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Has Building Information Modeling transformed the construction delivery process?

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Yes! Building Information Modeling (BIM) is a construction delivery method that drastically reduces change orders, delays, and litigation. BIM also provides crucial facilities management operations information enabling energy-savings throughout the life of the building. In short, BIM solves many of the perils inherent with traditional construction delivery methods.

BIM creates computer-generated 3D building models that provide the details for construction. These models allow users to view the inside and outside of buildings from any angle and to view minute construction details (e.g., paint colors, light switch locations, etc.).

BIM also provides spatial relationships capable of change. For example, an owner can move a window shown on the BIM model to see how the change affects the room characteristics (heating, lighting, sound, etc.). The BIM model will automatically change the scopes of work for the various trades affected by the change.

Historically, only the architects prepared building plans. However, with BIM, each key construction player is involved in generating the model. This collaborative process results in fewer clashes between the constructing team members and the design team and, hence, fewer change orders, delays, etc. For example, the door installation crew can insure each door is properly sized and fire-rated for its particular application before any doors are ordered. With change orders reduced, the construction schedule becomes more definitive and litigation over change orders, and extensions of time decrease correspondingly. In short, BIM provides a "clash detection" function at a time when these issues can be addressed most cost-effectively.

So why hasn't everyone jumped on the BIM bandwagon? First, it is a relatively new concept and most change is met with some degree of resistance. Notwithstanding, the U.S. General Services Administration, the U.S. Army Corps of Engineers, states, educational institutions, and healthcare facilities are adopting BIM. The successful implementation of BIM by these prominent participants has encouraged others to adopt the process.

Second, it is a common misconception that BIM is more expensive. While BIM does add some initial cost, the overall decreased construction costs more than offset such increased cost. In the article, "BIM Return on Investment", Journal of Building Information Modeling, Spring 2011, the authors performed three case studies that hypothesized the estimated return on investment if non-BIM projects used BIM. The savings were staggering. The authors noted:

"The results of this research confirm the overall high return on investment of BIM to an owner, suggesting that regardless of the size and scope of a project, the implementation of BIM can be a vital tool that results in significant cost savings for all stakeholders."

Third, some unjustified concerns linger that not enough BIM-competent people are available to successfully implement BIM projects. This concern can be addressed during the vetting process. For

example, one must ensure the primary design and construction team members have the requisite software knowledge.

Additionally, one must ensure the supporting team understands BIM-related issues. This includes selecting an insurance agent who can bind coverage unique to BIM. As noted by Jacquelynne "Jack" Maloney, Tonry Insurance Group (www.tonry.com), "BIM can expose contractors without the correct coverage to 'errors and omissions' claims." The process must also include hiring a construction lawyer knowledgeable about BIM-specific contract terms (e.g., apportioning liability for a jointly created model, unintended privity issues, ownership/licensing of model, etc.).

In summary, BIM represents an opportunity to realize cost savings and delay avoidance rather than costly changes, delays, and litigation inherent in traditional construction delivery methods.

Drew Colby is of counsel at Partridge Snow & Hahn LLP, Marlborough, Mass.