

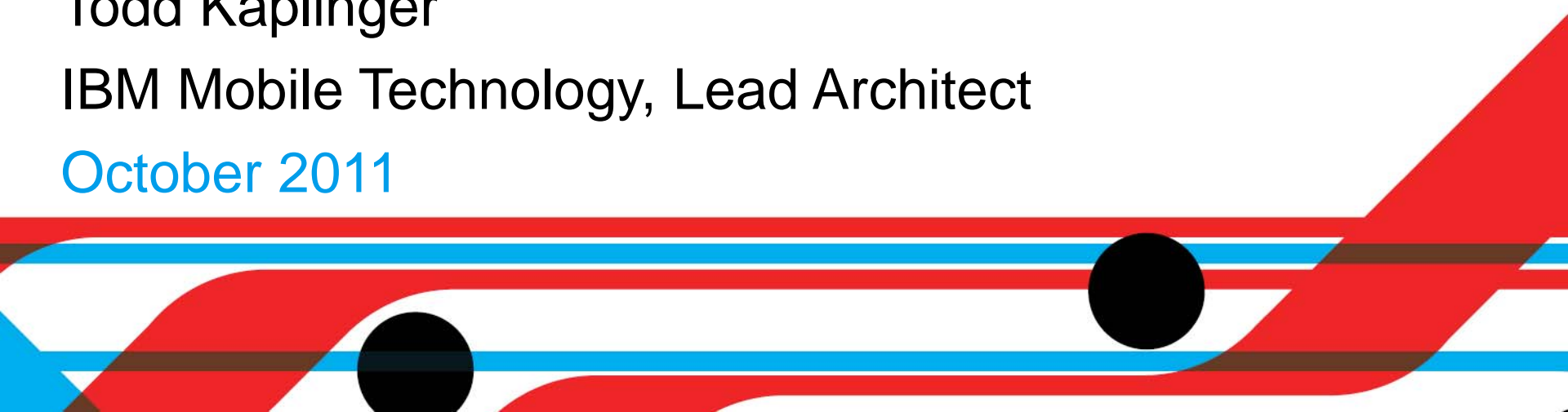


Developing Mobile Applications

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IBM Mobile Technology Preview

Available starting October 7, 2011

Overview, Forums and Blogs
<http://ibm.co/ibmmobile>

Download IBM Mobile Technology Preview

https://www14.software.ibm.com/webapp/iwm/web/preLogin.do?source=swerpws-wsapstfob-3&S_PKG=codemob

IBM Mobile Technology Preview

The IBM mobile technology preview will provide customers with early access to IBM's mobile capabilities and demonstrate our approach to mobile application design, distribution, and management



Device and Server Infrastructure Capabilities

Support for Android



Mobile Server Capabilities
on WAS v8.5 Alpha Liberty

SOA & Connectivity

Existing Back Ends

Server runtime

- Acts as central point for integration to back-ends
- Hosts key capabilities such as user registry and notifications
- Runs on IBM's Liberty runtime
- **Customers will be able to** integrate and extend existing applications and services to maximize existing investments

Notification capability

- Delivers notifications to users through maintained connection between client and server
- **Customers will be able to** engage users with notifications of time sensitive information or actions to take

Client runtime

- Provides a container for developing hybrid applications, written in HTML and JavaScript, that deliver a compelling touch-based user experience and have full access to native device functions
- **Customers will be able to** rapidly develop, package, and distribute mobile applications through internal and external app stores by leveraging existing skills and assets

Demonstrations, Samples, & Documentation

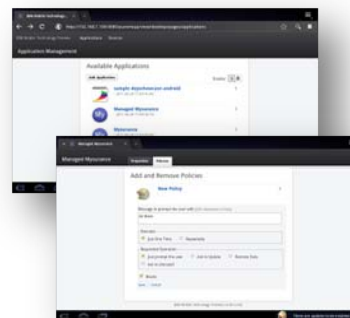


Demonstrations & Samples

- **Mysurance** – Provides a showcase hybrid application that demonstrates all capabilities in an end-to-end insurance scenario
- **Dojo Showcase** – Highlights the full breadth of Dojo capabilities
- **Hybrid Showcase** – Demonstrates integration with all available native device functions
- **Simple Notifications Client** – Illustrates notification functionality and development techniques

Management Concepts

To be demoed



Application Management

- Centralizes control over your mobile apps including policy-based access, versioning, updating, tracking, and wipe/remove
- **Customers will be able to** distribute apps to employees and control access to those apps and their enterprise data

http://ibm.co/ibmmobile



The screenshot shows a web browser window displaying a blog post on the IBM developerWorks website. The browser's address bar shows the URL: <https://www.ibm.com/developerworks/mydeveloperworks/blogs/9cd82557-5608-4d01-b4e9-c3eb24142>. The page title is "IBM Mobile Technology Preview Downloads (IBM Mobile Technology Preview)".

The page features a navigation bar with "developerWorks" and links for "Technical topics", "Evaluation software", "Community", and "Events". A search bar is present on the right. Below the navigation, there are tabs for "Browse Blogs", "My Blog", and "My Updates". The main content area has a header for "IBM MOBILE TECHNOLOGY PREVIEW" with buttons for "DOWNLOAD", "BLOG", and "FORUM".

The main article is titled "IBM Mobile Technology Preview Downloads" by CesarCantua, dated Sep 20. It includes social media sharing options (Like, retweet, +1) and a description of the download. The article text reads: "The IBM Mobile Technology Preview download is delivered as a zip file. It can be placed anywhere in the file system and unzipped to expose the contents listed below. The Overview document, included in the zip file, is a good starting place to learn about the IBM Mobile Technology Preview and the features provided. Please see the Getting Started Guide, linked from the Overview document, to familiarize yourself with the file contents, point you to the code, and give you a head start to running the samples. Included with this Technology Preview are the following:

- Hybrid Enablement Framework** for building cross-platform mobile applications with HTML, CSS, and JavaScript. The IBM Mobile Technology Preview is utilizing the PhoneGap open source framework as a means to quickly deliver hybrid capabilities. Other hybrid approaches exist and may be used in addition to, or instead of, PhoneGap in future technology preview deliveries.
- Notifications** a RESTful notification service and a client side notification library enables enterprise logic to post notifications to one or more target devices.

On the right side, there are sections for "LINKS" (Connect. forum) and "RECENT TWEETS" (including tweets about Dojo testing and link layouts for nested graphs).

Agenda

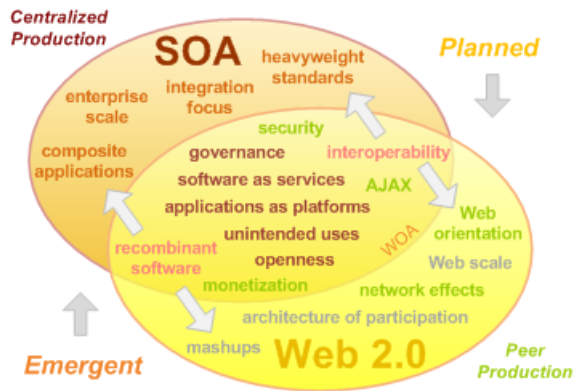


- Evolution of Web Applications
- Mobile Landscape
- Mobile Programming Models
- Mobile Web Development using Dojox Mobile
- Summary
- WebSphere Perspective
- Next Steps

Continuing the Evolution of Web Applications



The Two Top-Level Organizing Principles in Modern Software Continue to Converge



Data Points



Jerry Cuomo's Blog - 2011 WebSphere Trends

https://www.ibm.com/developerworks/mydeveloperworks/blogs/gcuomo/entry/jerry_s_2011_websphere_trends1?lang=en_us

- 46m Android devices sold in 2Q2011 (43.4% share)
- 19m iOS devices sold in 2Q2011 (18.2% share)

<http://www.macrumors.com/2011/08/11/gartner-nokia-held-off-apple-in-smartphone-sales-in-2q-2011/http://www.applemobizone.com/archives/64295>

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

<http://www.gartner.com/it/page.jsp?id=1278413>

- During 2011, over 85 percent of new handsets will be able to access the mobile Web. In US and W. Europe, it is already surpassed that.

<http://mobithinking.com/mobile-marketing-tools/latest-mobile-stats>

- Currently there is an estimated 5.3 billion mobile cellular subscriptions worldwide, including 940 million subscriptions to 3G services.
- Access to mobile networks is now available to 90% of the world population and 80% of the population living in rural areas.

International Telecommunications Facts/Figures 2010

Why Is Mobile Different?



- Mobile users require **efficient and timely access to information**.
- Interactions are **short and focused, interruptions are common**.
- Devices are often exclusively **touch-based**.
- User interfaces must be **easy and obvious**.
- **Screen real-estate is precious**.
- **Typing should be minimized**.

- Applications must still be usable when **out of wireless coverage**.
- **Timeliness of data must be communicated**.
- **Security is critical**.
- Often used for **monitoring as opposed to active consumption**.
- **Social interactions are important**.
- **Mobile hardware and user interfaces evolve much faster than the typical enterprise software cycle**.

Mobile users today expect **high-fidelity access to the same information they have on the desktop, presented in an easy-to-learn, mobile-friendly (often touch-friendly) format**.

A New Frontier of Growth



Mobile B2C

- Increase customer satisfaction by enabling banking, insurance, and trading anywhere, anytime
- Reach customers in new ways through mobile applications, SMS, email

Mobile B2E & B2B

- Enable field employees for increased productivity
- Greater efficiency and accuracy in supply chain operations
- Exchange business information with partners securely

Mobile M2M

- Enable the exchange of data and events between businesses and machines
- Internet of Things - sensor events feeding information and driving a smarter



Developing Mobile Enterprise Applications



■ Requirements

- Enterprise connectivity to existing services
- Enterprise scalability
- Enterprise Security (data integrity)
- Enterprise Support (Open Source and Purchased Software)
- Licensing agreements
- Tooling

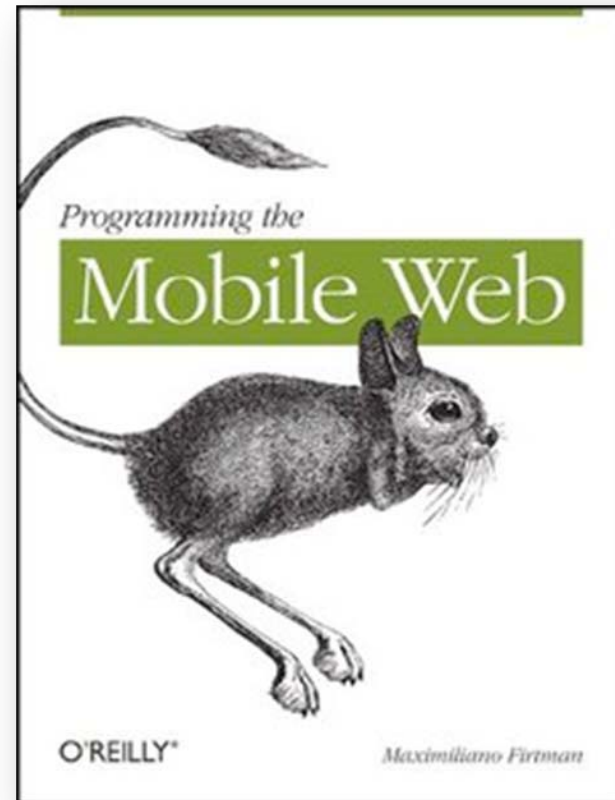
■ Characteristics

- Cross platform development of applications
- User Interface(UI) richness and performance
- Branding (product branding, custom web styling and themes)

Mobile Programming Models



- Web Model
- Hybrid Model
- Native Model



Web Model



- **Characteristics**

- HTML/CSS/JavaScript
- HTML5 and Webkit bring greater functionality
- All content is loaded by web browser from URL
- No native look/feel (CSS can simulate to an extent)

- **Advantages**

- Familiar, web-based programming model (web dev)
- Quick and easy development iteration (browser reload)
- Easy application update/rebranding (change web server content)
- Does not need to be packaged or distributable via app stores
- Widest range of device support

- **Disadvantages**

- Slower than native or hybrid – app loaded over network and run in web container
- Can only do what the browser supports on that platform

Hybrid Model



■ Characteristics

- HTML/CSS/JavaScript
- JavaScript wrapper for native functionality (location, network, media, local/offline, ...)
- Runs inside web container hosted on the device (Webkit, Fennec, Opera, etc.)
- Packaging can include all web assets or dynamic content loaded from url (like the web model)

■ Advantages

- Easy migration from web model to hybrid model (superset of web model)
- Reuse of web programming skills
- Quick and easy development iteration (browser reload)
- Easy application update/rebranding (change web server content)
- Enables access to native functionality from browser
- Wrapper goes away as browser gains capabilities (hybrid becomes web)
- Revenue via purchase through app stores

■ Disadvantages

- Slower than native (app run in web container)

■ SDKs

- PhoneGap: iPhone/iPad, Android, Blackberry, Palm, Symbian
- QuickConnect: iPhone, limited Android



Native Model



- **Characteristics**

- Specific application for each device
- Write to device-specific SDK API

- **Advantages**

- Highest performance
- Native look/feel
- Can use any capabilities that the device supports

- **Disadvantages**

- Must write app for each device supported
- Most costly development model (dev + maintenance)
- Specific skills needed for development

- **SDKs**

- iOS: Objective-C/Xcode
- Android: Java/Eclipse
- Blackberry: Java/Eclipse



Model Summary



Attribute	Web	Hybrid	Native
Easy to Learn	Easy	Easy	Hard
Performance	Slow	Moderate	Fast
Device Knowledge required	None	Some	Lots
Time to create app	Short	Short	Long
App compile/deploy/run cycle time	Short	Short	Long
App portability	High	High	None
Support native functionality	No	Most	All
Installable packaging	No	Yes	Yes
Extensible	No	Yes	Yes

Technology Choices for Mobile



PhoneGap

Mobile browsers leading the HTML5/CSS movement



All
 CSS
 HTML5
 JS API
 Other
 SVG

Web Browser
 All
 Desktop Mobile
 IE iOS Safari
 Firefox Opera Mini
 Safari Opera Mobile
 Chrome Android Browser
 Opera

Time period
 All
 Three versions back
 Two versions back
 Previous version
 Current
 Near Future (early 2011)
 Future (mid/late 2011)

Status
 All
 Recommendation
 Proposed Rec.
 Candidate Rec.
 Working Draft
 Other
 Unofficial / Note

Alternatives
 Accept polyfills

Sort
 Most users first

Other options
 Detailed tables
 Accessible colors
 Show conclusions

■ = Supported
 ■ = Not supported
 ■ = Partially supported
 ■ = Support unknown

Summary

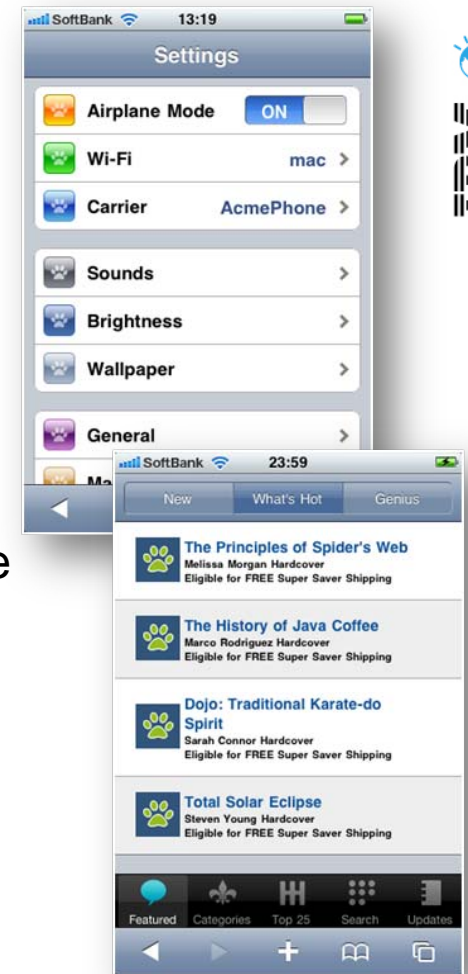
Calculation of support for currently selected criteria

	IOS Safari	Opera Mini	Opera Mobile	Android Browser
3 versions back				
2 versions back	3.2: 54%		10.0: 46%	2.1: 53%
Previous version	4.0-4.1: 62%		11.0: 65%	2.2: 62%
Current	4.2-4.3: 65%	5.0-6.0: 32%	11.1: 72%	2.3: 64% 3.0: 77%
Near future				
Farther future				

Further details can be obtained from
http://caniuse.com/#agents=mobile&cats=CSS,HTML5&show_conc=1
 as of September 27, 2011

What is dojox.mobile?

- A dojo-based widget set for creating mobile web applications
 - Available since dojo-1.5
- Aims to provide lightweight UI widgets
 - Native device access is not in the scope of dojox.mobile
- Aims to allow you to develop device-specific or device-neutral look & feel applications
 - Currently, iPhone, Android and BlackBerry themes are available
- Server technology agnostic



Features of dojox.mobile



- Widgets
 - Edge-to-edge List
 - Round Rectangle List
 - Switch
 - Icon Container
 - Tab Container
 - Buttons
- Extensive use of CSS3 features to optimize for webkit-based mobile browsers.
 - Animation, gradient colors, rounded rectangles
- Non-CSS3 PC browser support
 - Compatibility module
- Animations
- Themes
- Progress Indicator
- Browser's back/forward button support
- Keeping the scroll position between view transitions

Lightweight nature of mobile widgets



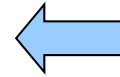
- Performance is extremely important because:
 - Mobile devices are not as powerful as desktop PCs
 - Mobile users interaction patterns are not the same as desktop users.
- Removed dependencies on the dojo modules as much as possible.
 - No dependencies even on some of the essential core modules like Templated, Container, Contained, dojo.query, or dojo.parser.
- No images are used.
 - UI parts consist of DOM and CSS3.
 - Only application icons are images.
- Support for CSS sprite
 - Application icon images can be aggregated into a single file to reduce the number of http requests.
- Possible to use the webkitMobile build option (when PC browser support is unnecessary)
 - Drops IE and Firefox-specific code at build time, and thus reduces the dojo core size
- Minimal parser is provided
 - dojox.mobile.parser consists of only 80 lines of code (including comments)
 - Small but enough capability to bootstrap simple dojo applications (not limited to mobile)
 - Can be used in place of dojo.parser



Dojo Showcase – device themes

A screenshot of the Dojo Showcase application on an iPad tablet theme. The interface is light gray with a dark blue header. The left sidebar lists various controls like Buttons, Forms, Switches, etc. The main content area shows a form with sections for Personal Data, Login, and Alerts. The 'Hide birthdate' checkbox is checked. A 'Reset Form' button is at the bottom right.

iPad tablet



Android tablet

A screenshot of the Dojo Showcase application on an Android tablet theme. The interface is dark gray/black with a dark blue header. The left sidebar lists various controls. The main content area shows the same form as the iPad version, but with a dark background and different styling for the form elements. A 'Reset Form' button is at the bottom right.

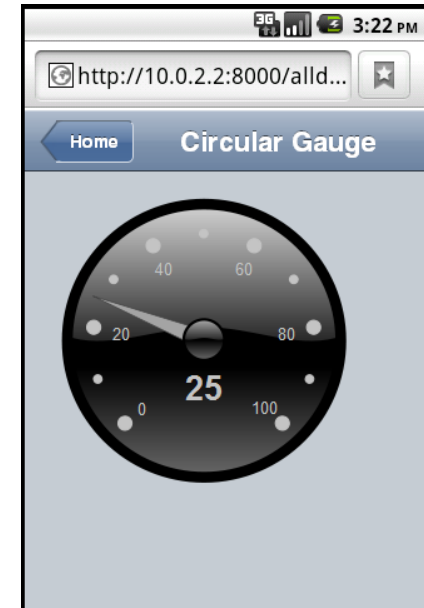
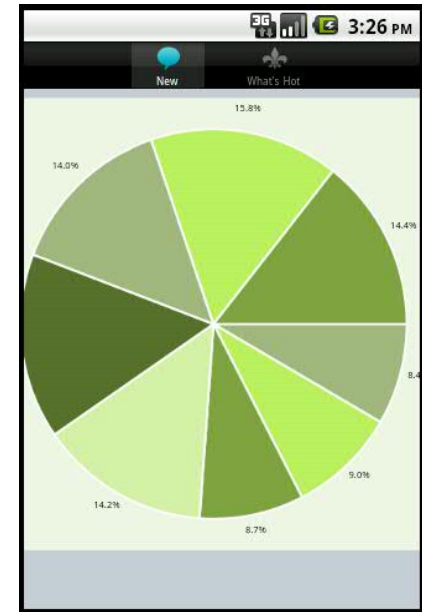
Animations



- Supported view transition animations:
 - Slide, Flip, and Fade
- For webkit-based browsers:
 - Animations are handled with CSS3 features
 - Animations run smoothly compared with JavaScript-based animations such as `dojo.fx`.
- For non-CSS3 browsers:
 - Animations are handled with `dojo.fx` (`dojox.mobile.compat`)

Dojo Visualization for Mobile

- Mobile enablement of Dojo Charts and Gauges
- Optimization for mobile (download only what is needed)
- Provide themes adapted to small screen size
- Several new predefined gauge styles
- Support of iOS, Android, BlackBerry phones
- Touch support for scrolling & panning



Summary



- Enterprise Mobile Ramp Up
- Application Development Model Choices (Native, Hybrid and Web)
- Technology Choices and Frameworks
 - Coding in native JavaScript (Dojo, Sencha, JQuery)
 - Java models (Dojo JSF / GWT)
- WebKit Browsers
- Dojo Mobile

Current WebSphere Perspective



- Open Standards (HTML, JavaScript, CSS, REST) Development
 - Hybrid when needed using Open Source solutions such as PhoneGap
- Write Once, Run Anywhere
- Web 2.0 and SOA Design Patterns
- Dojo - consistent development model (desktop & mobile)
- End to end development using Eclipsed-Based Tools such as Rational Application Developer (RAD)

“If you can build your app with HTML, CSS and JavaScript, then you probably should.”

- Johnathan Stark

WAS Feature Pack for Web 2.0 & Mobile

- Extend the reach of WAS applications from the Desktop to Mobile devices
- Enabling Mobile UI's:
 - Dojo Core & Widget Infrastructure
 - Dojo Visualization
 - New Mobile Widget Library
 - Dojo Web Builder (Build optimization service)
 - Desktop & Mobile Demo Showcase
- Accelerating Rich Internet Applications:
 - Touch-enabled desktop widgets
 - Maps components (tiled and vectors)
 - New Visualization widgets
 - Updates to Existing Components (Dojo 1.7-alpha, JAX-RS, etc)
- Common Mobile & RIA Application Building Blocks:
 - Directory Listing Service
 - File Upload Service (multipart)
 - Graphics Conversion Service (SVG to PNG, JPG, PDF)
 - Logging/Debug/Analytics Capture Service



Next Steps & Resources



- Dojo Toolkit site: dojotoolkit.org
- IBM Web 2.0 and Mobile Development Community:
 - Home (Blog, Wiki, Bookmarks, etc.): <http://ibm.co/Web20MobileDevComm>
 - Forum: www.ibm.com/developerworks/forums/forum.jspa?forumID=2421
 - Twitter: twitter.com/ibmweb2mobile
 - YouTube Channel: www.youtube.com/ibmweb2mobile

THANK YOU!



Q & A