IBM Mobile Platform for System Z

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Thursday August 7, 2014 10:00 AM
Session 16184
Agenda

• Mobile Landscape
• IBM Worklight Mobile Platform
• Mobile on System Z
• CICS & Worklight Demo Application
Mobile business opportunity is huge

*Time* Magazine, January 2014

Projections of mobile growth and PC decline based on Gartner data

**The Death Of the PC?**

Now that we carry computers in our pockets, desktops and laptops are on the decline

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**The PC Slowdown**

- Units sold
  - The first BlackBerry with e-mail capabilities is released
  - Microsoft releases Windows XP
  - Dell sells 25 million computers, edging out HP for largest market share
  - Facebook opens to everyone
  - Twitter launches
  - Samsung's Galaxy Note popularizes "phablets" (large smartphones)

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**PROJECTED**

- 1 billion
  - 900 million
  - 800 million
  - 700 million
  - 600 million
  - 500 million
  - 400 million
  - 300 million
  - 200 million
  - 100 million
  - 0

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**In 2013**

- An estimated 1.02 billion mobile apps were downloaded

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**NOTE:** Ericsson predict 4.5B in 2018

(World population ~ 7.2+B)
Smartphone users demand instant gratification and real data

Millenials don’t have patience – they expect the data to be instant and accurate

Replicated copy is unacceptable and results in excessive requests

SOURCE: Prof. Ramesh K. Sitaraman
Computer Science, UMass Amherst
GLOBE STAFF

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So Why is Mobile so Challenging?
Mobile Enabling Your Business Is Not Easy! - There are many Challenges

**Fragmentation** of devices and platforms

**Speed** and frequent iteration of the mobile lifecycle and continuous delivery

**Connectivity** to back-end systems and cloud

**Security** to protect corporate data and managing BYOD (Bring Your Own Device)

**Mobile Context** taking advantage of unique capabilities such as geo-location

**Delivering** high quality apps and rapidly incorporate customer feedback

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The Roots of Mobile Development Run Deep

Front-end
- Short time to market
- Web? Hybrid? Native?

Back-end
- Teamwork
- Industrialize dev
- Integrate with SDLC

30% of the value and effort is visible (mobile UI)

70% of the value and effort lies under the surface

User engagement
- Connect to back-end
- Efficient and flexible push notifications
- Track and leverage location
- Offline availability
- B2E app distribution

Security
- Push upgrades
- User authentication
- App security
- Data protection

Operations
- Manage and enforce app versions
- Track problems that affect UX
- Ensuring continued support in a quick-changing landscape
Spectrum of mobile app development approaches

**Pure web**
- Mobile web site (browser access)
- • HTML5, JS, and CSS3 (full site or m.site)
  - • Quicker and cheaper way to mobile
  - • Sub-optimal experience

**Hybrid**
- Native shell enclosing external m.site
- • HTML5, JS, and CSS
  - • Usually leverages Cordova
  - • Downloadable, app store presence, push capabilities
  - • Can use native APIs
  - • + more responsive, available offline

**Pure native**
- Pre-packaged HTML5 resources
- • As previous
  - • + more responsive, available offline
  - • Web + native code
  - • Optimized user experience with native screens, controls, and navigation
- HTML5 + native UI
- • Mostly native, some HTML5 screens
- • App fully adjusted to OS
  - • Some screens are multi-platform when makes sense
  - • Best attainable user experience
  - • Unique development effort per OS, costly

**Mobile web site (browser access)**
- • As previous
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IBM Worklight: Main Components

**Development**

Worklight Studio

Leading tools for cross-platform hybrid development that maximize code reuse, speed up development, and promote team work

Operational Analytics

**Run Time**

Operational Console

UI for app deployment, management, and version enforcement, real-time operational analytics, push notifications

Worklight Server

Gateway for mobile user engagement, security, analytics, and application control

App Runtime

Client APIs available for **native**, **hybrid**, and **web** apps

Worklight App Center

A non-MDM, cross-platform, private mobile app store tailored to the needs of development team or as an enterprise store

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Studio – WYSIWYG UI Construction *(HTML, JQuery or Dojo)*

**Eclipse perspective** for Worklight projects.

**Optimized layout** for hybrid app development

**Rich page editor** for visual development
Rich mobile simulator for hybrid applications

- Device specific tests early during development.
- Change device types, orientation, device settings (GPS, accelerometer, etc…)
- Supports Cordova and Worklight client API

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Worklight Server: Adapters

- **Run time**
  - Lightweight server-side logic to expose systems of records in a mobile-friendly way
    - Automatic JSONification of enterprise data for quick transport and ease of consumption by mobile developer
    - Server-side service composition to reduce number of requests over slow mobile network
    - XSLT to reduce fat SOAP responses
  - Security
    - Automatic enablement of server-side authentication control and audit
  - Analytics
    - Automatic collection of user actions and device and app properties
  - Data sync
    - Enables synchronization with on-device JSON Store
  - Mobile user engagement
    - Push notifications and geo-based event management

- **For the server developer**
  - JS anywhere: Simple APIs for server-side JavaScript development
  - Extensibility: Java API for custom adapters

- **For the client developer**
  - Easy-to-use, consistent client-side API to call any back-end system

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CICS Connectivity Options with Worklight

Worklight Server
- Adapters
  - HTTP
  - HTTP
  - HTTP
  - MQ
  - MQ
- Web Services
- HATS

System z
- CICS
  - HTTP
  - HTTP
- Messaging
  - HTTP
  - HTTP
  - MQ
- MQTT
- REST
- JSON
- SOAP
- 3270
- SNA
- TN3270

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### Unified Push Notifications

- Uniform access to push notifications providers
  - Register for, notify, and receive a notification via Worklight APIs or SMS

- Register for and send SMS based notifications
  - E.g.

#### Back-end System

<table>
<thead>
<tr>
<th>Polling Adapters</th>
<th>Notification State Database</th>
<th>iOS Dispatcher</th>
<th>Android Dispatcher</th>
<th>Windows Phone Dispatcher</th>
<th>SMS Dispatcher</th>
<th>Administrative Console</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message-based Adapters</td>
<td>Unified Push API</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Notification statistics, SMS subscription control</td>
</tr>
</tbody>
</table>

Optional 2-way SMS

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Transform business processes with geo-location services

- Geo-location info has important potential for consumer and employee-facing applications
  - Creating differentiating services based on user location
  - Optimizing business processes and operations
  - Increasing application security

- But holds challenges
  - What to **collect** and how?
  - How to **use** what’s collected?

- Worklight provides you simple and strong tools to:
  - Control acquisition of GPS and Wifi coordinates
  - Define points of interest and geo-fences
  - Trigger actions based on location changes
  - Efficiently transmit to Server
  - Store
  - Handle events
  - Perform analytics

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Encrypted and synched on-device data storage

Embedded JSON mobile database:

- JavaScript APIs to store, query and update data
- Multiple user support on the same device
- Supports data encryption
- Bi-directional data sync for simplified off-line operations
Worklight Operations Console

- Supports multiple versions on the same platform
- Device specific versions are uncoupled

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App Version Management

Remote Disable: Deny access to an app of a specific version on a specific environment

- Ensure users use the latest security fixes
- Avoid using previously installed old versions that are no longer supported

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Direct Update On-device Logic

1. Web resources packaged with app to ensure initial offline availability
2. Web resources transferred to app’s cache storage
3. App checks for updates on startup and foreground events
4. Updated web resources downloaded when necessary, with user confirmation or silently

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Fine-grained Blocking of Users

- Block access of a specific app from a specific user device, to address scenarios where a device is lost, stolen, or is otherwise banned from accessing the system.

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IBM Application Center

- Share apps across developers, testers, and other stakeholders
  - iOS, Android, Windows Phone 8, BlackBerry 6 and 7

Developers
- Easily distribute app to testers

Testers
- Easily find apps and versions to test
- Provide rating and feedback directly from the device

Developers
- Access all feedback in a centralized manner

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Worklight Analytics

### App Usage
- EGUI: 18%
- openInsuranceCustomer: 27%
- WLOutdoorsApp: 25%
- AppCenter: 22%
- Other: 16%

### Environment Usage
- android: 33%
- iphone: 8%
- ipad: 1%
- mobilewebapp: 27%
- Other: 31%

### Adapter Calls
- InquireCatalogWrapper: 11%
- AuthAdapter: 8%
- InquireSingleWrapper: 46%
- PlaceOrderWrapper: 13%
- Other: 23%

<table>
<thead>
<tr>
<th>Application</th>
<th>Hits</th>
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</thead>
<tbody>
<tr>
<td>EGUI</td>
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<tr>
<td>openInsuranceCustomer</td>
<td>95</td>
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<tr>
<td>WLOutdoorsApp</td>
<td>92</td>
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<tr>
<td>AppCenter</td>
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<tr>
<td>Other</td>
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<table>
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<tr>
<th>Environment</th>
<th>Hits</th>
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<tbody>
<tr>
<td>android</td>
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<tr>
<td>iphone</td>
<td>159</td>
</tr>
<tr>
<td>ipad</td>
<td>136</td>
</tr>
<tr>
<td>mobilewebapp</td>
<td>43</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Adapter</th>
<th>Hits</th>
</tr>
</thead>
<tbody>
<tr>
<td>InquireCatalogWrapper</td>
<td>721</td>
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<tr>
<td>AuthAdapter</td>
<td>363</td>
</tr>
<tr>
<td>InquireSingleWrapper</td>
<td>205</td>
</tr>
<tr>
<td>PlaceOrderWrapper</td>
<td>173</td>
</tr>
<tr>
<td>Other</td>
<td>95</td>
</tr>
</tbody>
</table>
Unified Client and Server Analytics

- Out-of-the-box analytics address the following:
  - User adoption, device and app properties
  - User actions and called adapter procedures
  - Performance and data usage information
  - Exceptions, crashes, logs, response time
  - JSONStore performance

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Service integration analytics

- Robust analytics for adapter usage including average response time, average data usage, and server usage statistics.
Server and Client log inspection made easy

- Worklight Analytics Console enables easy searching of both client and server logs
System z addresses Enterprise mobile development and delivery challenges

Fragmentation and developing for multiple mobile platforms
- Highly fragmented set of devices, platforms, languages, and tools complicates development, test, and operations

Accelerated time to market requirements
- Accelerated development demands instant provisioning of development servers.
- Spikey mobile traffic demands highly scalable cloud-based infrastructures, for both SoE and SoR.

Connecting apps with existing enterprise systems
- Apps typically need to leverage existing enterprise services, which must be made mobile-consumable, and remain secure.
- Enterprise systems must be able to instantly provision new services and environments.

IBM Worklight Studio and RDz
- Seamless integration with z data and transactions.
- Device runtime provides mobile device independence.

System z Scalability
- System z Linux cloud enables rapid provisioning of Worklight servers.
- z/OS is the leader in transaction processing and easily scalable to handle workload increases.

z/OS is mobile enabled
- z/OS subsystems are mobile-ready, with consumability enhancements planned. Eg: MongoDB API for DB2
- WAS Liberty z/OS Connect
- End to end mobile security.
- High-performance access

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System z bridges Systems of Record and Systems of Engagement

Systems of Engagement

- Mobile Apps
- Siloed Dept. Apps

Systems of Record

- Finance
- Corporate Data Warehouse
- Accounting
- Order Fulfillment

Cloud APIs

- Systems of Engagement are cloud-based, decentralized, support rapid app development.
- Linux on z
- z/OS

Complete your session evaluations online at www.SHARE
Do I have to buy new servers to run Worklight?
No! Worklight will run on zLinux!

If you have an Integrated Facility for Linux (IFL) you can get started NOW!

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Typical Services Deployment… Good, but can be better

JSON
Lightweight services
Few Kbs
(good for 3G connections)

SOAP/XML
Heavyweight services
Many Kbs

Calls to existing mainframe services and data

JSON → SOAP/XML
JSON ← SOAP/XML
Transformations

Parsing XML Takes time and CPU

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CICS V5.1 Mobile Feature Pack

JSON Lightweight services Few Kbs (good for 3G connections)

No Transformations :-)

Calls to NEW 'mobile friendly' mainframe services and data

NEW CICS V5.1 Mobile Feature Pack

Complete your session evaluations online at www.SHARE.org/Pittsburgh-Eval
IBM WebSphere Liberty z/OS Connect
Embedded in z/OS Middleware:
• CICS, IMS, Batch, UNIX apps

No Transformations :-)

New Restful Interface

Discovered z/OS assets
Simplified Access
Auditing and Chargeback

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Demonstration
CICS Application Overview

• CICS Catalog Manager Application
  – COBOL based CICS application
  – VSAM File
  – Separate Presentation Logic and Business Logic
  – Callable Interface - Commarea
Existing CICS Web Service Enabled App

Diagram:
- 3270 Client
- z/OS
- CICS
  - EGUI Main
  - VSAM File (EXMPCAT)
  - Browse
  - Place Order
Worklight Modernizes the CICS Web Service Enabled App

Mobile Client → Worklight Server → Web Services → CICS Web Service → EGUI Main → Browse, Place Order → VSAM File (EXMPCAT)
Worklight Enhances the CICS Web Service Enabled App

Enhanced Search and Shopping Cart Features are added via Worklight.

Features do not currently exist in the CICS application.
Worklight gives a Mobile UI to CICS Services
CICS application for Android and iOS

For More Information
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Mobile Browser Simulator

The Mobile Browser Simulator displays mobile web pages in a variety of mobile browser sizes and shapes.

Webpage: /MobileEnterprise/apps/services/preview/EGUI/android/6.1

Camera
Capture
Compass
Contacts
File
Geolocation
Network
Scenario

For More Information
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### Mobile Browser Simulator

The Mobile Browser Simulator displays mobile web pages in a variety of mobile browser sizes and shapes.

<table>
<thead>
<tr>
<th>Cordova</th>
</tr>
</thead>
<tbody>
<tr>
<td>» Device</td>
</tr>
<tr>
<td>» Events</td>
</tr>
<tr>
<td>» Accelerometer</td>
</tr>
<tr>
<td>» Battery</td>
</tr>
<tr>
<td>» Camera</td>
</tr>
<tr>
<td>» Capture</td>
</tr>
<tr>
<td>» Compass</td>
</tr>
<tr>
<td>» Contacts</td>
</tr>
<tr>
<td>» File</td>
</tr>
<tr>
<td>» Geolocation</td>
</tr>
<tr>
<td>» Network</td>
</tr>
<tr>
<td>» Scenario</td>
</tr>
</tbody>
</table>

---

![Browse Catalog](image)

<table>
<thead>
<tr>
<th>Item</th>
<th>Stock</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ball Pens Black 24pk</td>
<td>118 in stock</td>
<td>$2.90</td>
</tr>
<tr>
<td>Ball Pens Blue 24pk</td>
<td>Only 3 left in stock</td>
<td>$2.90</td>
</tr>
<tr>
<td>Ball Pens Red 24pk</td>
<td>105 in stock</td>
<td>$2.90</td>
</tr>
<tr>
<td>Ball Pens Green 24pk</td>
<td>78 in stock</td>
<td>$2.90</td>
</tr>
<tr>
<td>Pencil with eraser 12pk</td>
<td>83 in stock</td>
<td>$1.78</td>
</tr>
<tr>
<td>Highlighters Assorted 5pk</td>
<td>13 in stock</td>
<td>$3.89</td>
</tr>
<tr>
<td>Laser Paper 28-lb 108 Bright 500/ream</td>
<td>102 in stock</td>
<td>$7.44</td>
</tr>
<tr>
<td>Laser Paper 28-lb 108 Bright 2500/case</td>
<td>25 in stock</td>
<td>$33.54</td>
</tr>
</tbody>
</table>

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Display a menu
Mobile Browser Simulator

The Mobile Browser Simulator displays mobile web pages in a variety of mobile browser sizes and shapes.

Webpage: /MobileEnterprise/apps/services/preview/EGUI/android/6.1

[Image of Mobile Browser Simulator with product list]

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  - $2.90

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  - Only 3 left in stock
  - $2.90

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  - $2.90

- Ball Pens Green 24pk
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  - $2.90

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- File
- Geolocation
- Network
- Scenario
Mobile Browser Simulator

The Mobile Browser Simulator displays mobile web pages in a variety of mobile browser sizes and shapes.
MOBILE MAINFRAME APP THROWDOWN
Will you be our mobile champ?

Open to existing System z clients

The challenge: Build a proof-of-concept demonstrating mobile enablement of your existing mainframe apps.

Get IBM help to build your mobile PoC

Call us 'Coach': We provide getting started guides and access to IBM zMobile Experts for questions and queries.

Win a week with IBM experts & more

Make it real: Win help from IBM to bring your mobile app to life.

ibm.biz/mmathrowdown

No submission of code required, only screenshots. Entries must be complete and submitted by 17 Sept 2014.
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