How eRCP stacks up against Android and other Mobile Rich Client Platforms

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Why is it that you came to this talk?

• Compelling ideas for data driven mobile apps?

• Existing desktop or web apps yearning for mobility?

• Know nothing about Embedded development?

• Saw the word android and thought it would be cool?
What will you get out of this talk?

- An appreciation of 3 ‘rich’ client app platforms
- What does each platform bring to the client
- How do you develop for these platforms?
- How Eclipse™ figures prominently in each one...
- A real world example, coded from scratch
  *(IPO to follow EclipseCon...)*
Who are we?

• Ken Walker
  • Development lead for IBM’s J9 Java Class Libraries (the seed for Apache Harmony) - JSR-075 Spec Lead - other stuff
  • ken_walker@ca.ibm.com

• David Girle
  • Developer within IBM’s Workplace, Portal and Collaboration Software group, focused on mobility
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What *Compelling Idea* did we start with?

- How could we improve upon the efficiency of a swap meet without removing the social interactions
- Every gamer, no matter what console or system
  - Would like a zero cost exchange process to obtain games they have not yet enjoyed
- How could we make this easy and ubiquitous?
  - Players manage their catalog and wishlists making this visible to other gamers
  - Trades are prearranged on mobile devices, wherever and whenever
  - Trades are completed at prearranged public swap meets
- This enhances the vitality of the swap meet concept
What platforms did we choose to compare?

• eRCP - Embedded Rich Client Platform
  - an optimized UI for embedded devices
  - subset of SWT/JFace plus mobile extensions
  - Equinox based platform for component reuse and replace

• Android - A software stack for mobile devices
  - Java™ language and Dalvik VM based runtime
  - Database, graphics, media, mobile specific APIs
  - Application framework for component reuse and replacement

• Webkit - Open sourced browser engine
  - HyperText Markup Language
  - JavaScript / CSS based Client code
  - Reload page - that’s the Application framework
What did we need to start?

• LAMP stack based web site and a cool URL
  ✷ http://www.yours4mine.com

• MySQL Database containing
  ✷ games, items, meets, regions, trades and users

• PHP based RESTful APIs
  ✷ GETs perform queries
  ✷ PUTs are used to update existing entries
  ✷ POSTs are used to add new entries resulting in a new URL
  ✷ DELETEs are..... you get it...

• Eclipse was used to edit the PHP and HTML
  ✷ Not quite as robust as Eclipse JTD *to be polite*
Client Development Goals

• We were not trying to do best of breed application, rather get a functional application up on each device where:
  Each client needs to be able to interact with the RESTful APIs on the Server

• Intensionally share a UI metaphor between devices
  Learn platform characteristics by attempting to replicate a design concept/model
  Same essential page layouts/flow

• In following our goals we could evaluate the strengths and weaknesses from an API and platform perspective
  from a developer & tooling perspective
eRCP version of Yours4Mine.com

• eRCP is deployable on many platforms
  - Nokia™ Symbian™ phones such as 9500, 9300, and the newest E90
  - Windows Mobile™

• eRCP supports a subset of SWT and JFace
  - Similar functionality to Desktop SWT
  - Mobile extensions provide widgets commonly found on devices
  - Commands should be used to act as menu items and may be mapped to soft keys on the device
  - Good layout capabilities (Grid, Row, Form, Fill)
  - Workbench model supported on devices
eRCP Development Setup

• Setting up eRCP for Development fairly straightforward
  - Download latest driver
  - Use it as a Target Platform
  - Setup a runtime to use it (Java SE or Java ME)
  - Fix up compiler settings as needed
• Eclipse JTD then utilized as you would any plugin
• Emulation not done through Desktop SWT but via the eRCP Runtime
• Debugging works as expected
• Exported plugin, deployed to device and tested
Some of the widgets utilized

Tree
QueryDialog
ListView
eRCP Development Comments

• Included XML APIs good for REST parsing
• Mobile extensions a useful addition
• Architecture and code can be shared between desktop and mobile deployments
• Emulation not always entirely accurate
• No convenient method for switching Views or Screens
  - Implemented a screen stack to simply navigation
  - Did not like or want to use a Tabbed widget
• Sprint™ Announcements this week regarding the Titan stack will bring deployment targets, documentation and a tooling focus to the eRCP platform
Webkit version of Yours4Mine.com

- Webkit is supported on many platforms
  - Nokia Series 60, Safari, iPhone™, iPod Touch™ and also on Android
- Webkit approach based on Web 2.0
  - HTML and CSS
  - Java Script
  - Background queries and updated from the host server in an AJAX style
- IUI iPhone/iPod Touch Library (available at Google™ Code)
  - Provides look and feel of native apps
  - Simple yet elegant views and navigation
Webkit Development Setup

• Setting up not so straightforward
  - Need a LAMP based platform setup
    ▪ Local or remote - remote means longer turnaround time
  - Used Eclipse, PHPeclipse, WebServices other tools

• Use Safari™ on Mac™/Windows™ for Emulation

• Not a lot of debugging help while developing
  - JavaScript consoles
  - Adding extra information in the PHP output rendered
  - Problems can be in several areas, PHP, MySQL, CSS, JavaScript - hard to track down

• UI is extremely flexible given that it is HTML/CSS
Some of the screens created

List of Items

Buttons/Images

List of Meets
Webkit Development Comments

• Heavy lifting done on the Server
   Can perform more advanced SQL queries to get specific results vs a bunch of disjoint REST calls at the client
   Can lead to less traffic over the wire

• AJAX style loading in background
   Reduces or eliminates page reloads
   Supports standard navigation on the device

• As fast as your net connection
   Fast to start, page flips as fast as data is sent
   Nothing is overly large by design

• Emulation not always entirely accurate
   Safari vs. iPhone Javascript / CSS minor differences
Android version of Yours4Mine.com

- Android is available as an early look SDK, on Windows, Mac & Linux™
  - Supported by members of the Open Handset Alliance, which includes HTC™, LG™, Motorola™ and Samsung™
- A ‘clean sheet’ approach to a mobile platform
  - Includes Linux kernel, libraries, app framework and apps
  - Application language Java5 deployed to a Dalvik runtime
  - New UI and application model
  - Support for 2D & 3D graphics and integrated WebKit browser
Android Development Setup

• Setting up Android for Development is straightforward
  - Install the SDK (m5-rc15)
  - Install the Eclipse Plugin (ADT)
  - Update the Eclipse preferences to point to the SDK directory
• Nicely integrated to Eclipse in the editor & debugger
• Emulation done in a separate runtime process
  - Run the emulator from separate console window
• Debugging works as expected
  - Invocation & execution are currently slower than desired
Some of the views created

Buttons/Images

List of Meets

Maps
Android Development Comments

• Comfortable environment for a Java developer
  - Brings Java5 language features to the mobile environment
  - Tooling makes deployment to Dalvik runtime seamless

• UI model balances simplicity, power, look & feel

• Application lifecycle
  - Leverages the Linux process model (think ANR)
  - Activities, Services & Intents

• XML used to describe app & view components

• Extensive, useful API
  - Graphics, db, media, telephony, GPS, camera, …
  - Some doc challenges, but lots of How-To’s on the web
Walkthrough using the devices snapshots

• Represents two gamers

• Each has a game they no longer want

• How do they interact with UI?

• What do the UI’s look like on the platforms
Mike adds a Mario Game

Mike marks it as Available

Ken marks Lair as Available

Mike marks Lair as a Wanted Item

Sees Ken has it and offers to trade

Ken sees trade is pending

Chooses Mikes Mario Galaxy

Mike accepts the counter offer

Ken finds the next meet

Which links to a Google map
Summary of Platforms

• eRCP
  - Platform widgets, mobile extensions, easy to develop for
  - There are no “Configurations” in eRCP vs JTWI or MSA on MIDP
  - Very small user installed base - Sprint Titan stack will effect change

• Android
  - Compelling whole Java solution, apps first class citizens (think RIM™)
  - Easy to develop for
  - Performance is an unknown
  - Zero installed base as of this presentation

• Webkit
  - In particular, iPhone/Touch UI (also looked at Series 60)
  - Performance is quick if data amounts are managed
  - Millions of units by both Apple™, Nokia, others
  - (also works on Android...)
Other Mobile Platforms of Interest

• Java ME and MIDP 2.0
  - Insanely large number of deployed devices
  - Would need additional JSRs
  - UI never met corporate acceptance

• Flash Lite / Silverlight

• Strictly Native Apps for:
  - Windows Mobile
  - Symbian Series 60
  - Mobile Linux
  - iPhone
Other Related Embedded Sessions

• “eRCP Project, today and tomorrow”
  • Tuesday, 11:20, Room 209/210 (Short Talk)

• “Mobile Tools for Java - Current Project Status”
  • Tuesday, 11:40, Room 209/210 (Short Talk)

• “From The Horse's Mouth - What Embedded Developers Like and Dislike About Eclipse-Based Development Tools”
  • Tuesday, 11:50, Room 209/210 (Short Talk)

• “Android and OSGi: Can they work together?”
  • Tuesday, 13:30, Theatre (Long Talk)

• “Taking Applications Wireless with BlackBerry and Eclipse”
  • Tuesday, 16:30, Ballroom E (Gold Sponsor Talk)

• “JavaME tooling for the Eclipse Platform: what we can expect?”
  • Tuesday, 20:45, Room 204/204 (BOF)

• "Announcing the Sprint Next Generation Java Platform"
  • Wednesday, 14:30  Room 206 (Long Talk)

• “Rapid Development of eRCP Applications”
  • Wednesday, 19:30, Meeting Room 1 (BOF)
Yours4Mine.com is an online version of a swap meet. If you're done with or otherwise want to get rid of your video games you likely would like a replacement. With any luck, there's someone in your area who has what you want.

Enter your items and mark some of them for trade. Make a Wishlist and see if anyone is trading them. Then set up a meeting place and trade yours for mine!

Yours4Mine.com is brought to you by Ken Walker and David Girle as part of an EclipseCon 2008 Presentation on Mobile Rich Client platforms.

Email Us!

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