Knowledge Management and Quality Management

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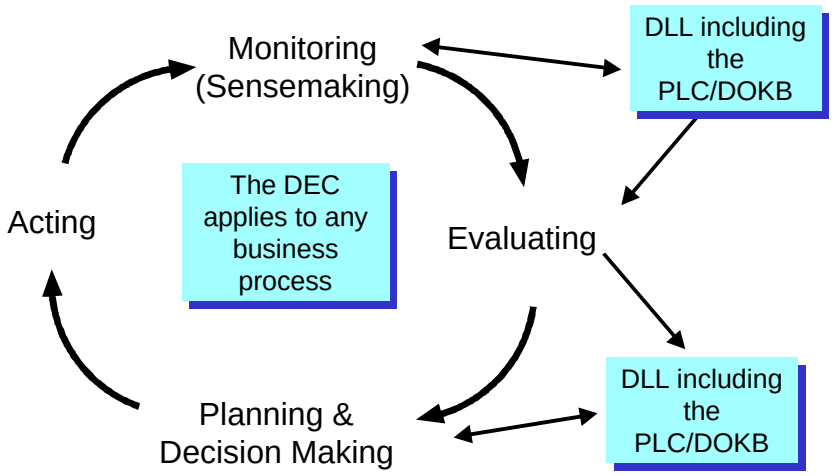
Business Processes, the KLC, and KM

The Decision Execution Cycle “Kicks” off the Problem Life Cycle (PLC)



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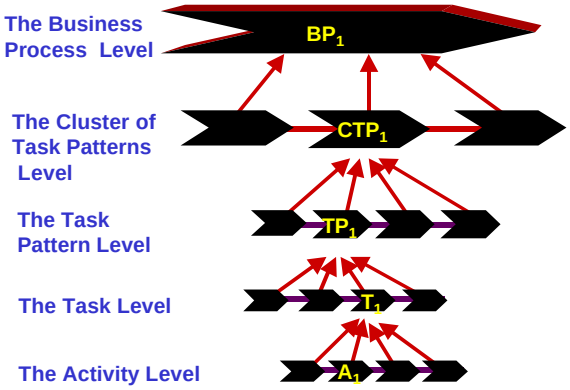
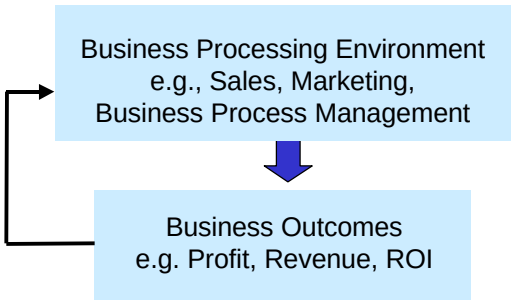
The Activity to Business Process Hierarchy



Business Processes Ultimately break down to activities, and activities, as we have seen, are produced by Decision Execution Cycles.

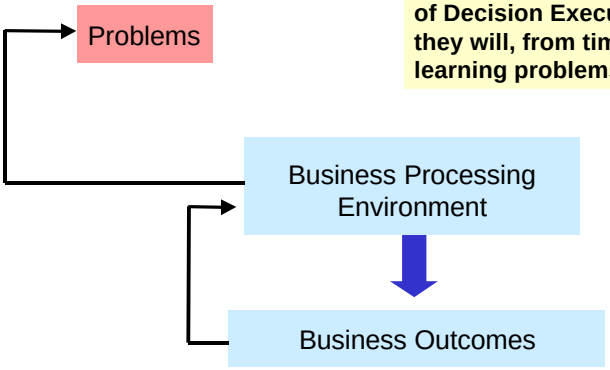
The Business Processing Environment and Business Outcomes



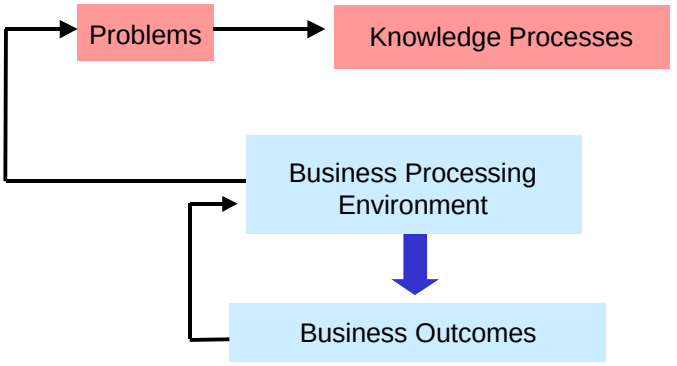
Business Processes are performed and managed by agents. Agents, if they're groups, have an internal culture. At the same time the cultural component of social ecology also impacts the agent decision execution cycles that ultimately comprise the business processses**.**

Business Processing Environment and Business Problems

Since Business Processing Environments are comprised of Decision Execution Cycles, they will, from time-to-time, spawn learning problems



And Knowledge Processes



Problems require problem-solving processes or problem life cycles! In organizations we call these knowledge processes

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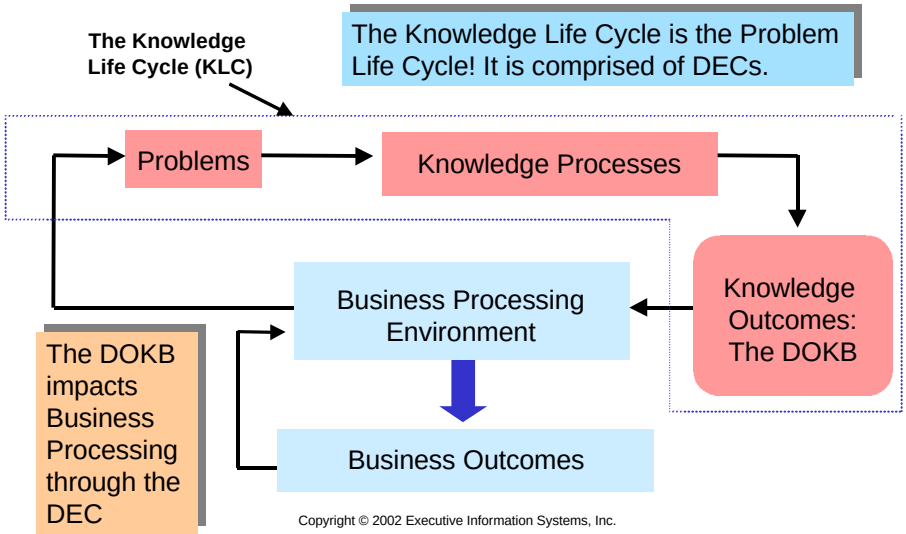
And Knowledge Outcomes: the DOKB



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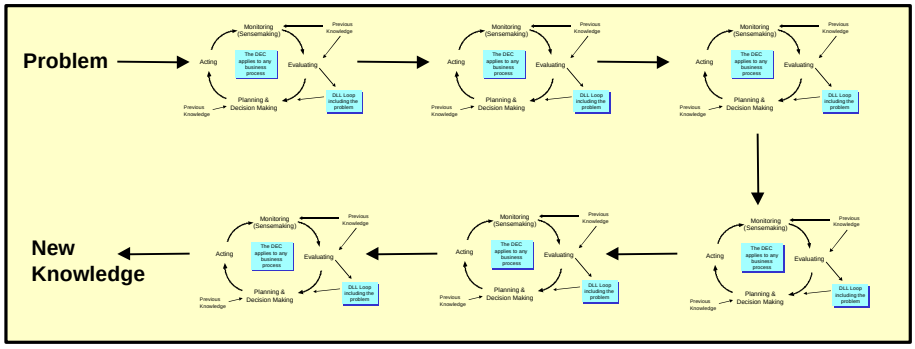
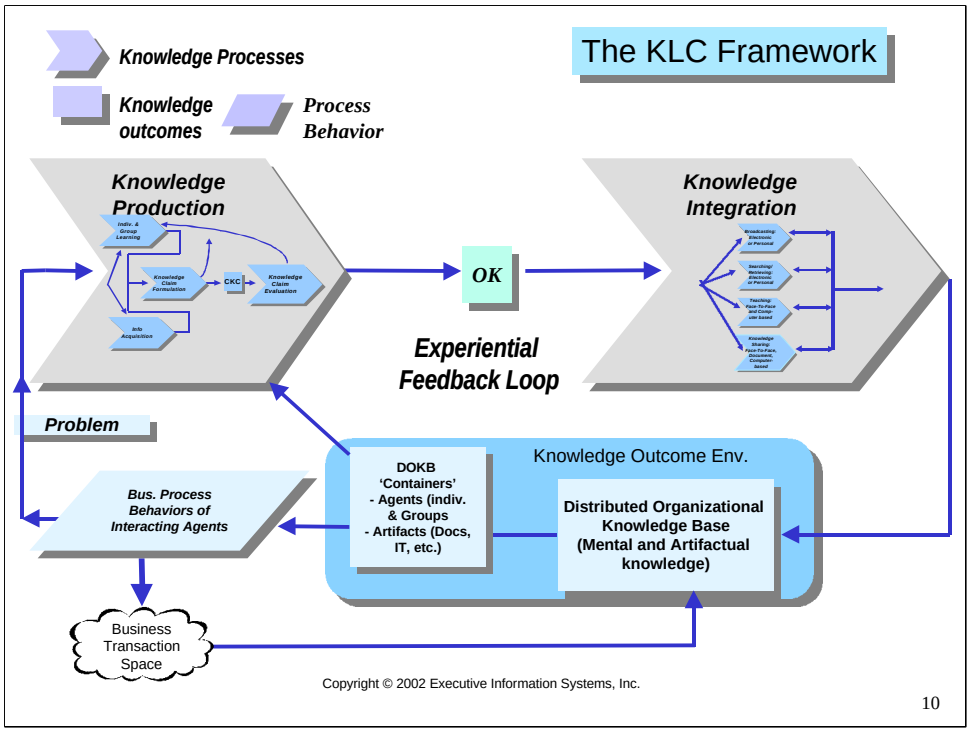
Problem-Solving Life Cycles and Decision Execution Cycles

The Problem Life Cycle



The Problem Life Cycle is a process composed of many Decision Execution Cycles all motivated by the learning incentive system!


Knowledge Processes
Knowledge outcomes
Process Behavior
The KLC Framework
Knowledge Production
Knowledge Integration
OK
Experiential Feedback Loop
Problem
Bus. Process Behaviors of Interacting Agents
DOKB 'Containers' - Agents (indiv. & Groups - Artifacts (Docs, IT, etc.)
Knowledge Outcome Env.
Distributed Organizational Knowledge Base (Mental and Artifactual knowledge)
Business Transaction Space
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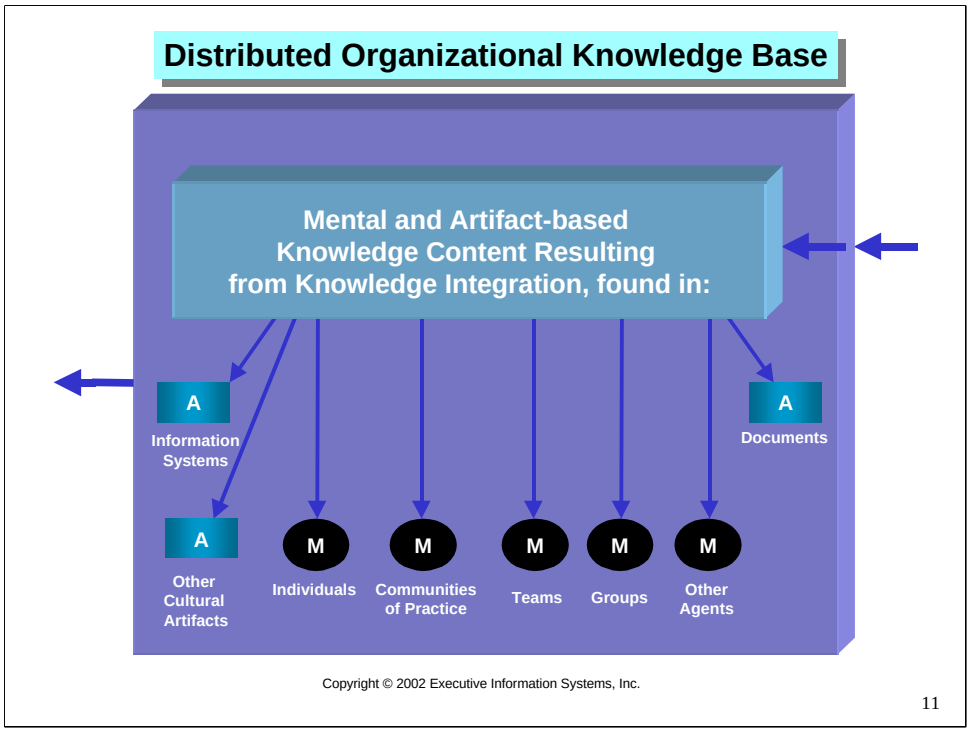

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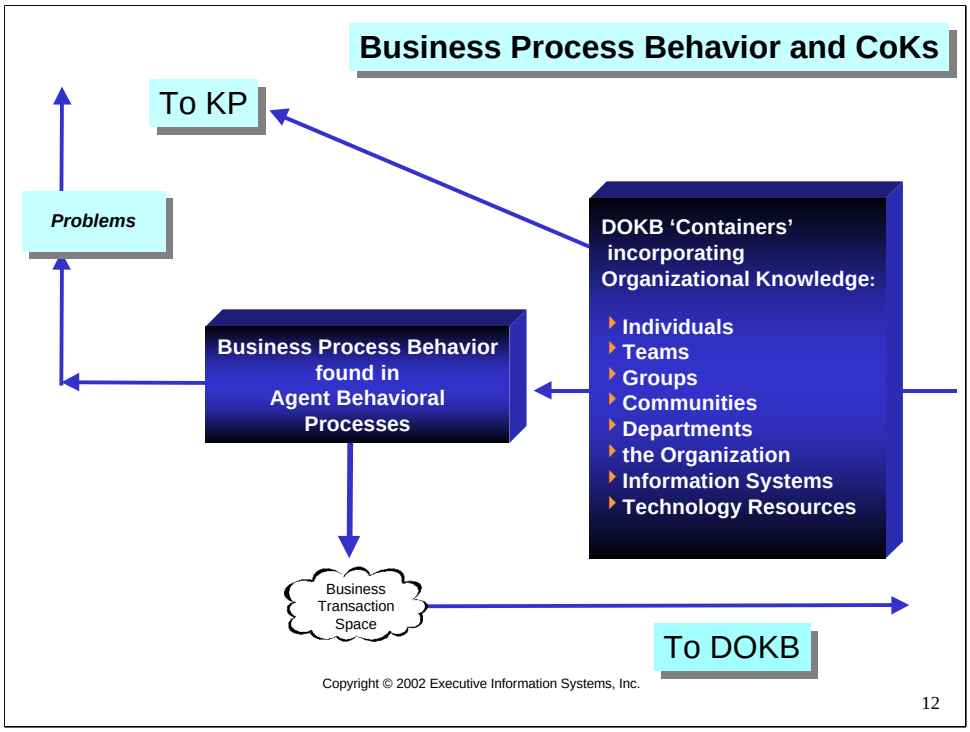
Business Process Behavior and CoKs
To KP
Problems
DOKB 'Containers' incorporating Organizational Knowledge:
Individuals
Teams
Groups
Communities
Departments
the Organization
Information Systems
Technology Resources
Business Process Behavior found in Agent Behavioral Processes
Business Transaction Space
To DOKB
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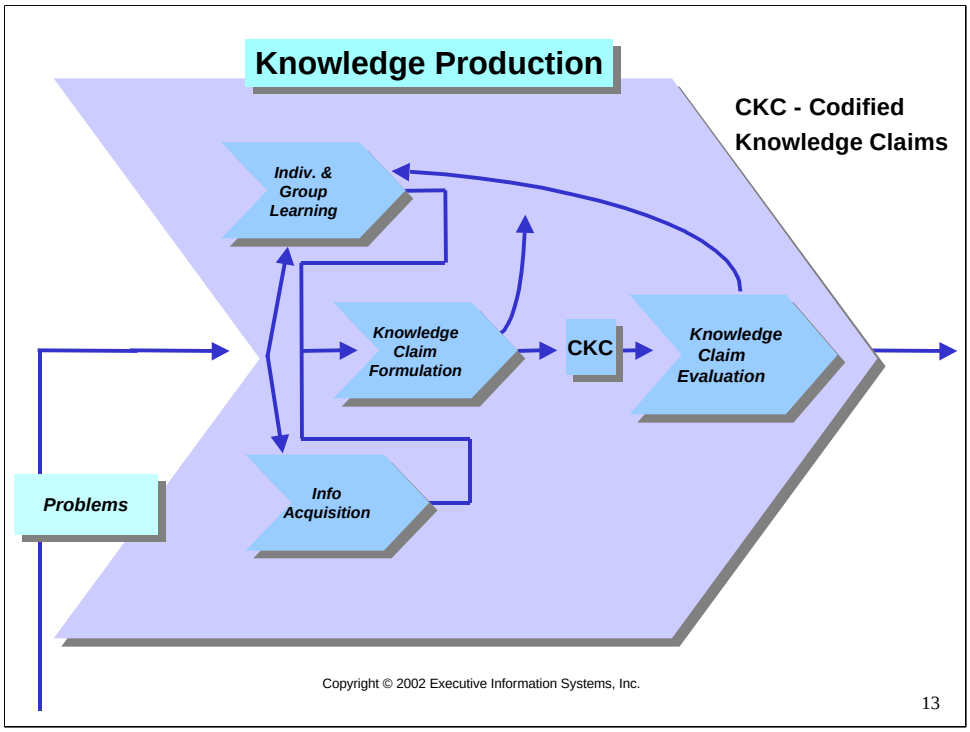
Knowledge Production
CKC - Codified Knowledge Claims
Indiv. & Group Learning
Knowledge Claim Formulation
CKC
Knowledge Claim Evaluation
Problems
Info Acquisition
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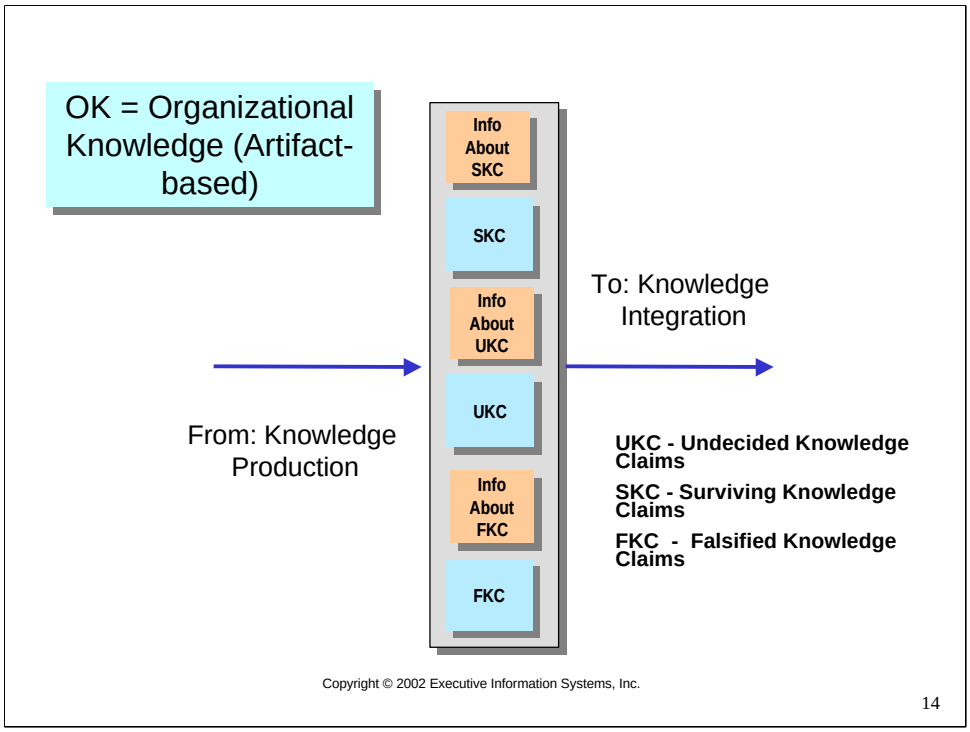

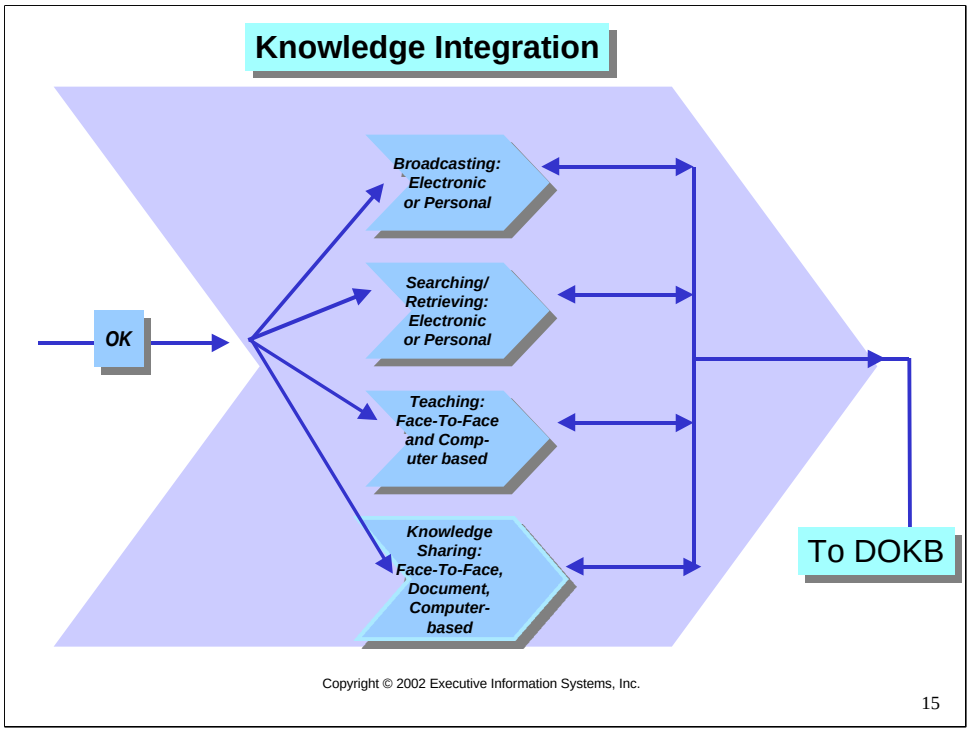
Knowledge Integration
OK
Broadcasting: Electronic or Personal
Searching/ Retrieving: Electronic or Personal
Teaching: Face-To-Face and Comp- uter based
Knowledge Sharing: Face-To-Face, Document, Computer- based
To DOKB
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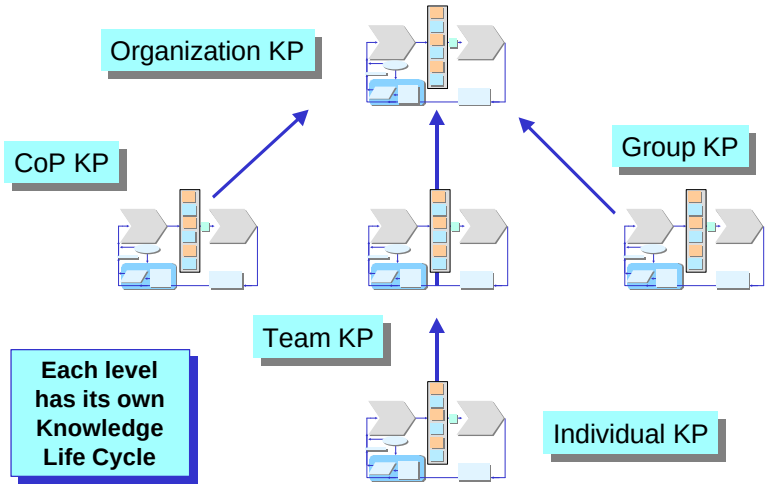
Nested Knowledge Processes



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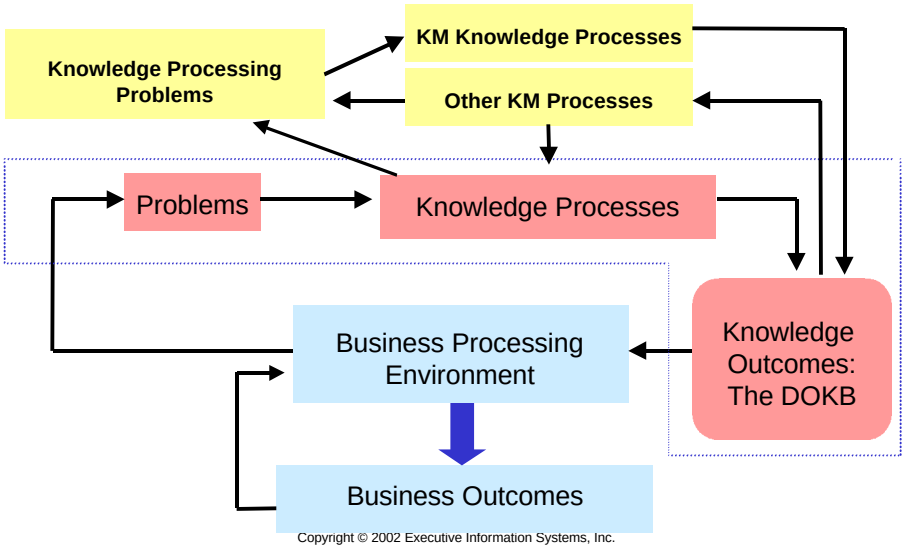
And Knowledge Management



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KM Categories

- Knowledge Management - Interpersonal Behavior
  - Leadership (hiring, training, motivating, monitoring, evaluating, etc.)
  - Figurehead/symbolic representation activities
  - Building relationships with individuals and organizations external to the enterprise
- Knowledge Management - Knowledge Processing Behavior (Knowledge Production and Integration and their sub-processes)

KM Categories (Two)

- Knowledge Management - Decision-Making KM Activities
  - Changing knowledge process rules at lower KM and knowledge process levels
  - Crisis Handling
  - Allocating Knowledge-related and KM Resources
  - Negotiating agreements with representatives of other business processes

QM and KM

QM and KM

- Some approaches to Quality Management
- Commonalities in QM approaches
- QM and KM: The basic conceptual relationship

Major Approaches to Quality and QM

- Deming
- Juran
- Crosby
- TQM
- Six Sigma
- ISO 9000

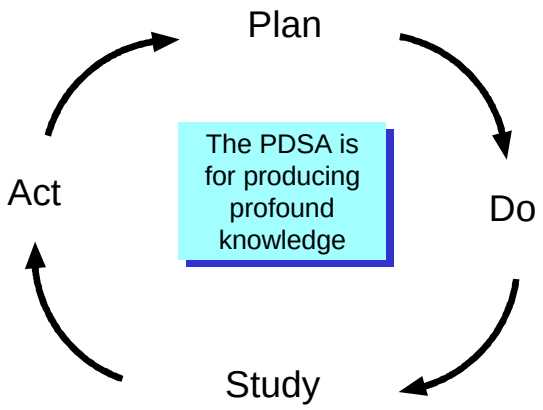
W. Edwards Deming: On Quality

- Quality is an attribute of a product or service that can only be defined by the customer.
- Because of this its meaning is relative
- Quality or lack of it is one of the outcomes of the specific business process that produces a product or service
- Quality is produced by proper execution of such a process
- The job of quality management is to provide the system and the leadership to facilitate such proper execution

W. Edwards Deming: Key Elements

- The system of profound knowledge
  - theory of systems
  - theory of variation
  - theory of knowledge
  - knowledge of psychology
- The Plan-Do-Study (or Check)-Act Cycle for producing profound knowledge
- Prevention by Process Improvement
- The Chain Reaction for Quality Improvement
- Common Cause and Special Cause Variation
- The 14 Points for achieving quality
- The Deadly and Dreadful Diseases

The Plan-Do-Study-Act Cycle



Joseph M. Juran: On Quality

- Quality is “fitness for use”
- Balance between product features and products free from deficiencies
- Features must meet customer expectations
- Absence of deficiency is as essential as desired features in producing customer satisfaction
- So the ultimate test of quality is fitness for use by customers as reflected by customer satisfaction

Joseph M. Juran: Key Elements

- The Spiral of Progress in Quality
- The Breakthrough Sequence
- The Project-By-Project Approach
- The Juran Trilogy
- The Principle of the Vital Few and Trivial Many

Juran: The Trilogy of Quality Management

- Quality Planning
  - developing a process to achieve goals involving customer satisfaction
- Quality Control
  - holding onto gains, controlling variation, preventing waste
- Quality Improvement
  - lowering cost of poor quality
  - achieving innovation in performance

Philip B. Crosby: Quality

- Conformance to requirements
- Must be defined in measurable terms and expressed as a clear target
- Either present or not present
- The Cost of Quality (COQ) = Price of Conformance (POC) + Price of Non-Conformance (NPOC)
- POC is cost of getting things done right the first time
- NPOC is the cost of waste

Philip B. Crosby: Key Elements

- Do It Right the First Time
- Zero Defects and Zero Defects Day (an attitude and commitment towards prevention)
- The Four Absolutes of Quality
- The Prevention Process (involves thinking, planning, and analyzing to forecast and prevent errors)
- “The Quality Vaccine” (composed of three management actions--determination, education, and implementation) and
- The Six C s (comprehension, commitment, competence, communication, correction, continuance)

Crosby: Four Absolutes of Quality

- Conformance to the requirements: This idea of quality must be integrated into the enterprise
- The system of quality is prevention (eliminating errors before they occur)
- The performance standard is zero defects
- The measure of quality is the PONC: the lower the PONC the more widespread the quality
- These four absolutes must be attained through strong discipline, complete leadership commitment, substantial resource allocation for training, tools, and appropriate personnel, and Crosby's 14-step approach to achieving conformance.

Total Quality Management: Quality

- “we define quality as consistently producing what the customer wants while reducing errors before and after delivery to the customer. More importantly, however, quality is not so much an outcome as a never ending *process* of continually improving the quality of what your company produces.” David Chaudron qualitymanagement.com
- Close derivative of Deming’s approach to Quality

Total Quality Management

- "A structured system for satisfying employees, customers, and suppliers by integrating the business environment, continuous improvement, and breakthroughs with development, improvement, and maintenance cycles while changing organizational culture" (from iqd.com).
- Great emphasis on needs and requirements analysis
- Uses a systems approach with strong emphasis on both cultural and technological elements
- Strong emphasis on prevention and role of leadership
- Closely related to Deming's approach to QM

Six Sigma: Quality

- The value added by a productive endeavor
- Potential quality is the maximum possible value added per unit of input.
- Actual quality is the current value added per unit of input
- The difference between the two is waste
- Six Sigma is focused on reducing waste, cycle time, defects, and those costs that do not add value
- Goal is virtually error-free performance

Six Sigma: Key Elements

- Implements “proven” quality principles and and a select few of the myriad QM techniques
- Performance is measured by the sigma level measure of variability in the company’s business processes
- Uses a Define-Measure-Analyze-Improve-Control (DMAIC) model
  - Define goals
  - Measure existing system and processes
  - Analyze (including stat analysis) & develop plan closing gap
  - Improve system (Use stat methods to validate)
  - Control the new system by institutionalizing it through new policies and rules

Six Sigma: Implementation approach

- Senior leadership training in principles & tools for organization success, followed by SLs directing development of management infrastructure & innovation-friendly culture supporting Six Sigma.
- Develop systems establishing close communication with customers, employees, & suppliers. Includes rigorous methods and ways of overcoming cultural, policy, and procedural barriers
- Rigorously assess training needs, provide remedial basic skills education, and comprehensive training in systems improvement tools, techniques, and philosophies
- Develop framework for continuous process improvement along with system of indicators for monitoring progress and success.
- Projects for improving business performance linked to measurable financial results.
- Six Sigma projects conducted by individual employees & teams led by change agents (Master Black, Black, and Green Belts)

ISO 8402 and 9000: Quality and QM

- "The totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs" ISO 8402
- *Quality management:* activities performed to formulate and implement policies and programs intended to achieve quality.
- Examples:
  - quality planning,
  - quality control,
  - quality assurance, and
  - quality improvement

ISO 9000: Eight Principles

- Customer Focus (on needs and requirements)
- Leadership (establish unity of purpose, direction, environment for participation)
- Involvement of people (full)
- Process Approach (managing activities & resources)
- Systems Approach to Management (of inter-related processes)
- Continual Improvement (of processes and performance)
- Factual Approach to Decision Making (analysis of data/info)
- Mutually Beneficial supplier relationships

Commonalities in QM Approaches

- QM approaches tend to view quality in terms of value produced by business processes for customers
- Reshape and control process to get quality
- Tend to take a systems, but not a complex adaptive systems approach
- Emphasize scientific approaches, empirical investigation, statistical analysis, formal knowledge processing
- Emphasize metrics and measurement
- View QM as an integrated set of activities designed to have a direct impact on all business processes and their inter-relations

Commonalities in QM Approaches (Two)

- Use Technological and particularly IT tools and techniques
- Employ a wide range of analytical techniques and also social interaction and human intervention techniques
- Emphasizes strongly the elimination of errors before they happen: prevention
- Strong emphasis on cause-and-effect analysis suggesting a deterministic view of quality
- Strong emphasis on leadership and its role in QM
- Widespread emphasis on organizational learning framework to produce knowledge needed for achieving quality, e.g. PDSA.

Commonalities: QM & KM Approaches

- Reshape processes to get the valued result (either quality or accelerated sustainable innovation in response to problems)
- Emphasizes metrics and measurement
- Use IT tools and techniques
- Employ a wide range of analytical techniques and also social interaction and human intervention techniques (many techniques are the same)
- Emphasizes strongly the elimination of errors before knowledge is applied in business processes
- Widespread emphasis on organizational learning framework, e.g. the PDSA framework, the OL Loop
- Strong emphasis on leadership and its role

KM and QM Differences

- KM has widespread emphasis on the KLC, a framework, as explained earlier, composed of nested OLCs, while QM only recognizes the PDSA for making knowledge
- KM is a set of activities designed to directly impact knowledge processes only. Its impact on other business processes is indirect
- KM emphasizes the highly non-linear and emergent nature of social interaction in organizations
- Thus if a business process is non-mechanistic in nature, KM assumes that cause-and-effect chains proceeding from KM interventions will not be sufficient to produce the knowledge needed for “quality”. Instead these interventions need to facilitate individual and group creativity to produce that knowledge

KM and QM Differences (Two)

- KM has less emphasis than QM on controlling knowledge processes due to belief in self-organization
- KM, unlike QM, emphasizes ***cas*** approach to systems
- KM relies heavily on communities of practice/inquiry
- KM follows a scientific approach, but with great emphasis on the human sciences and social technology and with emphasis on fallibilism in the contexts of formulating knowledge claims and eliminating errors in them

The Basic QM & KM Relationship

- QM is very focused on knowledge production and integration, but not on managing these processes explicitly
- KM is a kind of QM
- It is QM directed at improving the quality of the knowledge processes: knowledge production and knowledge integration
- Where quality is defined as accelerated sustainable innovation in response to problems
- And innovation is defined as the production and integration of new knowledge produced by the KLC in response to problems

KM is a Kind of QM!

QM, KM, and other Business Processes

- QM can relate to and have an impact on any business process including KM (e.g. CRM, SCM)
- But KM activities manage only knowledge production, knowledge integration and their outcomes used in business processes, so the focus of KM is, in one way, much more narrow.
- On the other hand since KM is concerned with managing knowledge processing, it follows that it is about managing knowledge processing in QM
- The production of “profound knowledge” for example occurs through knowledge processing and is subject to policies and rules influenced by KM
- E.g. validation criteria are influenced by KM

QM in KM

- I said earlier that QM can have an impact on KM
- Meta-KM, or KM directed at KM is, in fact, a QM process directed at KM itself.
- However, it relies on KM principles to perform QM and reflects the KM orientation expressed two slides ago.

Meta-KM is, in fact, a QM process directed at KM itself

Knowledge Processing and KM Conceptual Frameworks and QM

- Earlier we listed primary differences between KM and QM in their underlying conceptual approaches. After our presentation of various KM-related conceptual frameworks, the following points should have emerged very clearly.
  - The combined organizational learning/CAS/KLC/ Metaprise/ sustainable innovation approach to KM is much more oriented toward emergence than the various QM frameworks, while still emphasizing causal analysis
  - The KM frameworks have much less emphasis on leadership control as a key factor and much more emphasis on leadership as a facilitative mechanism

Knowledge Processing and KM Conceptual Frameworks and QM (Two)

- The KM conceptual framework is consciously fallibilist in orientation, while continuing to emphasize the importance of validation
- The KM conceptual framework emphasizes a network of nested OLCs rather than a single Plan-Do-Study- Act cycle, and it also emphasizes the double-loop nature of organizational learning and its translation into the knowledge production and knowledge integration processes of the KLC in the organizational context
- The combined KM conceptual framework is much more hierarchical than the QM conceptual framework with its Meta-KM and metaprise orientations
- Sustainable Innovation as an organizing principle is much more central to KM than it is to QM

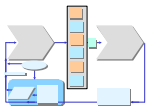
Knowledge Processing and KM Conceptual Frameworks and QM (Three)

- QM is very focused on performing knowledge processing in order to decide how to manage business processes in order to produce quality in products and services
- It is not focused on managing knowledge processing in order to accelerate innovation to solve problems in business processing whose effect is to produce inadequate quality in products and services.

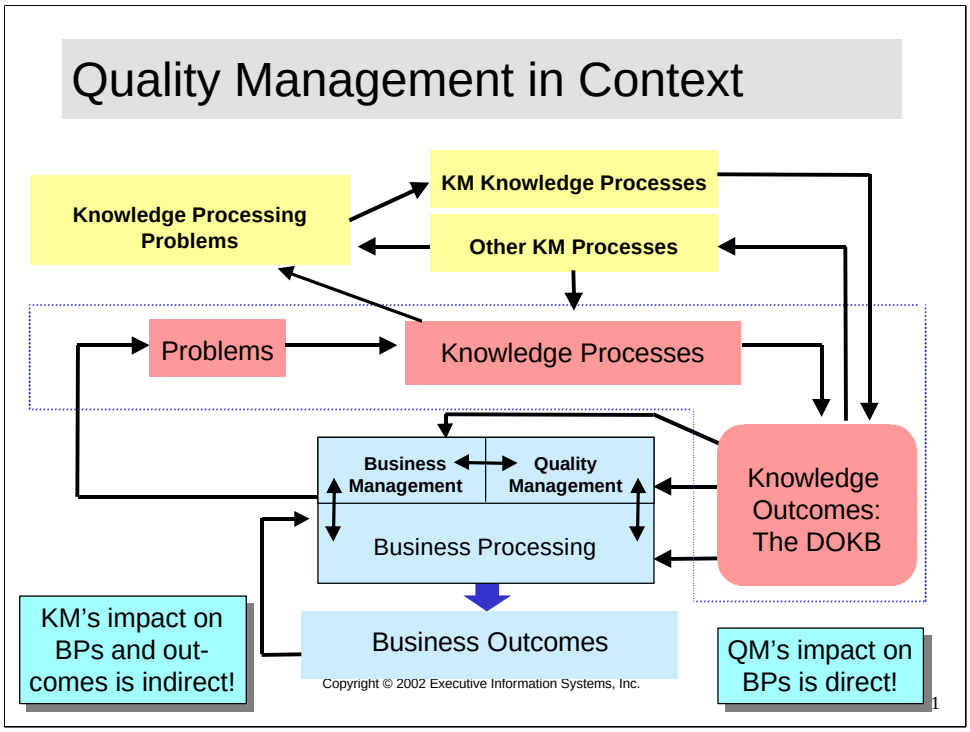
The Plan-Do-Study-Act Cycle vs. the KLC

- The PDSA is QM's alternative to KM's KLC as a way of looking at knowledge production

VS.



- The KLC is a richer formulation that clearly distinguishes the knowledge production, and integration processes from the decision execution loop that characterizes all decision making, and that locates knowledge use in business processes produced by these decision execution loops.
- The PDSA is also not an alternative to the OLC framework presented earlier, because it is intended to apply to knowledge production and is not offered as a general view of all decisions.


Quality Management in Context
Knowledge Processing Problems
KM Knowledge Processes
Other KM Processes
Problems
Knowledge Processes
Business Management
Quality Management
Business Processing
Knowledge Outcomes: The DOKB
KM's impact on BPs and out-comes is indirect!
Business Outcomes
QM's impact on BPs is direct!
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KM Metrics and Quality Metrics

- Except for those developed from the KLC and KM processes themselves, quality metrics will primarily be found in the business outcome area, and
- Derivatively in the business process area, comprising those metrics that have an impact on quality outcome measures such as conformance to customer requirements

KM can use quality metrics within its framework as business outcome or process metrics! Therefore, quality metrics may be viewed as KM Metrics in the broadest sense!

Comparison of KM with Quality Methodologies

- Quality Methodologies (QMs) are targeted at business processes in general, while KM methodologies (KMMs) are targeted at knowledge and KM processes
- QMs generally use Life Cycle Methodologies, while KMMs increasingly use iterative, incremental, process methodologies distinguishing workflows and phases
- QMs use a business process conceptual framework relying on the PDSA cycle and a cause-effect orientation, while KMMs use a knowledge process conceptual framework based on the KLC, or an alternative knowledge process framework, KM, Metaprise, and Sustainable Innovation frameworks, and having a ***cas*** orientation.
- QMs are task pattern driven, while KMFM is both task pattern-driven and business structure-centric

Comparison with Quality Management Tools and Methods

- KM is very catholic in its employment of tools and methods.
- Virtually all QM tools ranging from Affinity Diagrams, to the variety of QM statistical tools, to cause-and-effect diagrams, to brainstorming, to Tree Diagrams, are and will continue to be used in KM.The reason for this is that many QM practitioners have brought their tools with them in contributing to KM
- There are some tools used in KM however that have not spread to QM These include:
  - Communities of Practice
  - Knowledge Cafes
  - Story-telling
  - Value Network Analysis
  - Semantic Network Analysis/knowledge mapping/cognitive mapping

KM-related IT Tools and Quality Management

- Quality Management software, at present is very focused on functionality related to QM
- Diverse in nature, with an emphasis on specialized functionality rather than comprehensiveness
- Not strongly oriented toward integration with Enterprise multi-tier computing architecture
- Not up-to-date with respect to recent IT innovations such as distributed computing and intelligent agents, powerful content management software, EIPs, collaborative software, text mining software
- in short, QM software is at the beginning of its evolution in an enterprise context

KM-related IT Tools and Quality Management (Two)

- EIP software could integrate diverse QM software applications
- It could also integrate QM software into the enterprise computing structure, thus making acceptance of the software more palatable
- Software for supporting communities of practice can support knowledge production about quality
- knowledge portal software supporting e-CRM can provide support for continuous assessment of customer needs and wants, and better measurement of the “voice of the customer”
- Text mining and semantic networking software can strengthen knowledge claim formulation about quality as well as collaboration on quality models and projects

KM-related IT Tools and Quality Management (Three)

- Quality management has already begun to use Balanced scorecard, group decision processing, modeling and data mining tools
- In general, there is already some overlap between KM-related IT tools and QM-related software applications.
- In the future, this overlap will grow
- Eventually knowledge portals will provide a context for QM software application support and will supply a broad range of general functionality for quality management

Contributions of KM to Quality Management

- What the contribution of KM to QM is implicit in previous slides
- QM relies heavily on knowledge production, and it emphasizes systematic, statistical, even scientific studies to bring quality to the modern enterprise
- What KM will contribute to QM is KM's continuing, evolutionary development of effective programs, policies, and rules that accelerate innovation in QM and enhance the ability of QM-related knowledge processes to eliminate error and produce survivable knowledge claims on which QM decisions and business process actions can be confidently based

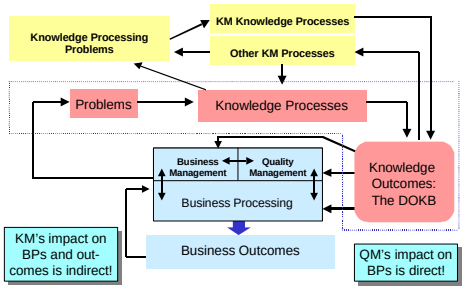
Contributions of KM to Quality Management (Two)

- More specifically, KM can also contribute
  - conceptual frameworks for thinking about knowledge processing and improving its character
  - validation frameworks that can help individuals and groups test and evaluate knowledge claims
  - social process-based techniques for enhancing KCF, KCV, and I and G learning in the plan and study phases of the PSDA cycle
  - Metrics for studying and evaluating knowledge processing in QM

Contributions of KM to Quality Management (Three)

- More specifically, KM can also contribute
  - IT tools for supporting knowledge production and knowledge integration in QM including Enterprise Knowledge Portals, IAs, collaborative software, software supporting group decision making, assessment capture software and other software applications reviewed earlier
- In sum, the contributions of KM to Quality Management decisions are indirect, but they can have a pervasive positive impact on knowledge processing in QM and through this impact can effect both QM decisions and business processing

Again, Remember:



The End