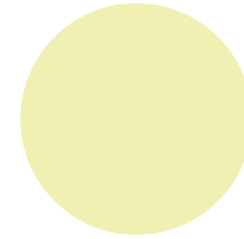
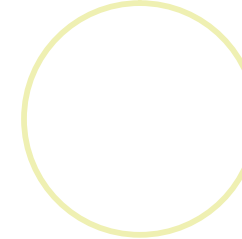
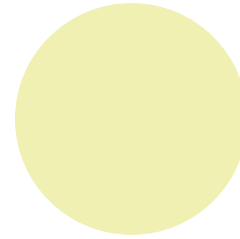
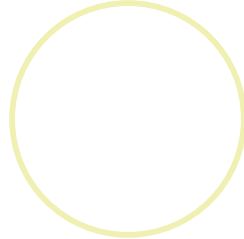


Week 3

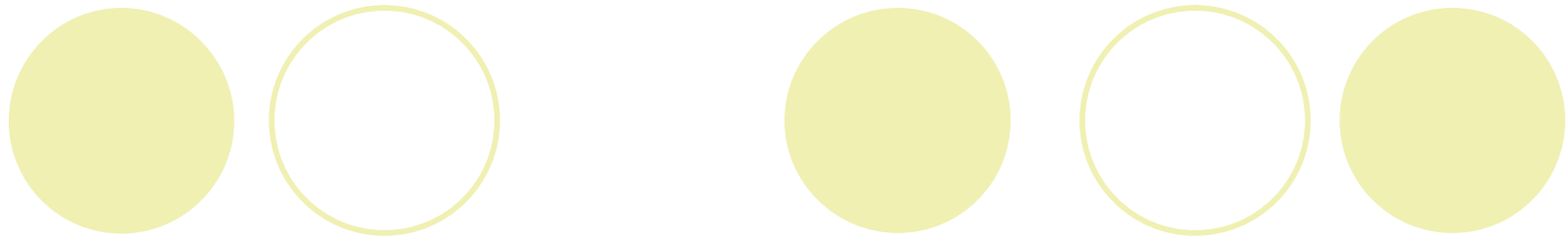


# **Telecommunications and Networks**

**Information Technology For Management 7<sup>th</sup> Edition**  
Turban, Volonino

**John Wiley & Sons, Inc.**

Week 3



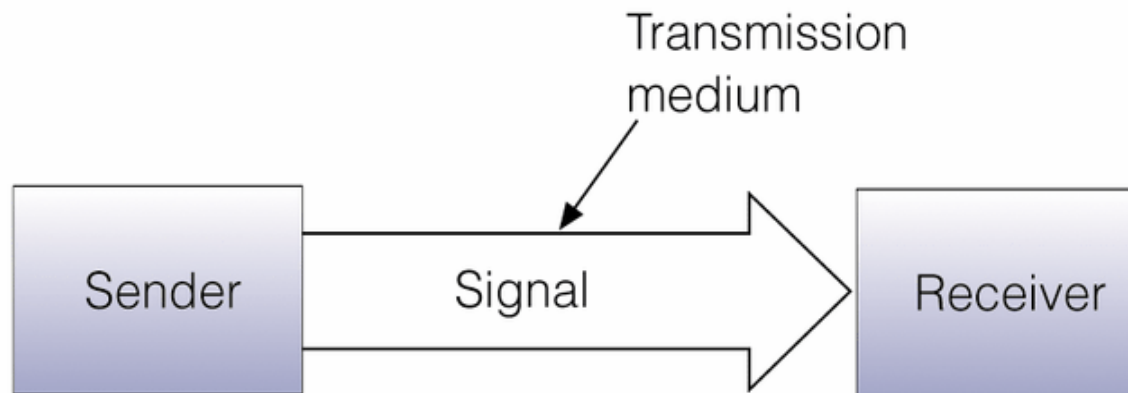
# Overview of Telecommunications Systems

# Communications

## FIGURE 6.1

### *Overview of Communications*

*The message (data and information) is communicated via the signal. The transmission medium “carries” the signal.*

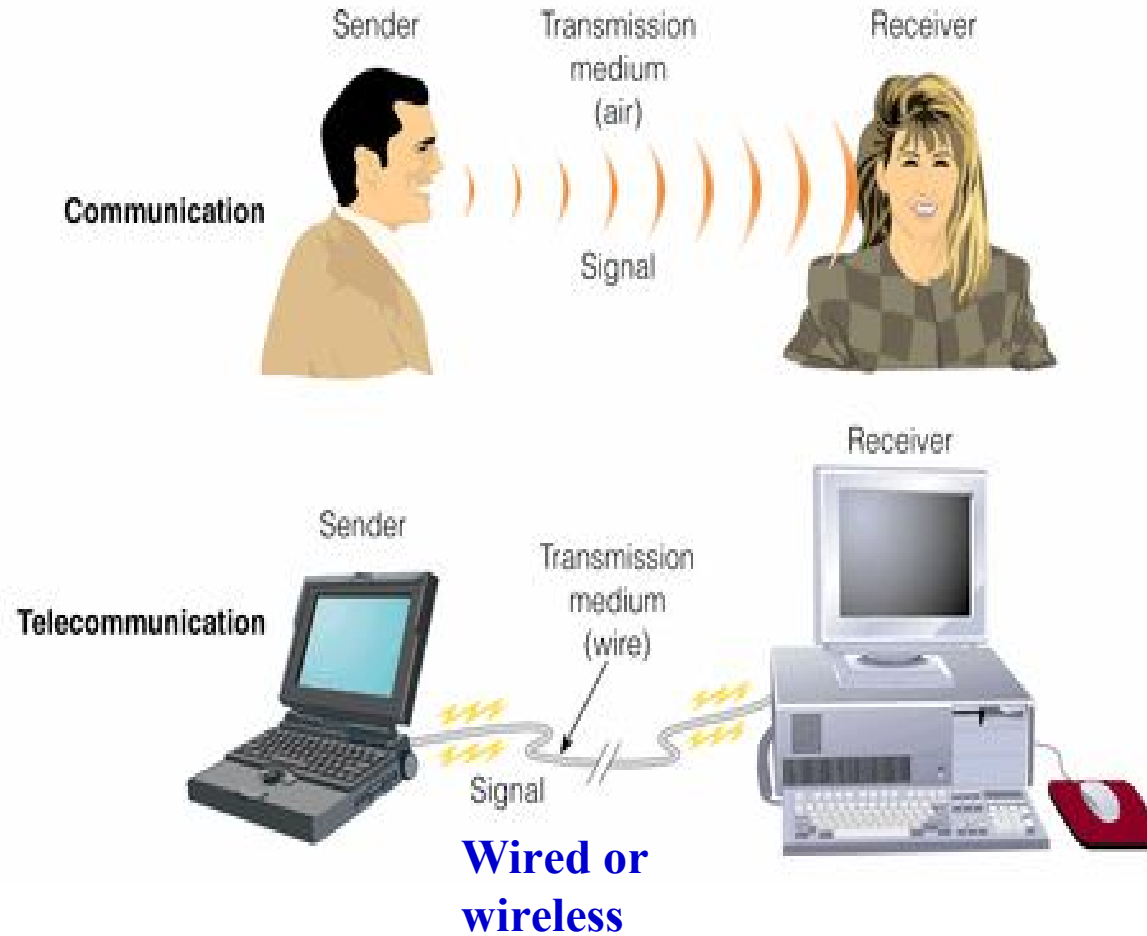


# Communications

**FIGURE 6 2**

## Communication and Telecommunication

*In human speech, the sender transmits a signal through the transmission medium of the air. In telecommunication, the sender transmits a signal through a cable or other telecommunication medium.*

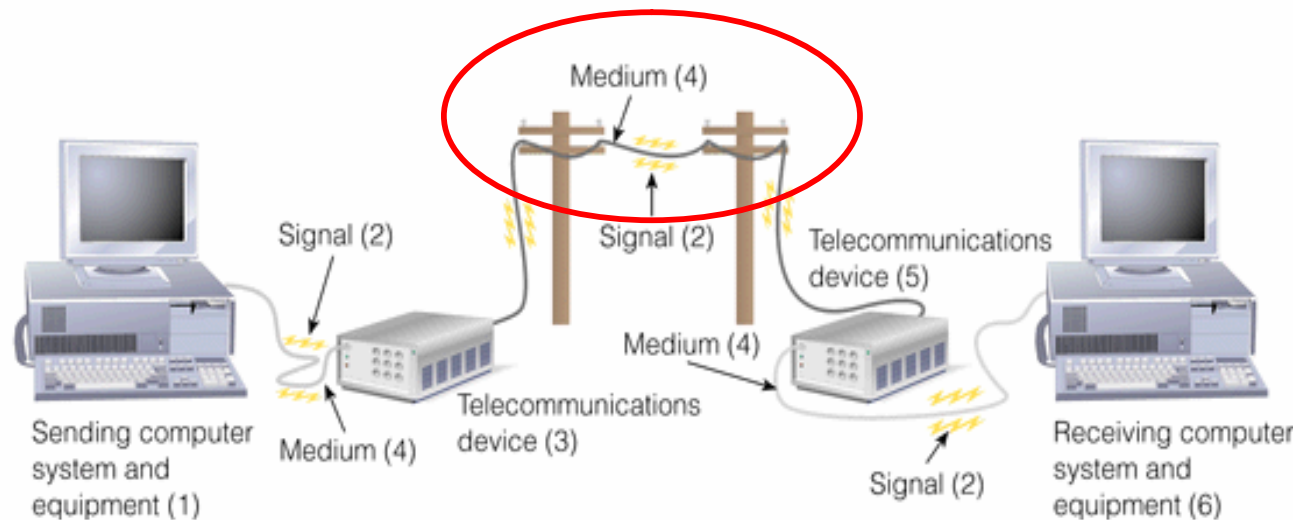


# Telecommunications

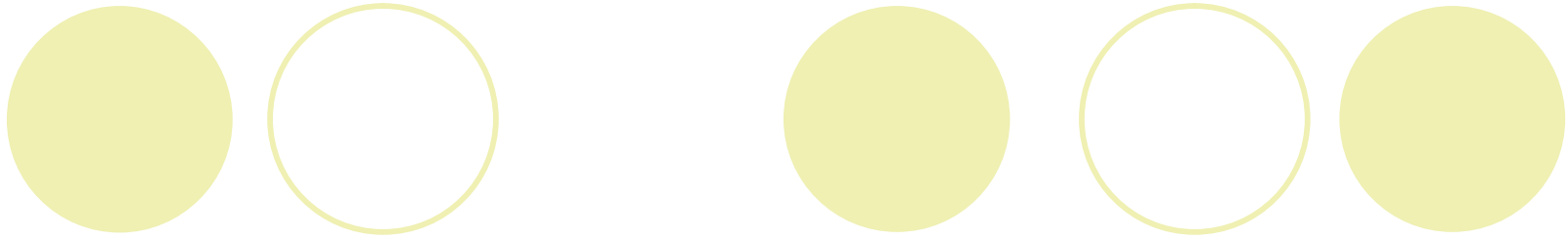
**FIGURE 6 3**

*Elements of a Telecommunications System*

*Telecommunications devices relay signals between computer systems and transmission media.*



**Tele → far apart, distant**



# Networks & Distributed Processing

# Basic Processing Strategies



- Centralized processing
- Decentralized processing or Distributed processing

# Network Concepts and Considerations

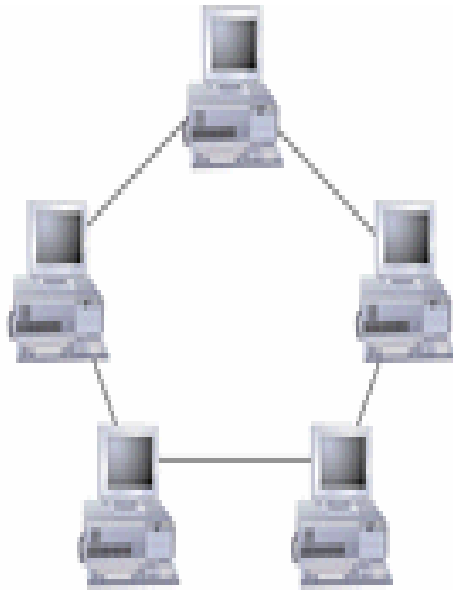
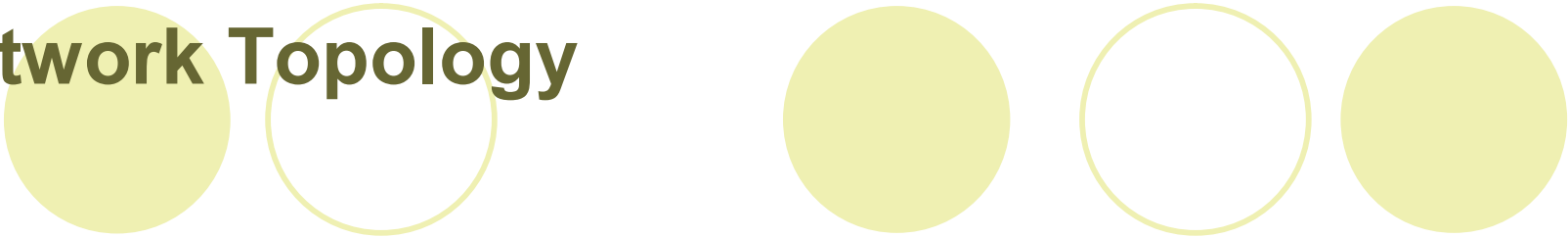
- Network topology
  - Ring network
  - Bus network
  - Hierarchical
  - Star network
  - Hybrid network
- Network types
  - Local Area Networks (LAN)
  - Wide Area Networks (WAN)



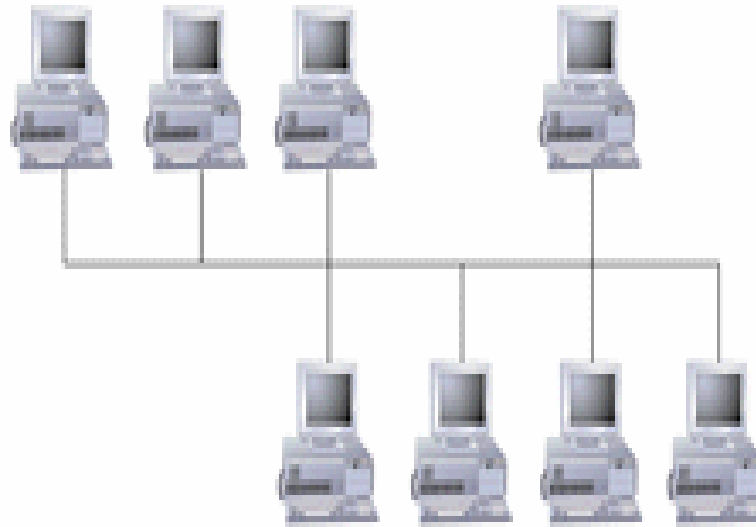
# Popular Network Topologies

- **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 (**ring**)

# Network Topology



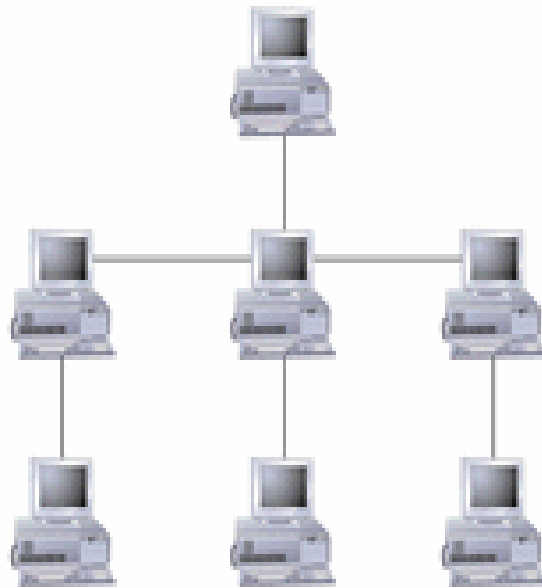
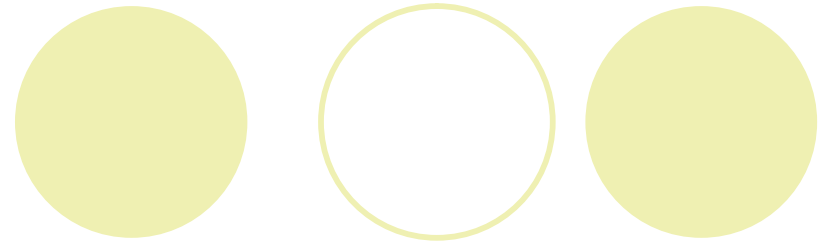
(a) Ring



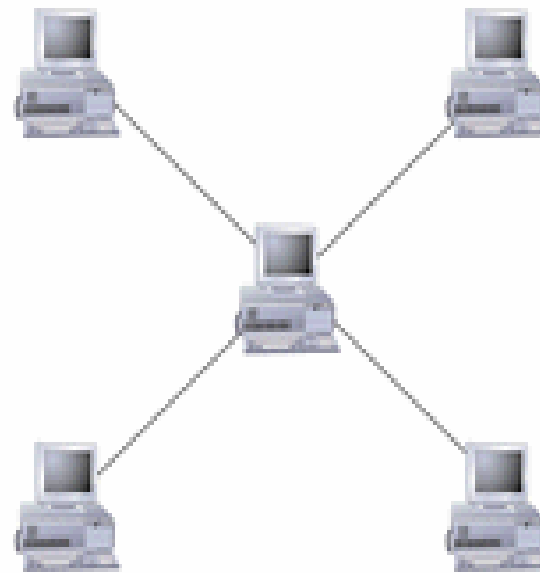
(b) Bus



# Network Topology



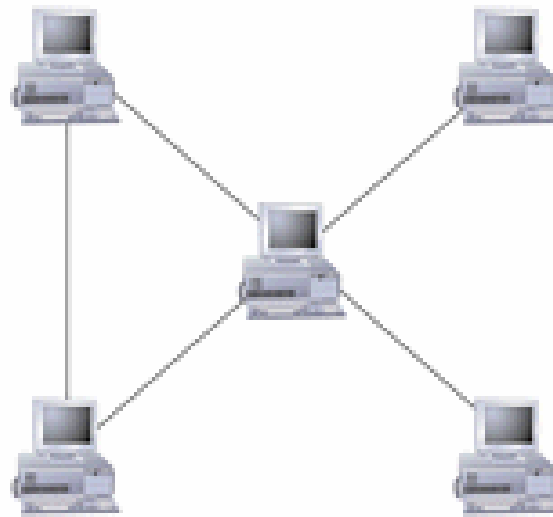
(c) Hierarchical



(d) Star

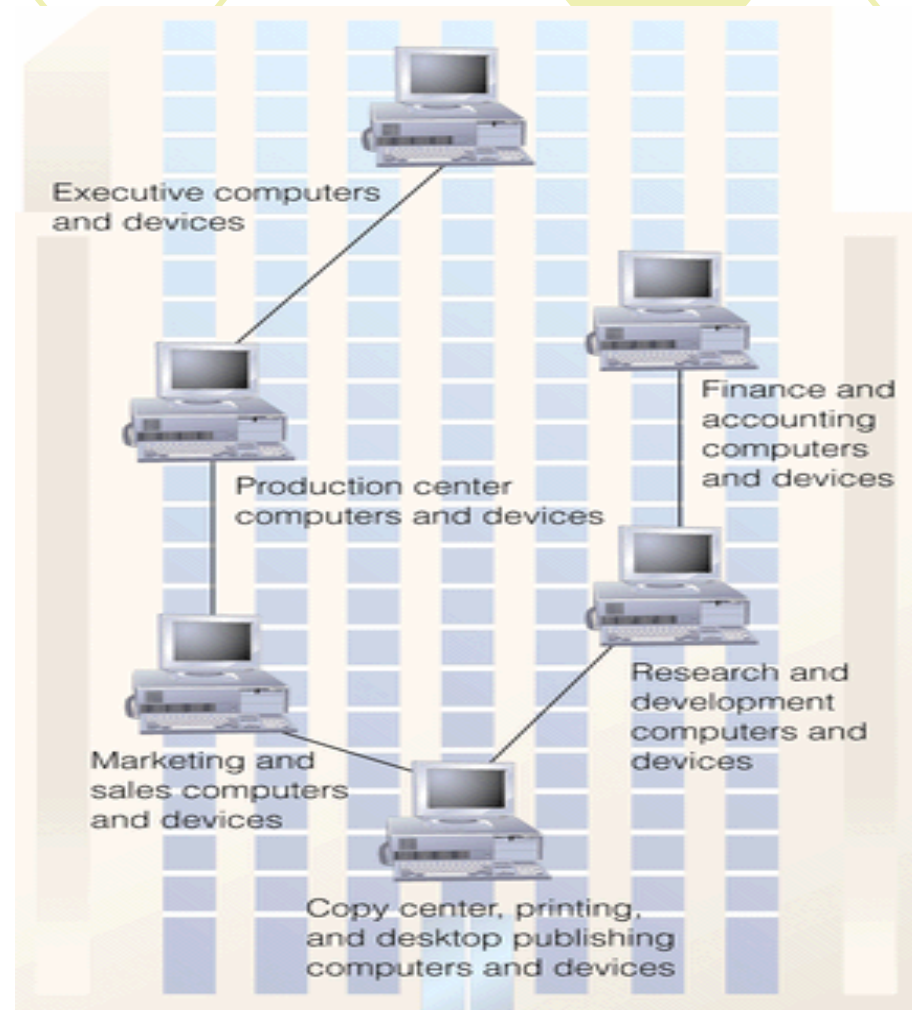


# Network Topology



(e) Hybrid

# Local Area Networks



**FIGURE 6 15**

## *A Typical LAN in a Bus Topology*

*All network users within an office building can connect to each other's devices for rapid communication. For instance, a user in research and development could send a document from her computer to be printed at a printer located in the desktop publishing center.*

# Wide Area Networks

**FIGURE 6 16**

## *A Wide Area Network*

*Wide area networks are the basic long-distance networks used by organizations and individuals around the world. The actual connections between sites, or nodes (shown by dashed lines), may be any combination of satellites, microwave, or cabling. When you make a long-distance telephone call, you are using a WAN.*



# Local Area Network (LAN)

- **LAN** consists of the following components:
  - **LAN file server** is a **warehouse** 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 (Cont)

- **LAN network interface card (NIC)** is a special adapter (**interface**) that links an individual device to the communication medium and specifies:
  - The rate of data transmission (**bps**);
  - The size of the message units (**Bytes, B**);
  - Addressing information attached to each message (**IP address**)



# 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.)

# Going Wireless

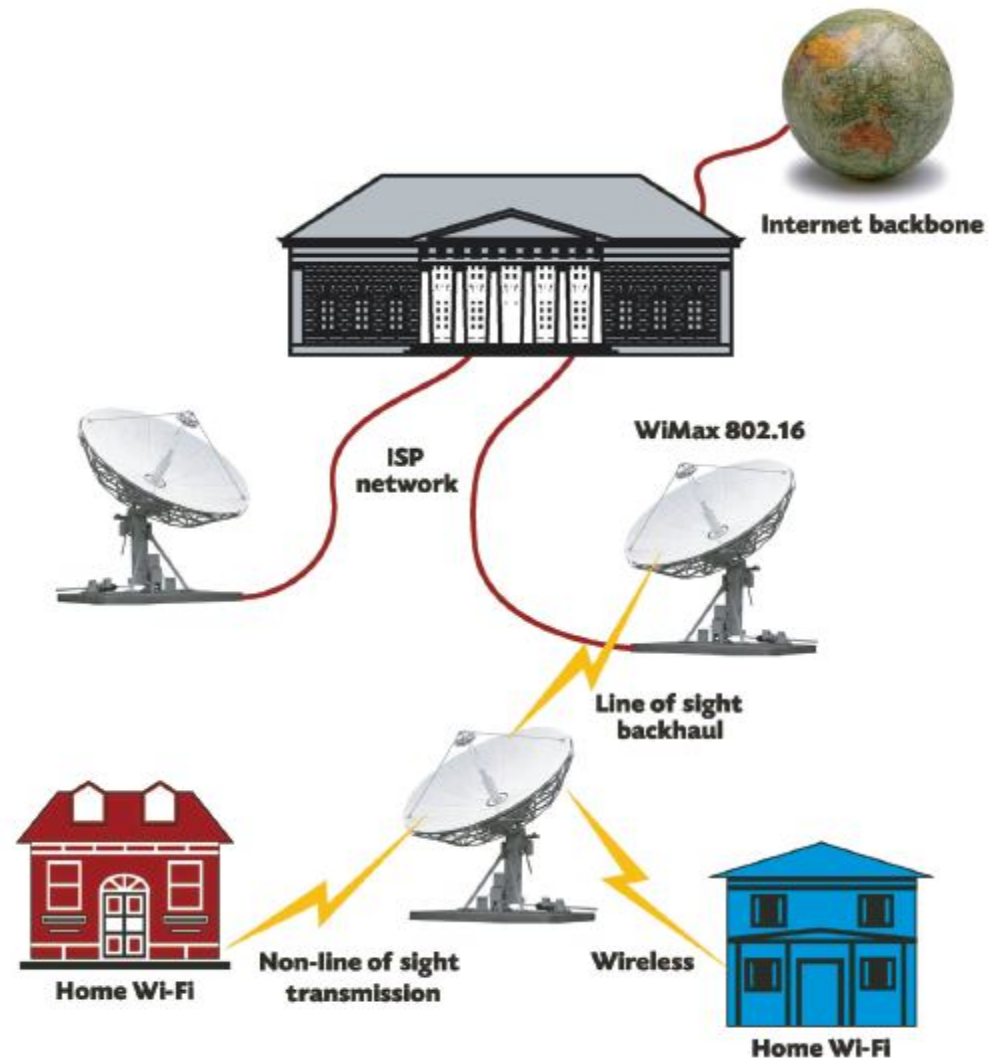
The header features the text "Going Wireless" in a dark green font. To the right of the text are three circles: a solid light green circle, an outlined light green circle, and another solid light green circle. The entire header is enclosed in a thin dark green rectangular border.

- Wifi - simple wireless networks
- WLAN - expanding the wireless connection
- WiMax - Long-range wireless


# The Network Infrastructure



# The Dis-connected Connected



# Tourism and ICTs

- 
- **Front office: reservations, check-in, payments**
  - **Back office: accounting, payroll, human resources management, marketing, procurement**
  - **Communication with consumers and alliances**
  - **Control of business processes**
  - **Customer services -- CRM**
  - **Marketing research**
  - **Management of unexpected events**
  - **Flexible and dynamic pricing**
  - **Differentiation of products**
  - **Monitoring performance indicators**
  - **Building feedback mechanisms -- FAQs**

## Tourism and ICTs

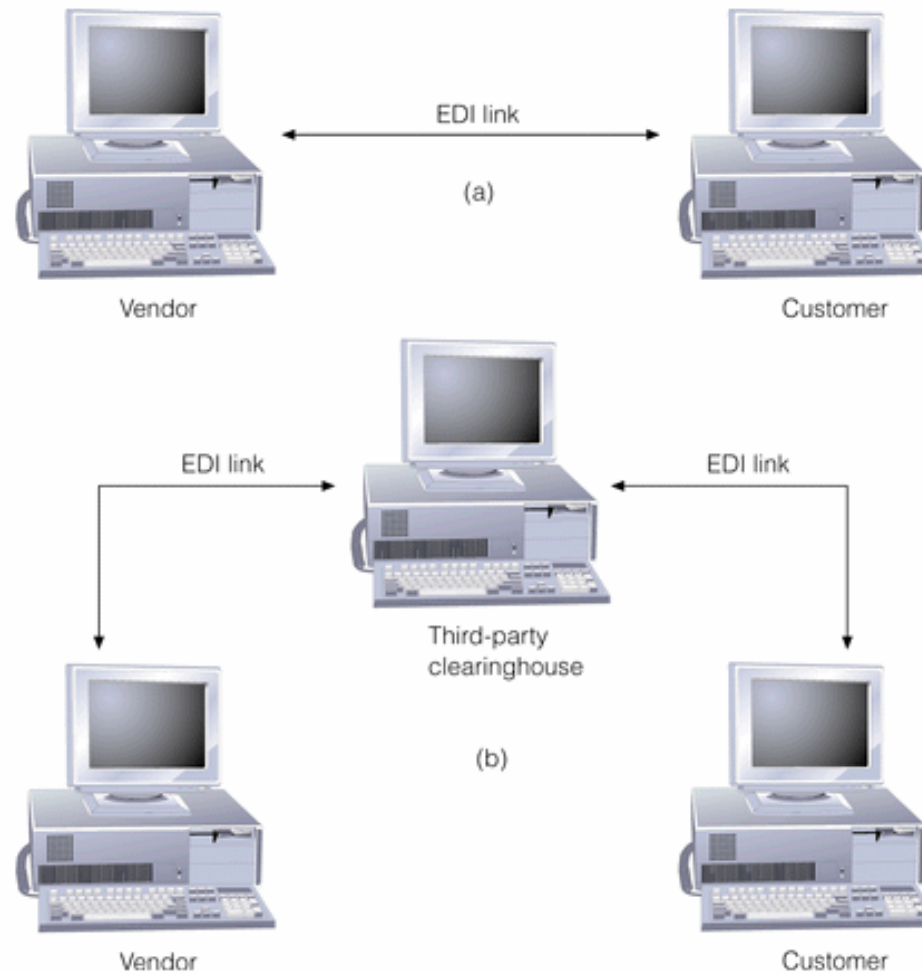
- VoIP, email and e-fax
- Mobile gadgets – Mobile reservation systems
- Videoconferencing
- Electronic Data Interchange (EDI) →
- Inter-organisational & Intra-organisational networking
- Virtual reality – Sight-seeing, Viewing
- Information superhighway
- Kiosks and touch screen terminals
- Destination Management Systems (DMSs)

# Electronic Data Interchange (EDI)

**FIGURE 6 24**

*Two Approaches to Electronic Data Interchange*

Many organizations now insist that their suppliers operate using EDI systems. Often the EDI connection is made directly between vendor and customer (a); alternatively, the link may be provided by a third-party clearinghouse, which provides data conversion and other services for the participants (b).



**Application :**  
procurement, order,  
customs

# Tourism and ICTs



- **Between partners**

- **availability/ prices inquiries**
  - negotiations and bargaining
- **reservations & confirmations**
  - lists of groups/visitors
  - receipts/documents
  - vouchers & e-tickets
- **traveling facilitation**
  - follow up progress
  - keep partners informed about plans
  - amend plans once unexpected things arise
- **feedback and clearing**
  - payment & commissions clearance
  - feedback & suggestions
  - complaint handling





# Telecommunications and Applications

- VoIP
- Electronic software distribution (upgrade)
- Telemedicine
- Videoconferencing
- Skype, Viber, WeChat etc

# Videoconferencing



**FIGURE 6 23**

## *Videoconferencing*

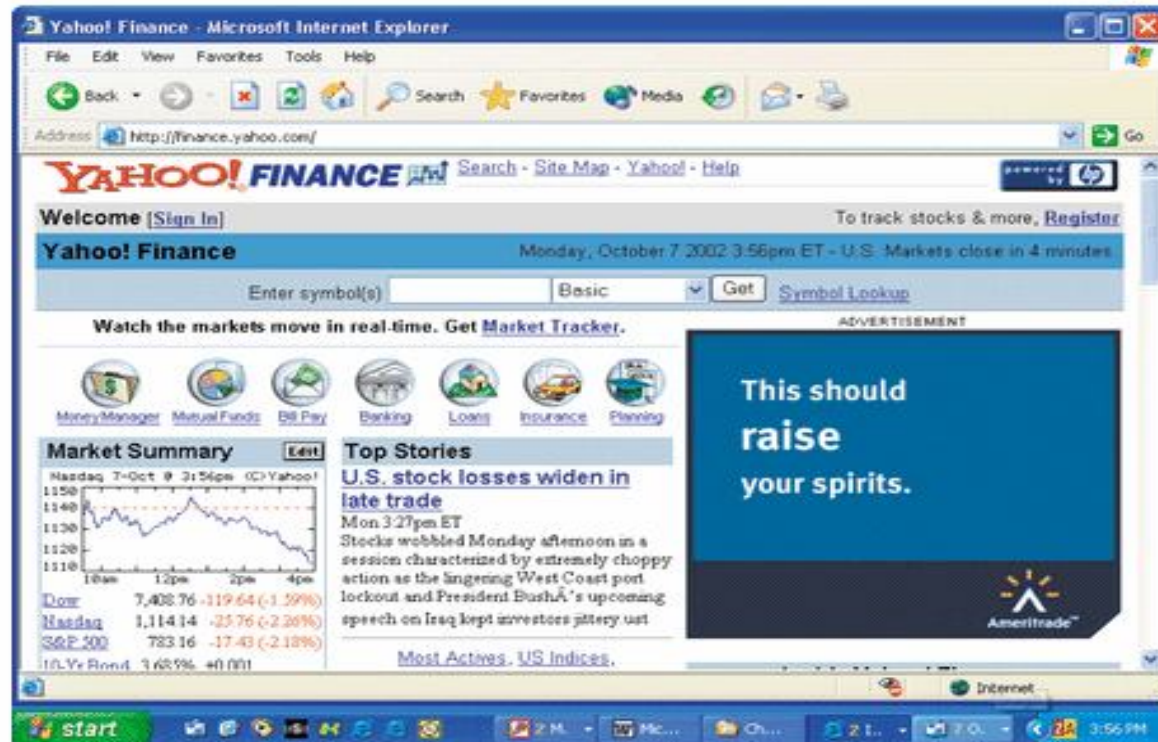
*Videoconferencing allows participants to conduct long-distance meetings "face to face" while eliminating the need for costly travel.*

*(Source: Courtesy of Zydacron.)*

# Public Network Services

FIGURE 6 25

Public network services provide users with the latest information required to remain competitive. Yahoo, for example, enables registered users to obtain up-to-the-minute stock quotes.



# Summary



- **Communications** - any process that permits information to pass from a sender to one or more receivers
- **Basic processing schemes**
  - Centralized processing
  - Distributed processing
- **Network topologies**
  - Ring network
  - Bus network
  - Star network
- **Network types**
  - Local Area Networks (LAN)
  - Wide Area Networks (WAN)