



**KM Quick:
A KM Tool for Government Practitioners**

**A Product of the FAA Knowledge Services Network
and The Federal Knowledge Management Network**

This tool is available at www.km.gov.

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I. KM Quick: A KM Tool for Government Practitioners

A. Introduction:

1. KM Quick is the genesis of an outline of knowledge management (KM) provided for KM practitioners in the Government. Practitioners in the private sector may also be interested in using it. Many individuals are expressing appreciation for a quick reference that lists various aspects of KM. Since KM touches numerous disciplines, professionals who provide KM expertise find themselves overwhelmed when implementing and integrating KM. Under these circumstances, KM Quick allows one to quickly scan for related KM subjects. The original editors have the expectation that KM Quick will be expanded and changed as others build upon it. As you develop changes or additions, please provide them to bob.turner@faa.gov.
2. KM Quick is created in Word Outline view to enable instantly expanding and collapsing levels and sections to facilitate thinking about various topics. To search the outline completely, open all levels of the outline using the "All" button, and use Find under the Edit menu,
3. We are at an unprecedented crossroad in our national experience. The formidable challenges of the 21st Century are rising up at us on every side—new specters of war and destruction, global scale hunger and disease loom larger than ever, and the list goes on. At the same time, we seek our dreams—the drive for freedom and global peace, increasing choices and longer life, and much more. Now, in new ways, the capacities of our citizens and our government workforce offer new hope, new promise, and rich abilities to respond creatively to rapid change. Knowledge management drives to the center of our most valuable resources—capable citizenry that must be served and engaged, and dedicated civil servants who have the knowledge to serve well.
4. To set the stage and create the context for considering KM, you will first find an outline of key drivers in the 21st Century knowledge environment followed by knowledge imperatives for government.

B. The 21st Century Knowledge Environment

1. Accelerating Change
 - a Hyper speed in every aspect of living
 - b Unprecedented ability to rapidly scale up
 - c Intensified interaction of elements and relationships
 - d Constantly shrinking world—globalization
 - e Expanding diversity
2. Increasing Uncertainty
 - a Increasing disparity between economic classes
 - b Shifting populations
 - c Non-linearity challenge: small change—inordinate impact
3. Meeting the Complexity Challenge

- a Proliferation of data, information and knowledge
- b Connectivity of everything
- c Expansion of human networking
- d Growth of complexity in both elements and relationships
- e Workforce highly capable of adapting given effective leadership

4. Growing Need for Knowledge and Learning

- a Work becoming increasingly knowledge-centric
- b Brilliant technologies augment knowledge processes
- c Expansion in drive for learning
- d Learning resources becoming pervasive
- e Rapid innovation makes continuous learning a core issue

5. Exploding Innovation

- a Exploration and discovery are accelerating in human experience
- b Innovation processes are involving more and more workers
- c KM is helping innovation processes mature
- d Ubiquitous and intelligence systems
- e Mobility and pervasiveness

C. Knowledge Imperative for Government

1. Leverage Knowledge through e-Government

- a The “e” in e-Gov fundamentally connotes “enabled” government that develops and provides a new level of capacity to involve the public and to work across agencies to serve the public:

eGovernment is enabled government... government of the people, by the people and for the people in a virtual world, a collaborative government where technology meets human creativity, and where government manages and shares its vast stores of knowledge with, and for the benefit of, the citizen. (Mark Forman, OMB, and Alex Bennet, DON, 2001)

From the GAO:

”Of the People: Getting information from the people before decisions are made.

By the People: The exchange of information among agencies

For the People: Feeding the results back into the whole process”

(David Walker, GAO 2001)

- b The Federal Government’s e-Government strategy
<http://www.whitehouse.gov/omb/infoereg/egovstrategy.pdf>
- c Customer relationship management (CRM)

(1) CRM also stands for Citizen Relationship Management

(2) <http://www.crm2day.com/library/pr/pr0020/pr0020.shtml>

2. Build KM Capacity throughout Government

- a OMB and GAO identifying viable approaches to KM
- b Congress mandating KM development and leadership
- c Federal KM thought leaders increasing collaboration about KM across the government
- d Unions supporting knowledge sharing and innovation challenges in agencies
- e Employees creating communities of practices for sharing expertise

3. Increase Knowledge of Complexity

- a Connectivity of everything
- b Saturation of Information
- c Growth of complexity – elements and relationships

“Complexity is the harbinger of the future. Leveraging knowledge is the only solution to complexity.”
David Bennet of Mountain Quest Institute in speaking about the next generation organization as an
Intelligent Complex Adaptive System (ICAS)

4. Learn How to Learn Across Government

- a Learning about learning
- b Learning across government
- c Becoming a learning individual/organization
- d Knowledge sharing and communities

5. Apply KM to Emerging Challenges in Government

- a Homeland security
 - (1) Information security
 - (a) Flow of data, information knowledge and people
 - (2) Horizontal and vertical integration, federal, state and local
 - (3) Use knowledge to make decisions at the periphery
 - (a) Communities of Practice
 - (b) Share Nets
 - (4) Accelerate knowledge diffusion (Mesh Concept)
 - (5) Integration over time
 - (a) Ensure continuity
 - (b) Pattern continuity
 - (c) Historical continuity

- b Support transformational change
- c Enable sustainable high performance
- d Workforce is capable of adapting given effective leadership

D. Historical Perspectives of Knowledge

1. Oral Tradition Begins Around Campfires –

- a Knowledge is retained in cultural memory through memorized sayings, sagas, songs, poems and similar media. Storytellers, poets, bards were primary carriers of knowledge, passing it on from generation to generation by oft repeated word of mouth, passing it within families and tribes, and around village campfires. Knowledge spread with the people as they traveled via migrations and on trade routes.
- b In transition from pre-literate times, these traditions were captured and left to us in writing by such as Homer, Aesop, Moses, and the Brothers Grim.
- c Passing on technical skills and "know how" became formalized in guilds, apprenticeships, and societies. Human culture carried knowledge forward and without strong cultural measures and continuity, important knowledge content was distorted or lost.
- d Oral tradition continues today as a carrier of culture primarily for informal knowledge such as social morays, etiquette, and what people consider good and bad behavior. Changes in spoken language result in new words and meaning, and have a social or cultural context. A "native" in a culture is one schooled by its oral tradition. Those changes that "stick" become formalized later in writing.

2. Formal Documents Transmit Knowledge

- a Initially writing itself was important and sacred. Knowledge and wisdom were put in encoded forms to be copied and distributed but not to be changed or altered without social sanction (information assurance). Special repositories of semi-permanent media carrying the encoded information were often established to protect loss of these kinds of documents and preserve them for future generations.
- b Early "Knowledge Managers" held special status, e.g. as priests and scribes. Imhotep, worshipped in Egypt, was credited with creating the Egyptian Hieroglyphics, their "Holy Writing". And encoding the Hebrew Bible was a sacred act; copyists checked content validity with measures that would make today's data Cyclic Redundancy Check (CRC) algorithms pale by comparison.
- c Today formal documents, which are altered only by formal agreement and social sanctioning, include treaties, constitutions, policy, law, and regulations.

3. Industrial Economies

- a Made possible by advances in printed materials and communication technologies
- b Though originally documents were carved on stone, wood, or clay tablets, or via markings made on wood, hides and primitive papers, the printing press made documents inexpensive to duplicate and to change.
- c With the printing press, the concept of universal literacy became widely accepted as a cultural norm.
- d Printed books and literacy supported the underpinnings of industrial economies, with scalable knowledge activities organized in hierarchies in business and government bureaucracies.

4. Post-industrial Economies

- a Knowledge explosion with availability of larger educational systems advances in communication technologies and widespread availability of computer media. Characterized by complexity and rapid change.
- b Documents and books are now widely available electronically and the ability to rapidly create, exchange and store documents adds to the complexity of modern society, as well as to the explosion of creativity and new technologies.
- c Web content from government or new sources can be altered and re-disseminated in minutes, making “document” or content reliability a key issue.
- d Sharing knowledge becomes a new form of value exchange and creates value both for giver and receiver.
- e Documents in overabundance are no longer necessarily “sacred truths”, and transmitters of knowledge and culture. Currency is a major issue, “is this new or old news?” Attention management is an issue in an age of info glut. Filters are needed to exclude “noise” and focus individuals and teams on the information and knowledge they need.

5. “Knowledge Wells”, Communities, and Virtual “Campfires”

- a New Web communities (virtual tribes, communities of interest and communities of practice) now connect online locally or globally based on affinities
- b The Internet offers push options (electronic distribution) or pull options (accessible pages, repositories, databases, newsgroups, Frequency Asked Questions etc.) Real-time interaction is possible via text chat, electronic meetings and briefings using audio, video, whiteboards etc.
- c Via existing technology members of globally distributed groups can request and receive “expert” assistance and/or a pointer to or validation for information and knowledge at all times (7x24x365). Many individuals and groups are taking advantage of this “well” and “virtual campfire” to further business or personal interests.
- d The oral tradition continues on the Web. And, as always, some of the new tribes (on-line communities and vendors) that transmit and validate knowledge for others are building the “global village”, and some may, as in the case of Al Qaeda, organize to harm it.

6. A timeline view of modern KM development

- (1) <http://www.entovation.com/timeline/timeline.htm>

E. Key KM Terms

1. Data derives from Latin word meaning something given. It is a specific, limited or discrete bit of communication. If accurate, it may be called a fact. Data is considered to be a subset of information that is used for analysis. A single data item has no meaning and yet can be essential and extremely valuable in the development of information. Computers easily process data.
2. Information puts data in context and gives it meaning. Information may add value in various other ways such as by qualifying or labeling. Information is a message that is determined by recipients as to whether it is information. The etymology is complex—to form and perhaps to give light to. Labeling or quantifying data may clarify it so that it provides information. Messages attempt to convey information and imply both a sender, either a person or automated media, and a receiver who receives the data in a meaningful context. No message is conveyed unless the message is meaningful to the receiver.

"Patterns of data may form information. Patterns of information and context may form knowledge."

David Bennet

3. Knowledge: Is created by people and reflects their know-how and involves their education, experience, thinking, decision-making, and all other capacities for creating choices and taking action. Corporate knowledge is derived from individuals and may be documented and embedded in organizational resources. Knowledge is more than data and information.

a Three different definitions of knowledge :

(1) "Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of the knowers. In organizations, it often becomes embedded not only in documents or repositories, but also in organizational routines, processes, practices and norms." Davenport & Prusak

(2) "Knowledge is about reasoning about information and data to enable performance, problem solving, decision making and learning" Tom Beckman, IRS

(3) "Knowledge is the human capacity (potential and actual ability) to take effective action." David Bennet

b Comparison below is from The Free On-Line Dictionary of Computing, 2001, Denis Howe

"1234567.89 is data.

'Your bank balance has jumped 8087% to \$1234567.89.' is information.

'Nobody owes me that much money.' is knowledge.

'I'd better talk to the bank before I spend it, because of what has happened to other people.' is wisdom.

Following example is from the FAA

"8,000' and '10,000- are data.

'10,000 is height of mountain' and '8,000 is height of aircraft' is information.

'If plane flies at this altitude, flight will be prematurely terminated.' is knowledge.

Keeping aircraft higher than terrain.' is wisdom.

- c Many involved in defining knowledge also talk about expertise, intelligence and wisdom as levels beyond knowledge. As we come to understand knowledge better, our understanding will increase and our attention will move further.
- d **Tacit Knowledge:** Our know-how, including the ability to reason, make decisions and take action derived from individual experience, beliefs, etc. It includes what a person knows and what it knows how to do, but has not been documented or formally captured.

"I shall reconsider human knowledge by starting from the fact that *we can know more than we can tell*. This fact seems obvious enough; but it is not easy to say exactly what it means. Take an example, we know a person's face, and can recognize it among a thousand, indeed among a million. Yet we usually cannot tell how we recognize a face we know. So most of this knowledge cannot be put into words. But the police have recently introduced a method by which we can communicate much of this knowledge. They have made a large collection of pictures showing a variety of noses, mouths, and other features. From these the witness selects the particulars of the fact he knows, and the pieces can then be put together to form a reasonably good likeness of the face...but the application of the police method does not change the fact that previous to it we did know more than we could tell at the time."
Michael Polanyi—Polanyi coined the term "tacit knowledge".

- e **Explicit Knowledge:** Written, codified, or imbedded knowledge that has been transferred to workgroups or to the organization.
 - (1) Examples include the knowledge in business processes, written standard operating procedures, expert systems (programs which emulate human thought processes in well defined problem domains), rules, regulations, and copyrights/patents.
 - (2) Some KM authors discuss implicit knowledge, which is more than tacit, but not yet explicit. If you ask a person a question, and they can easily give you an answer that is not written or codified anywhere yet, they are transmitting implicit knowledge. It is accessible through query or discussion.
- f **Social Knowledge** is shared informally between individuals, and within groups, communities, and networks. It may be either explicit or tacit. As tacit knowledge, it is sustained through interaction and is especially demonstrated by the synergy in high performance teams. It is related to capacity for cooperation, and shared norms, values and objective.
- g **Customer Knowledge** is both knowledge the customer holds and knowledge about the customer. Ideally, this knowledge is beneficial to both the organization and to the customer.

4. Knowledge Management: An emerging academic discipline and management process that addresses how people, workgroups, and organizations use knowledge principles, processes, technologies, and training to leverage intellectual capital by increasing knowledge flow, organizational learning, innovation, and performance.

Karl M. Wiig first used the term "knowledge management" in a keynote address in 1986 at the International Labor Organization Conference, a Swiss conference sponsored by the United Nations. Debra Amidon spoke to "Managing the Knowledge Asset into the 21st Century" in a conference on the Roots of Knowledge Innovation in 1987.

- a Many different definitions are available—examples:
 - (1) "Knowledge Management is the systematic, explicit, and deliberate building, renewal, and application of knowledge to maximize an enterprise's

knowledge-related effectiveness and returns from its knowledge assets.”
Karl Wiig

- (2) “Knowledge management (KM) enables organizations to capture, formalize, organize, store, access, apply, and share knowledge, experience, and expertise to enable superior performance. Additional benefits from managing knowledge include better business solutions and decisions, better collaboration and knowledge sharing, and improved workforce proficiency and knowledge.” Tom Beckman, IRS
- (3) “At its core KM is the process through which an enterprise uses its collective intelligence to accomplish strategic objectives.” Ramon C. Barquin. Barquin and Associates, Inc.
- (4) “The systematic process of creating, maintaining and nurturing an organization to make the best use of knowledge to achieve:
 - sustainable competitive advantage or
 - sustainable high performance.”David and Alex Bennet, Mountain Quest Institute
- (5) “Knowledge management is a systematic approach (with a background in information technology, human resources, strategy, and organizational behavior) that views implicit and explicit knowledge as a key strategic resource and aims at improving the handling of knowledge at the individual, team, organization, and inter-organizational level in order to improve innovation, quality, cost-effectiveness and time-to-market.” Dr. Martin Eppler, MCM institute, University of St. Gallen, Switzerland, 1999

- b Please Note: Some practitioners prefer using “knowledge sharing” rather than knowledge management. We like “knowledge services”, however, the term knowledge management is popular and one can “manage” knowledge activities in a relative sense.

”The purpose of management is the productivity of knowledge.”
Peter Drucker

5. Knowledge Workers: Professionals who perform work that requires complex reasoning, significant decision-making, and sophisticated action based on a myriad of discreet inputs related to a specialized domain of knowledge.

”The single greatest challenge facing managers in the developed countries of the world is to raise the productivity of knowledge workers and service workers....The country that does this first will dominate the twenty-first century economically “ Peter Drucker
The term knowledge worker was coined by Peter Drucker in 1959.

- a Knowledge work is generally characterized as having many variables, elements of choice based in human judgment, and involvement of learning. As the world advances, knowledge work domains tend to become more complex and require increasing levels of augmentation from computer and communication technologies.

6. Intellectual Capital: Includes all of the knowledge resources of an organization, including human capital, social capital, customer capital, and organizational capital (explicit enterprise knowledge codified, for examples, in regulations, codes, processes, copyrights and patents).

- a Human Capital: The individual and collective capabilities of the employees of the organization, including their knowledge, skills, abilities, competencies, education, and experience.
 - (1) Increasingly, employees’ capacity for learning and their abilities to be creative and innovative are highly valued assets.
 - (2) While previously the predominant view was to consider employees as costs, today employees are more frequently viewed as assets. The newer trend is to view employees as investors.
- b Social Capital: The informal networks, relationships, trust, and shared understanding between individuals in organizations. Social capital is manifested in the structure of relationships between employees as they interact in the organization. In addition to interactions across the networks built on relationships, social capital also takes into account all the aspects of language (culture, context, etc.) and patterning (sequence, amount, timing, etc., of exchange).
- c Structural/Enterprise Capital: Everything that is left when the employees go home. Includes property, patents, copyrights, business processes, systems, codified policies and procedures, etc. Also includes relationships with stakeholders. Often, organizations have highly developed structural capital that uniquely enhances their efficiencies and effectiveness.
- d Customer Capital: The quality of the interaction and the relationship between the organization and the customers that enables the organization to effectively serve the customers.
 - (1) External capital is measured by criteria such as the efficiency of product or service delivery and the satisfaction and loyalty of the customer.

(2) Interaction with customers is increasingly virtual and is evolving to enable self-service and a collaborative relationship.

e Basic relationship of intellectual capital key terms to KM terms

<u>IC</u>	<u>KM</u>
Human Capital =	Tacit Knowledge
Social Capital =	Social Knowledge
Customer Capital =	Customer Knowledge
Structural/Enterprise Capital =	Explicit Knowledge

7. Organizational Learning: Involves the continuous review of organizational experience and the transformation of that experience into knowledge—accessible to the whole organization, and relevant to its core purposes.

- a Although individual learning may benefit an organization, organizational learning differs from individual learning which may improve only the individual's knowledge of, and capacity to act either in their personal or work environment.
- b Organizational learning is a collective process dependent on interactions and the learning from inter-relationships. It comes from the synergy of healthy interactions between employees.
- c Organizations with a learning focus and knowledge creating organization are continually improving their capacity for analysis, decision-making, and action.

8. Ontologies: Attempt to describe all the parts of a field or subject. Ontologies usually include taxonomies, but they also include all terms related to the subjects, the meaning of terms, and their interrelationships. Ontologies show relationships between subparts that cannot be seen in taxonomies, because usually in taxonomies the subparts are under separate branches. Ontologies may also include axiomatic inference rules about interrelationships of items.

- a Example of ontology of birds: A bird can be a sparrow or can be a sparrow hawk. A bird has wings and has feathers; therefore you can infer that a sparrow hawk has wings and feathers.

9. Taxonomies: Classification schemes, which attempt to describe all the parts of a field or subject. A taxonomy is generally viewed as a tree with branches like the taxonomy of plants and animals, where a subspecies is a branch under a larger branch of species. Unlike ontologies, taxonomies do not usually show interrelationships. To build a taxonomy, it is helpful to have an ontology that includes terms and definitions.

- a Example from a taxonomy of mammals:

(1) Antilopinae

- (a) Ammodorcas
 - (i) Ammodorcas clarkei
- (b) Antidorcas
 - (i) Antidorcas marsupialis
- (c) Antilope
 - (i) Antilope cervicapra

- (d) Dorcatragus
 - (i) Dorcatragus megalotis
- (e) Gazella
 - (i) Gazella arabica
 - (ii) Gazella bennettii
 - (iii) Gazella bilkis
 - (iv) Gazella cuvieri
 - (v) Gazella dama

- b See also taxonomy example in process classification framework .pdf file available at <http://www.apqc.org/free/framework.cfm>

F. KM Primers

1. From the World Bank's former Chief Knowledge Officer (CKO) and Storyteller Extraordinaire
www.stevedenning.com/knowledge_management.htm
- 2.
3. Defense Systems Management College Primer
http://www.dau.mil//pubs/mfrpts/mrfr_1999.asp
4. From the Intranet Journal -
http://www.intranetjournal.com/articles/200011/ic_11_29_00a.html
5. CIO Council Document on KM: See .doc file titled "Managing Knowledge at Work next to last in the list of documents at: <http://www.km.gov/documents/docs-resources.html>
6. Global Knowledge Primer from Entovation -
<http://www.entovation.com/gkp/gkpindex.htm>

G. Related Disciplines

1. Complimentary disciplines significantly impacting KM
 - a Management Sciences including Business Science, Information Management, Document Records Management, Organizational Development and Change Management
 - b Social Sciences including Psychology, Sociology, Cognitive Science, Learning, Ethnography and Social Informatics
 - c Technology and Science including Information Management, Information Technology, Artificial Intelligence, and Complex Adaptive Systems
 - d Library Science, Archivists
 - e Financial Management including Economics
2. Knowledge is addressed in many other disciplines such as
 - a Anthropology, Cybernetics, Religion, Linguistics, History, Political Science, Literature, Philosophy, Epistemology
 - b The list may be 80+ disciplines long (Edward Swanstrom, 1998)

H. KM: The Dark Side

1. Nay Sayers claim KM is:
 - a A fad that will pass
 - b Is using info and tech differently for better info management
 - c An oxymoronic – most knowledge is tacit and can't be managed
2. Too complex
 - a Too ambitious – trying to boil the ocean

b Everything, therefore nothing

I. Challenges and Pitfalls

1. Seeing knowledge as primarily data and information
2. Overlooking the human factors
3. Ignoring organizational culture
4. Avoiding the digital divide – lack of knowledge literacy
5. Ignoring the flow aspects of knowledge
6. Not having executive sponsorship
7. Proceeding without top level support, planning, funding
8. Trying to ramp up KM without showing value
9. Thinking knowledge capture and transfer is a technology solution
10. Doing KM without a compelling link to business processes
11. Overlooking grassroots efforts and existing communities
12. Pursuing lofty goals without an evolutionary approach
13. Overlooking innovation
14. Overlooking tie to intellectual capital
15. Overlooking tie to learning
16. Using employee evaluations that encourage knowledge hoarding

J. Critical Success Factors for KM

1. Create a shared vision for KM development
2. Tie KM directly to strategic planning and mission goals
3. Make the business case
4. Gain leadership support from CIO and HR
5. Seek quality and commitment from KM practitioners
6. Achieve early successes
7. Provide incentives for knowledge sharing

8. Create organizational focus on learning
9. Remember KM is 80% people, process, and training
10. Don't forget technology is a necessary enabler

K. The Future of KM

1. Trends

- a Popularity of KM
- b Innovative knowledge breakthroughs
- c Virtual knowledge hubs
- d Convergence of knowledge, learning and innovation
- e Knowledge retention in CoP's
- f KM imbedded in all business processes
- g Knowledge focus in enterprise operations
- h Knowledge agents, both human and software
- i Knowledge enhancing human-machine interaction
- j Knowledge imbedded in customers products and services
- k Reusable and marketable knowledge objects
- l Knowledge markets
- m Increasingly intelligent processes
- n Ubiquity of knowledge

2. Principal Players

- a Academia
 - (1) Undergrad
 - (2) Graduate Level
- b Business management consulting
 - (1) Process Improvement
- c Information and communication technologies
 - (1) Enterprise operations
 - (2) Industry hardware and software advancements
- d Training and development
- e Complimentary scientific disciplines
 - (1) Psychology
 - (2) Social Sciences

- f Research and development
- g Human resources
- h Private industry
- i Government
 - (1) DoD Agencies
 - (2) Non-DoD Agencies
- j Publications and media
 - (1) Web
 - (2) Newspapers, magazines and journals
 - (3) Books

II. KM Management and Leadership

A. KM Leadership Priorities

1. **Leverage intellectual capital**
 - a Understand human aspects of knowledge flow
 - b Champion knowledge-based initiatives
 - c Support cross-cutting relationships
 - d Orchestrate knowledge flow
 - e Build-in value for learning at all levels
 - f Reward knowledge champions and KM experts
 - g Use systems thinking to implement solutions
2. **Be fluent about knowledge economy**
 - a High level information and knowledge literacy
 - b See the future of technology
 - c Handle complexity with speed and deliberation
3. **Evangelize vision with KM goals**
 - a Demonstrate KM value to strategic goals
 - b Include KM and intellectual capital in strategic planning
4. **Seek and support a specific KM strategy**
 - a Develop a Knowledge Strategy or KM Roadmap
 - b Call for bottom up as well as top down
 - c Aim at mid-management support
 - d Create pilots to support early adoption of KM resources
 - e Imbed knowledge requirements and standards in policies
5. **Establish governance and infrastructure in support of KM**
 - a Seek integration of change management, leadership vision, learning, e-learning and KM
 - b Distribute endorsement and charter to KM advocates
 - (1) Select staff committed to KM principles
 - (2) Recognize successes with knowledge-centric initiatives
 - c Develop knowledge elements in core business processes
 - (1) Seek KM measurements
 - (2) Improve processes for explicit and tacit knowledge transfer to build on flow of worker knowledge and ideas.
 - d Formal KM leadership roles
 - (1) CKO and Chief Learning Officer (CLO)
 - (a) Criteria for selection
 - (i) Backing of the chief executive

- (ii) Expertise in one or more KM domains
 - (iii) Credibility with executive team
 - (iv) Persuasive and visionary
 - (v) Strong program management background
 - (vi) Credible expertise in KM
 - (vii) Evangelize, consult, mentor, and teach KM
- (b) Preferably reports to highest level
- (i) Clear charter
 - (ii) Hired from within or without
- (c) Direct Reports
- (i) Accountability
 - (ii) Project team leaders
- (d) Relationship to other executives
- (i) Training and development
 - (ii) HR
 - (iii) CIO

(2) Other KM Roles in Enterprise

- (a) KM Competencies
http://www.fgipc.org/02_Federal_CIO_Council/Resource/30_Lrng_Objctvs_4KM_Course.htm
- (b) Department of Navy (DON) KM/IM/IT Career Paths - <http://www.don-imit.navy.mil/summaryTemplate.asp?catID=7&initID=20&theID=08172000JLB5427055>
- (c) KM champions
- (d) Consultants and process facilitators
- (e) Knowledge engineers
- (f) Knowledge implementers and practitioners
- (g) KM Analysts –
 - (i) IT
 - (ii) E-learning
 - (iii) Publishers, librarians/cybrarians
 - (iv) Harvesters

(v) Advisory Services (see upcoming study by Madeline Blair, Pelerei, Inc.)

(h) Communities of Practice

(i) Community champions and sponsors

(ii) Core team member roles

6. Develop KM Expertise

- a Development of basic enterprise KM training
- b Specialized KM training
- c Use of academic KM resources
- d KM conferences
- e KM communities of practice and interest
- f KM consortiums and networks
- g KM research centers
- h KM on-line resources
- i KM consultants

B. KM Standards & Ethics

1. Purpose of standards

- a Standardize KM terminology, metrics and models
- b Standardize KM taxonomy and ontology
- c Standardize KM metrics
- d Evaluate KM educational programs
- e Assess competencies of KM practitioners

2. Sources of standards

- a KM is a relative new field and standards are still under development. Sources are world-wide KM organizations and providers of KM educational opportunities
- b The Federal Government has a list of KM competencies for practitioners and other employers

3. Specific standards

- a The Global Economics Knowledge Council is in the process of developing KM standards based on economics <http://gkec.org/gkec2001.pdf> and <http://www.kmstandards.org/km.shtml>
- b KM Practitioner Certification Standards

(1) KMCB KM Body of Knowledge™ - <http://www.kmpro.org/kmcertboard.htm>

(2) U.S. Government KM Working Group Learning Objectives (14)
http://www.fgipc.org/02_Federal_CIO_Council/Resource/30_Lrng_Objects_4KM_Course.htm

- c The World Economics Forum (WEF)
- d International Institute for Management Development
<http://www01.imd.ch>

- (1) The World Competitive Yearbook
<http://www01.imd.ch/wcy/methodology>

4. KM Ethics

C. The Value Proposition

1. The economics of KM

- a Growth of knowledge-centric economy
- b Expansion of knowledge-based work.
- c The relationship of knowledge assets to mission performance
- d The value of knowledge assets to the mission
- e Measuring knowledge assets

- (1) Increased reason to measure
- (2) Increased ability to measure
- (3) Increased reflection of true costs and value

2. Areas for Intellectual Capital/Knowledge Asset investments

a Human Capital

- (1) Employees as individual knowledge assets
- (2) Teams as knowledge assets
- (3) In some enterprises, employees are viewed as “investors”
- (4) Employees and workgroups used to generate wealth

b Social Capital

- (1) Relationships based on interdependencies, common goals, cooperation, trust, collaboration, and collective action
- (2) Provide value to participants
- (3) Formal employee networks and communities
- (4) Informal employee networks such as communities of practice
- (5) Analyzed via Social Network Analysis (SNA) tools
- (6) Increases potential for knowledge sharing and innovation

c Structural/Enterprise Capital

- (1) Intellectual Property

- (a) Patents
- (b) Copyrights
- (2) Processes - formal and informal (promising practices)
- (3) Databases and existing enterprise technology
- (4) Relationship with oversight authorities
 - (a) Congress and GAO
 - (b) Executive Office and OMB
 - (i) The President's Management Agenda
 - (c) Balanced Scorecard
http://www.whitehouse.gov/omb/budintegration/scorecards/agency_scorecards.htmlOther regulatory agencies
- d Customer Capital
 - (1) Customer base
 - (2) Capability to engage customers

3. Return on KM investments

- a Human Capital
 - (1) Prevent re-work
 - (2) Retain expertise of staff
 - (3) Maximize knowledge sharing and transfer
 - (4) Reduce "time to talent"
 - (5) Minimize impact of "brain drain", exiting or retiring knowledge
- b Social Capital
 - (1) Create integration and synergy horizontally
 - (2) Transfer tacit knowledge to explicit knowledge
- c Enterprise Capital
 - (1) Improved efficiencies of processes
 - (2) Leveraged technology to support knowledge sharing
- d External Capital
 - (1) Knowledge sharing with partners and customers
 - (2) Flexible alternatives for resources

D. Measuring KM

1. Using KM metrics to evaluate how intangible assets are leveraged to support core business purposes. See Metrics Guide for KM Initiatives by DON CIO available from www.km.gov/documents/DoN_KM_Metrics_Guide_v1.doc Federal Government Measurements Mandates
 - a Government Performance and Results Act (GPRA, 1997) Mandates
 - b Clinger-Cohen Act of 1996
 - c Measuring the impact of intellectual assets and intangibles is new and there is no universally accepted model for the private sector
 - d Types of frameworks to assure metrics are aligned to both KM project objects and organizational strategic goals
 - (1) Flow frameworks,
 - (2) Matrix
 - (3) Causal Diagram
 - (4) Balanced Scorecard – critical tool developed in 1992 and helpful in especially in valuing intangible assets; adapted for use by the Federal Government during the Bush Administration in 2001.
 - (a) See the Balanced Scorecard Institute - <http://www.balancedscorecard.org/default.html>
 - (b) A balanced scorecard aligns measures with strategies in order to track progress, reinforce accountability, and prioritize improvement opportunities – it is more than metrics, it is a management scorecard
 - (c) A traditional balanced scorecard integrates four related perspectives- Financial, Customer, Learning and Growth and Vision and Strategy and uses a balanced set of tangible and intangible factors to describe performance
 - (d) The intent is not only to use metrics to review past performance, but to help develop innovations and future directions by asking questions about what do we need to do to succeed in the future
 - (e) By reviewing both outputs and outcomes, it provides a double loop feedback system
 - (5) Other models include:
 - (a) The Intangible Assets Monitor developed by Karl Sveiby
 - (b) Skandia Navigator which combines balanced scorecard approach and Intangible Assets Monitor
 - (c) Intellectual Capital Index developed by Johan and Goran Roos
2. Techniques that use modeling and simulation to extract the effects of process changes on an organization. Data collection and outcome-based measures vary over the life of the KM effort
 - a Types of KM metrics
 - (1) Measure info on IT systems and other systems supporting KM

- (2) Qualitative measures such as anecdotes and storytelling sell early efforts (e.g. the pilots)
- (3) Output measures related to use of knowledge system
- (4) Outcome measures related to impact of KM on organization
- b Stages for using KM Metrics
 - (1) Early stage measures
 - (a) May not have time to demo Return on Investment (ROI)
 - (b) Use qualitative measures
 - (2) Successful mature stage
 - (a) Mature stage not for 2, 3 or more years
 - (b) Metrics show outputs (tangible and intangible ROI) vis-à-vis knowledge investments
 - (c) Demonstrate and report agile and wise decision making
 - (d) Tangible ROI shows improved value of products and services
 - (e) Demonstrate improvements vis-à-vis Best Practice criteria
 - (f) Show improved Balanced Scorecard
 - (g) Show improved customer satisfaction
 - (h) Show support to e-Gov
 - (i) Foster improved performance through increased productivity, quality and innovation

E. KM Strategy vis-à-vis Change Management

1. Creating a knowledge-based change strategy

- a Acknowledge the different stakeholders and those who may be supporters or opponents to change
- b Balance between top down and bottom up approach
- c Charter the change function and select location
- d Select a change model that has a KM component
- e Assess and identify the differences between the current and future desired states and the “knowledge gaps”
- f Plan and implement the change outcomes and activities
- g Evaluate the results and begin new planning cycle

2. Promote change and link to need to learn

- a Frame the change process in terms of creating the future
- b Promote learning to keep pace with change

- (1) Link learning and knowledge to ability to innovate

- (2) Rapid change can create chaos without learning and knowledge sharing to support new competencies

3. Special resources

- a Go beyond human capital to complete intellectual capital model
- b Use KM to build intellectual capital
- c Draw upon new developments from Complexity Theory
- d Foster innovation strategies
- e Leverage recognition and reward systems

4. Change and technology

- a Match change strategy to technology infrastructure development
- b Microsoft is challenging managers world-wide to answer this question: "How does everything connecting to everything change my industry?"
<http://www.microsoft.com/net/business/needtoknow.asp> (downloadable PowerPoint slide #27)

- (1) How does everything connecting to everything change my agency?
Reconsider business models and customer relationships and customer services in the light of the new connectivity.

- (2) Expand collaborative technology infrastructure

III. KM: People and Culture

A. Knowledge and Individuals

1. How people think, brain is the arbiter of relationships and patterns

- a Elements of individual knowledge
 - (1) Data, information, and implicit knowledge
 - (2) Facts, rules, truths, principles, policies, and laws
 - (3) Concepts, models, methodologies, and processes
 - (4) Meaning, patterns, and context
 - (5) Gained from relationships, collaboration, and networks
 - (6) Values, beliefs, intuition, and inspiration
 - (7) Education, learning and experience
 - (8) Capability for reasoning, judgment, decision, and action
- b Filtering and sense making: people think in:
 - (1) Images and symbols
 - (2) Mental models
 - (3) Analogies and analogy-based extrapolation

- (4) Stories and archetypes based on experience
- (5) Context, hooks for means, relationships, and access
- (6) Sense making can be thought of as “truth finding”
- (7) Sense making at work is a social activity

2. Information and knowledge literacy

- a Awareness of need for information and knowledge
- b Learning to select, search and evaluate sources
 - (1) Understanding and capability to use the latest Information Technologies:
Web, Internet, search, newsgroups, listservs
 - (2) Awareness of library resources and ability to use libraries. See Federal
library list at: <http://lcweb.loc.gov/flicc/fliccmem.html>
 - (3) Awareness of agency and interagency datastores and efforts to link them.
 - (4) Assessing the ROI of information that can be used for decisions and actions.
Assessing the cost if employees do not having key information readily
available

- c Developing critical thinking, the thought process employees use to decide whether what they have read or heard is true or false.
- d Awareness of ethnics and standards for sharing, identifying and using copywrited material
- e See Information Literacy CD at:
<http://openacademy.mindef.gov.sg/OpenAcademy/Central/HTML%20Folder/KM/il/default.htm>

3. KM and diversity/ Section 508 compliance

- a KM can enable all employee to collaborate and share
- b KM as leader to reducing barriers

4. KM actualization

- a KM practices improve sense of expertise for individuals
- b Neuro-linguistic Programming for accessing individual know-how
- c KM practitioners Identify and improve knowledge flows between individuals within the organization.

B. Knowledge in Work Groups and Teams

1. Optimizing communication

- a Developing common vocabularies
- b Developing trust and other norms
- c Understanding the impact of non-verbal communication
- d KM learnings from anthropology, sociology

2. Distributed cognition

- a Cognition not confined to individuals and brain processes
- b Cognition is distributed across individuals, teams, workspaces and artifacts
- c Individuals and their local environments are both integral elements of communication and knowledge sharing

3. Group work tools for improving KS

- a Field Theory
- b Social Networks Analysis (SNA) (see more on SNA under KM Interventions below)
- c Identification of Group Norms, operating principles, and values, especially as they relate to knowledge sharing

4. Virtual collaboration:

- a Identify existing and potential virtual teams and encourage by helping with needed resources including technology tools and facilitation
- b Promote opportunities to participate in communities of practice

C. Enterprise Culture

1. Cultural elements

- a Ceremonies and awards
- b Formal behavior
- c Building space and interaction

- d Values and beliefs
 - e Everyday behaviors
 - f Mental models
 - g Policies
2. Knowledge sharing cultural enablers
- a Organizational Development
 - b Change management
 - c Trust
 - d Dialog
 - e Collaborative teaming
 - f Virtual teaming
 - g Reflection
 - h Fun
 - i Focus on experiential
 - j Pursue practical processes with positive results
 - k Permission to experiment and learn from mistakes
 - l Information and knowledge rich culture
 - m Technology, computers, and the Internet

IV. KM and Learning

A. KM and Learning in Organizations

1. KM compliments the learning organization's drive to respond more intelligently to change
2. KM is based on a premise of continual learning, which is both an individual and organizational process for creating new knowledge to meet persistent change

B. KM and Learning for Individuals

1. Knowledge workers must be lifelong learners
 - a Skills must be continually renewed or become obsolete
 - b New skills must be acquired
2. To respond to change and new technologies people must be enabled to learn how to create, innovate and employ new processes

C. Motivations for Learning

1. Human motivators
 - a Survive and meet basic needs
 - b Growth
 - c Professional development and marketability
 - d Curiosity and intellectual enjoyment
 - e Gain edge over competitors

2. Intra-organizational motivators

- a Adapt to fast changing environment
- b Improve effectiveness
- c Innovate
- d Improve or perish: lose funding or jobs contracted out

3. Inter-organizational motivators (partnerships and alliances)

- a Adapt to fast changing environment
- b Obtain and improve upon a new capability
- c Collaborative learning
- d Improve effectiveness
- e Innovate
- f Improve or die collectively

D. Adapt Appropriate Learning Strategies

1. Andragogy - adult learning theory

- a Adults prefer learning that is experiential, oriented to problem solving, and focused on useful and immediate value. They learn by doing.
- b Adults prefer learning that is self-directed

2. Behavioral approaches

- a Focus on facts
- b Strategies have specific steps and clear outcomes

3. Humanistic approaches

- a Focus on experiential learning
- b De-emphasizes cognitive or rote learning
- c Making errors and learning from errors can be very beneficial

4. Cognitive approaches

- a Focuses on how learning occurs as well as on content
- b Need for context for learning and establishing relationships with existing mental models

5. Information processing models

- a Short term memory vs. long term memory
- b Response generation permits action on memory
- c Learning experiences that enable acting on learnings in memory

6. Taxonomies about learning

- a Bloom's Learning Taxonomy – types of learning:
 - (1) Knowledge: memorization of facts or terms
 - (2) Comprehension: translating or paraphrasing info or rules
 - (3) Application: using info in new situations, applying rules

- (4) Analysis: breaking information down into discrete parts
- (5) Synthesis: constructing a new idea from parts of others
- (6) Evaluation: placing a value judgment on data

b Gage's Categories of Learning Outcomes

- (1) Generalizations: prerequisites to new knowledge
- (2) Intellectual skills: the ability to carry out actions—knowing how, discriminations, concrete and defined verbal information such as names, facts, principles, concepts, rules, and higher-order rules
- (3) Cognitive strategies: executive control or the way in which the learner guides attending, learning, remembering, and thinking
- (4) Attitudes: preferences, feelings, an acquired internal state that influences the choice of personal action
- (5) Motor skills: physical performance of muscles

7. What is learned?

a Cognitive learnings

- (1) Expertise, skills, experiences, anecdotes, stories, context information, strategic decision-making, and tacit knowledge
- (2) Domains of learning
 - (a) Subject matter knowledge
 - (b) Technical knowledge
 - (c) Organizational knowledge
 - (d) Personal knowledge

b Emotional Intelligence

- (1) Related to “social intelligence” and understanding other people as well as oneself
- (2) Includes self-awareness, self-management and delayed gratification in order to achieve goals, empathy, the ability to manage one’s own emotions, and the ability to relate effectively to others
- (3) Skills that help people appropriately identify their feelings and appropriately express feelings in ways that enhance work relationships with subordinates, peers and supervisors, and customers.

8. Facilitators for learning

a Optimal characteristics of learners

- (1) Motivation to try potentially better processes
- (2) New or improved skill or ability desired

- (3) Trust in abilities and validity of those providing knowledge
- (4) Flexibility and agility
- (5) Curiosity
- (6) Safe environment
- (7) Flow State: A sense of highly focused attention, mental enjoyment of the activity for its own sake, a sense of being outside of time, a match between the challenge at hand and one's skills
- b Optimal characteristic of organizations that learn
 - (1) Climate of openness and "organizational curiosity", including a safe environment which permits risk and failures, appreciation of diversity in learners, and tolerance for complexity and uncertainty
 - (2) Leadership involved and supporting learning
 - (3) Perceived performance gap between current and desired performance
 - (4) Resources committed to quality learning, both continuously in rich community interactions, e.g. CoP's, Col's, and episodically in learning events
 - (5) Organization measures progress
 - (6) Systems perspective
 - (7) Processes for maximizing flow of data, information, and people; an interactive rich environment, characterized by fluid movement of people between teams, CoP's, Col's, and networks.
- c High impact: relate learning to organization goals

E. Learning Delivery

1. Types

- a Blended learning models: combine as many as possible in one learning experience for economy and re-enforcement: classroom, online courseware, virtual classrooms and collaboration tools
- b Individual or group, mentoring, classroom
- c One time experiences: lectures, seminars, or on-going courses or processes
- d Same time and place: classroom training
- e Different time and place: learners chooses when to access
 - (1) TV Video, online access of text/audio/video modules
- f Same time, different place
 - (1) Satellite telecast, Internet chat learning experiences, teleconferencing learning modules, web casts
- g Long course versus just-in-time learning "bullet"
 - (1) 15 minutes e-learning "experiences"

- (2) Push learning bullets to staff in their “off times”

2. Distance learning and e-learning

a ROI

- (1) Saves travel costs
- (2) More choices for accessing learning

b Types

- (1) TV/Satellite telecast
- (2) Web cast
- (3) E-mail
- (4) Internet

c Barriers

- (1) Boring, requires self motivation
- (2) Lack of social stimulation of the classroom

d Enhancers

- (1) Quality content
- (2) Provide short, just in-time segments
- (3) Organization culture values e-learning
- (4) Built in evaluations
- (5) Managers accountable for success of employees
- (6) Establish on-line classroom communities

3. Learning through simulations and models

- a Models clarify process
- b Simulations can assist cultural change

4. Action Learning

- a Learn by doing
- b Often small groups focused on learning objective
- c May or may not be facilitated groups
- d May be inter-agency or within a team
- e Original focus was managers across organizational boundaries, now may be staff and local or cross-cutting
- f Draw learning from change activity

5. After Action Reviews

- a Group focus on what happened, why it happened, and how to sustain strengths and improve on weaknesses
 - (1) All participants take part
 - (2) Discussion is completely candid and without deference to rank
 - (3) Open ended questions
 - (4) Discussion may be facilitated
 - (5) Goal to end with all having a strong desire to seek the opportunity to practice the discussed task again
- b Written review, making learning explicit; the focus is on what can improve future operations
- c Review shared so others in organization benefit from learnings
- d Develops trust and improve organizational climate
- e May result in action items or new training objectives

*****ARR EXAMPLE: On the army's mission to Haiti in 1994, one unit was assigned the task of clearing caches of weapons from towns thought to be in the hands of rebels. In the unit's first attempt, the townspeople were completely uncooperative. During the AAR someone observed that the military police's large German shepherd dogs frightened the Haitians. Another person suggested showing off the dogs during weapons sweeps to impress the townspeople.

The unit tried this tactic in the next town to be cleared of weapons and had better success. In the ensuing AAR, someone commented that the unit was always confronting belligerent men and not women. If a woman commanded the unit, the townspeople's cultural expectations would be shaken and the unit might get better cooperation. So in the next town to be cleared, a female lieutenant took command, with the men visibly saluting her and bolstering her appearance of authority. At the same time, the unit continued to showcase the dogs. This combination produced even better success.

In the AAR following this second attempt, someone mentioned that townspeople accosted by soldiers in the streets were more hostile and less cooperative than those approached in their homes. In the third town to be cleared, the unit continued to show off the dogs, continued to openly support the command of

a woman, and added the step of going to people's homes. The effect was an overwhelming success; the unit thoroughly cleared the town of guns and ammunition.

6. New Case Study Methodology

- a Based in Action Learning principles
- b Outlined in KM Interventions below

7. Feedback mechanisms

- a Measure and modify based on learning outcomes
- b Learning outcomes motivates reevaluation of learning process

8. Communities of Practice enhance learning – CoP's are:

- a One of the best tools for tacit knowledge transfer
- b Formed to support learning activities of community members
- c Sponsors of learning events
- d Sponsors of learning innovation

F. Systems Thinking and the Learning Organization

1. Systems perspective – recognition of interdependence between organizational groups and learning

- a Viewing the organization in a systems perspective, seeing internal interrelationships and relationships to external forces, enabling organizational learning.
- b Identifying mental models, permitting new perspectives

2. Appropriate use of single loop and double loop learning (extrapolating from a simple error correction perspective when needed to reexamining norms, beliefs, policies and goals in a changing environment)

G. Knowledge about Knowledge

1. Knowledge representations

- a Symbols
 - (1) Case Based Reasoning (Experiential)
 - (2) Rule Based Reasoning (Heuristics)
 - (3) Network Based Reasoning
 - (4) Model Based Reasoning
 - (5) Analogy Based Reasoning

- b Language
- c Sensory
- d Metaphor
- e Extrapolations, Interpolations

2. Parts of knowledge

- a Structure
 - (1) Links
 - (2) Nodes

- b Reasoning

V. KM Processes

A. Overarching Principles

1. Document processes and make them explicit
 - a Process Modeling
 - b Process Simulations
2. Pursue continuous process improvement
3. Maximize knowledge flow
4. Optimize technology support for processes
5. Employ Systems Thinking.
6. Use Complexity Theory principles
7. Measure results

B. KM Supports Creativity and Innovation Processes

1. Enablers for innovation: Knowledge sharing, IT, communications
2. Depend on all workers to pursue innovation in culture of learning, trust, mutual respect
3. Seek ideas from workers, customers, partners and competitors
4. Manager's key job is to monitor knowledge flow, and focus is on knowledge innovation, moving new ideas into services and products
5. Management and employees built innovation systems based on valuing the human capital as the chief innovation resource, technology is an enabler but not driver of innovation
6. Customer relationship management (CRM) is integral to innovation
7. Strategic plan is future oriented and stresses innovation goals
8. Creativity
 - a Fostered by rich communication
 - (1) Flow of knowledge and ideas through groups, teams, CoP's, networks, shared knowledge spaces and portals
 - (2) Managers and employees use systems thinking
 - (3) Teams work in flow state, and get immediate feedback about their progress

- (4) Teaming is fluid, and sponge like, with the right people being drawn in as needed
- b Problems, situations or opportunities are identified and researched
- c Brainstorming and teaming generate new ideas that are evaluated and prioritized.
- d Knowledge based resource analysis is key to decision making

C. Embedding KM in Organizational Processes

1. Strategic planning

- a Scenario Building
- b Embed KM in Strategic Planning
 - (1) IT Planning
 - (2) HR Planning
 - (3) Obtain input on KM planning, delivery and feedback from union and employee groups

2. Change management

- a A key tool in managing complex knowledge initiatives
- b Organizations may not know where to place change management staffs

3. Research and development

- a What is the R&D vision?
- b What are the knowledge activities in the R&D process

4. Human resources

- a Knowledge retention
- b Performance system underscores philosophy and application of KM
- c Align recognition and rewards with KM focus
- d Develop performance management system that foster knowledge sharing
- e KM Incentive Processes: awards and non-monetary recognition
- f Provide workers what they need to do their jobs: access to information, knowledgeable peers, experts, and just-in-time learning experiences

5. Core business processes

- a Understanding the core business process and develop knowledge infrastructure to support those processes
 - (1) Identify processes that support mission critical deliverables
 - (2) Pinpoint knowledge sharing gaps such as: Customer complaints, lack of best knowledge for decisions and actions, and timeliness of knowledge flows
 - (3) Pilot process improvement
 - (4) Evaluate and adapt

- b KM Builds on TQM, CMM, ISO 9000 and Project Management Improvement tools
- c Improve core organizational business processes through knowledge audits

6. Benchmarking

- a Exploring promising practices outside the organization
- b Identifying promising practices inside the organization

7. Problem solving

- a Task forces, tiger teams etc. tackle tough issues
- b Work groups seek wide range of ideas and welcome the innovations and creativity of others
- c Alternatives are found out of the sharing of experiences, reflections, intuitions and dialogue

8. Decision making

- a Knowledge-based resource analysis is key to decision making
- b Leadership and management access to knowledge resources
- c Decentralization of decision making to holders of knowledge
- d Team decision-making is aided by collaborative infrastructure
- e Reuse knowledge critical to decision making

9. Program and project implementations

- a Clear outcomes with identification of knowledge resources and strategies
- b Open communication and rich networking and boundary spanning
- c Excellent written and/or audio/video record of past decisions guide action

D. Examples of KM Models and Processes

1. General KM Models

- a People, Process, Technology and Training
- b Intellectual Capital Models

2. Refined KM Models

- a DON Framework
 - (1) Content, Process, Culture, Learning, Technology
 - (2) <http://openacademy.minddef.gov.sg/OpenAcademy/Central/HTML%20Folder/KM/KCO/siteindexframes.htm> and <http://www.acq-ref.navy.mil/reflib/kmpitch.pdf>
- b George Washington University Model
 - (1) Leadership, Organization, Technology, Learning
 - (2) <http://www.gwu.edu/~mastergw/programs/KM>
- c AMS
 - (1) People, Process, Content and Technology
<http://www.ams.com/KnowledgeMgmt/downloads/download.asp?a0a=1&a1a=1&>

d Siemens

- (1) Step 1: What is the most significant business perspective for the near future?
- (2) Step 2: Which knowledge areas are significant for the selected business perspective?
- (3) Step 3: (often alternated with Step 2) Which of the key performance indicators use for business apply to the selected perspective?
- (4) Step 4: What is the current and future impact of the knowledge areas on the Key Performance Indicators?
- (5) Step 5: What is the status of our knowledge areas and where should we improve?
- (6) Step 6: What is our plan and how do we monitor our progress?

e Amrit Tiwana

- (1) Step 1: Analyze the existing infrastructure
- (2) Step 2: Align KM and the business strategy
- (3) Step 3: Design the KM infrastructure
- (4) Step 4: Audit existing knowledge assets and systems
- (5) Step 5: Design the KM team
- (6) Step 6: Create the KM blueprint
- (7) Step 7: Design the KM system
- (8) Step 8: Deploy, using the results-driven incremental methodology
- (9) Step 9: Manage change, culture, and reward structures
- (10) Step 10: Evaluate performance, measure ROI, and incrementally refine the KMS

f APQC <http://www.apqc.org/>

- (1) Stage 1 Get Started
- (2) Stage 2 Develop a Strategy
- (3) Stage 3 Design and Launch a KM Initiative
- (4) Stage 4 Expand and Support

g KMPro <http://www.kmpro.org/>

- (1) People, Learning, Process, Applied Technology, Emerging Technology (in products/services), Leadership

- h KMPPro <http://www.kmpro.org/>
 - (1) Create Knowledge Imperative
 - (2) Design/Justify
 - (3) Manage Change
 - (4) Continuously Improve

VI. KM Interventions

A. Knowledge Audits

1. Inventory of knowledge processes and knowledge objects
 - a Identify symptoms of poor knowledge management:
 - (1) Info glut
 - (2) Duplication of work or rework due to lack of knowledge
 - (3) Parts of organization are unaware of work done in other parts
 - (4) Staff do not know where to find what they need
 - (5) Old information/knowledge is not distinguished from current

- b Identify all sources of knowledge, and all knowledge flows
- c Identify knowledge gaps: gaps for employees, partners, customers etc.

2. Knowledge Maps

- a Locate existing knowledge intensive processes, knowledge objects, and experts (knowledge holders)
- b Show relationships of selected knowledge resources to each other and related organizational activities
- c Code for deep knowledge resources and emerging requirements

B. Social Networks Analysis (SNA)

1. Realize that behavior is affected by position in social structures
2. Analyze dynamics and ties between workers
3. Identify types of networks and overlaps between them: e.g. trust nets, personal nets, social nets, expertise nets (who asks and who gets answers)
4. Identify roles people play as central or peripheral, connectors or as knowledge brokers
5. Know that informal networks are increasingly where work happens, where employees meet and where knowledge is, or is not, exchanged
6. Identify barriers and interventions to improve knowledge flows
7. Assist managers and employees to build cohesive networks to facilitate knowledge flows

C. Communities of Practice

1. "Cport: Building Communities of Practice, A Practitioner's Guide" a Dept. of the Navy CD : -per http://www.don-imit.navy.mil/default_cd.htm this CD can be requested from doncioproducts@hq.navy.mil
2. CoP includes each of these three elements:
 - a Domain of interest: people share interest in a topic
 - (1) Characterized by passion and commitment both to topic
 - (2) More than a club, membership implies intent to develop expertise
 - (3) Sanctioned by management - participation is part of work day
 - (4) Members are expected to give and take; personal ROI comes from community support for topic
 - b Community: interact and build relationships by sharing
 - (1) Fundamentally informal and self-organizing
 - (2) Includes and values people with expertise

- (3) Usually composed of volunteers
- (4) May include people across organization and retirees, customers or partners outside the organization
- (5) Activities and discussions both build community and share knowledge and work practices
- (6) Officially "sanctioned," but not managed
- (7) Community leaders or coordinators are key``
- (8) Some periodic face time important for trust building: meetings, lunches, teleconferences
- (9) Increasingly virtual (using technology to keep in touch: via web cams, email, groupware, CoP software products etc.)
- (10) Members may sign commitment document for knowledge sharing (knowledge contract)

c Practice is the shared knowledge resources

- (1) Focus is exchanging knowledge and continual learning
- (2) CoPs organize explicit knowledge: validate and update knowledge repositories and other resources
- (3) CoPs provide the collaborative environment
- (4) CoPs are the best tool for tacit knowledge transfers

3. Starting a CoP

- a Use Social Network Analysis to ID existing “underground” communities
- b Obtain executive sponsorship
- c Assure fit within organization culture
- d Develop core group, explore expectations, shared space
- e Recruit members
- f Establish technology platform for virtual interaction
- g CoP kick off workshops
- h Emphasize value of sharing to individual and organization, and plan for metrics to demonstrate value
- i Publicize
- j Address issues around boundaries, amount of documentation, membership and group processes and structure

4. CoP Roles –

- a NOTE: In a small and/or new CoP, individuals may have multiple roles
- b Leader who is champion or sponsor
- c Integrator who coordinates with other parts of organization and other CoPs
- d Coordinator or facilitator
- e Cybrarian
- f Social coordinator and/or events tracker – notifies CoP members of their events and other related events, seminars, or training opportunities, etc.
- g Question and Answer (Q&A) tracker
- h Technologist – provides options for communications – audio, video, computer etc. and helps with technology challenges
- i Core members
- j Subject matter experts and gurus
- k Group members

5. Maintaining and growing a community

- a Face-to-face activities and groups
- b Virtual moderation: questions, topics, discussion threads stimulate interest
- c Mentoring
- d Maintain member level of commitment and engagement
- e Not an organizational unit, can survive reorganizations

6. CoP Lifecycle

- a Phases of Development
 - (1) Conceiving and catalyzing
 - (2) Gaining executive buy-in and publicizing
 - (3) Building trust
 - (4) Collaborating Connecting people
 - (5) Sharing know-how

- (6) Collaborating
- (7) Creating Knowledge
- (8) Continuation, renewal or sunset

7. Expected Organizational ROI

- a Increased rate of innovation
- b Improved quality and speed of product delivery
- c Increased collaboration across the organization
- d Avoidance of costly mistakes
- e Overcoming barriers to sharing: trust issues, reluctance to ask, knowing who to contact, and the desire for reciprocity

D. Storytelling

1. Organizational storytelling involves telling Informal stories about interactions between members of the organization and/or between members or representatives of an organization and other organizations.
2. Stories can be: positive or negative; complex, and have a great deal of meaning in the sub-text (something not stated explicitly in dialogue or narrative); usually have powerful messages about values or norms
3. Types of stories
 - a Scenario: Story about the future, what if.... Scenarios can assist in cataloging alternatives to aid planning.
 - b Anecdote: Brief sequence often used to demonstrate organizational values
 - c Fictional: Often composites that protect the identifies of individuals
 - d Written or oral: In organizational settings, many KM practitioners relate written stories have not been effective. Oral stories, crafted and told with sincerity and feeling are very effective communication..
 - e All organizations have stories, which are shared¹¹ formally or informally. They may promote change or support dysfunction
4. Values of Stories
 - a Provide a context and “hooks” for remembering
 - b Personalize situation, “give it a face”, thus evoking emotion, connection with others in the organization
 - c Increase courage and confidence, and validate experiences.
 - d Stimulate creativity
 - e May transfer experience (tacit knowledge), best practices, and expertise/knowledge
 - f Powerful tool for cultural change by making explicit or inspiring organizational values and norms
 - g The most effective tool to persuade others of the value of KM

E. Promote Knowledge Sharing

1. Promote a preference for knowledge reuse

¹ TEST NOTE

2. Hold knowledge fairs: public displays with demonstration booths and informational sessions about organizational knowledge successes and knowledge resources (event intermediation)
3. Publicize knowledge sharing success stories
4. Create knowledge maps, yellow pages, and other ways for people to contact experts
5. Develop knowledge sharing spaces: “war room”, situations rooms, strategically placed coffee pots and food, white boards, etc.
 - a Design work spaces for team efficiencies and flow (social and knowledge interactions) between employees
 - b Adapt physical layout to improve flow
 - c Arrange “play” areas, or “knowledge cafes”, for fostering innovation and creativity

F. Taxonomies

1. Classification schemes which attempt to describe all the parts of a field or subject. Definitions in a taxonomy may aid common use of language in a field. They require rigor in use of terms and definitions.
 - a Communication within an organization is hampered by lack of common definitions for terms. The discipline of creating a taxonomy can improve communication by helping created shared meanings
 - b Taxonomies are a key tool in search engines and for content management; therefore enterprise wide development of a taxonomy can be key to document and content management, to the storing, retrieval and sharing of information across the organization
 - c Taxonomy must be built based on how employees use content in their work; it must be based on work flow and work processes
 - d Improve employee’s effectiveness by giving by enabling “smart” tools, enabling different views and intuitive searches
 - e Facilitates the retrieval, capturing and recognition of content by users
 - f Links from the taxonomy lead to people, content and events
 - g Often an ontology is developed first to show all aspects of an subject, including the interrelationships, more complete definitions and a thesaurus of terms
2. Taxonomies must be kept up to date; in addition to creating one, there is a need to invest resources to dynamically update it
3. Free sample taxonomy on process management from APQC and Arthur Andersen: <http://www.apqc.org/free/framework.cfm>

G. CRM: Customer/Citizen Relationship Management

1. CRM involves combining quality and creativity to produce new processes, services and products
2. e-Government (enabled-Government) processes
 - a Identify Customers: both internal and external: (employees, partners agencies, and citizens, politicians and the Federal Executive, and other agencies/partners both domestic and international)

- b Understand customer behavior
- c Focus on learning from the customer
- d Catalog all of these: existing customer services, customers expectations for service, and unarticulated needs of customers
 - (1) Use KM and quality process improvement to develop and imbed tool customer tools, best practices and data managements solutions in a cost-effective way for the organization
 - (2) Provide single integrated view of customer: one customer information and contact records is available to all parts of the organization electronically and in real time, and shows the interrelations between customers
 - (3) Customer data collected in a standard way so that it is easy for all parts of the organization to use
 - (4) Customers have options for contact: phone or in some cases office visit (with appointment options), mail, email, Internet, Internet chat, and wireless connectivity
 - (5) Customers have options between full service contact (with one-stop shopping for related Government services) and self-service with minimal or no assistance
 - (6) Self-service contacts: customers are able to learn so that they may complete contacts feeling more capable and better prepared to interact and get what they need next time

- e Goal is sharing knowledge with customer to enable and enrich customer capability
 - f Customer, whether citizen, another government agency or oversight agency, is viewed as interdependent stakeholder
 - g Government innovates to assure new technology protects the privacy of data on citizens
3. Focus is on future services and products for customers, i.e., customer wishes that may not yet be articulated and services/products not yet developed.

H. Embedding Knowledge in Products and Services

1. Identify knowledge as added value in products and services
2. Processes that improve knowledge value-add
3. As customers learn from each interaction, this increases
 - a Their ability to interact effectively
 - b Their return rate

I. Collaborative and Virtual Infrastructures

1. Ubiquitous access to corporate experts
2. High speed collaboration
3. Pervasive access to knowledge repositories
4. Virtual infrastructure, processes and training on demand

J. Knowledge-base Content Management

1. Policies
 - a Authentication Issues
 - b Evaluation for relevance (defining outdated)
 - c Archiving policy
 - d Access: security
2. Explicit
 - a Knowledge repositories: data mining, data collection processes, and document management
 - b Taxonomies and metadata
 - (1) Develop and use common terms
 - (2) Use taxonomies to collect, store, and retrieve data enterprise-wide

- c Ontologies
- d Datastores and data warehouses
- e Legacy databases are included in searchable datastores
- f Searching is based on metatags and other powerful search tools

3. Tacit

- a Tacit knowledge repositories: transcripts, audio, and video tapes of team or individual knowledge based on experiences, lessons learned, and expertise

- (1) Structural elements

- (a) Know-what
 - (b) Know-why
 - (c) Know-who
 - (d) Know-how

- b Learning
 - c Mentoring
 - d Meetings and phone calls
 - e Person to person interactions

- (1) Networks and communities

- f Knowledge accidents

- (1) Water cooler meetings

- (2) Hallway discussions

4. Development of knowledge objects

K. Disintermediation and Intermediation

- 1. Disintermediation: make content and people so accessible that average employees easily and quickly find answers for themselves document, web, audio, or visual format or via peers and/or experts.

- 2. Intermediation

- a "Advisory Services" intermediate knowledge transfer

- (1) "Advisory Services" will be described in upcoming article from Madelyn Blair (www.pelerei.com)

- (2) Selected small staffs of a handful (1 to 5 people) who support experts by providing "one stop shopping" for queries

- (3) Trusted generalists with a flair for research and communication, and a reputation for competency

- (4) Committed to customer service

- (5) Focus on a broad topic area serving typically from 200 to 9000 experts in a given field
- (6) Gather relevant data and report discrepant answers
- (7) Consult experts organization wide as needed
- (8) Skills are in knowing who to contact and where to search both internally and on the internet to get broadest possible background on topic or issue
- (9) Where used, ROI can be dramatic. Advisory Services may complete queries 4 times faster because of their familiarity with people and data sources, and because they are junior staff they perform the work at lower salaries than the experts.

- b Maximize use of cybrarians, and library science specialists

L. New Case Study Methodology

1. Methodology advocated by Probst and Davenport in “Knowledge Management Case Book: Siemens Best Practices”
2. Engage insiders and “outsiders”, i.e., consultants or graduate students in constructing narrative of project case-study like those used in graduate business schools
 - a Case coaches work with company employees to help surface valuable insights
 - b All involved with project participate in drafting case study
 - c Opportunities for self-reflection for team members, and new awareness of informal organizational habits
 - d Study uses narrative style, not traditional objective business writing
3. Pre-requisites
 - a Openness, genuine organizational desire to learn from real (not sugar-coated) experiences.
 - b Willingness of top management to sponsor case studies, and then learn from and use them.
4. Benefits
 - a Collect tacit knowledge
 - b Action learning for project/team members writing the studies
 - c Organizational learning from growth of shared knowledge base
 - d Competitive advantage from increased learning capacity

M. Federal Agency KM and Innovation Benchmarking

1. Agencies showcase replicable successes and know-how
2. Web publish KM and innovation processes for use by other agencies
3. Encourage benchmarking visits between federal agencies

VII. Enabling Technologies

A. Technology Issues

1. Use state-of-the art technologies to enable and correlate with knowledge and learning organization
2. Implementation of Technology
 - a Interface - human factors
 - (1) Issues: Technology learning curves
 - (2) Fear of technological incompetence

- b Early adopters
 - c Pilots and enterprise-wide adoption
3. Intelligence
- a Knowledge bases
 - b Multi-parameter uncertainty
 - c Prediction
 - d Learning models
 - e Autonomous operation
 - f Cognitive tuning
4. Reliability
5. Ubiquity and pervasiveness
6. Availability—the digital divide
7. Security
8. Cost
9. Bandwidth

B. Key Infrastructure

1. Enterprise support
- a Plan a layered enterprise knowledge support architecture
(David Skyrme)
 - (1) Collaboration
 - (2) Coordination
 - (3) Conversation
 - (4) Communication
 - (5) Connections

- b Special support to pilots, demonstration projects, and early adopters

2. Personal equipment

- a Desktop
- b Mobile

3. Communication technologies

- a Bandwidth
- b Telephones
- c Cell phones
- d PDA's and mobile devices
- e Web-Cams – Real time web conferencing via software like Microsoft's Netmeeting

Out on the USS San Jacinto, Petty Officer Storm has run into a problem with a winch motor. Last year when experiencing the same problem he had to wait until the next port visit to get repairs done. With the advent of the Naval Marine Corps Intranet, he quickly hops to the computer, pulls up Microsoft NetMeeting, and within minutes via satellite, has direct access to a TeleMaintenance expert at the Naval Surface Warfare Center in Crane, Indiana. During the next 20 minutes, while viewing equipment blueprints on his computer screen, he learns how to effect repair. Through connectivity and good knowledge management, he's solved his problem within the hour.

- f Multimedia

4. Internet and WWW

- a WWW: accelerated pace of change by extending Internet to all; source of information explosion and increasing rate of change
- b e-Gov: "enabled" Government using technology to serve citizens
- c Internet 2: an advanced networking initiative partnering educational institutions with government and private industry to develop improved (faster) technologies. May be creating tomorrow's Internet.

(1) <http://www.internet2.edu/>

- d The Semantic Web: Internet pages will contain information other computers can act on.

(1) http://home.swipnet.se/semanticweb/200108/sw_diff_web.html and www.w3.org/DesignIssues/Semantic.html

- e The Deep Web: Below the radar of most search engines. At least 400x the number of web pages that most search engines find. Deep web pages are on dynamically generated sites.

(1) <http://www.press.umich.edu/jep/07-01/bergman.html>

C. Web Pages, Intranets and Portals

1. Portals provide access, authentication, and personalization.
2. Web page is usually a “Home Page” with links to key data and applications necessary for employees’ work in one place:
 - a Links internally to Web based intranets and traditional datastores
 - b Links to Internet sites frequently used by employees
 - c Have powerful search and retrieval tools
 - d Links to applications employees use
 - e May include links to employee email and schedule
 - f Ideally, may be personalized
3. Portals are a major KM tool which integrates with other software listed below for knowledge sharing within enterprise, allowing one-stop shopping and easy access to resources
 - a Portals filter web pages from intranets and external Web to users who need it for their daily work – filtering what is needed and providing quick access to work tools
 - b Portals can display validated content, providing confidence to user
 - c Increase efficiency by filtering based on employee profiles and customization—“my portal”
4. Can also link to NetMeeting-type applications, delivering audio-visual content and transmission of significant non-verbal meta-communications
5. Future connectivity will include wireless applications
6. Security is increasingly important, providing the access for the right ideally with just one login and password for all organizational secure access points.

The Federal Highway Administration’s Rumble Strip Website (<http://safety.fhwa.dot.gov/programs/rumble.htm>) is a prototype of how members of an electronic community of practice or community of Interest can share information, resolve technical issues, and publish results.

The problem: 1997 statistics from the Fatality Analysis Reporting System (FARS) show that 37,280 fatal crashes occurred, with 11,126 of these crashes being coded as single-vehicle run-off-the-road crashes. This large safety problem is addressed significantly by continuous shoulder rumble strips (CSRS).

To promote their use, the Rumble Strips Website provides copies of studies on the problem and rumble strips solutions from experts and State governments. This site tells how to implement and maintain different types of rumble strips and gives cost/benefit ratios. It includes a list of providers of rumble strips sorted by the type of service they offer. The library of research material includes state policy and specification documents, and video and audio clips on rumble strips. A page titled “The Downside –Isn’t “ (compared to lives saved) admits to complaints about noise and impact on bicyclists and relates how States address these concerns. And for those whose questions still aren’t answered, there is an “Ask the Expert” online discussion group.

D. Collaboration Tools

1. **Face to Face**
 - a Same Time/Same Place
2. **Virtual**
 - a Same Time/Difference Place
 - b Different Time/Same Place
 - c Different Time/Different Place
3. **Groupware**
4. **Communities of Practice**

E. Other KM Software Support

1. **Search**
 - a Semantical engines
 - b Taxonomy engines
 - c Ontology tools (free software: <http://protege.stanford.edu/index.html>)
 - d Discovery engines
 - e Expertise engines: knowledge maps, yellow maps, expertise locators
2. **Knowledge exploration and discovery**
 - a Data mining
 - b Text mining
 - c Link analysis
 - d Knowledge visualization
 - e Machine learning
3. **Information and knowledge repositories**
 - a Best practices knowledge bases
 - b Data warehouses
 - c Content management
 - d Legacy systems
 - e Other knowledge databases
4. **Document management and workflow**
5. **Knowledge audits and knowledge mapping tools**
6. **e-Learning**
7. **Customer relationship management (CRM) software**
8. **Artificial intelligence**
 - a Intelligent agents
 - b Computer language translations

- c Machine learning

9. Expert systems

- a Case based reasoning (Experiential)
- b Rule based reasoning (Heuristics)
- c Network based reasoning
- d Model based reasoning
- e Analogy based reasoning

10. Information fusion

- a Uncertainty management
 - (1) Data fusion
 - (2) Evidence extraction
 - (3) Link discovery

11. Multi-modal interfaces

- a Visualization
- b Haptics
- c Sound
- d Smell

12. Personal workspace on the Web

13. Process management and project management

VIII. KM Resources

A. Marketing Materials

1. KM presentations
2. KM posters and slogans
3. KM success stories

B. Models and Processes

1. General KM Models
 - a People, Process, Technology and Training
 - b Intellectual Capital Models
2. Refined KM Models
 - a DON Framework
 - (1) Content, Process, Culture, Learning, Technology

- (2) <http://openacademy.mindef.gov.sg/OpenAcademy/Central/HTML%20Folder/KM/KCO/siteindexframes.htm> and <http://www.acq-ref.navy.mil/reflib/kmpitch.pdf>
- b George Washington University Model
- (1) Leadership, Organization, Technology, Learning
 - (2) <http://www.gwu.edu/~mastergw/programs/KM>
- c AMS
- (1) People, Process, Content and Technology
<http://www.ams.com/KnowledgeMgmt/downloads/download.asp?a0a=1&a1a=1&>
- d Siemens
- (1) Step 1: What is the most significant business perspective for the near future?
 - (2) Step 2: Which knowledge areas are significant for the selected business perspective?
 - (3) Step 3: (often alternated with Step 2) Which of the key performance indicators use for business apply to the selected perspective?
 - (4) Step 4: What is the current and future impact of the knowledge areas on the Key Performance Indicators?
 - (5) Step 5: What is the status of our knowledge areas and where should we improve?
 - (6) Step 6: What is our plan and how do we monitor our progress?
- e Amrit Tiwana
- (1) Step 1: Analyze the existing infrastructure
 - (2) Step 2: Align KM and the business strategy
 - (3) Step 3: Design the KM infrastructure
 - (4) Step 4: Audit existing knowledge assets and systems
 - (5) Step 5: Design the KM team
 - (6) Step 6: Create the KM blueprint
 - (7) Step 7: Design the KM system
 - (8) Step 8: Deploy, using the results-driven incremental methodology
 - (9) Step 9: Manage change, culture, and reward structures
 - (10) Step 10: Evaluate performance, measure ROI, and incrementally refine the KMS

- f APQC <http://www.apqc.org/>
 - (1) Stage 1 Get Started
 - (2) Stage 2 Develop a Strategy
 - (3) Stage 3 Design and Launch a KM Initiative
 - (4) Stage 4 Expand and Support
- g KMPPro <http://www.kmpro.org/>
 - (1) People, Learning, Process, Applied Technology, Emerging Technology (in products/services), Leadership
- h KMPPro <http://www.kmpro.org/>
 - (1) Create Knowledge Imperative
 - (2) Design/Justify
 - (3) Manage Change
 - (4) Continuously Improve

C. Education and Research

1. Learning about KM

- a Universities
 - (1) George Washington University - <http://www.gwu.edu/~mastergw/programs/KM>
 - (2) George Mason University <http://psol.gmu.edu/psol/degree2.nsf/Degree%20Frameset?OpenFrameSet>
 - (3) Harvard - Working Knowledge - <http://hbswk.hbs.edu/topic.jhtml?t=knowledge>
 - (4) Canada - McMaster's University – MBA specializing in Innovation and New Technology and focus on intellectual capital research <http://www.business.mcmaster.ca/programs/index.html>
 - (5) Queen's College, Canada, <http://business.queensu.ca/kbe/>
 - (6) Europe - Institute for Media and Communications Management, University of St.Gallen, Switzerland <http://www.knowledgemedia.org/netacademy/pages.nsf/pages/indexkm.html>
- b Organizations
 - (1) KMPRO certification: www.kmpro.org
 - (2) APQC – www.apqc.org

- (3) KMCI Certification <http://www.eknowledgecenter.com/index.htm>
- (4) Organization for Economic Co-operation and Development -
<http://www.oecd.org/EN/about/0,,EN-about-0-nodirectorate-4-no-no-0,00.html>

2. Research centers

a IBM

- (1) Institute for Knowledge-Based Organizations (IKO)
www.ibm.com/services/kcm/km_consulting.html
- (2) Cynefin Centre for Organizational Complexity, IBM Global Services –
www.ibm.com/services/cynefin/

- b IFTF (Institute for the Future)
<http://www.iff.org/>
- c Ikujiro Nonaka - <http://www.jaist.ac.jp/~kouhou/FP/e/ks/nonaka.html>

D. KM Books + A Short Reading List

1. Books *Books for beginners

- **Building Knowledge Management Environments for Electronic Government* by Barquin, Bennet and Remez
- Cognition in the Wild* by Hutchins
- Collaborative Technologies & Organizational Learning* by Neilson
- Common Knowledge, How Companies Thrive By Sharing What they Know* by Dixon
- **The Complete Idiot's Guide to Knowledge Management* by Rumizen
- Cultivating Communities of Practice* by Etienne Wenger
- Creating the Knowledge Based Business* by Amidon and Skymre
- If Only We Knew What We Know: The Transfer of Internal Knowledge and Best Practice* by Carla S. O'Dell
- In Good Company* by Cohen and Prusak
- **Innovation Strategy for the Knowledge Economy* by Amidon
- The Innovation Superhighway* (Forthcoming October 2002) by Amidon
- Know Your Value? Value What You Know: Manage Your Knowledge and Make it Pay* by Cope
- The Knowing-Doing Gap* by Pfeffer and Sutton
- The Knowledge Creating Company* by Nonaka & Takeuchi
- Knowledge Management Case Book* by Davenport and Probst
- **Knowledge Management: The Catalyst for Electronic Government* by Barquiiin, Bennet, Remez
- Knowledge Management Foundations: Thinking about Thinking* by Wiig
- Knowledge Management Handbook* by Liebowitz
- **Knowledge Management Toolkit* by Tiwana
- **Knowledge Networking* - by Skyrme
- The Knowledge Management Yearbook, 2000-2001* by Cortanda and Woods
- Linkage, Inc's Best Practice in Knowledge Management and Organizational Learning Handbook* by Harkins, Carter & Timmins
- Managing Knowledge* by Probst, Raub, and Romhardt
- The Reflective Practitioner* by Schon
- The Social Life of Information* - Brown & Duguid
- The Springboard: How Storytelling Ignites Action in Knowledge-Era Organizations* by Denning
- Strategic Learning in a Knowledge Economy: Individual, Collective, and Organizational Learning Process* by Cross & Israelit
- The Tacit Dimension* by Polany
- **Working Knowledge* by Davenport & Prusak

E. KM Web Links

1. Selected Web articles on KM and related subjects
 - a From The Jensen Group, a study that puts KM in perspective:
<http://www.simplerwork.com/k/profilefull.htm>
 - b Brint on what is KM?: www.brint.com/km/kmdefs.htm
 - c Karl-Erik Sveiby on what is KM? :<http://www.sveiby.com.au/KnowledgeManagement.html>
 - d KM Forum on what is KM?: www.km-forum.org/what_is.htm
 - e KM Resource Center with lots of KM links:
http://www.kmresource.com/exp_lotsoflinks.htm
 - f 3 KM Primers from Seiby, Saint-Onge and Staes: <http://knowinc.com/primers>
 - g Journal of the International Network of Social Network Analysis Network:
<http://www2.heinz.cmu.edu/project/INSNA/joss/index1.html>
2. Glossaries
 - a KM Pocket Encyclopedia from Dept. of Navy
 - b <http://www.peo-it.navy.mil> - See IT Encyclopedia in the upper right corner
 - c New language for new leverage: the terminology of knowledge management -
http://www.ktic.com/topic6/13_TERM0.HTM
 - d FAA knowledge terminology - www.faa.gov/ahr/hrkcenter/defineterms.html
 - e Working definition of knowledge -
http://www.sims.berkeley.edu/courses/is213/s99/Projects/P9/web_site/glossary.htm
3. References for creating a KM ontology
 - a <http://www.ontoweb.org/>
 - b <http://protege.stanford.edu/index.html>
4. Key Web links for KM work in public sector
 - a KM in the Government
 - (1) KM Working Group of Federal CIO Council and the Federal KM Network site
www.km.gov.
 - (2) Army -<http://www.army.mil/ako/>
 - (3) AMEDD wins Army KM award, June 2002:
<http://www.armymedicine.army.mil/armymed/default2.htm>
 - (4) Army After Action Reviews - http://call.army.mil/products/spc_prod/tc25-20/chap1.htm
 - (5) Company Command - <http://companycommand.com>
 - (6) KM in the Dept. of the Navy (DON) - <http://www.don-mit.navy.mil/interestTemplate.asp?type=initiative&theID=17>
 - (7) Naval Training Command Links to 2 DON CD's -
www.minddef.gov.sg/navy/tracom/links/links.htm
 - (8) Dept. of the Navy: a description of 7 DON CDs and an email address for ordering them - http://www.don-imit.navy.mil/default_cd.htm

- (9) Navy Acquisition knowledge Management System - <http://www.acq-ref.navy.mil/services.cfm#AKM>
 - (10) Program Management CoP - <http://www.pmcop.dau.mil/pmcop/>
 - (11) Knowledge management applied to facilities management. CADD/GIS Technology Center, Department of Defense
<http://www.foundationknowledge.com/DesktopDefault.aspx>
 - (12) ASK Magazine, NASA Knowledge Sharing Publication,
http://www.appl.nasa.gov/knowledge/ask_home.htm
 - (13) Los Alamos National Laboratory <http://km.lanl.gov/>
 - (14) GSA Planned Acquisition Knowledge Management Portal -
http://www.gsa.gov/Portal/content/products_content.jsp?contentOID=115548&contentType=1007&PMVC=1
 - (15) Federal Highway Administration Community of Practice -
<http://nepa.fhwa.dot.gov/ReNepa/ReNepa.nsf/home> and
<http://safety.fhwa.dot.gov/programs/rumble.htm>
 - (16) World Bank Knowledge Sharing site - <http://www.worldbank.org/ks/index.html>
 - (17) GAO recommends Chief Operating Officer position with KM and Strategic Planning responsibilities - <http://www.gao.gov/new.items/d02940t.pdf>
and <http://www.gao.gov/cghome/km/sld001.htm>
 - (18) National Science Foundation -
<http://www.nsf.gov/pubs/1998/nsf9855/nsf9855.htm#kn> and
<http://www.ehr.nsf.gov/kdi/award99/default.htm>
- b KM Nonprofits
- (1) KM Pro - <http://www.kmpro.org/aboutkmpro.htm> -
 - (2) www.iff.org
 - (3) Institute for the Future - <http://www.wipo.int/>
- c KM Groups
- (1) CIO Council KM Research Center - <http://www.cio.com/research/knowledge/>
 - (2) Entovation - <http://www.entovation.com/>
 - (3) Thought Leaders Gatherings: A Community of Practice for Leaders -
<http://www.thoughtleadergathering.com/home.php>
 - (4) http://openacademy.mindef.gov.sg/OpenAcademy/Learning%20Resources/Knowledge%20Mgmt/know_mainmenu.htm#anchor1
 - (5) Brint -- <http://www.brint.com/km> and the case for KM -
<http://www.kmbook.com/>

d Magazines

(1) <http://www.kmmagazine.com/>

(2) <http://www.kmworld.com/>

(3) <http://www.kmmag.com/>

e KM Quotes

(1) General Quotes -

<http://openacademy.minddef.gov.sg/OpenAcademy/Learning%20Resources/Knowledge%20Mgmt/Thinker.htm>

(2) Quotes that support the value of KM

An investment in knowledge pays the best interest.” Benjamin Franklin

“Knowledge is the prime need of the hour”
Mary McLeod Bethune

“If you have knowledge, let others light their candles in it.” Margaret Fuller

“Knowledge is not simply another commodity. On the contrary, knowledge is never used up. It increases by diffusion and grows by dispersion.” Daniel J. Boorstin

“Knowledge will forever govern ignorance; and a people who mean to be their own governors must arm themselves with the power which knowledge gives.” James Madison

“I not only use all the brains that I have, but all that I can borrow.” Woodrow Wilson

“If HP knew what HP knows, we would be three times more profitable.” Lew Platt, Chief Executive Officer, Hewlett-Packard

“The only way to sustain competitive advantage is to ensure that your organization is learning faster than the competition.” Arie de Geus, former head, Group Planning, Royal Dutch Shell

“They say a little knowledge is a dangerous thing, but it's not one half so bad as a lot of ignorance.” Terry Pratchett

“If a little knowledge is dangerous, where is the man who has so much as to be out of danger?” Thomas H. Huxley

“Those who have knowledge, don't predict. Those who predict, don't have knowledge.”
Lao Tzu

“If knowledge can create problems, it is not through ignorance that we can solve them.” Isaac Asimov

“Real knowledge is to know the extent of one's ignorance.” Confucius

“Reliance on a single, uncontradicted data source can give people a feeling of omniscience.” Karl Weick,
“Sensemaking in Organizations”

“Knowledge rests not upon truth alone, but upon error also.” Carl Gustav Jung

“The greatest difficulty lies not in persuading people to accept new ideas, but in persuading them to abandon old ones.” John Maynard Keynes

“You can’t just take a stodgy organization, hire smart guys, and expect good things to happen.” Julio Rotemberg, Harvard Business School

“The most important, and indeed the truly unique, contribution of management in the 20th century was the fifty-fold increase in the productivity of the manual worker in manufacturing. The most important contribution management needs to make in the 21st century is similarly to increase the productivity of knowledge work and the knowledge worker.”
Peter F. Drucker

“Downsizing over the past decade might have lead toward negative attitudes of knowledge sharing in certain organizational cultures. Employees feel that their knowledge is critical to their value and continued tenure.... Such organizations might not [nor should] even attempt a KM project.” Davenport and Prusak (1998)

“Knowledge is of no value unless you put it into practice.” Anton Chekhov

“Efficiency is doing things right; effectiveness is doing the right things.” Peter F. Drucker

“Networks will link science and society in ways yet unimaginable” www.entovation.com/gkp/challenge.hrm

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