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The Death of the Filing Cabinet

A paperless office may have many advantages, but the best could be the legal protection it affords.

By Associate Editor Jean Thilmany

LET GO OF THE PAPER. STEP AWAY FROM THE FILE CABINET. No matter how tradition-bound you may feel, when looking for a design document, either current or outdated, these days the best advice is: Boot up the computer.

Managing engineering documents electronically—that is, via a computer system on which users share files—enables all engineers to be on the same page, literally. But benefits extend far beyond what's called version control.



Not only does electronic document management function as an on-line library complete with check-out rights, but it also allows engineering firms to maintain archival records of older designs and the engineering thought behind them. The archival storage and automatic search capabilities inherent in these systems let engineers produce relevant documents in no time.

And those engineering firms that need to keep documents to comply with regulatory requirements find the software—which acts as an electronic file cabinet—vital. Indeed, companies have found that such systems actually help protect them in the event of lawsuits.

Still, version control and workflow management are the most often cited reasons to house engineering documents on a server. Digital management prevents too many cooks (or engineers) from spoiling the design soup by ensuring only one person at a time gets to make changes to a drawing or document. Workflow management means incipient designs can pass between pertinent mechanical engineers, analysts, and manufacturing engineers at the proper time in the design cycle.

Mandar Rege, senior director at management company Alvarez and Marsal of New York has glimpsed both the business and legal benefits to be gained by electronic document management. His firm is currently overseeing the Lehman Brothers restructure.

Alvarez and Marsal's data analysis and preservation side handles large amounts of electronic data, and Rege, who is also a chemical and mechanical engineer, has a hand in controlling that data. He also advises companies looking to begin their own electronic management systems.

:: Archival Retention

From a business perspective, storing and handling documents electronically help engineering firms run efficiently by keeping document management costs low, Rege said.

In his experience, engineering firms usually archive blueprints and records by converting hard copy into electronic images and, of course, storing newly created CAD drawings, blueprints, and records in the same system.

The electronic tools are also useful for archival retention, Rege said. Electronic documents take up much less room than paper documents, and they can be warehoused for a long period of time and without the worry of paper degrading or a document getting lost or mishandled. Rege added that firms with electronic management systems in place don't need to keep a librarian on staff specifically to store and retrieve records, as was often necessary twenty or so years ago.

On the flip side, Rege pointed out that a firm's information technology staff needs to ensure electronic files are adequately backed up—that is, they won't disappear forever should the server crash. And the IT staff themselves frequently take the place of the librarians of yore.

But these systems have progressed from being used as a replacement for paper to being called upon to improve business processes, Rege said.

“Electronic documents are easier to find and locate. If you wanted to move a document from one place to another, you could quickly send them long distances,” Rege said. “And then, more recently, people wanted to take advantage of the workflow part of it. They realize the benefits of using workflow to get their job done.”

Many engineering businesses that Rege has worked with start managing documents using a file-sharing and version-naming process. Engineers essentially check out a document or design from the common electronic file cabinet, then rename the document and date it upon return. Theoretically, the new name and date lets other users see at a glance when the file was last updated.

“But file-share means everyone has to understand how files are versioned and they have to understand the process of removing or tagging obsolete documents,” Rege said. “All this is completely manual. And more people using the system means more distribution and a greater probability it will fail.”

When they decide to upgrade their file-sharing system, many companies turn to Microsoft Sharepoint. The Microsoft program is more sophisticated than simple file-sharing techniques and is fairly easy to integrate with existing Windows systems, Rege said. In addition, not only is the program easy to roll out, but suppliers and collaborating engineering firms can tap into—and participate in—the system.

“Engineers have a lot of contact with third-party business partners,” Rege said. “Tools like Sharepoint do a pretty good job of bringing them together and giving them access to third-party information in a private, confidential environment.”

Other document management software is specifically focused on engineering firms. Such programs include the capability to share and to warehouse CAD documents, other three-dimensional designs, and documents like bills of material unique to the engineering realm. These include systems from Synergis Software, SolidWorks, Northrop Grumman, and ACS Software.

Electronic document management systems like these spread the wealth, says Todd Hays, president of ACS of Torrance, Calif.

“Many will initially use the system to handle day-to-day engineering stuff like checking files in and out and revision control,” Hays said. “But once things are under control, other departments, like purchasing, could look up a design. Or an engineer could e-mail off a copy to a vendor and say, ‘This is what I need for manufacturing.’ So everyone has the benefit of accessing a controlled library of information.”

:: Business Benefits

The experience of the engineers at AWB Engineers, a consulting firm in Salisbury, Md., is pretty typical of the

benefits of managing documents electronically. While the engineers there were doing their best to control the overwhelming number of documents, CAD files, change orders, and the like that flowed through the company every day, managers still ran into trouble.

Because they were using a file-sharing system, the engineers sometimes found that two team members were making simultaneous revisions to different copies of the same file, which would then set off a chain of back-and-forth e-mails and meetings to sort out the problem, said Greg Barfield, IT and CAD manager at the firm.

The company recently turned to a document management system that houses all files in a common database and allows only select engineers to make design changes. The software ensures that changes are made in an orderly fashion, Barfield said.

Synergis Software of Quakertown, Pa., is supplying AWB with the Adept Document Management system, according to Todd Cummings, Synergis's vice president of research and development.

:: Legal Argument

But the argument for electronic document management systems extends far beyond aiding workflow, Rege said. Many companies—banks and medical manufacturers, for example—need to keep huge amounts of information for regulatory purposes. And almost every company, including engineering firms, has a legal interest in maintaining an easily produced paper trail.

Organizing engineering data is vital for archival, regulatory, and legal purposes, said David Kessler, a partner in the intellectual property practice group at Drinker Biddle, a Philadelphia law firm.

“Basically, engineering firms aren’t that much different from a small biotech startup that’s trying to develop the next great drug,” Kessler said. “It’s just a different kind of science.”



That is why engineers should keep organized records of what Kessler called their “inventions.” Engineers may need to produce documents that prove they were the first to design or produce a product, said Mike Burg, a patent lawyer at Drinker Biddle.

“And by that I don’t mean keeping information loosely around, like in an e-mail so they can’t find it when they need it,” said Burg, who is a mechanical engineer as well as a lawyer.

Also, engineering firms should be maintaining these types of documents for years, Kessler said. Case in point, he said, is the August 2007 Interstate 35 bridge collapse in Minneapolis: Forty-year-old bridge design documents played a crucial role in probing the reason for the collapse and, of course, in the subsequent lawsuits.

Engineering companies can never know when they’ll be called upon to produce original documents, he said.

Also—depending on the type of engineering business—managers may need to maintain records to comply with regulatory requirements.

For instance, city governments need to maintain citywide sewer and street planning records, Kessler said, so they can be searched quickly by other city or county officials—or by citizens—looking for pertinent information.

Though the advice seems counterintuitive, engineers should beware of maintaining every single record, he added. While storing reams of electronic “paper” is certainly easier on computer servers than within file cabinets, reams of information might get firms into legal trouble, too.

That's because, legally, engineering firms need to turn over all documents related to a lawsuit. Anything relevant to the case—even if the firm wasn't mandated to have maintained it—must be turned over. And therein some compromising information may lie.

“Once you anticipate or have litigation, you have an absolute requirement to keep everything you know or should know is relevant to the case,” Burg said.

“The more stuff you're not using for any reason is clutter and it clogs the lawyer's discovery process,” Kessler said. “Look at your e-mail box. About 90 percent of what's in there has no value. That's the idea of getting rid of things with no value.”

Above legal costs, engineering companies face basic business costs when they choose to maintain every document, design, or file that crosses every engineer's desk, Burg said.

“No one wants to rent out another office so they can store their files,” he said. “But because electronic storage is so convenient and relatively cheap, people tend to maintain everything.

“But there's costs in hardware and maintenance and a potential cost if confidential information is ever lost or stolen,” Burg added.

“Of course, the average engineering firm doesn't face much litigation,” Burg said. “Thank God.”

Still, the next time you call up a CAD document on your computer, spare a thought for the wooden file cabinets of yore, the one that would have been occupying a corner of your office in days gone by.