

Toward Knowledge Management Systems in the Legal Domain

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ABSTRACT

This paper reviews the technical and organizational basis for knowledge management in large law offices. Based on a taxonomy of knowledge consisting of administrative data, declarative knowledge, procedural knowledge, and analytical knowledge a number of relevant knowledge management characteristics are extracted. Knowledge currency, knowledge dispersion, knowledge documentation, and the retrieval of implicit knowledge are among the main issues that constitute the arena for knowledge management in the field of law offices. Finally, a set of high level specifications for technology based knowledge management tools in large law firms are provided.

KEYWORDS

Knowledge Management, Knowledge Flow, Workflow, Task Analysis

"In the 1990s the key challenge of survival for legal expertise will depend on service quality and a capacity to use data and ... technology tools."

Ethan Katsh, *Law in a Digital World*

INTRODUCTION

The market for providing sophisticated legal services in the 1990s in the United States is intensely competitive. As Coutts (1996, p.44) points out, the number of lawyers has exploded and there are now

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fewer clients or potential clients per lawyer. The supply of lawyers has now exceeded the demand for their services and a viable competitive strategy is a requirement for economic survival.

Managing and using information and knowledge efficiently and productively are core competencies for lawyers. The law is a highly information-oriented profession. A 1992 report of a task force of the American Bar Association, the leading professional association for lawyers, for example, identified a number of "fundamental lawyering skills." Among these fundamental skills are several requiring the collection, processing, storage and retrieval of information, including legal research and investigation, factual investigation, legal analysis, problem solving and the organization and management of legal tasks. (American Bar Association, 1992, p. v)

United States lawyers, however, have been slow to adopt electronic technologies for managing the information which is critical to their work. Ethan Katsh (1995, p.172), a leading writer on the impact of electronic technologies on the practice of law, quotes Fred Bartlit, a prominent litigator as saying, "Most of what lawyers do is store, categorize, organize ...and analyze data. Microcomputers and networks have revolutionized the way people in other businesses perform these tasks, but they have barely made a dent in how lawyers do their jobs."

The tools and techniques currently used by large law firms to manage their knowledge are fragmented and rudimentary at best. These firms could benefit immensely from the development and use of knowledge management tools. This paper explores some of the user requirements which must be taken into account in designing appropriate tools.

The paper first describes a typical large law firm environment in terms of its tasks, structure, people, and technology. It then proposes a taxonomy for classifying the types of knowledge a large firm possesses and makes analytical observations concerning the characteristics of a firm's knowledge which are relevant to knowledge management. Based on those characteristics, the paper identifies a set of high level system and user specifications which can serve as a basis for developing usable tools for knowledge management in a large law firm.

DEFINITION OF KNOWLEDGE MANAGEMENT IN THE CONTEXT OF LARGE LAW FIRM PRACTICE.

There is no general agreement at present on the meaning of "knowledge management," and as Karl Sveiby points out on his World Wide Web site (1996), it can have very different meanings to different practitioners. Sveiby defines "knowledge management" as having two senses. The first sense focuses on the process aspects of knowledge and on the management of people in the management of knowledge. The second, sense views knowledge as objects that can be identified and manipulated in information management systems.

Stuart (1996, p.1) gives a slightly different definition of Sveiby's first sense as meaning "concerted efforts to capture, organize, and share what employees know." As she states the definition, it is directly more applicable to the law firm's situation. It is implicit in discussions of knowledge as an object that can be manipulated that the purpose of the manipulation is to achieve some sort of strategic market advantage. In this paper, therefore, we define knowledge management as the organized effort to capture, organize and share the knowledge of employees for the achievement of a shared strategic goal.

THE TASKS, STRUCTURE, PEOPLE, AND TECHNOLOGY OF A LARGE LAW FIRM.

To provide a framework for our evaluation of knowledge management needs within large law firms, we have turned to H.J. Leavitt's classic analysis of industrial organizations. Leavitt viewed organizations as complex systems in which four significant variables interact:

- task variables,
- structural variables,

- technological variables,
- and human variables. (Leavitt, 1965, p. 1144).

Tasks

Tasks, as viewed by Leavitt, are the production of the goods and services which the organization exists to produce. For the kind of law firm described in this study, the primary task is the provision of legal services to clients. The firm characteristics described are a composite of several Pittsburgh area law firms with sophisticated business, corporate and litigation practices.

The subtasks involved in providing legal services include extensive factual and legal research, the analysis of the law and the facts as they appear in a particular client's situation, counseling clients based on that analysis, and negotiation or litigation on the client's behalf. Much of the firm's work product in carrying out these activities consists of communication with the client in the process of counseling and advising and of the production of written work product in both paper and electronic form.

Structure

Structure, in Leavitt's model, means the systems of communication, authority and work flow within the organization. (Leavitt, 1965, p. 1144). The firm has comparatively little hierarchical structure. A managing partner, who usually consults with a partners' committee, provides overall direction to the firm. Client services are performed by partners, assisted by less senior attorneys, non-lawyer professional staff such as legal assistants, and clerical and administrative staff.

Technology

Technology for these firms refers to the "problem-solving inventions" (Leavitt, 1965, p. 1144) used to perform their client service tasks. These law firms maintain a fairly sophisticated technological environment. Based on the results of a "Capital Equipment Survey" conducted in late 1996 by the *National Law Journal*, a typical large law firm in the Pittsburgh area has between 225-250 lawyers and an equal or greater number of support staff using computers. Nearly all of the users have Pentium grade desktop personal computers and the

predominant operating system is Microsoft Windows version 3.1.

Typical software applications for a sample law office include a time and billing system, a word processing application (Microsoft Word or WordPerfect), the SoftSolutions proprietary document management system, GroupWise groupware for email and other document sharing functions, and a variety of specialized database programs for litigation support.

The lawyers and staff are located in the firm's nine offices in several cities. Two-thirds of the offices have both their own internal local area network and access to a wide area network linking the other five networked offices. The network software is Novell NetWare. The other offices have neither a local area nor a wide area network. Firm members in the networked offices can email and transfer files to clients and others outside the firm but no external access is allowed to the network.

People

The fourth component of Leavitt's analysis is the people in the organization. Law firm personnel typically includes attorneys (partners and associates), professional staff (law librarians and legal assistants), and support staff, usually comprised of administrative and clerical support staff, information systems staff, marketing staff, and financial and business support staff.

CHARACTERISTICS OF THE FIRM'S KNOWLEDGE WHICH ARE RELEVANT TO KNOWLEDGE MANAGEMENT

Law firms possess many types of knowledge. In this section of the paper we propose a taxonomy of these types of knowledge. These types of knowledge have a number of relevant attributes, such as location, creators, physical format, and sensitivity as data. We also discuss our observations of these characteristics of as they affect the development of user requirements for a knowledge management system.

Information and knowledge are generated in large quantities and in a variety of types

As noted above, the practice of law is an information and knowledge intensive business. Large law firms typically generate and maintain several different kinds of data, information, and knowledge which could be included in a knowledge base to support the

use of knowledge management tools. The types of information involved can be categorized as administrative data, declarative knowledge, procedural knowledge, and analytical knowledge.

Administrative data

Administrative data includes all of the nuts and bolts information about firm operations, such as hourly billing rates for lawyers, client names and matters, staff payroll data, and client invoice data.

Declarative knowledge

Declarative knowledge is "knowledge of the law," the legal principles contained in statutes, court opinions and other sources of primary legal authority. Law students spend most of their law school careers acquiring this kind of knowledge.

Procedural knowledge

"Procedural" knowledge is knowledge of the mechanics of complying with the law's requirements in a particular situation: what documents are necessary to transfer an asset from Company A to Company B, or what forms must be filed where to create a new corporation.

Analytical knowledge

Analytical knowledge is the conclusions reached about the course of action a particular client should follow in a particular situation. Analytical knowledge results from analyzing declarative knowledge (i.e. substantive law principles) as it applies to a particular fact setting.

Different forms of knowledge carry very different amounts of strategic value

The strategic value of knowledge usually depends on its currency, accuracy, and degree of innovation.

One popular competitive strategy for large law firms is to differentiate themselves with clients by providing exceptional customer service using technology tools. Kirkland & Ellis, a leading Chicago firm, says that "Our philosophy is to anticipate client demand with high quality technology and communications systems. We are focusing our current efforts on enhancing

communication and document sharing with clients.” (Leibowitz, 1996, p. B9).

While any law firm certainly needs to maintain efficient administrative records, there does not appear to be any significant possibility for gaining strategic advantage in the firm’s core competency of providing sound legal advice to its clients by using these records. The detailed administrative knowledge they contain is essential to the operation of the practice, but does not really contribute to the substantive content.

Declarative, procedural and analytical knowledge offer significantly greater possibilities for creating strategic value to the firm. A case drawn from the case collection of one of the authors serves to illustrate the differences in strategic value among procedural, declarative, and analytical knowledge. In the early 1990s one of the authors, at the time engaged in the practice of law, represented a corporate client as seller in several sales of corporate businesses and real estate. At the time, buyers of businesses and real estate had become concerned about their possible liability for pollution existing on property when they purchased it. The U.S. federal laws governing the legal responsibility of landowners for environmental contamination on their property had been adopted a few years earlier and their full impact on the sale of businesses was just beginning to be understood.

The relevant declarative knowledge was an understanding of several related state and federal laws and agency regulations governing liability for environmental contamination. The relevant procedural knowledge in part was knowing how to transfer the environmental licenses and permits used by a given business to a new owner and how to transfer the real estate as an asset. The relevant analytical knowledge was understanding what risks the buyer of a contaminated property faced (legal and financial) and what contractual protections could reasonably be given to the buyer by the seller.

Liability for environmental contamination was a new and rapidly developing area of the law. The procedural and analytical knowledge applicable to liability for environmental contamination did not exist in a publicly available form which was readily accessible. It took time for the government agencies administering the law to write and issue detailed regulations. During this period, the only procedural information available often consisted of informal

discussions with agency employees about a specific transaction. These discussions were not publicly available to anyone not directly involved in the transaction.

Similarly, there was an even longer period in which analytical knowledge developed. It took several years for buyers to realize that the new laws meant that they could be held responsible in certain circumstances for pollution existing on the property when they bought it, particularly since the contamination was usually unknown to both buyer and seller. It took even longer for attorneys to work out reasonable expectations for contractual protections for both buyers and sellers.

The custom among attorneys experienced in negotiating transactions had been to protect a buyer of a business against specified risks via “representations” in the contract (i.e. warranties of quality), with “indemnities,” or promises to repay losses the buyer suffered, offered for any breach of the warranty. One obvious question to be worked out was, which losses would be repaid if an environmental warranty were breached. It took time to think through an understanding of the many sorts of losses that could happen: the direct cost of cleanup, the buyer’s lost profits if the cleanup disrupted production, the probable decline in market value of a property even after it had been cleaned up. Sellers balked at giving unlimited promises to repay unknown amounts of money, so negotiations usually ensued over which risks the buyer would be protected against and what time and dollar limitations would be applied.

Like any creative process, arriving at this understanding took time. In its earliest stages, it was a very private process. Because the issues were so new and because the transactions were private contract negotiations, only lawyers who had directly participated in such a transaction had access to analytical knowledge of the issues. Their knowledge was in their heads and in the contracts or memos they created to record the transaction. Because a negotiation was involved, the final drafts of the document would seldom reflect all of the issues considered, making it an incomplete repository of knowledge. Because the issue involved was only one of many involved in the overall transaction, the knowledge could only be retrieved from the transaction documents if they were indexed or if the attorney remembered that a particular transaction included an environmental indemnity issue.

As more and more companies participated in sales of property involving these issues, however, the amount of public information grew. Continuing legal education and other professional seminars and law journal articles were early forms in which the information gradually became public. Even later, books appeared which contained practice guide "checklists" for handling transactions involving environmental contamination issues.

From a strategic value perspective, however, there was a period of several years when there was significant value to a client in having access to a lawyer's analytical knowledge of environmental contamination because so little information was available publicly on the negotiating issues involved. The knowledge's strategic value lay in its innovative quality.

A lawyer who was more familiar with the issues could do a more thorough and more efficient job of protecting the client's interest than one who started from scratch in understanding the situation. Access to analytical knowledge about what parties in similar negotiation positions had successfully argued was particularly useful to clients who were interested in completing transactions successfully without "giving away the store" in terms of the deal. In other words, the lawyer who had this analytical knowledge could give the client more value by enabling the client to make a better financial deal. Because of what they already knew, they could also be more efficient in handling the transaction in fewer billable hours with less research time. To be useful, however, the knowledge had to be both current and accurate.

Knowledge is dispersed among many different members of the firm, and others outside the firm may contribute to knowledge

Law firm data and knowledge have a wide variety of sources both inside and outside the firm. Much administrative data is generated by the members of the firm as billing records for their services. Other administrative data is created by the firm's administrative staff.

Attorneys are the major source of analytical, declarative and procedural knowledge. Legal assistants have some declarative knowledge based on their experience. Declarative knowledge also can be found in publicly available sources intended for research purposes, primarily books, online

subscription research sources, and CD-ROM resources. The quantity of publicly available research materials for any given topic depends significantly on the size of the market for the information. The more specialized the legal area, the smaller the potential market for materials and the less that is usually widely available.

Experienced legal assistants are usually an invaluable source of procedural knowledge, since much procedural work is delegated to them. Experienced legal secretaries may also have a significant amount of procedural knowledge for transactions they handle often. To some extent, legal assistants will also have analytical knowledge for subjects and clients with whom they work frequently.

The role of others outside the law firm in generating analytical and procedural knowledge needs to be noted. While much of the useful procedural and analytical knowledge resides in firm employees, it is likely that there are sources outside the firm as well. One belief cited by Stewart (1996, p. 1 of 4) as frequently expressed in the knowledge management literature is the view that learning is social: people learn in groups. These groups are known in the literature as "communities of practice." Communities of practice have been defined by Brook Manville, director of knowledge management at McKinsey & Co., as "a group of people who are informally bound to one another by exposure to a common class of problem." (Stewart, 1996, p. 2 of 4)

It is quite likely that the communities of practice for the lawyers in the firm include other members of professional associations such as bar associations. These groups usually have a number of committees devoted to practice areas, such as environmental law. A few more technologically advanced lawyers may use listservs on the Internet or such subscription services as "Counsel Connect" on the World Wide Web as a sounding board for analytical and procedural issues. These external sources can provide knowledge in the form of informal conversations, written newsletters and updates, briefs filed in relevant litigation, and so on.

Knowledge is not consistently documented, and documented knowledge is not always explicit

Much administrative data is captured in electronic form as part of the firm's billing records. Other administrative data resides in the firm's payroll and

benefits records and file and records management systems.

Much of the firm's declarative knowledge resides in the memories of the firm's attorneys and in their work product. As noted above, the firm has access to publicly available declarative knowledge in the form of published reference works, and declarative knowledge is typically the best documented type of knowledge.

Much procedural knowledge is documented throughout the firm's files in the form of completed records of transactions, which provide guidance about what legal documents (such as deeds or bills of sale) were necessary to complete a certain type of transaction. The knowledge of procedure reflected in these documents is often implicit rather than explicit. Explicit procedural knowledge is contained in a collection of published "practice guides" for popular areas like real estate transactions. These guides include standard checklists of items necessary to complete a particular transaction for the kinds of transactions which occur frequently.

Analytical knowledge resides primarily in attorneys' heads. Analytical knowledge is occasionally documented in client files through the "memorandum to file" of an attorney's thought processes. More often it is reflected in the completed contract documents or other transaction documents by the inclusion of specific clauses dealing with a particular topic. The analytical knowledge reflected in completed documents is very often not explicit, in the sense that it is often not clear from the face of the document what analytical issues are dealt with in the document.

Knowledge is often shared on an informal basis without documentation

Certain methods of sharing knowledge, at least within the firm, have traditionally been part of large law firm culture. One of the most important ways of sharing knowledge has been through the process of partners training associates to perform tasks. In larger firms, the practice of "hiring young lawyers as apprentices who were trained, supervised, and rewarded by a partner" (Sherer, 1995, p. 673) has been followed throughout most of this century.

This method focuses on transmitting knowledge from more experienced attorneys to less experienced attorneys, as distinguished from transmitting it to

other partners in the firm or to legal assistants and other support staff. This attorney training customarily has relied on informal methods of transmitting knowledge, such as rotating young attorneys through a series of practice groups within the firm. (Sherer, 1996).

Much of this informal training takes place via collaborative work on documents such as contracts and pleadings. Some of it occurs through informal consultation between a senior attorney and a junior attorney about the best way to handle a specific task. These consultation may be carried out by face to face discussions, email or telephone conversations. No attempt is usually made to capture the substance of the training through these informal methods, even where a form of communication, such as email, may often be used that could produce documentation. It is important to note that this training often takes place under intense time pressure. Further, in an hourly billing system there is often little or no financial incentive to produce documentation which cannot be billed directly to a client.

Firms also engage in more formal methods of transmitting knowledge discussed below, such as maintaining "brief banks" and similar repositories of past work product, and document "forms libraries" which contain samples of a wide variety of documents.

If knowledge has been documented, it is contained in a mixture of paper and electronic formats and located in dispersed physical locations

Administrative data typically exists in a combination of print and electronic formats. A large firm would customarily maintain computerized databases for key matters such as tracking lawyers' hourly billings, for its client contact data, and for staff assignments to projects but would usually generate paper invoices to clients. The data physically resides in the firm's computer network and in paper files.

Declarative, procedural and analytical knowledge is often documented in attorney work product such as briefs, memoranda, and actual legal documents such as contracts, wills, and instruments of transfer. Work product documents typically are created in electronic form but are customarily stored in print format client files. The electronic format materials are stored in standalone personal computers or on the network.

Paper materials are located throughout the firm's offices.

Where knowledge has been documented, only a few simple tools exist to facilitate the retrieval of knowledge by topic

Attorney work product files are usually indexed by client name and matter name but their contents are seldom indexed for subject matter in more than the most general way. "Client X Acquisition of Fort Lauderdale, Florida Real Estate" would be a typical file name.

An attorney creating a particular item of work product may place it in a firm "forms library" maintained in electronic format. These "forms" can then be used by other lawyers as examples or models. In a typical installation the forms library is stored on the network and is physically available to those who have network access. The forms library allows access to individual documents by name but subject matter classification is often limited to what can be included in a descriptive DOS format file name (for example, "FLADeed.doc"). Retrieving material from the forms library thus usually requires a tedious sequential search and review of the contents of the library.

Access to the procedural and analytical knowledge embodied in client files is difficult at best for those not familiar with the files. The client files are often not indexed by subject matter, making it difficult to locate procedural or analytical knowledge on a particular topic if the contents of the file are not already familiar.

Document management systems such as SoftSolutions do support network wide searches for documents in electronic form by selected attributes such as document author name or keywords appearing in the document. In the absence of a consistent system of classifying the document's contents by subject or topic, however, keyword searches by topic produce incomplete retrieval of all relevant documents.

Implicit knowledge is especially difficult to retrieve

Even if knowledge is documented by work product such as a memorandum to file, access to the implicit procedural and analytical knowledge embodied in the firm's files is often difficult at best. Client files which are indexed according to a subject-based

system may offer some help in searching for analytical knowledge. A large transaction, however, may include dozens of analytical issues and it is unlikely that all of them would be indexed. Procedural knowledge is unlikely to be indexed at all. This means that the user must often rely on the ability to search by keywords for relevant fact patterns to retrieve relevant procedural or analytical knowledge.

Some knowledge raises issues of security and confidentiality

There are few confidentiality concerns with declarative knowledge. This type of knowledge is meant to be public and readily accessible to all. Analytical and procedural knowledge within the firm can, however, raise issues of security and client confidentiality. Attorneys in the firm have professional ethical obligations to their clients to maintain the confidentiality of information furnished by the client. While these ethical obligations are customarily interpreted to permit sharing the information among the firm's members and staff, appropriate precautions still must be taken to avoid disclosures outside the firm.

IMPLICATIONS FOR SYSTEM DESIGN

We believe that our observations about the characteristics of knowledge within large law firms have implications for the design of knowledge management tools for these firms. There is not a one-to-one correspondence between our observations and the implications for design, as some observations have a number of ramifications for the design of tools. The following discussion of the implications for system specifications is

A number of specification concern the roles of different end users of a knowledge management system in a large law firm. Gatekeepers, knowledge librarians, and other specialists should be named:

- A gatekeeper capable of evaluating materials for inclusion must be named.
- To assure accuracy, knowledge should be edited before being made accessible.
- To assure currency, the knowledge should be reviewed periodically after it has been placed in the knowledge base.

Another set of specifications deals with the strategy and trail of knowledge items, thus putting isolated knowledge "chunks" into organizational context:

- To maximize the strategic value created by a knowledge base, it must focus on the type of knowledge which has been identified as having the best potential strategic value. A selection process must be established for inclusion in the knowledge base. There should be agreement about the types of knowledge which are to be captured in the knowledge base as having strategic value to the firm.
- Users must have access to the name of the source of the knowledge. It must be easy to identify the creator of a particular item of knowledge.
- It must be easy to learn the history of a particular item in the knowledge base: the date it was added, the date of any revisions, the frequency with which it has been used, and specific situations in which it has been used.
- The tools must be able to extract the useful knowledge while preserving the confidentiality of client information. Some portions of the knowledge base must support restricted access.

The collaborative aspects of knowledge are related to specifications that border on the areas of organizational memory and collective intelligence:

- Because knowledge can be created by many firm members, all firm members should be able to share knowledge. All knowledge management tools should be in an electronic form and available on a network accessible by all firm members. Portions of the tools should be accessible by external users with appropriate security mechanisms.
- The system must facilitate the informal sharing of knowledge. Users should be able to identify creators of knowledge on a particular topic. The system should facilitate contact with the creator of knowledge by email, telephone, or online conference. Users should also be able to transmit items readily by email or other electronic communications.
- To encourage users to document their knowledge, it should be easy to add material to the knowledge base. As far as possible, the system should capture information without requiring much additional effort from the creator.

Knowledge acquisition and the elicitation of knowledge are crucial factors on the input side. Technical and organizational factors are concerned:

- User tools should be suitable for use by users with a wide variety of both substantive legal knowledge and technological sophistication.
- There should be incentives to document knowledge. When items are added to the system, the source must be identifiable. It should be possible to measure the use of an item once it is placed in the system.

Electronic formats of structured and unstructured knowledge objects is a rather basic specification for knowledge management tools. Closely connected to this aspect is the retrieval and presentation of knowledge:

- The tools must be able to capture and manipulate knowledge in a variety of formats, both electronic (word processing, email, and electronic database search results) and paper.
- Users should be able to retrieve knowledge in a format which can readily be exported to a word processor for inclusion in work product.
- The tools must permit at least rudimentary subject matter indexing. Users must be able to search, sort and retrieve knowledge in the system by subject.
- The system must facilitate the retrieval of implicit procedural and analytical knowledge. Users must be able to conduct keyword searches for relevant fact attributes which are not indexed. The use of other tools, such as intelligent agents and collaborative filtering programs, which could facilitate the retrieval of implicit knowledge, should be explored.

CONCLUSIONS.

We believe that a significant opportunity exists in large law firms for the successful use of knowledge management tools. These firms are currently performing some knowledge management tasks with tools which offer only rudimentary knowledge management capability and which are not fully integrated with the firms' existing technology. None of the currently available tools satisfies all of the user requirements we have identified.

The tools which are currently available do not adequately support the informal knowledge sharing which is a key element of knowledge management in these firms. Tools must be configured to support and encourage informal collaboration and a stronger information-sharing culture. In these organizations, where performance is measured by the number of billable hours, knowledge management tools must minimize amount of effort required of the user. They must become as "invisible" as possible.

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