Lecture 1

Introduction

Dr. Henry Linger

Unit Organisation - IMS5330 & IMS3012

- Lecturer: Henry Linger
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- Unit organisation-IMS5330
  - 2 hour Lecture
  - 1 hour Tutorial

- Reading Material

- Assessment
  - Class test: 40%
  - Practical assignment: 50%
  - Participation: 10%

- Unit organisation-IMS3012
  - 1 hour Lecture
  - 1 hour Laboratory
  - 1 hour Tutorial

- Reading Material

- Assessment
  - Unit Exam: 60%
  - Practical assignment: 40%
Unit Aims and Objectives

- **Aim**
  to build a basic understanding of KM through a range of techniques for utilizing personal and organizational knowledge to achieve organizational effectiveness and efficiency

- **Objective**
  to understand the issues involved in implementing KM systems in an organisational setting

Unit Scope

- The unit will be issues based
  - a number of issues will be discussed as (artificially) self-contained topics
  - the issues will overlap
  - recurrent issues will be identified

- At the conclusion of the unit you will be able to;
  - understand the current views on KM systems development;
  - contribute to the KMS development teams;
  - provide advise and options relating to KM implementation;
  - illustrate your advise with technical solutions
Information and Knowledge

Information
- is raw material for production of knowledge - Alavi, 1997
- is the flow of messages or meaning which may add to, restructure, or change knowledge - Muchup, 1983
- is data endowed with relevance and purpose. It is static and passive.

Knowledge
- takes place within a context of information and involves a mix of insights, framed experiences, values, judgments and ideals. It is dynamic because it triggers ideas and actions - Davenport and Prusak, 1998
- (human knowledge is understood as) a family of classification patterns related to a specific part of a real or abstract world - Slowinski, 1992
Knowledge dimensions

- Tacit knowledge = Analog knowledge
  - deeply rooted in experience, ideas, values and social activity
  - highly personal, subjective, hunches, intuition
  - hard to formalize and communicate
  - technical: 'know-how' of the craftsman
  - cognitive: ingrained mental models
  - has not yet been abstracted from practice

- Explicit knowledge = Digital knowledge
  - Formally articulated knowledge, typically in documentary or digital format
  - This is the knowledge of rationality
  - It is formal and systematic, and often sequential.
  - It is expressed in words and numbers.

Nonaka and Takeuchi, 1995

A Guiding Principle

Knowledge - (the knowledge of something) is the ability to form a mental model that accurately represents the thing as well as the actions that can be performed on it and by it.

Sowa, 1994
Knowledge Management

(Monash SIMS Definition)

Knowledge Management is a broad concept that addresses the full range of processes by which an organisation deploys knowledge. These involve the creation, acquisition, distribution and use of knowledge by the organisation.

Frada Burstein and Henry Linger

What is an Information System

“An arrangement of people, data, processes, interfaces and geography that are integrated for the purpose of supporting and improving the day-to-day operations in a business as well as fulfilling the problem solving and decision making needs of managers”

Whitten and Bentley, 1998, p706
The IS Development Process

The Waterfall Model

Development as a Waterfall

- Pros
  - easy to understand and follow forces planning up front
- Cons
  - fairly rigid
  - many changes may cause project to stop
- Reality ...

Modified Waterfall Model

The Modified Process

Spend more time in the first few stages of the waterfall model and iterate a few times exploring goals and requirements of the site before entering the design and implementation
Knowledge Management Lifecycle

- Creation and Acquisition of Knowledge
- Communication and Collaboration
- Knowledge Storage and Organization
- Research and Retrieval
- Revision and Distribution

Software for Knowledge Management

- Creativity Tools
- Document Management
- Data Warehouses
- Data Mining
- OLAP
- Intra-/Internet-Standards
- User Modelling
- Content Management
- Enterprise Modelling
- Editorial Systems
- Workflow Mgt.
- Text Mining
- Case Based Reasoning
- Search Engines

H. Shauer, 2002
Knowledge Management Systems (KMS)

- A system for managing the gathering, refining, analysing and disseminating of knowledge in all its forms within an organisation.

- A system that supports organisational functions while addressing the needs of the individual within a purposeful context.  
  
  Charles Jackson (@Brint)

- A socio-technical system to support the processes by which an organisation deploys knowledge

KM Systems – are they real?

- KMS is an ICT system in the sense of an application system or an ICT platform that combines and integrates functions for the contextually handling of both explicit and tacit knowledge, throughout the organization or that part of the organisation that is targeted by a KM initiative.

- KMS supports network of knowledge workers in the creation, construction, identification, capturing, acquisition, selection, valuation, organization, linking, structuring, formalization, visualization, distribution, retention, maintenance, refinement, evolution, accessing, search and last but not the least the application of knowledge the aim of which is to support the dynamics of organisational learning and organisational effectiveness.  
  
  Maier, 2001
KM Framework: A Process View

Alavi, 1997

The KM toolkit: Road Map for this Unit

The first phase: evaluation of the infrastructure and aligning knowledge management and business strategy.

The second phase: KM system analysis, design, and development.

- Knowledge audit and analysis.
- Designing the KM team.
- Creating the KM system blueprint.
- Selecting KM technology
- Developing the KM system.

The third phase: KMS deployment.

The final phase: measuring ROI and performance evaluation.

Amrit Tiwana, 2002
KMS - Beyond IS

- KMS are socio-technical systems that can support
  - knowledge creation
  - knowledge capture, formalisation and preservation
  - knowledge organisation and distribution
  - application and utilisation of knowledge

*Traditional IS are not explicitly aimed at supporting all these functions*

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Sources of Knowledge

*Any time and anywhere*

- Any user
- Any business process

*Any method for access & creation*

- SAP
- IBM
- Oracle
- NCR

*Proven, scalable, & secure repositories*

Adapted from CompuTechnics, 2000
Nature of KMS

- KMS is not a synonym for any ONE technology but requires an efficient IT infrastructure to acquire, create and deliver organisational knowledge to all organisational constituencies.
- Traditional IS, if concerned with MEANING not just information CONTENT, plays a significant role in KMS.
- KMS are defined as systems designed and developed to give users in organisation the knowledge they need to perform their tasks (Gallupe, 2000).
- KMS supports both the productive and cognitive activities that together define a knowledge work task.

Activities Supported by ICT

- Modelling
  - task and knowledge
- Documenting
  - organising material using the models as an index or catalogue
- Task Performance
  - every time an activity is performed it provides a context for the model of that activity type
- Reuse
  - ability to share all aspects of the activity between the community of practice and to draw on past experience
- Communications
  - collaboration
Goals of KMS Initiatives

- **Value Adding**
  - limits the collection and storage of materials to that required for task performance
  - encourages the reuse of existing materials in knowledge processes

- **Changing Perspective**
  - tasks are knowledge work in contrast to knowledge mining in a repository ie deriving and preserving knowledge from material generated by task performance

- **Implementing Organisational Learning**

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Beyond IS - Enhancing KMS with AI

- Expert systems
- Knowledge discovery
- Machine learning
- Case-based reasoning
- Intelligent agents
- Simulation modelling
- etc
Approaches to KMS

Codification – product-based approach
- Create knowledge object;
- Create knowledge base/archive/library/repository;
- Index and store knowledge object in the knowledge base;
- Subject matter expert or information manager acts as a Knowledge Integrator/Broker

Personalization – people/process-based approach
- Identify knowledge processes
- Create knowledge flow support facilities
- Integrate knowledge base with the knowledge processes
- Align knowledge objects with knowledge flows
- Requires KM specialist, KM coordinator, support from the CE manager as well as Knowledge Integrator/Broker

Functional - a knowledge work support approach
- KMS provides access to organisational knowledge for intelligent decision support
- Includes functionality for decision-making, learning, reasoning, memory and explanation
- Builds on, and combines, the first two approaches
- Focus is on innovation and learning
- Requires strong change management both vertically and horizontally in the organisation

KMS - Addressing the KM Dimensions

Structural Dimensions
- Organisational Design
- Information Infrastructure
- Technology Infrastructure

Functional Dimensions
- Memory
- Learning
- Sense Making
KMS - Supporting Action

Knowledge \[\rightarrow\] Exploration

Information \[\rightarrow\] Exploitation

Data \[\rightarrow\] Performance

Information Object

KMS - Addressing Organisational Work

Focus \[\rightarrow\] Object of Work

Organisation \[\rightarrow\] Capability

Group \[\rightarrow\] Collaboration

Individual \[\rightarrow\] Activity
References

- @Brint resource: http://www.brint.com/km/
  - e-mail: subscribe@brint.com

Recommended activities

- Subscribe to the KM virtual communities mailing lists:
  - ActKM Forum http://www.actkm.com/
  - KMTool http://www.kmtool.net/
- Review relevant websites:
  - CIO Magazine Archive http://www.cio.com/archive/index_knowledge_management.html
  - KMCentral is a dynamic central resource for practitioners and academics of all levels http://www.icasit.org/km/index.htm
  - KmWiki - http://www.voght.com/cgi-bin/Pywiki?KmWiki
  - @Brint resource: http://www.brint.com/km/
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