BOOK REVIEW

Building Information Modeling: A Strategic Implementation Guide
by Dana K. Smith, FAIA, and Michael Tardif, Assoc. AIA, CSI (John Wiley and Sons, 2009)

Reviewed by Vance Drumadoir

Summary: It's finally here: This is the book to read if you are straddling the Building Information Modeling fence, wondering if the grass really is greener on the BIM side. (Bottom line: It is, so jump on over!) And if your firm already is on BIM terra firma, this book, written on the level of strategies thinking, can help you both see the big picture and refine your work processes to build on the full potential of BIM for all players in the industry.

Building Information Modeling: A Strategic Implementation Guide, written by Deke Smith and Michael Tardif, two of the few seasoned experts in the field, demystifies many myths and misconceptions surrounding BIM. It emphasizes that BIM is about the modeling, not the model per se, which, the authors posit, has caused particular confusion among design professionals who equate "model" with physical creation.

BIM offers a systems approach to collecting and organizing information about all phases of the building's life, from feasibility studies to its ultimate reuse or deconstruction. As such, BIM is a tool for organizing and exchanging information, which in turn facilitates a newly emerging approach, integrated project delivery (IPD). As an AIA initiative, IPD is a totally integrated owner/designer/builder team approach to doing a better job of design excellence, construction efficiency, and building performance. Although facilitated with the knowledge-integrating power of BIM, IPD can have little to do with technology or geometry. It is a mindset and a means to an end, not the end itself. Arguably, BIM's greatest benefit in the design stage is serving as a means to "building" the building virtually before actual construction begins, allowing all parties to catch mistakes and clashes before they become physical realities.

Of course, not everyone connected to the building ever uses all of the information collected, but all of it is accessible to anyone who needs it at any given time. The information needs of each sector of the industry are different, as are their appropriate tools for collecting and sharing building data. But the goals are common to all: Get people to work together in a team, improve communication, and perform more tasks in parallel and fewer tasks in sequence. According to the authors, the overarching goal is simple and universal to all players: "Greater productivity and efficiency across the entire life cycle of any building."

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A wealth of information

The authors present well-reasoned arguments in eight information-rich chapters:

- "Building Industry Challenges and Opportunities" sets the stage by explaining that in terms of productivity gains and technological advancement, the building industry has accomplished very little over the last century, especially when compared to almost any other industry. Among the reasons the authors cite is a lack of reliable statistical data about productivity itself, stemming from an industry notoriously lacking in research. This data dearth renders the process of information sharing even more critical. "In the absence of government funding, the importance of a global culture of innovation that includes knowledge sharing, open standards development process, and full interoperability of digital industry data cannot be overestimated," the authors write.

- "BIM Implementation Strategies" tells us that to be successful; BIM strategies must be employed as part of an overall business strategy. This does not mean a single ginormous building file or software application that suits everyone, but rather software tools that can work together. BIM also requires attitude adjustment and "systems-minded building industry professionals [who] regard the information they create with an attitude of stewardship rather than ownership." This chapter also sticks its toes into the metrics of measuring progress in implementation.

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- "Business Process Reform" discusses workflow modeling and acknowledges inherent conflict between a purely collaborative approach to information sharing and the need for individual businesses to turn a profit and remain, well, individuals. The authors posit that the most realistic approach is one recognizing the co-existence of collaboration and competition, wherein innovation sparks from the dynamic tension between the two approaches. For individual firms, they posit that the sweet spot for using BIM is right behind the pioneers yet ahead of the crowd, and offer a list of innovation management strategies to get and keep a firm in the sweet spot. This chapter also surveys the industry standards landscape, including the National BIM Standard.

- "BIM-Based Enterprise Flow" offers tips on how individual firms can incorporate business processes into their own practices. They advise all businesses to adopt open standards and focus on providing value to the clients, not controlling the data. "If your firm's core competency is design," they write, "then your esoteric

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knowledge should be embodied in the design and not in some 'creative' format for the documentation." They also explain how BIM implementation may affect a firm's marketing/business development, human resources, finance, information technology, and operations.

- "The Building Life Cycle" notes that BIM begins before design, that is, info generated during feasibility, planning, and the early development should be part of the model. The chapter travels through this phase and then onto views of design and construction, operations and maintenance, and ownership and asset management. It also looks at some of the liability concerns generating by sharing information through BIM.

- "Building Information Exchange Challenges" provides definitions of data, information, knowledge, and wisdom as steps on the continuum that BIM strives to achieve. The authors also mention the AIA's new legal documents supporting BIM: AIA Contract Document E201™–2007 Digital Data Protocol, AIA Contract Document C106™–2007, Digital Data Licensing Agreement, and AIA Contract Document E202™–2008 BIM Protocol Exhibit.

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- "Building Information Exchange Requirements" offers several case studies of how day-to-day information exchange among practitioners can be achieved. These include Information Delivery Manuals; agcXML, a buildingSMART initiative that offers a publicly available format for information exchanged during design and construction through a number of standard documents, the International Code Council's SMARTcodes tool to automate code compliance checks, and the Construction Operations Building Information Exchange (COBIE), another buildingSMART alliance project.

- "The Way Forward" definitively promotes tasks that can be done in parallel, rather than in series, as a way to optimize the entire business process as opposed to individual tasks. It also reassures readers that the roles and responsibilities of individual players in the building industry are not likely to change substantially. "In any team sport," the authors analogize, "if the team is communicating, then the team is more likely to win."

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Well organized and refreshingly readable

Although they aimed their efforts at "architects, engineers, constructions, and real estate asset managers," the authors have the training, practical experience, and soul of architects. As you would hope for in a book about sharing and organizing information, the text is logical and scrupulously organized, as well as extremely easy to navigate. The chunks of new and provocative information within each of the eight chapters are bite-sized enough to chew and swallow mindfully. And, considering the density and gravity of the subject, the text is refreshingly readable and engaging. The authors offer a deft hand with analogies, especially those related to experiences in other industries, which make their points crystal clear.

Clarion call to action

Tardif dedicates this book to "all of our colleagues in the building industry who refuse to accept the status quo and who share our passion to build a better world." The authors end with a pitch and some suggestions for professionals to contribute to the effort: The "someone" who needs to work towards solving industry problems is everyone—including you, they write.

In all, the goal of Building Information Modeling is pretty basic and universal. "Examining our business processes to determine how we can improve workflow is not much different than a team coach developing and implementing new plays. The goal is not to complicate our work with endless introspection and analysis," Smith and Tardif conclude. "Instead, we want to examine and implement options that allow us to achieve peak performance and effectively move the ball toward the goal: building the building more efficiently and truly meeting the needs of our clients."

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