

Contractor Uses BIM to Maximize Profits

Contributed by the AIA Knowledge Resources Staff

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SUMMARY

The AIA Technology in Architecture Practice and AIA Practice Management Knowledge Communities sponsored a conference, December 2–4, 2007, to discuss the future of professional practice. As the conference title indicates, it was a big-picture conference that looked at different aspects of the profession, including building information modeling (BIM). The use of BIM as a project delivery method has increased in recent years. Holder Construction Company, an early adopter of BIM, is now able to look back and quantify the cost savings that BIM has afforded them over the past seven years.

HOLDER'S STRATEGY

Holder Construction Company (Holder), based in Atlanta, is proud to say that 80 percent of its business is repeat business and all of its projects use some type of team approach. Holder uses BIM to save money and streamline the construction process.

Holder first introduced BIM in a pilot project in 2000, and now it uses some form of BIM on 18 projects. Holder employs eight full-time in-house technical staff who develop models and two field personnel who help translate the models from the computer to construction. Holder calculates it has saved \$3.5 million since 2000, after initial sunk costs, by using BIM as a project platform.

HOLDER'S BEST PRACTICES

The broad questions for architecture and construction professionals are how did they implement BIM and what tips do they suggest. Michael Fevre, AIA, director of architecture and planning, says Holder uses modeling for quantity take-off and collision clarification. Typically it builds the model itself, except on the few occasions when the architect provided them with DWG-format files.

Holder's experience shows that an in-house modeling staff is cost effective and the cost of the model is always less than the savings incurred. A three-dimensional model on site can help clarify the

scope of work for trade contractors because they can see a detailed example of the end result. At Holder in-house modeling staff create constructability models for field use and facility management models for owners.

SOFTWARE OPTIONS

When talking about the transition to BIM, Fevre explains the start-up process may not be smooth, but you won't see any benefits until you try it. Once you take the step forward you can figure out how modeling and the team approach work for your firm, and then start to see the benefits. Holder uses a series of different software packages to fulfill its needs; some of the more common modeling software packages are

- **Graphisoft by ArchiCAD.** The Web site says "Graphisoft is the pioneer and leader in developing Virtual Building™ solutions."
- **JetStream by Navisworks.** The Web site says "NavisWorks is the developer of JetStream, the leading collaborative 3D/4D Design Review software. JetStream improves productivity and quality in the project lifecycle of Building, Plant, and Marine construction."
- **MicroStation by Bentley.** The Web site says "MicroStation is an innovative CAD platform used by teams of architects, engineers, contractors, and GIS professionals to integrate work on buildings, civil engineering projects, power plants, and geospatial information."
- **Revit Architecture by Autodesk.** The Web site says "Revit Architecture software works the way you think, so you can create naturally, design freely, and deliver efficiently."
- **Revit MEP by Autodesk.** The Web site says "Revit MEP software is the building information modeling design and documentation solution for MEP engineering."
- **SketchUp by Google.** The Web site says "Developed for the conceptual stages of design, Google SketchUp is a powerful yet easy-to-learn 3D software tool that combines a simple, yet robust tool-set with an intelligent drawing

system that streamlines and simplifies 3D design.”

PROCESS

One question a transition to BIM provokes is how can you determine the return on investment from BIM? The answer is you can quantify direct savings and indirect savings. Holder uses the collision detection application to calculate crew rates per hour against the amount of hours the potential collision would require to be fixed. On one project an \$80,000 digital model detected 590 collisions that would have cost Holder \$800,000.

Holder's average savings on BIM projects is \$345,678, three to five times the cost of the model. This does not include indirect savings from a reduced number of contingencies, which multiplies the savings rate. Overall, implementing BIM has been a worthwhile process, which continues to grow and save Holder time and money.

About the Presenter

Michael Fevre, AIA, LEED AP, is director of planning and design support services at Holder Construction Company, which provides clients with design-build and construction management through a team approach. He is responsible for companywide development and implementation of BIM services and products and has launched more than 100 BIM efforts—full and partial—in the last three years.

RESOURCES

More Best Practices

The following AIA Best Practices provide additional information related to this topic:

- 10.04.02 Getting Started with Building Information Modeling
- 10.02.07 Using Web-Based Project Management Tools
- 10.04.05 Building Information Modeling: Potential Legal Exposures

For More Information on This Topic

See also “Virtual Design and Construction: New Opportunities for Leadership” by James R. Bedrick, AIA, *The Architect's Handbook of Professional Practice, Update 2006*, page 33.



See also the 14th edition of the *Handbook*, which can be ordered from the AIA Bookstore by calling 800-242-3837 (option 4) or by email at bookstore@aia.org.



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Key Terms

- Practice
- Information management
- Project management automation
- Building information modeling
- Project management

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