



Asia-Pacific
Economic Cooperation

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Agenda Item: 9

Knowledge Management and e-Learning

Purpose: Information

Submitted by: Japan



**APEC Symposium on Open Source
and Open Course for E-Learning
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Knowledge management and e-Learning

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Content



→ About concepts of knowledge management and e-learning



→ Relation between knowledge management and e-learning

JAIST

Japan Advanced Institute of Science and Technology



School of Information Science
21st Century COE Program:
Verifiable and Evolvable
e-Society



School of Knowledge Science
21st Century COE Program:
Technology Creation Based on
Knowledge Science



Technology creation based on knowledge science

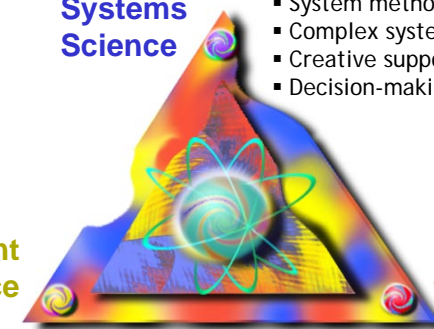


Systems Science

- System methodology
- Complex systems analysis
- Creative support systems
- Decision-making processes

Management Science

- Knowledge management
- R&D processes
- Social systems
- Socio-technical systems



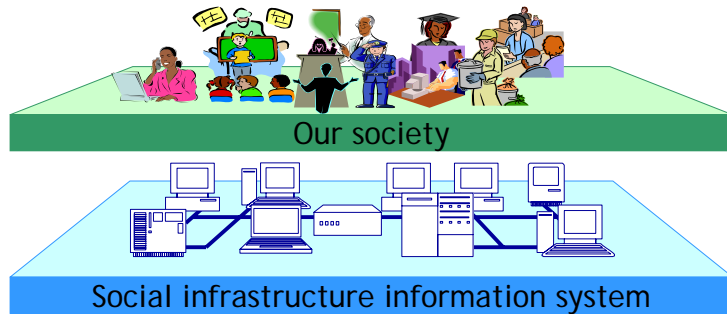
Information Science

- Knowledge creating methodology
- Knowledge-based systems
- Genetic knowledge systems
- Molecular knowledge systems

Verifiable and evolvable e-society



Can you trust e-society infrastructure information system and leave your life to it?



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Strength of knowledge



*“Knowing ignorance is strength;
ignoring knowledge is sickness”*

Lao Tzu (老子)



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What is knowledge?



No single definition on which scholars agree, continued debate about the nature of knowledge.

- **Understanding** gained through experience, observation or study.
- Knowledge is **what is known** (confident understanding of a subject, potentially with the ability to use it for a specific purpose).

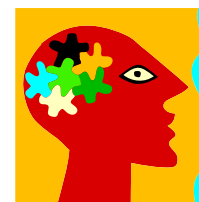


Personification of knowledge
(Greek *Επιστημη*, Episteme)
in Celsus Library in Ephesos, Turkey.

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Where knowledge can reside?



Human mind



Document



Organization



Computer & Internet

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Two types of knowledge



Tacit knowledge (subjective)

Knowledge which is only known to you and hard to share with someone else (people's head).

- Cognitive dimension
 - Beliefs
 - Mental models
 - Perceptions
 - Schemata
- Technical dimension
 - Informal skills
 - Crafts (know-how)



Explicit knowledge (objective)

Knowledge that can be codified, articulated, and easy to share or communicate (media).

- Theoretical approaches
- Problem solving
- Documents
- Data bases
- Knowledge bases



Polanyi (1966), "We can know more that we can tell"
Nonaka & Takeuchi (1995), "Knowledge creating-company"

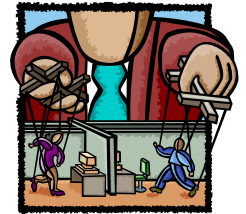
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Management



The act of providing direction to people and/or organizations



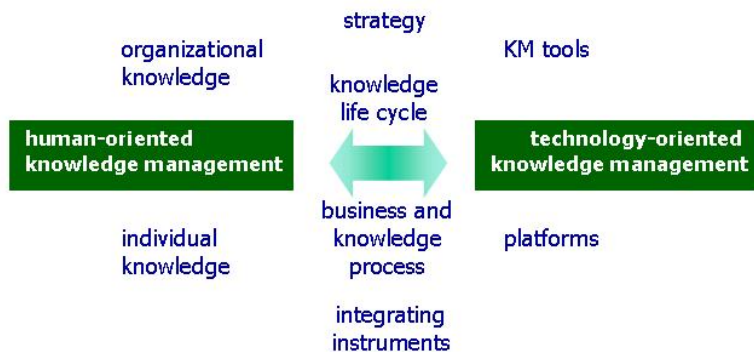
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What is knowledge management?



Knowledge management is a new emerging trend in business with different definitions



Human versus technology-oriented KM and approaches to their integration

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What is knowledge management?



- Knowledge management as I use it here is not a software product or a software category. Knowledge management doesn't even start with technology. It starts with **business objectives** and processes and a recognition of the need to share information.

- Knowledge management is nothing more than **managing information flow**, getting the right information to the people who need it so that they can act on it quickly. (Bill Gate)



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What is knowledge management?



- Simply, it is management of knowledge.
- Management of organizational knowledge for creating business value and generating a competitive advantage.
- "Knowledge management is leveraging relevant intellectual assets to enhance organizational performance." (Stankosky, 2002)
- "A conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that strive to improve organizational performance". (O'Dell & Grayson, 1998)



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What is knowledge management?



"Involving a continual interplay between the tacit and explicit dimensions of knowledge and a growing spiral flow as knowledge moves through individual, group, and organizational levels."

(Nonaka, 1994)



Ikujiro Nonaka

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What is knowledge management?



Knowledge management: processes of creating, capturing, and using knowledge to enhance organizational performance.

(Stacey, 2000)



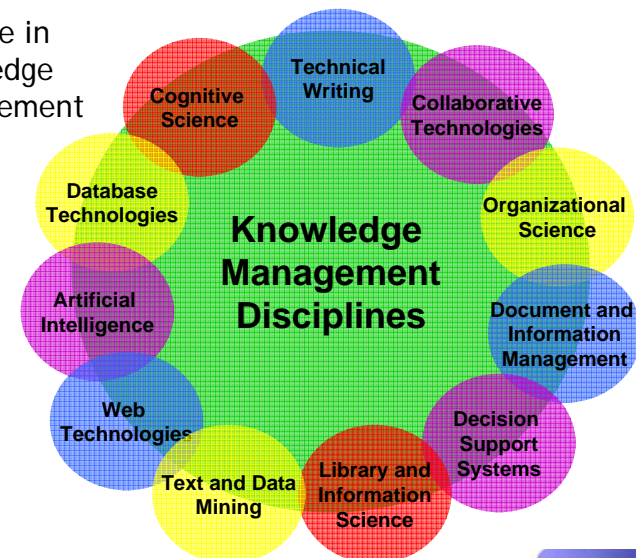
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The interdisciplinary nature of KM



ICT role in knowledge management



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Theory of knowledge creation

Depends on view of knowledge



The organization as a "machine" for information processing is based on Cartesian duality – *mind and body, subject and object* – and the Western tradition of knowledge as *rational thinking*.



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The organization based on the Japanese tradition – *body and spirit work together* through the whole *personality* – the Zen tradition is tactile and interpersonal.



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Why Japanese companies succeed?



- Japanese companies existed in an environment in which the only certainty was uncertainty.
- Japanese companies struggled against international competition with dogged determination → a new technology, a new product design, new production process, a new marketing approach, etc.
- Knowledge accumulated from outside is shared within the organization, stored as part of company knowledge, used for new technologies and products

Knowledge creation → Continuous innovation
→ Competitive advantage

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The knowledge-creating company

Nonaka, I. and Takeuchi, H. (1995), Oxford University Press



- Xerox Distinguished Professor, foundation Dean of the School of Knowledge Science, Japan Advanced Institute of Science and Technology.
- Author of the knowledge creation theory that explained the successes of Japanese companies are based on their success of knowledge management.
- Extended the concepts of explicit and tacit knowledge, as well as theory about the conversion between them.
- "the best book of the year in business and management in 1996" → how Japanese companies create the dynamics in innovation?



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Making tacit knowledge explicit



- 1978: Honda wanted the development of a new-concept car with the slogan "Let's gamble" → formed a team of young engineers and designers (the average age was 27).
- Only two instructions: (1) a product concept fundamentally different from anything the company had ever done before; (2) to make a car that was inexpensive but not cheap → provide an extremely clear sense of direction.
- Ambitious challenge "Automobile revolution" with question: "If the automobile were an organism, how should it evolve?"
- Answer: "man-maximum, machine minimum" → ideal car should somewhat transcend the traditional human-machine relationship → car simultaneously "short" and "tall", lighter, cheaper, more comfortable, more solid → "Tall boy" car.



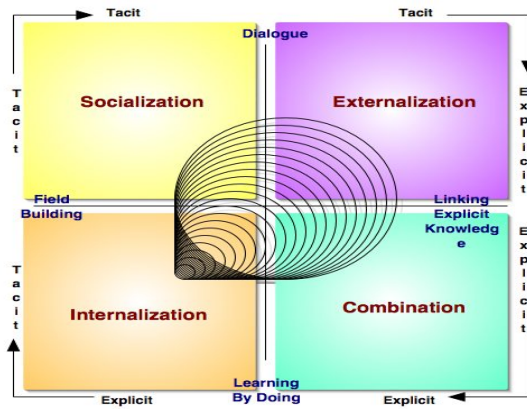
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Four modes of knowledge conversion



By social contact or sharing experience among members



THE SPIRAL OF KNOWLEDGE CREATION

Translating individual insights into rules, recipes, formulas, procedures, etc. which can be widely disseminated

Combining different bodies of explicit knowledge by documents, meetings, conversations, etc.

By shared mental models or technical know-how, etc.

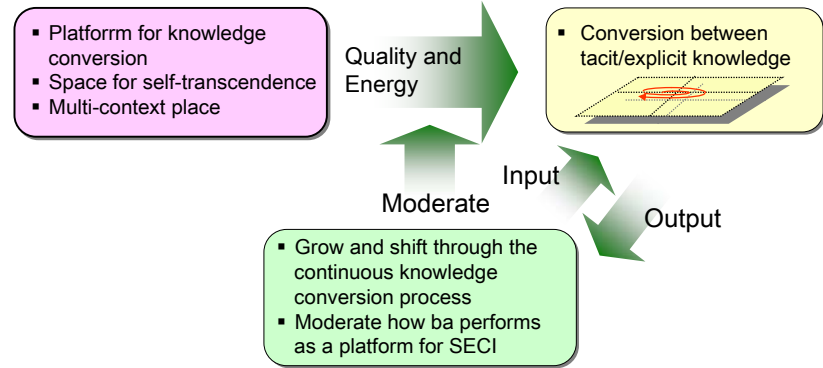
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Components of knowledge management



Ba: Place for knowledge conversion

SECI: Process of knowledge conversion



Intellectual capital:
Basis of knowledge creation

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Ba – shared place for knowledge creation



- The word "Ba" is a Japanese term which roughly translates into the English word "place".
- Ba is a place where one shares a context with others to create meanings. Participants understand the contexts of others and oneself, and through interaction, change the contexts.
- Ba may be:
 - Real: Office, distributed working spaces, brainstorming rooms, etc.
 - Virtual: Email, teleconferences
 - Spirit: Sharing experience, ideas, etc.



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Ba – shared place for knowledge creation



Common place for people to get information and share their ideas, opinion, etc.

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Ba – shared place for knowledge creation



On-screen keyboard and e-learning

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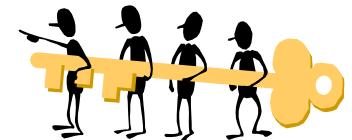
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Knowledge management in APEC economies



Australia	New Zealand
Brunei Darussalam	Papua New Guinea
Canada	Peru
Chile	Philippines
PR China	Russia
Hong Kong, China	Singapore
Indonesia	Chinese Taipei
Japan	Thailand
Republic of Korea	United States
Malaysia	Viet Nam
Mexico	

PAKDD'05
RIVF'07
PRICAI'08



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Learning related issues



Knowledge worker



Life-long learning



Learning organization



e-Learning

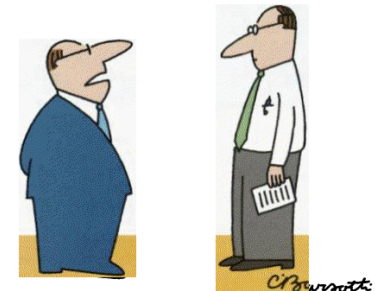
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You know you're a knowledge worker if ...



- 80% of your time is spent doing things that "aren't your job".
- Your mother doesn't understand what you do.
- Your boss doesn't understand what you do.
- You don't understand what you do.



What is exactly a "knowledge worker", and do we have any on staff?

– who works primarily with information or develops and uses knowledge in the workplace
– Need learning to gain knowledge

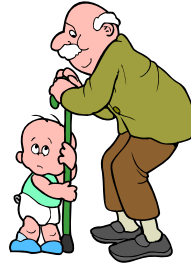
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Life-long learning



- It's never too soon or too late for learning.
- Often accomplished through distance learning or e-learning, continuing education, home-schooling or correspondence courses.
- The knowledge and skills acquired in primary, secondary and university education are usually not sufficient for a professional career spanning three or four decades.



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What is a learning organization?



- "Organization where people continually expand their capacity to create the result they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how learn together" (Senge, 1990)
- Learning organization can mean an organization which learns and/or an organization which encourages learning in its people. It should mean both." (Robin, 1998)



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Learning and e-Learning



- **Learning** is the process of gaining knowledge through study and experience.
- **e-Learning** means the use of new multimedia technologies and the internet to improve the quality of learning (European Communities, 2004).
- We do know the "e" doesn't stand for "electronic". The "e" in e-Learning would be better defined as **Evolving** or **Everywhere** or **Enhanced** or **Extended**.
- e-Learning = learning environment supported by continuously evolving, collaborative processes focused on increasing individual and organizational performance.



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e-Learning and traditional classroom



Classroom	Physical, time and location dependent	Unlimited, anywhere, anytime
Content	Textbook Video Projector slides	Simple text, audio, animation, video, printed and online resources, collaboration
Personalization	One learning path	Place and path determined by learner

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e-Learning is and is not



e-Learning is

- Non-linear
- Dynamic process
- Learner controlled
- Reusable objects
- Informal
- Platform independent
- Communities of Internet
- etc.

e-Learning is not

- Linear
- Static event
- Instructor controlled
- Non-reusable objects
- Formal
- Standard
- Functional or department
- etc.

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e-Learning management systems



■ Definition

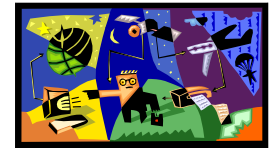
- Helps people learn (acquire new knowledge) and package and deliver existing knowledge through teaching

■ Knowledge conversion

- tacit-to-explicit
- explicit-to-tacit
- tacit-to-tacit

■ Features/Capabilities

- Reusable learning object libraries
- Adaptive web-based course delivery
- Student evaluation and progress tracking



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Content



- About concepts of knowledge management and e-learning



- Relation between knowledge management and e-learning

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e-Learning to knowledge management



- e-learning could be a cornerstone of knowledge management (organization learning, life-long learning).
- e-learning provides a good environment for people in organizations to learn: everywhere, dynamics, non-linear, informal (virtual "ba").
- e-learning supports sharing knowledge among people and converting tacit to explicit knowledge: wiki, blogs, communication, etc.



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Knowledge management to e-learning



- The need of knowledge management in organization offers opportunities and challenges to e-learning (content, methods, effectiveness).
- Knowledge management tools can support the development of open courses and open sources in e-learning.



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Challenges for e-learning



- Which content of e-learning should be done to meet the need of knowledge management?
- How open courses and open sources contribute to the development of e-learning?



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Conclusions



- "Knowledge sharing is power".
- Knowledge management is crucial for APEC member economies.
- Strong relation between knowledge management and e-learning.

Darwin: It's not the strongest, nor the most intelligent, but the species most adaptable to change has the best chance of survival.



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