Discovery, Search, and Customized Delivery

Through the discovery capability users can access information located in databases all over the world. It facilitates education, government services, entertainment, and commerce. Discovery is done by *browsing* and *searching static* or *dynamic* data sources on the Web.

- **Internet Software Agents**
- **Internet-Based Web Mining**
- **Other Discovery Aids**
- **Toolbars**
- **Material in Foreign Languages**
- **Information and Corporate Portals**

Discovery, Search, and Customized Delivery

Software agents are computer programs that carry out a set of routine computer tasks on behalf of the user and in so doing employ some sort of knowledge of the user's goals

- **Search engines, directories, software and intelligent agents**

- **Web-Browsing-Assisting Agents**

- **Frequently Asked Questions (FAQ) Agents**

- **Search Engines and Intelligent Indexing Agents**

Enterprise Search Architecture

3
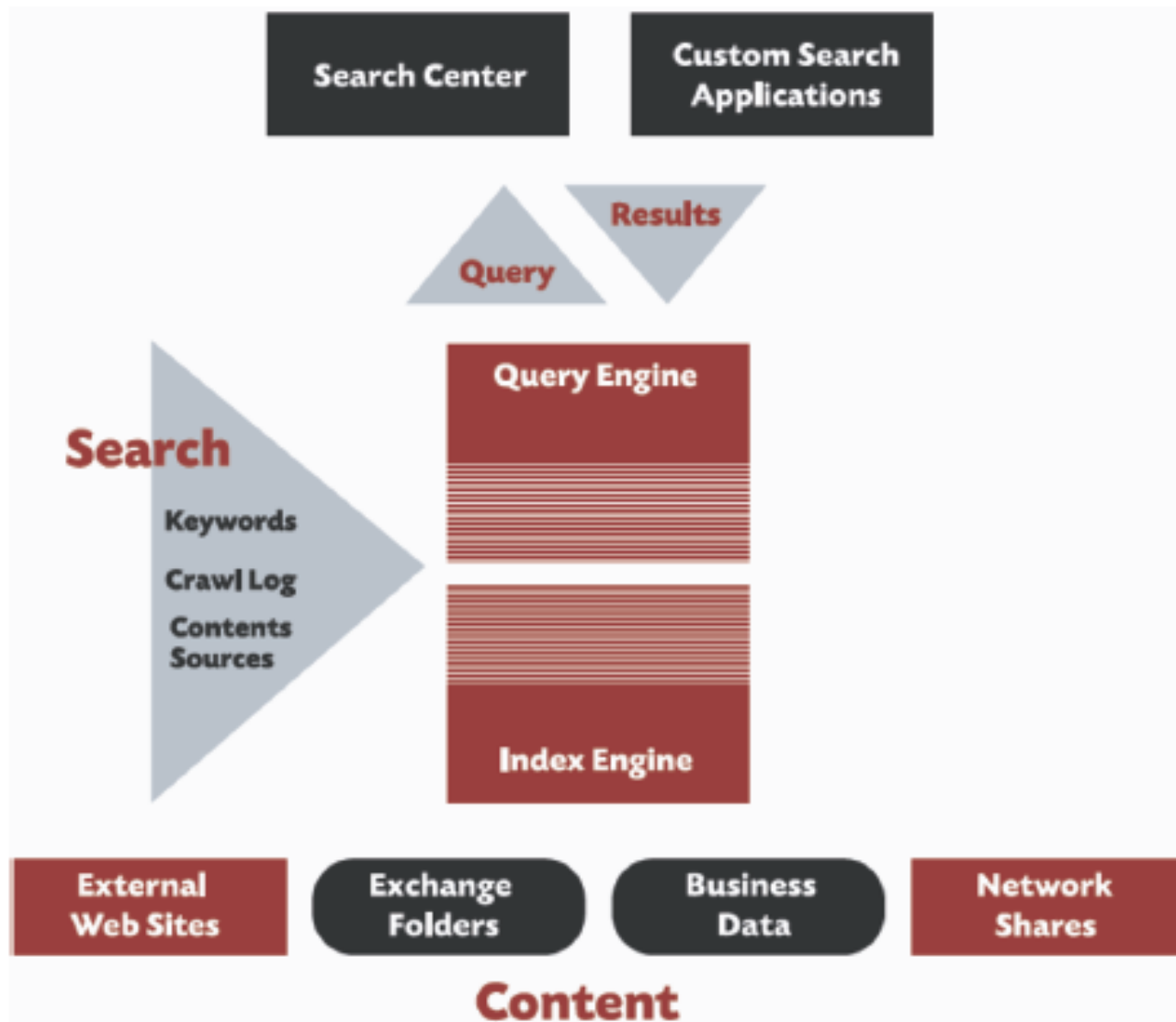
Discovery, Search, and Customized Delivery

- Blogs

- Wikis

- Wikilog or bliki

- Podcasting

- RSS – standards of web feed formats Really Simple Syndication and Rich Site Summary

- XML eXtensible Markup Language

- XBRL eXtensible Business Reporting Language

Communication - Internet Application Categories

People exchange and share information by sending and receiving messages, documents, forms and files. This information-processing supports the organization and the transaction of business. Communications can involve one or several IT-supported media, such as text, voice, graphics, radio, pictures, and animation. Using different media increases the effectiveness of a message, expedites learning, and enhances problem solving.

- **Electronic Mail**
- **Web-Based Call Centers**
- **Electronic Chat Rooms**
- **Voice Communication**
- **Weblogging (Blogging)**

Communication

- Telecommunication

- Mobile Communication – four wireless networks

  - CDMA – Code Division Multiple Access

  - GSM and 3GSM Networks – Third generation global system for mobile communication services. Multimedia services as music, TV, video, internet etc.

  - EDGE Networks – Enhanced data rates for GSM evolution.

Communication

- Mobile Communication – four wireless networks
 - WI-FI Networks – wireless fidelity to connect devices.

Mobile and Wireless Infrastructure

- Cell (Mobile) Phones and Smart Phones.

- Personal Digital Assistants (PDAs).

- Tablet PCs – pen based computing.

- Instant Messaging (IM) and ICQ (I seek you).

- Converged Devices – merger of many devices in one.

Mobile and Wireless Infrastructure

- PDAs Personal Digital Assistants.

- Tablet PCs – pen-based computing.

- Instant Messaging and ICQ (I seek you).

- Converged Devices.

The Dis-connected Connected
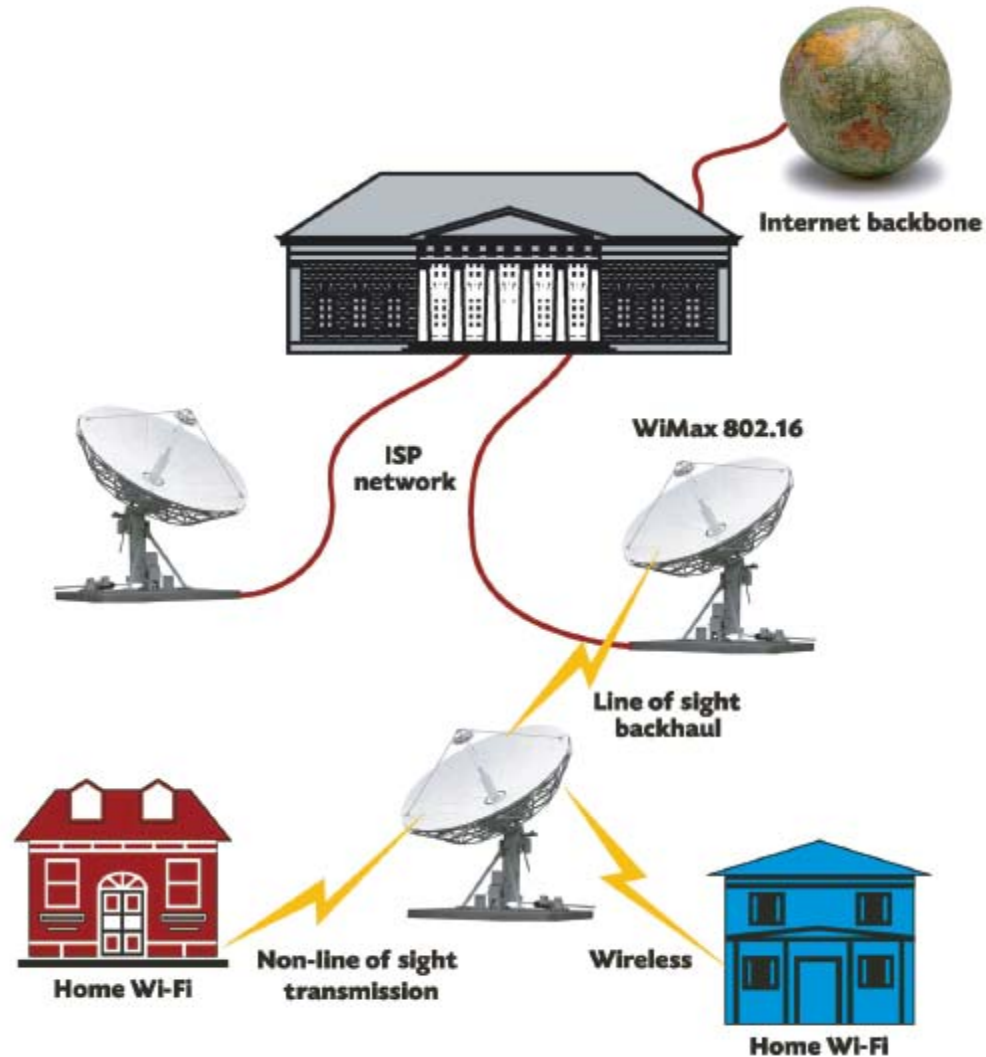
Voice over Internet Protocol VoIP

- Internet Telephony or VoIP.

- WLAN – Wireless Local Area Network

- WIMAX – portable device for communication

Network Computing – Overview and Drivers

Messaging and Collaboration

Collaboration refers to the mutual efforts of two or more individuals or groups to perform activities in order to accomplish certain tasks. These tasks range from designing products and documents, to teaching, to executing complementary subtasks, to working with customers, suppliers, and other business partners. In an effort to improve productivity and competitiveness collaboration can be supported electronically.

- **Virtual collaboration** *(e-collaboration):* the use of digital technologies that enable organizations or individuals to collaborative

- **Collaborative commerce** *(c-commerce)*: collaboration among business partners
  - Supply chains
  - Dealer/Partner Networks
  - Product Networks

Collaboration – Tools (Workflows)

- Workflow Technologies: the movement of information through the sequence of steps that make up an organization's work procedures or business processes.
    - **Workflow management** is the automation of workflows from start to finish, including all exception conditions.
    - **Workflow systems** are business process automation tools (software programs) that automate almost any information-processing task.
- Workflow applications:
    - **Collaborative workflow:** addresses project-oriented and collaborative types of processes.
    - **Production workflow:** addresses mission-critical, transaction-oriented, high volume processes.
    - **Administrative workflow:** is cross between collaborative and production workflows.

Collaboration – Tools (Groupware)

Software products that support groups of people who share a common task or goal and who collaborate on its accomplishment. Groupware implies the use of networks to connect people, even if the people are in the same room.

- **Electronic Meeting Systems** attempt to improve face-to-face meetings with their electronic counter-part.

- **Electronic Teleconferencing** (*Teleconferencing*) is the use of electronic communication that allows two or more people at different locations to have a simultaneous conference.
  - **Video Teleconferencing** (*videoconference*), participants in one location can see participants at other locations. Data (**data conferencing)** can also be sent along with voice and video making it possible to work on documents together.
  - **Web Conferencing** is Videoconferencing solely conducted on the Internet

Collaboration – Tools (Groupware) *(continued)*

Real-time collaboration **(RTC) Tools:** help companies bridge time and space to make decisions and to collaborate on projects. RTC tools support synchronous communication of graphical and text-based information.

- **Interactive Whiteboards** work like the "physical world" whiteboards with markers and erasers, except instead of one person standing in front of a meeting room drawing on the whiteboard, all participants can join in.

- **Screen Sharing software**, allows group members to work on the same document, which is shown on the PC screen of each participant.

- **Instant video**, is a kind of real time chat room that allows you to see the person you are communicating with.

Collaboration – *(continued)*
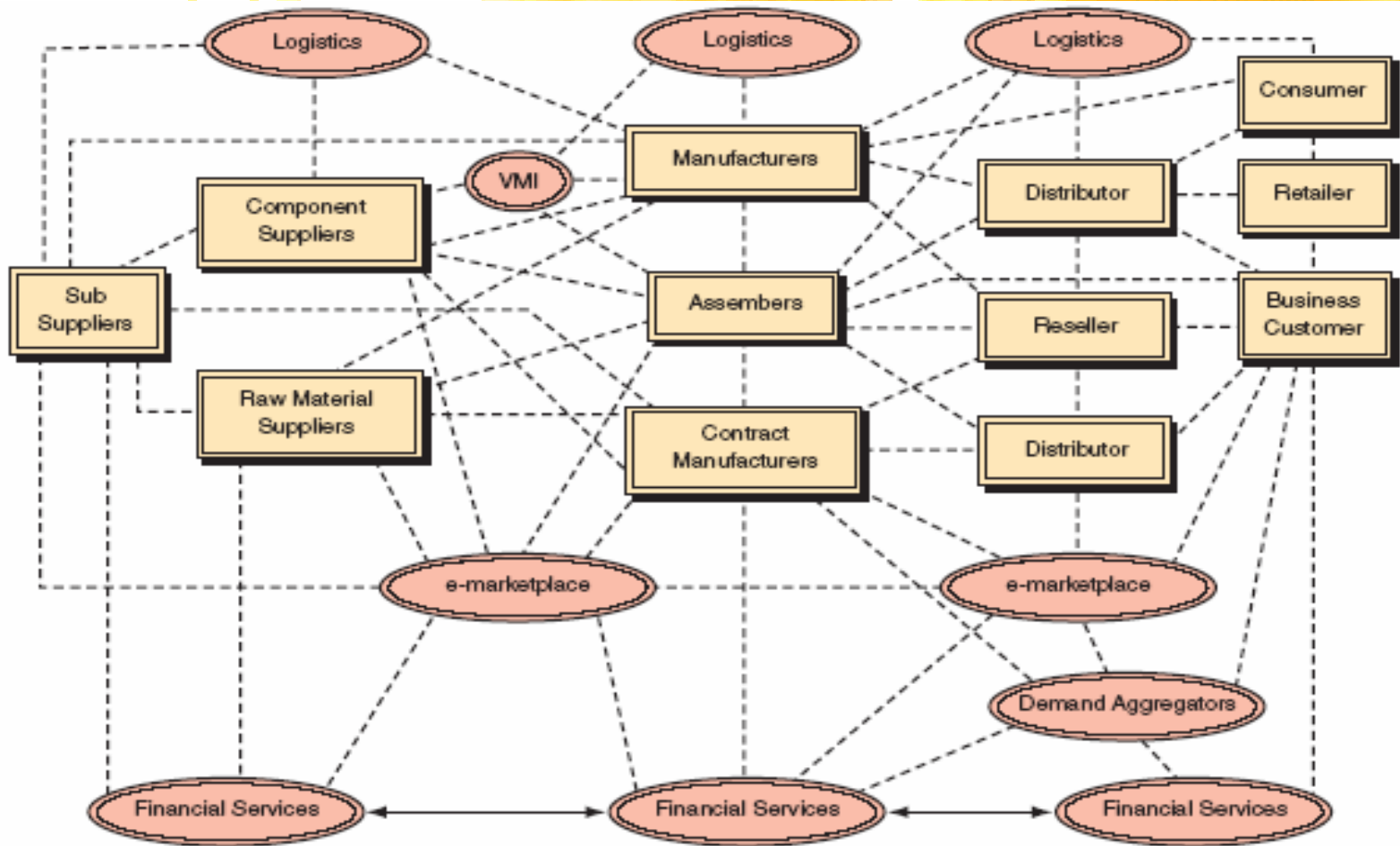
Collaborative Networks

E-Learning – Web-based Application

Distance learning (DL) refers to situations where teachers and students do not meet face-to-face. It can be done in different ways. E-learning is only one form of distance learning. It provides a new set of tools that add value to traditional learning modes. It does not replace the classroom setting, but enhances it, taking advantage of new content and delivery technologies.

- **Blackboard Inc.** (*blackboard.com)* offers a complete suite of enterprise software products and services that power a total "e-education infrastructure" for schools, colleges, universities, and other education providers.

- **WebCT** (*webct.com*) provides a similar set of tools, but with a different vision and strategy. It uses advanced pedagogical tools to help institutions of higher education make distance-learning courses possible.

Telecommuting – Web-based Application

Telecommuting, or *teleworking,* refers to an arrangement whereby employees can work at home, at the customer's premises, in special work places, or while traveling, usually using a computer linked to their place of employment.

- There are numerous non-compensatory benefits and advantages for employees, employers, and society. The most important being improved productivity.
- Some disadvantages for the *employees* are increased feelings of isolation, loss of fringe benefits, no workplace visibility, and lack of socialization.
- Disadvantages to *employers* are difficulties in supervising work, potential data security problems, training costs, and the high cost of equipping and maintaining telecommuters' homes.

MANAGERIAL ISSUES

- **Security of communication.** Communication via networks raises the issue of the integrity, confidentiality, and security of the data being transferred. The protection of data in networks across the globe is not simple.

- **Installing digital dashboards.** Many companies are installing "digital dashboards," which are a sort of one-way portal that are continuously updated with online displays. The dashboard is available to employees in visible places around the company and is also accessible from PCs, PDAs, etc. Large companies, such General Electric, believe that the cost of the dashboards can be justified by better discovery and communication they promote within the company.

- **Control of employee time and activities.** To control the time that employees might waste "surfing the Net" during working hours, some companies limit the information that employees have access to or use special monitoring software. Providing guidelines for employee use of the Internet is a simple but fairly effective approach.

- **How many portals?** A major issue for some companies is how many portals to have. Should there be separate portals for customers, suppliers, employees, for example? Regardless of the answer, it is a good idea to integrate the separate portals. If you build a separate portal, make sure it can be easily connected to the others.

MANAGERIAL ISSUES Continued

- **Organizational impacts.** Technology-supported communication may have major organizational impacts. For example, intranets and groupware force people to cooperate and share information. Therefore, their use can lead to significant changes in both organizational culture and the execution of business process reengineering. Further impacts may be felt in corporate structure and the redistribution of organizational power.

- **Telecommuting.** Telecommuting is a compelling venture, but management needs to be careful. Not all jobs are suitable for telecommuting, and allowing only some employees to telecommute may create jealousy. Likewise, not all employees are suitable telecommuters; some need the energy and social contact found in an office setting.

- **Cost-benefit justification.** The technologies described in this chapter do not come free, and many of the benefits are intangible. However, the price of many networking technologies is decreasing.

- **Controlling access to and managing the content of the material on an intranet.** This is becoming a major problem due to the ease of placing material on an intranet and the huge volume of information. Flohr (1997) suggests tools and procedures to manage the situation.

Local Area Network (LAN)

- **LAN** consists of the following components:

  - **LAN file server** is a repository of various software and data files for the network

  - **Nodes** are the client machines on the LAN

  - Wired or wireless communication media that connects the devices

Local Area Network (Continued)

- **LAN network interface card (NIC)** is a special adapter that links an individual device to the communication medium and specifies:

  - The rate of data transmission;

  - The size of the message units;

  - Addressing information attached to each message

  - The network topology

- **Network operating system (NOS)** manages the server and routes and manages communications on the network.

Wide Area Network (WAN)

- **Wide area networks (WANs)** are networks that cover large geographic areas.

  - WANs typically connect multiple LANs

  - WANs have large capacity and combine multiple channels (fiber optic, satellite, microwave, etc.)

  - WANs are provided by common carriers, such as telephone companies (Sprint, AT&T, etc.)

- **Value-added network (VAN)** are private, data-only networks managed by outside third-parties that provide these networks to multiple organizations.

Going Wireless

- Wifi - simple wireless networks

- WLAN - expanding the wireless connection

- WiMax - Long-range wireless

Network Topologies

- **Star**, all network nodes connect to a single computer, typically the file server

- **Bus**, all network nodes connect to the *bus,* which is a single communications channel, such as twisted pair, coaxial cable, or fiber optic cable

- **Ring**, network nodes are connected to adjacent nodes to form a closed loop

Enterprise Networking

- **Enterprise network** is an organization's interconnected network of multiple LANs and also can include multiple WANs

- **Backbone networks** are corporate high-speed central networks to which multiple smaller networks such as LANs called *embedded LANs* and smaller WANs connect

Managerial Issues

- **Organizational Impacts:** Changes in Communication forms

- **Future of Technology Support:** Movement toward more collaboration

- **Extending Organizational Boundaries:** Growing Reach of Organizations

- **Virtual Work:** Dispersed Organizations and the worker

- **Single view of the Truth:** improving information integrity

- **Social and Ethical Issues**

Discovery, Search, and Customized Delivery

Data mining refers to sophisticated analysis techniques for sifting through large amounts of information to discover new patterns and relationships.

- **Predictive Tools**
  - Classification (Predefined Groups)
  - Regression
  - Time series

- **Descriptive Tools**
  - Clustering (No Predefined Groups)
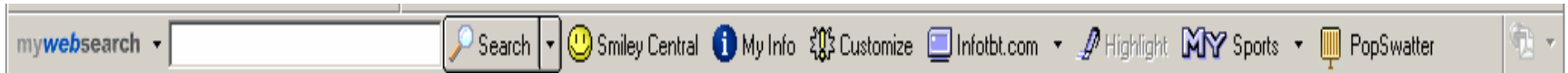 - Summarization
  - Association
  - Sequencing

Discovery, Search, and Customized Delivery

Hundreds of other search engines and discovery aids are available

- *Webopedia.com*
- *What Is?* (*whatis.com*)
- *eBizSearch* (*gunther.smeal.psu.edu*)
- *HighBeam* (highbeam.com)
- *Howstuffworks.com*.
- *Findarticles.com*

Discovery - Toolbars

To get the most out of search engines, you may use add-on toolbars and special software.

mywebsearch ▾ | 🔍 Search ▾ | 😊 Smiley Central | ⓘ My Info | ⚙ Customize | 🖥 Infotbt.com ▾ | 🖊 Highlight | MY Sports ▾ | PopSwatter

- Google Toolbar (*toolbar.google.com*)
- Copernic Agent Basic (*copernic.com*)
- KartOO (*kartoo.com*)
- Yahoo Companion (*companion.yahoo.com*)
- Grokker (*groxis.com*)

Discovery - Information in Foreign Languages

There is a huge amount of information on the Internet in languages that you may not know. Automatic translation of Web pages is an application offered by many vendors. However, not all automatic translations are equally good, so evaluation of these products is needed.

- WorldPoint Passport (*worldpoint.com*)
- Babel Fish Translation (*world.altavista.com*)
- *AutoTranslate* (*offered in Netscape browser*)
- *trados.com*
- *translationzone.com*