

TEST-DRIVE YOUR BUILDING BEFORE PUTTING A SHOVEL IN THE GROUND

What could be better for real estate developers or investors than to test-drive a building before committing to the final design? Now they can, thanks to a technology called Building Information Modeling, or BIM.



David Bonifacic

According to David Bonifacic, president of New York-based WB Engineers/Consultants PLLC, BIM is technology-driven software that allows the designer to create a 3D model of the building before committing to it with

hard drawings. As the 3D model is analyzed (and perhaps changed), those changes are reflected throughout the design. Further, when all parties agree to the design, the various trades can use the BIM database to accurately calculate, for example, the amount of ductwork or piping needed.

3D version of CAD

Bonifacic says that BIM is at its most basic a 3D version of CAD, or computer-aided design, except that it allows everyone involved in the project to collaborate. For example, if an architect wants a large, fancy lobby in the building that will require intricate coordination between the ceiling layout, ductwork, structure and lighting, the team can each enter their design information into their respective BIM and then review the complete lobby design. Any conflicting design features can be resolved during the design process rather than later, during construction, when costly changes could impact the project.

BIM is not new to the building-design scene, but today the architectural and engineering community is quickly embracing it, according to Bonifacic. He says that an American Institute of Architects survey in Feb. 2007 found that 20 percent of its members were using BIM for billable projects and that 13 percent have purchased the software, but are yet not using it. Among users, 35 percent said BIM's greatest benefit is producing higher quality through fewer change orders and more accurate documents. Additionally, 17 percent said it leads to faster project delivery. He says that the two most prominent BIM software programs available are Autodesk Revit and Bentley Microstation.

For BIM to come into wide use, it needs to be used on high-profile projects. That may be at hand. Bonifacic said it is being used to design the Freedom Tower in downtown Manhattan, as well as a building at 250 West 55th Street, the Fulton Street Transit Center and the Jacob K. Javits Convention Center expansion. Outside of New York, the software is being used to design the Minnesota Twins ballpark in Minneapolis, the Lansing Delta Township assembly plant for General Motors in Flint, Mich., the Peter B. Lewis Science Library at Princeton University and the expansion of Comer Children's Hospital in Chicago.

Guidelines that will enable BIM software and other applications used by architects, engineers and construction companies to communicate effectively are still in the works and are being developed by the International Alliance for Interoperability. On the construction industry

side, the National Institute of Building Sciences is working with IAI on interoperability standards.

"The single most important aspect of BIM is that it provides availability of the entire project in one accessible model," Bonifacic says. "The data built into this model can be retrieved, organized and documented at any project phase, with the assurance that changes made in one view will be coordinated throughout the project. Moreover, it enables us to visualize what we're trying to build before we build it. This way we can test drive the building and all the alternatives."

Bonifacic says BIM is a powerful tool with fantastic potential. "Using BIM can have a significant impact on the project schedule. You can fix problems on a 3D model rather than after construction. The time saved with this method can be very significant," he said. ■



Building Information Modeling is being used to develop the Freedom Tower.