Legal Technology for Tough Times

A Comprehensive Approach

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General Introduction

When times get tough, the tough go looking for solutions. One solution to improve your profitability in tough times is to seek to lever your technology to work for you. Compared to other steps that you can take in your practice, your prudent investment in technology can produce large ROI's. Accordingly, this session will explore the strategic application of technology to help you improve your profitability not only in the short term but in ways that ensure the longer-term success of your firm. We will focus on technologies that assist in the production of work product as well as technologies that assist in the 'back office' that traditionally are not given the same attention as the 'front office' or production side of the practice.

PLANNING FOR YOUR DIGITAL LAW PRACTICE

Suppose that you have taken a bit of time, thought about where you want your practice to go and as a result, totally overhauled how you practiced law and tried to be as efficient and effective as possible? What technology makes the most practical sense, how much should it cost, and how would you do it?

For an increasingly large number of lawyers, that's not an abstract concept. Recent ABA studies show that the majority of all practicing lawyers are solo and small firm practitioners and that an increasing number of large firm lawyers are joining their ranks as tough economic times and major layoffs are bringing large firm expectations to small firm practice.

In the small firm context, the firm's front line technical support person and system administrator is, more often than not, yourself, and the firm's technology budget and the partners's vacation plans are likely pulling in different directions. With that in mind, we'll discuss what makes sense for the small firm revamping its technology. (You can supplement these general materials

by accessing our more detailed articles on specific automation topics that will be posted by the Washington State Bar Association.)

A General Business Model:

We often get asked the question: "What is the best software and hardware for me to buy in my practice?" Invariably the person asking the question is looking for a quick answer to something that he/she regards as a fairly easy question. In reality, the practice (or rather the plan for the growth of the practice) drives the choice of software; and the software (and how someone chooses to practice) drives the choice of hardware. In this section we will look at the interplay between your computing resources and your business plan.

1.Overview: Business Strategy of Low Volume/High Margin Work:

Most small to medium sized law businesses would do well by following Michael Porter's business strategy work at Harvard Business School by concentrating on low-volume, high-margin legal work. This movement to this type of higher-value 'niche' practice has been demonstrated to work particularly well in small to mid-size law firms and is particularly appropriate for "virtual law firms". We've included a discussion of virtual law firms further down in these materials.

The temptation in this type of practice is to open up and take on more varied work (the ubiquitous 'general practice') – unfortunately this almost always works against all but the largest firms by diluting the strong business focus of the firm and results in lower-value work being performed. The firm also loses its market focus, since by being all things to all people; it is also seen as not having any competencies that distinguish it from the competition. Accordingly it would be a tactical objective to ensure that your systems positively reinforce the move towards existing high-value work done in the firm by making such work efficient and effective.

In light of your strategy, your financial systems should produce the financial reports, billings and management reports on a 'real time basis' that allow both management and individual lawyers to set financial and work targets and monitor their progress against their goals and the budget

expectations of the firm.

Your accounting system should support the entire workflow cycle – from opening files, recording time, recording disbursements, calculating interest on outstanding and unbilled disbursements, handling the file, producing pre-bills, producing final bills and following up on accounts receivable and payables. Lawyers should be able to access trust and disbursement data 'on the fly'. Lastly it should assist in budgeting for the firm, for setting both billable time and billable revenue targets for all lawyers and assist in tracking and reporting on the same. For example, in a personal injury practice, it is important that the amount of billable time put into a file does not exceed the approximate % fee value of the file – otherwise the firm is putting financial and personal resources into what are commonly known as 'dog' files.

Furthermore, it should also assist in the cataloguing of 'knowledge management' which in your case would be the assembly of excellent legal precedents, opinion, settlement briefs and the like to be shared among all the lawyers of the firm.

As a result, your technology should focus on supporting discrete, highly profitable practice areas and should not seek to support a wide range of commodity legal services (which are high-volume, low-margin work). In the longer term, your 'technology spend' should be concentrated in building discrete practice systems that support your niche practice(s) and improve on its effectiveness and efficiency, both from a practice standpoint as well as from a financial standpoint.

2.Foundation Issues:

In this part of the paper, we are starting right from basics and proceeding from there. Your firm may be much further advanced along these lines; if so, feel free to jump ahead to the next section unless you wish a quick overview of these issues.

First Priority: Your Network:

Although we discuss networking in much greater detail elsewhere in these materials, it's worth reiterating here the importance of a solid local area network in even the smallest law office. This

may seem almost too basic, but the authors have seen good sized law firms operating without a centralized computer network - instead they use the Internet to transfer around files and documents between discrete lawyers and staff in the firm. Accordingly, we are starting right from the beginning and talking about the benefits of an office network.

There are a number of advantages to systematizing over an office network. For one, all your files can be saved onto a central server in a common file structure and backed up from there. This results in the office having resiliency against any singly hard-drive failure and resultant file and data loss on any single PC. Furthermore, they permit access to peripherals such as networked printers and scanners (important when considering moving to a paper-less office). In a law office environment, a LAN (local area network) allows case or practice management software to be installed to run across the network, providing centralized calendaring, To-do's, file and contact management, call and time tracking, messaging and much more. Various practice management software packages are: Amicus Attorney, LawStream, Practice Master, Client Files, Time Matters, NEEDLES and the like. A LAN will also support a computerized accounting system integrated into the case or practice management software.

Few of the enabling technologies discussed below work very effectively if your office is not already networked. As a practical matter, wiring a law office with a highly capable local area network, whether based upon a simple peer to peer network or dependent upon a central file server, is an obvious necessity. Without networking, a law office cannot communicate effectively and without effective communication, a law office cannot operate efficiently.

Generally accessible data files such as case notes, prior word processing documents, contact and conflict of interest information, internal Email, and calendaring are about the most basic networking applications imaginable. These basic programs so greatly improve the cost and efficiency of routine intra-office communication that any office that has not already implemented such programs is basically just waiting around for the giant asteroid to hit and cause them to become selectively extinct.

To this short traditional list of networked applications, one should add a few more recent

developments, including imaging every document in every new case file with Adobe Acrobat, networking your time, billing and accounting data entry so that every attorney and staff member directly enters his or her own time, shared litigation analysis and database programs, and case management programs. None of these are very useful unless everyone directly contributes toward the data pool and works with the same data set. That can only be done on a network.

Given the ubiquity of Microsoft Office and the increasing interconnection between Microsoft Outlook and various third party legal application programs, a small office probably should choose Microsoft Outlook if you're starting from scratch.

Second Priority: Your Accounting System/Computerized Accounting System:

The number of lawyers practicing using a pure paper-based accounting system is rapidly diminishing, being limited in our experience to solo lawyers and some smaller firms at this point. To repeat what should be obvious, there are many advantages to moving to a computerized accounting system and in particular, a specially developed legal accounting system that has full trust and general accounting features and which can integrate with the common case or practice management systems available to lawyers today. Notwithstanding these advantages, the authors have found many firms that simply want: 'the cheapest accounting system they can get.' With respect, we feel that this is penny wise and pound-foolish.

Most law firms (even personal injury ones) track billable time to determine a number of financial metrics that relate to the profitability of the firm. Even if the firm does not bill by time, tracking logged billable time is one determinant of effort being placed by lawyers. You can compare effort placed into the file with the results achieved and reflect on the overall success, client selection and overall financial goal achievement.

For example, every lawyer should have both a billable time expectation as well as a results (or revenue based) expectation, on at least a monthly and an annual basis. When you break it down by months, realize that in a litigation practice, months can vary. However, over the long-term, if

a lawyer is not achieving their revenue-goals, then they are not meeting their partnership or associate career expectations. This kind of information should be in the hands of management when determining not only partnership admission but also an associate career path and future in the firm.

It is almost impossible to provide any meaningful feedback on a lawyer's effort and results without the financial metrics that track these indicators. Lastly, the financial health of a practice is dependent on meeting stated financial goals for the firm and for each person therein. Furthermore, any law practice needs access to real time financial and management reports, such as:

- accounts receivable (aged),
- accounts payable,
- WIP outstanding (aged), by lawyer and by file,
- trust account balances,
- outstanding payables,
- salaries and bonuses payable,
- cash in bank relative to accounts payable over the next 30 days,
- disbursements outstanding, by file and aged,
- and the like..

This kind of information is easily generated using a computerized accounting system. Without this kind of management information that helps set and determine progress towards daily, weekly, monthly and annual financial goals, a firm in our experience, would tend to exist solely on their overdraft on their general account as they are blown about by the winds of practice. This leaves a firm vulnerable to financial pressures, such as a sudden downturn in the success rate of a file or files.

Dealing with personal productivity, without a computerized accounting and time and billing system, individual lawyers will be hard-pressed to pull up individual financial reports on the fly. There would be almost no ability to check on their goals and numbers to ensure that they were

'on track' with their financial progress (without having to bother the accounting department to generate an accounting report). This is certainly one aspect of performance management that is to be encouraged! Most, if not all, legal accounting packages are able to generate at least a minimum standard set of financial reports on the fly, given that the accounting data is regularly input into the system.

Without a computerized accounting system, lawyers and management would face these problems:

- Unable to obtain real-time listings of disbursements by category on a file (this would have to be generated by the accounting staff)
- Unable to download bank data directly from the bank website for reconciliations (this is a significant time saver at other firms
- Unable to print trust balances by file (this would have to be generated by the bookkeeper or accounting staff based on the paper trust records)
- No centralized collection of time and billing data - in most cases with paper-based systems, lawyers must dive into paper chits or excel spreadsheets to determine their billable time on files)
- No automatic collection and posting of office disbursements to the file (such as with www.Copitrak.com).

Accordingly, your time and money spent on a good legal and accounting financial package is time and money well spent.

Third Priority: Practice Support - Collaboration/Knowledge Management/Precedents

In most firms, it is apparent that each lawyer has developed their own set of precedents. One of the financial "levers" of profitability is the ability to resell existing work product. There are a number of reasons why this is difficult to achieve in a law office; typically one cause is the compensation system in use in a firm does not reward the time spent on taking a specific document and reworking it into a more generalized precedent for reuse. Another factor is that firms are not generally organized to place documents in an organized structure on the network for reuse. A third is that the systems in place in the firm do not support sharing of documents and information.

Microsoft has developed a product called Sharepoint that provides users with an interface for users to collaborate on documents and office files/cases, build shared calendaring, discussion forums, Wikis (a online repository of information only open to members of the firm), blogs (if you wish) and more. The best thing is that once you have your Microsoft network up and running, you can install Windows SharePoint Services (WSS), currently at version 3.0, for free (the full version of Sharepoint Server is a purchasable product, but there is no need to start at that level).

There is a document library that is built into WSS that is particularly important for smaller firms: it incorporates versioning, required checkout (so that only one person can be making changes to a document at a time and such changes are tracked) and content approval (so that a precedent is not changed unbeknownst to anyone).

Furthermore, Microsoft is intending on using WSS as a building block for further functionality and as such, it is a good platform upon which to build a document repository.

Specifications on how to install and deploy WSS can be found on a Microsoft TechNet web page: http://technet.microsoft.com/en-us/windowsserver/sharepoint/bb735844.aspx to Windows Server 2008.

There are reports now on the internet that law firms that have deployed Sharepoint services in their offices have seen their development of document precedents and collaboration on files soar.

Furthermore, younger lawyers benefit from the knowledge collection which results from the collaboration.

The top benefits that are attributed to Sharepoint include:

- A simple, familiar and consistent user experience. Sharepoint is integrated with the Microsoft family of products, so that the learning curve is flattened.
- It integrates a common workflow environment.
- It allows for the management and reuse of knowledge content for increased financial return.
- It allows an organization to gain wider access to both structured and unstructured information (that typically was only shared on a 1-1 personal level).
- It allows people to connect 'who knows what'.
- It creates a single centralized source for the aggregation of precedents and other information.

Sharepoint can also be used to create collaborative spaces for clients and lawyers to work together. Clients these days are asking for greater involvement in their files; Sharepoint allows a firm to create separate collaborative spaces for clients to see the documents on their closing, to view the pleadings and evidence on their litigation file etc.

I would note that Sharepoint is not a document generation product; rather it is a collaboration product that allows for the hosting and organization of a document precedent system.

Fourth Priority: Automatic Collection of in-office Disbursements:

In a paper-based firm, staff would use paper sheets for recording of photocopies and the like. While this system works (so long as people follow the system for recording of the copies) there are more efficient and effective ways to proceed. For example, Copitrak: http://www.copitrak.com offers terminals for copiers, scanners etc that log copies against file

numbers and can transmit this information directly to the accounting system. They also have systems that track phone calls, documents scanned, pages printed etc.

The Digital Law Office

Changing attitudes and cultures to make the most of your technology

THE DIGITAL LAW OFFICE

Although the concept of the paperless law office has been around for many years, a more appropriate organizational metaphor is that of the electronically organized law office because the root causes of continuing lawyer inefficiency are fundamentally archaic attorney attitudes (e.g., that staff should do most clerical chores) and of court systems, and consequently legal organizations that continue to rely in fair part upon legacy paper records despite their attendant inefficiency and inflexibility. Moving to the next level of law office efficiency requires abandoning paper files as our basic organizational approach and instead embracing electronic documents as our primary or even sole files.

In a sense, making the transition to an electronic filing system is less difficult than you might imagine, given that Evidence Rules 1001(3) and 1003 already make explicit provisions for the use of printouts, electronic records, and duplicates and given the Congressional mandate that the federal government move toward an electronically-centered organizational approach. And, given that modern digital photocopiers are nothing more than a limited functionality combination of scanner, storage, and laser printer, there is no fundamental technological difference between a photocopied duplicate and a document that is scanned, stored on your hard disk in a locked format such as Adobe Acrobat, and later printed as needed.

Of course, you will need to retain original documents to the extent that might be necessary for recording, to prove your case under Evidence Rules 1002 and 1003, or for other similar reasons. You may need to show that any scanned documents have not been altered, something that is reasonably clear using an authenticated file format such as Acrobat PDF. However, beyond that point, there is little reason to rely upon a paper file as your primary office organizational paradigm. Indeed, there is little reason to retain much of the paper file at all.

At this point, I personally image any documents provided by the client and then return those documents immediately to the client. Similarly, rather than making photocopies of all materials

for a client, I image incoming materials, such as disclosures, and then send to the client the copies received from the opposing party, with a stamped notation that we have electronically imaged the enclosed documents and that the client should retain the paper copies. Client copies of documents prepared by our offices are simply PDF attachments to Emails or, if necessary, laser prints of whatever we have prepared, scanned into our electronic imaging case file, and then sent to the opposing party. When a subset of records must be produced to the opposing party, I find that it's far faster to personally review and print the pertinent record sections rather than manually go through a file, mark documents to be copied, provide instructions to clerical staff, and then check to ensure that everything was done correctly and that no privileged materials were inadvertently disclosed.

Making the decision to change your office procedure attitudes and paradigms, and then initially and consistently following them, is the critical part. Transitioning to a digital law office initially requires a little more effort and discipline by both the attorney and the client. However, within months, you'll never consider going back to the old, more costly paper paradigm. Why, for example, should you pay someone to file a paper document in the first place, pull it out whenever you need a particular part of a file, refile the document, make photocopies, reorganize the paper file from time to time, and then repeat this process throughout a case?

Too often, lawyers or their staff misfile paper documents and then use additional staff time searching for that misfiled paper document. Studies done some years ago suggested that as much as 10% of a paper-based office's staff time was used to find misfiled or difficult to find paper documents.

Thus, the traditional law office's organization and management problem is finding and exchanging the information contained in paper records, which are more difficult to search and perhaps improperly filed and re-filed by inexperienced staff. Even in the context of a paper-based office filing system, using your computer systems as the primary means of electronically organizing your office simplifies the use of paper files. For example, scanned PDF documents are readily organized by date on your computer system and, indeed, the same document can be

stored in several different file locations to ensure that it is not overlooked. Restructuring a large electronic case file takes perhaps an hour or two, not a few days as with a paper file and, when done by an associate attorney rather than a secretary, is fully and appropriately billable. If you elect to retain a paper file throughout the litigation, filing that paper is much simpler when you can first search a digital file. Because it's fast and easy to first find the electronic version and ascertain its date, you can simply file any retained paper documents by date without sorting them into different categories such as pleadings and correspondence. This approach saves time compared to filing, retrieving, and sometimes losing paper documents that are filed by category. Clerical staff requirements are reduced commensurately. My experience indicates that the ability to rapidly reorganize a file and to quickly and facilely reuse electronically imaged documents in variety of ways confers a tremendous litigation advantage to the electronically organized side, particularly when you need to be able to adapt instantly in trial to new or impeachable evidence.

Most often, reviewing any documents or information on your computer system will be sufficient for in-office use. When you do need a hard copy, such as attachments to a letter or pleading or for exhibits, you can print out documents on an as needed basis and then discard the paper copies when they're no longer necessary. You can simply load the case file on to your notebook computer or take it with you on a DVD or flash drive.

Rather than elaborately planning a transition to a digital filing system, just start doing it with new documents as they're produced and received. As with computer CPUs and data caches, the most recent information is that which will be used most frequently. Within a few months, you'll be seeing significant benefits, particularly if you start imaging the most important existing paper materials from current cases as time permits. Assuming that you have a fast scanner and fast laser printer in your office, you'll find it faster and more efficient to print and sign a document, such as a letter or pleading, on the spot and then immediately scan the executed copy into your filing system before taking it out to your clerical staff to fax, mail, or file with the court. Doing so is an important step that takes perhaps an additional minute of the attorney's time while substantially reducing inefficiency, staff overhead costs, and possible oversight.

Email is obviously a major time saver and important Emails should be treated just like formal business letters, converted to PDF files, and stored in the case directory. Recently, I've found that many attorneys accept and appreciate informal service of pleadings in PDF format as Email attachments.

Buying Law Office Technologies

Good Planning and Purchasing Practices

Buying Law Office Technologies

Good Planning and Purchasing Practices

You don't need to spend yourself into bankruptcy to acquire effective computer hardware: high performance computer systems are no longer expensive nor unreliable. In this section, we'll discuss how you might initially plan a transition to a high tech small or medium law firm.

Effective automation is a cornerstone of any successful law practice but ill-conceived automation can be an expensive solution in search of the right problem. Law office automation's long term usefulness and profitability depend greatly upon how we plan for the future.

Even though simple approaches and programs often provide the best return for your automation investment, it's far too easy to simply throw a lot of immature bleeding edge technology, expensive hardware and even more expensive staff time at what is really a law practice management problem. The solution is to plan, purchase and implement technology acquisitions carefully and buy only the hardware and software that you will be able to install and begin using within the next two months or so. Purchasing binges are inefficient. By the time that you get around to installing some of your purchases, you likely can buy a newer, better version of the same product for less money.

Choose your technology with a weather eye upon long term, low cost usefulness. Buy mainstream technology wherever possible and avoid dead-end and "bleeding edge" hardware and software - you'll not only save money by purchasing mature, proven software and hardware but likely also spare yourself an expensive, frustrating experience installing and using immature technology. The personnel costs and disruption attendant to installing complex technology usually costs more than the actual purchase price. Use the least complex technology that efficiently does the job for you, provided that it has reasonable long term growth potential.

Investigate the spectrum of available technology before becoming looked in. At a minimum, you should buy medium-high performance computer hardware. Try to avoid systems that use wholly proprietary "system" or "mother" main boards. Unlike systems that use "ATX" or "Micro-

ATX" main boards, proprietary systems usually can't be upgraded. A fast new system that's more than adequate for almost all foreseeable law office needs can usually be purchased for about $1,000 or less. And, everything will be new and up to date, compatible and covered by warranty. A note regarding terminology: throughout this paper, we use the common term "desktop" computer system. Our use of this term does not mean that we prefer computers whose main processing unit actually sits on top of your desk rather than the preferable vertical computer resting on the floor.

Basic engineering and overall system performance doesn't vary very much from brand to brand anymore, even though brand name manufacturers often use system boards that are proprietary in how they mechanically attach to the computer case, an approach that unfortunately precludes less costly third party upgrades later. Although brand name systems from first tier vendors are often excellent buys, if you anticipate later making periodic upgrades to your systems then you should at least consider purchasing generic systems that use high quality components mounted inside an industry standard ATX-style system case. Again, the system case ideally would be a vertical floor-mounted system that's capacious and well-cooled.

High end pricing is no longer synonymous with high end performance; rather, more expensive systems typically include consumer frills such as very fast video cards primarily useful for computer gaming rather than business. Such "features" are of no significant business use. System performance now is largely dictated by generic features such as the CPU, DRAM memory, network cards, system board chipset and hard disk performance. Most major manufacturers including HP and Dell use many of the same third party brand name components.

DON'T BUY MORE HARDWARE THAN YOU NEED RIGHT NOW

Avoid advertising-driven computer consumerism. You are buying a business tool, not a hobby whose main purpose is emotional satisfaction, even though most people enjoy the latter. Typically, on-line and retail dealers push their most expensive, highest margin units. The extra cost of higher-priced computers derives primarily from highly-touted consumer features that have little benefit to any office.

Historically, system performance increases rapidly while prices simultaneously plummet. There's no immediate end in sight to either trend although the rate of useful improvement has been diminishing lately as the technology matures. Make your purchasing decisions based upon current needs rather than upon perceptions of what you might need in a year or two. Cutting edge technology is typically over-priced, immature and unreliable while it's still hot. Many manufacturers try to sell you their higher margin, top of the line systems and fastest components by promising that purchasing marginally more computing power ostensibly avoids the need to upgrade hardware as often. That's false economy at best, and it's probably not true. We believe that it's most sensible to buy good quality, mature technology that's about 1/2 generation behind the current top of the line. Buying about one-half generation behind the leading edge saves you a lot of money while providing more reliable technology with enough performance to work satisfactorily for at least two to three years. These cost savings alone should allow you to regularly upgrade the critical computer system components, the CPU, DRAM and hard disk or to replace the system more often - a policy that both saves money and keeps your hardware more generally current for the overall life of the system.

We usually recommend a three year hardware replacement cycle although you might want to make partial upgrades more frequently, given today's very low component prices. It's false economy to retain or to not upgrade a too-slow system until it's been fully depreciated based upon an artificially long depreciation schedule. Remember, modern computer and communications technology are now the basic tools and lifeblood of any law practice.

BUSINESS NEEDS ARE PARAMOUNT

All technology exists to support a business's core function, in this case practicing law effectively and efficiently, and technology must be chosen and implemented with those core business functions in mind. Law firms, particularly litigation firms, are somewhat different than other businesses: ultimately, we must be effective above all else. Efficiency is important to the bottom line but is secondary to winning those cases that, on their facts and law, should not lose for lack

of effectiveness. Where feasible, choose software that is flexible and able to meet evolving substantive needs and that is based upon "open" software standards.

CHOOSE SOFTWARE SYSTEMS WITH GREAT CARE

Major software changes, particularly accounting, billing, and practice management systems, are actually much more complex than hardware changes, so you should choose very carefully before making any decisions. For all practical purposes, almost all Windows-based computers are basically interchangeable and compatible. Software, on the other hand, includes all of your data, probably going back many years. Most legal specific software programs use proprietary data file formats that by and large cannot be converted to another vendor's format. Once you've decided upon a particular vendor's program, making a major change is wrenching, expensive, and disruptive. Hence, be sure that you choose programs that use open file formats, or that can export data to open file formats.

Be sure that your vendors have the commitment and the resources to be around and actively developing their products in ten years. You don't want to be in the same position as one court system with which I am familiar: six days before Wang filed bankruptcy, this particular court system ordered and paid for enough Wang computers to equip the entire state court system from end to end. It took months to get the paid-for Wang computers and the systems were obsolete by the time that they were delivered. Choosing products from software start-ups that use unique data file formats runs much the same risk.

As a practical matter, choosing a major software system is part of your overall strategic planning for your law firm. Before making any commitments, try to ascertain where your firm anticipates positioning itself in the market ten years from now and the types of practice that your firm envisions pursuing. A firm specializing in real estate documentation will have very different needs from a litigation-oriented firm and the most appropriate software systems will be very different. First and foremost, any new software system should clearly provide a major increase in your firm's effectiveness within its primary practice areas and it should do so with minimal disruption and drain on staff time. Purchase costs are probably the smallest portion of overall

system cost – setup, staff training, disruption, maintenance and upgrade are ultimately higher than initial purchase costs although such costs are not obvious when you are considering a software purchase. Thus, ease of use without extensive setup and training, overall reliability and easy maintenance will be critical. These factors, and the overall substantive suitability of a product, should be evaluated by a smaller group of users, both staff and lawyers, whose technical knowledge is accepted throughout your firm. Using a respected sub-group will ease acceptance by various firm members, some of whom will probably be championing some other favorite practice software.

Basic Law Office Technologies

Using enabling technologies to reduce staff requirements

Basic Law Office Technologies

REDUCING OFFICE STAFF WITH "ENABLING" TECHNOLOGY

My long time, extremely competent and patient paralegal Rose Chidester had announced her well-deserved retirement. No longer could I simply ask Rose where she had filed a particular document nor expect as a matter of course a flawless billing and accounting cycle, nor could I simply send an e-mail to Rose asking her to work out the medical liens in a personal injury case. And, in our rural area, experienced paralegals are few and far between. It was time to start from scratch and to rethink all aspects of my office's automation. Every law office has to face this problem at one time or another.

Starting from scratch entailed many decisions, including the overall level of automation and the extent to which I was willing to personally perform tasks formerly done via support staff. Clearly, though, it was time to fully implement some basic enabling technologies that more efficiently perform certain tasks such as typing dictation and filing on a much more consistent basis. Rather than spending a lot time and money on frills, toys or bleeding edge technology, it seemed important to focus on solid, substantive ways to automate basic day-to-day law office functions in a way which both increases each person's effectiveness and also, by reducing unnecessary effort by skilled staff, increases my office's –basic economic efficiency and cost effectiveness.

My nominations for most useful and productive law office "enabling" technology are pervasive networking, voice dictation directly into your word processor, converting your law practice into one based upon digital imaging of your documents, legal-specific litigation support and case management programs, and digital photography.

NETWORK YOUR DATA

Few of the enabling technologies discussed below work very effectively if your office is not already networked. As a practical matter, wiring a law office with a highly capable local area network, whether Microsoft, Apple or Novell, whether based upon a simple peer to peer network or dependent upon a central file server, is an obvious necessity. Without networking, a law office cannot communicate effectively and without effective communication, a law office cannot operate efficiently. Because it's so important, we've devoted an entire section later in this paper to networking.

1.DIGITAL DICTATION

First and foremost among automation initiatives to reduce overhead should be the use, to the maximum extent possible, of voice recognition and dictation programs. Switching to voice recognition is relatively easy in some ways because Nuance's Naturally Speaking Legal version is quite effective and accurate. Although accurate voice recognition has seemingly been just around the corner for years, I believe that this technology is ***finally*** mature enough for efficient everyday use.

I found that accuracy considerably improved when I used a high end Plantronics DSP 500 USB headset. I found that voice recognition was best to my own working style when I used a digital recorder optimized for voice recognition. Sony and Olympus make compatible models, costing between $190 and $300 retail. The new Naturally Speaking Legal version's single best feature is its voice macro capabilities, which preserve fonts, rich text and other formatting when standardized text is converted into voice macros. That makes it useful for easy access to calling up pleading captions or letterhead already addressed to the appropriate party and in devising standard boiler plate language that can be assembled into a complete document with a few voice commands. I recently saw a physician friend start doing his medical chart notes on the spot each day rather than spending hours in the evening dictating chart notes to be later typed, often inaccurately, by some third party. That sold me.

There is another, complementary approach. Simply save almost all of your word processing documents, even routine letters, in separate client directories and then just editing them, or block copying portions, as later need dictates. Experience shows us that a surprising high percentage of letters are repetitively sent to the same people in the same cases and that portions of pleadings are often reusable as a case progresses. An attorney with even modest keyboard skills, which almost everyone has acquired by now, can take an existing letter or pleading and directly edit it on the keyboard as needed in the same or less time than he or she required to dictate that same letter or pleading, given instructions to a secretary, and then review and sign that letter or pleading. Eliminating manual dictation transcription saved me about 20 staff hours per week along with a few hours per week of my own time explaining what I wanted done rather than doing it myself.

2.DIGITAL IMAGING AND FILING

Imaging every pertinent document in your office, in essence becoming a "paperless" practice, is now highly mature and practical. Reducing the cost of filing and retrieving paper documents is another major approach to reducing unnecessary staff overhead, allowing highly trained paraprofessional staff to focus on the skilled tasks for which they are best suited. Over the years, I have worked with quite a number of paperless office concepts, scanners, and programs, but for too long was ultimately content to rely upon experienced professional staff with a deep knowledge of each case. That approach is no longer cost-effective. Adobe Acrobat Professional, currently in version 9, is clearly the most flexible and useful approach to document imaging. Acrobat PDF is the de facto standard for most government documents and the official standard for the federal courts and federal government and the mandatory means of filing pleadings with most federal courts. I have found that transitioning to an office where every document is imaged and stored as a readily printed and reusable PDF file has been by far the single most productive step that I have taken in the past fifteen years. In a later section, I will discuss how to implement a paperless office based upon document imaging. One common concern about imaged

documents concerns whether such documents will be treated in the same fashion as traditional photocopies. I do not know any law office that has ever found this to be a problem, particularly after the passage of the 2004 Electronic Transactions Act, which legitimizes most electronic transactional records.

There are several other major benefits of converting to a document-imaged filing system:

- It's less expensive than photocopying
- You can use the commenting and markup functions in Acrobat Professional to easily turn regular imaged documents and photographs into persuasive exhibits that are easily shared with Acrobat's Email function.
- You can take an entire case file home using an inexpensive flash drive.
- Assuming that you back up your data properly and regularly, a digital law office is far less likely to suffer a catastrophic loss from fire, weather or other casualty.
- Finding documents is much easier. You don't need to worry about someone else taking an important file folder, it's all on the network to be shared by everyone. If you run the OCR function in Acrobat Standard or Professional, the entire contents of each document will be directly searchable, enabling you to find that vaguely remembered material. There are some excellent indexed search programs available for a modest charge. I prefer Copernic Desktop Search because it's very fast and can search the content of files stored on network drives as well as the drives on your desktop computer.

3.LITIGATION SUPPORT

First and foremost, Adobe Acrobat itself can be a very powerful litigation tool. Beyond Acrobat, there are many powerful litigation-specific programs available but I believe that the CaseSoft products, recently acquired by Lexis-Nexis, stand out as particularly useful for the sorts of cases which might be handled by a small to medium law firm. The CaseSoft product are also used

extensively by the SEC, Department of Justice, and other federal agencies involved in major litigation.

There are four separate CaseSoft programs that I find particularly useful:

- CaseMap, which is essentially like a spreadsheet or database for litigation facts, issues, persons, and dates. I try to use CaseMap for every case. CaseMap can link seamlessly with documents imaged with Adobe Acrobat.
- NoteMap, a highly flexible outlining program. Outlining is one of the best ways to flexibly think through and organize a case.
- TimeMap, which can take a range of dates and facts, whether directly input or transferred from CaseMap, and construct a sophisticated graphical timeline suitable for use in pleadings or as an exhibit.
- TextMap, a sophisticated transcript handling program.

Using straightforward litigation support programs such as these not only greatly improves the quality of your litigation efforts but also reduces the need for paralegal assistance in preparing service copies, trial notebooks, exhibits, attachments to pleadings, discovery and disclosures. Basically, you can easily reuse anything that you've already imaged, slicing and dicing it as needed. You'll still need paralegal support for your litigation efforts unless you're willing to do all of the initial data analysis and entry yourself, but overall, programs such as these will substantially reduce the paralegal time required to prepare a case for trial.

4.OFFICE SUITES

It's not even a race anymore. Microsoft Office 2007 is well organized and the de facto standard. Even though I am a die-hard WordPerfect user since 1985, where I to choose a new office suite at this time, I'd choose MS Office 2007, mostly because Excel is such a good spreadsheet and PowerPoint is an excellent tool for legal presentations. Corel WordPerfect Office X4 is now

out and it's probably still the most powerful word processor for formatting legal documents. If you travel a lot or have several branch offices, then check out the shared Internet-based office programs available without charge for registered Google users. I find them to be somewhat anemic but more than adequate for day to day use.

However there is OpenOffice (www.openoffice.org) and its Mac counterpart NeoOffice (www.neooffice.org). These office suites offer a word processor, spreadsheet, presentation application, drawing and database programs. They are 'open source' and completely free. They are not second class applications – I have been using NeoOffice on my Mac for months now and continue to be impressed – I find it to be faster and much more user friendly than Microsoft Office. Both these applications can open Word and WordPerfect files – and save to Word, OpenDocument (an open source format that will soon be used by all word processors) and other formats including .rtf.

There is no better bang for the buck these days – particularly for lawyers opening a new office. I highly recommend these products for both new and existing offices.

5.BILLING, ACCOUNTING AND CASE MANAGEMENT

Billing, accounting and case management were the next areas where more highly integrated technology seemed cost-effective. Previously, my office staff had done my billing in Timeslips, my accounting in Quickbooks Pro, and my case management using a basic calendaring program and contact database program not too different from Outlook. After considering several programs, I chose PCLaw, now owned by Lexis-Nexis, primarily because of its tightly integrated accounting and billing functions. Integrated accounting and billing saves about 10 hours of staff time during an average week, although some outside contract accounting became necessary to perform some tasks that the attorney could not economically perform. Improved accounting and billing probably saves, on average, about 5 hours per week.

6.CASE MANAGEMENT SOFTWARE

You really need good case management software and your malpractice carrier is going to insist upon it. There are about ten useful integrated case management and accounting packages specifically designed for law offices. This is one area where the legal-specific programs are more useful and effective than attempting to customize a general purpose program to fit the legal environment. Time Matters, Amicus, and ProLaw have been the market leaders and all of them are well regarded. Of these three, only Amicus remains an independent company, Lexis-Nexis having acquired Time Matters and Thomson-West having acquired ProLaw. Each of these programs will require a substantial amount of setup and customization; you should probably use a specialized vendor to install and customize any of these programs. Which of the three that you choose is mostly a matter of preference. They all perform basically the same functions. Amicus has often been thought of as better adapted to smaller firms, with Time Matters occupying the middle ground and ProLaw being better suited to larger firms.

7.DIGITAL PHOTOGRAPHY AND VIDEOGRAPHY

Digital photography and videography has become cheap, effective and easy over the past few years, enabling even sole practitioners to easily and inexpensively produce visually effective exhibits for every case. I believe that digital photography and videography will be the next “big thing” in useful legal technology. Lawyers are still using too many words when the rest of our culture has moved on to a highly visual style. Elsewhere in these materials, I have discussed the sort of printers that are economical and effective when used to print exhibits. You can find a discussion of appropriate digital photography and videography hardware and software, and of a method to authenticate digital photographs, in my several recent 2006-2007 articles posted on the American Bar Association Law Technology Today (www.abanet.org/lpm/ltt) and Law Practice Today (www.abanet.org/lpm/lpt) web sites. The information is too extensive to include here but your firm really should be alert to using digital photography as a basic part of its persuasive

arsenal. Digital photos are especially useful for producing exhibits or for inclusion in briefs when marked up and used with Adobe Acrobat Professional.

WHAT TECHNOLOGY CANNOT EASILY DO

There are some tasks where technology cannot, or should not, be substituted for trained staff. Technology cannot mail your letters nor physically file them with the Court, where that is required, nor make photocopies nor greet clients and make them feel welcome, comfortable and important to you and your staff. Technology cannot keep your paper files in order - and, along with imaged documents, we undoubtedly will maintain our paper files for some years to come. Technology cannot notarize a document for a client nor listen to, and reassure, a client. These tasks require trained and caring staff. What enabling technologies can do, however, is to allow your staff to focus upon those matters needing a human touch and human hands without being diverted into time-wasting tasks that the attorney can perform faster and less expensively using enabling technologies.

Practicing Law At A Distance

The Virtual Law Office

Practicing Law At A Distance

THE VIRTUAL LAW OFFICE

Let's start with a basic question: what is a "virtual law office."

I believe that it is:

- Has a stable core group of attorneys;
- Has established collaborative relationships with other, specialized law firms that possess expertise that's occasionally needed;
- Is glued together with appropriate computer and telecommunications technology; and,
- Expands and reduces personnel as needed.

Frankly, there is nothing new, or even frightening, about the virtual law firm, provided you use due care. Indeed, most attorneys have already had at least some experience working in a "virtual" law firm setting, often without even realizing it. For example, attorneys regularly associate with, and work closely with, local counsel in other states or distant cities as the need arises. Attorneys also regularly associate with other attorneys who have known expertise in specialized areas. It's common for several law offices scattered across the country to join forces on major cases that are too big for any single law firm or share generalized work product.

Attorneys also regularly work with professional and paraprofessional staff who either telecommute or otherwise work off-premises. We are comfortable working with temporary contract investigators, court reporters, attorneys, expert witnesses and researchers whom we may not physically meet very often, if at all. Likewise, in larger legal entities, we often have little physical contact with co-workers upon whom we depend and with whom we frequently work.

In a very real sense, the voice telephone and later the fax machine were the first transitions away from working exclusively face to face with people. Over the past several years, however,

efficient long distance collaboration among attorneys who may never physically meet have dramatically increased as high bandwidth Internet technologies finally made the process fast, easy, and efficient.

I'll examine several possible models of how attorneys can leverage new technology to realize the "virtual law firm" as a viable means of organizing law practices. I anticipate that we will see some or most of these general changes and opportunities:

Hiring and Training Employees:

We may see a premium placed upon hiring attorneys with substantive specialized backgrounds in education, administration, psychology, and possibly some social sciences. Such attorneys will:

(a.) be able to better understand the overall scope of the client's objectives and problems;
(b.) avoid the need to first become educated in depth about the client's substantive issues;
(c.) be better able to communicate with the client; and,

(d.) be better able to effectively coordinate and combine the efforts of the different disciplines needed to solve the client's problem.

Quality control and the training of associates will become even more important, but also more difficult, in the virtual law office. We'll lose some of our ability to informally and efficiently review intermediate work and discuss it with staff, attorneys, and experts who are not physically located in our offices. Mentoring will become more difficult. I believe that quality control issues are an under-appreciated problem arising in connection with virtual law offices.

The traditional law firm placed great emphasis upon grooming promising attorneys and staff for the long haul, training less experienced staff, and gradually giving them more authority as they

gained experience and ability. Generally, the more experienced senior attorneys understood, and could do, everything assigned to new staff, and thus could effectively mentor and supervise less experienced staff. Senior partners met with the client and set strategy, often being the only persons who really understood the Big Picture. Small portions of a matter, along with explicit directions, were given piecemeal to less senior staff. Later, as information slowly worked its way to senior attorneys, the efforts of many junior people were gradually combined and sharpened by more experienced senior associates and junior partners. Ultimately, the finished product arrived back on the desk of the partner in charge of the case, who theoretically checked the work for quality and judgment.

The days of the generic junior attorney and staffer are gone along with the pencil-and-paper era. We need to hire and retain better-trained, technically adept staff, particularly paralegals with extensive technology experience. Many of these staff members must have skills that many lawyers currently comprehend only with difficulty. In good economic climates, such employees are in high demand and very mobile. Rather than directing such employees in detail, we need to motivate and lead them. We'll need to adapt our management style to a more collegial, democratic approach that better suits an increasingly professional support staff.

The virtual law office ipso facto needs employees who are comfortable working with advanced computer systems and who can readily learn new techniques and approaches. Because advanced technology requires advanced skills, we'll have to invest a substantial amount of time money in training employees to a mix of constantly evolving skills through specialized outside trainers. And, rather than training new staff, the senior partners will need to take the same training themselves. Employees with specialized knowledge are no longer interchangeable and, unless we maintain a professionally rewarding place of employment, employee mobility will increase as law firms compete for better-educated, more productive paraprofessional staff. Losing such employees is not only expensive, in terms of hiring and training replacements, but also very debilitating on our productivity.

However, the virtual law office also has some real staffing advantages. Although there is a strong premium upon highly knowledgeable senior staff, routine clerical chores such as filing and low-level data entry, conversely, either disappear or become simpler and require less case-specific knowledge. That allows a firm to be less dependant upon clerical employees for routine chores.

A BAD ECONOMY IS FORCING LAW OFFICES TO RESTRUCTURE

There is obviously a great premium placed upon cost-effective legal work when the economy has yet to bottom out. Yet, given the natural tendency in most people to stick with a routine that seems to work "good enough", such crises are often useful as prods to overdue structural reform that can increase productivity even while decreasing fixed costs. Students of history may recall that the broad-reaching 1904-1905 technological and procedural reforms of the British Navy by Admiral Jackie Fisher not only increased its effectiveness several-fold while reducing annual budgets. Law offices have a similar opportunity now.

Internet-based legal applications and general office applications, such as those offered by Google, are handy for light duty work on the go but are not yet able to fully compete with the features, stability, and maturity of tried-and-true desktop applications. Until then, performance and security issues will limit their usefulness and range of features. However, as mainstream web-based legal applications mature, they'll clearly influence not only how we practice law but also how we organize our law offices, or should I say our practice associations. One thing is sure, though: traditional legal organizations will change greatly over the next decade or so.

Law offices will likely change into radically different, flexible practice associations that respond more quickly to market and technological changes and likely adopt a more flexible and democratic horizontal structure that facilitates the quick and efficient flow of critical information, something that's critical to the quick parry and thrust of almost any law practice.

Almost every other industry has found that flexible business structures also lend themselves to better financial efficiency.

I've identified below several possible models of how the forward-looking law office might consider structuring itself. Law offices - particularly litigators - need to "re-engineer" their operations to emphasize excellent internal communications and fast, precision delivery by a small, often ad hoc team. Information has always been power, metaphorically, but it's now king.

Why are a law office's structure and internal communications becoming so important? In the paper-and-pencil era, we used the brute force of many associates and paralegals to manually collect and process the vast amount of information required by any significant litigation or transaction. Because the raw data could not be readily analyzed by a single person in the pencil-and-paper era, we resorted to extensively summarizing the data.

We added intermediate layers to supervise employees and to control the quality of the basic paperwork as it gradually flowed to the ultimate users. Nasty surprises resulted in court or negotiations when our summaries did not match our evidence. Potentially important raw data and research, and a coherent overview of the entire matter, was often blurred or lost in the paper-based summarization process. Information may get to the decision makers too late. Staffing costs have become prohibitively expensive and clients have become less willing to pay such costs. Continuing to insert several potentially superfluous layers of associates and staff between the senior litigator and those gathering the raw data simply causes critical information to move too slowly. Too many intermediate lawyers and clerical staff not only reduce the office's productivity and responsiveness but badly hurt its overhead, increasing costs to the point where effectiveness is lost due to inefficiency.

To a decreasing extent, traditional law firms continue to employ these vertical "channels" as the primary conduits for information flow within a firm. But those sorts of law offices are

expensive, counter-productive anachronisms in an era where a fast Internet connection makes a paralegal on the other side of the continent almost as accessible as one down the hall and one can get quick advice about how to handle a particular sort of case from a colleague's Email or an internal blog. As a result, an Internet-based virtual law office can leverage the effectiveness of a few highly experienced attorneys and staff, regardless of where they live. In this era of web-hosted document-imaging files, we don't even need to be overly concerned about where the paper files, if any, are located.

THERE ARE SEVERAL POSSIBLE STRUCTURAL SOLUTIONS

One approach may be to form small ad hoc action teams. Such teams would form and dissolve in response to individual projects or to specific aspects of a very large case, with their results quickly available to the ultimate decision makers. These teams should include professionals already knowledgeable in specialized areas, to ensure a competent immediate response. Action teams should have their own budgets and their choice of the firm's personnel. The team's members would cooperatively process and share information through remote networking technologies. This approach might be particularly useful in medium-to-large litigation offices. Web-hosted applications are particularly useful to this sort of action team on the go for light duty word processing and centralized document and case files. Trial notebooks could be posted and commented upon using Adobe's commenting and comment collation features.

Another solution might be to form a separate, highly specialized "boutique" office that already has the specialized knowledge, research, and forms to work quick-breaking projects, particularly legislative affairs. Here, the premium on specialization and fast reaction probably places this option beyond the immediate reach of most general. Smaller offices could joint-venture as needed with other similar firms possessing complementary expertise, again an option made feasible primarily by Internet technology.

Most commonly, the law office of the future will likely tend toward the virtual law firm, combining a small permanent core group similar to military cadres or large construction contractors, drawing upon contract professionals and paraprofessional staff as necessary for particular projects. This office's ability to maintain a broad network of cooperating joint venture partners with expertise in different areas of the law will be crucial to future effectiveness. This model, heavily dependent upon high bandwidth Internet connectivity and centralized imaged files, has a number of economic advantages as well. Telecommuting and teleconferencing become a practical norm, reducing space rent, travel and commuting costs.

I believe that this model will prove the most feasible for the average small-to-medium law office of the future. This approach will only work efficiently if and when the data, documents, and case management and collaborative technology are immediately available across the Internet in a responsive, high-bandwidth technological environment. Although practicing with people we rarely meet physically may seem unnerving, upon reflection we see that we do it all of the time using plain, old-fashioned telephone service. The only difference is that Internet technology makes the process smoother and more efficient. One possible advantage to this structure, compared to the preceding two law firm structural models, is that the core group will already be familiar with working with each other, possibly reducing personal clashes, startup times, and initial confusion.

Another possible intermediate solution might be to generally retain the same vertical law office structure but flatten it by reducing the number of associate lawyers and paraprofessionals who actually research, process, and summarize data, and also by reducing clerical staff. Instead, we'll involve senior lawyers more directly with processing and using the raw data through advanced technology. We can minimize the burden upon senior lawyers through the use of a few associates and paraprofessionals who develop raw information and then input it into advanced document assembly, case management and litigation support programs such as CaseMap and NoteMap.

These programs help key lawyers find evidentiary items quickly and spot critical information and important patterns. Easily-accessed legal research materials allow the senior litigator to more quickly research questions at his or her desk. This model has worked for me personally and my own sense is that the quality of litigation may even improve as intermediate overhead costs decrease.

Not all, nor even many, of these thoughts about structuring a virtual law office will be directly applicable to your situation. However, cost-effective technology is pushing the entire economy, and thus law firms, to become much more streamlined and efficient. Making the leap is now more a question of changing our mindset and working habits than a technological issue.

Most likely, a slimmed-down traditional law firm structural model will hybridize with the pure Internet-based virtual law firm to produce an intermediate law firm model that has both solidity and flexibility, a model that I believe will retain long term viability.

Regardless of which approach is taken, we'll see law offices adopting an increasingly horizontal structure that emphasizes networking, shared document imaging, and electronic communication. Expect to see radically different law offices that feature reduced litigation staffing, lower overhead, and reductions in the number of clerical staff, associates, and mid-level partners. There’s little future in simply hunkering down and waiting for the asteroid to hit.

TECHNICAL ASPECTS

Traditionally, remote offices were networked using really expensive dedicated T1 phone lines whose bandwidth was slower than most DSL Internet connections. The widespread use of high speed Internet connections, even at home, makes remote networking quite a bit less expensive and fundamentally easier.

There are several major remote access approaches of which lawyers should be cognizant but not necessarily technically adept:

- Virtual Private Networks (VPNs) use the public Internet infrastructure to connect with other specifically designated computers but VPNs act like a private network through the use of encryption and firewall settings that prevent unauthorized access by persons trolling the Internet. A VPN requires that router hardware on each end be properly configured in order to allow authorized traffic to access the system.
- An Internet-based secure document storage repository such as www.acrobat.com or for larger cases, higher repository systems like Catalyst.com
- Google Gmail accounts offer what is believed to be secure document storage and version control.
- Windows Remote Desktop Access – this means of controlling another computer is built into every recent copy of Windows and is basically intended for technical support use. However, it can be used for remote access to application software. The potential security compromises inherent to this approach scare me.
- Third party remote access software programs are a very mature technology by now. Among the more reputable remote access programs are Laplink Gold, GoToMyPC, and Symantec PC Anywhere.
- There is an excellent discussion of remote access network at www.about.com

Document Imaging

Tips for converting to a law practice based upon documents digitally imaged with Adobe Acrobat

Document Imaging

LITIGATING WITH ADOBE ACROBAT: GETTING STARTED

Basing my litigation practice upon Adobe Acrobat, I have been able to simultaneously improve my ability to quickly, effectively and efficiently handle fairly complex litigation while reducing my non-billable overhead by about fifty percent. Here are some tips that I learned along the way.

The most important concept is that how you use Acrobat, and what it can do for you in a litigation practice, is almost infinitely mutable. There's no single right way to use, only the way that is right for you. Experiment and see what works best for you and your staff rather than taking my thoughts as gospel. Remember, though, that properly and fully exploited, Acrobat can be a transformational technology - whether you ease into Acrobat or simply jump in head-first, think about how you can leverage its many capabilities. Because Acrobat can work in so many different ways, it is difficult to state an overall "Litigating with Acrobat" theme beyond its great flexibility and adaptability. So, I'll content myself with simply setting out some of the ways that my litigation practice has evolved in its use of Acrobat:

1. Make Acrobat your primary filing system. Use Acrobat documents in preference to paper wherever possible. We retain only original paper documents such as recorded instruments, notes, or signed discovery and disclosures.
2. Discard your fears about discarding your paper-based filing system. A recent University of California study found that about 99% of all original business data and documents are now stored as "Electronically Stored Information" - that's the new buzz word used by the new Federal Rules of Civil Procedure recently adopted by the US Supreme Court. Congress mandated years ago that the federal courts, as with the rest of the US Government, convert over to a electronic case file and reduce its use and retention of paper. I suspect that a large portion of that remaining 1% may be the legal profession!

3. So long as you store all electronic case data in a central location and back up all data nightly, your files and law practice are less vulnerable to fire, natural disaster, and other loss compared to paper files that cannot simply be copied from a backup hard disk to a new computer. Besides, it is good practice to store all backup media off-premises and that may save you a midnight trip to your office to get a file that you forgot.
4. It is **NOT** easier to store and maintain unsearchable box after box of paper records. It is **NOT** cheaper to pay clerical staff to (perhaps inaccurately!) file, find, refile, and then again find mis-placed documents.
5. It is **NOT** easier and cheaper to keep pulling out, and refiling, the same documents over and over when you need to make copies of them throughout a case.
6. It **IS** much easier and cheaper to prepare a single multi-file Acrobat binder and print out as needed complete, already collated copies using a modern high speed laser printer, which have become much faster and much less expensive over the past few years. Besides, many of us have had, in years past, the unsettling, tedious and frustrating experience of photocopying a large quantity of documents only to find that they had somehow gotten out of order.
7. It **IS** much more efficient to make color copies using your own fast scanner, Acrobat, and color laser printer, compared to running to the local office store and paying $.79 per page.
8. After you scan your paper documents, avoid the temptation to retain the paper. We stamp already-scanned incoming paper as a client copy and then re-send it to the client.
9. Scan and handle documents only once. We will scan any documents presented by the client during a meeting and then return them immediately to the client.
10. Use your scanner and laser printer as your basic photocopying machine, particularly for large documents that you must keep in order, such a service copies of disclosures. We found that this was less expensive than a traditional photocopier and ultimately far easier and faster to use.
11. Use a very fast network with fast hard disks and gigabit Ethernet connections to the desktop. Some Acrobat documents can be very large indeed, particularly briefs with embedded video and audio clips and attached exhibits. We built our file server using a 10,000 rpm SATA RAID disk array, lots of RAM on the server, and switched gigabit

connections. Most newer computers include a gigabit Ethernet connection on the system board and full-speed gigabit network switches are now quite inexpensive.

12. Your Acrobat filing system will quickly grow large. Be sure that your server hard disks are big enough – 600 to 1200 Gigabytes would be a good start, especially if you plan to use a lot of digital photography and videography.
13. Store all documents in one place, on a central file server. The electronic filing system is your complete office - back it up completely and reliably every day. This is easy to do with fast and inexpensive USB-based shirt pocket hard disks. Be sure to verify that a backup is a good one. We use the basic backup accessory in Windows XP because it is universal and can be run on almost any computer in a pinch.
14. Use the latest available version of Acrobat Professional. At the moment, version 9.1 is currently shipping. Acrobat's Professional versions have many commenting and document markup features that make them particularly useful in exchanging information with clients and in preparing discovery, exhibits and other basic law office tasks.
15. Keep track of the time spent scanning and coding any documents. These costs are listed as recoverable, and hence billable, under Civil Rule 79 cost recovery provision.
16. Ease into using Acrobat. Start scanning new cases and any documents that you are likely to need in the near future. Within three months, you will find that most of the documents that you might need on a day to day basis are already scanned and available across your local area network. Scan older cases as needed or when you are about to archive them. Set a target date when you will be scanning everything.
17. Make the contents of all documents text-searchable by enabling OCR as you scan each document. Alternatively, if you find that this takes too long or is inconvenient at that time, then set up a batch command to OCR multiple documents or entire folders in one operation.
18. Search the content of Acrobat documents by using a good indexed desktop search program. We like the Brainware and Coperic programs. Change the default parameters to also search your network drives and to completely search PDF documents as a text document rather than merely searching on the file name.

19. Put a scanner on each desk. Scanning documents is a task for everyone, not just clerical staff. Attorneys should consider scanning each document when a client provides it to them and then immediately annotating the document with pertinent information by way of comments, bookmarks or annotations in Acrobat Professional. You can either print out a document with the markups showing or simply the raw scanned document.
20. As a desktop scanner, we like the Fujitsu ScanSnap series, which is very flexible and convenient, and adequately fast, for light duty scanning. For heavier scanning and as a departmental scanner, we like the Canon DR-2580 and Xerox DocuMate 252/262/272 series. You really need fast sheet-fed document scanners, not flatbed scanners with an attached Automatic Document Feeder. These do not work nearly as well. Any fast Windows XP computer connected to your network should be sufficient.
21. You will also need a high quality flat bed scanner that accurately scans photographs and similar materials. You should not skimp here because most scanners do a pretty bad job on photographs. After several false starts, I got the Epson 4990 Pro flatbed scanner, which does an excellent job of accurately rendering flat materials. The Epson V series is Epson's current higher end scanner series.
22. Get the newest versions of Corel WordPerfect X4 or Microsoft Word. Both of these programs have enhanced PDF file capabilities, including the ability to read and revise the contents of a PDF file.
23. Start exchanging documents as PDF attachments. This has saved me a tremendous amount of time and hassle when working with clients, experts and cooperative opposing counsel.
24. If you are sending PDF copies of materials to clients, experts or other attorneys on the same side of a case, then you can use the "Enable Commenting and Analysis in Acrobat Reader" function if you have Acrobat Professional, Version 8 or Version 9. This function enables another person who may only be using the free Acrobat 8 or 9 Reader to enter comments upon a document sent to them and to search a document for works or a particular text string. Doing so makes preliminary document review and exchanging information much more efficient. Use Acrobat's commenting collation and review feature to pull together everyone's comments about a particular document section.

25. Organize your electronic client file structures in any way that works for you but avoid overly complex directory structures. You don't really need them once you have standardized file content names and run an indexed desktop search program, and you will waste time searching through too many different directories. Remember, one of the biggest advantages of an Acrobat-based filing system is that you can totally rearrange an entire case file quickly and easily to suit an evolving litigation situation.
26. Keep in mind that you will be using the same scanned documents for everything: initial client intake, the preparation of pleadings, disclosures and discovery, trial briefs, exhibits, and in-court presentations. For example, the same Acrobat "binder" that I used to put together initial document disclosures became, with annotations adding exhibit labels and numbers, the materials sent to an out of state expert, the exhibits for the expert's testimonial preservation deposition, the materials used to depose the other party, and my actual exhibits.
27. Wherever possible, avoid scanning lengthy Acrobat documents after you have prepared and signed them. That can be time-consuming and actually less accurate. Instead, if you are filing in US District Court, simply print initially to the Acrobat PDF printer when choosing your printer, digitally authenticate your document, and file with the Court using a PACER account. Email a copy to your client FYI and, most likely until service rules change, print out and mail a copy to opposing counsel. It's much easier, though, if counsel agree to simply serve documents as Email attachments and send an Email read receipt.
28. In state court, many states still don't have the luxury of any sort of electronic filing and you will need to print, sign and file an original paper document. However, even under these circumstances, you can greatly improve your efficiency. Most of these steps will be applicable to producing any final legal document that includes any attachments.
29. Rather than scanning the printout of a lengthy word processing document and all of its attachments, scan only the pages that are actually physically signed by your office.
30. The remainder of the document can be printed directly from your word processor, spreadsheet, web browser, Email, photographic or other primary program directly to an Acrobat file using the Acrobat PDF printer function.

31. As a bonus, documents printed directly to Acrobat will be inherently OCR'd and text searchable without additional time-consuming processing and will also take up much less file storage space on your office system.
32. Simply replace the blank signed pages with the scanned pages actually signed by you.
33. If you are faxing a document, then later scan and append the fax confirmation printout to prove actual receipt by the other party.
34. If you wish to attach exhibits or other already scanned documents, then initially prepare them by first adding and ordering any attachments and exhibits into a single multi-file "Binder". Then, use the Drawing Markup text box tool to add an appropriately colored and labelled exhibit sticker directly on the scanned documents that you'll be using. You can copy and re-use such an exhibit sticker page by page and exhibit by exhibit as needed. This is a lot faster than using paper exhibit stickers and then trying to rescan each such document after the paper exhibit sticker has been attached. Remember, you can later edit and change the contents of any text box exhibit sticker or entirely delete it if desired.
35. Finally, use Acrobat's Document, Insert Pages function to append each exhibit or attachment in the desired order so as to build your complete document.
36. Print paper copies of the final compound document as needed on a fast color laser printer. I like the Konica Minolta 5670 series for its fast performance and high quality printed output.
37. Get and use a digital signature in order to lock down and later authenticate, if necessary, any Acrobat documents that you may be retaining as your original file copy.

COST-EFFECTIVE ELECTRONIC TRIAL PRACTICE

An Acrobat-based litigation practice is so flexible that it can easily be whatever you need it to be - you can be as traditional or as avant garde as fits a particular situation and you can do this very

quickly and easily. Here are some general tips and tricks that I found useful in a litigation practice based upon Acrobat Professional.

The major principal of electronic cost-effectiveness is simple: reuse your imaged documents as much as possible. Here's an example from a recent construction claim trial in which my clients, originally the defendants, not only defeated the claim, but prevailed on their counterclaim in an amount six times higher than the Plaintiff's original claim.

As with many construction claims, the case was factually complicated relative to the amount in question and thus very much needed a highly cost-effective approach. Losing was not an option in this instance. As documents were brought in by the client, I scanned them directly into Adobe Acrobat and added annotations based upon information from my client. These same documents were later consolidated and became the attachments to our mandatory pretrial disclosures and requests for admission. After annotating the consolidated documents, particularly photographs of the construction, the same documents were among the most important attachments to a summary judgment motion, which in turn morphed into our trial exhibits, our trial brief, and, with some selection and editing, the visuals for our opening and closing statements. They also became the basis, when quickly edited on the fly, for a fast and effective cross-examination of the opposing party's expert witness.

This technique works especially well with already prepared video clips from video depositions and audio clips from testimony.

There is a fundamental military maxim that urges commanders to get "inside your opponent's decision cycle" so that you force them into a chaotic and ineffective defensive posture because you are acting faster than they can appropriately react. Not only is this highly effective, but it is demoralizing to your adversary. You certainly don't want this to happen to your case. Structuring your imaged documents so that they can be quickly and easily re-used helps you

retain the ability to act and react faster than your opponent. Electronic trial practice, based upon an Adobe Acrobat filing system and trial notebook whose content is easily chosen and morphed as necessary, provides you with precisely that ability.

There are a number of secondary electronic technologies that I've found to be extremely useful in trial practice. In long bench trials, we use CaseSoft's outlining program "NoteMap" to briefly summarize sequentially each testimonial point by every witness as the trial progresses, with a citation to the date and time in the Court's log notes. These can be moved easily as needed into a topical outline showing the documentary and testimonial evidence on each side of each point. Once these testimonial outlines have been created, we convert them into Adobe Acrobat format and then embed actual audio clips of the critical testimony in the correct place in the Acrobat document. These sound and video enabled documents also can be used as on-the-fly cross-examination materials, closing arguments, final briefing, and an appeal record as well.

There are several secondary financial benefits to moving to a digital law office. Scanning and printing out paper copies is often less than the direct cost of making photocopies of the same documents, and your equipment purchase and maintenance costs will likewise be lower. It's much easier to exchange documents with clients, co-counsel and opposing counsel as PDF attachments to e-mail messages. Disclosure and Discovery attachments are much more economically prepared if you gather your applicable Acrobat documents, consolidate them into a PDF binder, and then send them as a CD or DVD rather than a box full of dead trees.

By loading a flash drive or burning a CD of the case file, you can take your entire case file with you at home or when traveling on a disc or two loaded on your notebook computer rather than lugging around cases of paper documents for the airlines to smash or lose. If you forget to bring something critical, or if documents arrive while you're on the road, your office staff can image them into PDF and send them to you as e-mail attachments or, if you have remote access to your network, directly download them. Should another attorney take over the case, you can retain a

complete copy of the file without any stress at all. As you transition to a digital filing system, your dead-file storage space requirements and costs will drop dramatically. Finally, assuming that you back-up your computer systems regularly, your practice will be much less vulnerable to the disruption that would otherwise occur in the event of fire, flood, or other natural disaster.

It’s critical that you be consistent, particularly when naming documents. Even if you store everything in a single, unsubdivided folder, you can find what you need quickly on a list display of all related documents start with the same first word. For example, all discovery should use "discovery" as a first word. A motion for accounting might have its component documents named "accounting - motion," "accounting - memo," "accounting - affidavit in support," etc. However, you can scan all related documents into a single PDF file, such as "accounting motion - complete" and avoid that potential problem entirely. Alternatively, using Acrobat’s capability to combine several PDF files into a single document accomplishes the same end.

This same ability allows you to scan all related documents, say a complete motion package one time, simply print them out as needed to attach to a hard copy of a letter or pleading, and then only scan the executed letter or pleading itself, along with any fax transmission confirmation sheet. Then, combine all of the PDF files into a single document that includes the letter or pleading, all attachments, and the fax confirmation sheet. This is a neat and fast solution that minimizes any chance that related documents would become separated.

An electronically organized office and litigation practice gives you very substantial operational and financial advantages. The cost savings, when coupled with appropriate changes in the attorney’s attitudes and work habits, will likely repay within months the costs of upgrading to faster computers, efficient scanners and laser printers. You’ll be able to practice more effectively, particularly in a litigation setting.

Remember to keep your electronic office organization as simple as possible and treat legacy paper printouts as transient materials to be used and discarded as needed. Tips to keep in mind:

1. Remember that an Acrobat-based filing system is very flexible. Avoid spending a lot of time up front setting up an elaborate, highly subdivided filing system up front. Not only will this time likely be wasted, but you may spend so much time looking in 15 different folders for a particular document that you negate the efficiency advantages of an electronic file system. I'm speaking from experience on this one. Early on, I had a staff member get so carried away with creating a filing system that nothing else got down and I could never find anything very quickly.
2. Instead, set up a directory for current cases, a separate subdirectory for each current case, and then a few basic directories in each matter subdirectory. I use Correspondence, Disclosures and Discovery, Investigation, Internal, Evidence, Pending, Payables and Pleading, but that basic structure is merely a personal preference. Make further subdirectories as needed for a particular case. For example, I often make a further subdirectory for dispositive motions.
3. Make all documents text-searchable by OCRing them and then search for documents as needed with a good text search program such as Copernic Desktop Search. Text recognition is very demanding on your computer. If you or your staff use default settings and render a document text-searchable at the time that it is scanned, you will need a very fast computer or a lot of patience.
4. Personally, I find it best to set up a batch program to run the Capture tool on many documents at once. If you have a spare computer, then you can run that batch process and walk away while it runs. Sometimes, you will be able to OCR an entire directory while, under other circumstances, you may only be able to OCR 20 to 40 documents in each iteration of the Capture batch process. By the way, using a batch process later is an excellent way to bring earlier, non-OCR files up to snuff.
5. Title your documents in a consistent and information fashion - e.g., Kashi to Opposing Counsel accepting $100K Settlement Offer. This may seem obvious but it is obviously often violated.

6. Hard disk space is cheap. File copies of a document that you will not change in the future in all directories in which someone might be likely to look.
7. Use a litigation support program, such as CaseMap, that can work directly with Acrobat documents and import them into a CaseMap matter. Once you have CaseMap set up properly for a particular case, with people, documents, issues and links already defined in CaseMap, then imported Acrobat documents that have been OCR'd may be automatically categorized and properly filed in CaseMap.
8. Remember that one of the major efficiencies of Acrobat-based law practice is the ability to re-use whatever you have scanned. For example, if your client brings in a bunch of documents during the initial consultation, then scan them on the spot as the client explains them to you. Retain a clean original copy of each scanned document and then put explanatory notes and comments on a working copy of every scanned document, thus reducing your need to take separate notes. Later, you can pull these same documents, and other later-developed materials such as photographs, into a single "binder" for discovery and disclosure purposes. It's easy to review your binder for privilege.
9. You can mutate and re-use this same document-inclusive document disclosure binder at later times as a quick way to prepare exhibits to motions, deposition exhibits, trial exhibits, cross-examination materials, and visuals for opening statements and closing arguments.
10. Combine all related pleadings into a single sequential file. For example, if you are dealing with a summary judgment motion, then rather than storing all of the documents separately, which become more time-consuming and harder to finder, make a single summary judgment file, starting with the Motion, then appending the memo, affidavits, exhibits, and other supporting documents. When any opposition, Rule 56f motion, reply, orders, etc are filed, then append these documents as well, in consecutive order. At the conclusion, you will have a complete history of the entire motion in one file and in consecutive order.

Infrastructure

Some Alternatives for Shared Resources

Infrastructure

AVOIDING DATA OBSOLESCENCE AND LOSS

There's one potential drawback to converting to a digital law practice - data obsolescence, the inability to physically access data or to electronically use it in the future. Law office automation focuses upon the immediate retrieval and use of data during the daily course of business. Unfortunately, most office automation efforts to date have failed to adequately provide for the long term use and re-use of data over a period of years and decades.

Because of the rapid advance in hardware and software, programs and data that we use today will likely not be usable in fifteen years without a great deal of effort. Even NASA has experienced difficulties in this regard: fifteen year old computer tapes containing data from planetary exploration missions cannot be used readily on currently available mainframe tape drives. NASA has been forced to spend millions of dollars converting these tapes to modern formats and cataloging their contents.

Long term data usage provides an excellent example of why strategic business planning has become so important in the digital age. Suppose that you have moved your case files and other record away from legacy paper or microfilm to document imaging. One obvious reason to make this move is to do away with costly, hard to research, bulky paper records. However, a paper record has one crucial advantage relative to electronic imaging: paper lasts many decades without special treatment and anyone can determine all the information existing in that record simply by holding the page and reading it. No special equipment or software is necessary to use a paper record and there will be no difficulty with "backward compatibility" twenty five years from now.

Document imaging and a digital law practice are clearly the wave of the present, let alone the

future. Both document imaging and a more general digital law practice require that the electronic document archiving media remain usable for decades and that the necessary hardware and software still exists to use those electronic documents. Given the rate at which technology advances and file formats change, and given the inevitable failure of heavily used devices like the hard disks in your computers, there are only a few things of which we can be sure. In ten to fifteen years, it will be essentially impossible to find new drives which can read CD or perhaps even DVD formats or backup tapes made today. Also, there is a good chance that the computer components that you are using today will have failed within several years and finding replacement components or repair parts five years hence will be essentially impossible. Thus, an important aspect of long term digital law practice infrastructure will be ensuring is that your data will be usable and accessible into the foreseeable future.

Accessibility involves several factors. Firstly, data must remain usable by both current and future software. You should standardize your entire firm upon well-known and broadly popular programs made by a company that's likely to be continuing development of their products many years hence. At the moment, this implies using Adobe Acrobat, which has become a de facto imaging product standard that’s been licensed by other software vendors. Adobe has recently implemented an archival version of its standard PDF document format, and that appears to be the best bet at this time. Future data usability also implies the desirability of using programs that either store or export data in a standardized format that can be accessed by evolving software from other companies. Standardized data formats include RTF and ASCII text files, SQL databases, Adobe Acrobat PDF imaging formats, Adobe DNG photo format for RAW data files, and traditional JPEG and TIFF photo formats. Converting standardized data to new program file formats will be smoother and less expensive ten years hence. I opted for the universally accessible PDF format. It’s not readily altered and PDF files are extremely compact compared to bit-mapped file formats such as TIFF. That will save a huge amount of filer server data storage capacity, speed up digital filing retrieval, and generally make digital filing practicable, which it’s not when using image file formats such as TIFF.

Your data must be physically accessible and transferable to more modern storage media from time to time. Given the rapid evolution of computer software and hardware standards, physical accessibility must be a primary concern. If your data cannot be read into the computer for lack of a functioning drive, all the conversion software in the world will do you little good. For example, if you store old billing records on a backup tape, the magnetic recording on that tape will fade within a few years. If your tape drive breaks (and it will, sooner or later), you'll not be able to replace the drive with a model which can compatibly read a five year old tape format and access the data. You will have thousands of pages of documents and no means to read them. These same concerns arise in connection with fire, theft or other casualties affecting the data storage in your office. There are several lessons to be drawn. Firstly, you'll need to carefully choose the hardware and software which you implement with an eye toward future upgradability. Secondly, you should expect to implement a comprehensive data conversion and hardware upgrade procedure every three or four years while backward compatible software and hardware remains available and conversion is relatively straightforward. Plan for smooth data and hardware migration and you're less likely to be orphaned.

At this time, the most reliable, easiest and least expensive method of preserving and protecting law office data are large 500MB to 1,000 MB external hard disks that simply plug in to a high speed USB or Firewire port. Portable USB or Firewire hard disks are greatly superior to tape backup drives and do not have hardware obsolescence issues to the same degree as tape backup drives, which are essentially obsolete.

TELEPHONE SYSTEMS:

There are a lot of really expensive telephone systems on the market and, speaking from personal

experience, they're mostly overkill for the small law firm and even harder to use than a VCR with 100 functions controlled by two unlabelled buttons. There's a fairly easy and not very expensive long-term alternative for small law firms: virtual phone systems based upon Centrex, where a series of separate hard-wired outside phone lines are integrated at the phone company's central exchange. Centrex-based phone systems are often easier to use and richer in useful features; they're worth exploring but be aware that your base monthly charge may be higher than the phone company might suggest and that you may be charged for wiring the installation despite representations to the contrary. There are some less-expensive short term alternatives. You can use your cell phone as a primary contact because that avoids any problem with locating you, you can forward calls from the office system, and your cell phone number is portable from carrier to carrier. You may want to add caller-ID so that you can ignore unnecessary calls.

FAXING AND PHOTOCOPYING:

A dedicated laser fax machine makes a lot of sense even for a small law office and is usually quite inexpensive. For years, I used $700 HP 33xx series multifunction devices for years as our office's fax machine, replacing them every two years or so as the automatic document feeder wore out. Finally, I realized that I never really used the scanner, printer or copier functions and simply bought a Brother laser fax machine at Costco for $188. It's proven more than satisfactory. Be sure to get a fast, modern 33.6Kbit fax system. You'll save money in the long term. For authentication reasons, I still prefer using a paper fax with a confirmation printout in any case where I believe that I later may need to prove receipt, something that's not a reliable when using Email. After all, the Email recipient only needs to refuse to send the receipt acknowledgment.

Traditional photocopiers are dead as the Dodo except for low-end convenience machines. Vendors often don't even want them back when the lease runs out. It's worth remembering that a photocopier is basically a laser printer hooked up to an integrated scanner. There are now

much more effective and reliable alternatives that are also more effective.

At the low end, a multipurpose machine usually combines a scanner, printer, fax, and copier functions. I don't like them because I've found that the low end devices are great for occasional home use, their intended purpose, but that low end devices are much too limited to be effective for every function in the office over the long term. High end networked multifunction devices typically cost several thousand dollars, can be quite effective, but usually have their own operational limitations. I personally find it inconvenient to run down the hall to scan documents being handed to me by a client or to retrieve a document that I'm printing. These higher end multifunction devices tend to be effective but expensive to purchase and maintain because there is less competition than in the computing device market. You'll typically find high end multifunction devices at business machine dealers and, depending upon features, they may make a lot of sense for a small law office whose mindset still depends upon a traditional photocopier rather than worked with imaged document files in PDF. I think that these devices are not an optimum purchase and are well on their way to obsolescence.

By and large, I personally believe that it's more convenient, more reliable, and less expensive to put a medium speed scanner and color laser printer on everyone's desktop and to also use the scanner/printer combination as a quick photocopier when needed. A centralized high speed scanner in the staff work area handles big copying jobs much more effectively and efficiently than a traditional photocopier when used with high capacity network file storage and a very fast networked color laser printer like the Konica Minolta 5670.

Scanning all documents into Adobe Acrobat with a separate scanner and printing them as needed with a fast laser printer is both more efficient and less expensive than buying and servicing a standalone photocopier for 8.5" wide documents. Although basic laser printers do not collate per se, you can easily achieve the same end result by controlling how you combine an print a series of imaged documents in Adobe Acrobat: this is actually a lot faster and easier than standing over

a “collating” copier and feeding 25 documents at time in proper order and far more flexible and effective as a basic approach to practicing law.

SCANNERS

It makes a lot of sense to put a scanner on everyone’s desk rather than run down the hall to use a faster centralized scanner. Unfortunately, there’s no perfect solution and this area of technology does not appear to be advancing very rapidly.

One of the better and more broadly compatible scanners that I’ve used recently is the Canon DR-2580 series, which scans 25 sheets per minute, either single sided or duplex. Although the DR-2580 allegedly can scan 11x17 sheets in a folded scanning mode, I’ve found that this claimed feature is not reliable. The Xerox 252/26/272 series, which is made by Visioneer, has nearly bullet-proof paper handling and 25 sheet to 33 sheet per minute scanning speeds, single-sided or duplex. Prices for the Xerox Documate scanners typically range between $750 and $1,100.

The most cost-effective desktop document scanners are those in the Xerox ScanSnap series, which usually cost about $400 or so. These scanners are shipped with a full-featured copy of Adobe Acrobat Standard version 8. The scanning interface software provided by Fujitsu, even with their less expensive ScanSnap scanners ($420 Internet price), is much more sophisticated than the software provided by Xerox. Fujitsu’s software including automatic color and paper size detection, automatic re-orientation of upside down documents, and automatic blank page deletion when used in duplex scanning mode. The Fujitsu’s 18 sheet per minute (single or double sided) scanning speed is more than adequate for most desktop uses. Unfortunately, recent ScanSnap models seem more prone to paper misfeed and jamming as a result of simple design flaws with the paper feed path.

Wider 11"x17" documents, so-called “B-size”, are frequently used in the real estate and construction industries for plats and construction plans and you may need some means of scanning and printing such documents. Unfortunately, most full-size 11" wide scanners and laser printers are inexplicably far more expensive. If you use larger B size documents only rarely, then by far the most cost-effective approach is to simply take the occasional large document to a local UPS Store or Kinko’s and have the requisite number of copies made along with a high resolution copy reduced to 8.5"x11" suitable for high resolution scanning and storage back at your office. If you anticipate scanning a lot of 11” wide documents, then your best current bet is the Mustek A3 Scan Pro 1200, which Amazon.com typically sells for about $150 plus shipping. This scanner is a bit clunky but definitely does the job for scanning larger than letter sized documents. It even works directly with Windows XP x64.

PRINTERS

You’ll need several printers, particularly if you’ve designed your office around the concept of document imaging. Firstly, you’ll need some fast color laser printers to produce printouts of imaged documents as needed for disclosure, discovery and trial purposes. I found that the use of color photographs is very effective in a litigation practice; I also found that separately printing and then collating color pages is tedious and prone to error. Other litigators have had the same experience and we all arrived at the same time-saving solution: buy a fast color laser printer and use it for everyday use. Unfortunately, the print quality and effectiveness of color lasers and their cost per page vary a great deal even among different models from the same manufacturer. You’ll need to do your homework before buying any of them. Be sure that you get a fast one, though. There’s nothing more excruciating than a slow printer and a rapidly approaching filing deadline. Be sure that your intended laser printer easily feeds and prints envelopes one at a time; that will save a lot of hassle when you are short on staff. Unfortunately, this is another area where the technology does not appear to be advancing very quickly. After a lot of trial and error, I found that the HP and Lexmark color laser printers generally are rather slower than advertised,

especially when printing out Adobe Acrobat documents and that their per page costs are rather high. Dell and Konica Minolta now seem to offer the most effective and cost-efficient color laser printers. My own personal choice is a 37 page per minute Konica Minolta 5670.

In the digital age, it's now easy and inexpensive to make your own enlargements for use as in-court exhibits rather than using the traditional approach of sending them out to a lab, which might result in a few days delay and a few hundred dollars per print. However, you'll need an economical wide format color printer. A printer with a maximum print size of 13"x19" is the bare minimum for making enlargements useful in Court but is probably too small for presentation to a jury. Among the readily available 13"x19" printers, the Canon Pixma 9000, at about $400, is probably the least expensive and the Epson R2880 probably has the best photo print quality. I did not like the folded paper feed path on the more expensive HP 9180 but its high quality printed output and functionality are well-regarded.

For legal purposes, a dye based ink printer is probably preferable to a pigment based ink printer. Pigment based inks have a longer life span and potentially higher quality but these are primarily attributes for the fine art printing market. The often better print speed, lower cost, and adequate longevity of dye based ink prints sometimes makes these printers more suitable to the demands of day to day law practice.

Larger exhibits require a really wide carriage printer, preferably at least 24" wide. The HP z3200 has received excellent reviews but is quite expensive, with a base price of nearly $3,500. I use an HP DesignJet 130nr, which will make excellent, highly cost-efficient 24"x36" or wider prints. Although the cut sheet feed tends to jam or scratch prints, the DesignJet 130's roll feed option works beautifully and at a much lower cost per print. I prefer to use 24" rolls of HP Photo Satin for everything although heavyweight coated paper is much less expensive and probably just fine for exhibits. A 50 foot roll costs about $80 and the thick paper and tough finish greatly reduce damage. HP's high capacity 84/85 series inks are rated as having an 82 or

longer year archival print life. The ink tanks last a long time, even with 24" wide prints and that greatly reduces the cost per print. Overall, I found that a 24" x 36" print cost me about five to ten dollars to produce, which is trivial compared to the cost using a third party lab. Using big prints in a courtroom, especially when they're made on photo roll paper, can be a problem unless they are mounted on rigid foam board. The best and most economical way to mount and handle big prints is to buy a box of 32"x40" foam mounting board that incorporates a self-adhesive layer that will bind the print to the underlying foam core board.

Any large format printer like the DesignJet 130 series is a big, heavy printer that should be setup and calibrated professionally before you can use it to full effect. You'll do best if you buy the printer from a local HP professional products dealer who can set it up at your location and run a color calibration. The basic DesignJet 130r with roll feeder and cutter has a base price of about $1,550.

Desktop Computers:

This area of law office equipment has been beaten to death and decent computers are generally pretty inexpensive anymore. We all need one but the proliferation of models can seem bewildering. Buying an instantly recognizable brand name like Dell or HP may be a good idea but even then, you can customize your system rather extensively. At this time, Intel's Core 2 Duo dual core and quad core CPUs and AMD's quad core Phenom II x4 series both perform extremely well at a fairly reasonable cost. As with your file server, you'll want a very fast hard disk as your boot drive, at least a 7200 RPM SATA drive. Western Digital drives are excellent, among the fastest on the market, and generally quite reliable. You'll need at least two, and preferably four, gigabytes of RAM. Recent studies suggest that the productivity gains from providing each user with a large, high quality LCD monitor are very high compared to the slightly increased purchase cost. Get a nice 24" or larger widescreen monitor. These only cost about $250 for a name brand like Viewsonic when bought over the Internet and the wide screen

allows you to have two windows simultaneously visible, which allows you to view a PDF file at the same time that you are drafting a letter or pleading pertaining to the PDF file. A Logitech wireless mouse and keyboard combination will give you a lot of flexibility about where you locate your computer and desktop. You can find more detailed hardware discussions at www.kashilaw.com under the tech articles tab or among our papers being posted by the Washington Bar Association.

Practical Networking

Choosing desktop and network operating systems

PRACTICAL NETWORKING

Every law office now depends upon robust desktop computing and networking capabilities, including both local area networking within the office and also high performance Internet access.

WHICH OPERATING SYSTEM?

The first question, of course, is should one use Windows, Linux, or Mac, and which flavor? Although the Apple Macintosh is a most useful and interesting platform, certainly more technically advanced given is UNIX underpinnings, and although both Macintosh OS 10 and Linux are both more robust, I felt compelled to stay with Windows, but not because of any particular fondness for slower performance, higher cost and lower stability/reliability. The sad truth is that lawyers, unlike graphics designers or industrial applications, are locked into Windows XP or Windows Vista. The old adage that useful application software dictates the choice of operating system, rather than the other way around, is especially true for lawyers. Most of the really useful programs specific to the legal industry run only within pretty recent versions of the Windows operating system.

Windows 7 looks promising – in many ways, its underlying structure has been simplified, accelerated, and generally much more like the small basic "kernel" structure used by Linux to such advantage. However, this newer operating system, which will replace the much-reviled Windows Vista, is not yet shipping and will, if history serves, probably have compatibility and reliability problems for about a year after its initial release.

So, Windows it was. Three versions remain currently available: Windows XP Service Pack 2 for 32 bit processors, the 64 bit version of Windows XP, and Windows Vista. Given Vista's

voracious demand for computing power devoted to secondary features of little value to the business user and Vista's broad reputation for the instability and poor performance, I chose Windows XP, which is finally pretty reliable. Now that the faster and technically superior 64 bit version of XP (dubbed XP x64) is finally supported by most printers, all flash drives, and many fast document scanners like the Canon DR-2580 and the Mustek A3 Scan Pro 1200 11x17 flatbed scanner, I recently started upgrading computers still using the reliable but somewhat slowly 32 bit version of Windows XP, Service Pack 3. However, Windows XP is still shipping by popular demand among large corporate customers who distrust Vista and who pressured Microsoft to put 32 bit Windows XP back on life support despite Microsoft's desire to shift users to Windows Vista, which in scheduled to be phased out instead. An OEM copy of Windows XP x 64 will set you back about $140 per computer.

A NEW NETWORK INFRASTRUCTURE:

Your network infrastructure is now the key component of your law office. Proper network specification requires more precision and care than deciding which desktop computers to buy. Desktop computers are, within reason, pretty fungible commodities these days so long as they are stable and fast enough.

I used the 64 bit version of Windows XP as the operating system for my file server. Windows XP x64 version actually uses Microsoft's stable and useful Server 2003 network operating system code without the high price. If you have more than five or ten computers, though, then it makes sense to get a regular copy of Microsoft's latest server software. A very small office would likely find the latest Small Business Server package, which includes Outlook Exchange, a web server, and other network-based software, to be cost-effective.

Although every version of Windows XP or Windows Vista allows you to network every computer and printer in the office to your heart's content, such free-wheeling ways have a

tendency to spin out of control and have always concerned me. It's much better to keep all of your data on a single high-end server computer, even if that computer is only acting as a host for Microsoft's peer to peer networking inherent to Windows XP. Sharing printers, especially expensive items like high speed color laser printers or USB attached network backup devices, makes a lot of sense, though.

There are several good reasons to keep all of your data on a single central file server. It's definitely a faster and more stable arrangement. Application programs do cause desktop computers to lock up from time to time and if someone's workstation is also acting as a file server for others, then any freeze or crash brings down the entire network and everyone loses their work. In addition, it's harder to keep track of the latest version of any file or operating system when different versions are scattered through dark corners of all the computers in your office. Finally, your data backups will be more complete and reliable if all data is maintained, used, and backed up from a single location.

SETTING UP A PEER TO PEER NETWORK

Setting up a peer to peer network in theory should be easy. After you've installed Windows XP on each computer, run the Network Setup Wizard found under "Accessories" "Communications" and set up peer to peer sharing. I prefer to share only a single comprehensive network data folder on the designated file server. Then, using the My Network Places, Tools, Map network drive option, designate the shared data folder as a drive letter to be reconnected each time that you star your computer. Be totally consistent with shared folder and drive letter designations to avoid any confusion or conflicts. Be sure that each computer has a unique name and identifier.

Initially, even though I have had many years of networking experience, I could not get Windows x64 peer to peer networking up and running without some quirks. It turns out that my network

cabling and hardware, simple though it was, was too sophisticated for Microsoft's peer to peer networking right out of the box. Ultimately, I found that, for hassle-free initial installation, one should use Microsoft's default workgroup name and use only a single network switch to connect all of the computers, printers and Internet access. I avoided sharing everyone's printers and documents with everyone else. It's just too easy, under those circumstances, to misfile and misplace documents. After you've gotten everything communicating properly, then go back and be sure that you have set up the system security, including nuanced sharing rights and firewalls. Ultimately, with quick DSL connections and the right kind of routers at the office and at home, you can set up a "Virtual Private Network" (VPN) that allows you to securely access your entire network from a remote location. That's definitely worth the extra effort and experimentation.

NETWORKING HARDWARE

I used an inexpensive 24 port gigabit speed network switch that directly connects a file server, five desktop and one notebook computer, and my high speed Internet connection. The 64 bit Windows network file server discussed here can handle a fair sized office, so the practical limitation upon the ultimate size of a peer to peer network will be the number of direct connections available on the network switch. Low cost brand name switches are available with up to 24 individual connections. If you're not sure about how many connections you'll need, then buy a larger model to accommodate future demands. Earlier, I maxed out an 8 port switch with just myself, four employees, a notebook computer, file server and Internet access.

Be sure that you get a gigabyte speed Ethernet "switch" rather than a slightly less expensive "network hub". Unlike a switch, which can connect any Ethernet device to any other Ethernet device at the optimum speed for each, a network hub cannot detect and adapt to Ethernet devices running at different speeds. That means that a hub either runs your file server's connection to the rest of your network at excruciatingly slow speed or that it cannot communicate with DSL

modems and printers, both of which typically include only slow Ethernet connections. Using a gigabit speed switch avoids all such problems without any hassle.

Why bother with a fast network connection? Network connection speed really didn't matter very much when we only used a network to store retrieve small word processing files. Now, although perhaps five or seven years behind the rest of the world, the legal profession is becoming very visual, with high resolution photographs, video depositions, paperless filing systems using Acrobat, and high speed Internet access all vying for the same network bandwidth. Only gigabit speed networking can provide adequate performance for these modern network demands, even in the smallest law office. Luckily, gigabit networking is really quite inexpensive. Most new computers include at least one built in gigabit speed Ethernet port without extra charge. If needed, you can always buy an add-in card; I paid $15 for my last add-in gigabit Ethernet card. Even if your notebook computer only has a 100 megabit Ethernet connection, it will connect, albeit more slowly, to a gigabit speed switch. Connecting network cabling should be at least 350MHz Category 5E or, better yet, more modern 500 MHz Category 6. A modern gigabit switch and proper cabling are the only hardware that you need, aside from the computers and printers that you will connect, for a completely modern network.

WHAT GOES INSIDE THE FILE SERVER BOX?

You can buy a generic file server or you can have one built to your custom specifications using the best quality, most reliable and fastest components. I chose to build my own but unless you are fairly expert, don't try assembling this at home. I used the following components, which I believed to provide the best value, reliability and performance for the money that I allocated for a new file server. I bought most of the products mentioned here from www.newegg.com, which I consider to be one of the most reliable, low cost and best-stocked Internet vendors. Chances are that you'll prefer to have a competent local shop build and service your law firm's file server rather than doing it yourself. Here are a few suggestions but these are not cast in concrete

because technology prices are again dropping even as performance rises, given the current market conditions:

1. AMD Quad-core Opteron. This is a fast but inexpensive four core CPU intended for file servers although it also works very well in a desktop computer. I prefer it to Intel's more expensive Xeon file server CPU. Use at least 4, preferably 8, gigabytes of matched high speed DDR2 RAM memory. Processors aimed more toward end user desktop computing often don't perform as well in a file server setting, whose primary function is to move a lot of data to and from network storage to end user computers. The extra RAM is a cheap way to improve overall network performance.
2. Matching AM2+ or AM3 style system board from a solid component company like ASUS, Abit, or Gigabtyte. Be sure that your file server system board includes a high quality built-in RAID disk array controller for modern high speed SATA disks. That allows you to set up a high-end failure-resistant disk array in about five minutes with minimal cost and hassle. Not too long ago, setting up a RAID disk array was akin to rocket science: an expensive black box, whose internals were known mostly to wizards and that blew up with a certain regularity. You'll need to include four gigabytes (4 GB) memory.
3. The RAID disk array: take four 750 gigabyte Western Digital Black Caviar SATA hard disks, which are among the fastest and reliable hard disks available at a rational price (about $80 each). Then, attach a powered hard disk cooler to each one, and connect them to the power supply and to the system board SATA data connections. In only a few minutes, you can electronically combine these four discrete hard disks, whose individual capacities total 3,000 gigabytes, into what appears, to your operating system, to be a single 1,500 GB hard disk. Why, you might reasonably ask, would any reasonably sane person spend about $320 to turn 3,000 gigabytes into 1,500 gigabytes, especially when you can buy a perfectly good 1,500 gigabyte hard disk for under $150? Data security and fast

performance. A RAID hard electronically spreads all of its data over all four disk drives, reading and writing simultaneously, and achieving even better performance than any of its individual fast hard disks. That's important when many people are trying to access the same hard disk for large Acrobat or multimedia files.

Even more important, though, is a RAID disk array's redundancy and consequent high level of resistance to data loss when disk drive hardware fails. Any one of a RAID array's individual hard disks can fail and your system will continue working without data loss. When you replace the failed hard disk, the RAID array uses special data stored on the remaining disks in the array to reconstitute the third hard disk as a fully functioning disk array component without any data loss. Even though you are undoubtedly backing up your network data every day, you still need this sort of operational reliability. Down time is just too costly for a law firm.

4. A big reliable power supply and lots of cooling fans. You'll need a top end voltage stabilized 600 watt or higher power supply for any file server. Although vendors typically use the least expensive power supply that they can find, don't fall into that gambit. Failing power supplies are probably the most common reason that network file server hardware fails.

Be sure that you have a large battery-powered uninterruptible power supply (UPS) to ensure continued operation if there wall outlet power fails. I prefer APC brand UPS devices - they're reliable and are recognized as a USB device capable of shutting down the file server when the battery runs low. Best of all, they're readily available at Costco and not too expensive.

Use as many fans and as large a tower case as feasible. All of this hardware

generates a lot of heat, so you'll need as many fans and as much unobstructed interior case volume as possible. Large 120 mm fans exhausting hot air from the file server case tend to do a better job cooling a computer's interior than smaller fans or fans that blow outside air into the case. Where possible, use fans that are powered and controlled by the system board through small three pin connectors that plug directly into the system board. These are monitored and controlled by your system board hardware as your hardware heats up. Fast hard disks run very hot. Attach a hard disk cooler to each: I like the Coolmax products that are screwed into the bottom of each hard disk and that blow cool air on to the exposed hard disk electronics, which seems to be the most common point of hard disk failure. I also install all the RAID hard disks in a position where one large fan blows cool outside air across all three disk drives.

Finally, here's a trick that I used to cool the file server's tightly packed RAM. Most modern tower cases include a side-mounted fan on the removable panel. Usually, this fan is almost perfectly placed to blow cool outside on to the RAM memory. Modern RAM runs hot and is highly susceptible to heat failure. The colorful little heat spreaders that most RAM vendors now put on their chips are helpful but more a marketing ploy. You'll need to supplement those bright red or serious-looking black heat spreaders with cool outside air. Determine which way the side-mounted fan is blowing. If it's blowing from the outside inward, then that's great; your RAM cooling problem is probably already solved. If it's exhausting hot air, then simply reverse the action. These fans are simply attached by four self-threading screws. Remove the screws, reverse the fan, and then re-attach the other side with the self-threading screws.

5. Simple data backup. Back up your data every day, even if your new file server has a RAID disk array. The RAID array only protects against hardware failure and that's very critical. However, most studies suggest that about 80% of

business data loss occurs because of employee error. A RAID array responds to the delete command just as promptly as a single hard disk and the data will be just as "gone". A RAID array has no value in protecting against fire, theft, disaster, or other casualty loss. Only a proper daily "full" backup, stored off-premises, fully protects against operator error, theft and casualty loss. Incremental or other forms of partial data backup are often unreliable and may not restore all data correctly.

Tape drives used to be the backup device of choice but are now totally obsolete, at least for the small law firm. Far better, far less expensive, and far more reliable are portable hard disks. These plug into a high speed USB 2.0 port and are recognized as just another hard disk when plugged into the file server or other computer with full rights to all data. Up to 400 gigabytes or so, you can use a small 9.5 mm hard disk generally intended for notebook computers. Although a little more expensive, these have the advantage of being powered by the USB port itself and do not require any other external source of electrical power. As such they are highly portable. If you need more storage space than that, then you can buy a fully configured 1000GB or 1,500 GB external hard disk from Costco for $100 to $150. These work well when used either with the ubiquitous Windows backup accessory program or when simply dragging and copying the entire set of data folders in Windows. Regardless of what hardware you choose, use it every day and store the backups off premises.