digital nervous system

Practicing Knowledge Management

Table of Contents

Microsoft

digital nervous system

Practicing Knowledge Management:
Turning Experience and Information into Results

Business Strategy White Paper

Knowledge management is first and foremost a management discipline that treats intellectual capital as a managed asset. The primary "tools" applied in the practice of knowledge management are organizational dynamics, process engineering, and technology. These work in concert to streamline and enhance the capture and flow of an organization's data, information, and knowledge and to deliver it to individuals and groups engaged in accomplishing specific tasks. These individuals, or knowledge workers, are unequivocally the most vital resource in the 21st-century company. The primary goal of knowledge management is to deliver the intellectual capacity of the firm to the knowledge workers who make the day-to-day decisions that in aggregate determine the success or failure of a business.

Knowledge management is not about creating a central database that is a complete replica of all that is known by employees or that is embedded in the systems they use. On the contrary, knowledge management is about embracing a diversity of knowledge sources, from databases, Web sites, employees, and partners, and cultivating that knowledge where it resides, while capturing its context and giving it greater meaning through its relation to other information in the company. Knowledge management is not about turning knowledge workers into interchangeable components by plugging them into some corporate knowledge base. Its essence involves fueling what knowledge workers do best—what Microsoft CEO Bill Gates refers to as "thinking work." It is about partnering technology with a corporate culture and business processes, and using it as the vehicle to manage and deliver the business information and the expertise of fellow workers to the most fundamental driver of business growth: the knowledge worker.

The Imperative for Knowledge Management

Knowledge Management is a nascent but rapidly growing practice that seeks to maximize the value of an organization by helping its people to innovate and adapt in the face of change. Some significant forces are pushing organizations to use knowledge management practices to manage their experiential and intellectual capabilities more systematically.

Microsoft
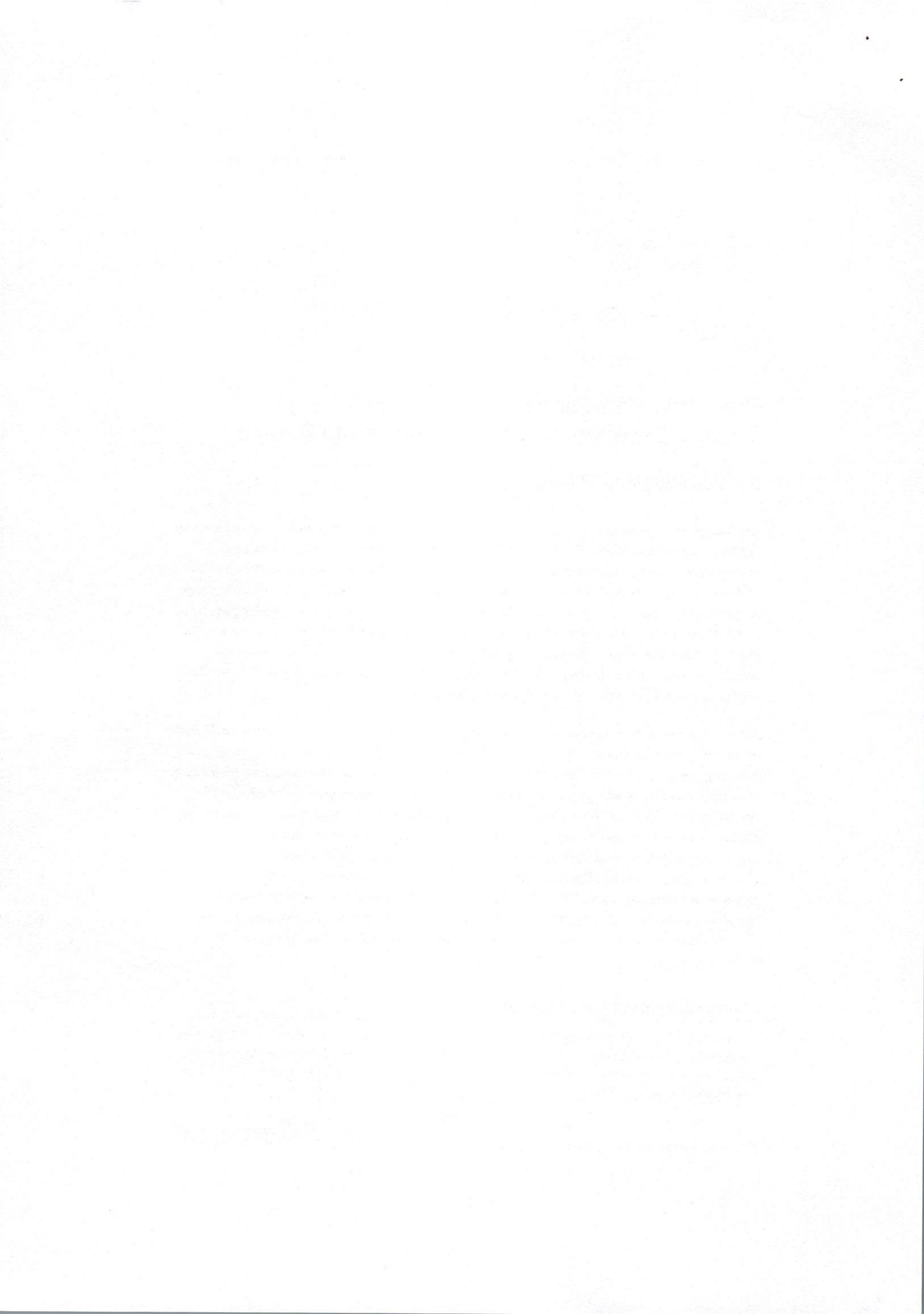
First, businesses are beginning to see decreasing returns to investments in reengineering the production process. The sophistication of tools to manage and measure hard assets, such as TQM, Reengineering, and Activity Based Costing, are plentiful and well understood. In many cases these practices have become commodities and world-class production is often a requirement rather than a differentiator. Corporations now see managing knowledge and the innovation process as the most important new discipline for gaining a competitive edge in satisfying customers.

Second, during the past 50 years the world's economies have undergone a significant transformation from an almost pure production-based value system to an intellectual and skill-based value system. In the United States, production workers accounted for only 34 percent of the workforce in 1980, versus 57 percent in 1940 (76 percent in 1900)[i]. In addition, investors now place a more significant premium on companies that have relevant management skills and the ability to adapt to changing business conditions than on the value of a company's fixed assets. A company's future and valuation is more dependent than ever on its ability to introduce new products quickly, reach new markets, and react swiftly to new threats.

The third force has been the rise of the "entrepreneurial economy"[ii]. Helping fuel this growth has been the increasing cultural importance of entrepreneurs as well as the rise of venture capital funds (from $14 billion in 1985 to $46 billion in 1997 in the United States alone[iii]). Because an entrepreneur's defining talent is the redistribution of value to new business models, the pace of change continues to accelerate. Less-developed economies can undergo extremely rapid change as they leverage the experiences of developed ones. These new business models continually attack existing ways of selling, managing, and financing.

Finally, technology itself has created the imperative for knowledge management. The ability to capture information, knowledge, and data has far outstripped people's ability to absorb and analyze this information in a focused way. Companies whose employees have access to the information and skills necessary to spot trends and manage opportunities will have a distinct competitive advantage in exploiting market shifts.

Knowledge management helps prepare people for an environment of constantly shifting demographics, industries, economies, and customer needs by ensuring that people have the expertise and information they need in order to properly assess business problems and opportunities. This paper will discuss the fundamental elements of knowledge management and highlight some of the tools available for ensuring success.

Knowledge Management Background

Before moving into discussions of the tools available for implementing knowledge-management practices, it is useful to lay some groundwork on the fundamentals of knowledge management.

How Knowledge Grows

Knowledge has its roots in three primary areas, all of which must be considered when developing a knowledge-management solution. People gain knowledge from their experiences and their peers' expertise, as well as from the analysis of business data such as sales and financial reports. Through the synthesis of these three elements, new knowledge is created and opportunities are shaped. Effective knowledge-management strategies manage and foster all of these sources of new knowledge:

Business Data is generally characterized as a set of discrete facts about events and the world. Most organizations capture significant amounts of data in highly structured databases, such as ERP and MRP line-of-business sytems. In addition, most firms subscribe to external data sources that provide demographic information, competitive statistics, and other market information. The core value building

Microsoft
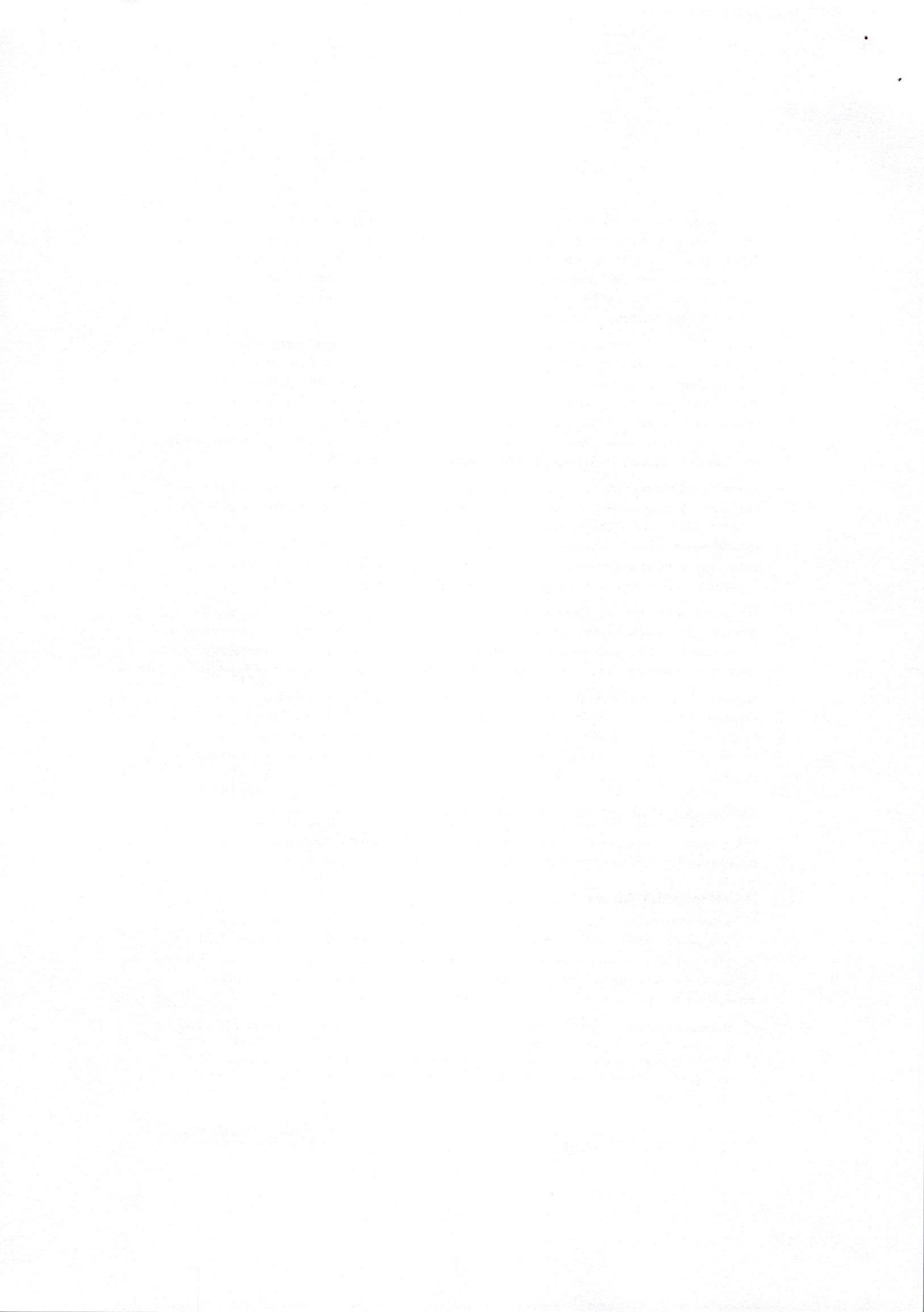
activity around business data is the ability to analyze, synthesize, and then transform the data into information and knowledge.

Information is the outcome of capturing and providing context to experiences and ideas. Information, or **explicit experiences**, is typically stored in semi-structured content such as documents, e-mail, voice mail, and multimedia. The core value building activity around information is managing the content in a way that makes it easy to find, reuse, and learn from experiences so that mistakes are not repeated and work isn't duplicated.

Knowledge is composed of the **tacit experiences**, ideas, insights, values, and judgments of individuals. It is dynamic and can only be accessed through direct collaboration and communication with experts who have the knowledge. Knowledge-management systems must provide the cultural incentives for sharing the personal experiences that have historically constituted an individual's value to a firm. Today, an individual's contribution to a firm is in the creation of new knowledge through collaboration with others and in synthesizing existing information and data.

Microsoft refers to these as knowledge assets because they represent the elements that a corporation must manage in order to ensure a dynamic, innovative, and agile organization. Without properly managing these assets, a company cannot grow effectively. Information is lost, lessons are unlearned, work is prolonged, tasks are repeated, trends go unnoticed, and completed jobs are recreated.

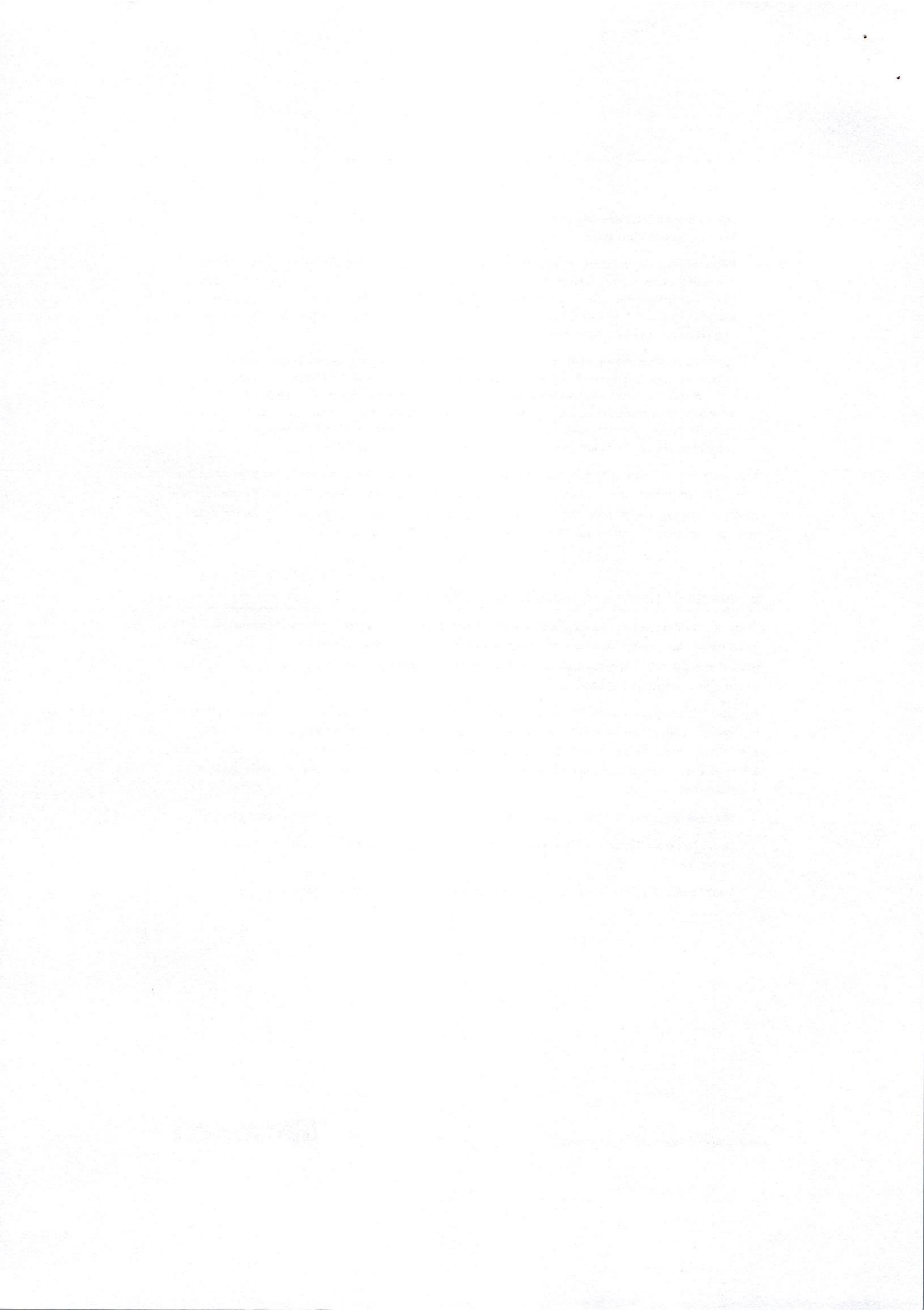## Elements of Knowledge-Management Solutions

Every organization has a unique collection of knowledge assets and distinct business problems to which those assets must be applied. Therefore every knowledge-management solution is specific to the firm for which it is designed. This section will outline the elements that must be considered when building real-world knowledge-management solutions.

Because knowledge management deals with cultural, strategic, process, and technological issues, it is important that people are provided with the proper incentives and tools to share knowledge and that solutions are designed with specific business problems in mind. By focusing planning and execution on the following three areas, organizations can ensure results-oriented KM practice where real-world strategic needs are met.

Process: Ensuring that knowledge management is aligned with specific business processes.

Organizational Dynamics: Overcoming barriers to sharing knowledge and fostering a spirit of innovation.

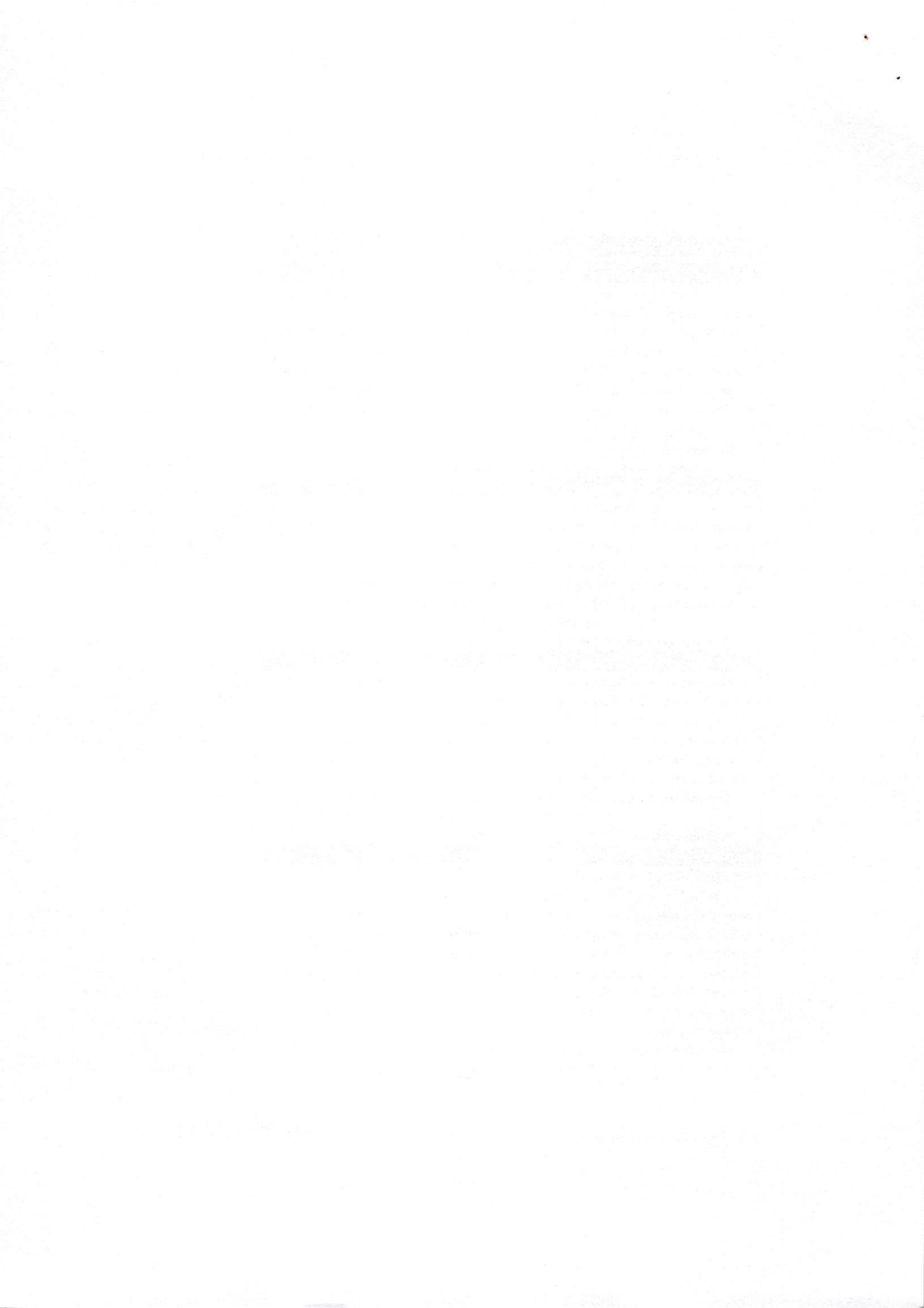**Technology**: Enabling people's knowledge-sharing activities within familiar tools.

Microsoft

Process

A knowledge-management practice begins by objectively looking at the firm's strategic strengths, weaknesses, and goals for clues to where knowledge management will have a high impact. Real knowledge-management solutions provide specific, measurable benefits in four critical areas of an organization.

Microsoft

PROCESS TARGETS FOR KNOWLEDGE MANAGEMENT

Product and Service Design and Development

Collaborating across groups of multiple disciplines is critical to ensuring that products and services are designed to meet customer needs. By capturing input from sales, marketing, engineering, design, and other groups, knowledge-management solutions provide both a methodology for sharing ideas as well as capturing best practices in design and development. By bringing together the ideas and information of each group, the project moves forward more quickly and efficiently. Divisions become aware of the work done elsewhere, reducing the duplication of work and enhancing inter-division problem solving.

Success Measures	Product success rates, cycle time, low design rework
Technology Enabler	Analysis, Collaboration, Tracking

Customer and Issue Management

Satisfied customers are the foundation of a company's continuing success. Tracking the ongoing contact with those customers—their issues, buying patterns, and expectations—is essential in developing and improving those valuable relationships. Effective knowledge-management solutions can greatly facilitate this process—from building a more effective sales force to creating a more responsive support system.

Success Measures	Customer satisfaction, needs captured in products, breadth of service coverage
Technology Enabler	Tracking, Collaboration

Business Planning

In environments where "change is a constant," businesses are challenged to constantly revise strategies within every area of the company, from the supply room to the executive suite. Companies are embracing the idea that information must be shared across levels, and that decision-making authority needs to be distributed widely. Knowledge management enables systematic access to business data, competitive information, and market demographics that support the decision making process.

Success Measures	Discovering trends, crisis response times, competitive awareness, acting on complete information
Technology Enabler	Analysis, Collaboration

Employee Management and Development

A company's single most valuable asset is its workforce. Effective knowledge-management systems can track employees' skills and competencies, facilitate performance reviews, deliver training, provide up-to-date company information, manage benefits, and improve employee knowledge and morale. Dynamic market conditions can catch a corporation without valuable skill sets across its employees. Knowledge systems should identify skill gaps as well as provide mechanisms for training employees in new skills. When certain individuals significantly outperform others, it is a sign that there may be a best practice that could be shared. This situation is an ideal target for knowledge-management focus.

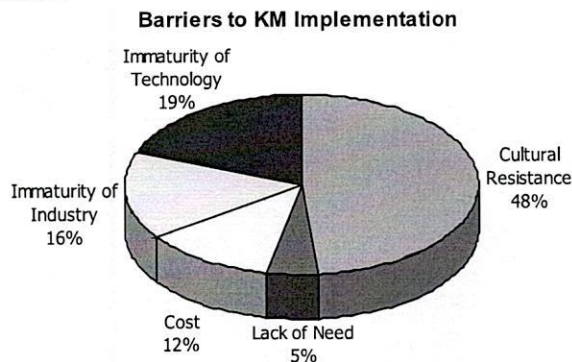|	
Success Measures	Education levels, training participation, skill alignments
Technology Enabler	Content Management, Collaboration, Tracking

Microsoft

Organizational Dynamics

Companies consistently identify cultural issues as the greatest barrier to the successful implementation of knowledge management. These cultural barriers surface in two areas:

Knowledge Sharing: People spend a great deal of time developing personal knowledge as a way of differentiating themselves in an organization. This naturally breeds an attitude of "knowledge is power". By rewarding those with the greatest knowledge, managers reinforce this attitude and foster an environment of distrust.

Fear of Innovation: Dealing with constantly shifting markets in the entrepreneurial economy requires innovative thinking and action. However, innovation is often considered to be a risky venture. People tend to gravitate towards the tried and true, which often results in missed market shifts.

Chart 1

Barriers to KM Implementation

Immaturity of Technology 19%

Immaturity of Industry 16%

Cultural Resistance 48%

Cost 12%

Lack of Need 5%

Overcoming these cultural barriers requires an organization to create an atmosphere where sharing knowledge and innovating is valued and rewarded, both implicitly and explicitly. If people feel alone or unrewarded in changing their behavior, they will not participate in the practice of knowledge management.

Implicit Strategies: Leadership needs to send a simple, clear message that sharing and innovation fostered by knowledge management are important to the organization. By funding and sponsoring high-profile projects, encouraging systemic innovation, and making agility and innovation a personal priority, management can create buy-in to the process.

Explicit Strategies: Evangelizing knowledge management and then not following up with tangible rewards can be extremely demoralizing. Companies need to adjust the ways in which employees and teams are rewarded. By focusing on people's ability to lead within their spheres of influence, create buy-in across groups, develop personal skills, and integrate other groups thinking, rewards can back implicit knowledge-management incentives.

Technology

Technology is the knowledge-management enabler. It provides the foundation for solutions that automate and centralize the sharing of knowledge and fueling of the innovative process. When choosing a set of technologies on which to build knowledge management, there are a number of critical issues.

Microsoft

First, users should not have to learn a new way of working with their software. The more integrated solutions and infrastructure are with users' software the less they will need to give up their familiar tools. The success of a knowledge-management solution is ultimately judged at the point where people interact with the organization's information. If users need to change the way they work in order to work within a knowledge-management system, the cost for training will be enormous and the motivation for a user to participate in the system will be minimal.

Second, technology should deliver only the relevant business information to users from every possible source. A byproduct of the speed at which technology changes is the fact that information and knowledge assets will always be stored in a variety of different places. The platform must support new solutions as well as integrate existing assets in a transparent fashion to users, administrators, and developers.

Third, because of the increasing mobility of knowledge workers, the technology platform must be integrated with a variety of devices from phones to laptops. The ability to synthesize and deliver focused information is useless if it cannot be accessed at the point where a decision needs to be made.

Finally, every organization has a unique collection of knowledge assets and distinct business problems to which a solution must be applied. The platform, composed of its infrastructure, applications and partner solutions, must support the wide variety of needs that arise.

Knowledge-Management Platform

Microsoft and industry partners provide their customers with a comprehensive platform of products and solutions that enable their knowledge-management practices. The attributes of the platform are designed to ensure that technology issues enable, not encumber, a corporation's efforts in this area. The Microsoft Knowledge-Management Platform has five main components:

Knowledge Desktop

Microsoft® Office provides a seamless, interactive portal into all of a corporation's knowledge assets. With the capability to connect dynamically and directly to data warehouses, collaborative messaging servers, and document systems, Microsoft Office 2000 provides an Internet-enabled set of tools for working with any knowledge asset. At the same time, users are certain that others can view work performed in Office due to the deeply integrated Web features.

Knowledge Services

The knowledge services provide centralized management of a company's core knowledge assets as well as supporting the seamless delivery and tracking of those assets.

Collaboration – Sharing Tacit Knowledge Across Time And Distance: The integrated collaborative capabilities of Microsoft Office and Microsoft Exchange Server allow users to innovate together within their familiar productivity tools. Exchange and Office include capabilities such as shared calendars and tasks, threaded discussions, easy application creation, and folder home pages to help groups collaborate. In addition, Microsoft NetMeeting® conferencing software contains tools such as white boarding, video, chat, and application-sharing that allow users not only to communicate, but also to work together on knowledge assets as they collaborate.

Content Management – Capture and Manage Explicit Experience: Content-management technologies allow people to capture, codify, and organize experiences and ideas in central repositories that enable seamless, intuitive access to an entire organization. Exchange, Microsoft Site Server, and Office integrate to provide the ability to categorize, publish, and manage documents and

content. Microsoft's knowledge-management platform also supports workflow around content, such as versioning, approvals, routing, and locking.

**Business Intelligence – Turning Business Data into Knowledge**: Being able to quickly spot trends

Content Management Case Study
The J.D. Edwards Knowledge Garden helps its consultants share best practices and find subject experts who can help them solve problems faster and more consistently. The application codifies the company's knowledge base using Site Server taxonomies and delivers personalized updates automatically based on users needs.

in financial and line of business data allows decision-makers to plan better strategies. The data-warehousing and business-intelligence features in Office and Microsoft SQL Server™ enable knowledge workers at all levels of a corporation to better understand their markets. Data Transformation Services bring together information from accounting, manufacturing and process systems to present a transparent view of an entire organization. Microsoft OLAP Services, PivotTable® dynamic views, and Office Web Components allow users to easily analyze vast amounts of data in their familiar Office or browser environment.

Capture, Search and Deliver – Bringing Knowledge to Teams and Communities: Building teams and communities across a dispersed organization is possible with portals built on personalized, cross-enterprise search and delivery technologies. Site Server 3.0 searches across databases, public folders, Web sites, and file shares. In addition, it is also able to deliver personalized information to either community portals or directly to users' desktops.

Tracking & Workflow – Capture and Enforce Best Practices: Tracking services allow companies to identify best practices by measuring successes, while workflow tools enable the creation of process-based applications to ensure that the practices are followed and measured. Exchange Folder Agents and Routing Objects combine to provide a powerful and flexible system for building workflow applications.
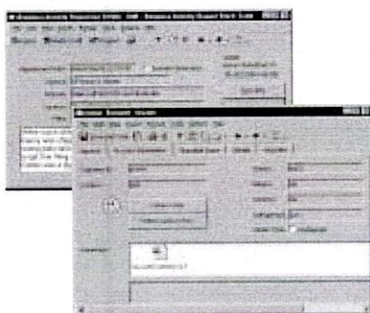
Tracking & Workflow Case Study
Snapper, Inc uses the Outlook® messaging and collaboration client and Exchange to better service their customers and capture product feedback. Integration between Exchange, SQL Server and AS/400 data allows the firm one window on all the information the salespeople need. The solution allowed Snapper to cut out middle-men and get in touch with its customer's needs.

System

Microsoft Windows NT® Server provides the foundation for a digital nervous system by providing a scalable set of services that manage all the core elements of any solution. Microsoft Windows NT Directory services provide

Microsoft

a centralized, standards-based directory for managing information about the skills and competencies of employees that is directly integrated with standards-based security. Windows NT also provides a standardized way of managing applications, through the Microsoft Management Console, which ensures an extremely low cost of ownership across the entire Microsoft family of server products.

Connected Devices

Through partnerships with telecommunications companies, the Microsoft Windows CE operating system, and advances in natural interfaces, Microsoft is providing knowledge workers with limitless access to the full resources of their organizations at anytime and in any place.

Partner Solutions

Because every business is different, Microsoft has fostered the premier partner network in the technology industry to provide businesses with the choice of a partner that understands their particular business needs. By making available a broad array of qualified partners, Microsoft ensures that companies get the best solutions for their business.

Microsoft

Conclusion

Developing a knowledge-management practice requires a well-balanced approach. Technology is a required foundation for managing knowledge assets and bringing people together in dispersed organizations. At the same time, creating incentives for sharing knowledge and having focused business goals will help avoid many of the common pitfalls of knowledge management.

While knowledge management offers cost savings, the real value is in more forward-looking and adaptive organizations. Companies will see benefits in faster product development, improved decision-making, more skilled employees, and enhanced services that better meet customer needs. These benefits will surface in measures such as cycle-time reductions, better resource returns, higher product satisfaction indexes, and increased employee education levels.

Other Resources

http://www.microsoft.com/dns

---

[i] Intellectual Capital; Thomas A. Stewart; 1997; Doubleday

[ii] Innovation and Entrepreneurship; Peter F. Drucker; HarperBusiness 1993, first published Perennial Library, 1986

[iii] U.S. Venture Capital – Industry Overview and Economics; September 1998 McKinsey & Company

Microsoft