

**Putting More Rigor in Knowledge
Management**
“Adding More Science to the Art”

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and Technology**

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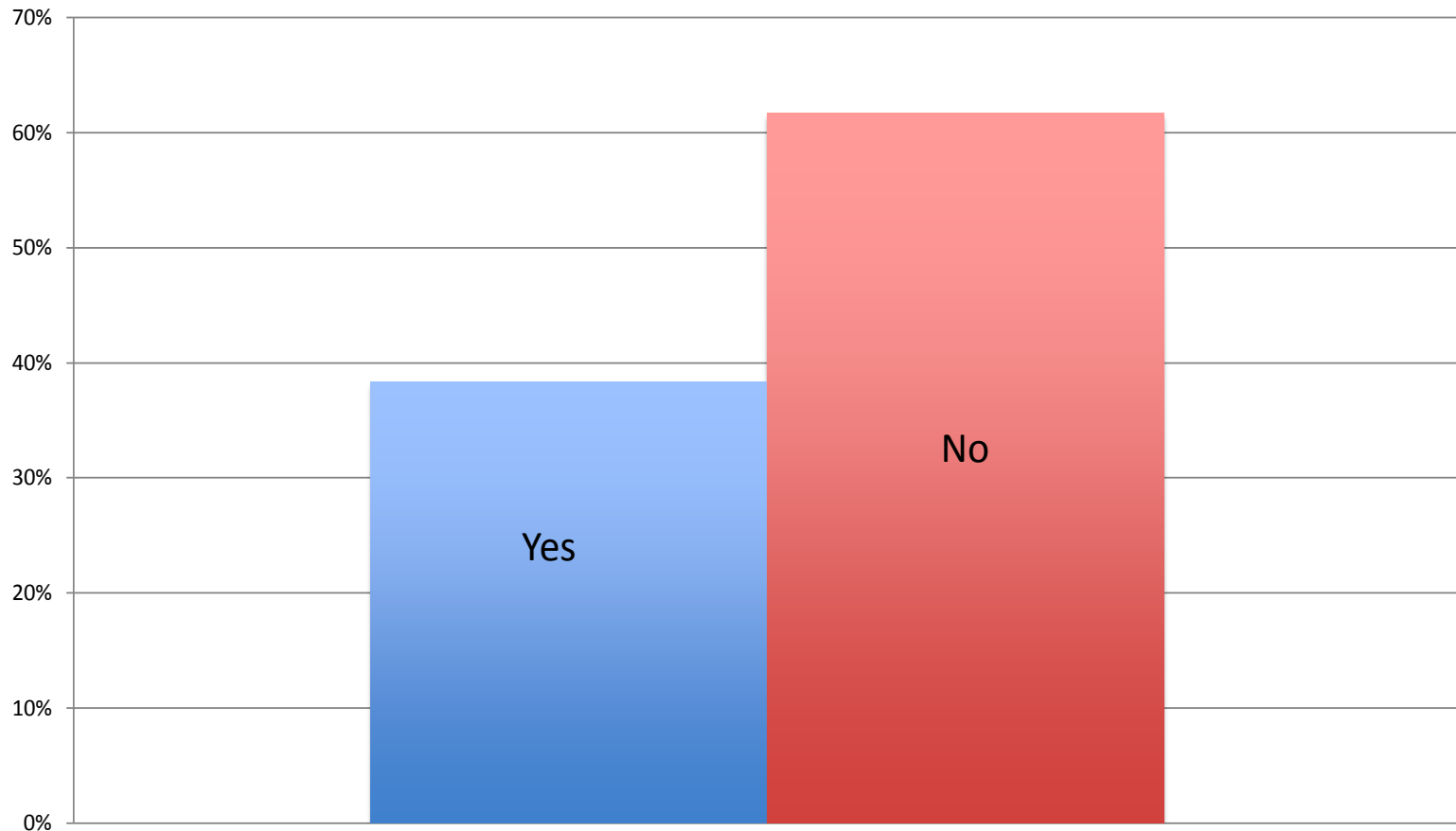
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“The Research Core of the KM Literature”

(Wallace et al. (2011), Int. Journal of Info Mgt, Vol. 31)

- **Bibliometric analysis on 21,596 references in 2,771 source publications**
- **27.8% of KM-related articles used no identifiable research methods**
- **Of the remaining 455 refereed articles, 60% used mainstream and social sciences research methodologies**
- **Remaining 40% used “provisional methods” as a substitute for more formally defined or scientifically-based research methodologies**

80% of Respondents Say they Have no Formal Retention Strategy in Place but 38% Have a Backup Expert in their Knowledge Area

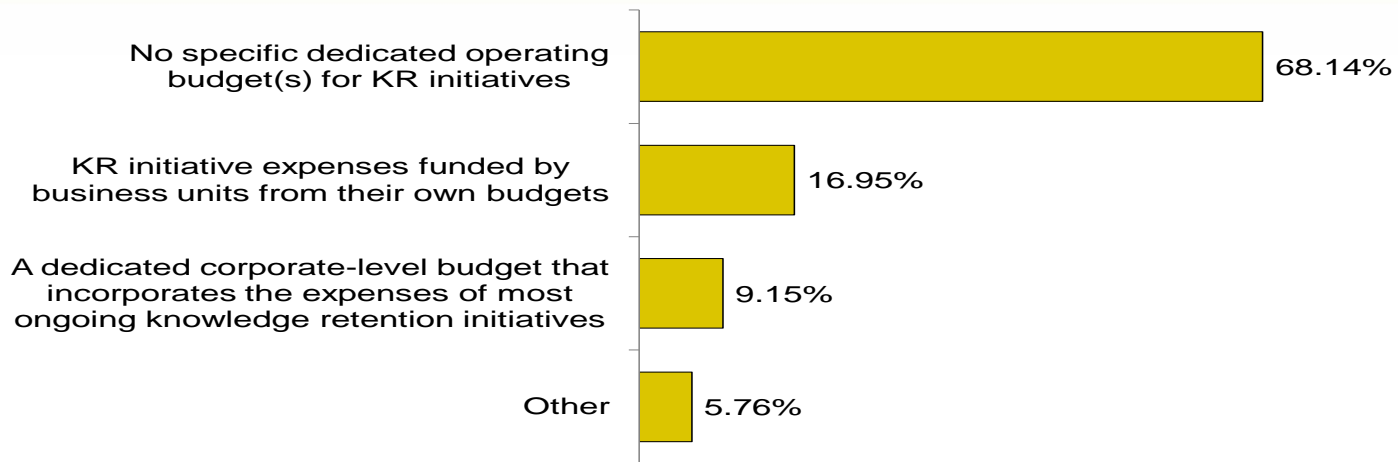


Percentage of Respondents Answering Yes/No About Having a Backup Expert
Cader, M. and J. Liebowitz, KR Survey, 69 respondents from 42 organizations, Spr.2008.

i4cp KR Survey (426 organizations responded)—January 2009

- Over 77% of the organizations don't have an owner for KR initiatives

In terms of resources dedicated to knowledge retention, your organization has:



“KM Modules : Analysis of Coursework”

(Rehman and Sumait (2010), Journal of Info & KM, Vol. 9, No. 4)

- **13 Graduate KM Programs**
- **Programs were found in Schools of business, public policy, computing, and library & info science**
- **#1: Courses on KM concepts, theories, principles, application, management, and implementation**
- **#2: Courses on KM technologies, systems, architecture, and related areas**
- **#3: Courses on info and knowledge societies and environments, info needs, info users, info services, info world**
- **#4: Courses on information and knowledge organization**
- **#5: Cognate Courses: Organization and management courses; Research.**

“KM Modules...” (continued)

■ **Course modules:**

- ◆ **Ethics**
- ◆ **Information and Info Management**
- ◆ **Knowledge Management**
- ◆ **Intellectual Capital**
- ◆ **Knowledge Sharing, Collaboration, Culture, Enablers**
- ◆ **Knowledge Organization**
- ◆ **Learning and Learning Organization**
- ◆ **Competitive Intelligence**
- ◆ **E-Commerce**
- ◆ **KM Technology**
- ◆ **Management**
- ◆ **Research Methods**

Today's and Tomorrow's Environment

Graying workforce

Cross-generational knowledge flow issues

Continuing to do more with less

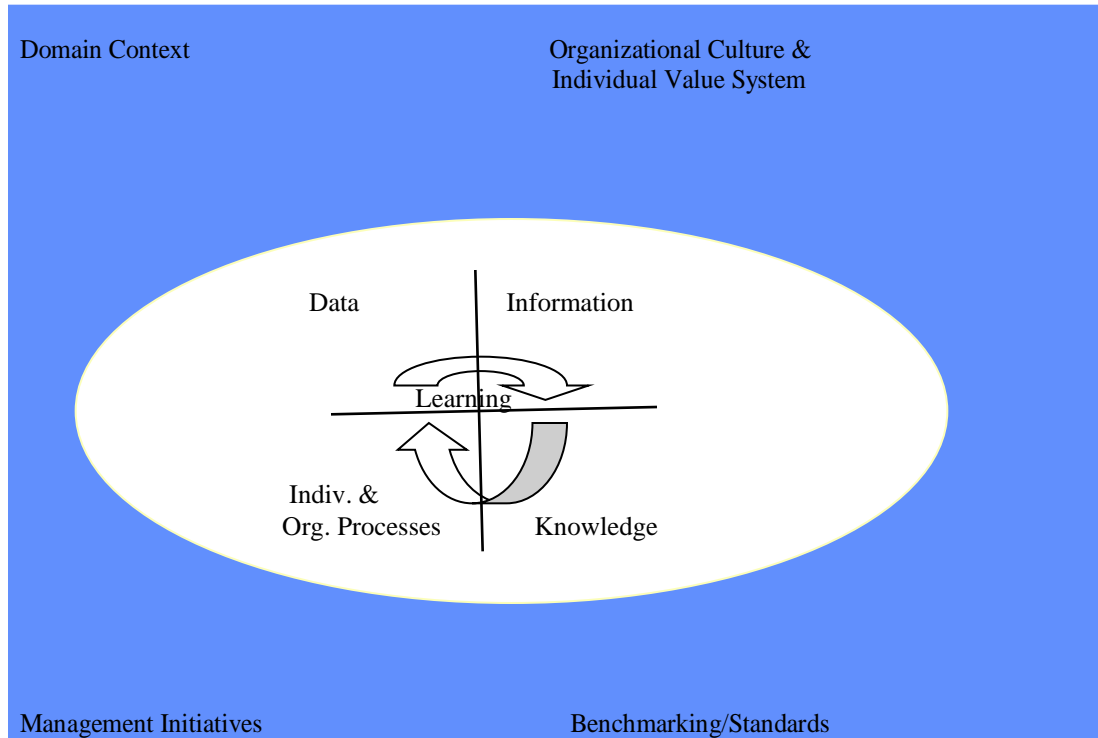
Developing and maintaining relationships (e.g., private-public partnerships)

■ Impact of social networking

For which of the following business reasons are you using blogs? (Forrester Research; 107 IT decision makers at US companies with 500 or more employees; multiple answers):

- 63%: Internal communications
- 50%: Internal knowledge and content management
- 47%: External thought leadership
- 46%: Marketing to customers and prospects
- 2%: Other

Conceptual View of the Knowledge Framework






■ Knowledge
Identification &
Capture



■ Knowledge
Sharing

■ Knowledge
Creation



■ Knowledge
Application

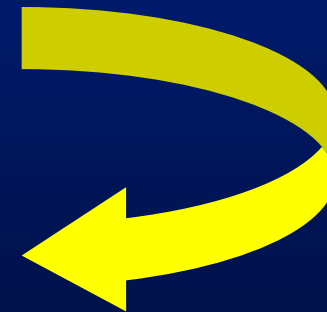


TABLE 1: SAMPLE OF KNOWLEDGE MANAGEMENT FRAMEWORKS (derived from [33])	
FRAMEWORK	DESCRIPTION
Allee [1]	1. Data (feedback), 2. Procedural (efficiency), 3. Functional (effectiveness), 4. Managing (productivity), 5. Integrating (optimization), 6. Renewing (integrity)
American Management Systems [2]	1. Find (create knowledge centers), 2. Organize (motivate and recognize people), and 3. Share
Accenture [3]	1. Acquire, 2. Create, 3. Synthesize, 4. Share, 5. Use to achieve organizational goals, 6. Environment conducive to knowledge sharing
Dataware Technologies, Inc. [4]	1. Identify the business problem, 2. Prepare for change, 3. Create the KM team, 4. Perform the knowledge audit and analysis, 5. Define the key features of the solution, 6. Implement the building blocks for KM, and 7. Link knowledge to people
Buckley & Carter [5] Centre for International Business, University of Leeds	Business process approach to knowledge management (no formal methodology but key knowledge processes are identified): 1. Knowledge characteristics, 2. Value added from knowledge combination, 3. Participants, 4. Knowledge transfer methods, 5. Governance, and 6. Performance
The Delphi Group [6]	Specifics about a methodology have not been released, but the following are addressed: 1. Key concepts and frameworks for knowledge management, 2. How to use knowledge management as a competitive tool, 3. The cultural and organizational aspects of knowledge management, 4. Best practices in knowledge management, 5. The technology of knowledge management, 6. Market analysis, 7. Justifying knowledge management, and 8. Implementing knowledge management
Ernst and Young [7]	1. Knowledge generation, 2. Knowledge representation, 3. Knowledge codification, and 4. Knowledge application
Holsapple and Joshi [8] Kentucky Initiative for Knowledge Management	1. Acquiring knowledge (including extracting, interpreting and transferring), 2. Selecting knowledge (including locating, retrieving and transferring), 3. Internalizing knowledge (including assessing, targeting, and depositing), 4. Using knowledge, 5. Generating knowledge (including monitoring, evaluating, producing, and transferring), and 6. Externalizing knowledge (including targeting, producing, and transferring)
Knowledge Associates [9]	1. Acquire, 2. Develop, 3. Retain, and 4. Share
The Knowledge Research Institute [10]	1. Leverage existing knowledge, 2. Create new knowledge, 3. Capture and store knowledge, 4. Organize and transform knowledge and 5. Deploy knowledge
Liebowitz [11]	1. Transform information into knowledge, 2. Identify and verify knowledge, 3. Capture and secure knowledge, 4. Organize knowledge, 5. Retrieve and apply knowledge, 6. Combine knowledge, 7. Learn knowledge, 8. Create

Liebowitz and Beckman [12]	1. Identify (determine core competencies, sourcing strategy and knowledge domains), 2. Capture (formalize existing knowledge), 3. Select (assess knowledge relevance, value, and accuracy and resolve conflicting knowledge), 4. Store (represent corporate memory in knowledge repository), 5. Share (distribute knowledge automatically to users based on interest and work and collaborate on knowledge work through virtual teams), 6. Apply (retrieve and use knowledge in making decisions, solving problems, automating or supporting work, job aids, and training), 7. Create (discover new knowledge through research, experimenting, and creative thinking), and 8. Sell (develop and market new knowledge-based products and services)
Marquardt [13]	1. Acquisition, 2. Creation, 3. Transfer and utilization, and 4. Storage
Monsanto Company [14]	No formal knowledge management methodology: use learning maps, values maps, information and knowledge maps, measurements, and information technology maps
The Mutual Group [15]	Capital framework: 1. Gather information (building an explicit knowledge infrastructure), 2. Learn (tacit knowledge development), 3. Transfer and 4. Act (developing capability through values deployment)
The National Technical University of Athens, Greece [16]	1. Context (generating knowledge), 2. Knowledge management goals (organizing knowledge), 3. Strategy (developing and distributing knowledge), and 4. Culture
O'Dell [17] American Productivity and Quality Center	1. Identify, 2. Collect, 3. Adapt, 4. Organize, 5. Apply, 6. Share, and 7. Create
PriceWaterhouseCoopers [18]	1. Find, 2. Filter (for relevance), 3. Format (to problem), 4. Forward (to right people), and 5. Feedback (from users)
Ruggles [19]	1. Generation (including creation, acquisition, synthesis, fusion, adaptation), 2. Codification (including capture and representation), and 3. Transfer
Skandia [20]	Universal Networking Intellectual Capital: Emphasizes 1. Networking and knowledge sharing, 2. Knowledge navigation by project teams, 3. Intellectual capital development tool box
Van der Spek and de Hoog [21]	1. Conceptualize (including Make an inventory of existing knowledge and Analyze strong and weak points), 2. Reflect (including Decide on required improvements and Make plans to improve process), 3. Act (including Secure knowledge, Combine knowledge, Distribute knowledge and Develop knowledge), and 4. Review (including Compare old and new situation and Evaluate achieved results)
Van der Spek and Spijkervet [22]	1. Developing new knowledge, 2. Securing new and existing knowledge, 3. Distributing knowledge and 4. Combining available knowledge
Van Heijst et al. [23] CIBIT, Netherlands	1. Development (creating new ideas, analyzing failures and examining current experiences), 2.

Limitations of Current KM Methodologies

- **Lack of detail**
- **Lack of an overseeing framework (we prefer to use the systems-thinking framework)**
- **Failure to address the entire KM process**

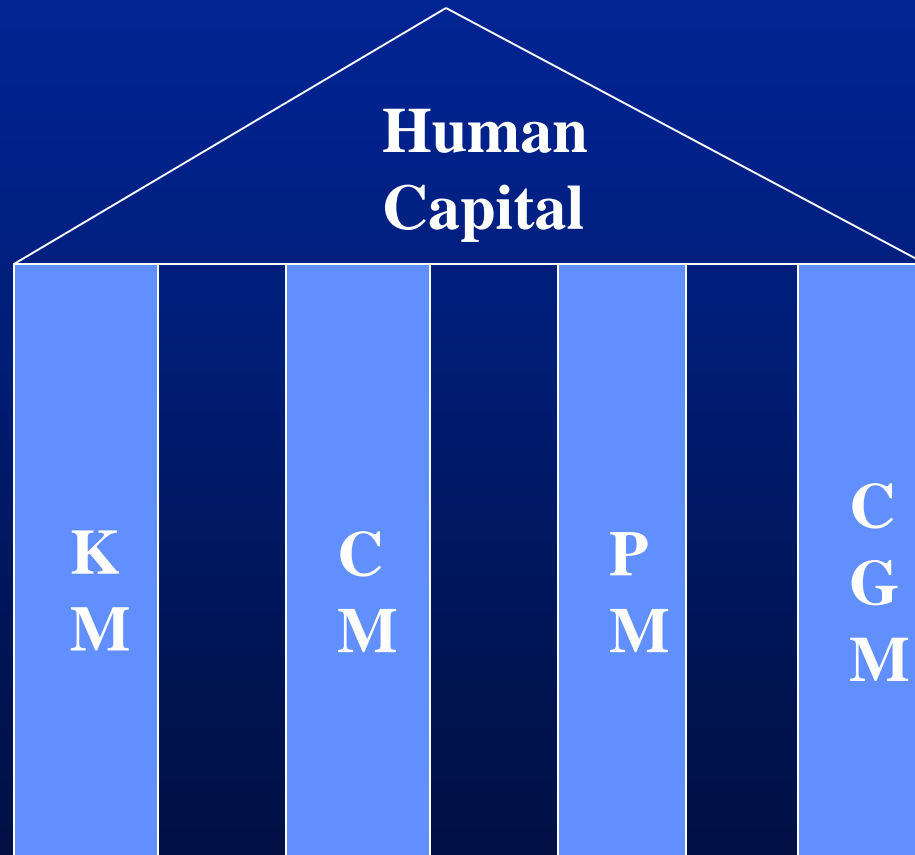
The SMART Methodology for KM Development (Liebowitz et al.)



Liebowitz, J. and T. Beckman (2008), “Moving Towards a K3M...”, Advances in MIS: Knowledge Management (I. Becerra and D. Leidner, Eds.), M.E. Sharpe Publishers, April.

Maturity Level	Key Indicators
0	<ul style="list-style-type: none"> •Inefficiencies in searching for needed information and knowledge •Not knowing who to contact within the organization for answering questions •Lack of innovation •Silo/stovepiping effects
1	<ul style="list-style-type: none"> •Realization that your competition is applying KM concepts and that you may be lagging behind your competition •Realization that there may be a better way of doing business and reaching out to the customers/stakeholders by using KM techniques
2	<ul style="list-style-type: none"> •Testing the waters through selected KM pilots •KM technology infrastructure starts to be built •Metrics are developed to measure initial success
3	<ul style="list-style-type: none"> •Employee morale increases due to an improved sense of belonging/community from KM efforts •KM organizational infrastructure starts to be put in place •KM pilots migrate into full-blown projects
4	<ul style="list-style-type: none"> •Enterprise-wide knowledge management •Learning and knowledge sharing proficiencies are built into the recognition and reward system of the organization •KM processes are put in place to ensure the capture, sharing, application, and creation of knowledge •New products or services are created •Functional silos begin to crumble
5	<ul style="list-style-type: none"> •Nirvana is created through the KM activities by establishing high levels of employee morale, increased worker productivity, improved institutional memory building, improved customer relations, increased innovation, a thriving continuous learning culture exists, improved access to people and associated information & knowledge, and a “working smarter not harder” environment permeates

4 Pillars of a Human Capital Strategy

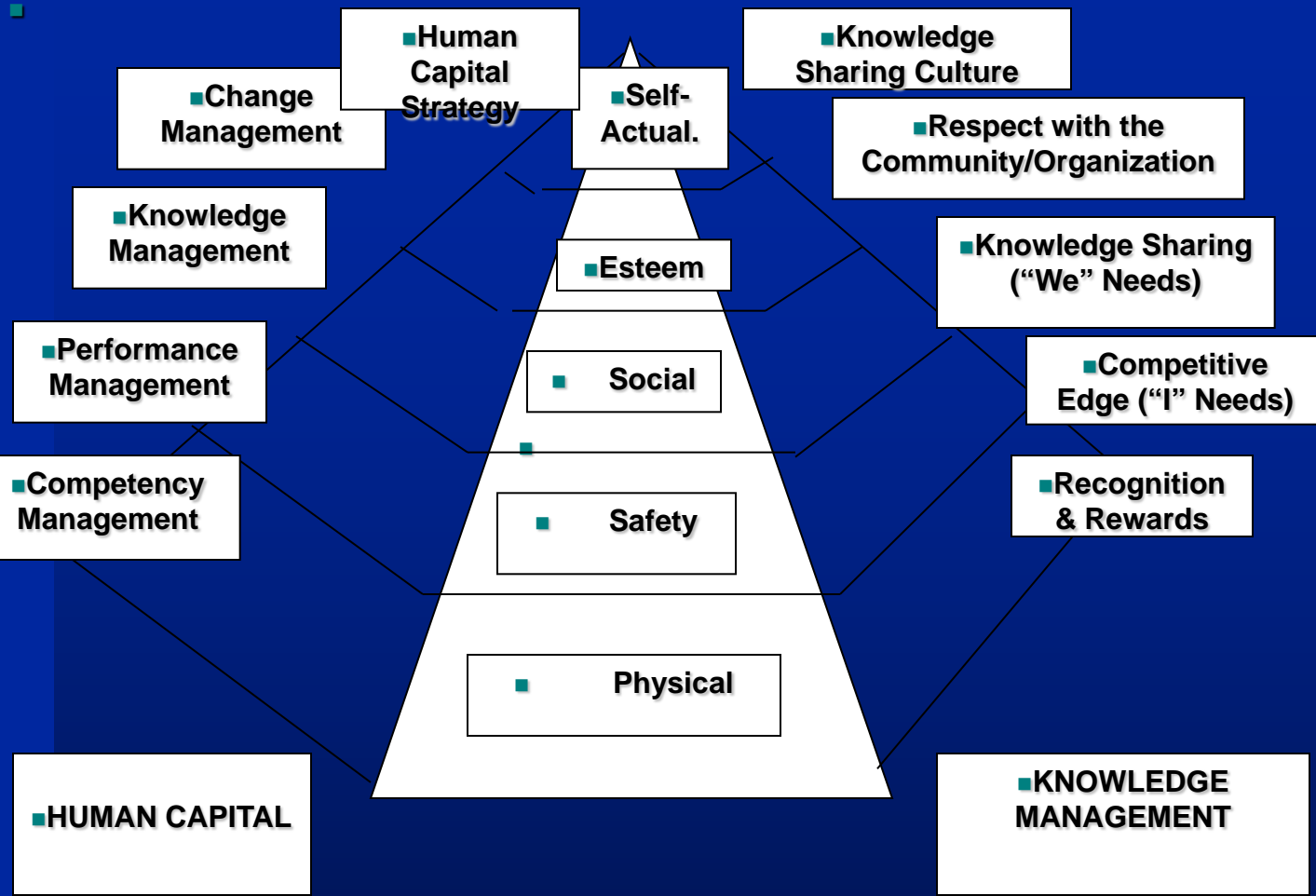


- KM=Knowledge Mgt.
- CM=Competency Mgt.
- PM=Performance Mgt.
- CGM=Change Mgt.

Pillars of KR

(Liebowitz, J. (2009), Knowledge Retention: Strategies and Solutions, Auerbach Publishing)

- Recognition and Reward Structure
- Bi-directional Knowledge Flow (bottom-up and top-down)
- Personalization and Codification (“connections” and “collection”)
- The Golden Gem (bringing back talented retirees into the organization via contractors, consultants, retiree & alumni association, ready pool of retired experts)



Knowledge Management and Human Capital Strategy Within Maslow's "Pyramid"

Knowledge Audit Steps

1. Identify what knowledge currently exists in the targeted area (typically select a core competency that is cross-departmental/functional)
 - a. Determine existing and potential sinks, sources, flows, and constraints in the targeted area, including environmental factors that could influence the targeted area
 - b. Identify and locate explicit and tacit knowledge in the targeted area
 - c. Build a knowledge map of the taxonomy and flow of knowledge in the organization in the targeted area. The knowledge map relates topics, people, documents, ideas, and links to external resources, in respective densities, in ways that allow individuals to find the knowledge they need quickly.
2. Identify what knowledge is missing in the targeted area
 - a. Perform a gap analysis to determine what knowledge is missing to achieve the business goals
 - b. Determine who needs the missing knowledge
3. Provide recommendations from the knowledge audit to management regarding the status quo and possible improvements to the knowledge management activities in the targeted area.

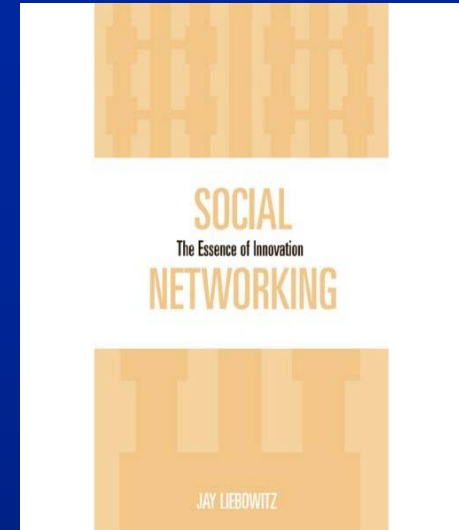
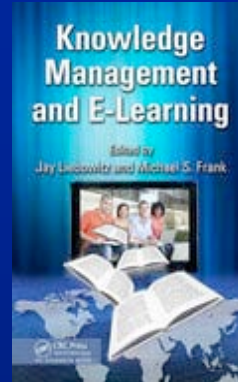
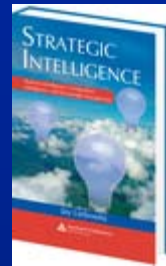
Developed a Knowledge Audit Questionnaire

- What type of knowledge is needed to do your work?
- Who provides it, where do you get it, how does it arrive?
- What do you do, how do you add value, what are the critical issues?
- What happens when you are finished?
- How can the knowledge flow be improved, what is preventing you doing more, better, faster?
- What would make your work easier?
- Who do you go to when there is a problem?

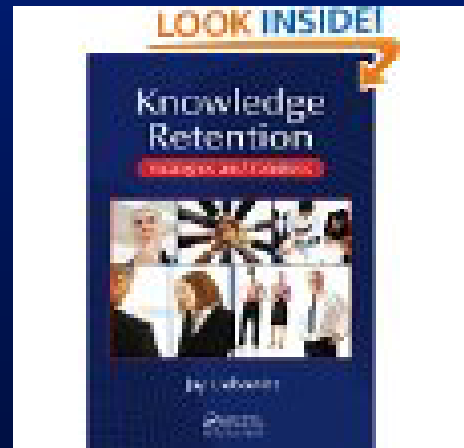
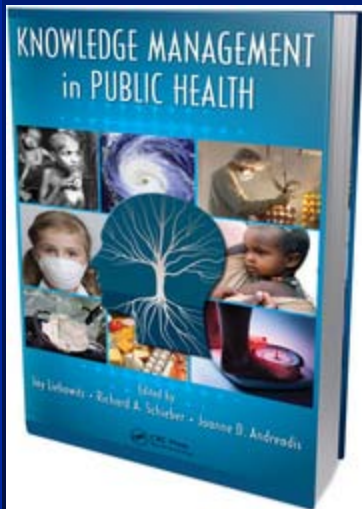
What They Didn't Tell You about Knowledge Management

Jay Liebowitz

The Informal Organization (Katzenbach Partners, 2007)



“Yet, in most corporate settings, the informal organization is poorly understood, poorly managed, and often disregarded as inconsequential.”

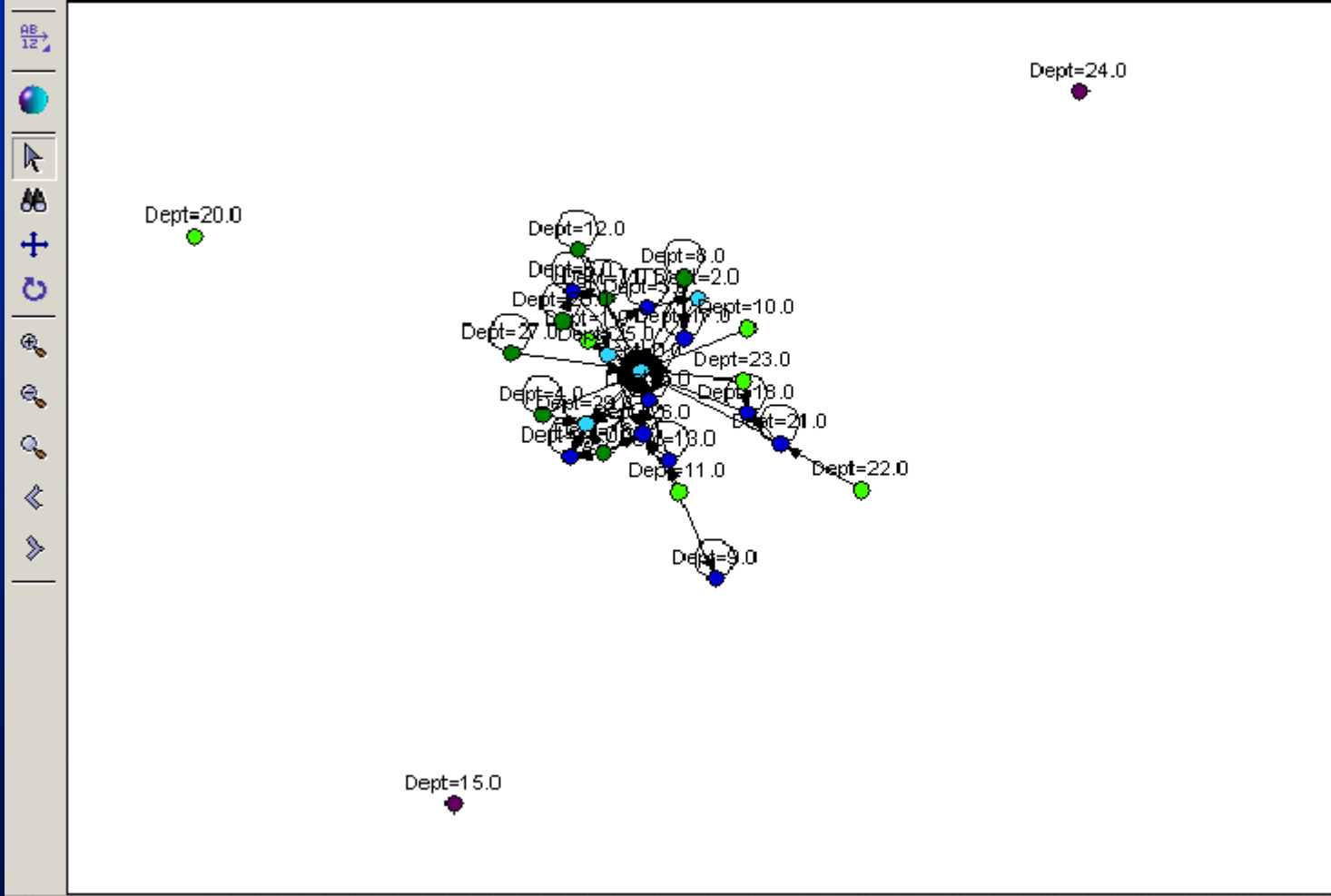


MAKING CENTS OUT OF KNOWLEDGE MANAGEMENT

EDITED BY
JAY LIEBOWITZ

Social Network Analysis

- **Social network analysis [SNA] is the mapping and measuring of relationships and flows between people, groups, organizations, computers or other information/knowledge processing entities.**



Report

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Select Layout

Spring-Ed

Neighbor

Select Node

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Direction

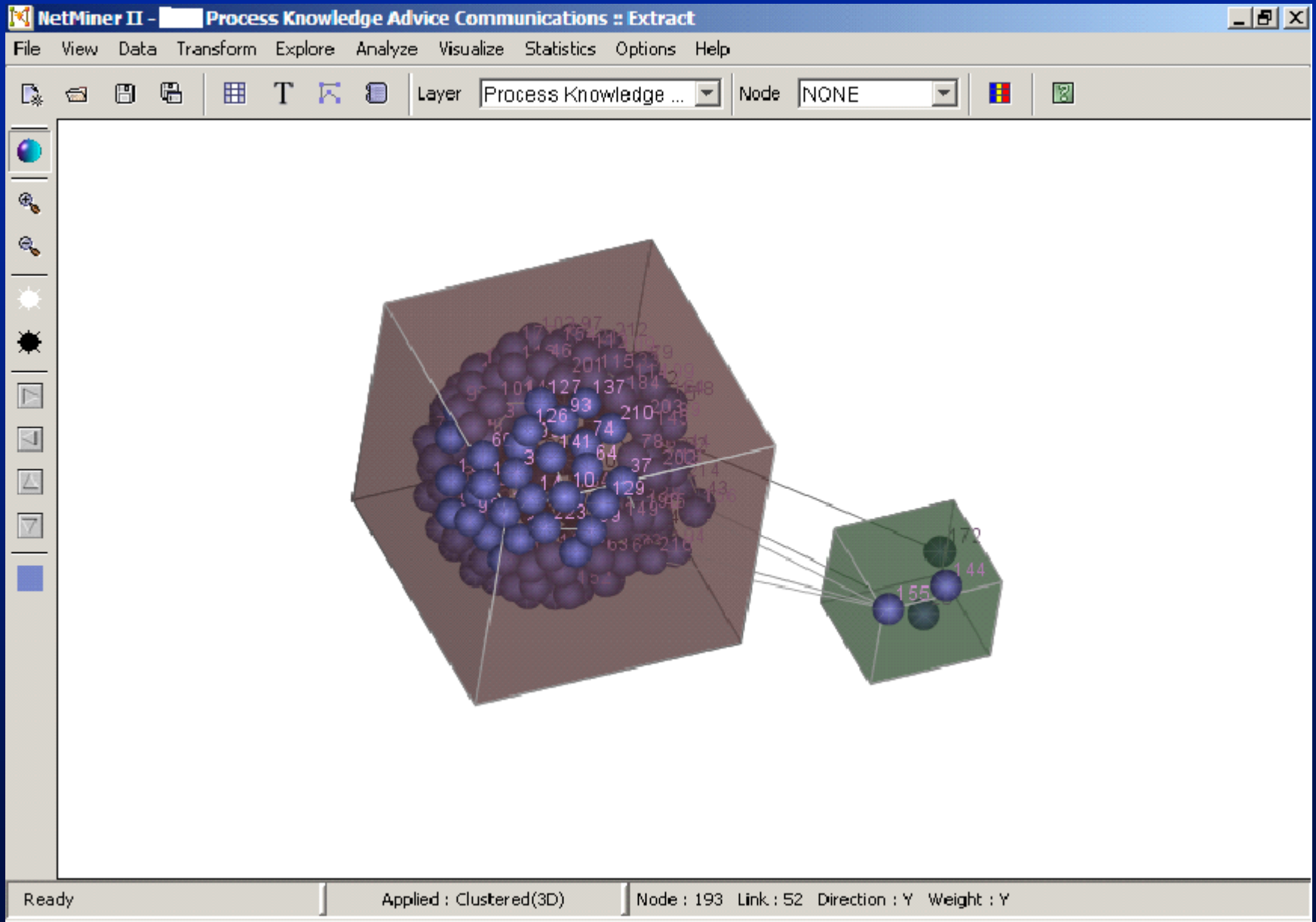
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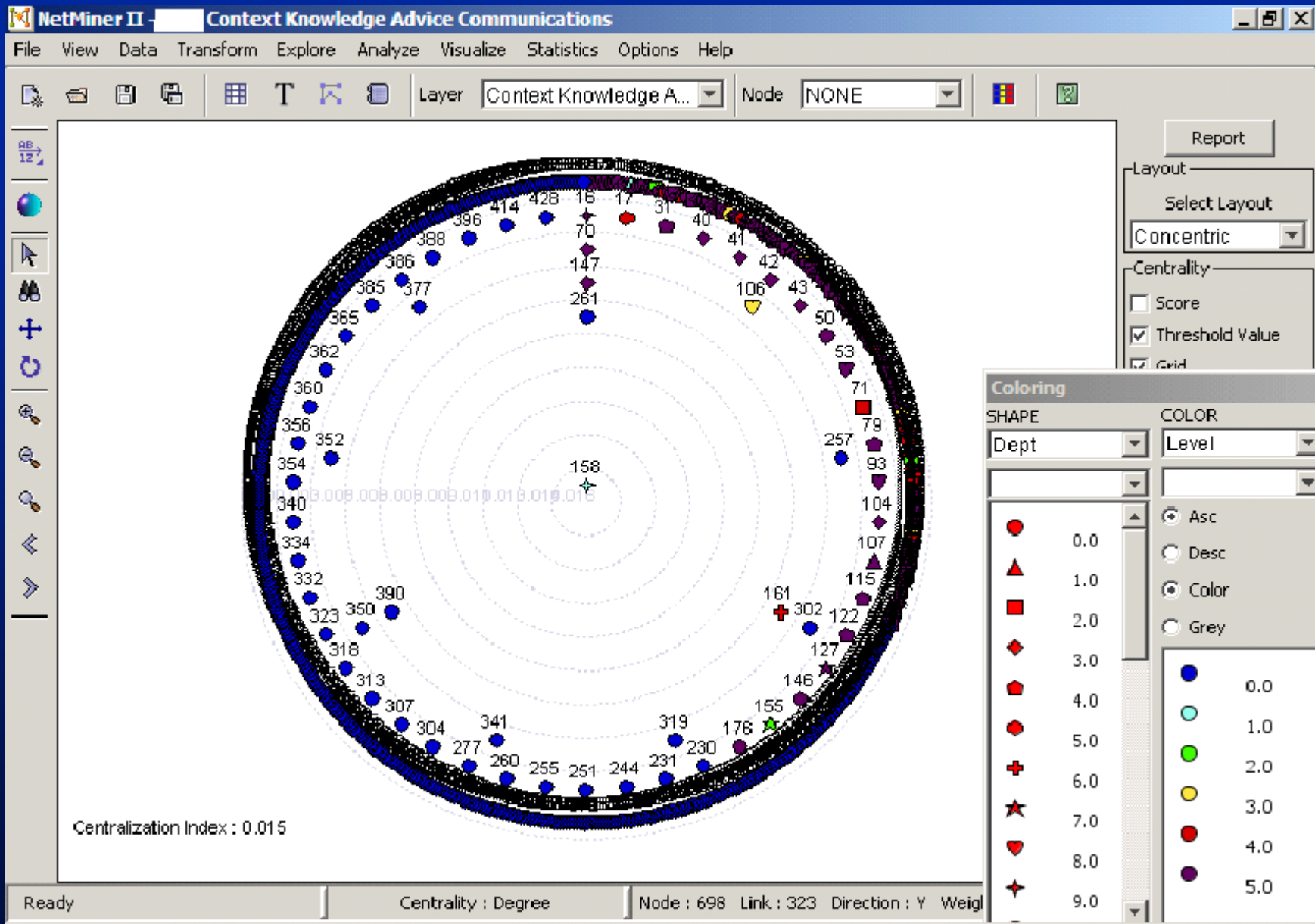
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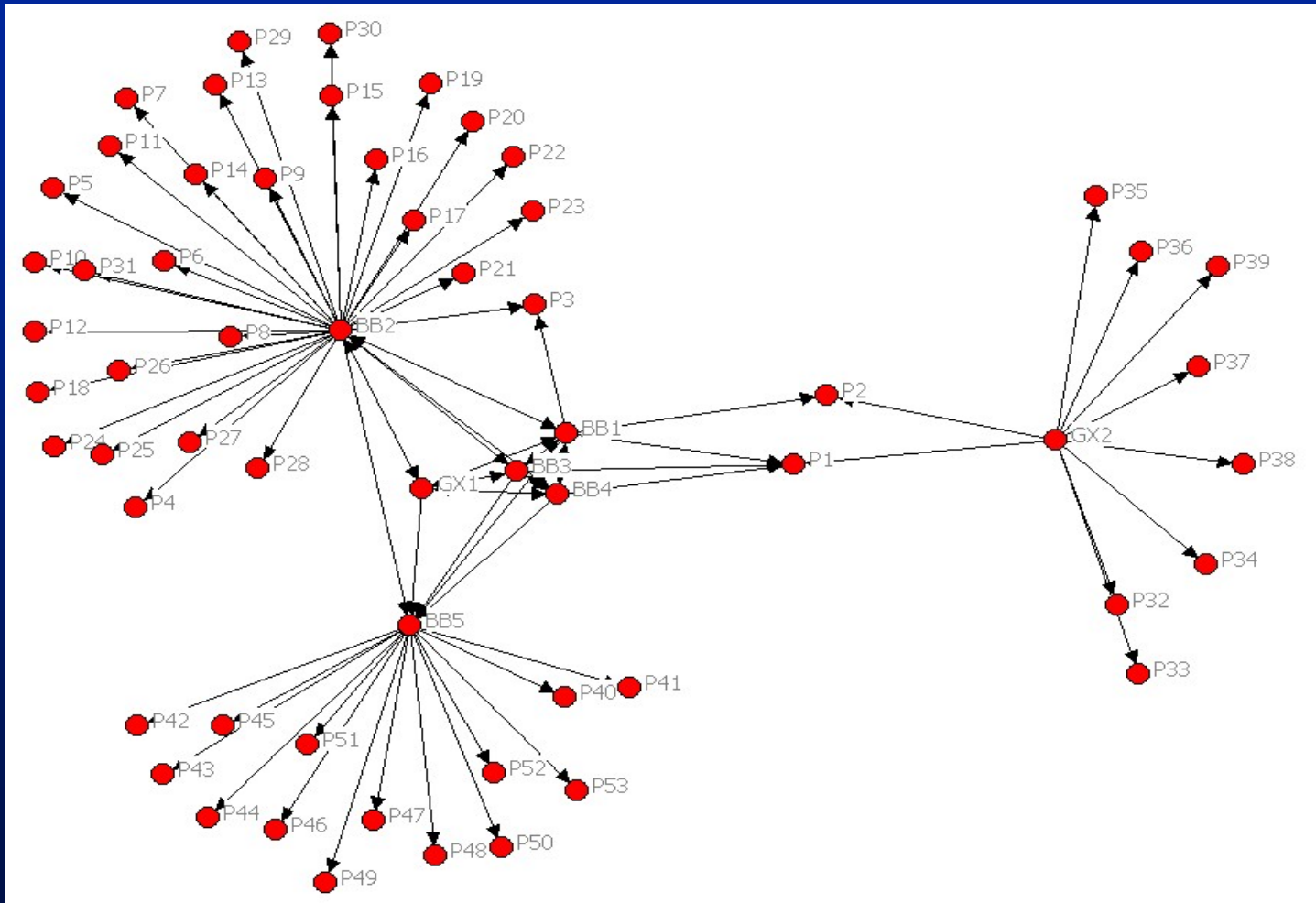
None

Show





Net Team Layout by Generation



Node Types by Area

K Area	Isolate	Transmitter	Receiver	Carrier
Context	329	133	190	46
Exp. Pr	361	126	171	40
General	378	118	162	42
Process	442	110	109	37
Relation	445	94	121	38
Strategic	396	113	151	38

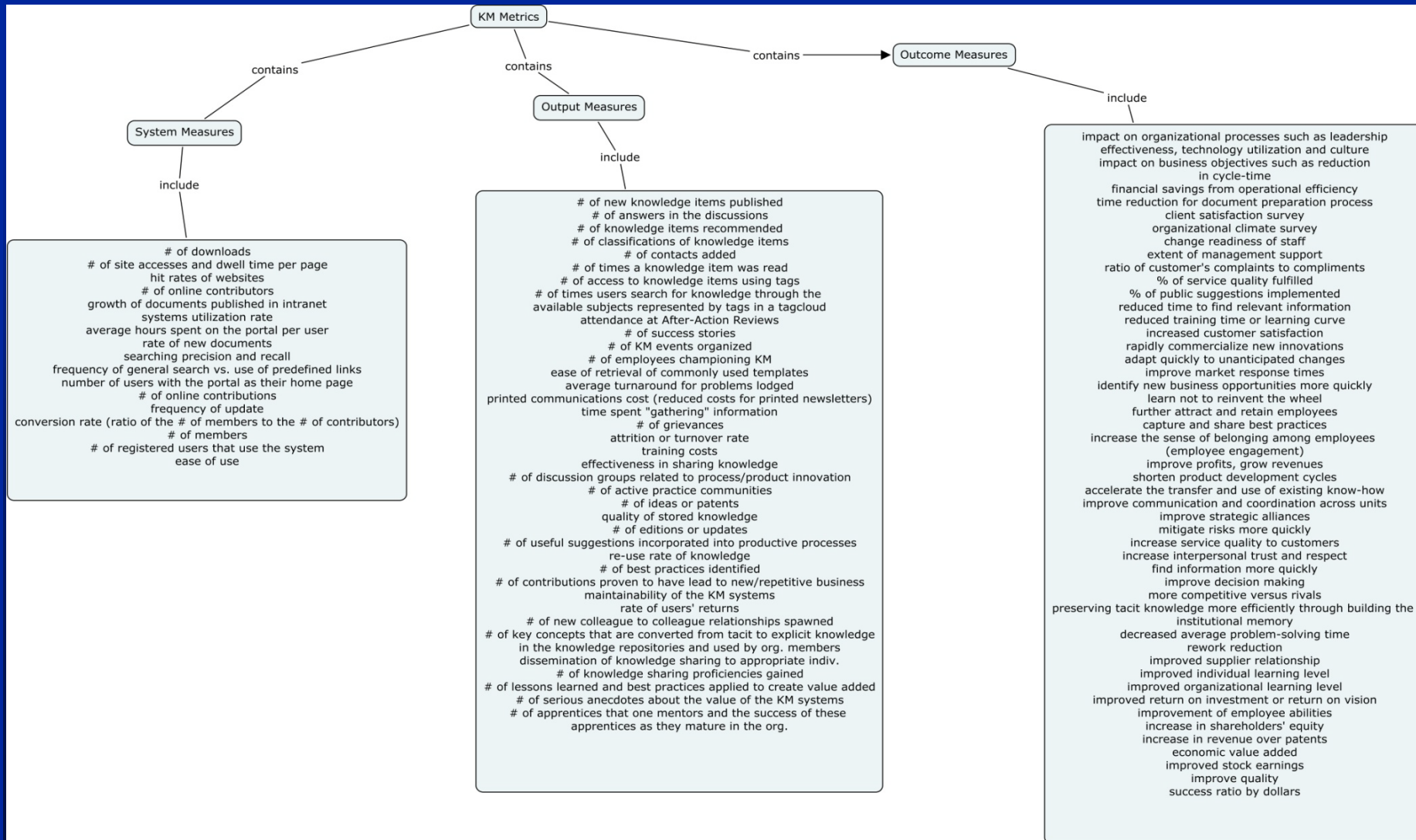
Knowledge Sharing Effectiveness Inventory

- 25 questions
- Communication, Measurement, KM Environment, Organizational Facilitation
- Fannie Mae Foundation, HCFA, Large Pharmaceutical Company, Transportation Security Agency, FAA, etc.

Sample Questions from Knowledge Sharing Survey

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
ABOUT COMMUNICATION:					
1. Key expertise is often captured in an online way in my organization.					
2. I get appropriate lessons learned sent to me in areas where I can benefit.					
3. I usually have time to chat informally with my colleagues.					
4. Individualized learning is usually transformed into organizational learning through documenting this knowledge into our organization's knowledge repository.					
ABOUT KM ENVIRONMENT:					
5. There are many knowledge fairs/exchanges within my organization to spawn new colleague to colleague relationships.					
6. There are lessons learned and best practices repositories within my organization.					
7. We have a mentoring program within my organization.					
8. We have Centers of Excellence in our organization whereby you can qualify to become a member/affiliate of the Center.					
9. We typically work in teams or groups.					

KM Metrics: Literature Search [Liebowitz/Plexus, 2010]



Critical Success Factors for KM (applying Fuzzy Logic--Liebowitz)

■ **Adaptability/Agility:**

- Anticipate potential market opportunities for new products/services
- Rapidly commercialize new innovations
- Adapt quickly to unanticipated changes
- Anticipate surprises and crises
- Quickly adapt the organization's goals and objectives to industry/market changes
- Decrease market response times
- Be responsive to new market demands
- Learn, decide, and adapt faster than the competition

Creativity:

- Innovate new products/services
- Identify new business opportunities
- Learn not to reinvent the wheel
- Quickly access and build on experience and ideas to fuel innovation

Institutional Memory Building:

- Attract and retain employees
- Retain expertise of personnel
- Capture and share best practices

Organizational Internal Effectiveness:

- Coordinate the development efforts of different units
- Increase the sense of belonging and community among employees in the organization
- Avoid overlapping development of corporate initiatives
- Streamline the organization's internal processes
- Reduce redundancy of information and knowledge
- Improve profits, grow revenues
- Shorten product development cycles
- Provide training, corporate learning
- Accelerate the transfer and use of existing know-how
- Improve communication and coordination across company units (i.e., reduce stovepiping)

Organizational External Effectiveness:

- Reach to new information about the industry and market
- Increase customer satisfaction
- Support e-business initiatives
- Manage customer relationships
- Deliver competitive intelligence
- Enhance supply chain management
- Improve strategic alliances

Applying AI to KM: Expert Systems Technology

- Knowledge elicitation techniques to acquire lessons learned (via structured/unstructured interviews, protocol analysis, etc.)
- On-line pools of expertise (rule or case-based)
- Knowledge representation techniques for developing an ontology

Intelligent Agent Technology

- **Intelligent multi-agent systems with learning capabilities to help users in responding to their questions**
- **Searching and filtering tools**
- **User profiling and classification tools**
- **Agent-Oriented Knowledge Management—AAAI Symposium (Stanford University)**

Data Mining and Knowledge Discovery Techniques

- Inductively determine relationships/rules for further developing the KM system
- Help deduce user profiles for better targeting the KM system
- Help generate new cases

Neural Networks, Genetic Algorithms, etc.

- **Help weed out rules/cases**
- **Help look for inconsistencies within the knowledge repository**
- **Help filter noisy data**

IT-Based KM Research Issues

- Develop “active” analysis and dissemination techniques for knowledge sharing and searching via “intelligent” agent technology (i.e., where “learning” takes place)
- Apply knowledge discovery techniques (e.g., data/text mining, neural networks, etc.) for mining knowledge bases/repositories
- Improve query capabilities through natural language understanding techniques
- Develop metrics for measuring value-added benefits of knowledge management
- Develop standardized methodologies for knowledge management development and knowledge audits
- Provide improved techniques for performing knowledge mapping and building knowledge taxonomies/ontologies

IT-Based KM Research Issues (cont.)

- Develop techniques for building collaborative knowledge bases
- Develop improved tools for capturing knowledge from various media (look at multimedia mining to induce relationships among images, videos, graphics, text, etc.)
- Develop techniques for integrating databases to avoid stovepiping, functional silos
- Build improved software tools for developing and nurturing communities of practice
- Develop techniques for categorizing, synthesizing, and summarizing lessons learned (look at text summarization techniques)
- Explore ways to improve human-agent collaboration
- Explore human language technologies for KM (input analysis, extraction, question-answer, translation, etc.)

Sample People/Culture/Process-Based KM Research Areas

- Interaction between knowledge codification and knowledge-sharing networks (Liu et al., 2010, ISR)
- Developing outcome measures for KM effectiveness
- Value network analysis
- Relationship between change management and KM
- How best to embed KM processes within the daily working lives of employees
- How best to develop formal KR strategies and programs

KM Curricular Issues

- **The synergy between KM, BI, and CI (“Strategic Intelligence”)**
- **Integrated, systems-view approach to KM**
- **Balance between people/culture, process, and technology**
- **Practice-based modules (capstones, theses, etc.—e.g., medical schools and now law schools)**
- **Multidisciplinary view of KM**
- **Synergy between KM and e-learning (UN)—**
- **http://polaris.umuc.edu/de/csi/2010_JayLiebowitz/ppt_syn/JayLiebowitz_index3.html**

Summary



- KR&T should be on the minds of senior leadership and management
- Need to have methodologies, processes, techniques, and tools for KM
- Need to apply concepts from other disciplines to advance KM
- Need to think creatively in developing future KM programs and courses