KNOWLEDGE CREATION AND KNOWLEDGE MANAGEMENT ARCHITECTURE
Main Topics

- Knowledge Creation and Sharing
- Knowledge Infrastructure
- Knowledge Management Architecture
- Build versus Buy Decision
KNOWLEDGE CREATION

- Dynamic activity that can enhance organization success and economic well-being
- Driver of innovation
- Involves knowledge acquisition, selection, generation and sharing
- Maturation - translates experience into knowledge
Impediments to Knowledge Sharing

Compensation
Recognition
Ability utilization
Creativity
Good work environment
Autonomy
Job security
Moral values
Advancement
Variety
Achievement
Independence
Social status

Personality
Vocational reinforcers
Attitude
Work Norms

Organizational culture
Knowledge sharing
Company strategies and policies
Nonaka’s Model of Knowledge Creation and Transformation

<table>
<thead>
<tr>
<th>TACIT TO TACIT (SOCIALIZATION)</th>
<th>TACIT TO EXPLICIT (EXTERNALIZATION)</th>
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<tbody>
<tr>
<td>E.G., INDIVIDUAL AND/OR TEAM MEETINGS</td>
<td>E.G., DOCUMENT A BRAINSTORMING SESSION</td>
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<table>
<thead>
<tr>
<th>EXPLICIT TO TACIT (INTERNALIZATION)</th>
<th>EXPLICIT TO EXPLICIT (COMBINATION)</th>
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<tr>
<td>E.G., LEARN FROM A REPORT AND DEDUCE NEW IDEAS</td>
<td>E.G., CREATE A WEBSITE FROM SOME FORM OF EXPLICIT KNOWLEDGE</td>
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KNOWLEDGE INFRASTRUCTURE

- **People core**: Evaluate employee profiles
- **Content core**: Identify knowledge centers
- **Technical core**: The total technology required to operate the knowledge environment
Identifying Knowledge Centers

- Job openings, Benefits
- Strategies, Tools, R & D, Advertising
- Competition data, Sales volume, Leader sales information
- Complaint rate, Satisfaction information

Human Resources

Sales

Customer Service

Marketing
Stages of KMSLC

1. Evaluate Existing Infrastructure
2. Form the KM Team
3. Knowledge Capture
4. Design KM Blueprint
5. Verify and validate the KM System
6. Implement the KM System
7. Manage Change and Rewards Structure
8. Post-system evaluation

Iterative Rapid Prototyping
Layers of KM Architecture

1. User Interface
   (Web browser software installed on each user’s PC)

2. Authorized access control
   (e.g., security, passwords, firewalls, authentication)

3. Collaborative intelligence and filtering
   (intelligent agents, network mining, customization, personalization)

4. Knowledge-enabling applications
   (customized applications, skills directories, videoconferencing, decision support systems,
   group decision support systems tools)

5. Transport
   (e-mail, Internet/Web site, TCP/IP protocol to manage traffic flow)

6. Middleware
   (specialized software for network management, security, etc.)

7. The Physical Layer
   (repositories, cables)

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Databases

Data warehousing
   (data cleansing, data mining)

Legacy applications
   (e.g., payroll)

Groupware
   (document exchange, collaboration)
The User Interface (Layer 1)

- User interface design focuses on consistency, relevancy, visual clarity, navigation, and usability
Authorized Access Control (Layer 2)

Internet

- News/events
- Marketing
- E-commerce
- Careers

Intranet

- Human resource information
- Production information
- Sales information
- Strategic plans

Extranet

Clients
- Suppliers
- Vendors
- Partners
- Customers

- Product information
- Sales information
- Collaboration/cooperation
Collaborative Intelligence and Filtering (Layer 3)

- **Personalized** views based on stored knowledge
- **Groupware** to facilitate both sync- and asynchronous interaction and discussion
- **Intelligent agents** reduce search time for needed information
Knowledge-Enabling Application (Layer 4)

- Referred to as *value-added layer*
- Creates a competitive edge for the learning organization
- Provides knowledge bases, discussion databases, automation tools, etc.
- **Ultimate goal:** show how knowledge sharing could improve the employees
Transport Layer (Layer 5)

- Most technical layer to implement
- Includes LANs, WANs, intranets, extranets, and the Internet
- **Ensures that the company will become a network of relationships**
- Considers multimedia, URLs, graphics, connectivity speeds, and bandwidths
Middleware (Layer 6)

- Focus on interfacing with legacy systems and programs residing on other platforms
- Designer should address databases and applications with which KM system interfaces
- Makes it possible to connect between old and new data formats
Physical Repositories (Layer 7)

- Bottom layer in the KM architecture
- Represents the physical layer where repositories are installed
- Includes intelligent data warehouses, legacy applications, operational databases, and special applications for security and traffic management
Build In-House, Buy, or Outsource?

- Trend is toward ready-to-use, generalized software packages
- Outsourcing is also a trend, releasing technological design to outsiders
- Question of who owns the KM system should be seriously considered
### Build vs. Buying

<table>
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<tr>
<th>Option</th>
<th>Cost</th>
<th>Time Factor</th>
<th>Customization</th>
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<tbody>
<tr>
<td>In-house development</td>
<td>Usually high</td>
<td>Much lower than development by user</td>
<td>High, depending on quality of staff</td>
</tr>
<tr>
<td>Development by end users</td>
<td>Usually low</td>
<td>Depends on skills set, system priority, and so forth</td>
<td>High to the user specifications</td>
</tr>
<tr>
<td>Outsourcing</td>
<td>Medium to high</td>
<td>Shorter than in-house</td>
<td>High</td>
</tr>
<tr>
<td>Off-the-shelf Solution</td>
<td>Low to medium</td>
<td>Nil</td>
<td>Usually up to 80% usable</td>
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End of Lecture Three
In Class Discussion Exercise

★ Assume you are the person responsible for making decision on a KM project
★ How would you decide to build or buy?
★ Based on the key elements compared, and
★ The current state of your organization preparedness (thinking in terms of maturity in layers of KM architecture)
Knowledge Sharing Via Teamwork

- Initial knowledge
- Team performs a job
- New knowledge reusable by same team on next job
- Knowledge captured and codified in a form usable by others
- Outcome is realized
- Outcome compared to action
- New experience/knowledge gained

Initial knowledge leads to team performing a job, which results in new knowledge reusable by the same team on the next job. This new knowledge is captured and codified in a form usable by others, leading to an outcome that is compared to action. The process results in new experience/knowledge gained.