



Collaboration: Gaining Momentum

by Michael Anello, contributing writer

When you talk about emerging technologies in the construction industry, collaboration is always part of the discussion. Collaborative tools offer builders, contractors, and owners a variety of benefits including the ability share plans and drawings, post specs and documents, and communicate effectively with project team members.

But it's tough to know the extent to which the industry is actually using collaborative tools. While some construction professionals are using more rudimentary forms of collaboration such as email, others have stepped up to more advanced categories such as project-management systems.

There are various reasons why some companies adopt collaboration technologies while others have chosen not to. Some firms find that the accelerated speed of business and the growing scale of projects have forced them to adopt collaborative tools. Others, meanwhile, have adopted a wait-and-see attitude and complain that they have been inundated with so many new products that they are unable to choose a vendor with any degree of confidence. And still others maintain that collaboration has not caught on due to the fragmented nature of the construction industry.

But make no mistake. Collaboration is gaining momentum in the industry. As more and more construction professionals become educated about technology in general and collaboration in particular, they are taking advantage of various collaborative tools and the multitude of benefits that they offer.

Perception and practice

Attitudes and practices toward collaborative products vary markedly. For example, in a survey conducted by the Associated Builders and Contractors (ABC), Roslyn, Va., 75% of respondents indicated that they were not evaluating collaboration tools. The survey looked at 6,000 ABC members representing companies of all sizes. Of the 25% of respondents that said they were evaluating collaboration tools, 12% could not name the vendor that they were evaluating. In addition, none of the leading vendors of collaborative tools was being widely evaluated, the survey reported. In fact, no vendor was above the 3% mark for evaluation by respondents.

“People are holding onto their fax machines,” says Chris Carmicle, executive vice president and founder of ABCpoint.com. He adds that the term “collaboration” is not well understood in the construction industry and means different things to different people. In addition, even those individuals who use collaborative tools only use certain features because they do not understand the full benefits a collaborative tool offers. Carmicle adds that the majority of leading construction firms are at least evaluating collaboration tools, but it will take more than interest from the leaders to drive adoption.

"It's not like the auto industry, where getting the blessing of one large company means gaining a significant market share—you need the buy-in of middle and smaller markets before anything will take hold," Carmicle points out.

Other surveys report a much more optimistic landscape for high-tech advances in the construction industry. In a survey conducted at the 2000 World of Concrete Exposition by BuildPoint, Redwood City, Calif., respondents displayed a readiness to use the Internet. BuildPoint found that 80% of companies in the concrete business, including general contractors and subcontractors, had direct Internet access. The survey also reported that Internet broadband access had been obtained by 35% of general contractors, 21% of subcontractors, and 44% of suppliers.

In addition, a 1999 survey conducted by BST Consultants, Tampa, Fla., found that 89% of 148 chief executives from large, predominantly commercial construction firms indicated that they were, "wired and planned to significantly increase spending on information technology."

Bridging the gap

The ABC, with 23,000 member firms in 82 chapters across the United States, has taken proactive measures to enable its members to bridge the technology gap. Responding to the growing needs of member firms, the association developed ABCpoint.com, a Website for its members. ABC Point.com evaluates Internet technologies, partners with various companies, and then brings these companies' services to association members through the ABCpoint.com portal. The Website offers an online bid-management system, a directory for construction-related Websites as well as online product manuals for obtaining product specifications.

Although ABCpoint.com has not yet endorsed a collaboration tool, it is discussing a partnership with one of the larger collaboration vendors. "Many (collaboration tools) are new, and it's probably not wise to try evaluating them now," says Carmichael, who predicts that Primavera Systems, Bala Cynwyd, Pa.; and Meridian Project Systems, Folsom, Calif., will eventually grab a significant share of the collaboration market.

Meanwhile, Buzzsaw.com, San Francisco, Calif.; Constructware, Atlanta, Ga.; Citadon, San Francisco, Calif.; and e-Builder, Gainesville, Fla., are the other major vendors that will battle for position in the collaboration marketplace, he adds.

Another industry association that has stepped forward to provide high-tech solutions to its members is the Associated General Contractors of America (AGC), Alexandria, Va. Responding to the recommendations of a special committee on Internet technology, the AGC recently announced the formation of strategic partnerships with two vendors: Primavera Systems and Construction Software Technologies Inc. (iSqFt), West Chester, Ohio.

Mark Pursell, the AGC's executive director of business development, says AGC surveys have indicated that 60% of the group's members expect the association to provide online services to its members. The surveys, conducted in late 2000, indicate that members are most interested in two activities: finding work and managing projects via online tools.

The AGC recently published another survey, conducted by Deloitte and Touche, Boston, Mass., indicating that although information technology was a key strategic initiative, most respondents had not yet implemented a strategy. The survey is yet another indicator that the AGC needs to provide technology solutions directly to its 38,000 member companies and 250,000 individual members, officials say. In Pursell's opinion, most contractors and construction projects are not being managed over the Internet, but will be soon. Currently, use of the Internet for communication is at the email level, says Pursell. "Five years ago, if you asked someone about email, a construction guy would chuckle, 'I don't have an email address'—now this guy is chuckled at," he observes.

Project owners, who are at the top of the construction food chain, are demanding responsiveness and accountability, and this will necessitate the gradual adoption of collaboration tools, adds Pursell.

As a result of the AGC's strategic partnership with iSqFt, the company will provide online plan rooms, construction project information, bidding and estimating software, and collaboration and communication tools to AGC members at discounted prices.

iSqFt is up and running in seven chapters, and another 30 chapters are in the process of rolling out the Internet service. Primavera will also offer discounted pricing for PrimeContract and has agreed on planned educational initiatives for AGC members.

The developments in these two large construction associations point to their potential roles in bridging the technology gap that exists in many construction firms. However, discussions with several architects and engineers, general contractors, subcontractors, and suppliers suggest that the adoption of collaborative technologies is occurring at a steady pace. These discussions also reveal that there are many factors influencing the adoption of collaboration tools, and that absolutes and trends are few.

Owner perspective

The Fulton County School System is a K-12 system located over a large geographical area surrounding Atlanta, Ga. Robert Flowers, director of facilities planning for the district, says that the school system began a needs-assessment process approximately four years ago, identifying more than \$100 million in renovation needs. In order to carry out the \$82-million project, the school system chose e-Builder as a communications tool.

During the needs-assessment phase of the project, the school system realized that the scale of the project would defy normal communication methods. The five-year project had been divided into five school clusters representing more than 70 project sites.

"We chose e-Builder 2.0 to communicate with five teams of different architects and construction managers—it was really five projects within one project," says Flowers. "Each team already had its own collaboration tool. We didn't want them to abandon their own management tools."

"We selected e-Builder because of its open architecture that allowed the customization of the tool, with e-Builder assistance, converting the single project tool into a programwide tool," he explains.

"We used it as a way to communicate schedules, as a filing system, and as a method to document progress. We did not, however, use the request-for-information (RFI) function because it would have been complicated due to the numerous contractors throughout the five teams," Flowers adds.

Construction firms were chosen for the project because of their abilities, including the willingness to use collaborative tools. "We initially had some limitations with a few offices that lacked (Internet) connections fast enough to be useful. There was an initial struggle with firms that only had up to 56K modems. It took about three months of training and reminding to become efficient," says Flowers. "We had to repeatedly state our mantra: 'If it doesn't appear online—it doesn't exist.' However, once a majority of the players began using the collaboration tool properly, it became an incredible asset."

Center America Property trust (Center America), a real estate investment Trust in Houston, Texas, began using Buzzsaw.com a year ago. The decision came as a result of investments in Buzzsaw.com made by Center America's parent company, Morgan Stanley, New York, N.Y., says Dan Muniza, Center America's vice president of development and construction.

"Much of the excitement about the collaboration tool has come from my lenders," says Muniza. "The lenders seem to be buying into the project in part because they can follow the progress in a daily manner through posted photos."

Muniza adds that the contractors were all eager to try the tool, which is now installed at a level that allows the superintendent to create daily reports with pictures onsite.

He says that Center America chose Buzzsaw.com primarily for the vendor's willingness to provide excellent product support and training as well as the product's capability to transmit drawing files. Muniza

found that a number of other collaboration tools simply could not transmit drawings to remote reprographic companies.

Because Buzzsaw.com's parent company is Autodesk, San Rafael, Calif., creators of AutoCAD, Buzzsaw.com is logically suited to handle drawing files, he explains.

Muniza points out that many companies are developing collaborative tools in house while other firms are trying customized products developed by service providers. "I personally think that this is off the mark. I have always had better success with existing tools," he maintains.

But Muniza does not believe that contractors are independently electing to use collaboration tools. Instead, he says, project owners will drive adoption. "If the owner sees this has an advantage, then the owner will direct all players to work with this (collaboration) tool," he states.

Another company, Meijer Inc., Grand Rapids, Mich., is an example of project owners promoting the adoption of collaboration tools. Dave Becker, Meijer's manager of properties systems and resource center, says that Meijer began a pilot project three years ago to collaborate with all of its contract managers, consultants, and designers using Meridian products.

Meijer implemented Meridian's Prolog within its own environment, attempting to use the Internet to connect with project participants. However, realizing the difficulties of keeping up with software updates, Meijer decided to switch to Meridian's ProjectTalk, Becker says.

"We got quicker buy-in from all of our architectural, engineering, and civil engineering consultants because (ProjectTalk) was Internet-based, and once that happened, we got better use of the product by the consultants. By making it easy, they were eager to use it. It was a natural move from Prolog to ProjectTalk," he explains.

Becker adds that all construction managers working on the company projects are required to use ProjectTalk. Meijer has about 20 new store projects in progress in which ProjectTalk has been implemented. The tool is used heavily for its RFI document-management function.

"We have a quick turnaround time (24 hours to respond to an RFI) that we impose on all our consultants, and we think we can do better," proclaims Becker.

There is always resistance to using new technology tools and collaboration is no different. "I implemented CAD (computer-aided design) here 22 years ago and there was a lot of resistance," recalls Becker, who says he experienced a similar situation when ProjectTalk was introduced.

"After two or three years, architects and engineers began using the technology because we had threatened to use other contractors who agreed to adopt the technology," he recalls.

Becker believes that the pressure to adopt collaboration technology will flow from the top. Collaboration will only take place when adoption becomes a necessity for contractors and subcontractors to continue doing business, he notes.

Unfortunately, some of the really small subcontractors still do not have fax machines, computers or email addresses. "In the end, they will get passed up," Becker predicts.

A/E perspective

MMP Architects, Winnipeg, Manitoba, has always been a technology-junky firm, "always trying to push the envelope to see what technologies can help us out," says Bob Wrublosky, the firm's principal architect.

In 1999, MMP Architects became the first Canadian firm to use Buzzsaw.com. MMP uses Buzzsaw.com so that clients may monitor progress and interact in the design-markup process.

"It also allows us to share drawings with our consultants. And we also use the collaboration tool as a marketing point," says Wrublosky.

“Some consultants who have worked with us in the past have elected not to come onboard because of the collaboration tool. For the most part, these consultants were not interested in the technology investment. Some consultants were unwilling to set their office up with software or even email or high-speed, dial-up Internet access, so they were left behind. On the other hand, most consultants have been intrigued and said the experience was good.”

Although Buzzsaw.com has actually cost MMP architects money, Wrublosky says, “We weren’t looking for cost savings, but actually were looking for a better product and an edge on our competition.” He adds that it has taken a fair amount of work to keep employees up-to-speed and even more work to maintain client knowledge and training. Fortunately, Buzzsaw.com has a terrific technical support department, and MMP has encouraged its clients to use its services, Wrublosky says.

“However, the MMP home office has turned into somewhat of a technical-support center, because clients feel more comfortable calling me for help. I’m not about to discourage this,” he asserts. Post Buckley Schuch Jernigan (PBSJ), Miami, Fla., is a large consulting engineering firm of 2,600 employees with 60 offices in the United States. Projects, generally at the city and county level, contribute to annual revenue of \$300 million.

“When the number of individuals involved in a project, including multiple consultants, stakeholders, city and county officials, and regulatory agencies, exceeds a dozen individuals from a dozen locations, it’s the coordination of individuals that presents a challenge,” says Marc Walch, PBSJ’s vice president of information management.

The firm, which specializes in civil and environmental engineering and construction management, began using e-Builder for the massive coordination efforts resulting from these large projects. Walch says the firm uses e-Builder for both design and implementation of the projects. The firm targets projects with a minimum \$1 million engineering fee or \$10 million construction value to justify using the collaboration tool. Such projects represent 5-10% of the firm’s total projects. This is the benchmark that PBSJ has set for breaking even on the collaboration-tool investment. Like many firms, the first priority of PBSJ in using a collaboration tool is to save money.

“Whether the collaboration tool produces a better job is a fringe benefit that both a project owner and PMSJ can take advantage of,” says Walch.

Most firms, who have yet to realize the savings that result from the use of a collaboration tool, are probably not taking advantage of its total functionality.

“The developers of these collaboration tools are (creating) much more power than the average user can take advantage of,” says Walch. In addition, the maximum benefit cannot be achieved when only a minority of users is properly using a majority of the functions, he adds.

Walch estimates that 5-10% of engineers and 10-15% of architects are using collaboration tools. He maintains that the use of collaboration tools depends on the size of the projects, which means that only the larger firms with large projects have the opportunity to take advantage of collaborative tools.

More and more projects, especially those overseen by public agencies, require a collaboration tool, says Walch, who adds that he would like to see the adoption of collaboration tools driven by project owners because when the owner is paying for the collaboration tool, there is significantly less resistance.

“When larger cities from larger states realize that there is a benefit to using collaboration tools in managing their large projects, then you might see a faster adoption of these technologies—I think that’s where we’re heading,” Walch maintains.

Ellerbe Becket, Minneapolis, Minn., provides integrated architecture, engineering, planning, and construction services worldwide. Mike Hnastchenko, the firm’s director of technology, says it is the

worldwide nature of the firm's clients, projects, and corporate offices that necessitated the use of a collaboration tool. For instance, each phase of a construction project, from design to completion, may be implemented from a separate office.

Ellerbe Becket chose Buzzsaw.com in 1999 after trying out five different collaboration tools. "At one point, some individuals were simultaneously using three different collaboration tools, and we felt that standardizing across the corporation would help promote buy-in from our employees and consultants," says Hnastchenko.

The firm's projects, such as those in South America, could have never been accomplished without the ability to collaborate with the local consultants and general contractors in the foreign nations, he maintains.

Using Buzzsaw.com allows Ellerbe Becket to utilize experts from various offices, regardless of location, resulting in stronger project teams. Ellerbe Beckett is currently using Buzzsaw.com on 120 projects, with 400 internal users and 1,500 external users.

Hnastchenko says that the greatest difficulty in overcoming the cultural challenge of technology is gaining trust. Unlike software, in which you actually receive something that can remain on your computers, "the Web service can go away and you're left with nothing," he says.

The GC perspective

Beers Construction Co., Atlanta, Ga., was one of the first general contractors to actively use a collaboration tool on all of its projects, says PBSJ's Walch, whose company has worked with Beers Construction in the past.

Beers Construction uses e-Builder to gain a competitive edge in marketing, promoting the tool to project owners, architects, and subcontractors because everyone can save on costs by using the technology. The company is currently using e-Builder on approximately 10 projects and utilizes the tool for a variety of tasks, taking its cues from the project owner as to which specific functions will be employed on a particular project.

The Beck Group, Dallas, Texas, is a large general contractor with additional architecture and real estate services. The firm generates approximately \$950 million in annual revenue in the commercial construction industry. The Beck Group began considering collaboration tools four years ago when it began investigating project-management software and decided on Prolog by Meridian.

Today, Beck still uses local versions of Prolog, but most new projects are managed on ProjectTalk. Architects use Buzzsaw.com for their collaboration because the tool is geared to the designer side. Buzzsaw.com is not used, however, for project management by the Beck Group, since this tool's strength is not project management, says James LaMarr, Beck's project collaboration specialist. The company uses ProjectTalk for collaborative functions like RFI tracking, document management, project-directory listings, and posting daily subcontractor reports. Different functions are used depending on the project, says LaMarr.

As far as the future adoption of collaboration tools is concerned, LaMarr says that more and more project owners are requiring collaboration tools and a few have their own. When an owner requires the use of a collaborative tool other than ProjectTalk, the Beck Group uses the owner's tool, but continues to use Prolog internally, LaMarr explains. This, of course, requires rekeying or reposting information from one system to the other.

LaMarr says that most of the Beck Group's competitors use some collaboration tool, and even some of the large subcontractors are initiating their own collaboration programs. He notes that more and more subcontractors have email, and the Beck Group will soon use email in addition to the fax machine to announce work availability.

On the other hand, LaMarr believes that the adoption of collaboration tools will only become widespread when more and more people are available to collaborate with—sort of the critical mass theory.

Subcontractor perspective

Humphrey and Associates, Fort Worth, Texas, is a mechanical and electrical specialty subcontractor for the industrial and commercial construction industries, generating approximately \$60 million in annual revenue.

Ed West, vice president of construction for the firm's Dallas office, says that the subcontractor made an internal decision to use Prolog because it wanted to standardize the documentation system between multiple locations. Later, the firm was requested to use ProjectTalk by the Beck Group and a few other general contractors on a project-by-project basis.

West says that the acceleration of business processes in the construction industry has resulted in shrinking project timetables. As a result, collaboration tools are necessary to help maximize labor efficiencies, which is generally the most costly and the most risky component of the project.

Getting things done faster requires "having closer coordination while working in the same cramped area and staying out of each other's way," says West, who explains that Humphrey and Associates uses ProjectTalk on a daily basis for communication, documentation, and sharing CAD files.

"The use of collaboration by our competitors is limited and may give Humphrey and Associates a competitive edge, especially over smaller subcontractors, says West. "Adoption of collaboration tools will be driven by a desire to be more competitive."

Collaboration is by no means a standard in the construction industry. Collaboration tools are more prominent in larger companies and are typically used for larger projects. In addition, project owners play an important role in the adoption process, and the widespread use of collaborative tools will depend on the extent to which project owners require their use in the future.

Also, architectural and engineering firms are more likely to use collaboration tools than general contractors or subcontractors. Once again, however, the use of collaborative tools by these users is not widespread, and when used, these tools are reserved for the larger projects.

Construction associations, too, are playing a significant role in the promotion of collaboration. Strategic partnerships and branded member services will attempt to bring collaboration tools to small and midsize construction firms and subcontractors.

Indeed, no single collaboration tool can deliver all functions appropriate to all phases of the construction project, from conception through construction to facilities management.

Jim Summers, a former landscape architect who now advises principals at Einhorn, Yaffe, and Prescott, an architecture and engineering Firm in Boston, Mass., offers an entirely different perspective on collaborative technology. Summers says that the development of collaboration tools is inherently flawed. Without addressing this fundamental error, widespread adoption may never be possible.

Summers argues that different players in the construction process use collaborative tools in very different ways. For architects and engineers, collaboration provides a means for exchanging information. For project owners, collaboration allows access into the work of the project team. In the end, project owners, architects and engineers, general contractors, and subcontractors are all interested in different types of data with different levels of detail.

"Collaboration can't be all things to all people, soup to nuts," contends Summers.

Instead, he believes the development of collaboration tools should take an entirely different approach. Says Summers, "No one will benefit fully until you separate the data from the interface."

He sees no reason why all of the data in a project, collected from conception to completion, could not be shared by different vendor products. He envisions collaboration tools that could pull out only the data of interest to the user at the level of detail appropriate to their needs.

It may be some time before collaborative tools are customized to such an extent. Still, collaboration has made significant headway in the industry as more and more builders and contractors integrate it into their day-to-day operations.