The “Other” Java ME
Java ME on TV and other Non-Mobile Devices

Jon Courtney | May 3, 2011

CableLabs
...Revolutionizing Cable Technology
Agenda

• CDC vs. CLDC vs. J2SE
• CDC Markets Then & Now
• Example: Blu-ray
• Example: OCAP / <tru2way>
• Technology Gaps & Concerns
CLDC < CDC < J2SE < J2EE
Java Platform

Java 2 Platform, Enterprise Edition (J2EE)

Java 2 Platform, Standard Edition (J2SE)

High-end PDAs
TV set-top boxes
Embedded devices

Mobile phones & entry-level PDAs

Smart cards

(Circa 2005)

Java 2 Platform, Micro Edition (J2ME)
CDC Stack

Advanced GUI
Personal Profile
Personal Basis Profile

Optional Packages
RMI
JDBC
Security
Web Services

CDC APIs

Connected Device Configuration

CDC Virtual Machine

(Circa 2005)
CDC Then

- **Personal Profile 1.0**
  - Personal Basis Profile 1.0

- **Foundation Profile 1.0**
  - Connected Device Configuration 1.0
The "Other" Java ME

- OCAP API Additions:
  - (Level 2 API additions included)
  - Java bindings to OpenGL ES
  - 2.5D graphics primitive drawing

(Circa 2002)

Target Devices

CLDC

CDC

Desktop

http://java.sun.com/products/cdc/
CDC Today

- Personal Profile 1.1

- Personal Basis Profile 1.1
  - Foundation Profile 1.1
  - Connected Device Configuration 1.1
Media Devices
CDC Market Successes…
DVB MHP : 15M

- DVB GEM: Globally Executable MHP
Blu-ray Disc Players : 85M

(Including 50M PS3s)
OCAP / <tru2way> : 8M
Amazon Kindle: 6M (est.)
Others

• GEM-IPTV : 2M
• ACAP (Korea) : 1M
• Java-based STBs (China) : 3M
• Brazil SBTVD Ginga-J…
• Plus:
  o advanced printers (PP)
  o more?
Example: Blu-ray

• Based on DVB GEM
  ○ PBP 1.0 or 1.1 + Java TV
• org.bluray: Disc-media-specific Java extensions
• Java used in 100% of disc menus
• Java frequently used for on-disc games and other enhancements
Blu-ray Discs
OCAP: OpenCable Application Platform

- Based on DVB GEM
  - PBP 1.1 + Java TV
- org.ocap: Cable-specific Java extensions
  - Guide app is primary client
    - Monitor app enforces operator policy
    - Multiple simultaneous secondary apps
  - Extensions for DVR, Home Networking, UPnP, 3DTV
- Adopted by 8 major N.A. cable operators
- 15M – 20M by end of 2012
- Ongoing development (10 years and counting?!)

Cable Television Laboratories, Inc. 2011.
OCAP: Java Platform Gaps

• PBP stuck on JDK 1.4 language features
  o No generics, covariant return types, typesafe enums…
• CLDC optional packages not readily available for CDC
  o E.g., OpenGL ES
• Lack of advanced UI features / options
  o Java FX???
  o AGUI (JSR 209)?
  o Open GL ES 2.0?
OCAP: Java "Concerns"

- Platform stagnation
  - Conversely, it may be hard to upgrade our PBP reference
- HTML5 integration
  - DLNA “lite” profile
- Developer mindshare
  - Losing interest and expertise to Android
- Oracle / JCP investment?
  - Previously, Sun was the driver for core TV technologies
Questions and comments…
Thank you

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