



Faculty of engineering - Shoubra
Benha University

Research Article / Research Project / Literature Review

in fulfillment of the requirements of

Department	Engineering Mathematics and Physics
Division	
Academic Year	2019-2020 Preparatory
Course name	Computer
Course code	ECE001

Title: -

Mobile Computing

By:

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Examiners committee	Signature
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Application Brief

Mobile Computing is a technology that allows transmission of data, voice and video via a computer or any other wireless enabled device without having to be connected to a fixed physical link. This tutorial will give an overview of Mobile Computing and then it will take you through how it evolved and where is the technology headed to in future along with the classifications and security issues involved.

ScreenShots

The main concept involves –

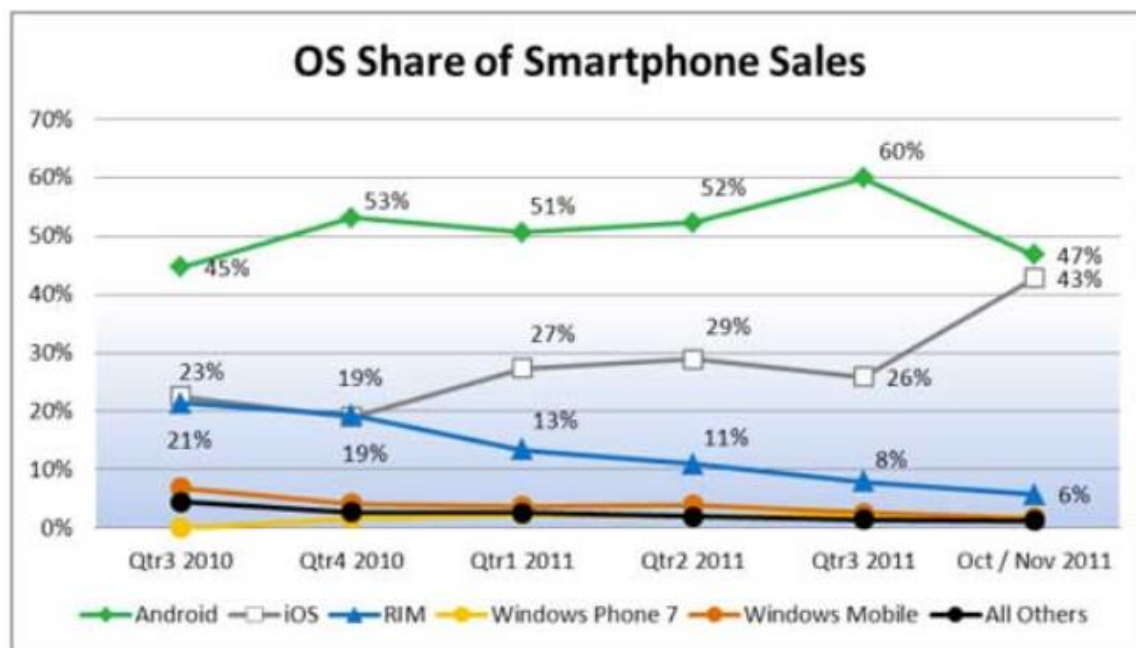
- Mobile communication
- Mobile hardware
- Mobile software

Mobile Computing Tutorial

- [Mobile Computing - Evolution](#)
- [Mobile Computing - Classification](#)
- [Mobile Computing - Major Advantages](#)
- [Mobile Computing - Security Issues](#)

Personal Digital Assistant (PDA)

We hear of terms such as telecommuting, which is being able to work from home or the field but at the same time accessing resources as if one is in the office.



Personal Digital Assistant (PDA)

The main purpose of this device is to act as an electronic organizer or day planner that is portable, easy to use and capable of sharing information with your computer systems.

PDA is an extension of the PC, not a replacement. These systems are capable of sharing information with a computer system through a process or service known as synchronization. Both devices will access each other to check for changes or updates in the individual devices. The use of infrared and Bluetooth connections enables these devices to always be synchronized.



With PDA devices, a user can browse the internet, listen to audio clips, watch video clips, edit and modify office documents, and many more services. The device has a stylus and a touch sensitive screen for input and output purposes.

Smartphones have the capability to run multiple programs concurrently. These phones include high-resolution touch screens, web browsers that can access and properly display standard web pages rather than just mobile-optimized sites, and high-speed data access via Wi-Fi and high speed cellular broadband

The most common mobile Operating Systems (OS) used by modern smartphones include Google's Android, Apple's iOS, Nokia's Symbian, RIM's BlackBerry OS, Samsung's Bada, Microsoft's Windows Phone, and embedded Linux distributions such as Maemo and MeeGo. Such operating systems can be installed on different phone models, and typically each device can receive multiple OS software updates over its lifetime.



Location Flexibility

This has enabled users to work from anywhere as long as there is a connection established. A user can work without being in a fixed position. Their mobility ensures that they are able to carry out numerous tasks at the same time and perform their stated jobs.



Saves Time

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.

Enhanced Productivity

Users can work efficiently and effectively from whichever location they find comfortable. This in turn enhances their productivity level.

Entertainment

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.

Streamlining of Business Processes

Business processes are now easily available through secured connections. Looking into security issues, adequate measures have been put in place to ensure authentication and authorization of the user accessing the services.

Some business functions can be run over secure links and sharing of information between business partners can also take place.

Meetings, seminars and other informative services can be conducted using video and voice conferencing. Travel time and expenditure is also considerably reduced.

Mobile computing has its fair share of security concerns as any other technology. Due to its nomadic nature, it's not easy to monitor the proper usage. Users might have different intentions on how to utilize this privilege. Improper and unethical practices such as hacking, industrial espionage, pirating, online fraud and malicious destruction are some but few of the problems experienced by mobile computing.



- Hiring qualified personnel.
- Installing security hardware and software
- Educating the users on proper mobile computing ethics
- Auditing and developing sound, effective policies to govern mobile computing
- Enforcing proper access rights and permissions



These are just but a few ways to help deter possible threats to any company planning to offer mobile computing. Since information is vital, all possible measures should be evaluated and implemented for safeguard purposes.

In the absence of such measures, it's possible for exploits and other unknown threats to infiltrate and cause irrefutable harm. These may be in terms of reputation or financial penalties. In such cases, it's very easy to be misused in different unethical practices.

If these factors aren't properly worked on, it might be an avenue for constant threat.

Various threats still exist in implementing this kind of technology.



Source Code

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<h1> Mobile Computing Tutorial </h1>
<p>Mobile Computing is a technology that allows transmission of data,</p>
<p> voice and video via a computer or any other wireless enabled device without having to be connected to a fixed physical link.</p>
<p>This tutorial will give an overview of Mobile Computing and then it will take you through how it evolved</p>
<p>and where is the technology headed to in future along with the classifications and security issues involved.</p>
<p> The main concept involves -</p>

<ul>
<li>Mobile communication</li>
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<li>Mobile software</li>
</ul>

<p> Mobile Computing Tutorial </p>
<ul>
<li><a href="Mobile Computing - Evolution.html">Mobile Computing - Evolution</a></li>
<li><a href="Mobile Computing - Classification.html">Mobile Computing - Classification</a></li>
<li><a href="Mobile Computing - Major Advantages.html">Mobile Computing - Major Advantages</a></li>
<li><a href="Mobile Computing - Security Issues.html">Mobile Computing - Security Issues</a></li>
</ul>

<h1>Audience</h1>
<p>This tutorial has been prepared for beginners to help them understand the basics of Mobile Computing.</p>
<p>After completing this tutorial,</p>
<p>you will find yourself at a moderate level of expertise in Mobile Computing from where you can take yourself to the next level.</p>

<h1>Prerequisites</h1>
<p>This tutorial assumes you are completely unaware of the basic concepts of Mobile Computing,</p>
<p>but still you are living in the present where mobile phones,</p>
<p>PDAs and Tablet PCs are being used in day-to-day life.</p>
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<h1> Mobile Computing - Evolution </h1>
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<p>In today's computing world, different technologies have emerged.</p>
<p>These have grown to support the existing computer networks all </p>
<p>over the world. With mobile computing, we find that the need to </p>
<p>be confined within one physical location has been eradicated. </p>
<p>We hear of terms such as telecommuting, which is being able to </p>
<p>work from home or the field but at the same time accessing resources </p>
<p>as if one is in the office.</p>



<br> </br>
<p>The advent of portable computers and laptops, Personal</p>
<p>Digital Assistants (PDA), PC tablets and smartphones,</p>
<p>has in turn made mobile computing very convenient. </p>
<p>The portability of these devices ensure and enable</p>
<p>the users to access all services as if they were in </p>
<p>the internal network of their company. </p>
<p>For example, </p>
<p>the use of Tablet PC and iPads. This new technology </p>
<p>enables the users to update documents, surf the </p>
<p>internet, send and receive e-mail, stream live video files,</p>
<p>take photographs and also support video and voice conferencing.</p>
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<h1> Mobile Computing - Classification</h1>
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<p>Mobile computing is not only limited to mobile phones, but there are various gadgets available in</p>
<p>the market that are built on a platform to support mobile computing. They are usually classified in</p>
<p>the following categories -</p>
<p style="font-size:230%">Personal Digital Assistant (PDA)</p>
<p>The main purpose of this device is to act as an electronic organizer or day planner that is portable,</p>
<p>easy to use and capable of sharing information with your computer systems.</p>
<p>PDA is an extension of the PC, not a replacement. These systems are capable of sharing</p>
<p>information with a computer system through a process or service known as synchronization. Both </p>
<p>devices will access each other to check for changes or updates in the individual devices. The use</p>
<p>of infrared and Bluetooth connections enables these devices to always be synchronized.</p>
<br> </br>

<br> </br>
<p>With PDA devices, a user can browse the internet, listen to audio clips, watch video clips, edit</p>
<p>and modify office documents, and many more services. The device has a stylus and a touch sensitive </p>
<p>screen for input and output purposes.</p>
<p style="font-size:230%">Smartphones</p>
<p>This kind of phone combines the features of a PDA with that of a mobile phone or camera phone.</p>
<p>It has a superior edge over other kinds of mobile phones.</p>
<br></br>
<p>Smartphones have the capability to run multiple programs concurrently. These phones include </p>
<p>high-resolution touch screens, web browsers that can access and properly display standard web </p>
<p>pages rather than just mobile-optimized sites, and high-speed data access via Wi-Fi and high </p>
<p>speed cellular broadband</p>
<p>The most common mobile Operating Systems (OS) used by modern smartphones include </p>
<p>Google's Android, Apple's iOS, Nokia's Symbian, RIM's BlackBerry OS, Samsung's Bada, </p>
<p>Microsoft's Windows Phone, and embedded Linux distributions such as Maemo and MeeGo.</p>
<p>Such operating systems can be installed on different phone models, and typically each </p>
<p>device can receive multiple OS software updates over its lifetime.</p>
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Benha University
Faculty of Engineering - Shoubra
Academic year 2019-2020



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</body>
<h1> Mobile Computing - Major Advantages</h1>
<br> </br>

<p>Mobile computing has changed the complete landscape of our day-to-day life. Following are the major advantages of Mobile Computing -</p>
<p>major advantages of Mobile Computing -</p>
<p style="font-size:230%">Location Flexibility</p>
<p>This has enabled users to work from anywhere as long as there is a connection established.</p>
<p> A user can work without being in a fixed position. Their mobility ensures that they are </p>
<p>able to carry out numerous tasks at the same time and perform their stated jobs.</p>
<p style="font-size:230%">Saves Time</p>

<p>The time consumed or wasted while travelling from different locations or to the office and back,</p>
<p>has been slashed. One can now access all the important documents and files over a secure channel </p>
<p>or portal and work as if they were on their computer. It has enhanced telecommuting in many companies.</p>
<p>It has also reduced unnecessary incurred expenses.</p>
<p style="font-size:230%">Enhanced Productivity</p>

<p>Users can work efficiently and effectively from whichever location they find comfortable.</p>
<p>This in turn enhances their productivity level.</p>

<p style="font-size:230%">Ease of Research</p>

<p>Research has been made easier, since users earlier were required to go to the field and search</p>
<p>for facts and feed them back into the system. It has also made it easier for field officers and</p>
<p>researchers to collect and feed data from wherever they are without making unnecessary trips to</p>
<p>and from the office to the field.</p>

<p style="font-size:230%">Entertainment</p>
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<body>
<h1> Mobile Computing - Security Issues</h1>
<br> </br>

<p>Mobile computing has its fair share of security concerns as any other technology. </p>
<p>Due to its nomadic nature, it's not easy to monitor the proper usage. Users might</p>
<p>have different intentions on how to utilize this privilege. Improper and unethical</p>
<p>practices such as hacking, industrial espionage, pirating, online fraud and malicious</p>
<p>destruction are some but few of the problems experienced by mobile computing.</p>
<br> </br>

<br> </br>
<p>Another big problem plaguing mobile computing is credential verification.</p>
<p>As other users share username and passwords, it poses as a major threat to </p>
<p>security. This being a very sensitive issue, most companies are very reluctant</p>
<p>to implement mobile computing to the dangers of misrepresentation.</p>

<p>The problem of identity theft is very difficult to contain or eradicate.</p>
<p>Issues with unauthorized access to data and information by hackers, is</p>
<p>also an enormous problem. Outsiders gain access to steal vital data from</p>
<p>companies, which is a major hindrance in rolling out mobile computing services.</p>

<p>No company wants to lay open their secrets to hackers and other intruders,</p>
<p>who will in turn sell the valuable information to their competitors. It's </p>
<p>also important to take the necessary precautions to minimize these threats</p>
<p>from taking place. Some of those measures include -</p>

<ul>
  <li>Hiring qualified personnel.</li>
  <li>Installing security hardware and software</li>
  <li>Educating the users on proper mobile computing ethics</li>
  <li>Auditing and developing sound, effective policies to govern mobile computing</li>
  <li>Enforcing proper access rights and permissions</li>
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