Security Strategies in Web Applications and Social Networking

Chapter 3

Evolution of People-to-People Communications

Learning Objective and Key Concepts

Learning Objective

- Analyze the evolution of people-to-people communications.

Key Concepts

- Key technologies in social media and social networking

- Differences in cultural norms between generations

- Common sites and applications in social media and social networking

Personal vs. Business Communications

Personal Communication	Business Communication
Communication between two people that is not strictly business related	Communication used to promote a product, service, or organization or relay information within the business

Email

- a strong communication medium both for personal use and for business.
- for business it provides a record of communication a method of archiving, transaction, and transmission.
- also widely used for personal communication.s
- technology is the same, but policies are different.
- NOTE: e-mail sent to and from work is the property of the employer.
- e-mail etiquette applies to both business and personal email.
- losing some ground to instant messaging (IM), social networks, and other real-time communications.

Voice over Internet Protocol

- large corporations reduce long-distance costs by incorporating VoIP into their business practices.
- VoIP is based on insecure protocols, such as Internet Protocol (IP).
- forces users to adopt security strategies to mitigate the risks.
- VoIP is widespread in businesses both small and large for the cost savings on phone charges.
- VoIP may also facilitate team collaboration through better communication with geographically separated colleagues.

Real-Time Communications

- IM originally designed for person-to-person personal chats.

- Google, Yahoo, Facebook, and Twitter all offer forms of instant messaging.

- Recently IM has been adopted in the workplace.

- IM could become more popular than e-mail and the phone.

- IM and real-time communication can improve communication between customers and clients.

- Best practices for IM and real-time communications in the workplace:
  - Separate business and personal contacts
  - Do not use IM to transmit sensitive data
  - Instant messages can be tracked and stored by the administrator
  - Keep messages brief and to the point
  - Develop company IM usage polices

Real-Time Communication with Video

- person-to-person calls using Skype offer teleconferencing over the Internet.
- video lag time has been a deterrant.
- with faster transmission media such as fiber optic cabling, lag times have been reduced.
- will be commonplace for both personal and business applications.
- real-time video conferencing for businesses is a more expensive option.

Blogging

- commonplace on the Web.
- has both a personal and business application.
- commonly used by business to promote and market services and products.
- keeps Web site content fresh and frequently updated.
- fresh content is a strong search engine optimization (SEO) strategy..
- Businesses have reasons to include a blog in their marketing efforts:
  - no technical knowledge required
  - very easy to use with a Word-type interface
  - no need for a Web designer to edit content
  - allow for two-way communication
  - enables establishing relationships with the visitors
  - helps your ranking with search results
  - easy distribution of information

Social Networking

- large numbers of people have subscribed to social networking sites.
- sites with high traffic caught the attention of business.
- now businesses are active participants in the social networking phenomenon.
- businesses advertise on social networking sites, set up groups, and apply strategies for branding and product awareness.

Evolution of Communications

- Communication evolved pictograph → alphabet → telephone → VoIP.
  - Snail mail - by postal service, slow and expensive.
  - E-mail - quick and inexpensive, allows attachments and quick retrieval of information.
  - Phone - public switched telephone network (PSTN) is stable, inexpensive, and widely available.
  - Real-time chatting (instant messaging) - largely a personal communication medium, replaced many emails and phone conversations.
  - Real-time video conferencing - Skype allows (free) computer-to-computer video calls.
  - Texting - replaces many phone calls.
  - Blogging - enables posting reviews and opinions on any topic.
  - Social networking – Twitter, Facebook are casual and quick, millions use them to communicate to their social groups.
  - VoIP - uses the Internet infrastructure as the transmission media and with near zero-usage costs could become the new standard for personal and business communications.

Voice

Analog: Anycontinuoussignalfor which the time-varying feature of the signal is a representation of some other time-varying quantity
Digital: A data technology that uses binary communication with only two discrete values
Messaging: Contacting another individual through a voice mail or text, etc.

Analog

Digital

Messaging
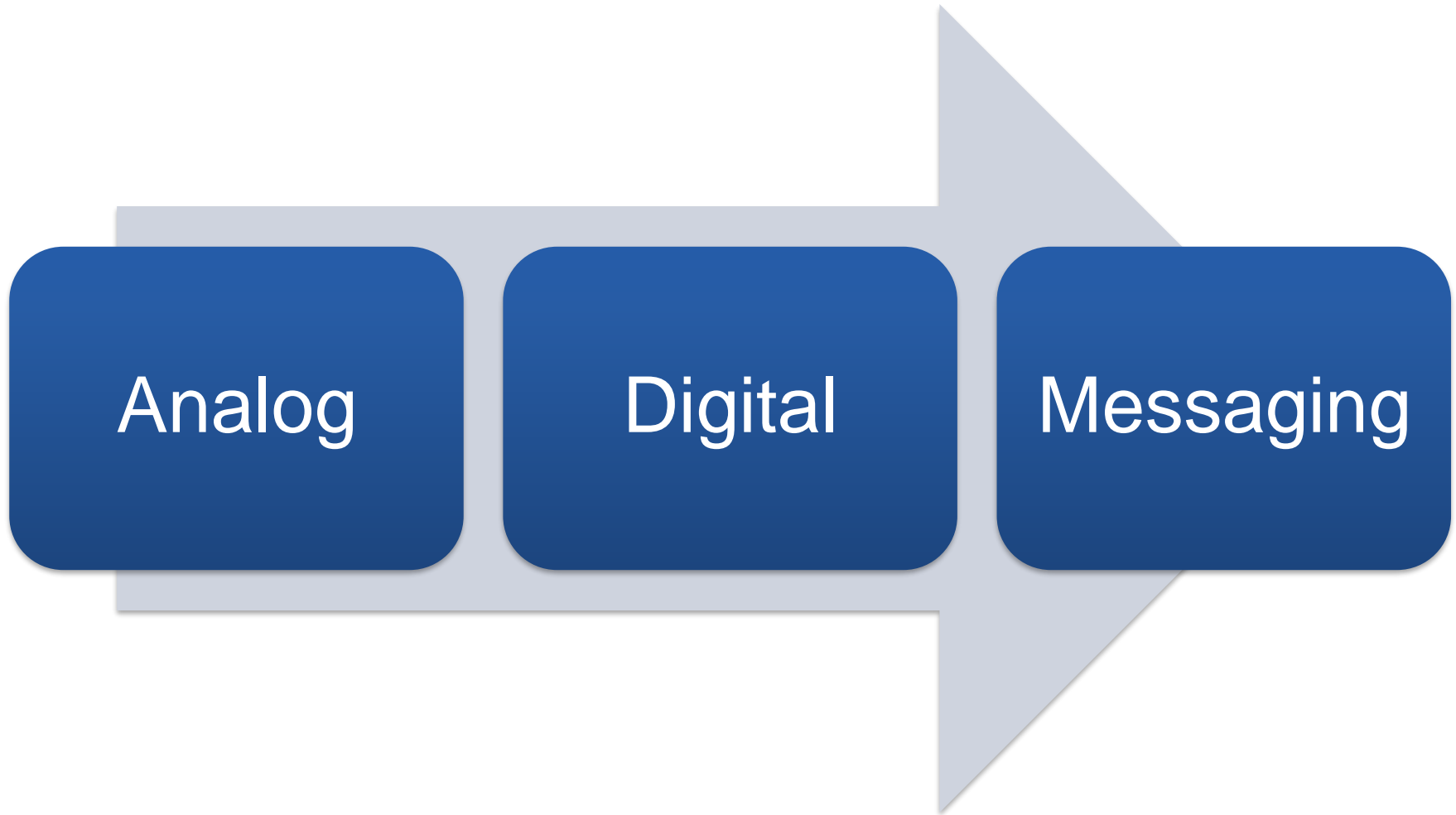
Voice: Analog, Digital, VoIP

- All networks use some form of media to transmit data and voice communications (copper-based cable, fiber-optic, wireless media).
- Communication signals are sent in analog or digital for.
- Digital communications are preferred today.
- The public switched telephone network (PSTN) has traditionally been analog, today it is largely digital.
- Analog connections still in use between homes and the local phone exchange.
- Problem with analog signals: they degrade with distance travelled through the copper media.

Packet and Circuit Switching

- Function of switching: it establishes the path between devices and routes the information between communication ends.

- Two common forms are circuit switching and packet switching.

- Circuit switching requires a dedicated physical route that connects the sending and receiving devices.

- The channel is decided upon immediately before communication starts.

- Communication stays on that channel only throughout the transmission.

- The sending system establishes a physical connection, the data is transmitted between the two, and the channel is closed when the transmission is complete. Ex: traditional phone conversation.

- With packet switching, messages are broken down into small data packets and routed independently.

- Allows for a better use of available bandwidth by letting packets travel different routes through the network, avoiding high-traffic areas.

- Message delivery is more reliable. Ex: LANs.
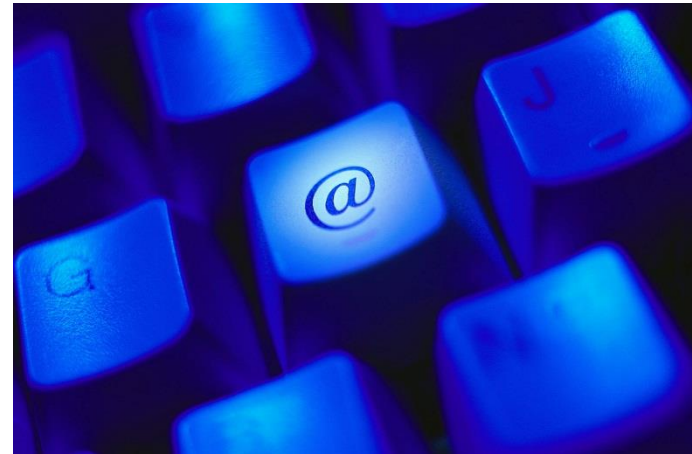
Circuit Switching
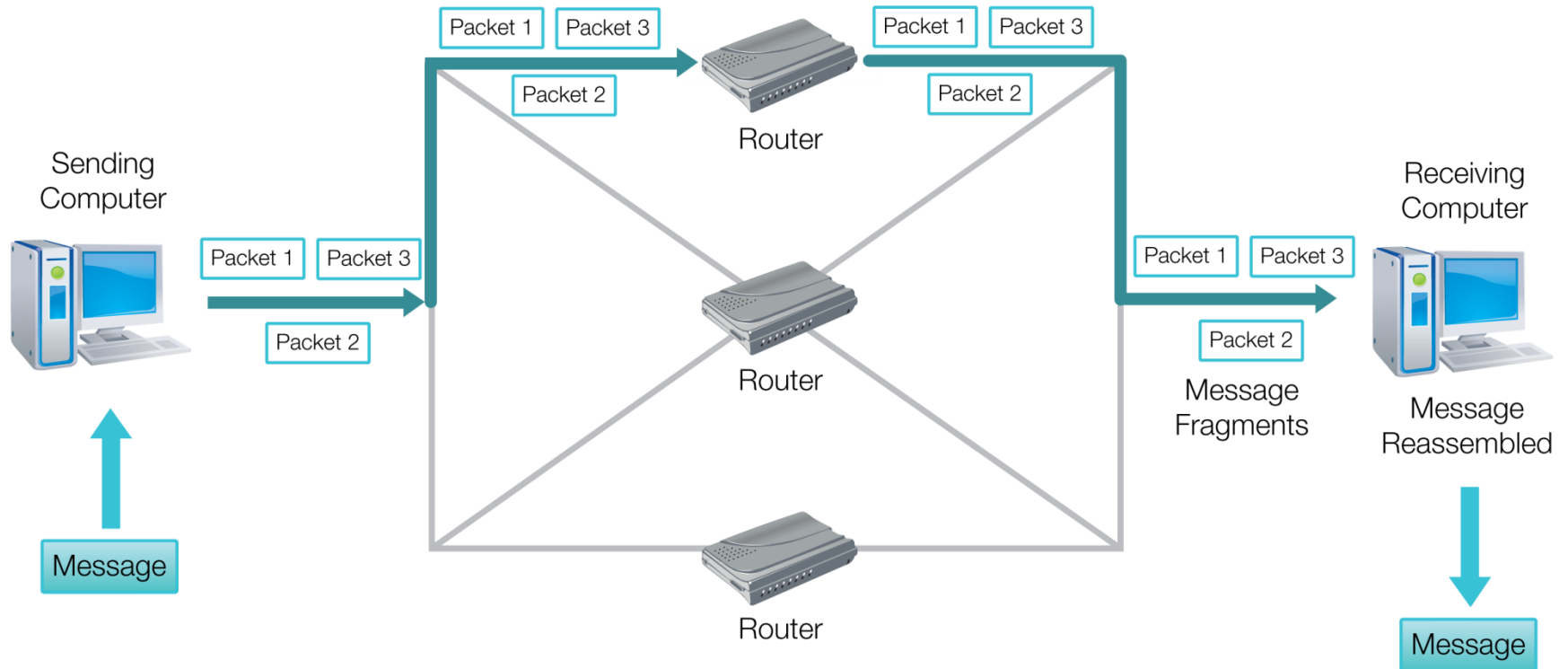
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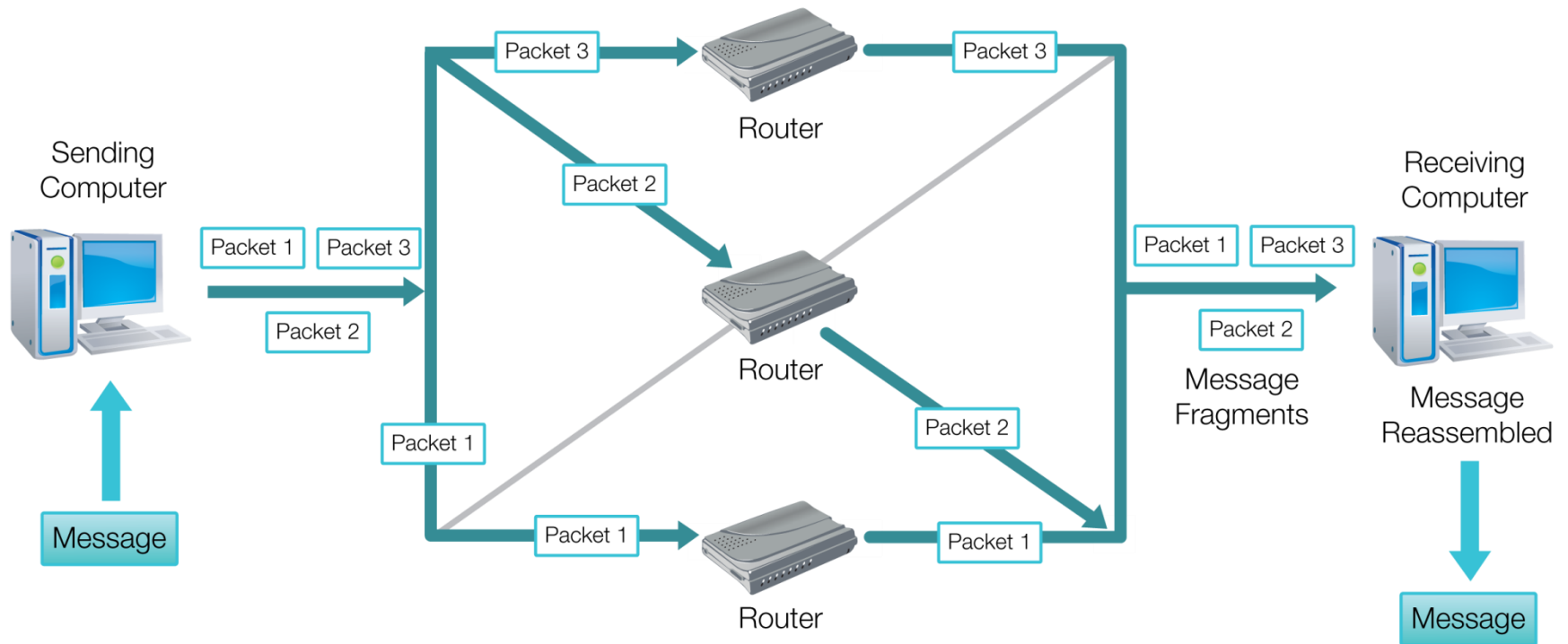
Fax and E-mail

- **Fax**: A document sent digitally over a telephone line
- **E-mail**: An electronic mail sent through a computer

Voice Messaging

- Voice messaging is similar to e-mail
- Voice messaging is not the same as voice mail. With voice messaging, the intent is to leave a voice message, not talk directly to a person.
- Users can retrieve messages from anywhere in the world.
- Third-party companies offer voice-messaging services.
- For businesses, voice messaging improves communication both internally and externally.
- Advantages:
  - can boost job productivity by not having to stop to answer every phone call
  - provides a means of archiving messages
  - messages can be sent to multiple recipients
  - accessible 24 hours per day
  - reduces message-taking costs
- Disadvantages:
  - clients and customers would rather speak to a person
  - training may be required to effectively use it
  - may not be economically feasible for smaller companies.

Faxing

- Faxing still remains necessary when signatures and company letterhead are required.
- Small to mid-sized companies may use a dedicated fax machine while other larger corporations may use a fax server.
- Faxing directly from the desktop requires a fax server to be set up, which involves both hardware and software.
- Most network fax systems appear as a network printer and the fax system asks the user for the destination phone number.
- Advantage: the transmission quality is very because there is no scanning involved.
- The fax server can communicate with the e-mail system for delivering faxes to users' mailboxes.
- Fax originally travelled through the PSTN first in analog then in digital form.
- Fax over IP (FOIP) using the T.38 protocol was developed as a way to permit faxes to be transported across IP networks between analog fax machines.

E-mail

- The communication method of choice.

- E-mail is fast, secure, trackable, affordable, and dependable.

- A server acting as the network's e-mail server is essentially a post office that manages incoming and outgoing mail.

- Novell's GroupWise and Microsoft's Exchange Server are examples of software used for mail servers.

- Many modern e-mail server products provide scheduling features that allow functions such as shared calendars to be used (groupware applications).

- As companies become increasingly dependant upon e-mail for both outside and interoffice communication, dedicated mail servers are becoming more common.

- Most e-mail systems can send and receive e-mails to the Internet using the Simple Mail Transfer Protocol (SMTP) and then are translated into the native format of the mail system being used.

UM and UC

Unified Messaging (UM)

- The integration of different electronic messaging and communications media

Unified Communications (UC)

- The integration of real-time communication services

Unified Messaging

- Is the integration of various media-fax, voice, pager messages, e-mail, and more—into a single interface for message submission, transportation, and retrieval.

- All faxes, e-mails, and voice-mails are present in one convenient inbox.

- The most common strategy to deploy unified messaging is a common message store (CMS). All messages—voice, fax, and e-mail—are placed in the user's e-mail message store.

- Unified messages are retrieved through a telephone user interface (TUI) or secure Web-based interface.

- Advantages:
  - Reduced hardware—Networks are not required to have fax machines and answering machines, which reduces hardware costs.
  - Single point of message access.
  - Increased security (centralized storage).
  - Message notifications when messages arrive.
  - Remote access.

Unified Communications

- The philosophy behind unified communications focuses on presence and availability.

- Unified messages provide methods to reach people and contacts quickly through a variety of media.

- Unified communication encompasses:
  - Unified messaging - allows users to access e-mail, voice mail, and fax messages through a single in-box either via the telephone or through a Web interface.
  - One-number
  - Real-time forwarding - accept incoming calls or forward them to voice mail in real time.
  - Multiple message notification - through voice mail, e-mail, pager or other mobile device.
  - Urgent calls are never missed.

Communication Protocol-Enabled Applications

- Presence or availability

- Instant messaging (IM), aka chat

- Audio and video conferencing

- Collaborative communications

Voice over Internet Protocol (VoIP) and Session Initiation Protocol (SIP) are the communication protocols referred in this slide.

Video Conferencing Advantages

- Reduces travel times for employees
- Reduces hotel and food expenses
- Increases productivity (employees are in the office more)
- Increases communication (can occur anytime)
- Increases ability to share and produce digital data collaboratively
- Allows collaborative projects despite geographic separation
- Makes it easier to train remote employees
- Enhances face-to-face discussions

Social Media and Networking

- Media designed to be disseminated through social interaction by using highly accessible and scalable publishing techniques

- Networking to meet and keep friends and/or contacts

- Virtual communities and online social groups

- Y-generation and people-to-people communications

What Are Social Media and Social Networking?

- Online communities to share similar interests, ideas, and beliefs.
- User profiles differ by site.
- Ads based on your demographic details, interests, and observed behaviors.
- Privacy control options on social networking sites may change without prior notice to members (responsibility of the user to stay informed)
- Web crawlers go through your profile and make it available in searches outside the social networking site.

Virtual Communities and Online Social Groups

- Social networking sites provide mechanisms for you to create and belong to online social groups and virtual communities (a feature of Web 2.0)

- Online social groups also have business applications. Some organizations use online groups for the following reasons:

  - Training for employees
  - Support for customers
  - Product marketing Focus or opinion research
  - Support for employees
  - Online employee meetings

- In general, however, businesses' social networking and virtual communities are on a collision course. Productivity losses are high due to time spent on social networking.

Online Presence and Networking

Personal Social Networking Sites

- **MySpace** (launched in 2003) –
  - Subscribers to MySpace can follow musicians and actors and become fans. On their profiles, members can post playlists of their favorite music.
  - MySpace sells advertising as a part of its business model. The advertising is targeted to the member by using the behavioral data.
  - On your MySpace profile, you can set and share your mood, using emoticons.
  - Members can blog about their interests. Other users can leave comments. You can access the MySpace Music sections and generate playlists that play from your profile.

- **Orkut (**launched in 2004) –
  - Free-access social networking solution by Google that is most popular in Brazil and India. Originally,
  - Membership was by invitation only, to establish stronger circles of trust.

- **Yahoo 360 (**launched in 2005) –
  - Yahoo 360 closed its operations everywhere, except in Vietnam, in 2009.
  - It let users create personalized avatars and choose the environments in which the avatar was displayed. Avatars can now be used by other Yahoo services, such as Yahoo Mail and Yahoo Messenger.
  -

- **Facebook** (launched in 2004) -
  - Facebook is arguably the most popular general social networking site.
  - Started as a social network for the Harvard University community only.
- **Twitter** (launched in 2006) -
  - Social networking and microblogging site.
  - You can send and read brief messages and status updates using up to 140 characters.
- **Ning and Plaxo.**
  - Ning and Plaxo serve the general audience.
  - Ning (Chinese for "peace") is a social networking hosting service that allows members to create their own sites with customizing tools.
  - Plaxo offers address book and calendaring service options. It allows members to integrate activities from other sites with their profiles. In a strategic alliance with the cable TV provider Comcast, Plaxo now promotes Comcast's brand network.

Professional Networking

- **LinkedIn**, launched in 2003
  - used for professional networking
  - generates revenue from advertising and sales of premium features to its subscribers.
  - you can search for people and invite them into your first circle of professional connections.
  - members can post presentations for their business or services or use other widgets that LinkedIn provides.
- **Ziggs** is a social network for professionals similar to LinkedIn.
- **Biznik** and **Networking for Professionals** are social networking sites for small businesses.
- **E.Factor** is a network also built around entrepreneurs. It provides business listings, blogs, forums, deals, and discount services. Users can search for businesses with which to partner or find financing opportunities for their own business. It is an online community and a virtual marketplace.
- **Ecademy** and **Young Entrepreneur** focus on sharing information among entrepreneurs,

Online Social Behavior

- professional e-mail communication is governed by professional guidelines and best practices. Rules for content, form, style, and substance were established.

- Online social networking can be tricky. You may have online friends who are not offline friends Guidelines, whether formal or informal, are needed to manage the social networking environment.

- One common recommendation is to develop a "friend" strategy.

- Businesses develop guidelines for social networking that may include:
  - All posts should have the company's best interests in mind and be respectful of the company.
  - Social networking activities should not interfere with workplace responsibilities.
  - Posts must not violate copyright laws.
  - Posted images should not violate company privacy policies.
  - Company logos and trademarks may not be used without consent.

Communication: Evolution of New Processes

- Use of language in online communications
- Social networking protocols
- Chat room protocols
- Acceptable use policies (AUP)
- Limitations of liability

Online Language

- As times and technologies have changed through the years, so has the English language. A lot of the changes have come due to the speed of life that people are leading. There are shortened ways to convey your thoughts through typing online.
  - Example: "NVM" Never Mind
  - Example: "IDK" I don't know

Social Networking Protocols

- Social networking protocols are a formal description of message formats and the rules for exchanging those messages in social networking sites.

Chat Room Protocols

- Chat rooms have evolved out of the old Bulletin Board System that worked like a modern Internet forum. Users who want to participate in live conversations, use chat rooms to do so.

Acceptable Use Policies

- Acceptable use is a set of rules applied by the owner or manager of a network, Web site, or large computer system that restricts the way in which the network site or system may be used.

Limitations of Liability

- An organization, such as Facebook, is not liable for the content that people post on its Web site.

- This includes any actions or reactions people take and/or post online.

Summary

- Key technologies in social media and social networking

- Differences in cultural norms between generations

- Common sites and applications in social media and social networking