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Building Construction

'BIM' enters construction vocabulary

Three letters – BIM – are increasingly becoming part of the ABCs of construction technology.



What is BIM?

BIM, which stands for building information modeling, refers to the creation and coordinated use of digital information about a building project, according to the Construction Management Association of America.

That data can include specifications about cost, schedule, fabrication, maintenance, 3-D models and energy. This information guides design decisions, production of construction documents, performance forecasts, cost estimation and construction planning – and, in the long run, facility management and operation.

More and more people in the construction industry are becoming familiar with BIM, according to results of a survey released in October by the McLean,

Va.-based Construction Management Association of America and FMI Corp., a Raleigh, N.C.-based management consulting and investment banking firm for the construction industry.

"It's gaining momentum. There's significant movement on so many fronts," says Bob Mauck, vice president of virtual design and construction at architecture, engineering and consulting firm Ghafari Associates LLC, based in Dearborn, Mich.

BIM offers improved communication, higher quality project execution and better decision-making.

Mauck cites General Motors Corp., the U.S. General Services Administration and the U.S. Army Corps of Engineers as being among leaders in the BIM movement.

The survey, conducted in 2007 by FMI, shows 35 percent of the building owners surveyed had used BIM on at least one project. That compares with 11 percent in 2006, 6 percent in 2005 and 3 percent in 2003.

The perspectives of building owners, such as corporate tenants and real estate developers, are considered a bellwether of trends in the construction industry.

Marisé Mikulis, a senior consultant with FMI, says she expects the number of BIM users to continue escalating. Currently, BIM represents perhaps as little as 5 percent of construction spending, she says.

Mauck says the overall use of BIM is beginning to shift from the pilot phase into the mainstream.

"I wouldn't say it's prevalent yet," Mauck says. "It's a learning curve. It takes time. It takes collaboration. It takes change."

Why are more folks in the construction business making the change to BIM?

Improved communication, higher quality project execution and better decision-making are the chief reasons cited by survey respondents.

Among the highest hurdles in BIM adoption, according to the survey, are lack of technical expertise and lack of industry

standards. Nonetheless, nearly three-fourths of the BIM users in the survey indicated they'd recommend BIM to others.

"Contractors are beginning to participate pretty significantly in this transformation," says Tim Douglas, a senior product marketing manager at Autodesk Inc., a San Rafael, Calif.-based provider of BIM software and other two- and three-dimensional design technology.

One benefit that's at the foundation of the BIM movement is cost cutting.

Because every player in the software-dependent BIM process – contractors, subcontractors, architects, engineers, project managers – is adhering to the BIM-produced building model and has access to the same digital information at the same time, this stepped-up level of collaboration diminishes the chance for errors, experts say.

Contrast that with the traditional method of exchanging, tracking and constantly updating scores of construction documents.

Through BIM, someone can detect that a water pipe will mistakenly intersect with an air duct – before the pipe and duct are installed. Fixing such errors on a computer screen rather than on a construction site saves time and money, experts say.

With BIM, "you can understand how the project is going to unfold," Douglas says.

The bottom line: BIM fortifies teamwork on a construction project, according to Mauck.

Mikulis says the collaborative model sparked by BIM knocks down traditional work "silos" among the various participants in a construction project.

Mikulis advises that building information modeling is best pursued in a step-by-step fashion. For instance, the General Services Administration – the federal government's landlord – is requiring use of BIM only in the design phase of its projects, but not in other phases.

At this point, Mikulis says, not every construction project is suited for BIM.

"It's not one size fits all," she says.

Douglas points out that BIM involves more than merely installing new software.

"Simply applying technology to existing business processes or practices doesn't give you the kind of benefit that you would expect," Douglas says. "Technology isn't really the answer. It's a combination of the process and the technology."

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