



THE  
YANKEE GROUP  
*A Primark Company*

# *Knowledge Management: People and the Process*

Management Strategies  
Planning Service

*August 1997*



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# Executive Summary

## Knowledge Management: People and the Process

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### Introduction

In the late spring and early summer of 1997, the Yankee Group conducted extensive research on the subject of knowledge management. While we believe the *implications of knowledge management initiatives on profitability and productivity are profound, significant challenges will inhibit many organizations from realizing benefits*. The most prevalent inhibiting factor is misunderstanding the nature of knowledge management. In short, it is not an “information technology” thing, or an “HR” or a “financial” thing. Knowledge management is *all* of these things. This Report offers Yankee Group clients definitions, guidelines, and real-world examples of how organizations realize benefits from leveraging their intangible assets.

We understand that some readers may be interested exclusively in the technology implications of knowledge management. You will see that many topics associated with this subject appear to have little to do with technology. But the Yankee Group believes that if this subject is important enough for you to invest the time to read this Report, you should be aware of its general management *and* technological implications. We believe knowledge management initiatives will force organizations to reconsider their propositions of value and the responsibilities of management throughout the organization. Managers and other contributors must learn why this is true, and should explore the subject as a group.

Knowledge management may seem “esoteric,” and if you believe this, you are not alone. But “big-picture” organizational implications must not be dismissed as being beyond the scope of this subject. *Consequences of ignorance are dramatic and permanent, and potentially catastrophic from a business perspective*. You will see the term “value” mentioned often throughout our Executive Summary, and in the Report itself. “Value” in knowledge management is not defined in the traditional sense. While value is typically expressed in terms of revenue and earnings potential, the value of intangible assets is what is relevant in knowledge management. *Intangible assets typically accrue “soft” benefits that cannot be measured in traditional ways*. Intangible value domains include brand potential, copyrights, patents, image, quality, customer retention, employee attrition, competence, and many other areas that are detailed in the Report. *The primary objective of knowledge management initiatives is to convert these intangible assets into organizational capital, not to convert intangibles into traditional measures of value*.

This means that organizations need to change the way they define value. We will not attempt to define value as it relates to each firm in the Executive Summary or in the Report. But we will propose a framework for each reader to define value within the context of his or her organization. The Yankee Group believes this Executive Summary offers sufficient detail and scope to define the issues and opportunities that organizations face in implementing successful knowledge management initiatives. We propose that the Executive Summary outlines our findings, and that the Report offers proof of these conclusions.

## The Yankee Group on Knowledge Management

*Knowledge management is the art of transforming intangible assets into enterprise value. Initiatives must identify the organization's intangible assets, leverage them to ensure the most appropriate allocation of resources, efficiently connect "those who know" with "those who need to know," and as much as possible, convert personal knowledge to organizational knowledge.*

## Data, Information, Knowledge, and Value

Data, information, and knowledge have little value in and of themselves. The act of converting these intangibles into substantive value is the ultimate goal of knowledge management initiatives. Practitioners make varying distinctions between data, information, and knowledge, and some consider that reducing this to three states is an oversimplification. Vincent Barabba, in his 1995 book, *Meeting of the Minds*, breaks it down even further into data, information, intelligence, knowledge, understanding, and wisdom.

Regardless of how these terms are defined, the value proposition of an organization should be well differentiated from that of its competitors, and clear in terms of how value is defined. The knowledge management process proposes to manage the creation of value from an organization's intangible assets—value that will accrue to the organization's clients, employees, partners, and shareholders. The effort (and related cost) that an organization must expend to realize value decreases as you move from data, to information, to knowledge, as noted in Exhibit ES-1.

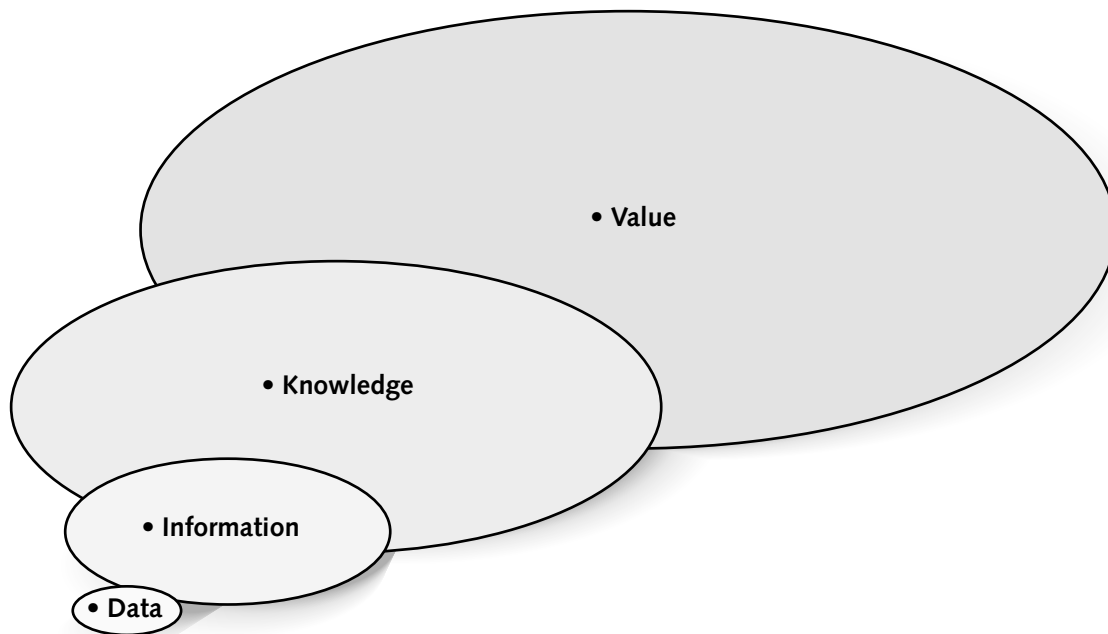
## Knowledge: Forms

Enterprise knowledge itself has three forms—tacit, explicit, and implicit. In tacit form, knowledge is not easily articulated and resides in the minds of individuals, who may or may not work for the organization directly. In many cases it cannot be readily conveyed, and instead, must be communicated through a combination of speaking, demonstration, and personal trial and error before knowledge is actually transferred. Some knowledge artifacts and details about an individual's specific

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## Exhibit ES-1 The Conversion Process

Source: *the Yankee Group, 1997*



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competence can be made explicit. Explicit knowledge exists in patents, formulas, copyrighted material, and other content to which the organization owns the rights. Implicit knowledge exists in organizational processes, workflow, culture, structure, and methods employed to run the organization, as well as in its formal interactions with customers, suppliers, regulators, the community, and among employees. As with all forms of knowledge, implicit knowledge at one point started out as tacit knowledge. But over a period of time it was made explicit, and eventually became part of the process itself by either programming it into an application or by incorporating it into the organization's workflow and methods.

## Knowledge Transfer

Experiential transfer of tacit knowledge has occurred throughout time. Military examples date back to Sun Tzu in the 6th century B.C. Farmers and skilled laborers have passed down the arts and skills of their respective trades from generation to generation in much the same way. Apprentices learn by working alongside the master of their chosen art or skill in the hope that one day that art or skill will become their own. Knowledge workers call this relationship mentoring. The common threads among these examples are the intellectual bond that forms within certain groups of people and the cultural predisposition they have toward organized

knowledge-sharing. Participants usually know, trust, and respect one another before an effective and timely transfer of knowledge occurs.

## Accountants, Behaviorists, and Technologists

The Yankee Group has found that knowledge management experts are inclined to address the subject from the perspective of either an accountant, a behaviorist, or a technologist. All perspectives are addressed by experts to some extent. But practitioners and those charged with leading knowledge management efforts will naturally view knowledge management from the perspective of their experience.

## An Expert Perspective

The Yankee Group has interviewed many experts in the field of knowledge management. Though knowledge management is not a universally understood and accepted concept, the idea that knowledge can be more effectively leveraged is embraced by all. What follows is a brief introduction to the people who have offered input to this Report. Throughout the Report we will hear from these practitioners on various subjects related to the topics discussed:

- *Dan Agan* is *Excalibur Technologies'* vice president of marketing and a frequent speaker on the subject of knowledge management.
- *Vincent Barabba* is general manager of corporate strategy and knowledge development at *General Motors Corp. (GM)* and author of the 1995 book, *Meeting of the Minds: Creating the Market-Based Enterprise*.
- *Stephen Butler* is chairman of *KPMG Peat Marwick's* worldwide operations. *Roger Siboni* is deputy chairman of KPMG and previously led its information technology, communications, and entertainment consulting practice.
- *Chris Christensen* is knowledge management service leader at *Ernst & Young*.
- *Dr. Thomas Davenport* is a professor and director of the information management program at the *University of Texas at Austin*, and is an author of several widely acclaimed articles and books on the subject of knowledge management, process re-engineering, and IT applications in business, including his recent *Process Innovation* and *Working Knowledge: How Organizations Manage What They Know*.
- *James Ekmann* is deputy associate director for the office of systems and environmental analysis of the Federal Energy Technology Center within the *Department of Energy (DOE)*. Mr. Ekmann is responsible for the DOE's performance measurement system PARIS.



- *Jeanne Harris* and *Rick Stuckey* lead Andersen Consulting's knowledge management consulting practice. *Charlie Paulk* is Andersen Consulting's chief information officer.
- *Ron Helgeson* is vice president at *Teltech Resource Network Corp.* *Dave Magnani* is practice leader of Teltech's knowledge management consulting group. Teltech provides consulting in knowledge management along with a range of primary and secondary research services. The cornerstone of Teltech's research capabilities is a network of experts covering more than 30,000 areas of science and technology.
- *Kirk Klasson* is knowledge management service leader at *Cambridge Technology Partners (CTP)*.
- *Jacques Longerstaeey* is a vice president at *J.P. Morgan* and one of the business architects of its RiskMetrics and CreditMetrics methodologies, which have been made generally available outside of the firm.
- *Carla O'Dell* is president of the *American Productivity & Quality Center (APQC)*, publisher of two recent reports and sponsor of a number of events over the past few years on the subject of knowledge management. *Peggy Odem* has led several benchmarking efforts for the APQC, and *Alan Powell* is director of information systems and services for the organization.
- *Lawrence Prusak* is the managing principal and competency leader of *IBM's* knowledge management practice. He joined IBM from Ernst & Young where he was competency leader in its knowledge management practice. Mr. Prusak is also author of the book *Knowledge in Organizations*.
- *Dr. Charles Savage* is president of *Knowledge Era Enterprises* and author of the book *Fifth Generation Management: Co-Creating Through Dynamic Teaming, Virtual Enterprise, and Knowledge Networking*.
- *Dr. Karl Erik Sveiby* is currently a visiting research fellow at *Queensland University of Technology* in Brisbane, Australia, and an author of several books on the subject of knowledge management, including his most recent title *The New Organizational Wealth: Managing and Measuring Knowledge-Based Assets*.
- *Dr. Jerry Wagner* is president of *Milagro Systems*. Over the years, Dr. Wagner has been an early innovator and entrepreneur in the fields of spreadsheet software, decision support systems, and groupware, and now in the area of knowledge management.

## Can Knowledge Be Managed?



on technological infrastructure and often substitute data and information for true knowledge.

3. *Knowledge Vision in Isolation.* Often, visionaries can recognize value in areas such as knowledge management and develop initiatives that are isolated, but quite successful.
4. *Knowledge Fad.* Some organizations are motivated to pursue knowledge management initiatives because it is the latest corporate fad.
5. *Knowledge Measurement.* The focus is financial and on measuring performance of intangible assets that are core components of the organization's proposition of value.
6. *Knowledge Differentiation.* Knowledge management innovators recognize this as a way to distinguish the organization from its competition and to create a sustainable competitive advantage.

The Yankee Group has found that organizational motivation to leverage intangible assets that combines vision, leadership, technology, differentiation, and measurement drives the most successful initiatives.

## The Yankee Conversion Continuum: Content, Context, and Constituents

The Yankee Group believes that business opportunities for true knowledge era firms are real and dramatic. But any transition strategy must take into account where we are today. To this end, the Yankee Group has developed the *Yankee Conversion Continuum* for intangible assets (see Exhibit ES-3) as a pragmatic model for leveraging intangible assets and maximizing value to the organization. Consider this framework when evaluating current initiatives, or as a guideline in deploying new initiatives. The Yankee Conversion Continuum consists of 18 focus areas within three domains: content, context, and constituents. Think of these focus areas and domains as continuous states, and not as part of a mechanistic process.

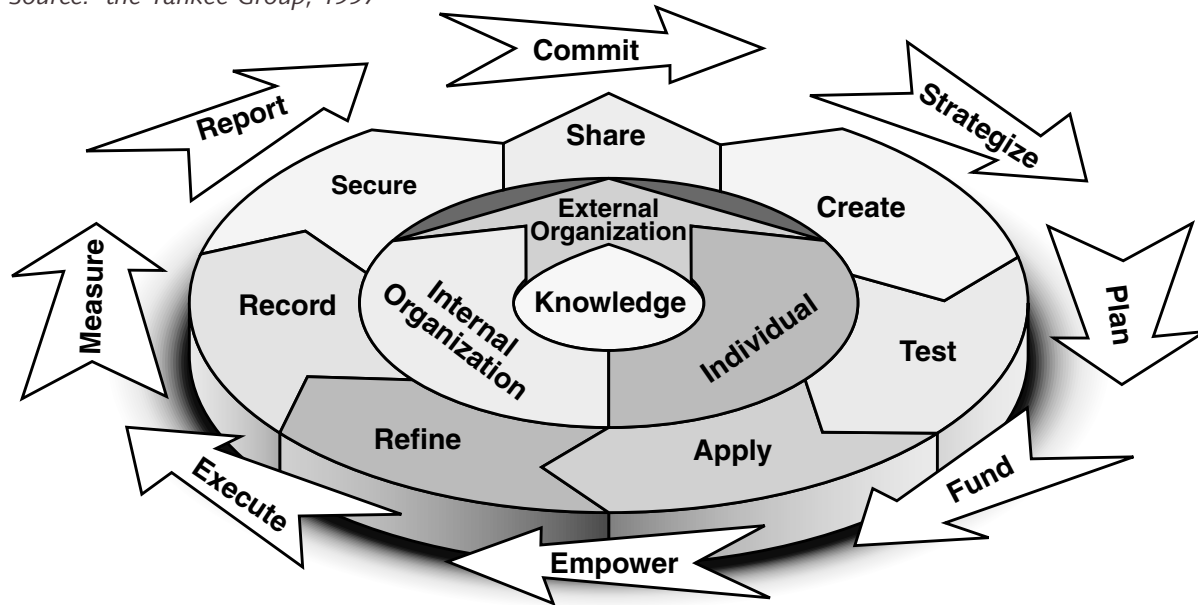
### Knowledge Awareness: Content

At the core of any intangible asset conversion initiative resides the organization's portfolio of knowledge, which can be brought to bear on demand. Knowledge can come from inside or outside the organization, and is present in the interaction with stakeholders, suppliers, partners, regulators, and the community; within paper and electronic documents; in experiences, best practices, and methodologies; within patents, formulas, briefs, and cases; within computer programs, where methods and processes have been systematized; within work processes that have not been

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**Exhibit ES-3**  
**The Yankee Conversion Continuum**

Source: the Yankee Group, 1997



explicitly defined and automated; and within the minds of individuals.

**Knowledge Facilitation: Context**

Sharing knowledge is more an art form than a scientific discipline. Tools reserved for the more explicit knowledge domains are not necessarily useful in exchanging tacit knowledge. But both types of knowledge must be communicated in knowledge management initiatives. Given this, what is actually communicated must be structured in a way that is appropriate given the context of sharing.

In knowledge management, sharing is an activity in and of itself. Knowledge assets that have been created or acquired must be tested, applied, refined, recorded, and secured, before they can be shared.

**Knowledge Leadership: Constituents**

For a successful knowledge management initiative to be carried out, value to the organization must be realized. This will not happen without the commitment of management throughout the organization. The value of knowledge must be understood and articulated in the mission of the organization. Its strategy and operational plans must include initiatives for sharing knowledge, and these initiatives must be funded. Goals and rewards must empower constituents to share. Value must be measured and reported in a useful way to justify the significant investment

required by the organization and its internal and external constituents. Only the organization's leadership can make this happen.

## The Facilitator: The Peer

Knowledge management pioneers have found peers—who encourage professionals to share what they know—to be indispensable as knowledge management advocates. The justification for devoting the services of a professional (or group of professionals, as the case may be) to facilitating the transfer of knowledge within the organization is not obvious, and it isn't consistent with the way things work in most organizations. The initial reaction of those affected is often skeptical. This is because organizations have informal mechanisms in place that manage such processes today. The knowledge peer, acting as a facilitator, is uniquely able to close gaps that exist between sources of knowledge and the internal demand for it.

## Organization

Organizations can become preoccupied with activities that offer little value, and may reach conclusions based on political motivations or other inappropriate criteria. To effectively manage intangible assets, there should be an unbiased focus on outcome and on its eventual impact. Organizations should establish organic processes and enablers that facilitate this focus. We believe knowledge era organizations will be much flatter in structure, and that employees—regardless of their position within the organization—will work directly with customers (in the broadest sense) some part of the time. From a knowledge management point of view, this allows for efficient transfer of tacit knowledge between those who make decisions and those affected by them. But most organizations are not structured in this way today.

## Organizational Issues

The Yankee Group has identified four key organizational issues that must be addressed in knowledge management initiatives:

1. *Knowledge differentiation: the silo effect.* Knowledge tends not to travel far from home, or far from those that pay for it. Knowledge management initiatives help minimize the negative impacts of silos by drawing together resources that are affected by the action to be taken, and by making one another aware of the consequences of actions, or of inaction, as the case may be.
2. *Spatial differentiation.* Proximity of constituents to one another is an important factor in knowledge management. People tend to share more readily with those around them. Technology is a tremendous enabler for minimizing the effects of spatial separation when thoughtfully employed.

3. *Adhocracy in a machine bureaucracy.* Strict hierarchical structures with rigid policies, procedures, processes, and people are a holdover from the command-and-control militaristic-style organizations that have existed for centuries. In today's service markets, rigid structures and processes are inappropriate. Knowledge organizations find that dynamic matrix-type structures work best, but organic bureaucratic hybrids are still the norm.
4. *Formal and informal forms.* The interests of the market, the leadership, the individual, and other stakeholders should be closely aligned and accurately represented in the formal organizational structures. But there are cases where a gap exists between the organization's structure and processes, and what it takes to create value. So private informal organizations are established that address these issues. An alignment of the formal and informal organizations must be established.

## Chief Knowledge Officer?

The Yankee Group proposed in a previous section that firms appoint knowledge facilitators where knowledge is to be leveraged. The organization's decision to appoint a chief knowledge officer (CKO), or to incorporate the knowledge management discipline into management's overall responsibilities, is independent of the decision to utilize knowledge peers to facilitate knowledge transfer. For organizations that appoint a CKO, the function could be placed in a number of areas structurally. The function could reside within one (or more) of the operating groups, or within a functional group such as IS, or the role could be created as a staff position reporting to the CEO. The CKO may or may not have direct reports. The choice depends on the particular situation of the organization, its history, and the level of change required. We recommend that the CEO be directly involved, and even take on double duty initially—it's that important.

## Culture

Knowledge management initiatives must consider the dynamic and often conflicting agendas of individual personalities, organizational culture, structure, strategy, goals, rewards, and the formal and informal organizations. Management must reward complementary influences, and either neutralize or eliminate the destructive personal and process influences that exist. Complementary influences include rewards and goals that measure and encourage sharing; technology and process infrastructures that are robust and consistent in their ability to facilitate knowledge transfer; an open culture that encourages the exchange based solely on content; a work environment that is open, upbeat, dynamic, stimulating, forgiving, and sufficiently flexible; and participants with positive attitudes, good communication skills, breadth and depth of appropriate knowledge, intelligence, good values, and a strong work ethic. There is extraordinary leverage to be gained when these factors are in sync and when organizations offer sufficient flexibility to address the requirements of the people and



the process.

## Standards

For intangible assets to be leveraged, standards must exist in both technology and process terms. This may seem obvious. But all organizations have standards that are routinely ignored because their usefulness has expired and management has been slow to respond. A poor choice of standards, or an apparent disconnection between standards and the work of the organization, can impede or even consume any leverage that would otherwise have been gained. Standards needn't be state-of-the-art. In fact, there is a negative relationship between innovation and wide adoption. While it is important to experiment with tomorrow's solutions today, it is just as important to understand the consequences of forcing a method upon a wide audience prematurely. When properly selected, standards help organizations leverage what is known and help workers quickly achieve high levels of productivity. Wide adoption of appropriate standards is critical to any successful knowledge management effort.

## Technology

### Technology and Knowledge Management

For technology to be efficiently leveraged, standards must be adopted that address the needs of constituents and those of the organization collectively. But excessive assertion of standards actually has the opposite effect, so a balance is required. The Yankee Group recommends that organizations consider the following ten factors when considering technology standards:

1. Employees become comfortable with the tools they use and resist change.
2. Employees will act independently if the organization does not respond within what they consider to be a reasonable time frame. It is then difficult to get them to change.
3. Technologists work to limit the number of supported platforms and applications. This may conflict with the organization's strategic plan. A connection between the two plans may not even exist. This dynamic prompted the decentralization of IS functions in the late 1980s and early 1990s.
4. Standards that are decided without buy-in from the constituents they propose to serve are at risk.
5. Unilateral decisions prompt passive/aggressive behavior where standards exist, but are ignored.
6. Organizations delay expenditures on technology because benefits are

difficult to quantify. These delays often prompt individuals and groups to set independent and inconsistent standards.

7. Standards are sometimes chosen for political reasons that have nothing to do with the business of the organization.
8. Standards (or new versions of systems) are often inadequately tested and found to be incompatible with what is used, or to insufficiently address organizational requirements.
9. Organizations may rationalize a technological tool based on one set of criteria and implement it using a completely different set of criteria.
10. Organizations make standards decisions without considering the consequences of incompatibilities with employee home environments and the standards of the external organization.

## Selected Technology Enablers

Technology is one of the key enablers allowing knowledge management initiatives to offer quick returns. Below we identify several technological tools that have been identified through Yankee Group research as key infrastructure components in knowledge management efforts:

- Groupware, the Internet, Web, extranets, and intranets.
- MBAware, business planning, market planning, forecasting, decision analysis, and simulation applications.
- Process modeling tools.
- Executive information systems (EIS), decision support systems (DSS), data visualization, and on-line analytical processing (OLAP).
- Artificial intelligence, neural networking, fuzzy logic, and natural language programming.
- Data warehousing and data mining.
- Current news awareness.
- Archival searching.
- Help desk applications.
- Document management, text retrieval, and imaging.
- Vertical and cross-industry applications.
- Audio, video, and data communications infrastructure.

## A CIO Power Vacuum?



Does it sound like the technology area is getting somewhat disempowered by all of this? Perhaps, but technology is about to become even more important to the organization than before. Organizations will step up knowledge management initiatives over the next five years, and dramatically expand the use of technology as a strategic tool. If the CIO loses the bid for CKO, has he or she lost power within the organization? The Yankee Group believes that this is not true. In fact, the CIO's responsibilities will increase, and become more clearly defined.

## **Measurement**

The Yankee Group proposes that measurement should be considered in the same manner detailed within the three layers of the Yankee Conversion Continuum for intangible assets: content, context, and constituents (see Exhibit ES-3).

### **Content: Intangible Measures**

There are several methods that help organizations determine what non-traditional assets have value and how they can be measured. The first step in the measurement process is to identify the organization's intangible assets. The content layer of the Yankee Conversion Continuum illustrates the various dimensions of an organization's intangible assets. Assets exist in competencies, methods, and intellectual property, within the minds of employees and throughout the extended organization. Organizations must identify intangibles that differentiate themselves from others in terms of the organization's value propositions. Some are easily identified and others are almost impossible to see. But until intangible assets are identified, their value will not be realized beyond the limited context of their source. And usually, they will remain part of someone's personal capital, and subject to related risks and limited leverage potential.

### **Context: A Perspective of Measure**

Once the assets have been identified, and before they can be leveraged, their value must be measured within an appropriate context. Measures include their respective ability to affect competence, perception, efficiency, growth, stability, renewal, and conversion to organizational capital as appropriate.

### **Constituents: The Management of Measurement**

The items listed above (under "Content") represent intangible assets that would be desirable to measure, and the context within which an organization might measure them. But the organization's ability to measure them is often constrained by cost and the cooperation of process participants. Participants include the organization's management, employees, stakeholders, regulators, community, partners, and clients.

Management must determine what areas justify measurement and what the appropriate measures are. They must empower constituents to cooperate in measurement. They must ensure that the value of measurement exceeds its cost. And they must ensure that the measurement technique and area measured are aligned with the organization's overall mission and strategy.

## Selected Measurement Methods

One of the most comprehensive looks at intangible assets has been created by Dr. Karl Erik Sveiby. Before his recent appointment at the Queensland University of Technology in Brisbane, Australia, Dr. Sveiby developed a concept known as the Intangible Assets Monitor that has been adopted extensively in Sweden, Denmark, and Norway. Several key measures are identified in the Intangible Assets Monitor. These business areas are measured in terms of their ability to contribute to the organization's overall growth, renewal, efficiency, and stability. Specific business areas measured include the customer's ability to enhance the organization's image, competence, and organization; sales volume per customer; client repeat orders; organization's top clients and their contribution to revenue; IT investment; research and development investment; proportions of staff that are professionals, support, and management; professional experience; average education level; turnover rate; and seniority. A few alternative measurement methods include the balanced scorecard (from Renaissance Solutions), benchmarking, brand equity valuation, business worth, colorized reporting, competency models, knowledge bank, microlending, process auditing, relative value, and subsystem performance.

We recommend that measures be applied that help express, in relative or quantitative terms, the value of content leveraged within a specific context. Today, intangible assets seem to be most accurately measured by markets, and measurement tends to be highly subjective and volatile. These measures vary from firm to firm, and often seasonally. Variance is just as important an issue when measuring intangibles as it is in traditional financial measurement. The measurement of intangible assets is a unique exercise that must be customized to fit the organization's specific situation in terms of the value of each measure and the appropriate technique to employ.

## User Cases

Examples of good knowledge-sharing practices abound, but many of the best examples are never discussed outside of the firms that practice them. Other examples are practiced in isolation without the knowledge or long-term commitment of the organization's management. In such cases, longevity of these initiatives is questionable. Many of the more successful knowledge management initiatives have institutionalized processes similar to that proposed in the Yankee Conversion Continuum.

## Index of Knowledge Management Initiatives Studied

The following are the knowledge management initiatives studied for this Report:

- *3M*, U.S., managing innovation.
- *AGRO*, U.S., improved crop yield.
- *Analog Devices*, U.S., cultural change.
- *Andersen Consulting*, U.S., Knowledge Xchange knowledge management system.
- *ASEA Brown Boveri (ABB)*, Switzerland, Sweden, outcome-based compensation.
- *Bain & Co.*, U.S., experience knowledge base.
- *Bechtel*, U.S., BecWeb.
- *Blue Cross and Blue Shield of Florida*, U.S., ModelMAX.
- *Boeing*, U.S., the 777.
- *British Petroleum (BP)*, UK, business process outsourcing (BPO).
- *Buckman Labs*, U.S., relative value.
- *Cadence Design Systems*, U.S., design process outsourcing.
- *Celemi*, Sweden, Tango and the Intangible Assets Monitor.
- *Chaparral Steel*, U.S., participatory management.
- *Chevron*, U.S., experience-sharing.
- *Coopers & Lybrand*, U.S., KnowledgeNet.
- *Cushman & Wakefield*, U.S., customized client services.
- *Deloitte & Touche*, U.S., application-specific knowledge leverage.
- *Dow Chemical*, U.S., subsystem performance.
- *Ernst & Young (E&Y)*, U.S., Center for Business Knowledge.
- *First Virtual Corp.*, U.S., the virtual organization.
- *Frito-Lay Inc.*, U.S., shelf-space leverage.
- *GM Hughes Electronics*, U.S., best business process re-engineering (BPR) practices.
- *General Motors Corp. (GM)*, U.S., the dialogue decision process.
- *Hewlett-Packard Co. (HP)*, U.S., knowledge-sharing culture.

- *Honda Motor Co.*, Japan, intra-division communication.
- *IBM*, U.S., “Think.”
- *Inova Alexandria Hospital*, U.S., Work Improvement Initiative.
- *J.P. Morgan*, U.S., RiskMetrics and CreditMetrics.
- *Kaiser Permanente*, U.S., benchmarking.
- *KPMG Peat Marwick*, U.S., KWEB and Cyber Park Avenue.
- *KREAB*, Sweden, measurement of intangible assets.
- *Lotus Development Corp.*, U.S., empowerment.
- *McKinsey & Co.*, U.S., “PD” and the Practice Olympics.
- *Monsanto*, U.S., SAP with a knowledge perspective.
- *National Semiconductor Corp.*, U.S., communities of practice.
- *National Technological University*, U.S., distance learning.
- *Open University*, UK, distance learning.
- *Otican*, Denmark, dynamic organization.
- *Outokumppu*, Finland, smelting expertise.
- *Pacific Enterprises*, U.S., PE Xchg.
- *Pfizer*, Switzerland, competency models.
- *PLS-Consult*, Denmark, mentoring.
- *Price Waterhouse*, U.S., best practices.
- *Procter & Gamble Co.*, U.S., standards.
- *Ritz-Carlton*, U.S., personalized service.
- *Sandia National Laboratories*, U.S., enterprise-wide viewing environment (EVE).
- *Skandia*, Sweden, annual report on intellectual capital.
- *Steelcase*, U.S., leadership community.
- *Teltech Resource Network*, U.S., KnowledgeScope.
- *Toyota Motor Co.*, Japan, supplier relations and crisis management.
- *U.S. Department of Energy, Federal Energy Technology Center (FETC), Performance Analysis, Rating, and Improvement System (PARIS)*.

- *US WEST*, U.S., rumor mill.
- *WM-data*, Sweden, intangible asset management.
- *The Yankee Group*, U.S., brand management and Yankee On-Line.

## Conclusion

In conclusion, Yankee Group research indicates that interest is very high on the subject of knowledge management, but an overwhelming majority of organizational leaders have only a basic understanding of the subject. We believe the implications of knowledge management on profitability and productivity are profound, and significant challenges will inhibit organizations from realizing benefits. A typical reaction to knowledge management is that the subject seems very “esoteric,” since it often involves areas of an operation that are considered “soft” and difficult to objectively quantify. We propose that the consequences of ignorance here are dramatic and potentially catastrophic from a business perspective.

Large-scale organized knowledge-sharing has been occurring for centuries. While every organization leverages intangible assets to some extent, all stand to gain from more effective initiatives. Value in knowledge management is not defined in the traditional sense. While value is typically expressed in terms of revenue and earnings potential, the value of intangible assets is what is relevant in knowledge management. Anecdotal evidence of this value is abundant, and identifying it is not a problem—but quantifying value is. Intangible assets typically accrue “soft” benefits that cannot be measured in traditional ways. Intangible value domains include brand potential, copyrights, patents, image, quality, customer retention, employee attrition, and competence. The primary objective of knowledge management initiatives is to convert these intangible assets into organizational capital, not to convert intangibles into traditional measures of value. This means that organizations must change the way they define value.

Many topics associated with knowledge management have little to do with technology. However, the Yankee Group believes organizations should be aware of both the management and technological implications. While technology offers leverage for portions of this process, technology is merely an enabler. But that said, technology has driven favorable and sometimes dramatic shifts in the cost/value relationship. We believe knowledge management initiatives will force organizations to reconsider their propositions of value, as well as the responsibilities of management throughout the organization. Managers and other contributors must learn why this is true and should explore the subject as a group. Effective initiatives tend to be expensive, since the technological, human, and measurement components cannot be implemented independently. Organizations must understand their core competencies and focus exclusively on leveraging intangible assets related to these propositions of value. The cultural aversion to the “softer” dimensions of management must be overcome for initiatives to succeed.

Knowledge management is not synonymous with information management, and distinctions exist between knowledge, information, and data. The definitions of these three items vary widely, depending on the perspective of the practitioner or the organization. But we believe that each plays an important role in successful knowledge management efforts. Personal knowledge must be “converted” to organizational capital, as much as possible. But knowledge is not the only intangible asset being leveraged through knowledge management initiatives. Commitment to share must come from the top, and rewards and goals should encourage knowledge-sharing, not competition. Mutual trust exists in environments where knowledge is exchanged freely and openly. We have found that standards are key to any successful effort. The Yankee Group believes that knowledge management is intangible asset management, and that it is *not* the next corporate fad.

## Recommendations

- Secure the commitment of management.
- Establish that the primary objective of knowledge management initiatives must be to convert intangible assets into organizational value, not to convert intangibles into traditional measures of value.
- Appoint a leader in the organization who has the authority and responsibility to leverage the organization’s intangible assets, and the understanding and ability to make it happen.
- Consider the organizational implications of executing a plan based on the Yankee Conversion Continuum for intangible assets.
- If chances for such a framework being implemented are high, then we recommend you proceed.
- If there are significant questions regarding the organization’s commitment or ability to execute, do not proceed. Unsuccessful efforts waste resources and can inhibit success at a more appropriate time.
- If this is the first knowledge management initiative, establish a pilot project that offers significant high-visibility benefits if successfully executed, and employs knowledgeable cooperative constituents.
- Appoint knowledge facilitators in areas where knowledge will be leveraged.
- Incorporate intangible asset conversion into the organization’s overall mission, strategy, and proposition of value.
- Have knowledge facilitators identify sources and uses of knowledge that are closely linked with the value proposition.
- Have facilitators establish a process for putting this knowledge into context.

- Develop business and technology plans that outline measurable objectives and progress milestones, and consider the unique characteristics of intangible assets and knowledge-sharing.
- Establish constituent goals and rewards that are consistent with sharing what is known, and take steps to ensure these goals and rewards embrace the concept.
- Execute the organization's plan and measure the results.
- Report findings, and use these results to make adjustments and to increase the organization's commitment.





# Chapter 1

## Introduction: The Knowledge Value Relationship

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### 1.1 Data, Information, Knowledge, and Value

*Thomas Davenport:* “We managed data for the last 30 years and called it information. Now we’re managing information and calling it knowledge.”

Data, information, and knowledge have little value in and of themselves. The act of converting these intangibles into substantive value is the ultimate goal of knowledge management initiatives. Practitioners make varying distinctions between data, information, and knowledge, and some feel that reducing this to three states is an oversimplification. Vincent Barabba, in his 1995 book *Meeting of the Minds*, breaks it down even further into data, information, intelligence, knowledge, understanding, and wisdom.

Regardless of how these terms are defined, the value proposition of an organization should be well differentiated from that of its competitors, and clear in terms of how value is defined and how the process of creating value for the organization’s clients, employees, partners, and stake-holders is realized. There appears to be consensus that the effort expended to realize value decreases as you move from data to knowledge (or to wisdom, if you prefer). While the distinction between tacit and explicit knowledge may be clear, the distinction between knowledge, information, and data is not. Let’s consider the story of First Lieutenant David Steeves of the United States Air Force, to highlight these distinctions.

On May 9, 1957, Lieutenant Steeves took off from Hamilton Air Force Base in California on a training mission to Selma, Alabama. He and his T-33 training jet disappeared that day without a trace. Rescue missions turned up nothing and the pilot was soon declared dead. But to everyone’s surprise, Lieutenant Steeves turned up after wandering around in the Sierra Nevada for 54 days. He hadn’t eaten for two weeks after the crash, but eventually found a cabin and provisions in Kings Canyon National Park. After several weeks he stumbled upon a couple of campers who helped him find his way back to civilization. Lieutenant Steeves became a hero.

But his hero status soon faded when the military couldn’t locate his jet. Rumors ranged from the 23-year-old pilot selling his plane to Russia, to him shipping it in pieces to a Mexican intermediary. While the Air Force never charged him with anything, the consequences of its investigation and the subsequent innuendo were

devastating. His wife left him and took their young daughter with her. He quit the military and became a commercial pilot, but never gave up hope of finding the wreckage and clearing his name. Unfortunately, that never happened. At 31, Steeves died in a plane crash.

Twelve years later, in 1977, a group of Boy Scouts hiking in Kings Canyon National Park came across a cockpit cover. The Air Force determined that the serial number on the cover matched that of Lieutenant Steeves's T-33 jet. While a cockpit cover alone could not identify the specific aircraft, its serial number did. This single piece of information changed everyone's understanding of what had actually occurred. The majority had reached an inappropriate conclusion based on insufficient data and misinformation. People thought they knew, but they didn't. This example illustrates the distinctions between knowledge, information, and data, but it also illustrates the positive and negative consequences of understanding.

The value of knowing the right answer quickly is often dramatic, but value itself is not always measurable or quantifiable. In the case of David Steeves, value is measured in terms of what was lost. We lost a war hero, a happy family, the future benefit of their collective contributions, a portion of the positive image of the Air Force, and faith in the morality of our justice process. The goal of knowledge management initiatives is to harness the collective capabilities of an organization to reach proper conclusions quickly. The result leverages the positive affects and minimizes the negative impacts of reaching inappropriate conclusions.

## 1.2 Knowledge-Sharing: Something Old and Something New

Over two thousand years ago, the Chinese warrior philosopher Sun Tzu presented a set of principles in *The Art of War* that represent the core of military strategy and tactics to this day. Sun Tzu's ancient principles included strategic assessment, doing battle, planning a siege, formation, force, "emptiness and fullness," armed struggle, adaptations, maneuvering armies, terrain, the "nine grounds," fire attack, and the use of spies. These 13 principles have been adapted to all aspects of military operations and politics, as well as to business. Many of those who understand these concepts have neither read the book nor heard of Sun Tzu. Its essence has been communicated directly from generation to generation through hands-on training provided by leaders who themselves came to understand its principles, not from reading about them, but from direct experience. Understanding the distinction between transfer of knowledge experientially and through more explicit means, is important in fully understanding and leveraging an organization's knowledge base.

## 1.3 Knowledge: Forms

Enterprise knowledge comes in three forms, and each must be appropriately leveraged in knowledge management initiatives (see Exhibit 1-1). The unique characteristics of each form—tacit, explicit, and implicit—are described in this section.

### 1.3.1 Tacit Knowledge

Tacit knowledge is not easily articulated and resides in the minds of individuals, who may or may not work for the organization directly. In many cases it cannot be articulated in any substantive way, and instead must be communicated through a combination of speaking, demonstration, and personal trial and error before knowledge can be transferred. This form of knowledge exists in a person's skills, abilities, and competence, in his or her relationships with customers, suppliers, regulators, community, and in the personal interactions among employees and other constituents. The task of empowering an organization to leverage tacit knowledge is quite different than the challenge of employing explicit or implicit knowledge. We will explore these issues in detail throughout our Report.

### 1.3.2 Explicit Knowledge

Some knowledge artifacts and details about an individual's specific competence can be made explicit. Explicit knowledge exists in patents, formulas, copyrighted material, and other content to which the organization owns the rights. It exists in explicit policies, procedures, and methods employed to run the organization. And it exists in best practices, benchmark results, and performance metrics for the organization and its various proprietary and non-proprietary processes. The incremental cost of leveraging explicit knowledge is almost inconsequential. So the value that can be derived is significant, but only if the transfer process is managed effectively.

### 1.3.3 Implicit Knowledge

Implicit knowledge exists in computerized applications, workflow, policies, procedures, culture, structure, and methods employed to run the organization, as well as in its formal interactions with customers, suppliers, regulators, the community, and among employees. As with all forms of knowledge, implicit knowledge at one point started out as tacit knowledge. But over a period of time it was made explicit, and eventually became part of the process itself by either programming it into an application or by incorporating it into the organization's workflow and methods.

## 1.4 Knowledge Transfer

Experiential transfer of tacit knowledge has occurred for hundreds, even thousands of years. As noted in the example of Sun Tzu, military examples date back to the 6th century B.C. Farmers and skilled laborers have passed down the arts and skills

## Exhibit 1-1 Forms of Knowledge

Source: *the Yankee Group, 1997*

### Tactic Knowledge

- Business Acumen
- Flying Expertise
- Language Skills
- Programming Ability
- Writing Proficiency

### Explicit Knowledge

- IRS Tax Code
- Design Patents
- Publication Copyrights
- Chemical Formulas
- Business Metrics

### Implicit Knowledge

- Organizational Culture
- ERP Applications
- Purchasing Workflow
- Space Shuttle Launch
- Underwriting Process

of their respective trades from generation to generation in much the same way. Apprentices learn by working alongside a master in the hope that one day his or her skill will become their own. Knowledge workers call this relationship “mentoring.” The common threads among these examples are the intellectual bond that forms within certain groups of people and the cultural predisposition they have toward organized knowledge-sharing. Participants usually know, trust, and respect one another before an effective and timely transfer of knowledge occurs.

## 1.5 Accountants, Behaviorists, and Technologists

The Yankee Group has found that knowledge management experts tend to address the subject from the perspective of either an accountant, a behaviorist, or a technologist. All perspectives are addressed by experts to some extent. But practitioners and those charged with leading knowledge management efforts will naturally view knowledge management from the perspective of their experience.

While knowledge management principles have been employed for centuries, the movement has been gaining momentum lately, especially in the United States. Accountants and financial experts view knowledge management from the perspective of identification, measurement, and reporting of intangible assets. Organization behaviorists look at knowledge management from a cultural and structural point of view. They usually focus on methods that optimize human and political aspects of knowledge and on influences that affect an organization’s propensity to share. Technologists tend to focus on advances that have occurred technologically in recent years, and on how these can be leveraged to enable knowledge-sharing within an organization.

# Chapter 2

## Knowledge and Management

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### 2.1 Can Knowledge Be Managed?

One of the challenges that managers face in this area is the absence of a common definition for knowledge management. Distinctions are made by experts between data, information, and knowledge, as mentioned previously, but these distinctions are often unclear. The goal of an effective program should be to facilitate the exchange of knowledge. Definitions offered in this regard are many and varied. Before we propose a definition for knowledge management, let's explore several examples that have been proposed by experts in the field:

- **Dr. Karl Erik Sveiby:** *“The art of creating value from an organization’s intangible assets.”*
- **Roger Siboni of KPMG Peat Marwick:** *“We don’t have a formal statement or definition for knowledge management, but we do have a vision. Every individual within KPMG must be able to deliver the knowledge of every other individual in the firm to every client—anytime, anywhere.”*
- **Vincent Barabba of GM:** *“Knowledge management is really the wrong term. If anybody thinks they could manage knowledge, they don’t understand what’s going on. In an era in which a person could predict what the world was going to be like with some degree of certainty, it’s conceivable that you could anticipate what you need to know and then organize to provide that information at the time you need it. That would be close, I would say, to knowledge management, and the term might be appropriate. If anybody is dealing in the world where that condition exists, they’re fortunate. I don’t know of any industry we’re in today where anybody is willing to say ‘I can anticipate with some degree of certainty what’s going to happen out there and therefore I can tell you what I need to know.’ ”*
- **Jeanne Harris of Andersen Consulting:** *“Knowledge management promotes ongoing business success through the systematic creation, acquisition, synthesis, sharing, and use of information insights and experiences.”*
- **Lawrence Prusak of IBM:** *“Knowledge itself cannot be managed. You cannot manage what’s in someone’s head. The challenge is to help firms leverage what they know. Help them use it and figure out new ways to do things faster.”*

- **James Ekman of the Department of Energy:** “Knowledge management is the conscious collection and use of information about and from an organization that represents its history, and its current and future practices. Knowledge of how the organization does business and what its products are represent important commodities that must be managed to maximize their value to the organization.”
- **Chris Christensen of Ernst & Young:** “Knowledge management includes those activities and capabilities that support a firm’s development and use of intellectual capital—capital/knowledge irrespective of whether the intended benefit is internal or external. In process model terms, these are generally under the heading of create or acquire; maintain or enhance; store/provide access; evaluate; dispose.”
- **Dr. Jerry Wagner of Milagro Systems:** “Knowledge management is a recognition that knowledge is our most important asset. The real problem with that phrase is the word ‘management,’ which is a vague word and creates confusion in this context. That said, I’m not sure there needs to be a better term. I think there will be sub-areas that form within the discipline of knowledge management. These areas will add sufficient meaning and clarity.”
- **Carla O’Dell of the American Productivity & Quality Center:** “Knowledge management is the conscious strategy of putting knowledge into action by creating context, infrastructure, and learning cycles. Organizational knowledge is valuable knowledge in action.”
- **Dan Agan of Excalibur Technologies:** “Knowledge management is taking the intellectual assets of the enterprise and leveraging them for the achievement of business goals.”
- **David Magnani of Teltech:** “We view knowledge management as the process of proactively leveraging internal and external information and knowledge to create value for the organization. But how one defines knowledge management is relatively unimportant to the central challenge of getting people to take action on knowledge and information. Only if a knowledge management initiative produces such action can it be termed a success.”
- **Kirk Klasson of Cambridge Technology Partners:** “Knowledge management is the ability to realize increasing returns from managed business competencies.”
- **Thomas H. Davenport of the University of Texas at Austin:** “The goal of the knowledge management process within an organization should be to merely facilitate the creation, distribution, and use of knowledge by others.”



## **2.2 The Yankee Group on Knowledge Management**

Knowledge management is the art of transforming intangible assets into enterprise value. Initiatives must identify the organization's intangible assets, leverage them to ensure the most appropriate allocation of resources, efficiently connect "those who know" with "those who need to know," and as much as possible, convert personal knowledge to organizational knowledge.

## **2.3 Organizational Motivation**

What motivates organizations to experiment with knowledge management initiatives? The Yankee Group has identified six primary motivations: knowledge defense, knowledge technology, knowledge vision in isolation, knowledge fad, knowledge measurement, and knowledge differentiation.

### **2.3.1 Knowledge Defense**

Some organizations have found that competitors are realizing significant leverage from their knowledge management initiatives. This is typically discovered after the competition has begun to harvest benefits that are not achievable through traditional methods. Defensive strategies may be driven by the organization's top management, but often they are identified by an isolated segment of the organization that is close to the market. If these initiatives are driven primarily from the bottom up they are not usually sustainable. This is because resources in operating units tend to focus on tactical issues. The expectation is that knowledge management initiatives are strategic in nature and the domain of top management, who will take action once they are aware. Defensive initiatives are successful and sustainable only if top management are truly committed to the task.

### **2.3.2 Knowledge Technology**

Technology has advanced to a point where significant value can be realized for a fraction of what similar efforts would have cost just a few years ago. This has prompted organizations in technology leadership positions to explore how knowledge can be leveraged throughout the organization. These initiatives usually start in the technology group and may lack support within the groups whose knowledge must ultimately be leveraged. They also tend to focus more on leveraging information than knowledge, unless support is sought early from other high-impact knowledge-oriented groups.

### **2.3.3 Knowledge Vision in Isolation**

Every organization has visionaries who can recognize value in areas such as knowledge management. If this individual or group is highly placed and well

respected within the organization, success is possible. More often than not, however, these projects end up losing momentum because they are expensive and resource-intensive. Visionaries often lose interest if the organization does not quickly recognize value. Unless value can be realized quickly and with high visibility, such efforts eventually fail.

### **2.3.4 Knowledge Fad**

When business process re-engineering (BPR) was at its pinnacle of popularity, financial reports around the world alleged initiatives offering order of magnitude productivity increases. Today we realize that the vast majority of efforts did not achieve these productivity efficiencies. Many offered only incremental improvements or none at all, and still others were simply veiled reorganizations and layoffs. Some organizations have been motivated to pursue knowledge management initiatives for similar reasons. The downside of such initiatives is that real value may never be realized. But since there is little effort expended in such cases there is little risk associated with failure, outside of devaluing the credibility of knowledge management initiatives in general.

### **2.3.5 Knowledge Measurement**

Accountants and financial experts are seeking more quantifiable measures of intangible assets, and much progress has been made in this area. Approximately 40 firms in a Swedish community of practice have been measuring and reporting on intangible assets for up to 10 years. Measurement and reporting are key components of any knowledge management initiative. The focus should be on measuring performance of intangible assets that are core components of the organization's proposition of value. These should be tied to action based on the outcome of measurement. Knowledge management initiatives that combine this focus with technology and organizational focuses are among the most successful programs.

### **2.3.6 Knowledge Differentiation**

Knowledge management innovators recognize this as a way to distinguish the organization from its competition and to create a sustainable competitive advantage. Typically, such initiatives are driven by a visionary management team and focused on organizational value.

The Yankee Group has found that no single motivation ensures success. Organizations that combine vision, leadership, technology, differentiation, and measurement increase their chances for success when implementing knowledge management initiatives.



**Rick Stuckey and Jeanne Harris of Andersen Consulting:** “We did a survey recently of chief knowledge officers and found that innovation is the leading driver of knowledge management initiatives. Many people were focused on getting better insights, or on improving productivity, or on reducing cost, or on making better decisions. Those are all good reasons for using knowledge management, but you can only cut costs so far. The upside potential through innovation is virtually limitless.”

## 2.4 Scandinavian Innovation

A significant effort has been made over the past 11 years within Scandinavian organizations in knowledge sharing and measurement of intangible assets (see Exhibit 2-1). A Swedish community of practice started work in this area when Dr. Karl Erik Sveiby published his first book, *The Knowledge Company*, in 1986. One year later, Dr. Sveiby published a second book called *Managing Knowhow*. A Swedish group of companies formed the Konrad Group in 1987 and reported its suggestions in a 1988 report known as the Konrad Report. Other Scandinavian initiatives include Sveiby’s Intellectual Assets Monitor and Skandia’s Business Navigator.

## 2.5 Knowledge Leverage: An Encore Performance

**NASA’s Saturn V Rocket.** The National Aeronautics and Space Administration (NASA) space program developed the Saturn V rocket that was successfully deployed in the Apollo space program from 1968 through 1972. The Apollo program was designed to land humans on the Moon and bring them back safely. Apollo missions 11, 12, 14, 15, 16, and 17 achieved that goal. At the time, the Saturn rockets developed at the Marshall Space Center were the most powerful space launch vehicles to date. At the height of the Saturn program, as many as 20,000 contractors

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### Exhibit 2-1 Scandinavian Innovators

Source: *the Yankee Group, 1997*

- ABB, Sweden
- Affarsvarlden, Sweden
- Angpanneforeningen, Sweden
- Awapatent, Sweden
- Celemi, Sweden
- FFNS, Sweden
- Jacobson & Windmark, Sweden
- Komrev, Sweden
- KREAB, Sweden
- Lindebergs, Sweden
- Otican, Denmark
- Outokumppu, Finland
- PLS Consult, Denmark
- Skandia, Sweden
- Telia, Sweden



were involved in various aspects of the program. Their involvement ranged from manufacturing the smallest components to static testing of complete vehicle stages. For the Marshall Center, vested with overall responsibility for the Saturn rocket, the management challenge was enormous and successful.

When the program was over, Marshall and NASA decided to dispose of most of the assets associated with the project. This included dies and other materials used to form its structural components and control systems, but it also included the designs used to build these components and systems, and other intellectual property associated with the program and its 20,000 contractors. All that was left was in the minds of the scientists, managers, and support personnel who had worked on the project and were now scattered throughout the world. Several years later, NASA considered reuse of the rocket for launching satellites, but the task of leveraging what was learned in creating the Saturn V proved impossible. The tangible and intellectual property associated with the program had been destroyed, and since the knowledge associated with its creation was not captured, there was little leverage to be gained from the Saturn V experience.

## 2.6 Lessons Learned

The Saturn V rocket project shows what can happen if an organization does not incorporate knowledge reuse as one of its strategic objectives. Doing so adds to the cost of doing business, but steps can be taken to minimize these expenses. Sometimes the circumstances surrounding an effort cannot be duplicated from scratch without the leverage offered by past experience. Year 2000 (Y2K) initiatives offer similar examples of programs that were developed 20 years ago when the economy of an extra two digits outweighed the effort of reprogramming when it would become necessary to do so. As we are painfully aware, that time has now arrived, in an environment where technical resources are scarce and system resources abundant. The problem is there are too few programmers available who have the knowledge of these antiquated programming languages, and none who understand many of the original processes that had been automated. Normally this would require only a simple re-acclimation effort, but not in this case. To further complicate the situation, the original system architects did not usually use structured programming techniques nor document programs and their interrelationships. Operations personnel didn't save copies of the source code that would have allowed people to decipher what the programs actually do and how they do it. Many of these programs must be rewritten from scratch or replaced with entire applications. When replaced with preprogrammed applications, other functions may be performed as well, but this might limit the organization's ability to differentiate its products or services from those of the competition.

The issue of knowledge management is nothing new, as we have noted. There are many organizational factors that exacerbate the problem, always relating to

competition for scarce resources. It's quite economical to consider the needs of the present exclusively. But this way of looking at things is short-sighted and detrimental to what could be realized by the organization in the long run.



## Chapter 3

# The Knowledge Organization: A New Era?

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*Charles Savage of Knowledge Era Enterprises: “As we transition from the Industrial Era to the Knowledge Era, we are discovering the real source of wealth in our companies is in our knowledge assets. It took the Industrial Era from 50 to 150 years to settle in, so things will not happen overnight. Many things had to come together to provide the basis for the Industrial Era. It was not only James Watt’s steam engine, but developments in metallurgy, metrics, pricing, transportation, and science. So if someone were to have said to a farmer at the beginning of the Industrial Revolution, ‘Are you going to implement the industrial model?’, he would have been a bit puzzled. It is no different now, when we suggest to executives trained in the Industrial Era that they are about to lead knowledge-intensive companies. Nevertheless, an excitement is building, because we realize we can now use not only peoples’ hands, but their heads, and not only their heads, but their full beings.”*

### 3.1 The Yankee Conversion Continuum: Content, Context, and Constituents

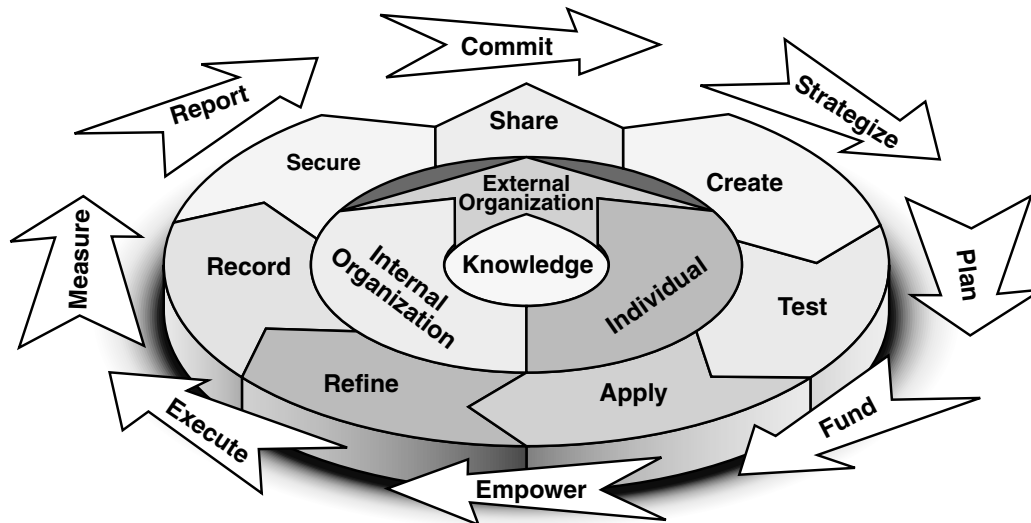
Perhaps a new era is upon us. One in which we realize the same levels of productivity improvement and leverage with organizational knowledge as we’ve seen evolve throughout the industrial age. Or perhaps, as some European firms suggest, it’s just another “Boston fad.”

The fact remains we work in an environment where the majority of leaders, managers, and individual contributors think and behave in a way that is inconsistent with the principles necessary to efficiently run a “knowledge era” organization. What saves companies from being put out of business by the order-of-magnitude efficiency improvements of such savvy competitors is that true knowledge era companies are still in the minds of theorists at this time. There are some very significant efforts going on, no doubt, but the industrial world has a long way to go before managers consistently view knowledge and other intangible assets as organizational capital and treat them as such. The Yankee Group believes that business opportunities for true knowledge era firms are real and dramatic. But any transition strategy must take into account where we are today.

To this end, the Yankee Group has developed the Yankee Conversion Continuum (see Exhibit 3-1) as a pragmatic model for leveraging intangible assets and maximizing their value to the organization. Consider this framework when evaluating current initiatives, or as a guideline in deploying new initiatives. The Yankee Conversion

### Exhibit 3-1 The Yankee Conversion Continuum

Source: the Yankee Group, 1997



Continuum consists of 18 focus areas within three domains: content, context, and constituents. Think of these focus areas and domains as continuous states, and not as parts of a mechanistic process.

#### 3.1.1 Knowledge Awareness: Content

At the core of any intangible asset conversion initiative resides the organization's portfolio of knowledge that can be brought to bear on demand. Knowledge can come from inside or outside the organization and is contained within both paper and electronic documents; in experiences, best practices, and methodologies; within patents, formulas, briefs, and cases; within computer programs, where methods and processes have been systematized; within work procedures, where tacit knowledge of methods and processes has been institutionalized over time; and within the minds of individuals.

The Yankee Group believes an effective conversion process leverages the following three categories of knowledge:

1. *Personal Knowledge: The Individual.* Personal knowledge relates to the unique history of the individual. Specific knowledge can vary as a result of factors such as functional and industry expertise, experience, longevity, successes, failures, creative abilities, logic, technical skills, communication abilities, crisis management skills, temperament, education, business acumen, intelligence, interests, aptitude, attitude, insights, wisdom, cultural

background, availability of time, interpersonal skills, values, intuition, needs, professional and personal networks, languages spoken, attention to detail, personal style, integrity, and preferences.

2. *Organizational Knowledge: The Internal Organization.* Organizational knowledge is process-oriented and represents the expertise that is embedded within the core competencies, mission, values, culture, relationships, policies, procedures, strategy, plans, patents, formulas, brands, methods, structure, workflow, and intellectual property of the organization. Workgroup knowledge relates to the unique skills and process that have been developed by the workgroup or team. These groups can be fixed groups that are static in their makeup and have a long history of expertise that has been developed and tested. Groups can also be dynamic in form and established on a project basis. In either case, process knowledge can be influenced by factors such as team dynamics, cross-functional makeup, group leadership, and various experiential factors. Functional or “horizontal” knowledge includes areas such as accounting, finance, IT, human resources, marketing, sales, and customer service. Other organizational influences include its history, culture, structure, policies, politics, workforce, mission, and values.
3. *Organizational Knowledge: The External Organization.* Organizational knowledge extends outside the organization to its clients, regulators, suppliers, strategic partners, community, governmental organizations, and other organizations with whom close working relationships have been established. The collective knowledge base of the organization’s customers and partners represents third-party expertise that is a critical source of knowledge and feedback in the life cycle of an organization’s products and services. It also represents the investment customers and partners have in working with an organization’s products, services, people, and processes; its ability to attract top-notch talent; and its image and reputation.

### 3.1.2 Knowledge Facilitation: Context

Sharing knowledge is more an art form than a scientific discipline. Tools reserved for the more explicit knowledge domains are not necessarily useful in exchanging tacit knowledge. But both types of knowledge must be communicated in knowledge management initiatives. Given this, what is actually communicated must be structured in a way that is appropriate given the context of sharing. In knowledge management, sharing is an activity in and of itself. Knowledge assets that have been created or acquired must be tested, useful, appropriate, current, communicable, secure, and available before they can be shared.

The following seven steps ensure that knowledge is placed in an appropriate context and that its sharing is facilitated:

1. *Create.* Develop, acquire, refresh, and capture all forms of knowledge content.
2. *Test.* Ensure that this knowledge is useful, appropriate, relevant, available, and communicable.
3. *Apply.* Engage, employ, verify, communicate, and utilize appropriate knowledge.
4. *Refine.* Confirm its accuracy, clarity, simplicity, relevance, currency, focus, style, and detail; minimize redundancy; consolidate; synthesize; confirm expected outcomes relative to expectations; ensure that it is timely, intuitively organized, and categorized; further refine and adapt what is known as required.
5. *Record.* Systematize, structure, link, and map knowledge bases, sources, and uses.
6. *Secure.* Ensure its confidentiality, access control, integrity, and availability.
7. *Share.* Disseminate, make available, and leverage all forms of organizational knowledge; ensure that it is consistently available to those who are able to leverage it.

### 3.1.3 Knowledge Leadership: Constituents

For a successful knowledge management initiative to be carried out, value to the organization must be realized. This will not happen without the commitment of management throughout the organization. The value of knowledge must be understood and articulated in the mission of the organization. Its strategy and operational plans must include initiatives for sharing knowledge, and for empowering the organization to actually share. Value must be measured and reported in a useful way to justify the significant investment required by the organization and its internal and external constituents. Only the organization's leadership can make this happen.

To accomplish this, the Yankee Group recommends that the organization's leadership focus resources on commitment, strategy, planning, funding, empowerment, execution, measurement, and reporting.

1. *Commit.* Establish the commitment of management, staff, and organizational resources. Knowledge-sharing must be advocated, supported, and continuously affirmed at all levels throughout the organization.
2. *Strategize.* Develop and update the organization's knowledge management strategy either independently, or as a key component of the organization's



overall mission and strategy. Focus should be on leveraging the value of knowledge. This value should be closely linked to the organization's core competencies. The strategy must consider the knowledge to be leveraged, the value of leveraging it, and the organization's ability to do so. The ultimate value of knowledge must exceed the cost of leveraging it.

3. *Plan.* Develop the organization's plan for implementing its knowledge strategy. Ensure that it is consistent with the organization's overall strategy, and that it leverages both technology and knowledge throughout the organization. Establish outcome expectations. Pay special attention to eliminating factors that negatively affect the creation and value of knowledge.
4. *Fund.* Ensure that knowledge management activities remain funded management initiatives in the areas of staffing, training, and technological infrastructure.
5. *Empower.* Ensure that employees, customers, stakeholders, partners, and the extended organization understand the benefits of knowledge-sharing, and that they feel compelled to actively participate. Ensure that knowledge differentiates your organization, as well as its products and services, and employment and investment opportunities, from other alternatives. Ensure that an effective infrastructure exists for knowledge-sharing and that it is easy to use. Ensure that goals and rewards are consistently linked to both the organization's overall strategy and its actual outcomes.
6. *Execute.* Execute all elements of the organization's knowledge management plan quickly, decisively, and thoroughly.
7. *Measure.* Quantify the value of the initiative through revenue increases, expense reductions, morale improvements, environmental progress, research breakthroughs, productivity gains, and other measures, and do so continuously. Tie results to performance measures, recognition, and compensation plans. Measure results over time and reward significant contributors to these results. Revisit prior conclusions to ensure they stand the test of time in terms of knowledge content, context, timeliness, relative value, accuracy, and durability.
8. *Report.* Report outcomes relative to expectations within the organization as well as to the organization's customers, partners, and stakeholders. Use these results to fuel future commitment and a broader adoption of knowledge-sharing initiatives throughout the organization.

## 3.2 The Knowledge Transfer Process: Facilitation

Who will act as the facilitator of knowledge-sharing activities? Senior management is responsible for ensuring that the focus areas in the leadership domain are addressed, but who is responsible for facilitating the focus of the content and context domains?

Clearly, knowledge-sharing occurs at all levels of the organization, and there must be champions whose roles are to identify sources of knowledge within a specific group or throughout the organization, and then put this knowledge into context so that it can be shared. Typically, there are five choices for such roles: the administrator, the researcher, the technologist, the manager, and the peer. Before identifying the most appropriate alternative, we will explore the strengths and weaknesses of each, considering factors such as career development, compensation, knowledge base, and the person's ability to contribute, and do so quickly.

### **3.2.1 The Administrator**

Candidates in this category tend to come from secretarial or administrative roles and may have personal relationships with constituents whose knowledge is being shared. But they have minimal personal understanding of the content itself. Education is usually high school and some college (or the equivalent). Technical skills are in administrative areas such as word processing, spreadsheets, and operation of the phone system. These individuals are available and their financial requirements are minimal. From a career development perspective, these employees would consider becoming a knowledge facilitator to be a promotion, and would see it as a long-term commitment.

### **3.2.2 The Researcher**

Candidates in this category have a librarian or administrative research background. Their education level is high, but there is minimal specialization in education and little experience outside of research. It would be a likely progression in many organizations from a "continuity of function" point of view, since people intuitively associate knowledge and research. It would be considered a lateral move from a career development point of view, since candidates in this category view knowledge management as what they do now. Longevity in the function would be continuous with that of a typical librarian or researcher. Understanding of the content is higher than that of an administrator, but not equal to the level of their constituents. Technical skills are typically higher than those of administrators in terms of ability to search databases and locate information, but lower in proficiency with word processing and spreadsheets. Candidates are available in large numbers today since downsizing, re-engineering, and proliferation of the World Wide Web (WWW) have encouraged tighter budgets and better end-user access to information. Financial requirements for researchers are moderate, but may increase as today's surplus of qualified library and research professionals is depleted.

### **3.2.3 The Technologist**

Technologist education levels are typically high, but familiarity with general business and other non-technology topics can be lacking. Understanding of the content is

similar to that of the researcher, but still not at the level of the constituents they serve. Candidates with this type of background are highly demanded and in short supply. Financial requirements for such candidates are high, given their contribution. As a first step for organizations that approach knowledge management from a technology perspective, the technical project manager may act as a knowledge facilitator initially. But for technical candidates, career progression into facilitation roles is lateral or downward. It is true that the most effective system designers become expert in the processes they are working with, and technical people sometimes shift into roles where they can leverage both their understanding of the technology and the process. But overall longevity in the position would be unpredictable for several reasons. In such cases initial satisfaction would be high, since there is great demand for their expertise and both the technology and its application might be considered “fresh” in technical terms. But the organization would not typically have a career path for them, and valuing their contribution might be difficult. Over time, compensation disconnects from that of former technical peers, their technical skills become outdated, and they will probably find themselves in a situation that is no longer satisfying and with limited mobility. Since the technologist’s skill set is highly demanded by the organization in other areas, these candidates might be best suited for transition roles.

### **3.2.4 The Manager**

Candidates in this category have usually worked in other roles throughout the organization, but their knowledge base may be dated unless they actively participated in the work of their group. This would not hold true for “working managers” who actively participate in a project with staff, or in instances where the knowledge to be shared relates to management activities. Managers have personal relationships with constituents whose knowledge is being shared, but sharing might be compromised initially because of the distance created by the former working relationship and a potential distrust. Education is typically at the highest levels. Technical skills may be dated or lacking. These individuals are available, but their financial requirements are high. From a career development perspective, they might consider this a demotion and offer only a short-term commitment—unless the role is at the level of CKO or of the manager responsible for knowledge-sharing initiatives in a large organization where there is a group managing these activities.

### **3.2.5 The Peer**

Peers have similar backgrounds in all respects to the constituents they propose to serve. The background of the peer would change depending on the group in question (so he or she could represent any of the groups above, as well as the typical knowledge professional whose knowledge must be leveraged). Their education level and focus are similar to their proposed constituents. The continuity of function is high, since their knowledge base is so close. Financial requirements match those of constituents, but are

much higher in most cases than of other alternatives. Career development may be perceived as a step backward or out of the organizational mainstream, and longevity in the function is likely to be low because of this. Technical skills will vary depending on the specialty, so it is likely that technical training would be required.

### **3.3 The Facilitator: The Peer**

From their experience, knowledge management pioneers have concluded that the peer is the best choice for encouraging professionals to openly share what they know. But let's review the need for such a facilitation role. After all, justification for devoting the services of a professional (or group of professionals) to facilitating the transfer of knowledge within the organization may not be obvious, and certainly isn't continuous with the way things work in most organizations. The initial reaction of those affected will be skeptical, mainly because organizations have informal mechanisms in place that manage such processes today.

The first step in leveraging the product of an informal knowledge market is to acknowledge its existence. This informal market drives much of the organization's output. But as we have seen in earlier discussions on tacit knowledge, sharing occurs only among those who "understand" and are trusted. This exchange is not exclusively an automated process, but technology plays an important role. The knowledge peer, acting as a facilitator, is uniquely able to close gaps that exist between sources of knowledge and the internal demand for it. The challenge facing organizations, then, is how to integrate peers into knowledge-sharing roles.

For this task we offer the following suggestions.

#### **3.3.1 Compensation**

Ensure that the compensation for such professionals is consistent with that of the constituents they serve.

#### **3.3.2 Career Advancement**

Decide if these positions will be considered a separate career path or a temporary role that members are encouraged to take on as part of the natural career progression. It is not until this path is confirmed by the progression of respected contemporaries that it will be considered viable, beyond that of a niche serving the circumstances or special interests of a minority (e.g., less motivated professionals or people on temporary leave from regular assignments for personal reasons).

### 3.3.3 Goals and Rewards

If the answer is that this will be a separate path, then suitable rewards, goals, and progression must be established and enforced. In this case, organizations must both encourage and require participation.

**Ron Helgeson of Teltech:** *“In our experience and given the nature of our business, we couldn’t manage the knowledge-exchange process with administrative generalists.”*

**Dan Agan of Excalibur Technologies:** *“Recently I was speaking with a CIO who had assumed the mantle of CKO within his organization. He was talking about how they had taken some missteps when they first explored the area of knowledge management. They had ‘knowledge managers’ whose job it was to review and categorize the material. And of course, they were determining what was rejected, what made it into various repositories, how they were annotated, and so on. Suddenly it occurred to him that these people had more power than the CEO. I don’t know that anyone has solved the entire problem of the ‘human filter.’ If you’re going to have human filters involved in some way, shape, or form, as most practitioners suggest you must, you have to somehow eliminate their bias. You must optimize the power that these people are given without limiting what everybody else gets back. You need to trust these people implicitly. This is a delicate balance.”*



## Chapter 4

# Organization

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*Three envelopes, revisited.* On his first day of work an organization's new chief executive had the awkward experience of meeting his predecessor, who had returned to remove a few personal items. As he was about to leave, the former CEO turned to his replacement and said, "I've left three numbered envelopes in the top left-hand drawer of the desk. If you find yourself in a crisis, as you undoubtedly will at some point, open one of the envelopes and its contents will guide you. Should it happen again, open another envelope, but be sure to open them in order." The two men exchanged a parting glance in silence. Since this unsolicited advice came from a source who had failed at the task, it was quickly dismissed.

For the next nine months things went quite well for the new executive. Output had increased beyond the levels of prior periods. The company had actually turned a profit for the first time in the last 18 months, and the board was pleased with the initial results. But in the next quarter, the company slipped back into the red; and by the fifth quarter, there was a deficit of \$0.12 per share. At this point, the CEO remembered the advice of his predecessor and looked in the top left drawer of his desk. He had made a point never to open that drawer and was quite surprised to see the three crisp white envelopes sitting side by side. Each envelope bore a simple Roman numeral on its face identifying its order. Without hesitation he tore open the first envelope and whispered aloud its one-word instruction—"Reorganize."

This was actually a brilliant idea, he thought. At this point he had made only a few changes and had spent most of his time becoming familiar with the organization and getting his team in place. Only a few structural changes had been made to accommodate his trusted advisers, and those changes tended only to add layers to the bureaucracy. Clearly, a reorganization was in order and that's what he did. Duplication of effort was eliminated, and areas of the organization that were understood were changed to reflect what made sense to the new management team. Areas that were not clearly understood were left alone with the instruction to cut 10% from last year's budget. Many of those loyal to the former CEO had been either demoted or let go, and those who remained were more cooperative and seemed enthusiastic about the company's new direction.

Things progressed smoothly for the next six months. But after eight months the progress that had been building appeared to stall when a large order didn't materialize. In the ninth month since the reorganization, results were down significantly for the quarter. The company announced a loss of \$0.25 per share, but the CEO was confident that things were on the cusp of turning around. Just a little more time was all that was needed. At this point the manager thought, what harm



could come from consulting the contents of envelope number two. He tore open the second envelope, which said, "Reorganize again." What a brilliant idea, he thought. At this point, he and his management team know even more about the business of the company, and could finish what they had started in the last reorganization. They would fire the sales executive, who had been one of the holdouts from the old regime. Her loyalty was questionable anyway, and this would offer an opportunity for the CEO to get involved personally in this large transaction. There was an excellent candidate for the top job in sales anyway whose loyalty would be without question. The CEO could act as interim sales vice president and help with the transaction personally. It would offer an excellent opportunity to see how the sales process works.

It appeared that the plan was a good one. The CEO stepped in to close the deal, and his assistance was invaluable. He was able to offer concessions on a few key negotiation points and the deal was closed. And within a month the results were better than ever. With the help of the largest deal in the company's history, earnings reached \$1.50 per share. The second month's results, subsequent to the latest reorganization, were \$1.65 per share and the contract negotiations for the new sales vice president were finalized. The results for the quarter, however, were terrible. The combination of severance for the departing executive, fees and signing bonuses for the new sales VP, and margin problems associated with the large order that had just shipped, caused a quarterly loss of \$2.40 per share, the largest in company history. At this point, the CEO was feeling slightly distraught. He knew a few mistakes had been made. He would even acknowledge that some of them were his fault. But the firm could easily recover. Perhaps envelope number three would offer a good suggestion.

So he opened envelope three, which advised, "Prepare three envelopes." . . .

**Lawrence Prusak of IBM:** *"Knowledge has social and economic value; knowledge sharing is asocial, apolitical, and 'aeconomical'; there is a deep possessive individualism relating to knowledge; every firm has its internal knowledge market with buyers, sellers, brokers, and pricing systems."*

**Thomas Davenport of the University of Texas at Austin:** *"Organizations need to change their structure and roles to do a better job of managing knowledge."*

**Jacques Longerstaey of J.P. Morgan:** *"Ex post, everybody at J.P. Morgan sees the benefits of offering some of our proprietary methodologies to the general public. But at the time, there were people who made the argument that it was proprietary knowledge and should not be shared. We had to convince these people of the potential benefits and implications in terms of our image, and that the market would go to whoever was first to offer a public product. The chairman accepted the idea rather quickly."*



## 4.1 Organize to Deliver Value

Anyone can make a decision. The challenge is making a decision that stands the test of time. Organizations often become preoccupied with activities that offer little value. Since value of intangible assets is often subjective, this tends to complicate the situation. Organizations take shortcuts, attributing value more to the source than the content. Value will be explored at length in the measurement section. But it's important to note here that to effectively manage intangible assets, an unbiased focus on outcome and its impact over time must be established. The primary objective of knowledge management initiatives must be to convert intangible assets into organizational value, not to convert intangibles into traditional measures of value. Organizations should establish structures that facilitate this focus.

We believe knowledge-era organizations will be much flatter in structure, and all participants will work directly with customers (in the broadest sense) some percentage of the time, regardless of the employee's position within the organization. From a knowledge management point of view, this allows for transfer of tacit knowledge between those who make decisions and those affected by them. But most organizations are not structured to address this situation today. There are several structural issues that affect knowledge management initiatives in today's organizations that we will explore here.

### 4.1.1 Knowledge Differentiation: The Silo Effect

Knowledge tends not to travel far from home, or far from those who pay for it. A functionally oriented group such as the sales organization might become exceptionally proficient at selling, but in the absence of input from other areas, the overall quality of business will deteriorate. In its most isolated form, the sales group slowly begins to focus on the overall volume of orders, and ignores such issues as appropriate delivery schedules, product availability, timely payment, order margin, legal exposure, shipping costs, and SG&A expenditures. This phenomenon is known as the "silo effect," and knowledge management initiatives help minimize the negative impacts of silos by drawing together resources that are affected by the action to be taken, and by making one another aware of the consequences of actions (or of inaction, as the case may be). Other affinity factors such as personal interests, education level, race, age, gender, personality, religion, income, intelligence, language, politics, relationships, and various socioeconomic factors tend to unite groups possessing similar indications and inclinations. Initially, more time is expended to bring these various participants up to speed on one another's interests, but in the long run, efficiencies lost are replaced with new efficiencies and value that come with understanding the "big picture."

### 4.1.2 Spatial Differentiation

Proximity of constituents to one another is also an important factor in knowledge management. Spatial separation can occur within a work area or campus, or can extend to time zones and countries. People tend to share more readily with those around them. Structures as seemingly insignificant as desks and walls can create barriers to communication. For this reason, many firms have implemented “open landscape” environments and have found that communication improves dramatically. As organizations implement outsourcing, telecommuting, decentralization, global expansion, and virtual workplace initiatives, the need to address spatial differentiation becomes even more critical. Technology is a tremendous enabler for such initiatives and can minimize many of the problems when properly employed.

### 4.1.3 Adhocracy in a Machine Bureaucracy

Most of the employment in developed countries has been in service-related fields for a number of years. But old habits die hard. Strict hierarchical structures with rigid policies, procedures, processes, and people are a holdover from the command-and-control militaristic-style organizations that have existed throughout history. In cases where markets are static and innovation unlikely, such structures may continue without consequence. But in dynamic service markets, such rigid structures are inappropriate. These days, employees work on several projects simultaneously that are often short in duration and populated with members from inside and outside the organization. The leader of one project might become a support person on the next. Knowledge organizations find that dynamic matrix-type structures work best. But most organizations end up struggling with some sort of organic bureaucratic hybrid that inhibits smooth communication, productive workflow, and effective knowledge-sharing.

### 4.1.4 Formal and Informal Forms

One of the key functions of management is to establish a formal organizational structure that effectively addresses market opportunities, or what Vincent Barabba and Gerald Zaltman refer to as the “voice of the market.” The interests of the market, the leadership, the stakeholders, and the individual should be closely aligned and accurately represented in the formal organizational structure. But there are cases where a gap exists between those requirements. So private informal organizations are established that address personal issues of security, familiarity, knowledge, trust, values, and a sense of duty to the organization and its clients. A match between the formal and informal organizations cannot be assumed. These private networks serve the needs of the organization as their constituents see them. But the interests served are often their own and could be inconsistent with the interests of the organization.

## 4.2 Make an Appointment: The Chief Knowledge Officer?

Should organizations run out and appoint a CKO? Well, that depends. If a significant component of your value proposition is based on knowledge (and even if that's not the case) you've been managing knowledge for as long as you've been in business. Let's explore a few alternative approaches in similar industries. McKinsey & Co., Inc. and Andersen Consulting don't have chief knowledge officers and they've been managing knowledge for as long as anyone—and doing a respectable job of it. In fact, McKinsey at one point promoted an executive to the virtual equivalent of that post. The company soon decided, however, that to have someone in such a role implied that it was not everyone's job to be converting personal capital to organizational capital or “practice development” (PD) in McKinsey parlance. In fact, everyone including the managing director of McKinsey worldwide has been doing just that for decades. McKinsey decided to continue to step up its knowledge management efforts, but eliminate the position.

Nevertheless, other firms in similar industries will opt for a CKO. Roger Siboni, the deputy chairman and chief operating officer of KPMG Peat Marwick, has decided to appoint a CKO over the next few months. KPMG has 76,000 professionals serving clients through 1,100 offices in 134 countries worldwide. This compares to McKinsey's 3,800 consultants in 69 offices worldwide. Through a series of consolidations in the accounting business, KPMG represents a collection of many very different, but world-class skills that could be more effectively leveraged. At a recent planning session for its next generation of leaders, KPMG's chairman Steven Butler told the audience, “We intend to grow billings and profits at extremely aggressive rates over the next five years. KPMG cannot achieve this by working harder. We can only do it by working smarter. Leveraging the collective knowledge of the firm will help drive that growth.”

The Yankee Group recommends, as one of the first steps, that firms appoint knowledge facilitators in each of the operating groups where knowledge is to be leveraged. Regardless of a firm's decision to appoint a CKO, or to incorporate the knowledge management discipline into management's overall responsibilities, the facilitation role must be implemented. Some form of facilitation is present in all knowledge management examples we've identified, and the more successful examples employ a peer in these roles, as noted previously.

For organizations that appoint a CKO, the function could be placed in a number of places structurally. The function could reside within one (or more) of the operating groups, or within a functional group such as IS, or the role could be created as a staff position reporting to the CEO. The CKO may or may not have direct reports. It depends completely upon the unique situation of the organization, its history, and what level of change is necessary. Our recommendation is that the CEO be directly involved, and even take on double duty initially—it's that important.

***Jeanne Harris of Andersen Consulting:*** “Put the right people in place to manage the content. Without knowledgeable people in place the content will not get created, it will not be managed correctly, and it will deteriorate. If users see ‘old stuff’ in there, they’ll never go back, and the system will die. For example, Andersen Consulting has knowledge managers whose job it is to keep knowledge fresh. Every organization needs someone to pass judgment on the knowledge and place it in a meaningful context to facilitate reuse. More than the knowledge itself, it is the context that makes knowledge valuable.”

## Chapter 5

# Culture

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**Cultural sensitivity.** A few years ago, a multinational French firm with several thousand employees worldwide circulated an informational video on cultural diversity to its locations worldwide. Since most employees were in France and the United States, the video's content centered on issues of interest to these groups. The most prominently featured quote was from a French manager who had fairly high visibility within France and the United States, and considerable experience in both cultures. He offered enthusiastically: "Americans brag about their financial performance and lie about their mistresses. The French lie about their financial performance and brag about their mistresses." The video was quietly removed from circulation in the United States after a few months. Not because it hadn't been popular. It had in fact been heavily demanded, although this was more for its entertainment value than for its intended purpose.

**Dr. Karl Erik Sveiby:** *"My best cultural experiences have come from Celemi's Tango knowledge business simulation exercise. It has now been run for managers all over the world. Because now I am based in Australia, I am focusing on Southeast Asia. I have run Tango with managers from Europe, America, the Nordic countries, Australia, and Southeast Asia. That's my best experience. One thing that is quite certain is that cultural differences exist. One surprise, but it shouldn't have been, is that in Southeast Asia I heard a recurring comment from executives in several countries. The comment was typically 'the Tango approach toward intangible assets seems to have been developed by a Japanese person.' I heard the same thing from Chinese managers in Beijing. They said, 'You must have had a Chinese person born in China to actually develop this because this is the Chinese way of doing business.' And they said the same thing in Singapore.*

*"The session that yielded the highest market value of all companies combined was conducted in Singapore. In Tango, we run the simulation with six companies and can calculate the total value created. So I would say that this approach toward managing intangible assets is well accepted in that part of the world. I have seen a bit of problems with it here in America, though. This is interesting because America is where I see the most interest now. I would say that in terms of cultural preparedness for the concepts behind this, America is lagging behind Europe, Australia, and the Nordic Countries. It's hard to say why. Part of it is the competitiveness that is the mind set of most managers here. To actually be able to create value with knowledge-based assets you have to be collaborative. You have to build on others' knowledge to actually gain leverage. This is the way to multiply. If you're competitive, you will probably be the one who is the best at that game and become the winner. But the total value created in that room is actually less than with collaborative behavior.*

*“This is, by the way, something that we will start a research project on at my University in Brisbane. We are doing a joint research project with Cornell on the differences in market value creation between collaborative and competitive behavior. The anecdotal evidence so far suggests that collaborative behavior creates more value in the aggregate.”*

**Kirk Klasson of Cambridge Technology Partners:** *“One thing about many knowledge-focused strategies that people can lose sight of, is that participation is often selfishly motivated. Communication is not going to be secured unless the participants realize an advantage that will accrue to them personally. It’s the notion that what’s good for the gaggle must first be good for the goose. There has to be some reciprocal arrangement on a human level between the participants that offers value.”*

**Jerry Wagner of Milagro Systems:** *“Knowledge management is a way of life. Even within our own organization, we have become more conscious of knowledge that is being carried around within our employees’ minds. It influences what we do. Knowledge management is a social and human-centered activity, and requires a conscious awareness that the information, knowledge, experience, and insights in the minds of employees are what is really important. These concepts are nothing new. But while managers have been saying the words, they’ve not recognized, acknowledged, and taken action on them in practice. This is changing, and knowledge management is driving that change.”*

## 5.1 The Culture Creature

Organizational culture is one of the most important factors affecting the adoption of knowledge management initiatives, and it is one of the most difficult to understand and influence. Culture is essentially a blending of an organization’s structure, its financial environment, and the personalities of its constituents. Successful knowledge management initiatives require a culture that embraces the free and open exchange of information and knowledge. But knowledge is a proprietary subjective intangible, which is not conducive to mandated sharing. Organizations must take steps to set goals and rewards that empower the sharing of knowledge.

But even if employees are willing to share knowledge, the cultural and technological infrastructure must exist for them to do so efficiently and appropriately. This infrastructure has three elements—facilitation that is coordinated by knowledge peers; constituent relations; and technological enablers. Technology will be discussed in a later chapter and facilitation through knowledge peers was discussed previously. The personal interactions of constituents are key to any successful effort and will be discussed briefly here.

The number of methods firms have employed over the years to address this issue are numerous. A detailed discussion is beyond the scope of this report. Some high-



impact methods include mentoring, piggybacking, apprenticeship, cross-functional training, team building exercises, extracurricular group events, and organization-wide outings.

IBM, for example, has departed from its long-standing rule of banning alcohol on company premises, and allows traditional Friday afternoon gatherings at its Tivoli Systems, Inc. subsidiary, where alcohol is part of the mix. The reason IBM tolerates such a change from its established company policy is its desire to preserve the open culture of Tivoli that encourages a free and open exchange of knowledge among employees. In fact, IBM has taken it one step further and has placed some of its other software subsidiaries under Tivoli management to see if Tivoli can share what it has learned at the management level.

## 5.2 The Influence Congruence Dynamic

*Attributed to Confucius: “He who knows and knows that he knows—he is a wise man, seek him; he who knows but knows not he knows—he is asleep, wake him; he who knows not and knows he knows not—he is a child, teach him; he who knows not and knows not he knows not—he is a fool, shun him.”*

The dynamic that is created when personalities are combined within an organization’s culture is variable, energizing, and always susceptible to both positive and negative influences that can affect the success of knowledge management initiatives. These influences can be either destructive, passive, or complementary, depending on the interaction between organizational culture and the personalities of individuals in the group. A brief description of these influences and their organizational and personal attributes is listed below.

### 5.2.1 Destructive

Destructive influences negatively affect the creation, value, and dissemination of knowledge.

Some examples of organizational factors that act as destructive influences include rewards and goals that overtly discourage knowledge-sharing; base compensation arrangements and work schedules that are considered unfair; information infrastructure that is insufficient and inconsistent in its ability to facilitate the transfer of knowledge and access to information; a culture that talks about the exchange of knowledge between parties, but does not do so; a work space that is insufficient; and a distracting work environment that is never stimulating, and is unforgiving, inflexible, and unable to accommodate the diverse skills and interests of its constituents.

Examples of interpersonal influences include a bad attitude, poor communication skills, unmotivated, inflexible, limited knowledge, closed-mindedness, insufficient

intelligence, poor value system, poor work ethic, unproductive activism, and unethical behavior.

### 5.2.2 Passive

Passive influences have little effect on knowledge creation, value, or the sharing process.

Some examples of organizational factors that act as passive influences include rewards and goals that tend to conflict with one another and neither encourage nor discourage sharing; base compensation arrangements and work schedules that are considered average; information infrastructure that is sufficient and consistent in its ability to facilitate the transfer of knowledge and access to information; a culture that expects the exchange of knowledge between parties; an adequate work space; and a neutral work environment that can be stimulating, forgiving, and flexible enough to accommodate the diverse skills and interests of constituents.

Examples of interpersonal influences include a “go with the flow” attitude; average communication skills; some internal motivation; passive/aggressive behavior; some flexibility; limited breadth and depth of knowledge; open-mindedness to some extent; average intelligence; traditional values; and a “9-to-5” work ethic.

### 5.2.3 Complementary

Complementary influences enhance knowledge value, creativity, and the sharing process.

Some examples of organizational factors that act as complementary influences include rewards and goals that measure and encourage sharing; base compensation arrangements and work schedules that are considered superior; information infrastructure that is robust and consistent in its ability to facilitate the transfer of knowledge and access to information; an open culture that encourages the exchange of knowledge between parties based solely on its value and not on factors such as position or source; a work space that is open and encourages communication among employees; and a dynamic, upbeat work environment that is intellectually stimulating, forgiving, and flexible enough to accommodate the diverse skills and interests of constituents.

Examples of interpersonal influences include a positive attitude, strong communication skills, internal motivation, flexibility, breadth and depth of knowledge, open-mindedness, high intelligence, good values, and a strong work ethic.



## 5.3 Culture and Knowledge Management

Knowledge management initiatives must consider the dynamic and often conflicting agendas of individual personalities, organizational culture, structure, strategy, goals, rewards, and the formal and informal organizations. Management must reward complementary behavior and eliminate destructive personal and process influences that exist. There is extraordinary leverage to be gained when these factors are in sync and when organizations offer sufficient flexibility to address the requirements of the people and the process.

***Rick Stuckey of Andersen Consulting:*** “The process of change and innovation is a numbers game. You must take in a large number of ideas for every one that comes out and is successful. The fact that you gather many ideas that don’t succeed should not be read as an indictment of the knowledge management system. A good company might take in 30 ideas for any one that becomes successful. You should expect failure as part of the process and learn from it.”

***Dr. Charles Savage of Knowledge Era Enterprises:*** “It is only natural that we should run into resistance to these developments around knowledge, especially as people do not readily understand what is involved. In fact, the antibodies against change are ever present. Change is resisted because it disturbs the comfort of the existing order. Nevertheless, some of the people who are resisters often understand better than the naive disciples. So it’s important to listen to why they are resisting, because they often take it more seriously than some people who just go along with the crowd, and they know the keys to the change.”



# Chapter 6

## Standards

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***Rick Stuckey and Jeanne Harris of Andersen Consulting:** “One of the key success factors in knowledge management is standardization. Each department must not be allowed to choose its own knowledge management system. There must be a consistent set of standards, operations, policies, and procedures, so that users can concentrate on content and not making the different systems work together. You don’t want to have one department doing knowledge management on Netscape, another doing it on Microsoft, and a third doing it on Notes. They will not be able to share the content effectively. Our clients are trying to get synergy across organizations that haven’t worked together very well in the past, and incompatible knowledge management systems exacerbate the problem. Departments such as HR, Sales, Marketing, and Production need to be connected, not separated. To really serve a customer, then, you need to cut through these functional silos. Knowledge management is an excellent way to do that, if you don’t create technical, cultural, and operational impediments.”*

### 6.1 The Standards/Leverage Dichotomy

For leverage to occur there must be standards in both technology and process terms. But a poor choice of standards, or an apparent disconnection between standards and the work of the organization, can impede or reverse any leverage that could otherwise have been gained through their use. Standards needn’t be state-of-the-art either. In fact, there is a negative relationship between innovation and wide adoption, since these two conditions tend to be mutually exclusive phases in the marketing cycle. While it is important to experiment with tomorrow’s solutions to today’s business problems, it is just as important to understand the consequences of forcing a method upon a wide audience before its time.

The consequences of forcing a particularly inappropriate or premature standard are twofold. The process must “learn” to use the new method, affecting collective productivity in a dramatic way. And if it fails, the barrier to adoption once the method can be adopted is high. The subsequent capital that must be expended to overcome this barrier, combined with lost productivity that would have been realized had it been adopted on time, combined with lost productivity on the initial effort, combined with the opportunity cost of the aggregate, is typically enormous and unmeasurable.

## 6.2 Flexibility

Standards must be consistently applied throughout an organization for them to be effective and leveragable. But it is important to introduce a measure of flexibility in the process as well. Organizations often continue to apply methods long after their purpose has expired. In the dynamic business environment of high technology, for example, the product life cycles are often expressed in terms of months, not years. So participants cannot afford to be preoccupied with time-consuming life cycle planning and lengthy experimentation, testing, and approval processes. Standards for “look and feel” of the product, however, might be appropriate so that customers can easily shift from version to version of the company’s products with minimal switching costs. High-performance teams utilizing proprietary rapid development processes might be appropriate in this example.

## 6.3 Employee Cycles

Organizations must address today’s rapid product cycles at a time when turnover among employees is extremely high. In most cases, the casual relationship organizations maintain with their employees is intentional. Layoffs, downsizing, and elimination of expensive programs that encouraged lifelong employment are some causes of the present employment dynamic. Often the first programs to be eliminated during many of these business changes were training and education programs. Many of these programs were responsible for formally transferring knowledge of standards and for enforcing their consistent use.

## 6.4 Standards and Knowledge Management

Standards are an integral part of any knowledge management effort, and careful analysis and selection requires a coordinated multidiscipline effort. When properly selected, they help organizations leverage what is known and help workers quickly achieve high levels of productivity. Wide adoption of appropriate standards is critical to any successful knowledge management effort.

*Roger Siboni of KPMG Peat Marwick: “The less translation that occurs within someone’s head, the better. There is a 17% turnover in our business every year. That means every five years we lose most of our knowledge. A knowledge management system must capture this personal knowledge and translate it into institutional knowledge.”*

# Chapter 7

## Technology

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**Thomas Davenport:** “It’s relatively easy to put the technological infrastructure in place, particularly since you can use it for other things. It is much more difficult to establish a culture that values knowledge in the first place, and then shares and uses it. Technology is the easy part; it is necessary but not sufficient.”

**Dan Agan of Excalibur Technologies:** “Filtering has advanced to a point where we can search on images. Biometrics technology capability allows us to search for a picture of a sunset, or an individual, or a fingerprint. People are really starting to understand the three legs on the stool, which are the people, the processes, and the technology. RetrievalWare is a crucial enabling technology for knowledge management, but it’s not ‘it’ by itself. And good face-to-face knowledge transfer among people is good knowledge management practice, but it’s not ‘it’ by itself.”

**Dr. Jerry Wagner of Milagro Systems:** “We’ve coined the term ‘knowledge networks’ as an area under knowledge management where our K.net product fits. Data warehousing and data mining occupy another technology category. The behavioral social science category is another sub-area within knowledge management.”

**Charlie Paulk of Andersen Consulting:** “The term ‘knowledge management’ may be relatively new, but Andersen Consulting and, I believe, many other companies, have been doing things to manage knowledge for many years now. I’ve been with Andersen Consulting for 33 years and we’ve been managing knowledge in one way or another from almost day one. The difference is the technology enabler today.”

### 7.1 The People/Process Relationship

The year 1984 came and went without the intrusion of George Orwell’s “Big Brother.” And the next five years will likely pass without the likes of HAL, as suggested in *2001: A Space Odyssey*. Despite our fear and fascination with artificial intelligence, society is still far from a world in which computers can think and reason as humans do. We have established that people must know, trust, and respect one another for an effective and timely transfer of knowledge to occur. And we’ve proposed that technology has reached the evolutionary stage where non-technologists can effectively transfer what they know into a system capable of automating what is explicitly understood. But this contributes little toward facilitating an effective interactive transfer for the type of dynamic situations that occur every day—those situations that seem to never take on the same form as in the

past. These management dilemmas can and should benefit from technology, but must do so without being inhibited by it.

That said, we must strive toward a balance between technology and the very personal aspects of business. In his 1982 book *Megatrends*, John Naisbitt referred to this phenomenon as the balance between high-tech and “high touch,” where for every significant technological advance there is an equally significant human response—or the technology is rejected. Over the past five years, we have experienced significant advances in technology that benefit knowledge-sharing. But unless we recognize the need to temper the harsh intrusion of such rapid advances into our working worlds, workers themselves will erect barriers that shield them from the consequences (both good and bad) of such changes. For these reasons, we conclude that companies proposing to leverage tacit knowledge as tacit knowledge, must do so with the services of a facilitator. This knowledge intermediary will help organizations manage the continuous process of connecting individual sources of knowledge with situations that demand their specific expertise, and do so in a non-intrusive collaborative way in which everyone benefits from the exchange. This exchange should leverage technology.

## 7.2 Experiential Knowledge Transfer and Technology

What we do has not changed substantially because of the introduction of technology. But technology certainly allows us to do what we do more efficiently. The most important aspect of any systems development initiative is the systems analysis phase, in which the processes and their interdependencies are identified and explored. This is where the transfer of tacit knowledge takes place from experts, to technologists, to systems. As much as 80% of the systems analyst’s (or system architect’s, in the current vernacular) time is spent reaching an understanding of what needs to be done, and only 20% of the time is actually spent doing it—or “coding it,” as the case may be. Speaking of coding, that has changed quite a bit over the years. In the early days (in computer terms, 1978), we wrote programs in machine and assembler languages in which computer registers had to be manipulated to get results. We then moved onto third-generation languages such as COBOL, FORTRAN, and Pascal, and then onto application development tools and fourth-generation languages. But now there has been a shift toward natural language and process modeling tools (see Exhibit 7-1). These tools allow people with expertise in the process to shape the system to their specifications, using their “language.” This eliminates the requirement of “bringing a techie up to speed” or “dragging the information out of them,” depending on your perspective.

There are many processes that cannot be made explicit and must remain in the minds of those that understand. These subjects must be identified and linked through technology so sources and uses of knowledge are able to communicate quickly and efficiently. Experts can now model processes and construct systems much more

**Exhibit 7-1**  
**Selected Technology Enablers: Infrastructure**

Source: the Yankee Group, 1997

<b>Groupware, the Internet, the Web, extranets, and intranets</b>	Lotus, Netscape, Novell, and Microsoft
<b>MBAware, business planning, market planning, forecasting, decision, and simulation</b>	Alphametrics, AustinSOFT, Avantos, B-Plan, Business Forecast Systems, Business Resource Software, CAC Research, Data Fellows, JIAN, Jitcons, KnowledgePointe, Milagro Systems, Palo Alto Software, Planet Corp., Powersim, Roundlake Publishing, Smart Software, SoftKey International
<b>Process modeling</b>	ABC, Advantage Technology, AT&T, Baan, CACI, CAP Volmac, Cincom, Clear Software, Future Tech, High Performance Systems, IDS Professor Scheer, Imagine That, Interface Technology, KBSI, Meta Software, Ptech, SAP, MCI Systemhouse, Sterling Key Workgroups, TEI, Visio
<b>EIS, DSS, OLAP, and data visualization</b>	Pilot Software, SAS, BBN, Decision Architects, Milagro Systems
<b>Artificial intelligence, neural networking, fuzzy logic, and natural language</b>	Intellicorp, Inference, Advanced Software Applications, California Scientific, HNC Software, IBM Corp., Nestor, Inc., Neural Computer Sciences, Neuralware, SPSS, Trajecta, Ward Systems
<b>Data warehousing and data mining</b>	Oracle, Sybase, Informix, Red Brick
<b>Current news awareness</b>	Individual, Desktop Data, Dow Jones News Retrieval, MAID
<b>Archival searching</b>	Knight Ridder Information, Lexus/Nexus, Dow Jones
<b>Help desk</b>	Clarify, Remedy, Vantive, McAfee, ServiceWare
<b>Document management, text retrieval, imaging</b>	Excalibur Technology, Fulcrum Technologies, Verity, Documentum, FileNet, Unysis, IBM
<b>Vertical applications</b>	SAP, Alltel Information Services, Policy Management Systems, Bisys, Systems and Computer Technology (S&CT), Electronic Data Systems (EDS), Computer Sciences Corp. (CSC)
<b>Cross-industry applications</b>	Peoplesoft, GEAC, Oracle, SAP, Lawson, Computer Associates (CA), SAS
<b>Communications infrastructure</b>	BBN, AT&T, MCI
<b>Videoconferencing</b>	PictureTel, Virtual Corp.

quickly and accurately. This is why knowledge management has finally reached a point where technology can be such a tremendous enabler. It also holds true for tacit forms of knowledge. It's possible for a Web browser to study where you "surf" and understand the subjects contained within those sites visited. It can then make recommendations regarding other sites you might find interesting. This is just the beginning. But we must be careful. Technologically, our inclination is to start doing what we can do before we determine how that relates to the firm's proposition of value. Enterprise value must be the exclusive focus of technology efforts.

### 7.3 A CIO Power Vacuum?

Does it sound as though the technology area is getting somewhat disempowered by all of this? Perhaps, but technology is about to become even more important to the organization than it has ever been. Because experts can provide their input directly, finding qualified experts who know technology and the business area will soon be unnecessary. This has been one of the most significant challenges in staffing IT departments. The constant power struggle over where these people belong (in the operating unit or in the technology operation) will end.

As we discussed previously, knowledge peers will help coordinate this exchange of knowledge and will be the primary interface in these endeavors. This shift makes it easier to staff positions, and at a lower cost. It occurs at a time when there is a shortage of qualified people in many technology areas. Even the most demanded technologies of today are much easier to learn and deploy. This combination of factors will prompt organizations to step up knowledge management initiatives over the next five years, and dramatically expand the use of technology as a strategic tool. If the CIO loses the bid for CKO, has he or she lost power within the organization? The Yankee Group believes not. In fact, the CIO's responsibilities will increase and become more clearly defined.

### 7.4 Technology Leverage: Skills Leverage

For technology to be efficiently leveraged, standards must be adopted that address the needs of constituents and those of the organization collectively. But excessive assertion of standards actually has the opposite effect, so a balance is required. The Yankee Group recommends that organizations consider the following 10 factors when considering technology standards:

1. Employees become comfortable with the tools they use and will resist change.
2. Employees will act independently if the organization does not respond within what they consider to be a reasonable time frame. It is then difficult to get them to change.



3. Technologists work to limit the number of supported platforms and applications. This may conflict with the organization's strategic plan. A connection between the two plans may not even exist. This dynamic prompted the decentralization of IS functions in the late 1980s and early 1990s.
4. Standards that are decided without buy-in from the constituents they propose to serve are at risk.
5. Unilateral decisions prompt passive/aggressive behavior where standards exist, but are ignored.
6. Organizations delay expenditures on technology since benefits are difficult to quantify. These delays often prompt individuals and groups to set independent and inconsistent standards.
7. Standards are sometimes chosen for political reasons that have nothing to do with the business of the organization.
8. Standards (or new versions of systems) are often inadequately tested and found to be incompatible with what is used, or to insufficiently address organizational requirements.
9. Organizations may rationalize a technological tool based on one set of criteria and implement it using a completely different set of criteria.
10. Organizations make standards decisions without considering the consequences of incompatibilities with employee home environments and the standards of the external organization.

One of the most widely adopted and advanced knowledge-sharing tools is Lotus Notes. But in many institutions Notes is not being used to provide an interactive exchange of knowledge—rather, it is being used as an E-mail system or as a document database. Many organizations implement state-of-the-art technologies only to find that they are being used in ways that add no more value to the organization than that of the process they replaced. And often, if you factor in training and other switching costs, there has been a significant net loss of organizational capital. These factors fuel an environment that encourages competition and does not foster productive working relationships. For knowledge management initiatives to succeed, the objective of IT must be to align its strategy with that of the organization's overall strategy. Only then will the IT strategy facilitate the process of knowledge-sharing and leverage. Exhibit 7-1 identifies several key technology infrastructure enablers.

**Roger Siboni of KPMG Peat Marwick:** *“Harvard is currently doing a case on our use of knowledge management, and the business question (they always have to end with a business question) is: Given the objectives and the value we can derive from*

*knowledge management, combined with the risks of using a variety of leading-edge technologies, what is the balance? We need to ask ourselves how much 'bleeding-edge' technology can be used to get what level of incremental benefit? What's the trade-off between safety and that incremental knowledge? Our technology plan looks out five years, and we're betting on a number of new technologies that each have an unknown probability of success in the market. KPMG is betting on a lot of risky technologies that have to 'hit.' We have considered various scenarios of failure and degrees of failure. The scenarios range from 'Can we get the cultural transformation that we need to make the investment worth while?' to 'Is the first release of software going to be scalable to 25,000 users in the United States and another 50,000 worldwide?' The business risk must be offset by the value of leveraging that incremental knowledge. This is an important question."*

## Chapter 8

# Measurement

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**Lawrence Prusak of IBM:** “Any measurement, no matter how crude, is valuable. But American managers tend to be so focused on measures that it could get in the way. Try to measure what you can, but focus on activities that add value.”

**Chris Christensen of Ernst & Young:** “While knowledge can be effectively quantified and reported, the cost of doing so would likely exceed its value. Financial reporting is difficult enough as it is. We should not further complicate the process. For these reasons I do not believe measurement and reporting initiatives will be adopted.”

**Thomas Davenport of the University of Texas at Austin:** “Our accounting system does not sufficiently measure knowledge assets and it is unlikely that the system is going to change anytime soon. But I don’t think it matters all that much. One could argue that the world already has a pretty good system for valuing knowledge in the stock market. But it is true that book value does not accurately represent value.”

**James Ekman of the DOE:** “Knowledge should be quantified and reported to the extent that it is essential and meaningful. The objective of the DOE’s PARIS initiative is to measure and report outcomes of our activities over time, relative to plan. As a federal agency, our product is often knowledge itself. At the DOE, it could be cost-effective technologies that allow U.S. citizens to breathe cleaner air and reduce related health care expenditures, or knowledge of how something was or was not created by federal funding or intervention, and how that something was or was not transferred to the public, and the net effect of that transfer.”

**Dr. Jerry Wagner of Milagro Systems:** “I don’t think it’s important to measure knowledge as a balance sheet issue as Skandia is attempting to do. The attitude and recognition that knowledge is our most important asset is the real issue. Recognition and awareness of this is what will create organizational change and business change, not the reporting aspects.”

**Charlie Paulk of Andersen Consulting:** “We don’t spend much time quantifying knowledge as an asset. I’m not sure knowledge is quantifiable. There is nothing new about the fact that knowledge exists in an organization. We haven’t tried to quantify it in the last hundred years. I’m not sure spending time on that today is of a lot of value. The more pertinent comment is that unless knowledge is applied it has no value. So what we are trying to do is ensure that the knowledge that exists is applied in a way that has value to our clients. Knowledge should not reside

*exclusively in the head of a person or in a file drawer, in working papers, or whatever. I think the more relevant point is how do you get it applied to business processes to increase the value of what you're doing."*

**Roger Siboni of KPMG Peat Marwick:** *"Measurement of intangible assets is really nothing new. You don't look at a biotech company and value it in terms of its balance sheet. At least not in the traditional way. You look for its pipeline of patented or in-process patented products, and value its intangible property. Its patents are just formulas. You value a biotech company by the depth, the sequencing, the richness, and time-to-market of its intellectual assets. You could say the same thing about a software company. Knowledge is just another form of intangible. Clearly, the biotech companies, the chip companies, and the software companies are doing it now. Intel and Chiron are good examples. EDS is doing it by valuing its contracts and valuing its knowledge stores."*

## 8.1 Intangible Assets, Knowledge, and Organizational Capital

Financial reports of companies often contain the statement "people are our most important asset," but the financial statements themselves do not attempt to quantify people as assets. Actually, people are just one of a number of intangible organizational assets. These intangible assets are what really represent the organization's collection of "knowledge assets." This knowledge exists in the minds of employees in the form of unique skills and expertise; in the minds of customers, partners, and other stakeholders as quality, brand, and investment options; and in the organization as proprietary methods and processes. Perhaps a more appropriate statement would be "intangible assets are our most important assets."

If constituents continue to represent the interests of the organization, their knowledge remains part of the organization's overall base of knowledge. If not, it disappears and often becomes a component of someone else's. But some companies and industries have identical book and market valuations, or market valuations lower than book value even when a company is in "play." Does this mean that the intangible assets have no (or negative) value? Perhaps markets assume a certain level of baseline intangible assets, with value or negative value attributed to the organization's "intangible asset gap." This is a subject of profound consequence and debate, and we will only touch upon it here. Please consult the "Related Reading" section (Appendix A) for some excellent recent books on this subject by Karl Erik Sveiby, Thomas Stewart, Leif Edvinsson, and Annie Brooking.

A majority of organizations do not recognize what constitutes intangible assets (or knowledge assets), let alone measure them. If you have trouble understanding why, stand before a group of professionals and ask if anyone knows what is actually meant by knowledge. One day we will all see a room full of enthusiastic hands

waving in response to this question. But today this does not happen even with groups of knowledge-savvy professionals. So the answer is obvious, and we offer it in the form of two questions:

- If we don't know what knowledge is, how can we measure intangible assets?
- If we cannot measure either knowledge or intangible assets, then how can we value either?

The truth is, we measure value based on its worth to others. This value fluctuates widely and over time stabilizes at a point that is close to its true value; it is how financial markets value knowledge. Equity valuations in the U.S. stock market are typically more than six times the book value of assets, according to some estimates. But as their volatility demonstrates, value cannot be easily determined, even by utilizing sophisticated valuation techniques. Value is determined by what someone is willing to pay for it.

## 8.2 Another Sports Analogy

To properly value an intangible asset, all of its potential uses must be considered. The example of professional athletes demonstrates this nicely. Does the salary of one player that is 50 times that of another player indicate that the first player's ability exceeds that of the other by 50 times? That's hardly realistic. Rather, there is a limited supply of superstars that may be two or three times more competent than their peers. Since a fixed number of positions must be filled, increasing the competence level at one of these positions can dramatically affect the outcome. While there is some entertainment value in a close match, a team whose record only contains close matches has little value. Those players who contribute a level of competence beyond the average (which in many venues is extraordinarily high) are compensated in a disproportionate manner.

There are other factors that contribute to value in this context beyond "winning," but they are usually related to winning. Clearly, a player who is able to lead and inspire other players can improve the overall level of team performance. A superstar who is also intelligent, articulate, and congenial, and has values that closely match those of his or her community, will improve the overall image of the team and its public relations and sponsorship potential. Some players have value in these areas and only average competence, but their presence fills seats, sells merchandise, and signs advertisers, so their contribution is nonetheless valuable. While these attributes present a challenge in terms of measurement, some measures can be made. These same measures apply to any organization in which intangible measures such as knowledge and ability are key factors in the value equation.

## 8.3 Measurement: Content, Context, and Constituents

The Yankee Group proposes that measurement should be considered in the same manner detailed within the three layers of the Yankee Conversion Continuum: content, context, and constituents. We will consider these three areas below as they relate to the subject of measurement.

### 8.3.1 Content: Intangible Measures

Several methods exist that help organizations determine what non-traditional assets have value and how they can be measured. The first step in the measurement process is to identify the organization's intangible assets. The content layer of the Yankee Conversion Continuum illustrates the various dimensions of an organization's intangible assets. Assets exist in competencies, methods, and intellectual property, within the minds of employees and throughout the extended organization. It's important to note that assets vary widely by industry and by firm within an industry. Organizations must identify intangibles that differentiate themselves from others in terms of the organization's value propositions. Some are easily identified and others are almost impossible to see. But until intangible assets are identified, their value will not be realized outside of the limited context of their source. And usually, they will remain part of someone's personal capital, subject to related risks and limited leverage potential.

What follows is a brief description of the intangible asset content areas that various techniques propose to measure:

1. *Personal knowledge.* The organization's skills and expertise in functional areas such as sales, marketing, accounting, finance, IT, research and development, human resources, and other industry-specific areas.
2. *Methods.* Core competencies represented in methodologies, processes, and procedures that are consistently applied on a regular basis in the normal course of business. These methods often represent key differentiators in the organization's value proposition.
3. *Intellectual property.* Intellectual property exists in many of the methods noted above, but is also contained in patents, brands, and various forms of published material. Intellectual property is recognized by the courts as the property of the organization either forever or for a specific period of time. Since this is one of the more quantifiable intangible assets, litigation is common.
4. *External organization.* Knowledge of the organization's clients, and competitors, the government and regulatory environment, the community, and strategic partners.

### 8.3.2 Context: A Perspective of Measure

Once the assets have been identified, and before they can be leveraged, their value must be measured within an appropriate context. Measures include their respective ability to affect perception, efficiency, growth, stability, renewal, and conversion to organizational capital as appropriate.

The following is a brief description of these contextual measures relating to intangible assets:

1. *Competence.* The organization's ability to provide consistently superior skills and expertise in the content areas noted above, as well as competence in management and leadership areas such as short- and long-term organizational vision; creation of innovative new ideas; ability to make timely decisions and reach accurate conclusions; ability to motivate and inspire the workforce to convert the vision, mission, and values of management to a set shared by the entire organization; and ability to distinguish between the time to exercise resolve and the time to be flexible.
2. *Perception.* The organization's perceived image and reputation are influenced by factors such as the quality of its products, services, and support; its ability to offer stockholders consistent and predictable earnings; its ability to attract, retain, and compensate its employees fairly; its sensitivity to the environment and to the community; its long history of providing products and services to customers at a superior value; and its sensitivity to the needs of its partners and their unique requirements.
3. *Efficiency.* The organization's ability to provide value to its constituents efficiently, quickly, and with sufficiently high margins to offer investors earnings that exceed those of other investment alternatives.
4. *Growth.* The organization's ability to consistently deliver increasing market share, quality, product functionality, revenue, profits, and new clients.
5. *Stability.* The organization's ability to retain clients, partners, and employees, offering predictable improvements in value and results consistently year after year.
6. *Renewal.* The organization's ability to continuously reinvent itself, as required over time, as market and resource dynamics continuously change.
7. *Conversion.* The organization's ability to convert personal capital into organizational capital.



### 8.3.3 Constituents: The Management of Measurement

The items listed above represent intangible assets that would be desirable to measure, and the context within which an organization might measure them. But the organization's ability to measure them is often constrained by cost and the cooperation of process participants. Participants include the organization's management, employees, stakeholders, regulators, community, partners, and clients.

Management must determine which areas justify measurement and what the appropriate measures are. They must empower constituents to cooperate in measurement. They must ensure that the value of measurement exceeds the cost of measuring. And they must ensure that the measurement technique and area measured are aligned with the organization's overall mission and strategy.

## 8.4 Measurement Methods

In this section we will introduce several measurement methods. However, detailed analysis of the various methods is beyond the scope of this Report. We will offer slightly more detail on the first of these methods, the Intangible Assets Monitor.

### 8.4.1 Intangible Assets Monitor

One of the most comprehensive looks at intangible assets was created by Dr. Karl Erik Sveiby. Before his recent appointment at the Queensland University of Technology in Brisbane, Australia, Dr. Sveiby developed a concept known as the Intangible Assets Monitor that has been adopted extensively in Sweden, Denmark, and Norway. Several key measures are identified in this method. Business areas are measured in terms of their ability to contribute to the organization's overall growth, renewal, efficiency, and stability.

The business areas include:

- The customer's ability to enhance the organization's image, competence, and organization;
- Sales volume per customer, client repeat orders;
- The organization's top clients and their contribution to revenue;
- IT investment;
- Research and development investment;
- Proportions of staff that are professionals, support, management;
- Professional experience;



- Average education level;
- Turnover rate;
- Seniority; and
- Median age.

### **8.4.2 Balanced Score Card**

Approach, a product from Renaissance Solutions (now affiliated with The Registry), complements an organization's traditional financial performance with intangible measures relating to customers, business processes, growth, and organizational learning.

### **8.4.3 Benchmarking**

Benchmarking compares organizational performance metrics relating to intangible measures to those of other firms. While it is desirable to compare "like" organizations, it is not always feasible. Organizations may take a creative look at leaders in other industries who struggle with similar issues, and then attempt to replicate that success in their operation.

### **8.4.4 Brand Equity Valuation**

Brand Equity Valuation looks at brands, patents, formulas, and other intangibles from the perspective of pricing flexibility, leverage, earnings potential, longevity, and other non-traditional value measures.

### **8.4.5 Business Worth**

Business Worth focuses on what the business impacts would be if certain knowledge assets disappeared or were more abundant, and considers the effect of time on value.

### **8.4.6 Colorized Reporting**

Colorized Reporting supplements traditional financial measures with measures of intangible assets such as patents, brands, formulas, customer satisfaction, image, and reputation. This approach is similar to the Balanced Scorecard.

### **8.4.7 Competency Models**

Competency Models looks to highly competent resources as emulation models. By measuring the tangible output of these high performers, and the subsequent market value of their output, a measure of value can often be quantified.

### **8.4.8 Knowledge Bank**

Knowledge Bank capitalizes some portion of salaries as an asset and treats traditional capital spending as an expense. This approach tries to highlight the connection between investment in knowledge assets and future cash flow.

### **8.4.9 Microlending**

Microlending is a new approach toward lending that considers intangible collateral of the organization such as education and training, peer-group references and support, and other personal qualities of the principals.

### **8.4.10 Process Auditing**

Process Auditing considers the impact of knowledge on specific business processes. The objective is to focus resources on knowledge-intensive processes where value increases significantly when knowledge is leveraged, or where value relating to the knowledge component is high relative to that of other processes.

### **8.4.11 Relative Value**

Relative Value focuses on progress as the primary objective, rather than on quantifiable measures. This approach recognizes the importance of high levels of customer contact, quickly returning phone calls to clients and employees, and of progress that does not represent tangible output itself, but facilitates significant returns over time.

### **8.4.12 Subsystem Performance**

Subsystem Performance focuses on the quantifiable value of leveraging specific intangible assets such as legal briefs, patents, formulas, drugs, methods, best practices, or innovative ideas. Value can often be identified as the gap between the previous results and the current results after knowledge management initiatives have been implemented.

## **8.5 A Yankee Perspective**

We recommend that measures be applied that help express, in relative or quantitative terms, the value of content leveraged within a specific context. Today, intangible assets seem to be most accurately measured by markets, and measurement tends to be highly subjective and volatile. These measures vary from firm to firm, and often seasonally. Variance is just as important an issue when measuring intangibles as it is in traditional financial measurement. For example, turnover in professionals of 12%

per year might be a realistic average for an IT consulting firm, but turnover of 100% per year might be acceptable for a firm in the food services business. Deviation from a metric might be an appropriate indicator. Its change from year to year, or in comparison to that of competitors, might be other viable measures.

Management must also consider the organization's ability to build its image and enhance competencies; measure the impact of intangible assets on the organization's income, balance sheet, and cash flow statements; reach appropriate conclusions that stand the test of time; maintain appropriate turnover levels, renewal rates, and client profit margins; and determine relative value of constituent contributions. The measurement of intangible assets is a unique exercise that must be customized for the organization's specific situation. As with other information collection exercises, the value of what becomes known as a result must exceed the cost of realizing it.

**Jacques Longerstaey of J.P. Morgan:** *“We had a number of reasons for making the RiskMetrics and CreditMetrics methodologies available outside of J.P. Morgan. One important aspect was they could be established more widely if made available as public products, rather than as proprietary offerings exclusively available to clients. Making them open and transparent also minimized the firm's liability. Our legal advisors believed that if we made the methodologies available to all, and if someone then made a mistake in implementation, the risk would be less than had they been available only to clients. Several image-related benefits accrued to us as well. We became viewed as open, and as a firm that goes beyond what is traditionally done to assist clients. CreditMetrics was first launched when the derivatives debacle at Bankers Trust was unfolding. This allowed J.P. Morgan to be viewed in a different light than many of its competitors. That was a strong benefit.”*

**Charlie Paulk of Andersen Consulting:** *“Our SAP community has made rather extensive use of the Knowledge Xchange to capture our experiences and to put precoded specifications for SAP in the Knowledge Xchange. We were able to implement a system in a client much faster than a client ever thought we could because we had captured our experience in customizing SAP over and over a number of different times. The client CEO says the ability of Andersen Consulting to use the Knowledge Xchange to implement SAP more quickly has given his firm a competitive advantage in the marketplace. What's that worth? It's endeared us to the client. More importantly, it's given the client a real value in their mind. How much of a competitive advantage? I don't know. Is the client ever going to quantify it? There's probably no way to do so. There's a lot of anecdotal evidence of value. But to quantify it, I am less enthusiastic about spending energy doing that. I am much more enthusiastic about making it better and better and increasing the value.”*



# Chapter 9

## User Cases

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*The physician and his brothers.* An ancient Chinese lord once asked his physician, who was from a family of exceptional healers, which of them was the most skilled. This youngest of three brothers was known throughout China as a physician whose abilities were without equal. To this question the physician replied, “My eldest brother sees the spirit of sickness and removes it before it takes shape, so his name does not leave the house. My elder brother cures sickness when it is still extremely minute, so his name does not get out of the neighborhood. As for me, I puncture veins, prescribe potions, and massage skin, so from time to time my name gets out and is heard among the lords.”

*Vincent Barabba of General Motors:* “Many of the best examples of business practices you never hear about. They’re not discussed outside of the organization. So with any luck, GM will be very successful with our ‘dialogue decision process,’ and you’ll never hear about it”.

### 9.1 Introduction

Examples of good knowledge-sharing practices abound, but many of the best examples are never discussed outside of the firms that practice them. Other examples are practiced in isolation without the knowledge or long-term commitment of the organization’s management. In such cases, longevity of these initiatives is questionable. Many of the more successful knowledge management initiatives are practicing all 18 elements of the Yankee Conversion Continuum to some degree. The Yankee Group believes the organizations featured here are good examples, but we also believe there are many others.

### 9.2 Knowledge Management User Cases

#### 9.2.1 Andersen Consulting: Knowledge Xchange Knowledge Management System

When Andersen Consulting rolled out Knowledge Xchange a few years ago, the “beta” users were its Global Management Council. That is representative of Andersen’s commitment to knowledge management. Between 5% and 6% of revenue is invested in training its 35,000 professionals on the company’s business practices, its methodology for analyzing a client businesses, and on other methods

focused on increasing client value. Employees typically have both a competency (strategy, technology, people, or process) and industry focus. Andersen Consulting has moved away from a hierarchical structure to a dynamic matrix, with Knowledge Xchange at its core.

Examples of Andersen Consulting knowledge management applications include its client-specific knowledge databases, application specification templates (SAP, for example), client service coordination mechanisms, standardized contractual agreements, proprietary methodologies, discussion databases, performance evaluation and career development applications, time and reporting systems, partnership voting administration, salary administration, E-mail directory services, skills matching, global community libraries, and best-practice databases. Use of Knowledge Xchange varies widely from community to community, each one driven by a partner-level knowledge sponsor. One such example is the worldwide government practice. This knowledge area is coordinated by a sponsor in Australia and a 10-member knowledge management group located in the Philippines, which is responsible for coordinating and refining content. Lotus Notes is at the core of Knowledge Xchange, and is combined with Microsoft office products and various home-grown tools and search agents.

### **9.2.2 Celemi: Tango and the Intangible Assets Monitor**

Celemi is a professional development and consulting firm based in Sweden, with offices in Europe and the United States. The company has published an audit of its intangible assets in its 1995 and 1996 annual reports, and has worked closely with Dr. Karl Erik Sveiby in support of these reporting efforts.

One of Celemi's training programs is called Tango. In a Tango session, executives simulate the operation of a knowledge-based enterprise. This program was developed in conjunction with Dr. Sveiby. The Tango "event" typically runs over a period of two to three days. Participants split into teams of knowledge organizations. A facilitator helps guide teams through the process of competing for assignments and personnel. Decisions on whether to invest heavily in high-caliber people, training, image-building assignments, or profitable work must be balanced. Participants get to learn firsthand what it's like to run a company whose assets are its people, and to make costly mistakes in a simulated environment rather than in the real world.

### **9.2.3 Ernst & Young (E&Y): Center for Business Knowledge**

Ernst & Young opened its Center for Business Knowledge in Cleveland, Ohio, in 1991. This is one of the cornerstones of E&Y's knowledge management effort, which it began to offer as a consulting service in 1995. The firm seeks out organizational models that are "knowledge-centric" in their mission, and works with

them to help realize their goals and to build internal expertise. The marketing strategy of E&Y concentrates on aligning employee skills with the needs of its clients. It encourages a primary point of client contact who brings in the necessary resources from a range of competency and industry areas, to address the unique business requirements of each client. Engagements are staffed with a rich complement of people whose knowledge, experience, and rapport fit the situation. And these groups are supplemented with subject matter experts from all over E&Y.

The company doesn't target all organizations as potential clients. It focuses on organizations that fit a certain profile, where there is a match between E&Y's skills, the customer's requirements, and mutual opportunities. E&Y works to establish relationships with these organizations and to understand what business issues they are struggling with. This highly integrated approach allows the company to identify engagements where it has achieved results faster, more effectively, with better pricing margins, or by leveraging its collective knowledge. Understanding these details allows E&Y to leverage its knowledge bases and replicate success from person to person, practice to practice, and country to country.

E&Y has organized its knowledge management applications around affinity groups and communities of interest in support of its strategic objectives. Every professional has access to its corporate knowledge bases. Subject groupings are focused on specific knowledge areas including industries, major services, and client business issues. Virtual teams are organized around projects and focus areas. These teams have, as a major element of their mission, the gathering, refinement, and sharing of knowledge for the benefit of clients and colleagues. The technological infrastructure used to support this includes Lotus Notes, Pentium-class portable workstations, Netscape Web browsers, Verity search technologies, Microsoft office products, and various proprietary methods and standards. E&Y's extensive knowledge management initiatives have institutionalized a level of introspection and cooperation that is among the best in practice.

#### **9.2.4 First Virtual Corp.: The Virtual Organization**

Ralph Ungermann comes into the office, flips on his system, reviews his messages, and gets ready for his first meeting of the day. This day he's first on the agenda at the Yankee Group's outsourcing conference in Orlando, Florida, five minutes from now. He places a quick call to KPMG, his accounting firm in Dallas, Texas, which handles the entire financial function for First Virtual. They'll be doing the presentation together—Mr. Ungermann in Mountain View, California, a KPMG partner in Dallas Texas, and another coordinating the presentation from Orlando.

Forty-five minutes later, the crowd applauds the technological wonder that went off without a hitch. It seemed effortless. It was easy to forget that Mr. Ungermann wasn't sitting right there and couldn't focus on body language as the moderator



roamed around taking questions from the audience. The presentation was full of multimedia switching between archived presentations from experts in various areas, live presentations from California and Florida, and interactive discussions between presenters, panel members, and the audience.

This is the life of Ralph Ungermann at First Virtual. He rarely gets on an airplane and he's CEO of a manufacturing company that doesn't do any manufacturing. First Virtual has decided to concentrate its internal resources on innovation and outsource everything else. Its corporate strategy is based on quickly developing innovative approaches to business issues and leveraging those innovations quickly and thoroughly. Successful partnerships and customer/partner communication combine with innovation to represent what First Virtual believes are its core competencies. In fact, it has outsourced every process that it doesn't consider to be a core competency of the firm, and truly acts the part of a virtual corporation. The Yankee Group event proved to be an equally impressive presentation on knowledge management.

### 9.2.5 General Motors Corp. (GM): The Dialogue Decision Process

Alfred Sloan institutionalized many of the concepts now commonly referred to as "knowledge management" over 50 years ago at GM. When Peter Drucker criticized GM in the early 1970s for having drifted away from these fundamental customer-focused principals, Drucker himself was criticized by GM's management. The current management team realizes that a fundamental shift away from the vision of Sloan led to its apparent loss of focus in the 1980s. GM is once again listening to the "voice" of the market, but with a 1990s technology and organizational twist. Vincent Barabba is leading an effort that proposes to connect the vast internal and external resources of General Motors with its customers, through a method Mr. Barabba refers to as the "dialogue decision process." Mr. Barabba wrote the book on this subject, literally. It's called *Meeting of the Minds: Creating the Market Based Enterprise*, and it was published in 1995 by HBS Press.

The dialogue decision process uses many of the principles of Russell Ackoff's "adoptive management learning system." Ackoff is the president of Interact and a professor at the University of Pennsylvania's Wharton School. Both processes combine collaborative technologies with advanced human communication methods, to optimize group decision-making. Cross-functional teams are created, and members work through the various dimensions of management dilemmas. Each situation is framed in detail, and group members get an opportunity to experience the perspective and thinking process of other participants. As a group, people work through the implications of various action scenarios, as well as those of inaction. GM has found that a decision framework such as this takes more effort initially, but decisions made using this method are more durable and experience a higher level of cooperation in implementation. It has also found that even by using this process, groups of experienced experts can reach inappropriate conclusions. But they learn



from these decisions as a group, and learn as much from unsuccessful efforts as from successful ones.

GM has two “highly placed” initiatives being implemented at this time. One is in the engineering area, and the other relates to corporate strategy. But GM does not refer to this as knowledge management. In fact, Mr. Barabba asserts publicly that knowledge cannot be managed. But the Yankee Group believes GM’s dialogue decision process could be one of the best examples of converting knowledge into value that it has seen. We say “could” because Mr. Barabba cannot discuss its results publicly.

### 9.2.6 IBM: “Think”

“*Think.*” That simple one-syllable mission statement inspired legions of IBMers for half a century. In fact, Thomas Watson Sr. filled the walls of IBM facilities with inspirational statements as he strove to impart his wisdom to employees worldwide. IBM pioneered the concept of switching employees from line to staff positions, in an effort to keep the flow of knowledge between disciplines crisp and in sync. This practice allows employees throughout the organization to expand the breadth of their knowledge and contacts, but it also allows the staff organization to better understand the needs of its constituents inside and outside the firm. Just as importantly, it allows line managers and individual contributors to experience the politics, policies, and processes of the functional areas. IBM also encourages employees to submit innovative ideas relating to the business of the company. Employees whose suggestions are adopted can receive bonuses that are determined by their value to the enterprise.

IBM has also taken steps recently to bring in some outside influences to help change the way it views the world. In a break with tradition, the company has departed from its long-standing rule of banning alcohol on company premises, and allows Friday afternoon gatherings at its Tivoli Systems subsidiary where alcohol is traditionally part of the mix. The reason it tolerates such a departure is its desire to preserve an open culture at Tivoli that encourages a free and open exchange of knowledge among employees. In fact, IBM has taken it one step further and has placed some of its other software subsidiaries under Tivoli management to see if that subsidiary can share what it has learned at the management level. IBM has also brought in outside expertise in industry areas, which allows the sales organizations and product groups to tailor offerings to specific market segments and communicate with customers in the language of the customer.

### 9.2.7 Inova Alexandria Hospital: Work Improvement Initiative

At Alexandria Hospital, a three-member team launched a hospital-wide effort known as the Work Improvement Initiative (WII) in 1992. Through the WII, employees

have dreamed up more than 1,000 changes. Related suggestions have saved the hospital over \$5.5 million in first-year savings, and many of these savings are recurring in nature. To offer some perspective: over the period, the operating budget of Alexandria Hospital was between \$100 million and \$110 million, so these savings represent a significant share of the total budget.

One key assumption of WII was that the people most familiar with the processes were most likely to have the best suggestions on how to improve them. Money-saving ideas came from five initiative categories including financial impact, productivity, patient care, interdepartmental cooperation, and employee/physician satisfaction. Employees participate in the savings generated by the program. When the hospital meets both its budget and a 90% patient satisfaction objective, 25% of first-year savings are offered as a bonus based on employee hours worked. Public recognition is given to employees offering suggestions. The system used to manage WII is a simple home-grown database application. The effort is coordinated by a seven-member steering committee, chaired by the director of management engineering.

While the hospital has realized a smaller number of suggestions recently, the benefits of its savings continue. Cost-saving measures have enabled the hospital to cut its annual increase in expenses from 12% in 1991 to less than 2% currently. The hospital's cost per adjusted discharge has shifted it from 51st position in the nation to the 24th percentile among Voluntary Hospitals of America (VHA) in hospitals of similar size, according to Arek Tatevossian, director of planning and management engineering at Alexandria. Mr. Tatevossian will look to benchmarking processes against those at other hospitals to further improve productivity.

## 9.2.8 J.P. Morgan: RiskMetrics and CreditMetrics

J.P. Morgan developed expertise over the years in managing portfolios of marketable securities, including bonds, equities, and foreign exchange contracts. Its proprietary methods for measuring risk were refined, codified, and automated. In October 1994, J.P. Morgan took the preemptive move of posting this risk management model called RiskMetrics on its Web site. In April 1997, a second site was implemented called CreditMetrics, which was the first generally available portfolio model for evaluating credit risk.

J.P. Morgan had a number of reasons for making the RiskMetrics and CreditMetrics methodologies available outside of the firm. One important aspect was that its methodologies could be established more widely if made available as public products, rather than as proprietary offerings exclusively available to clients. Making them open and transparent also minimized J.P. Morgan's liability. Its legal advisors believed that if the methodologies were made available to all, and if someone then made an implementation mistake, J.P. Morgan's risk would be less than had the products been made exclusively available to clients. Several image-related benefits

accrued to them as well. The firm became viewed as open, and as making an extra effort beyond what was traditionally done to assist clients. CreditMetrics was first launched when the derivatives debacle at Bankers Trust was unfolding. This allowed J.P. Morgan to be viewed in a different light than many of its competitors.

When CreditMetrics was first rolled out, J.P. Morgan temporarily increased support staff in anticipation of a wave of demand similar to that realized with the introduction of RiskMetrics. But it found that even though its Web site traffic was much higher, clients were more technically sophisticated the second time around. Also, the look-and-feel of RiskMetrics was similar, so the learning curve was not as steep as had been anticipated. The net effect was a dramatic increase in Web “hits,” with about one-third the initial support requirement.

### **9.2.9 KPMG Peat Marwick: KWEB and Cyber Park Avenue**

“It’s a virtual version of the old management by walking around,” according to KPMG’s deputy chairman and COO Roger Siboni. Cyber Park Avenue is the firm’s internal interactive “chat room,” and KWEB is its knowledge management infrastructure. KPMG is in the process of updating its infrastructure and taking its knowledge management capabilities to the next level. Mr. Siboni is evangelizing the effort at the executive level and is incorporating knowledge management into KPMG’s overall corporate strategy and mission. It will be the job of its soon-to-be-appointed CKO to work out the details of its plan, and to execute it. The CKO will come from the professional ranks, as will five “knowledge masters” who will lead the knowledge management charge within KPMG’s operating groups. The firm’s next generation of infrastructure will probably employ customized browser technology on close to 50 global WANs, and will utilize Oracle database technology, on Microsoft NT servers, with all applications accessed by notebook computers in the hands of KPMG’s 75,000 professionals.

There are several knowledge management initiatives either under way or planned, and KPMG intends to tie knowledge-sharing and related key performance indicators to goals and compensation. Management has begun to look carefully at business opportunities to ensure that each effort is focused on value, and plans to devote more capital to professional development. There are community of interest chat rooms where timely business issues and trends are discussed internally. Companywide forums allow employees to discuss anything, from evaluating the competition to critiquing the corporate strategy. Skill and opportunity databases allow the firm to match business requirements with available resources. Client proposals and presentations from KPMG’s focused market segments, product, and service areas are leveraged firmwide. An extranet is planned, where interactive issue-based forums will be hosted by well-known industry experts for the benefit of KPMG staff and clients. The knowledge masters will coordinate filtering the knowledge and information that is fed into KWEB.

KPMG intends to become the largest and most profitable of the Big Six accounting firms during the current management team's six-year term. Its chairman Steven Butler told a recent gathering of top partners, "We intend to grow billings and profits at extremely aggressive rates over the next five years. KPMG cannot achieve this by working harder. We can only do it by working smarter. Leveraging the collective knowledge of the firm will help drive that growth." Its mission is simple: KPMG must be able to deliver the knowledge of every individual in the firm, to every client—anytime, anywhere.

### 9.2.10 McKinsey & Co., Inc.: "PD" and the Practice Olympics

Practice development, or "PD" in McKinsey parlance, is "code" for knowledge conversion at this nearly \$2 billion management consultancy. In fact, part of any McKinsey associate's professional development plan had better include PD, or it is unlikely he or she will make partner. Meager PD efforts offering little value are quickly recognized and discouraged by peers and by management. PD is an all-encompassing term that represents the "content," "context," and "constituent" domains of knowledge management at McKinsey. Professionals report what they've learned during client engagements and research projects. They carefully preserve client anonymity, with recognizable details omitted or changed to disguise their source. McKinsey has doubled its investment in knowledge management over the past two years, and according to its current managing director Rajat Gupta, it is willing to absorb a 5-10% drop in client billings that may result from its efforts to better leverage knowledge.

The Practice Olympics is a knowledge management initiative that started as an experiment at McKinsey Germany. Consultants are encouraged to codify what they have learned as a result of client engagements or research projects, and to formally present their findings in a competition. Two- to six-person teams compete in events that are staged regionally, culminating in a firmwide competition judged by senior partners and clients. McKinsey's best work and emerging leaders gain exposure during the events among the firm's senior management, who also learn from the exercise.

Like other consulting, accounting, and law firms, as well as educational institutions, McKinsey employs the "up-or-out" career development philosophy. This is an important dimension of its knowledge management effort. An associate/partner ratio of approximately 7.6:1 is maintained at the firm. Professionals either become a principal, or are encouraged to seek employment outside the organization. This career development approach offers long-term commitments to professionals who best fit the target professional profile. Turnover among those who do not make partner creates positions for candidates who renew the firm's stores of knowledge and energy. The process itself creates a significant incentive for professionals to offer their best efforts and to dedicate themselves to their work during the first

several years when their value is being established and tested. What distinguishes McKinsey from many other organizations is its relationship with those who leave. When consultants are not extended an invitation to stay, they often remain loyal members of the McKinsey fold. To ensure this, the firm manages its former employee network in much the same way as a university manages its alumni network. McKinsey understands that the professionals it has trained will one day manage some of the world's largest organizations. It nurtures this relationship to ensure that consultants "land well" when they leave the firm, and that they are well positioned to keep McKinsey in mind for future engagement opportunities.

McKinsey struggles, as other firms do, with the organizational issues associated with knowledge management. The manner in which its management professionals go about the process of leveraging knowledge differs from practice to practice, even though there is a shared technological infrastructure. McKinsey has committed to the knowledge-management-focused practice coordinator position as a partnership track. A June 28, 1996, Harvard Business School Case (McKinsey & Company: Managing Knowledge and Learning, N9-396-357) profiles McKinsey's experience in knowledge management. It is clear that McKinsey has institutionalized a knowledge conversion process that places the interests of its clients and the firm above those of any individual. And it also does an extraordinary job of managing the professional development of associates and "alumni."

### 9.2.11 Teltech Resource Network Corp.: KnowledgeScope

Knowledge transfer has been a fundamental aspect of Teltech's business since the company's founding in 1984. A research and knowledge management services provider, Teltech's offerings include a proprietary network of experts that gives end users confidential telephone access to leading authorities in more than 30,000 areas of science and technology. While such access is aided by the use of electronic processes and tools, the actual knowledge transfer occurs through human-to-human contact.

Teltech's knowledge analysts are available to assist users in identifying and selecting appropriate experts. In fact, these analysts facilitate most network interactions. But clients who prefer to locate and choose experts on their own can do so through the use of Teltech's KnowledgeScope, an automated desktop thesaurus. Clients look at the same "expert biography" whether they make a match personally or have a knowledge analyst guide them through the process. And there's no difference in price. The incentive for everyone, therefore, is to do what's easiest. And there's a big incentive for Teltech to further automate the process, because the fewer people involved the greater the margin and leverage.

Teltech uses subject specialists instead of general administrators to make the match between clients and experts. The specialized knowledge of these facilitators enables them to speak the client's language, helping to accelerate needs discovery and ensure

identification of the most appropriate experts. Construction of expert biographies, which is central to Teltech's search-and-retrieval system, reflects the provider's sensitivity to behavioral issues, which could impede service use. Each biography, for example, describes not only the experts areas of specialization, work experience and accomplishments, but also his or her hobbies and areas of personal interest. This approach is designed to help "humanize" the expert and lessen the user's vulnerability to feelings of intimidation over the prospect of initiating contact with a world-class technical authority.

Teltech's processes reflect concern for quality and measurement as well. Experts are contractually bound to return calls from clients within 24 hours and to protect the client's proprietary interests. Every expert interaction generates a quality check to confirm that client expectations have been met, and corrective action is taken whenever a knowledge-transfer event falls short of the desired outcome. If the client's knowledge requirements cannot be satisfied through straightforward phone consultation, Teltech's experts are free to negotiate an independent work relationship, but only at the suggestion of the client.

Teltech's knowledge-transfer process is so successful that the company offers consulting services to show other firms how it's done. According to independent studies, the average Teltech client receives an 11:1 return on its service investment. Numbers like that should pique anyone's interest.

### **9.2.12 Toyota Motor Co.: Supplier Relations and Crisis Management**

Toyota, like many Japanese firms, has close working relationships with its suppliers. A recent fire that wiped out a parts supplier, Aisin Seiki, illustrates the risks and benefits of such relationships. The fire at Aisin, which manufactures 99% of Toyota's supply of a \$5 part known as a P-valve, caused Toyota to idle 20 automobile plants on Saturday, February 1, 1997. Toyota, which operates on a just-in-time manufacturing process, maintains only a four-hour supply of most parts. This was clearly a catastrophe for Toyota and potentially for the Japanese economy.

Within hours, blueprints were being analyzed and makeshift production lines set up. By Thursday, 36 suppliers and 150 subcontractors were manufacturing P-valves. One of the subcontractors, a sewing machine manufacturer, had spent 500 hours refitting a milling machine to produce just 40 valves per day. Within five days, Toyota was back on line, weeks before many estimates. Without extremely close supplier relations, Toyota could never have performed such a timely exchange of highly specialized manufacturing expertise to 186 firms, and have limited its losses as it did.

The suppliers and subcontractors did not even know how they would be compensated at the time for what they did. Aisin has since agreed to pay for everything including supplies, lost revenue, overtime pay, and depreciation. Toyota has contributed an



additional \$100 million as a token of its appreciation. This group of 186 suppliers and subcontractors implicitly trusted Toyota and Aisin, and each company knows that if they ever find themselves in similar circumstances the favor will be returned.

### **9.2.13 U.S. Department of Energy, Federal Energy Technology Center (FETC): Performance Analysis; Rating; and Improvement System (PARIS)**

The Department of Energy's (DOE's) PARIS was developed by teams of employees from the Pittsburgh Energy Technology Center, which is now part of the Federal Energy Technology Center. The process was developed in response to several pieces of legislation that were focused on improving the performance of federal agencies through the use of strategic plans and performance measurement. PARIS was conceived as an approach toward evaluating organizational performance relative to stated DOE/FETC objectives.

The system is predicated upon senior DOE/FETC management establishing strategic business priorities. Management performs a portfolio analysis of activities, considers the long- and short-term elements of various initiatives and priorities, and records these priorities within PARIS. In response, DOE/FETC staff responsible for each business area develop a set of near-term objectives. These targets are established and related to specific measurable events that define success. Teams of individual contributors are given the opportunity to identify approaches and assign value for each area, in a manner consistent with the overall strategy. Middle management is also offered an opportunity to prioritize activities relative to one another within their area of responsibility, once again, considering the guidelines and overall strategic objectives. The result of this process is offered to senior management through PARIS, as an action plan that addresses the strategic plan.

Process integrity is maintained by allowing the use of only approved ranking processes for assessing value; by having all teams provide input to the performance plan, and then compare targets and measures for all other teams; and by using external panels that evaluate past progress and future objectives. PARIS integrates with other DOE/FETC systems for budget analysis and program planning, and employs standard Internet tools and Microsoft products on the DOE's intranet. The "up, down, up" approach was created to let individuals apply their unique knowledge to the process in setting meaningful and achievable targets.

The FETC was formed when the Pittsburgh Energy Technology Center merged with an affiliated organization in Morgantown, Pennsylvania. Morgantown had developed a similar system known as the Performance Improvement and Measurement Methodology, or PIMM. The DOE/FETC is in the process of consolidating PARIS and PIMM into a new standard that will be utilized throughout the expanded organization.

### 9.2.14 The Yankee Group: Brand Management and Yankee On-Line

Perhaps you've noticed that the author of this Report is simply "the Yankee Group." There may have been a single author or 50 staff members contributing to its publication. But regardless, none of the Yankee Group's research has been published with a byline for the past 27 years, and we expect this practice will continue. Our management has built the Yankee Group brand in a manner that ensures the reputation and image associated with its research accrues to the firm. This practice is common at large consulting firms, but not necessarily among the Yankee Group's competitors. The value of having built the brand in this way was realized when management sold the firm to Primark in 1996. Since the Yankee Group's brand value is not necessarily tied to the personal contribution of any individual, it was viewed as a more stable investment than alternatives in the research field.

Although it is not always possible for members of a research firm to present a single voice, the Yankee Group carefully manages its presentation to clients and the press. Here are a few of the Yankee Group's methods in this area. The latest version of Yankee On-Line allows analysts to publish research directly to the Yankee Group's Domino-based extranet. This application "personalizes" services available to subscribers, and is available 24 hours a day, seven days a week. Abstracts of the Yankee Group's entire research portfolio are available to clients free of charge, and full text is available to subscribers. The Yankee Group leverages the same system for analysts and sales personnel to stay abreast of research activities beyond their primary areas of responsibility. It also helps staff members keep track of the service doing research on a particular subject and of who has expertise in an emerging field. Yankee On-Line gives analysts and clients the ability to quickly determine the company's position on issues without speaking to the respective experts directly.

Technology vendors make a concerted effort to keep the Yankee Group's staff of analysts up to date. In fact, analysts could spend their entire work day speaking with vendors, and would never get anything published if efforts were not coordinated. To manage this process, the Yankee Group has a companywide staff meeting every Monday morning in which client work is discussed and meetings are scheduled. The meeting never lasts longer than 30 minutes. Sales and analyst activities are closely coordinated with clients, prospects, projects, and events. Redundancy is minimized and the cross-functional efforts of staff are leveraged as much as possible. This forum serves other important purposes as well. New employees have an opportunity to meet co-workers and learn about the Yankee Group's unique methods, and in many cases employees practice their presentation skills. This could not be accomplished without the combination of our group scheduling system and the companywide interdepartmental session.



## **9.3 Some Mini-Cases**

### **9.3.1 3M: Managing Innovation**

This diversified manufacturing company encourages its employees to spend time each day exploring new and innovative approaches to market opportunities. It rewards individuals for successful efforts and has institutionalized a corporate culture that encourages learning, sharing, and risk-taking. 3M managers are required to link these efforts to revenue and over 60,000 products have been developed as a result.

### **9.3.2 AGRO: Improving Crop Yield**

AGRO, which markets fertilizer and seed, collects information on farmer soil constitution and combines it with weather and crop information. It then offers client-specific knowledge to its customers as a value-added service. The client and salesperson meet to discuss the results and to develop a strategy to maximize crop yield.

### **9.3.3 Analog Devices: Cultural Change**

Analog Devices worked to deemphasize a culture that had been built around a functional orientation and internal competition. It has made progress toward institutionalizing a collaborative knowledge-sharing orientation.

### **9.3.4 ASEA Brown Boveri (ABB): Outcome-Based Compensation**

ABB ties some of its managers' compensation to the results of their decisions and to knowledge that has been applied in the decision-making process.

### **9.3.5 Bain & Co.: Experience Knowledge Base**

Client engagement teams document experiences and leverage this knowledge throughout the firm.

### **9.3.6 Bechtel: BecWeb**

Bechtel's Web Advisory Board defines important technology and style standards for its BecWeb intranet, such as guidelines on HTML authoring, Web interface design, complying with systems architecture, engineering standards, internal guidelines, documentation, and generally establishing a consistent look-and-feel across the BecWeb intranet. Bechtel's civil engineering group is developing a three-dimensional catalog portfolio of Bechtel's standard architectural designs. Its overall knowledge management initiative is known as the Global Knowledge Network (GKN), which will allow the firm to build more structures and do it faster. The GKN is a companywide initiative to disperse mission-critical knowledge among Bechtel's 20,000 employees worldwide.

### **9.3.7 Blue Cross and Blue Shield of Florida: ModelMAX**

Blue Cross and Blue Shield of Florida developed ModelMAX, a neural-networking-based predictive modeling tool for direct marketers. ModelMAX has improved direct response and conversion rates on its indemnity, Medigap, Medicare, and HMO products. In one instance, in the top 10 segments predicted for conversion by ModelMAX, the hit rate was 81%.

### **9.3.8 Boeing: The 777**

The Boeing 777 was the first paperless design of an aircraft. The design process comprised over 200 teams, and included customers as part of the process. Design and construction were performed by the same teams, and suppliers also contributed knowledge in the effort.

### **9.3.9 British Petroleum (BP): Business Process Outsourcing (BPO)**

British Petroleum looks to BPO as a way to improve its core business, and to simplify BP's management, reduce costs, and enhance quality. Accounting services in Aberdeen, Scotland, have realized a 30% cost savings through BPO, and the company expects this to reach 50% as leverage increases through 1999. BP identifies key BPO success factors as treating suppliers as partners, ensuring a commercial alignment of interests through full disclosure and risk/reward-sharing, and effective performance management through service-level agreements (SLAs), process benchmarking, and joint management committees.

### **9.3.10 Buckman Labs: Relative Value**

Buckman Labs is a biotechnology firm that has organized itself around the concept of knowledge-sharing. Activities are coordinated by a knowledge transfer department and the "relative value" method of measurement is employed, in which progress is the goal, rather than quantitative measures. Financial rewards and promotions go to those who create value through shared knowledge. Robert Buckman estimates that his firm spends 3.5% of its revenues on knowledge management. The company recognizes its top 100 knowledge-sharers with an annual conference at a resort.

### **9.3.11 Cadence Design Systems: Design Process Outsourcing**

Cadence Design Systems, based in San Jose, California, supplies electronic design automation (EDA) software and services to leading electronics companies around the world. Over the past two years, Cadence has begun to transform the company from a software product vendor to a provider of complete business solutions for its customers' product development needs.

Cadence now offers to outsource the product design process for its clients. The company will go in and take over the product development function, including the client's design engineers. Cadence's design group then teams with the client's former design engineers to cut the development process in half, in many cases. Clients get products to market faster and Cadence gets to build its staff of highly qualified engineers.

### **9.3.12 Chaparral Steel: Participatory Management**

Chaparral is a small steel mill that has shunned traditional practices and has introduced initiatives such as a flat hierarchy, broad education, client contact at all levels, employee participation outside of traditional job functions, and rewards based on personal contribution. Chaparral labor per ton of steel is half that of its competitors, and its market-to-book ratio is higher than that of any firm in its industry.

### **9.3.13 Chevron: Experience-Sharing**

Two best practice-teams recently saved Chevron over \$172 million by sharing information between geographically disbursed groups. Also, \$150 million was realized in companywide fuel and electricity consumption savings, and another \$20 million savings by sharing information on the operation of gas compressors in its California, Colorado, and offshore Louisiana oil fields. Experience regarding drilling conditions and innovative solutions to problems are now shared throughout Chevron's global operation.

### **9.3.14 Coopers & Lybrand: KnowledgeNet**

Coopers & Lybrand's KnowledgeNet employs a "multidimensional map," offering unprecedented access to the firm's institutional expertise. Users can type in a description of a subject area, and KnowledgeNet refers them to professionals in the firm who are most knowledgeable about the subject. Hyperlinks let users get the latest reports, articles, and materials from recent conferences on the subject. KnowledgeNet offers access to the firm's 2,500 databases.

### **9.3.15 Cushman & Wakefield: Customized Client Services**

Cushman & Wakefield is a global commercial real estate firm that has made knowledge available to brokers in the field, allowing them to customize services for clients on demand.

### **9.3.16 Deloitte & Touche: Application-Specific Knowledge Leverage**

Deloitte & Touche's extensive implementation knowledge repositories on Lotus Notes is linked to the SAP R/3 Reference Model through IntelliCorp's LiveModel.

Deloitte & Touche Consulting Group/ICS has made available its Lotus Domino and Notes Knowledge Networks to its LiveModel-enabled IndustryPrint SAP R/3 process model library. This practice has allowed the firm to leverage experiences from previous engagements in order to dramatically reduce the implementation window for new clients.

### **9.3.17 Dow Chemical: Subsystem Performance**

Knowledge from approximately 25,000 patents and various Dow brands is available on-line, where it can be analyzed by other corporate divisions that leverage patents and brands in new product areas. Intellectual asset management brought the Dow businesses an overall \$40 million in additional capital and savings, and proof-of-concept for other knowledge management initiatives.

### **9.3.18 Frito-Lay: Shelf-Space Leverage**

Information on shelf space utilization is collected daily for various Stock Keeping Units (SKUs) and is combined with other relevant marketing information. Armed with this knowledge, Frito-Lay sales representatives work directly with retailer management to better leverage shelf space and increase sales of Frito-Lay products.

### **9.3.19 GM Hughes Electronics: Best BPR Practices**

Hughes Electronics captures its best business process re-engineering (BPR) practices in a knowledge base that combines a brief description of the project with a link to the participants. Hughes chose this approach because the tacit knowledge that exists or is built throughout the process is difficult to articulate in a database. In this case, it was not feasible given time and resource constraints. Hughes has found that connecting people that know with people that need to know is a more appropriate approach than trying to explicitly detail each case.

### **9.3.20 Hewlett-Packard Co. (HP): Knowledge Links**

Hewlett-Packard has several knowledge management initiatives employed to help maintain its leadership position in the markets it serves. Hewlett-Packard Laboratories is developing approaches to facilitate access to both internal and external knowledge. The Product Processes Organization (PPO), which provides the company's product divisions with such services as purchasing, engineering, market intelligence, change management, and environmental and safety consulting, has adopted many approaches to knowledge transfer including catalogues of documents, video and audio tapes of meetings, best-practice databases, and the Work Innovation Network, a series of meetings and ongoing discussions on change management topics. The PPO group also shares knowledge about the product-generation process

in a system called Knowledge Links. This knowledge may come from a variety of functional perspectives, including marketing, R&D, engineering and manufacturing.

HP's information systems group is documenting knowledge of procedures, personnel, and other processes within Web- and Lotus Notes-based systems, and plans to map sources of knowledge about information systems development and management around the company. The Computer Systems Marketing organization has incorporated marketing knowledge into a Web-based system that can be accessed by sales groups around the world. The system contains product information, competitive intelligence, white papers and ready-to-deliver marketing presentations.

### **9.3.21 Honda Motor Co.: Intradivision Communication**

Honda shares knowledge among its various divisions that extends beyond what would normally be communicated through traditional areas of responsibility. It has found that this practice acts as a catalyst for creative solutions and sparks innovation.

### **9.3.22 Kaiser Permanente: Benchmarking**

Internal benchmarking and best practices allowed Kaiser to open a health clinic several months ahead of schedule. Its knowledge-focused strategy also led to improved internal program schedules, reducing the implementation times by 6 to 12 months. Documented success stories allowed Kaiser to address concerns of constituents in advance, minimizing any resistance that would otherwise have been present.

### **9.3.23 KREAB: Measurement of Intangible Assets**

KREAB is a large Swedish media and communication consulting firm. Its management participated in the Konrad Report. KREAB has reported results based on the recommendations of this report since 1988.

### **9.3.24 Lotus Development Corp.: Empowerment**

Lotus ties 25% of the total performance evaluation and related compensation increases for its customer support employees to knowledge-sharing.

### **9.3.25 Monsanto: SAP with a Knowledge Perspective**

Monsanto is installing SAP with a unique twist. It is incorporating a knowledge perspective. The knowledge management architecture team is combining knowledge from the company's 15 strategic business units, accounting, and point-of-sale, as well as the organization's distributors, regulators, and joint ventures, and its internal policies and politics.

### **9.3.26 National Semiconductor Corp.: Communities of Practice**

National Semiconductor has established several communities of practice (CoPs) where groups of engineers conduct design reviews, and share knowledge, design methodologies, and general experiences among experts. Other major results of National Semiconductor's knowledge management initiatives include helping employees innovate, helping clients decrease time to market for new products, and reducing internal cycle times for business processes.

### **9.3.27 National Technological University: Distance Learning**

National Technology University is a pioneer in distance learning utilizing the Internet.

### **9.3.28 Open University: Distance Learning**

The UK-based Open University utilizes the Internet for distance learning.

### **9.3.29 Otican: Dynamic Organization**

The entire Denmark-based company Otican is organized around projects and interdisciplinary knowledge-sharing. There are no fixed job descriptions.

### **9.3.30 Outokumppu: Smelting Expertise**

Outokumppu's copper smelting operation has codified its smelting expertise and now provides services for plant construction and education of personnel and customers. This business is now more profitable than the original copper smelting operation.

### **9.3.31 Pacific Enterprises: PE Xchng**

Pacific Enterprises, a Los Angeles-based utilities holding company, has developed a threaded discussion database called "PE Xchng." The application cost about \$60,000 to build. PE Xchng is available to about 5,000 users at Pacific Enterprises' principal subsidiary, Southern California Gas Co. The gas company's competitive intelligence-gathering group collects tips about construction sites where developers are considering whether to use gas, oil, or electricity. The knowledge comes from personnel stationed throughout Southern California.

### **9.3.32 Pfizer: Competency Models**

Pfizer has created a competency model for recruiting new treasury executives that contains knowledge-building and -sharing skills, as well as financial skills.

### **9.3.33 PLS-Consult: Mentoring**

PLS-Consult groups its clients in terms of their knowledge contribution to the firm and tracks results in internal systems. It actively seeks large projects in which the firm can appoint its most experienced engagement leaders as mentors. These mentors transfer skills to less experienced consultants in a customer environment.

### **9.3.34 Price Waterhouse: Best Practices**

Price Waterhouse documents best practices in a Lotus Notes-based central repository and, through the use of the application, tracks revenue generated. Analysis and documentation time has been reduced, collaborative behavior has improved, and overall knowledge-sharing activities have increased.

### **9.3.35 Procter & Gamble: Standards**

Procter & Gamble ensures consistency among its marketing and sales efforts throughout the entire line of several thousand products. This is accomplished by investing heavily in training and through painstaking adherence to methodologies, processes, and standards for both technology and business practices.

### **9.3.36 Ritz-Carlton: Personalized Service**

Ritz-Carlton staff fill out cards with information detailing guest interaction. These comments and other relevant information are stored and presented to all staff members who have future interactions with the client, ensuring personalized service.

### **9.3.37 Sandia National Laboratories: Enterprise-wide Viewing Environment (EVE)**

Sandia employs about 8,500 people at laboratories in New Mexico and northern California, and at test facilities in Nevada and Hawaii. Sandia's EVE facilitates knowledge and information sharing throughout the organization. Some of its initiatives include collaboration among engineering departments, and documentation of meetings, presentations, project plans, policy manuals, internal (SAND) research abstracts, and internal and external publications, as well as vacation balances, conference room schedules, project-specific financial details, inventory levels, order status, and travel information.

### **9.3.38 Skandia: Annual Report on Intellectual Capital**

Skandia, a multinational financial services and insurance company, is one of the most advanced practitioners in measuring and reporting non-financial assets. It now



has several years of experience reporting non-financial ratios. Leif Edvinsson, director of intellectual capital at this firm, was instrumental in developing the theory of intellectual capital with Dr. Karl Erik Sveiby and the Konrad Group in Sweden. Skandia's annual report on intellectual capital draws from the work of the Konrad Group as well as the principles of the Balanced Scorecard from Renaissance Solutions.

Skandia has also formalized the process of creating and launching new financial services products, and has reduced the period of product launch to profitability from two years to approximately six months. Knowledge regarding startup of foreign businesses was leveraged to reduce the lead time to seven months, with an industry average of seven years. Two startups can now be formed each year, up from the previous rate of one per year. Skandia's business prototype contains all the information, business processes, and technology required to open and run an office.

This global insurance and financial services firm is expanding its Notes-based "knowledge bases" beyond Europe and the United States into Mexico, Colombia, and Tokyo. The American sister company's information services and technology group also measures computer literacy and usage by employees. Skandia's new Assess software gives more than 7,000 brokers detailed knowledge of investment options and asset allocations, and also leverages client proposals.

### **9.3.39 Steelcase: Leadership Community**

Steelcase has developed a "Leadership Community" at its headquarters, where it has a collaborative environment setup for executives. The space is "open landscape" (without walls) to facilitate communication. In the center of the room is an oval-shaped area with five screens and distributed projection capability. There are five tables that can accommodate four people each, with a center post where laptops are connected to project locally or communicate on the network. Executives are starting to manage the company from that environment.

### **9.3.40 US WEST: Rumor Mill**

US WEST's knowledge management initiatives include a company-moderated employee discussion site called the "rumor mill."

### **9.3.41 WM-data: Intangible Asset Management**

WM-data is Sweden's largest consultancy, employing approximately 3,000. The firm has no work unit larger than 50 employees. It finds this approach nurtures the sense of family and belonging, and also increases trust and knowledge-sharing. WM-data actively seeks equal numbers of women and men, and has found that diversity of gender and culture enhances creativity. The company is a pioneer in



linking non-financial indicators to corporate performance, and has been a practitioner of knowledge management since 1988. It publishes an extensive report on intangible assets as part of its annual report. WM-data produces traditional financial metrics only for reporting purposes and feels these measurements offer no utility for a knowledge company.



## Chapter 10

# Conclusion

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Yankee Group research indicates that interest is very high on the subject of knowledge management, but an overwhelming majority of organizational leaders have only a basic understanding of what is meant by the subject. We believe the implications of knowledge management on profitability and productivity are profound, and that significant challenges will inhibit organizations from realizing benefits. A typical reaction to knowledge management is that the subject seems very “esoteric,” since it often involves areas of an operation that are considered “soft” and difficult to objectively quantify. We propose that the consequences of ignorance here are dramatic and potentially catastrophic from a business perspective.

Large-scale organized knowledge-sharing has been occurring for centuries. While every organization leverages intangible assets to some extent, all stand to gain from more effective initiatives. Value in knowledge management is not defined in the traditional sense. While value is typically expressed in terms of revenue and earnings potential, the value of intangible assets is what is relevant in knowledge management. Anecdotal evidence of this value is abundant, and identifying it is not a problem. But quantifying value is. Intangible assets typically accrue “soft” benefits that cannot be measured in traditional ways. Intangible value domains include brand potential, copyrights, patents, image, quality, customer retention, employee attrition, and competence. The primary objective of knowledge management initiatives is to convert these intangible assets into organizational capital, not to convert intangibles into traditional measures of value. This means that organizations must change the way they define value.

Many topics associated with knowledge management have little to do with technology. But the Yankee Group believes organizations should be aware of both the management and technological implications. While technology offers leverage for portions of this process, technology is merely an enabler. Nonetheless, technology has driven favorable and sometimes dramatic shifts in the cost/value relationship. We believe knowledge management initiatives will force organizations to reconsider their propositions of value, and the responsibilities of management throughout the organization. Managers and other contributors must learn why this is true, and should explore the subject as a group. Effective initiatives tend to be expensive, since the technological, human, and measurement components cannot be implemented independently. Organizations must understand their core competencies and focus exclusively on leveraging intangible assets related to these propositions of value. The cultural aversion to the “softer” dimensions of management must be overcome if initiatives are to succeed.

Knowledge management is not synonymous with information management, and distinctions exist between knowledge, information, and data. The definitions of these three items vary widely, depending on the perspective of the practitioner or the organization. But we believe that each plays an important role in successful knowledge management efforts. Personal knowledge must be “converted” to organizational capital as much as possible. But knowledge is not the only intangible asset being leveraged through knowledge management initiatives. Commitment to share must come from the top, and rewards and goals should encourage knowledge-sharing, not competition. Mutual trust exists in environments where knowledge is exchanged freely and openly. We have found that standards are key to any successful effort. The Yankee Group believes that knowledge management is intangible asset management, and that it is *not* the next management fad.

# Chapter 11

## Recommendations

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- Secure the commitment of management.
- Establish that the primary objective of knowledge management initiatives must be to convert intangible assets into organizational value, not to convert intangibles into traditional measures of value.
- Appoint a leader in the organization who has the authority and responsibility to leverage the organization's intangible assets, and the understanding and ability to make it happen.
- Consider the organizational implications of executing a plan based on the Yankee Conversion Continuum for intangible assets.
- If chances that such a framework could be implemented are high, then we recommend you proceed.
- If there are significant questions regarding the organization's commitment or ability to execute, do not proceed. Unsuccessful efforts waste resources and can inhibit future success at a time that might have otherwise been appropriate.
- Should this be the first knowledge management initiative, establish a pilot project that offers significant high-visibility benefits if successfully executed, and employs knowledgeable cooperative constituents.
- Appoint knowledge facilitators in areas where knowledge will be leveraged.
- Incorporate intangible asset conversion into the organization's overall mission, strategy, and proposition of value.
- Have knowledge facilitators identify sources and uses of knowledge that are closely linked with the value proposition.
- Have facilitators establish a process for putting this knowledge into context.
- Develop business and technology plans that outline measurable objectives and progress milestones, and consider the unique characteristics of intangible assets and knowledge-sharing.
- Establish constituent goals and rewards that are consistent with sharing what is known, and take steps to ensure these goals and rewards embrace the concept.

- Execute the organization's plan and measure the results.
- Report findings and use these results to make adjustments and to increase the organization's commitment.

# Appendix A

## Related Reading

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### A-1 Recommended Reading List

*Compliments of Charles Savage, Lawrence Prusak, and Vincent Barabba*

- **Ackoff, Russell**, *The Democratic Corporation: A Radical Prescription for Recreating Corporate America and Rediscovering Success*. New York: Oxford University Press, 1994.
- **Allee, Verna**, *The Knowledge Evolution: Expanding Organizational Intelligence*. Boston: Butterworth-Heinemann, 1997.
- **Allee, Verna**. *Learning Links: Enhancing Individual and Team Performance*, Pfeiffer-Jossey Bass, 1996.
- **Amidon, Debra**, *The Ken Awakening: Innovation Strategy for the Knowledge Economy*. Boston: Butterworth-Heinemann, 1997.
- **Barabba, Vincent**, *Meeting of the Minds: Creating the Market-Based Enterprise*, Boston: Harvard Business School Press, 1995.
- **Barabba, Vincent, and Gerald Zaltman**, *Hearing the Voice of the Market*. Boston: Harvard Business School Press, 1990.
- **Bartlett, Christopher A.**, *HBS Case N9-396-357: McKinsey & Company: Managing Knowledge and Learning*, Boston: Harvard Business School Publishing, June 28, 1996.
- **Brooking, Annie**, *Intellectual Capital: Core Asset for the Third Millennium Enterprise*. London: International Thomson Business Press, 1996.
- **Davenport, Thomas H.**, *Working Knowledge: How Organizations Manage What They Know*. Boston: Harvard Business School Press, 1997.
- **Davenport, Thomas H.**, *Information Ecology: Mastering the Information and Knowledge Environment*. London: Oxford University Press: 1997.
- **Davenport, Thomas H.**, *Process Innovation*. Boston: Harvard Business School Press: 1995.
- **Drucker, Peter**, *Post-Capitalist Society*, New York, Harper Collins, 1993.
- **Edvinsson, Leif, and Michael Malone**, *Intellectual Capital: Realizing Your*

*Company's True Value by Finding Its Hidden Brainpower.* New York: HarperBusiness, 1997.

- **Hall, Brian**, *Values Shift, A Guide to Personal and Organizational Transformation.* Rockport, MA: TwinLights Publishers, 1995.
- **Leonard-Barton, Dorothy**, *Wellsprings of Knowledge: Building and Sustaining the Sources of Innovation.* Boston: Harvard Business School Press, 1995.
- **McKinnon, Sharon, and William J. Bruns**, *The Information Mosaic,* Harvard Business School Press, 1992.
- **Myers, Paul S., Ed.** *Knowledge Management and Organizational Design,* Boston: Butterworth-Heinemann, 1996.
- **Nonaka, Ikujiro, and Hirotaka Takeuchi**, *The Knowledge Creating Company.* Oxford: Oxford University Press, 1995.
- **Prusak, Lawrence, Ed.** *Knowledge in Organizations.* Boston: Butterworth-Heinemann, 1997.
- **Ruggles, Rudy, Ed.** *Knowledge Management Tools,* Boston: Butterworth-Heinemann, 1996.
- **Savage, Charles**, *Fifth-Generation Management: Co-Creating Through Dynamic Teaming, Virtual Enterprise, and Knowledge Networking, Revised Edition.* Boston: Butterworth-Heinemann, 1996.
- **Schmitz, Christof, Betty Zucker, and Wissen Gewinnt**, *Knowledge Flow Management.* Dusseldorf: Metropolitan Verlag, 1996.
- **Senge, Peter**, *The Fifth Discipline: The Art and Practice of the Learning Organization.* New York: Doubleday, 1990.
- **Stewart, Thomas**, *Intellectual Capital: The New Wealth of Organizations.* New York: Doubleday, 1997.
- **Sveiby, Karl Erik**, *The New Organizational Wealth: Managing and Measuring Knowledge-Based Assets.* San Francisco, Berrett-Koehler, 1997.
- **Sveiby, Karl Erik**, *The Knowhow Company: Strategy in Knowledge-Intensive Industries*, <http://www.sveiby.com.au> (available for download from the World Wide Web), 1992.



## A-2 Knowledge on the Web

- **Andersen Consulting Knowledge Technologies:**  
[http://www.ac.com/aboutus/tech/kt/au\\_frmain\\_1.html](http://www.ac.com/aboutus/tech/kt/au_frmain_1.html)
- **Federation for Enterprise Knowledge Development (FEND):**  
<http://www.fend.es/>
- **Savage—Knowledge Era Enterprises:**  
<http://www.kee-inc.com/>
- **Sveiby—Knowledge Management:**  
<http://www.sveiby.com.au/>
- **University of Texas at Austin—Knowledge Management:**  
<http://knowman.bus.utexas.edu/index.htm>
- **Knowledge Garden Resources:**  
<http://www.co-i-l.com:80/coil/knowledge-garden/resources.shtml>
- **Knowledge Management Network:**  
<http://kmn.cibit.hvu.nl/index.html>
- **The Knowledge Management Forum:**  
<http://www.3-cities.com/~bonewman/>

## A-3 Yankee Group Publications

- “IT as Value Driver: Reality Divided by Hype Is Greater Than One (Part 2),” *Yankee Watch Management Strategies*, Vol. 7, No. 8, May 1997.
- “IT as Value Driver: Reality Divided by Hype Is Greater Than One (Part 1),” *Yankee Watch Management Strategies*, Vol. 7, No. 6, March 1997.
- *Process Modeling Methods and Tools*, Yankee Group Management Strategies Planning Service Report, December 1996.
- “Information Technology Cost Allocation: Users Issues and Recommendations,” *Yankee Watch Management Strategies*, Vol. 6, No. 13, May 1996.
- *Hot Outsourcing Markets*, Yankee Group Management Strategies Planning Service Report, February 1996.
- *The Future of BPR*, Yankee Group Management Strategies Planning Service Report, December 1995.
- *EVA and IT: Making the Case for the Missing Metric*, Yankee Group Management Strategies Planning Service Report, December 1995.

- *The Future of the CIO*, Yankee Group Management Strategies Planning Service Report, September 1995.

## Appendix B

# Glossary of Acronyms and Abbreviations

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ABB	Asea Brown Boveri
APQC	American Productivity & Quality Center
BP	British Petroleum
BPO	business process outsourcing
BPR	business process re-engineering
CEO	chief executive officer
CIO	chief information officer
CKO	chief knowledge officer
CoP	community of practice
CTP	Cambridge Technology Partners
DOE	Department of Energy
DSS	decision support systems
E&Y	Ernst & Young
EDA	electronic design automation
EIS	executive information systems
EVE	enterprise-wide viewing environment
FETC	Federal Energy Technology Center
GKN	Global Knowledge Network
GM	General Motors Corp.
HP	Hewlett-Packard Co.

IS	information systems
OLAP	on-line analytical processing
PARIS	Performance Analysis, Rating, and Improvement System
PD	practice development
PIMM	Performance Improvement and Measurement Methodology
PPO	Product Processes Organization
R&D	research and development
SKU	Stock Keeping Unit
SLA	service-level agreement
VHA	Voluntary Hospitals of America
WAN	wide-area network
WII	Work Improvement Initiative
WWW	World Wide Web
Y2K	Year 2000

# Appendix C

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