European Guide to Good Practice in Knowledge Management

Frameworks on Knowledge Management

14 October 2002, Brussels

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Objectives of a European Knowledge Management Framework

The European KM Framework...

• ... should cover all important and relevant aspects (holistic) of KM, but not every detail.

• ... aspects should be based on empirical evidence (survey results, case studies).

• ... should easy to understand and to communicate to SME’s, but not only.
11 requirements for a KM framework in Europe
EKMF KM-Standards Position Statement (2002-03-14)

1. To provide a **holistic view** of the KM domain (in the sense of ‘KM in a nutshell, what is KM, what is the mission/message and what are the typical elements’)
2. To address **all stakeholders** in KM (SMEs, large organisations, consultants, academics, vendors, etc.)
3. To be based on **broad consensus** and give a neutral, non biased, and well accepted view on KM
4. To address the information needs of **KM beginners** as well as the need for a point of reference for **KM experts**
5. To provide **recommendations** and links for the **first steps** (where to start)
6. To include a **core KM terminology**
7. To represent the specific challenges and advantages of KM made in Europe
8. To be able to hook in other existing and/or emerging KM standards (namely 2nd and 3rd level standards as named in chapter 1.2)
9. To talk a simplistic and serious language
10. To be short and comprehensive (e.g. 15 pages)
11. To be public domain
Types of KM Frameworks
Weber et al. (2002)

• Holistic frameworks ...
  „... seek to provide a holistic description of KM. They aim to describe and combine all major aspects of KM and usually consider elements like organisation, technology, humans, strategy, etc. and explain their particular role for KM.”
e.g.: Know-Net, IPK reference model, CORMA, APQC.

• Explanatory Frameworks ...
  ...“aim to explain certain facets in KM, to emphasise a certain approach or message or to provide a small sub theory in itself.”
e.g.: Nonaka/Takeuchi, Probst et al.
Approaches towards Knowledge Management: Spiral of Knowledge Creation by Nonaka, Takeuchi 1995

- Explicit Knowledge
- Implicit / Tacit Knowledge

Epistemological Dimension

- Externalisation
- Combination
- Sozialisation
- Internalisation

Ontological Dimension

- Knowledge Level
- Individuum
- Group
- Company
- Company interaction

Source: Nonaka, Takeuchi 1995
Approaches towards Knowledge Management:
Three Pillars of Knowledge Management by Wiig 2000
Approaches towards Knowledge Management: Four KM Pillars Conceptual Model by Stankosky (1999)

Environmental Influences

Social
Political

Knowledge Management
The Architecture of Enterprise Engineering

Leadership
Business
Culture
Strategic
Planning - Vision and Goals
Climate
Growth
Segmentation
Communications

Organization
BPR
- Processes
- Procedures
Metrics
MBO
TQM/L
Workflow
Communications

Technology
E-mail
OLAP
Data Wareh.
Search Eng.
DSS
Process Modeling
Manage. Tools
Communications

Learning
Intuition
Innovation & Invention
Learning
Community
Virtual Teams
Shared Results
Exchange Forums
Communications

Multiple Disciplines
Systems Engineering
Organization Development
Systems Management
Organization Behavior
Approaches towards Knowledge Management:
The Knowledge Life Cycle (KLC) Framework developed by KMCI
(Firestone, McElroy 2002)

Knowledge Production
- Individual and Group Learning
- Knowledge Claim Formulation
- Information Acquisition

Knowledge Claim Evaluation

Knowledge Integration
- Info about SKC
- Info about FKC
- Info about UKC

Feedback (including the detection of problems)

External Inputs

Business Processing Environment
- Business Process Behaviors of Interaction Agents
- DOKB ‘Containers’
  - Agents (Indiv. & Groups)
  - Artifacts (Docs., IT, etc.)

Experimental Feedback

DOKB
- Objective Knowledge
- Subjective Knowledge

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Approaches towards Knowledge Management:
Levers for the Development of a Knowledge Enterprise
(BOOZ•ALLEN & HAMILTON 2001)

Knowledge Content
- Strategic decisions: Knowledge Objectives
- Users involved
- Knowledge required
- Gaps
- External and internal sources of knowledge

Processes
- Developing processes that standardize intellectual assets and allow people to perform key activities on it:
  - Creating
  - Sharing
  - Using
  - Collaborating
  - Improving
- Structuring knowledge to provide content and usability

Organization
- Explicit, ongoing change management
- Knowledge Management Design Team
- Rewards and incentives
- Culture Change

IT-Engine
- Software
- User access and network (e.g. internet)
- Database design
- Security
- Human Interface
Approaches towards Knowledge Management:
Framework of Intellectual Capital Management by IBM Corp. 2001

- Incentives
- Measurements
- Management System
- Organization
- Process
- Technology
- Environmental Factors
- Vision
- Strategy
- Value System

Leadership
## Approaches towards Knowledge Management:

**Knowledge Management as Organisational Competence by Cranfield School of Management (2001)**

| Business Level | **Distinctive Capability**  
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>(Knowledge of how to combine Competences &amp; Resources)</em></td>
</tr>
</tbody>
</table>
|                | Strategy, Direction, Goal-Setting  
|                | Appropriate Resource Deployment |

| Organisation Level | **Sets of Competences**  
<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td><em>(Knowledge of how to combine resources)</em></td>
</tr>
</tbody>
</table>
|                    | Structures & Responsibilities, Processes & Roles,  
|                    | Institutionalised Supporting Aids |

| Individual Level | **Resources**  
<table>
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<tbody>
<tr>
<td></td>
<td><em>(Technical, Management &amp; Exploitation)</em></td>
</tr>
</tbody>
</table>
|                  | Skills, Experience, Knowledge,  
|                  | Personal Characteristics |

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Approaches towards Knowledge Management:
Knowledge Management Media Reference Model by
mcm-institute St. Gallen (Eppler et al. 2001)

Views

- Community view
- Implementation view
- Services view
- Infrastructure view

Knowledge Cycle

<table>
<thead>
<tr>
<th>Identification</th>
<th>Evaluation</th>
<th>Allocation</th>
<th>Application</th>
</tr>
</thead>
</table>

- Communities of experts that create and share experiences, insights, and new concepts
- Know-how-intensive processes and projects in which the community members apply their skills
- Content Management-, Collaboration-, Retrieval-, Aggregation- & Visualization-services
- Infrastructure elements for the knowledge services such as I-Net platforms, network components
Approaches towards Knowledge Management:
Knowledge Management Framework by
APQC/Arthur Andersen (1996)

Source: APQC 1996
Approaches towards Knowledge Management:
Building blocks of Knowledge Management by Probst, Raub, Romhardt 1997

Building blocks for success

Knowledge goals
Knowledge identification
Knowledge acquisition
Knowledge development
Feedback
Knowledge assessment
Knowledge retention
Knowledge utilization
Knowledge sharing
Knowledge assessment
Knowledge identification
Knowledge acquisition
Knowledge development
Knowledge utilization
## Approaches towards Knowledge Management:
Knowledge Enabling: The 5x5 Grid by von Krogh, Ichijo, Nonaka (2000)

<table>
<thead>
<tr>
<th>Knowledge Enablers</th>
<th>Knowledge-Creation Steps</th>
<th>Sharing Tacit Knowledge</th>
<th>Creating a Concept</th>
<th>Justifying a Concept</th>
<th>Building a Prototype</th>
<th>Cross-Leveling Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instill a Vision</td>
<td></td>
<td>➼</td>
<td>➼</td>
<td>➼</td>
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<tr>
<td>Manage Conversations</td>
<td></td>
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<td>➼</td>
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<tr>
<td>Mobilize Activists</td>
<td></td>
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<td>➼</td>
<td></td>
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<td>➼</td>
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<tr>
<td>Create the Right Context</td>
<td></td>
<td>➼</td>
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</tr>
<tr>
<td>Globalize Local Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>➼</td>
</tr>
</tbody>
</table>
Approaches towards Knowledge Management:
Business Knowledge Management Framework by Bach, Vogler, Österle 1999
Approaches towards Knowledge Management: Knowledge Management Process Framework by Bukowitz, Williams 1999

Tactical
Triggered by market-driven opportunity or demand

Strategic
Triggered by shifts in the macroenvironment

Knowledge-based assets
- Knowledge repositories
- Relationships
- Information technology and communications infrastructure
- Functional skill sets
- Process know-how
- Environmental responsiveness
- Organizational intelligence
- Failure
- External sources
- ...
Approaches towards Knowledge Management: Knowledge management event chain by Despres, Chauvel 1999

Quelle: Despres, Chauvel 1999
Approaches towards Knowledge Management: Knowledge Value Chain by Weggemann (1999)

- **Operational Knowledge-conscious Management**
  - Designing and managing the operational processes in the knowledge value chain
  - Criteria: effectiveness, efficiency, and flexibility

- **Strategic Knowledge-conscious Management**

  - MVS
    - Determining necessary knowledge
    - Making inventory of available knowledge
    - Knowledge development or acquiring
    - Knowledge sharing and distributing
    - Applying knowledge
    - Evaluating knowledge

**Instruments:** Intranet, Corporate University, Competence Systems, Databases, Courses, Workshops, Coaching, Manuals, Brainstorms, Recruitment, Communities...
Approaches towards Knowledge Management:
Different components of the structure of operations on knowledge by van der Spek, Spijkervet 1997

Operations on knowledge
- Develop
- Secure
- Distribute
- Combine

Organisation personnel
Information technology
Culture and motivation
Management

Quelle: Van der Spek, Spijkervet 1997
Approaches towards Knowledge Management: Knowledge Management approach of CommonKADS by Schreiber, Akkermans et al. 2000

- **Organization model**: OM-2: people & structure
- **Agent model**: AM-1: agent descriptions (software, humans)

- **Organization model**: OM-2: overall process
- **OM-3: process tasks**

- **Task model**: TM-1: task descriptions

- **Knowledge model**: knowledge specification

- **Knowledge assets**: coarse grained description
  - form, nature, time, location

- **Agents** participate in business process

- Agents possess knowledge assets which require knowledge bottlenecks
Approaches towards Knowledge Management: Nine Success Factors (hypotheses) for Knowledge Projects by Davenport, Prusak 1998

- Knowledge-oriented culture
- Technical and organizational infrastructure
- Senior management support
- Link to economic or industry value
- Modicum of process orientation
- Clarity of vision and language
- Nontrivial motivational aids
- Some level of knowledge structure
- Multiple channels for knowledge transfer
Approaches towards Knowledge Management: Central concepts of process oriented KM by Remus 2002
Approaches towards Knowledge Management: Tasks of Knowledge Management by Allweyer 1998

Quelle: Dr. Thomas Allweyer, IDS Prof. Scheer GmbH, 1998

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Approaches towards Knowledge Management: Basic model of KM by Amelingmeyer 1999

- Level of Knowledge Management
- Design (Gestaltungs-) oriented Tasks
- Planning- and control oriented Processes

Company Management

Knowledge Management

Knowledge base
- Structure
- Dynamic

Company processes

Success

Environment
Approaches towards Knowledge Management:
Components of KM by VBM 2000
(Association of Bavarian Metal and Electro Industry – KM Guideline for SMEs)
Applications towards Knowledge Management:
The Fraunhofer IPK Reference Model for KM by Heisig (2000)

- The core of the Fraunhofer reference model constitutes the **business processes** as application fields of Knowledge. They integrate the knowledge domains and provide the context.

- The **Core activities** of KM relate to the specific business processes.

- Measures within the six **Design areas** (=> CSF) will contribute to the success of the KM initiative.
Approaches towards Knowledge Management:
The Movement of Knowledge in the I-Space by Boisot 1998

Source: Boisot 1998
Approaches towards Knowledge Management: Knowledge Management Process Model by Kucza (2001)

Identification of Needs for Knowledge

Sharing of Knowledge

Creation of Knowledge

Knowledge Collection and Storage

Knowledge Update
Approaches towards Knowledge Management:
Four perspectives which form Knowledge Management by Rivero (2002)

Source: S. Rivero Rodrigo 2002
Approaches towards Knowledge Management: Know-Net Framework (2002)
Approaches towards Knowledge Management: Knowledge Ecology (2002)
Approaches towards Knowledge Management: Knowledge Production System Activities
Global Knowledge Economics Council KM Framework

Source: Vaupel 2002
Approaches towards Knowledge Management: The Design fields of the Knowledge Management Maturity Model (KMMM®)

Source: Ehms, Langen, Siemens 2002

KM Processes
- Strategy, Knowledge Goals
- Company Environment Partnerships
- Employees Skills
- Culture Cooperation
- Leadership & Support
- Knowledge Form & Structures
- Technology, Infrastructure
- Processes, Roles, Organization

Holistic KM Systems
- Knowledge & Structures

KM Projects
- Employees Skills
- Culture Cooperation
- Leadership & Support
- Knowledge Form & Structures
- Technology, Infrastructure
- Processes, Roles, Organization

Source: Ehms, Langen, Siemens 2002

Human Capital
- Experience
- Know-how
- Skills
- Creativity

Intellectual Assets
- Documents
- Drawings
- Programs
- Data
- Inventions
- Processes

Intellectual Property
- Patents
- Copyrights
- Trademarks
- Trade Secrets
- Semiconductor Masks
Approaches towards Knowledge Management:
EKMF KM Framework – Vesion 1.4 (2002-03-07)
Potential Scopes of Selected Knowledge Management Practices by Wiig 1993

Nature of Approach

- Non-Technical Approach
- Combined Non-Technical & Technical Approach
- Technical Approach

Scope

- Very Narrow Single Activity Scope
- Narrow Single Function Scope
- Broad Multiple Function Scope
- Very Broad Organization-Wide Scope

Core Competencies Approach
Knowledge Optimizing Approach
Universal Knowledge Approach
Learning Organization Approach

Knowledge Integration Approach
KBS Development & Deployment Approach
Human Resource Management Approach
Approaches towards Knowledge Management:
Background and authors of Knowledge Management approaches by Roehl (2000)

Design Orientation

abstract

concrete

Technology oriented

Design perspective

Human/social oriented

Klahr 1997

Güldenberg 1997

Rehäuser/Krcmar 1996

V. Heijst et al. 1997a

Economics

Sociology

Schneider 1996

Schüppel 1996

Schmitz/Zucker 1996

Nonaka et al. 1991

Pawlowsky et al. 1994

Wilke 1995

ILOI 1997

Probst et al. 1996

Wiig 1994

Human/social oriented

Schüppel 1996

Engineering

Technology oriented
Conceptual roots of Knowledge Management
by Maier 2002

Knowledge Management

People oriented
- Knowledge goals
- Knowledge processes
- Roles and organization

Technology oriented
- Contents, structures, ontology
- Knowledge strategy
- E-Learning systems

Intellectual asset management
- Use of supporting information and communication technologies

Goal-oriented design of handling of knowledge, capabilities and competences

Translation to business and management concepts and terminology

OL as dynamic process
- Single/double loop learning
- Identification
- Intuition
- Interpretation
- Diffusion
- Integration
- Institutionalization

Organizational Learning
- Individual
- Group
- Organization
- Feedback
- Application

Organizational knowledge base/memory

Innovation management
- Management by ...
- Strategic management

Sociology of knowledge
- Organizational psychology
- Cognitive psychology

Evolution of organizations
- Organizational development
- Organizational intelligence
- Organizational change

Systems dynamics
- Systems theory
- Artificial intelligence

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Technological roots and influences of Knowledge Management Systems by Maier 2002

Knowledge management system (KMS)

- Use KMS metaphor
- Related terms
- Show other focus technological roots
- Provide available ICT basis
- Related theoretical concepts

Organizational memory
- Organizational memory system
- Organizational memory information system

Transactive memory system
- Enterprise knowledge medium

Skills databases
- Knowledge repository

Extended CRM
- Corporate portals
- KM suite

Knowledge maps
- Community builder

Knowledge push
- E-learning platforms

Knowledge-related applications
- Knowledge-related implementation

Organizational learning

Organizational knowledge base

AI technologies (text analysis, profiling, intelligent agents)
- Search engines
- Intranet/Groupware platforms
- Workflow management systems
- Workflow support systems

Visualization systems
- CBT/learning environments

Communication systems (e.g. email, videoconferencing)

Skills databases
- Extended CRM
- Meta-search engines

Business intelligence tools
- Data warehousing
- Document management systems

Workflow management systems
- Group support systems

Visualization systems
- CBT/learning environments

Communication systems (e.g. email, videoconferencing)
Approaches towards Knowledge Management:
Timeline 1987 - 2000
Competence Center Knowledge Management at Fraunhofer IPK (Berlin)

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