

# CONTRACTORS GOING HIGH-TECH

Construction companies move project management online

Webcore employees synchronize information at the Santa Clara Hilton construction site.



DENNIS G. HENDRICKS PHOTO

BY KATE REYNOLDS  
SPECIAL TO THE BUSINESS JOURNAL

**T**aming the lion of project management in the construction industry, an enterprise famously underserved by technology, has plagued contractors since the Egyptian days of Cheops and the Great Pyramid. The ancient quest for efficiency still offers a worthy question today: Has our current technology finally met the needs of one of the largest markets (over \$3 trillion) in the world?

Online project management is an enormous undertaking with entanglements that range from scheduling concerns—for both people and material—to privacy issues, bandwidth considerations, and a stymieing lack of compatibility among computer systems. But, if the problems are immense, so is the potential for savings as construction

moves online.

Sixty-five percent of the mistakes made in the construction industry are due to misunderstandings among architects, contractors and subcontractors, estimates Professor Hans Bjornsson, former director of Stanford University's Center for Integrated Facility Engineering (CIFE).

"You can probably save 10 percent just utilizing more effective methods of information sharing," adds Professor Bjornsson. "But the big fat is in supply chain management—procurement, where you can save almost 25 percent in an integrated world. This industry is ripe for e-commerce. If

you don't get in on the e-business, you're out. It's to e or not to be."

## Online integration progression

Dr. Florian Aalami is the executive vice president and co-founder of Redwood City-based BuildPoint Corp., an e-commerce marketplace for the construction industry. He sees four waves of solutions and adoption patterns.

The first wave, which started in 1994 or 1995, supported general communication and collaboration; as in the rest of the world, e-mail led the way. Design and engineering communities readily embraced e-mail, file transfer protocols, and project-specific web sites.

The second wave, which began in 1997, included online project management and project tracking informa-

tion. In principle, these tools sounded great, but the solutions were skewed to the needs of the general contractor. There was not wide acceptance within the subcontractor community simply because they could not use then-current technology.

Online project bidding—the third wave—went live a year ago. The guiding theory focused on disseminating bid package information in a timely manner. What really changed in this wave was the effort to link in the subcontractors with their fax machines; it was a novel way to combine the old world fax with the new world Internet.

At the end of 1999 the fourth wave began—online material procurement—an ability to order material as needed over the wires.

"Development cycles are shrinking," said Dr. Aalami. "We're going to



Bjornsson





DENNIS S. HENNING'S PHOTOS

Patrick Weiss of Buildfolio.com

**Buildfolio.com**

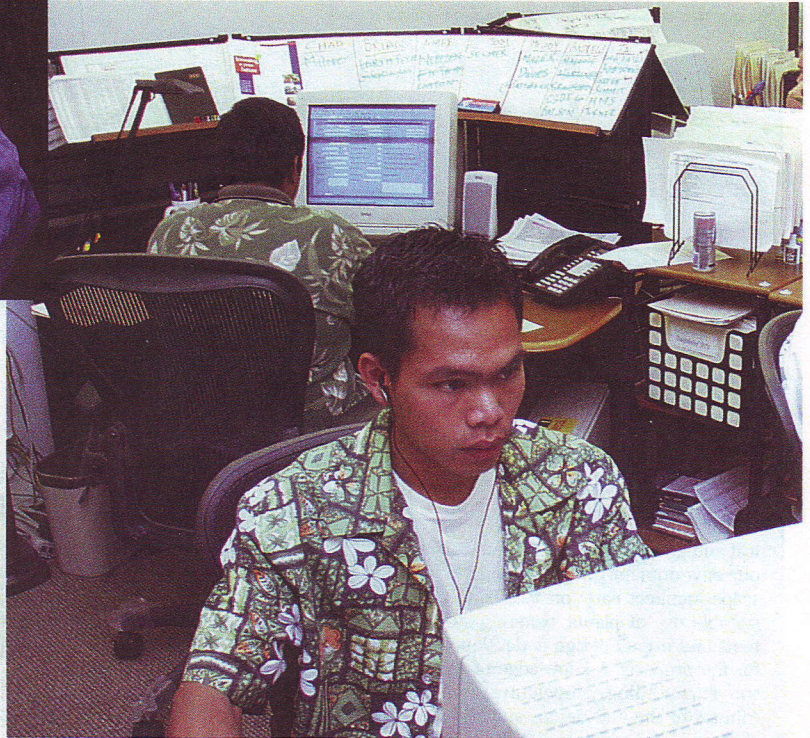
1895 El Camino Real  
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Tel. 650.321.9005  
<http://www.buildfolio.com>  
Provides online material procurement products for the construction industry. Links architects, contractors, distributors, and manufacturers in a real-time trading community.

**BuildPoint Corp.**

2200 Bridge Parkway, Suite 103  
Redwood City 94065  
Tel. 650.366.8000  
<http://www.buildpoint.com>  
Offers construction industry bid management software that provides a centralized online marketplace for contractors, subcontractors and suppliers.

**Cephren Inc.**

1072 East Meadow  
Palo Alto 94303  
<http://www.cephren.com>  
Tel. 650.845.2000  
Provides software for the bidding process in construction projects and for the procurement of building materials.



Implementation specialist, Tai Son, imports a general contractor's information into the BuildPoint system.

see new waves being adopted much quicker."

In the race to evolve online project management, California is clearly ahead, particularly those contractors in the greater Bay Area. Most have been at the forefront with beta sites for development in Silicon Valley. Still, Dr. Aalami estimates that the rest of the country lags behind by just a few months.

**Enter the wireless revolution**

"People sometimes ask me what's been the biggest technology revolution on the job site so far, and it's the cellular phone," said Ian Howell, vice president of product management for Cephren, Inc. Wireless today makes a lot of sense in that a cell phone or pager can notify someone quickly that he is needed. On the procurement side, wireless definitely has a role. Often on large jobs, materials are held in staging areas. If a contractor suddenly realizes he can call in a necessary piece of equipment today—even if it were originally scheduled for tomorrow—that can be done easily by wireless. Choosing the correct tool for the job is essential. "People get carried away with technology for

technology's sake, but what is important is figuring out what makes sense. Computer handheld punch lists? That makes sense. A set of meeting notes? It's not the right kind of device for the task," he said.

"The end goal is not to be paperless," said Sara Krueger, director of sales and marketing at Buildfolio.com. The end goal is to figure out how to make things pain-free, and it's not always a paperless environment that makes a project pain-free. Electrical systems and mechanical systems, for example, are very technical. Right now not all problems can be solved online. Headquartered in Palo Alto, Buildfolio.com is an application service provider for the sourcing and procurement of building materials.

Replacing reams of paper, though an appealing notion, is not as beneficial as reducing processing costs and lessening time-lag by conducting business over the Internet. Rather than waiting for overnight delivery, companies can send and receive documents in a matter of moments. Still, data incompatibility can be a roadblock, if sending and receiving applications are different.

But XML (Extensible Markup Language) avoids that by giving software developers a way to share data across a wide variety of platforms that can be tailored to particular users without altering the backend. "For example," said Professor Bjornsson, "if you have a number of subcontractors, but they are all using different accounting systems, XML makes it possible to receive and respond to an RFQ (request for quotation) in a way that is familiar to them."

Currently, the International Alliance for Interoperability (IAI) is developing worldwide standards for XML—work that could facilitate the next generation of e-business. In addition to its language project, the IAI has taken on the task of defining and describing all the systems of a building—and getting people to agree on them—a formidable job, according to Mr. Howell, a founding member of the IAI.

Even if data compatibility issues can be resolved, other worries arise. Chief among them is the issue of trust. How does a contractor know if an unknown company with a Web site is trustworthy? "The promise of

this fully-interconnected world is global sourcing," said Mr. Howell. "Anyone in the world can say he's selling something for half-price, but you don't know anything about that person. Are you sure you'll get those 100 window frames on time? If you get them, will they be the quality you want?"

Stanford's CIFE program is currently researching the labyrinth of trust issues, a matter of primary importance because the construction industry typically interacts with numerous players. Rating systems, such as that currently used on eBay, are being considered, but the trick is to develop a rating system that gives incentives to rate others accurately. Even with current online project management tools, valuable information can be mined, such as how companies perform.

And what is the future of high-tech project management and online material procurement in the construction industry? "I think the curve is going to be dramatic in the next couple of years," said Ms. Krueger.

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