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Wiki and the Wiki Way: Beyond a Knowledge Management Solution

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Abstract

The learning and knowledge that we have, is, at the most, but little compared with that of which we are ignorant. -- Plato

In an attempt to leverage knowledge, corporations have been inundated with assorted methods for retaining employee wisdom. The benefits from a successful knowledge management program can help create competitive advantage. As a result, numerous knowledge management solutions have been crafted and implemented. Unfortunately, many of these implementations have failed because they have focused on technology rather than creating an atmosphere conducive to knowledge capture and sharing.

Knowledge management initiatives provide the means to accumulate, organize, and access the firm's most essential asset. Social software, communication tools employing social techniques, instead of software components, to ease collaboration and interaction, has risen to the challenge of capturing knowledge with a variety of methods. This paper will specifically focus on one type of social software solution, "the wiki way."

Keywords: Knowledge management, Open source systems, Conversational knowledge management, Social software, Wiki, Wiki Way, Occupational Spam

Introduction

Publications of the 1990s exploded with numerous proposals to leverage what was believed to be most company's most profitable resource: employee knowledge. The threats of knowledge loss, particularly through retirements and economically related lay-offs, accentuated the importance of knowledge retention initiatives. One survey revealed that roughly 50% of the firms experienced a substantial setback from staff loss or suffered injured relations with suppliers or clients. Thirteen percent of the firms reported lost income associated with the departure of even a single employee (Alavi and Leidner 2001). Consequently it is not surprising that researchers and practitioners have sought ways to extract and exploit employee knowledge. Since the ultimate goal of IT management is managing knowledge and ensuring the right people are given pertinent information at the right time, IT departments were expected to become knowledge procurement administrators (Dragoon 2004). However, it was quickly discovered that while knowledge management (KM) is a process, it is not primarily a technical endeavor (Kotwica 2003).

Considerable research has documented benefits, challenges and software solutions related to KM. This paper will first reinforce the benefits of successful KM and then look at the common challenges and areas in which KM has fallen short of its promises. To harvest the benefits and overcome the obstacles, two types of software solutions have emerged: proprietary and open source. The focus in the remainder of the paper is drawn from the open source class of solutions. In particular, an innovative, social software response has materialized- the wiki way - a method in which contributors are able to build their own KM applications. The paper concludes with a look at the first three generations of Wiki Way support tools.

Knowledge Management

> *"All of life and business is a game of odds. Just as HR policies increase the odds of employee retention, and good customer service increases the odds toward repeat business, knowledge management is about increasing the odds toward knowledge being transferred, utilized and [contributing to] innovation" -- Larry Prusak, executive director, IBM Corp.'s Institute for Knowledge Management* (Glasser 1999)

The hype that surrounded KM in the 90s has lessened, but the long-term potential benefits still beckon. The promise of knowledge as the origin of sustained competitive advantage encourages corporations to examine their current processes and implement knowledge capturing initiatives (Drucker 1995). The importance and popularity of KM is evident in the creation of KM positions (Appendix Table 1), as well as the various definitions of KM (Appendix Table 2). Different perspectives on KM have resulted in a wide variety of proposed solutions (Appendix Table 3).

Shell International Exploration and Production demonstrated the power of KM in attributing greater than $200 million in direct cost savings and added income to the use of SiteScape, an online collaboration tool (Paul 2003). Shell's experience is mirrored by the research literature which suggests that groups utilizing a knowledge based system make superior decisions (Nah et al. 1999). Similarly, Ryder turned their logistics and transportation knowledge into a commodity and used that commodity to generate an additional two billion dollars in revenues (Davenport 2000).

To capture the promise of increased "effectiveness, efficiency, and competitiveness," many organizations have chosen to implement KM practices and systems (Schultze and Leidner 2002, p. 2). These efforts, however, commonly face resistance. Several challenges to effective KM programs are reiterated throughout the literature. In keeping with the focus, the challenges that can be resolved through the wiki way will be emphasized. Among these are: enticing employees to relinquish individuality, allowing the process to be technology driven, avoiding static systems, aligning with business goals, keeping out information clutter and undertaking the fundamental cultural change required of a KM endeavor (Kotwica 2003; Paul 2003; Markus et al. 2002; Tilley and Giordano 2003; Hayduk 1998).

One of IT management's roles in KM is the selection and implementation of technical solutions to capture and redistribute this significant asset. The intention of a KM system is to enable the formation, communication and utilization of knowledge (Alavi and Leidner 2001). A fundamental challenge in KM is knowledge capture. There are two overriding explanations for this challenge. First, science has taught us to value the objective over the subjective; therefore, the gathering of subjective knowledge is in direct contradiction to scientific value (Schultze 2000). However, KM creates a new environment where the objective and subjective are intertwined. Consequently, it has been suggested that a KM system should attempt to objectify an individual's subjective knowledge (Schultze 2000). Second, while explicit knowledge is verbalized and captured in business processes, tacit knowledge, the know-how, is often hidden and available only in the minds of employees (Schultze 2000; Alavi and Leidner 2001; Mahapatra and Sarkar 2000; Appendix Table 4). To succeed, a KM initiative requires that we learn to appreciate an individual's tacit, and often unproven, subjective as well as objective knowledge (Schultze 2000). Addressing this second barrier to knowledge creation often requires a fundamental change in knowledge sharing culture.

This need for culture change often hinders implementation of KM programs. Individuals might see the centralization and sharing of knowledge as the surrender of wisdom they may see as their exclusive value to an organization. Thus experts highlight the need to create a reward system focusing not on individualistic, self-promotion but rather on the disbursement of knowledge (Paul 2003; Davenport and Prusak 1998; Hayduk 1998). In addition to rewarding

sharing, shifting culture to promote the adaptation and application of collective knowledge ensures that employees see a benefit in the KM program (Hayduk 1998).

There are two essential catalysts for knowledge sharing: mutual trust and mutual influence (Nelson and Cooprider 1996). These are critical elements for establishing a knowledge sharing environment, which can lead to improved performance (Appendix Figure 1). A precondition to trust and influence is communication (Nelson and Cooprider 1996). Additionally, through communication, individuals are able to influence, or be influenced by others, and influence conveys mutual understanding, which entails shared knowledge (Churchman and Schainblatt 1965). The knowledge spiral (Appendix Figure 2) demonstrates the fundamental aspect of communication and socialization and its association to the knowledge creation process (Nonaka 1994; Hayduk 1998). According to Nonaka and Takeuchi (1995), the process of changing tacit to explicit knowledge begins with first socializing internal knowledge; next, the recipient internalizes the wisdom, thereby creating knowledge; and then, he continues the cycle by again sharing this new knowledge with others. As a result of this dialogue aspect to sharing knowledge, "conversational" knowledge creation and expansion is seen as a means for developing wisdom.

In the information age companies increasingly derive greater value from intellectual rather than physical assets (Kotwica 2003). The promise of success stories such as those at Shell and Ryder is highly enticing and provides a convincing reason for investing in a KM program. Even more compelling may be failures, for instance resulting from the disconnection between functional areas that can be the consequence of inattention to knowledge capturing and sharing initiatives (Pawlowski and Robey 2004; Markus et al. 2002; Nelson and Cooprider 1996). KM software solutions are sought to reap the possible benefits and avoid the potential losses. Such solutions come in two varieties: proprietary and open.

Proprietary Solutions

Most organizations have turned first to proprietary KM solutions. The list of available solutions is immense, easily surpassing 1,500 (McKellar 2004). While proprietary systems are extremely advanced in providing features, they cannot force the cultural change required for successful implementation. *Knowledge Management World* recognizes this idea when publishing their 2004 list of "100 Companies that Matter in Knowledge Management," as well as "Consultants, analysts and integrators that matter," together with their ideology that KM is "an attitude, not an application" (McKellar 2004; Appendix Chart 1).

Proprietary systems range from out-of-the box to highly customized solutions. The various proprietary system components are comparable, and typically include some or all of the following: robust searching capabilities, sophisticated document storage and management, collaboration and discussion forums,

advanced integration and document versioning (Copeland 2001; Kajmo 1999; Microsoft 2004). Prices, though highly varied, can be over five thousand dollars for only a few users (Microsoft 2003).

The major limitations of proprietary KM systems arise from the static accumulation of dynamic knowledge. Since knowledge is constantly evolving, systems that satisfy a specific intent are not easily adapted to changing users and their needs (Markus et al. 2002). Additionally, lack of integration between the purchased KM system and an individual's work process can cause a loss in efficiency, or worse, a rejection of the tools (Markus et al. 2002; Hayduk 1998; Paul 2003). The problem escalates when various non-integrated systems are employed leaving pertinent information scattered (Markus and Keil 1994).

The biggest failure of proprietary systems usually occurs when a company views their KM initiative as one of implementing technology. Larry Prusak illustrates the erroneous logic of a global financial service company whose total expenditure on a KM project was close to one billion dollars, with six years of invested time in what proved to be purely a technology exercise that led to an almost non-existent return on investment (Kotwica 2003).

Open Source Solutions

After considering the investment price, time requirements, and the possible immense loss, many companies increasingly find it easier to turn to open source software that provides the same benefits as proprietary solutions but at a fraction the front-end cost (Koch 2003). The possibility of, for instance, duplicating Sabre's savings of tens of millions of dollars over a five year period by avoiding upgrades or paying for extra support is a lucrative enticement for rejecting proprietary systems (Wheatley 2004).

Cost savings are not the only justification for open source systems. Open source proponents insist that performance improvements result from the numerous eyes inspecting code and quickly removing errors (Wheatly 2004; Madey et al. 2002; Mishra et al. 2002). The ability for greater customization is also possible, due to the ease of code availability and alteration (Mishra et al. 2002). As we will see below, these same benefits parallel those possible with wiki pages, which not only correlate to open source systems in ideology, but also first generation wiki code is created in an open source environment (Allen 2004).

The Wiki Way

First generation wikis

Wiki pages demonstrate a conversational KM solution. Conversational KM has surfaced as a method for organizational knowledge creation, particularly in a virtual team environment. The prospect of several key benefits make these solutions a favorable business option since they are not economically or technologically demanding, are quick to create knowledge and are well suited for

decentralized environments (Wagner 2004). The potential of wikis may surpass those familiar conversational technologies presently internalized into business processes, such as e-mail, discussion forums, instant messaging and group decision support systems (Appendix Table 5). In addition, wiki pages exemplify a social software solution whereby individuals are technically supported in aspirations to belong and contribute in a group atmosphere (Boyd 2003). This type of group participation creates voluntary social connections said to help realize personal goals (Boyd 2003). For this reason, wikis are being absorbed into many business applications.

The first Wiki-Wiki (pronounced wee-kee – wee-kee) was created in 1995 by Ward Cunningham as a method for researching the nature of software development. A wiki is a script driven website that allows a visitor to edit the content of the page. Therefore, each visitor can absorb and contribute information. Despite the inherent anarchy of the system, there are several unwritten rules to help maintain order (Appendix Figure 3). Adhering to these principles is fundamental to a successful wiki, since they are essential in establishing the communities of practice that create norms (Appendix Figure 4). The *open* principle, which allows complete freedom and the ability to add, edit or remove any aspect of a web page, makes many people apprehensive (Dickerson 2004b, Appendix Figure 3). However, current wikis prove that most individuals are not innately malicious, and follow the design rules. The reason for granting users the freedom denied in most web sites can be understood by translating the name. Wiki comes from the Hawaiian word meaning “quick.” A wiki provides an extremely fast and efficient way to collaborate and communicate knowledge among virtually anyone interested without the constraints of place or time (Bairstow 2003).

Although wikis have a “long” existence in the technical world, the technology has experienced a recent renaissance. Wikis can, and in some cases already are, transforming the way corporate America works. There is no longer need for countless conference calls, meetings and emails back-and-forth to resolve issues and understand requirements (Krause 2004). Entire projects are being drafted, designed, edited and coordinated by teams through the use of a wiki, where the *observable* principle allows visitors to view, contribute and collaborate at much faster rates through virtual real-time conversations (Dickerson 2004, Appendix Figure 3). Aperture Technologies has exploited these precise benefits from wiki pages for more than 100 employees, stating that the powerful collaboration element surpasses alternative options, enabling faster work completion (Hof 2004). In this manner, employing wiki pages as a collaboration tool does more than just integrate the KM system into an employee’s work process; it essentially becomes the actual work process.

Wiki pages mirror physical communities of socialization and information communication, thereby granting tremendous power in an online environment to conversational knowledge creation (Appendix Figure 5). Thus, some of the

previous challenges with capturing knowledge diminish when employing the wiki solution. The fundamental *organic* principle removes the static system dilemma, and allows for a KM system's structure and context to have the flexibility of customization and constant evolution, thus emulating the dynamic knowledge element it captures (Boyd 2003; Mishra et al. 2002, Appendix Figure 3). The *open* principle solicits the constant interaction of wiki contributors through editing page syntax or content, and adding or correcting posted knowledge- elements that foster the social ties vital for knowledge sharing (Boyd 2003, Appendix Figure 3). The importance of constant communication is present within wiki pages since, in essence, the only form of interaction among contributing individuals is through explicitly written words. Given that virtual team members implement explicit forms to transfer knowledge to dispersed colleagues, the problem of documenting tacit knowledge is lessened in an online, wiki environment (Griffith et al. 2003). Communication in this context further enhances mutual trust and influence- elements innate in wiki resulting from its design rules and structure.

There is enormous trust built into these systems where all have the power to add or delete content; the core of wikis is said to be trust (Appendix Figure 3). This fundamental notion of trust leads to the belief that no one will act out of context or maliciously. Still, there are methods within wikis to control the intrinsic freedoms and restore group cohesion. These include roll-back procedures, reverting to previous versions which are available within wikis as histories and the universal authority to add, edit and delete content (Wagner 2004; Boyd 2004). Business situations allow for greater control whereby registration of users coupled with attaching a user's name to edits makes the contributor accountable and traceable. Mutual influence is created by the *universal* principle, awarding visitors the ability to observe and respond to any wiki page publication. Hence, a wiki environment is conducive to the constructivist learning theory, where trust enables an individual to express knowledge in order to construct it, and influence helps to refine knowledge (Leidner and Jarvenpaa 1995; Wagner and Bolloju 2004).

The importance of a KM system which objectifies subjective knowledge is possible through the collective influence in wiki pages (Schultze 2000). Persistent knowledge in a wiki page is considered objective since it endured the *open* principle's deletion capability available to any potential critic. One of the founders of Wikipedia, the largest online wiki, articulates this concept: "the only way you can write something that survives is that someone who's your diametrical opposite can agree with it" (Gillmor 2004). Furthermore, the power of deletion can ensure information clutter is kept to a minimum, erroneous data is quickly removed and knowledge is relevant (Wagner 2004).

The last challenge to eradicate, enticing individuals to contribute, is important to attain the benefits of KM as well as the advantages of using wikis. Wiki page infrastructure consists of easily created hyperlinks which, by virtue of the

incremental principle, may point to non-existent pages, thereby tempting users to contribute the missing content. The reason for contributing this missing knowledge has been explained by wiki's portrayal as a reciprocal *hi-tech gift economy*, where gifts donated by individuals in the form of ideas or code are compensated through community recognition (Barbrook 2003). While there is no financial debt to repay for an individual's contribution gift, there is a moral debt to the community paid through continued collaboration. The human capital explanation depicts individual participation as a desire to acquire marketable skills or knowledge (Hann et al. 2002). Furthermore, the signaling theory describes individual contributions motivated by the search for prestige and recognition, as well as a method to market ones talent to employers (Hann et al. 2002). Each of these theories and ideas point to reasons less altruistic, but promising for attracting committed contributors.

The growing advantages and increased possibilities of attaining KM benefits have persuaded several companies to employ wikis. Two structured wikis have begun to dominate many corporate environments: TWiki and FlexWiki. TWiki has been positioned as an enterprise collaboration platform capable of filling the needs of a knowledge base, a document management system, a project development arena, a support system or a variety of imaginable groupware tools (Thoeny 2004). Companies such as Yahoo!, Disney, SAP, Cingular Wireless and Motorola are all proponents and patrons of the free software. Each boasts of post-implementation time and economic savings, increased efficiencies and successful dissemination of appropriate knowledge to disconnected teams (Cleaver 2004; Theony 2002). Similarly, FlexWiki is positioned to enhance team collaboration and knowledge exchange (Microsoft 2004). FlexWiki, built by Microsoft and donated to the open source environment through SourceForge, was among the top downloads for 2004, signifying wiki use outside of the already numerous Microsoft teams currently exploiting its capabilities (Foley 2004).

Nevertheless, as with the advantages, the disadvantages of open source systems also transfer to wiki pages. Since first generation wikis are built from open source code, the implementation of such solutions into a business atmosphere signifies unpredictable support and costs (Senf and Shiau 2003; Koch 2003). In addition, integration possibilities are also variable and not guaranteed (Senf and Shiau 2003; Koch 2003). Many corporations are uncertain of open source licensing and as a result, fear the possible consequences of software implementation (Wheatley 2004). Once employed as a knowledge support tool, the lack of coordination and management can create duplication of knowledge creation efforts (Mishra et al. 2002). The *convergent* design principle, whereby duplication is removed by discovering and citing the relevant content, should ensure the repetition is removed from wiki pages; however, it does not always function as a deterrent.

The open source environment has seen various resolutions to these problems including: system integrators with support and documentation, vendors such as

Dell, HP, IBM, Oracle and Sun supporting open source products and third-party indemnification to remove fear of implementing open systems (Wheatley 2004; Koch 2003; Senf and Shiau 2003). Regardless of these advances, volatile support, maintenance and integration costs remain major impediments to open source code implementations such as wiki. Over half of nearly four hundred IT executives surveyed claimed that nonexistent vendor support was open source's fundamental disadvantage (Koch 2003). For this reason, second and third generation wikis have attempted to integrate the benefits of open software with the support and security of proprietary systems.

Second generation wikis

Second generation wikis are positioned for the corporate user who is hesitant of the wiki shift. San Francisco based Socialtext Inc. appeared first on the packaged wiki scene with a hosted service and user-friendly software (Jesdanun 2004). The Socialtext workspace combines the benefits of several technologies to build a more complete offering (Appendix Table 6). However, there is a cost for the assurance and "wrapping paper" associated with proprietary wikis. Prices vary depending on whether the service is hosted or if the organization is non-profit, and range from a $500 (non-profit) to $1000 (for-profit) set-up fee that includes five licenses, and $30 for each additional user per month, with volume discounts reducing the per user fee (Socialtext 2004c).

Alternatively, Socialtext also supports KWiki, an open source option which, for a fee, extends and supports a wiki (Socialtext 2004). Socialtext offers a basic wiki that is highly customizable through selected plug-ins available for download (Socialtext 2004b). Moreover, should the need arise, Socialtext provides the ability to easily upgrade to the more expensive Socialtext Workspace (Socialtext 2004b). Whether the full Workspace solution or the KWiki alternative is employed by frequent or few corporations, Socialtext has assisted in legitimizing the wiki way for the business world.

Third generation wikis

The most recent wiki application emerged this past October, thereby continuing the validation campaign for corporate wikis. Joe Kraus and Graham Spencer (the founders of Excite) released The Application Wiki from their Palo Alto startup JotSpot. Currently in beta, with availability by invitation only, this new wiki software has potential (Cole 2004). Approximately twenty days after the invitation opened, almost three thousand companies had signed up for the free beta-test in order to begin examining the potential benefits and applications (Evers 2004).

Application Wiki is boasting functionality beyond those aspects found in first and second generation wikis. An exciting addition to basic wikis is Wysiwyg (What-you-see-is-what-you-get) editing, allowing anyone who can type to edit pages (JotSpot 2004). Additionally, every JotSpot page has an email inbox whereby all emails cc'd to the page are automatically indexed and searchable (JotSpot 2004b). JotSpot pages also provide data repository opportunities that allow the

attachment of any type of file to a page, both of which are indexed and searchable (JotSpot 2004c). Furthermore, JotSpot has an Application Gallery that includes prefabricated "application templates" that can be added and modified for specific uses (JotSpot 2004d). These advanced wiki pages also allow for easy integration of real-time news feeds and web components such as Google search (Marshall 2004; Francisco 2004). The fundamental objective is to empower anyone to quickly create customized web programs solely through the use of Application Wiki's improved functionality (Hof 2004).

The predicted possibilities for JotSpot's Application Wiki have been numerous, including collaborative workspace initiatives, customer support management, job candidate tracking, project management and trouble ticketing, to name a few (Hof 2004; Evers 2004; Appendix Table 7). Proponents are attracted to JotSpot's possible applications, low cost and simplicity (Evers 2004). While Application Wiki has been described as a bottom-up technology, with popularity commencing at the workgroup level and spreading outwards and upwards, the strong belief is that they *will* grow (Evers 2004).

Conclusion

Globalization and displacement of teams into virtual environments amplify the importance of knowledge sharing (Tilley and Giordano 2003). Wiki pages have potential for realizing the long awaited benefits of KM, and removing some of the identified challenges. Wikis have the ability to disseminate knowledge to various domains that resides across time, distance and organizations. They can be integrated as part of an employee's work process in order to facilitate knowledge sharing and system utilization. Additionally, wikis provide a dynamic system for knowledge capture, able to evolve with changing needs. The open wiki feature allows for communication, collaboration and the documentation of what is collectively considered pertinent knowledge. Furthermore, wikis can also be employed as boundary objects facilitating the essential connection between the business and technology environments to ensure that opportunities for efficiency and effectiveness are not overlooked (Pawlowski and Robey; Newman and Robey 1992).

The power of wiki applications is being extended beyond KM initiatives to include document retention, project management, employee evaluation, help desk, calendars and much more. In essence, the flexible customization of wiki pages allows them to be molded to fit a specific need; basically, Wymiwyg ("What-you-make-is-what-you-get"). The dilemma of occupational spam provides a perfect application for wikis to re-instill productivity once offered through email. Occupational spam, a hindrance surmounting commercial spam in many organizations, is excessive cc'ing that may account for 30% of email volume (Mayfield 2002). The trouble escalates, since these emails must, unlike commercial spam, be at least skimmed. This signifies that if an individual receives around fifty emails daily, greater than four hours a day is spent on email (Mayfield 2002). Alternatively, all pertinent information can be posted to an

appropriate wiki page and the information can be stored, updated, refined, searched and quickly referenced, thereby re-establishing the time efficiencies once attributed to email. However, in order to reach these high expectations, managers will still need to inspire the corporate cultural change to surrender power to employees and collapse the hierarchy of control (Jesdanun 2004).

In today's time-pressed corporate world, it is inevitable that the future of wikis will be more permanent than the continuously evolving content of their pages. In light of Microsoft's recent hiring of Ward Cunningham (the wiki inventor), more than likely the technology will be pulled into collaborative proprietary software, in order to remove the insecurity of open source software (Foley 2004). Regardless of how it is presented, the potential impact of wikis is significant. This social software program promises to change the work environment and employee interaction… the workplace of the future promises to be a stimulating and intriguing place.

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Appendix

Table 1. New Roles for Knowledge Management (Tan et al. 1998, pp.630)

Organization	New roles
Anderson Consulting	Chief Knowledge Officer
Arthur Andersen	Global Knowledge Manager
Booz, Allen, and Hamilton	Chief Knowledge Officer
Buckman Laboratories	Vice-President of Knowledge Transfer
Coopers and Lybrand	Chief Knowledge Officer
Dow Chemical	Director of Intellectual Asset and Capital Management
Ernst and Young	Chief Knowledge Officer
McKinsey and Company	Chief Knowledge Officer
Monsanto Chemical	Director of Knowledge Management
Price Waterhouse	Chief Knowledge Officer
Skandia Afs	Director of Intellectual Capital

Table 2. Definitions of Knowledge Management (Tan et al. 1998, pp.630)

Source	Definition
Strapko (1990)	Understand the relationships of data; identify and document rules for managing data; ensure that data is accurate and has integrity
Anthes (1991)	Policies, procedures, and technologies employed for operating a continuously updated linked pair of networked databases
Davenport (1994)	Capture, distribute, and effectively use knowledge
Garvin (1994)	Create, acquire, and transfer knowledge and modify organizational behavior to reflect new knowledge and insights
Birkett (1995)	Bring tacit knowledge to the surface, consolidate it in more widely accessible forms, and promote its continuing creation
Gopal and Gagnon (1995)	Identify categories of knowledge needed to support overall business strategy, assess current state of organizational knowledge, and transform current knowledge base into a new and more powerful knowledge base by filling knowledge gaps
Maglitta (1995)	Map knowledge and information resources both on-line and off-line; train, guide, and equip users with knowledge access tools; monitor outside news and information
Myers (1996)	Identify and manage organizational knowledge only to the extent that it has been captured by organizational systems, processes, products, rules, and culture
Malhotra (1997)	Caters to the critical issues of organizational adaption, survival, and competence in face of increasingly discontinuous environmental change; embodies organizational processes that seek synergistic combination of data and information processing capacity of information technologies, and the creative and innovative capacity of human beings

Table 3. Knowledge Perspectives & Their Implications (Alavi and Leidner 2001, pp. 111)

Perspectives		Implications for Knowledge Management (KM)	Implications for Knowledge Management Systems (KMS)
Knowledge vis-à-vis data and information	Data is facts, raw numbers. Information is processed/ interpreted data. Knowledge is personalized information.	KM focuses on exposing individuals to potentially useful information and facilitating assimilation of information	KMS will not appear radically different from existing IS, but will be extended toward helping in user assimilation of information
State of mind	Knowledge is the state of knowing and understanding.	KM involves enhancing individual's learning and understanding through provision of information	Role of IT is to provide access to sources of knowledge rather than knowledge itself
Object	Knowledge is an object to be stored and manipulated.	Key KM issue is building and managing knowledge stocks	Role of IT involves gathering, storing, and transferring knowledge
Process	Knowledge is a process of applying expertise.	KM focus is on knowledge flows and the process of creation, sharing, and distributing knowledge	Role of IT is to provide link among sources of knowledge to create wider breadth and depth of knowledge flows
Access to information	Knowledge is a condition of access to information.	KM focus is organized access to and retrieval of content	Role of IT is to provide effective search and retrieval mechanisms for locating relevant information
Capability	Knowledge is the potential to influence action.	KM is about building core competencies and understanding strategic know-how	Role of IT is to enhance intellectual capital by supporting development of individual and organizational competencies

Table 4. Knowledge Taxonomies and Examples (Alavi and Leidner 2001, pp. 113)

Knowledge Types	Definitions	Examples
Tacit	Knowledge is rooted in actions, experience, and involvement in specific context	Best means of dealing with specific customer
Cognitive tacit:	Mental models	Individual's belief on cause-effect relationships
Technical tacit:	Know-how applicable to specific work	Surgery skills
Explicit	Articulated, generalized knowledge	Knowledge of major customers in a region

Figure 1. A Model of Shared Knowledge (Nelson and Cooprider 1996, pp. 415)

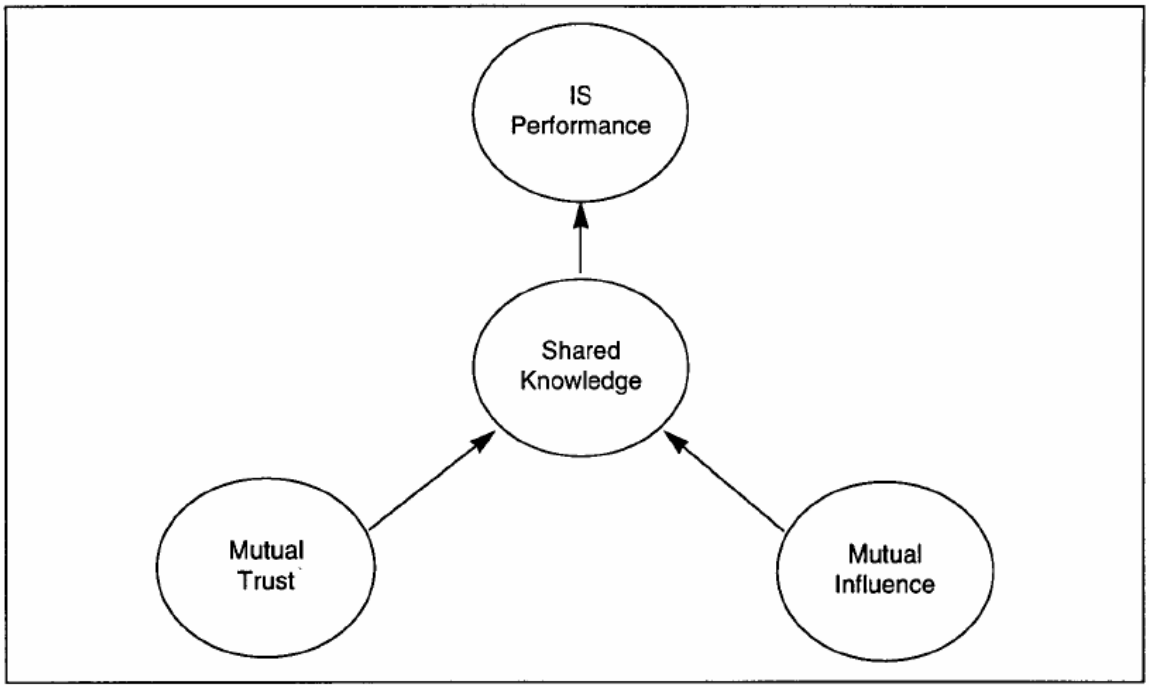

Figure 2. Knowledge Creation Process (Nonaka and Takeuchi 1995, pp. 62)

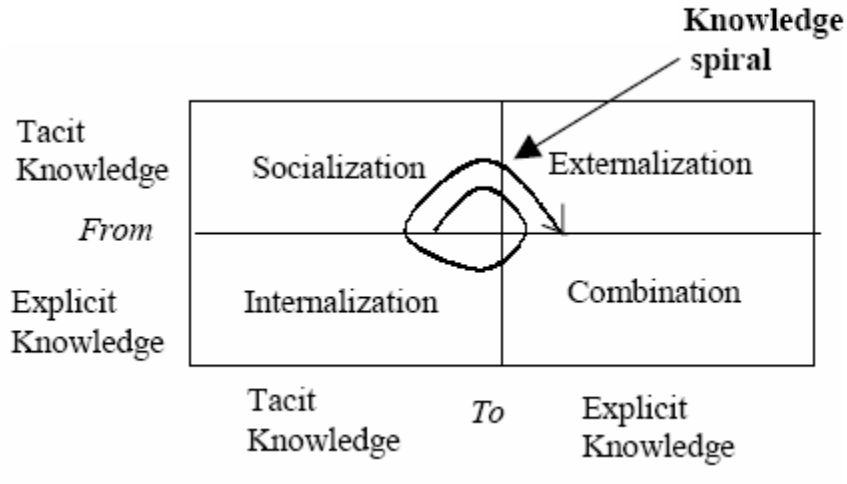

Chart 1. 100 Companies that Matter in Knowledge Management (McKellar 2004)

Table 5. Conversational Technology Overview (Wagner 2004, pp. 269)

Technology	Communication	Knowledge Repository	Knowledge Catalog
E-mail	1-to-1, 1-to-many, person-to-person	Local e-mail archives possible	Local index possible
Static and DB backed web pages	1-to-many, approaching many-to-many, "dialog" between web pages through hyperlinks	Local archives	Local index possible, web rings create larger catalog
Discussion forum	Many-to-many in web based forums, repeated 1-to-many in list servers	Central repository if web based, local if list server	Central index if web based
Internet chat	1-to-1, many-to-many	Frequently none, transient communication	None
Video / audio streaming	1-to-many	Central host or decentralized streamers	None, streams not indexed.
Video / audio conference	1-to-1, 1-to-many	Local repository if content is recorded	None, content typically not indexed.
GDSS	Many-to-many	Available, but GDSS sessions often treated as one-off.	Typically none, but possible
Web Log	1-to-many, can approach many-to-many (similar to web pages)	Local repository within each weblog. "Metablogs" now emerging	Yes, local index, metablog may provide larger catalog
Wiki	Many-to-many	Yes, current knowledge and history ("temporal database")	Yes

Figure 3. Wiki Design Principles

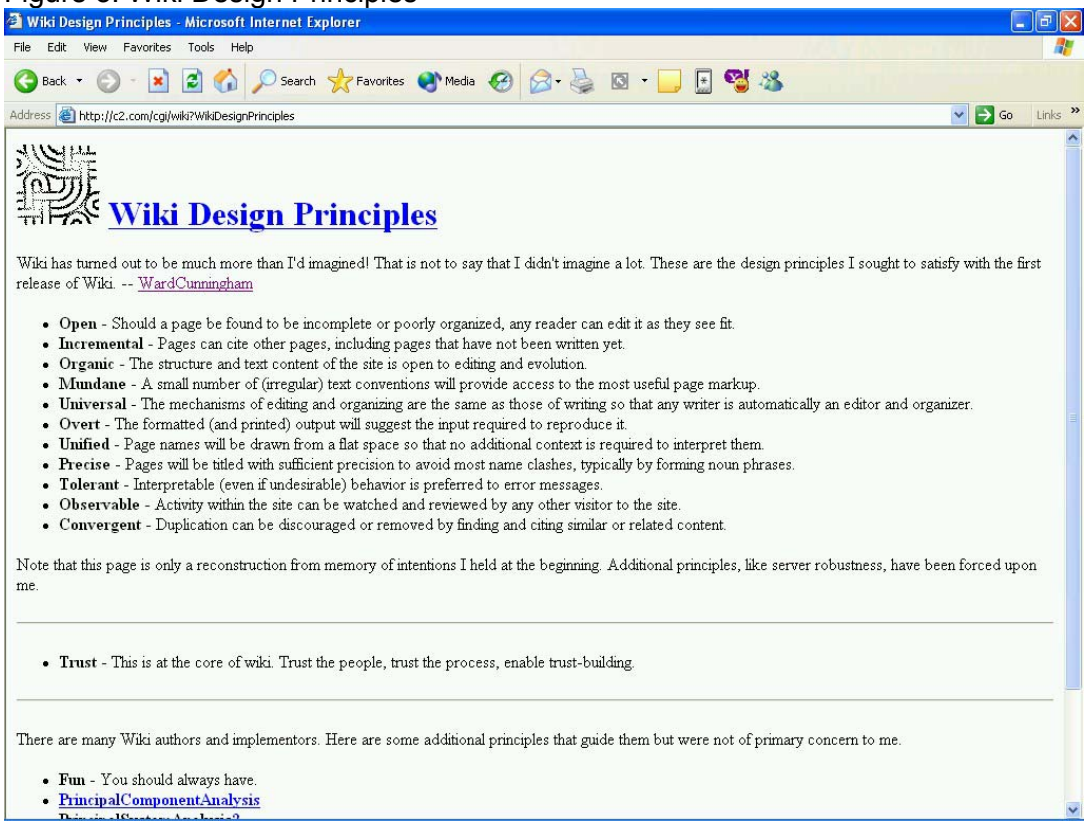

Figure 4. Wiki Social Norms

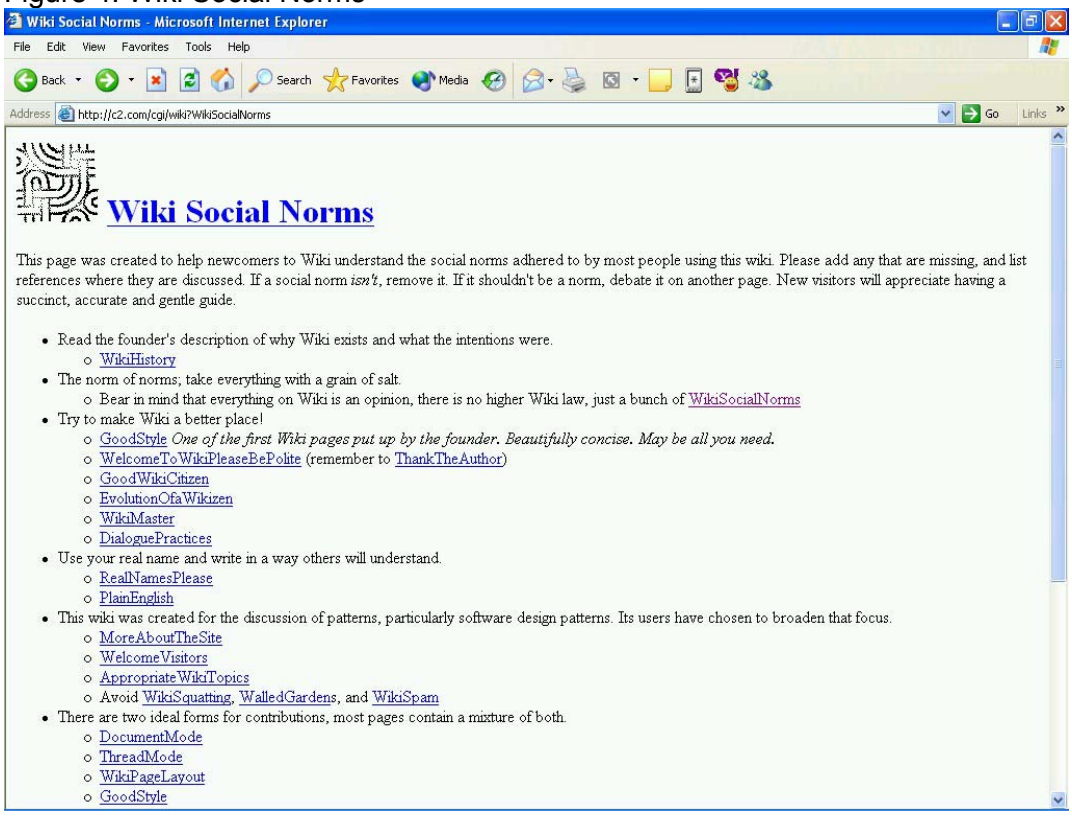

Figure 5. Wiki Community

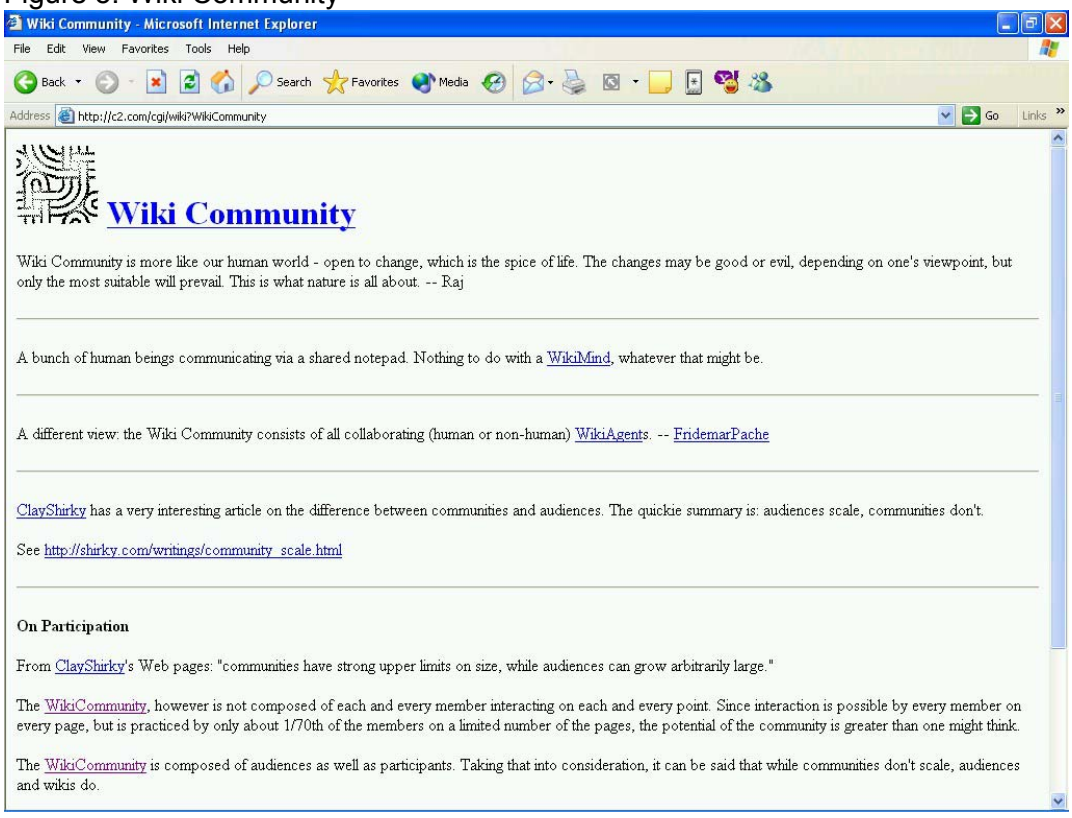

Table 6. (Socialtext 2004d)

Enterprise weblog publishing	-Simple weblog publishing -- posting is as easy as sending email -Publish current thoughts in chronological order, enabling readers to quickly see what's new -Communicate project narratives with team contributions -Subscribe to updates by email or RSS -- paying full attention only to important new items -Add content by email, without disrupting the flow of work
Wiki Collaboration	-Simple wiki-based collaborative document editing -Add comments to documents and posts -Complete record of all editorial changes -Ability to restore any previous version -Personalized and customizable navigation
Meeting support	-Ability to create persistent project workspace -Supports pre-meeting planning, resources, and meeting notes -Live chat integrated with project workspace, to capture and harvest resources -Ability to re-purpose meeting content into follow-up project activities
Knowledge Base	-Ability to create a knowledge base of linked and categorized content -Content and taxonomy can be reorganized to meet the organization's current need -Upload documents and manage document versions
Administration	-Access control: authentication is required for publishing, configurable for viewing -Administrative interface makes it easy to add users and groups -Look and feel is adaptable to the organization's web standards -Integration via open APIs -Users can be trained or train themselves in less than five minutes, leading to greater adoption and usage, with minimal support costs.
Architecture	-Web browser access enables zero-install use -- no additional applications necessary -Participants can also contribute content via email client, and read content via email or web news reader -Workspace application is hosted on a central server -Hosted at enterprise-class data center for security and reliability -Also available as an Hardware Appliance for secure, low-maintenance deployment behind the firewall

Table 7 (JotSpot 2004e)

Establish a company Intranet Publish company information in a Jotspot wiki: • Project specifications • Distribute employee information and policies • Company news and events • Marketing collateral	**Track Competition** Monitor your competitive landscape: • Maintain list of competitors • Integrate news from the web • Compare features • Target customers
Manage Meetings Organize your group: • Schedule meetings • Create agendas • Reserve conference rooms • Record meeting notes • Display results in a group calendar	**Share Interesting Articles** Create a public bulletin board: • Interesting articles • Research • Community news • Essays • Post your opinions using page comments or email
Project Management Produce better quality results: • Define specifications • Improve response time • Synchronize remote locations and team members • Monitor progress with a comprehensive calendar • Budget and control cost	**Documentation (Professional or Personal)** Easily create a valuable information archive to provide superior context and utility for others not involved in the data creation process. • Document software code • Workflow and process • Clinical trials • Your European backpack trip
Recruiting Manage your recruiting process: • Manage candidate pool • Attach a resume to reach candidate page • Aggregate emails from the candidate by CC:ing their individual page • Gather interview notes from employees using page comments • Organize job openings	**To Do List / Task Management** Productivity for a distributed team: • Shared calendar and table views • Assign tasks • Set priorities • Schedule due dates • Organize tasks by group • Flag items for discussion
Customer Relationship Management Receive a unified view of every customer: • Increase customer support • Increase customer satisfaction • Faster response time • Executive dashboard and extensive reports	**Track Bugs** • Document errors • Iterative development • Receive feedback from users • Post fixes
Help Desk • Prioritize help requests • Save time and resources • Analyze usage statistics	**Call Center Support** • Increase customer support • Save money • Access complete case histories
Manage Deals • Prospect potential business opportunities • Evaluate deals • Monitor closed transactions	