

A Study on Project Scope, Feasibility Analysis and Constraint for Mobile Computing

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Abstract: A technology like dynamic mobile computing allows transmission of data, via, a computer or any computing device, without having to be connected to a 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 last few years. An extension of this technology is the ability to send and receive data across these cellular networks. Now these days the mobile computing is a main source of communication for any purpose. It is with the growing pace of communication and globalization, sources of data communication have been growing in all the sectors. Now a days, one of the fast growing spot in the stream of communication is the Wireless and Mobile Technology. But it has also some constraints to be avoided, many challenges will come while working with mobile computing, there are many open issues going, to be solved to increase the total progress of the mobile computing. While with the growing pace of the mobile computing we need to insure the issue that is happening like the security issue, these day's people are doing their money transaction on the mobile itself and it carries highly credential data, so, it must be secured from the outside of the world. M-commerce is totally based on the concept of the mobile computing and uses the mobile device for the transaction but there are some limitation with all these stuff and we have to keep in mind while working with these devices. The goal of this project to find out the limitations, characteristics, applications, issues of mobile computing and new field where this technology will be useful and the technology used for the communication and networking.

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INTRODUCTION

The evolution of the computer industry and use of dynamic technology make the whole industry to step up with new idea and methods to implement the existing

technology in innovative way, especially in hardware that with smaller weight, size and less power consuming and the communications (flexible and effective wired, wireless, satellite, WANs, cellular, internet). All these innovative technology and methods step up the idea of

mobile computing. After now user don't have depend on the wired communication, expensed data transfer, localised from anywhere and anytime user can communicate, even they have the remote data transfer too. Now a days mobile computing totally based on the concept of cloud computing and in this way all the resources become on-demand, whenever user need the resource they will simply request for that resources. Use of cloud in mobile computing is very beneficial for user like flexibility, low cost, work from anywhere, pay for use, scalability, security and recovery. Now I can say birth of the mobile computing has started a new age of the technology in the field of IT. But as the user data is more essential and they believe the mobile will keep it secure in this way there are more security issues on the user and data, it also become the component of the mobile computing in computing has itself introduced a lot of security issue. When working with the mobile computing one of the major issue is networking issue. When there are huge traffic in the medium the possibility of losing your own destination or replicating your data is very high. So I can say still it needs to improve more for higher reliability. Now I can list some of the limitation of the mobile computing where it needs to improve more or I can say it is the obstruction I the way of mobile computing, insufficient bandwidth, Security standards, transmission interfaces, power consumption, Human interface with device, potential health hazards, location intelligence and network connectivity. In the previous static computing the physical link, connection can easily be rectified and error detection and security challenges are quiet easy and in this configuration it was very easy to make system self-sufficient but in mobile computing self-sufficiency and configuration is very difficult to achieve because of lack of resource or limited resources available to the mobile unit. Now a days everything become on demand, so, it is become difficult too to manage the security issues and the mobility of user and their data carrying to the network become more difficult task to transmit with high security. In mobile computing there is no any end to end encryption, if some user is sending some data through mobile network to the other user there is no guarantee that the data will be received as it is, it may be fished by someone using the same network or some alteration of data quiet possible.

There are various potential security problem like leakage of information through your mobile interface made by some attackers masquerading as a mobile support unit and user may easily be tricked in their trap and they easily get the user data by simply fooling them. As every new and innovative technology has two tails it has the same but the second one is more risky for the user if once they loss it, it is over so there must be a good encryption for the interface of the user so that attackers can't fool the users.

There are two principle task involved to provide the security and protection to the mobile computing mainly in cellular environment and that provide key encryption and message encryption in the home network that is while the user inside their own MST range.

Literature review: As the new technology spreading it also spreading its impacts and limitations and people are talking about all the perspective as I have read some of the people view and I realised that many people are not aware of the bad impacts of the consequences of the technology and they must be reminded in the simple way, so by making use of the some old great papers, my own knowledge and some help from the professors. I am mainly focused on limitations and constraints of the mobile computing. As rapid growth in wireless communication especially in mobile communication technology which can communicate with any wired, wireless device while in motion. This provides more flexibility to the user but along with that it also causes the security, authentication and more issue in the technology as it discussed by Srikanth Pullella. Mavridis and Pangalos^[1] mention the causes, motivation, technology risk and limitation by considering the hardware and software aspect of the mobile technology, as size of the devices reduced, become cheap, easy in handling, flexible, mobile, dynamic action all these causes the born of the mobile computing and it also cause many bad impact like radiation, user security issues. As cloud computing a cutting edge next generation technology it also make the birth of the mobile cloud storage and computing for better user experience so user are able to store every information to the some remote location so that they can secure their credentials and privacy but what if they data they are storing may be leaked by someone all your credential will be lost so the new technology given the more data risk than traditional, it was well explained by Aarti etc. As the evolution mobile computing in the field of information technology, the mobility concept of the technology and movement of user data one location to another will have become full of threat and these are not safe from the outer world and the idea itself become very challenging and more difficult to manage^[2].

MATERIALS AND METHODS

Mobile computing constraints and challenges: There are various factors on which the concept of mobile computing derived and also some major constraint which define the mobile computing ease and scope. I will discuss some of the constraints that has the major effects on the performance of the mobile computing.

Mobile device: The smaller size of the screen of the mobile that minimize the user friendly nature of the

applications, there are various web apps for the desktops but coming to the mobile web apps. There are few that will actually fit for the mobile, so in the device there are some constraints that will ease the use of mobile computing:

- Size of the screen
- Slow network
- Less bandwidth
- Low performance
- One app at a time
- Shorter battery life
- Slow processor speed
- Less memory size
- Slow clock speed
- Less cache memory

So, all these factors really affects the performance of the mobile computing so these constraints should always be taken in the consideration.

Network and connectivity: Mobile computing uses wireless network for the communication and data transfer but usually the wireless network consists of low bandwidth, slow accessing rate, high latency, high jitter, more data delay and the most affecting in all these is bandwidth. As we know power consumption is directly related to the power consumption means more bandwidth also needs more power sources and latency is also an issue due to complicated routing. Internet out of the reach, where the performance goes to zero no user accepts this issue. The explosion of mobile traffic puts immense pressure on mobile networks to deliver the necessary capacity and performance so mobile operators are trying to do with the existing tech with high bandwidth that is consuming more power and also causes another issue. Some of the sub-category of network constraints:

- Connectivity
- Low bandwidth
- High latency
- High delay
- More jitter
- Out of reach
- Network diagnosis

Now I have come to conclusion that there must be reliable data accessing technique for the mobile computing with improved bandwidth and low power consuming, these improved mobile technologies will definitely ease the performance.

RESULTS AND DISCUSSION

Mobility constraints: Movement of the object from one location/place to other location/place while in processing

is referred as mobility in mobile computing it may be dealt with mobile user, mobile data, even . Network, mobile components too, like I will plug in my laptop with Ethernet at home and work in my office. I will take all the aspect in my consideration, mobile elements are resources poor relative to the static and fixed elements and also it relies on finite energy resources. Physical space movement like when user is connected to their home network and moved from these location to some other location in this way the network connectivity may be interrupted even user can lose the connection too and at new location user has to connect to the new network and they have to re-access the resource from beginning. Information space is another aspect of mobility in which the data will be moved from one location to another location and in this way those users, currently accessing these data can lose the data and they have to try from some other source and also they have to start from the beginning. Other connection space in which the huge connection and network are re-scaled with the routers and scaled for new platform in this way the old and existing user may lose their connections.

The constraints are the facts which decide the performance of the system but to maintain a system in a well performed manner it leads to deal with huge challenges. Now I am focusing on the challenges in mobile computing that must be improved to maintain the high performance of the mobile computing. There are various challenges in the mobile computing, I am going to present the essential challenges of today.

Power: The main issue of the any new technology is power supply that must be available to keep the system functioning, mobile device must be connected to an adapter for proper functioning of the apps and all, the life of the battery connected to device also goes down and down and it cannot keep the device for longer. No AC adapter or no DC supply it's not worth it, so, to manage the power resource for cutting edge technologies is very essential.

Low bandwidth: The capacity of the network is defined by its bandwidth only, more bandwidth can handle more users. Total bandwidth is divided among the user those who are sharing the network. To increase the capacity of the network, needs to set up new improved cells and different wavelength and in this way you need to improve the efficiency and accuracy and high capacity of the network, to add more cells in network means increasing the user in the network in the low bandwidth it will overload the system and cause the less user friendly environment. The scalability of the bandwidth is limited and hence, I can say

there must be some effective way to increase the bandwidth and more number of the user in the network.

High bandwidth variation: When we compare the current mobile technology and the static and wired technology the major difference in the bandwidth in old tech the bandwidth was fixed and now days the bandwidth is become variable, like the bandwidth of the network behave differently based on the connection. Like some video format display in different based on the network connection and the user status, so, all these happening only based on the user connectivity.

Heterogeneous network: In comparison of other static network computing, mobile computing network change the network very sharply, if user stay at same location or changes it changes the network very frequent. May be user cannot experience the same but it happens in repeated manner. Mobile network encounter more heterogeneous network over a channel. There are some case where a mobile computer may have access to several network connections at the same time and same place, for example where adjacent cells overlap or where it can be plugged in for concurrent wired access. When user moves from one place to the other place or even the frequency of the signal in the morning is not same as the evening even if you are inside of your country the network changes and use variety of networks that makes the mobile computing more complex.

Security: The major issue of the new technology is security and mobile computing is comparatively less secure than traditional computing and main reason behind is use of unreliable resources^[3]. As we have come to the wireless connection from wired connection and compromised with security. There must be some effective data encryption technique data can insure the user data and privacy over any network. Some of the issues are:

- Confidentiality
- Legitimate
- Integrity
- Accountability
- Availability

The above obstacle in the development of the mobile communication technology taking this behind from all the aspect of the software development so it must be taken care in the consideration to avoid the inability of the technology that is caused by the new technology over the traditional technology. So, the user must believe in technology with no risk of the user data and their

credentials, so, every users will believe in technology and technology must make sure of their believes.

CONCLUSION

Mobile computing is a new cutting edge technology and people already adapted it with more believe in technology that will follow after wards, so these has to be more efficient in all way from challenges to the security and issues of this new technology. The good impact of the mobile computing (which is known by everyone), the bad impacts and consequences must be accepted by the people but that lead the technology towards its limitation, so, these limitation must be improved for the better tomorrow and the risk (any kind of the risk like software, hardware, data risk) must be avoided for the ease of the technology.

Mobile computing is a new paradigm of computing which is accepted to revolutionize the way computers are used. Mobile computing enables access to digital resources at any time, from any location^[4]. From a narrow viewpoint, mobile computing represents a convenient addition to wire-based local area distributed systems. Taken more broadly, mobile computing represents the elimination of time-and-place restrictions imposed by desktop computers and wired networks. Wireless communication brings challenging new problems. Mobility makes information dynamic. Portability entails limited resources available on board to handle the variable mobile computing environment. The challenge for mobile computer designers is to incorporate wireless communication, mobility and portability to adapt the system designs that have worked well for traditional computing.

The use of mobile resources in distributed environments provides important benefits. Serious security problems are derived, however, from the essential attributes of mobile computing. Due to technological problems, especially in wireless communications, mobile agents are used to provide a reliable solution given the wide range of existent applications and distributed information systems. In this study, we presented the general technological infrastructure, the mobile system model used for our experiments and the health care environment where our work is in progress. Future work includes a systematic definition of at least two different security policies that are used by different backbone networks. Mobile units and their delegates (mobile agents) are provoked to overcome those different situations and to complete their tasks.

Now days every one including senior, aged and student mainly college students are using the smart phones for their social work and academics work, they are doing there all online payments, shopping and even visiting tickets. All these are the beneficial

use of the mobile computing, so, the consequences must be avoided in the development phase itself.

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