



i-mode

Revolutionary Wireless Internet Technology

Marc Lisevich
Bryan Kwan
Jay Hoang

Overview

- Introduction to i-mode
- i-mode and mobile technology today
- i-mode Development
- iHTML
- i-mode's Business Model
- Future of i-mode

What is i-mode?

- Service across a wireless network which enables handheld devices (such as cell phones) to access the Internet
- Mobile internet service offered by NTT DoCoMo
 - Introduced in February 1999
- Extremely popular in Japan and expanding into Europe
 - As of March 31st, 2002, there are approximately 32,150,000 subscribers (in Japan)

Quick Note: Invented by Mari Matsunaga

What Can I do With i-mode ?

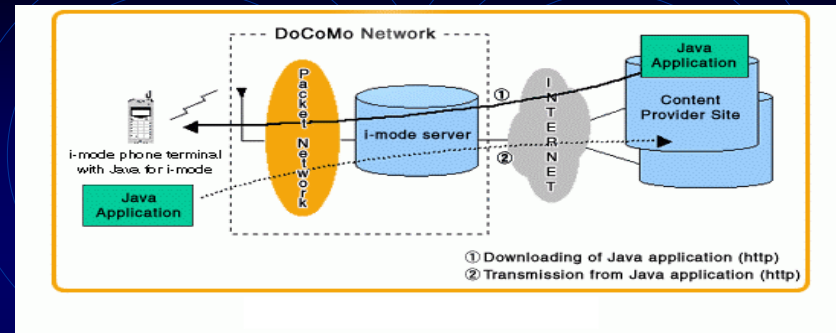
- Web-browsing
- Email (the "killer app")
- Chat, Games
- Access to information
 - Transaction Content
 - Money Transfer, Balance Check, Ticket Reservation...
 - Information Content
 - News updates, sports news, stock quotes...
 - Database Content
 - Restaurant Guide, Telephone Directory...

A Look at an i-mode Device

- Currently an i-mode device is an equivalent of a very low-end computer
- Additional buttons : directional, select and the i button.
- Must have an iHTML browser.
- Menu based interface (i-Menu)
- Try typing in a URL => It's not easy!



i-mode Transmission System



- Packet - switching network – information divided into packets when sent and reassembled when received by the i-mode user => faster.
 - i-mode users pay by volume of data downloaded.
- Code Division Multiple Access – method for allocating wireless channel (9.6kbps)

i-mode vs WAP

Comparing WAP and imode is not straightforward!

- i-mode – packet switching network
 - Handset contains IP stack
 - Communicates directly using iHTML web sites, through DoCoMo's relay centers
- WAP – protocol originally implemented on a circuit switched network
 - Can be packet switched e.g. GPRS
 - Requires gateway if required to communicate using TCP/IP
 - Can WAP support streaming video?
 - Both i-mode and WAP will be supporting XHTML

I-mode's security concerns/solutions

- Concern: prank/redirected calls
- Use SSL since version 3.0 since the medium is the internet and iHTML
- Java is more secure and only delegates resources to "trusted" servers
- Has partnered with major corporations including some Japanese and some in America and Europe
- As of version 3.0, i-mode has 128-bit encryption

Development

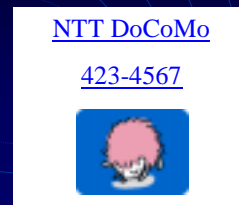
- The i-mode handset (Java enabled) use the KVM.
- Sun has ported the J2ME to i-mode.
- All Java Network operations in done via HTTP
- Other companies are porting applications for development including Macromedia, WapProfit, SEGA...
- It may even be possible to make your own movies that will be playable with 3G and 4G networks through FOMA

iHTML

- Originally named cHTML (compact).
- No jpegs, tables, image maps, frames, style sheets, cookies, fonts
- Handles GIFs, MIDI, and Java (iAppli)

iHTML example

```
<HTML>
<HEAD>
<TITLE>DoCoMo Net</TITLE>
</HEAD>
<BODY>
<CENTER>
<a href="http://www.nttdocomo.co.jp" accesskey="#">NTT DoCoMo</a><br>
<a href="tel:4234567" accesskey="*">423-4567</a><br>
<!-- animated gif -->
<IMG SRC="navi_ca.gif" WIDTH="94" HEIGHT="72">
</CENTER>
</BODY>
</HTML>
```



Billing

- Basic plan:
 - Packet plan - 200¥/month
 - i-mode plan - 100¥/month
 - Optional FOMA (3G) - 100¥/month
 - 400 packets free each month (doesn't include voice)
 - 0.27¥ per packet
 - Typical day, 1) access main menu = 3¥. 2) what's new = free 3) check the news = 28¥. 4) mobile banking = 100¥ 5) order food from restaurant = 40¥ 6) send and receive mail = 50¥
 - Add it all up, (221¥) x 30 days + 300¥ monthly charge = 6930¥ = \$70 US.
 - Does not include talk time.

Future of i-mode

- Currently, transfer rate is 9600 kbps.
- 3G which is released next year, (new version of i-mode), transfer rate 2 Mbps with streaming video and audio
- 4G (released in 2006), transfer rate is 20 MBps

Links

- <http://www.palowireless.com/imode>
- <http://www.eurotechnology.com/imode>
- <http://www.mobilemediajapan.com>
- <http://www.imodelinks.com>
- http://www.nttdocomo.com/html/subscriber_growth.html

i-mode Interactive Demo

- http://www.nttdocomo.com/html/imode01_4.html

i-mode iHTML Emulator

- <http://www.waprofit.com/products/emudownload.html>