

**HTM304: Management Information Systems**


**MANAGING KNOWLEDGE: KNOWLEDGE WORK AND ARTIFICIAL INTELLIGENCE**

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## LEARNING OBJECTIVES


- **EXPLAIN ORGANIZATIONAL KNOWLEDGE MANAGEMENT**
- **DESCRIBE USEFUL APPLICATIONS FOR DISTRIBUTING, CREATING, SHARING KNOWLEDGE**
- **EVALUATE ROLE OF ARTIFICIAL INTELLIGENCE IN KNOWLEDGE MANAGEMENT**



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## LEARNING OBJECTIVES

- **DEMONSTRATE HOW ORGANIZATIONS USE EXPERT SYSTEMS, CASE-BASED REASONING TO CAPTURE KNOWLEDGE**
- **DEMONSTRATE HOW NEURAL NETWORKS & OTHER TECHNIQUES IMPROVE KNOWLEDGE BASE**



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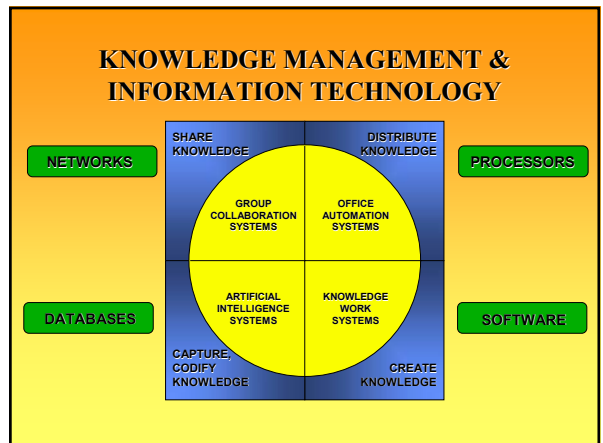
## KNOWLEDGE MANAGEMENT IN THE ORGANIZATION

- **Systematically & actively managing and leveraging stores of knowledge in an organization**
- **Organizational learning mechanisms are processes to create, gather, store, maintain, disseminate knowledge**
- **Substantial use of info technology enhances ability to sense, respond to environment**

## KNOWLEDGE MANAGEMENT IN THE ORGANIZATION

- **Office Automation Systems (OAS)**
- **Knowledge Work Systems (KWS)**
- **Group Collaboration Systems (GCS)**
- **Artificial Intelligence Applications (AI)**

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**OFFICE AUTOMATION SYSTEMS**  
**MANAGING DOCUMENTS:**

- **CREATION**
- **STORAGE**
- **RETRIEVAL**
- **DISSEMINATION**
- **TECHNOLOGY:** Word processing, desktop publishing, document imaging, Web publishing, work flow managers

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**OFFICE AUTOMATION SYSTEMS**  
**SCHEDULING:**

**FOR INDIVIDUALS & GROUPS:**

- **ELECTRONIC CALENDARS**
- **GROUPWARE**
- **INTRANETS**

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**OFFICE AUTOMATION SYSTEMS**  
**COMMUNICATING:**

**INITIATING, RECEIVING, MANAGING:**

- **VOICE**
- **DIGITAL**
- **DOCUMENTS**
- **TECHNOLOGY:** E-mail, voice mail, digital answering systems, GroupWare, intranets

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**OFFICE AUTOMATION SYSTEMS**  
**MANAGING DATA:**

**EMPLOYEES, CUSTOMERS, VENDORS:**

- **DESKTOP DATABASES**
- **SPREADSHEETS**
- **USER-FRIENDLY INTERFACES TO MAINFRAME DATABASES**

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**OFFICE AUTOMATION SYSTEMS**  
**MANAGING DATA:**

- **DOCUMENT IMAGING SYSTEMS:** Systems convert documents, images into digital form (e.g.: optical character recognition; microfiche)
- **JUKEBOX:** Storage & retrieving device for CD-ROMs & other optical disks
- **INDEX SERVER:** Imaging system to store / retrieve document

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**CREATE KNOWLEDGE**  
**KNOWLEDGE WORK SYSTEMS:**

**INFORMATION SYSTEMS THAT AID KNOWLEDGE WORKERS TO CREATE, INTEGRATE NEW KNOWLEDGE IN ORGANIZATION**

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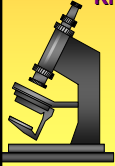


## KNOWLEDGE WORK SYSTEMS

**INFORMATION WORK:** Work consists primarily of creating, processing information

**DATA WORKERS:** People who process & disseminate organization's paperwork

**KNOWLEDGE WORKERS:** People who design products or services or create new knowledge for organization \*



## CREATE KNOWLEDGE KNOWLEDGE SYSTEMS:

- **CAD/CAM:** Computer Aided Design/Computer Aided Manufacturing: Provides precise control over industrial design, manufacturing
- **VIRTUAL REALITY:** Interactive software creates photorealistic simulations of real world objects (Virtual Reality Modeling Language: VRML) \*



## CREATE KNOWLEDGE KNOWLEDGE SYSTEMS:

- **INVESTMENT WORKSTATIONS:** High-end PCs used in finance to analyze trading situations, facilitate portfolio management \*



## SHARE KNOWLEDGE GROUP COLLABORATION SYSTEMS:

- **GROUPWARE:** Allows interactive collaboration, approval of documents
- **INTRANETS:** Good for relatively stable information in central repository
- **TEAMWARE:** Group collaborative software to customize team efforts \*



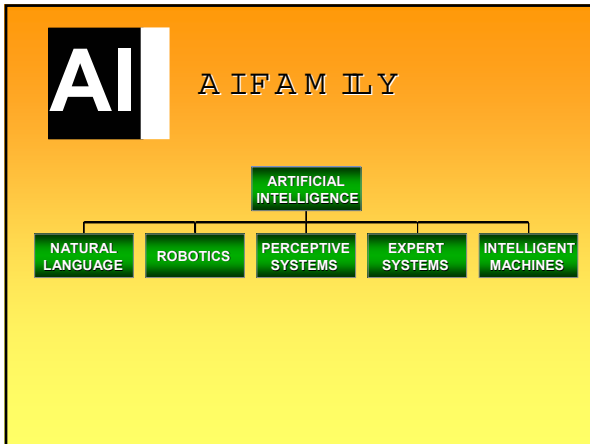
## CAPABILITIES OF GROUPWARE

- PUBLISHING, REPLICATION
- DISCUSSION TRACKING
- DOCUMENT MANAGEMENT
- WORK-FLOW MANAGEMENT
- SECURITY
- PORTABILITY
- APPLICATION DEVELOPMENT \*



ARTIFICIAL INTELLIGENCE  
(AI) SYSTEMS:

**AI: COMPUTER-BASED SYSTEMS WITH ABILITIES TO LEARN LANGUAGE, ACCOMPLISH TASKS, USE PERCEPTUAL APPARATUS, EMULATE HUMAN EXPERTISE & DECISION MAKING** \*



**AI** BUSINESS INTERESTS IN AI

- PRESERVE EXPERTISE
- CREATE KNOWLEDGE BASE
- MECHANISM NOT SUBJECT TO FEELINGS, FATIGUE, WORRY, CRISIS
- ELIMINATE ROUTINE / UNSATISFYING JOBS
- ENHANCE KNOWLEDGE BASE

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**AI** EXPERT SYSTEMS

**KNOWLEDGE - INTENSIVE CAPTURES HUMAN EXPERTISE IN LIMITED DOMAINS OF KNOWLEDGE**

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**AI** EXPERT SYSTEMS

- **KNOWLEDGE BASE:** Model of Human Knowledge
- **RULE - BASED EXPERT SYSTEM :** AI system based on IF - THEN statements (Bifurcation); Rule Base: Collection of IF - THEN knowledge
- **KNOWLEDGE FRAMES:** Knowledge organizes in chunks based on shared relationships

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**AI** EXPERT SYSTEMS

- **AI SHELL:** Programming environment of expert system
- **INFERENCE ENGINE:** Search through rule base
  - **FORWARD CHAINING:** Uses input; searches rules for answer
  - **BACKWARD CHAINING:** Begins with hypothesis, seeks information until hypothesis accepted or rejected

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**AI** EXPERT SYSTEMS EXAMPLES:

- **BLUE CROSS BLUE SHIELD:** Automated medical underwriting system
- **COUNTRYWIDE FUNDING CORP.:** Loan underwriting expert system
- **UNITED NATIONS:** Employee salary calculations

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## EXPERT SYSTEMS

### LIMITATIONS:

- Often reduced to problems of classification
- Can be large, lengthy, expensive
- Maintaining knowledge base critical
- Many managers unwilling to trust such systems

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## CASE - BASED REASON (CBR)

### AI USES DATABASE OF CASES:

- USER DESCRIBES PROBLEM
- SYSTEM SEARCHES DATABASE FOR SIMILAR CASES
- SYSTEM ASKS MORE QUESTIONS
- FINDS CLOSEST FIT
- MODIFIED AS REQUIRED

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## OTHER APPROACHES

- **NEURAL NETWORKS:** Software attempts to emulate brain processes
- **FUZZY LOGIC:** Tolerates ambiguity using nonspecific MEMBERSHIP FUNCTIONS
- **GENETIC ALGORITHMS:** Use models of organisms to promote evolution of solution
- **HYBRID AI SYSTEMS:** Combinations

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