A Brief Introduction to KMCI's Conceptual Frameworks as Taught in the CKIM and K-STREAM™ Programs

March 2004

Contents

KMCI – Conceptual Frameworks

- Introduction

- Key Ideas and Reference Models

- Practice Implications

- *The New KM's* Value Propositions

- Contact Information

2

KMCI – Conceptual Frameworks

Introduction

Introduction

- Primary focus is on *The New Knowledge Management*, a second-generation perspective on KM

- Predicated on view of KM as a management discipline that seeks to improve business performance by enhancing knowledge processing (i.e., an organization's capacity to learn, solve problems, innovate, and adapt)

- Our value proposition and deliverables?
  - Certificate programs in KM concepts and methods
  - Industry standard reference models developed *for* practitioners *by* practitioners
  - Research and development activity encompassing Basic Research, Industry Reports, Software Evaluation, and Consulting

Introduction (cont.)

- What distinguishes the KMCI point of view?
  - Its original, conceptual framework known as "Second-Generation KM" (aka, *The New KM*)
  - Its formulation of the "Knowledge Life Cycle" (KLC)
  - Its recognition of the importance of knowledge *making* in a firm, not just knowledge *sharing*
  - Its focus on the links between KM, organizational learning, intellectual capital, and innovation
  - Its view of firms as 'complex adaptive systems'
  - Its revolutionary conception of 'The Open Enterprise'
  - Its applications of KM to Risk Management
  - Its treatment of Corporate Epistemology and KM
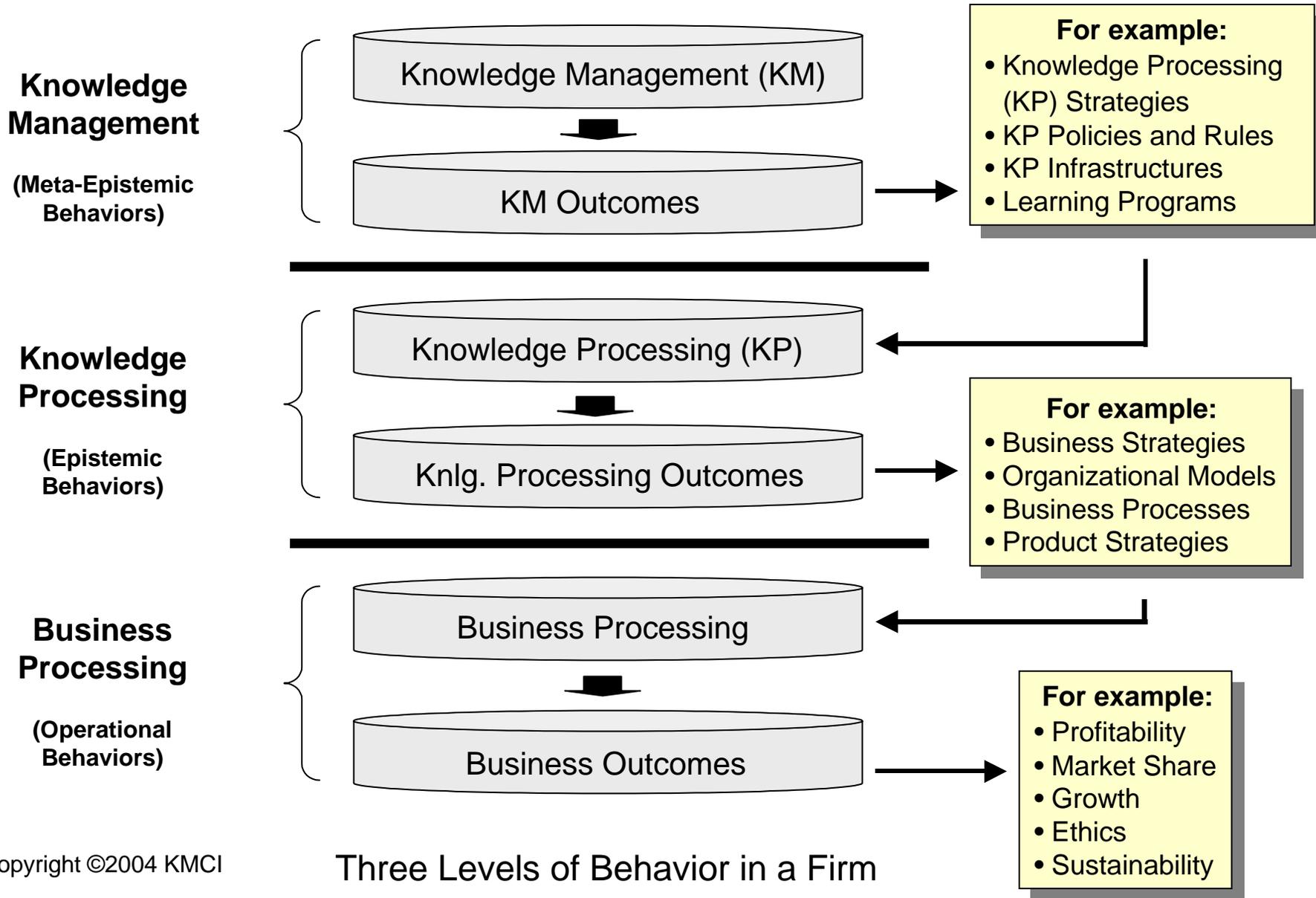 - Its comprehensive KM methodology: K-STREAM™

KMCI – Conceptual Frameworks

Key Ideas and Reference Models

Key Ideas and Reference Models

- ## Key Ideas and Related Reference Models
  - The New Knowledge Management's 3-Tier Model
  - An Organizational CAS Network with Agents
  - Double-Loop Learning - Combining Argyris/Schön and Popper
  - Decision Execution Cycle
  - The Knowledge Life Cycle (KLC)
  - Unified Theory of Knowledge ('Worlds' 1, 2 and 3)
  - Organizational Knowledge: *The Distributed Organizational Knowledge Base (DOKB)*
  - Types of Mental Knowledge
  - TNKM Interagent Knowledge Conversion Model
  - New Perspective on the KM Function
  - Corporate Epistemology – *The Epistemological Tree*

The New KM's *3-Tier Model*

Knowledge Management

(Meta-Epistemic Behaviors)

Knowledge Management (KM)

KM Outcomes

For example:
- Knowledge Processing (KP) Strategies
- KP Policies and Rules
- KP Infrastructures
- Learning Programs

Knowledge Processing

(Epistemic Behaviors)

Knowledge Processing (KP)

Knlg. Processing Outcomes

For example:
- Business Strategies
- Organizational Models
- Business Processes
- Product Strategies

Business Processing

(Operational Behaviors)

Business Processing

Business Outcomes

For example:
- Profitability
- Market Share
- Growth
- Ethics
- Sustainability

Three Levels of Behavior in a Firm

An Organizational CAS Network with Agents

Network of Goal- Directed Agents (Behavioral Processes) Including Social Ecology

CAS Inputs

CAS Outputs

Outgoing Transactions

Outgoing Transactions That Follow (to other agents)

Desired Transactions and Desired Social Ecology

Decisions

Values **Memory**

Attitudes **Goals**

Situational Orientations

Social Ecology

Social Conditions

Cultural Conditions

Geographical Conditions

Economic Conditions

Agent Behavioral Process

9

Double-Loop Learning — Combining Argyris/Schön and Popper

Since DLL involves change of behavior after creative problem-solving, we identify it with Popper's Theory

The Decision Execution Cycle

Monitoring
(Knowledge Use)

Acting
(Knowledge Use)

Previous
Knowledge

Evaluating
(Knowledge Use)

Planning &
Decision Making
(Knowledge Use)
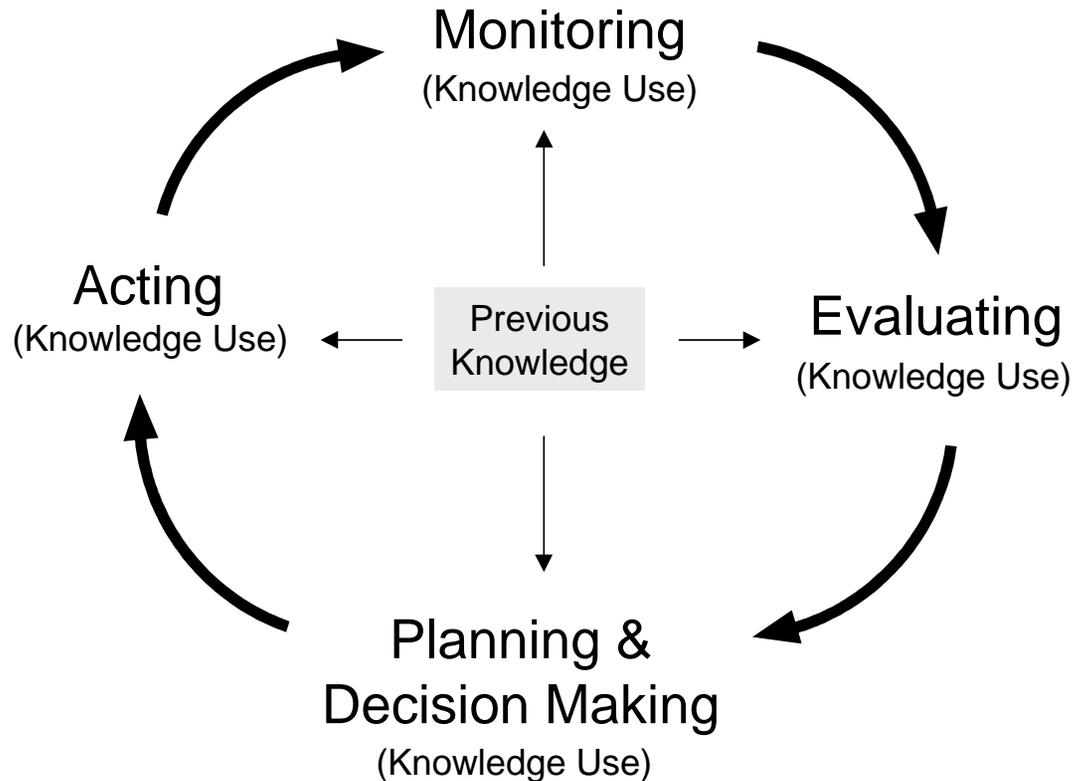
If and when instrumental gaps arise between what we have and
what we want, we adjust our plans and behaviors accordingly

11

The Knowledge Life Cycle (KLC)
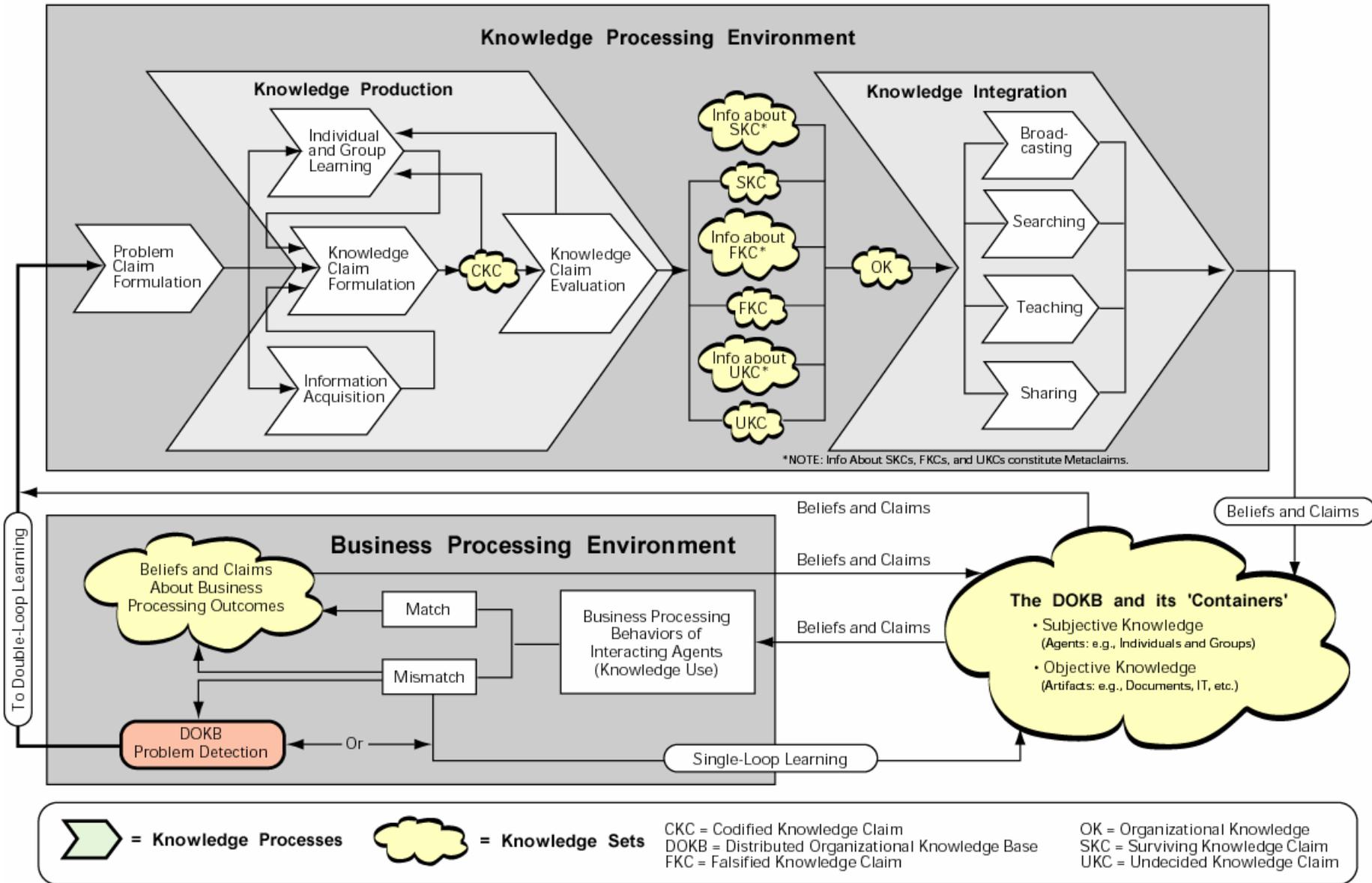
Understanding the KLC – A Brief Narrative

- Organizational knowledge is held both 'subjectively' in the minds of individuals and groups and 'objectively' in recorded or expressed form. This is the *Distributed Organizational Knowledge Base* (DOKB) of an enterprise.
- *Knowledge Use* in the *Business Processing Environment* results in outcomes that either satisfy expectations (*Matches*) or fail to do so (*Mismatches*).
- *Matches* reinforce knowledge previously used, thereby leading to its re-use.
- *Mismatches* initially lead to adjustments in Business Processing behavior based on choices made from within a range of pre-existing knowledge in the DOKB – this is *Single-Loop Learning* (Argyris and Schon).
- Successive failures from single-loop learning to produce matches in expected or desired outcomes leads to doubt about and/or rejection of pre-existing knowledge (problem detection), thereby triggering knowledge processing efforts to produce and integrate new knowledge – this is *Double-Loop Learning* (Argyris and Schon).
- *Problem Claim Formulation,* an attempt to learn and state the specific nature of the detected knowledge gap (or "problem"), is a precursor to *Knowledge Production*.
- New *Knowledge Claim Formulation* follows in response to validated problem claims, with input via *Information Acquisition* and *Individual and Group Learning*, all under the influence of content contained in the current DOKB.
- New knowledge claims are tested and evaluated via *Knowledge Claim Evaluation* using a variety of criteria.
- *Knowledge Claim Evaluation* leads to: (1) *Surviving Knowledge Claims* (i.e., new Organizational Knowledge), *Falsified Knowledge Claims*, or *Undecided Knowledge Claims*, and also produces *information about* each of these outcomes, or *Metaclaims (*altogether, 6 types of outcomes).
- The record of all such outcomes, both the claims themselves and their corresponding metaclaims, enter the DOKB via several means of *Knowledge Integration*, a mix of 'push' and 'pull' methods, along with the active response of agents to *Knowledge Integration* communications and activities.
- Once integrated into the DOKB, claims and metaclaims become subject to use in *Business Processing*.
- Experience gained from the use of knowledge contained in the DOKB gives rise to new claims and metaclaims regarding knowledge validity and value. The resulting *Beliefs and Claims About Outcomes*, in turn, change the DOKB's content and determine its growth.
- The cycle repeats itself endlessly.

13

Unified Theory of Knowledge

Unified theory: Knowledge is an encoded, tested, evaluated, and surviving structure of information that helps the system that developed it to adapt

3 types of knowledge:

– Encoded structures in *physical systems* allowing those objects to adapt to their environment (World 1)

– Tested, evaluated, and surviving beliefs (*in minds*) about the world (World 2)

– Tested, evaluated, and surviving, sharable (objective), *linguistic formulations* about the world (World 3)

Organizational Knowledge: *The Distributed Organizational Knowledge Base (DOKB)*

Mental and Artifact-based Knowledge Content found in:

Knowledge Use

A

Information Systems

A

Documents

A

Other Cultural Artifacts

M

Individuals

M

Communities of Practice

M

Teams

M

Groups

M

Other Agents

Types of Mental Knowledge

World 1 Knowledge

World 2 Knowledge (Mental Knowledge)

World 3 Knowledge

Synaptic and Genetic Encoding

Belief Predispositions

Situations

Cultural Expressions:
- **Documents**
- **Databases**
- **Files**

Feedback

- **Values**
- **Attitudes**

(Not Tacit, Implicit, or Explicit)

Feedback

Situational Beliefs

Influence

| Tacit | Implicit | Explicit |

Our mental knowledge (predispositions, and tacit, implicit, and explicit beliefs) is formed in response to specific situations, and also through interaction with W1 and W3 knowledge

16

TNKM Interagent Knowledge Conversion Model

TNKM = The New KM

New Perspective On The KM Function

Knowledge Management

KM Knowledge Processes (KLC)

Focus is on managing the KM function ← KM *Management* Processes

KM *Business* Processes

Focus is on managing knowledge processing policies, rules, and programs in KM Level BP Environment

18
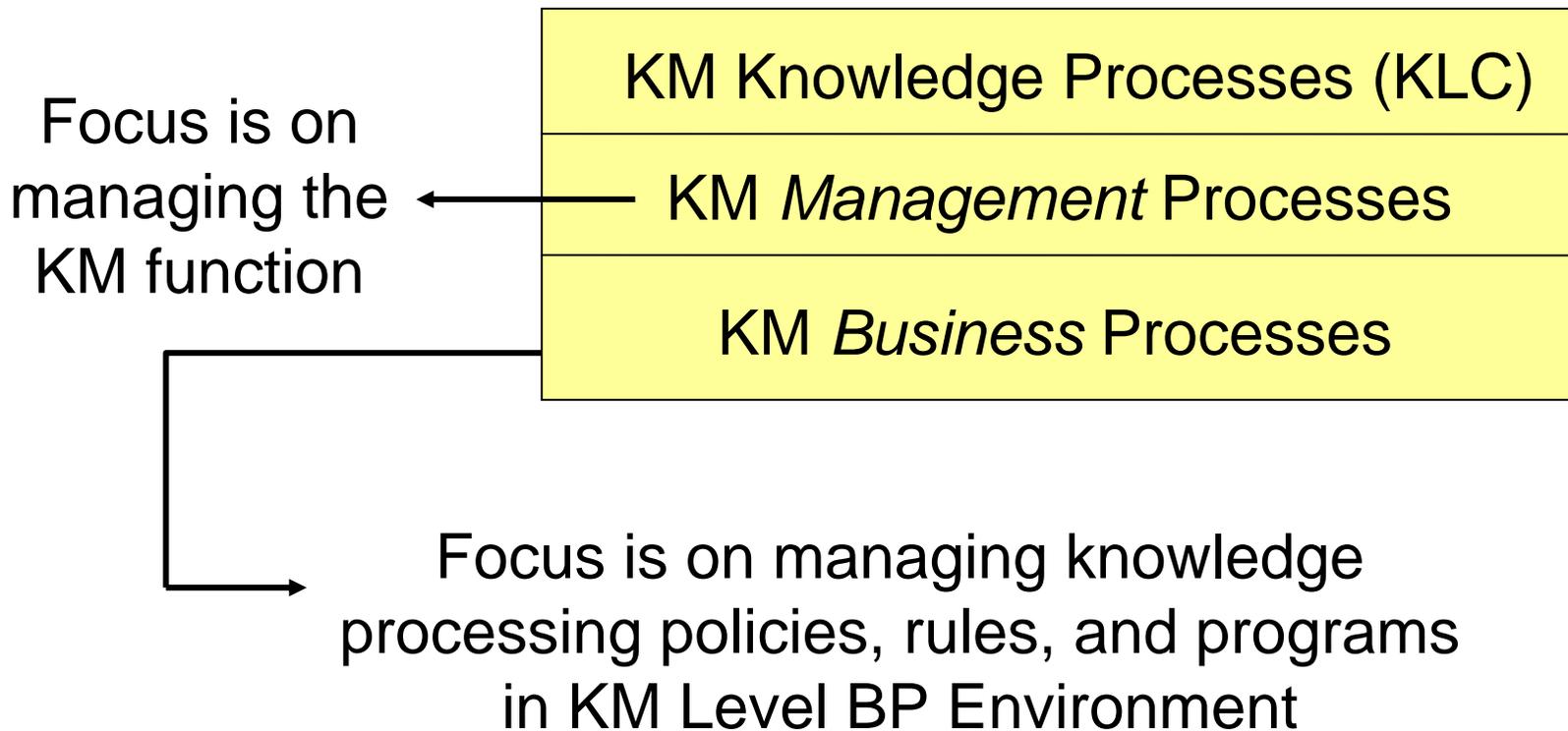
New Perspective on KM Function (cont.) – *9 KM Processes (from Mintzberg)*

KM Management Processes
- **Symbolic Representation**
- **Building External Relationships with Others Practicing KM**
- **Leadership**

KM Knowledge Processes
- **KM-level Knowledge Production**
- **KM level Knowledge Integration**

KM Business Processes
- **Crisis Handling**
- **Changing Knowledge Processing Rules**
- **Negotiating for Resources with Representatives of Other Organizational Processes and**
- **Resource Allocation for knowledge processes and for other KM processes**

*Note: This classification of KM activities relies heavily on Henry Mintzberg's framework developed from careful empirical studies of what executives actually do. See for example, Mintzberg, H. (1973), "A New Look at the Chief Executive's Job," Organizational Dynamics, AMACOM, Winter, 1973.

The Epistemological Tree

The Corporate Epistemological Battleground Is Here

Foundationalism (Justificationist)

Epistemological Realism (Correspondence)

— Empiricism

— Religious Realism

— Managerial Realism

— Rationalism

Coherentism — Epistemological Idealism

Fallibilism

Epistemological Realism (Correspondence)

Coherentism

Instrumentalism

Pragmatism

Justificationism (Floating Foundationalism)

— Expert-Based

— Paradigmatic

— Communitarian

— Managerial

— Others?

Which to embrace?

Criticalism

— Critical Rationalism

— Critical Scientific Realism

— Others?

Relativism (Justificationist)

Individualist Relativism

Solidarist Relativism

— Cultural Relativism

— Paradigmatic Relativism

— Communitarian Relativism

— Historical Relativism

Knowledge Management Implications

Theories of Evaluation

Theories of Truth

Theories of Evaluation

Foundationalism (Justificationist)

Epistemological Realism (Correspondence)
- Empiricism
- Religious Realism
- Managerial Realism
- Rationalism

Coherentism — Epistemological Idealism

Fallibilism

Epistemological Realism (Correspondence)

Coherentism

Instrumentalism

Pragmatism

Relativism (Justificationist)
- Individualist Relativism
- Solidarist Relativism

- Cultural Relativism
- Paradigmatic Relativism
- Communitarian Relativism
- Historical Relativism

Justificationism (Floating Foundationalism)
- Expert-Based
- Paradigmatic
- Communitarian
- Managerial
- Others?

Criticalism
- Critical Rationalism
- Critical Scientific Realism
- Others?

Justificationist KM:
- Relies on *appeals to authority* as basis of organizational knowledge
- Business processing and knowledge processing both controlled and dominated by management
- Knowledge processing is less participatory
- Knowledge produced is riskier

Criticalist KM:
- Sees all knowledge as truly fallible
- Business processing controlled and dominated by management; knowledge processing is not
- Knowledge produced is of higher quality
- *Knowledge Claim Evaluation* ethic is strong
- KM mostly about maintaining openness and rigor in knowledge production

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KMCI – Conceptual Frameworks

Practice Implications

Practice Implications

- ## Practice Implications
  - A Framework For KM Strategy
  - Social Innovation Capital
  - Sustainable Innovation and The Open Enterprise
  - KM Metrics
  - The Enterprise Knowledge Portal
  - K-STREAM™ Methodology

A Framework For KM Strategy

Knowledge Processing / Interventions	Demand-Side KP	Supply-Side KP	Supply/ Demand-Side KP
Social Interventions	Demand-Side Social Interventions	Supply-Side Social Interventions	S/DS Social Interventions
Technological Interventions	Demand-Side Technological Interventions	Supply-Side Technological Interventions	S/DS Technological Interventions
Socio/Techno Interventions	Demand-Side Integrated Interventions	Supply-Side Integrated Interventions	S/DS Socio/Techno Interventions

Social Innovation Capital


```
                        ┌──────────────┐
                        │ Market Value │
                        └──────┬───────┘
              ┌────────────────┴────────────────┐
    ┌─────────────────┐              ┌─────────────────────┐
    │ Financial Capital│             │ Intellectual Capital │
    └─────────────────┘              └──────────┬──────────┘
          ┌──────────────────────┬──────────────┴──────────────────┐
   ┌──────────────┐      ┌──────────────┐              ┌──────────────────┐
   │ Human Capital│      │ Social Capital│             │ Structural Capital│
   └──────────────┘      └──────┬───────┘              └────────┬─────────┘
        ┌──────────────┬────────┴─────┐            ┌────────────┴──────────┐
 ┌────────────┐  ┌────────────┐  ┌──────────┐ ┌──────────────────┐ ┌────────────────┐
 │ Intrasocial│  │ Intersocial│  │  Social  │ │ Innovation Capital│ │ Process Capital│
 │  Capital   │  │  Capital   │  │Innovation│ └────────┬─────────┘ └────────────────┘
 └─────┬──────┘  └─────┬──────┘  │ Capital  │      ┌───┴────┐
  ┌────┴────┐          │         └──────────┘   ┌────┐ ┌────────┐
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- Market Value
  - Financial Capital
  - Intellectual Capital
    - Human Capital
    - Social Capital
      - Intrasocial Capital
        - Egocentric Social Capital
        - Sociocentric Social Capital
      - Intersocial Capital
        - Customer Capital
        - Partner Capital
      - Social Innovation Capital
    - Structural Capital
      - Innovation Capital
        - IP
        - Other IA
      - Process Capital
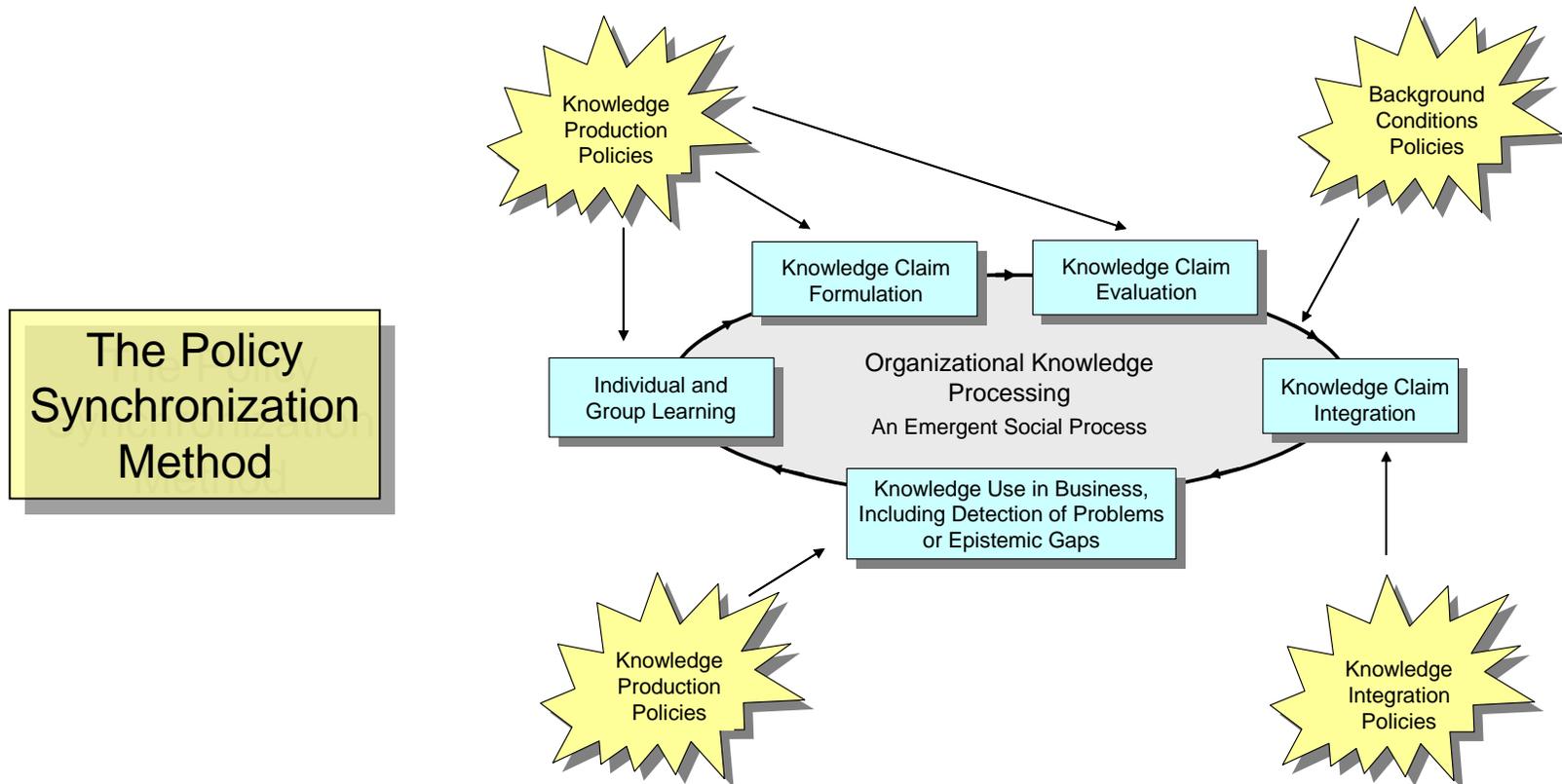
Social Innovation Capital shown (for example) in the context of the Skandia AFS 'Navigator' Model,

A form of valuable intellectual capital – the social capacity to innovate

Sustainable Innovation and The Open Enterprise

The Policy Synchronization Method

Knowledge Production Policies

Background Conditions Policies

Knowledge Claim Formulation

Knowledge Claim Evaluation

Individual and Group Learning

Organizational Knowledge Processing
An Emergent Social Process

Knowledge Claim Integration

Knowledge Use in Business, Including Detection of Problems or Epistemic Gaps

Knowledge Production Policies

Knowledge Integration Policies

KM Metrics

	Agents	Processes	Outcomes	
			Internal*	External*
Knowledge Management	Metrics	Metrics	Metrics	Metrics
Knowledge Processing	Metrics	Metrics	Metrics	Metrics
Business Processing	Metrics	Metrics	Metrics	Metrics

Outcome State at T_1 → Processing by Agents → Outcome State at T_2

T_1 T_2

*Internal Outcomes = Impacted states at same level (KM, KP, or BP).
*External Outcomes = Impacted states in target environment.

27

The Artificial Knowledge Manager is composed of the distributed servers and IAs depicted below

The Enterprise Knowledge Portal

Portal Web Clients

Application Servers

Application Servers

Transaction & Report/Query

XML messaging

XML messaging

XML messaging

XML messaging

App Mappings

Document Management Server

Exported Services

Text and Data Mining Server

Operational K Claim Object Model

Scanner/ Indexer

Web Server

Interlayer Mappings

Intermediate Classes

XML messaging

ERP & Legacy

Collab

Server Architecture

Knowledge Claim Object Model with Event Handling and Inference Engine

ETL, ROLAP & MOLAP

XML messaging

XML messaging

XML messaging
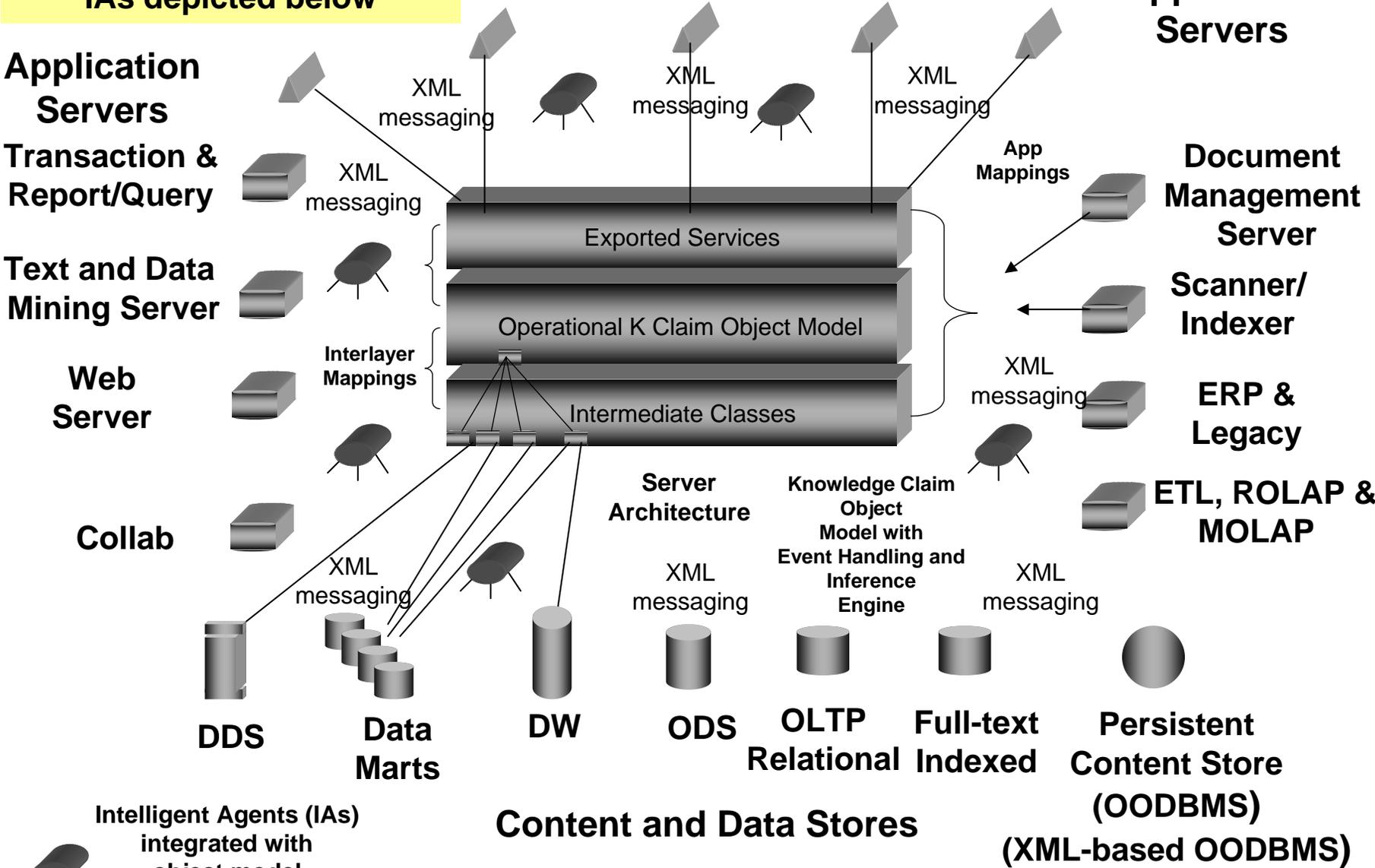
DDS **Data Marts** **DW** **ODS** **OLTP Relational** **Full-text Indexed** **Persistent Content Store (OODBMS) (XML-based OODBMS)**

Intelligent Agents (IAs) integrated with object model

Content and Data Stores

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28

K-STREAM™ – The Tool View

Expert Choice - For making 3-Tier Model Specification Tool, Gap Analysis and Alternative Solutions and Prioritization Report

Expert Choice - For Refinement of Alternative Solutions and Prioritization Report

Expert Choice – For Refinement of Preferred Solutions and Specification of Metrics and Measurement Model

Expert Choice – For Measurement of Impact and Computation of Benefits and ROI

Stella/ithink - For Modeling Alternative Solutions

Stella/ithink - For Modeling Final Solution

Stella/ithink - For Modeling Modified Solutions

Stella/ithink - For Modeling Modified Solutions

3-Tier-Model Specification & BSC Tools

3-Tier-Model Specification & BSC Tools

3-Tier-Model Specification & BSC Tools

3-Tier-Model Specification & BSC Tools

Strategy/ Assessment Phase → Decision Phase → Construction Phase → Transition Phase → Maintenance Phase

OE Specification - For Target Environment Report

Project Management, Graphical, and Statistical and AI Tools e.g., Primavera, SmartDraw, Statistica. For Managing, Modeling, Data Manipulation, and Testing

Semantic Networking Tool – For monitoring changes in the Knowledge Base, e.g., Semagix, ClearForest

29

The New KM's Value Propositions

New Value Propositions

- Because of its focus on knowledge production (making), not just sharing, The New KM:
  - Enhances ability to satisfy demands for new knowledge
  - Enhances rate and quality of organizational learning and innovation
  - Enhances organizational capacity to adapt
- Shows how to improve business performance by enhancing knowledge processing
- Clarifies distinction between KM and knowledge processing
- Brings clear definitions of knowledge to the table
- Shows how KM can be applied to Risk Management

31

KMCI – Contact Information

KMCI Contact Information

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