Lecture 5
The Technology Infrastructure
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The KMS Road Map

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

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

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

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The third phase: KMS deployment.

The final phase: measuring ROI and performance evaluation.

Amrit Tiwana, 2002

Technology Components of KM

Technology is an enabler of KM systems

- a balance between “must have” tools and “should have” tools (constrained by time/costs)
- Needs to support both tacit and explicit knowledge processes
A KMS Technology Architecture

- **User Interface:** e.g. browser
- **Authentication/Security Layer:** includes access identification, firewalls, and user recognition
- **Collaborative Intelligence and Filtering:** such as intelligent robots to disseminate news, based on agent or AI technology
- **Application Layer:** includes collaborative work tools, video conferencing, decision support tools, yellow pages, etc.
- **Transport Layer:** including WWW, TCP/IP, e-mail, document exchange, SMTP
  (Assumes existence of an appropriate Physical Layer such as cables, physical wires, modems for transmission)
- **Middleware and Legacy Applications**
- **Repositories:** such as data warehouse, databases, documents and other files

Supporting technology and functionality

- **local area network (LAN)**
- **intranet-based webs**
- **e-mail**
- **on-line publishing**
- **application distribution**
- **on-line search**
- **distributed databases**
- **multimedia data management**
- **e-mail archives**
- **frequently asked questions**
- **minutes of the meetings**
- **product information**
- **business intelligence**
- **project management**
- **reports**
- **news**
- **personal homepages**
- **videoconferences**

Intranet

- **An intranet is the main tool for sharing knowledge and allowing staff to tap the organisation's know-how.**
- **Primary aim**
  - Create and distribute up-to-date information
  - Give access to information resources within organisation
  - Give access to historical information
  - Create and maintain organisational memory
  - Link people
- **Targets**
  - Knowledge repositories
  - Mostly structured information (reports, manuals, and documents)
  - Discussion databases/listservers for sharing business information
  - Hyperlink-conneceted Internet documents;
  - Groupware databases
  - Thesaurus is essential to most on-line repositories
Portals

- A simple concept: a personalized and customised Web-based interface that consolidates access to information, services and applications
- Provides an "Information Ecology" for KM
- Facilitates knowledge sharing
- Facilitates knowledge transfer
- Makes organizational processes more transparent
- Is a front end and a major component of KMS

"Work is not where you go, but what you do"

Types of KM Portals

- Information portal provides instant access to personalised content and services.
- Collaboration portal facilitates online real-time communication, brainstorming sessions and allows selective push for relevant information.
- Team portal monitors efficient workflow-based task management among teams & members, sharing of skill sets.
- Expertise portal connects organisational experts to members who need their help (e.g., yellow pages, profiling, push/pull facilities, interactive sessions with experts).
- Learning portal maintains skill inventory, facilitates skill-upgrading through online learning sessions.


Another classification

- Corporate Portal
  - Business Intelligence
  - Business area
  - Horizontal (collaboration, expertise)
- e-Business (Extranet) Portals
  - Connect right customer to right service;
  - Provides secure channel for business transactions;
  - Facilitates Customer Relations Management
- Personal Portals
- Public Portals
  - General – Yahoo.com, Excite.com
  - Industrial – specific audience, Milago
  - Specific purpose – healthcare portals
Role of Intelligent Technology

- Modeling expertise
  - expert systems approach ("objectified" knowledge "canned" in a computerised form)
- Solving problems by analogy
  - Case Based Reasoning (CBR) approach
- Simulating problem solving
  - neural networks
- Dealing with ambiguity
  - fuzzy logic
- Deriving rules from data
  - machine learning
- Evolving solutions
  - genetic algorithms
- Search
  - Intelligent agents

Knowledge Based Systems

- An Expert System is ... a computer program that emulates the behaviour of human experts who are solving real-world problems associated with a particular domain of knowledge

  - Pigford and Baur (1990)
- Knowledge Based System is a more general term than Expert Systems
  - there may be no expert for the problem
  - systems may encode policies, rules, regulations which no one person knows completely
  - systems may not represent any one individual's method of problem solving
  - systems may be used to support rather than replacement of people

Case-Based Approach

- Case-Based Reasoning (CBR) - reasoning from experience.
- Knowledge about past experience is represented as cases
- CBR is based on psychological theory of human cognition
- Assumes that when solving a new problems we rely on past experience.
- New Solution = Past Solution(s) from the Case Base + Measure of Similarity
- CBR approach is used in AI to model human memory
Machine Learning

- Many organisations maintain large databases of past events. These databases may "hide" relationships between data elements that are significant and unknown to the organisation and its staff.
- Machine learning is one attempt to discover these relationships.
- Once discovered, the rules may be used in rule-based systems for automated action.

Intelligent Agents

- Agents can help in:
  - Knowledge creation (templates, reminders, automatic agenda management);
  - Knowledge classification (intelligent indexing);
  - Knowledge distribution (filtering rules, push technology, profiling);
  - Knowledge retrieving (content and context-based retrieval, automatic query generation, intelligent portals and EIP).

Currently Use of KM Technologies

Source: S. Zyngier, KM Survey in Australian corporate environment
Exploring Technology for KMS

- There are many classifications of KMS. You could see an example of such a classification used to search Monash KM Laboratory products database at http://km-svr.sims.monash.edu.au/
- There is another one provided within KM TOOLS part of ICASIT'S, a resource KMCentral (http://www.icasit.org/km/tools/index.htm)
- KMWorld’s “100 Companies that Matter in Knowledge Management 2004” (http://www.kmworld.com/100.cfm) is a list worth exploring for up to date information about technological solutions for KM projects.

References