Bye Bye Books: Drug Information in Your Palm™ or Pocket (PC)

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Objectives

• Review PDA technology, with emphasis on newer wireless capabilities
• Medical content and applications
• Drug Information Databases
• Where to go for further information

Review of PDA Technology

• What are these things anyway?
  – More than an organizer
  – Almost a computer
• Operating Systems: underneath it all
  – PalmOS, Windows (PocketPC), Blackberry (proprietary)
• Hardware
  – Many brands & models
  – Went quickly from one (Palm) to over 100

End-User Computing Devices

Basic Functions

Basic Applications:
  • Address Book
  • Datebook (calendar)
  • Memo Pad
  • Note Pad
  • Expense
  • Mail
  • System utilities
  • Calculator

On Computer: Desktop Version

Connecting the PDA

• Cradle to connect to computer
• “Sync” (synchronization) software copies newest information both ways
• Infrared for between-PDA “beaming”
  – Some printers support IR for mobile printing
• Wireless-equipped models can connect to the Internet away from a base PC computer
  – Much more on wireless to follow…
Entering Data into a PDA

- Write on screen: graffiti
- Use keyboard / widget
- Enter data in desktop software, then ‘Sync’ to transfer to PDA
- Use optional keyboard
- Beam to/from another PDA, via some form of wireless technology

Accessories

- Cases
- Keyboards
- Modems
- Digital cameras
- Presentation systems
- Supplemental memory cards
- Bar code readers/scanners
- Mobility (car power kits, etc.)
- Wireless

Sports Jacket for All the Gadgets

This blazer “sports” 14 hidden pockets plus hidden conduits in the garment allowing for the connecting and snaking of wires and cables from various devices.

#1 Question: What do you want the handheld device to do?

- Be a cell phone?
- Support Wi-Fi? (Run on 802.11 networks?)
- Store my calendar?
- Store my contact list?
- Store my e-mail? Let me write e-mail?
- Retrieve e-mail via wireless networks?
- View / Edit Office documents (Word, Excel)
- Run unique applications? (Medical)

Can You Use a Mobile PDA?

If your VCR is still flashing 12:00, this may not be the device for you.

Do You Want A Mobile PDA?

Decide whether you really like looking at a little screen while pushing tiny buttons.
State of the PDA Market

- The PDA market is evolving rapidly.
- Market demand is shifting away from low-end PDAs to handheld devices with some form of wireless connectivity, whether it is for data or voice.
- Mobile PDAs and the associated monthly fees can be somewhat expensive.
- Most PDAs in service are already obsolete.

PDA Network Connections

- Direct-wired network connection
- Connection via a “cradle”
- Wireless Connections (next 2 slides)

Types of Wireless Connections

- Wi-Fi – 802.11b (also other superior 802.11x standards)
- Cellular Connections
  - CDMA (Verizon Wireless)
  - GSM/GPRS (AT&T Wireless)
  - Upcoming, faster cellular standards are on the horizon
- Bluetooth (Personal Area Network or PAN)
  - When we say “mobile” wireless networking, we are generally looking at Wi-Fi and Cellular Connections.
  - When we’re looking to eliminate keyboard or mouse wires and cables, we’re looking at Bluetooth.
  - When using a cell phone, it’s becoming more common to use a headset. Bluetooth supports wireless headsets.

Types of Wireless Networks

- Wi-Fi Networks
  - 802.11b, a, g
  - Campus network
  - Public Hot Spots (fee for service)
  - Home networks
- Cellular Networks (require monthly fees)
  - Voice Networks
  - Data Networks
  - GSM / GPRS (AT&T)
  - CDMA (Verizon)

Different Types of Handheld Devices

- Standard Cell Phone
- Stand-alone PDA
- Palm family of PDA devices
- Blackberry family of PDA devices
- Windows family of PDA devices
- Smartphones, which are cell phones with some limited data capabilities
  (Note: PDAs have touchscreens, Smartphones do not.)

The Matching of Device and Wireless Technology

- Mobile devices come with an assortment of built-in or add-in wireless technologies.
- For wireless service to work, the wireless technology in the device, must match the wireless service being provided.
- For example, a Smartphone purchased from AT&T may not work on the Verizon network.
- Wireless coverage will vary from location to location.
- Most hospitals, campuses, and other institutional settings have limited 802.11 coverage at this time.
The Treo 600 combines a full-featured mobile phone and Palm OS organizer with GSM/GPRS wireless and even a digital camera.

**PalmOne**

- Wi-Fi enabled, built on Palm OS 5.2.1, a built-in keyboard, Web browser, and auto-get email software, VersaMail 2.5.
- Palm™ Tungsten™ W handheld, combined with GSM/GPRS wireless service from AT&T Wireless.

**Blackberry**

- Model 7510
  - Data and Voice
  - Color Display
  - Java Browser

- RIM 857
  - Data Only
  - B&W Display
  - Data Only
  - Paging and Short Messages

**Windows Mobile Pocket PC 2003**

- Dell Axim X5i
  - Typically 802.11 Wi-Fi enabled.
  - They support touch screens and come with or without keyboards.
  - Pocket Office and Pocket Outlook are available. Can be synched via cradle or wireless.
  - This is not a cell phone.

- Compaq iPaq

**Windows Mobile Pocket PC Phone Edition**

- Pocket PC Phone Edition
  - Samsung SPP-200
  - These cell phones have color screens, can run Pocket Internet Explorer for web access, Pocket Outlook for e-mail, and synch to Microsoft Exchange.
  - They do not have touch screens or allow stylus entry.

- Pocket PC Phone Edition
  - Hitachi G1000
  - Alpha Keypad

**Smartphones**

- Smartphone from Verizon Wireless
  - Samsung i600
  - CDMA Network

- Smartphone from AT&T Wireless
  - Motorola MP250
  - GSM/GPRS Network

**How do the vendors stack up?**

- **Blackberry**
  - Easiest to use and nice form factor
  - Very secure
  - Limited market share, but influential users
  - Limited 3rd party applications available
  - Requires purchase of Blackberry Enterprise Server for Exchange e-mail synchronization
How do the vendors stack up?

Palm
• Fairly easy to use
• Market leader in terms of units sold
• Struggling a bit financially
• "POP" E-mail client in PalmOffice
• Limiting its own software development – dropping Mac, no enterprise server
• Depends heavily on availability of 3rd party software

PalmSource Drops Macintosh Desktop Support
Feb 12, 10:10 PM EST
SAN JOSE, Calif. (AP) -- In a marked departure, PalmSource Inc. says future versions of its Palm operating system for handheld devices will not have built-in synchronization software for Apple’s Macintosh computers.

How do the vendors stack up?

Windows Mobile 2003
• More complex, but most powerful
• 2nd Place in market share, and climbing
• Offers Pocket Office for viewing and editing Office documents
• Growing library of 3rd party software
• Makes Exchange integration a freebee
• Hacker and virus risks a lingering concern

Push, Pull, or Back to the Cradle
Depending on what you purchase and how you set up your mobile handheld device:
• You may have to cradle Sync
• You may be mobile and always on-line
• You may be mobile with a periodic Sync
• You may be mobile and Sync on demand

How Would I Get Wireless Updates?
1. Updates can be viewed on-demand via a web browser – most devices
2. Some devices use a "POP" mail interface
3. Updates can be pushed from a PC desktop, if desktop left powered on and is running "push" software. (This does not scale well.)
4. Updates can potentially be pushed from MS-Exchange Servers, but not to all types of devices.

Realities about “Pushing” E-mail
• Most Exchange 2000 servers are not set up to push e-mail at all.
• Blackberry sells a server product that could push Exchange e-mail to Blackberry PDAs, but the software is expensive and does not push e-mail to Windows Mobile devices.
• Palm does not presently have a viable enterprise offering for pushing e-mail.
• Palm may partner with Blackberry in the future.
Security Concerns

- Mobile handheld devices do get lost and stolen.
- There are HIPAA concerns regarding protected health information (PHI).
- Proper protections include:
  - Password protection on startup
  - Encryption of data stored on the device
  - Anti-virus, particularly with Windows Mobile
  - VPN for access to organizational networks
  - Limiting the types of data you store on your device
- Some newer devices (e.g., Hewlett Packard h5450) have biometric capabilities using thumbprint scanning/verification.

Getting More Advanced

- Extend your PDA with software
- Literally hundreds of programs available via download sites on the Web
  - TUCOWS
  - Handango
  - Memoware: documents & books
- Many are free (shareware)
- Some cost money, usually not much

Software Categories

- Most important
  - Security, especially for clinical users
  - Document readers for .DOC, .PDF files
- Useful utilities
  - Word Processing, Spreadsheets on the PDA
    (I use "Documents to Go Pro" for Word, Excel, and PowerPoint files)
  - PDA version of Adobe Acrobat reader exists as well
  - Second calendar for your personal life
  - Reference content
- **Think about:** antivirus software

Web Clipping

- Wireless PDAs: “live”, but often use Web “clipping” to reformat and deliver content
- Middleman services: grab content, deliver it to PDA at Sync
- One choice: AvantGo (www.AvantGo.com)
  - Register via your desktop computer
  - Select “channels” or create your own
  - Read updated content periodically on PDA

AvantGo

Medical Content

- Software (simple to complex)
  - Calculators
  - Clinical assessment, guideline tools
  - Patient tracking databases
- Books and Reference Texts
  - Harrison’s, 5 Minute Clinical Consults, etc.
- Medline? **Not ready for prime-time**
  (but a decent alternative is available)
- Drug Information compendia
Medical Content

• Medical Calculations:
  – MedCalc 3.7
    • Available at www.Palmgear.com
    • Freeware medical calculator, sorted by category
    • Contains over 60 formulas
      – Ranging from Apgar scores to Zollinger-Ellison syndrome likelihood scores
    • Written for MAC and PC users
  – PharmD Toolbox
    • Also available at www.Palmgear.com
    • Costs $58.99, has 17 modules useful in inpatient care
    – Various other calculation programs available for renal/hepatic dosing, age adjustment, etc.

• Patient charting / tracking (many types)
  – Most widely used: Patient Keeper (www.patientkeeper.com)
  – Others include: Patient Palm Chart, custom databases created using programs such as HandBase, etc.
  – Also good for documenting provision of clinical services
  • iScribe: prescription writing & coding reference tool

Wireless Literature?

• Wireless access to Medline is possible, but difficult to accomplish
• Alternative: JournalToGo.com
  – Similar to AvantGo in terms of how it works
  – Currently gives access to many medical journals in the areas of cardiovascular, diabetes, asthma; or by subscription to product-specific literature
  – Loads abstracts of articles, major medical news developments; can request full articles at next Sync
  – Will likely take a fair amount of time to have enough journals available be fully useful, but is an interesting development

Drug Information Compendia

• ePocrates
• Lexi-Drugs
• AHFS Drug Information (AHFS-DI)
• mobileMICROMEDEX™
• Physician’s Desk Reference (PDR)
• Others
  – Rx only with various specialty tools/modules
  – Herbal / Alternative meds
  – etc.

ePocrates

• ePocrates is really a “line” of products
  • ePocrates Rx (free): basic version
  • ePocrates Rx Pro: $59.99 / year
  • ePocrates Essentials: $139.99 / year
• Unique features
  • Large market share (price is right!)
  • Formulary tool (mostly large insurance companies)
  • Retail pricing data (via www.drugstore.com)
  • Perhaps best suited to quick overviews, simpler questions with less depth of information required (particularly with the free product)
ePocrates Rx

Lexi-Drugs

• “Standard” drug information resource
  - Cost ranges from $75/year for a subscription (Drug module only) to $325/year for one with various clinical modules and online companion access
  - Unique features
    - Drugs arranged by Therapeutic Categories
    - Special Alerts
    - Also has retail pricing data
    - Ability to link to other databases on PDA (eg, more in-depth resources for particular areas)
    - Can be viewed as good “mid-level” compendium

Lexi-Drugs

AHFS D.I.

• PDA version of the “Big Red Book”
  - Costs $100, with monthly updates
  - Comes only as SD/MMC card, runs independent of the PDA’s on-board memory
  - Unique features
    - Good drug information
    - Chemistry/stability information
    - Laboratory testing/interpretation information
    - Strong on parenteral products
    - Familiar compendium for many hospital-based practitioners

AHFS D.I.

mobileMICROMEDEX™

• “In Depth” drug information resource
  - $75/year with daily online updates (free if an institution already subscribes to MDX products)
  - Unique features
    - Really a collection of several databases
    - Drug Information, Toxicology, Acute Care, Alt. Meds
    - Formulary tool (hospital formularies can be loaded)
    - Drug-Drug Interaction checker
    - Perhaps the most comprehensive, detailed source of information for the clinical user; also familiar to hospital-based practitioners
Choosing a D.I. Product

- Consider your practice environment
  - Platform preferences?
  - Enterprise solution(s) in place?
  - Already subscribing to one or more products?

- Consider your own needs and preferences
  - Cost, ease of use are similar across products
  - Accuracy, reliability of information
  - Depth of information needed
  - Comfort level with certain sources

Clinical Uses of PDAs

- Charting (Patient Tracking)
- ePrescribing
- Documentation of services (+ Billing)
- Electronic Medication Administration Record (MAR), with bar code scanning
- Patient risk assessment (eg, ATP-III)
- Medication reminders (patient level)
- Adherence assessment (provider level)
Where to Get More Info

• Vendors, magazines, colleagues and friends
  • Medical content portals
    – www.handheldmed.com
    – www.pdamd.com
    – www.collectivemed.com
    – www.pbrain.hypermart.net/medapps.html
  • Health care websites
    – http://hin.nhlbi.nih.gov/palmapps.htm (NHLBI)
      • Asthma/COPD, cholesterol, other related guidelines
    – www.healthprolink.com (Clinical data exchange)
      (good source for pharmacy-specific applications)
• When in doubt, Google! (www.google.com)