Java Technology: Now and Future

Sang Shin
sang.shin@sun.com
www.javapassion.com
Sun Microsystems
Topics

- Usage of Java technology today – You are using Java technology whether you know it or not
- Introduction to Java technology
- Real-life Java Technologies
- JavaFX: New RIA technology over Java platform
- Information technology: Next 10 years
  > How Java technology plays an important role
- Questions?
Usage of Java Technology Today
• 20 million Java-enabled TV devices
• 800+ million total Java desktops (91% of internet-connected PCs)
• 6+ million Java developers worldwide
• 6.5 million lines of Java SE code open sourced
• 3B Java-enabled mobile devices (85% of all mobile devices shipping)
• 2.5B Java Cards
• Widely supported on devices (>6B), mobile phones (>2B), and desktops (>800M)
Java Technology in End-to-End Computing
You are already using Java: Online
You are already using Java: Online
You are already using Java: Company
You are already using Java: Limewire
You are already using Java: Games
You are already using Java: Mobile Devices
You are already using Java: JavaCard

What we could do for travelers...

- Ticketless travel, air miles
- Telephony
- Car voucher with air miles
- Electronic cash
- Hotel coupons

(© Sun Microsystems, Inc., 1998)
# Java Is Everywhere!

<table>
<thead>
<tr>
<th>Auto</th>
<th>TV</th>
<th>PDA/Phone</th>
<th>Service Providers</th>
<th>Cards &amp; Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maytag</td>
<td>DVB</td>
<td>Nokia</td>
<td>Nextel</td>
<td>GSM SIM</td>
</tr>
<tr>
<td>Best Buy</td>
<td>CableLabs</td>
<td>Ericsson</td>
<td>NTT DoCoMo</td>
<td>American Express</td>
</tr>
<tr>
<td>OSGi</td>
<td>DTVIA</td>
<td>Motorola</td>
<td>Vodafone</td>
<td>Visa</td>
</tr>
<tr>
<td>Chrysler</td>
<td>Liberate</td>
<td>Samsung</td>
<td>AT&amp;T Wireless</td>
<td>Schlumberger</td>
</tr>
<tr>
<td>GM</td>
<td>SA</td>
<td>Siemens</td>
<td>Bell</td>
<td>Oberther</td>
</tr>
<tr>
<td>Ford</td>
<td>ATSC</td>
<td>Palm</td>
<td>Telus</td>
<td>Giesecke &amp; Giesecke</td>
</tr>
<tr>
<td>onstage</td>
<td>Sony</td>
<td>Compaq</td>
<td>T-Mobile</td>
<td>Devrient</td>
</tr>
<tr>
<td>Telematics</td>
<td>Philips</td>
<td>Sony Ericsson</td>
<td>Telia</td>
<td>Gemplus</td>
</tr>
<tr>
<td></td>
<td>Panasonic</td>
<td>Sharp</td>
<td>Sprint PCS</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td>Samsung</td>
<td>Toshiba</td>
<td>Telefonica</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td>LG</td>
<td>Sanyo</td>
<td>TIM</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hitachi</td>
<td>Sonera</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Panasonic</td>
<td>J-Phone</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fujitsu</td>
<td>SingTel</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NEC</td>
<td>LG TeleCom</td>
<td>...</td>
</tr>
</tbody>
</table>
JavaFX:

New RIA (Rich Internet Application) Technology over Java Platform
JavaFX Vision

JavaFX is **THE** platform for creating and delivering Rich Internet Applications across all the screens of your life

*JavaFX is Powered by Java*
Demo: JavaFX
Information Technology: Next 10 years
Trends in Information Technology

- Proliferation of computing devices
- Mobile devices as major computing platform
- Networking everywhere by everything and everybody
- Participation (software users & developers)
- Social networking
- Web as a computing platform
- Software as a service
- Open source movement
Proliferation of Computing Devices
Proliferation of Computing Devices

Data Center  Application  Edge  Client
Relevance of Java Technology

• The portability of Java application (Write Once Run Everywhere) is becoming increasing critical as the number of computing devices proliferate
  > A single Java application runs over thousands of devices
Mobile Devices as Major Computing Platform
Mobile Devices Are Becoming Major Computing Platform!
Relevance of Java Technology

• Before Java technology:
  > Software development and deployment was painful (Developers and Network operators)
  > New software installation was close to impossible (Users)

• With Java technology:
  > Most of the mobile devices already have Java platform pre-installed
  > Java is the most popular programming language for writing mobility applications
  > You can download many Java applications
Networking Everywhere by Everything & Everybody
Everything and Everybody Join the Network!
Relevance of Java Technology

• Java is built with networking in mind
  > Complete set of networking features
• Java code can be moved around among networked devices
  > Dynamic installation of application is possible
  > Dynamic networking among devices are possible
Era of Participation
Everybody Participates

The Age of Participation
Participation Age Business Models

- Google
- Exult
- Salesforce.com
- Netflix
- Sun Microsystems
- Viacom
- eBay
- Siebel
- CRM OnDemand
- Virgin
- EA.com
- Verizon Wireless
- Xingtone
Social Networking
facebook - it changes our life-style!
Web As a “The” Computing Platform
Web-based Applications: Consumers

- Email
- Online shopping
- Travel reservation
- Instant messaging
- Social networking
- Internet phone
- Map search
- ...

Welcome to the “Webolution”

- Smart Mobs
- Co-Creation
- Wikis
- Blogosphere
- Tags
- Social Networks
- The Long Tail

Brands: flickr, Google, eBay, YouTube
Software as a Service (aka Cloud Computing)
The Shrink Wrap-to-Network Services Revolution

Software Idea

Packaged Applications/Shrink Wrap

Network Services

Target

Customer’s Computer

Developer’s Data Center

Distribution

CD

Internet

Customer Economics

High cost

Low cost
Shrink Wrap Model of Today

• Consumers
  > Have to pay for functionalities you don't need
  > Have to install and configure in order to use software
  > No possibility to plug-in the feature you need
  > You have to do your own version control

• Software developers
  > No chance to distribute your software to the mass

• Companies
  > Constant headache of software upgrade and maintenance
  > Close to 70% of TCO is maintenance of computers and software
Service-driven Network

• Consumers
  > Download only pieces you need during runtime
  > Always get up-to-date software pieces
  > You pay only the things you use

• Software developers
  > Level-playing field for everybody

• Companies
  > No software upgrade and maintenance headache
  > TCO is way down
Open Sourcing
Sun’s History of Community
Open Source Momentum

- Some Facts
  > 800,000 the number of developers contributing to open source
  > 87% estimated number of US businesses using open source

- Increasingly a required in established markets, including government
- Critical in developing economies (Brazil, Russia, India, China)

“the most significant all-encompassing and long-term trend that the software industry has seen since the early 1980s.”

IDC Group Report
August 2006
Why Should Developers Care

- Great learning tool
- Opens new Opportunities
- Build a reputation/visibility in the community
- Build on your core technologies
- Borrow your non-core technologies
- Potentially lower maintenance burden
- Contribute to and leverage a code commons
- Work in community with the best and brightest
Relevance of Java Technology

• Pretty much all Java based technologies and solutions are in open-source form
  > JDK
  > Tomcat
  > GlassFish app server
  > OpenESB
  > OpenSSO
  > OpenDS
  > Many more
Java Technology In Automotive Industry
Tommy JR

• Tommy Jr. is a second generation autonomous vehicle built to compete in the DARPA Urban Challenge 2007 by Perrone Robotics

• It's Software is 100 % based on Java Technology
  > Java SE technology & Java ME technology
  > Java technology RTS for real-time navigation controls
  > SunSPOT safety controller

“Tommy Jr.”

MAX-UGV
MAX-Drivers
MAX
Java
OS/Runtime
Microprocessor/Micro-controller
Siemens VDO & BMW Partnership

• Top Level Architecture (TLA)
  > Java Technology-based platform
    > Mobile, networked applications for the automobile
    > Integrates
      – Location-based services
      – Web Services
      – Multi-media functions
  > Upgradeable platform
  > Can use across different car lines and manufacturers
Questions & Answers