



# Chapter 8

Networking and Digital Communication

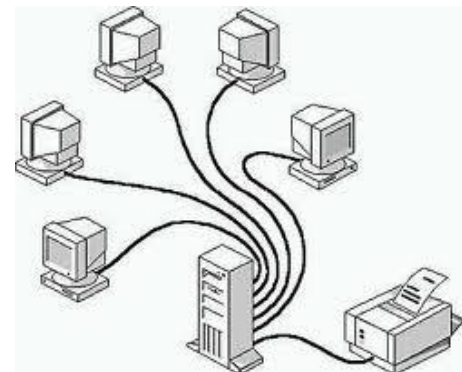
Part 2

# Topics

- Network Advantages
- Specialized Networks
- Interpersonal Computing
  - Emails
  - Blogs
  - Social Networking
  - Community collaboration
  - Online Gaming
- Online Survival Tips

# Network Advantages

- Networks enable people to:
  - **Share** computer **hardware** resources
    - Print servers accept, prioritize, and process print jobs
  - **Share** data and **software** programs
    - Site licenses reduce costs for multiple copies of software
  - **Work, play, and communicate together**
    - Groupware enables several users to work on the same document at the same time.



# THE INTERNET OF THINGS

Printers alert your computer that ink needs replacing



Elevators notifying facilities of a fault in the system wirelessly



WiFi



Air Con/Heating controlled centrally to ensure building runs efficiently



Centralised monitoring of Street lighting/water mains



Sensors on factory floors to control equipment

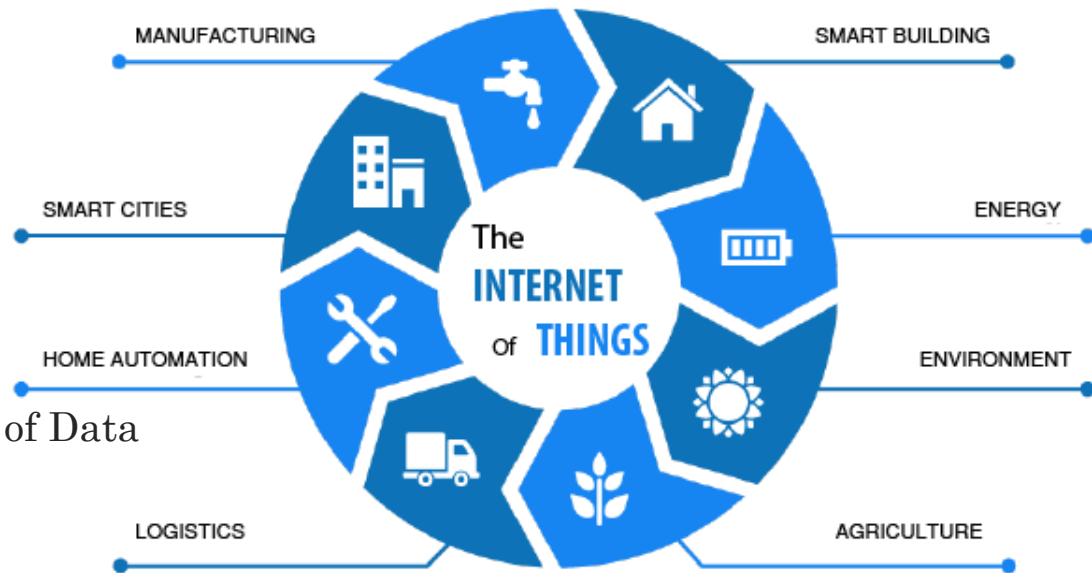


Sensors that call emergency services if an elderly person falls at home



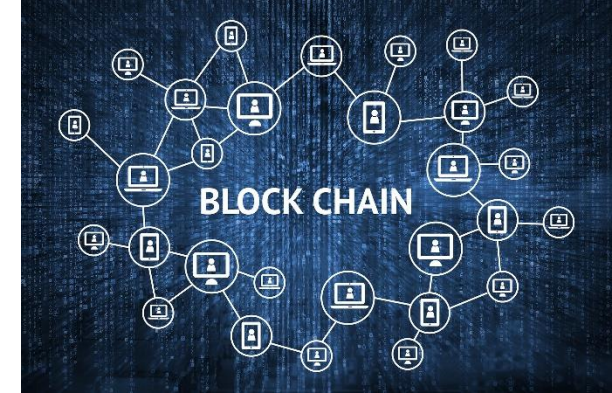
# Internet of Things IoT [Video Link](#)

- The Internet of things has evolved due to the convergence of multiple technologies, real-time analytics, machine learning, commodity sensors, and embedded systems. Traditional fields of embedded systems, wireless sensor networks, control systems, automation, and others all contribute to enabling the Internet of things.
- The interconnection via the Internet of computing devices embedded in everyday objects, enabling them to send and receive data.
- Applications:
  - Smart Home
  - Smart Cities
- Challenges:
  - Security
  - Privacy
  - Massive amounts of Data





# Specialized Networks

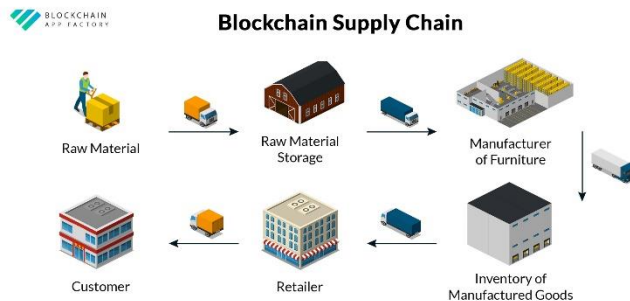


- **Blockchain**

- A system in which a record of transactions are maintained across several computers that are linked in a peer-to-peer network. Transactions are verified by network nodes and recorded in a public ledger.

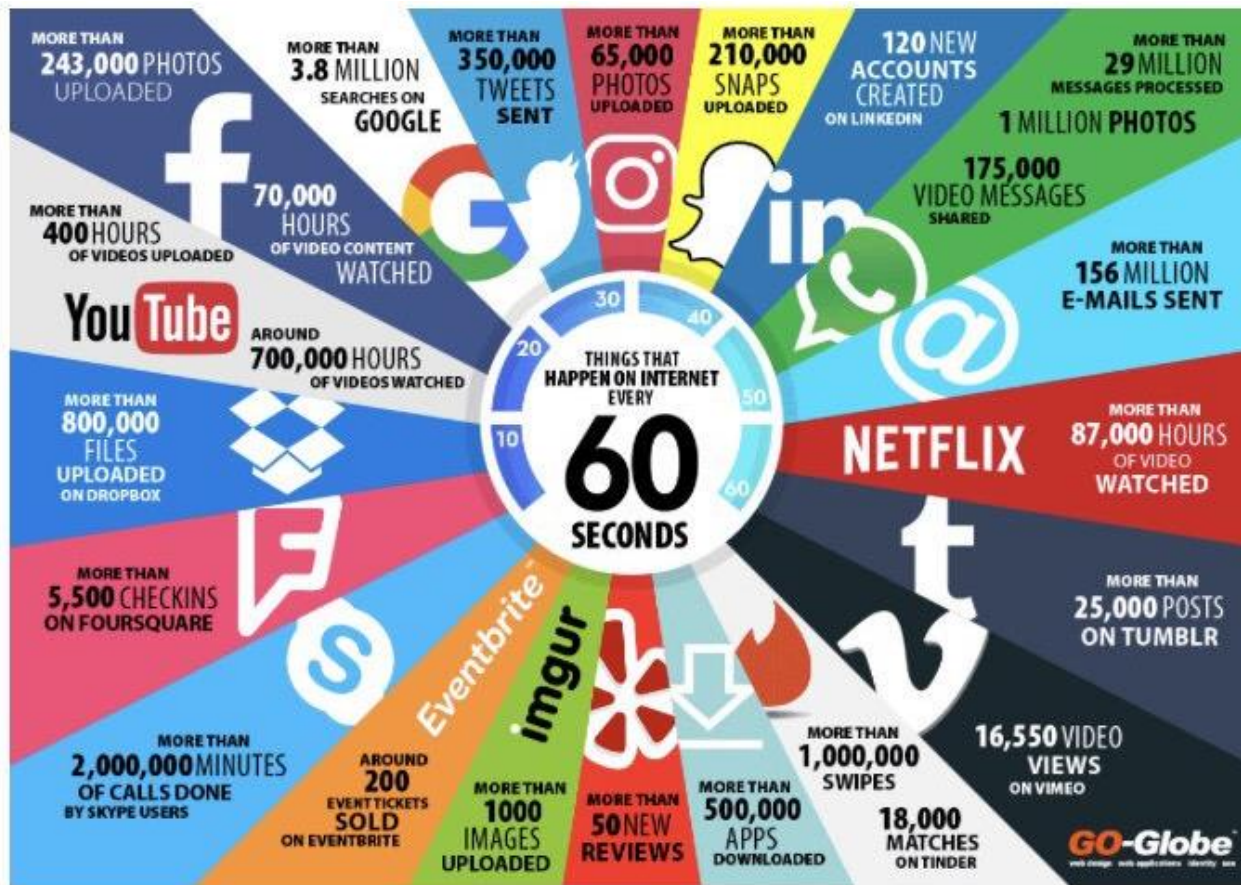
- **Applications:**

- **Cryptocurrencies** ([Bitcoin](#), Ethereum, etc...)
  - Is a digital asset designed to work as a medium of exchange that uses strong cryptography to secure financial transactions.
- **Supply chains and logistics** (IBM Blockchain)
  - Knowing the status and condition of every product on your supply chain from raw materials to distribution is critical.



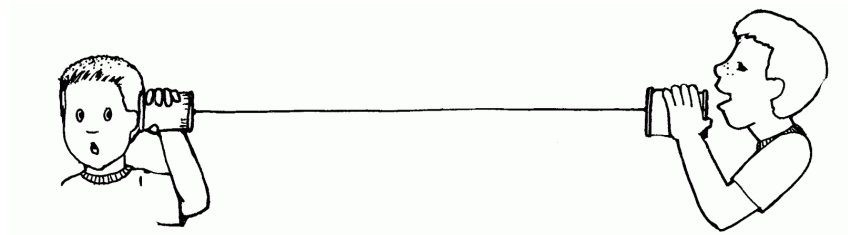
# Network Advantages

- What do you think happens in the internet in 60 seconds?



# Interpersonal Computing

- **Human-to-human** digital communication
  - Users spend around **70% of connected time** on the internet **to communicate** with other users.
  - **Applications:**
    - Emails
    - Chatting
    - Blogging
    - Video teleconferencing
    - Computer Telephony
    - Social Networking
    - Information Sharing



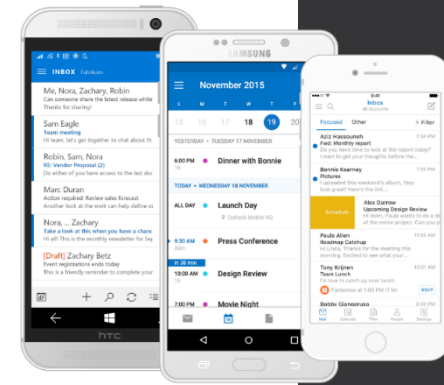




# Online Communication

- Allows people to interact while being physically located at different places in the world
- **Synchronous communication**
  - Real time communication between all parties
  - Instant Messaging (IM), Audio Conferencing, and Video Conferencing
- **Asynchronous communication**
  - Poster and reader don't have to be logged in simultaneously.
  - Examples : Emails, Newsgroup, Forums, etc...
  - Text messaging: Uses SMS technology

# Email



- Messages distributed by electronic means from one computer user to one or more recipients via a network.
- **Email Server**
  - Is a server that handles and delivers e-mail over a network, usually over the Internet. A mail server can receive e-mails from client computers and deliver them to other mail servers. A mail server can also deliver e-mails to client computers.
- **Common Issues:**
  - Spam unwanted junk mail
  - Attachment sizes
  - Email size limitations



# Audio Communication

- It enables two or more people to use the computer as a telephone conferencing system
- **IP Telephony or Voice over IP (VoIP)**
  - Is a general term for the technologies that use the **Internet Protocol's** to exchange voice, fax, and other forms of information that have traditionally been carried over dedicated phone lines.
- **Voice Mail:**
  - Is a computer-based system that allows users and subscribers to exchange personal voice messages



# Video Communication

- **Video Teleconferencing:**

- Capability of simultaneous video and audio for communication between people in real-time.

- **Benefits:**

- No need to travel
- Saves time
- Share resources and collaborate





# Blogging



- **Blogs (Web Log)**

- An ongoing online diary or commentary written by an individual. Examples: Blogger, WordPress, etc...

- **Micro blogs**

- Is the practice of posting small pieces of digital content—which could be text, pictures, links, short videos, or other media. Example: Twitter, Facebook, etc...

- **Video Blog (Vlog)**

- Is a form of blog for which the medium is video, entries often combine embedded video (or a video link) with supporting text and images.



# Social Network Revolution

- Is an online platform which people use to build social networks or social relationship with other people who share similar personal or career interests, activities, backgrounds or real-life connections



# Social Networking Issues

## Pros

- Easily accessible
- Inexpensive
- Informed & connected

## Cons

- Privacy
- Information overload (Oversharing)
- Addicted at the expense of personal relationships

How social Media is rewiring our brains?

# Social Media Influencers

- Users on social media who has established credibility in a specific industry.
- A social media influencer has access to a large audience.
- They contribute content
  - YouTube Videos
  - Snapchat
  - Instagram

## 3 Types of Social Media Influencers



Micro-influencers

> 1,000  
FOLLOWERS



Macro-influencers

> 100,000  
FOLLOWERS



Celebrities

> 1,000,000  
FOLLOWERS



74%

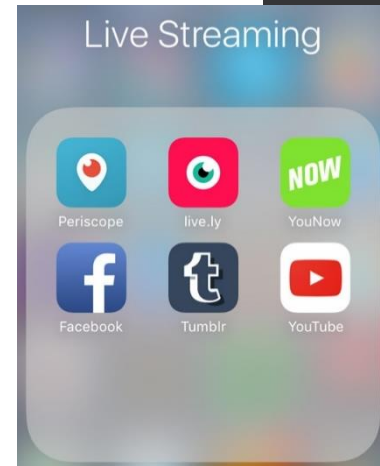
of consumers rely on  
**social media** to  
influence their  
**purchasing**  
**decisions.**



# Media Sharing



- **Video sharing platforms:**
  - YouTube, Vimeo, Keek, etc..
- **Viral video:**
  - Video that spreads through the process of internet sharing, in a short time period.
- **Streaming:**
  - Transmit or receive (data, especially video and audio material) over the Internet as a steady, continuous flow.
- **Live Streaming**
  - Refers to online streaming media simultaneously recorded and broadcast in real time
- **Podcasting:**
  - the practice of using the Internet to make digital recordings of broadcasts available for downloading to a computer or mobile device.





# Community Collaboration

- **Crowdsourcing**: using the internet and the intelligence of the crowd to accomplish a task or solve a problem for the benefit of all.
- Different forms
  - **Crowdsolving**: a collaborative, yet holistic way of solving a problem using many people
  - **Crowdfunding**: the collection of funds from the crowd to sponsor a project, e.g. Kickstarter, gofundme, indiegogo
  - Non commercial work, e.g. Anyone can contribute to it, Wikipedia



# Online Gaming

- Is either partially or primarily played through the Internet or another computer network
- Includes:
  - First Person shooter
  - Strategy Games
  - Massively Multiplayer Online Role-playing Games (MMORPGs)



# Online Gaming



- Gaming Networks
  - PlayStation Network
  - Xbox Live
  - Nintendo Network



- Characteristics
  - Thousands of simultaneous players
  - Players take roles in the virtual worlds
  - Passionate addiction of the Players
  - Cooperation among group of players required





# Sharing Resources

- Peer-to-Peer:
  - File sharing without posting on central server (music), e.g. torrents
- Grid Computing
  - Sharing processing power rather than data
- Cloud Computing
  - Resources come from the internet



# Online Survival Tips

- Maximize work by system
- Store Names in Address book
- Don't share emails/ passwords
- Don't display privacy matters
- Don't open suspicious mails
- Don't open suspicious links (phishing)
- Keep your system up to date
- Cross check online information
- Beware of fake stories circulating
- Avoid information overload