1.2 Investigates the need of technology to create, disseminate and manage data and information

Applicability of information in day today life

- Decision making - Information is useful for making decisions of day-to-day life.
- Predictions - Today's information would helpful to predict how it would be in the future. For an example, present information on currency exchange would be helpful to predict that for the following month or for the following year.
- Policy making
- Planning, scheduling and monitoring

Drawbacks of manual methods in manipulating data and information

Manual Data Processing

Data processing and information creation can be done manually. Some drawbacks occur such as ,

- consuming more time in entering and organizing data manually
- human errors in data processing may lead to inaccurate information
- Manual methods are inefficient in sharing information and hard to provide a quality service to the customer
- Data inconsistency may occur in manual methods of manipulating data and information

Data inconsistency - occurring the same data in two different files in different formats or values. When same data exist in different files, updates cannot be done easily.

Automatic data processing

Utilizes technology to store, process and retrieve data.

Benefits of Automatic data processing

- Automatic data processing handles data more efficiently than manual data processing and
- requires considerably less human interaction than in manual data processing.
- Some everyday applications in which automatic data processing outperforms (perform better than) manual data processing are emergency broadcast signals, security updates and weather advisories.
- In situations such as bad weather, harmful radiation and in some scientific or space research and also in war areas in which manual data processing is not possible, automatic methods save human lives.

Emergence of ICT era

With the dawn of Information and Communication Era, it has turned the world into a global village.

With the help of networking, there are endless connectivity, interactive technologies, information sharing and infinite access of data.

It eliminates drawbacks of manual data manipulation and make available a fast, easy, convenient and accurate information creation and dissemination (spreading information).

ICT has emerged as a key tool for influencing the process of organizations and people around the world catching up with the technological advancement such as the Internet, the WWW, mobile communication, mobile computing and cloud computing.

Internet and WWW

The Internet was launched in 1969 when the United States funded a project that developed a national computer network called Advanced Research Project Agency Network (ARPANET). The Internet is a large network that connects together smaller networks all over the globe.

The web (World Wide Web or WWW), was introduced in 1991 by Tim Berners Lee and at the moment who directs the World Wide Web Consortium (W3C), a group of industry and university representatives that oversees the standards of Web technology.
Prior to the web, the Internet was all text and no graphics, animations, sound, or video. The web made it possible to include these elements. It provided a multimedia interface to resources available on the Internet.

The first generation of the web, known as Web 1.0, focused on linking existing information. In this generation search programs, like Google Search, were created to provide links to websites containing specific words or phrases.

In 2001, the second generation, Web 2.0, evolved to support more dynamic content creation and social interaction. Facebook is one of the best-known Web 2.0 applications.

Web 3.0 is the current generation. It focuses on applications that automatically prepare personalized content for users. For example, Google Now uses data from the web (e.g., an individual's calendar of planned activities, weather reports, traffic reports, etc.), searches for interrelationships among the data (e.g., the effect of weather and traffic on an individual's planned daily commute to work), and automatically presents relevant information to the user (e.g., sends an early morning message to the individual's smartphone regarding expected bad weather and/or traffic delays). It is easy to get the Internet and the web confused, but they are not the same thing.

The Internet is the physical network. It is made up of wires, cables, satellites, and rules for exchanging information between computers connected to the network. Being connected to this network is often described as being online. The Internet connects millions of computers and resources throughout the world. The web is a multimedia interface to the resources available on the Internet.

Every day over a billion users from nearly every country in the world use the Internet and the web. What are they doing?

The most common services of internet and www

• Communicating is by far the most popular Internet activity. You can exchange e-mail, photos, and videos with your family and friends from almost anywhere in the world. You can locate old friends and make new friends. You can join and listen to discussions and debates on a wide variety of special-interest topics.

• Shopping is one of the fastest-growing Internet applications. You can window shop, look for the latest fashions, search for bargains, and make purchases.

• Searching for information has never been more convenient. You can access some of the world's largest libraries directly from your home computer. You can find the latest local, national, and international news.

• Education or e-learning is another rapidly emerging web application. You can take classes on almost any subject. There are courses just for fun, and there are courses for high school, college, and graduate school credit. Some cost nothing to take and others cost a lot.

• Entertainment options are nearly endless. You can find music, movies, magazines, and computer games. You will find live concerts, movie previews, book clubs, and interactive live games.

Web 3.0 application

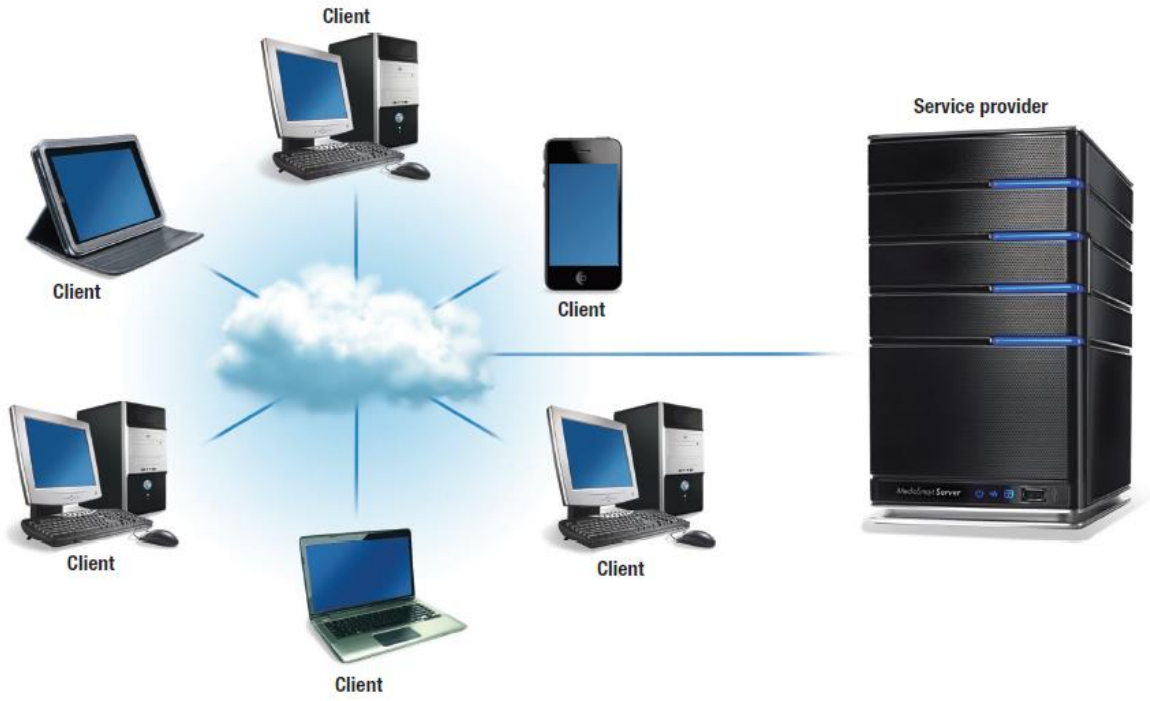
Mobile communication and mobile computing

Mobile communication involves the transmission of information over a distance without the help of wires, cables or any other forms of electrical conductors. Initially the mobile communication was limited between one pair of users on single channel pair. To accommodate multiple users Time Division Multiple Access (TDMA), Code Division Multiple Access (CDMA), Frequency Division Multiple Access (FDMA) and their hybrids are used.

Mobile Computing is a technology that allows transmission of data, voice and video via a computer or any other wireless enabled device without having to be connected to a fixed physical link.

Cloud Computing

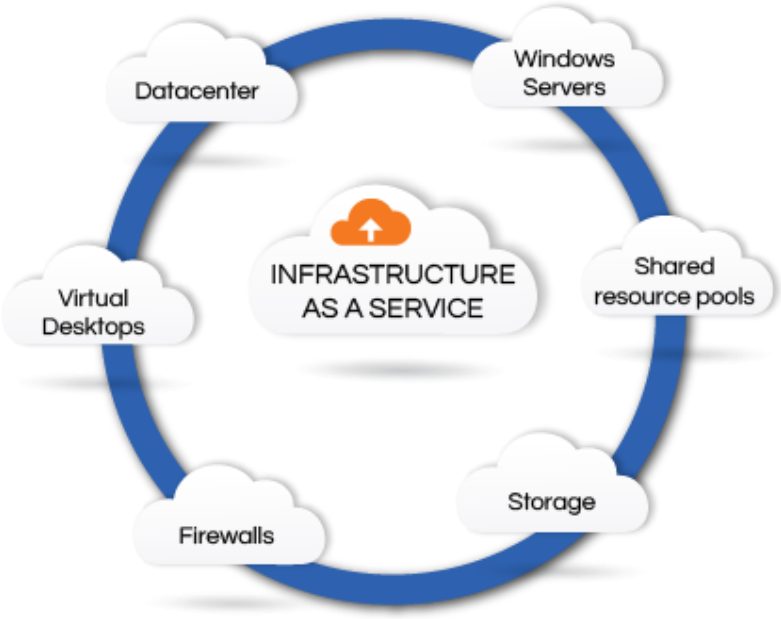
The term Cloud refers to a Network or Internet. A Cloud is present at a remote location and provides services over a network. Applications such as e-mail, web conferencing, customer relationship management (CRM) run in clouds. Cloud Computing refers to manipulating, configuring, and accessing the applications online. It offers online data storage, infrastructure and application. Cloud Computing provides access to applications as utilities, over the Internet.



There are reference models on which the Cloud Computing is based. These can be categorized into three basic service models as listed below:

1. Infrastructure as a Service (IaaS) - provides access to fundamental resources such as physical machines, virtual machines, virtual storage, etc.

Ex - Customer Relationship Management, games, virtual desktop applications



2. Platform as a Service (PaaS) - provides the runtime environment for applications, development & deployment tools, etc.

Ex - Database, web server, deployment tools

3. Software as a Service (SaaS) - allows to use software applications as a service to end users.

Ex - Virtual machines, servers, storage, networks

References

Teachers' Guide

Computing Essentials -2017