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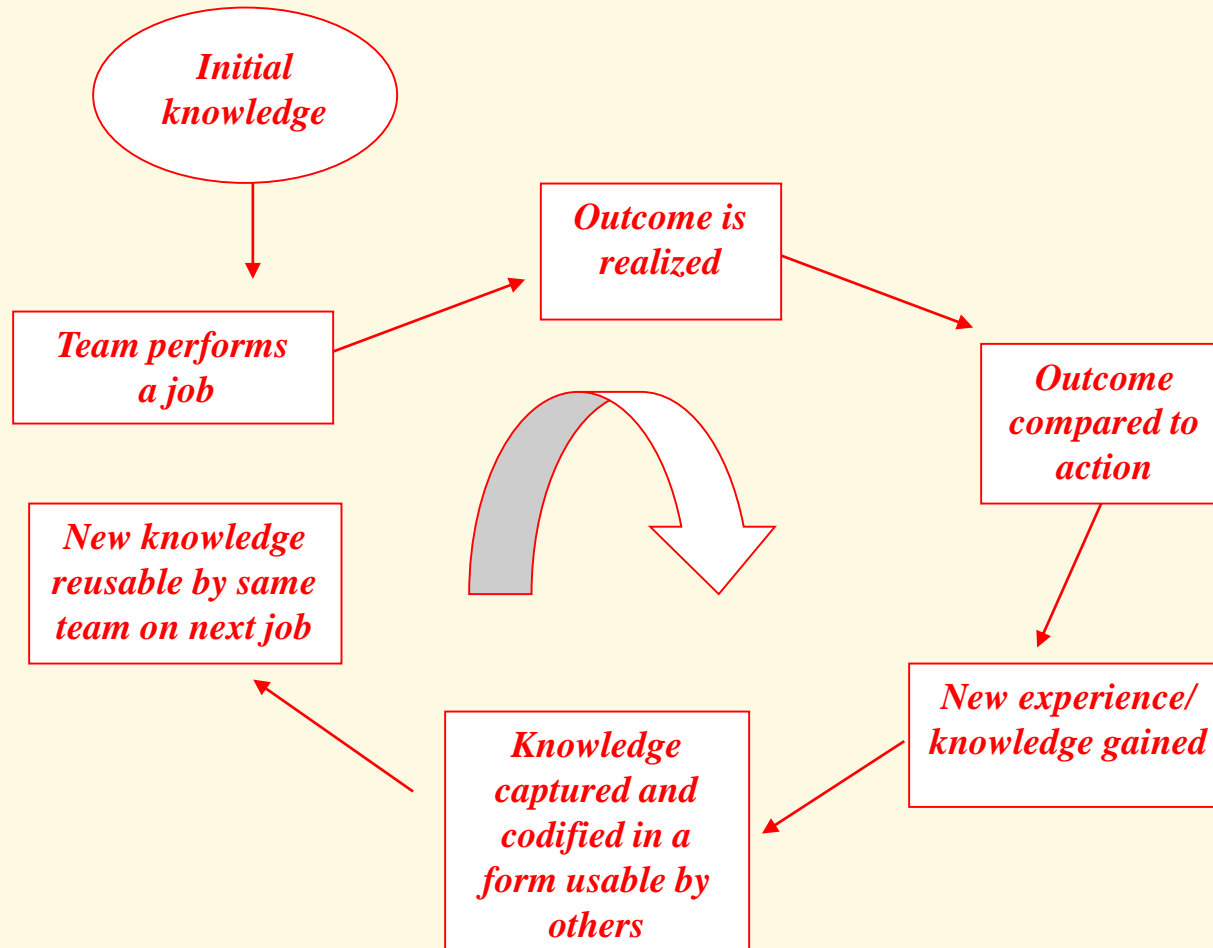
## Knowledge Creation and Knowledge Architecture

Munawar, PhD

# KNOWLEDGE CREATION

- ❖ KM is not a technology; it is an activity enabled by technology and produced by people
- ❖ An alternative way of creating knowledge is via teamwork
- ❖ A team compares job experience to job outcome—translates experience into knowledge
- ❖ Such newly acquired knowledge is carried to the next job
- ❖ Maturation over time with a specific job turns experience into expertise

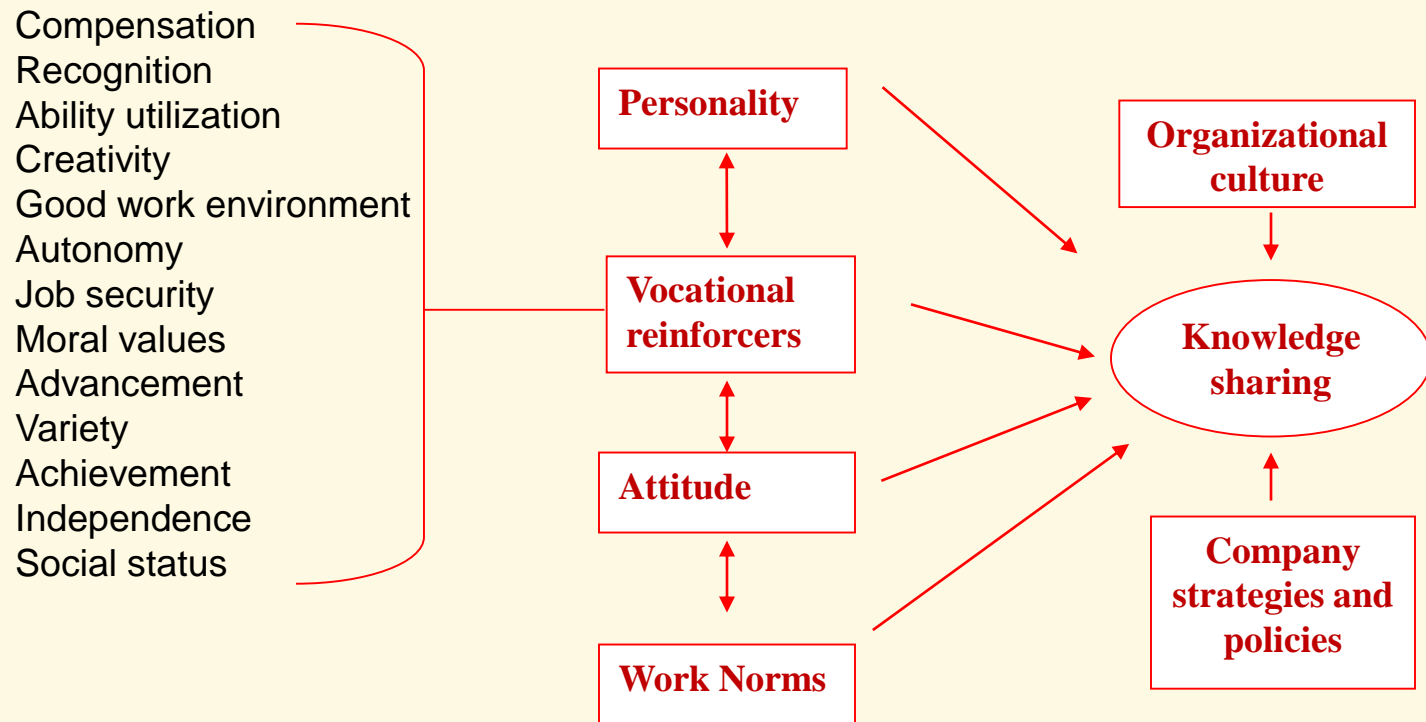
# Knowledge Transfer Via Teams



# Impediments to Knowledge Sharing

- ❖ Personality
- ❖ Attitude based on mutual trust
- ❖ Vocational reinforcers
- ❖ Work norms

# Impediments to knowledge sharing



# NONAKA'S MODEL

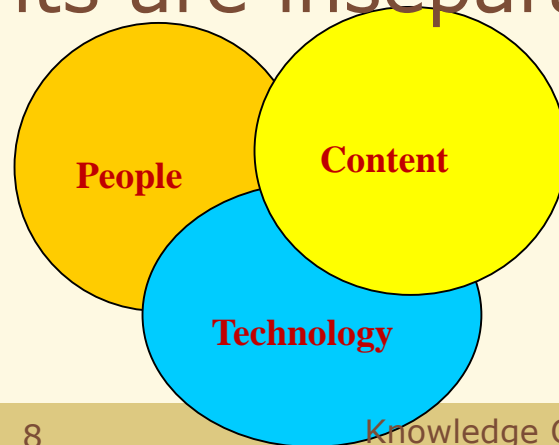
- ❖ Tacit to tacit communication (socialization). Experience among people in face-to-face meetings
- ❖ Tacit to explicit communication (externalization). Articulation among people through dialog
- ❖ Explicit to explicit communication (combination). Best supported by technology
- ❖ Explicit to tacit communication (internalization). Taking explicit knowledge and deducing new ideas. One significant goal of knowledge management is to create technology to help the users to derive tacit knowledge from explicit knowledge.

# Nonaka's Model

<p><b>TACIT TO TACIT</b> <i>(SOCIALIZATION)</i></p> <p>E.G., TEAM MEETINGS AND DISCUSSIONS</p>	<p><b>TACIT TO EXPLICIT</b> <i>(EXTERNALIZATION)</i></p> <p>E.G., DIALOG WITHIN TEAM ANSWER QUESTIONS</p>
<p><b>EXPLICIT TO TACIT</b> <i>(INTERNALIZATION)</i></p> <p>E.G., LEARN FROM A REPORT</p>	<p><b>EXPLICIT TO EXPLICIT</b> <i>(COMBINATION)</i></p> <p>E.G., E-MAIL A REPORT</p>

# KNOWLEDGE ARCHITECTURE

- ❖ Knowledge architecture can be regarded as a prerequisite to knowledge sharing.
- ❖ The infrastructure can be viewed as a combination of people, content, and technology.
- ❖ These components are inseparable and interdependent.



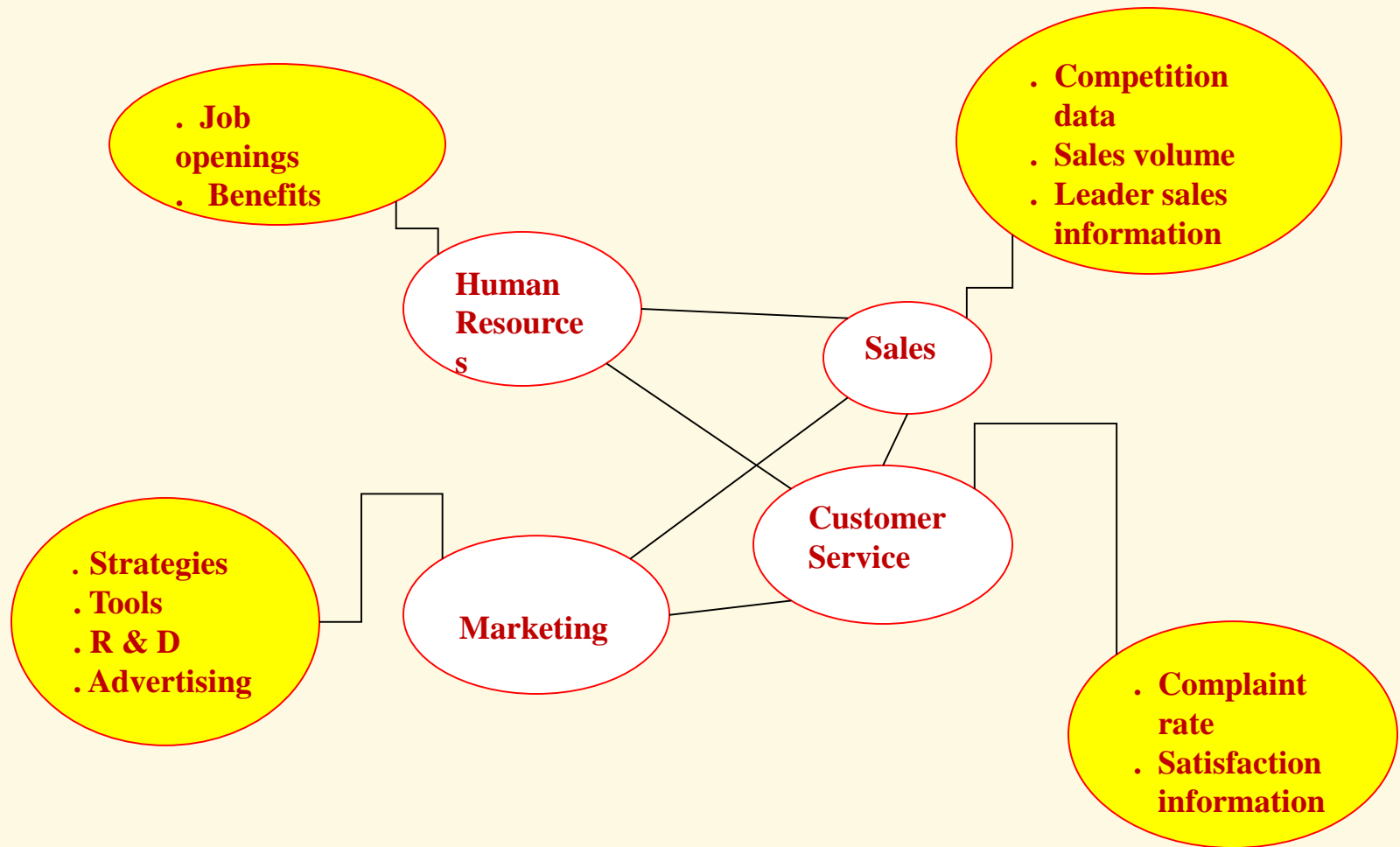
# KNOWLEDGE ARCHITECTURE

- ❖ People core: Evaluate the existing information/ documents which are used by people, the applications needed by them, the people they usually contact for solutions, the associates they collaborate with, the official emails they send/receive, and the databases they usually access

# KNOWLEDGE ARCHITECTURE

- ❖ Identify knowledge centers
- ❖ Activating knowledge content satellites
- ❖ Assigning experts for each knowledge center

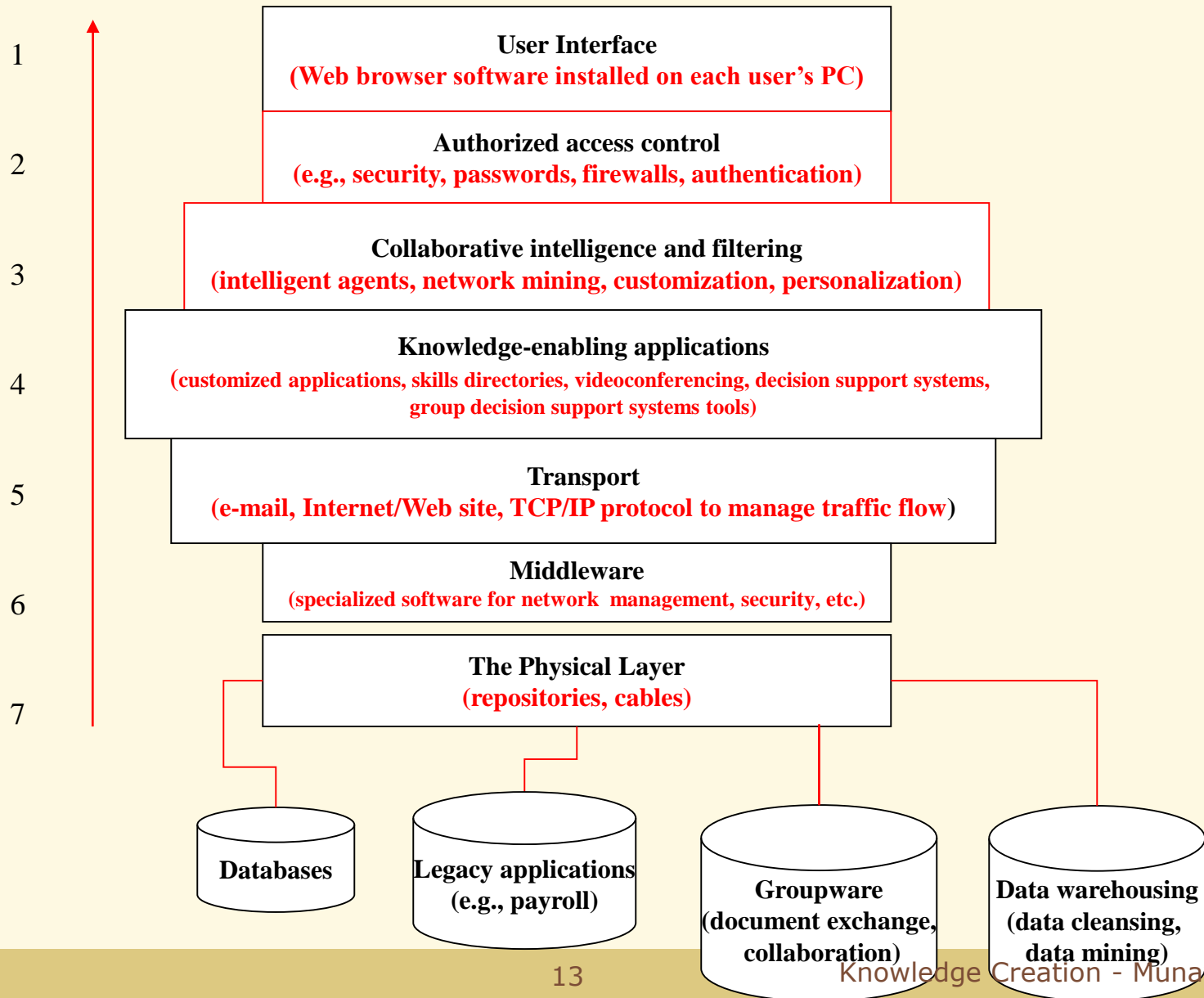
# Identifying Knowledge Content Centers



# KNOWLEDGE ARCHITECTURE

- ❖ The technical core: Enhance communication as well as ensure effective knowledge sharing
- ❖ The total technology (hardware, software, and the specialized human resources) required to operate the knowledge environment
- ❖ Accuracy, speed, reliability, security, and integrity

# Technical Layer of the KM System



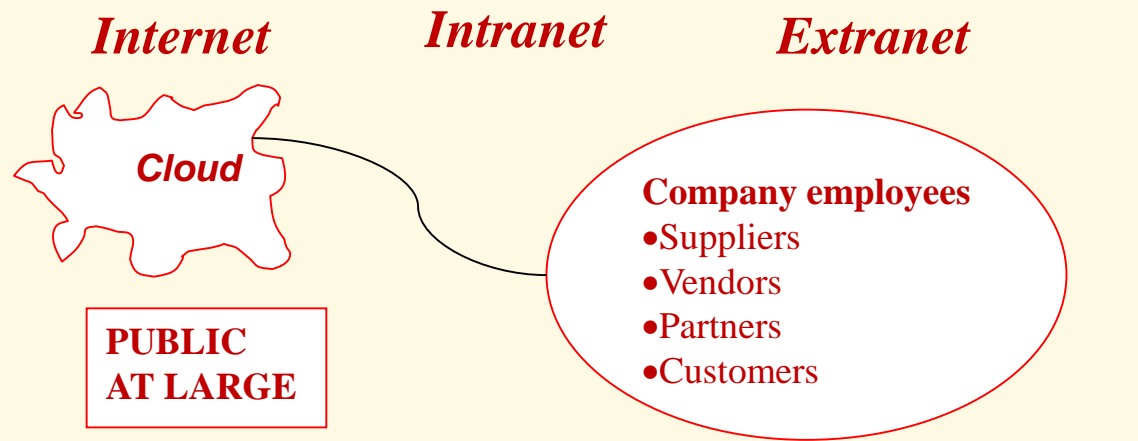
# *The User Interface Layer (Layer 1)*

- ❖ Tacit knowledge should be made available face-to-face, e-mail, or by other media
- ❖ User interface design focuses on *consistency, relevancy, visual clarity, navigation, and usability*

## ***Technical Access Layer (Layer 2)***

- ❖ *Intranet*: The internal network of communication systems modified around the Internet
- ❖ *Extranet*: An intranet with extensions that allow clearly identified customers or suppliers to reach company-related technical educational information

# Technical Access Layer



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

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

- Product information
- Sales information
- Collaboration/cooperation

# Features/Limitations of Firewalls

Protects against:

- ❖ E-mail services known to be problems
- ❖ *Unauthorized interactive log-ins from outside firm*
- ❖ *Undesirable material coming in/leaving firm*
- ❖ *Unauthorized sensitive info. leaving firm*

*Limitations include:*

- ❖ *Attacks that do not go through the firewall*
- ❖ *Weak security policies*
- ❖ *Viruses on floppy disks*
- ❖ *Traitors or disgruntled employees*

## ***Collaborative Intelligence and Filtering Layer (Layer 3)***

- ❖ Provides personalized views based on stored knowledge
- ❖ Reduces search time for information
- ❖ Intelligent agents search across servers to find the information requested by the client (user)
- ❖ Intelligent agents arrange meetings, pay bills, and even wander through virtual shopping malls, suggesting gifts and so on

# Criteria for an Effective Collaborative Layer

- ❖ Security—very critical
- ❖ Portability across platforms
- ❖ Integration with existing systems
- ❖ Scalability, flexibility, and ease of use

# Expert Systems

- ❖ Emulate the reasoning of a human expert in a problem domain
- ❖ Can help a person become wiser, not just better informed

Components include:

- ❖ **Justifier:** explains how and why an answer is given
- ❖ **Inference engine:** problem-solving mechanism for reasoning and inferencing
- ❖ **Scheduler:** coordinates and controls rule processing

# *Knowledge-Enabling Application Layer (Layer 4)*

- ❖ Often referred to as *value-added layer*
- ❖ Creates a competitive edge for the learning organization
- ❖ Provides knowledge bases, discussion databases, sales force automation tools, imaging tools, etc.
- ❖ Ultimate goal: show how knowledge sharing could improve the lot of employees

## *Transport Layer (Layer 5)*

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

## *Middleware Layer (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
- ❖ Contains a cluster of programs to provide connections between legacy applications and existing systems
- ❖ Makes it possible to connect between old and new data formats

## *Repositories Layer (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
- ❖ Regardless of choice, it is important to set criteria for the selection
- ❖ Question of who owns the KM system should be seriously considered

# Questions for Discussion

- ❖ What advantages are accrued by purchasing KM software instead of developing it in-house?
- ❖ Access to knowledge is based on profiles derived from the knowledge base. What technology would you recommend to provide access? Who will manage such access?



# Thank You !

**Munawar, PhD**