Personal Digital Assistant:
A New Information Management Tool

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Abstract

Handheld computing technology, commonly known as Personal Digital Assistants are having a tremendous impact in many personal, educational and business settings. This article explains the history and development of personal digital assistant, its features, applications, advantages and limitations of using the technology.

Keywords: Personal digital assistants, Information management

1. Introduction

Information revolution has attained a new dimension with the emergence of Personal digital Assistant (PDA) as a tool for personalized information management. This powerful handheld computing device is becoming invaluable in daily lives of professionals in various fields.

PDA, also known as palm computer or notebook computer, is a handheld device with information storage and retrieval capabilities. The earlier PDA's were glorified electronic data books and address books. As the technology advanced, the functionality of PDAs expanded exponentially. In addition to the basic organizer functions, PDA's can now store reference books, database

programmes, and can keep track of patients and clinical procedures. In addition modern PDA has e-mail, Internet and other networking facilities.

2. Origin and Development

PDA was originally designed as personal organizers but became a multipurpose tool over the years. In 1993 Apple Computer Incorporation introduced the first PDA, 'Newton Message Pad'. The release of 'Newton Message Pad' was heralded as a mile stone of the information age. But 'Newton Message Pad' was too big, expensive and complicated and its handwriting recognition was poor. As a result, it had only a limited number of users. Following Apple Computer Incorporation, other

companies attempted to make PDAs. But none of them succeeded in the attempt.

Because of the drawbacks of 'Newton Message Pad', PDA sales dwindled for the next three years and were almost off the charts. The PDA market was again revived by Palm Incorporation(Presently known as PalmOne Incorporation) , then a part of US Robotics, with the release of a new type of handheld computers 'Palm Pilot' in 1996. It was small and light , had long battery life , was easy to use and could store huge amount of data, when compared to the Newton Message Pad. This new version of Information management tool was met with tremendous acceptance world over, and it became the first successful handheld computer.

In December of 1997, 3Com a company best known for their computer networking products, purchased US Robotics, thereby acquiring Palm. The same year, Palm began licensing its operating system, known as PalmOS, to other PDA manufacturers. This paved the way for other companies to manufacture Palm compatible devices.

Microsoft entered the PDA market by releasing Windows CE version 1.0 in November,1996 and a variation of this was released in 2000 as Pocket PC.

The early versions of PDAs were about the size of a deck of a playing cards and weighing around 155g. By 1999, size had became still smaller. At that time devices were equipped with a 160 C 160 pixel backlit screen and came complete with a comprehensive suite of PIM (Personal Information Manager) software including databook, address book, to-do-list, expense management software, calculator, note-taking applications and games.

The beginning of 21st century witnessed the development of Internet accessible PDAs. Several web content providers collaborated with PDA manufacturers to offer 'web-clipped' versions of their sites designed specifically for PDAs for easy download.

3. Features of PDA

• PDA combines computing, telephone/fax, Internet and networking features.

• It incorporates handwriting recognition features. Most systems are controlled with a pen-like stylus and have handwriting recognition software for entering text.

• It has attractive portability.

• PDA stores its basic programs in a ROM Chip.

• It is powered by batteries.

• In PDA, LCD screen serves as both input and output device.

• Information can be transferred back

and forth between PDA and Personal Computer, by a process called synchronization. Through synchronization, handheld data can be backed up and managed on the PC, and third-party applications can be installed from the PC to the handheld.

• PDA can also communicate with PC and Internet through an infrared communication port that uses Infrared light to beam information and the process is called beaming.

• It has multimedia capabilities.

• PDA has simple E-mail client software.

• PDA offers easy mobility.

• PDA provides spreadsheet and database programs.

• Small and lightweight.

• Popular PDA models do not have built-in keyboards, but external keyboards are available for some.

4. Components of PDA

Following are the main components of a PDA.

i) Microprocessors

Microprocessor is the major component of a PDA which controls and co-ordinates various programmed instructions of the system. The microprocessor of a PDA is cheaper and smaller than that of a desktop or laptop computer. The processor speed is also comparatively less.

ii) Memory

The basic programs of a PDA are stored in a Read Only Memory (ROM) and it is akin to the hard drive of a PC. The data and any program added later are stored in the device's Random Access Memory (RAM). Many of the newer models of PDAs allow the users to increase the storage capacity of their handhelds through expansion memory cards.

iii) Input/Output Devices

The major input/output devices of the PDAs are:

a) Miniature Keyboard

Handheld computers typically use a miniature keyboard to input data. Often the keyboards are too small for easy or comfortable typing.

b) LCD Screen

PDAs have some type of LCD (Liquid Crystal Display) screen, which serves as an input and an output device. It displays information similar to that of a laptop/personal computer and with the help of the touch screen on the top of the LCD, programs can be launched and data can be entered.

c) Communication Ports

PDAs are designed to work in

tandem with desktop/laptop computers. The communication between PC and PDA is typically done through a serial or USB port on the PDA. In addition to communicating through a cable, many PDAs have an infrared communication port that uses infrared light to beam information to a PC or another PDA. Some PDAs also offer wireless methods to transfer data to and from a PC/PC network through a wireless e-mail /ISP like those available on new models of cell phones. Some PDAs offer telephone modem accessories to transfer files to and from a PC/PC network.

iv) Operating System

The operating system (OS) contains the pre-programmed instructions that tell the microprocessor what to do. The OS used by the PDAs are not as complex as those used by PCs. They generally take up less memory. PDAs typically have one of two types of OS.

a) Pocket PC O.S.

This was formerly known as Windows CE. The advantage of Pocket PC O.S is that it supports graphics, standard windows packages like Word and Excel, devices like MP3 players and MPEG movie players But pocket PC takes up more memory, slower and more complicated to use.

b) Palm O.S

This is the most widely used PDA

OS. Most of the medical software available is primarily written for the Palm OS. The advantages of Palm OS are that it takes up less memory, runs faster, and is easy to use.

v) Software

All PDAs have some kind of Personal Information Management (PIM) software in order to perform functions such as storing contact information, making to-do list, taking notes, writing memos, keeping track of appointments, planning projects and doing calculations.

5. Applications of PDA

a) Accessing Electronic Literature

PDA is very good at storing large amounts of textual information. The natural extension of this is to provide PDA forms of the reference books that often carry around. Presently a large number of titles, both textbooks and reference books are available to access over PDA.

b) Web Clipping

Web-Clipping programs available on PDA allow capture of web page content for use on a PDA. Many web applications and files can download and can easily install on PDA. Some of these are free (freeware) and others are affordable titles. Some provide automatic information updating. PDA users can choose web sites they wish to visit and convert this to PDA format with ease.

c) Calculations

The earlier applications for handhelds were designed solely to help professionals perform calculations. Calculators on PDA helps to make better decisions, give valuable advice and avoid calculation errors. Hundreds of calculators are available and some programs consolidate several calculators to a single PDA application.

d) Electronic Mailing

It is possible to send and receive E-mail messages from the PDA. PDAs allow wireless e-mail messages as well as by synchronization with the personal computers.

e) Address Books/Memo Pads/To-do Lists/Date Books

The PDA is a powerful, portable personal information manager. It has enough memory to contain and organize thousands of names, addresses and phone numbers. The calendar section is a powerful cross- referenced and alarm-enabled "day-timer". Also PDAs include applications to create a 'to-do list' and quick writing of memo. The PDA can also remind professionals of important dates/meeting with an alarm sound.

f) Database Applications

Using the PDA-based database management software institutions can design in-house customized databases as well as they can use commercial databases.

g) Word Processing

PDA has word processing application called 'document manager' using which documents can be created and reviewed. The text files for PDAs are called 'DOC' files. Some of the 'document managers' allow links similar to web page links.

h) Electronic Survey

PDA serves as an efficient tool for collecting data in survey research. The paper-based instruments remain inefficient for collecting data because of missing data, respondent error, and the cost of administration and entering data. PDA provides an outstanding alternative to this.

6. Limitations

Although PDA is an effective personal information management tool for the medical professionals , it has some limitations.

• Limited security features for storing sensitive data.

• Easy loss or theft of the device owing to the small size.

• Poor readability.

• Small screen size.

• Slow data entry.

• Limited memory.

• High cost.

7. Conclusion

The rapid, almost daily changes in the modern world require immediate access to relevant information. PDA facilitates effective means of storing retrieving, analyzing and sharing large volumes of information. Practitioners in different branches of knowledge can use this device in various ways. In addition to common facilities such as contact lists, calculators, calendars and expense logs, current PDAs have a wide variety of practical applications such as web clipping, communication with colleagues, and access to literature. Although PDA can provides many benefits, it has some limitations also. As the technology improves these limitations can overcome and more programs can be made available.

References

Wiggins, R. H. Personal digital assistants.17(1) 2004. *Journal of Digital Imaging* : 5-17

www.palmone.com Official web page of PalmOne Incorporation.