TECHNOLOGY WORKSHOP

Just preparing for the switchover will save you money.

Time to Go Paperless

BY RANDOLPH P. JOHNSTON AND ROBERT H. SPENCER

EXECUTIVE SUMMARY

■ **THE MAJOR OBSTACLE TO A PAPERLESS** is not technology; rather, it's resistance to re-engineering of business processes. Overcoming the mind-set requires the active cooperation of everyone from the CEO down to the clerical staff.

■ **JUST REDESIGNING A BUSINESS'S WORKFLOW,** eliminating all the disconnects and redundant paper handling, will immediately enhance a company's bottom line.

■ **THE UNEXPECTED BENEFITS OF SUCH ANALYSES** are the discovery of infrastructure shortfalls and the identification of disconnects in the existing paper workflow—both of which now can be corrected as the plans for the elimination of paper progress.

■ **IF YOU AREN'T READY TO DUMP PAPER** entirely there are intermediate steps that can move you in that direction. When we talk about the paperless office today we don't mean the elimination of all paper—that's a condition that's still years away.

■ **A DROP IN HARDWARE AND SOFTWARE PRICES** makes a conversion now even more attractive.

■ **CREATE A PLANNING COMMITTEE EARLY ON** that includes representation from most of the departments that will be responsible for building support across the organization. Be sure the members are keenly aware of all the current paper processes so they can help design an improved workflow for the paperless system.

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nly one major obstacle stands in the way of a paperless office—and it's not technology. It's resistance to re-engineering business processes to accommodate such a switch. That shouldn't come as a surprise. Business has relied on paper documents for thousands of years. Even today, with computers on most everyone's desk and e-mail fast becoming the leading mode of business communication, paper maintains a firm foothold. In fact, use of paper grows an average 7% a year. Check out most any business office and you'll still see desks with overflowing in- and outboxes and copies of e-mail, memos and reports scattered about. The irony is that much of that paper is copies of documents already stored in computers.

Glossary

Capture-preparation software: Cleans up stains and wrinkles in scanned images.

Content-management system: A paperless system.

Duplexing: Printing on both sides of a sheet of paper.

Metadata: The complex data that goes into a paperless system's index.

OCR: Optical character recognition software that reads images with letters and numbers.

RAID: A pair of hard disks specially configured so that anything written, edited or erased on one is

simultaneously performed on the other. The configuration is called a redundant array of inexpensive disks, or RAID.

PROMISED SAVINGS

It's been estimated that every dollar invested in going paperless will generate a return of as much as $30. Even if that estimate is overblown, the savings still would be considerable. Just redesigning a business's workflow and eliminating all the disconnects and redundant paper handling will enhance the bottom line. Most of the technology—hardware and software—is here today and it's proven technology. A conversion now is even more alluring because prices for paperless equipment—computers, scanners, storage devices and software—have dropped markedly in the past five years.

The pressure to go paperless continues to grow as new accounting procedures—from Sarbanes-Oxley and the Health Insurance Portability and Accountability Act, to name just two—add pressure for more extensive documentation and audit trails.

When we talk about the paperless office (the technical term is a *content-management system*) we don't mean the elimination of all paper—a condition that's still years away. Some technological and mind-set gaps still must be resolved before the modern office will resemble the bridge of the Starship Enterprise, where not a single scrap of paper is evident.

Even if you aren't ready to dump paper entirely, there are intermediate steps you can take. For example, if you're in public practice, there are systems for paperless tax preparation, paperless audit, engagement management and general document imaging, and for those in industry, there are systems that scan invoices and automatically enter their data into your accounts-payable program, eliminating manual data entry.

STEPS TO PAPERLESS

Once an organization opts to go paperless, it should create a planning committee with representation from most of the affected departments. Its initial task will be to determine whether the company's information technology (IT) infrastructure is capable of handling the extra burden. While it's helpful if some members have a technology background, it's more important that each member understand the details of how the business operates and how paperwork flows in and among the various departments. Once the committee assesses the organization's IT capability, it next must decide how paperless it wants to go; that will determine how comprehensively it will have to re-engineer its workflow and IT equipment.

For example, you can start small: converting just the accounts-payable department. An oversimplified workflow path will probably look something like this: First the paper invoices will be hand sorted and stacked in a scanner, where that information is digitized and stored in the computer. For verification that data would then be transmitted to the appropriate managers'

computers and, after approval, passed back to accounts payable for eventual payment.

A handy software tool for charting complex workflow is Microsoft Visio; Microsoft Project is good for keeping track and defining tasks, resources and due dates. Both require nothing more than basic computer skills to operate.

The planning and re-engineering process can be undertaken by your staff if it has the time and the skills. However, don't expect much help via research of the available literature: There is surprisingly little useful reference material to build a knowledge base. Consider engaging an independent consultant. By *independent* we mean a consultant not tethered financially or professionally to particular vendors. You can assess a consultant's independence by asking for a list of recent clients of various sizes and industries; if most end up with the same basic hardware and software configuration, that's evidence the consultant may be too attached to certain vendors.

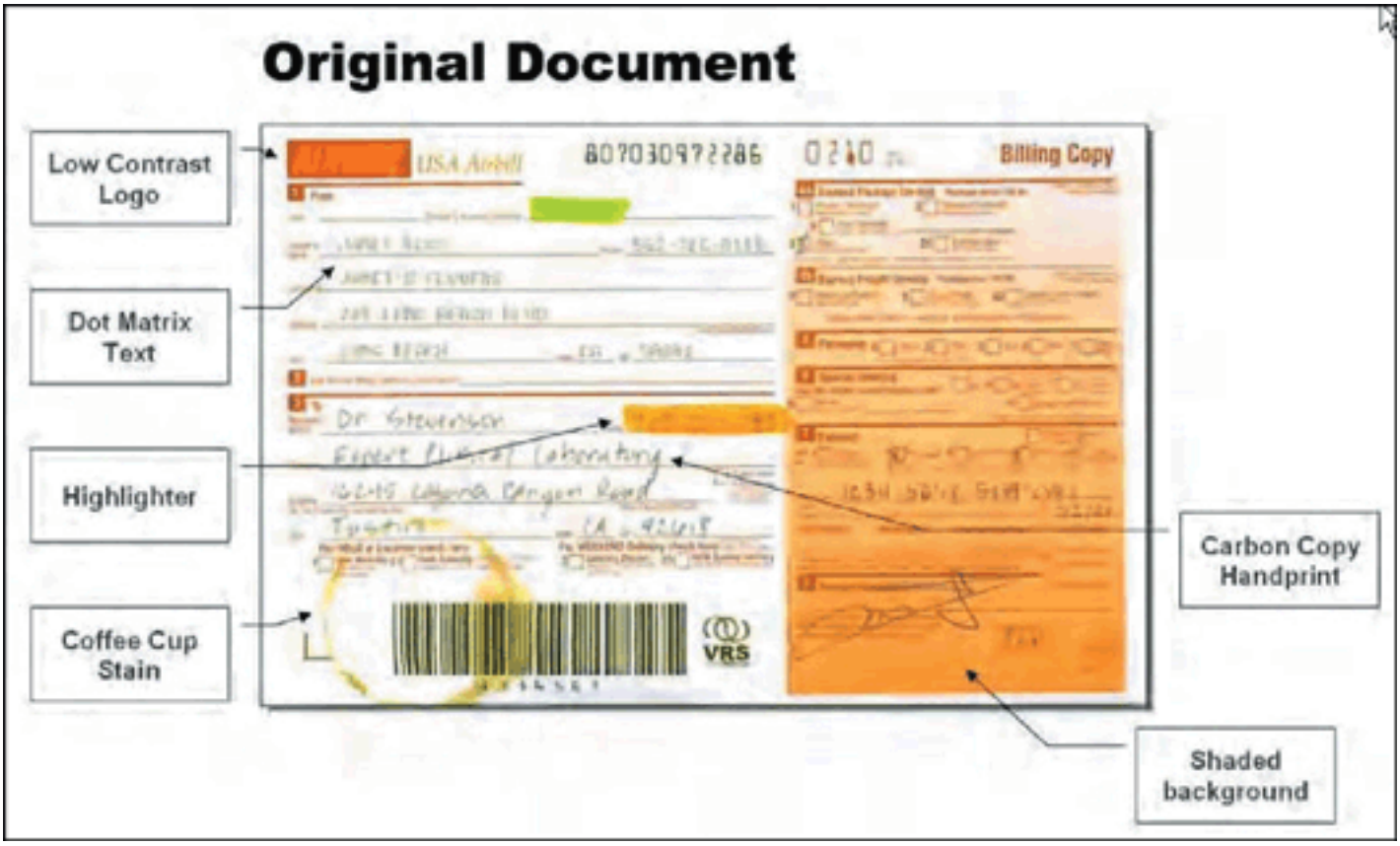
The unexpected gifts of such analyses are discoveries of infrastructure shortfalls and disconnects in the existing paper workflow—all of which now can be corrected as the plans for the elimination of paper progress.

You may not realize it, but your organization probably has already taken its first steps toward a paperless office. Consider how much raw data are already in digital form either already in your computers or flowing in from various sources such as remote computers, handheld personal digital assistants, telephones, remote cash registers and wireless laptops. So the only data that are likely to need conversion are from the never-ending flow of paper.

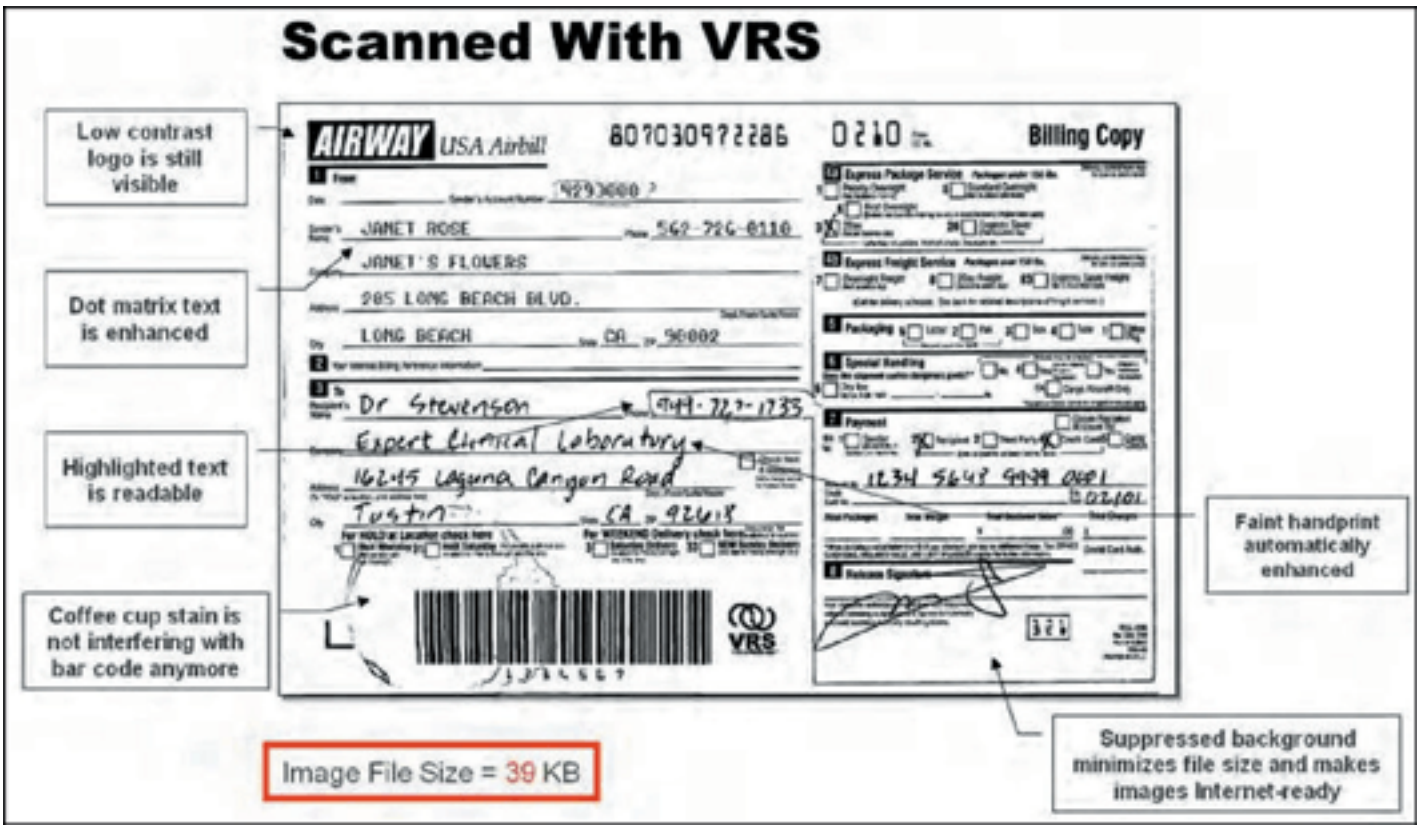
OVERVIEW OF THE PROCESS

Paper's conversion process begins when a clerk sorts the various kinds of paper—invoices, receipts, reports and mail. The clerk then stacks the material in the scanner's feeder and the automatic scanning gets under way, converting the image on the paper to a digital code. If the image is unclear—because the paper has smudges, coffee stains, wrinkles, folds or is tinted—the operator engages special capture-preparation software in the scanner to enhance and clean it. That software also compresses the digital image. To see how effectively that software improves a poor image, see exhibit 1.

Exhibit 1



Before: **An original image produced by a typical document scanner.**



After: **That same image after it has been cleaned and enhanced with Kofax VRS capture-preparation software.**

Once the initial scanning is finished, the paperless process takes one of three paths that will affect the choice of hardware, software and the eventual method of identifying each document for later retrieval.

The first option is the easiest, fastest and requires the least technology and expense. As a document is fed into the scanner, the operator types a descriptive file name (such as Sam Jones 2004 federal tax return) or an index code onto the resulting digitized image and then the whole image is electronically stored on a computer the way a photo is stored. As you can imagine, the indexing step is critical; the only way a stored image can be located for retrieval is via that index.

The second option, designed to enhance retrieval, requires a technological leap beyond just digitizing the image and giving it a name. During the scanning process a special program, called optical character recognition (OCR) software, is enabled. The OCR software "reads" and then interprets each individual alphanumeric image on the paper and converts it to a digital code. Upon completion, the computer stores not only every picture element of the image, but also the individual words and numbers that make up the document.

This method has a decided advantage over image-only storage: All the information (words and numbers) in the entire document can be made part of the document's identifying index; that's called metadata. As a result, any word or number on the image subsequently can be searched and any part of the document can be retrieved and even reproduced.

The third option lets the user select which process to use: image-only, OCR or both. The choice depends on the type of documents that are scanned and how detailed you want the indexing to be. For example, some documents, such as tax returns, can be adequately filed and easily retrieved just as images. Passing them through OCR software usually is unnecessary because the name and year of return are usually sufficient for retrieval. But a report, say, with pages of words and numbers on many different topics could be quite a challenge to effectively index without the ability to search its metadata.

In some cases, users assign additional indexing characteristics, such as the date when the file can be erased safely—a useful step when you consider how much space can be saved if expired files are automatically removed. Also, as extensible markup language (XML) becomes more widely used by the profession, its codes also can be added to the data, making the process of retrieval much faster and more precise.

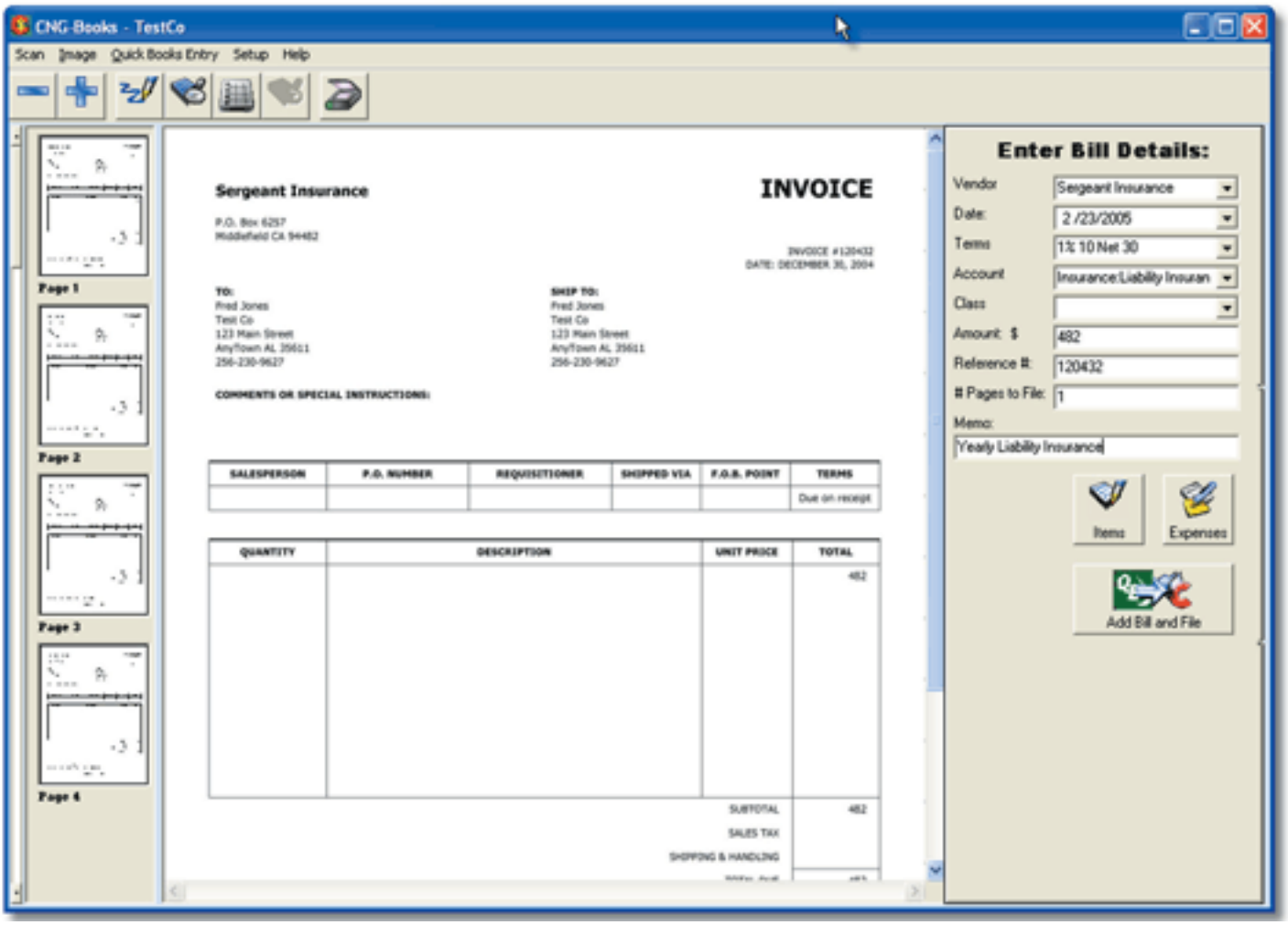
THE STORAGE PROCESS

The next step is storage. Since the originals will be destroyed soon after scanning, ultrasafe storage and regular and systematic backups are critical. Storage typically is on hard disks especially reserved for this purpose. For added safety, a second copy of the data usually is made, sometimes using a different storage technology. There are several storage technology options for backups: A separate hard disk, a pair of hard disks specially configured so that anything written,

edited or erased on one is simultaneously performed on the other (the configuration is called a redundant array of inexpensive disks, or RAID), magnetic tape, compact disks and, for long-term storage, optical disks or digital video disks.

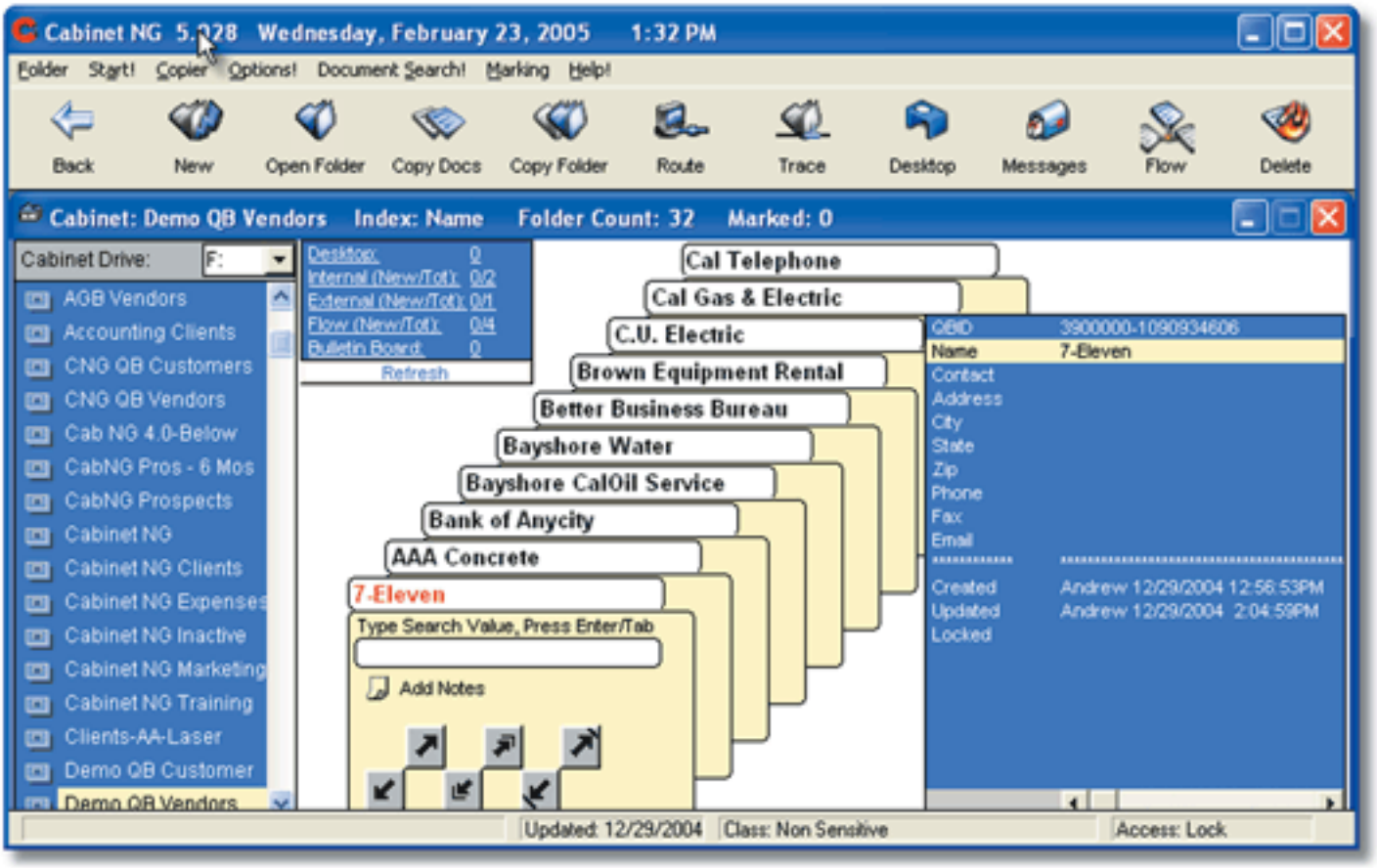
Most of the data will be filed in a typical tree format, which is the way most of us organize paper files and computer folders, with each branch standing for a major document category, such as clients, and an assortment of sub-branches for individual work areas. However, content-management software takes that process to a more sophisticated level. See exhibit 2 for a screenshot of a document being prepared by CabinetNG software for scanning and indexing. Notice on the right the key data that the software selects for indexing.

Exhibit 2



And notice in exhibit 3 how the filing system is purposely made to resemble a typical file cabinet.

Exhibit 3



RETRIEVAL

Once the digital data have been indexed and stored, easy and near-instantaneous retrieval is a must. Any user, whether familiar with a document's text or not, should be able to instantly locate what's needed. This is where an excellent indexing system built into the imaging software pays off. Some systems can find pages based only on key words embedded in the document; this method is not always helpful because the person who selected the key words often is not the person searching for the document. Depending on the size of the organization, more than one computer should be set up as read stations for the retrieved information.

EQUIPMENT

■ *Scanners:* The hardest working tool in the system is the scanner; it has to handle piles of documents. Insist on a heavy-duty flatbed design with a minimum duty cycle (the maximum expected normal volume) of at least 10,000 pages per month. If your scanner exceeds the recommended duty cycle, it may not qualify for warranty repair. Budget about 10% a year of its original cost for maintenance. Typical scanners for organizations up to 100 employees cost about $2,500 each; for businesses up to 1,000 employees, $4,000; and for larger organizations, about $15,000.

While it's nice to have the fastest scanner available, those that exceed 50 pages per minute carry a premium price. It's wiser to have several slower units situated in different areas of your office. That way the slower scan rate is more than compensated by having more machines in convenient

locations. The machine should be able to scan both sides of a document in a single pass (duplexing) and it should have an automatic document feeder (ADF) that can handle many different size papers because you don't want to have to manually feed each piece of paper into the machine.

AICPA RESOURCES

Conference

TECH 2005: The AICPA Information Technology Conference
June 27–29
Bellagio Hotel, Las Vegas

Electronic publication

e-MAP: Management of an Accounting Practice Handbook Online (# MAP-XXJA) has a chapter on developing and implementing a paperless office.

Online IT community

For more information on the paperless office, visit the new IT Community Web site at http://aicpa.org/infotech (see the article in this issue).

■ *Software:* When shopping for software be prepared for some name and price confusion. For one thing, not all vendors identify their software in the same generic way. In addition, one category of product—imaging software, for example—is capable of performing multiple functions (scanning, editing and retrieval) and some vendors charge a license fee only for the functions used. In addition, some vendors charge separately for each function and others charge one price for the entire package.

The cost and complexity of paperless software depend to a large extent on the size and style of your organization. The table in exhibit 4, below, provides some guidelines. Remember that software companies generally charge an ongoing maintenance fee for their product of 20% a year. In addition, you will need to budget for training and the cost of appropriate servers, networks and storage.

Exhibit 4

Cost of Paperless System Software Depends on the Size of an Organization

	1 user	2–10 users	11–50 users	50+ users
Imaging software	$200–$500	$600–$6,000	$3,000–$25,000	$15,000+
Capture-preparation software	$300	Included	Included	$15,000
OCR software	$500	$1,000	$2,000	$5,000
Workflow software	N/A	N/A	Included	$10,000
Scanner software	$700	$4,000	$7,000	$12,000
Implementation	Self	$3,000	$10,000	$20,000+
Total	$1,700–$2,000	$8,600–$14,000	$22,000–$44,000	$77,000+

■ **1-person office:** A complete setup costs no more than $2,000—and since the software is largely self-installing, there's no need to pay for that service. If you're satisfied with the clarity of the scans and can use a simple indexing system, you can keep costs down by not purchasing OCR or capture-preparation software. Most likely you will be satisfied with a .pdf format offered by Adobe.

■ **2–10 people:** Features and costs vary widely. You can keep costs to $300 per user or spend up to $6,000 for products with more advanced features. But don't skimp on the scanner functions and features. If your office copier is a multifunction device, it might serve as one scanner, but have at least another one with capture-preparation software. You're probably not big enough to need workflow software, but if it comes as part of the package, try it; you may find it useful. Your toughest problem will be finding a qualified installer to take on a job this small. Therefore, you may experience higher implementation costs than shown here.

■ **11–50 people:** You need more sophisticated features, including OCR, workflow and security software. Many of these features either will be included or will be available as add-ons; they'll be effective even if your business doubles in size. You'll especially need higher-end scanners with duplexing and automatic document feeding. Implementation will not be a do-it-yourself project.

■ **50+ people:** At this size you likely will benefit from workflow software and consultant assistance. Try to maintain the indexing in a single database. Your biggest challenge will be getting the various locations to handle the paperwork in a consistent fashion.

As you can see, conversion to a paperless office is not easy. It takes plenty of planning and a strong commitment to overcome the natural inertia of any office (see "You Need the Right Paperless Attitude"). After all, the entire organization has been using paper from day one, and now you're asking everyone to abandon that process and adjust to a completely different way of

working—and thinking. However, rest assured, once you undertake the project, you'll likely see positive results quickly. ■

You Need the Right *Paperless* Attitude

By Edward Mendlowitz

It was Jack Welch, writing in *Jack—Straight from the Gut*, who said it doesn't make sense to have a digital system and a paper system in a business. Considering the difference in the expense and efficiency between the two, sans start-up costs, I have to ask: "What are you waiting for?" Even though going paperless is a major undertaking and should be carefully organized with the right training and equipment, the cost and time savings and increased confidence a firm can achieve make it all worthwhile.

Our firm adopted a paperless tax season in 2004. Everything we did was planned and implemented in the beginning of February! We maintained file copies in an electronic environment; e-filed 87% (up from less than 1% for 2003) of the returns we prepared; and e-mailed many clients their copies in .pdf format.

We decided to electronically file all eligible returns. None of our clients objected once we explained it would reduce or eliminate keypunching errors by tax agencies and speed their refunds. Intraoffice, we correspond electronically using Microsoft's Outlook.

Our biggest savings were in time, from speeding up file retrieval and file use to reducing clutter. It's now faster to open and review files when clients call with questions. The cost savings from decreased paper expense, copying charges, staff time and postage and overnight charges also were significant. We also recently started to cut our file storage space. We're converting space (at no additional cost) previously used for paper file folders into room for work stations for staff or tax agents coming to our office. Our audit work papers now are Web-based and paperless, eliminating the need for us to carry tons of paper and secure files overnight. The reduced wear and tear on our auditors are certainly worth the cost.

Employee training was minimal, as the software and procedures were readily intuitive. Windows-based programs contain similar instructions and key strokes, so anyone with a Windows background can easily pick up new software. The only training we needed was in the specific applications of work papers and in adhering to our internal procedures with respect to backing up files and signatures.

We have a history of extensive file folder procedures. However, the paperless system has almost completely eliminated the need for paper file folders. Everything we used and did now is saved on our server. In some respects we follow the procedures we established for the paper files; it's just that now, it's all maintained digitally.

On January 1, 2005, when we merged our firm with a much larger one, the first thing our new partners did was provide every accountant with a scanner and a second computer monitor. Having the second monitor helps to speed file handling, inputting and reviewing. We can have the clients' scanned original data on one screen and the tax program on the other, or put the current tax return on one screen and the prior-year return on the other to compare them. Partners can retrieve tax-return files within seconds without getting off their chairs, speeding data retrieval when clients call with questions. And having returns on the screen when they're talking to clients also enables partners to suggest new services such as financial planning, investment management or tax planning.

Personal scanners have become such necessities around our office that we wonder how we ever got along without them. In fact, we've invested in some portable scanners that enable us to input data right at the client's office or at our homes. Since staff can hook up to the firm's server from off-site locations, it's literally the same as being at the office. Scanners and monitors are inexpensive; we easily recovered our cost within a few months through increased productivity, less intraoffice chatter, greater efficiency and faster turnaround time.

You can scan any document and save it to the network in any directory you wish. Then the software puts an index on the files that allows you to search for them by key words, dates or file names just as if they resided in your filing cabinet. Some software, such as GoFileRoom (which we use), is Web-based, permitting us to access files from anywhere.

We have digital folders for .pdf copies of tax returns, original client information, research questions and review notes, and "flag" sheets to remind us to take care of or follow up on return preparation. There are permanent files for divorce agreements, closing statements for real estate, financial planning, and reference letters and correspondence with and behalf of clients.

We use Capture Perfect software, Cannon scanners and the full version of Adobe Acrobat, as well as PaperPort, a program that can edit or alter scanned files.

It truly was a seamless transition to our paperless office; no one had trouble adjusting. Once we rid ourselves of the fear of getting started, we accomplished our goal with lightening speed. We prepare tax returns, e-mail .pdf copies to clients for review, keep copies on the server and file the government copies electronically with just a few clicks. And, so, to my fellow CPAs, I leave you with this message: When in doubt—go paperless.

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