



Designing for the Mobile Web

Lesson 4: Native Apps

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Welcome!

- Four sessions
 - 1: The Mobile Landscape
 - 2: Device Constraints and Opportunities
 - 3: HTML5 Web Apps
 - 4: **Native Apps**

Questions

- Ask questions via chat during the live course
- Ask in the discussion group
- Email us
 - *Please use the discussion group* for non-private questions
- Course Portal
 - www.online-web-courses.com



Michael Slater
Cofounder & CEO



Andrew DesChenes
Director of Services

Topics for This Lesson

- Why build native apps?
- "True" native apps vs. hybrids
- App design patterns
- Simple app builders
- Turning web apps into native apps with PhoneGap
- Using Titanium for more demanding projects
- Distributing your apps

Why Build Native Apps?

- Use native UI widgets
- Best performance
- Access to camera and other devices
- Access to file system
- Distribution through the App Store
- Built-in payment mechanism

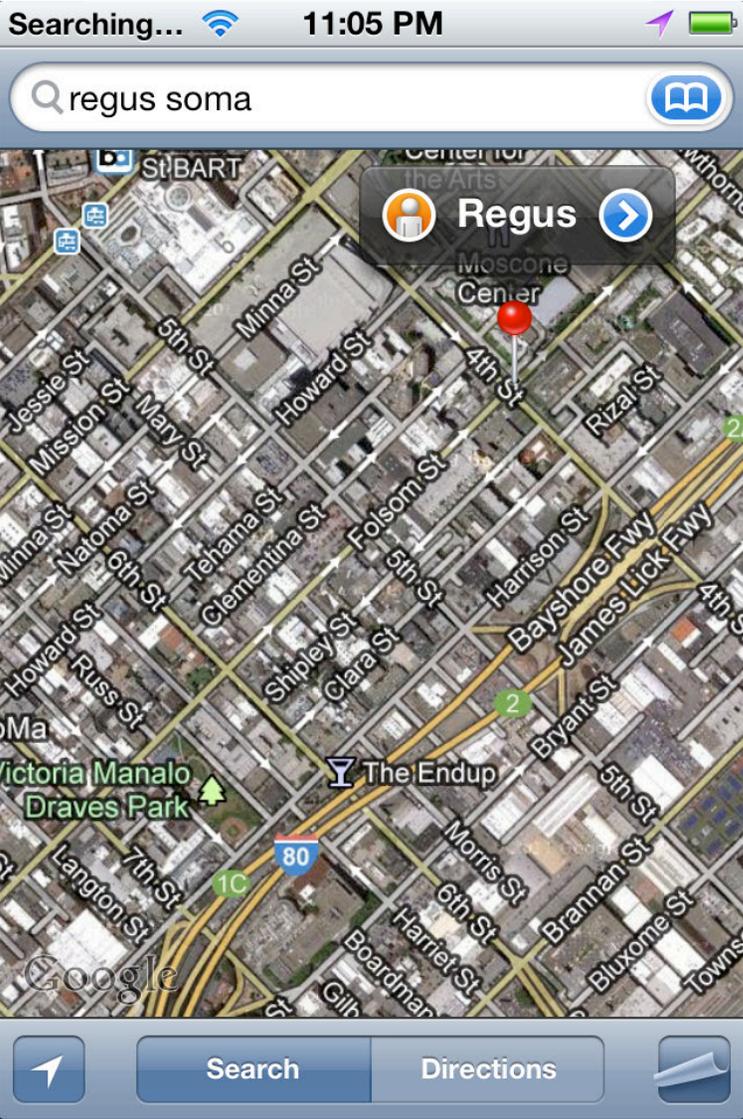
Building "True" Native Apps

- A serious software development undertaking
 - Nothing like building a website
 - User interface is created programmatically
- Each platform has entirely different tools, languages, and APIs
 - **iOS:** Objective C and Apple's XCode tools
 - **Android:** Java and Google's Android SDK
 - **Windows Phone:** C#, Silverlight, XAML

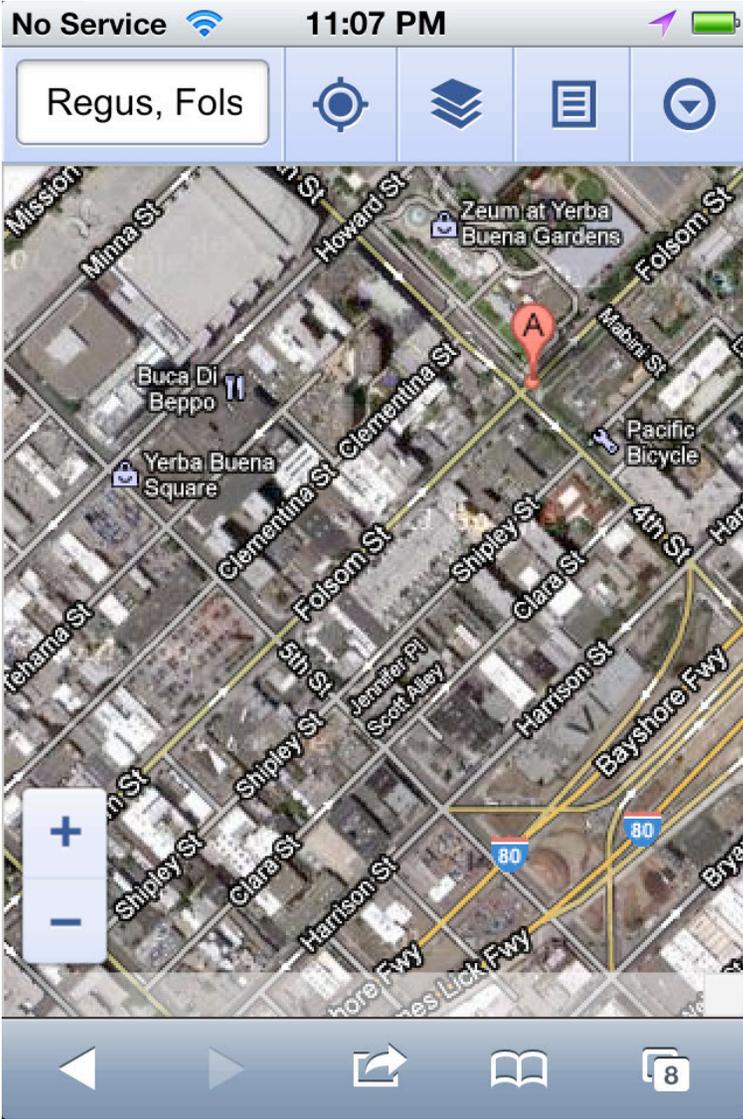
App Design Patterns

- Apps vs. Sites
- Header bars
- Toolbars
- List views and detail pages
- Multi-panel screens
- Settings
- Actions

App



Website



List Page

No Service 11:08 PM

Icon First Last Family Reset

Keyword

A

	Abert's Towhee <i>Pipilo aberti</i>	A
	Acadian Flycatcher <i>Empidonax virescens</i>	B
	Acorn Woodpecker <i>Melanerpes formicivorus</i>	C
	Akohekohe <i>Palmeria dolei</i>	D
	Alder Flycatcher <i>Empidonax alnorum</i>	E
	Aleutian Tern <i>Onychoprion aleuticus</i>	F

ABC
DE
FGH
IJK
LMN
OP
RST
UV
W
XYZ

Browse Search Favorites Help More

Detail Page

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Birds **Abert's Towhee** ▲ ▼

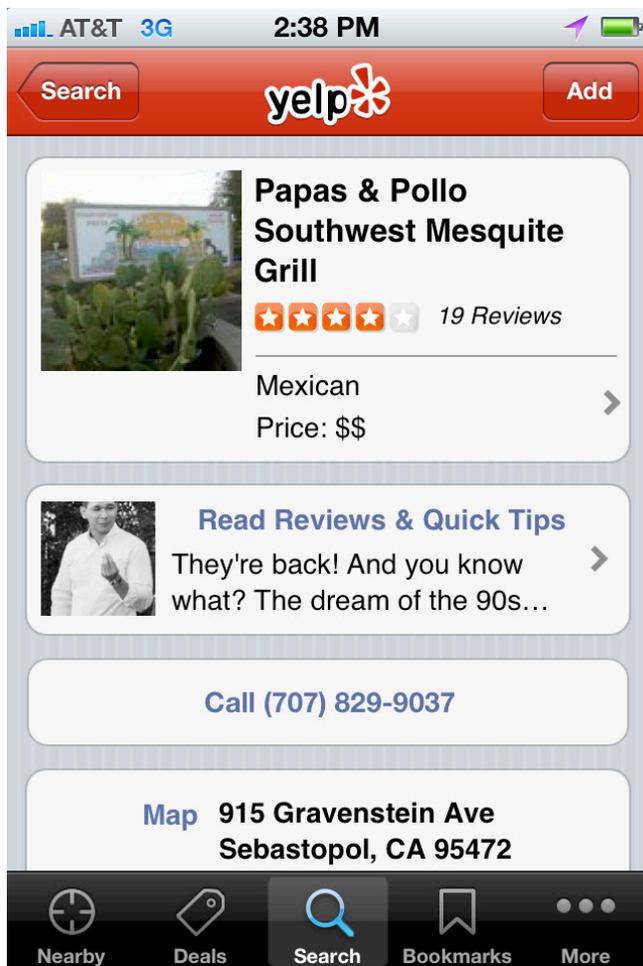
Pipilo aberti PASSERIFORMES
Sparrows (Emberizidae) ABTO



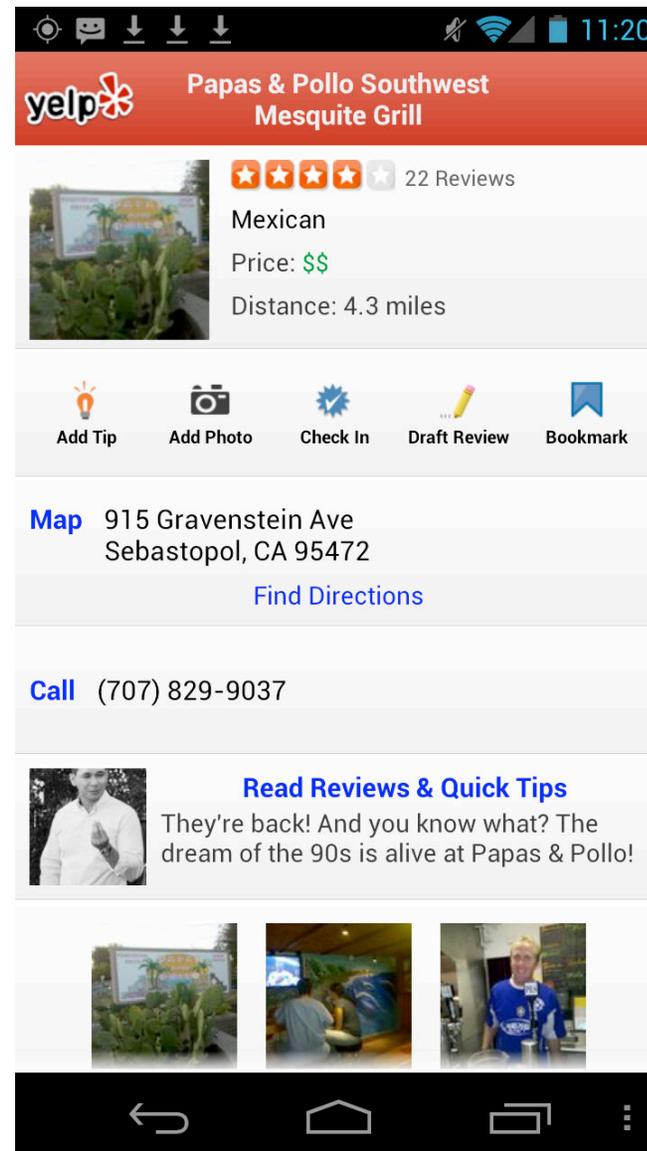
Bird Range Identify 3 Photos

 Similar Facts Birdipe

Countless Options for Detail Pages

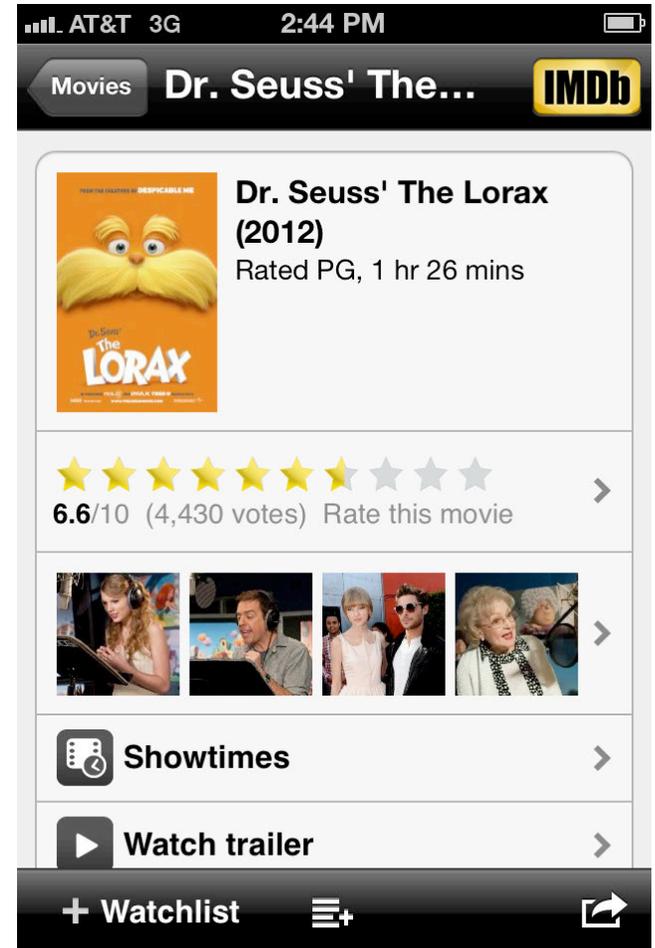
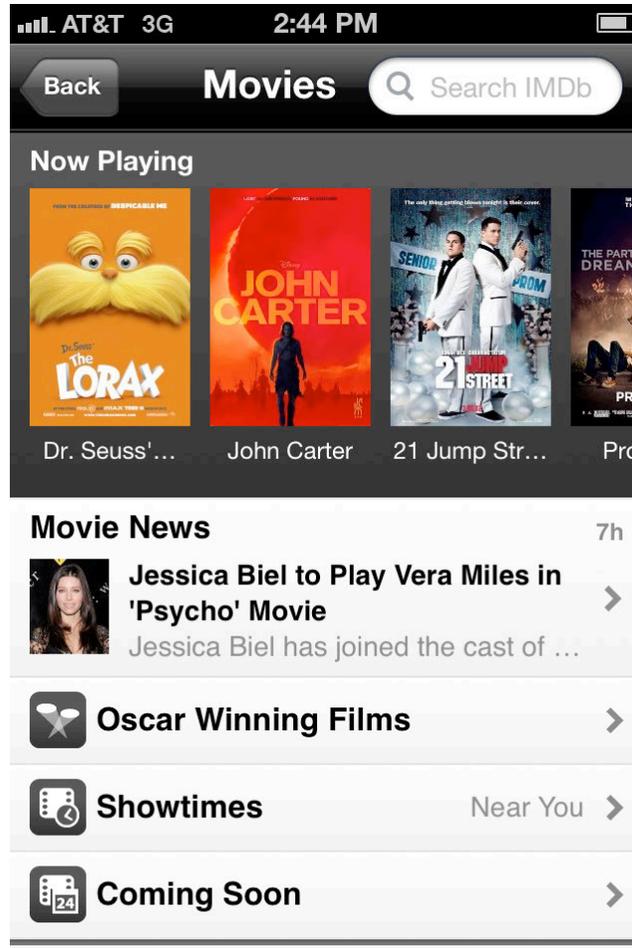
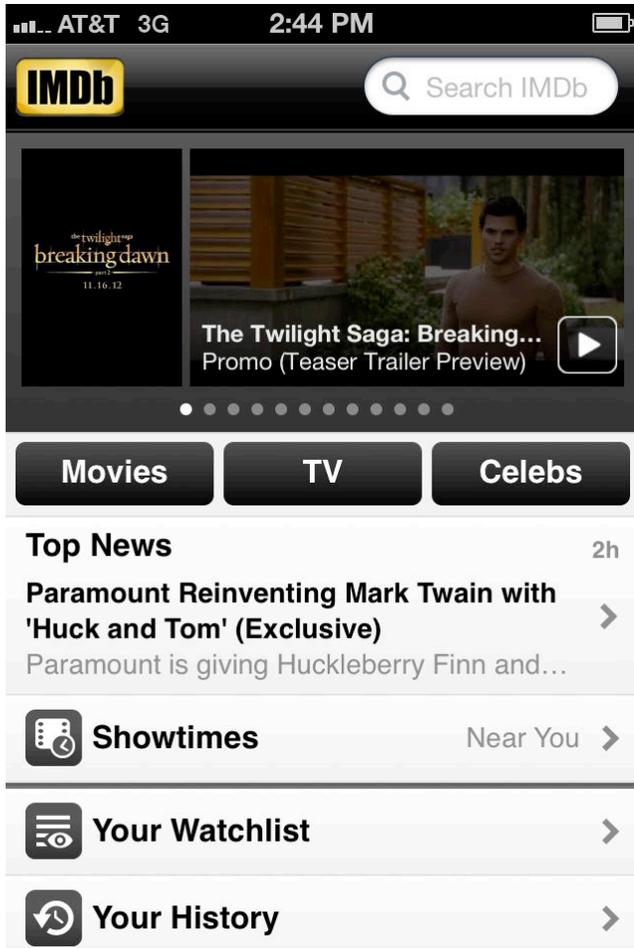


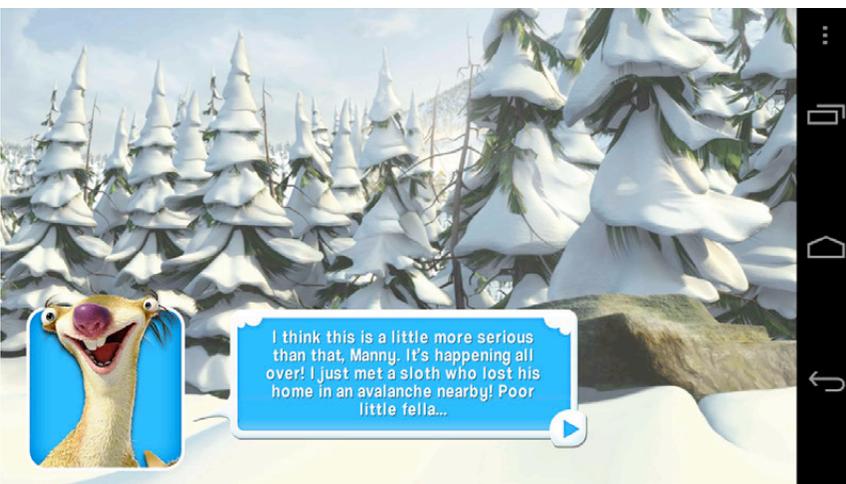
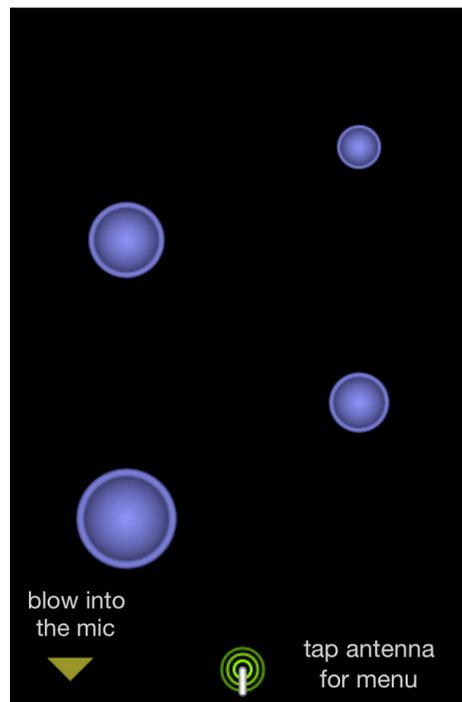
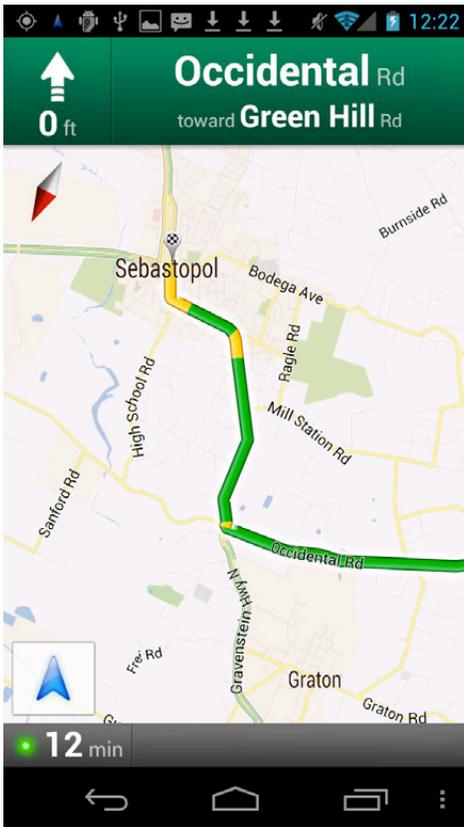
iPhone



Android

Drilling Down





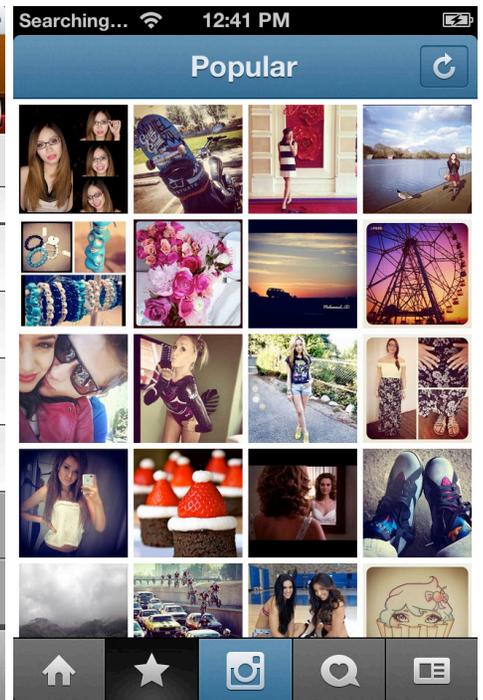
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Calendar

April, 2012

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5
6	7	8	9	10	11	12

Tasks Charts Calendar Statistics Settings

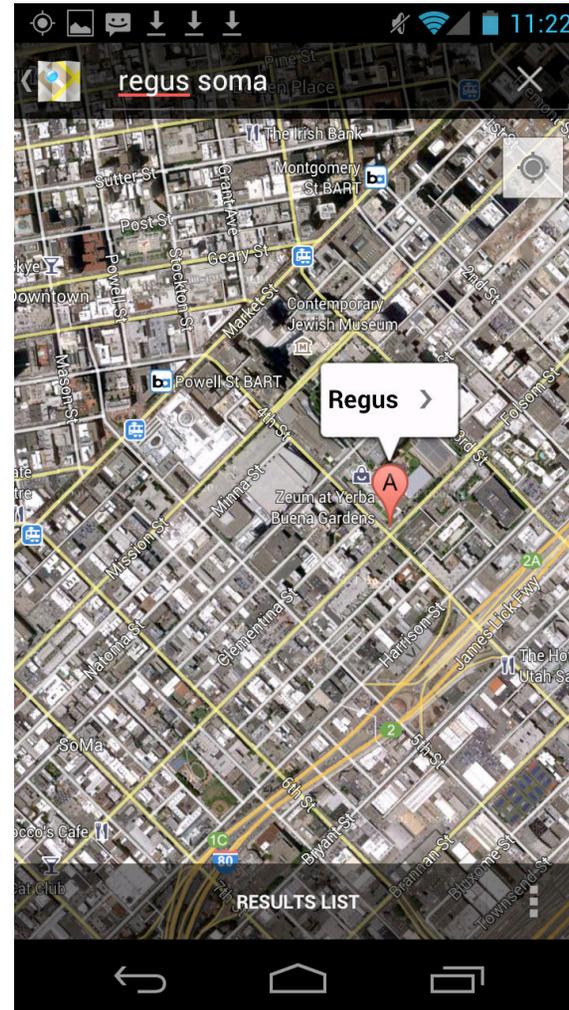


iPhone vs. Android UI

iPhone

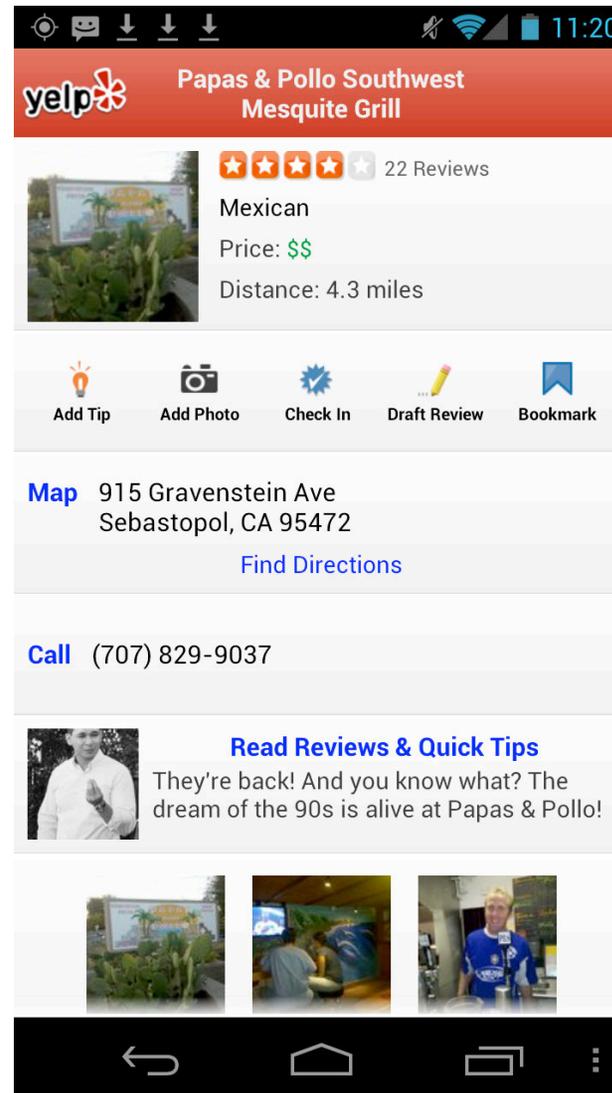
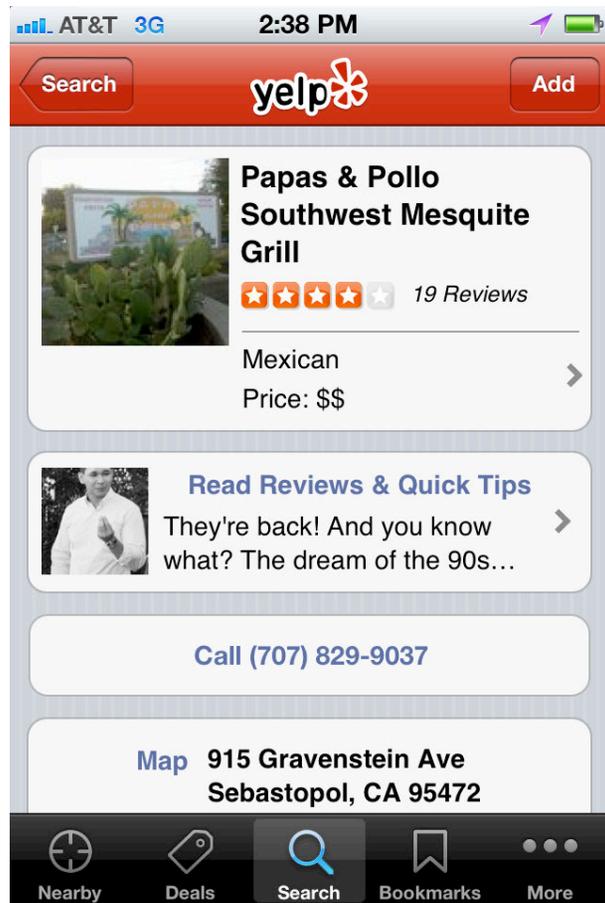


Android

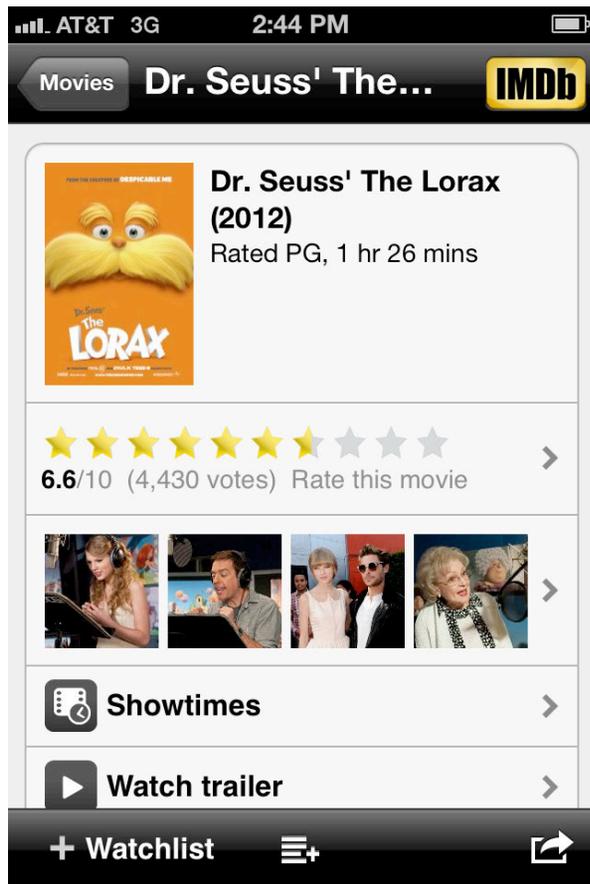


Android

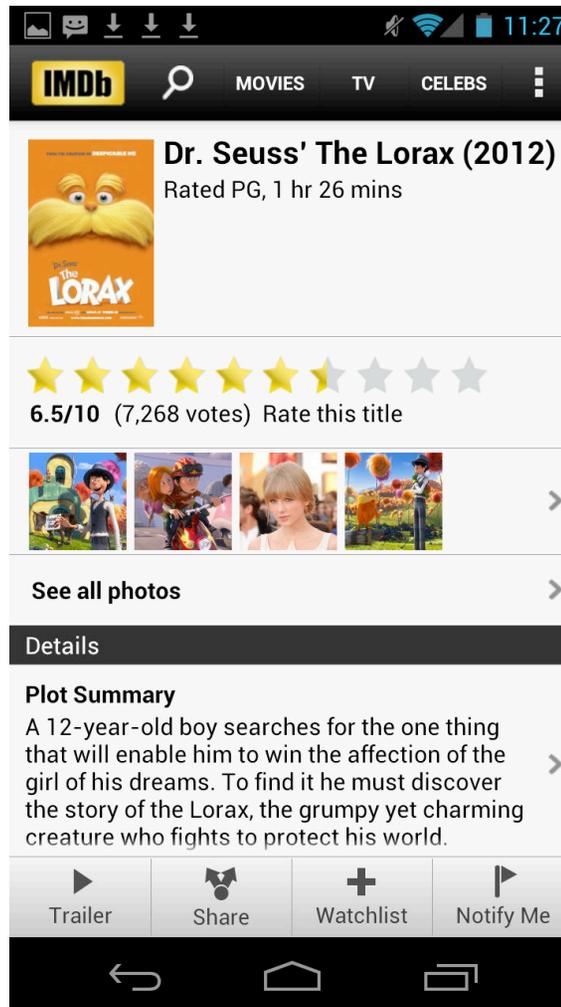
iPhone



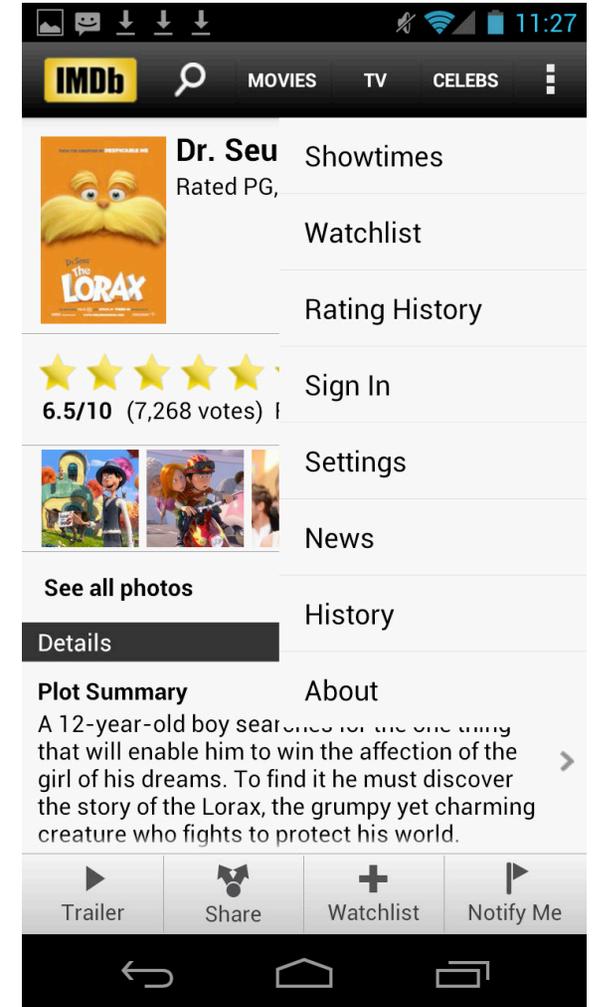
iPhone



Android



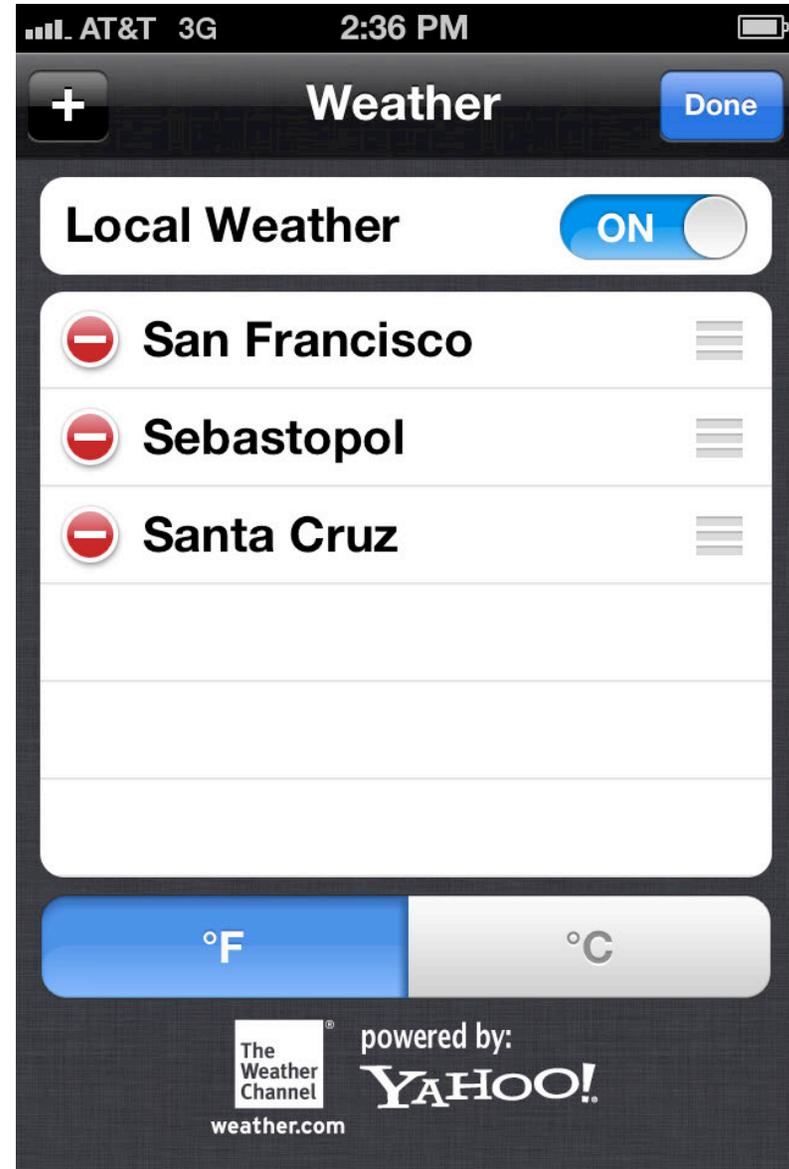
Menu



Multi-Panel Display Page



Info Sheet (Settings)



iOS Action Sheet



Approaches for App Building

- From the easiest to the most challenging
 - Web-based app builders (GUI)
 - Web app plus PhoneGap (HTML, CSS, JavaScript)
 - Titanium app (JavaScript)
 - True native app (Objective C, Java, or C#)

Simple App Builders

- Let you build apps with zero technical knowledge in just a few minutes
- Limited flexibility, but enough for simple needs
- Many choices
 - <http://www.businessapps.com/>
 - <http://www.theappbuilder.com/>
 - <http://www.appmakr.com/>
 - <http://www.widgetbox.com/mobile/>

Widgetbox App Builder

The screenshot displays the Widgetbox App Builder interface. At the top, a dark blue navigation bar contains the logo 'widgetbox powered by FLITE' and menu items: 'Mobile', 'Widgets', 'Pricing', and 'Dashboard'. On the right side of this bar are buttons for 'Join Now' and 'Sign In'. Below this is a secondary navigation bar with 'Overview', 'Gallery', 'Make an App', and a search bar labeled 'Find Mobile Apps'. To the right of the search bar are links for 'About Us', 'Our Blog', and 'Support'.

The main content area is titled 'Mobile Web App' and includes the text: 'Create a mobile web app that visitors can access on the iPhone and Android smartphones.' A green button on the right says 'Save & Start Trial no credit card required'. Below this, a status bar shows 'Status: Draft' and 'Your current plan level is Gold. Change Plan'. A handwritten note says 'Check out some other plan levels!'. The interface is divided into two main sections: a configuration panel on the left and a mobile device preview on the right.

The configuration panel on the left has several sections:

- APP TITLE:** A text input field containing 'New App' and a 'HEADER:' section with radio buttons for 'Title' (selected) and 'Image...'.
- PAGES:** A section with a dark grey bar that says 'Choose a page type below to get started.' Below it is an 'Add New Page' section with a green arrow pointing to a row of icons: RSS, Twitter, YouTube, a document icon, a green checkmark icon, a purple document icon, a blue refresh icon, and a 'MORE' button.
- NAVIGATION STYLE:** Radio buttons for 'Bottom Tab Menu' (selected), 'Top Tab Menu', and 'Menu List'.
- THEME:** A section with the text 'Choose a Theme: Glossy Blue' and a row of theme preview icons: 'Glossy Blue' (selected), a dark grey theme, a light grey theme, a dark grey theme with a grid pattern, and a 'MORE' button.

The mobile device preview on the right shows a smartphone screen. The status bar at the top of the screen displays 'AT&T 3G', '9:42 AM', and a battery icon. The app title 'New App' is centered at the top of the screen. Below the title is a white box with the text 'Your app has no pages, add some pages.' A green starburst sticker on the top right of the screen says 'TRY ME! I'M A LIVE PREVIEW'. To the right of the phone are two device icons: 'iPhone iPod touch' and 'Android 2.0 devices'.

BusinessApps Setup Flow

The screenshot displays the BusinessApps website dashboard. At the top, there is a navigation bar with social media links (Like, Send) and a notification that 16,070 people like the page. On the right side of the top bar are buttons for 'Publish Your App', 'Contact Us', and 'Log Out'. Below this is a teal header with the 'BusinessAPPS' logo and the tagline 'MOBILE APPS FOR BUSINESSES MADE EASY'. A secondary navigation bar contains links for 'Dashboard', 'Messages', 'Analytics', 'Help Desk', 'Tutorials', and 'QR Codes'. The main content area is titled 'Dashboard' and includes the subtext 'Create your small business - a mobile app in 5 easy steps' and a 'Need help?' button. A large teal banner features the text 'Business Apps' and 'PREMIUM BUILD WIZARD', along with a 'Start Here' button. A speech bubble contains the text 'We're the easiest way for any business to create mobile apps.' and a guarantee: 'GUARANTEED OR WE'LL BUILD IT FOR YOU!'. At the bottom, a row of five icons represents the setup steps: 'FUNCTIONALITY' (gear icon), 'CONTENT' (document icon), 'APPEARANCE' (three circles icon), 'PREVIEW' (magnifying glass icon), and 'PUBLISH' (arrow icon).

Pick Your App Features



Industry ?

Food & Dining

App Name ?

App Icon Name ?

Recommended

- Home
- Messages
- Order
- Loyalty
- QR Coupon
- Check In!
- Food Cam

Optional

- Menu
- Events
- Tip Calculator
- Twitter
- Location
- Specials
- Facebook
- Blog
- Newsletter
- About Us
- Image Gallery

SAVE FEATURES AND CONTINUE



1. FUNCTIONALITY
Customize App Tabs



2. CONTENT
Customize App Content



3. APPEARANCE
Customize App Appearance



4. PREVIEW
Preview Your Applications



5. PUBLISH
Publish To App Stores

40%

Home

Menu

Events

Order

Twitter

Location

Loyalty

Facebook

QR Coupon

Check In!

Food Cam

Fan Wall

About Us

Around us

Image Gallery

Testimonials

Yelp!

Show Buttons: ?



Call Button



Direction Button



Tell Friend Button

Save Preference

Add New Sub Tab

Locations ?

Add new Location

Delete

Mobile Background (640 x 840 pixels)

Select Device : Mobile

Choose File No file chosen

Upload Image

YOUR BUSINESS DETAILS (set opening times)

Website ?

Address 1 ?

Address 2 ?



1. FUNCTIONALITY

Customize App Tabs



2. CONTENT

Customize App Content



3. APPEARANCE

Customize App Appearance



4. PREVIEW

Preview Your Applications



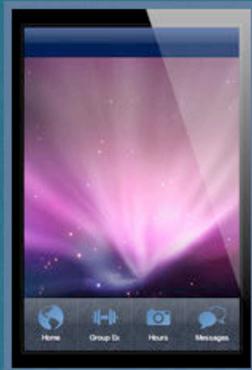
5. PUBLISH

Publish To App Stores

60%

Choose a menu style

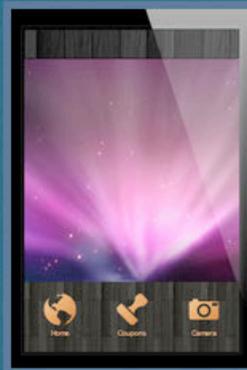
Filter menu styles:



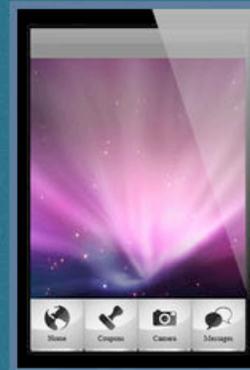
Single Row 1



Single Row 2

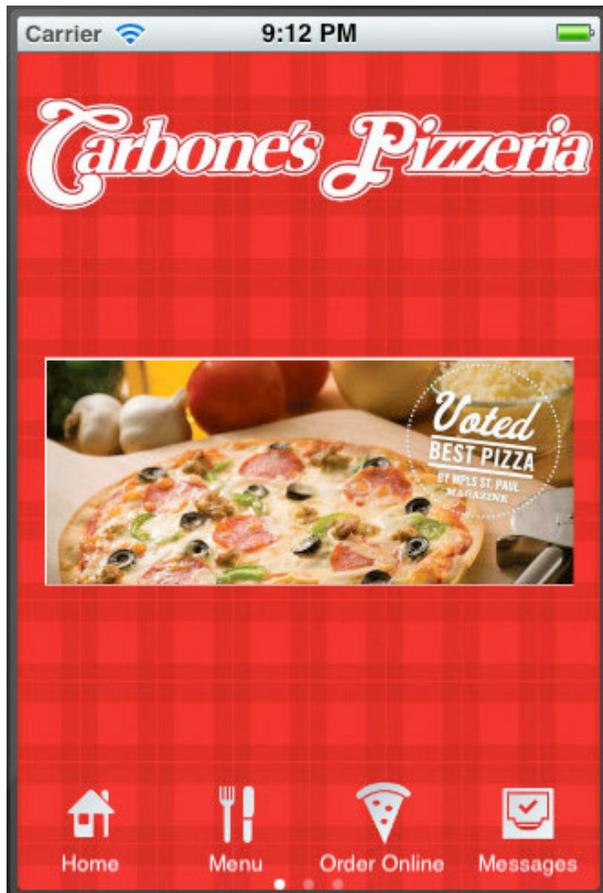


Single Row 3



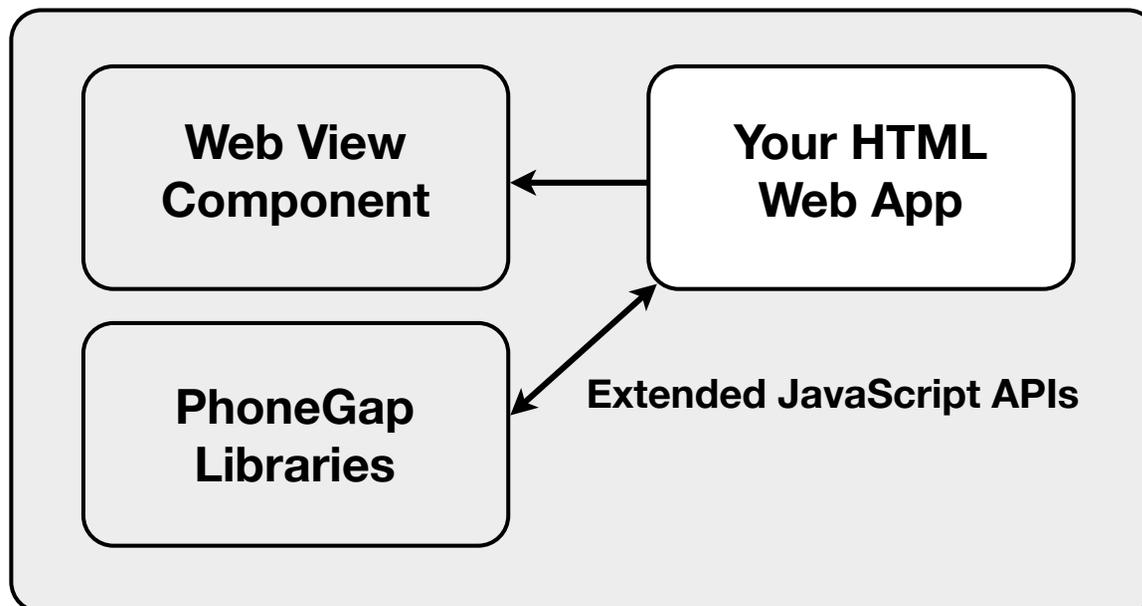
Single Row 4





Using Web Technologies for Native Apps

- Combine toolkit such as PhoneGap with HTML/CSS/JS to build "native" apps without native code
- Much more flexible than simple app builders, yet much simpler than true native app development



Native App

PhoneGap (aka Cordova)

How **PhoneGap** Works



Build your app once with **web-standards**

Based on HTML5, PhoneGap leverages web technologies developers already know best... HTML and JavaScript.



Wrap it with **PhoneGap**

Using the free open source framework or PhoneGap build you can get access to native APIs.



Deploy to **multiple** platforms!

PhoneGap uses standards-based web technologies to bridge web applications and mobile devices.

	 iPhone / iPhone 3G	 iPhone 3GS and newer	 Android	 OS 5.x	 OS 6.0+	 WebOS	 WP7	 Symbian	 Bada
ACCELEROMETER	✓	✓	✓	✓	✓	✓	✓	✓	✓
CAMERA	✓	✓	✓	✓	✓	✓	✓	✓	✓
COMPASS	✗	✓	✓	✗	✗	✗	✓	✗	✓
CONTACTS	✓	✓	✓	✓	✓	✗	✓	✓	✓
FILE	✓	✓	✓	✓	✓	✗	✓	✗	✗
GEOLOCATION	✓	✓	✓	✓	✓	✓	✓	✓	✓
MEDIA	✓	✓	✓	✗	✗	✗	✓	✗	✗
NETWORK	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTIFICATION (ALERT)	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTIFICATION (SOUND)	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTIFICATION (VIBRATION)	✓	✓	✓	✓	✓	✓	✓	✓	✓
STORAGE	✓	✓	✓	✓	✓	✓	✓	✓	✗



Video Tutorials:



1. Requirements

- Intel-based computer with Mac OS X Snow Leopard (10.6)

Necessary for Installing on Device:

- An Apple iOS device (iPhone, iPad, iPod Touch)
- iOS developer certification

2. Install SDK + PhoneGap



Download and install Xcode from [Apple Developer Portal](#) (Membership required)



[Download](#) the latest copy of PhoneGap and extract its contents. Navigate to the iOS directory and run the installer until completion.

Video Tutorials:



1. Requirements

- Eclipse 3.4+

There is also a [Terminal](#) version of this tutorial that doesn't use Eclipse.

2. Install SDK + PhoneGap



Download and install [Eclipse Classic](#)



Download and install [Android SDK](#)



Download and install [ADT Plugin](#)



[Download](#) the latest copy of PhoneGap and extract its contents. We will be working with the Android directory.

PhoneGap JS APIs

Accelerometer

Tap into the device's motion sensor.

Compass

Obtain the direction that the device is pointing.

Device

Gather device specific information.

Geolocation

Make your application location aware.

Storage

Hook into the devices native storage options.

Camera

Capture a photo using the device's camera.

Connection

Quickly check the network state, and cellular network information.

Events

Hook into native events through JavaScript.

Media

Record and play back audio files.

Capture

Capture media files using device's media capture applications.

Contacts

Work with the devices contact database.

File

Hook into native file system through JavaScript.

Notification

Visual, audible, and tactile device notifications.

JavaScript APIs Provide Bridge to Native Devices

- Access devices and events through JavaScript, effectively extending the browser's API
- Examples
 - `camera.getPicture`
 - `accelerometer.getCurrentAcceleration`
 - `compass.getCurrentHeading`
 - `contacts.find`, `contacts.add`
 - `online`, `offline`
 - `menubutton`
 - `notification.alert`, `notification.bEEP`, `notification.vibrate`

PhoneGap Example

- See Lesson 4 code files on the course portal
- Take the jQuery Mobile example from Lesson 3 and
 - Store the jQuery and jQuery Mobile files locally
 - Load the Cordova (PhoneGap) JavaScript file
 - Change main page filename to index.html
- Install XCode, then PhoneGap
- XCode > New > Project > Cordova-Based App
- Copy all the example files to the www folder

Appcelerator Titanium

- Allows you to build cross-platform mobile apps with JavaScript
 - HTML/CSS optional; views not necessarily web-based
 - User interfaces created programmatically
- More powerful, more flexible, and more to learn, compared with PhoneGap
- Access to native UI widgets (not just browser widgets) through JavaScript APIs



Getting Started with Titanium

- Lots of tutorials on Appcelerator site
 - <http://training.appcelerator.com>
- Appcelerator provides online marketplace for free and paid app components
 - <http://marketplace.appcelerator.com>
- Some "starter apps" available (like website themes)
 - <http://codecanyon.net/category/mobile/titanium>

Dealing with App Stores

- In the Apple world, approval by the App Store is everything
 - No other mass-market distribution method
- Apple has strict (but not necessarily clear) rules that are unilaterally enforced
- Need to follow Apple's guidelines, be willing to pay their cut on any commerce, submit your app, and then wait and hope
- In the Android world, it's relatively open and chaotic



Other Distribution Methods

- As an iOS developer (\$99/year), you can install development versions of apps on your own phone
- iOS enterprise developer program allows you to build apps and deploy them to any number of devices that you control, bypassing App Store
- For Android phones, no controls over distribution methods or apps
 - Google runs App Store as part of Google Play
 - Amazon Appstore, androidPIT.com, ...

Go Forth and Build Something!

- The only way to get started is to start!
- Pick something simple to build and build it
- Use an online, no-coding app builder if you don't want to mess with any code
- Try PhoneGap with jQuery Mobile if you're willing to deal with a little HTML, CSS, and JavaScript and want more flexibility
- If you long to program, set up Titanium with one of its sample apps, or try a native iOS app example