

KNOWLEDGE MANAGEMENT: A TOOL FOR CREATING EFFECTIVE AND ADAPTIVE REGULATORY AGENCIES

**A VISUAL PRIMER AND APPLICATION
GUIDE**

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The views and opinions expressed herein do not necessarily reflect the views or opinions of the NRRI, the National Association of Regulatory Utility Commissioners (NARUC), or its member states.

Introduction and Explanation

This primer and application guide presents an introduction to knowledge management, a tool for enhancing the learning potential of organizations, and argues that knowledge management is a technique that holds great promise for regulatory agencies. One premise of the argument for knowledge management for regulatory agencies is that the analytic infrastructure of regulatory agencies (i.e., their ability to bring analytic power to bear on issues of great public importance) is being constrained and eroded by a number of factors. Whether that argument holds at your commission or not, preservation and enhancement of the intellectual capital of regulatory agencies is critical.

In sequence, the figures within this document lay out the reasons behind the erosion of the analytic infrastructure of the regulatory process; describe knowledge management as it is currently practiced; identify why it is appropriate for regulatory agencies; compare it and other organizational change techniques; lay out a progression of benefits and strategies; develop a knowledge management program for regulatory agencies and identify where to start such a program; identify leadership characteristics necessary for learning organizations; describe “communities of practice,” a concept critical to innovation and organizational learning; compare Western and Japanese knowledge management, identify impediments and facilitators to knowledge transfer, acquisition, and creativity; create a sample balance sheet for intellectual capital; and outline a learning organization training program that I have presented to state commissions. A glossary and bibliography follow the figures. A short narrative overview precedes each of the figures.

This document is a work in progress. The electronic version will be updated as additional information is available. It is also intended as a discussion document and the initiation of a community of practice of its own around the application of knowledge management to regulatory agencies.

For information or assistance in the application of knowledge management to your organization please contact me at:

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I appreciate your comments and input.

Overview of Figure 1

Knowledge management is a powerful tool for organizational change, creativity enhancement, staff development, and performance improvement. In the regulatory environment, those are important goals, and in every organization, there is a gap between the potential of the organization and the reality of its performance, a gap that knowledge management is designed to address. But there is another reason for the application of knowledge management to public utility regulation. Public utility regulation is facing a crisis, a crisis that demands increased attention to the intellectual assets of public utility commissions.

Though each commission is different, it can be argued that the analytic infrastructure of the regulatory process, the ability of regulatory organizations to bring analytical tools and talents to bear on complex regulatory problems, is under assault from a number of directions, identified on Figure 1. Of most significance and danger are the increasing politicization of regulatory decision making, increasing issue complexity and the need for new skills, the potential for a reduction in resources available to commissions, and recruiting, retention and retirement problems. If that erosion of the analytical infrastructure is not addressed a number of adverse outcomes may result. Those outcomes are also identified on Figure 1.

The most immediate adverse impacts will be the continuation of federal preemption that has characterized public utility regulation in recent years, staff frustration and turnover, and the marginalization of regulatory agencies. In the longer term, regulatory decisions will be increasingly politicized, and, ultimately, the public will be poorly served unless the intellectual assets of regulatory commissions are protected, enhanced, and applied to the protection of the public interest.

Figure 1: Erosion of the Analytic Infrastructure of Public Utility Regulation

Current Problems

Likely Outcomes

Increased Importance of Policy Decisions

End of iterative ratemaking processes
Market variability and impact

Federal Preemption of Regulatory Responsibilities

Requirements for New Analytic Methods

Market monitoring
Merger evaluation
Reliability assessment, etc.



Staff Turnover and Frustration

Issues that Transcend State Boundaries

Regional issues
National issues
International issues

Analytic Void, Inability to Bring Analysis to Bear on Issues

Erosion of Commission Analytic Capability

Retirements and turnover
Recruiting difficulties
Increased workload



Increasingly Adverse Public Impacts and Dissatisfaction

Increasing Issue Complexity

Unintended consequences
Synergistic effects, nonlinearity
Issue interrelationships

Marginalization of Regulatory Agencies

Limited Public Resources



Long-term Unintended Consequences for Consumers, Inability to Manage Markets

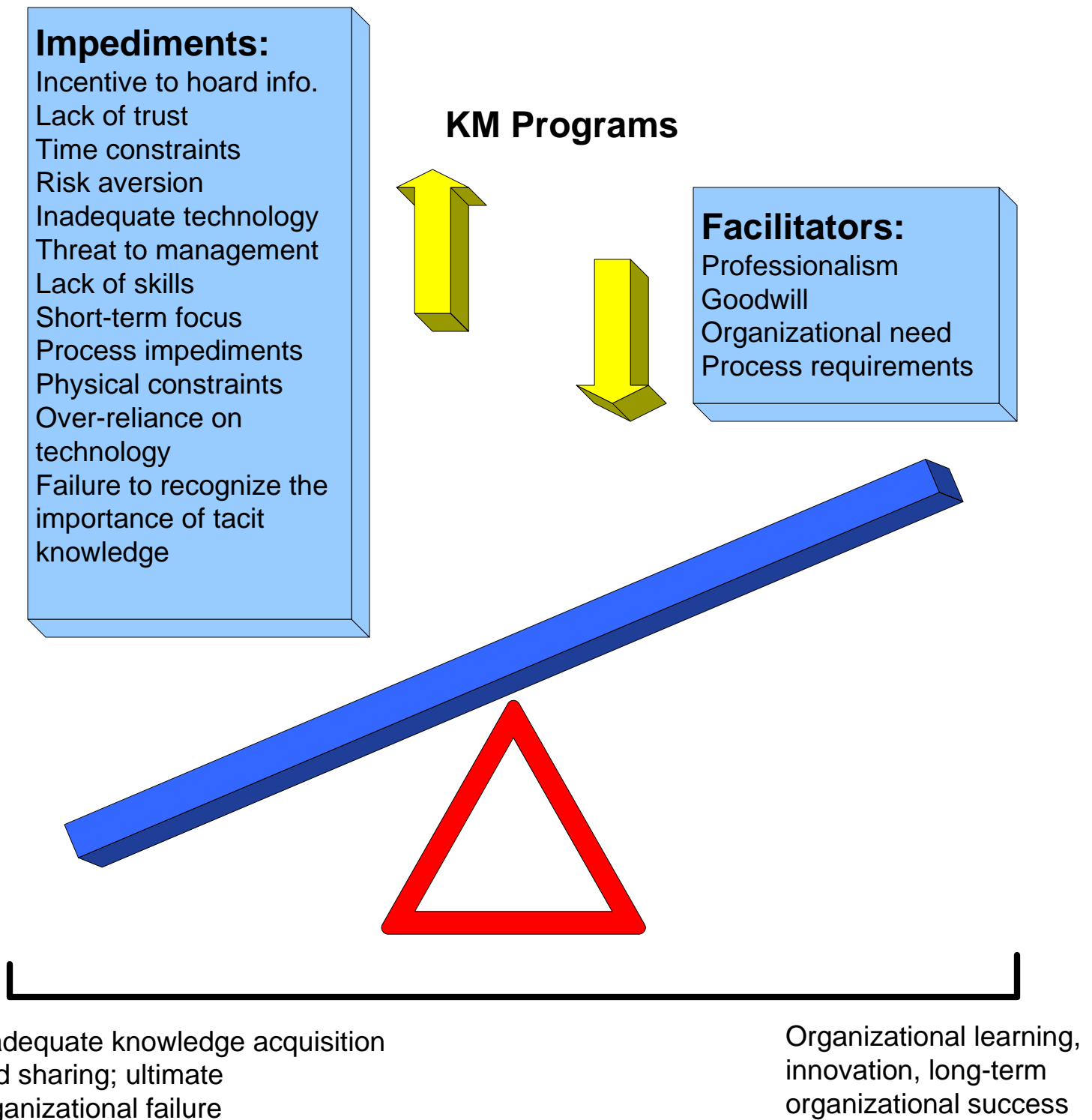
Politicization of the Regulatory Decision Process

Increased Political Purview and Politicization of Decision Making

Overview of Figure 2

In any organization, structures, processes, and human dynamics often inhibit the creation of new knowledge and the sharing of knowledge across the organization. Chief among the factors inhibiting knowledge acquisition and creativity are incentives to hoard information, a short term focus, and inadequate use of technology. Though there are other, positive factors that cause people to naturally share knowledge and seek innovation, those factors usually cannot overcome the obstacles to knowledge sharing. As a result, the performance of the organization is adversely impacted. Deliberate knowledge management programs attempt to reverse this natural imbalance by decreasing the impediments to knowledge transfer, increasing the natural facilitators, and creating organizational learning, a key to innovation and long-term organizational success.

Figure 2: Typical Impediments and Facilitators to Knowledge Transfer, Acquisition, and Creativity



Overview of Figure 3

The intellectual assets of an organization are its most essential assets and the only ones capable of sustaining long-term organizational effectiveness. They are of three varieties—human capital (the knowledge and skills of individuals), structural capital (systems, procedures, and compiled information), and social capital (the ability of individuals to work together and share knowledge).

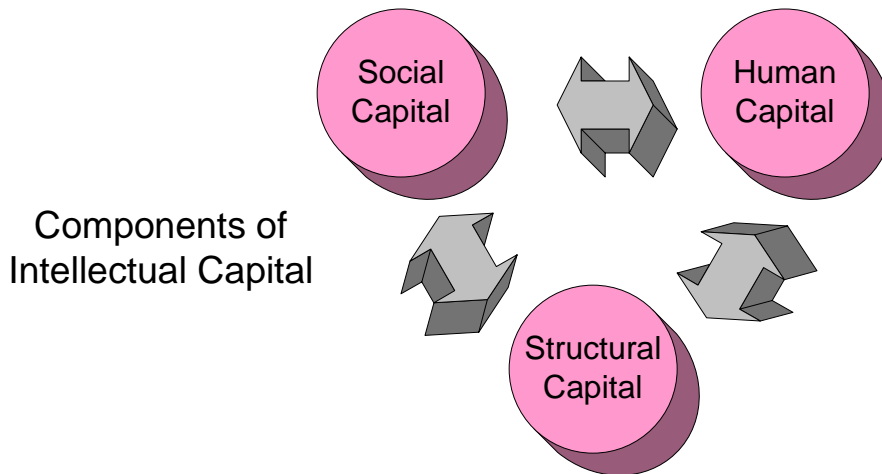
The long-term goal of knowledge management is to create a “complex adaptable organization,” an organization that is able to reflect on its processes and rules and adapt those processes and rules as necessary to fit changing circumstances.

A key concept in knowledge management is the distinction between explicit and tacit knowledge. Explicit knowledge is that knowledge that is rational, sequential, digital, and capable of being transmitted by formal, systematic means. Tacit knowledge is experiential. It is transmitted through metaphors and analogies and personal relationships. The creation and transmission of both are critical to organizational success.

Knowledge management can either be adopted by an organization as a formal plan or as an overall operational philosophy. It allows multiple points of change leverage and can create a variety of outcomes, which include enhanced creativity and innovation, increased organizational effectiveness, better integration with customers, and reduced decision time.

Figure 3: An Integrated Organizational Learning and Knowledge Management Framework

Organizational learning is an integrated attempt to increase the intellectual assets of the organization.



Knowledge is the capacity for effective action. It can be separated into content, context, and structure. The two types of knowledge are explicit and tacit.

Knowledge Management is a deliberate design of processes, tools, structures, etc., with the intent to increase, renew, share, or improve the use of knowledge represented in any of the three elements of intellectual capital. It focuses on 2 activities: sharing (knowledge velocity) and acquisition (innovation, adding value). It does not develop strategic solutions so much as provide the organization with the ability and skills to develop solutions as needed.

The leverage points of Knowledge Management are skill training, the establishment of collaborative opportunities and mechanisms, leader/manager training, performance assessment, process redesign, job design, integration of external stakeholders into the knowledge creation process, physical structure and layout, technology, and changing mental frameworks.

The intended outcomes of Knowledge Management initiatives are:

- Enhancement of creativity and innovation
- Increased efficiency and effectiveness
- Reduced decision making time
- Increased morale and motivation, decreased turnover
- Creation of an open, mutually supporting work environment
- Better integration with customers
- Development of complex, adaptive processes
- Creation of long-term strategic advantages for the organization.

Overview of Figure 4

Knowledge management is not the only tool available for organizational change, and some would argue that it, like its predecessors, will be replaced at some point by another “technique of the moment.” Knowledge management does have, however, some advantages over other change strategies. It is less process-focused than TQM or reengineering, it doesn’t require a prediction of the future as does strategic planning, and it involves staff and, in fact, makes increasing their competence a major goal. Knowledge management doesn’t prepare the organization for a certain future but prepares it to adapt to whatever circumstances arise.

Perhaps the best advantage of knowledge management is its scalability, the ability to adopt it as a philosophy, implement a full-scale program, or undertake selected knowledge management initiatives.

Figure 4: Comparison of Selected Organizational Change Techniques

| | TQM | Reengineering | Strategic Planning | Knowledge Management |
|--|--|---|--|--|
| Goal | Reduced Defects; Increased Efficiency | Streamlining, Right Processes | Creation of “Fit” for the Future | Increasing Intellectual Capital and Adaptability |
| Focus | Existing Processes | Optimal Processes | Identification of and Preparation for the Future | Intellectual Capital and Knowledge Flows |
| Timing of Impact | Immediate | Mid-range to future | Future | Immediate to Future |
| Era of Application | 1980s | Early 1990s | 1970s | Early 1990s (Hijacked by IT Industry); Late 1990s Reformed |
| Role of Staff | Participants in Process Reform | Target of Process Reform | Irrelevant to Planning Processes | Goal is to Enhance Capabilities |
| Relationship to Current Practices | Attempts to Reform Current Practices | Attempts to Replace Current Practices | Current Practices Are Irrelevant | Builds on Current and Informal Practices |
| Strengths | Ability to Focus on Known Processes | Wider Scope than TQM; Zero-Base Focus | Shift of Focus to Long-Term Changes and Implications | Better Use of Knowledge and Better Organizational Adaptability |
| Weaknesses | Over-Emphasis on Existing Processes | Focus on Processes; Lack of Consideration of Human Factors | Inability to Predict the Future | Difficult to Estimate Benefits |

Source: Adapted in part from Don Tapscott, *The Digital Economy*, McGraw-Hill, 1996.

Overview of Figure 5

Knowledge management is more appropriate for some organizations than others. Simple organizations, employing simple processes, are less well-suited to knowledge management than complex organizations that rely on sophisticated information for decision making. Public utility commissions are particularly well-suited to reap the benefits of knowledge management because knowledge is the key asset and focus of the regulatory process. Regulatory agencies are staffed by knowledge workers, who are motivated by learning and ideas and have the potential to apply innovative techniques and processes to the resolution of public issues.

Figure 5: Why Is Knowledge Management Appropriate for Regulatory Agencies?

Knowledge is the Key Asset in the Regulatory Process (i.e., Public Utility Commissions Are Knowledge Dependent)



A knowledge organization is an organization that recognizes knowledge as a critical strategic asset, equips itself with the tools to use knowledge effectively, and fosters its capabilities to collect and use knowledge in pursuit of its mission.

Public Utility Commission Staffs Are Dominated by Knowledge Workers



Knowledge workers are those that collect, distribute, synthesize, and add value to information. Their primary mission is to foster decision processes (by commissioners or consumers) through the use of knowledge.

The “Communities of Practice” at Commissions are Built Around Information and Ideas



Communities of practice are emergent clusters of affiliated staff who create, share, and apply knowledge within and across boundaries. Knowledge management can enhance the functionality of the communities of practice and encourage their use as centers of innovation and work.

Knowledge Workers are Motivated by Learning and Ideas



Knowledge workers thrive on the opportunity to make a difference, the exposure to ideas, the opportunity to explore issues, and the chance to make an intellectual contribution. Knowledge management is designed to foster those motivators.

Public Utility Commissions Are Involved in a Process of Reinvention



Knowledge management creates more long-term strategic advantage than other change methods because it builds the capacity for ongoing change. It can be integrated into other change initiatives like strategic planning.

Overview of Figure 6

One of the first tasks in applying a knowledge management program is the assessment of the current level and use of the organization's intellectual capital. One way to assess those assets is to create a balance sheet that notes both the strengths and weaknesses of each of the three categories of intellectual capital. Figure 6 builds that balance sheet for a regulatory agency, though the balance sheet would be different for each individual commission. A net knowledge worth is calculated as a summary. In general, the intellectual capital of regulatory agencies, though considerable, is biased towards immersion in current or past competencies and an emphasis on historical information and processes.

The goal of the knowledge management under this analogy is to increase assets and decrease liabilities with the result of increasing net knowledge worth. Also employing this analogy, "before" and "after" balance sheets could be created as an evaluative mechanism, and a "pro forma" balance sheet (a prospective assessment) could be created as a planning tool.

Figure 6: The Intellectual Capital of Regulatory Agencies: A Sample Balance Sheet

Assets

Social Capital

- Team approach to cases
- Small-group cohesion

Human Capital

- High skill levels in some competencies
- Immersion in task performance; deep OJT
- Some education opportunities
- Professional discipline

Structural Capital

- Large body of historical information: cases, orders, filings
- Some complaint information
- Some cross-jurisdictional data

Liabilities

Social Capital

- Interactions limited by process and rules
- Interactions limited by win-lose culture

Human Capital

- Limited opportunities for cross training
- Some new skill areas not well covered

Structural Capital

- Significant portion of stored information may not be useful in changing contexts

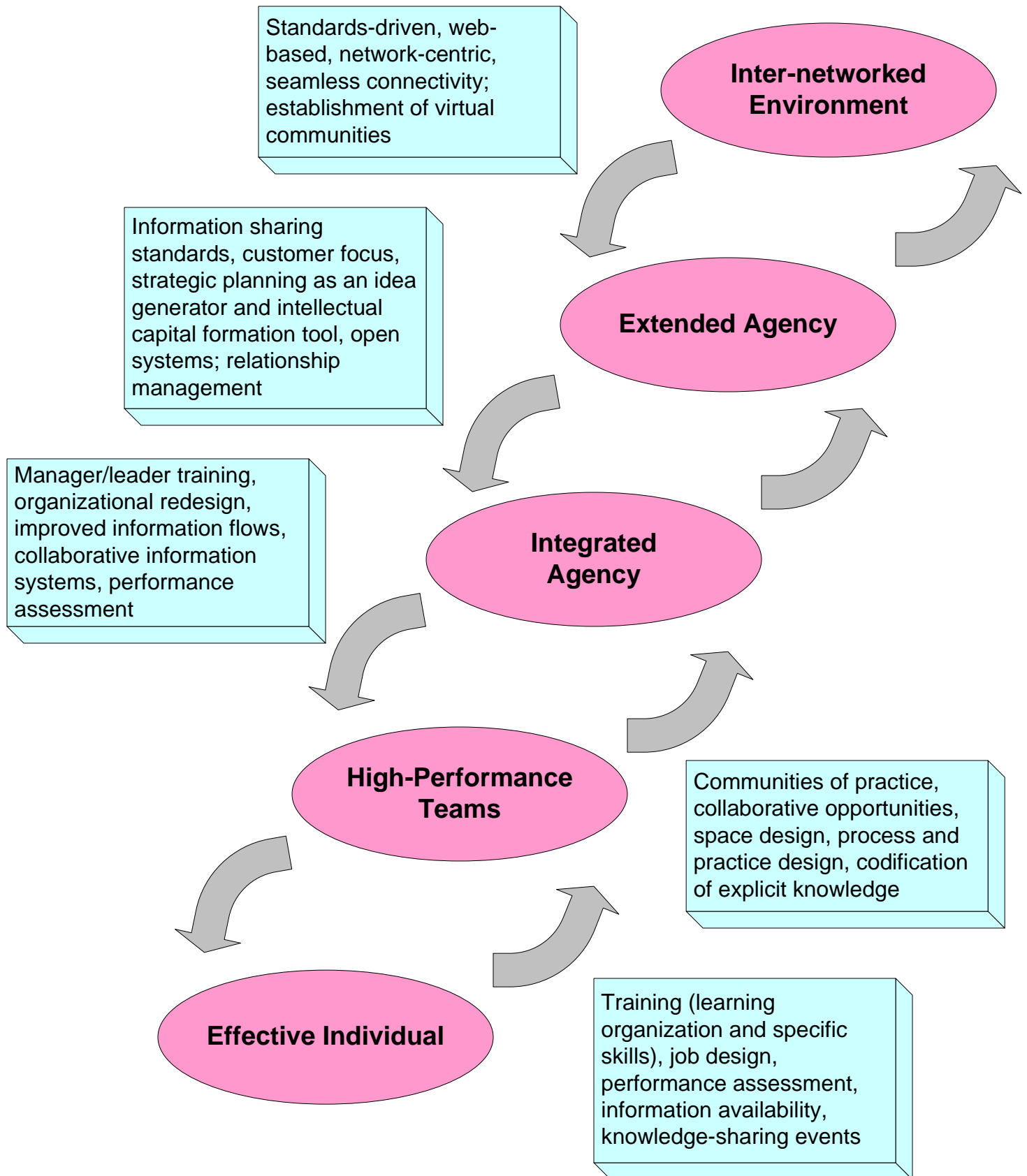
Net Knowledge Worth

The intellectual capital of regulatory agencies is biased towards small group loyalty, immersion in current or past competencies; emphasis on historical information and data utilization; use of complex, non-adaptive processes

Overview of Figure 7

Knowledge management can be built from the bottom up, beginning with the individual and proceeding through teams, the internal agency, the agency's external relationships, and, finally, the external environment. Don Tapscott has identified a progression that is shown on Figure 7. For each level, a different set of knowledge management strategies applies. The strategies are also identified in Figure 7.

Figure 7: Knowledge Management Strategies and Progression for Public Agencies

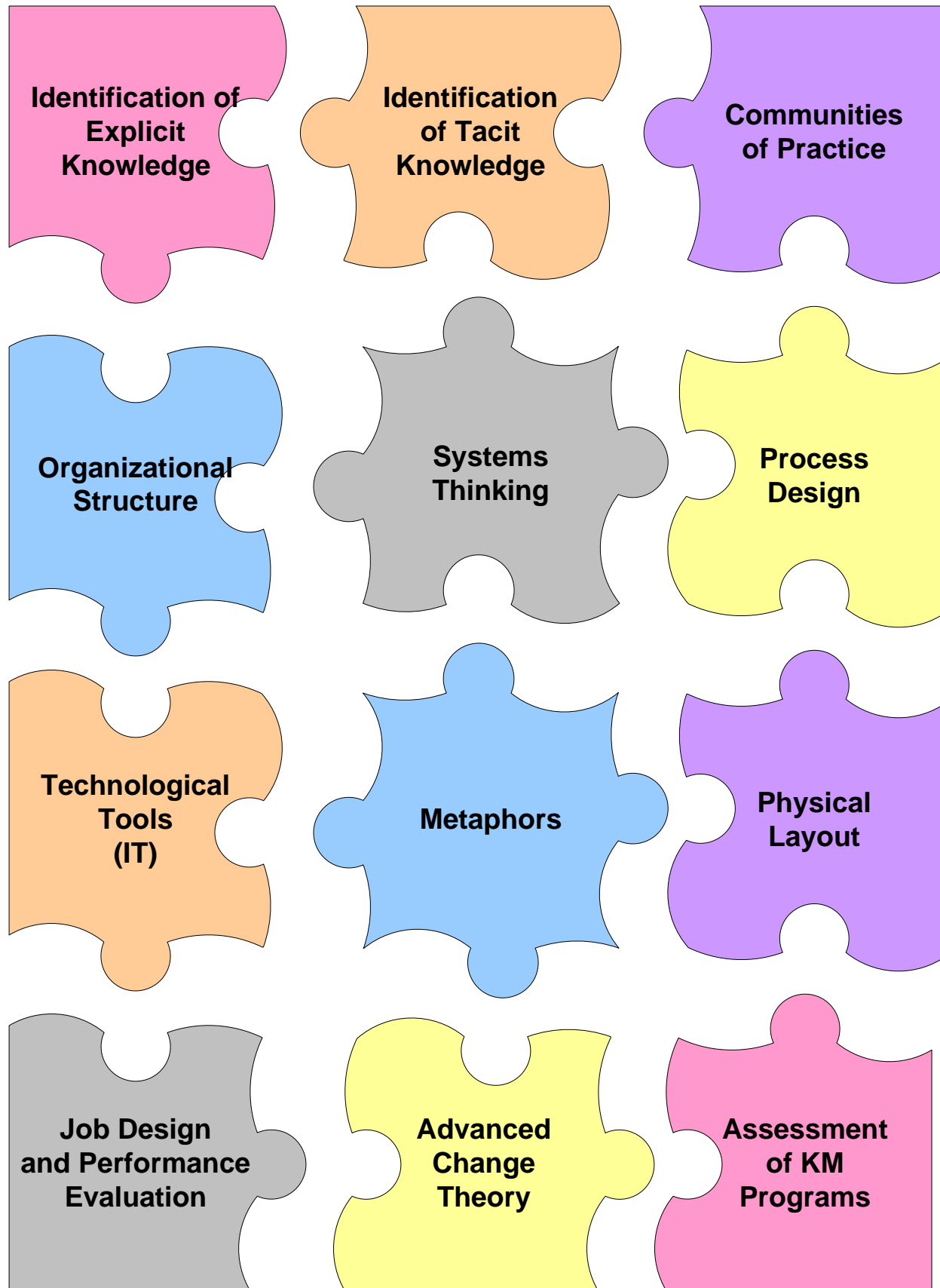


Overview of Figure 8

Creating the capability for an organization to think, reflect, create, and adapt to changing circumstances requires a mix of strategies. Some of those strategies are “hard,” like the design of processes that allow knowledge sharing and the creation of performance evaluation systems that induce knowledge sharing and innovation. Some of the strategies are “soft” and target the individual and his/her mindset toward organizational adaptability.

Advanced Change Theory is a change model developed by Robert Quinn at the University of Michigan. It emphasizes personal accountability, modeling, and leadership from any point in the organization.

Figure 8: The Integration of “Hard” and “Soft” Elements into Knowledge Management



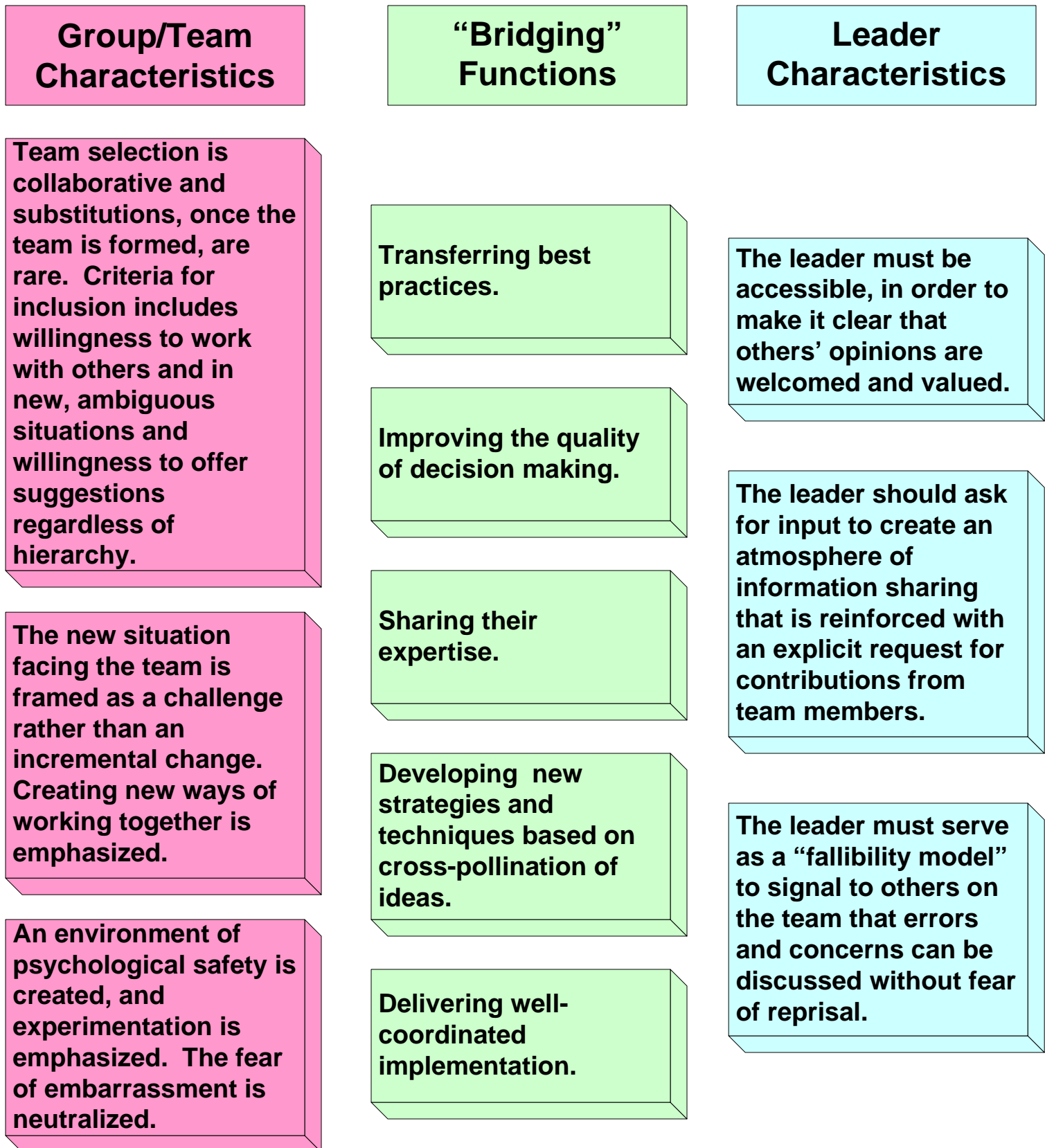
Overview of Figure 9

As is the case in any change strategy, management plays a key role in knowledge management, though the role of management is considerably different in knowledge management than in other change strategies. In knowledge management, the objective is to create bottom up innovation and adaptability. Centralized management and control are less important than encouragement of team efforts and sharing expertise.

Figure 9 identifies the role of agency leaders in knowledge, the composition and chartering of teams, bridging functions of managers, and the necessary characteristics of leaders.

In knowledge management, middle managers play a key role as a link between the vision established by top management and the creation of knowledge at lower levels.

Figure 9: Creating and Leading the Learning Organization



Source: Author’s construct based on Amy Edmondson, Richard Bohmer, Gary Pisano, “Speeding Up Team Learning,” *Harvard Business Review*, October 2001, 125-132 and Morten T. Hansen and Bolko Von Oetinger, “Introducing T-Shaped Managers: Knowledge Managements Next Generation,” *Harvard Business Review*, March 2001..

Overview of Figure 10

According to Nonaka and Takeuchi, an effective knowledge management program can set in motion a perpetual cycle of knowledge creation. They identify the conditions that enable that knowledge spiral (intention, autonomy, creative chaos, redundancy of information, and variety), and the steps in the knowledge creation process. This knowledge creating process begins with sharing tacit knowledge and conceptual creation. Historically, most knowledge creation activities in organizations have focused, instead, on explicit knowledge and mechanisms for creating and sharing it.

Figure 10: Application of the Knowledge Spiral

Enabling Conditions of the Knowledge Spiral

Intention: the aspiration of the organization to achieve its goals

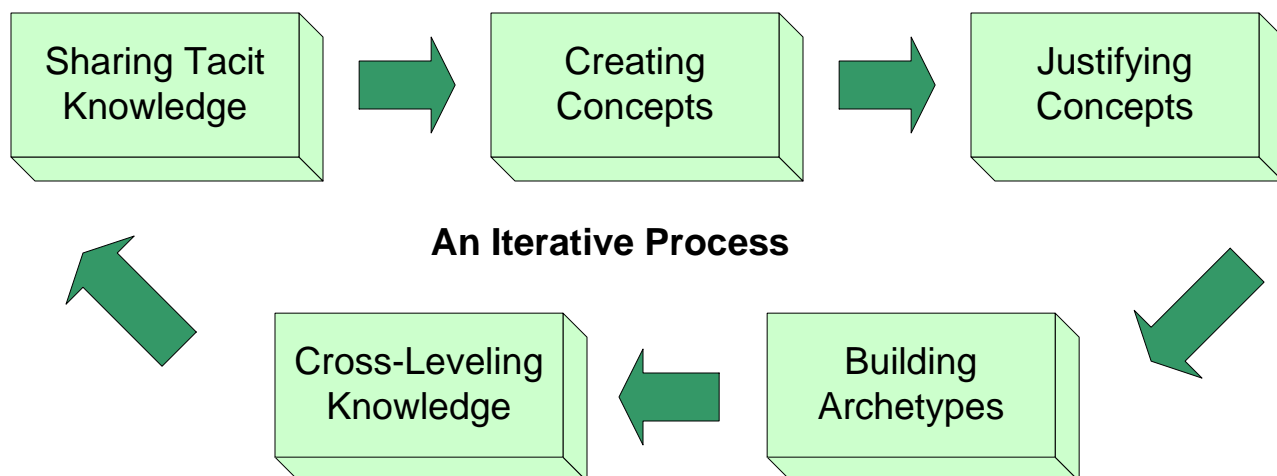
Autonomy: as far as circumstances permit and in order to pursue organizational goals

Fluctuation and creative chaos: organizational crisis or recognition of the need for change. The ability of the organization to be self-reflective determines the creativity of the process. Chaos is destructive to organizations that are incapable of self-reflection.

Redundancy of information

Requisite variety: the internal diversity of thinking must match external diversity

Steps in the Knowledge Creation Process

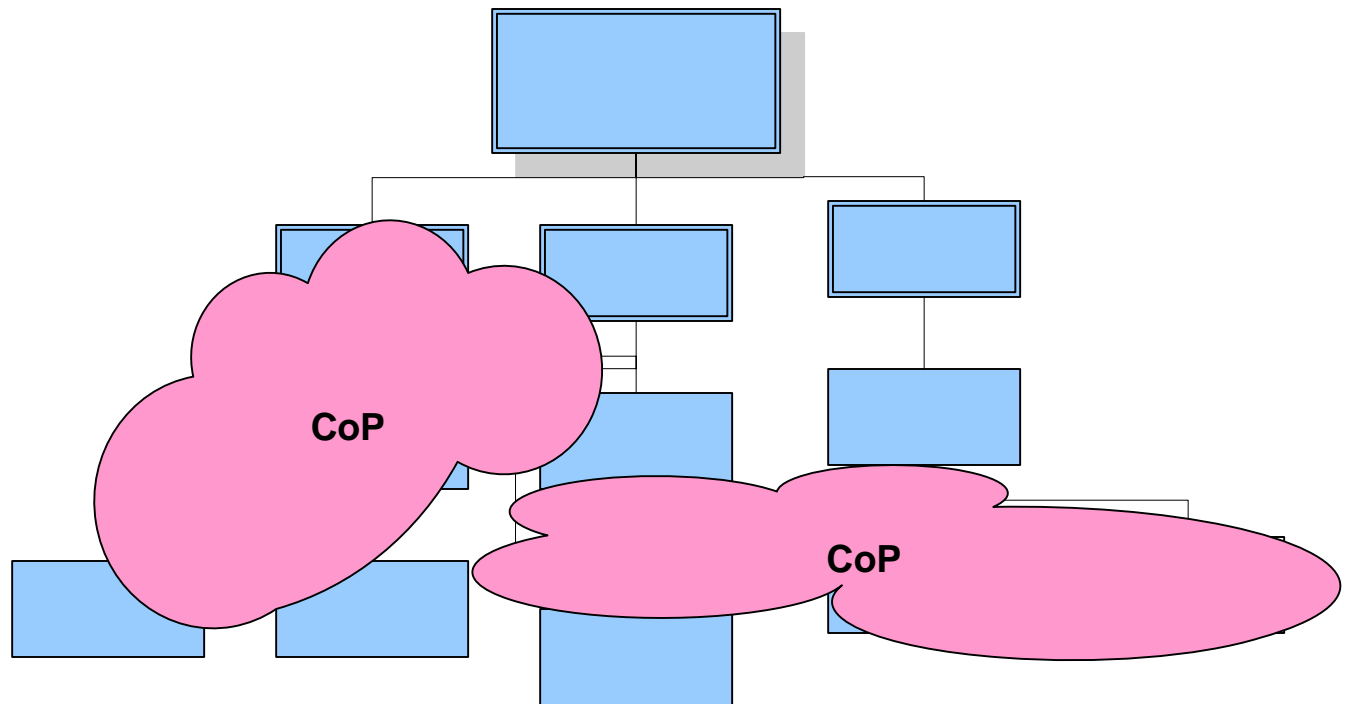


Source: Adapted from Ikujiro Nonaka and Hirotaka Takeuchi, *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation* (New York, NY: Oxford University Press, 1995).

Overview of Figure 11

A key element in the knowledge creation activities of any organization is the operation of communities of practice. Communities of practice typically develop informally among people with shared interests. They allow knowledge to be shared within and across organizational boundaries. In some cases, they link the organization to entities outside the formal boundaries of the organization. Though communities of practice sometimes defy organization and guidance, they can be encouraged by the provision of space, time, and resources. Communities of practice can be the source of innovation but can also be conservative in their orientation.

Figure 11: The Communities of Practice (CoP) Model of Organizational Learning



Communities of Practice

Create, share, and apply knowledge within and across boundaries

Are adhoc and emerge around common concerns or expertise

Can be issue or task based

Are sustained by a belief in the “rightness” of their activities

Communicate ideas through stories and metaphors

May be innovative (but can be conservative as well)

May be permanent or temporary

Resist direction

Can cross organizational boundaries (internal and external)

Can be encouraged by:

- Provision of time and resources,

- Encouragement and reward for participation

- Provision of “space”

- Celebration/recognition of results

Are key to the development and transmission of knowledge

Assist with:

- Socialization (conversion of tacit knowledge to tacit knowledge)

- Combination (conversion of explicit knowledge to explicit knowledge)

- Internalization (conversion of explicit knowledge to tacit knowledge)

- Externalization (conversion of tacit knowledge to explicit knowledge)

Overview of Figure 12

As indicated in Figure 11, communities of practice are largely self-emerging, that is, they grow themselves and manage themselves. Communities of practice can, however, be inspired and encouraged. Figure 12 identifies six requirements for the operation of communities of practice. The first four (a challenge, space, rewards, and tools) can be provided by managers. A “beginner’s mind” can be encouraged by training and the charge granted to the community of practice. Last, communities of practice need to be accountable to the organization and not operate at cross-purposes to it.

Figure 12; Inspiring (i.e., Breathing Life Into) Communities of Practice

Effective Communities of Practice Require:

A Challenge:

CoPs are inspired by the opportunity to change the existing order, to create something that was previously thought impossible. Big challenges inspire big efforts and excitement.

Space:

CoPs need to have the space, both literally and figuratively, to collaborate. Physical space that allows for display, comment, and modification of the community's ideas and work products.

Rewards:

CoP members need to be rewarded for their efforts, though not, necessarily, with financial rewards. Knowledge workers are motivated by the opportunity for freedom, the chance to work on exciting ideas, and the meeting challenges. The CoP should be rewarded for activity, whether it results in a success or a failure. Inactivity is not acceptable.

Tools:

CoPs need to have the tools necessary for success. Those tools might include computers, software, and specialized skills.

Beginner's Mind

Though expertise is important, the members of CoPs need to approach the challenge without the onus of "the way things have to be done."

Accountability:

Ultimately, CoPs have to contribute to the goals of the organization. Those that, over time, serve other goals must be moved to another organization whose purposes they fit or terminated.

Overview of Figure 13

As indicated in Figure 13, Western and Japanese approaches to knowledge management differ. Japanese knowledge management more fully addresses tacit knowledge than Western approaches, and Japanese knowledge management is more focused on the creation of new knowledge than Western approaches, which emphasize codification and transmission of existing knowledge. The role of middle managers as a link between the strategic direction provided by top managers and the operating level is emphasized in Japanese knowledge management. At present, the boom in knowledge management that the West is experiencing has not reached Japan.

Effective, far-reaching knowledge management requires a synthesis of the two approaches.

Figure 13: Comparison of Knowledge Management Approaches in the West and Japan

| Characteristic | West | Japan |
|--|---|--|
| View of Knowledge | Knowledge is principally data or stored information | Knowledge also includes emotions, values, hunches |
| Type of Knowledge | Explicit: objective, stored in databases, and easily transmitted online | Tacit: subjective, personal, and cognitive, experiential |
| Activity Focus | Management, codification, and transmission of existing knowledge | Creation of new knowledge |
| Knowledge Management Responsibility | Select few in human resources, IS, or internal consultants who classify, tabulate, and reduce knowledge into rules and formulae | Widely dispersed, many involved; interaction among front-line employees, middle managers, and top management, with middle managers playing a key synthesizing role |
| Management Approach | Top-down | Middle-Up-Down |
| Boom | Yes: books, journals, conferences, consultants, supportive information systems, corporate titles | No |

Source: Derived from "Reflection on Knowledge Management From Japan," Hirotaka Takeuchi and Ikujiro Nonaka in *Knowledge Management: Classic and Contemporary Works*, MIT Press, 2000.

Overview of Figure 14

From the previous figures, it is apparent that knowledge management is a change technique that impacts virtually every aspect of the organization. Where, then, does one start in the develop of an effective program.

The seven steps identified on Figure 14 provide a simplified knowledge management program, beginning with the establishment of a knowledge vision and proceeding through pilot tests of initiatives.

The role of IT is critical in knowledge management. In the early 1990's, knowledge management was “hijacked” by IT vendors, who prescribed information systems as the best knowledge management solution, selling the idea that “if you build it, they will come.” Current models of knowledge management are more sensitive to human factors and make use of IT but are not fully dependent on it. One guideline states that no more than 30% of the expenditures in a knowledge management program should be spent on IT.

Figure 14: Where to Start Your Knowledge Management Program

Create a knowledge vision: a mental map identifying the kinds of knowledge the organization is committed to building and sharing

Inventory the explicit and tacit knowledge of the organization and identify communities of practice and impediments to and facilitators of knowledge creation

Train managers and knowledge workers

Enable knowledge creators; provide incentives for knowledge creation and sharing; make participation in knowledge creation a part of job descriptions; assemble a diverse knowledge creation team.

Create high-density interactions; employ metaphors and analogies; involve stakeholders in the creative process; examine physical space; create shared creative space

Optimize the use of IT in support of knowledge management.

Pilot test knowledge management initiatives

Overview of Figure 15 and 16

Figure 15 outlines a knowledge management program that the author is prepared to tailor to the specific conditions of a state commission and assist in its implementation.

Figure 16 describes an introductory course in organizational dynamics and the learning organization. It provides a foundation for knowledge management.

Figure 15: A Knowledge Management (KM) Program Design for Regulatory Agencies

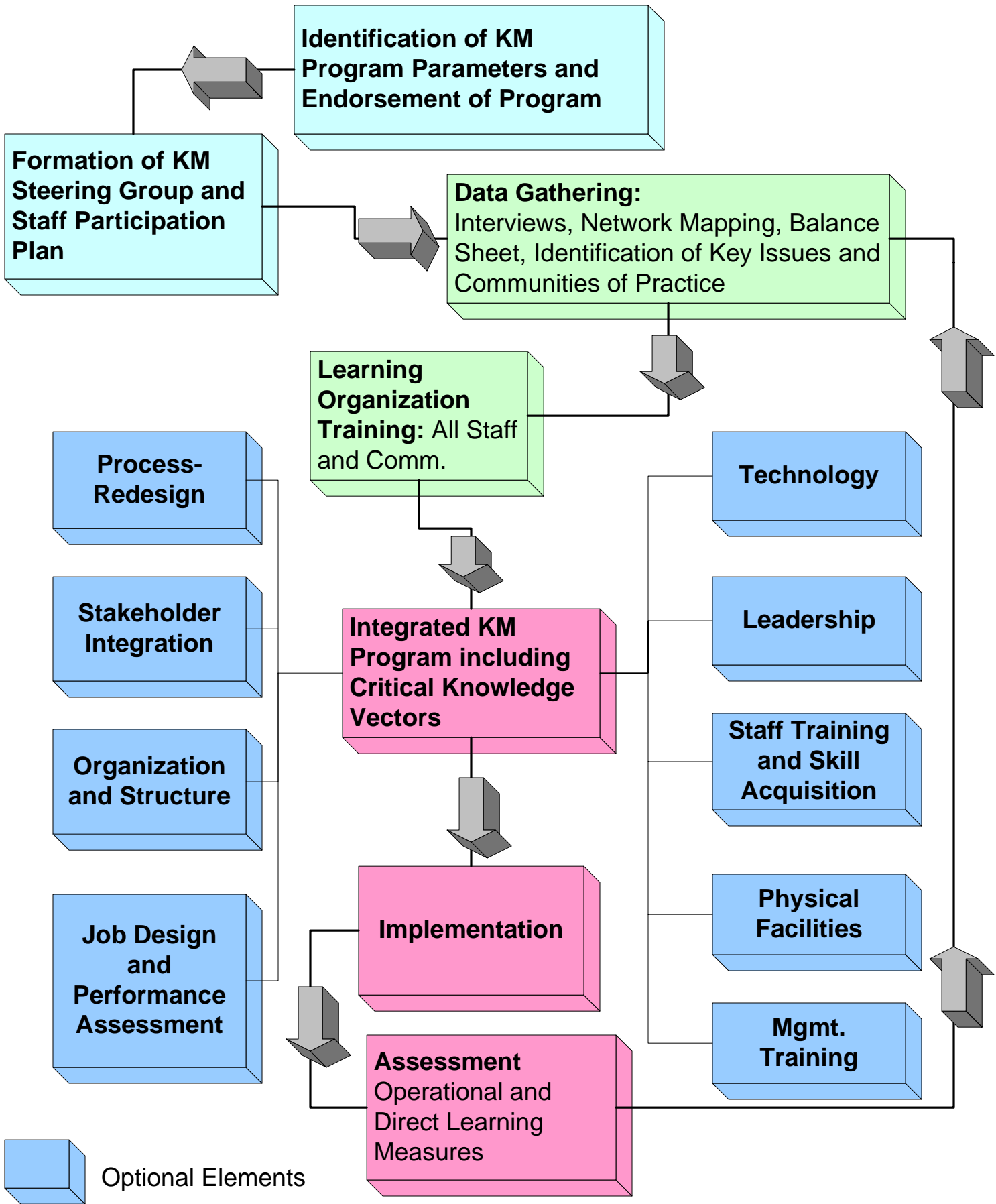


Figure 16: Organizational Dynamics and The Learning Organization

The Introductory Course for Knowledge Management

This program is designed to:

Create an understanding of organizational and personal dynamics.

Provide participants with a set of tools chosen to allow them to succeed in rapidly changing and stressful environments.

Expose participants to leading-edge thinking on leadership and organizations

Provide a base for a knowledge management program.

Course Modules:

Envisioning and understanding issues and concepts (Metaphors)

Coping with adversity (Learned Optimism)

Understanding thought processes (Ladder of Inference)

Creating adaptable organizations (The Learning Organization)

Communicating effectively (Advocacy and Inquiry)

Understanding the forces of change (Chaos, Emergence, and Entropy)

Conflict resolution (Principled Negotiations)

Building effective groups (Teamwork and Collaboration)

Leading from anywhere (Advanced Change Theory)

What some of those who have attended the program have said about it:

Very dynamic and interactive.

Very powerful.

Both inspirational and pragmatic.

It was terrific.

Very insightful.

This course should be given every year.

A Knowledge Management Glossary

Page 1

Analytic Infrastructure: the resources, human and physical, that allow organizations to bring analytical expertise to bear on problems (Wirick)

Beginner's Mind: the ability to see a problem as if it is being seen for the first time, without the mental impediments created by "the way things are usually done"

Combination: the process of combining different bodies of explicit knowledge often through sorting, adding, combining, and categorizing (Nonaka and Takeuchi)

Community of Practice: a group characterized by the sustained pursuit of a shared goal, collective learning, shared practices, and attendant social relations (Adapted from Wenger)

Complex, Adaptive Organizations: as compared to simple organizations (few elemental units and closed environments) and complex organizations (intricate, intertwined procedures whose execution is predicated on a set of unchanging rules), complex, adaptive organizations are composed of a number of individual components that are intelligent and adaptive; complex, adaptive organizations have the capability to adjust to changes in their local environments to maintain their effectiveness (Ruggles and Little)

Direct Measures of Learning: performance measures of knowledge management that identify such items as the numbers of people trained, the numbers of persons in communities of practice, and the numbers and types of customers impacted (Bassi and Van Buren)

Explicit Knowledge: knowledge that is objective, rational, sequential, digital, and capable of being transmitted in formal, systematic language; as distinguished from tacit knowledge (Nonaka and Takeuchi)

Externalization: the process of articulating tacit knowledge into explicit concepts; often employs metaphors, analogies, concepts, hypotheses, or models (Nonaka and Takeuchi)

Human Capital: the knowledge, skills, and experiences possessed by individual employees; it comprises both explicit and tacit knowledge (Seeman, et al.)

Internalization: the process of converting explicit knowledge into tacit knowledge; often associated with "learning by doing" (Nonaka and Takeuchi)

Knowledge Management: the deliberate design of processes, tools, and structures with the intent to increase, renew, share, or improve the use of knowledge represented in any of the three elements of intellectual capital (Seeman, et al.)

Knowledge Worker: a term defined originally by Peter Drucker to designate workers who carry the means of production and the organization's value in their heads as distinguished from those workers who served in organizations in which the means of production was embedded in physical capital (Ives, et al.)

A Knowledge Management Glossary

Page 2

Middle-Up-Down Management: as distinguished from top-down and bottom-up management styles, a management process that employs middle managers to play a key role in facilitating organizational knowledge creation, serving as a bridge between the ideals of top management and the reality of the front line (Nonaka and Takeuchi)

Operating Measures of Learning: knowledge management performance measure that identifies improvements in the ability of the organization to perform its functions; examples include customer satisfaction, lead times, employee productivity (Bassi and Van Buren)

Social Capital: an element of intellectual capital that is reflected in the ability of groups to collaborate and work together; it is a function of trust (Seeman, et al.)

Socialization: the process of converting tacit knowledge to explicit knowledge through sharing experiences and creating shared mental models; does not require using language (Nonaka and Takeuchi)

Structural Capital: a portion of intellectual capital that contains the explicit rule-based knowledge embedded in the organization's work processes or systems or encoded in written policies, documentation or shared databases; it is what remains of intellectual capital after the employees go home (Seeman, et al.)

Tacit Knowledge: knowledge that is embedded in human experience and relationships; it is transmitted informally and through metaphors, analogies, and stories

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Citations and references for the course on Organizational Dynamics and the Learning Organization are available separately by request.