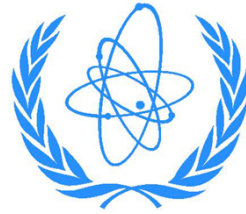**1962-7**

Joint ICTP-IAEA School of Nuclear Knowledge Management

1 - 5 September 2008

Basic Aspects of Knowledge Management

Dimitris KARAGIANNIS

Institute for Knowledge & Business Engineering
Bruenner Str. 72
Vienna A-1210
Austria

IAEA School of Nuclear
Knowledge Management

Basics of Knowledge Management:
Basic Aspects of Knowledge Management

1. – 5. September, Trieste, Italy

o. Univ.-Prof. Dr. Dimitris Karagiannis

University of Vienna

dk@dke.univie.ac.at

Agenda

1	Introduction
2	Basic Aspects of Knowledge Management
3	Concepts and Methods for Knowledge Management
4	Technology for Knowledge Management

Knowledge Management Basics

MOTIVATION

Quotes on Knowledge Management

"Nothing is more risky than not knowing and still acting."
(translated) [J. W. von Goethe]

"There is nothing so practical as a good theory."
[Kurt Lewin]

"You can command people obedience, but not knowledge."
(translated) [Konfuzius]

"What gets measured, gets done. If you are looking for quick ways to change how an organisation behaves, change the measurement system"
[Mason Haire]

"What's happened here is 90% culture change. You need to change the way you relate one another. If you don't do that, you won't succeed."
[CEO of Buckman Laboratories]

"The end of all knowledge should be virtuous action."
[Philip Sydney]

Knowledge Management Success Factors

Cultural layer

- Knowledge culture: learning culture, trust, openness, fairness
- Commitment and engagement, support and guidance of the managers

Target layer

- Knowledge management as part of the strategy
- Definition and break down of clear goals for the knowledge management
- Provision of resources (time, budget)
- Delegation of responsibility and competencies, creation of incentives

Knowledge layer

- Networking of experts
- Facilitation of communication
- Facilitation of team work
- Qualification of employees

Action layer

- Alignment to the requirements of operative activities
- Flexible organisational structure
- Defined roles and responsibilities
- Operational structure: formalisation, standardisation, transparency

Data layer

- ICT as enabler
- Ensure acceptance of employees
- Provision of stored data and knowledge
- Quality assurance of stored data and knowledge

Development of Knowledge Management?
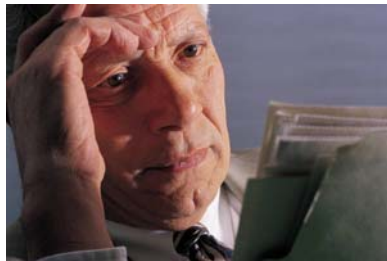
Technical Knowledge Management

Description: Installing software with functionalities, which support the exchange of knowledge.
Example: Database with contact persons.
Problem: „*If the database is a phone directory of experts, I would like a secret number.*" [Quote]

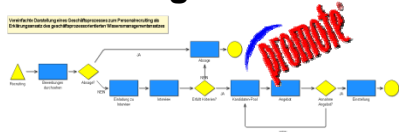**Human Knowledge Management**

Description: Motivation of employees to exchange knowledge.
Example: Football results were used to arouse interest in a discussion forum.
Problem: As the main discussion item was football subsequently, the discussion forum had to be closed.
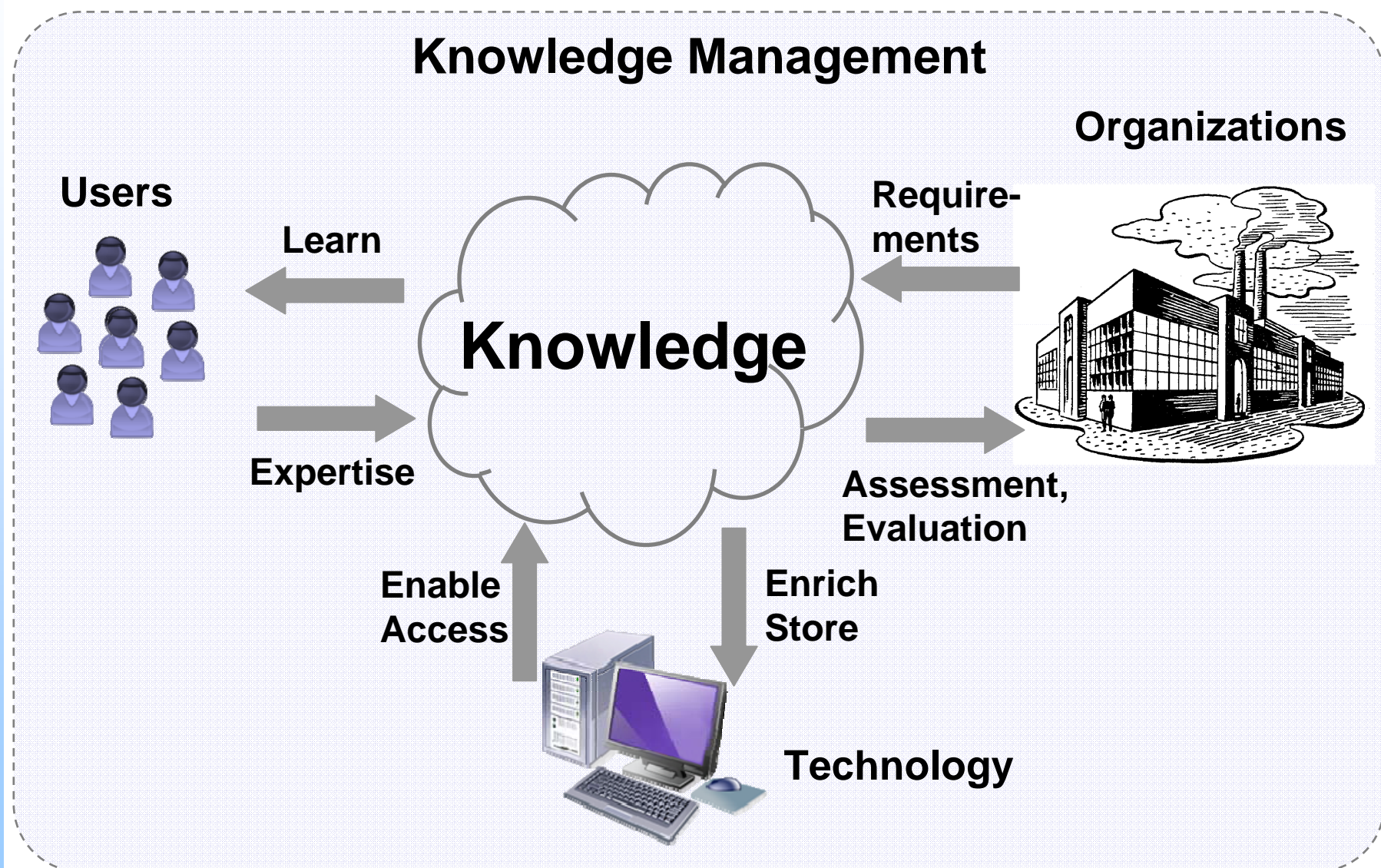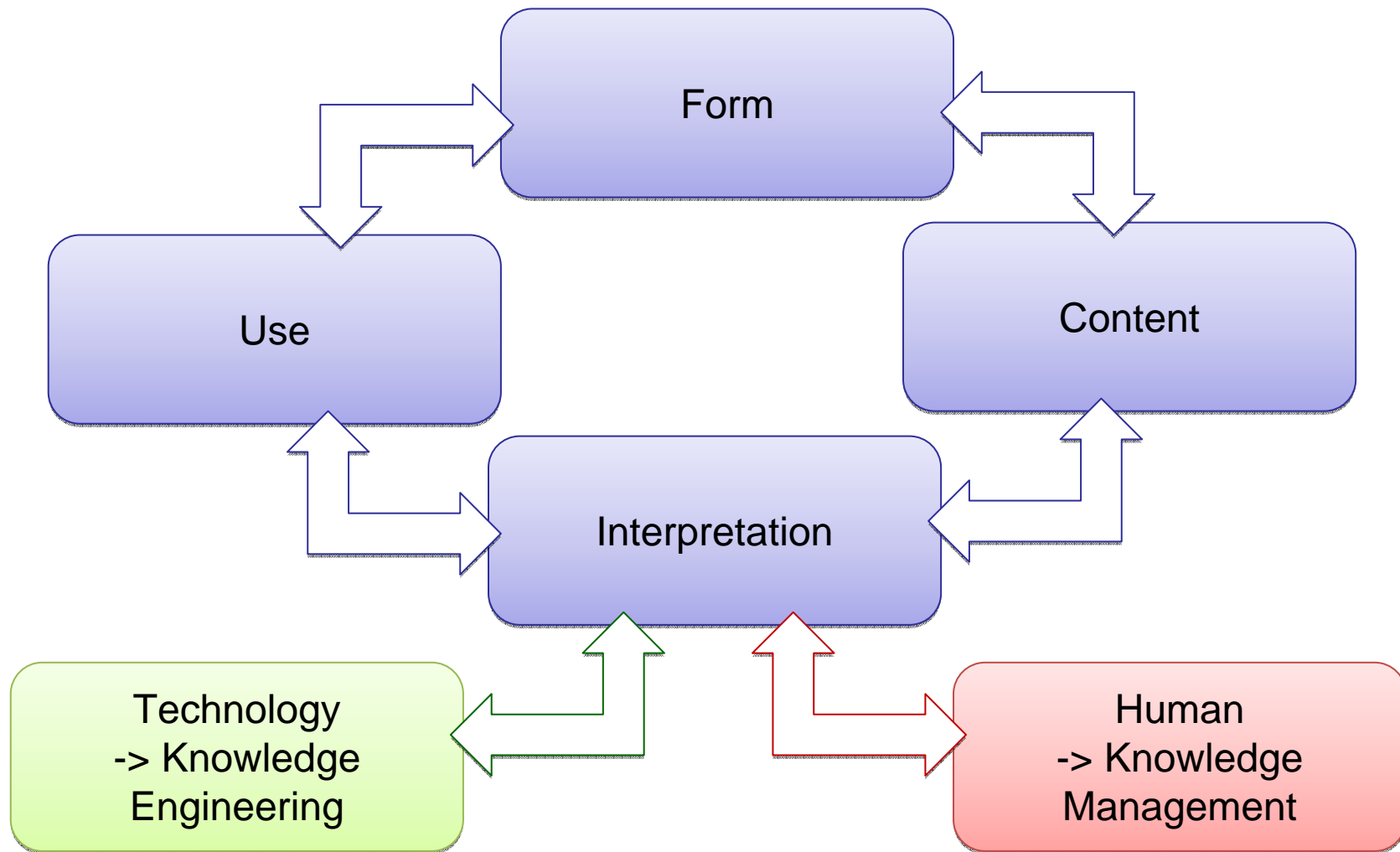
Organisational Knowledge Management

Description: Linking of Knowledge Management with the business goals and company structure.
Example: A business process is supported with technical and human Knowledge Management.
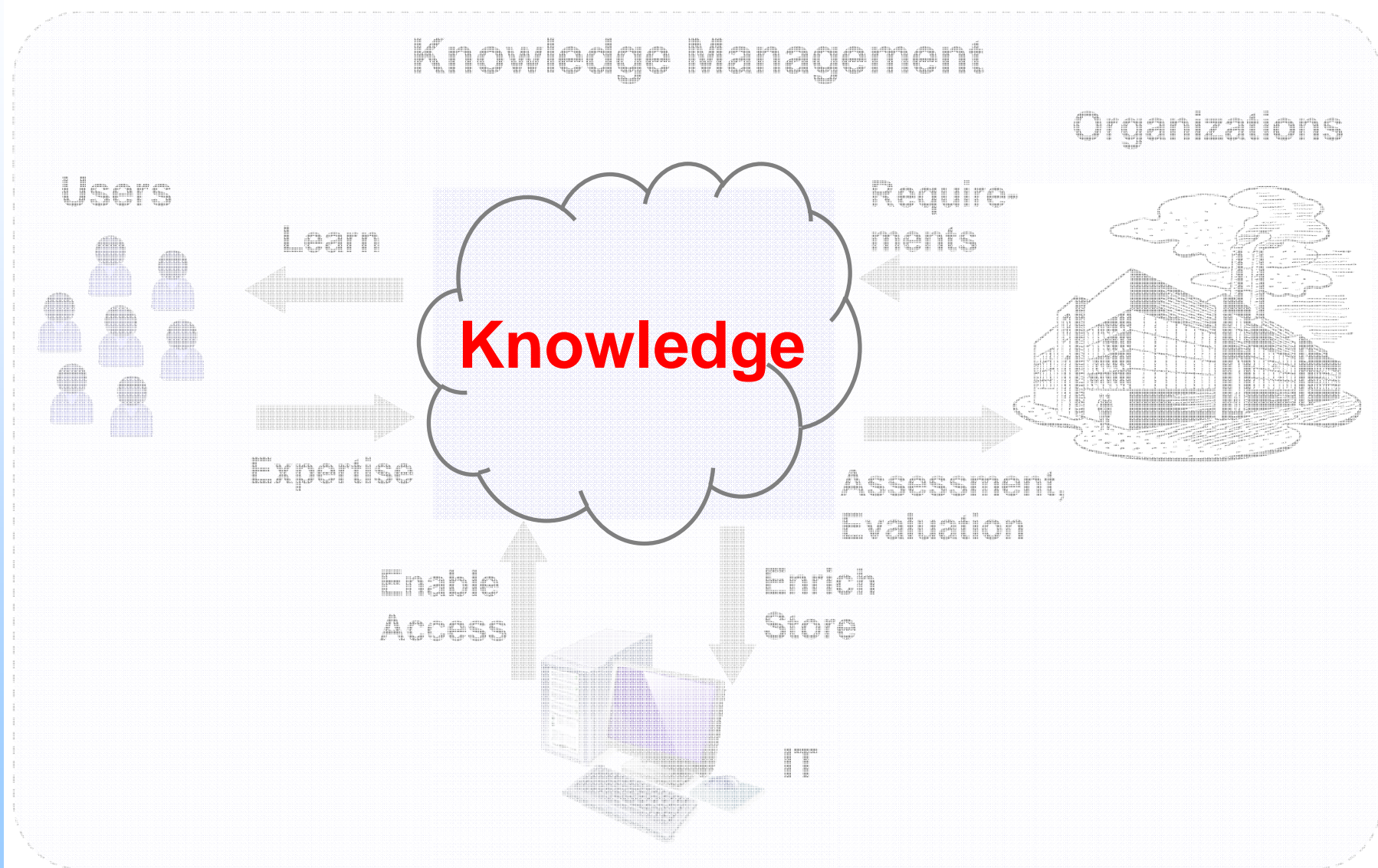
Knowledge Management: Positioning

Knowledge Management

Users

Learn

Expertise

Knowledge

Organizations

Require-ments

Assessment,
Evaluation

Enable
Access

Enrich
Store

Technology

Knowledge Management vs. Knowledge Engineering

Knowledge Management Basics

KNOWLEDGE

Knowledge Management: Positioning

Knowledge: Some Definitions

"Knowledge is possessed by humans … as truths and beliefs, perspectives and concepts, judgments and expectations, methodologies and know-how. Knowledge is used to receive information – to recognize and identify; analyze, interpret and evaluate, synthesize, assess and decide; adapt, plan, implement, and monitor – to act" (Wiig, 2000)

"Knowledge is a fluid mix of framed experiences, values, contextual information and expert insights that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers." (Davenport and Prusak, 1998)

"justified true belief" (Nonaka and Takeuchi, 1995)

"Knowledge is humanized information" (Karagiannis, 1998)

Knowledge as Important Success Factor for Companies

"The basic economic resource is no longer capital, nor natural resources, nor labour. It is and will be knowledge." (Peter Drucker, 2001)

- The life cycle of products is becoming shorter
  - Faster implementation of innovations
- Lean management needs decisions on all organisational levels
  - Necessary knowledge must be available on all levels
- Companies operate more and more globally
  - geographically distributed department divisions
  - virtual companies
- Concurrent Engineering needs the integration of knowledge from different department divisions

Basic Principles of
Knowledge Processing (1)

Representation of knowledge in daily life:

Application	Knowledge representation
Authority	Forms
News	Headlines
Advertising	Graphics, Photographs
Math	Formulas
Statistics	Tables
Musician	Note, Acoustics
Secretary	Stenography

Basic Principles of Knowledge Processing (2)

Knowledge exists on different layers:

Cognitive layer:

– persons formulate their thoughts colloquial

Representation layer:

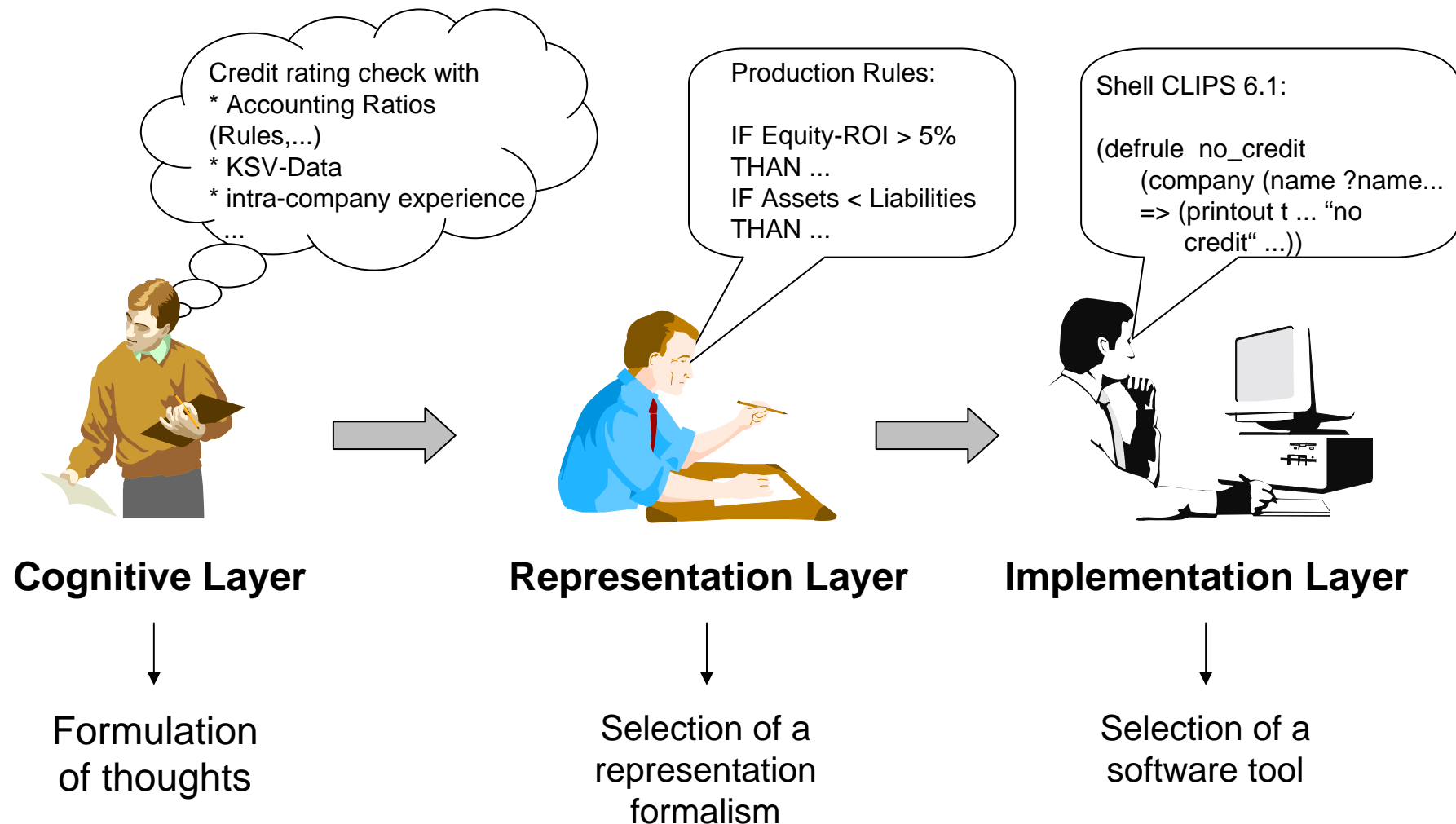– formalization of thoughts (oriented at human Knowledge Processing)

So called AI-Gap

Implementation layer:

– orientated towards computer

Translation/Transformation steps are necessary to come from the cognitive layer to the implementation layer

Basic Principles of Knowledge Processing (3)

Credit rating check with
* Accounting Ratios (Rules,...)
* KSV-Data
* intra-company experience
...

Production Rules:

IF Equity-ROI > 5% THAN ...
IF Assets < Liabilities THAN ...

Shell CLIPS 6.1:

(defrule no_credit
  (company (name ?name...
  => (printout t ... "no credit" ...))

Cognitive Layer **Representation Layer** **Implementation Layer**

Formulation of thoughts

Selection of a representation formalism

Selection of a software tool

Karagiannis (2001)

Basic Principles of
Knowledge Processing (4)

Derivation of new knowledge = inference = conclusion = thinking process, where new knowledge is generated from existing one -> Linking statements (synthetic view)

Examples:

All humans are mortal.
Fact: Socrates is human.
Conclusion: Socrates is mortal.

deductive conclusion (Modus ponens)
The generated knowledge can be used as a basis for further links

If there is rain, then there will be no picnic
Fact: There was rain
Conclusion: There was no picnic

Basic Principles of Knowledge Processing (5)

Analytical thinking of natural sciences
„Why questions"

Some examples:

- **Biology:**
  Why do illnesses like diabetes and cancer develop?
  → We hope for answers from genetics.

- **Physics:**
  Why do black holes exist?
  →Searching for the one theory, which unifies the gravitational theory and the quantum mechanics.

The Blind Men and the Elephant

It was six men of Hindustan
To learning much inclined,
Who went to see the Elephant
(Though all of them were blind)
That each by observation
Might satisfy the mind.

The first approached the Elephant
And happening to fall
Against his broad and sturdy side
At once began to bawl:
"Bless me, it seems the Elephant
Is very like a wall".

The second, feeling of his tusk,
Cried, "Ho! What have we here
So very round and smooth and sharp?
To me 'tis mighty clear
This wonder of an Elephant
Is very like a spear".

The third approached the animal,
And happening to take
The squirming trunk within his hands,
Then boldly up and spoke:
"I see," quoth he, "the Elephant
Is very like a snake."

The Fourth reached out an eager hand,
And felt about the knee.
"What most this wondrous beast is like
Is mighty plain," quoth he;
"'Tis clear enough the Elephant
Is very like a tree!"

The Fifth, who chanced to touch the ear,
Said: "E'en the blindest man
Can tell what this resembles most;
Deny the fact who can,
This marvel of an Elephant
Is very like a fan!"

The Sixth no sooner had begun
About the beast to grope,
Than, seizing on the swinging tail
That fell within his scope,
"I see," quoth he, "the Elephant
Is very like a rope!"

And so these men of Hindustan
Disputed loud and long,
Each in his own opinion
Exceeding stiff and strong,
Though each was partly in the right
And all were in the wrong.

So oft in theologic wars,
The disputants, I ween,
Rail on in utter ignorance
Of what each other mean,
And prate about an Elephant
Not one of them has seen!
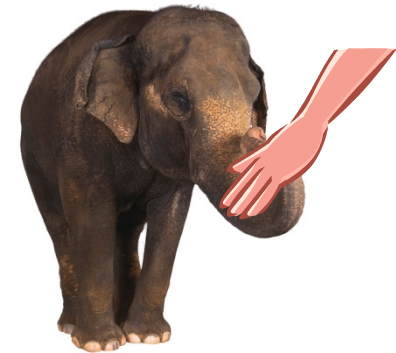
Indian folktale retold in poetic form by Godfrey Saxe

Data – Information - Knowledge

Data ….….… Information ….….…. Knowledge

E1

unstructured …………………………………………… structured

isolated ……………………………………………… positioned

context-independent ………………..… context-dependent

minor behaviour control ….....…. major behaviour control

symbols ………………..……… cognitive patterns of action

distinction …………………………… mastery/capability

E1   create new graphical representation
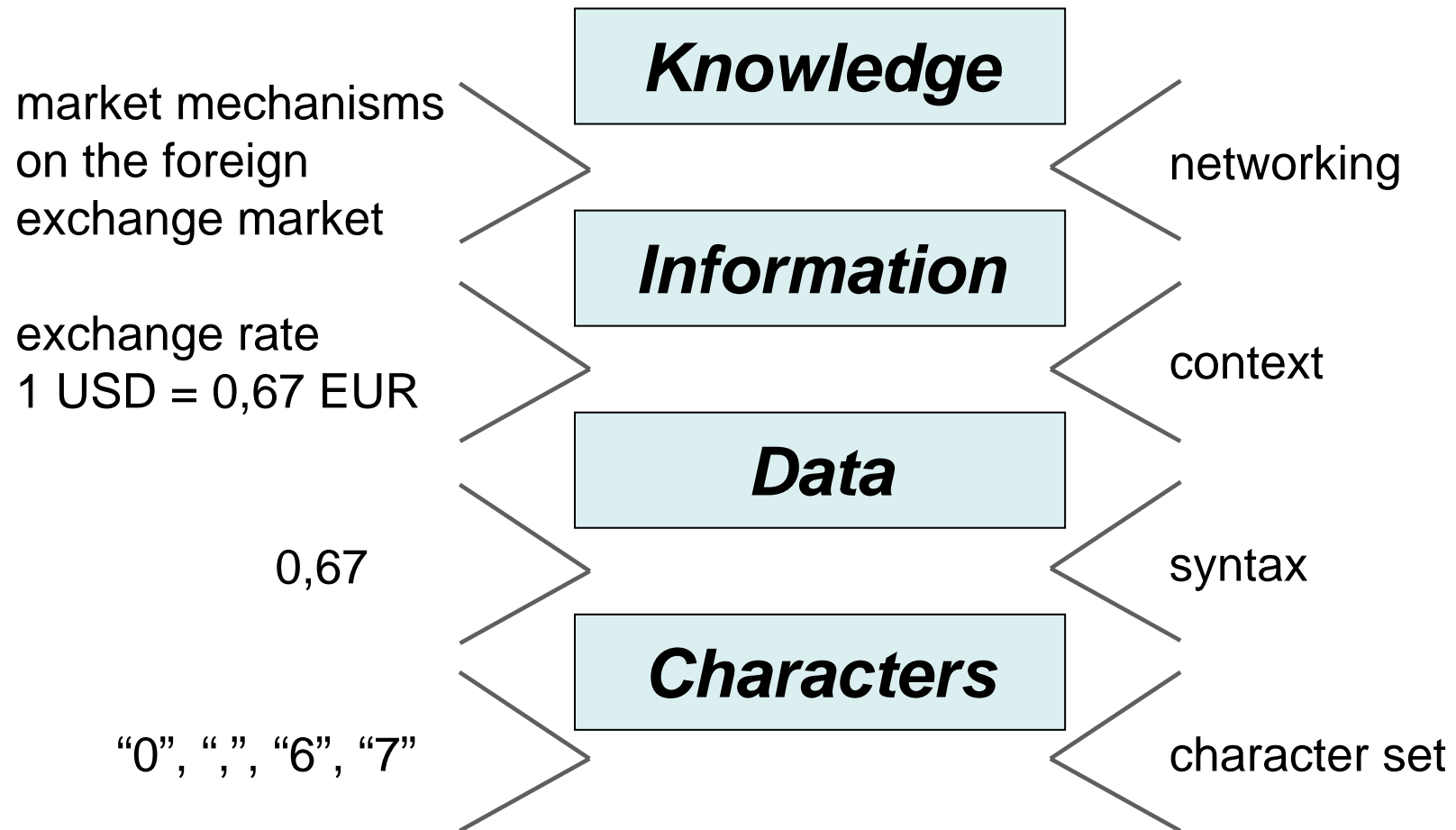Elena-Teodora, 24/04/2007

Data – Information - Knowledge

50   Data = natural number

50   Information = road sign

… I have to slow down …

50   Knowledge = intelligent behaviour ("When do I have to brake?")

Karagiannis (2001)

Data – Information - Knowledge

Knowledge

market mechanisms
on the foreign
exchange market

networking

Information

exchange rate
1 USD = 0,67 EUR

context

Data

0,67

syntax

Characters

"0", ",", "6", "7"

character set

Probst (2003)

The Knowledge Staircase
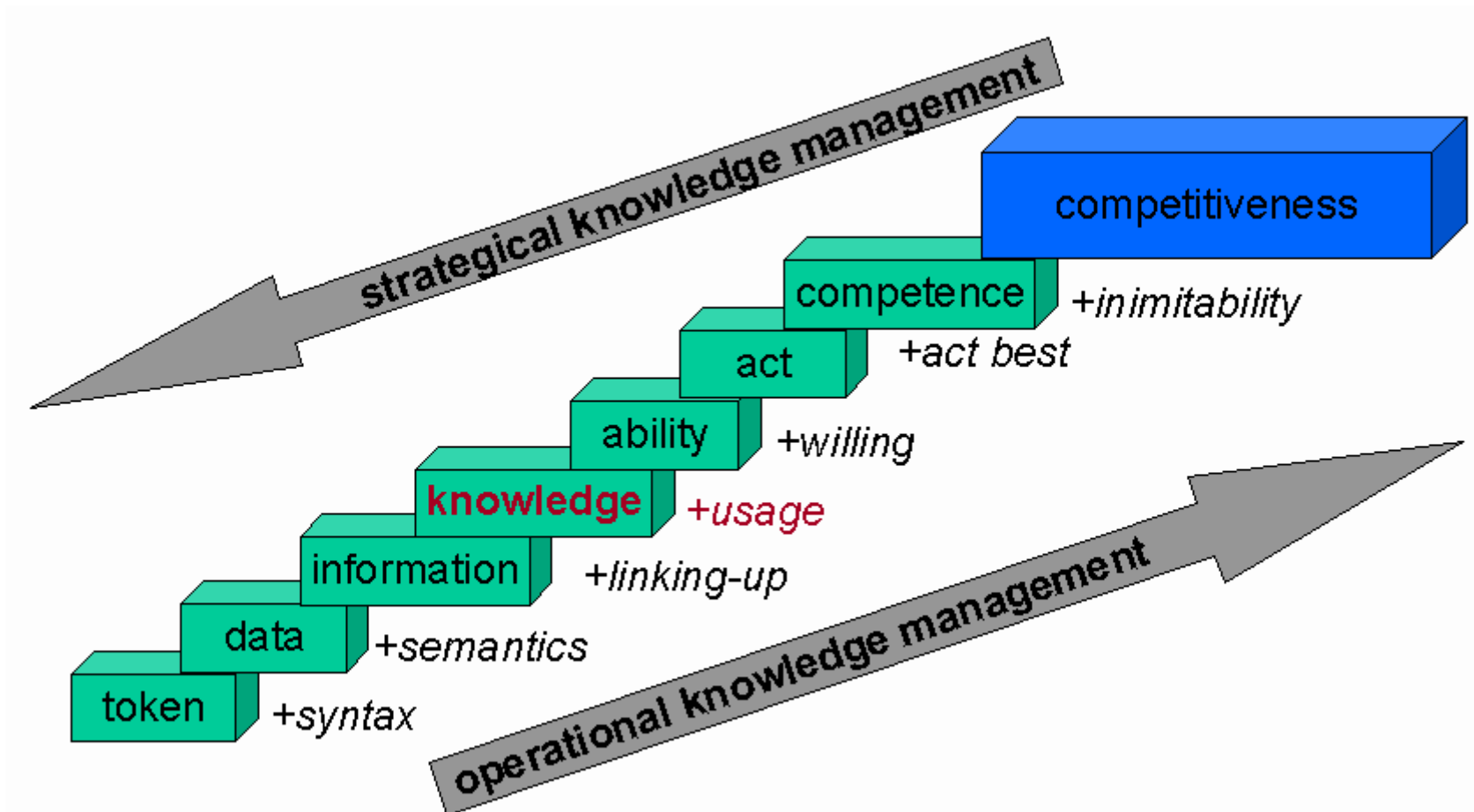
North (1998)

Classification of Knowledge (1)

explicit   implicit

Derivation

KNOWLEDGE

precise

insecure

Type

incomplete

Representation

vague

Meta-Rules

Rules   Facts
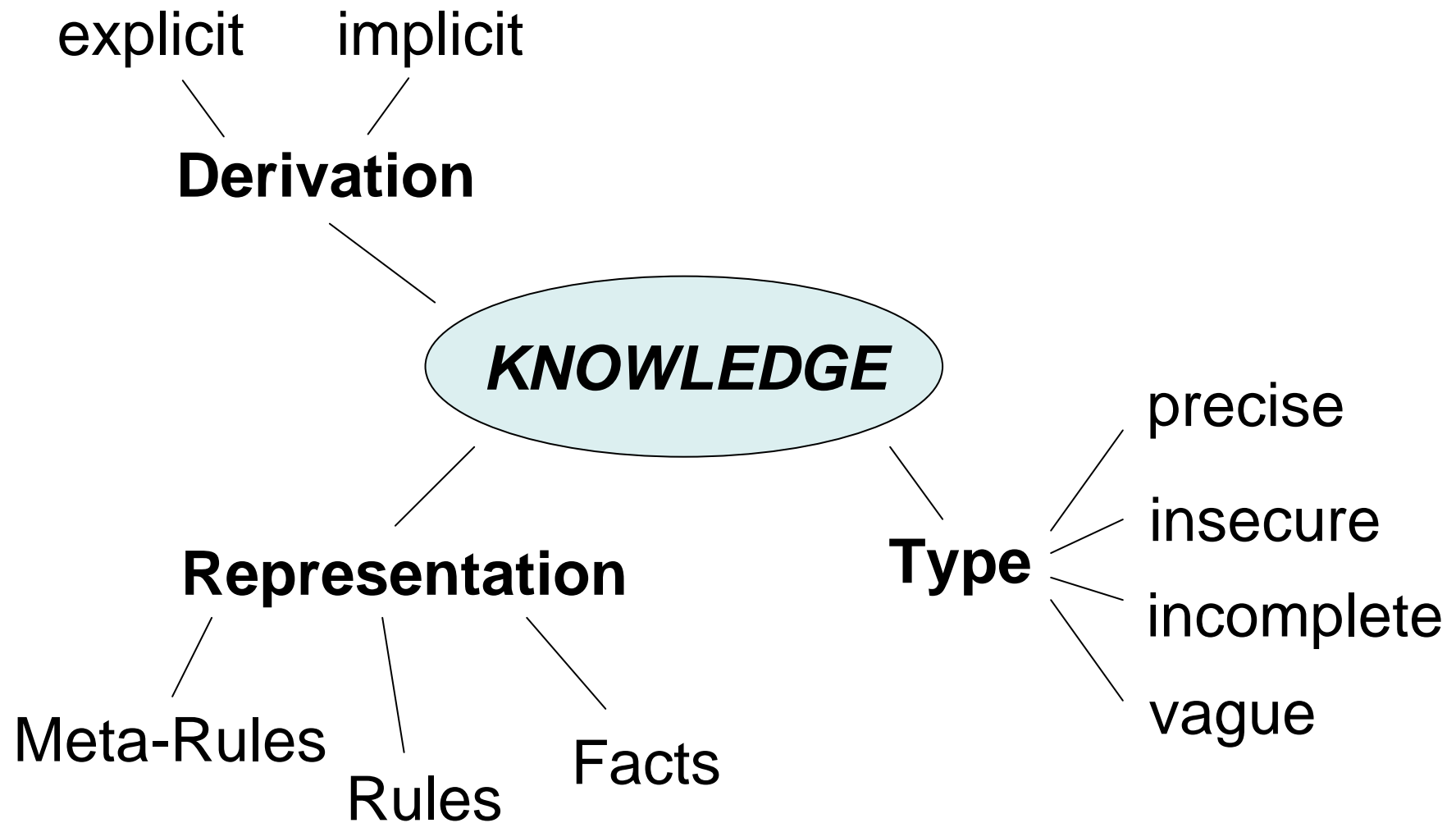
Derivation of Knowledge (1)

Explicit knowledge:
data, facts, documents

Implicit (tactic) knowledge:
experience, communications, culture

Knowledge

explicit   implicit
Derivation

KNOWLEDGE

Representation

Meta-Rules   Rules   Facts

Type
precise
insecure
incomplete
vague
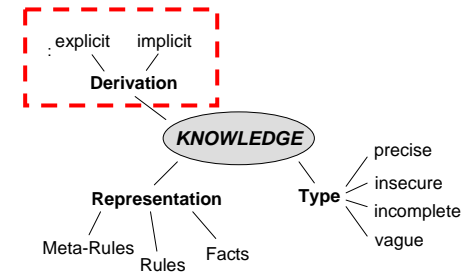
GRS Report (2003)

Derivation of Knowledge (2)

- ## Implicit (tacit) knowledge:
  - difficult to communicate
  - can hardly be formalised
  - is stored in the brain
  - embodied knowledge

- ## Explicit knowledge:
  - can be communicated
  - can be formalised on different levels
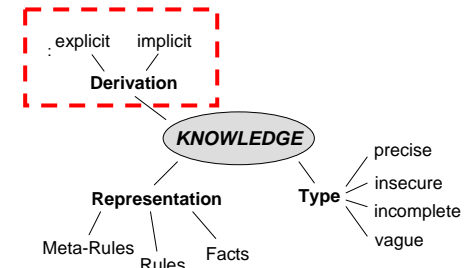 - can be stored in different media (documents, data bases ...)
  - disembodied knowledge
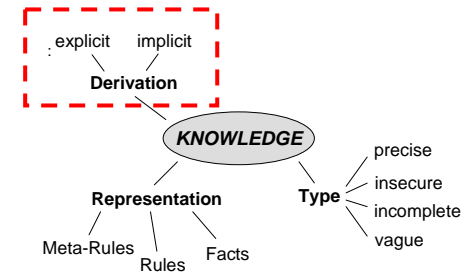
Polanyi (1983)
Nonaka & Takeuchi (1995)

# Derivation of Knowledge (3)

- The creation of knowledge in an organisation is a continuous process

explicit   implicit

Derivation

KNOWLEDGE

precise
insecure
incomplete
vague

Representation   **Type**

Meta-Rules   Rules   Facts

Tacit	Dialogue	Explicit

Tacit

Socialization
Sharing experiences
Observing, imitating
Brainstorming
without criticism

Externalization
Writing it down
Creating metaphors
and analogies
Modeling

Field
Building

Linking
Explicit
Knowledge

Explicit

Internalization
Access to
codified knowledge
Goal based training

Combination
Sorting, adding,
categorizing
Methodology creation
Best practices

Learning by Doing

Nonaka& Takeuchi (1995)

Representation of Knowledge

Representation of knowledge:

- **Rules:** allow to define contexts (e.g. "The driver coming from the right has priority.")

- **Facts:** are used to define realities (e.g. "This Audi has a red lacquering.")

- **Meta-rules:** relate to the use of „normal" rules (e.g. "The above rule is out of effect on priority roads.")
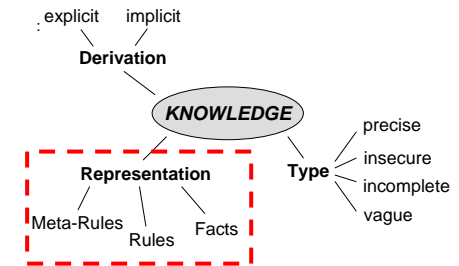
Type of Knowledge

Type of knowledge:

- **Exact knowledge:**
  - *„It is raining."*

- **Uncertain knowledge:**
  - *„I think it will not rain tomorrow."*

- **Incomplete knowledge** (knowledge not complete, but strongly delimitated):
  - *„The temperature is between 10 and 15 degree Celsius"*

- **Vague knowledge** (interpretation-dependent knowledge):
  - *„The weather is quiet good."*
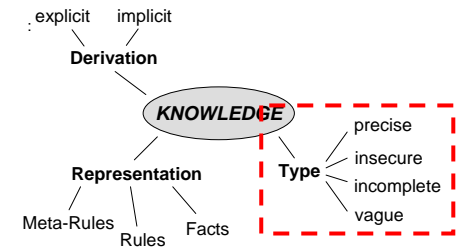
Further Classification Possibilities (1)
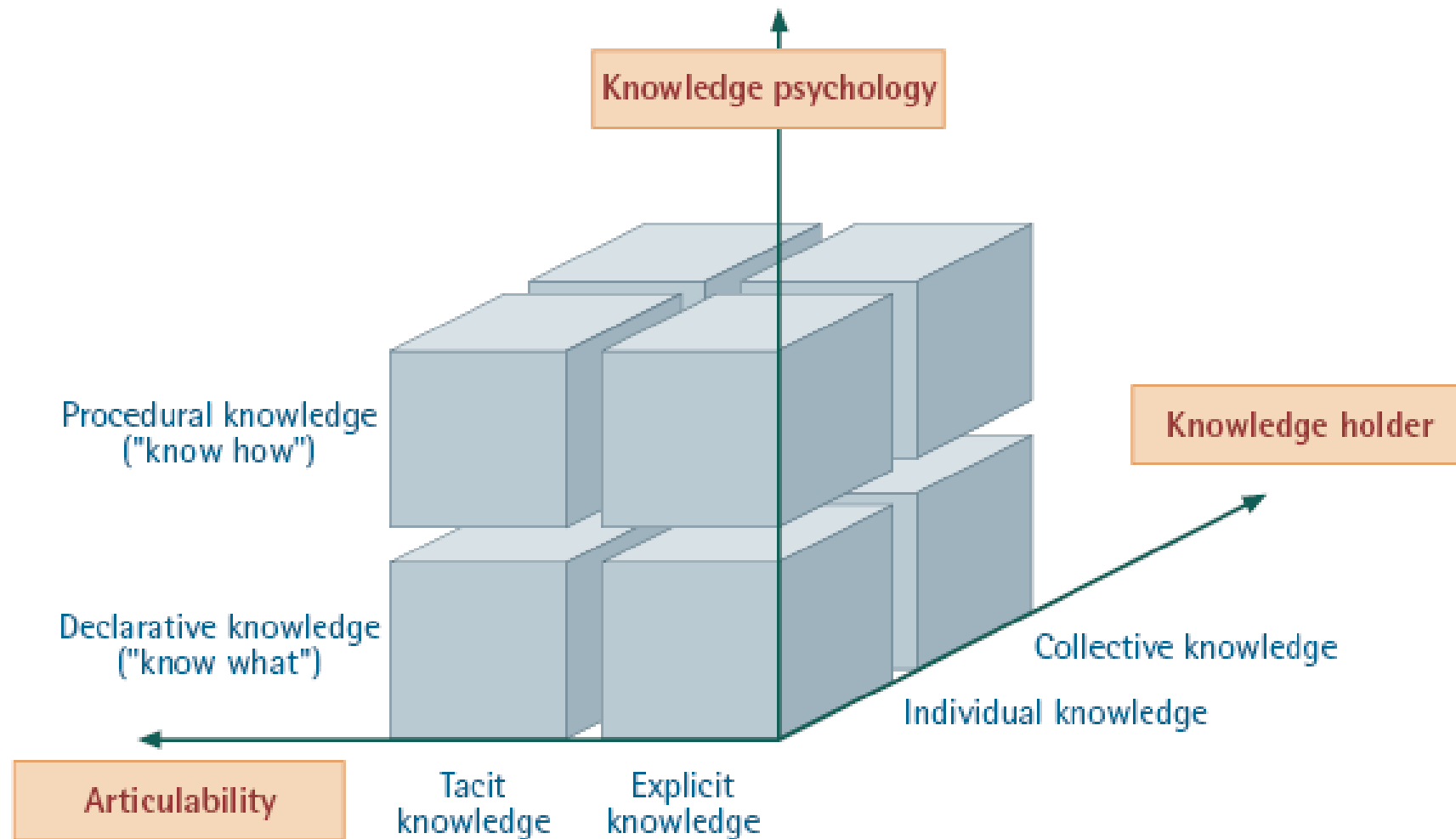
Source: An illustrated Guide to Knowledge Management (www.wm-forum.org)

Further Classification Possibilities (2)

- Sackman:
  - dictionary knowledge (what?)
  - directory knowledge (how?)
  - axiomatic knowledge (why?)
  - recipe knowledge (what should?)
- Wiig:
  - public knowledge
  - expert knowledge
  - private knowledge
- Sveiby:
  - explicit knowledge
  - skill
  - experience
  - value judgements
  - social network

Further Classification Possibilities (3)

- Scheler:
  - instrumental knowledge
  - intellectual knowledge
  - spiritual knowledge
- Machlup:
  - practical knowledge
  - intellectual knowledge
  - small-talk/pastime knowledge
  - spiritual knowledge
  - unwanted knowledge
- Ryle:
  - knowing that
  - knowing how
- …

Knowledge Management: Driving Vision

THE POWER OF KNOWLEDGE IS GROWING.

Knowledge is becoming the world's main economic resource.

The main added value of a product or service is the know-how required to design, market and implement it.

© Rosalie Zobel, Director, European Commission, Brussels

Knowledge Management Basics

KNOWLEDGE MANAGEMENT

Knowledge Management: Positioning

Knowledge Management

Organizations

Users

Learn

Requirements

Knowledge

Expertise

Assessment, Evaluation

Enable Access

Enrich Store

IT
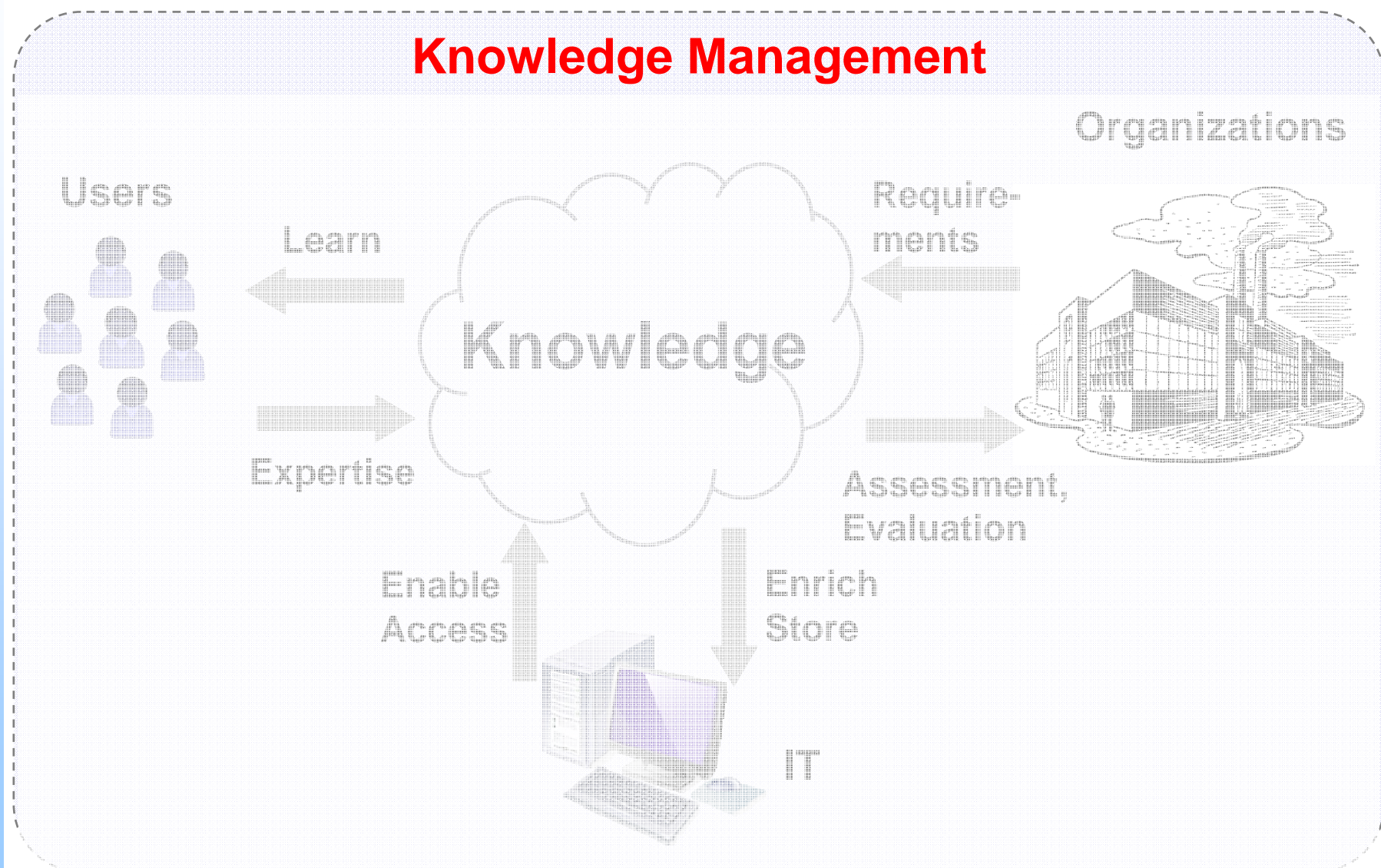
Knowledge Management Basics

HUMAN KNOWLEDGE MANAGEMENT

Knowledge Management: Positioning
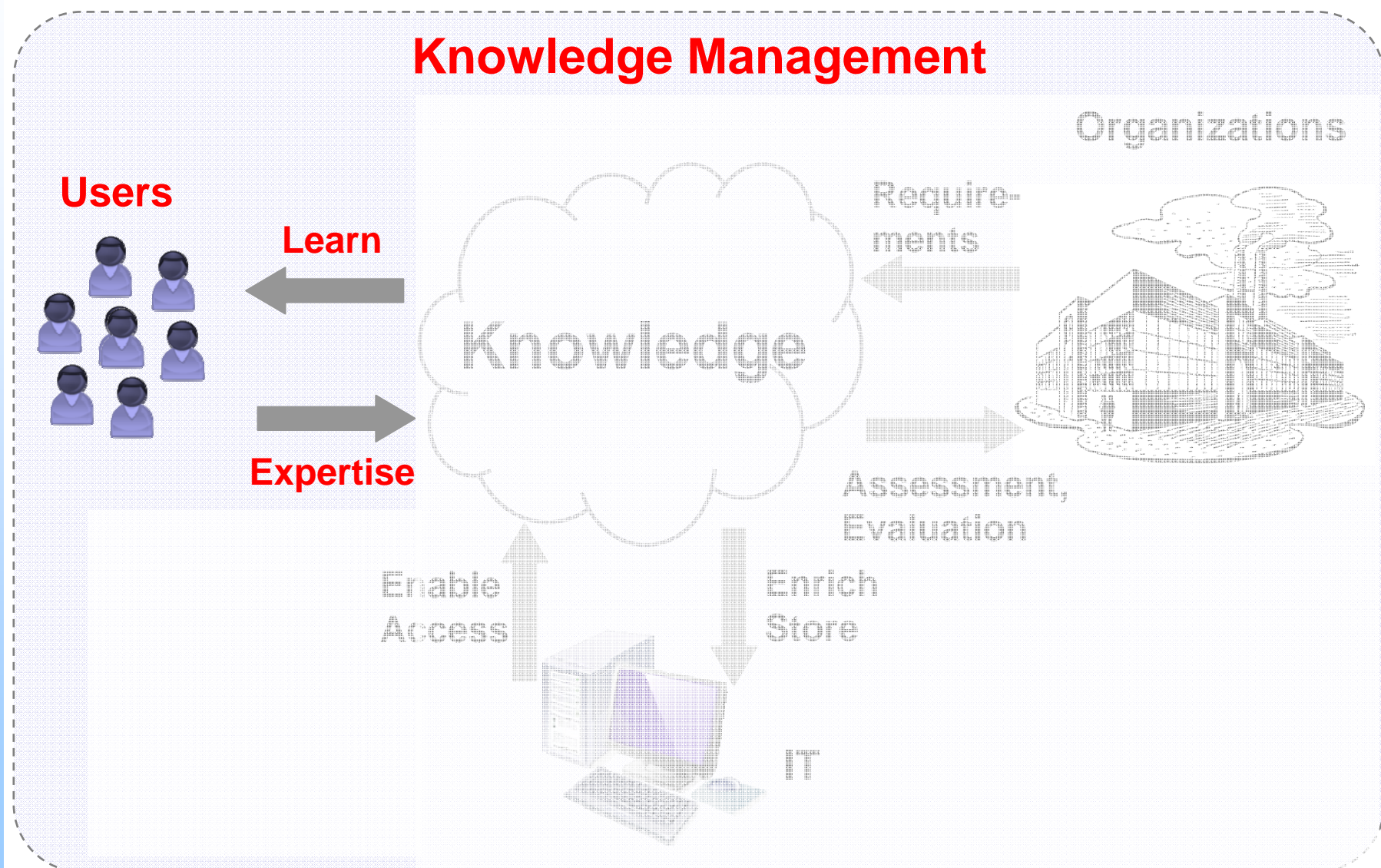
KM: Value of Knowledge and Society
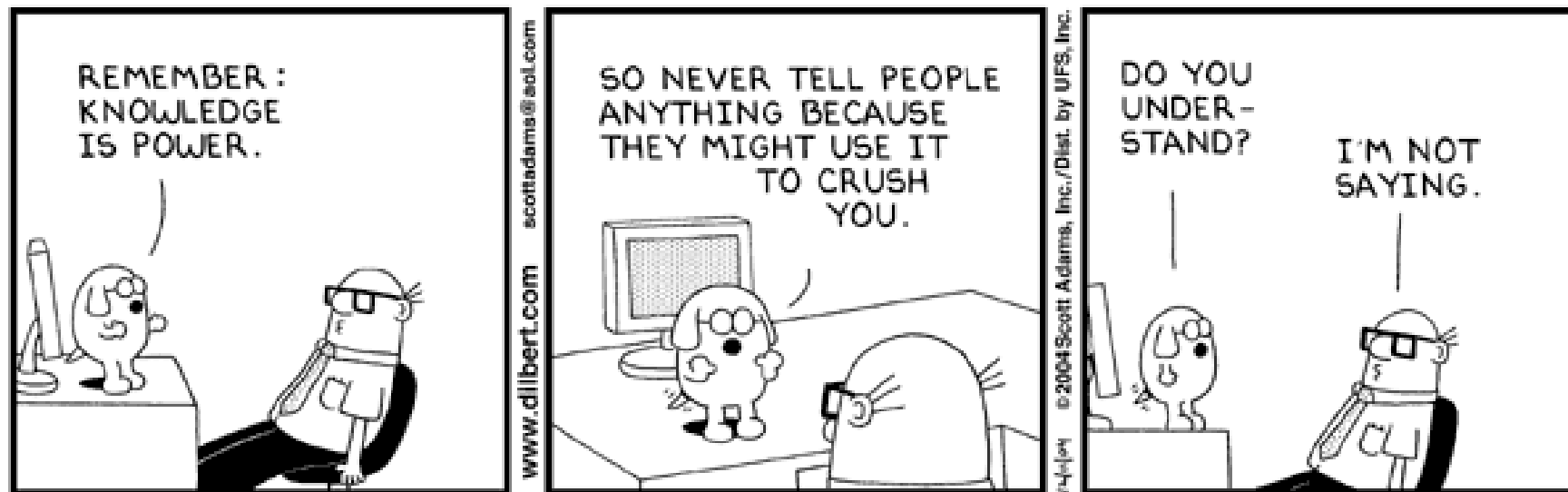
Knowledge as a „Resource"
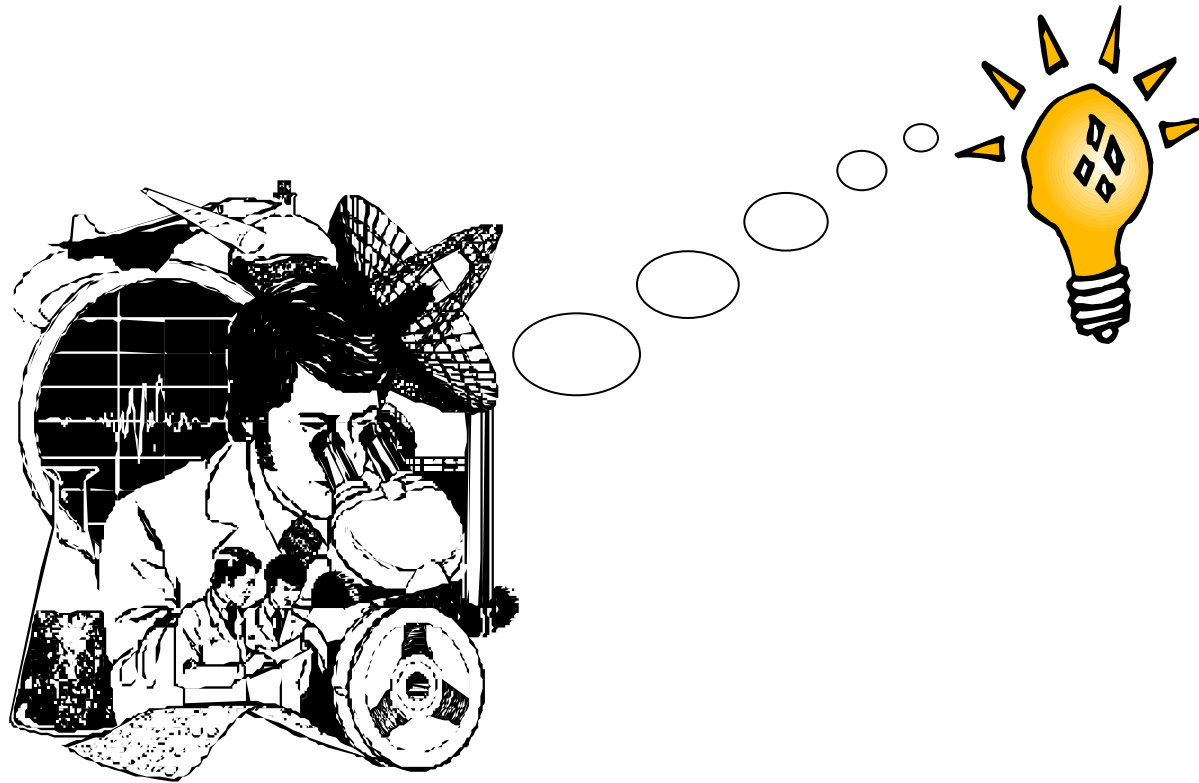
If knowledge is a „resource", where is this resource coming from?....

The Knowledge Society: A Challenge for Human Beings

Self-reliance of the knowledge worker

The mobile and networked human

New requirements for ICT
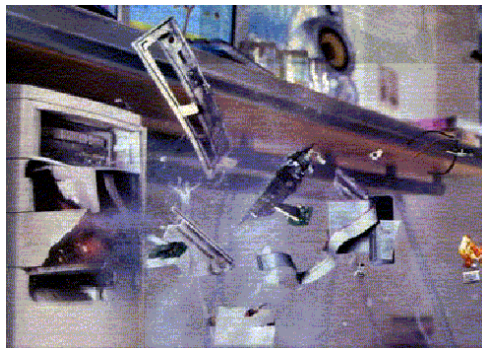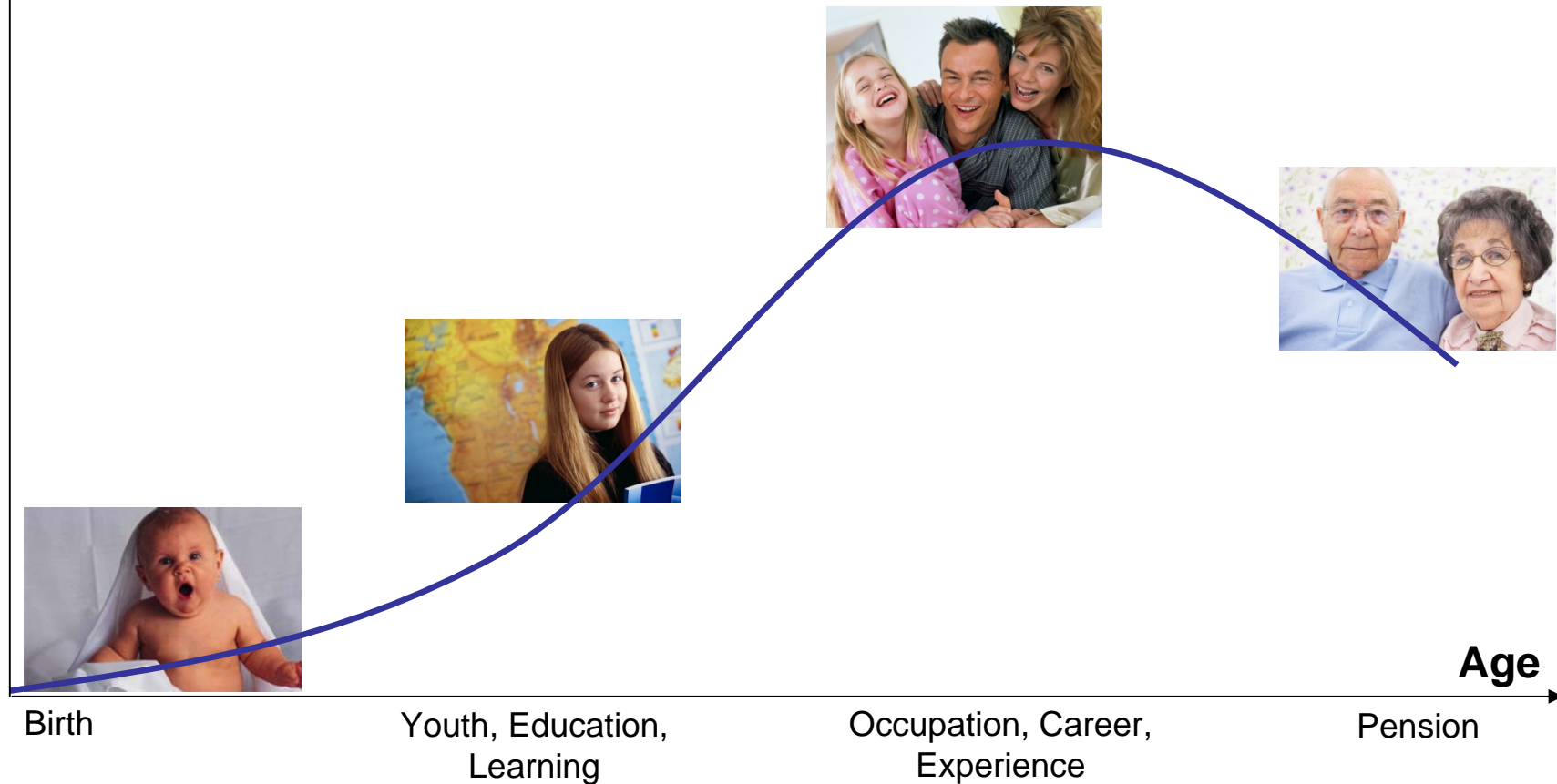
Legal regulations (For example: Software Patents)

The Human Being as Creative Centre
The Knowledge Curve

Knowledge

Conversion of implicit into explicit knowledge (e.g. writing a book) does not change the knowledge curve.

Age

Birth

Youth, Education, Learning

Occupation, Career, Experience

Pension

The Human Being as Creative Centre
Knowledge Source and Knowledge Carrier

Idea
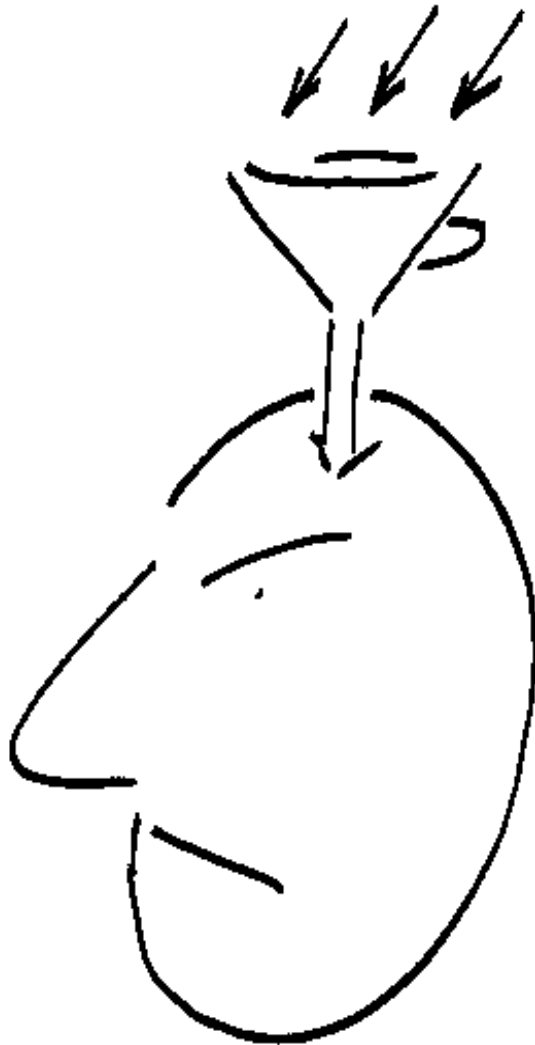
Making Knowledge explicit

Knowledge Object Book

Knowledge Carrier Human Being

The Human Being as Creative Centre
Individual Knowledge Generation
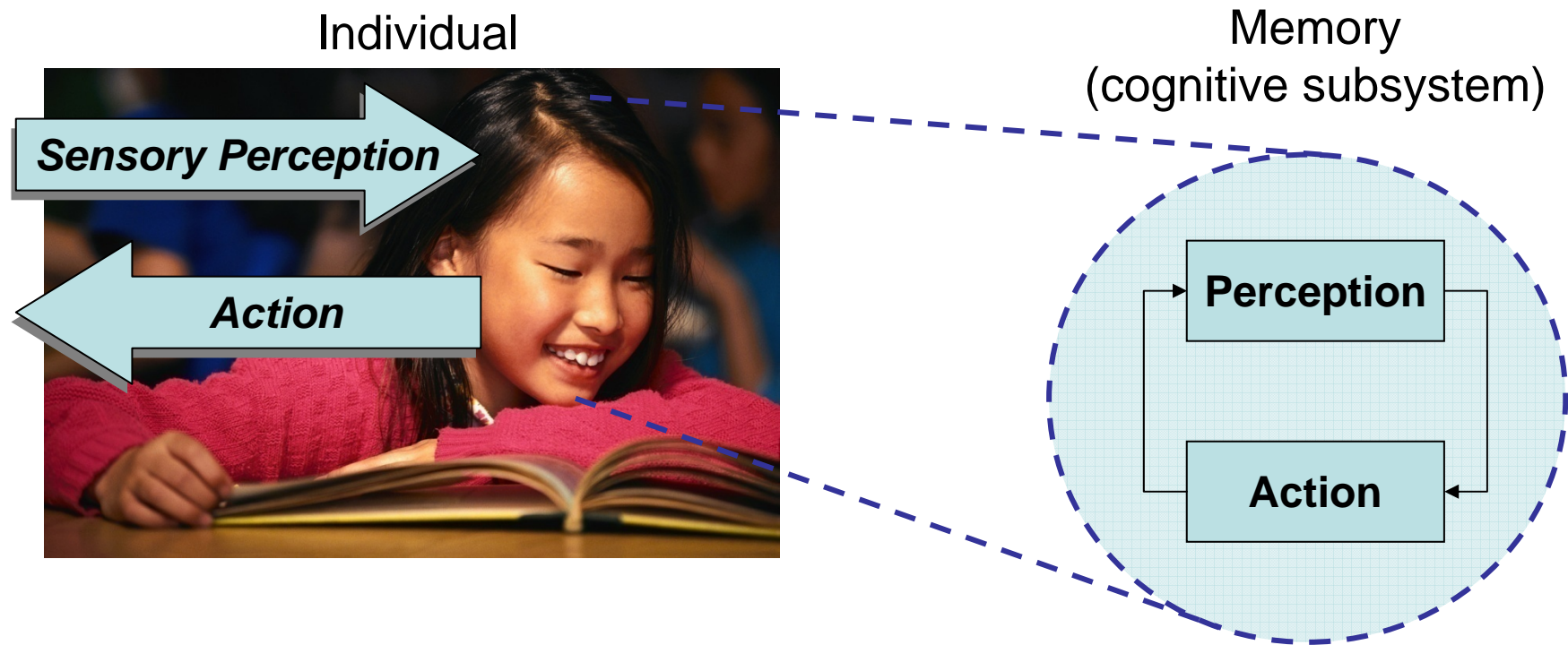
Learning Process by Popper (1)

The three worlds of Popper:
1. The world of objects (physical world)
2. The world of human emotions (psychological world)
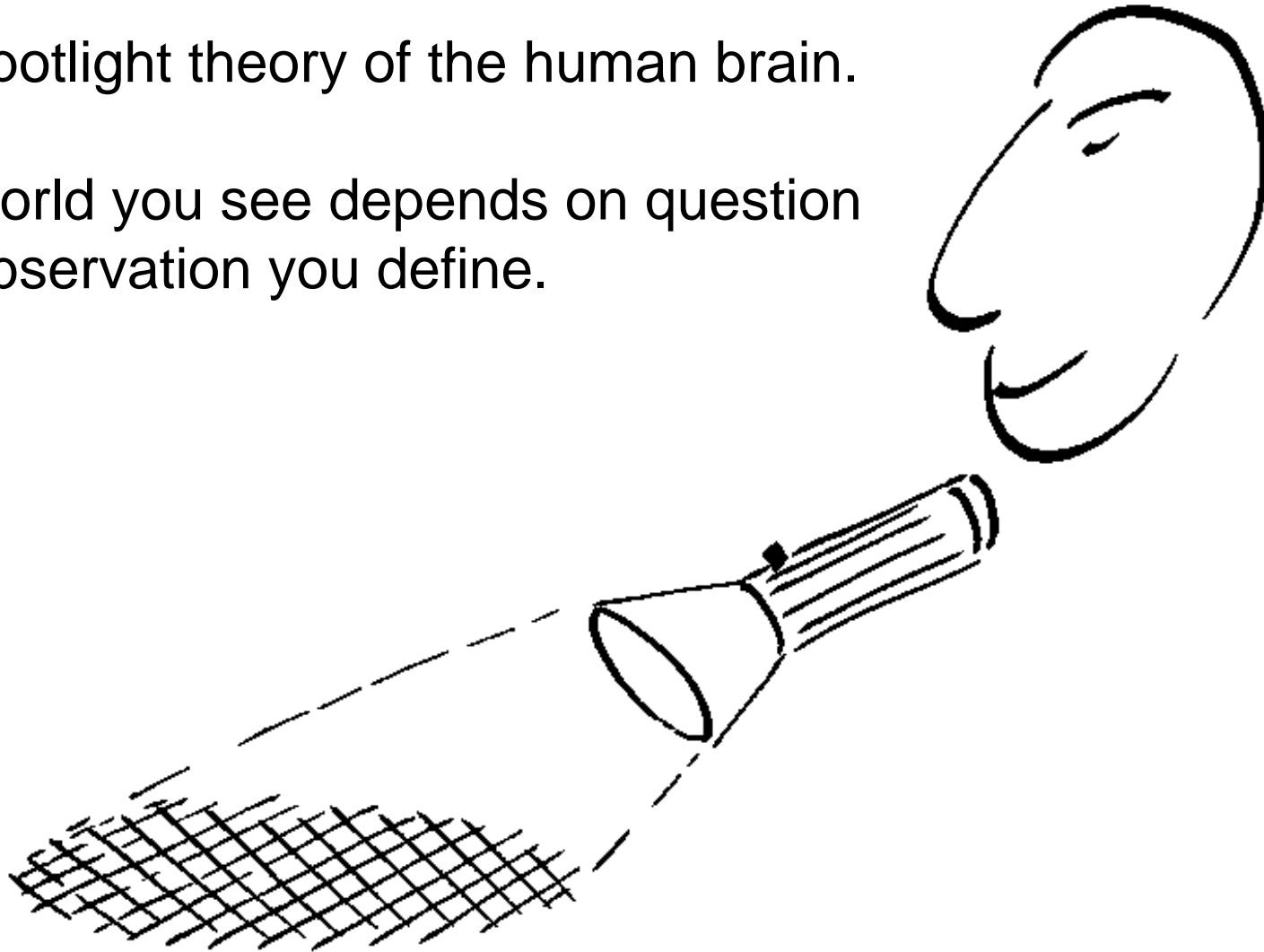3. The world of experiences expressed in natural languages

The human brain is like a bucket where information is floating in and is further developed to knowledge through systematic classification

©2004 ESCHENBACH — GEYER
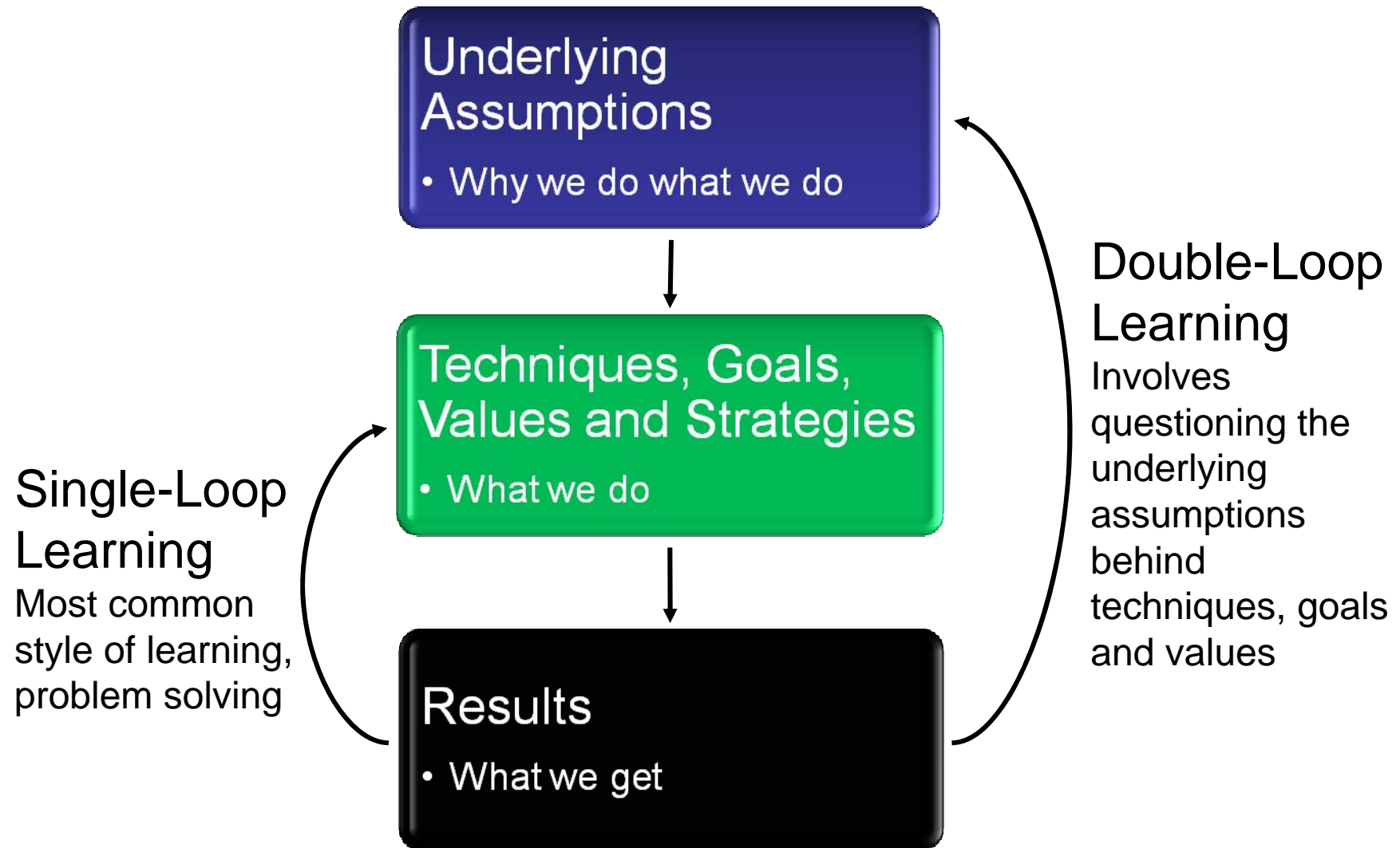
Learning Process by Popper (2)

The spotlight theory of the human brain.

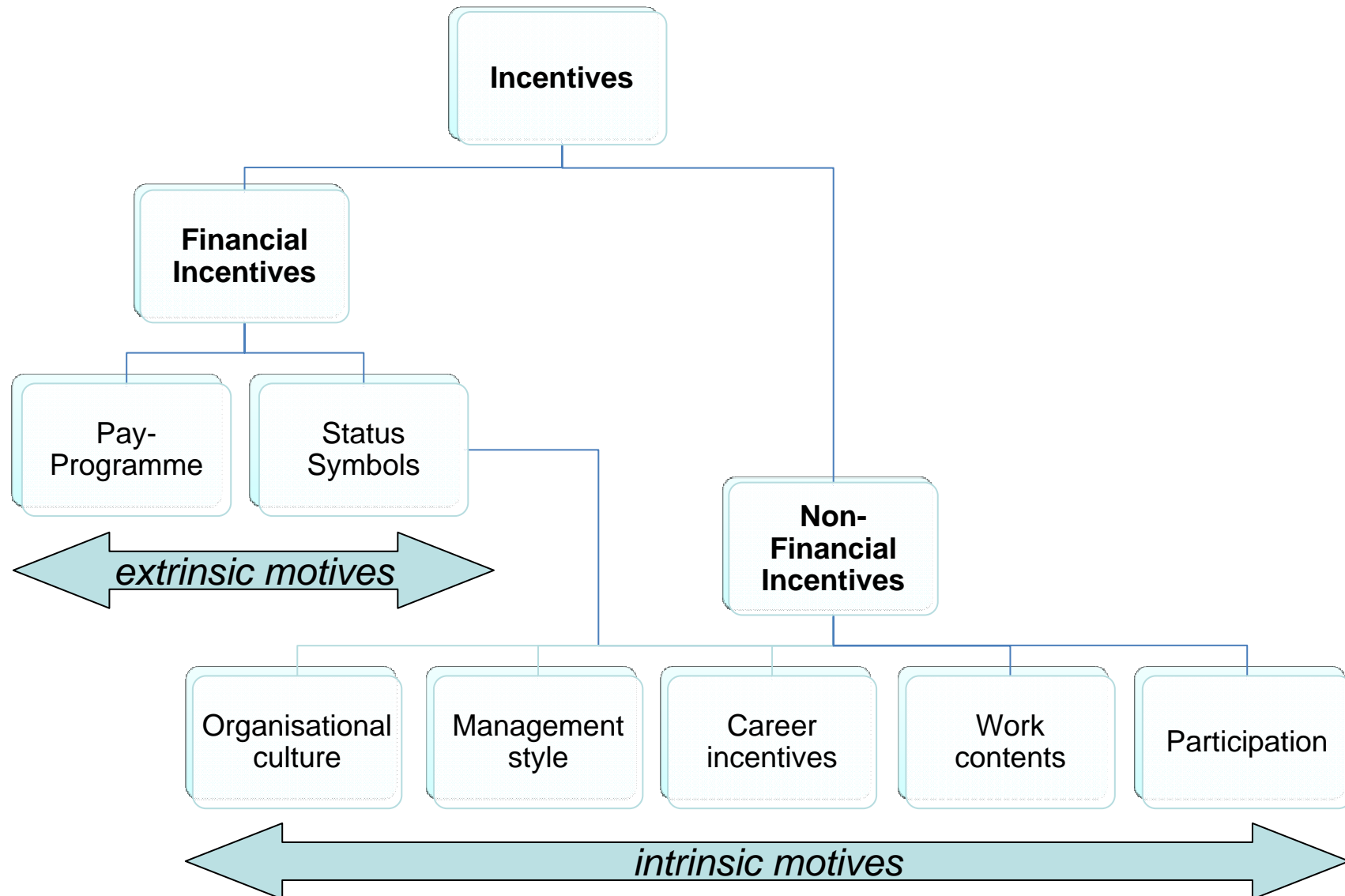The world you see depends on question and observation you define.

Single-Loop and Double-Loop Learning by Argyris

Underlying Assumptions
- Why we do what we do

Techniques, Goals, Values and Strategies
- What we do

Results
- What we get

Single-Loop Learning
Most common style of learning, problem solving

Double-Loop Learning
Involves questioning the underlying assumptions behind techniques, goals and values
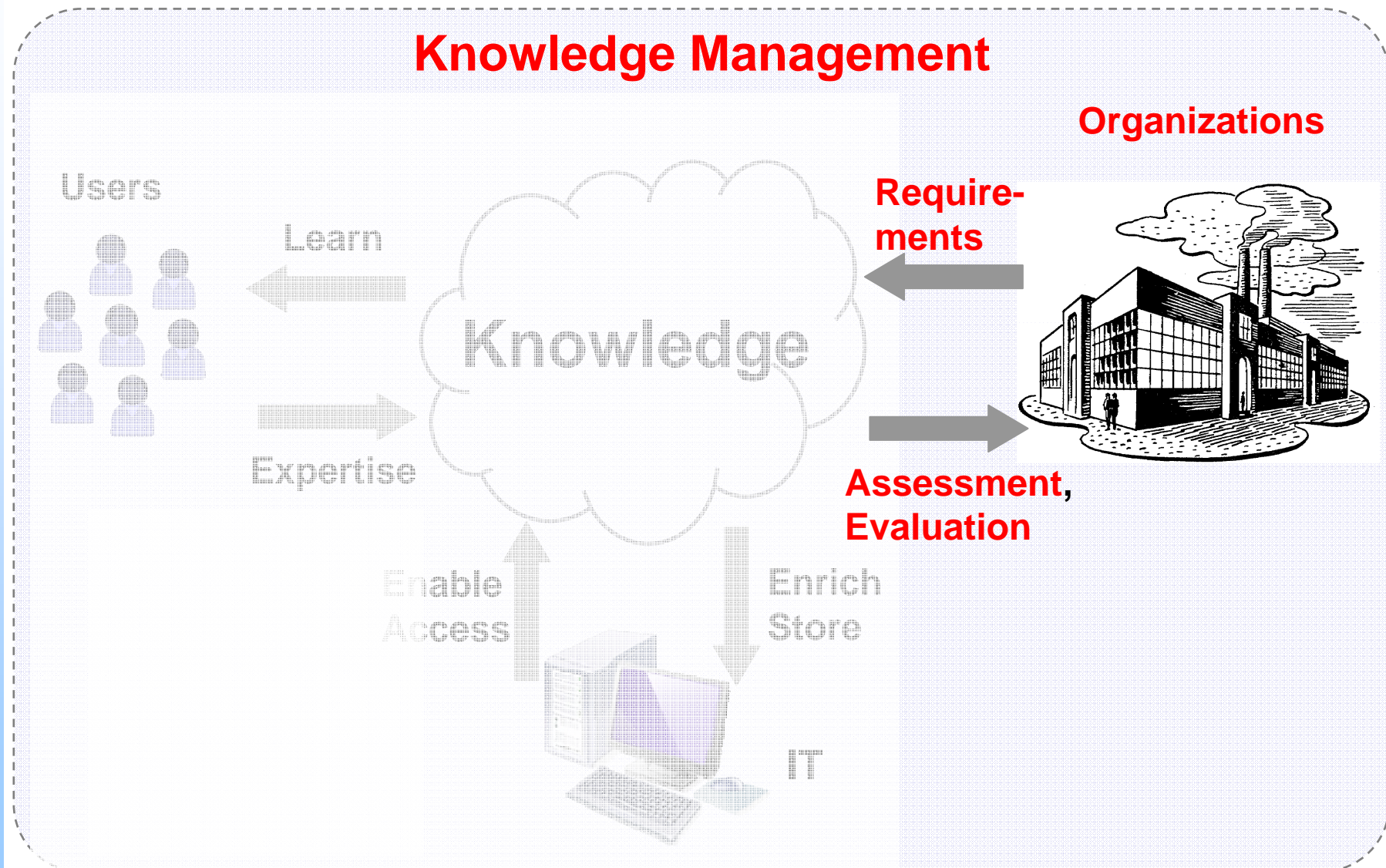
Argyris (1993)

Motivation: Classification of Incentives

Knowledge Management Basics

ORGANISATIONAL KNOWLEDGE MANAGEMENT

Knowledge Management: Positioning

Knowledge Management

Organizations

Users

Learn

Knowledge

Require-ments

Expertise

Assessment, Evaluation

Enable Access

Enrich Store

IT

Organization as Knowledge Carrier

The organization is

- An own knowledge subject (knowledge source and knowledge carrier)
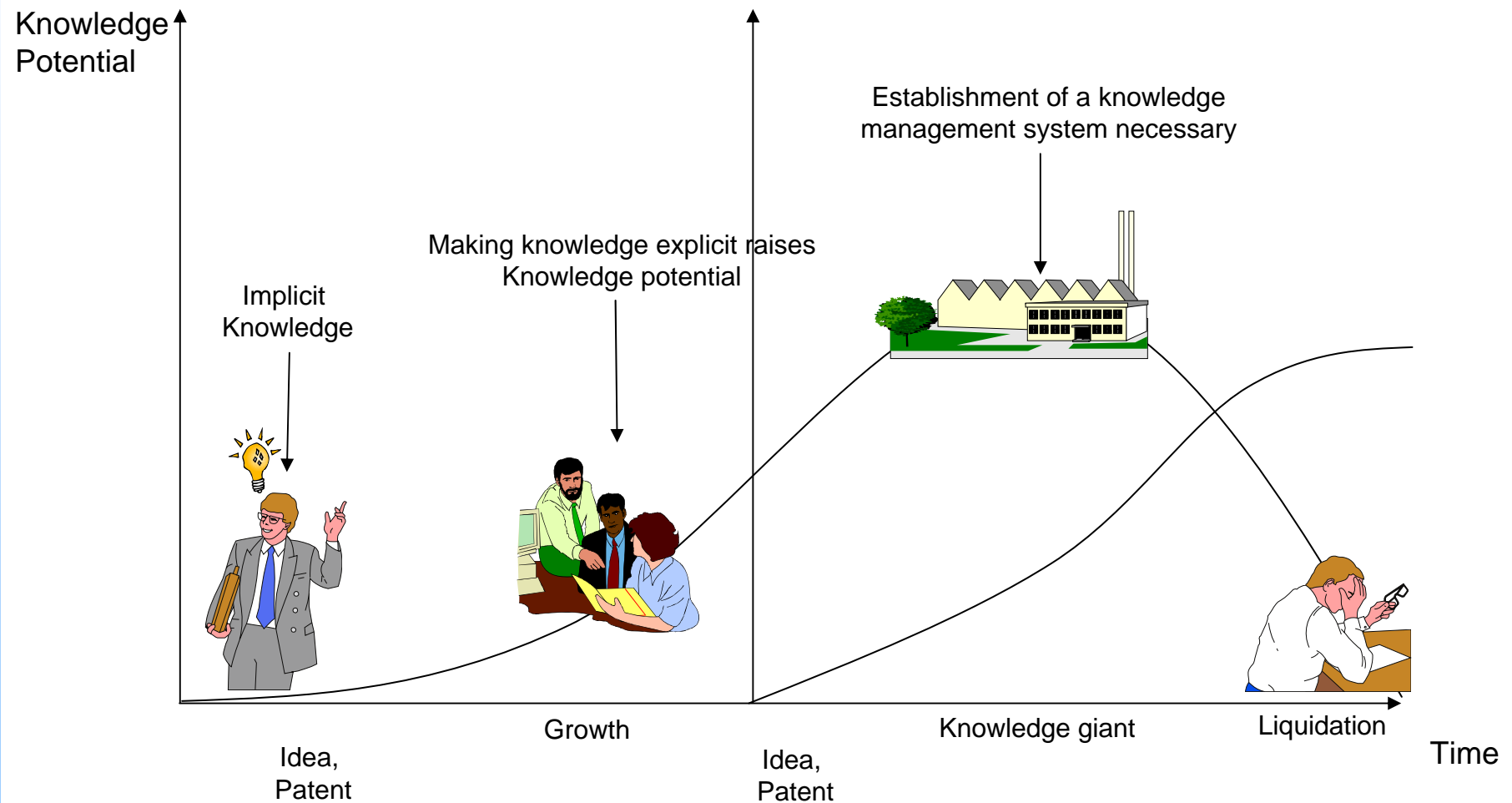- Is more than the sum of all participating persons (non-linear relationship)
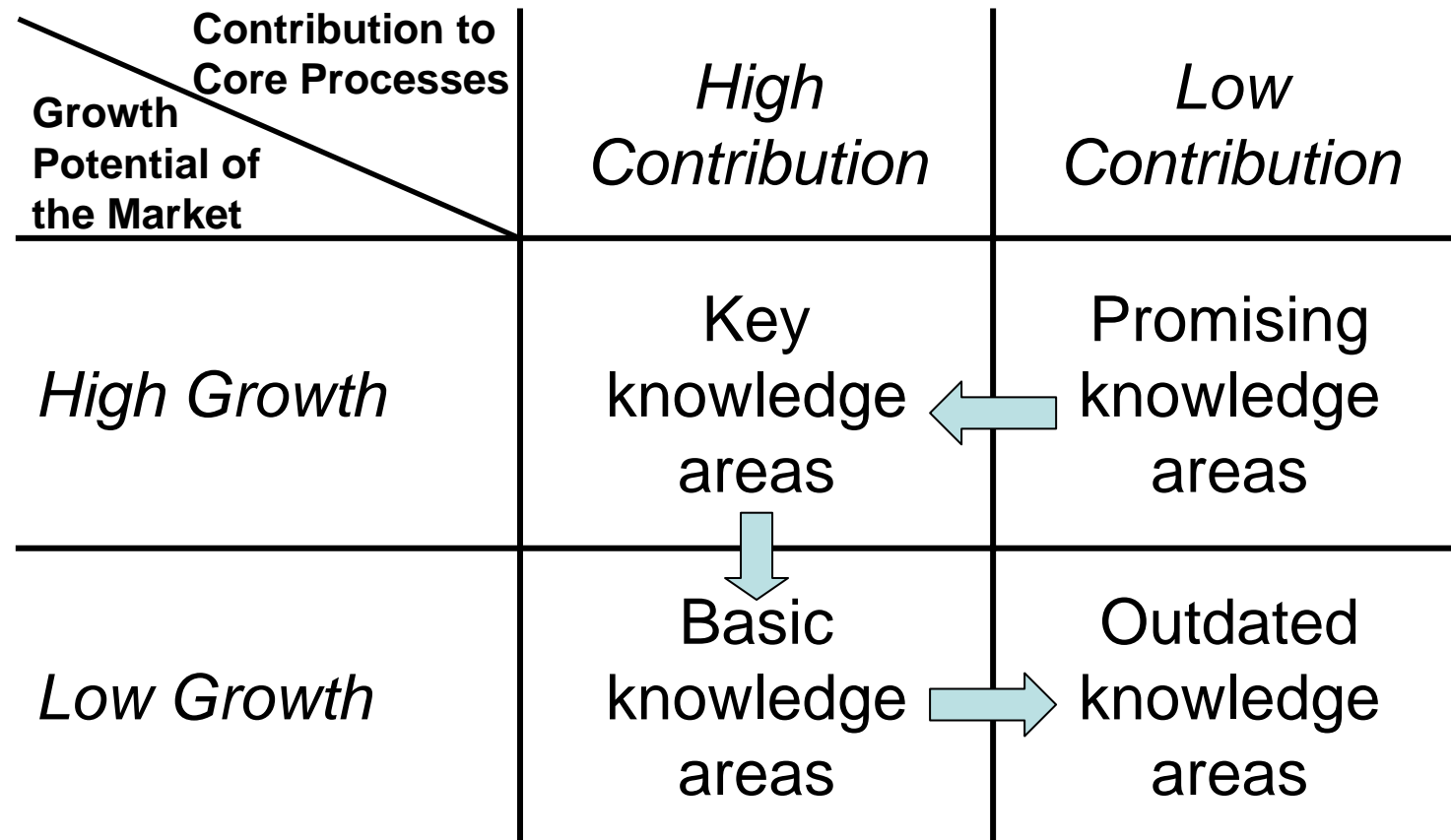

Factors for Knowledge Management:

- Coordination
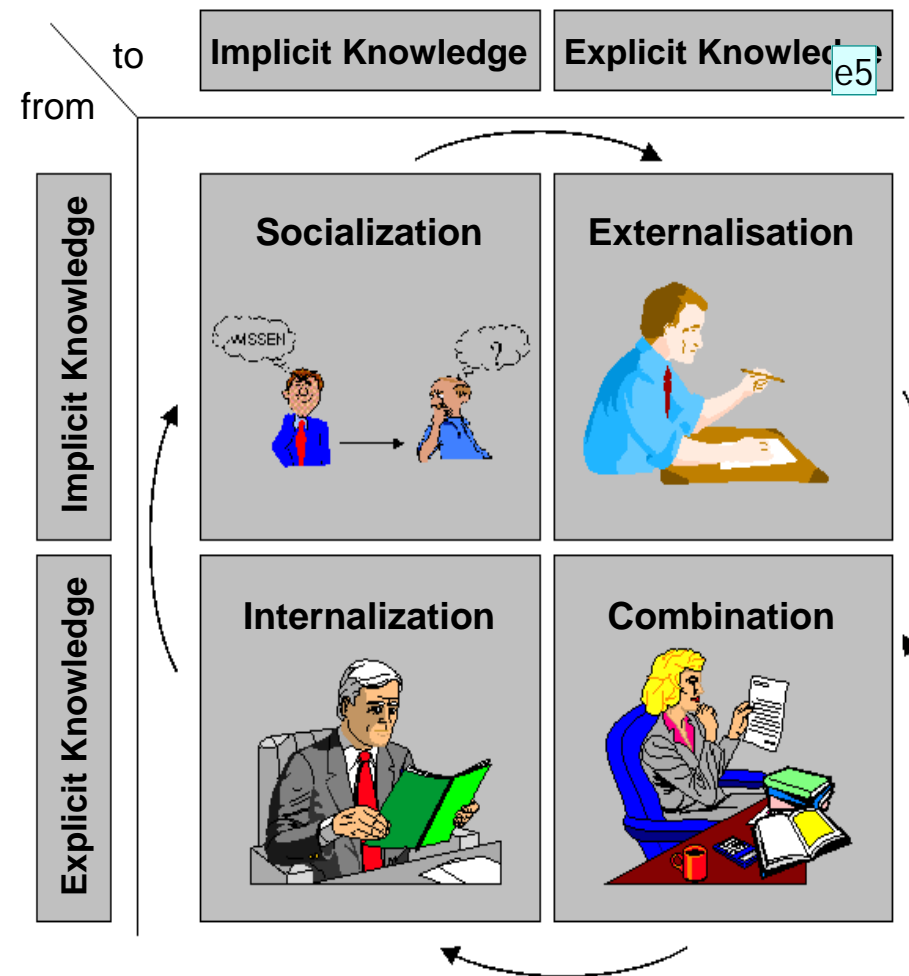- Cooperation
- Communication

within the organisation.

Knowledge Curve

Knowledge
Potential

Establishment of a knowledge
management system necessary

Making knowledge explicit raises
Knowledge potential

Implicit
Knowledge

Growth

Knowledge giant

Liquidation

Idea,
Patent

Idea,
Patent

Time

The Knowledge Life-Cycle within Organizations

Contribution to Core Processes / Growth Potential of the Market	*High Contribution*	*Low Contribution*
High Growth	Key knowledge areas	Promising knowledge areas
Low Growth	Basic knowledge areas	Outdated knowledge areas

Classification of Knowledge Flows

e5   Robert Woitsch … bitte um Originalfile
emiron, 31/07/2008

Classification of Knowledge Flows

Knowledge flows in organizations:

- ***Socialization*:** oral communication of individuals Example: giving instructions

- ***Externalisation:*** Transformation of implicit in explicit knowledge
  Example: writing a book

- ***Combination*:** Transformation of explicit in explicit knowledge
  Example: a book review

- ***Internalization*:** Transformation of explicit in implicit knowledge
  Example: Memorizing content

Application Example - Person:
„Distributed Project Team"

Knowledge Management Effects:

„Knowledge multiplication":
Organizational units should work together and not against each other. Communication barrier as organizational culture, terminology like technical conditions should be recognized and eliminated.
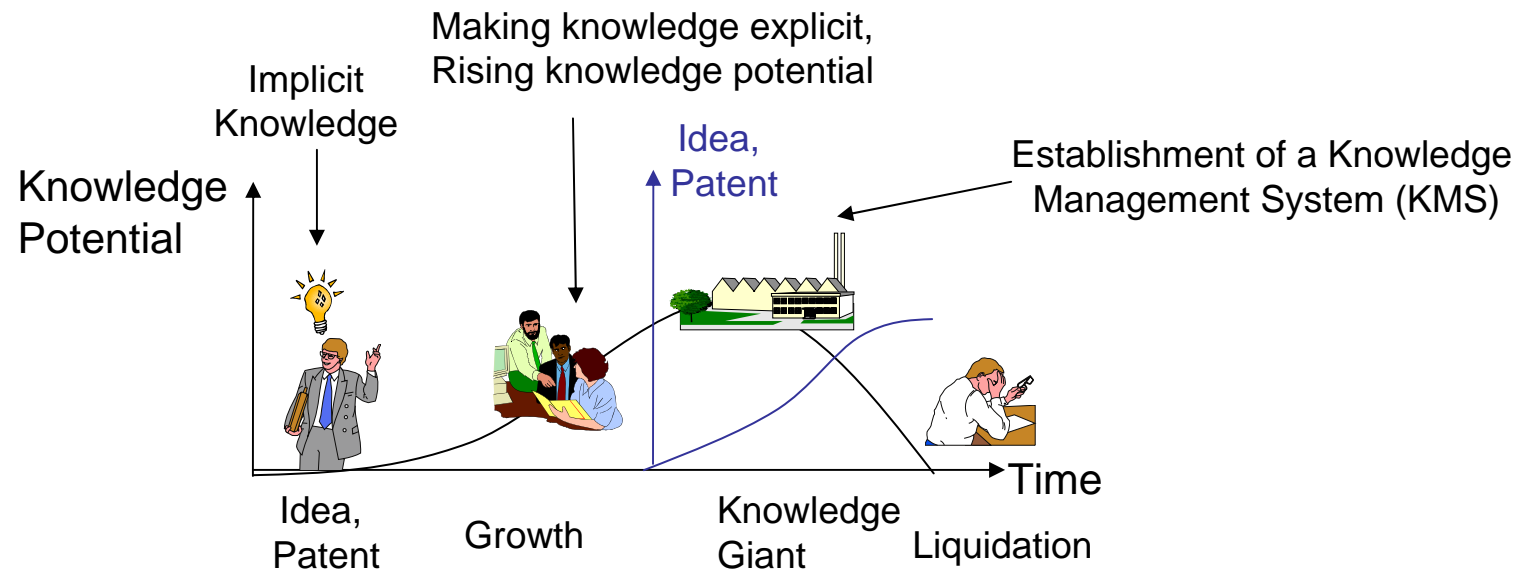Example: Competence center vs. distributed project teams
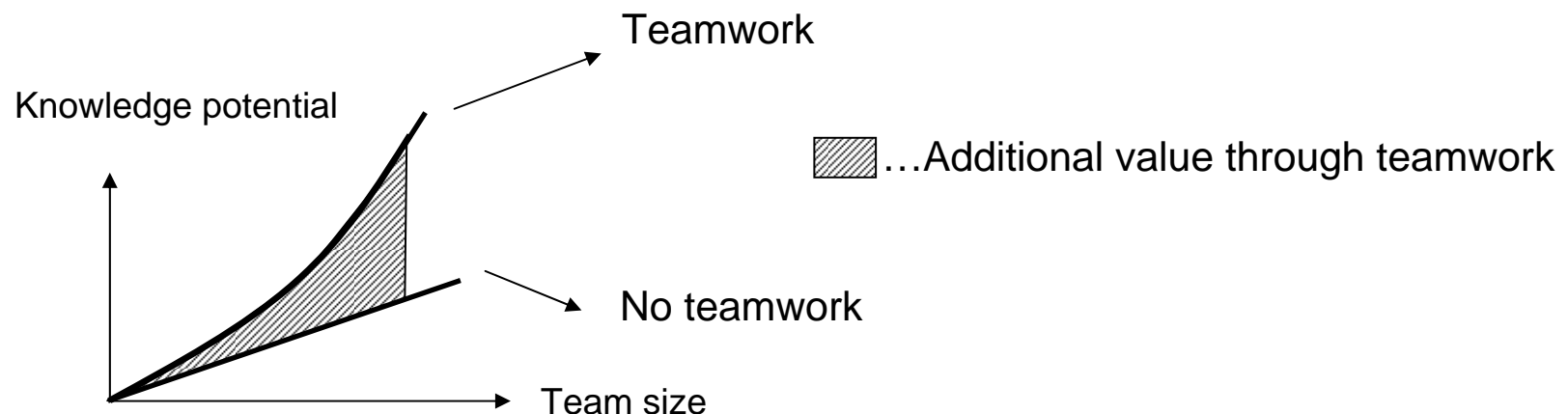
Application Example - Organization: Technology Foresight

Knowledge Management Effects:

„**Knowledge innovation**":
Innovation guarantee a quick product development, as well as process changes.
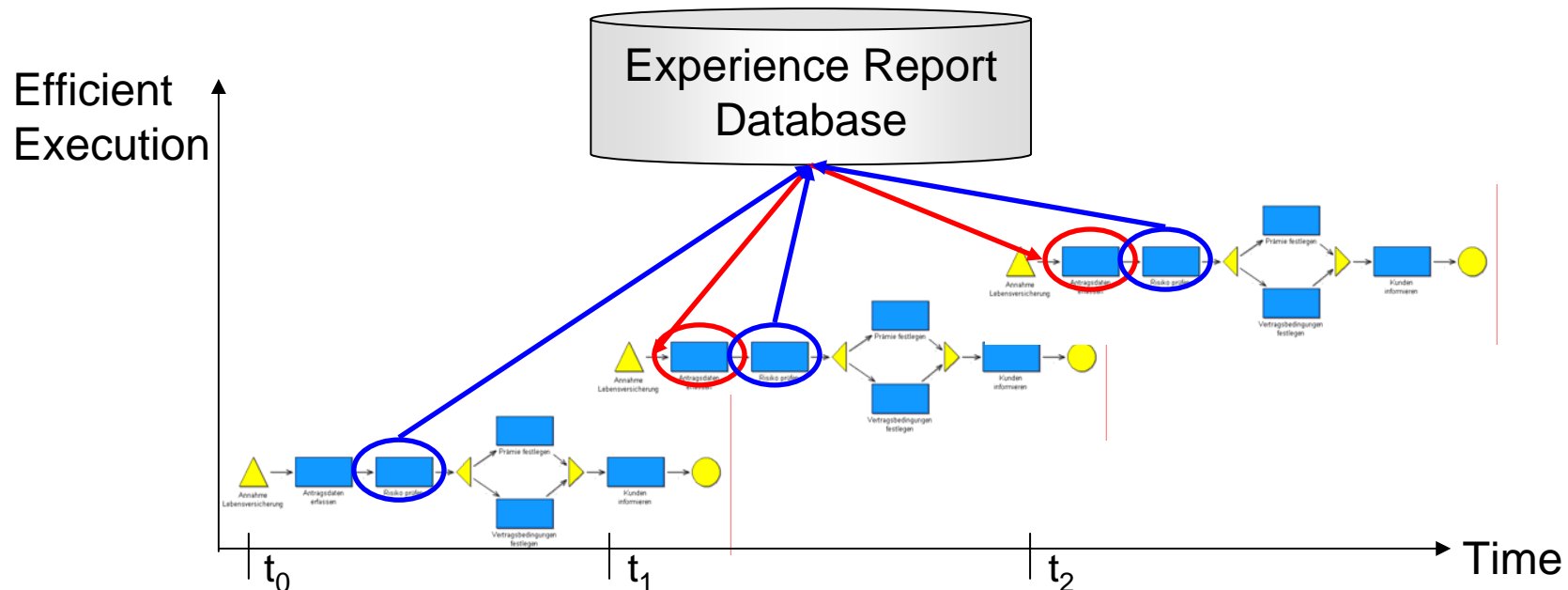*Example:* Technology foresight

Knowledge Management Effects:

„Use the knowledge resources efficiently"

Already acquired knowledge needs to be made available in all
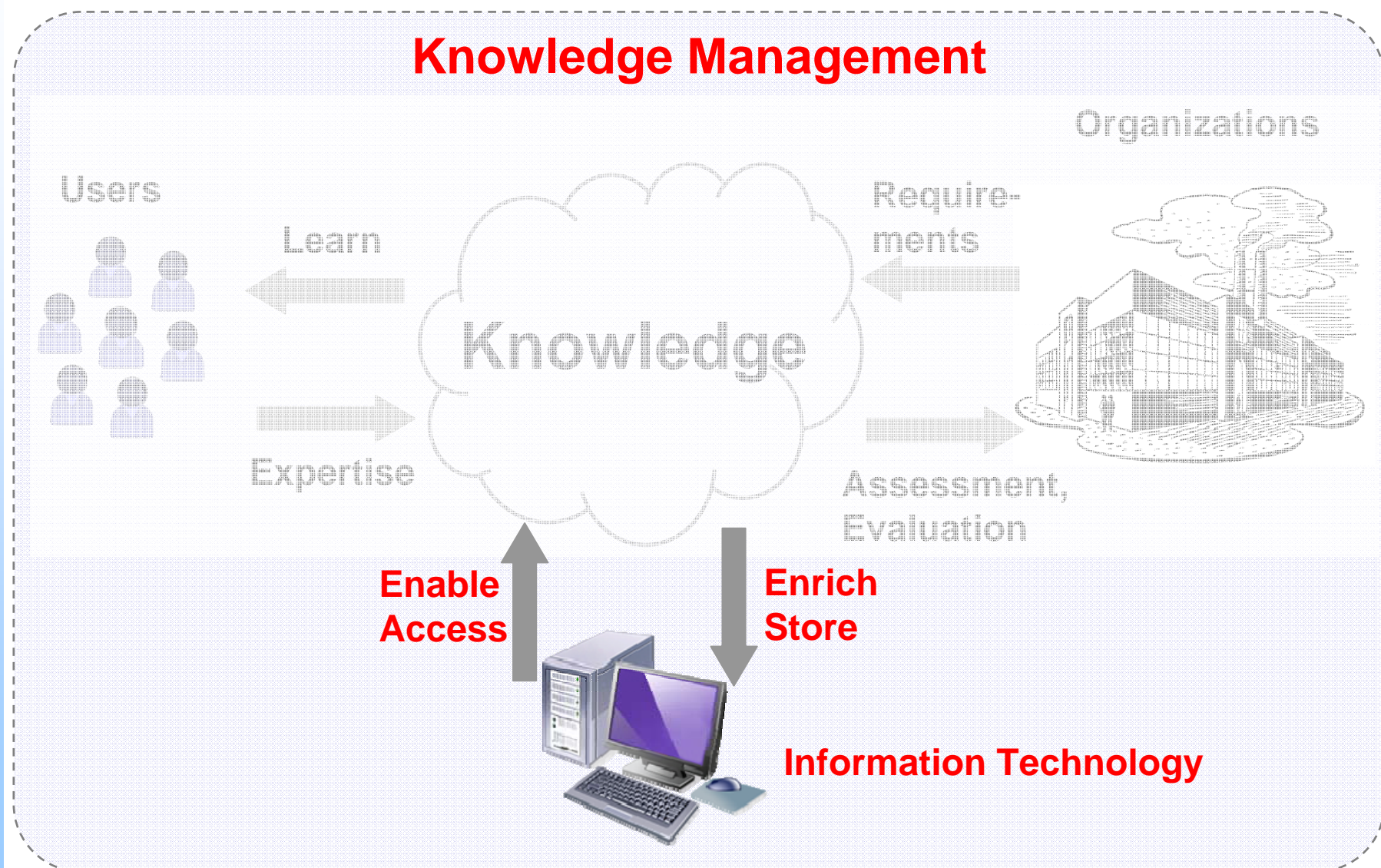departments of an organization.
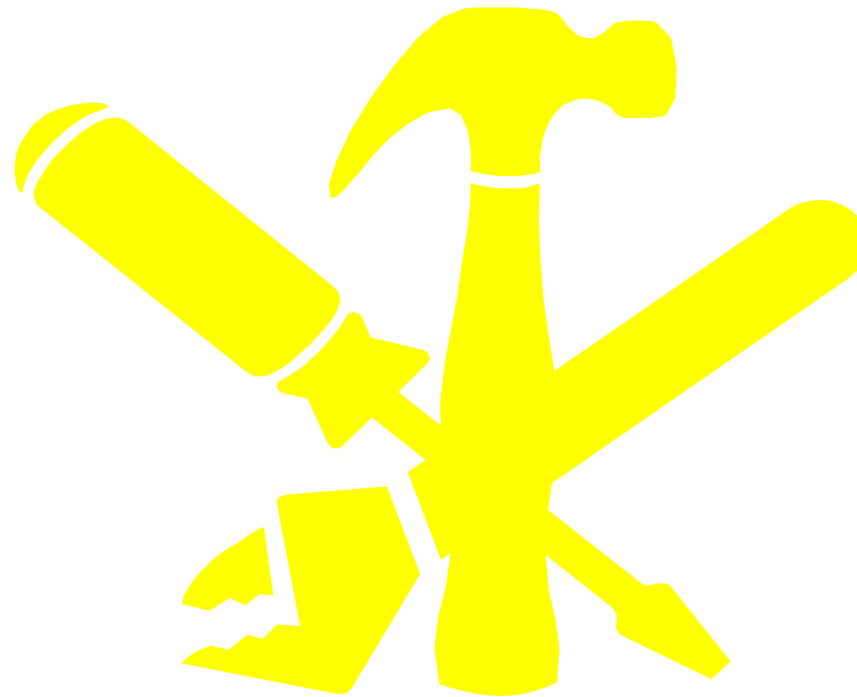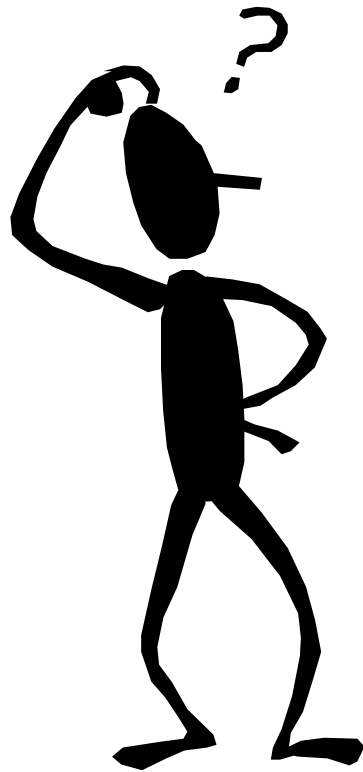*Example*: Process-oriented database with experience reports

Knowledge Management Basics

KNOWLEDGE MANAGEMENT IT AS ENABLER
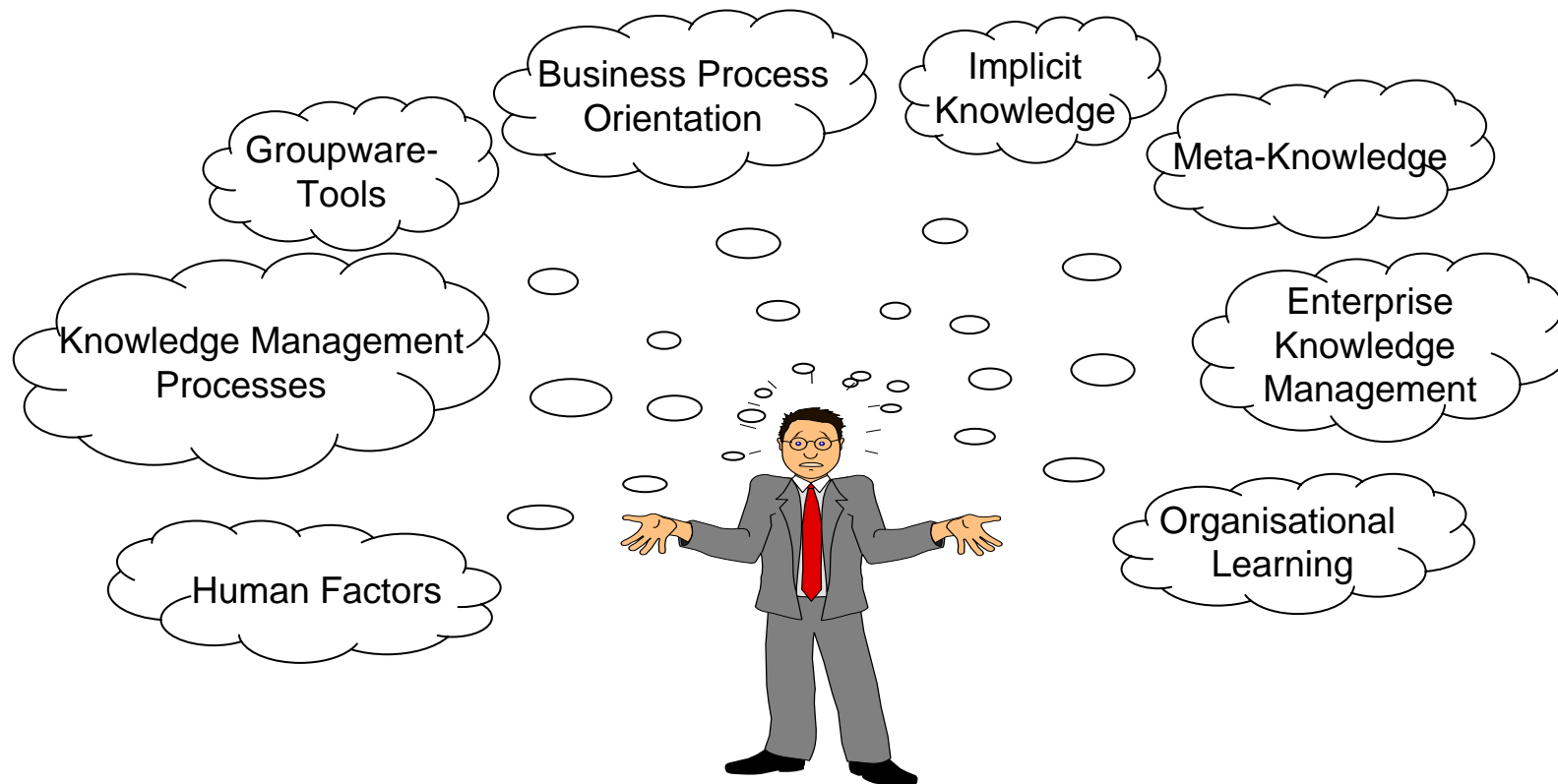
Knowledge Management: Positioning

Information Technology as Enabler

Here is a hammer, where is the problem ?

IT as Enabler: Dimensions

Successful Knowledge Management requires the integration of different dimensions….which support is to be expected for this from *Information Technology*?

IT as Enabler: Functionalities (1)

Main Categories*:

- Process Management Tools**
- Search Engines
- Workflow Management Systems
- Document Management Systems
- Data Warehouse
- Content Management Systems
- Groupware

* Taxonomy and description according to the Fraunhofer-Institute for Industrial Engineering IAO, Market Study: Knowledge-based Information Systems, 2nd Edition 2000, pg. 23 ff.
** not explicitly mentioned in the study

Process-Oriented Knowledge Management

e6   Originalgrafik von Robert Woitsch....

emiron, 31/07/2008
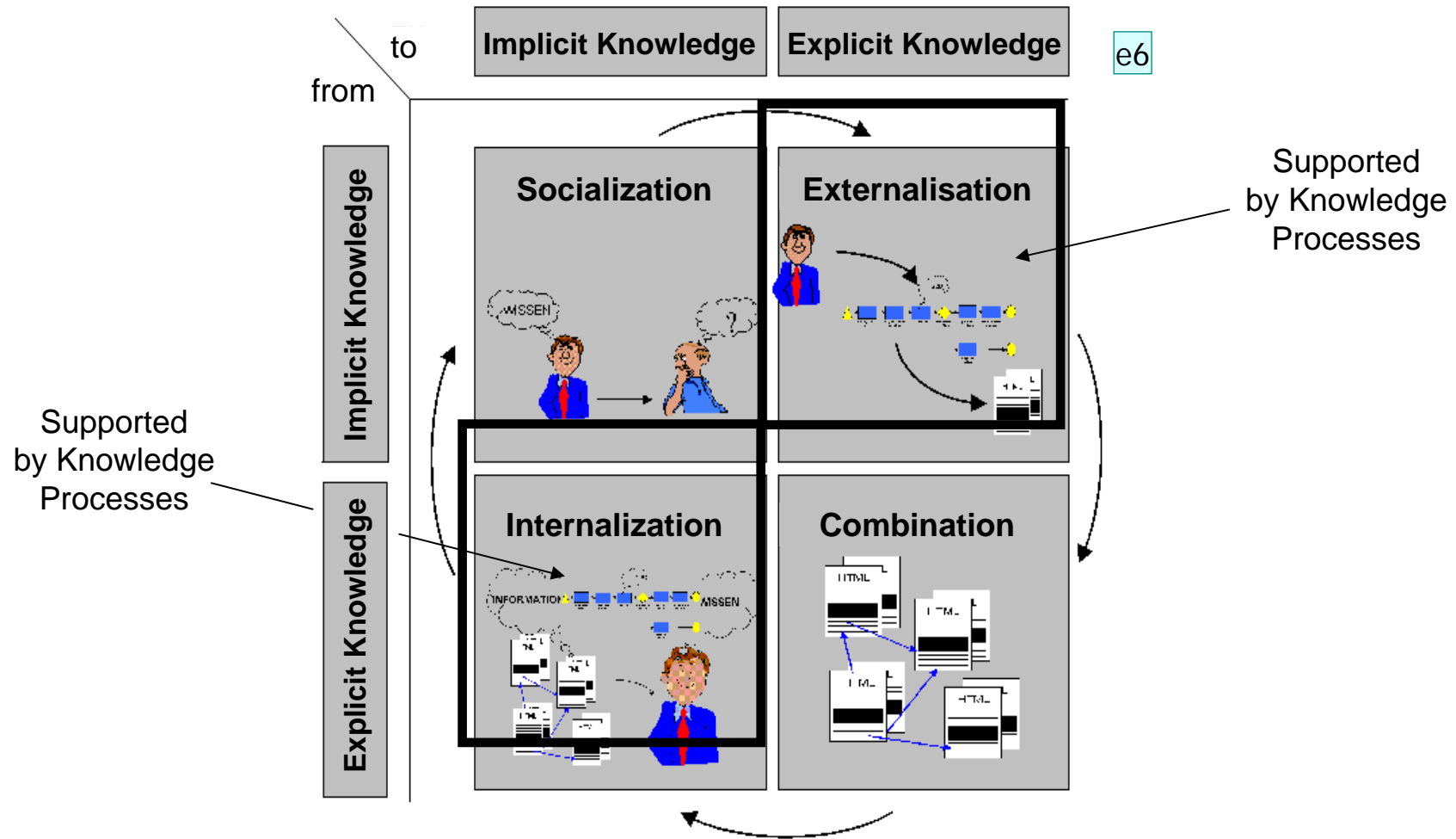
Process-Oriented Knowledge Management
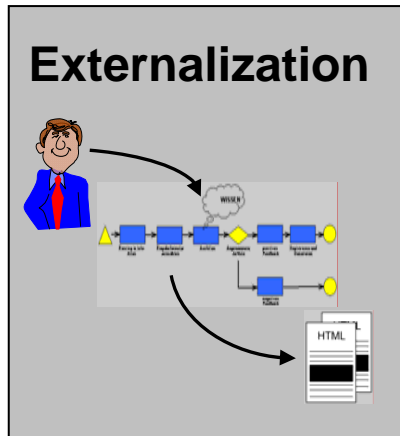
Externalization

- *Assumption*: Knowledge processes can be modelled

- Knowledge flows can be represented in knowledge processes
- Knowledge processes support the tasks "Internalization" and "Externalization"
- Knowledge Management
  – Modelling of knowledge processes
  – Embedding in the context of business processes

IT as Enabler: Market Screening

Market screening of software tools for Knowledge
Management within the EU-project PROMOTE

– http://www.boc-eu.com/promote   e7

– Standardised product description (name, version,
weblink, company-profile, product description,
categorisation)

e7   Alternative Adresse?
               emiron, 04/08/2008

IT as Enabler: Functionalities (2)

Detailed view of categories:

- ***Search Engines*:**
  Keyword- or full-text search
  - Ranking according to relevancy
  - Agent search
  - Search for different file formats with format filter and gateways

- ***Workflow Management Systems*:**
  - formalised processes
 - „ad hoc"-workflows for badly structured processes
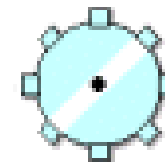
- ## *Document Management Systems* :
  - Functionalities on the allocation of access rights, versioning, controlled access for document stocks
  - Common: additional extension by workflow- and groupware components
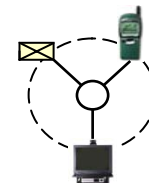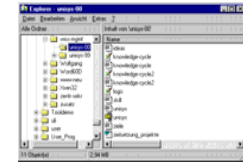
- ## *Data Warehouse*:
  - Transmission of heterogeneous data in a central data warehouse and revelation of unknown connections with Data Mining components
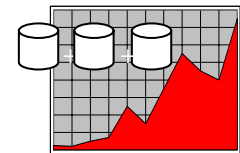
IT as Enabler: Functionalities (4)

- **Content Management Systems:**
  - mainly internet-based systems supporting the collection and exchange of information, the preparation of information (Knowledge Map) for the different user profiles

- **Groupware:**
  - support of collaborative work by hard- and software components
  - Examples: e-mail, video conferencing, special data bases, group editors, distributed planning systems, bulletin board etc.

IT as Enabler:
Frequency distribution of functionalities
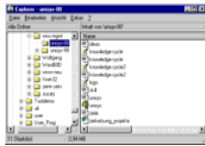
Content Management Systems

Search Engines

Document Management Systems
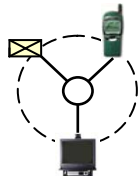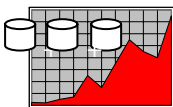
Groupware-Systems

Workflow-Systems

Data Warehouses

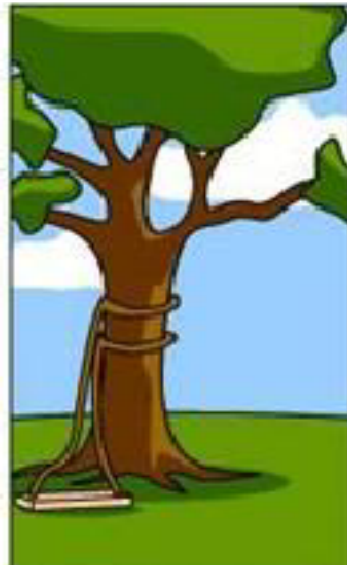How the customer explained it

How the project leader understood it

How the analyst designed it

How the consultant described it

How the programmer wrote it

What the customer really needed

„Communication" means saying and hearing have the same message

KNOWLEDGE MANAGEMENT

KNOWLEDGE MANAGEMENT
Knowledge Management Approaches

Knowledge Management Challenges

1. Amplitude of the topic. New perspective on all company processes.

2. Consequent implementation (30%) contradicts the importance (80%).

3. Knowledge Management is not a „Out-of-the-Box" solution.

4. Knowledge Management Systems (KMS) are to „IT-oriented".

5. Knowledge Management can generate a „knowledge flow".

6. Knowledge Management barriers are being ignored.
   „That which must not, can not be".

7. Knowledge is power. Knowledge sharing is power loss or power gain.

8. Knowledge management is a technique, but not necessarily a result.

9. The factor ‚time' is being underestimated. Quick-wins are seldom realisable.

10. Monetary evaluation of knowledge ist almost impossible.

11. Successful knowledge management requires the implication of the top
12. management and money.
13. Erfolgreiches Wissensmanagement verlangt Topmanagementeinsatz und Geld.

(c.f. Schneider)

Introduction to Knowledge Management (1)

- Knowledge Management can be understood as a pragmatical further developlment of the ideas of the organisational learning.

- Knowledge Management focuses on the improvement of organisational skills on all levels of the organisation through an improved dealing with the ressource „knowledge".

- Knowledge Management deals with that part of learning processes, which can be formed.

Introduction to Knowledge Management (2)

- Knowledge Management tries to give company's management starting points for targeted interventions in the organisational knowledge pool and develops for this aim concepts and methods.

→ The organisational memory includes all knowledge components, of which a company disposes for the solution of ist different tasks. (individual vs. collective knowledge components, e.g. skills, experience, routines, standards). Knowledge Management has to take into account the complete data- and information environment of an enterprise.

Introduction to Knowledge Management (3)

Basic problems of Knowledge Management:

- The notional separation of data, information and knowledge has contributed to the fact that most enterprises do not have an integrated understanding for the management of the own knowledge pool.

- Clearly defined management roles or organisational structures for the better management of the ressource „knowledge" as well as of a common „knowledge language" are missing in almost all enterprises.

- Theoretical concepts of knowledge management are lacking at the same time the empirical basis for validating their statements.

Introduction to
Knowledge Management (4)

The following requirements are considered as necessary:

- *Integration*: The creation of a common language and the subsumption of Knowledge Management ideas in already existing concepts as Total Quality Management or Business Process Reengineering.

- *Problem-orientation:* Knowledge Management has to provide its contribution for solving concrete problems and must not remain on the meta-level („Learning is important – learning is good"). The usability of ideas in practical work is the final test.

Introduction to
Knowledge Management (5)

- *Understandability*: Select relevant terms and ideas in the field of Knowledge Management, which are understandable within organisations.

- *Action-orientation:* Analysis within the field of Knowledge Management must empower the management, to assess the application of management instruments in their organisational knowledge base and help to lead to decisions and actions.

Introduction to
Knowledge Management (6)

- *Provision of instruments:* The target of a knowledge management concept has to be, at a final point, the provision of a certain arsenal of perfected and stable methods and instruments.

Introduction to
Knowledge Management (8)

Knowledge Target/Objectives → (Feedback) ← Knowledge Evaluation

Knowledge Transparency

Knowledge Usage/Utilisation

Knowledge Acquistion

Knowledge Preservation

Knowledge Development → Knowledge Distribution

E2
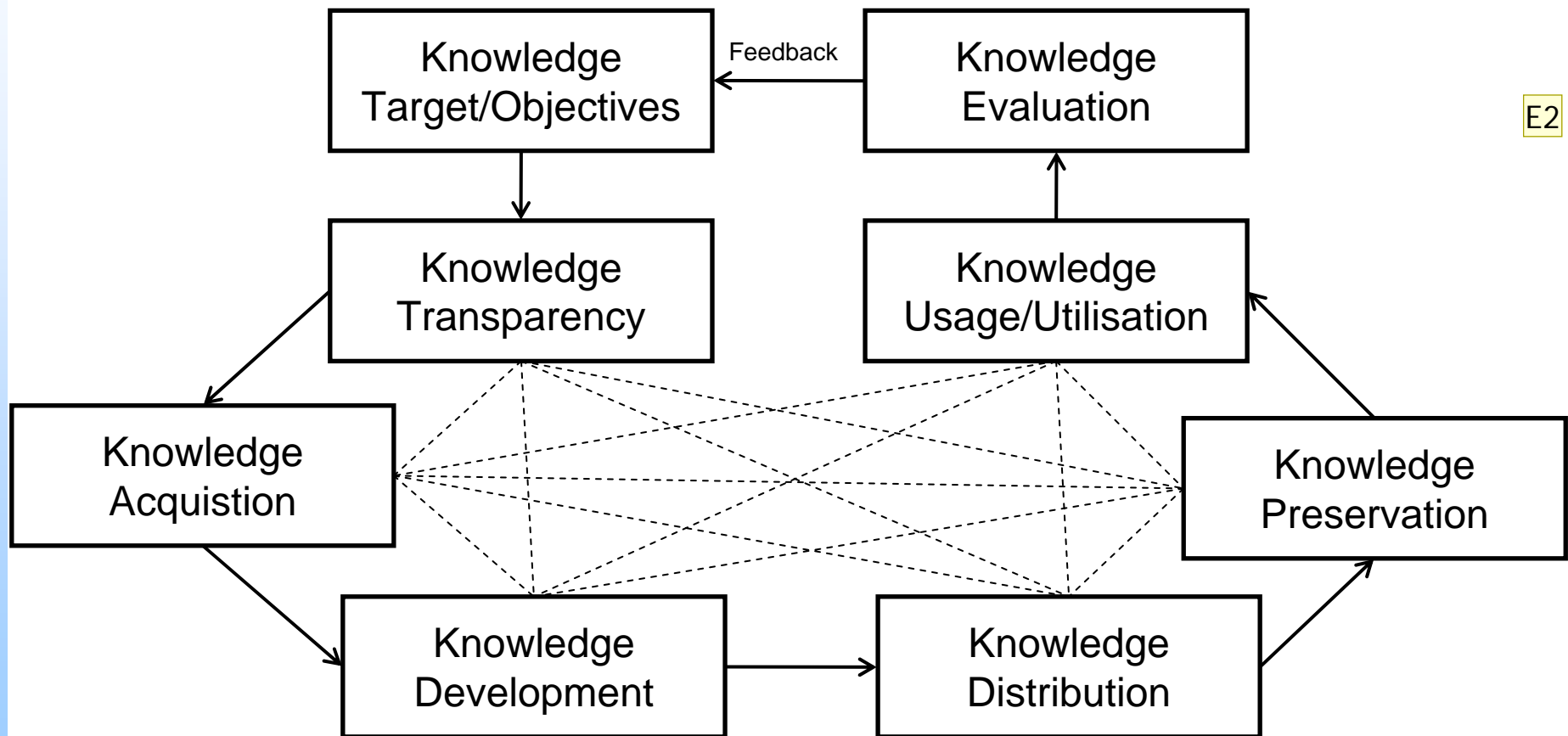
E2   graphic to be drawn
               Elena-Teodora, 24/04/2007

The components' order follows two principles.

An *external cycle* with the elements

- Objective
- Implementation
- Measurement

represents the traditional management process.

Introduction to
Knowledge Management (10)

Tasks of the *external cycle*:

- Makes the importance of strategic aspects of Knowledge Management clear

- Clarifies the importance of explicit and concrete objectives

- Considers the necessity to exhaust the possibilities of measurement in the field of Knowledge Management; this would help to comply to the idea of a target-oriented steering

Components of the *internal cycle*:

- Knowledge transparency
- Knowledge acquisition
- Knowledge development
- Knowledge distribution
- Knowledge preservation
- Knowledge utilisation

Knowledge problems often arise because organisations do tend to neglect one or more of these componentes, disturbing the knowledge cycle.

2 Examples:

- If there is no transparency about the internal reports of the market research -> this knowledge cannot be used within the development process.

- If no documentation of single steps of a problem solving process is realised, they possibly fail to be retained in the organisational memory making the repetition of a successful process impossible.

Introduction to
Knowlege Management (13)

Defining components of Knowledge Management provides some *advantages*:

- structures the management process in „logical phases"

- offers approaches for „interventions"

- provides a well-tried searching grid for the search of reasons within „knowledge problems"

Knowledge targets/objectives

Knowledge targets direct the activities of the Knowledge
Management. They determine on which level skills need
to be built up.

The following distinction is made:

- Normative knowledge targets
- Strategic knowledge targets
- Operational knowledge targets

Introduction to
Knowledge Management (15)

- Normative knowledge targets aim to create an „knowledge-aware" company culture, where sharing and further development of the personal skills create the prerequisites for an effective Knowledge Management.

- Strategic knowledge targets define organisational „core knowledge" and describe the future competence demand of the company. They define the competence portfolio to be striven for in the future. They oriented themselves at the long-termn construction of competences within the organisation.

Introduction to
Knowledge Management (16)

- *Operational knowledge targets ensure the implementation of Knowledge Management and secure the necessary concretisation of normative and strategic knowledge targets.*

Examples:
- Availability of all internal created documents of the organisation within the Intranet
- Definition of a fixed english level for the employees
- Documentation of all processes

Knowledge identification

Important: Analyse already available internal or external available knowledge.

Problem: Most big companies have nowadays the problem to keep the overview on internal and external data, information and skills. This lack of transparency leads to inefficiencies, „uniformed" decisions and double lines. An effective Knowledge Management must create a sufficient amount of internal and external transparency and support each employee in his searching activities.

Introduction to
Knowledge Management (18)

One possibility to create internal knowledge transparency is in creating Knowledge Maps, which support a systematic accsess to the organisational memory.
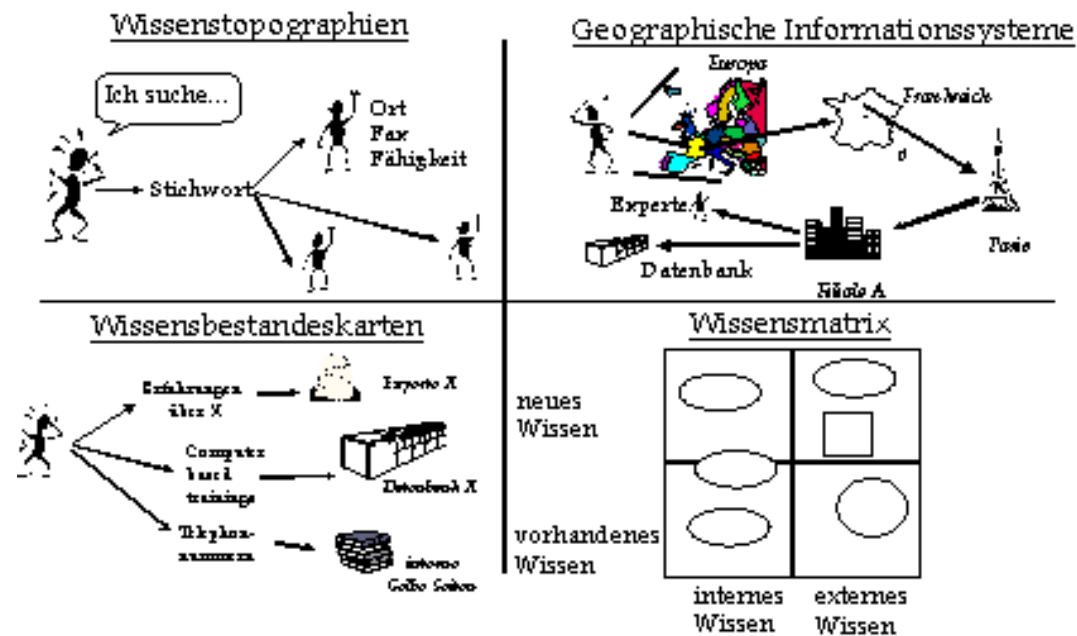
Knowledge acquisition

Variation A:

The acquisition of knowledge of other companies is often
used to build up future competencies, who's realisation
would not be possible from own ressources (e.g. by
takeovers of particularly innovative companies in the own
competence field or the concious entering of product links
for closing knowledge gaps)

Bsp.: Vodafone - Mannesmann takeover offer

Variation B:

The acquisiton of stakeholder knowledge is often a very
convenient way to get to central ideas and improvement
proposals. (Stakeholder of an organisation = those groups
in the environment of an organisation, who have special
interest and claims on the company activity).

Example.: Inclusion of key custormers in the development
process, e.g. supply industry for the automotive industry

Introduction to
Knowledge Management (21)

Variation C:

The acquisition of knolwedge of external knowledge carrieres
(e.g. recruiting of specialists) can be realised by classical
recruiting strategies or by involvement of external
consultants like headhunters etc.

Variation D:

*Acquisition of knowledge products like software, patents or
CD-Roms.*

→ The organisation does no automatically gain
organisational skills through purchase. It's potential is
realised only through human action and meaningfull
integration in an existing knowlege basis.

Knowlege development

Many management researchers concentrate themselves
when researching Knowledge Management on the
processses of Knowledge Development.

The production is in the center of
- New skills
- New products
- Better ideas
- High-performant processes

Introduction to
Knowledge Management (24)

Knowledge development covers all management efforts, by
which the organisation aims to create currently not
existing skills either within the company or otherway of
skills not existing internally or externally.

Knowledge development can be conceptionalised on an
- individual and on a
- collective layer.

Introduction to Knowledge Management (25)

Processes of individuell Knowledge Development are based on creativity and systematic problem solving abilities. By creating
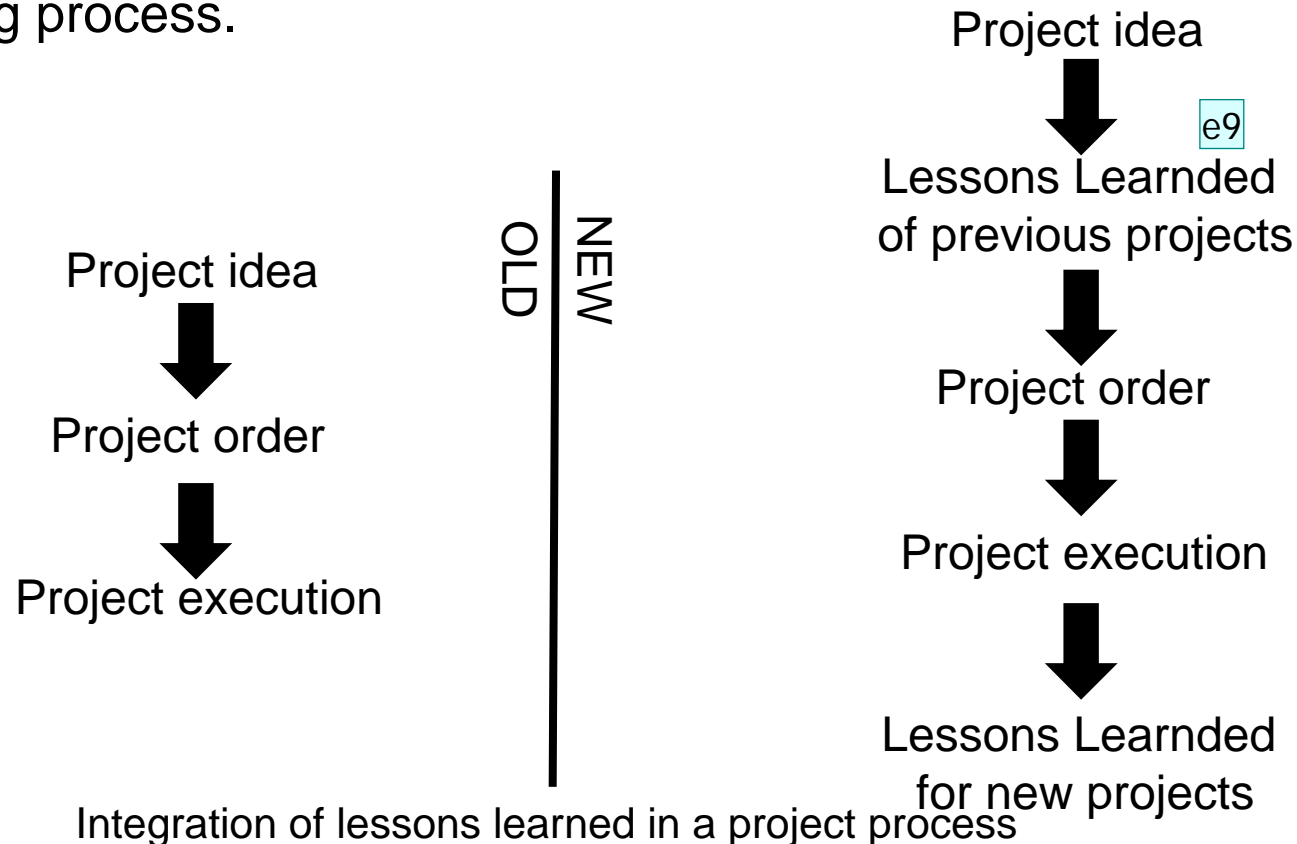
- internal think tanks
- of learning arenas
- of a lessons learned-database
- internal competence centers and product clinics

this process can be supported.

Exp.: Lessons learned

Lessons learned represent the essence of experiences, which have
been made in a position and are the result of a collective
learning process.

Project idea

→

e9

Lessons Learnded
of previous projects

→

Project idea

→

Project order

Project order

→

→

Project execution

Project execution

→

OLD | NEW

Lessons Learnded
for new projects

Integration of lessons learned in a project process

e9   Originalgrafik??
       emiron, 04/08/2008

Knowledge distribution

The distribution of experiences within an organization is the prerequisite to make isolated informations or experiences usable within the whole organization.

Central question: Who should know what in which amount and how can the processes of knowledge distribution be eased?

Relevant technologies apply especially
- „Groupware",
- Modern forms of interactive Management Information System (MIS)
- All instruments of „Computer Supported Cooperative Work"

Knowledge use

Knowledge use = productive employment of organisational
knowledge for the advantage of the company is the ultimate
goal of Knowledge Management

Problem: A successful identification and distribution of central
knowledge parts does not ensure the use in operational
activities.

Consequencies of the non-utilisation of Knowledge Systems:
e.g. „Death spiral" of a knowledge base
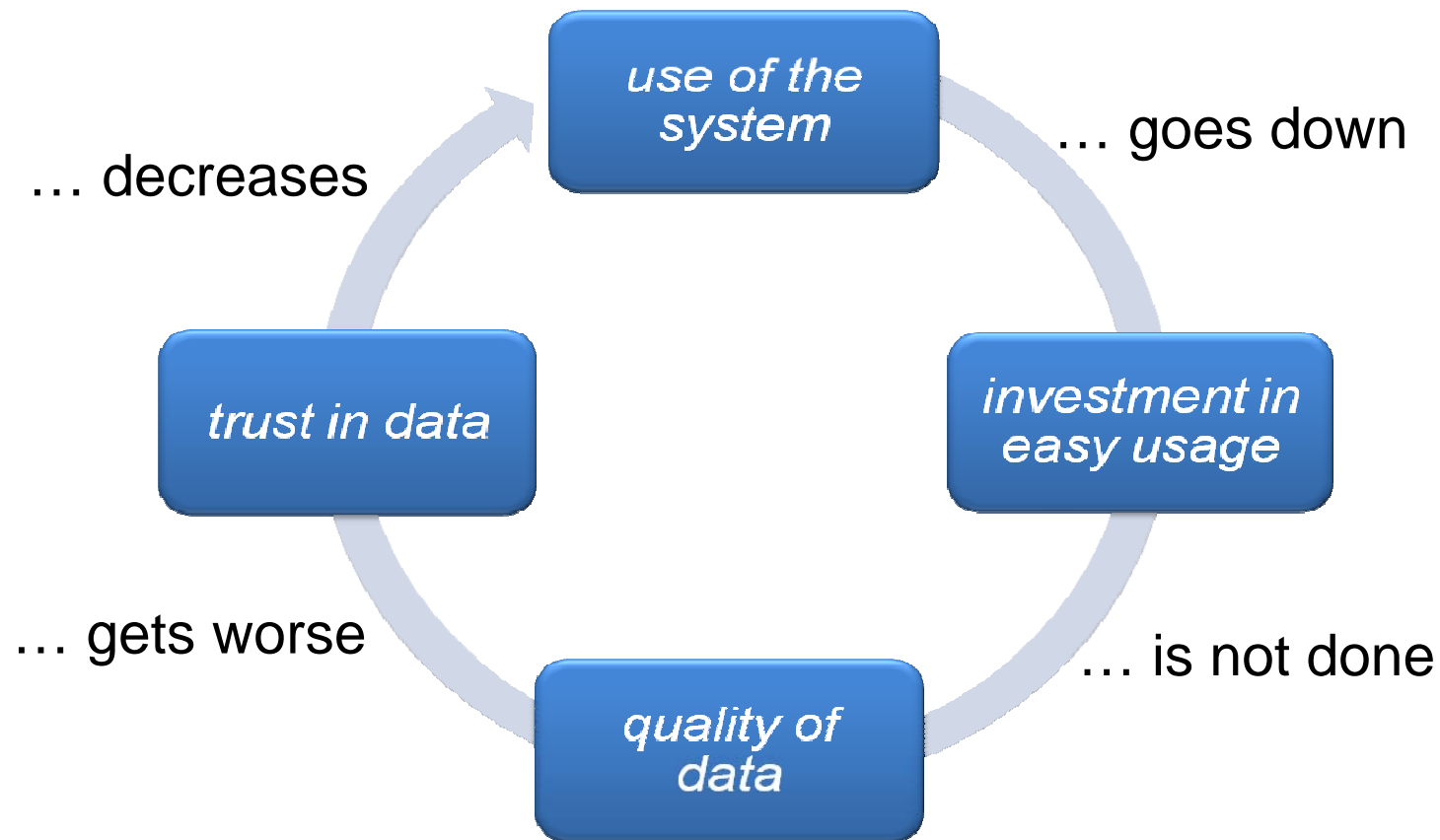
Introduction to
Knowledge Management (31)

Forms of „organisational knowledge loss:

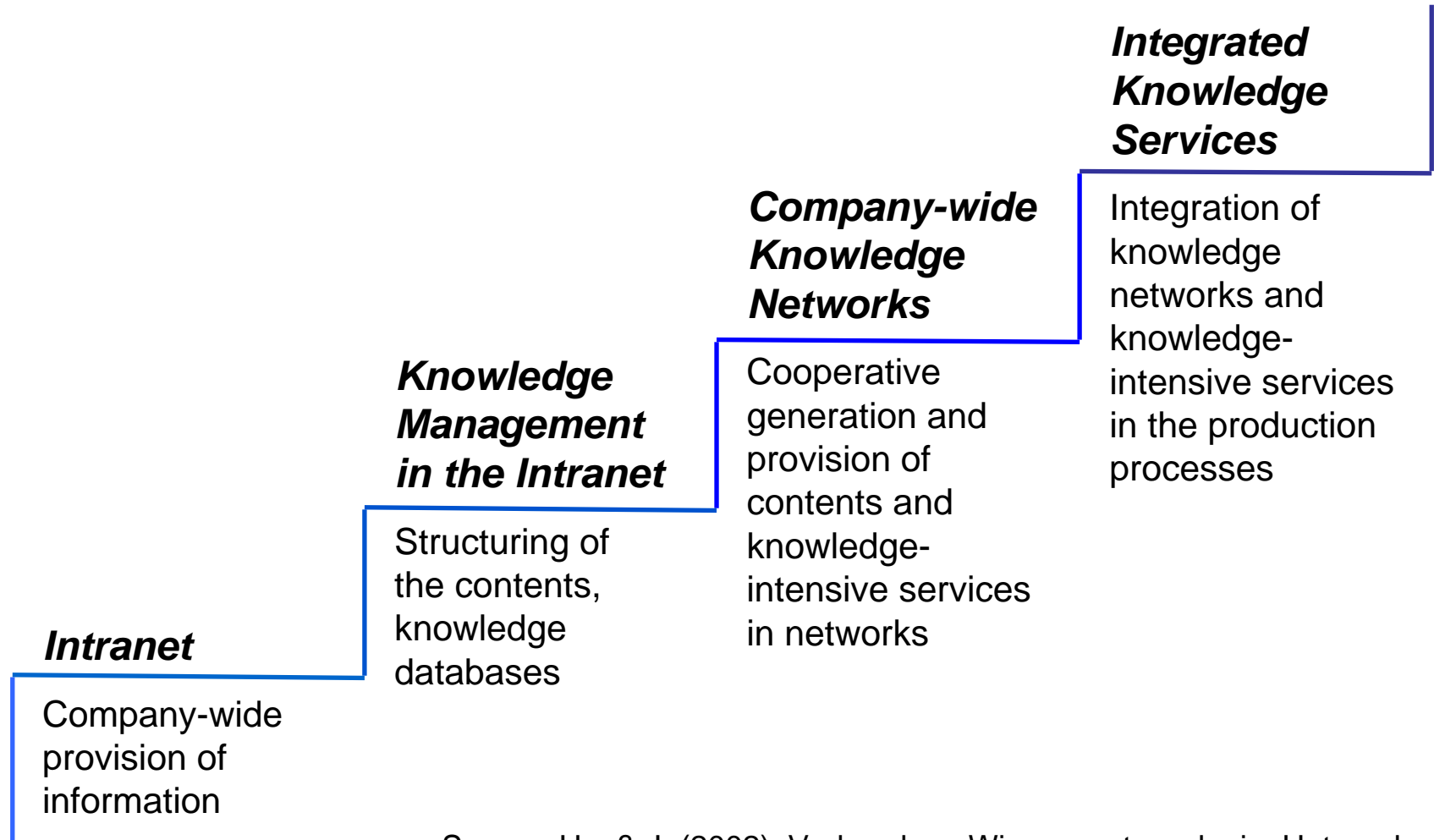| mode \ type	individual	collective	electronic
memory has been deleted	• termination • death • amnesia • early retirement	• dissolving of adjusted teams • reengineering • outsourcing of compentencies	• irreversible data loss through: • viruses • hardware mistakes • system crashes • insufficient back-up • hackers
access not possible — limited	• overload/limited • transfers • illness/vacation • inadequate training • service according to regulations	• making taboo of routines • collective sabotage	• reversible data loss • overload/limited • interface problems
access not possible — permanent	• overload/permanent • no awareness of the importance of own knowledge • inner termination	• sale of company divisions • migration of teams • cover-up	• permanent incompatibility of systems • overload/permanent • wrong codification

DKE

Introduction to Knowledge Management (32)

Evaluation methods for Knowledge Management:

|	Knowledge Goals	Evaluation Methods
normativ	• Create prerequisites for knowledge-oriented goals strategiv and operative area • Target "knowledge-aware" organisation cultures • Need commitment of management	• Cultural analysis • Observation of top mamnagement behaivour • Credibilityanalysis (Gap analysis Ideal vs. As-Is)
strategic	• Determination of organisational core knowledge • Definition of SHOULD-BE competence portfolio • Control the competence creation	• Knowledge balance incl. "competence" accounting (gains, losses) • Analysis of competence portfolio • Controlling of important knowledge projects
operational	• Translation of normativ and strategic knowledge goals into operation • Assure appropriate intervention on different levels of intervention	• Training controlling based on well-defined learning goals • Evaluation of system usage (e.g. Intranet) • Definition of individual skill profiles

KNOWLEDGE MANAGEMENT
Knowledge Maturity

Maturity Levels of Knowledge Management (1)

Intranet

Company-wide provision of information

Knowledge Management in the Intranet

Structuring of the contents, knowledge databases

Company-wide Knowledge Networks

Cooperative generation and provision of contents and knowledge-intensive services in networks

Integrated Knowledge Services

Integration of knowledge networks and knowledge-intensive services in the production processes

Source: Hauß, I. (2002). Vorhandene Wissensnetzwerke im Unternehmen richtig nutzen. In: Wissensmanagement 2/2002
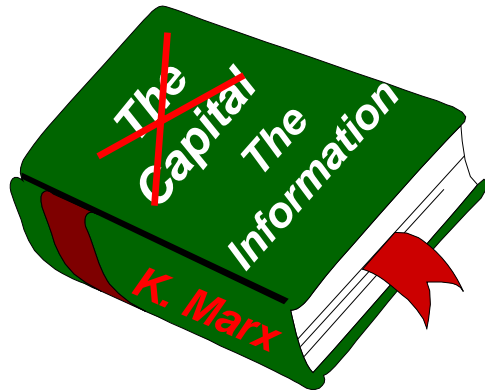
Maturity Levels of Knowledge Management (2)

1. initial
2. repeatable
3. defined
4. managed
5. optimizing
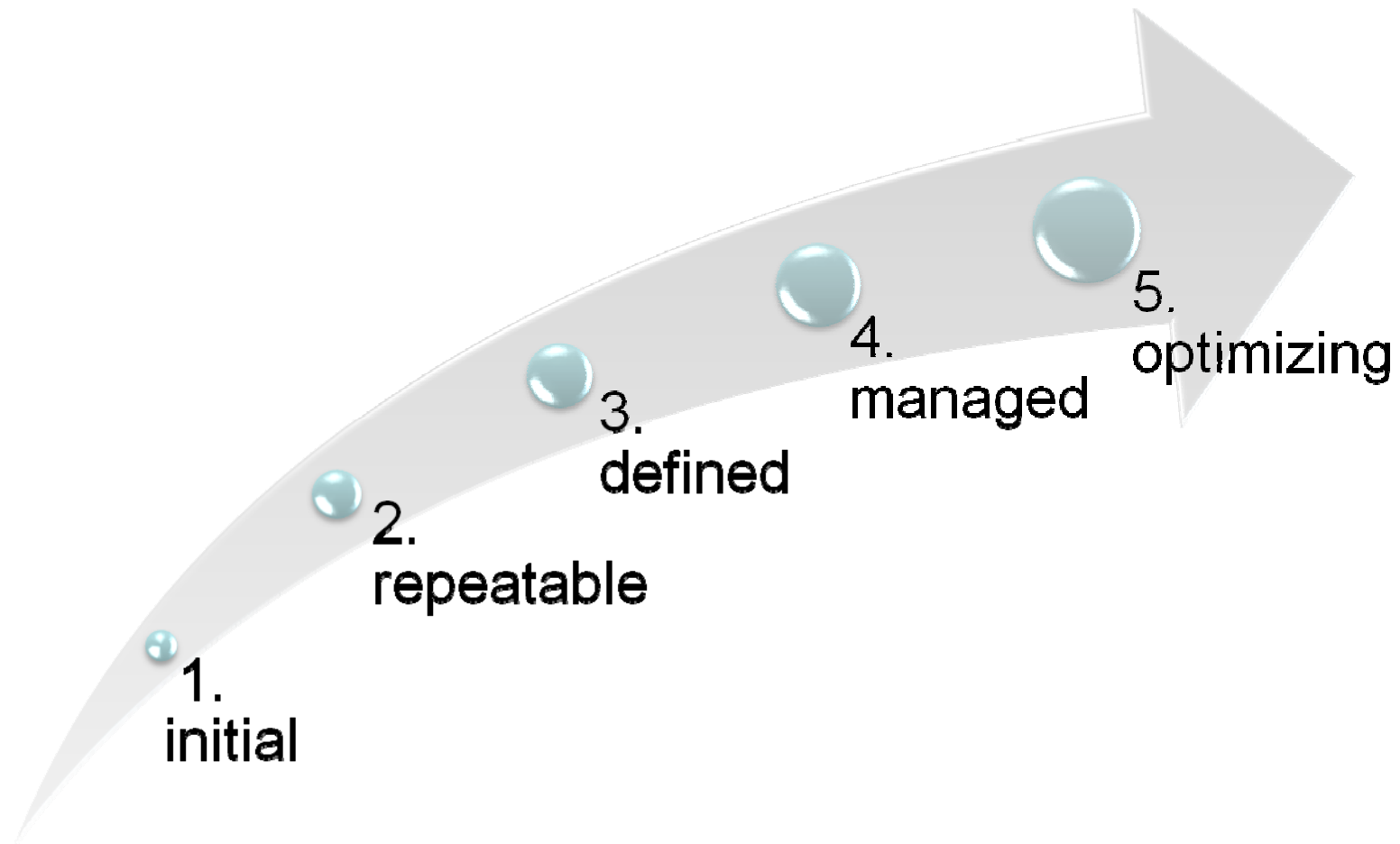
Source: Ehms, K. and Langen, M. (2000). Ganzheitliche Entwicklung von Wissensmanagement mit KMMM. In: Wissensmanagement 4/2000
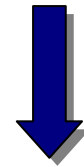
Conclusion and Outlook

Knowledge and Information 1

If Karl Marx was alive today, he would not write "**The Capital**" but "**The Information**".

Information is the most important element in an information society.

Paradox:

"Too much information is useless - Information-Overflow".

Knowledge Management: Facts / Thesis

„Knowledge Management is highly political and needs ‚top management' support."

„Knowledge Management must be anchored in organizational structures and the organizational culture."

„Knowledge Management is nowadays mainly driven by the development of the Information and Communication Technology."

Knowledge: Please don't forget, that

"Knowledge

is

humanized information"

(Karagiannis, 1998)

Thank you !