
ROLE OF MOBILE COMPUTING- ITS APPLICATIONS IN IMPROVING LIFE

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Abstract:

Internet has been labeled as the path breaking technology. It has brought a dramatic change in business landscape and touched the life of common man. Following it, the next technology that has deep impact on our lives is the mobile computing. Mobile computing and wireless communication networks are playing an increasingly important role in our professional and personal lives. Now a days we use many mobile devices like mobiles, PDAs etc. for personal and business communications. Applications of mobile computing are almost limitless and exist in socio-economic, industrial and commercial domains.

In this paper, we shall explore how various mobile computing applications are playing a key role in improving our life. We shall how mobile applications are helping in improving public sector organizations, its socio-economic impact and its impact on business activities. We shall also discuss how it would help in shaping our future.

Keywords : mobile computing, micro-payments, m-business

1. INTRODUCTION

Mobile computing is a technology that allows transmission of data, via a computer, without having to be connected to a fixed physical link. Its main feature is its mobility: user mobility, network mobility, device mobility, service mobility. With the rapid technological advancements in Artificial Intelligence, Integrated Circuitry and increases in the computer processor speed, the future of mobile computing looks increasingly exciting. With the emphasis increasingly on compact, small mobile computers, it may also be possible to have all the practicality of a mobile computer in the size of a hand held organizer or even smaller. Also due to availability of mobile devices with common man its impact is at root level. Mobile computing has opened up a new horizon for business and governments of developing and developed countries. Especially developing countries like India which has a rich pool of IT expertise it would be able to reach common man. Mobile computing has played a significant role in the fields of business, improving facilities provided by public sector organizations.

2. MOBILE COMPUTING APPLICATIONS

In this section, we shall discuss how various mobile computing applications are helping in shaping our future. We shall begin by discussing its role in business. It shall be followed by its effects in diverse areas such as agriculture, education, military, transportation, disaster recovery, and medical emergency care.

2.1. In business

M – Business (mobile –business) is conducting business by exploiting the mobile devices and wireless networking. Mobile business applications include mobile access to existing e-business applications so that mobile users can use these applications from anywhere. It helps to achieve strategic business benefits. Usually people are seen buying cinema tickets and other tickets using mobile devices. Thus it avoids need of extra staff needed at different sites.

Managers can use mobile computers in, say, critical presentations to major customers. They can access the latest market share information. They can communicate with the office about possible new offers and call meetings for discussing responds to the new proposals. Many companies send their advertisements on mobiles which helps them to reach large number of users having one – to one correspondence.

Micro-payments are also being done using mobile devices. One can easily get their cable TV connection renewed by making payments using mobiles. Bills are send to customers on mobile devices eliminating use of paper work. Tele-banking is used by banks to execute different transactions. People can even do shopping using these devices.

Transportation industry has really benefited from mobile computing. One can keep track of their consignments. It can also help drivers guide to reach a destination with the shortest possible path available.

In manufacturing industry, due to automation of machines one can control the working of machines from mobile devices. The amount of quantity to be produced can be kept track of using mobile devices.

Thus with the evolution of mobile computing and related devices the business activities have speeded up and is providing huge benefits to companies in growing there interaction with customers.

2.2. In Rural areas

Mobile computing technology would be very effective and invaluable in the rural setup where basic infrastructure like power may be either unreliable or lacking to support conventional computing technology. The Gyandoot Project of Dhar District in Madhya Pradesh is such a project that exploits the features of mobile computing for the benefit of rural communities.

Governments are planning for m-voting, m-interaction and m-administration. In some countries, governments are conducting experiments in this regard. m-administration is concerned with improving the operations and communications with government units. The Bhoomi project of Karnataka government has computerized 20 million land records of 0.67 million farmers living in 30000 villages in the state. The government employees can be notified about various policies using mobile devices, resulting into better and faster access to information. The government-to- citizen

interaction is a technique by which interaction with government officials is made easier using mobile devices. At the height of SARS incident, the Hong Kong government sent a blanket text message to 6 million mobile phones to warn against rumors and explain government plans.

Information about weather, crops diseases is provided to farmers on mobile devices. They are also informed about potential places of selling their crops.

2.3 In Education field

Mobile computing application is also used in the field of education. Now a days many examination results are displayed on the mobile devices. The CBSE board examination results were available on the mobile phones. Many companies have launched mobile classrooms where students can access education material using mobile devices. Many search engines have added features that help to search books, research papers and other material using mobile devices.

2.4 In Medical field

For patients whose health is on the line the benefits are even greater. They have increased access to specialized doctors. They don't have to stick around the hospital any longer. This ease in mobility allows them to do their own work while still under the doctor's care. Safety is another issue that is helped here because the rate of mistakes can significantly be decreased. Also, patients can be picky when making changes in their daily lives when signing up for a treatment. With Wireless Technologies, their healthcare can be less intrusive, for example in the case of wearable sensors. They don't have to show up to the hospital for a blood pressure check. It can be done while they are working through wearing wireless sensors that transmit this information in real-time to their doctors.

Mobihealth is a project based on a European initiative to create a generic platform for home healthcare using BAN-based sensors and wireless telephony technology. They are using GPRS/UMTS wireless communication technology for transferring data. Some of the capabilities include measurement and transmission of vital signs and other bio signals. In this project they developed a Body Area Network (BAN) and a service platform for patients and healthcare professionals.

2.5 In banking field

Many banks are offering banking services over Internet, voice and mobile phones through SMS. All updates in transactions are provided to customers on their mobile devices. The people now do not need to go to banks to perform their transactions. People are using plastic money to perform transactions. ATMs wirelessly connected to handheld devices through Bluetooth can be used to operate in remote rural areas. Credit card authorization is performed on mobile POS terminals equipped with wireless adapters.

2.6 In Airline industry

Mobile devices such as PDAs or tablet PCs are used for grading in a simulator training environment. Access reservation, flight schedule and ticketing information by busy travelers using handheld

devices. Virtual check-in for regular customers. Airline Baggage and Cargo Control is done automated machines. Flight arrival and departure information while traveling to the airport is made to people on mobile devices. Easier, faster and quicker checking in of baggage by scanning bar-coded information from baggage tickets directly into a database. Also, airport security and monitoring is made easy using mobile devices.

2.7 In defense filed

Mobile computing helps in delivering high-performance, energy- efficient solutions in defense field. It provides soldiers access to information anytime, anywhere and improves their situational awareness while using a small, ultra-mobile device. Soldiers can benefit from the reduced size and weight of these devices and have the freedom and flexibility to easily communicate with others. Also many devices are now being fitted in fighter planes that helps in better tracking of places.

2.8 In construction

Locations of the production sites frequently change in construction industry. Since one consequence of this fact is fieldwork, mobile computing is of great importance for the construction industry. Recording project data, such as supply delivery records and progress updates, directly at the jobsite is one of the basic functionalities of such systems. More complex systems include a comprehensive suite of hosted internet solutions that facilitate rapid communication and collaboration throughout the entire project life cycle, from financing and planning through engineering and design, procurement, construction, and facility management (Citadon 2000). Document management systems provide construction teams with a project-specific extranet, whereby remote team members can communicate and access up-to-date documents. Further, such services alert users affected by changes in real time via e-mail or a pager.

Another approach has been discovered in Japan, where the Daito Trust Construction Company developed a large-scale mobile computing system called the DK Network. This involved the construction of a specialized dedicated network and a construction management database. The company reports that, thanks to the use of Personal Handy-phone Systems (PHS) and specially designed, integrated PDAs (including a video camera), the system made the process of construction easier and greatly increased productivity. Daito reports four main benefits of the system: it eliminates redundancy in project task operations, reduces response waiting time, greatly limits revision of job tasks, and enables access to new construction standards. It remains a question, however, how many companies working together on a construction project would be able to follow this approach. For most of them, standard devices and services have to be available on the market at affordable prices in order to be attractive.

3. FUTURE

Although mobile computing technology started very slow but now due to mobile devices getting cheaper and its availability its growth is tremendous. In the field of medical applications is still

relatively new, commercial products are being developed by several companies to solve wide ranging problems. In the future, Implanted wireless devices will continuously monitor our health, enabling the medical profession to treat most diseases in their absolute infancy. Mobile computing will also be used to monitor our diet and its effects on our health, control unhealthy habits such as smoking and alcohol consumption, and enable us to maximize the effects of exercise. Diseases such as diabetes will be virtually controlled through wireless monitoring and corrective-action devices, which will automatically adjust insulin levels without the patient even knowing.

With technology shifting from 2G to 3G and to 4G, it is possible that almost all the devices that we use from cars, various devices in our houses will be using this in some way or the other. Many other concepts have evolved like cloud computing, grid computing that will add to this field.

4. CONCLUSION

The aim of this paper was to objectively describe the potential of mobile computing in various fields is helping in improving life and would also help in near future. We have intentionally not focused on special devices, prototype equipment and concepts. Anyhow, it is obvious that mobile computing will play an extraordinarily important role in the future of the almost every field. This fact encouraged us to continue with research and try to find solutions to the many open problems.

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