



Construction Institute

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June 6, 2008

Innovative Approaches to Collaborative Project Delivery

June 19, 2008

33rd Annual Membership Meeting & Awards Dinner

BIM, a Better Way to Do Projects!

Building Information Modeling - The move to intelligent model-based project delivery

Building Information Modeling (BIM) has become one of today's hottest topics in the AEC industry. BIM is said to be the one functional tool that will transform how we design, construct and communicate about projects. It promises to take the surprise factor out of the process.

BIM is an acronym coined by the three largest architectural graphic software developers - Autodesk, Bentley and Graphisoft. BIM is defined as an integrated database of graphic and specification information describing a building and all the elements that comprise it to create a virtual three-dimensional (3D) model that closely resembles reality.

Using new generation BIM design software, such as Revit, ArchiCAD or Bentley Architecture, a computerized model of the facility is built virtually by the A&E design team. The resulting BIM model is used as the basis for the construction process. Ideally, the model continues to be used and maintained for the life of the building as a parallel reality with enormous usefulness in long-term facility planning, asset management, component maintenance, life safety and security control, etc.

The Emerging Reality

Up until now, the design and construction process has been dependent upon communication media that require interpretation – two dimensional drawings, renderings, verbal & written instructions. Most of our problems and errors can be traced back to this one

characteristic. BIM offers an escape from this flawed process, by dramatically reducing the interpretation required to comprehend our building projects.

But advanced computer software alone can not elicit the true value of BIM. In order to maximize the benefits of BIM



Photo courtesy of Autodesk, Inc.

all stakeholders in the process (owners, architects, engineers, contractors, subs and suppliers) need to commit to being part of an integrated project team. By doing so, all members benefit from this full-dress rehearsal of the project by studying design alternatives, evaluating the construction process and identifying issues before the final design.

This model-based technology creates intelligent relationships among objects so that changing one element of a design

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Global Trends Driving the Adoption of Building Information Modeling (BIM)

Twenty years from now, the built world in which we live, work and play will look dramatically different from the world that exists today. Four global trends are driving this change and they will drive the adoption of new approaches, like Building Information Modeling (BIM) and project delivery. These trends will significantly challenge architects, engineers, contractors and owners that will make this transformation possible; but they will

ultimately have a positive, transformative impact on the industry.

The first challenge is population growth. According to the Brookings Institute, “The population of the United States will increase by 70 million..., (and) half of the buildings in which Americans will live, play and work in the year 2030 don't even exist yet.” The second challenge is globalization. As AEC firms drive to compete across physical, economic and political boundaries, they will be confronted with new contractual and cultural relationships. The third challenge is resource scarcity. This scarcity is not just of commodities like steel, or concrete, but also of the knowledge and human resources who are retiring at a rate at which our education systems can't keep pace to replace. The fourth challenge is sustainability and the necessity to reduce and mitigate the significant material and energy inefficiencies and waste that accumulate throughout the construction and operations phases of the building lifecycle.

To meet these challenges and seize the opportunities that exist in the global construction economy today, companies need to challenge existing, entrenched practices and embrace new technologies and approaches that encourage the use of BIM — an

integrated process built around coordinated, reliable information related to a project, from design through construction and into operations. BIM provides a complete approach to design for civil engineering, building design and construction. BIM

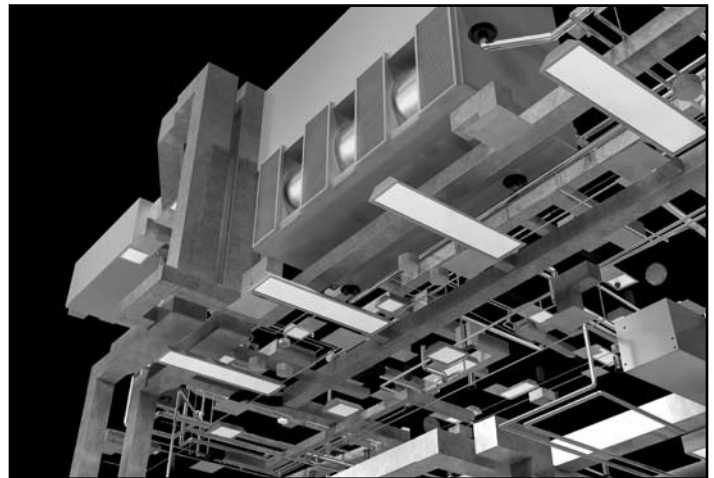


Photo courtesy of Autodesk, Inc.

programs allow coordination for the various disciplines—architecture and civil, structure, mechanical, electrical, and plumbing engineering. The software allows for changes — anytime, anywhere—to be coordinated automatically throughout the project. Designs and documentation stay coordinated, consistent, and complete. Easing the transition from design to construction, BIM programs offer the unique ability to visualize all types of models, regardless of file format or size. It streamlines the model integration, mediation and visualization process.

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Welcome New Members

All State Construction, Inc.
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 Horizon Services Company
 CR3, LLP
 Filomeno & Company, P. C.
 Steffian Bradley Architects
 EMCOR Group, Inc./EMCOR
 Energy Services

BIM, a Better Way

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changes automatically all related elements. The kinks, errors and unanticipated factors typically uncovered during construction can be resolved before the design is finalized. In fact, the team can test-drive the entire project before a shovel is placed in the ground.

BIM doesn't stop there. BIM allows product manufacturers to create BIM sub-models of their products (equipment, furnishings, fixtures, etc.), so that the designer can seamlessly insert them into the master model. Specifications, product identification information, and physical, 3-D characteristics can be included with the sub-model. This allows precise, quickly generated renditions of design concepts for review and comment.

Precursors to the BIM concept have been used for years by auto and aircraft designers allowing unprecedented collaboration among multiple design teams assigned to single projects. Emerging BIM software is already making its way into the AEC delivery process across the country. Protocols are being established by software developers to allow the sharing or interoperability of BIM models between groups working with different software and managing different aspects of the project. The General Services Administration mandated in 2006 that all design work on Federal buildings be in BIM format!

If you haven't begun the process of learning about BIM and the tools used in the process, the time to start is now. ▲

F O C U S

BIM: A Marketing Primer and Call to Action

BIM is, at its heart, a communication tool. Marketers, at their core, are communicators. Beyond the impacts to a marketing professional's day-to-day work, there are a few additional roles to serve in a firm. This is especially true in these formative years of adopting BIM in the A/E/C industry.

1. Facilitate and Educate

As a trend and as a buzzword, BIM is, and will continue to be, understood and used in many different ways. An architect may be speaking of the 3D capabilities and BIM as a tool for helping the owner to make decisions, while the contractor she's talking to may be hearing something about interdisciplinary coordination and reduced conflicts in interstitial space. The marketer can help the architect and the contractor with internal education and communication about BIM within their companies. The marketer should always work to clarify the topic by encouraging greater understanding of the biggest picture with consistency in language and use of the details about BIM's usefulness from the client's perspective.

2. Partner and Collaborate

Marketers, in particular in their business development function, have the opportunity to discuss BIM broadly with clients, sub-

consultants, vendors, partners, and even the competition. Marketers are conduits for information. Their active participation inside and outside of their firms will bring an important perspective and additional data that will help position the firm in the market. Since many of the more broad-reaching changes anticipated by BIM are to delivery method and "partnerships," the marketer's role in building relationships of substance will be key.

3. Educate the Client

The greatest changes in the industry, driven by BIM, will come as a result of market pressures: owners seeking greater efficiency, lower cost, stronger supply chain relationships, longer use of core data, and more. Marketers can – and should – take the opportunity to educate clients, through industry events, company hosted events, and other marketing communications, about the benefits and whys and hows of BIM. Better educated clients will make better selectors of A/E/C firms with BIM capabilities.

Excerpt from "BIM: A Marketing Primer and Call to Action" by Ted Sive, FSMPS, and Matt Hays, August 2007. The entire white paper is available on www.smeps.org. Published with permission from the Society for Marketing Professional Services Foundation.

Global Trends Driving Adoption of BIM

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The programs allow project teams to adhere to design intent, while confirming constructability during preconstruction — reducing the number of issues that arise in the field. Keeping project teams connected throughout the entire project lifecycle requires anywhere, anytime access to information and a solution that reinforces best practices and business processes. These programs deliver on-demand, streamlined communication and business processes across project teams enabling the successful execution of projects and programs.

Those companies that embrace Building Information Modeling will be well-equipped to meet and capitalize on the four global trends. BIM is the modeling tool that will allow them to take a process-driven, integrated project delivery approach, creating document design information through the use of visualization, simulation and analysis. Progressive companies who adapt BIM will have a competitive edge with an economically beneficial, ecologically sustainable ability to connect people, information and processes among all stakeholders. ▲

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