



Innovation
that Matters

Build: Collaborative and Agile Development of Mobile Applications

Gordon Fung

Senior IT Specialist, Software Group
IBM Hong Kong

Mobile is a mandatory transformation

10 Billion devices by 2020

61% of CIOs put mobile as priority

45% increased productivity with mobile apps



Smartphone adoption skyrockets

- 1 in 3 Americans own a smartphone and the number is higher in some Asia-Pac countries.
 - 12% of Americans own a tablet and shipments are projected to double from 2011 to 2013.1
- Tower Group



By 2013, mobile phones will overtake PCs as the most common Web access device worldwide

- Gartner

How about Hong Kong?

“Our smartphone penetration rate of 61% (as at 2011) is among the second highest in the world.”

Quote from the Report Published by OGCIO, HKSARG, Apr 2012

http://www.ogcio.gov.hk/en/news_and_publications/publications/doc/Fact_Sheet-HK_as_ICT_Hub-EN.pdf

Based on Our Mobile Planet (<http://www.ourmobileplanet.com/en/>).

Rank	Country	Population	Smartphones	Per Capita
1	Singapore	49	44	90%
2	Hong Kong	80	49	61%
3	Sweden	93	48	52%
...				
16	USA	3191	1118	35%

Quote from the smartphone penetration rate analysis by TomiAhonen Consulting 2011 (<http://communities-dominate.blogspot.com/brands/2011/12/smartphone-penetration-rates-by-country-we-have-good-data-finally.html>)

Based on Our Mobile Planet (<http://www.ourmobileplanet.com/en/>).

Mobile handset dominance is difficult to predict

1995 Palm

500,000 units sold in 6mths.
70% market share



2001 Nokia

40% Market share of all
mobile phones



2008 RIM

Fastest growing stock. 56%
of smartphones, 77% 3yr
CAGR (19.7% share in 10/11)



2011 Apple

Most valuable company in
the world, 27.3% of
US smartphones

2013+ Android

Has 43.7 of the US
smartphone market 10/11



With enormous opportunities (and challenges to IT)

Business to Enterprise (B2E)



- Increase worker productivity
- Improved claims processing
- Increase revenue with sales engagements
- Extend existing applications to mobile workers and customers
- Reducing fuel, gas, or fleet maintenance costs where relevant
- Increase employee and business partner responsiveness and decision making speed
- Resolve internal IT issues faster
- Reduce personnel cost (utilizing personal devices instead of corporate devices)

Business to Consumer (B2C)



- Improve customer satisfaction
- Deeper customer engagement and loyalty
- Drive increased sales through Personalized offers
- Customer service
- Competitive differentiator
- Improve brand perception
- Deeper insight into customer buying behavior for up sell and cross sell
- Improve in store experience with mobile concierge services



And Mobile App is much more than just programming



- So we need
 - A total solution that can cope with all these challenges
 - Technologies that can adapt to the future
 - Technologies that YOU can take control

Worklight Focus



Creating rich, yet cost-effective mobile apps in a fragmented technological landscape.



Connecting the enterprise back-end services in a secure and scalable manner



Controlling the growing portfolio of applications deployed “in the wild”

Worklight Overview



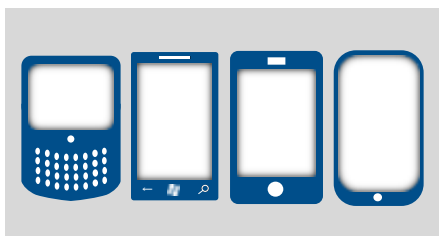
Worklight Studio

The most complete, extensible development environment with maximum code reuse and per-device optimization



Worklight Server

Mobile middleware offering unified push notifications, version management, security and integration



Worklight Runtime Components

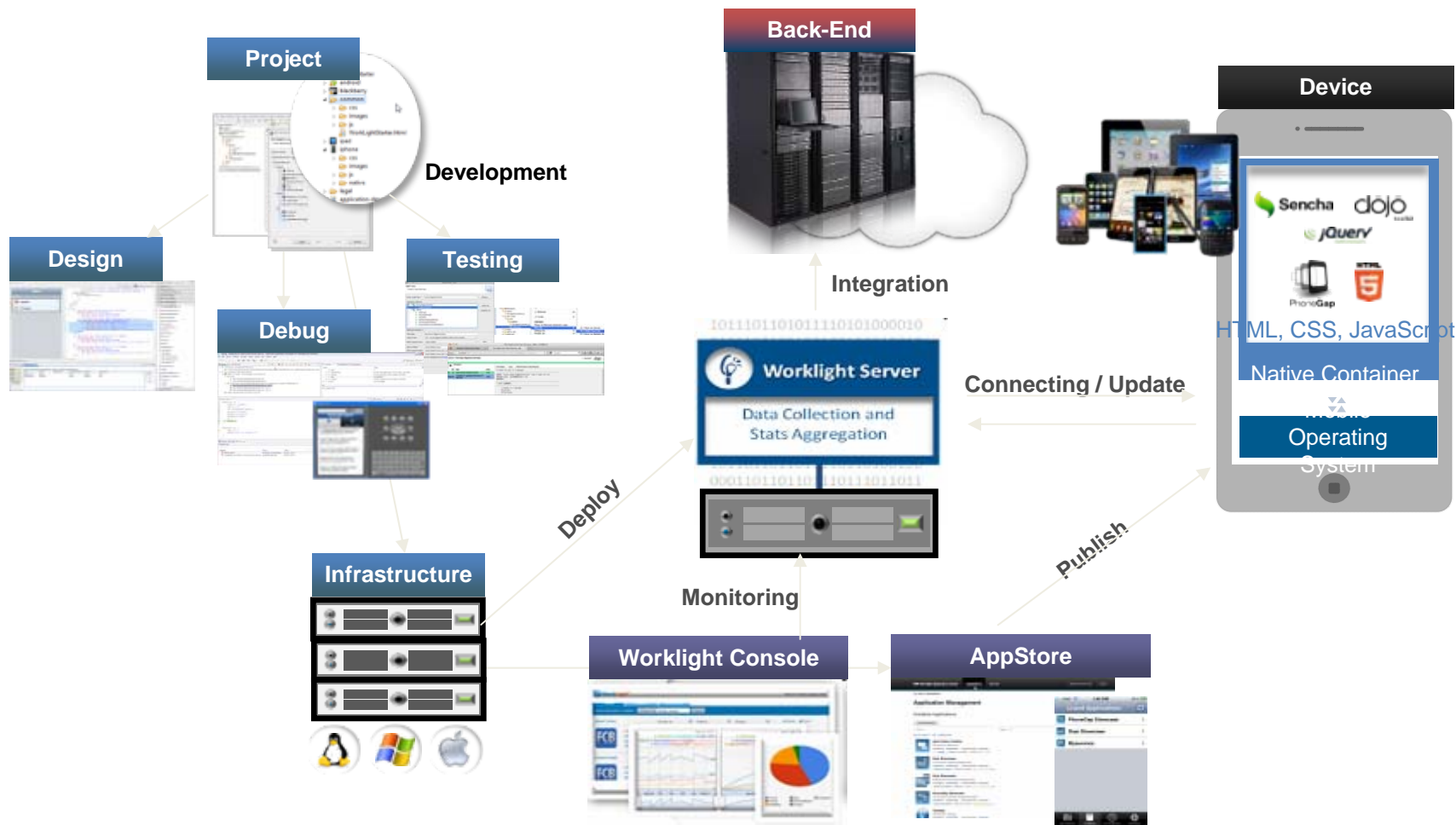
Extensive libraries and client APIs that expose and interface with native device functionality and the Worklight Server



Worklight Console

Web-based console for real-time analytics and control of your mobile apps and infrastructure

Worklight – The Mobile Enterprise Application Platform



Developer



Admin



User

Worklight Application Types

Browser Access

Written in HTML5 JavaScript and CSS3. Quick and cheap to develop, but less powerful than native.

Hybrid Apps - Web

HTML5 code and Worklight runtime libraries packaged within the app and executed in a native shell.

Hybrid Apps - Mixed

User augments web code with native language for unique needs and maximized user experience.

Native Apps

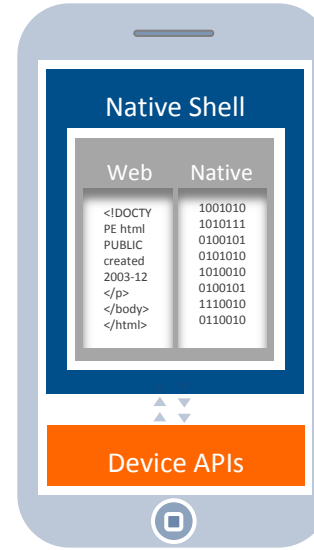
Platform-specific. Requires unique expertise, pricy and long to develop. Can deliver higher user experience.



Browser Access



Downloadable

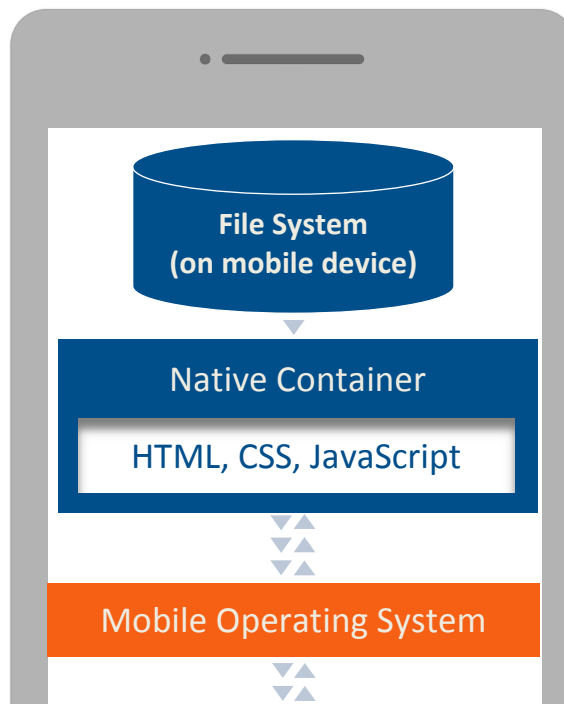


Downloadable



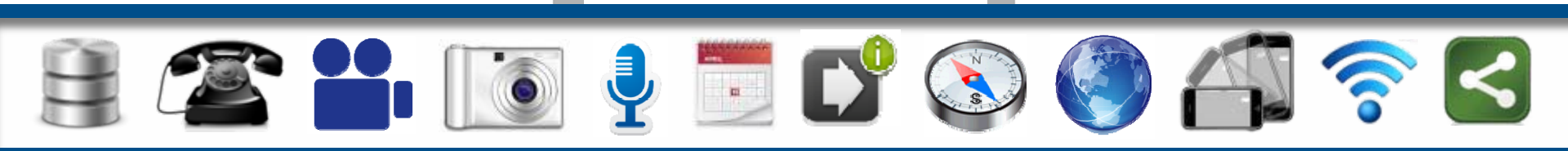
Downloadable

Hybrid Apps

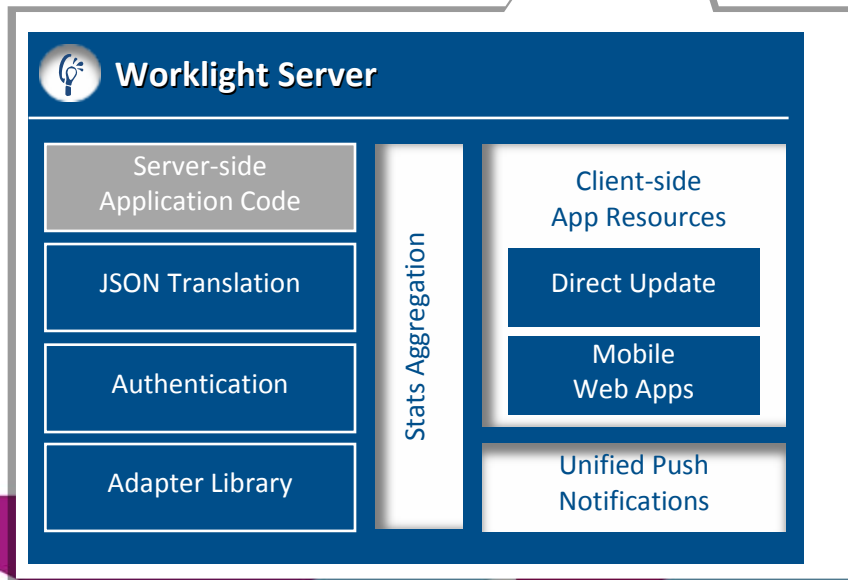
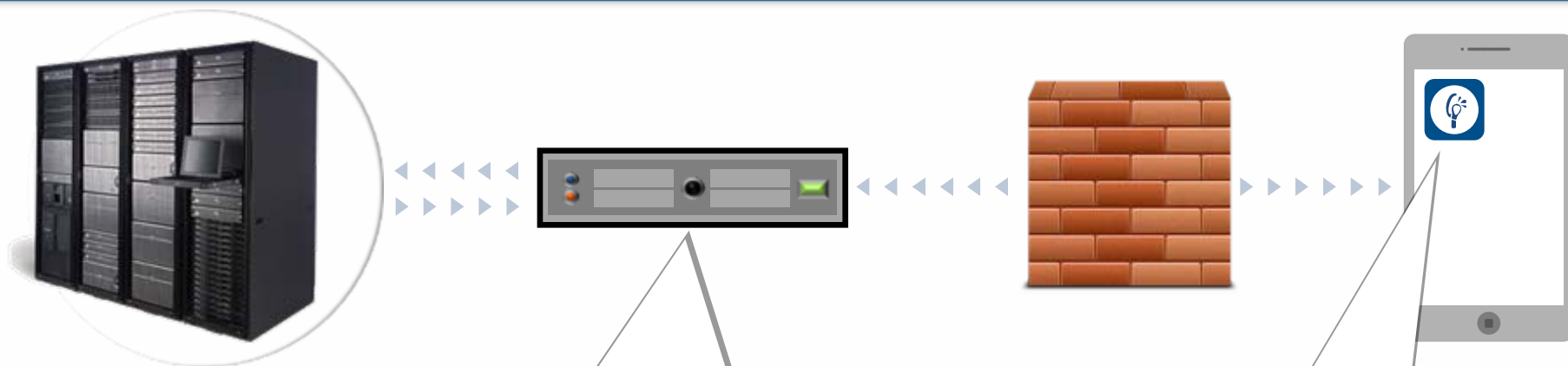


Combines best of both worlds:

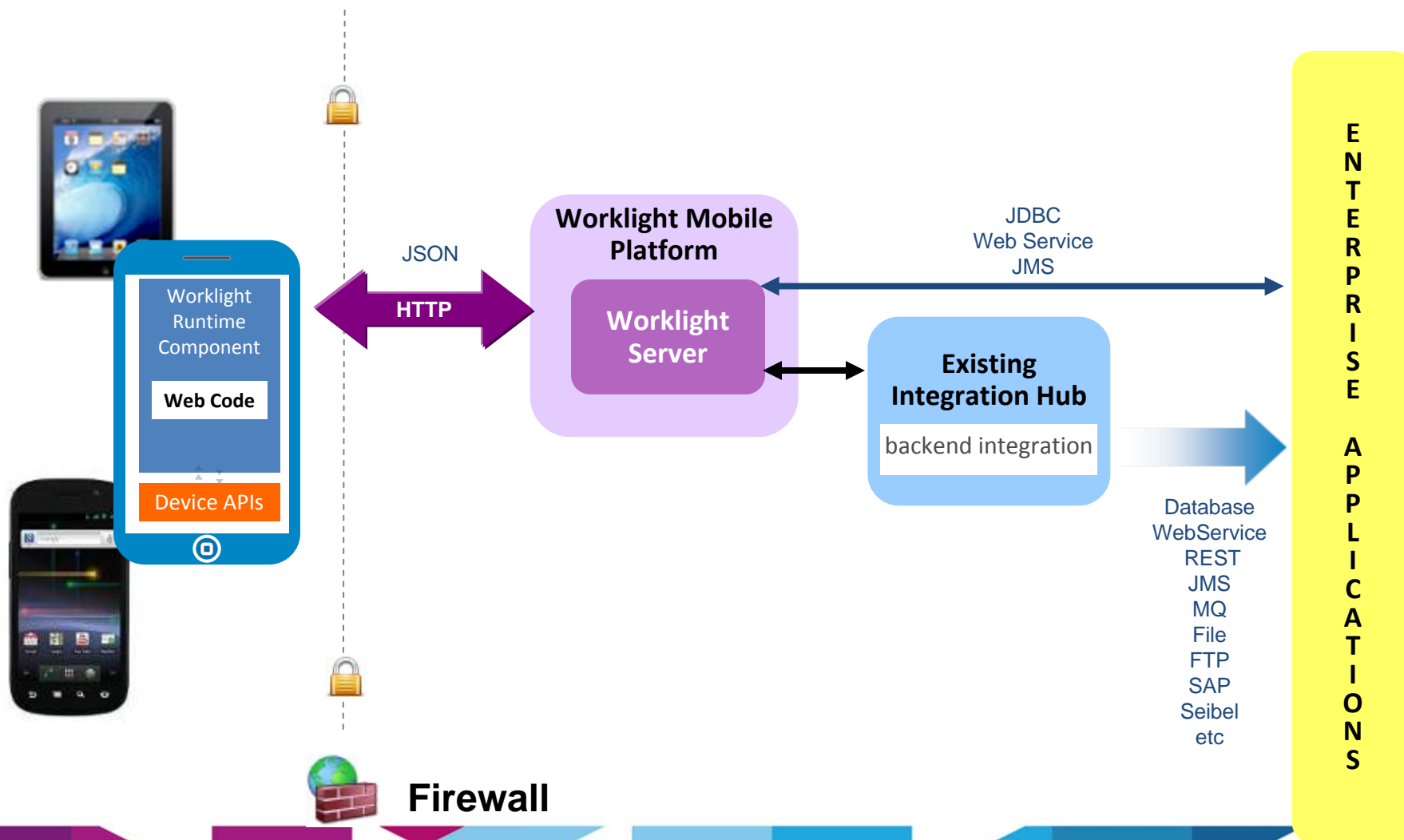
Primarily written in HTML5, CSS, JS while allowing full access to device capabilities.



Worklight Architecture

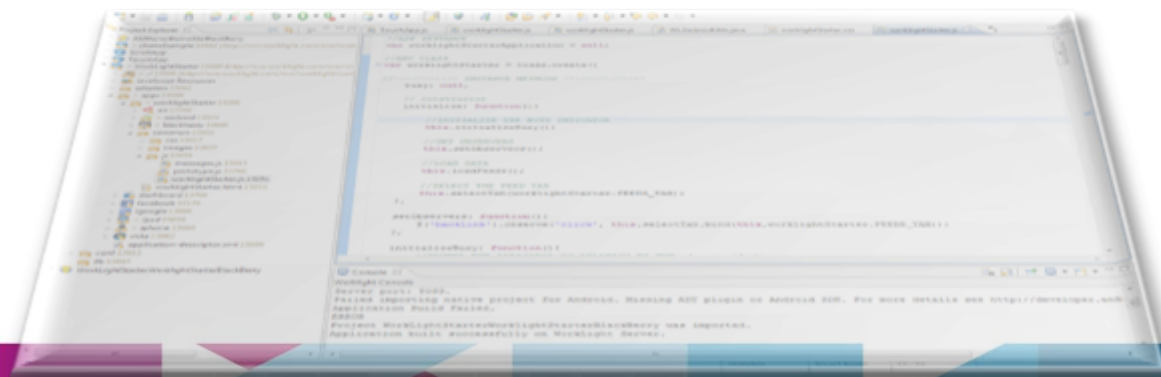


Leverage Existing Backend Integration



Integrating Best-in-class Tools

Worklight is compatible with prominent HTML5 libraries and tools:



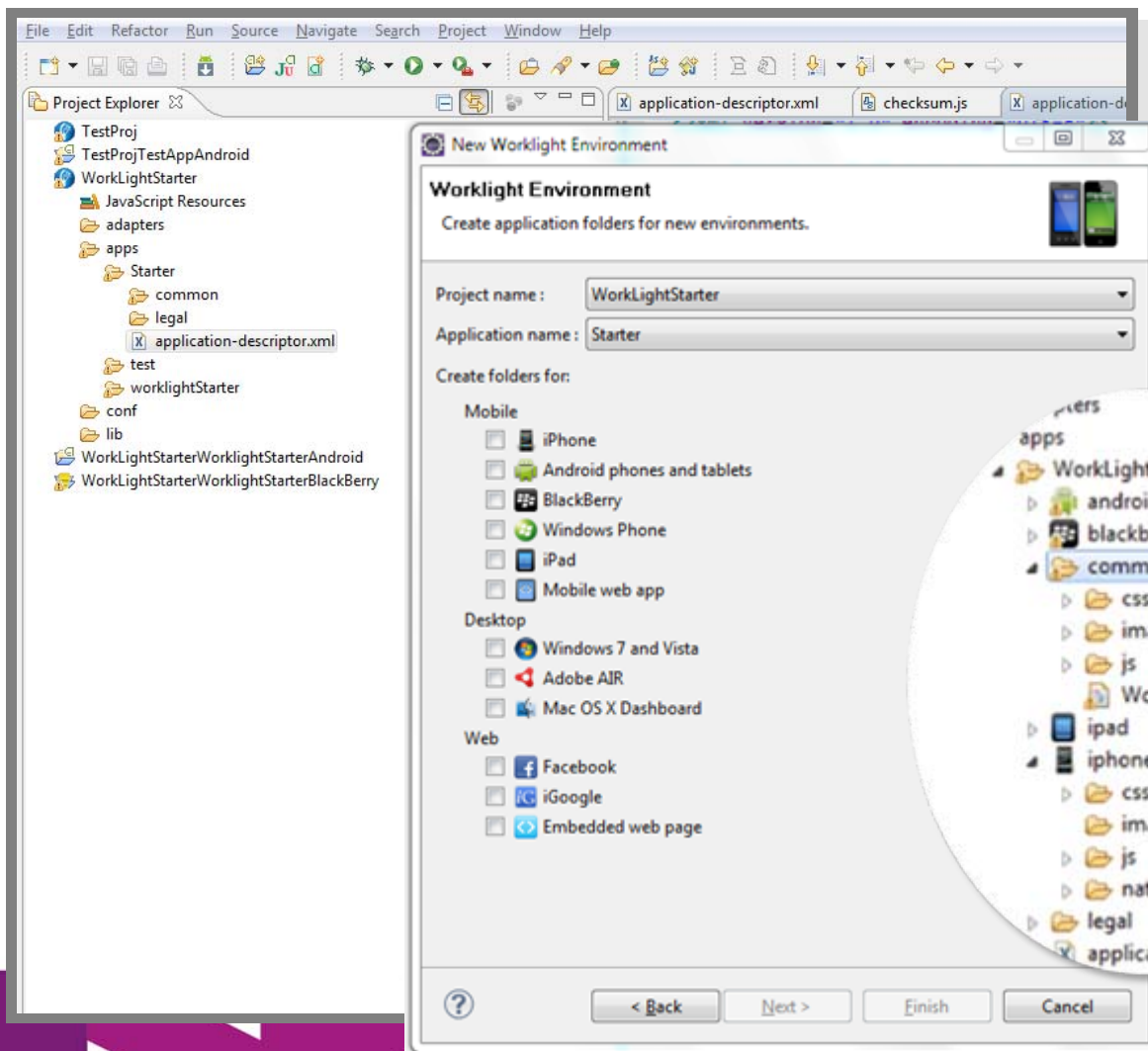
Studio – WYSIWYG UI Construction

The screenshot displays the Eclipse IDE interface for building a mobile application. The central Design view shows a mobile device simulator with a 'Demo' header and a 'Fruits' list containing 'Apples' and 'Oranges'. The Source view shows the corresponding Dojo Mobile HTML code, including a Dojo Mobile ListItem widget. The Properties view on the right shows the configuration for the selected 'Listitem' widget, including its label and icon.

```

dojo.ready(function() {
});
</script>
<meta name="apple-mobile-web-app-capable" content="yes">
</head>
<body onload="WL.Client.init({})" id="content" style="display: none">
<div data-dojo-type="dojox.mobile.View" id="home"
  data-dojo-props="selected:true">
  <h1 data-dojo-type="dojox.mobile.Heading"
    data-dojo-props="label: 'Demo'"></h1>
  <h2 data-dojo-type="dojox.mobile.EdgeToEdgeCategory">Fruits</h2>
  <div data-dojo-type="dojox.mobile.RoundRectList">
    <div data-dojo-type="dojox.mobile.ListItem"
      data-dojo-props="label: 'Apples', icon: 'images/apples.png'"></div>
    <div data-dojo-type="dojox.mobile.ListItem"
      data-dojo-props="label: 'Oranges', icon: 'images/oranges.png'"></div>
  </div>
  </div>
  <!-- application UI goes here -->
  <script src="js/myApp1.js"></script>
  <script src="js/messages.js"></script>
  <script src="js/auth.js"></script>
  </body>
</html>
    
```

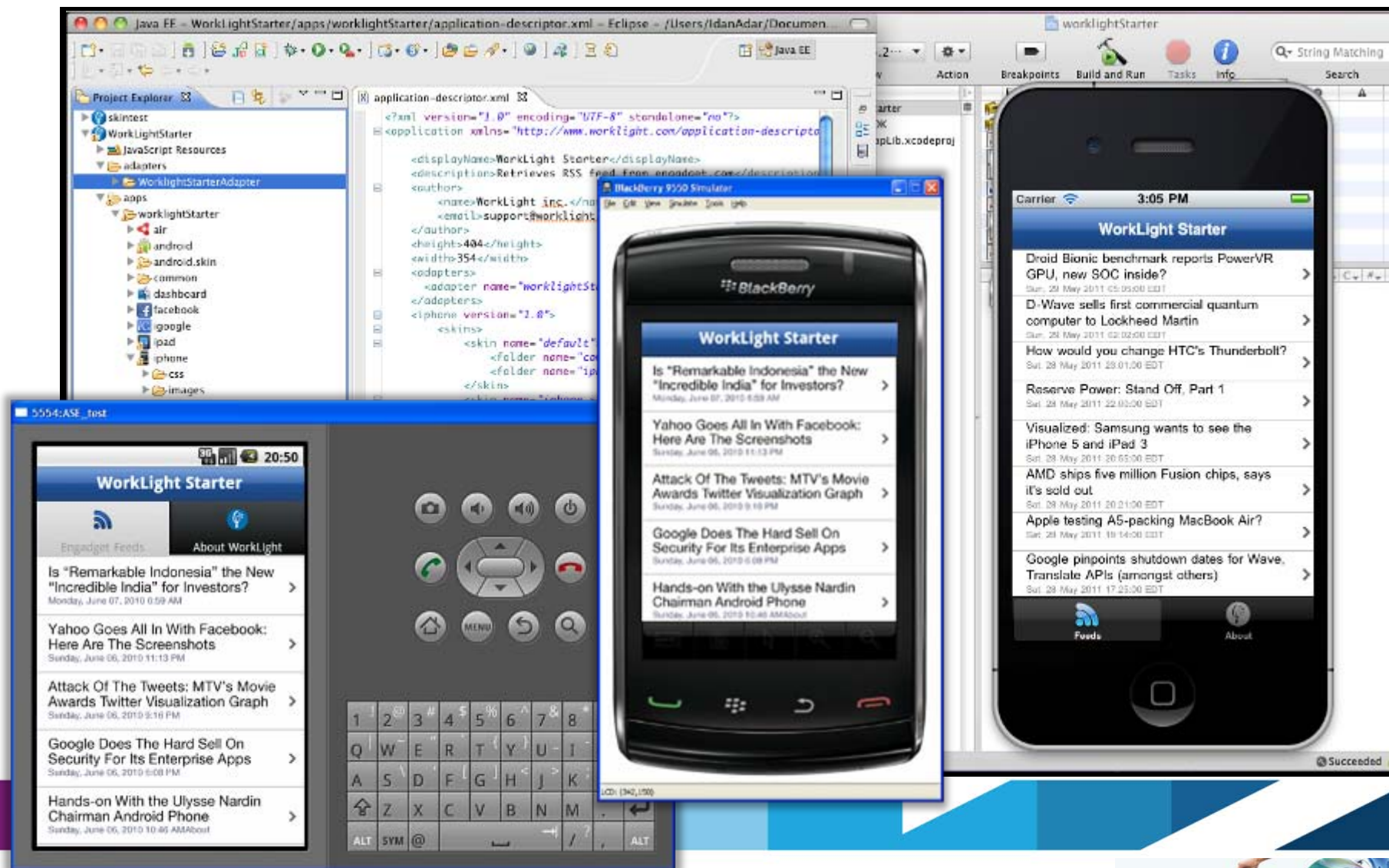

Common web codebase facilitates reuse



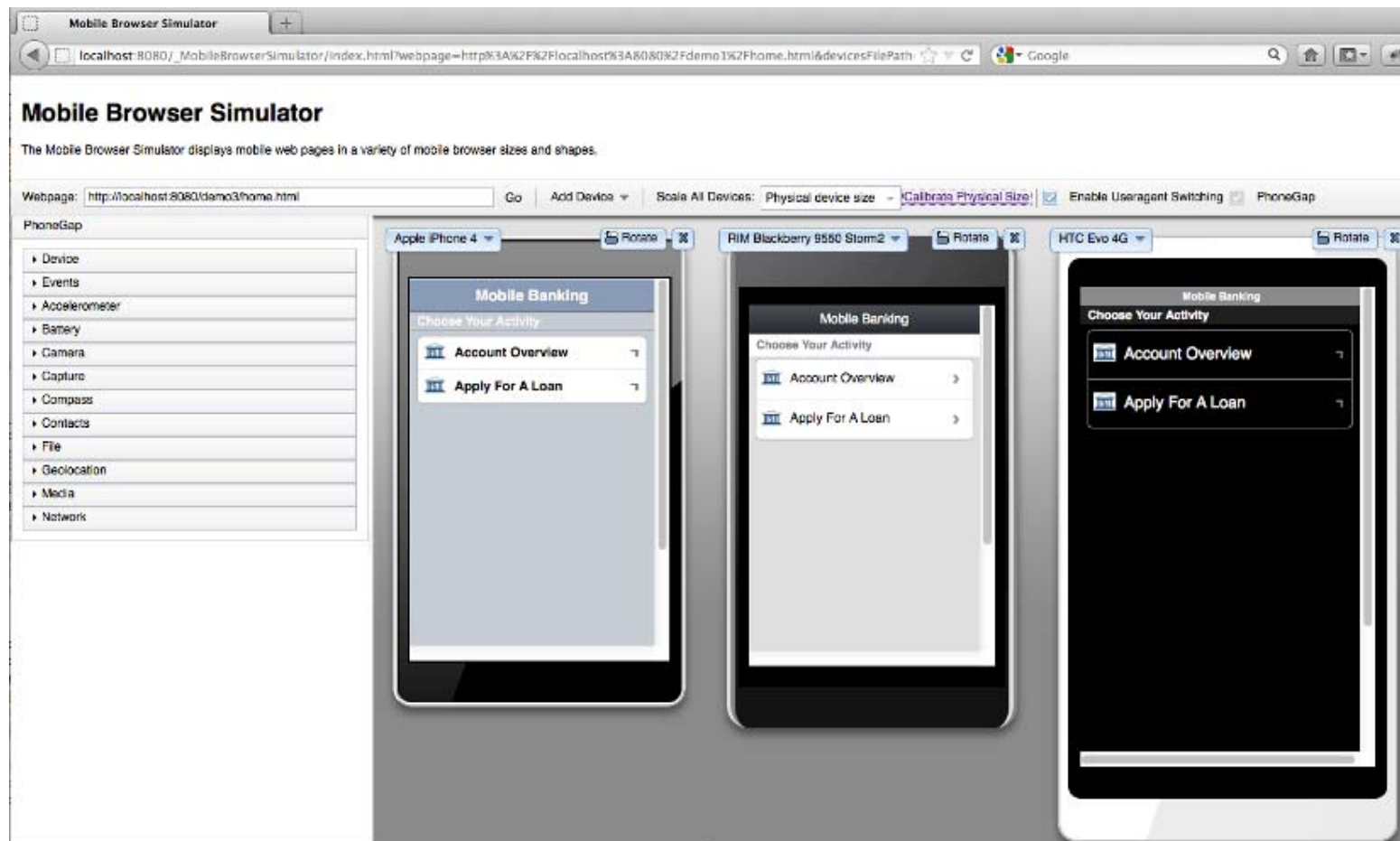
Common code placed in primary file

Environment optimization code is maintained separately

Incorporated Device SDKs and Emulators



Preview in browser



Perform device specific tests in the Mobile Browser Simulator:
supports PhoneGap and Worklight client API

Runtime Skinning – Use Cases

Different Screen Sizes



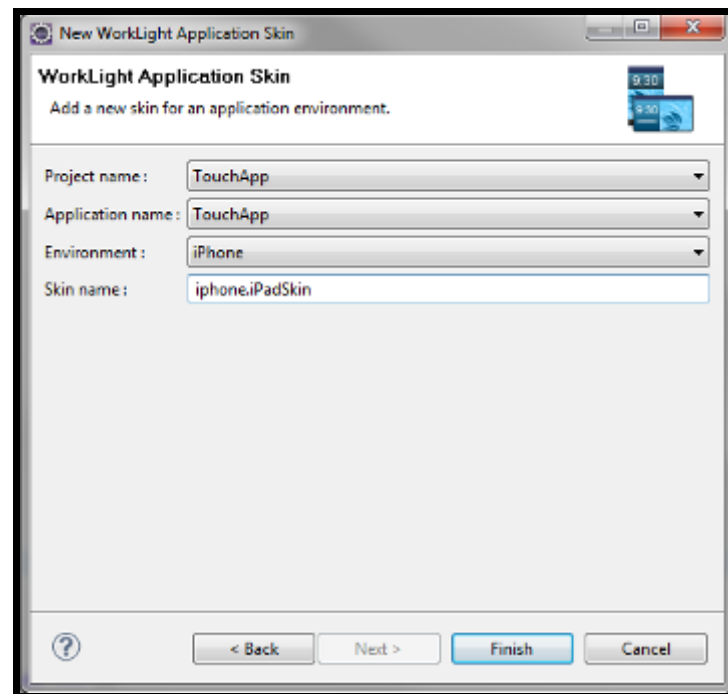
Different Screen Densities



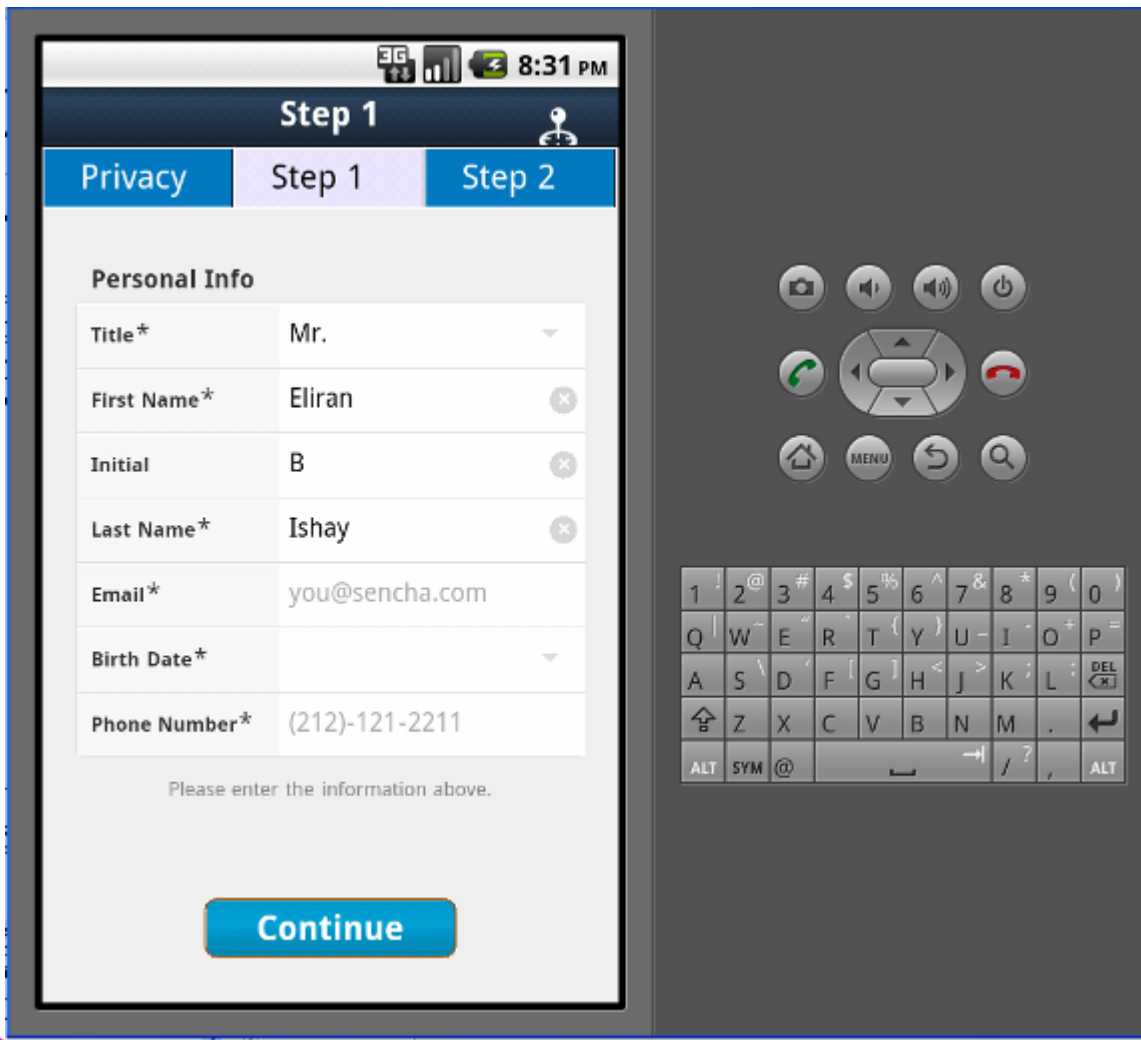
Different Input Method



Support for HTML5



Example Mobile Skin on Android



Example Mobile Skin on iPad

Step 1

Privacy	
Step 1	
Step 2	

Credit Card Application Disclosure

Annual Interest Rate
 Purchase rate in effect when your account is approved: 19.97% Until and including your July 2011 statement date, the Cash Advance rate in effect: 19.97%. The Cash Advance rate will increase to 21.97% effective the later of the day following your first statement date or the date your account is opened. Promotional balance transfers: 0.97% for 6 months for balance transfers made within 90 days of account approval if you apply by January 2, 2011.

Personal Info

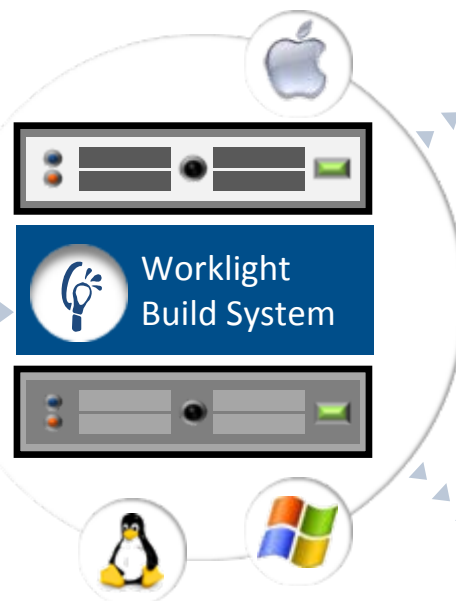
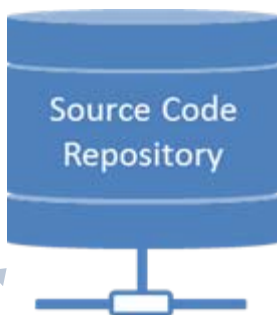
Title*	Ms.	▼
First Name*	Jane	✕
Initial	CY	✕
Last Name*	Fung	✕
Email*	jcyfung@ca.ibm.com	✕
Birth Date*	01/01/1980	▼
Phone Number*	1230223943	✕

Please enter the information above.

Continue

Centralized Build

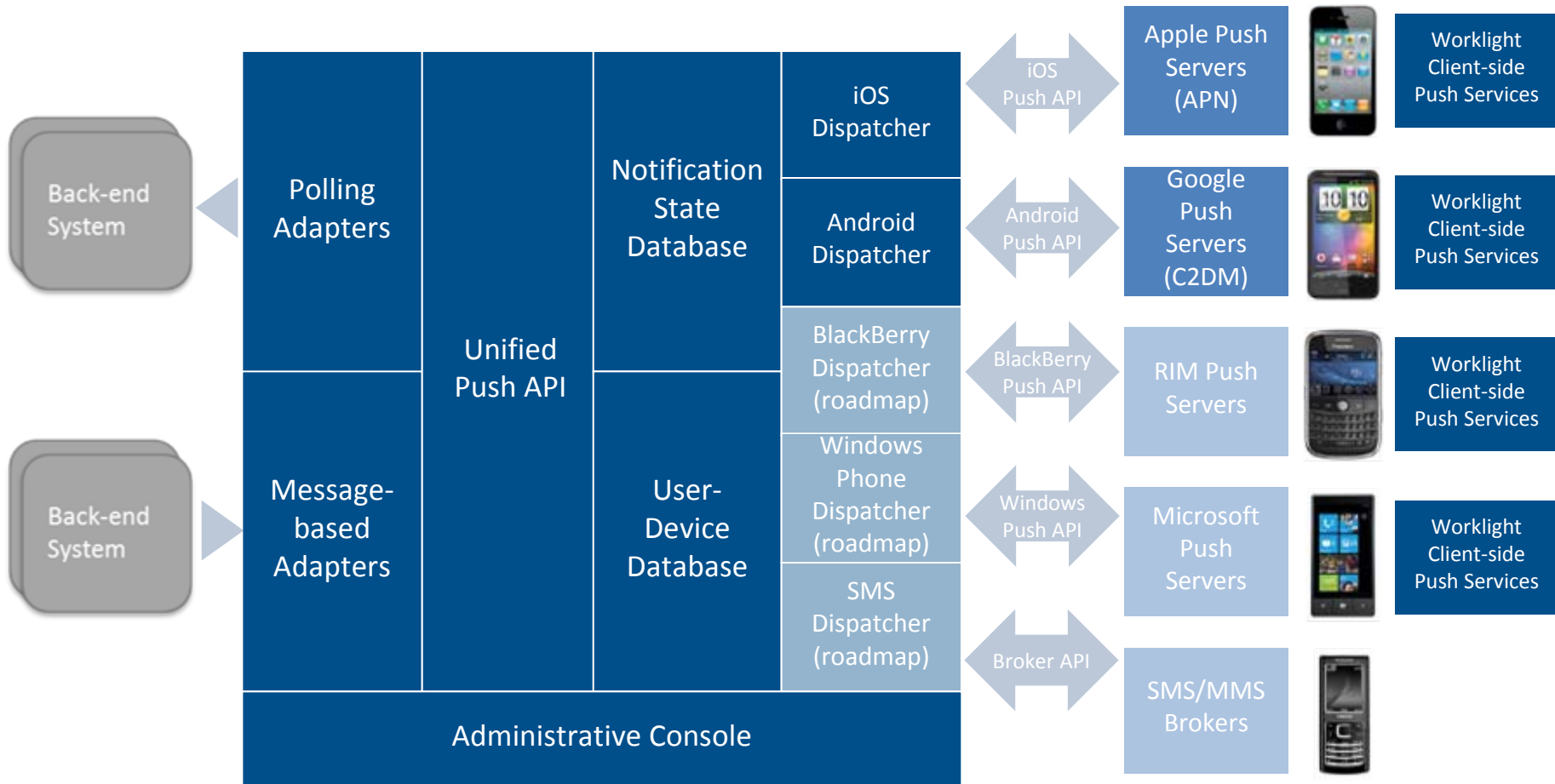
1. Create an Worklight project and application in Eclipse via Worklight Studio
2. Add a mobile environment of your choosing
3. Add app content



4. Build and deploy it to the Worklight Server
5. Use the specific environment tools to deploy to the device
 - Eclipse for Android
 - Xcode for iOS
 - Visual Studio for Windows Phone
 - Ripple for BlackBerry



Unified Push Notifications



Mobile Security Objectives

Protect data on the device

- Malware, Jailbreaking
- Offline access
- Device theft
- Phishing, repackaging

Enforce security updates

- Be proactive: can't rely on users getting the latest software update on their own

Streamline Corporate security approval processes

- Complex
- Time-consuming

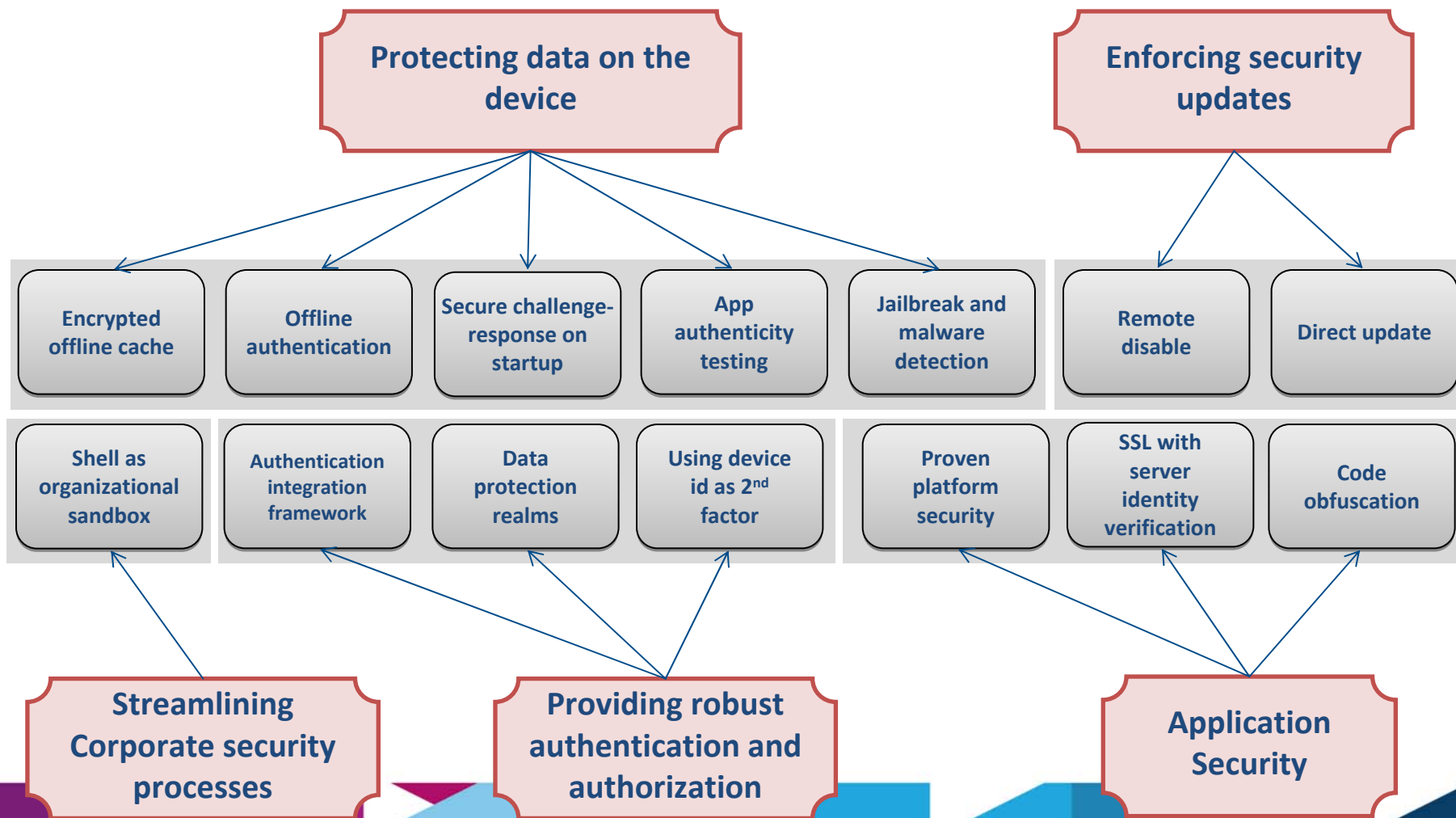
Provide robust authentication and authorization

- Existing authentication infrastructure
- Passwords are more vulnerable

Protect from the "classic" threats to the application security

- Hacking
- Eavesdropping
- Man-in-the-middle

Securing Mobile Apps



Data Collection and Analytics



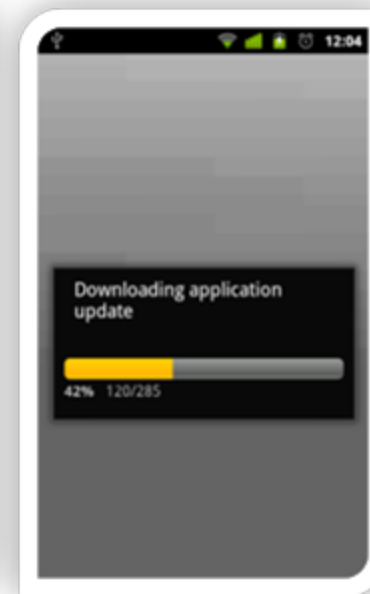
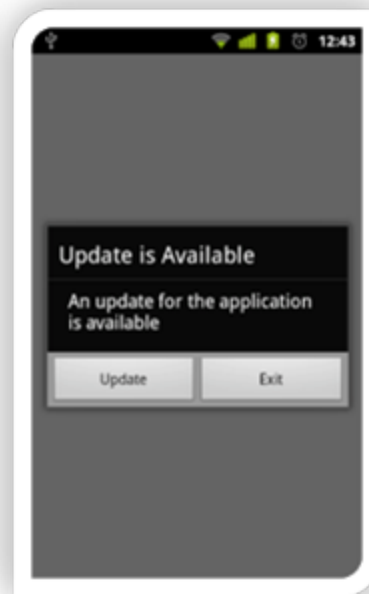
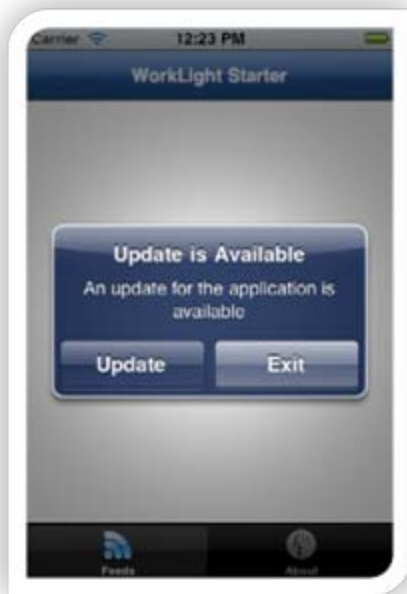
Direct Update – On-device Logic



- Web resources packaged with app to ensure initial offline availability
- Web resources transferred to app's cache storage
- App checks for updates
 - On startup
 - On foreground
- Updated web resources downloaded when necessary

Direct update – client user experience

1. Detection upon startup and foreground
2. Dialog for easy user selection
3. App download progress bar



4. Application restarts automatically

App Management

Worklight Welcome, Guest | [Logout](#) | [About](#) | [License](#)

[Catalog](#) | [Push Notifications](#) | [Reports](#) | [Active Users](#)

Deploy application or adapter: No file chosen

WorkLight Starter

Retrieves RSS feed from engadget.com

Preview as: Last updated at: 2012-01-30 10:13

Device	Version	Status	Authenticity Testing
iPhone	Version 1.1	Disabled	Disabled
Android	Version 1.0	Active	Enabled, blocking
BlackBerry	Version 1.0	Active	
Windows Phone	Version 1.0	Active	
iPad	Version 1.0	Active	Disabled
Facebook	Version 1.0	Get App URL	

Configuration for iPhone Version 1.1 (Disabled):

- Notification text (will appear on the device): Please upgrade to the latest version
- URL to app store or market: <http://itunes.com/myapp>
- Buttons:
- Lock this version:

Worklight Starter

Application Disabled

the version 1.0 is disabled, please update to version 2.0.

Feeds | About

Application Management – Application Center



A cross platform private mobile application store similar to public app stores but focused on the needs of an organization or a team

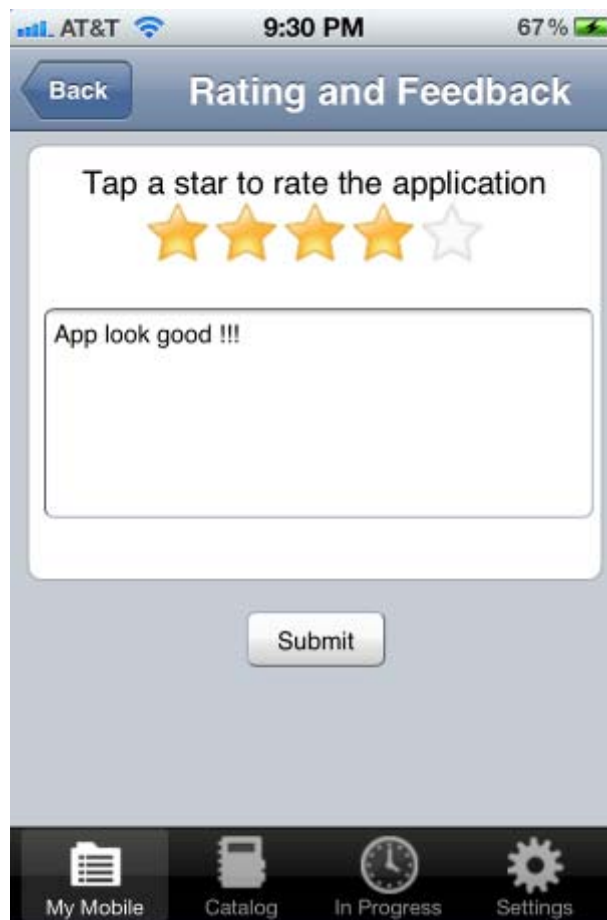
Key capabilities:

- delivers distribution and management of mobile applications within a company / teams
- easy distribution of iOS and Android apps within a team
- provides versioning and updates
- centralizes rating and feedback information
- controls who can modify or install an application
- easy to install and simple to run


Download Application over-the-air to the device



Provide Feedback or switch back



Feedback aggregated on Application Center console




Mobile Clinic


iOS (com.ibm.imf.sample.MobileClinic)

Installation: unrestricted | Administration: restricted

version 3.0	4/25/12 5:14 PM	★★★★★ (1)
version 2.0	4/25/12 4:54 PM	☆☆☆☆☆ (0)
version 1.0	4/25/12 10:32 AM	★★★☆☆ (3)



Mobile Clinic 3.0 on iOS

Welcome Demo User 

Search

Properties

- **Feedback**

Application Feedback

Average rating: ★★★★★

1 of 1 Page 1 Previous Next

Sort by: Rating | Creation Date Refresh list

demo commented on 4/25/12 5:15 PM ★★★★★

Greg's iPad 2 | Apple iPad | iOS iPhone OS/5.1 (9B176)

Looks good

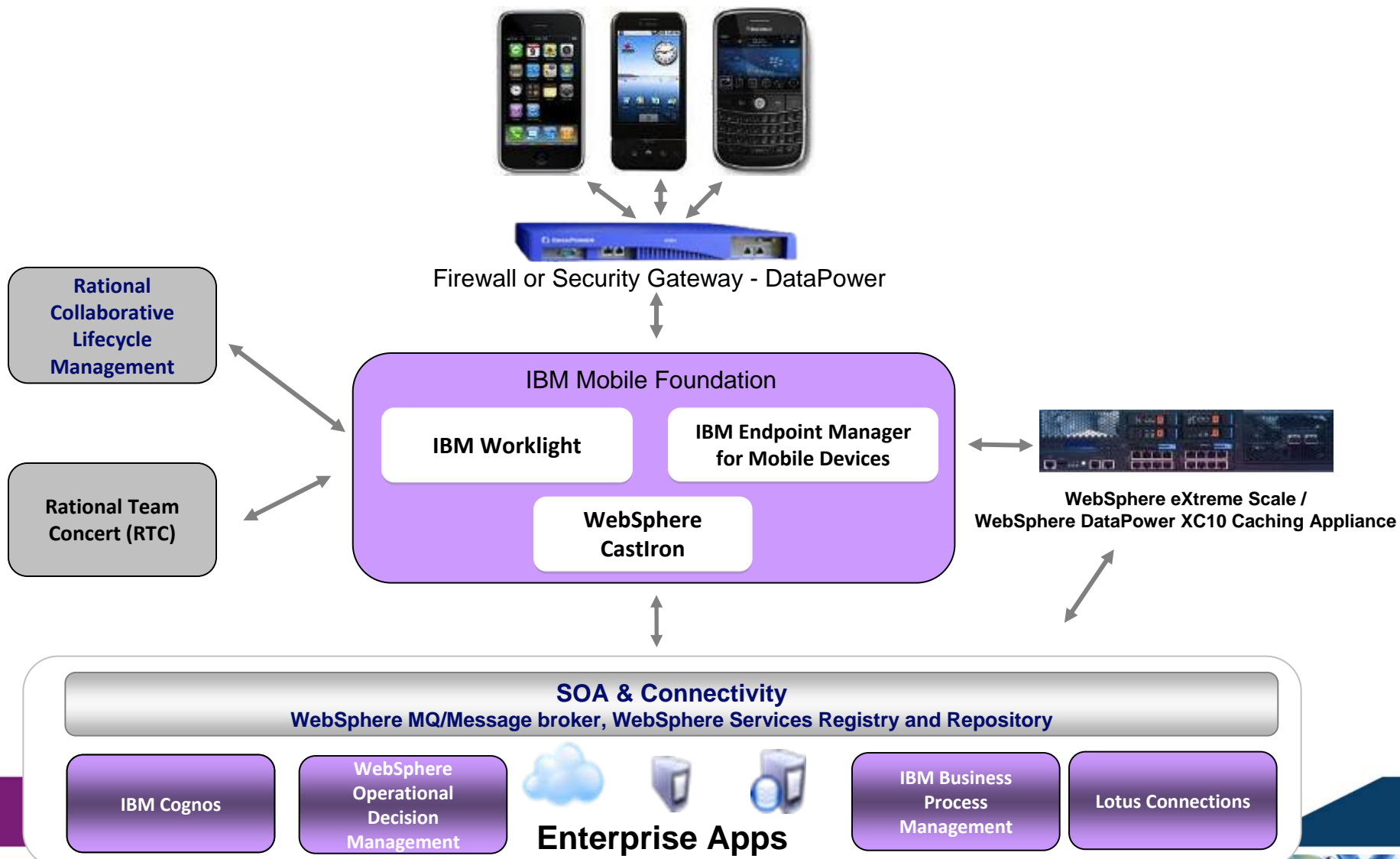
Show: 5 | 10 | 20 | 50 | 100 | All items Jump to page 1 of 1 Previous Next

Customer Spotlight – Lotte



- Rich hybrid app with over 100 screens
- Native implementation for augmented reality and security
- Ported Android to iOS in a 3-4 weeks

IBM Mobile Foundation – sample topology



Try today!

- **IBM Worklight Developer Edition**

- <http://www.ibm.com/developerworks/mobile/worklight.html>

- **Getting Started**

- <http://www-01.ibm.com/software/mobile-solutions/worklight/library/>

- **Documents**

- <http://www-01.ibm.com/software/mobile-solutions/worklight/library/v50/documentation/>



© Copyright IBM Corporation 2012. All rights reserved. The information contained in these materials is provided for informational purposes only, and is provided AS IS without warranty of any kind, express or implied. IBM shall not be responsible for any damages arising out of the use of, or otherwise related to, these materials. Nothing contained in these materials is intended to, nor shall have the effect of, creating any warranties or representations from IBM or its suppliers or licensors, or altering the terms and conditions of the applicable license agreement governing the use of IBM software. References in these materials to IBM products, programs, or services do not imply that they will be available in all countries in which IBM operates. Product release dates and/or capabilities referenced in these materials may change at any time at IBM's sole discretion based on market opportunities or other factors, and are not intended to be a commitment to future product or feature availability in any way. IBM, the IBM logo, Rational, the Rational logo, Telelogic, the Telelogic logo, and other IBM products and services are trademarks of the International Business Machines Corporation, in the United States, other countries or both. Other company, product, or service names may be trademarks or service marks of others.

Trademarks and Disclaimers

Copyright IBM Corporation 2012. All rights reserved.

- IBM, the IBM logo, ibm.com, WebSphere, DB2, Cast Iron, and Rational are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with the appropriate symbol (® or ™), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the web at “[Copyright and trademark information](http://www.ibm.com/legal/copytrade.shtml)” at www.ibm.com/legal/copytrade.shtml.
- Adobe is either a registered trademark or trademark of Adobe Systems Incorporated in the United States, and/or other countries.
- Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.
- Microsoft and Windows are trademarks of Microsoft Corporation in the United States, other countries, or both.
- Java and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.
- Other company, product, and service names may be trademarks or service marks of others.
- Information contained within is for informational purposes only, and is provided 'as-is' without any warranties, either expressed or implied. References in this publication to IBM products or services do not imply that IBM intends to make them available in all countries in which IBM operates.