

## MOBILE COMPUTING

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### ABSTRACT

As business continues to grow, need to stay in touch with customers and business partners became more necessary. Business growth and success, depends on fast and in-touch communication, inefficient and gap in communication can easily result to huge financial losses and reduction in sales. But with the use of mobile computing which is wireless transmission of data through portable devices which may include smart phones, portable computers, PDAs, mobile phone, laptops and so on, all these problems will be taken care of, you can stay in touch with your customers and business partners, make real time decision and improve profit

### KEYWORDS

Mobile Computing, Wireless Computing and Wireless Transmission

### 1. INTRODUCTION

Some wireless networks may include WLAN, Wi-Fi, CDMA, and GPRS and so on. There are many companies that provide mobile computing solutions to users or subscribers. In all the mobile computing devices, the cell phone and the laptop are the most widely used, they can be used to read and send e-mails, call and receive calls, including multimedia applications, [1][2]all these can be done on the go, without traditional wire connection.

We can view mobile computing as made up of three major aspects:-

**The mobile communication** By this we mean the network properties and technologies involved in communications e.g. the protocols and data formats

**Mobile hardware** This has to do with the physical components and the mobile portable devices

**Mobile software** This is the instructions and mobile applications

There are so many mobile computers which has been introduced to mobile computing in recent times, which includes

**Cell phone:** -This is an electronic wireless device use to make mobile telephone call across wide geographical locations. Most cell phones has many functionalities including receiving call, SMS service, mms , internet access, games and short range data transfer via infrared and Bluetooth.

**PDA:** (Personal Digital Assistant or Personal Data Assistant) this is a mobile device, which has many functions including ability to connect to the internet, personal information manager and multimedia uses

**Smart phone:** - This can be described as PDA, with the functions of cell phone. Most smart phone can accept installable applications

**An ultra mobile PC:** - This is just a full functional computer but in a PDA size it also runs general purpose operating systems [2][3]

## 2. MOBILE COMPUTING GROWTH

In recent years mobile computing has rapidly grown, people now stay in touch with their business, schedule activities and meet customer's satisfaction. The gap between when people are in office and out of office has been greatly minimized, since people can achieve what they can do at their office with just a mobile device. The growth is show in the fig. 1

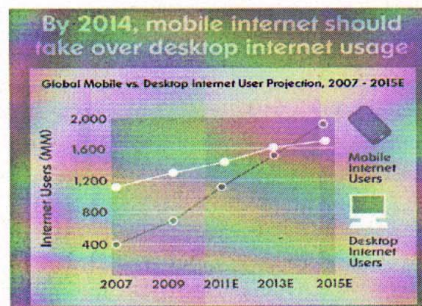


Fig. 1. The Mobile Internet Had Overtaken Desktop Internet

Source (<http://www.netwitstinktank.com/mobile/the-rise-of-mobile.htm>)

## 3. OVERVIEW OF DATA COMMUNICATION

Data Communication can be described as the exchange of data via a communication network; this may include file transfer (FT) electronic mail, the World Wide Web (www) and multimedia applications.

**Data transmission** can be achieved with different technologies, PSTN, ISDN, and ATM these technologies has either been circuit-switching or packet switching [4]

**Circuit-switching** This is connection oriented, which is basically designed for voice, data are sent from one user to another, this is done through a dedicate path

Data send through a circuit-switching network cannot be redirected if the path to be used is busy.

An example of the circuit-switching network is the public telephone network is shown in fig 2.

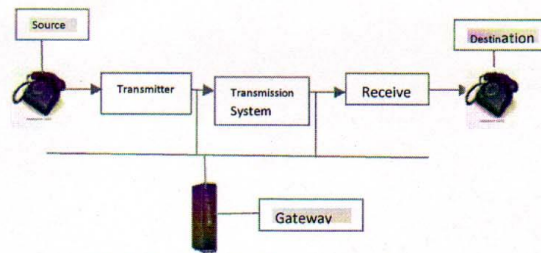


Fig.2. Public telephone network

For data to be sent through circuit-switching network, three significant phases are involved

There must be an **established** path between sender and receiver

Once path has been established then **transfer** occurs and

After transfer paths is **disconnected**.

Packet Switching this technology is basically designed for voice here messages is split into small packets, each packet carries the full address (sender and receiver), and the most widely used of Packet Switching technology is the Virtual Circuit Switching and the Datagram

In **virtual Circuit switching**, packets are sent through same path of pre planned route which is established before sending the packet as shown in fig.3

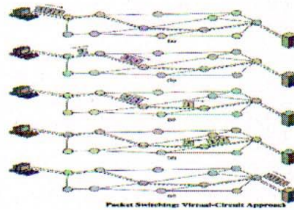


Fig.3. Virtual Circuit Diagram [4]

In Datagram, as shown above packets are treated independently; packets can be sent to the destination via different route which may depend on network availability [4]

#### 4. APPLICATION OF MOBILE COMPUTING

There are many applications and advantages of mobile computing too numerous to mention, below are some of its application

**Companies and organizations:** With mobile computing, managers can monitor business trend, access latest information on shear, use available information to make decision, can stay in touch with office and monitor possible change and address arising issues. Even when they are far from office, mobile computing brings them close. This is the power of mobile computing

**Emergency service:** Information is power; receiving information on the go can be of immense advantage. Emerging you are driving on a particular road, and suddenly receives security alert on you mobile device, may be armed robbers have block the road, such information could be helpful even saving your life

**Location Independent:** With mobile computing, you no longer need to be in your office to reply mails, make schedules, connect to customers, and find current listings. At any location, you can stay in touch.

**Email and paging:** sending and receiving mails is very essential to business individuals, with mobile computing, you can handle urgent development that may affect your business, With your mobile device you can browse the internet and have a vast knowledge on the go, paging is also at your disposal

**Estate Agents:** Estate agents can be very efficient, they can access current listing and relate the information to their client even while on the field, and such information can help in customer's satisfaction. It can only be achieved with mobile computing.

## 5. CHALLENGES OF MOBILE COMPUTING

Mobile computing is not without some challenges, as discussed bellow

● **Low bandwidth:** Most mobile networks are available within a specific range of commercial phone use. GPRS, EDGE, 3G and even most recent 4G are slower when compared with high internet direct cable connection

**Interference:** Some signals a times interface with mobile network, geographical location can as well have significant effect on mobile networks

**Power:** Where there is no source of power supply, since most mobile devices depends heavily on battery power, it can run down when it stays longer out main power source

**Health hazard:** Occasions have arise when accident occur as a result of drivers using their mobile device while on the stirring. Some mobile device also interfere with sensitive medical devices

**Interface interaction:** Most mobile communication device still have small screen and keypad so awkward to use and this is also a challenge to mobile computing [5]

● **Data Security:** Security is also a major challenge to mobile computing, since working on mobile depends on public networks, generally, data sent via public networks are less reliable.

## 6. SUMMARIES

Today's world has seen an increase in mobile computing; most human activities will soon be base on mobile technologies. The focus now is to see how mobile phones and mobile technologies can make the health care system and the people working in it more efficient, which will means saving more life as the main goal.

Many countries have already benefitted from the immense gain and efficiency of mobile health care and the number keep growing

With mobile phones and technologies doctors now provides medical attention and care to patients, saving time and increase in productivity

Soon the Wal-Mart-like efficiency will be demonstrated in mobile global health care

Going far more than saving life, mobile technologies are now effectively used by government, ministries and NGOs to direct, monitor activities, schedules and provide good governance to the people

Mobile computing has been affectively used to control traffic in many countries provided SMS base traffic information to road users as more lives are saved.

Small and medium-sized businesses depend mostly on mobile technologies. The Smartphone and other mobile devices have become so important to every operation that most of small companies around the U.S. and other advanced countries say they find it very difficult if not impossible to run their companies without mobile technologies.

These businesses do make use mobile apps like Square and Foursquare for many specific tasks, including processing payments and market adverts

● People that uses mobile technologies admits that it helps them tremendously to increase a competitive advantage, boost productivity and efficiency, and allow their employees to work remotely

Companies and managers have improved their business functions and stay in touch with colleagues and partners with mobile computers. Customers can now have better service as information is made available to them upon request.

Finally, People can now stay at the comfort of their house and monitor their business effectively and improve productivity.

All these have been made possible with the aid of mobile computing.

## **REFERENCE**

[1]Computer Networks, Andrew S. Tanenbaum, 4<sup>th</sup> Edition, Prentice Hall.

● [2]Roth, J. "Mobile Computing - Grundlagen, Technik, Konzepte", 2005, dpunkt.verlag, Germany

[3]Computer Networking: A Top-Down Approach Featuring the Internet, 5th Ed. (2010), by James F. Kurose and Keith W. Ross.

[4] William Stallings 7<sup>th</sup> Edition (2004) Data and Computer Communication. Pearson, Hall upper saddle rivers NJ

[5]Management Information System, 4<sup>th</sup> Edition (2010) by Kenneth C, laudon and Jane P. Laudon, upper saddle Rivers New Jessie