i-mode - technology and content

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Structure

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What is i-mode?

- introduced 1999
- multimedia and messaging services ("AOL for mobile phones")
- user pays for data transfer and premium content
- based on WWW standards (TCP/IP, HTTP, HTML)
- Limited Availability
  - only for customers of Japanese mobile phone provider NTT DoCoMo
  - technology licensed by European providers (e.g. E-Plus)
  - 42 million subscribers in Japan, 4 million worldwide (stagnating)
- Bandwidth: 9.6 - 28.8 kbit/s (2G), 64/384 kbit/s (3G)
- new features added continually
i-mode as a business model

- NTT DoCoMo has full control over terminals and Official sites
  - Official sites (~ 4,000)
    - accessible via menu
    - partnership with NTT DoCoMo
    - have to agree to follow certain guidelines
    - can use i-mode's micro-billing
  - Unofficial sites
    - accessible via URL
    - can be provided by everyone
- Micro-billing system (mcommerce)
  - payment via mobile phone bill
  - 9% fee goes to NTT DoCoMo
- Simple DRM
Standards-based Infrastructure (1)

i-mode protocol stack
• packet-switched data transfer
• for better performance: wireless-profiled TCP (WTCP, included in WAP 2.0)
• WTCP is translated to TCP by internet gateways
• content access and e-mail via HTTP
• i-mode compatible HTML (iHTML, extended subset of HTML) for content
• optional encryption via 40/128 bit SSL
Extensive Multimedia Support

- Initially:
  - i-mode compatible HTML (extended cHTML)
  - GIF (interlaced, animated, transparent)
  - SMF ringtones (MIDI)
  - emojis 🌠🌙مبادئ

- Now:
  - XHTML-MP (as proposed for WAP 2.0)
  - JPEG
  - MPEG4 (Japan) (176 x 144 pixels @ 15fps) with styled subtitles (e.g. Karaoke)
  - RealVideo (Germany)
  - Macromedia Flash Lite
  - PDF

- Many media only viewable on certain terminals
Wealth of Services

• E-mail and SMS equivalents
• Micro-Billing
• i-appli (Java applications)
• i-area (location based services)
• i-mode FeliCa (active RFID chip for payment/ID)
• i-motion (video-on-demand)
• i-shot (upload/send photos)
• Bar code scanning
• IR communication / remote control
• ... many more
Development for i-mode - iHTML

• i-mode compatible HTML extends cHTML (subset of HTML)
• many HTML features not supported in cHTML
  – JPEG images
  – tables
  – Image maps
  – Multiple character fonts and styles
  – background colors and images
  – Frames
  – CSS & JavaScript
• some iHTML additions
  – accesskey attribute `<a href="..." accesskey="1">1</a>`
  – tel protocol `<a href="tel:5315551234">Call Me!</a>`
  – emojis (= pictograms, written as decimal HTML entities)
• now being superceded by XHTML-MP
Development for i-mode - i-appli

- special Java applications
- downloaded via special link in iHTML
- uses J2ME/CLDC device configuration
- incompatible with MIDP 1.0
- additional packages (com.nttdocomo.*) provide
  - low-level graphics
  - UI components
  - HTTP/S
  - Scratchpad (freely available application memory)
- must extend com.nttdocomo.ui.iApplication
- different application descriptor (.jam instead of .jad)
- some competition from Flash Lite
Resources

- **Let's make i-mode contents (very detailed technical info)**
  http://www.nttdocomo.co.jp/english/p_s/i/make/index.html

- **cHTML proposal**
  http://www.w3.org/TR/1998/NOTE-compactHTML-19980209/

- **international i-mode developer site**
  http://www.nttdocomo.com/corebiz/services/imode/develop/index.html

- **i-mode site of E-Plus**
  http://imode.eplus.de/imode/iv_imode_program/index.jsp

- **inofficial i-mode FAQ (outdated)**
  http://www.eurotechnology.com/imode/faq.html

- **IBM Developerworks i-mode tutorial (outdated)**