PERSPECTIVES ON KNOWLEDGE MANAGEMENT IN LAW FIRMS

WHITE PAPER

Ronald W. Staudt
Professor of Law

Knowledge management has been the rage in a variety of businesses for the past ten years. The essential idea is that employees and the record of their work have knowledge that makes the business function. KM as a concept promises that if the best knowledge is captured, shared and reused rather than starting each engagement from scratch, then time will be saved, efficiency created and costs of production will drop as quality improves. [i]

Recent discussions and presentations about knowledge management in law firms have concentrated on a very narrow band of technology applications. This White Paper places knowledge management in law firms within the history of lawyers using technology to enhance their professional activities. Then, the White Paper argues that knowledge management for law firms requires a broad and wide-ranging set of tools. The White Paper concludes that optimal set of tools will vary from firm to firm and from lawyer to lawyer in predictable ways when examined against the history of adoption of technology by attorneys and the lessons of that history. Finally, the White Paper presents the key perspectives needed to evaluate the benefits of adopting one of the recently introduced knowledge management products: integrated search products that combine searches of commercial online legal databases with searches of law firm work product.

1. The Adoption of Technology by Practicing Lawyers

Since the beginning of the office technology boom in the 1980's lawyers have been accused of being Luddites, fearful and reluctant to adopt modern technology. Lawyers are often compared unfavorably in this arena to accountants and even doctors. A more objective view of lawyers demonstrates that they will adopt effective technology with enthusiasm when the tools are appropriate for the professional tasks that they face.

Successful lawyers are rightly reluctant to abandon the personal working habits and tools that produced their successes. Lawyers are well supported with clerical staff because their time is valuable. Technology innovations must fit into the pattern of their work with seamless ease. It is almost always easier, faster and more "productive" to delegate to support staff any new effort that interferes with the lawyer's time-tested means of working.

Therefore, it has been difficult to introduce into law firms new technologies that directly affect the way lawyers themselves perform their professional tasks.[ii] These "front office" innovations have a higher burden of persuasion because they have the potential to damage as well as to improve the engine of firm productivity and profit.

It should be noted that this historical reluctance by lawyers to adopt "front office" technology does not apply to "back office" technology aimed at improving staff efficiency and office operations. Lawyers are not reluctant to buy tools for their assistants that make their support staff more efficient. Attorneys have acted like all intelligent business people when faced with decisions about deploying back office technologies. So long as the new technology did not force lawyers to change their own professional techniques, these investment decisions have been made by balancing costs against efficiencies to be gained by deploying the new technical tool. Photocopiers, fax machines, accounting software systems and all the modern "back office" systems were introduced within law firms on the same schedule as they entered other professions.

Lawyers have also adopted some "front office" technology, tools used by lawyers themselves in their professional efforts, with unusual speed and enthusiasm. They were early adopters of word processing innovations from mag-tape and mag-card machines in the 1960's to IBM Displaywriters in the 1970's to WordPerfect in the 1990's.[iii] To be fair to the front v. back office distinction, early word processing purchases were relegated to back office departments staffed by clerical staff. As the personal computer revolution emerged in the mid-1980s, lawyers themselves began to use word processing, primarily the lawyer friendly WordPerfect software.[iv]

Another example of front office innovation is the emergence and growth of computer aided legal research. Beginning in 1973, the Lexis Service began to build an online database of primary research tools for lawyers. Within a decade hundreds of thousands of lawyers learned this new way to find the law. By the mid 1980's lawyers had the most powerful, most extensive, most frequently used online research system of any profession or academic discipline. Chemists and other scientific researchers could find online abstracts of the papers that formed the foundation of the knowledge of their disciplines. U.S. lawyers had online access to the full text of nearly every important case and statute in the country within Lexis' first decade. By 1989, one million LexisNexis IDs had been issued.[v]

Similarly, in the middle 1990's, lawyers embraced the benefits of networking, e-mail and Internet communications. The Internet quickly became an important tool for lawyer-to-lawyer communication and client-to-lawyer communication.[vi] In fact, electronic mail may have been the most widely and enthusiastically adopted technology innovation for lawyers since the telephone.[vii]

Lawyers jumped on the e-mail bandwagon in the mid-1990s. And they haven't looked back. Today, lawyers routinely use e-mail to send memorandums, mull strategy with clients, and mark up drafts of briefs with co-counsel. The day-to-day work of a lawyer now mostly takes place over e-mail.[viii]

In the mid-1990's as lawyers shifted to electronic communication over the Internet, LexisNexis introduced the first ability to conduct online research on the World Wide Web. Lawyers were enthusiastic adopters of this new way to use pervasive technology to find the law. Today 90% of online searches on LexisNexis are performed over the web.

There are some obvious lessons from this short history of the growth of technology in law firms. Lawyers are rational business people and will make investments in technology that will leverage the investments made by firms in support staff and other back office systems. Once they complete the necessary careful analysis of savings or revenue improvement that can be reliably predicted if a new billing system is implemented or network infrastructures are improved, lawyers will act to implement technology innovations that improve profitability.

Alternatively, lawyers will adopt new technologies that affect their work habits only if it is demonstrated that the new technology will produce a major leap in productivity of core professional activities like research, writing or communication. The burden on the technology innovator is higher, and correctly so, if these core areas of lawyer work are changed.[ix]

These ideas work together to help predict the viability of technology innovations that affect the way lawyers practice law. If an innovation is a breakthrough in convenience, speed and efficiency, lawyers are willing to spend money to purchase the tool, as well as otherwise billable time to learn to use the tool. For example, for a century *Shepard's*® cite checking was a complicated but essential step of all careful legal research. *Shepard's* reports were delivered in cascading sets of maroon books, red pamphlets and white paper flyers. When LexisNexis first built the *Shepard's* online service the books, pamphlets and flyers were merged into one very current electronic report. The central purpose and value of *Shepard's* was improved by this conversion to online delivery. Lawyers and law students will spend time to learn this type of innovation.

In summary, while lawyers have been accused of failing to adopt modern technology that is common in other professional services organizations, usually this criticism is unfair. Law firms have adopted back office software and hardware on the same schedule as most information businesses. Attorneys are more conservative in jumping into new technologies that change the way they do their own knowledge work; but even there, history demonstrates that lawyers will invest in front office technology, even lead other professions in adopting such technology, once productivity advantages are clear and powerfully demonstrated. Clarifying examples of this technology leadership include LexisNexis itself, word processing software and *Shepard's* online.

Next we examine two sets of more nuanced factors that influence the knowledge management needs of lawyers.

2. The Lawyer Life Cycle and Two Types of Knowledge Management

All lawyers and all law practices are not the same. Even the same lawyer does not have identical knowledge management needs throughout a long career. Young lawyers need different knowledge tools than do more senior attorneys. In this part of the White Paper we classify lawyers according to the type of work that dominates their day. Different types of work will demand different types of tools. Second, we classify knowledge management approaches into two types of tools that are appropriate for very different practice settings.

Experts who study professional service firms have described lawyers, as well as architects and other consultants, as finders, minders or grinders. These three overlapping categories define the stage of professional development and the major impact of the work that professionals do on a daily basis.[x] Finders are attorneys who bring in new clients. Minders manage the matters that the firm handles for a client and maintain relationships with current clients. Grinders do the research, draft the contracts, handle the depositions and argue the motions in court.[xi] To be useful to all of the lawyers throughout a firm and to be useful to any single lawyer throughout their professional life cycle of an evolving career, a variety of knowledge management tools will be needed.[xii]

- In the early years of a lawyer's career, research and document drafting are the predominant professional activities. The tools of legal research are knowledge management tools that help professionals locate the wisdom and analysis previously written by judges, expert scholars and lawyers for adaptation and use in the context presented by a current client. LexisNexis, *Shepard's* citation tools, treatises by Matthew Bender authors and competitive publishers' works are all delivered to the computer screens of modern lawyer researchers. LexisNexis™ Total Search, a new integrated search tool, delivers that part of the prior work product selected by the firm, to the same knowledge interface and the same computer screen currently used by lawyers to find the law.

- More senior associates and young partners are entrusted with management responsibilities. At this stage in their careers they are responsible for a team of lawyers and paralegals delivering legal services on specific matters needed by the firm's clients. These lawyers require information about the matters that the firm is handling drawn from a variety of internal information sources like the time and billing system, the conflicts system, the document management system and external sources like LexisNexis news reports, web updates and stock market reports. Matter centric portal technology, like the Plumtree system, is more central to their daily knowledge management than research tools that draw on existing firm work product.

- Knowledge about the client dominates the third, client development phase of a lawyer's career. News and stock reports are important to this work and a clear understanding of all the work in process for a particular client is critical. A client centered portal view is more effective in meeting this lawyer's needs.

Knowledge management approaches to these various professional needs can be divided into two categories: codification and personalization.[xiii] Ernst & Young has been cited as an example of codification. Ernst & Young maintains a 250-person Center for Business Knowledge that gathers all the best practices and best documents and reports and delivers this content to be reused in similar engagements. Bain & Co. and McKinsey & Co. are reported to be examples of the personalization approach to knowledge management. A personalization knowledge management tool keeps track of the expertise of these consultants and their accomplishments to be enable gathering quickly the right team with the right experience to address customer needs.[xiv]

Codification will produce efficiencies in a law firm with repetitive work that can benefit from automated document assembly. A matter-centric portal will produce benefits for a lawyer whose main job is managing the work of teams of lawyers and paralegals delivering complicated legal

services to major clients. A client-centric portal provides the information and knowledge about all the firm's clients and prospective clients to support the core professional activities of lawyers who are focused on client development.

The need for a knowledge management tool that is tuned to personalization is illustrated by the business problem expressed by one partner in a large Chicago law firm who recently remarked that he received calls every day seeking the names of associates or other partners with particular expertise or experience and he was at a loss to provide the information. He was so overwhelmed by the size and changes in his firm that it was difficult to make a list of those lawyers with specific types of expertise by years in practice. Personalization, as a knowledge management goal, will help the overwhelmed partner deliver a good list of experienced young lawyers to staff a new engagement even if the firm's personnel assets become too large to hold in his own memory.

3. One Size Does Not Fit All: Different Types of Lawyers Need Different Types of Knowledge Management Tools

The preceding background is the setting within which the current enthusiasm for knowledge management in law firms must be examined. In the final section of the White Paper we set out the critical factors that must be examined when deciding whether to implement one of the new integrated search products, like LexisNexis Total Search, that combine searches of commercial online legal databases with searches of law firm work product. Before we reach that topic, it is essential to review the broader context within which lawyers will evaluate those products.

Knowledge management strategies for lawyers extend from the application of repetitive document assembly technology through creative uses of the conflicts database. Knowledge in a law firm is not confined to legal research or the use of good models of prior work product for transactional documents or pleadings. In addition, knowledge management tools in law firms include at least the following types of innovations: portals, intuitive search tools, data mining, automated document assembly and practice management systems. These innovations draw on information systems like the file room, the document management system, the conflicts database and the time and billing system. All of the following technologies can be considered part of the knowledge management resources in law firms.

- **Portals**

Client information, existing work product, the record of firm activities on behalf of specific clients, new developments inside a firm as well as breaking news can be gathered and shared through a web browser using modern portal technology, like the LexisNexis™ Portal powered by Plumtree.

> Portals play an essential role in knowledge management by delivering knowledge resources when and where lawyers need them. Sophisticated firms understand that portals must be designed not only to aggregate applications and filter information, but also support legal work processes, thereby delivering applications and information at the point they are needed within the flow of a work activity that a lawyer is performing.[xv]

"Portals now play a significant role across the knowledge management spectrum. Besides the ability to serve as the single entry point to multiple sites on the Web, portals provide features for managing:

* the knowledge content--captured information and knowledge residing in the databases

* communities--a place for experts or project workers to collaborate--share information and manage in progress work documents--in real time;

* information aggregation--the capability to mine among different databases for specific records or content, then combine information to create new information or knowledge; and

* infrastructure--a platform which is Web-hosted separately or combined with other IT operations."[xvi]

- **Intuitive search tools**

Remarkable new search tools can extract knowledge and information from unstructured data, like e-mail repositories. "Folding e-mails into a [knowledge-management] system isn't like folding in research memos that are already organized by topic." [xvii] For example, LexisNexis e-Discovery Solutions allow lawyers to search electronic discovery data, including e-mail, using the power of intuitive search technology. These tools help attorneys search, organize and tag electronic documents so that they can find the most relevant ones, easily and quickly.

- **Data mining**

Vast repositories of court filing data and current docket databases can be mined for connections between judges, clients and the work of lawyers.

> LexisNexis™ CourtLink® allows legal professionals to use court records in new ways to support development of litigation strategies as well as perform due diligence to support business decisions. While traditional online legal research helps guide what attorneys argue, CourtLink helps attorneys develop how they will argue. By conducting online docket research through CourtLink, corporate counsel or their outside counsel can develop strategic profiles of the litigants' histories, research opposing counsel's trial strategy in related cases and investigate arguments and pleadings a judge found compelling in a similar case.[xviii]

- **Automated document assembly**

Automated document assembly tools can restructure the methods lawyers use for repetitive drafting tasks, like routine complaints in divorce cases or documents prepared in uncomplicated real estate matters. Document assembly can also support more complicated transactions if the documents needed to complete the deal contain lots of boilerplate and the text does not require large amounts of customized drafting.

> HotDocs® document automation solutions from LexisNexis give end users and beginning developers the power to create text-based templates and assemble text documents and graphical forms. Interactive interviews guide you through logically sequenced questions to gather all of the information required to create complex customized documents. HotDocs then computes values, determines what text to include or exclude based on answers, changes gender references, and even updates verb tenses. The result is an automatically compiled and flawless document.[xix]

- **Practice management systems**

More sophisticated task scheduling and practice management systems can gather best practices and trigger reminders to lawyers of next steps complete with proposed form documents.

> The LexisNexis version of Time Matters® begins with data entry and data retrieval forms that change depending on what you wish to accomplish. If you want to deal

with a contact, the data entry form will include the usual name / address / company affiliation / phone / e-mail / website information, and also information about the contact.

When you make an appointment, fill out an appointment data entry form; if your appointment relates to the previously entered contact, just enter the first couple letters of the contact's name, or use the pull-down list to select the contact. The appointment then not only appears in the calendar, but also under the particular contact. In fact, once a contact is in your system you can associate appointments, matters, documents, e-mail and about anything else in this system with that contact. Go to that contact name and select a particular category of listings to see all of your notes, or documents or appointments or whatever else is associated with that contact, or use a Timeline view to look at a list of all items associated with that contact, of whatever type, arranged chronologically.[xx]

All of these tools, in their proper application for lawyers, are examples of knowledge management. Each of these technologies requires careful analysis of setting, expected value and cost of implementation. Different parts of each law firm will find different tools to be valuable depending on the type of work, the practice objectives and the mix of lawyers in the practice. Various tools can work together, but they have different purposes and different types of impact on the "front office." A terrific portal will not produce a set of automated document assembly templates for high volume transactions. The inescapable conclusion for law firms looking to enhance knowledge management capabilities is that there is no substitute for the hard work of examining the costs of each potential innovation and predicting, with as much reliability as possible, the likely benefit to the firm profit of adopting that innovation.

LexisNexis[™] Total Search: A Knowledge Tool for Enhancing the Value of Firm Work Product

Thirty years ago, when the LexisNexis service was invented, most large firms had less than 100 lawyers. Each firm had a law librarian whose job included the maintenance of paper files, in file drawers, that contained the work product of attorneys in the firm. These file drawers were organized using professional indexes prepared by the librarian. In addition, nearly every lawyer had some files or three ring binders that stored a copy of motions, subpoenas, memoranda and pleadings as well as deeds and contracts and powers of attorney that the lawyer had prepared for prior clients.

Lawyers also talked to each other and stayed in one firm for most of their careers. Attorneys in a practice group knew the type of matters handled by their colleagues. In this idyllic setting, if a lawyer were asked to draft a certain type of motion in a personal injury case, the assigning partner usually pointed to one of the partner's files to find a model or a starting point for the work.

The world has changed in the past thirty years. Law firms are larger today. Lawyers are mobile and move from firm to firm during their careers. Firm clients are sophisticated consumers of legal services and the buyer is often an attorney who spent years in a law firm before joining the corporate law department. In response to these changes, individual lawyers today work on many levels to achieve efficient reuse of their own work, and to capitalize on the work product of both colleagues and strangers.

Legal research, by its very nature, is a form of knowledge management in which lawyers seek the written work of judges, law professors and other lawyers to help uncover legal information and to make predictions about the direction of changes in the law. All lawyers have developed, from the very beginnings of their careers, a sophisticated set of competencies and habits that help them to find the law, locate important facts and apply the law to the facts in creative and appropriate ways to advance the cause of their clients.

The lessons of the history of law firm technology in the front office tell us that any new technology that combines law firm work product with commercial databases must be extremely easy to use. The new tool must not unnecessarily change or upset the patterns of research and analysis that successful lawyers have already established in their work. A tool that seamlessly integrates into existing research methods would be the ideal innovation, especially if it offered the leap forward of convenience and power that the introduction of *Shepard's* online offered 10 years ago.

To decide whether to deploy an integrated search tool, the cost/benefit analysis is also critical. The cost and burden of implementing the new tool must be low enough and the proposed benefits high enough to justify the decision to move forward. Increasingly, as law firms have become more and more technically sophisticated the key metric in determining cost of implementation has been the ease of integration of a new innovation within the current technical infrastructure of a firm. Even if the price of software licensing and hardware purchases are reasonable, if the innovation takes hours of staff time to implement and install, then the innovation may be too costly to justify the proposed benefit.

To recap, the three keys to determining if it makes sense for a firm to deploy a search product that combines a search of firm work product with a commercial database are:

1. **Extreme ease of use**: successful junior lawyers are already successful researchers and they have developed tools for finding and reusing the work of others, including other lawyers in the firm. Any new tool that improves this process must fit easily and seamlessly into their successful working patterns. This factor is most critical in deciding to deploy any technology that must integrate into the research fabric of the firm's "front office" and, by design, affects the way that lawyers do their core professional tasks.

2. **Powerful benefits**: the combination of firm resources and commercial search results must produce significant benefits for the lawyers who adopt the new tool. Benefits to be examined and evaluated include an increase in research speed and accuracy and the leap in the precision of collaboration that the combination of research resources makes possible. Achieving these benefits will depend in large measure on the current structure of the firm's internal data and on the past and future ability of the firm's data infrastructure to insure that the firm data is of very high quality. Firms must also factor in any additional benefits like enhanced traditional research functionality.
A combined search tool must be very effective in searching the work product of the firm. The commercial search side of the tool is LexisNexis-a search and retrieval system that has been refined over thirty years. Law firms have not struggled to encourage researchers to use LexisNexis but work product retrieval systems have failed for lack of use and lack of ease of use. Therefore, the most important innovation in a combined search product is a

breakthrough in the part of the product that searches firm data. The search of firm data using this tool must be easy to use, comprehensive and a leap forward in effectiveness.

3. **Reasonable cost**: law firms must exercise business judgment to evaluate the benefits of the most powerful technology innovations against the costs of acquiring and implementing those innovations. Costs for a combined search product come in two varieties: out-of-pocket expenditures and the time of staff and fee earners.

   - Hardware and software costs are easy to determine and compare.
   - The implementation costs and the burdens on technology staff to install and maintain this type of innovation are likely to be a more significant cost.
   - Training of the technical staff and, most importantly, training of the lawyers and paralegals must also be included in the assessment.
   - The cost of selecting documents, describing them for the work product retrieval database and maintaining the content are also costs that may be significant and a critical determinant of successful implementation of this type of knowledge management.

   Work product storage and retrieval projects have failed because the software was difficult to install and maintain. Burdens on technical staff equate to significant costs of ownership. Yet these costs pale when compared to the cost of hiring editors to select documents and write metadata to guide classification and improve retrieval of past work product. Even more costly is the loss of revenue from top fee earners when the work product system demands significant time from them. New systems that require any significant time from lawyers to build and maintain the archive are doomed from the start. If new staff must be hired to eliminate the burdens the system would otherwise impose on fee earners, the cost of the innovation greatly increases.

LexisNexis Total Search meets the burdens of the three determinants outlined above. Because LexisNexis Total Search is based on the existing *lexis.com* user environment, lawyers will find that it fits into their current research and drafting workflow. From a benefits standpoint, LexisNexis Total Search allows a firm to achieve new productivity gains by leveraging existing firm work product as well as current IT investments in applications like the document management system. Finally, LexisNexis Total Search is thoughtfully engineered so that the firm's administrative staff will not be required to devote significant personnel resources or hardware costs to the project.

A final word about seamless benefits

The history of lawyers' adoption of technology innovations carries a powerful and simple message. If new technology delivers significant benefits in work product quality or powerfully enhances their abilities effectively to represent clients, lawyers will adopt the technology. Word processing, email, electronic research, *Shepard's* online, automated time and billing systems, all of these innovations offer solid evidence of the willingness of law firms to innovate when the benefits are manifest.

LexisNexis Total Search offers this kind of benefit by delivering the prior work product of the firm to the practicing lawyer in a convenient and seamless way. LexisNexis Total Search enhances the work product archive by seamlessly evaluating every embedded citation using *Shepard's* to signal both good law and citations of questionable authority. These two benefits may be the most important advantages offered by this new tool. When the combined search capability, the simultaneous search of selected LexisNexis databases while seamlessly linking to those firm

documents that match the LexisNexis search terms, is added to the benefits calculus, lawyers will find a second level of benefit that will deliver higher levels of productivity, seamlessly.

About the Author

Ronald W. Staudt is Professor of Law and Associate Vice President for Law, Business and Technology at Chicago-Kent College of Law. He teaches Internet law, computer law, copyright law and a seminar called Access to Justice and Technology. He co-founded and supervises the Justice Web Collaboratory - a law school center using Internet resources to improve access to justice with special emphasis on building web tools to support judges, legal services advocates and pro se litigants. Current projects of the Justice Web Collaboratory include: Judgelink, a national portal for state court judges; Illinois Technology Center for Law and Public Interest, the Illinois statewide legal assistance web portal; and Access to Justice, an interdisciplinary project with the IIT Institute for Design to reengineer court systems for self-represented litigants.

Professor Staudt received a B.S. in mathematics and a B.A. in philosophy from St. Joseph's College, Rensselaer, Indiana. He is a graduate of the University of Chicago Law School, where he was a member of the University of Chicago Law Review. Before joining the Chicago-Kent faculty in 1978, he practiced with the firm of Hubacheck, Kelly, Rauch & Kirby for two years, was staff attorney and assistant director of the Pima County, Arizona Legal Aid Society, and was a clinical fellow and lecturer at the Mandel Legal Aid Clinic, University of Chicago Law School. From 1994 through 1998, while on leave from Chicago-Kent, Professor Staudt served first as Vice President for Technology Development, and later as Vice President for Knowledge Management for LexisNexis, a member of the Reed Elsevier plc group.

---

[i] "Knowledge management has come to the fore over the last 8-10 years, progressively brought into center stage, driven by the networked economy, through increased competition, mergers and acquisitions and the all invasive Internet presence." Paul R. Campbell & John Blackwell, Knowledge Management: A State of the Art Guide, 6 (2001).

[ii] Ed Wesemann, *Is the Emperor Wearing Clothes?*, 21 Of Counsel, 5 (December 2002).

[iii] R. Staudt, *1988 IIT Survey: Automation Is Name of The Game*, The National Law Journal, LEGAL TECH '88, 19 (November 21, 1988); R. Staudt & B Farber, *Survey Shows Big Firms Are Big On Computers*, 72 A.B.A.J. 100 (April, 1986).

[iv] R. Staudt & R Shiels, *Where Have all the Computers Gone? Survey Checks Out Law Firm Usage*, 79 A.B.A.J. 82 (1993).

[v] LexisNexis, *Celebrating Innovation…and 30 years of online legal research* <https://www.lexisnexis.com/anniversary/timeline.asp> (accessed July 1, 2003).

[vi] R. Staudt & R Shiels, *The End of the Beginning: The Computerization of the Practice of Law in Large Firm*s, The American Lawyer, Technology Supplement, 7 (1994).

[vii] R. Shiels, *Technology In Large Firms:The Revolution Is Upon Us,* The American Lawyer, 1995 Technology Directory, 29 (1995).

[viii] Ashby Jones, *How Do You Capture Knowledge From E-mail?*, Legal Times, 19 (June 17, 2002).

[ix] A corollary to this principle is that lawyers are more inclined to consider new technologies that their clients and the wider business community have already adopted. This is just another perspective on the described reluctance. In Geoffrey Moore's terminology, an innovation must "cross the chasm" before the majority of lawyers will adopt it. Goeffrey A. Moore, Crossing the Chasm, (1991)

[x] D. Maister, Managing the Professional Service Firm, (The Free Press 1993); D. Maister, *Measuring Profitability Matter By Matter*, The American Lawyer, MAISTER ON MANAGEMENT, 38 (July/August, 1994).

[xi] R. E. Rosen, *We're All Consultants Now: How Change in Client Organizational Strategies Influences Change in the Organization of Corporate Legal Services*, 44 Ariz. L. Rev. 637 (2002).

[xii] David Maister argues that law firms can also be categorized into three groups based on the major impact of the work they do: brains, gray hair, and procedure projects. "Brains" client work takes creativity, innovation and the pioneering of new techniques because the client's problem is of extreme complexity. "Gray hair" projects are those types of engagements where a firm is hired for its experience in delivering a certain type of work. The "procedure project" client work needs some customization to the client needs but the work is somewhat programmatic. Low costs, reliability, and speed are key competitive factors for these firms. David Maister, *Managing the Professional Service* Firm, (The Free Press 1993); J.P. Schratz, *I Told You to Fire Nicholas Farber-- A Psychological And Sociological Analysis of Why Attorneys Overbill*, 50 Rutgers L. Rev. 2211 (1998).

[xiii] M.T. Hanson, N. Nohria & T. Tierney, *Whats's Your Strategy for Managing Knowledge?,* Harvard Business Review, 106 (March/April 1999).

[xiv] Id.

[xv] Sally R. Gonzalez, *The Knowledge Business*, The Recorder, 4 (March 1, 2002).

[xvi] Ken Mitchell, *Introducing the Portal*, The Public Manager (September 1, 2001).

[xvii] Ashby Jones, *How Do You Capture Knowledge From E-mail?*, Legal Times, 19 (June 17, 2002).

[xviii] LexisNexis, *CourtLink Gives Corporate Counsel A Competitive Edge,* The Metropolitan Corporate Counsel, 38 (March, 2003).

[xix] LexisNexis, *HotDocs* <http://www.lexisnexis.com/hotdocs/> (accessed July 1, 2003).

[xx] *Your Time Matters*, Law Office Technology Review (November 7, 2002).