MOBILE COMPUTING FOR PRESENT TECHNOLOGY

Abhilashveeraiahgari*

Jaideepjalla*

Abstract

Mobile Computing has fast become an important new paradigm in today's world of networked computing systems. Ranging from wireless laptops to cellular phones and WiFi/Bluetooth-enabled PDAs to wireless sensor networks, mobile computing has become ubiquitous in its impact on our daily lives. The debut if iPhones and the proliferation of other handheld devices has spurred excitement and interest in this evolving field. In this the state-of-the-art in both the research and commercial communities with respect to mobile computing are mentioned .We investigated standard protocols and platforms, the capabilities of today's commercial devices, and proposed next-generation solutions. In the process, we will seek to gain an improved understanding about where the field is headed, and what is the importance in the mobile computing.

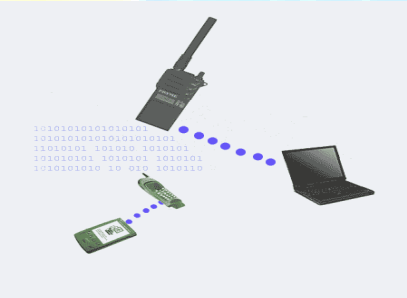
Key words: wifi PDAs, iPhones, mobile computing

* *UG Student, Department of E.C.E, K L University*

1.Introduction

Mobile computing: A technology that allows transmission **of data, via a computer, without having to be connected to** a fixed physical link.Mobile voice communication is widely established throughout the world and has had a very rapid increase in the number of subscribers to the various cellular networks over the across these cellular networks. [1]This is the principle of mobile computing. Technology as it allows users to transmit data from remote locations to other remote or fixed locations. This proves to be the solution to the biggest problem of business people on the move - mobility. In this article we give an overview of existing

cellular networks and describe in detail the CDPD technology which allows data communications across these networks. Finally, we look at the applications of Mobile Computing in the real world.



Mobile computing aims to provide a network infrastructure and corresponding terminal capability to perform all desktop-like computing functions seamlessly at any place or time, even while the terminal is moving.[2] This means that anytime and anywhere, a user would be able to browse the web, check e-mail, play digital music, and perform all other computing activities without having to be behind a desktop at home or work. At its best, mobile computing would allow a user to have access to a consistent working environment..

2.Portable computing devices:

A Portable computer is a general-purpose computer that can be easily moved from place to place, but cannot be used while in transit, usually because it requires some "setting up" and an AC power source. `computers are also called a "transportable" or a "luggable" PC.A Tablet PC that lacks a keyboard (also known as a non-convertible Tablet PC) is shaped like slate or a paper notebook, features a touchscreen with a stylus and handwriting recognition software. Tablets

may not be best suited for applications requiring a physical keyboard for typing, but are otherwise capable of carrying out most tasks that an ordinary laptop would be able to perform. An Internet tablet is an Internet appliance in tablet form. Unlike a Tablet PC, an Internet tablet does not have much computing power and its applications suite is limited, and it cannot replace a general purpose computer. Internet tablets typically feature an MP3 and video player, a web browser, a chat application and a picture viewer.

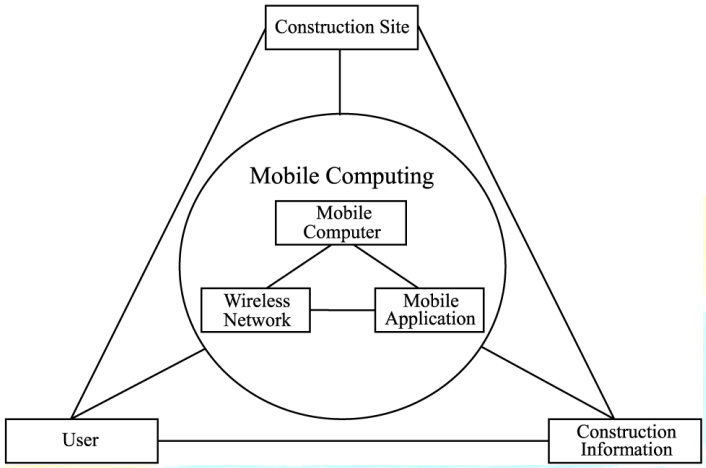
3. Latest trends in mobile computing:

Mobile computing devices are becoming smaller, lighter, and more powerful 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 PalmOS and the PocketPC operating systems.[3] These devices are capable of simple word processing, spreadsheet applications, web browsing, calendar notations, and address management. There are also lowend 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 color displays.

4. Technology in mobile computing:

Recently, the free Linux operating system has been modified to run on handheld computers of different types. Some manufacturers are also adopting Linux for their handheld computers.[4] 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 simputers have been developed for mass usage in rural areas where the computing infrastructure is limited. Device integration, such as the integration of cell phones and handheld computers, is also occurring.

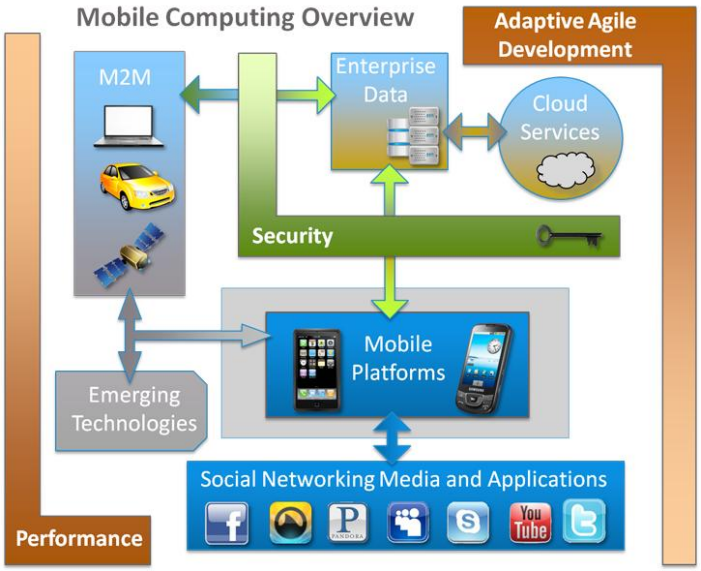
Location aware mobile computing—in which a person is able to obtain information on local restaurants, theaters, coffee-shops, maps, driving directions, traffic, weather, news, tourist attractions, and the like on a handheld computer—is also becoming prominent.



5. Network:

Wireless connectivity for handheld computers also comes in several varieties. Most handheld computers come with built-in infrared ports that can be used to exchange information with a network or another computer at short range. Many of them can connect to wireless local area networks (LANs) based on the IEEE 802.11 standard.[5] Some cellular telephone service providers are also making cell phone modules available for attachment to the expansion slots of handhelds computers. Bluetooth, a new wireless standard for personal area networking, is also available for some handheld computers. Wireless technologies, includes 802.11b, otherwise known as Wi-Fi, Infrared Data Association (IrDA), 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. The Ultra- Wideband Radio is superior to that of Bluetooth in that it can transmit at

greater lengths (up to 70 meters), with only half of the power that Bluetooth uses. [6]HomeRF 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 Internetaccess.



6. Mobile computing business applications:

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. 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. Traveling 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 other mobile device.

7. Other Applications:

7.1 For Estate Agents

Estate agents can work either at home or out in the field. With mobile computers they can be more productive. They can obtain current real estate information by accessing multiple listing services, which they can do from home, office or car when out with clients. They can provide clients with immediate feedback regarding specific homes or neighborhoods, and with faster loan

approvals, since applications can be submitted on the spot. Therefore, mobile computers allow them to devote more time to clients.

7.2 In courts

Defense counsels can take mobile computers in court. When the opposing counsel references a case which they are not familiar, they can use the computer to get direct, real-time access to on-line legal database services, where they can gather information on the case and related precedents.[7] Therefore mobile computers allow immediate access to a wealth of information, making people better informed and prepared.

7.3 In companies

Managers can use mobile computers in, say, critical presentations to major customers. They can access the latest market share information. At a small recess, they can revise the presentation to take advantage of this information. They can communicate with the office about possible new offers and call meetings for discussing responds to the new proposals. Therefore, mobile computers can leverage competitive advantages.

7.4 Stock Information Collection/Control

In environments where access to stock is very limited ie: factory warehouses. The use of small portable electronic databases accessed via a mobile computer would be ideal.

Data collated could be directly written to a central database, via a CDPD network, which holds all stock information hence the need for transfer of data to the central computer at a later date is not necessary. This ensures that from the time that a stock count is completed, there is no inconsistency between the data input on the portable computers and the central database.

7.5 Credit Card Verification

At Point of Sale (POS) terminals in shops and supermarkets, when customers use credit cards for transactions, the intercommunication required between the bank central computer and the POS terminal, in order to effect verification of the card usage, can take place quickly and securely over cellular channels using a mobile computer unit. This can speed up the transaction process and relieve congestion at the POS terminals.

7.6 Taxi/Truck Dispatch

Using the idea of a centrally controlled dispatcher with several mobile units (taxis), mobile computing allows the taxis to be given full details of the dispatched job as well as allowing the

taxis to communicate information about their whereabouts back to the central dispatch office. This system is also extremely useful in secure deliveries ie: Securicor. This allows a central computer to be able to track and recieve status information from all of its mobile secure delivery vans.

7.7 Electronic Mail/Paging

Usage of a mobile unit to send and read emails is a very useful asset for any business individual, as it allows him/her to keep in touch with any colleagues as well as any urgent developments that may affect their work. Access to the Internet, using mobile computing technology, allows the individual to have vast arrays of knowledge at his/her fingertips.

Paging is also achievable here, giving even more intercommunication capability between individuals, using a single mobile computer device.

8. conclusion:

Mobile computers offer many new options, however there are difficulties to consider. Generally, wireless laptops cost 50% to 100% more than their desktop counterparts. Laptops are also harder to upgrade most proprietary hardware components that limit future options. The cost of setup for mobile computing varies depending on the number of employees, and the hardware required. The initial investment in this technology remains risky, as the market is rapidly changing and improving.

9.References:

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