# Mobile Computing

Dhilip Kumar Thirumoorthy

3rd year B.E.C.S.E, United Institute of Technology, Coimbatore.

**Abstract–** *Due to increase in the number of portable computers and the need for network connectivity, mobile computing has become an important part in day to day activities. Mobile computing offers many benefits for organizations who choose to integrate their technologies into fixed organizational system. From wireless laptops to cellular phones mobile computing has become an unavoidable part. Mobile computing improves quality, accessibility, efficiency and enhances management effectiveness. The scope of this paper is to discuss about characteristics, applications and issues that arise in mobile computing.*

Keywords: Mobile computing, Wireless Technology, Application, Limitations.

## I.i    INTRODUCTION

Mobile computing is a human-computer interaction by which a computer is expected to be transported during normal usage. Mobile computing involves mobile communication, mobile hardware and mobile software. Mobile communication is the concept of using small and portable devices with wireless connections in an unknown location or the location which is not predefined. A concept of creating an information management platform which is free from temporal and spatial constraints is called mobile computing. The connectivity mode that has been used is known as "Mobile Connectivity".

The mobile connectivity between two nodes exists if they are continuously connected through wireless channels and could utilize the channels without subject to temporal and spatial constraints.

### A.   CHARACTERISTICS OF MOBILE COMPUTING

Mobile computing is a combination of computer hardware, software and application software and some communication mediums. Some of the characteristics are based on the following:

- Hardware
- Software
- Communication

### a   HARDWARE

The factors such as size, weight, storage (primary and secondary), microprocessor, forms of input and output, battery life, durabilityetc., determine the characteristics of computer hardware.

### b   SOFTWARE

Mobile computing uses following two types of software:

- System Software
- Application Software

Some of the system software's used are Windows, Android etc. Each operating environment has a form of Integrated Development Environment (IDE) for application development. Most operating environments provide more than one development environment.

### B.COMMUNICATION

Communication is a very important characteristic in mobile computing. The way of communication in a mobile computing can be classified into the following

- Connected
- Weakly Connected
- Batch
- Disconnected

The connected state implies that there is continuous and high speed connection available. The weakly connected state denotes that communication is continuous but the connection is a slow speed one. A batch connection denotes that the mobile computer is not continuously available for communication. Disconnected state denotes that there is no connection available between the mobile computer and the fixed information system.

### (i) COMMUNICATION TECHNOLOGIES THAT ARE AVAILBLE

There are many technologies that are available for the communication of mobile computers. Some of the technologies that are available are given below

- Wireless Local Area Networks(WLAN's)
- Personal Communication Systems(PCS's)
- Specialized Mobile Radio Service(SMR)

## I.i    WORKING OF MOBILE COMPUTING

Information flows through wireless channels in mobile computing. The processing unit is free from temporal and spatial constraints. A processing unit (client) is free to move about the space while getting connected to server. This is a powerful facility which allows users to get to data site independently. The working of mobile computing has its basics in Personal Communication Systems (PCS's.).PCS refers to a wide variety of wireless access and personal mobility services. PCS includes high-tier cellular systems and low tier cellular systems.

### A.    HIGH-TIER CELLULAR SYSTEMS:

High-tier digital cellular systems include the following:
- Global system for mobile communications.
- Personal digital cellular.
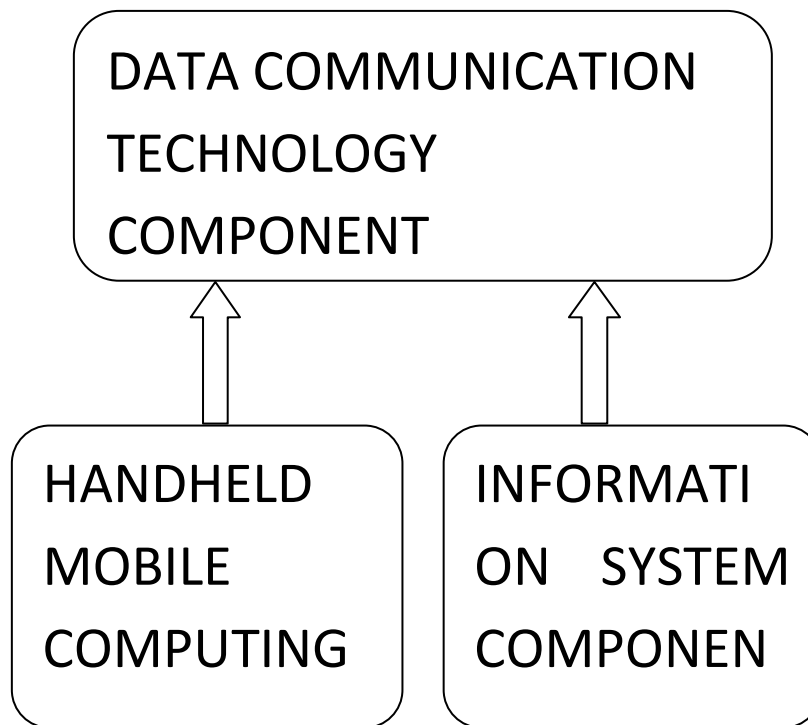
### B.    LOW-TIER CELLULAR SYSTEMS:

Low-tier digital cellular systems include the following:
- Cordless Telephone System 2(CT2).
- Personal Handy Phone Systems (PHPS).

## I.ii    MOBILE COMPUTING COMPONENTS

There are three components in mobile computing:
- Handheld mobile computing device
- Communication Technology Component
- Centralized Information System

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┌─────────────────────────────────┐
│  DATA COMMUNICATION             │
│  TECHNOLOGY                     │
│  COMPONENT                      │
└─────────────────────────────────┘
        ▲                ▲
        │                │
┌───────────────┐  ┌───────────────┐
│  HANDHELD     │  │  INFORMATI    │
│  MOBILE       │  │  ON  SYSTEM   │
│  COMPUTING    │  │  COMPONEN     │
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A.   APPLICATIONS OF MOBILE COMPUTING
        There are two types of applications of mobile computing:
- Horizontal Applications
- Vertical Applications

C.       HORIZONTAL APPLICATIONS
- Web browsing
- Word processing
- Scheduling
- Contact management

D.       VERTICAL APPLICATIONS
- Retailing
- Shipping
- Medical
- Public safety

E.   BENEFITS OF MOBILE COMPUTING
- Improved Information Accessibility
- Increased Operational Efficiency
- Increased Management Effectiveness
- Emergency Services

F.   LIMITATIONS OF MOBILE COMPUTING
- Insufficient Bandwidth
- Security Standards

- Power Consumption
- Potential Health Hazards

## I.iii    CONCLUSION

Mobile computing is an important, evolving technology. It enables mobile personnel to effectively communicate and interact with the fixed organizational information system while remaining unconstrained by physical location. Mobile computing offers significant benefits for organizations that choose to integrate the technology into their fixed organizational information system. Mobile computing is made possible by portable computer hardware, software, and communications systems that interact with a non-mobile organizational information system while away from the normal, fixed workplace. Mobile computing is a versatile and potentially strategic technology that improves information quality and accessibility, increases operational efficiency, and enhances management effectiveness. Mobile computing may be implemented using many combinations of hardware, software, and communications technologies. The technologies must be carefully selected and the applications designed to achieve the business needs required from the overall organizational information system. Here in this paper we have in term identified some of the challenging issues, applications of mobile computing along with few of the characteristics of Mobile computing.

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