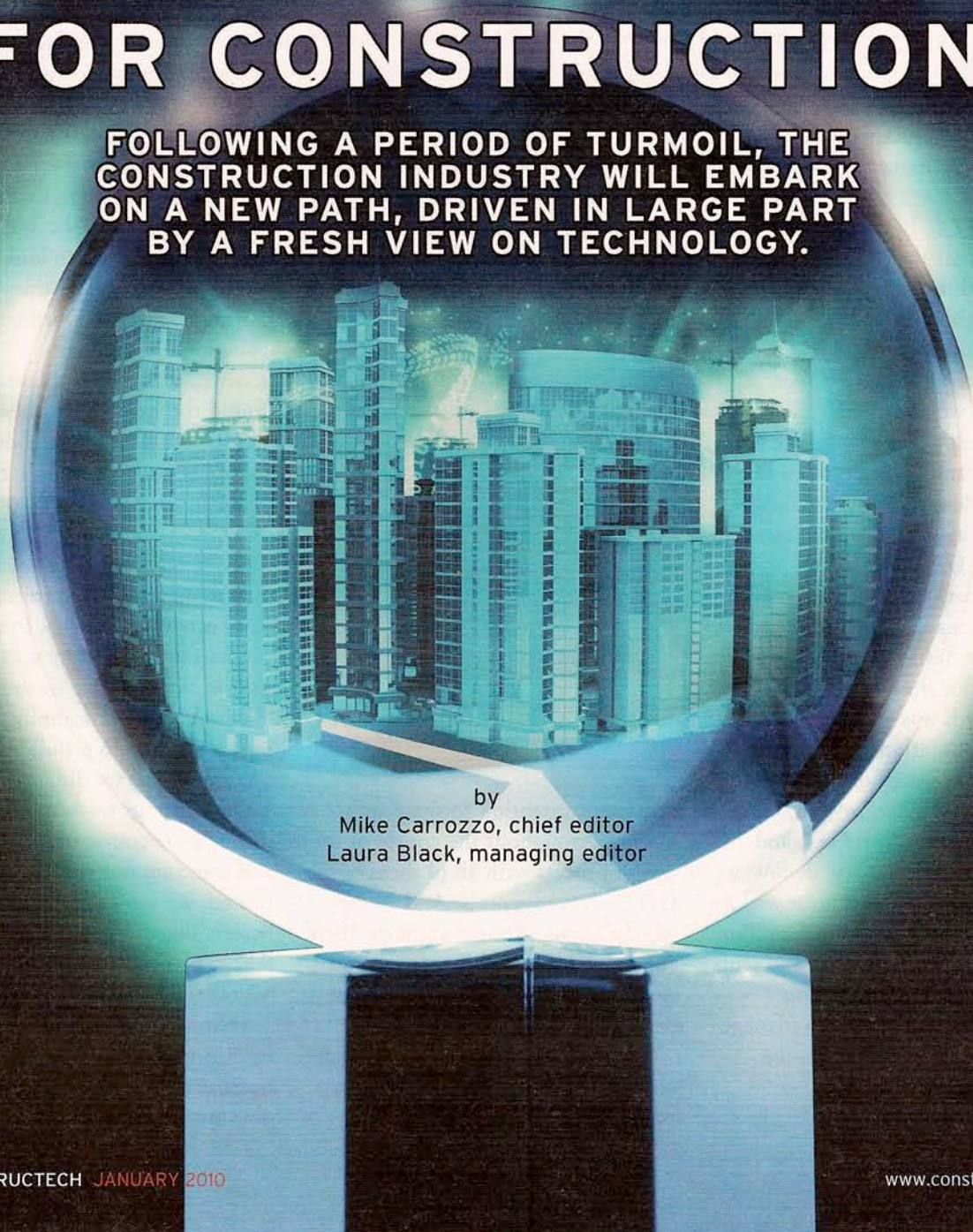


WHAT'S NEXT FOR CONSTRUCTION

FOLLOWING A PERIOD OF TURMOIL, THE
CONSTRUCTION INDUSTRY WILL EMBARK
ON A NEW PATH, DRIVEN IN LARGE PART
BY A FRESH VIEW ON TECHNOLOGY.



by
Mike Carrozzo, chief editor
Laura Black, managing editor

Looking back at 2009, one could consider it to be a year of change—or more accurately, a year in which some key societal, political, and environmental factors were put in place that will drive a significant amount of change in the years to come.

Take, for example, BIM (building information modeling) and IPD (integrated project delivery). These processes have been around for a number of years, but new guidelines and standards at the state level could drive a higher level of adoption of BIM-related technologies for everyone working on state-funded projects—from owners, to general contractors, to subcontractors. Or even consider the impact new ediscovery rules at the state level and increased safety regulations will have on document management and jobsite reporting.

These examples will have a direct impact on how technology is used in construction for years to come, but more specifically how the industry as a whole will need to develop a new approach to managing data.

The industry has reached a tipping point, of sorts—a point where the rate of technology adoption is likely going to increase dramatically. FMI Corp., www.fminet.com, Raleigh, N.C., coins it as an ‘inflection point’ in its Tenth Annual Survey of Owners, meaning the economic turmoil from the past two years will result in a dramatic shift in the AEC (architecture, engineering, and construction) industry with six dominant forces guiding the way—globalization, social norms, technology application, economic performance, political stability, and environmental influence.

As this shift begins to occur, owners, general contractors, and subcontractors will likely need to look to technology as a means to improve team collaboration and project delivery and comply with new regulatory guidelines and trends in 2010.

BETTING ON BIM

Perhaps no movement has had a bigger impact on the AEC industry during the past decade than BIM. Most contractors and owners no longer need convincing, as many have already dedicated resources to specialized departments and technology. But the year ahead could be critical in how far BIM continues to move forward.

Just this past year we saw the Division of State Facilities in Wisconsin implement guidelines and standards for using BIM on state projects, while the Facilities Design and Construction Division within the Texas Facilities Commission adopted BIM for state design and construction projects in an effort to standardize the use

AS WE LOOK AHEAD TO 2010 WHAT WILL BE THE BIGGEST FACTORS DRIVING TECHNOLOGY INITIATIVES FORWARD FOR YOUR CUSTOMERS IN CONSTRUCTION?

"2010 may be the 'inflection point' for contractors—the combination of the recession and the ready availability of the Internet is changing construction company practices. Today is the day of the virtual office—field operatives connected wherever they are using technologies like VoIP; instant messaging/text messaging for quick questions and answers; direct connectivity to backoffice systems using Internet and Web browser technology for time and expense capture, and access to cost information."

- Jim McFarlane, Explorer Software Group

"Delivering technology that provides the subcontractor within accurate information, so that they can make informed decisions based on accurate facts—whether that is in being able to estimate a potential project with accurate costs and profitability, having all of the facts and information at their finger tips after they have won the project and are in the building phase and servicing the project after it is complete. In this difficult marketplace, working with inaccurate information can cause a project to be lost or won in error, implemented at a loss, or poorly maintained with service afterward."

- Bob Yakimetz, Accubid Systems

"Companies making investments in developing BIM models want to get a big return, that means integrating BIM data into other workflow processes, including project budget development, submittals, developing schedules, etc. Flexible integrations through Web services; now more than ever systems need to talk to each other and share information; technology systems also must adopt to companies' workflow ..."

- Bruno Berti, Meridian Systems

"As we look into 2010, it is the use of SharePoint, all the collaboration, and the ability to put the RFIs (requests for information), the submittals, and those types of things in construction-related sites for multiple users for the company—whether it is somebody in project management, somebody in purchasing, somebody in inventory, (or) somebody in finance—having the ability to look at and see who is doing what, when it was done, copies of the invoices, copies of the receiving tickets, images of the purchase orders (and) bringing them all together when the project manager is out ... Sharepoint can help drive workflow throughout the organization."

- Jim Wenninger, WennSoft

of BIM on future projects. Some believe other states are close to adopting similar mandates, and everyone in the industry is well aware of the BIM guidelines required by national owners as the U.S. General Services Admin, www.gsa.gov, Washington, D.C.

Such guidelines and standards have an effect on everyone involved with the construction project, from the owner on down. While few can deny the benefits of BIM for project delivery, one of the biggest points of contention is how to apply the technology and at what phase of the project.

The advancement of the technology available can be perceived as being either very robust or still on the cusp, depending on the discipline. For example, an architect might say the tools are very sound, while a mechanical subcontractor would argue that while technology is good for things like clash detection it is still lacking in terms of smart icons for building components (i.e. furniture, equipment, hardware).

"I think the advancement of the technology depends on the discipline and each technology provider is making strides in integrating the different disciplines very well in order to create a complete model," says Dawn Naney, program management director, BJC Healthcare, www.bjc.org, St. Louis, Mo. "It all comes down to what the intent is, defining the value proposition, and with the expectations and alignment of the team in order to get the biggest bang for the buck."

Talking from an owner's perspective, Naney believes what would be very beneficial is the modularization of BIM technology to assist teams in scoping what is needed or what would be beneficial for each project. She says, "Once we understand what problem we want to solve then we can get creative about the solution, i.e. do we just need 3D renderings or estimating and conflict resolution as well."

She believes there is room for improvement in the areas of performance modeling (metrics around quality and performance) to include more robust ties to project management and scheduling software; predictive estimating models that use linear regression models to help predict pricing trends; and ties to project management tools or cost tracking software that can segregate price into customizable work breakdown structures.

Clay Goser, who worked as a system planning architect and the director of construction, community hospitals at BJC before leaving to start a project/program management consulting firm, concurs with this assessment of the market, saying part of the challenge with the adoption of BIM is the fact teams don't fully understand what it is that they want BIM to accomplish. He says, "The first thing we start to talk about when we look at implementing BIM or any other technology is the reliability of the technology. We look at who owns the model, who will invest in the tool, how will it be used, and what the roles are of all parties using the tool."


The message here is that the industry needs to first understand the means to which it will deliver projects more collaboratively, improve overall performance, and enable innovation. He points out the need for standards around collaborative delivery that supports the use of integrated tools and a need to understand the intrinsic benefit of the technology as it relates to the project, more than just bottomline cost.

"You also may not use every component on each job," adds Goser. "Teams need to have an environment of trust and a strong enough working relationship where they can determine very quickly on the frontend of a project what is appropriate to use on a project."

Julian Kang, associate professor and graduate program coordinator, Texas A&M University, www.tamu.edu, College Station, Texas, talks on the applications involved and the factors that will drive adoption.

"We have one dominant application for BIM right now but the application that the GC or designers will end up using will be determined by request of client," he says. "If

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a client asks for the Revit model or the NavisWorks model, or in the case of the U.S. Army Corps of Engineers, the Bentley BIM model, the GC or designer needs to provide that model. The question of which application will be used will be driven by the owner and I believe this will lead to no one single dominant application in the market, meaning that GCs and designers will have to be good at using multiple applications.”

Also, Kang sees some challenges with producing an estimate from the model. “Ideally you can get the estimate when you have everything within the model. Practically though, by the time you need estimation you

don’t have all the (required) information (in the model) at that particular moment,” says Kang. “Almost always when you are working in estimating you will have to be working on some type of assumptions and those assumptions are normally made by estimators and it is hard for estimators to explain what those assumptions are as far as efficient modeling goes.

“If you are a BIM expert you might not have a clear idea of how you want to build the model at the early stage of the estimation process because you don’t have enough information for creating the model. I see a lot of GCs depending on manual or 2D process for estimation and then once they get the estimation done and the project brought in they start using BIM seriously. From there some start to question why they are using BIM for estimation, because it has been done already and the project is awarded.”

Some applications help to produce a ‘macro’ estimate beforehand, but according to Kang, the true time-saving aspect is still up for debate.

Regardless of what level the technology seems to be presently at, most contractors are moving ahead with their plan of attack. We have seen a shift coming from all types of contractors.

“We have hired a BIM modeler on our staff and will be one of the first contractors to integrate our other information systems into the BIM model, such as accounting, sales, and scheduling data. With BIM you can’t be half committal, it requires all hands on deck,” says John Lord, chief technology officer, Component Assembly Systems, www.componentassembly.com, Pelham, N.Y. “As a drywall firm, we do not get pulled in to the ‘big room’ in the same way a mechanical or structural contractor would, however our access to models does provide us with conflict information and allows us to provide solutions before we hit the area with \$100/hour workforces.”

But BIM adoption doesn’t come without warning, says Lord. “Do not buy (the software) without understanding the terrain. Beware of claims



TALK ABOUT THE CHANGING ROLE OF TECHNOLOGY PROVIDERS IN THIS INDUSTRY AND THE EFFECT THEY WILL HAVE ON THE WAY TECHNOLOGY IS USED.

“As a more technically-proficient workforce evolves, so too does the nature of construction management. The professionals taking the helm of today’s leading construction outfits have grown up in the information age. They depend on technology to make them better at what they do—whether it’s scheduling subs, managing payroll, or analyzing overall company performance. But they are also construction people who know the construction business, a traditional industry that has been slow to adopt new technologies, particularly in the backoffice. The challenge is to balance passion and desire to deliver forward-thinking solutions against the real-world needs of customers’ technical expertise and/or technical infrastructure.”

– Jay Haladay, Viewpoint Construction Software

“Overall, technology must create a balance between capability and usability. The more complex construction software becomes, the steeper the learning curve, which could become more of a liability when attempting to learn a new technology and maintain a hefty bid volume simultaneously. Software adoption is a process, and special attention must be given to training for that transition. Technology providers need to offer more than an instruction booklet with the package. As technology becomes more advanced, training and support both become necessary for full utilization of the technology. A solid training program, backed by a stellar support system, will be one of the most impactful selling points to companies that have decided to make the switch to software.”

– Greg Duyka, On Center Software