**Legal Considerations for a Potential Model BIM Protocol in the United States**

BIM’s information sharing is the driving force behind greater efficiency, but the philosophical underpinnings of BIM create a tension with the traditional allocation of liability among project participants in the AEC industry — liability that is assigned to project participants based on their control over their scope of work. Below we identify seven potential issues that should be addressed in any model BIM protocol.

1. **Requirements:** Given the absence of a standardized approach in the United States, it should not be surprising that one of the most basic issues confronting contractors is the lack of definition around BIM requirements. In solicitations and requests for proposals, BIM requirements are often stated in vague and ambiguous terms, often because owners may not know what BIM information they need or how they will use the information. As a result, contractors expend considerable time and resources
trying to clarify with owners what exactly is being requested in terms of BIM data and deliverables. The NBIM-US provides a sample BIM production timeline, a project execution spreadsheet that is completed by the parties and integrated into the agreement, and a number of guidelines that owners should use to ensure they provide definite, comprehensive and understandable requirements to contractors. Specific BIM requirements must be developed at the outset of each project and tailored to each level of BIM so that owners and contractors have clarity as to what they are buying and providing, respectively.

2. **Design Responsibility:** BIM envisions a collaborative approach in which different design professionals add discipline-specific information to a shared model. Full implementation of BIM means that design plans are dynamic, subject to various inputs from multiple parties. The NBIM-US provides examples of what needs to be detailed in the contract (Example: “Who creates each information package, in terms of project or facility role? Is this an internal or external role? The precise individual and external organization will be identified in the project information handover plan.”) But, given the collaborative nature of BIM design, a standardized protocol should address statutory professional engineer “responsible charge” responsibilities, including the sealing of drawings, specifications and other design documents. A standardized U.S. protocol must establish the rights, responsibilities and liabilities of the engineer in charge and other designers, and provide clarity on when the level or state of design is sufficiently mature to be relied upon, for what purposes and by whom. This may include a defined method for granting access and locking documents, as these procedures will also have implications in liability disputes.

3. **Standard of Care:** The NBIM-US provides no specific guidelines but notes that businesses must work with legal counsel to develop and negotiate special contract clauses that include when parties are entitled to rely on electronic information that has been provided. It does not, however, suggest that one approach is preferable to others. In truth, BIM’s collaborative approach to design raises questions as to whether a designer’s standard of care will be legally altered. For example, it is unclear what effect the use of BIM will have on established legal doctrines, such as an owner warranting the design provided by its professional. See United States v. Spearin, 248 U.S. 132 (1918). In addition, a designer’s duty of care traditionally is owed only to its customer. However, a designer’s knowledge that the use of, and potential reliance on, its design by multiple users raises questions as to whether a designer’s duty of care should be expanded to include parties other than its customer.
4. **Design Risks and Liabilities**: Here, too, the NBIM-US provides no specific guidelines but notes that businesses must work with legal counsel to develop and negotiate special contract clauses that include appropriate access to, reliance on and use of electronic information. But the shared environment of design associated with BIM may increase liability exposure for designers, who must be cognizant of the various parties that may be relying on the accuracy of the data they contribute to the model. This concern is particularly salient in the context of negligent misrepresentation claims, which in many jurisdictions allow a third party to make a tort claim seeking recovery of economic losses when it can allege that its reliance on a professional’s design was foreseeable. The compensation received by the designer in return for providing professional services, however, generally does not account for the risk of such third-party claims. And multiple designers and shared BIM workspaces create questions regarding how to allocate and measure liability. This also has important implications for professional liability insurance, which is underwritten on the basis that the scope of insureds’ responsibilities is defined and delineated from that of other project participants.

5. **Intellectual Property Rights**: Again, the NBIM-US notes only that businesses must work with legal counsel to develop and negotiate special contract clauses that include ownership of intellectual property and downstream uses of BIM information. When BIM is used as envisioned, the contributions by various contractors and subcontractors all come together to create a final model. This raises legal questions regarding who owns and who has license to use the final composite. While owners will insist upon ownership rights to the model, the intellectual property rights of the model’s contributors also must be taken into account. The market economics that affect the pricing of design services do not generally allow the full cost and value of the designer’s expertise and know-how to be reflected in the pricing of services on any particular project. Furthermore, given that a designer’s expertise and know-how is developed over time, across many projects, and often pursuant to proprietary processes and procedures, it is paramount that designers retain intellectual property rights for future use.

6. **Confidentiality**: While the NBIM-US notes that this must be addressed with legal counsel, no specifics are provided. BIM’s foundation rests on information sharing, both before and during a project, but this should not occur at the expense of confidentiality. Contractors sharing data with many project participants have legitimate concerns that their proprietary information could end up being shared with a compet-
itor. A model BIM protocol should put meaningful limits on what information is subject to sharing and how shared information is protected so that construction firms can maintain their competitive advantage.

7. **Security:** A model BIM protocol in the United States must provide guidance on how parties will allocate the costs associated with data housing and exchange and detail the roles, responsibilities and procedures for cybersecurity. Again, these procedures should be sufficiently uniform so that contractors can factor the costs/risks into their pricing estimates.

**Conclusion**
While industry groups have provided guidelines, and the NBIM-US has integrated these guidelines into a useful protocol, the U.S. AEC industry is still far from a standard implementation approach that fairly balances the interests of all project participants. A more standardized protocol that affirmatively addresses these considerations would benefit the industry.

**Endnotes**
1  http://www.bimplus.co.uk/management/why-bim-must-manufacturers/


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