
KNOWLEDGE AND TALENT IN A PEOPLE- READY BUSINESS

Dan Rasmus

EXECUTIVE SUMMARY

Shifts in demographics, differing expectations of generations, globalization, the demand for transparency, and the freedom of choice about where and when to work will force businesses over the next decade to reconsider how they manage their knowledge and talent. The discipline of knowledge management, after some years in eclipse, has returned as a priority for organizations facing the challenges of rapid workforce transition. With baby boom workers poised to retire and younger workers with different skills and perspectives toward work ready to step in, organizations need new ways to protect, share, and grow their institutional knowledge or risk losing it. New software can lower the traditional barriers toward knowledge sharing by making it easier, less time-consuming, and less formal by providing rich tools for information management and collaboration. However, organizations can only realize their knowledge and talent goals through a combination of changes to practices, culture, and technology. This white paper surveys the challenges and possible solutions in light of the current situation and the themes that will drive changes in knowledge management over the next 8-10 years.

OVERVIEW

The first time around, knowledge management wasn't a smashing success. Organizations attempted to leverage the expertise, experience, and insights of their workers by capturing them in large, structured data systems where they could be easily accessed and retrieved. Unfortunately, these systems were often cumbersome and difficult for people to incorporate into their daily routine, leading to low levels of participation and abandoned knowledge bases. Workers also became suspicious that their own positions might be at risk once they shared their personal insights and knowledge. In some organizations, the traditional structures of compensation were not set up to reward people who took the time to learn, share and mentor.

Major social and economic developments over the past 10 years are fueling renewed interest in knowledge and talent management techniques. The global economy has driven home the critical role of knowledge as a competitive differentiator. Knowledge is now at least a co-equal capital asset, alongside financial and physical capital, in the creation of value. Access and prompt utilization of distinctive knowledge is proving decisive in every organization's efforts to create innovative new products and services, improve operations, forge more rewarding relationships with partners, and provide outstanding customer service.

The movement toward more customized customer experiences, global research and demands for rapid response has made work itself less predictable and more complex. Even routine, structured task roles now require a significant component of unstructured knowledge work – *ad hoc* collaboration with colleagues, customers and partners, open-ended information search, exception-handling, and the construction of personalized "micro-processes" to simplify and automate specific repetitive tasks that fall outside the defined steps of the larger workflow. Traditional knowledge management has achieved its most recognized successes to date precisely in structured task environments like call centers. However,

anyone who has interacted with a scripted call center worker on a problem that falls outside the scope of the organization's knowledge base, recognizes the limitations of failing to provide workers with the skills and resources to manage the unexpected, the exceptional or the complex.

Change today happens too fast for people and organizations to rely exclusively on structured processes and the rigid IT solutions that support them. Agility requires that organizations equip all their people – even those in task-based roles – with tools to operate effectively in a knowledge environment: that is, with tools to create, find and share knowledge easily and naturally, within the context of their familiar, daily activities.

Retiring baby boomers and the seemingly high turnover millennial generation will create new challenges for maintaining knowledge capital if organizations do not take immediate steps to ensure its continuity. In the next 10 years, hundreds of millions of senior workers will retire, often from critical organizational responsibilities. Their replacements bring new skills and often dramatically different attitudes and values to the workplace. Effective management of this dynamic workforce will be a key to enabling a smooth transition between generations – retaining the experience and expertise of the older workers and maximizing the contributions of the younger--while preserving a recognizable culture within the organization.

Over the last decade technology has matured considerably, along with the growth in understanding its role in empowering people. Rigid, structured systems for data capture can easily be supplemented with more user-friendly applications that provide better integration into day-to-day work, and with less formal Web 2.0 technologies like blogs, wikis, social networks, and subscription services (like RSS feeds). The emergence of these technologies helps lower barriers to participation that plagued earlier technology approaches to the management of knowledge capital, and support the kind of fluid practices and culture conducive to organizational learning.

Organizations today now have the means, motive, and opportunity to transform the way they manage knowledge and thereby improve their ability to compete effectively in a globally-integrated, networked world. With improved connections between people, more organic models for information storage and retrieval and the democratization of business intelligence, organizations can more effectively manage some of their most pressing problems around innovation, productivity, customer retention, supply management, and regulatory compliance. And as today's cutting-edge technologies begin to surface in mainstream information work applications over the next 10 years, the potential returns on knowledge capital will only continue to increase.

COMPLEXITY AND SPECIALIZATION

The term “information worker,” increasingly calls for more specialization as technologies, processes and sciences become more specific. Complexity comes from two sources: the evolution of a system or process over time; and from an increasing amount of information about the underlying structures of processes, markets, and relationships. Some things that appear simple may actually be complex, but until we view them at a higher resolution, we are not exposed to that complexity. Information technology gives us a powerful lens for exploring the complexities of systems whose behavior seems almost random in the abstract. Computers have provided us with insights about physical sciences, statistics, economics, and medicine that would have been undiscoverable without the power to account for billions of variables and unfathomable amounts of raw data. Complexity and specialization force individuals to access and retain highly contextual knowledge in order to succeed.

The tension between complexity and simplification has tangible impacts on work and management. Sometimes it is desirable to view issues in their full complexity, as a way of coming to grips with the level of effort necessary to address them, or for testing tactical proposals to minimize the possibility of unintended consequences. Other times, it is more useful to strip away detail and view situations at a high level of abstraction, where it is possible to see larger trends and causalities. A sales manager, for example, may want detailed status reports on each of his active accounts. The vice president of sales may simply need to see the comparative performance of different sales territories represented as colors on a map. The amount of desirable complexity therefore varies by role and context.

Let Experts be Experts Ideally, organizations would prefer everyone be expert, or at least proficient, in everything. For obvious reasons, that’s not possible. This challenges organizations to allocate the finite expertise and attention of each worker in ways that are optimized for their role and skill.

No one wants untrained generalists doing work that requires specialized skills and experience. This manifests as incompetence — a toxic quality in any workforce, especially one that drives value through knowledge. Equally, but not as obviously harmful, is the problem of specialists forced into the role of generalists. Organizations pay a premium for workers with specialized knowledge, experience, education, and other qualities. When those workers are forced to spend the majority of their productive hours on activities that don’t require or develop their special skills – such as when doctors spend more time filling out insurance forms than treating patients, or project managers spend 40percent of their time searching for information scattered across various repositories – organizations lose the value of their investment (and the person’s skills may diminish as a result of disuse or frustration). The productivity and

Knowledge Work is People Work

Knowledge work can be mediated through automation, but it cannot fundamentally be automated. The only way for organizations to increase their base of knowledge capital is to provide people with the means to discover, document, share and consume knowledge. Microsoft’s investments and development efforts are targeted to enable organizations to respond to rapid change by empowering people with tools that amplify their ability to find and share information, interpret data more precisely and coordinate responses collectively.

effectiveness of the knowledge-based enterprise falls short of potential, and possibly short of competitive muster.

In the knowledge economy, specialists will demand higher salaries than generalists, and demographic pressures will make specialists increasingly sparse. That dynamic makes the effective utilization of specialists within an organization even more imperative. At the same time, the rewards of specialization create incentives among workers to acquire skills that empower value, as happened with web expertise in the early days of the dot com boom.

SIMPLIFYING THE KNOWLEDGE WORK ENVIRONMENT

Organizations can improve the management of their human capital by enabling knowledge transfer and the productive application of expertise through simplification of the information work environment. Simplification can be achieved at different levels, ranging from personal information management to team knowledge sharing to simplification of business processes and workflows.

Personal Knowledge Management Automation of rote information-work processes such as status reporting, project notifications, email filtering, information, and attention management can reduce the burden of “information overload” – e.g., excessive complexity in the information space – and free up the valuable attention of skilled professionals to add maximum value. People will have more time to share knowledge and collaborate with their colleagues, customers and partners.

Organizations that reduce the friction of learning by automating mundane tasks and enabling information exchange will give experts more time to develop their expertise, and more time to share it with others. These organizations will not only remove barriers to productivity for their best performers, but also grow their base of knowledge capital by encouraging up-skilling of workers at all levels.

Managing Team Knowledge in a Collaborative Environment Small teams, whether they are co-located or geographically distributed, face challenges as to how they share process knowledge and individual expertise. Integrated collaboration platforms help team members coordinate their activities using shared workspaces, calendar and schedule services. Presence data for real-time communications helps bridge the challenges of time and distance, while subscription services and automated alerts help ensure awareness of new information or the need for immediate action. Teams can also build process knowledge into the workspace environment with facilities to assign workflow tasks (e.g., document review, research, etc.) in the context of their collaborative work.

Knowledge in Enterprise Workflows As noted above, workers in structured environments such as call centers benefit from flexible knowledge management systems that augment their existing IT applications. These can include tools for ad hoc communication, open-ended information search, and informal environments for capturing and sharing tacit knowledge, such as blogs and wikis.

Simplification Increases Knowledge Utility It is important that organizations build a means for attracting talent that can meet their needs for specialized services, and those who can fathom the complexity of the systems or services that they develop, deploy or service. And they need to create environments and work experiences where people can embrace new learning to upgrade their skills, and to obtain knowledge as it is created—all of which will be taking place in a globally distributed workforce. Integrated collaboration and communication can simplify the way people interact, helping them adapt more rapidly to change, either by avoiding risk, or identifying areas of insight that will lead to new opportunities.

TOWARD A DYNAMIC KNOWLEDGE ENVIRONMENT

If you take into account the dramatic developments in communications and collaboration over the past two decades, much of the infrastructure required to deploy a Dynamic Knowledge Environment exists. These environments, however, often offer point solutions to a particular facet of the knowledge management problem – business intelligence or search, for example – without considering the organic ways in which organizations create, transfer and retain knowledge. Failure to recognize the organic nature of learning leads to higher information technology costs, the addition of superfluous processes, and a situation that may make it harder for organizations to obtain a unified view of their knowledge assets with each new investment they make.

In many cases, organizations looking for practical solutions for individual needs will fail to create a generalized technology environment that can be used to solve the majority of knowledge capture and retention issues. Enterprise content management (ECM) is one example of this. Because the demand to manage and control the output of a process is so great in some regulatory environments, organizations implementing solutions like Enterprise Content Management often lose their more subtle knowledge such as: knowledge about the process, knowledge about the intermediary forms of content, and knowledge about how decisions were made, and what information was used to inform a decision. The complexity of the tactical objective – compliance – overrides general knowledge-sharing as a priority.

From an IT management standpoint, the increasing number of components in a software infrastructure may overwhelm those implementing such systems, forcing them to look for low-hanging fruit, and being satisfied with small wins rather than tackling the larger issues of knowledge transfer and retention. This perfectly rational way of looking at the IT issues, however, does not serve the business well in the long term. A truly comprehensive knowledge management solution requires a systemic overview of both technology and organizational practices to find out where knowledge is being created, how it is being transferred, where it is being stored, and by whom.

The picture that emerges can be frustrating. The difficulty is that knowledge management has no focal point; no single center of gravity around which it revolves. People, processes, information, and culture, in all of their aspects, can act at one time as creator of knowledge, and at another, as consumer. At different points in processes, exceptions may require knowledge that could not be anticipated by process designers. And people routinely learn things, discover new information or realize an insight outside of the structure of a process, a role, or even an organization, and that knowledge must somehow find its way to the right people at the right time, or inversely, be found by the right people at the time they need it.

The Dynamic Knowledge Environment (DKE) In traditional logic diagrams, functions and their interfaces are clear and precise. Handoffs are well defined and interactions invoked when necessary. In the dynamic knowledge environment, though the technical need remains for well-defined interfaces and open standards for information flow, the conceptual view of such an environment must necessarily reflect the blurred edges and confused boundaries that exist in real life.

We have seen this type of blurring on the desktop as applications invoke one another to embed spreadsheets into word processing documents or charts into presentations. In the knowledge environment, repositories become more universal. Rather than segregating work by function or role, the dynamic knowledge environment indexes across the boundaries of team-specific or function-specific repositories to create unified views of information. And because the architecture of the dynamic knowledge environment is horizontal by design, knowledge-specific repositories, such as lessons learned,

best practices, and communities of practice, use the same mechanisms for implementation as line-of-business tools, further decreasing the dimensions of the data footprint that must be traversed to find the right information.

At the core of the DKE are four primary functional blocks with permeable edges. The first is the *device centric view*, where the knowledge worker executes his or her communication and collaboration activities, and where he or she authors or assembles content. This is traditionally seen as a set of applications running on a desktop or notebook computer, but in the future, such an environment may well be a set of services that complement client software to achieve a goal.

Below that is the *information and collaboration integration platform*, which supports workflow, data integration, blogs, wikis, shared calendars, and shared tasks.

The final two pieces of internal infrastructure are comprised of *communications and repository services*, both of which should be transparent and completely integrated with the client experience. In other words, if a knowledge worker saves content, the experience of where that content is saved on the service should be transparent through normal file services. And if communication is required, access to communication facilities should be available wherever needed, and should be able to be invoked from any place a person's name appears.

NAVIGATING THE DYNAMIC KNOWLEDGE ENVIRONMENT

The fluid movement of knowledge through the DKE can best be illustrated through several classic knowledge management capabilities.

Lessons Learned/Best Practices The core of knowledge management is gaining access to the unique and specific knowledge that people have obtained in the course of doing business. This requires the affirmative participation of people to contribute to the knowledge base – a potential stumbling block to implementation in organizations that lack the culture or the practical incentives for workers to share their knowledge. *KM World* magazine cites the example of the legal profession as one that stands to benefit enormously from a DKE, but has been hampered by the financial model that emphasizes billable hours as the primary success metric.¹ So long as members of the firm are not compensated (or, worse, are penalized) for time they take to contribute knowledge to the internal repository, they are unlikely to bother. In this case, any implementation of DKE technology must be accompanied by some kind of shift in the financial model or culture.

However, the right technology approach can also lower barriers to participation. A robust DKE accommodates many ways for people to contribute, depending on their work style, and many ways for organizations to promote participation. Increasingly, professional services organizations, such as law firms, are creating specific roles to support knowledge creation, learning and retention. For example, many leading UK firms have well-developed precedents and know-how systems. These are maintained by full time professional support lawyers (PSLs) who are senior lawyers (and in some cases partners) and who are experts in their fields. The functions of PSLs, depending on the firm and the practice group, may

¹ McKeller, H. "Business and Practice: KM and the Law." *KM World*, September 29, 2006.
<http://www.kmworld.com/Articles/ReadArticle.aspx?ArticleID=18280>

include: development of precedents, maintenance of know-how databases, filtering and dissemination of current awareness information, and training.²

Organizations can promote blogs, wikis, and internal discussion forums where valuable contributors receive recognition and reward. The information shared in these forums is self-organizing (for example, a blog about software installation issues, or a discussion group on contract case law), and also searchable within the knowledge repository.

A DKE should also simplify the process of user contributions by allowing input via unstructured data (voice, video, handwritten notes), from devices ranging from desktop PCs to phones, faxes, scanned documents or notes taken on a TabletPC, and enable that information to be searchable using metadata tags or pattern recognition.

People elsewhere in the organization could then subscribe to subjects of interest via subscriptions, using tools like RSS feeds. Such feeds would allow them to expose frequently-used resources on personalized portal sites, receive notifications via email, voicemail, or other preferred channels, or access knowledge using research and discovery functions built in to their information work productivity software.

And in the DKE, lessons learned and best practices are not static. As soon as they are shared, individuals within the organization can modify them, apply them in different ways, and share their learning and the context of their applications to further enhance the knowledge infrastructure of their organization or community.

Improved Access to Information In a study on the "Hidden Costs of Information Work" (Doc #201334, April 2006), IDC found that organizations can spend up to \$14,000 per knowledge worker per year searching for information. The recreation of information that was not found through search can cost an additional \$4,500 per worker over the course of a year. Inefficient searches add significant costs to an organization. A primary reason why people lose data is because there are too many places to store it. Thus, an analyst will save a spreadsheet in a folder on her local hard drive, forget where she saved it, look high and low throughout her system and the multitude of file shares on the network, and finally wind up starting over from scratch.

Improved search and file management technologies in the DKE remove the artificial layer of abstraction in the "folder and directory" model and allow people to find information according to meaningful content tags, whether it's stored locally or in a network repository. In the example above, the analyst would simply type in "Q2 financials spreadsheet" and get pointers to all relevant files, wherever they reside.

This also addresses the problem of static data taxonomies, where the structure of the database can't keep pace with changing requirements and soon overwhelms the ability of users and IT to maintain the growing list of classifications. Organizations can achieve this benefit--not through the physical consolidation of all data assets into a single place--but through services that expose data from multiple locations as a single logical repository for search. In a DKE, the search function is available across all applications and devices, and can be embedded and invoked from within applications so people don't have to leave their work context to find information.

² <http://www.llrx.com/features/benchmarkingkm.htm>

Finding the Right People When people, rather than data or documents, are the objects of search, the same challenges and solutions apply. Organizational roles and titles serve the same problematic function as file folders within a rigid taxonomy – they only tell part of the story. Meaningful knowledge and expertise can exist throughout an organization without regard for formal divisions of labor. Knowledge networks can help expose hidden assets by connecting people to the processes, discussions, documents, and projects that can help them achieve a goal or complete a task with more proficiency. At the same time, knowledge networks allow them to reveal their ability to contribute by passively identifying expertise and competence from the work they contribute and the conversations in which they take part.

A Dynamic Knowledge Environment would provide several ways to locate and engage the right people. Expertise identifiers can be built into the organizational contacts directory, and those contacts can be automatically included in discussions or notifications via RSS and other publish-subscribe models. Project managers can rapidly find and build teams based on expertise, reputation, past performance, and history of interaction with other team members. For ad hoc communication, presence information is embedded in documents, processes, team sites, and email, indicating whether the person is available for real-time communication (whether instant message, phone/videoconference or a meeting), all of which can be called upon, or switched between, from the same, familiar interface.

Distributed Mentoring and Coaching Person-to-person knowledge transfer is often the most efficient and effective. But as with mediated knowledge sharing via best-practices, there is the problem of incentives and culture. If the processes of mentoring and coaching are too burdensome for the participants (particularly the mentor/coach), the opportunity for learning may be lost.

A DKE provides easy, natural ways for people to impart knowledge in one-to-one or one-to-many situations. Real-time communication via instant message, online meetings and remote application-sharing sessions provides direct opportunities for dialogue, demonstration and feedback. People can also use presence status to indicate their availability – or lack thereof – to set up a kind of “office hours” for consultation and set aside other time for uninterrupted work or personal time. Presence also supports “just-in-time learning” by connecting parties at the exact time the knowledge is needed.

A DKE can facilitate specialized e-learning opportunities through its rich collaboration and communication capabilities. This type of e-learning would leverage the existing capabilities of the infrastructure, rather than requiring organizations to duplicate their investments with closed, proprietary systems.

Blog comment threads, wikis and discussion forums provide channels for asynchronous knowledge transfer. Many organizations have implemented these kinds of channels to provide IT helpdesk services, sometimes in combination with real-time chat and application sharing. The same practices could easily apply to other types of specialized knowledge.

Driving Innovation Innovation in practice means the design and refinement of products, services, and processes. As this is fundamentally a knowledge-based activity, a DKE offers many ways to speed and simplify the process while improving the quality of the output.

Routing, notification, version control, and all the other routine tasks that are part of the product development cycle can be automated, saving participants the time and trouble of managing administrative activities. The tools to design and modify processes, such as forms and workflow diagrams, are part of the information/work application environment, so the team members and management can adapt process rules to fit changing conditions and work styles without involving IT.

The primary advantage of a DKE is the ability to embed knowledge into processes. At each point in the process, participants have access to the people and information they need to maximize their contribution. All the knowledge within the organization can be brought to bear on problem-solving, leading to innovative solutions that incorporate the best, most up-to-date expert and customer feedback.

Learning from Customers Many organizations gather customer data from transactions. Data, however, is not the same as knowledge. Raw data must be assembled from the various repositories in which it is collected – CRM systems, transaction systems, loyalty programs, sales and marketing lists, sales force automation applications, etc. – then interpreted to determine a course of action. Because of the sheer volume of data that organizations now collect, there is the real risk that the prescriptive or predictive quality of the information could be obscured in a welter of complexity.

A DKE assists people in using customer data by allowing them to customize the way they consume it according to their needs and role. When data is accessible and pervasive across the entire enterprise, organizations can build dashboards and alerts into personalized workspaces, and provide customer-facing workers with a single view of the relationship to provide better service. In most cases the individual workers will be able to assemble the information they need from high-level components that fit easily into their existing information management tools, be it their e-mail client or their personal portal.

Organizations can also obtain knowledge from customers who require less abstraction and interpretation. They can ask them directly for their views and engage them in a dialogue. This can provide invaluable insights to all kinds of processes from product design to service delivery, while also forging a closer relationship with customers. However, customers can face some of the same barriers to contributing information as internal employees: lack of incentive and lack of opportunity. A DKE provides organizations with ways to reach out to customers as part of an interactive process, through blogs, comment sites, webcasts, questionnaires, and events: a wide range of informal, interactive conversations that can engage and reward customers, while providing genuine and contextual learning opportunities for product teams and service providers.

People As Process The so-called 80/20 rule in business states that 20 percent of transactions are exceptions to normal processes, but consume 80 percent of the resources. Obviously, it is advantageous to gradually evolve processes to capture more and more exceptions. At the same time, it is virtually impossible to design a process that anticipates every potential outcome, especially with the kind of complex, knowledge-intensive needs that many organizations now face, both internally and externally. There will always be a need for people to apply their knowledge, training and discretion to resolve issues, and in any process, there is likely to be a need to escalate or engage outside expertise from time to time.

A Dynamic Knowledge Environment embraces people as part of structured processes and enables them to access the resources they need – information, expertise, escalation, or secondary processes – in a more flexible and responsive way. Search and collaboration services are available to workers from within structured workflow applications, so exception-handling tasks can be accomplished without leaving the familiar integrated work environment. Call center workers, for example, can use knowledge networks to locate subject-matter experts and engage them directly, and in real time, through instant messages that resolve customer issues not covered in the knowledge base. Front-line workers also have a greater ability to modify processes themselves to incorporate their own best practices for handling specific exceptions.

When people are empowered as a part of process-driven work, organizations can achieve the predictability and economy of structure, combined with the responsiveness and adaptability that only people can provide.

Making Better Decisions Business Intelligence (BI) offers executives a view into enterprise data to support decisions – a critical capability in a dynamic, competitive marketplace. And there is considerable overlap between the capabilities of BI systems and the knowledge transparency features of a Dynamic Knowledge Environment. The risk is that organizations that invest in dedicated BI solutions without consideration of the whole knowledge creation, transfer, and retention ecosystem – not to mention use of collaborative tools to rapidly disseminate and assimilate insights garnered from a BI system – may end up with significantly greater IT cost and complexity, duplicated capabilities, and fundamental system incompatibilities. Additionally, they may also experience lost opportunities from insights that just couldn't find their way to someone who could act on them.

Building a holistic Dynamic Knowledge Environment that includes collaboration, content management, forms, portal integration, unified communication and search, in addition to core BI capabilities, enables organizations to mobilize a greater volume of knowledge for decision-support than traditional BI systems. And this occurs in an open, interoperable environment where decision-support information can be incorporated into standard or customized applications for easy use and access.

Facilitating Communities of Practice Communities of practice (CoPs) are a way for geographically distributed organizations or informal groups to share, transfer, and retain information using DKE facilities such as team workspaces, threaded discussion groups, online meetings, document repositories, interactive live meetings, and other collaborative forums. In addition to encouraging mutual learning and sharing of best practices, CoPs can be a hedge against workforce transition. The community repository retains not only the knowledge exchanged by the members, but the entire context of discussion and feedback. New team members can familiarize themselves with the whole institutional background of particular subjects by combing through community archives, and therefore reduce the time it takes to ramp up to full participation. In active communities, the role of mentoring is often distributed among the group, rather than managed through top-down HR processes, transforming the community into the *de facto* repository for knowledge in terms of both human capital and intellectual property.

Measuring Knowledge Utilization The productivity gains of collaboration have always been notoriously difficult to quantify. By centralizing the knowledge infrastructure, organizations not only gain the benefits of efficient information search and transfer, but also the ability to observe and measure patterns of search, communication, collaboration, contribution and process performance. Managers can apply visualization tools to collaboration metadata, which will help them identify the *real* distribution of work and expertise within their organization. This can help bring formal policies in line with effective practices. They can also employ download statistics, blog traffic measurements, and reputation systems (to grade the usefulness of individual contributions) to assign relative value to their knowledge assets, whether they are documents, systems or people.

BEYOND THE DYNAMIC KNOWLEDGE ENVIRONMENT

Organizations can implement many of the capabilities of the DKE using products currently in the market, in conjunction with internal practices that foster knowledge development and knowledge sharing. Looking

ahead, several technologies under development may expand the boundaries of knowledge management even further and integrate even more deeply into the way we work.

Smart content extends the use of metadata to embed audit-ability, security, and self-executing applications within documents. Content will not only “know” where it belongs within a data structure and how it can be found in a search, but also who has accessed it in the past, how many times it has been transferred, who has privileges to view, print, and redistribute it, and how it can “unpack” to provide additional functionality.

Pattern Recognition will enable systems to learn and predict user behavior with greater certainty, enabling the automation of more and more administrative tasks. Communication software will use pattern recognition to correlate content and context clues to assign priority to communications, follow people to different devices and locations, and automatically gather documents and resources according to task- and role-based context. Pattern recognition at the system level can also be used to automate administrative tasks such as standardization of data types between different systems, interface configuration, workspace provisioning, etc.

Location services and smart spaces will project the characteristics of the knowledge environment into the physical world. Offices and conference rooms will “know” who is in them, file cabinets and storage rooms will be able to direct people to the precise locations of physical documents, and people will be able to locate one another and set up face-to-face meetings using mobile devices.

Cross-platform identity management provides security and authentication across different systems, so people can seamlessly access resources without having to present passwords and credentials. Authentication methods will expand to include explicit biometrics (fingerprints, voice identification, and handwriting) and implicit biometrics (such as typing cadence, facial recognition, and “preponderance of evidence” methods that combine multiple individual traits into a profile that is very hard to spoof).

Voice-based systems accept both system commands and input by voice, including in noisy surroundings, with a high degree of precision. Eventually, this will include real-time, voice-based translation services, to facilitate knowledge transfer across the language barrier. Voice and other audio will also be interpreted by pattern recognition systems, and its content extracted in ways that allow it to be indexed and accessed. Time codes on streams will be able to precisely identify a point in a video or audio conversation that meets the specifications of a query.

New display technologies such as digital desktops, digital clay, and digital paper will finally free electronic data from the prison of the desktop monitor and give people a more tactile and intuitive way to interact with digital information.

MICROSOFT’S COMMITMENT TO ORGANIZATIONAL LEARNING

Microsoft has been creating the building blocks for a people-centered dynamic knowledge environment for over 30 years. The latest versions of Microsoft Office system, Microsoft Windows, and Microsoft server technologies offer the richest tools for knowledge creation, collaboration, content management, enterprise search, and unified communications, within the familiar Office interface that people already know and use.

However, technology is not the only necessary component for a Dynamic Knowledge Environment. Success depends on a total organizational commitment to a culture of learning. Knowledge contributors

should be recognized and rewarded. Incentive structures should be examined and modified to encourage people to develop their own skills and the skills of their colleagues through collaboration, discussion, mentoring, and communities of practice.

As workforce transition accelerates because of trends in demographics, globalization and technology, organizations must act quickly to preserve their knowledge assets. A Dynamic Knowledge Environment offers comprehensive capabilities to create, transfer, and retain knowledge, based on a rational and cost-effective IT infrastructure.

Microsoft encourages all customers to start looking beyond the tactical solution categories of business intelligence, portals, search, workflow, etc. and think about the business productivity infrastructure as a whole. In that way, organizations can begin moving toward the benefits of a Dynamic Knowledge Environment in a systematic, economical way.

10 STARTING POINTS FOR DYNAMIC KNOWLEDGE ENTERPRISES

1. Encourage **informal knowledge capture** through the use of collaborative technology that works the way people work
2. Deploy **flexible and adaptable technology** that amplifies the capabilities of employees by helping them quickly find the people, processes or information they need to be effective.
3. Allow employees to invest in relationships and use their **social networks** for learning and knowledge sharing.
4. **Align incentive and reward programs** to encourage knowledge sharing
5. **Embrace innovation** throughout the organization as a focal point for organizational learning and action
6. **Build knowledge networks** with employees, partners and customers that help anticipate future demand and risks.
7. Build an information architecture that allows the organization to **optimize around people, not process**, so that people can collaborate, find and use information and build work-saving tools within the natural context of their role, task and work style.
8. Consider the role space plays in knowledge exchange and **create environments that encourage knowledge sharing.**
9. Include the recognition of knowledge intensive processes and the retention of talent and knowledge as a **specific goal in strategic planning.**
10. **Define metrics** in the context of strategic organizational goals that will demonstrate the value of knowledge investments.

APPENDIX: KNOWLEDGE MANAGEMENT IN THE NEW WORLD OF WORK

The “new world of work” is Microsoft’s analysis of how shifts in demographics and changes in the social environment, globalization, and emerging technologies will present new challenges and opportunities for people and organizations over the next 10 years.

The following section discusses the risks and opportunities to knowledge retention and talent management in light of the uncertainties around global economic integration, ubiquitous connectivity, increasing demands for transparency, and the demographic transitions that will be reflected in the workforce.

Managing Knowledge in One World of Business Although globalization is moving forward, its pace and ultimate progress are unpredictable. That uncertainty creates a high degree of risk for organizational knowledge.

In an open and global economy, talented individuals may be attracted to certain geographical locations, as reflected in Richard Florida’s research around the “creative class³.” However, the ubiquity of global networks ensures that the knowledge possessed by these individuals, regardless of their physical location, remains available, and will likely go not to the highest (economic) bidder but to the bidder whose culture, practices, and technology provides the best overall environment and experience for the individual.

In a more fragmented world, knowledge may be locked behind ideological or geopolitical boundaries that are reinforced by information and communications filtering, or in extremes, cut off completely. Those parts of the world that reflect a high friction for knowledge transfer present a different set of issues than those in an open, friction-free knowledge economy.

Regardless of the details associated with freedom or fragmentation, software will play an important role in the work experience for information and knowledge workers. Collaborative environments will serve as the hub for learning and knowledge transfer. Company culture will be distributed according to how organizations choose to orchestrate their collaborative environments, not where or how they build their buildings. *One world of business* is not the equivalent of globalization, but a metaphor for global engagement as a platform for the work experience. Even in places where the economic and cultural effects of globalization have not reached local populations, there will always be a local affluent, expatriate or temporary management segment of the population who use technology to connect to colleagues around the world.

ONE WORLD OF BUSINESS

- the ubiquity of global networks ensures that the knowledge remains available, regardless of a worker’s location;
- software will play a significant role in the work experience for information and knowledge workers;
- Collaborative environments will serve as the hub for learning and knowledge transfer.

³ Florida, Richard. *The Rise of the Creative Class: And How It's Transforming Work, Leisure, Community and Everyday Life*. Basic Books, 2002, New York, NY

In the 1990s the World Bank reinvented itself as a bank for knowledge, as an extension of its financial capabilities. Access to a global skill base was only a starting point. The skill base, or codified content, points to people who could think about how their knowledge might be applied to a new situation. Those team members used a wide variety of technology, from fax machines to cellular phones, to engage one another. *One world of business* was not an existing construct the World Bank leveraged, but something it created by developing the means for its team of global experts to rapidly and effectively transfer their knowledge among themselves, and their customers.

Knowledge Anywhere, Anytime The build-out of wired and wireless broadband on a global scale is a boon to those struggling with knowledge retention and transfer. Rather than concentrating knowledge and talent in single physical locations, ubiquitous broadband will allow people to find information that can help them start learning from anywhere at any time. More importantly, they will be able to connect with other people in real-time if possible, and asynchronously when challenged by time and distance, so that they may learn “just-in-time” and in the context of a current challenge. Although they may need to wait for a reply, they will not need to delay action, defer questions, or suspend dialog. As resources converge, people can quickly apply advice and learning to achieve local results.

Central to the *always on, always connected* theme is the idea of choice; choice about where and when one works. A Microsoft Information Worker Board of the Future⁴ member said they view the workplace as something that could be “reduced to the technology that one uses.” As the networks and access devices continue to mature and extend their reach across the world, that view will likely become the majority among younger and older workers alike. This attitude toward work reinforces the idea of life-long learning as boundaries between work and life blur.

Knowledge in the Transparent Organization Governments, markets and organized consumer groups are putting regulatory, legal, and social pressure on organizations to expose an unprecedented level of detailed information about their internal practices to satisfy public desire for accountability, while demanding higher levels of privacy for personal data. To comply with these new demands, organizations need to know how and where to find the right information. This is not always so easy, especially when information and practices are segmented across multiple repositories.

Regulatory pressures are often the result of knowledge failures. When knowledge transfer is not fluid and efficient, individuals, or entire organizations, can take actions that fail to meet regulatory guidelines. From the opportunity perspective, the lack of solid capabilities to transfer knowledge can result in pressure for

The Microsoft Information Worker Board of the Future program brings together young people to explore their attitudes, skills and desires of as they apply to the workplace of tomorrow. By working closely with this emerging demographic, Microsoft will be better able to anticipate their expectations for the role software will play in their work life experience, and therefore develop tools that better align with those expectations.

⁴ Daniel W. Rasmus, “Information Workers of the Future” at Microsoft. (*KM Review*, Chicago, Vol. 7, Issue 5, November/December 2005)

new regulations, where they might otherwise be avoided by proactively understanding what consumers, customers or constituencies expect. Knowledge about customer expectations can result in actions by an organization that reveal important process, product, or service information that can help positively engage customers by delivering the information they need to build loyalty and trust.

A lack of transparency may not only pose compliance challenges, but may also impair an organization's ability to gain insights from past performance to guide future strategies. Analysts Don Topscott and David Ticoll, in their book *The Naked Corporation: How the Age of Transparency will Revolutionize Business*, [2003] [Permission to use?] make a compelling case for the many benefits derived from transparency, including improved worker productivity, better supplier and customer management practices, and stronger, more trusted brands.

Many technologies can help organizations become more transparent, from policy-based enterprise content management to transparent workflows and distributed business intelligence. Once organizations have greater insight into their own knowledge assets, they can more readily make themselves transparent to customers, government agencies, or other interested parties through a variety of channels. Various subscription services and the ability to expose corporate data more directly to partners and consumers through portals can improve transparency while driving down the cost of compliance.

Technology can certainly help organizations reduce the costs associated with regulatory compliance, but it may also create higher returns as a means for engaging customers, consumers and constituents. It can be used as a way of sharing knowledge that will reinforce the value proposition of the product or service organization seeking to build a relationship with customers and partners.

Managing Knowledge for a Changing Workforce When baby boomers (born between 1946-1963) retire, as they are now starting to do in increasing numbers, they will not be taking desks, chairs and other physical assets of their workplace with them when they go. They will, however, be taking something far more valuable and difficult to replace: their knowledge, experience, and a set of values and expectations that has shaped the workplace for the past 25-30 years. Not only are there fewer numbers of workers to replace them, but those workers have vastly different attitudes and expectations. The new talent pool joining the workforce is highly skilled and extremely capable of creating value in collaborative work environments and distributed work situations. But they do not share the previous generation's sense of commitment to a particular employer. For the majority of this emerging group, their work and their jobs are just a part of an integrated view of life.

THE MILLENNIAL GENERATION

- Is cynical about their relationship to their employers;
- Is highly skilled and capable of creating value in collaborative work environments and distributed work situations;
- Has a strong affinity for social networking, team collaboration, and has an expectation of quick rewards;
- Has a propensity to use technology as a tool across all aspects of their lives;
- Will create a rapid turnover of knowledge that will require new techniques.

This new generation, known as the "Millennial Generation," grew up in a world of outsourcing, downsizing, changing notions of family, and a shift in risk away from employers, society and government and toward individuals (accompanied, in many cases, by a counter-swing in prosperity toward the top).

They enter the workforce very cynical about the relationship between employers and employees, resulting in attitudes that focus on self-fulfillment, self-realization, and self-accomplishment. Younger workers are less likely to be motivated by climbing the corporate ladder or even viewing a job as more than a paycheck. The Millennials will create a rapid turnover of knowledge that will require new techniques, and great diligence in order to retain and leverage the knowledge they bring to the workplace, and the knowledge they obtain and create while they are employed.

The way out of the potential spiral of knowledge decay may be found in other strong attributes associated with the Millennials; namely their high affinity for social networking, team collaboration and their expectation of quick rewards and their propensity to use technology as a tool across all frontiers of their lives. If those elements are combined, distributed teams, working where and when they choose, governed by a clear set of objectives, and using software to amplify their communication capabilities, can help create a dynamic environment where knowledge sharing is rewarded immediately and metrics are visible to management. Technologies such as shared workspaces, workflows, online forms, expertise location, and knowledge networks, and unified communication (email, instant messaging, mobile, and voice telephony, etc.) are as familiar to the generation that futurist Howard Rheingold⁵ refers to as “digital natives” as television was to their parents. Likewise, there is the expectation that these technologies will provide some sort of feedback and monitoring to the organizations that deploy them.

This technique of mining knowledge from collaborative environments will be best applied to the kind of unstructured project work that is becoming more common in corporate, and government settings, and will be less useful for transaction-driven encounters. In the knowledge economy, however, value will be derived from innovation and rapid response, while cost savings will be derived from the automation of most highly repetitive tasks. In this way, the value of unique knowledge grows, further increasing the need for processes and environments that can take advantage of the knowledge workers have, and capture knowledge during turnover, which will rapidly infuse new employees with knowledge gained from their predecessors.

Organizations that create dynamic environments, empower their employees, and provide state-of-the-art technology, may also find lower turnover rates among Millennials. Microsoft’s Information Worker Board of the Future, which sought out the opinions of selected “ambassadors” of the emerging generation, identified these characteristics as strong attractors for younger workers.

⁵ Rheingold, Howard. Smart Mobs: The Next Social Revolution. Basic Books. 2003.