Wonderful World of Wireless
WD200W

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Contents

Wireless Possibilities: The Hype and the Reality

Wireless Is Here, It's For Real

› **How many here have a wireless phone?**
› **How many phones provide wireless-web access?**
› **Initial hype may have overstated value**
  › Costs, usefulness of service not justifiable
  › Challenge using micro-devices for display/data entry
  › Still, many wireless services exist
› **New technologies coming:**
  › Better phones, networks
  › Better underlying technology
› **Will look at these, how to get started today**
  › While consumer, business markets mature

Who's Using Wireless Today?

› **Major brand sites**
  – ABCNews.com (abcnews.go.com)
  – ESPN (espn.go.com)
  – USA Today (usatoday.com)
  – Wall Stree Journal (wsj.com)
  – Barnes and Noble (mobile.bn.com)
  – Weather Channel (weather.com)
  – CBS Sportline.com (cbs.sportsline.com)
  – Edmunds.com (mobile.edmunds.com)

› **Major tech sites**
  – AOL (aol.com/anwywhere)
  – Yahoo (yahoo.com)
  – eBay (ebay.com)
  – Expedia.com, travelocity.com
  – Mapquest.com/wireless/
  – E*Trade (www.etrade.com), Schwab
  – ZDnet (zdnet.com)

Some Unique Mobile Applications Available

› **Biztravel (biztravel.com)**
  – comprehensive travel information for frequent business travelers
› **iQradio (iqradio.com)**
  – interactive nationwide radio station directory
› **NextBus (nextbus.com)**
  – Real-time arrival info for arriving bus or train (in select cities, tracked via satellite)
› **TrafficStation (trafficstation.com)**
  – Personal Traffic Advisor, area reports, personalized, route-specific traffic reports, Personal Traffic Advisor Telewarning System

Wireless Means Many Things

- **Most obvious example: Phones**
- **Other examples**
  - Pagers
  - PDAs (portable digital assistants)
  - Laptops with wireless modems
  - Wristwatches
  - Automobiles
  - Clothes
- **Differences are more than physical dimensions**
  - Radical new approaches to communicating

Many Ways to Wireless Programming

- **Most prominent in US today is WAP (wireless access protocol)**
  - And its associated WML (wireless markup language)
- **Others, equally popular in different parts of world**
  - I-mode, Palm, PocketPC , J2ME and more
  - Bluetooth not really in same space
- **Differences more than just language**
  - Some are much more suitable to data remaining in device, resuming later connection, complete control of interface, and more

Wireless Adoption WorldWide

- **Adoption rates worldwide are quite varied, based on several factors, some not obvious:**
  - Telecommunications monopolies, if any
    - Or too many carriers, splintering the market
  - Wireless infrastructure, including
    - Cost (per minute vs flat rate) for wireless service
    - Availability of SMS, GSM, other technologies
    - Availability of higher speed, later technology
  - Challenges in getting land-lines for internet access
    - Wireless access may be more popular where land-lines are expensive or even unavailable
  - Clearly a difference between consumer and business

Wireless Web Development Approaches

WAP

- **Wireless Application Protocol**
  - Early leader in wireless platform development
  - Predominant approach in US
  - Supported by nearly all newly manufactured phones
- **Corresponding Wireless Markup Language (WML)**
  - WAP is akin to HTTP, as WML is akin to HTML
  - Very familiar for web developers
    - Easy to learn, easily supported by CF, JSP, etc.
- **Managed by the wapforum (wapforumorg), supported by hundreds of members**
- **Will discuss in more detail later**

I-Mode

- **Predominant wireless platform in Japan**
  - Huge adoption rates among Japanese consumers
  - Making inroads into other markets worldwide
- **NTT Docomo is state-run phone company**
  - Has monopoly, mandated this platform
- **Still, has its strengths**
  - Regarded for its highly graphic interface
  - Facilitated by efficient, unified network
- **Dramatically facilitated by always-on nature**
  - And flat-rate pricing
- **Many strengths are not I-mode, per se!**

Palm

- **Palm Computing platform is predominant PDA**
  - Personal Digital Assistant
- **Differs from WAP, I-mode**
  - Device is intended as PDA, with wireless capability
  - In some ways, is more useful device for info mgt
  - Stronger data entry capabilities (stylus, keyboards)
- **Wireless capabilities seem grafted on, though**
  - Requires separate modem, wireless service
  - Content must be written specifically for Palm
  - Palm realizes need to make inroads into enterprise

PocketPC/Windows CE

- **Windows CE was early implementation of Windows on PDA's**
  - New incarnation is PocketPC platform (specs, API)
  - Making inroads into, stealing from, expanding upon Palm market
  - Strength is integration of familiar windows apps, interface
  - Available on multiple PDAs: Compaq, HP, others
- **Microsoft recognizes need for micro-device and wireless support**
  - Familiar development platform for windows developers
  - Like Palm, has strength over WAP as a real computing device with local storage, computing power

J2ME

- **Sun Microsystems has split the Java 2 platform into 3 editions:**
  - J2SE (standard), J2EE (enterprise), J2ME (micro)
- **Java 2 Micro Edition**
  - highly optimized Java runtime environment
  - targeting a wide range of consumer products
    - including pagers, cellular phones, screenphones, digital set-top boxes and car navigation systems
- **J2ME itself further split into profiles, i.e., MID-P**
- **Like Palm, PocketPC, supports device data storage, computing**
  - Full range of capability of the Java platform

Others

- **Symbian Epoch OS**
- **RIM Blackberry (device and platform)**
- **Application Service Providers**
  - ThinAirApps
  - Oracle
  - others

One Approach: WAP Application Development

WAP Architecture

About WML

- **Looks and acts very much like HTML**
  - Designed for the limited display and keyboard input features of today's phones
  - Generally can only be viewed in phones or "phone emulators"
- **There are significant differences. Not really HTML-lite.**
  - Differences in tags
  - Differences in how it's coded

"Hello World" In WML

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.1//EN"
   "http://www.wapforum.org/DTD/wml_1.1.xml">
<wml>
<card>
<p>
   Hello World!
</p>
</card>
</wml>
```

- **Notice: 2 different head tags, different WML tags**
- **Case of tags is sensitive, all tags must be closed**
- **Might be stored as hello.wml**
- **WML has support for <input>, other data entry elements**

Creating WAP Applications in CF/JRun

```
<CFCONTENT TYPE="text/vnd.wap.wml"><?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.1//EN"
   "http://www.wapforum.org/DTD/wml_1.1.xml">
<wml><card><p>
<CFOUTPUT>#application.storename# Login</CFOUTPUT>
<do type="accept">
   <go href="login.cfm?login=$(uname)"/>
</do>
<br/> Name: <input name="uname"/>
</p></card></wml>
```

- **Notice: CFCONTENT tag;<?xml> tag on same line**
  - **Also performing login, using input elements, passing URL var**
- **Might be stored as a "login.cfm"**
- **JRun: replace CFCONTENT with equivalent:**
  - **JSP:** `<%@ content_type="text/vnd.wap.wml">`
  - **Servlet:** `response.setContentType("text/vnd.wap.wml")`

How to View/Develop WML Pages

- **Can any web browser view WML pages? No!**
  - Only phones and phone emulators can view output of a page sent as WML
  - Later "resources" slide will show where to obtain
  - Let's see an example
- **Any editor, of course, can be used to develop them**
- **Most wireless phone providers now support WAP**
- **Most recently made wireless phones support WAP**
  - Some support HDML only
    - Handheld Device Markup Language, WML's predecessor

Usability/Style Guidelines

- **Some tools assert they can convert any content to WML**
- **Really best to create custom WML content, targeted for phones and mobile users**
  - Easy, drill-down navigation
  - Few keystrokes
  - Remember past visits
- **OpenWave has a list of several style guides from carriers and their own**
  - http://developer.openwave.com/support/techlib.html#styleguides
  - http://developer.openwave.com/resources/uiguide.html
- **See web sites in later "Resources" page for still more**

Which Horse to Bet On?

Choosing Among The Approaches

- **Issues:**
  - Your level of control over platform/device choice for your customers
  - Market penetration of platform/devices if no control
  - Cost to implement, develop, maintain
  - Background of current developers
    - Easy for web developers to learn, implement WAP
  - Requirements for device info storage, programmability of interface
    - WAP generally not suited to local data storage, limited interface
  - Importance of data entry in the application

Common Challenges

- **Developer challenges**
  - Interface challenges on tiny devices
  - Limited bandwidth, sometimes disconnected
  - Market penetration for phones, networks, services
  - Supporting multiple approaches in a single application
  - Support multiple devices within each approach
- **Market/culture issues**
  - Security
  - Location sensing
  - Push/notification

WAP Challenges

- **Development Challenges**
  - Browser incompatibility issues
  - Browser detection in server-side code
  - Problems using cookies (not always supported)
  - Error handling challenges (returned in HTML)
- **Other Challenges**
  - Security (WTLS/SSL, and "wap gap")
  - Using XML/XSLT
  - WMLScript
- **See Books, Articles on "Resources" Slide**

Coming Changes/Improvements

- **New devices, networks, increased bandwidth**
  - Devices providing better input, more storage
  - More devices supporting J2ME
  - G3 (very high bandidth) networks being laid
    - GPRS, Edge, GSM/WCDMA
- **Platform improvements**
- **Resolution of security, location sensing issues**
- **Time will allow:**
  - Industry support for changes
  - Market support for new, existing applications
- **Bottom line: easy to get in now, experiment, watch**

Where to Go From Here

Emulators

- **Easiest may be: http://wapsilon.com/**
  - Doesn't require installing software
  - Emulates Nokia phones. Reasonable WML support
- **Openwave emulator**
  - Available at developer.openwave .com
- **Nokia, Ericsson have own emulators available**
- **Most are free for development**

Note: This slide is not in your binder

General Wireless Development Learning Resources

- **Books**
  - New ones coming out all the time
  - Search Amazon.com for WAP, I-mode, J2ME, Palm
- **Magazines**
  - M-Business, Wireless Business & Technology
- **Web Sites**
  - Portals: ayg.com, wirelessdevnet.com, allnetdevices.com
  - Magazines sites: mbizcentral.com, wbt2.com
  - Phone manufacturers: nokia.com, ericsson.com
  - Service providers: attws.com, sprintpcs.com, nextel.com, verizonwireless.com, etc.
  - Wrox mailing lists: p2p.wrox.com

CF/JRun-Specific Wireless Development Learning Resources

- **Allaire.com wireless section of DevCenter**
- **Professional WAP, chapter 11, "ColdFusion and WAP" (written by yours truly)**
- **WAP Development with WML and WMLScript (Ben Forta)**
- **Several articles in ColdFusion Developers Journal (by Ben, myself, others)**
- **CF Wireless mailing list: http://www.bromby.com/cfwireless/**

Questions & Answers

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