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STUDY OF MOBILE COMPUTING DEVICES WITH SECURITY ISSUES

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Abstract

Advances in wireless networking have prompted a new concept of computing, called mobile computing in which users carrying portable devices have access to a shared infrastructure, independent of their physical location. This paper will have a survey on mobile computing. It involves software, hardware and mobile communication. Due to this, different types of mobile devices are talked and they are investigated in details. 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 Wi-Fi/Bluetooth- enabled PDA's to wireless sensor networks, mobile computing has become ubiquitous in its impact on our daily lives.

Introduction

Mobile computing is an interaction between human and computer by which a computer is expected to be motivating during normal usage. Mobile computing involves software, hardware and mobile communication. Respectively, mobile software deals with the requirements of mobile applications. Also, hardware includes the components and devices which are needed for mobility. Communication issues include ad-hoc and infrastructure networks, protocols, communication properties, data encryption and concrete technologies. Mobile computing means being able to use a computing device while changing location properties [1]. In the last 10 years, the advent of mobile phones as well as laptops has dramatically increased the availability of mobile devices to businesses and home users. More recently, smaller portable devices such as PDAs[2].A technology that allows transmission of data, via a computer, without having to be connected to a fixed physical link. Mobile computing technology enables the mobile worker to create, access, process, store and communicate information without being constrained to a single location [3]

Mobile computing devices

Personal digital assistant (PDA)

A personal digital assistant (PDA), also known as a palmtop computer, or personal data assistant, is a mobile device that functions as a personal information manager. PDAs are largely considered obsolete with the widespread adoption of smart phones. Fig shows a sample PDA. A PDA has all requirements of connecting to internet such as: an electronic visual display, enabling it to include a web browser, audio capabilities enabling use as a portable media player. Most PDAs can access the Internet, intranets or extranets via wireless methods like Wi-Fi or Wireless.

Global Journal of Engineering Science and Research Management

FIG. - MOBILE COMPUTING DEVICE

Smartphone

A smart-phone is a mobile phone built on a mobile operating system, with more advanced computing capability and connectivity than a feature phone. The first smart-phones was a combination of a personal digital assistant (PDA) and a mobile phone functionally. Some functions were added in later models like portable media players, low-end compact digital cameras, pocket video cameras, and GPS navigation units to form one multi-use device, high-resolution touch-screens and web browsers for displaying standard web sites and mobile-optimized pages. Also, Wi-Fi provided high-speed data access and mobile broadband. The most usual mobile operating systems (OS) used by modern smart-phones include Google's Android, Apple's iOS, Nokia's Symbian, RIM's BlackBerry OS, Samsung's Bada, and Microsoft's Windows Phone.

Tablet computer

Tablet computers are larger than a mobile phone or personal digital assistant. They are a type of mobile devices integrated into a flat touch screen and primarily operated by touching the screen. No physical keyboard is placed in them. It often uses an onscreen virtual keyboard. Booklets include dual-touchscreens. Early examples of the tablet concept originated in the 19th and 20th centuries mainly as prototypes and concept ideas. The first commercial portable electronic devices based on the concept appeared at the end of the 20th century. Apple released the iPad with operating system and touchscreen technology in 2010. This has sparked a new market for tablet computers and after this success many other manufacturers have produced versions of their own including Samsung, HTC, Motorola, RIM, Sony, Amazon, HP, Microsoft, Archos, etc.

Limitations of mobile computing

- Insufficient bandwidth: Mobile Internet access is generally slower than direct cable connections, using technologies such as GPRS and EDGE, Higher speed wireless LANs are inexpensive but have very limited range.
- Security standards: When working mobile, one is dependent on public networks, requiring careful use of VPN.
- Power consumption: When a power outlet or portable generator is not available, mobile computers must rely entirely on battery power
- Transmission interferences: Weather, terrain, and the range from the nearest signal point can all interfere with signal reception
- Potential health hazards: People who use mobile devices while driving are often distracted from driving and are thus assumed more likely to be involved in traffic accidents.

Applications of mobile computing

1. For Estate Agents: Estate agents can work with mobile computers they can be more productive. They can obtain current real estate information by accessing multiple listing services.

Global Journal of Engineering Science and Research Management

2. Emergency Services: Information regarding the address, type and other details of an incident can be dispatched quickly, via a Cellular Digital Packet Data (CDPD) system using mobile computers.
3. In courts: 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.
4. In companies: Managers can use mobile computers in, say, critical presentations to major customers. They can access the latest market share information.

Issues in mobile computing

Security issues

a) Confidentiality: Preventing unauthorized users from gaining access to critical information of any particular user.
b) Integrity: Ensures unauthorized modification, destruction or creation of information cannot take place.
c) Availability: Ensuring authorized users getting the access they require.
d) Legitimate: Ensuring that only authorized users have access to services.

Bandwidth

Bandwidth utilization can be improved by logging and compression of data before transmission.

Location intelligence

A mobile computer must be able to switch from infrared mode to radio mode as it moves from indoors to outdoors. It should be capable of switching from cellular mode of operation to satellite mode as the computer.

M - the need for mobility.
O - the need to improve operations.
B - the need to break business barriers.
I - the need to improve information quality.
L - the need to decrease transaction lag.
E - the need to improve efficiency.

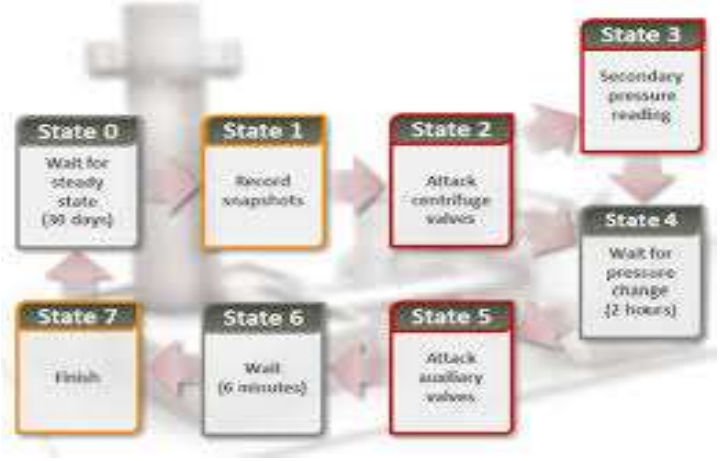

Fig:-use of computing device in many state

Conclusion

A comprehensible introduction of mobile computing is presented in this paper. One must wonder though whether or not everyone will want to have such an "invading" technology, especially when it comes to ubiquitous computing[1]. Devices including personal digital assistant (PDA), smartphone, tablet computer, ultra-mobile PC, and wearable computers are talked. Also, operating systems such as Symbian, Windows, Palm OS, BlackBerry, iOS, Android, and Bada are got into. At the end, the limitations of mobile computing are subjected. health issues (electrical component in clothes/skin may have unwanted long term effects on humans) as well as privacy ones (a chip inserted into someone's arm could be made as a tracking device without the wearer knowing; [2]Mobile computing is made possible by portable computer hardware, software, and

Global Journal of Engineering Science and Research Management

communications systems that interact with a non-mobile organizational information system while away from the normal, fixed workplace. Mobile computing is a versatile and potentially strategic technology that improves information [3]

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