

# Construction software — *from start to finish*

BY ADAM PLETSCH

## Four steps to help you understand your technology options

**T**here is nothing more frustrating – or indeed more devastating to your bottom line – than underestimating the ultimate cost of a job. After all, there's no going back to the customer to raise the price at that point. You're stuck with it.

A recent study performed by independent research firm Decipher for Intuit Construction Building Solutions confirms that many contractors are undercharging their customers. One out of every two contractors, in fact, admitted that they commonly fail to

include in their estimates certain general-condition costs such as supervision, phone calls and temporary power. That's probably why 65 per cent of respondents point to greater profitability and 57 per cent to more accurate estimating as areas where they really need to pull up their socks.

But such problems represent only a small sampling of what can go wrong during a construction job. You have to be accurate with your man-hour and materials estimates, stay on top of subcontractor costs, ensure that important information about job changes, rates and other financial figures is all shared among the many stakeholders. Most of all, you have to track everything constantly and accurately, or else your \$400,000 profit

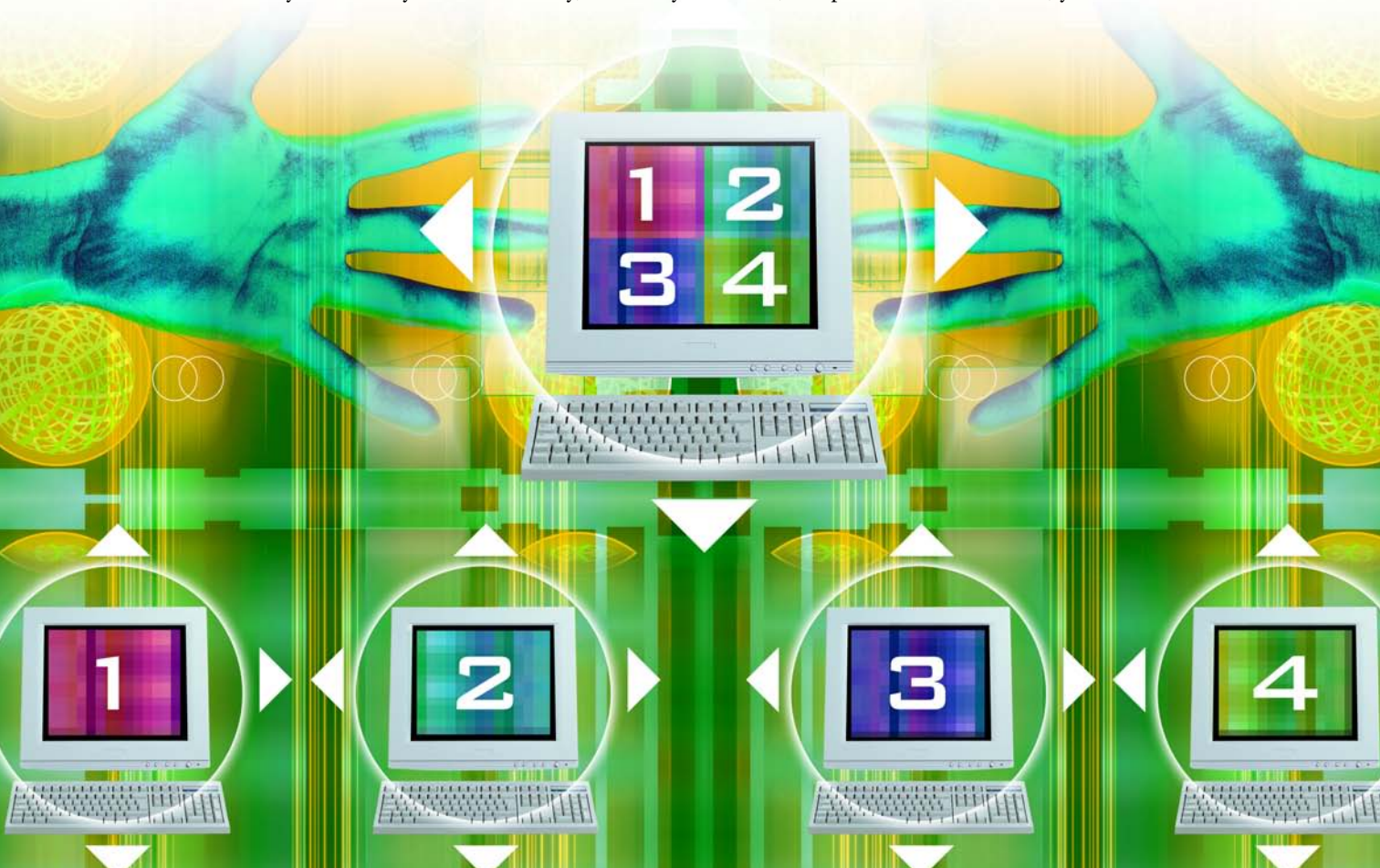
could turn into a \$600,000 loss.

There are many vendors out there vying for the opportunity to outfit your firm with the software you need to ensure that you are making accurate bids – doing a professional job and saving time and effort by using what you've learned on the last job to do the next one even better.

### Step one: takeoffs

If there is any excavation involved in a job, you likely need takeoff software. It is designed to help you determine, for example, how many square feet of paving you have to do, or how many cubic yards of fill you'll need for a job. It must all be prepared before you're ready to actually put a bid or estimate together.

Of course, you can do takeoffs with-



out the software; people who are meticulous and do them by hand can get very accurate numbers. It just takes a long time. According to InSite Software Inc., a vendor of such systems, doing a takeoff manually can take five to 10 times longer.

"If you take a bunch of contractors, put them together and ask 'What is your bid?' you'll find the estimates from general contracting for labour in installing a door or putting in a square of roofing will be very close," says Steve Warfle, product manager with the Rush, N.Y.-based InSite. The big variability will be exposed when it comes to determining something like the earthwork that's required. A large dump truck might hold 15 cubic yards

of dirt, and it's not uncommon to have a small site project incorporate 30,000 or 40,000 cubic yards of it. This can often be the biggest variable expense on a project. It also offers an estimator the greatest occasion for making an expensive blunder.

#### Step two: estimating and bidding

Contractors who take information from a product like InSite's often put it into systems from estimating and bidding specialists such as Heavy Construction Systems Specialists (HCSS), HardDollar Corp. or Bid2Win Software Inc.

According to Paul McKeon, president of Bid2Win Software Inc. of Portsmouth, N.H., one benefit of Bid2Win 2005 is that it allows contrac-

tors to standardize their estimating and bidding processes.

"I tell folks all the time that an estimate is really a forecast for profit and if you're not getting detailed in terms of that estimate, you're not doing a good job of forecasting profitability," says McKeon.

Users of Bid2Win can get into as much or as little detail as they want when breaking down pay items that they will bid to a specific authority, using crews, with production, and using integrated subcontractor- and vendor-management systems. The system allows the coordination of quotes received from subcontractors and vendors for any big job that is being put together.

Beyond this, Bid2Win also integrates with project-management software. So, for example, if a contractor is successful on a bid, in a matter of seconds it could push all that bid's information off to any of the standard scheduling or project management tools, such as Microsoft Project or any of the Primavera systems.

McKeon says any contractor buying estimating and bidding software should be keeping the path to integration with project management clear.

HCSS is another provider of estimating and bidding software. It offers four categories of software based on contractor size, priced accordingly. But HCSS is adding a range of other applications as well, including a job-control and project-management package.

"We're trying to provide all the tools necessary for a contractor and the operations side of their business," says John Davis, vice-president of sales and one of the owners of Houston-based HCSS.

HCSS knows its primary strengths are in estimating/bidding and Davis says if users want to use just that software, HCSS will interface well to whatever accounting system, scheduling software or takeoff system they have.

"We do integrate into any other products that they may be using as well, so what we're trying to do is fill some voids with some of the products that we have," he explains.

## Checklist

Choosing a software package for use in the construction industry isn't easy. Here are seven important factors you might want to keep in mind during the selection process.

- Decide if you want to buy from one or many vendors. Choosing best of breed means choosing many vendors' systems, putting them together and integrating them. This can lead to a lot of customization work. But it can also lead to you getting exactly the system you wanted. The alternative is to go to one or two vendors and choosing a system that handles many more applications.
- Figure out if you need technology built upon Microsoft's .NET platform, for example. It might help long-term, when you upgrade later or clamp on more applications. Then again, it might not.
- Similarly, contractors should ask what databases are supported by/built upon which software programs. For large companies with huge IT infrastructures, this, as well as the previous point, are critical considerations.
- Don't buy your software for the wrong reasons, such as: "Our president knows a guy there and can get us a deal"; "My brother-in-law's company implemented it and it seems (from half a continent away) to be going okay"; or, "We've been upgrading on it for years, and it'll be easier to just stick with it than having to learn something brand-new."
- Talk to customers who are using the software you're considering and grill them on the good, the bad and the ugly application features. Make sure you compare apples to apples: reference customers should be of a similar size to yours and hopefully similar in business model.
- Find out what kind of support is included in your software purchase. If your employees are not as computer-literate as most, you may need access to 24/7 support, and you may need it for longer than another contractor would.
- Make sure you know what you want from your software before you go out and get it. And be persistent; talk to as many vendors as it takes. This is a far better approach than scoping out several ill-fitting packages, hearing the pitches and trying to pick out the best of a bad lot.

### Step three: project management

There are many project-management systems to choose from, including the aforementioned Microsoft, Primavera and Meridian Systems.

Another option is WennSoft, which offers: the Service Management Series, for dispatching, scheduling, quotes, order and billing status, customer work histories and inventory usage; Job Cost, for tracking contract information, project-change orders, subcontracts, forecasts, forecast revisions committed purchase orders and other events; and the Equipment Management Series, for integrating equipment management, service, management and financial reporting.

Jim Wenninger, president of WennSoft, of New Berlin, Wisc., says his company became a software vendor when it couldn't find good software to run its own business. It decided, through either "dumb luck or a great insight," to build it on top of Great Plains Software's platform. When Microsoft bought Great Plains and its enterprise resource planning (ERP) system a few years ago, a certain awareness of WennSoft at sales presentations (due to familiarity with Great Plains) became built-in.

WennSoft, like HCSS, believes in providing more, rather than fewer application choices to contractors.

Wenninger says in the 1990s and

early 2000s, customers assumed they would be able to buy "all kinds of parts" to build a system which — as long as all technology was based on Windows — would work straight out of the box. "Well, they found out it didn't," he says. Wenninger says contractors tell him they want one solution for many things. They want it to be responsible for all financial, project-management, purchasing and inventory activity. It also should be able to handle tracking fixed assets, charging for equipment, knowing where equipment is and when it needs to be maintained and how to service it.

### Step four: job cost accounting

During the bidding process, a contractor is estimating what it will take to get the job. Once he gets the job, he can take the bid and — ideally, not always — dump his estimate into the job-cost budget. For example, the contractor can then estimate how many cubic yards of dirt he will need to move over how many man-hours, with which pieces of equipment, costing how much and taking how many hours. As the job progresses, he can compare what actually happens against what he thought would happen (his estimate).

"That's where we come in," says Fred Ode, president of Foundation Software. "[A contractor] could make money on a job and think the estimate was great, but the problem was that he made more money on some aspects of the job and actually lost money on other aspects. With this knowledge and information, that will help him do better business in the future."

He compares what job-costing accounting does to what a golfer learns from a bad golf shot. He gets immediate feedback that he either chose the wrong club or didn't allow for the wind, and can use this information the next time. "But it's too late for that shot."

There is a human element, though. The challenge — as it often is when using a software package — is maintaining good data so everyone can learn from each other's mistakes. The superintend-

ent, foreman and field people must actually report information in a manner that makes sense to the estimating or bidding department, Ode says. "You have to motivate them to do it, they have to want to do it, and that's the biggest challenge from our perspective."

Toronto-based CMiC also provides accounting software to contractors, although Bassem Hamdy, the company's director of product management and marketing, describes the software as "construction ERP (Enterprise Resource Planning)." It facilitates a connection with all internal departments within a construction company and allows communication and management between all stakeholders — such as vendors or a material suppliers, subcontractors, or partners such as architectural firms.

CMiC has three main product lines: CMiC Enterprise, which is traditional back-office accounting; CMiC Financials, "your boring, basic, general-ledger, accounts-payable, accounts-receivable"; and CMiC Project Management, which opens up the project-costing world to the back-office accountant.

Hamdy says CMiC's key product is CMiC Project Management, which is designed to take a job from the point where a business developer learns about it through a contractor relationship. The project is then set up as a bid project and integrated into bid and procurement software (from CMiC), which allows contractors to create invitations to bid. Subcontractors can come online to the contractor's Web site and enter their own bids, download drawings, or do online takeoffs. "Estimators literally choose online which bidders they want — and with the press of one button comes the creation of legal-verbiage contracts and, of course, in the back office accounting, the actual commitment."

CMiC's accounting/project management can receive its data from any major estimating package, such as HCSS or Timberline, "or the Number One estimating package on the market, Excel," Hamdy says with a laugh.

## Great White Lag

According to Bassem Hamdy, CMiC's director of product management and marketing, Canadian construction firms are lagging behind U.S. ones in their rate of implementation of software systems that perform accounting tasks.

"The Americans are eliminating general expenses, overhead, by implementing these types of systems. The Canadians are tending to add overhead, the margins are decreasing. Our construction costs are going up because of that."

Andy Burg, operations technology consultant at Cincinnati-based Messer Construction Co., a CMiC customer with about US\$500 million in revenues and more than 600 employees, says the life cycle of the project – apart from takeoff and the estimate – is handled by its CMiC software package.

Once Messer is awarded a project, the senior project executive responsible begins the process by creating the proper information in CMiC. The next person in line, the project manager, builds upon this information, pulling the estimate in from its Messer's Timberline estimating software. A job-cost structure is created, jobs are purchased and subcontractors are managed through the system. Its project managers also maintain their cost reports, order billings and subcontract change orders through this module, so that "at any minute when somebody asks them a question," they know that they can rely on informa-

tion coming out of the system.

"In the past, we've had other software for project management; you had to maintain your changes there," says Burg. "Once a month, you took that information and put it in the accounting software, and you tried to make them balance so that you were reporting back to our corporation what you were showing on your other software. There was a lot of redundant information, a lot of time spent. This obviously streamlines the process."

Burg says the biggest benefit from collaboration between CMiC and other software is the way it becomes integrated with Messer's accounting system. That allows subcontractors to see the status of their payments and lets owners review billings and owner cost reports.

Messer even stores digital images in its system, which Burg calls the "virtual file cabinet," and which allows managers the freedom to leave the job site.

"In the past we've been tied to the

information that's in the [actual] file cabinet. With CMiC, if we're at home or anywhere out of the office, we can access the information, which is a huge benefit — because that's sharing information to all team members and you can access it anywhere."

Whether a contractor decides to try the "best-of-breed" method, buying the best applications from several vendors and putting them together, or going to one or two vendors to put together a whole system, two things are clear. The fewer steps you have to take, the less time you will waste entering and re-entering information; and the more accurate your data is, the fewer mistakes you will make during takeoffs, estimating and bidding, project management and job-cost accounting. ♦

*Adam Pletsch is a freelance writer based in Toronto. He has an extensive background in writing about industrial software.*