# The Survey on Mobile Computing and Its Applications

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**Abstract -** Mobile computing as a technology that allows transmission of data, voice and video and improved understanding of human mobility patterns would yield insights into a variety of important societal and urban planning issues. The integration of mobile computing and sensing with cloud computing enables new applications that process big data collection and identify important places people visit ,infer relative traffic volumes on city roads. This paper involves with the main concept of trends, technology, mobile communication and mobile hardware.

**Key words: Band width1, Devices2, Data dissemination3 and principles of mobile computing.**

## 1.INTRODUCTION

**Mobile computing** aims to provide a network infrastructure and equivalent terminal capability to perform all desktop-like computing functions seamlessly at any place or time, even while the terminal is moving. This means that anytime and anywhere, a client would be able to look through the web, check e-mail, **play digital music**, and perform all other computing activities without having to be with a desktop at home or work. At its best, mobile computing would allow a user to have access to a consistent working environment.

## 1.1Distributed system

This is one of the major development areas in distributed computing, embed the same functions found in a normal computer into hand-held devices such as mobile phones. The use of **distributed system** technology to enable users who are not fixed in a single physical position to communicate.

## 2. PRINCIPLES

### A. Portability:

It facilitates movement of devices within the mobile computing environment. These devices may have limited device capabilities and limited power supply[1], but should have sufficient processing capability and physical portability to operate in a movable environment.

### B. Connectivity:

It is connected to minimal amount of downtime, without being affected by movements. Quality of service of the hardware connectivity.

### C. Interactivity:

The nodes belonging to a mobile computing system are connected with one another to communicate and collaborative through active transactions of data.

## 3.LATEST TRENDS IN MOBILE COMPUTING

Mobile computing devices are becoming smaller, lighter, and more dominant than their predecessors. They also come in various types and connectivity options. Two prominent classes of mobile computing devices today are those that use the Palm OS and the Pocket PC operating systems. These devices are capable of simple word processing, spread sheet applications, web browsing, calendar notations, and address management. There are also low-end handheld computers with monochromatic displays, low resolution, limited memory, and somewhat bulky sizes. Higher-end devices are extremely thin, have a high-resolution, and can include colour displays.

## 4.TECHNOLOGY IN MOBILE COMPUTING

A. Recently , the free *Linux* operating system has been modified to run on hand held computers of different types. Some manufacturers are also adopting Linux for their hand-held computers.[2]As this operating system carries no licensing fee, it could further reduce the cost

of handheld computers. In developing countries like India, voice activated *Linux*-based computers have been developed for mass usage in rural areas where the computing infrastructure is limited. Location aware mobile computing—in which a person is able to obtain information on local restaurants, theatres, coffee-shops, maps, driving directions, traffic, weather, news, tourist attractions, and the like on a handheld computer—is also becoming prominent.

*B.* Wireless *Network* connectivity for handheld computers also comes in several varieties. Most handheld computers come with built-in infrared ports that can be used to swap information with a network or another computer at short range. Many of them can connect to wireless *local area networks (LANs).* Some cellular telephone service providers are also building cell phone modules available for attachment to the expansion slots of handhelds computers. Bluetooth, a new wireless standard for personal *area networking*, is also offered for some handheld computers.

Wireless technologies, includes 802.11b, otherwise known as Wi-Fi, Infrared Data Association (IrDA)[2], *Ultra-Wideband Radio (UWB),* and Home RF are being applied to similar technologies that Bluetooth use with mixed results. 802.11 is the most well-known technology, excluding Bluetooth, and uses the same radio frequency, meaning that they are not compatible as they cause interference with each other. 802.11 is being implemented into universities in the US, Japan and China, as well as food and beverage shops where they are being used to identify students and customers. Even airports have taken up the 802.11 technology, with airports all over        America, and three of America's most prominent airlines promoting the use of it. Infrared Data Association is extremely inferior to that of Bluetooth. Its limitations include only being able to communicate point-to-point, needing a line of sight, and it has a speed of fifty- six *kilobytes per second,* whereas Bluetooth is one megabyte per second. [1]-[2]The Ultra- Wideband Radio is superior to that of Bluetooth in that it can transmit at greater lengths (up to 70 metres), with only half of the power that Bluetooth uses. Home RF is a technology that is not very well known. It is used for data and voice communication and targeted for the residential market segment and does not serve enterprise- class. WLANs, public access systems or fixed wireless Internet access.

## 5.DEVICES USED IN MOBILE COMPUTING

Mobile computing devices, portable computer, compact, lightweight units including a full character set keyboard and primarily intended as hosts for software that may be parameterized as laptops[3], notebooks, notepads, etc.,

- Mobile computing
- Smart cards
- Wearable computers

### A. *Mobile phones:*

It includes a restricted key set primarily intended but not restricted to for vocal communications as smart phones, cell phones, feature phones, etc,

### B. *Smart cards:*

It can run multiple applications but typically payment, travel and secure area access.

### C. *Wearable computers:*

Mostly limited to functional types and primarily intended as incorporation of software agents, as watches[3], wrist bands, necklaces, keyless, implants, etc,.

## 6.MOBILE COMPUTING - APPLICATIONS:

### A. Business application

Much of the advances in mobile computing are currently focused on business applications. The technology available and being developed is designed to increase **productivity**, **efficiency** and **connectivity** for workers in a range of fields from retail to professional [4]. The advent of wireless networking has created new opportunities in the design of instructional space. Computing systems are currently present in many forms of customer service, mobile computing has the potential to have applications for a greater range of these businesses [5]. Travelling sales representatives have the potential to offer consumers a demonstration of their product, simply through the use of a *PDA* (*Personal Digital Assistants*), wireless laptop, or another mobile device.

## 7.LIMITATIONS FOR COMPUTING

In range and bandwidth, the mobile internet access is generally slower than direct cable connections, using technologies such as GPRS and EDGE, and more recently HSDPA, HSUPA,3Gand 4G and also the upcoming 5G networks[6]. These networks are usually available within range of commercial cell phone towers, high speed network wireless LANs are inexpensive but have very limited range. The security standards while working in mobile, one is dependent on public networks, requiring careful use of *VPN*. Security is major concern while concerting the mobile computing standards on the

fleet one can easily attack the *VPN* through a large number of networks interconnected through the line.

When a power outlet or portable generator is not available, mobile computers must rely entirely on battery power, combined with the compact size of many mobile devices,  This often means unusually expensive batteries must be used to obtain the necessary battery life. The human interface with screens and keyboards tend to be small which may make them hard to use. Alternate input methods such as speech or handwriting recognition require training.

## 8.ADVANTAGES FOR COMPUTING

- **Location flexibility** has enabled users to work from anywhere as long as there is a connection established. A user can work without being in a can work without being in fixed position. Their mobility ensures that they are able to carry out numerous tasks at the same time and perform their stated jobs.
- The **time** consumed or wasted while travelling from different locations or to the office and back, has been slashed. One can now access all the important documents and files over a secure channel or portal and work as if they were on their computer. It has enhanced telecommuting in many companies. It has also reduced unnecessary incurred expenses [6].
- The **enhanced productivity** users can work efficiently and effectively from whichever location they find comfortable. This in turn enhances their productivity level.
- The **entertainment** which commences with video and audio recordings can now be streamed on-the-go using mobile computing. It's easy to access a wide variety of movies, educational and informative material with the improvement and availability of high speed data connections at considerable cost one is able to get all the entertainment they want as they browse the internet for streamed data. one is able to watch news, movies, and documentaries among other entertainment offers over the internet. This was not possible before mobile computing dawned on the computing world.

## 9.COMPUTING IN TRAFFIC

Recent advancements in sensor, mobile computing and wireless communication technology have created an opportunity for mobile computing and online traffic simulations. This paper presents a distributed traffic simulation framework where traffic simulation and data processing are performed in a distributed fashion by mobile computing. The traffic predictions across the multiple logical processes are co-ordinated by optimistic execution inspired by time wrap which mitigates the synchronization problem allowing each logical process to access asynchronously.

## 10.CONCLUSION

In this paper we discussed several aspects on secure data processing in Mobile Computing. data includes data confidentiality, data authentication, availability of data and data integrity gives us the required security to process.

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