What is Knowledge Management?

Tobias A. Heigl

Workshop on Managing Nuclear Knowledge

8-12 November 2004, Trieste, ITALY
Disguise = Hide
Moron = Idiot
Why Knowledge Management?

1. The principals of leadership have changed
2. Existence of new dominance in the factors of production
3. New importance of corporate mission and vision
1. The Principals of Leadership have changed

<table>
<thead>
<tr>
<th>Yesterday</th>
<th>Tomorrow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard</td>
<td>Hierarchy</td>
</tr>
<tr>
<td>Low</td>
<td>Clarity of Mission</td>
</tr>
<tr>
<td>Weak</td>
<td>Consequences (Rewards/Sanctions)</td>
</tr>
<tr>
<td>Low</td>
<td>Information and Communication</td>
</tr>
</tbody>
</table>
The new Design of Corporations

### History
- Function focused
  - hierarchical, unflexible
  - Rigid borders in the organization
  - Local optimization of the invested resources

### Present
- Process focused
  - distributed, flexible
  - Reduction of barriers
  - Optimization of the chronological outlet
  - Distributed throughout the organisation

### Future
- Solution focused
  - open, dynamic
  - linked
  - selforganized
  - expanding over the organizations borders
  - based on knowledge sharing
Dimension

- „There are ~ 250,000 Siemens employees with PCs that are considered as knowledge workers worldwide. They work 230 days a year. If every employee could save only ½ hour (25 €) in daily knowledge work (for instance information retrieval) through better corporation and knowledge sharing Siemens would save about 1.5 billion € a year“ (Vieser, Siemens AG).
2. A new Dominance in the Factors of Production

- Labor: includes all human efforts
- Capital: manufactured resources used to produce other things
- Land: natural resources like minerals, water, the land itself
- Knowledge: “The basic economic resource is no longer capital, nor natural resources, nor labor. It is and will be knowledge.” (Peter Drucker)
Survey of 200 large firms found:
- 82% have KM underway in their organization
- 50% have KM staff & budget
- 27% have a Chief Knowledge Officer

(Conference Board)

Survey of nations leading CEOs:
- Second top priority “Improving KM” (88%)

(Foundation for Malcolm Bald Ridge Award)
By 2005, enterprises that lack ongoing KM infrastructure will lag KM-enabled competitors by 30-40% in speed of deployment for new competitive programs and products

*(Gardner Group)*

(Nancy C. Shaw)
Facts

- Lucent Technologies acquired in ´99 Ascend Communications for about 20 billion US$. Ascend has 2500 employees and make a turn over of 1.5 billion US$. Lucent payed 8 million US$ for the knowledge work of every worker!

- Siemens bought ´99 Redstone Communications with 85 employees for 400 million US$. That means Siemens payed 4.7 million US$ for the knowledge work of every worker!

Both companies are pure knowledge based companies that own only a good knowledge infrastructure and interesting rights.
3. New Importance of Mission and Vision

- Corporate culture as a new form of corporate alignment
- Synchronisation instead of “not invented here syndrom“
- Transparency instead of “knowledge islands“
- Self motivation instead of “hierarchy“
**What is Knowledge?**

<table>
<thead>
<tr>
<th></th>
<th>Data</th>
<th>Information</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Difference</strong></td>
<td>Coded observations</td>
<td>Data + meaningful structure</td>
<td>Information + personal context</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>𠂲_kbafad1987665Gafäödlf0001</td>
<td>Newspaper with news about the US stock market</td>
<td>To manage your own personal stocks</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>Easy to manage in a database</td>
<td>More complex but possible</td>
<td>Very complex often impossible</td>
</tr>
</tbody>
</table>
041899DL5508201430
Information

- Date 041899
- Flight DL55
- Departure 0820
- Arrival 1430
Knowledge

- But flight 55 is always late, you’ll miss your meeting!
Wisdom

- It doesn’t really matter!
Do you agree?

- Begin with data
- Add context to get information
- Add understanding to get knowledge
- Add judgement (values) to get wisdom
 Begin with data
 Add context to get information
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Knowledge – Information – Data

- Where is the life we have lost in living?
- Where is the wisdom we have lost in knowledge?
- Where is the knowledge we have lost in information?
- Where is the information we have lost in data?

(T.S. Biot, Choruses from „The Rock“, Album „Collected Poems 1909 – 1919“)
Unusual attributes of „Resource Knowledge“

- Unlimited resource; never run out of „raw“ materials
- Knowledge grows from sharing (and giver frequently become even more knowledgeable)
- Personal chemistry critical in knowledge process
- And ....
Problem 1
Communication is a Problem (Transfer of Information)
Don’t worry, we all have a communication problem
Problem 2: Even worse!

He wants to have a swing
What’s happening?

- Tungsten carbide bushes
- Stainless steel
- Solid mahogany

What Product Marketing specified

- Sun shade
- Bell
- Cushions

What the salesman promised

- Design group’s initial design
Not just a communication problem!

- Corp. Product Architecture's modified design
- Pre-release version
- General release version
Diversity of Perspectives!

Swing = Marketing

Swing = Sale

Swing = Design

Swing = Strategy

Swing = Pre-Release

Swing = Release
Diversity through Factor Time

Kopernikus 1475

Einstein 1905/15
International Diversity

- Diverse cultural backgrounds
- Diverse regional problems
- Diverse political systems
- Diverse national interests
Begin with data

- Add context to get information
- Add understanding to get knowledge
- Add judgement (values) to get wisdom
Larry Prusak, IBM

„I call my field knowledge management but you can't really manage knowledge. What a company can do is manage the environment that optimizes knowledge."

(Larry Prusak, Managing Partner, IBM, Global Services, 1998)
Two Types of Knowledge

- **Tacit (subjective) Knowledge**
  - Insights, intuitions, and hunches
  - Knowledge of experience (body)
  - Not easily visible and expressible
  - Highly personal, hard to formalize, difficult to communicate or share with others
  - Rooted in individual’s actions and experiences, including ideals, values, or emotions

- **Explicit (objective) Knowledge**
  - Formal and systematic
  - Knowledge of rationality (mind)
  - Can be expressed in words and numbers
  - Easily communicated and shared in form of hard data, formula, codified procedures, or universal principles
  - Can be expressed in computer code, chemical formula, sets of general principles

(Nonaka and Takeuchi, „The Knowledge Creating Company“ 1995, pg.71)
The metaphor of the iceberg:
a company is mainly defined by hidden influences.

(GRS Report 2003)
How to interfere?

- Personal approach (Small Range Changes)
- Middle range approach (Middle Range Changes)
- Technocratic approach (Large Range Changes)
- Holistic approach (Full Range Changes)
Personal Approach to KM

- Motivational aspects:
  - Incentives (monetary / non monetary), …

- Competences:
  - Leadership
  - Communication skills
  - Self-management
  - …
Middle Range Approach to KM

- Communities of practice / Networks
- Visualization of visions and decisions
  - Mind Maps, Think Tools,
- ...

„We have to develop knowledge optimization initiatives to leverage our key learnings.“
Technocratic Approach

- Business Re-Engineering
- Information Technology
- Knowledge Process Modelling
- Ontologies
Important for the Future I: Knowledge Maps

Front-End
- Thesauri
- Taxonomies
- Query Expansion
- Information Retrieval
- Navigation
- Knowledge Sharing
- Semantic Net
- Consistence Verification
- Inferencing
- Prädikatenlogik

Back-End
- Extended ER-Modell
- Mediation
- Queries
ISP-41 Variationsrechnung

Rechenprogramm: COCOSYS


<< zurück zu Mehrraum-Containment

Auswahl

- Containment
- Jodchemie und Jodtransport
- Aerosolförmige Jodspezies
- I2-Ablagerung auf Stahl
- ISP-41 Variationsrechnung
- Jodmodell AIM-F1
- Jodmodell IMPAIR
- Mehrraum-Containment

Finde ...
- Dokumente des Sharepoint Portals
- Dokumente des WWW
- Mitarbeiter im Sharepoint Portal

Options
- Exakte Suche
- Semantische Suche pro

Rules of radioactive substances:...

Verwendete Suchwörter: "containment", "ISP-41"

GRS-A-2110
Beschreibung: Das Programm benötigt folgenden L Rechnanlagen getestet: Parallelrechner CONVEX unter UNIX E Dimensionierungsgrößen für FILOCOX
Rang: 21

GRS-A-2192
Auftrags-Nr.: 73 250 Anmerkung: Dieses Projekt wird durch Forschungsvorhaben und abgeleitete Projekte (Reaktor)
Rang: 19

KTG Fachgruppentagung Karlsruhe Störfällen
Beschreibung: A. Allelein, GRS, H. A. Forschungsvorhaben und abgeleitetes Vessel (Teilnehmer - Allgemeine Forschungsportals vgl. 677 Anmerkung: Dieser Bericht ist vor Rang: 15

Reisebericht CSARP 98
Beschreibung: Reisebericht Coopera (CSARP) Bethesda 05.-07.05.2003 M Organisation, Teilnehmer - Allgemeine Research Program (CSARP) Meeting
Rang: 15

GRS-A-2417-1
Auftrags-Nr.: 73 250 Anmerkung: Dieser Bericht ist vor Rang: 15
Important for the Future II: Process-Orientated KM
Knowledge Management as a Business Process
Holistic Approaches: Framework-Models

- Nonaka & Takeutchi: The „Knowledge Creating Company“
- Probst et al: „Managing Knowledge“
- Siemens Corporate KM Framework
- Accenture Consulting KM System
- Knowledge System of GRS
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Nonaka & Takeutchi

Spiral of Knowledge Creation in a company

Tacit → Tacit

**Tacit**
- Socialization
  - Sharing experiences
  - Observing, imitating
  - Brainstorming without criticism

**Dialogue**

**Explicit**
- Externalization
  - Writing it down
  - Creating metaphors and analogies
  - Modeling

Tacit → Explicit

Explicit → Tacit

**Explicit**
- Combination
  - Sorting, adding, categorizing
  - Methodology creation
  - Best practices

**Learning by Doing**

Explicit → Explicit

Spiral of Knowledge Creation in a company
Spiral of Knowledge Creation in a company
Probst et al.

Strategic level

Knowledge goals

Knowledge assessment

Operational level

Knowledge identification

Knowledge preservation

Knowledge acquisition

Knowledge use

Knowledge development

Knowledge dissemination

Knowledge sharing
Complete KM Structure of Accenture

Roles
- Domain Member
- Expert
- Knowledge Administrator
- Knowledge Sponsor
- Knowledge Integrator
- Knowledge Developer

Processes
- Contribute
- Access
- Improve
- Feedback
- Synthesize
- Validate
- Archive/Delete

Content
- Common Systems
  - Data
    - Reports
    - Specs
    - Standards
    - Procedures
    - Forms

- Documents
  - Business
  - System Use
  - Contributions
  - Individual
  - Team

- Metrics
  - Lessons Learned
  - Best Practices
  - Discussions
  - Assumptions
  - Decisions

Tools/Services
- Search
- Links
- Containers
- Visual Controls
- Home Pages
- Routing/workflow
- Security
- Alerts
- Customized Profiles

Infrastructure
- Document Management
- Lotus Notes
- Internet
- Communication & Collaboration
- Information Interfaces

- Global WAN
- Servers
- Desktops
Accenture: Key Success Factors of KM

Business Value

Human-Resources
- Management
- „Talents“
- Complete personnel

Information/Communication
- Technique
- Organization

Corporate Culture

Knowledge Management
The „Knowledge Manager“ and his Daily Work Duty

- To prove business value
- Process/project management
- To arrange face-to-face meetings
- To connect experts
- To maintain content management
- To find arguments for KM
- To win sponsors and partners
- To promote projects
- To build up technical infrastructure
Critical Questions for the Knowledge Management

- **Added Value** – What kind of knowledge provides maximum additional value? What is the employees need of knowledge?

- **Processes** – Are the implemented processes supporting the accumulation and preparation of data as well as the distribution and use of explicit knowledge?

- **Culture** – Are the people in the organization enabled and motivated to share knowledge? Is the management exemplary in sharing knowledge? Do the experts have the feeling of transparent decisions?

- **Metrics/Feedback** – What is measured? Does it really match to the managements expectations?

- **Technology** – How supports the organization their knowledge workers with IT-Infrastructure?
THANK YOU FOR ATTENTION!

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