



# Social Media Apps Programming

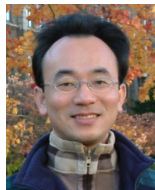
## Introduction to Android / iOS Apps Programming

1051SMAP02

TLMXM1A (8648) (M2143) (Fall 2016)

(MIS MBA) (2 Credits, Elective) [Full English Course]

Wed 8,9 (15:10-17:00) B310



Min-Yuh Day, Ph.D.

Assistant Professor

Department of Information Management

Tamkang University

<http://mail.tku.edu.tw/myday>



# Course Schedule (1/3)

Week	Date	Subject/Topics
1	2016/09/14	Course Orientation and Introduction to Social Media and Mobile Apps Programming
2	2016/09/21	Introduction to Android / iOS Apps Programming
3	2016/09/28	Developing Android Native Apps with Java (Eclipse) (MIT App Inventor)
4	2016/10/05	Developing iPhone / iPad Native Apps with Swift (XCode)
5	2016/10/12	Mobile Apps using HTML5/CSS3/JavaScript
6	2016/10/19	jQuery Mobile

# Course Schedule (2/3)

Week	Date	Subject/Topics
7	2016/10/26	Create Hybrid Apps with Phonegap
8	2016/11/02	jQuery Mobile/Phonegap
9	2016/11/09	jQuery Mobile/Phonegap
10	2016/11/16	Midterm Exam Week (Midterm Project Report)
11	2016/11/23	Case Study on Social Media Apps Programming and Marketing in Google Play and App Store
12	2016/11/30	Invited Speaker: Prof. Yoshinobu Kano, Associate Professor, Faculty of Informatics, Shizuoka University

# Course Schedule (3/3)

Week	Date	Subject/Topics
13	2016/12/07	Google Cloud Platform
14	2016/12/14	Google App Engine and Google Map API
15	2016/12/21	Facebook API (Facebook JavaScript SDK) (Integrate Facebook with iOS/Android Apps)
16	2016/12/28	Twitter API
17	2017/01/04	Final Project Presentation
18	2017/01/11	Final Exam Week (Final Project Presentation)

# Android /iOS Apps Programming

Native Apps

Hybrid Apps

Mobile Web Apps



# Android / iOS Apps Programming

- Native Apps
- Mobile Apps (Web Apps)
- Hybrid Apps

# App Development Comparison



Native Apps



Hybrid Apps



Web Apps



# Hybrid Apps

## Mobile Apps, Native Apps





# HTML5 vs. Hybrid vs. Native Apps



**39%**

**SPEND TIME DEVELOPING  
THE SAME APP/FEATURE FOR  
MULTIPLE PLATFORMS**



**HTML5 is #1**

**CHOICE FOR BUILDING APPS FOR  
MULTIPLE MOBILE PLATFORMS**

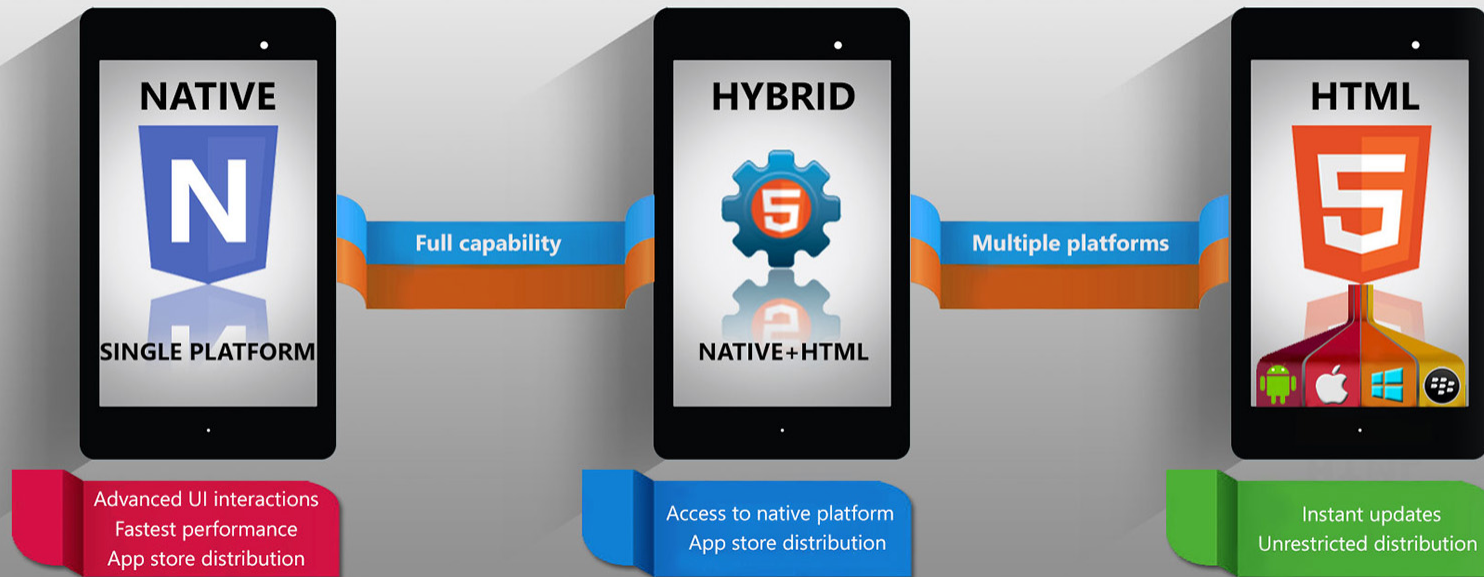


Source: KendoUI.com

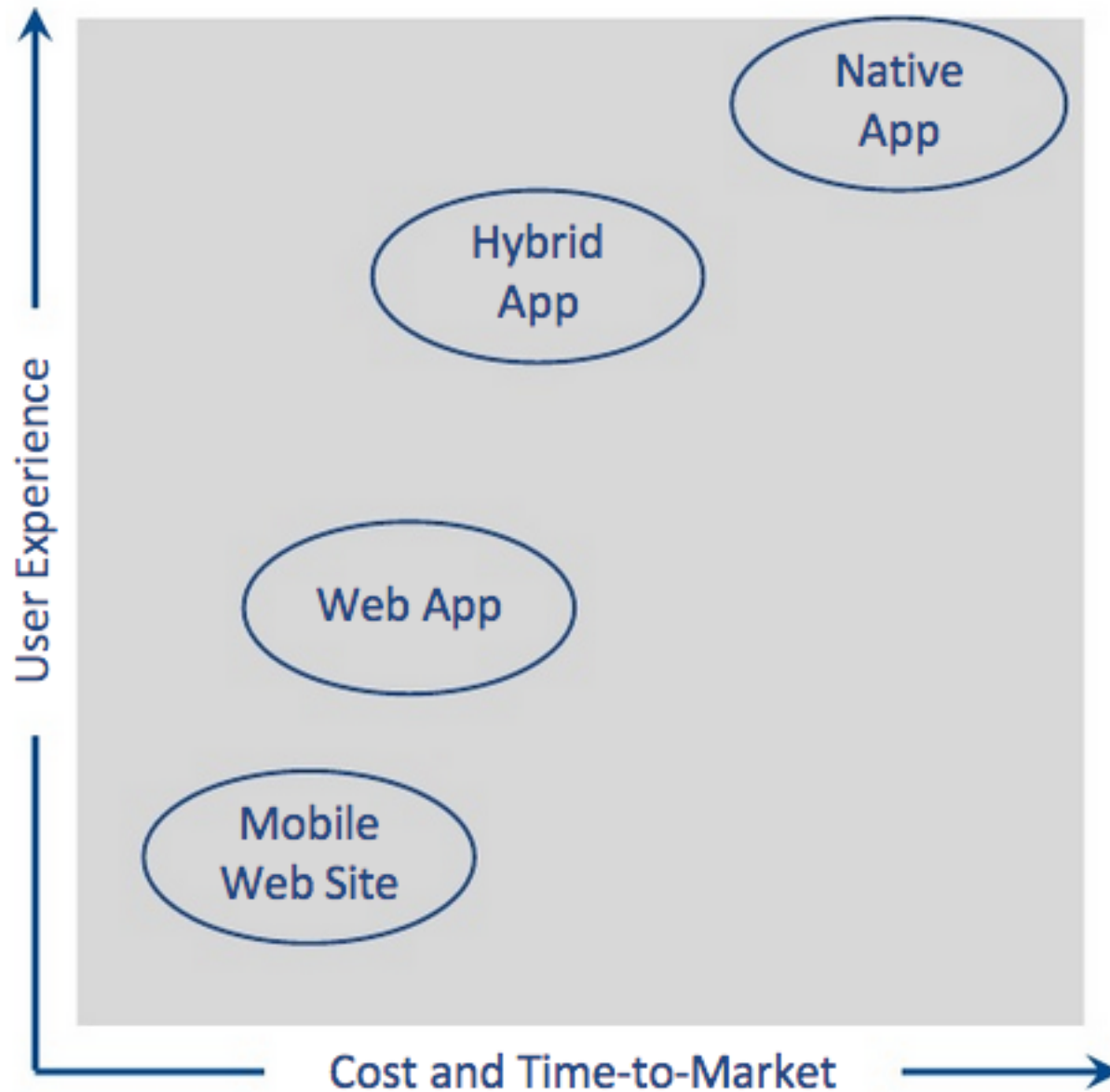
# Native Mobile app

## Hybrid Mobile App

### Responsive Web



# Native Apps vs. Hybrid Apps

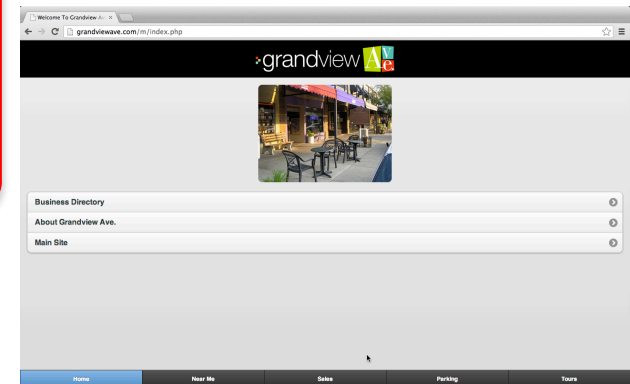
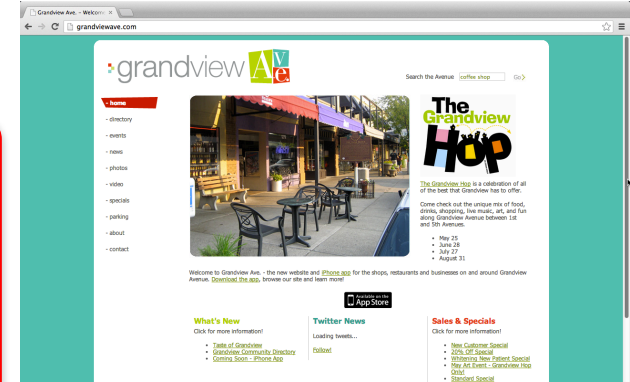
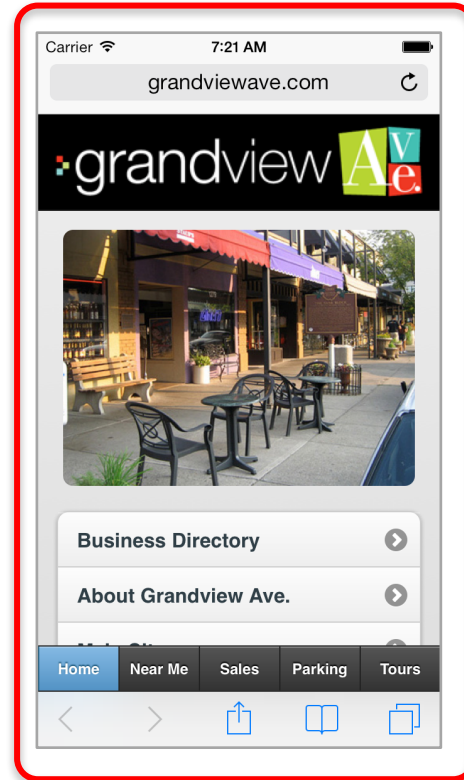


# Mobile Apps

- Mobile Website
  - Classic Website

- **Mobile Apps**
  - Web Apps

- Responsive Web Design (RWD)



# Mobile Website Classic Website

Grandview Ave. - Welcome x  
grandviewave.com

grandview **AV**e

Search the Avenue  Go >

- home
- directory
- events
- news
- photos
- video
- specials
- parking
- about
- contact

**The Grandview Hop**

The Grandview Hop is a celebration of all of the best that Grandview has to offer.

Come check out the unique mix of food, drinks, shopping, live music, art, and fun along Grandview Avenue between 1st and 5th Avenues.

- May 25
- June 28
- July 27
- August 31

Welcome to Grandview Ave. - the new website and [iPhone app](#) for the shops, restaurants and businesses on and around Grandview Avenue. [Download the app](#), browse our site and learn more!

Available on the App Store

**What's New**  
Click for more information!

- [Taste of Grandview](#)
- [Grandview Community Directory](#)
- [Coming Soon - iPhone App](#)

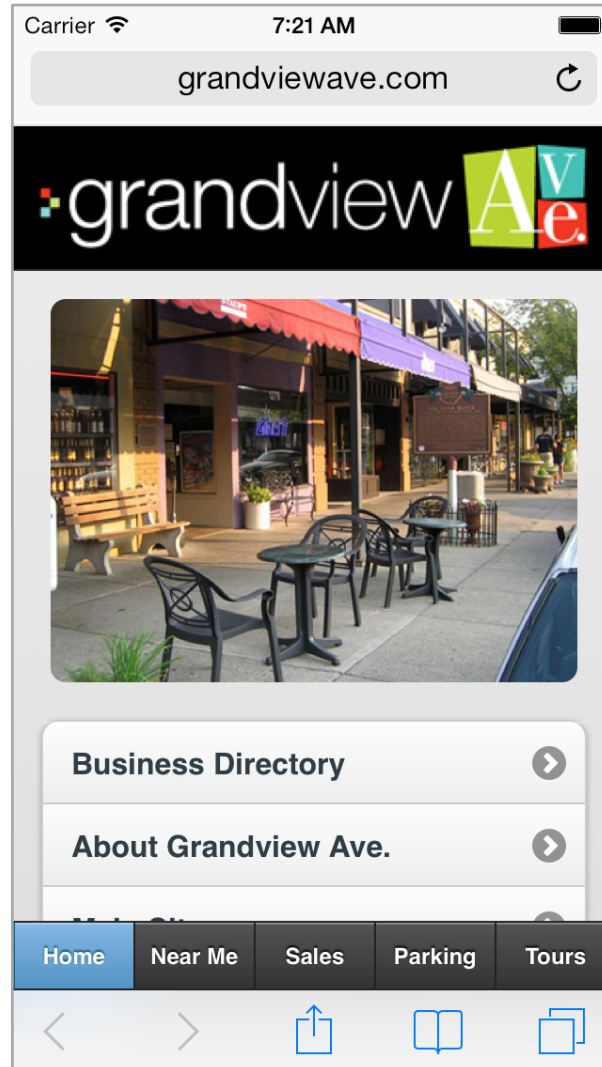
**Twitter News**  
Loading tweets...  
[Follow!](#)

**Sales & Specials**  
Click for more information!

- [New Customer Special](#)
- [20% Off Special](#)
- [Whitening New Patient Special](#)
- [May Art Event - Grandview Hop Only!](#)
- [Standard Special](#)

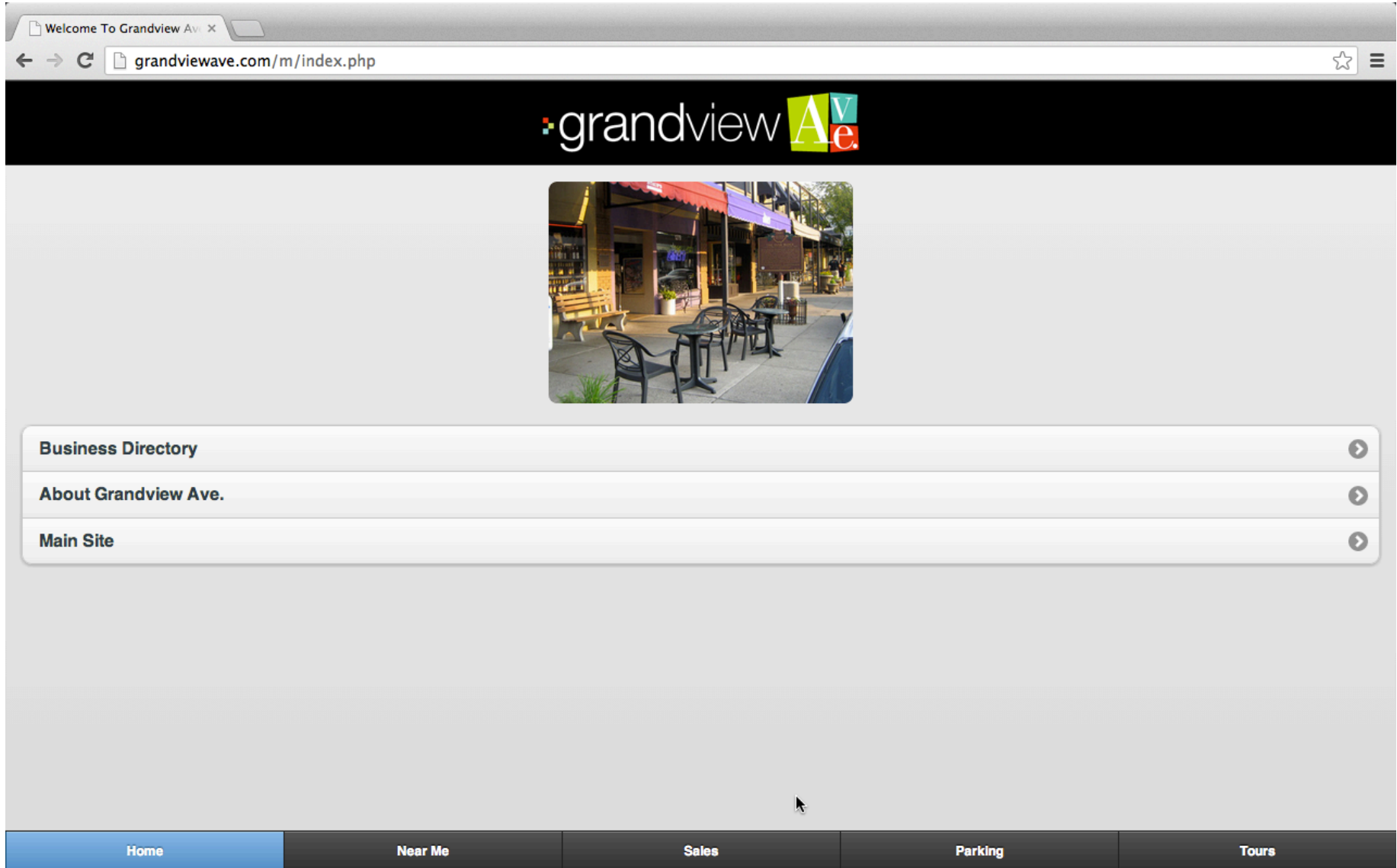
<http://grandviewave.com/>

# Mobile Apps (Web Apps)



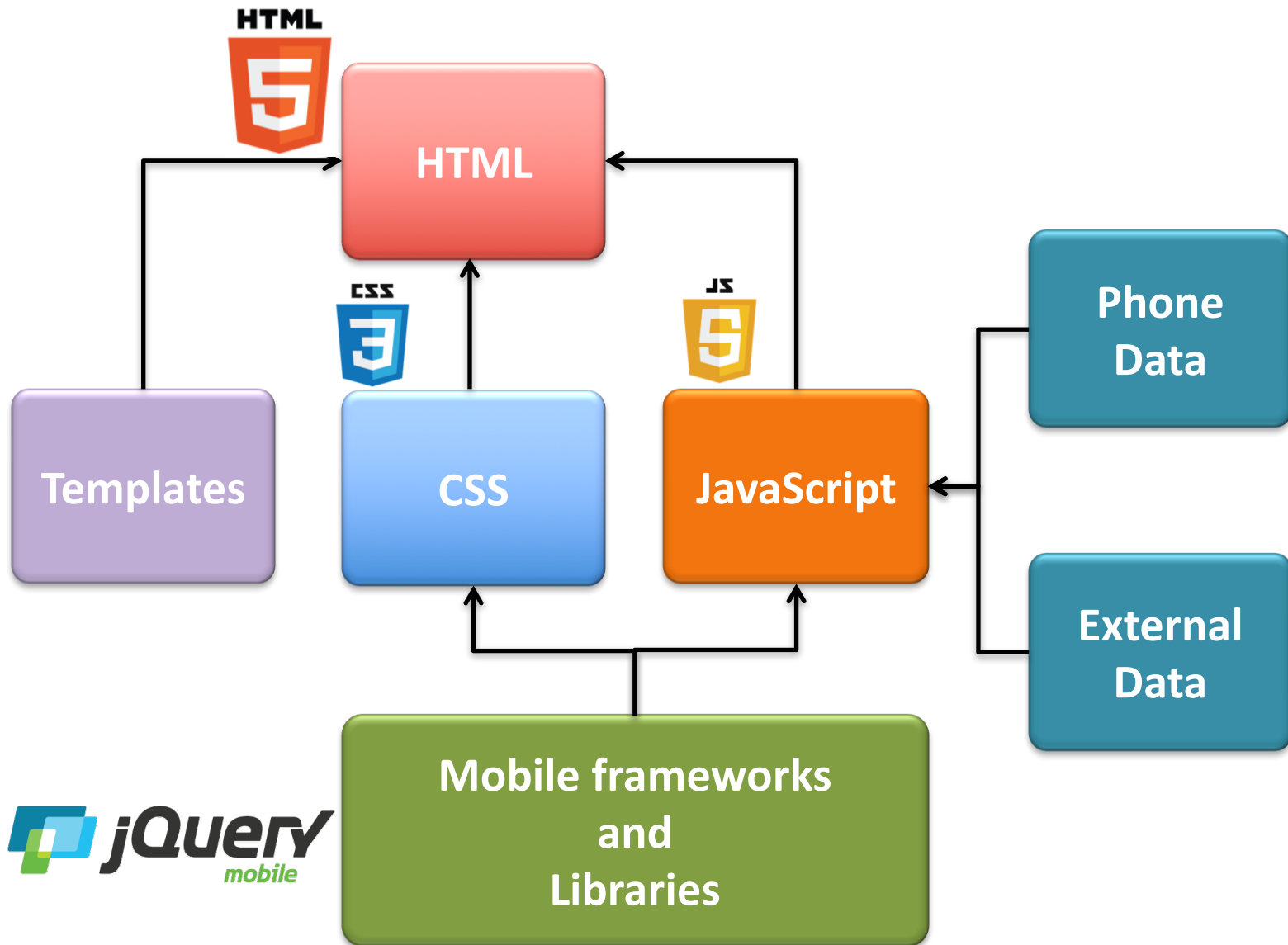
<http://grandviewave.com/>

# Responsive Web Design (RWD)



<http://grandviewave.com/m/>

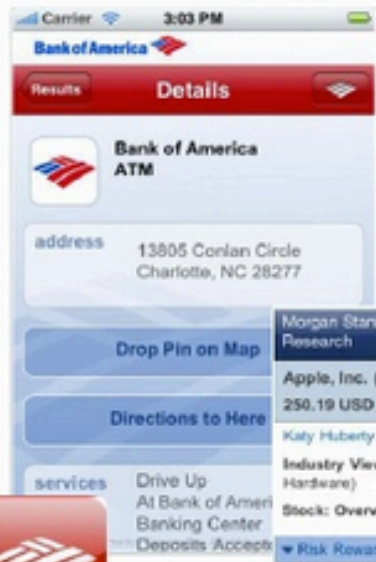
# Mobile Web App





# Hybrid App Examples

Bank of America



Facebook



Morgan Stanley

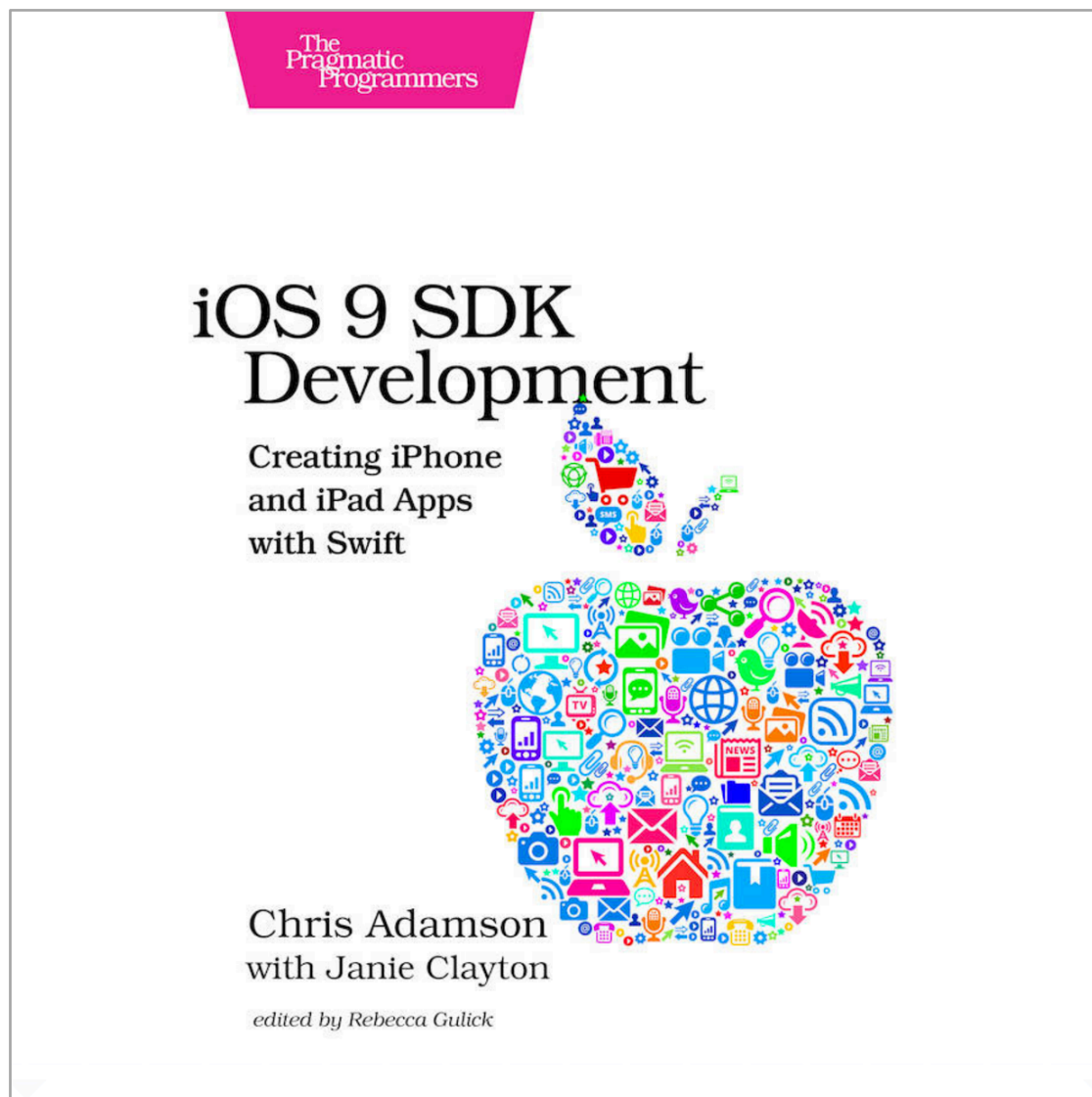


Lotte Card (Korea)

# Examples of Purely-Native Mobile Apps

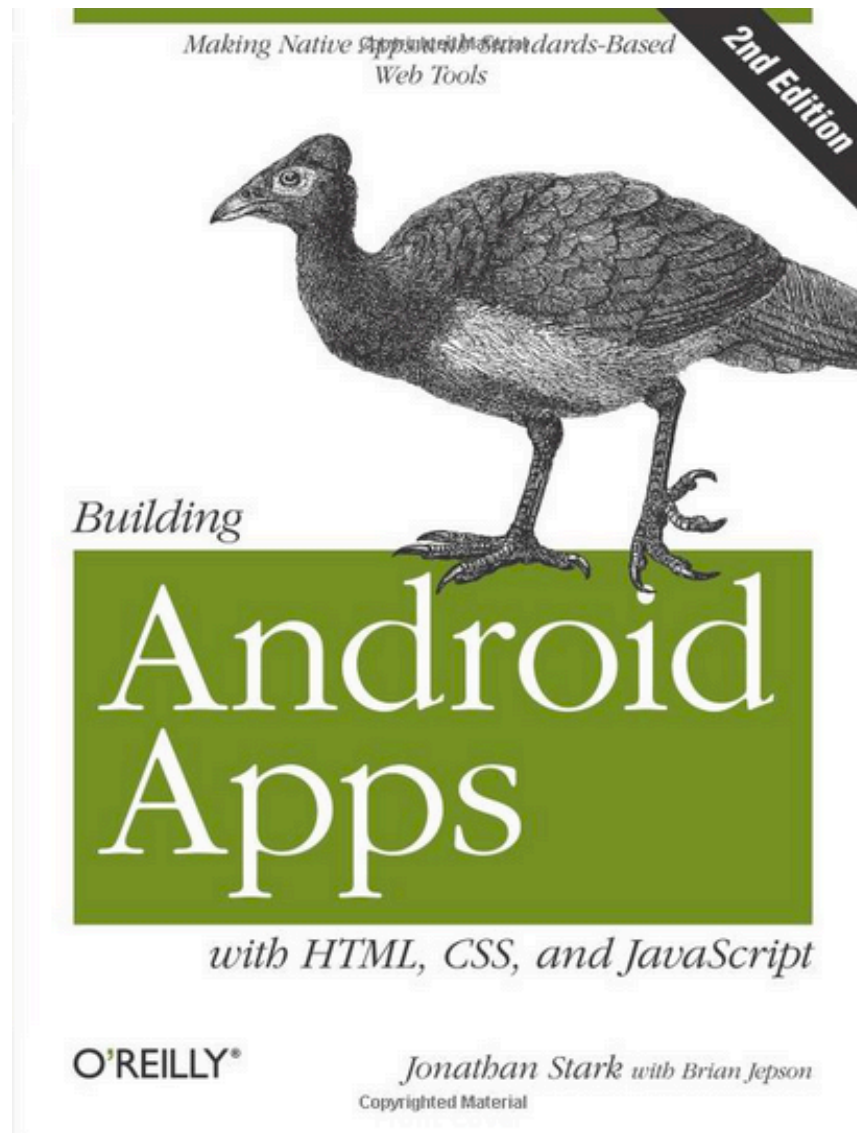


Chris Adamson and Janie Clayton,  
**iOS 9 SDK Development: Creating iPhone and iPad Apps with Swift,**  
Pragmatic Bookshelf, 2016



# Building Android Apps with HTML, CSS, and JavaScript: Making Native Apps with Standards-Based Web Tools, J

onathan Stark & Brian Jepson, O'reilly, 2012



# Building iPhone Apps with HTML, CSS, and JavaScript: Making App Store Apps Without Objective-C or Cocoa,

Jonathan Stark, O'Reilly, 2010

*Making App Store Apps Without Objective-C or Cocoa*



*Building*

iPhone  
Apps

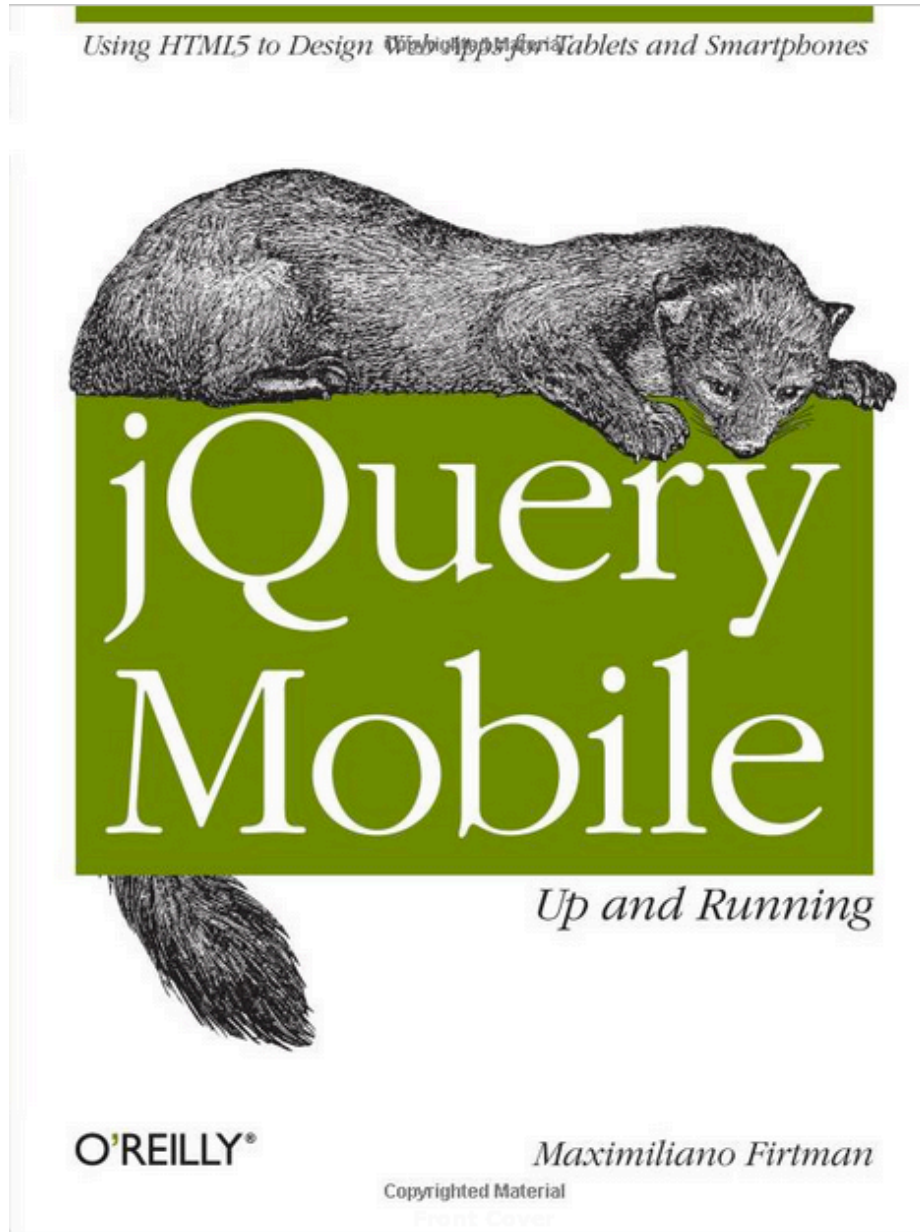
*with HTML, CSS, and JavaScript*

O'REILLY®

*Jonathan Stark*

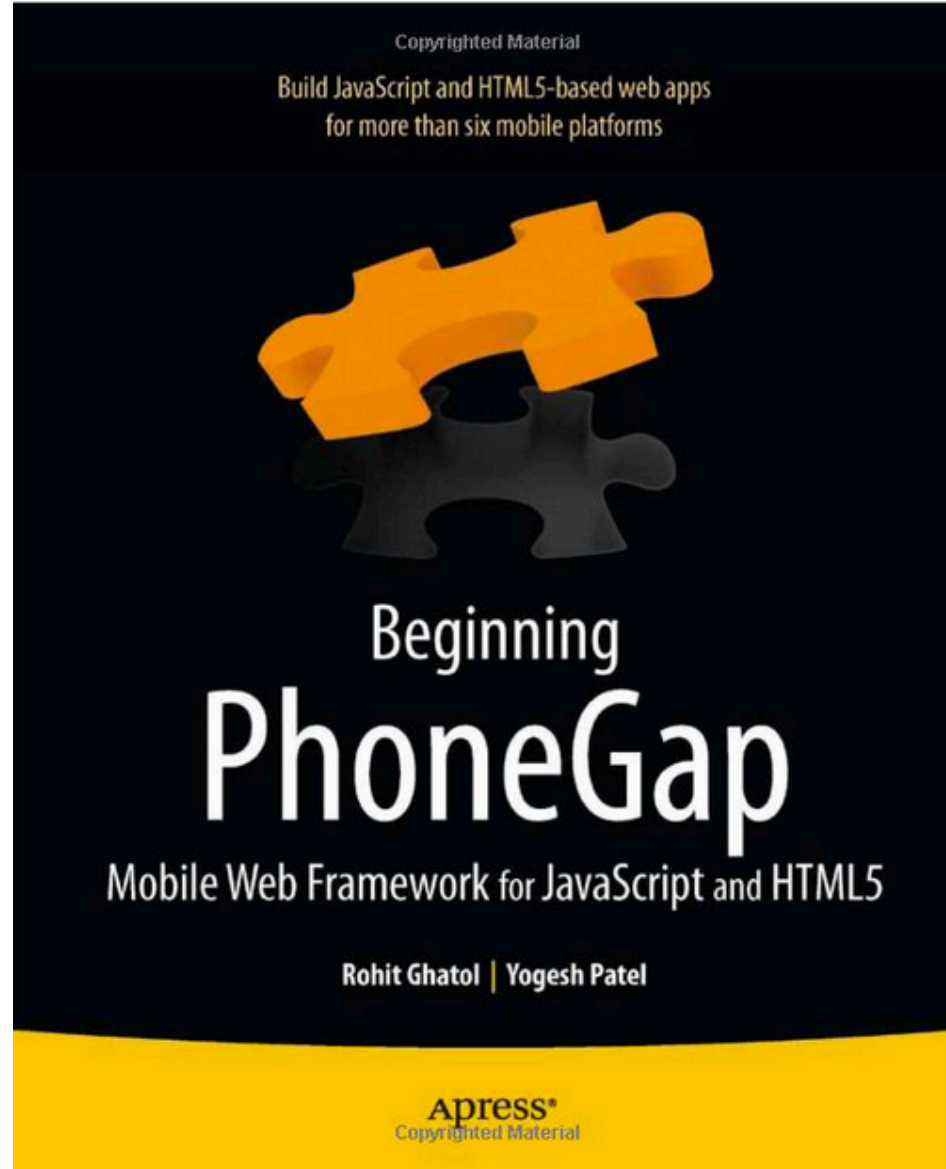
Copyrighted Material

Jon Reid, **jQuery Mobile**, O'reilly, 2012



Source: <http://www.amazon.com/jquery-Mobile-Running-Maximiliano-Firtman/dp/1449397654>

Rohit Ghatol and Yogesh Patel, [Beginning PhoneGap: Mobile Web Framework for JavaScript and HTML5](#), Apress, 2012



# Responsive Design

## HTML5/CSS3/JavaScript





# jQuery Mobile

<http://jquerymobile.com/>

jquerymobile.com

Plugins

Contribute

Events

Support

jQuery Foundation



Your donations help fund the continued development and growth of jQuery.

[SUPPORT THE PROJECT](#)

[Demos](#) [Download](#) [API Documentation](#) [Themes](#) [Resources](#) [Blog](#) [About](#)

Search



## A Touch-Optimized Web Framework

jQuery Mobile is a HTML5-based user interface system designed to make responsive web sites and apps that are accessible on all smartphone, tablet and desktop devices.

### Download jQuery Mobile

[Custom download](#)

[Latest stable](#)

Version 1.4.5

jQuery 1.8 - 1.11 / 2.1

### Seriously cross-platform with HTML5

jQuery Mobile framework takes the "write less, do more" mantra to the next level: Instead of writing unique applications for each mobile device or OS, the jQuery mobile framework allows you to design a single highly-branded responsive web site or application that will work on all popular smartphone, tablet, and desktop platforms.

[Browser Support](#)



### Developer Links

- [Source Code \(GitHub\)](#)
- [jQuery Mobile Git \(WIP Build\)](#)
  - [JavaScript](#)
  - [CSS](#)
- [Report an issue](#)
- [Browser Support](#)
- [Changelog](#)

# Bootstrap

<http://getbootstrap.com/>



Aww yeah, Bootstrap 4 is coming!

[Bootstrap](#)

[Getting started](#)

[CSS](#)

[Components](#)

[JavaScript](#)

[Customize](#)

[Themes](#)

[Expo](#)

[Blog](#)



Bootstrap is the most popular HTML, CSS, and JS framework for developing responsive, mobile first projects on the web.

[Download Bootstrap](#)

Currently v3.3.7



Speed up your design workflow with over 175 templates and 500 polished UI elements

ads via Carbon

# PhoneGap

<http://phonegap.com/>

← → ↻ ⓘ phonegap.com



 Adobe

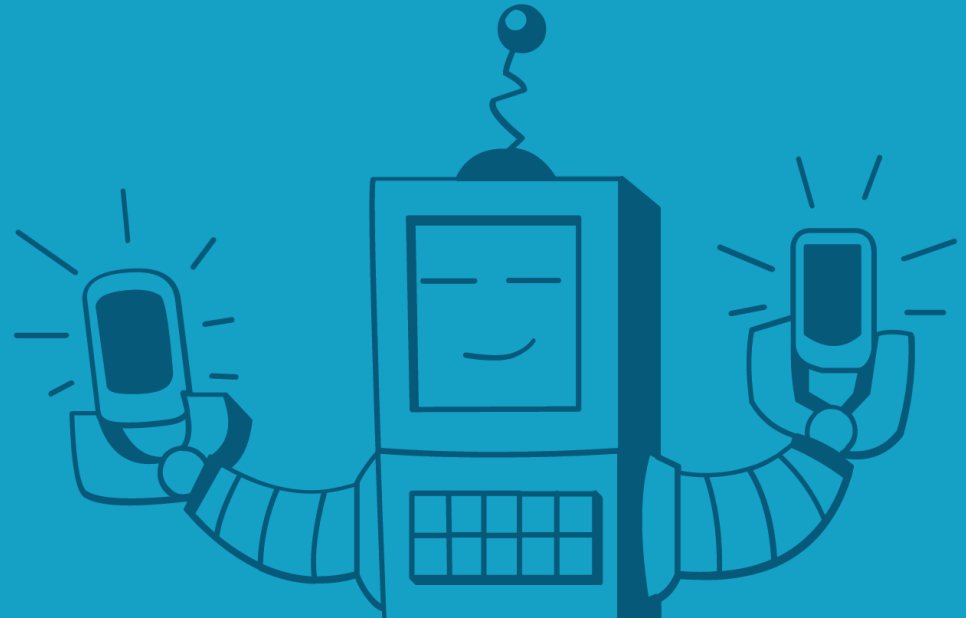
 Adobe PhoneGap

[Products](#) [Get Started](#) [Docs](#) [App Showcase](#) [Blog](#)

Build amazing mobile apps  
powered by open web tech.

[START NOW](#)

[LEARN MORE](#)



## Create your app with PhoneGap

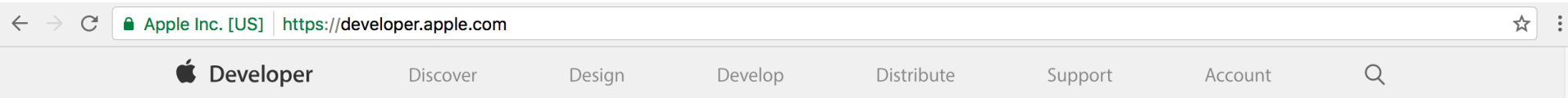
Reuse existing web development skills to quickly make hybrid applications built with HTML, CSS and JavaScript. Create experiences for multiple platforms with a single codebase so you can reach your audience no matter

## Package your app in the cloud

PhoneGap Build takes the pain out of compiling PhoneGap apps. Get app-store ready apps without the headache of maintaining native SDKs. Our PhoneGap Build service does the work for you by compiling in the cloud.

# Apple Developer

<https://developer.apple.com/>



## Submit Your Apps

Download Xcode 8, test your apps, and submit them to the App Store.

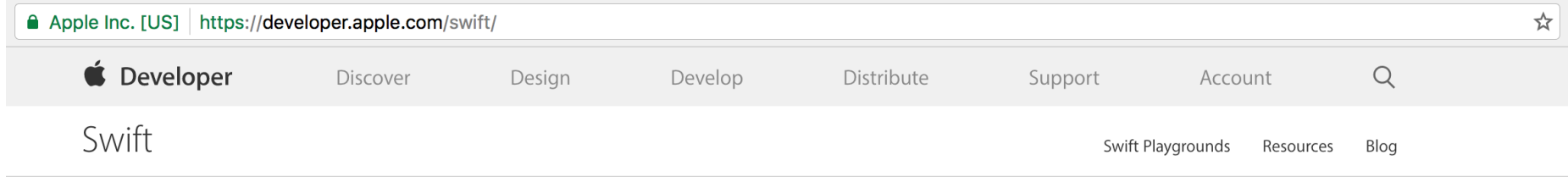


Everyone Can Code  
We're giving everyone the power  
to learn, write, and teach code.

Apple Pay  
An easier way to pay within  
apps and websites.

Apple Developer Program  
One membership. All Platforms.

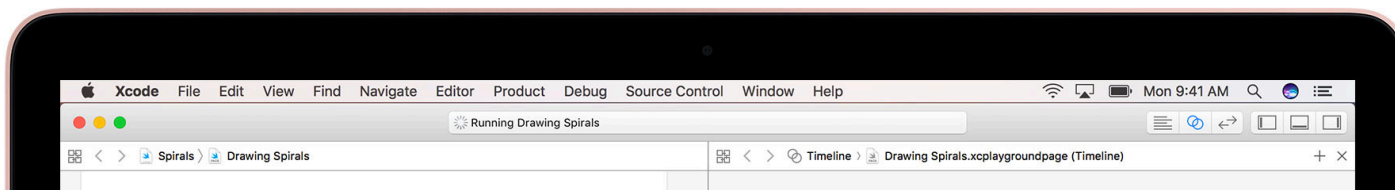
# Apple Swift for iOS



## Swift 3

The powerful programming language  
that is also easy to learn.

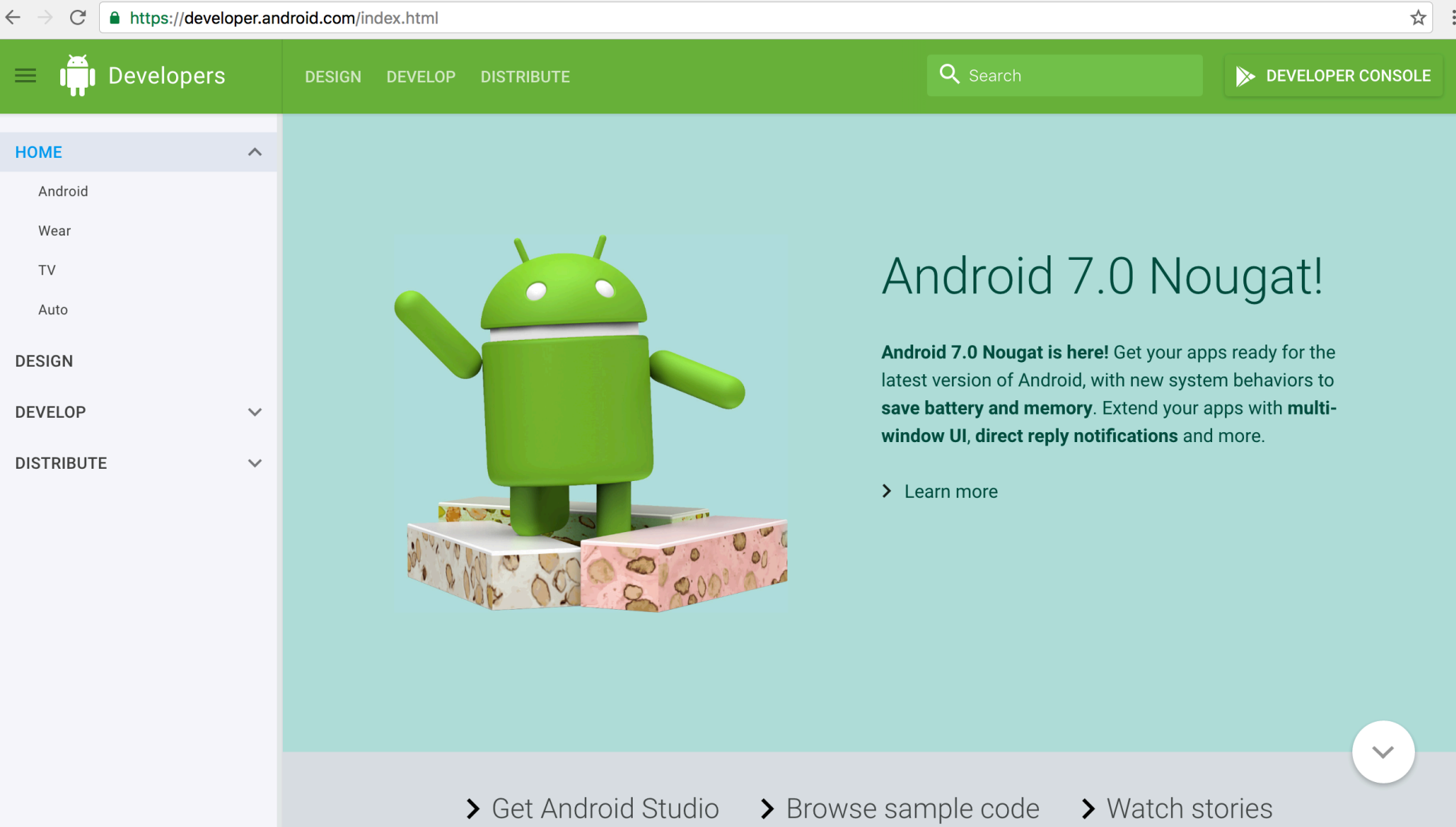
Swift is a powerful and intuitive programming language for macOS, iOS, watchOS and tvOS. Writing Swift code is interactive and fun, the syntax is concise yet expressive, and Swift includes modern features developers love. Swift code is safe by design, yet also produces software that runs lightning-fast.



Source: <https://developer.apple.com/swift/>

# Android Developer

<http://developer.android.com/>



The screenshot shows the Android Developer website interface. At the top, there is a green navigation bar with the Android logo and the word "Developers". Below this, there are three main categories: "DESIGN", "DEVELOP", and "DISTRIBUTE". A search bar is located on the right side of the navigation bar, and a "DEVELOPER CONSOLE" button is also present. On the left side, there is a sidebar menu with "HOME" selected, and sub-items for "Android", "Wear", "TV", and "Auto". Below the sidebar, there are sections for "DESIGN", "DEVELOP", and "DISTRIBUTE". The main content area features a large green Android robot character standing on a stack of Nougat candy pieces. To the right of the robot, the text reads "Android 7.0 Nougat!" followed by a paragraph: "Android 7.0 Nougat is here! Get your apps ready for the latest version of Android, with new system behaviors to **save battery and memory**. Extend your apps with **multi-window UI**, **direct reply notifications** and more." Below this text is a "Learn more" link. At the bottom of the page, there are three links: "Get Android Studio", "Browse sample code", and "Watch stories". A small circular button with a downward arrow is located in the bottom right corner.

https://developer.android.com/index.html

Developers

DESIGN DEVELOP DISTRIBUTE

Search

DEVELOPER CONSOLE

HOME ^

Android

Wear

TV

Auto

DESIGN

DEVELOP v

DISTRIBUTE v

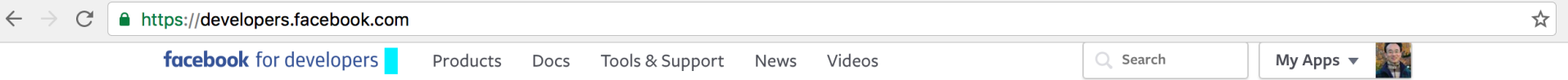
## Android 7.0 Nougat!

**Android 7.0 Nougat is here!** Get your apps ready for the latest version of Android, with new system behaviors to **save battery and memory**. Extend your apps with **multi-window UI**, **direct reply notifications** and more.

> Learn more

> Get Android Studio > Browse sample code > Watch stories

# Facebook Developers



Connect on a global scale.  
Build, grow and monetize your apps with Facebook



## Facebook Login

Account Creation in two taps



## Sharing on Facebook

Promote your app or website organically



## Facebook Analytics for Apps

Understand how people use your app



## Mobile Monetization

Monetize your mobile app or mobile website with ads



## Messenger Platform

Build your bot to reach 1 billion people

<https://developers.facebook.com/>

# Integrate Facebook with your native iOS apps



**iOS**

Integrate Facebook with your native iOS apps.

<https://developers.facebook.com/>



# Facebook SDK for iOS

Facebook Developers | My Apps | Products | Docs | Tools & Support | News | Search in docs

- Graph API
- IOS SDK**
  - Getting Started
  - Calling the Graph API
  - Errors
  - FAQ & Troubleshooting
  - Changelog
  - Upgrade Guide
  - IOS 9
  - Reference
  - Downloads
  - Deprecated
- Android SDK
- JavaScript SDK
- PHP SDK
- Unity SDK

## Facebook SDK for iOS

Helps you build engaging social apps and get more installs.

[Download the SDK](#)

Includes Bolts, Audience Network, and Facebook frameworks. Requires iOS 7.

v4.6.0. See [Change Log](#) or [Upgrade Guide](#).

- [Read our iOS 9 guide](#)
- [Get Started on iOS](#)  
Basics for iOS
- [SDK Reference Docs](#)  
API Reference Docs



**In iOS SDK**

- More Getting Started Guides
- Related Resources

**Share**  
People on your app can share, send a message, or like content in your app. They can also share

**Login**  
People can sign in to your app with their Facebook Login.

# Integrate Facebook with your native Android apps.



## Android

Integrate Facebook with your native Android apps.

<https://developers.facebook.com/>

# Facebook SDK for Android

Facebook Developers | My Apps | Products | Docs | Tools & Support | News | Search in docs

- App Development
- APIs and SDKs
  - Graph API
  - iOS SDK
  - Android SDK**
    - Getting Started
    - Calling the Graph API
    - Changelog
    - Upgrade Guide
    - Reference
    - Downloads
    - Deprecated
  - JavaScript SDK
  - PHP SDK
  - Unity SDK

## Facebook SDK for Android


Helps you build engaging social apps and get more installs.

[Download the SDK](#)

Includes Audience Network, and Facebook packages. Requires Android API 15.

v4.6.0. See [Change Log](#) or [Upgrade Guide](#).

- [Get Started](#)  
Basic guide for Android
- [SDK Reference Docs](#)  
Reference Docs and sample code



**In Android SDK**  
Other Resources

### In Android SDK

**Login** | **Share**

People can easily sign in to your app with their | People using your app can share or send a

# Twitter Developers

<https://dev.twitter.com/>



 / Developers ▾

Search



English ▾

Sign in



# #HelloWorld

2 0 1 6

Learn how to build with the  
Twitter Platform

[View Event Locations](#)

Build the  
**Best Apps**



Tap into  
**Twitter**

Gain Unique  
**Insight**

Tweets by [@TwitterDev](#)

# Google Cloud Platform


← → ↻ <https://cloud.google.com> ☆




 Google Cloud Platform  [Console](#) 

[Why Google](#) [Products](#) [Solutions](#) [Launcher](#) [Pricing](#) [Customers](#) [Documentation](#) [Support](#) [Partners](#) [Try It Free](#) [Contact Sales](#)

## Build What's Next Better software. Faster.

- ✓ Use Google's core infrastructure, data analytics and machine learning.
- ✓ Secure and fully featured for all enterprises.
- ✓ Committed to open source and industry leading price-performance.

 [TRY IT FREE](#) [CONTACT SALES](#)

	<h3>Natural Language API</h3> <p>Analyze sentiment and entities with the Google Cloud NL API.</p> <p><a href="#">LEARN MORE</a></p>
	<h3>Cloud Webinar Series</h3> <p>Learn how to apply cloud technology to real world use cases.</p> <p><a href="#">SIGN UP NOW</a></p>
	<h3>Google Cloud Storage</h3> <p>Why you should add cloud storage to your data protection strategy.</p> <p><a href="#">DOWNLOAD WHITEPAPER</a></p>

# Google App Engine

← → ↻ <https://cloud.google.com/appengine/> ☆

 Google Cloud Platform

🔍 Search

Console



Why Google

**Products**

Solutions

Launcher

Pricing

Customers

Documentation

Support

Partners

Try It Free

Contact Sales



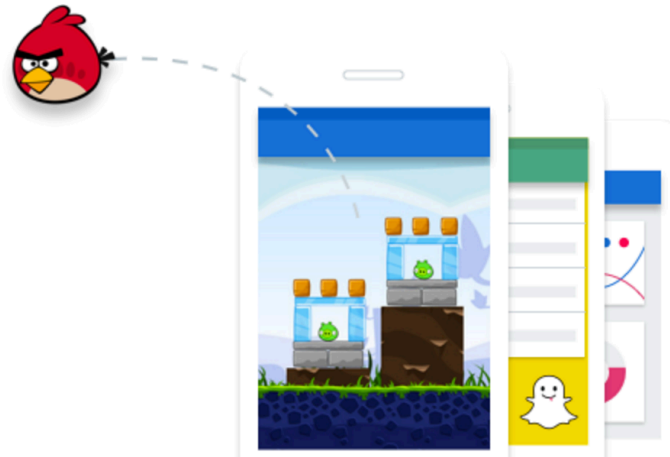
## APP ENGINE

A powerful platform to build web and mobile apps that scale automatically

TRY IT FREE

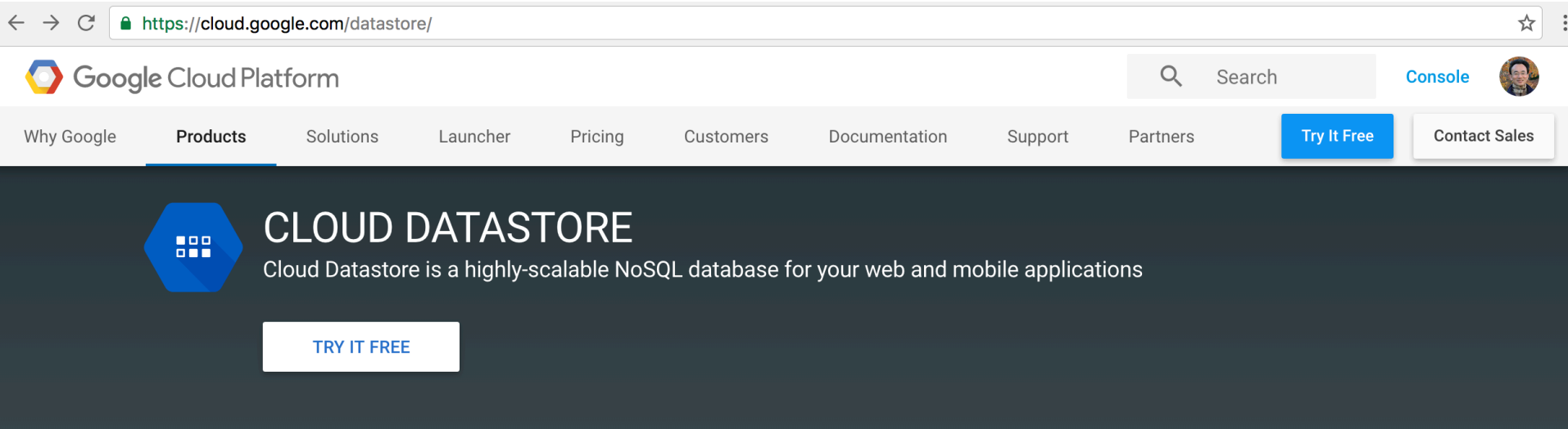
## Build Apps, Scale Automatically

Google App Engine is a platform for **building scalable web applications and mobile backends**. App Engine provides you with built-in services and APIs such as **NoSQL datastores, memcache, and a user authentication API**, common to most applications.



<https://cloud.google.com/appengine/>


# Google Cloud Datastore



← → ↻ <https://cloud.google.com/datastore/> ☆

Google Cloud Platform

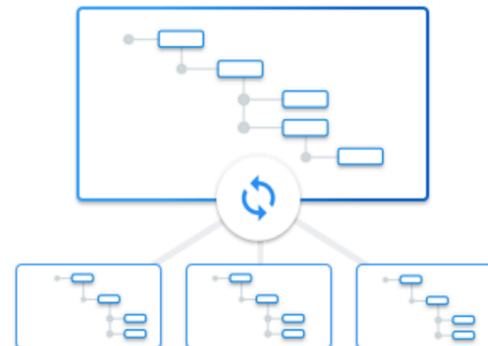
Why Google **Products** Solutions Launcher Pricing Customers Documentation Support Partners [Try It Free](#) [Contact Sales](#)

 **CLOUD DATASTORE**  
Cloud Datastore is a highly-scalable NoSQL database for your web and mobile applications

[TRY IT FREE](#)

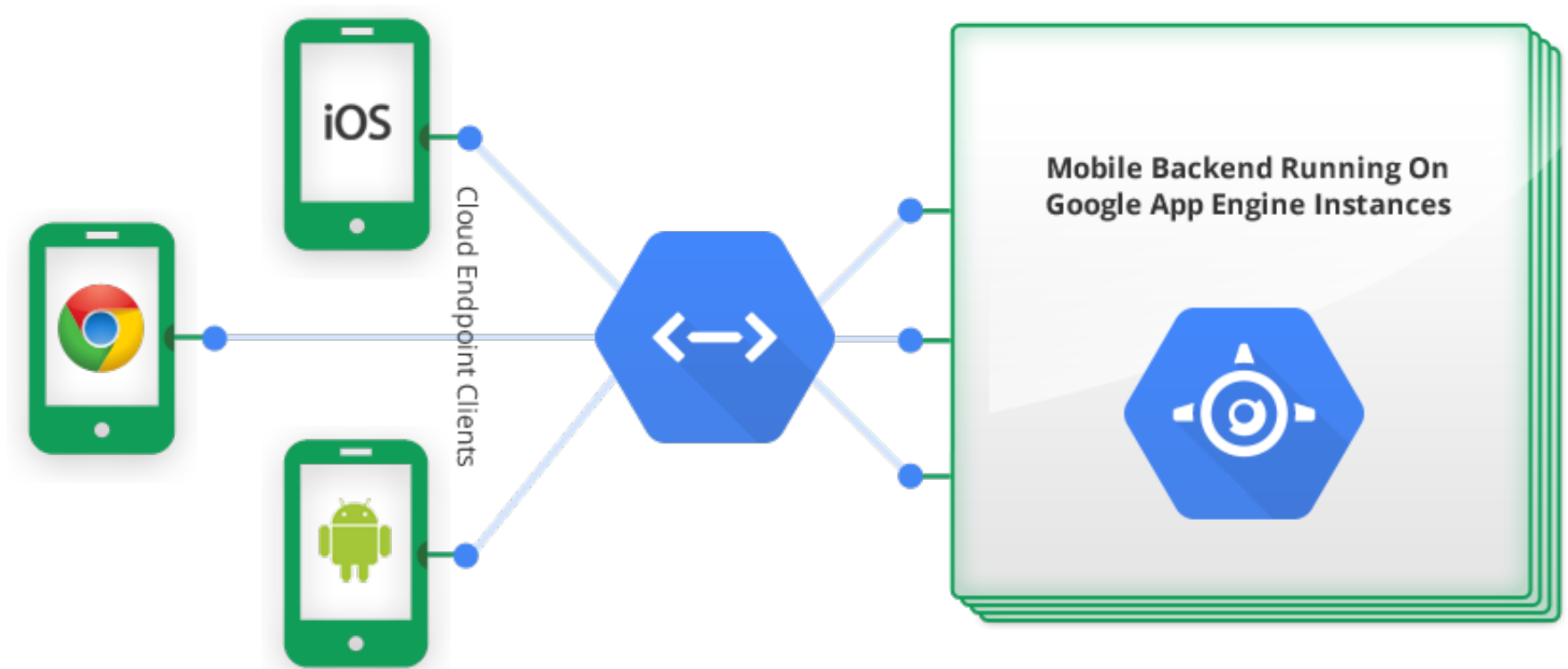
## Highly Scalable NoSQL Database

Cloud Datastore is a highly-scalable NoSQL database for your applications. Cloud Datastore **automatically handles sharding and replication**, providing you with a highly available and durable database that scales automatically to handle your applications' load. Cloud Datastore provides a myriad of capabilities such as **ACID transactions, SQL-like queries, indexes and much more**.



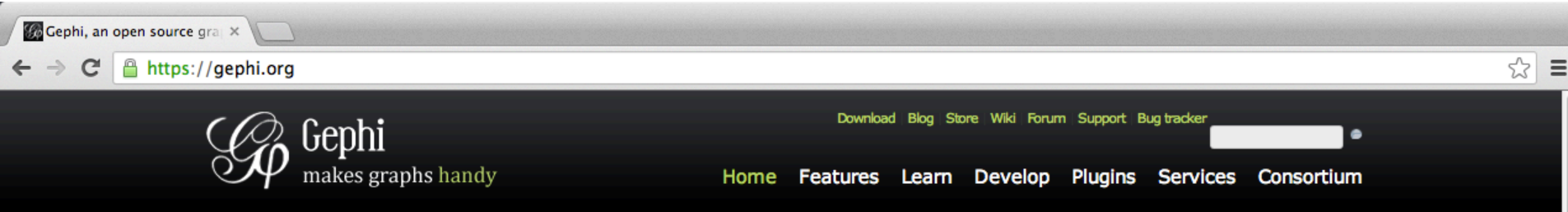
<https://cloud.google.com/datastore/>

# Google Cloud Endpoints





# Gephi: Social Network Analysis and Visualization: <https://gephi.org/>



## The Open Graph Viz Platform

Gephi is an interactive visualization and exploration platform for all kinds of networks and complex systems, dynamic and hierarchical graphs.

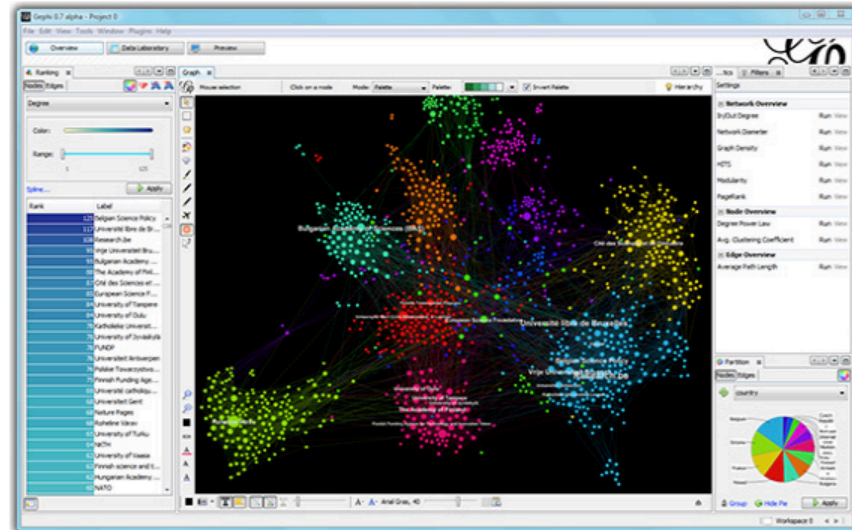
Runs on Windows, Linux and Mac OS X. Gephi is open-source and free.

[Learn More on Gephi Platform >](#)

 **Download FREE**  
Gephi 0.8.2-beta

[Release Notes](#) | [System Requirements](#)

- ▶ [Features](#)
- ▶ [Screenshots](#)
- ▶ [Quick start](#)
- ▶ [Videos](#)



Support us! We are non-profit. Help us to innovate and empower the community by donating only 8€:

[Donate](#)



### APPLICATIONS

- ✓ **Exploratory Data Analysis:** intuition-oriented analysis by networks manipulations in real time.
- ✓ **Link Analysis:** revealing the underlying structures of associations between objects, in particular in scale-free networks.

“Like Photoshop™ for graphs.

— the Community

### LATEST NEWS

[Google Summer of Code 2012](#)

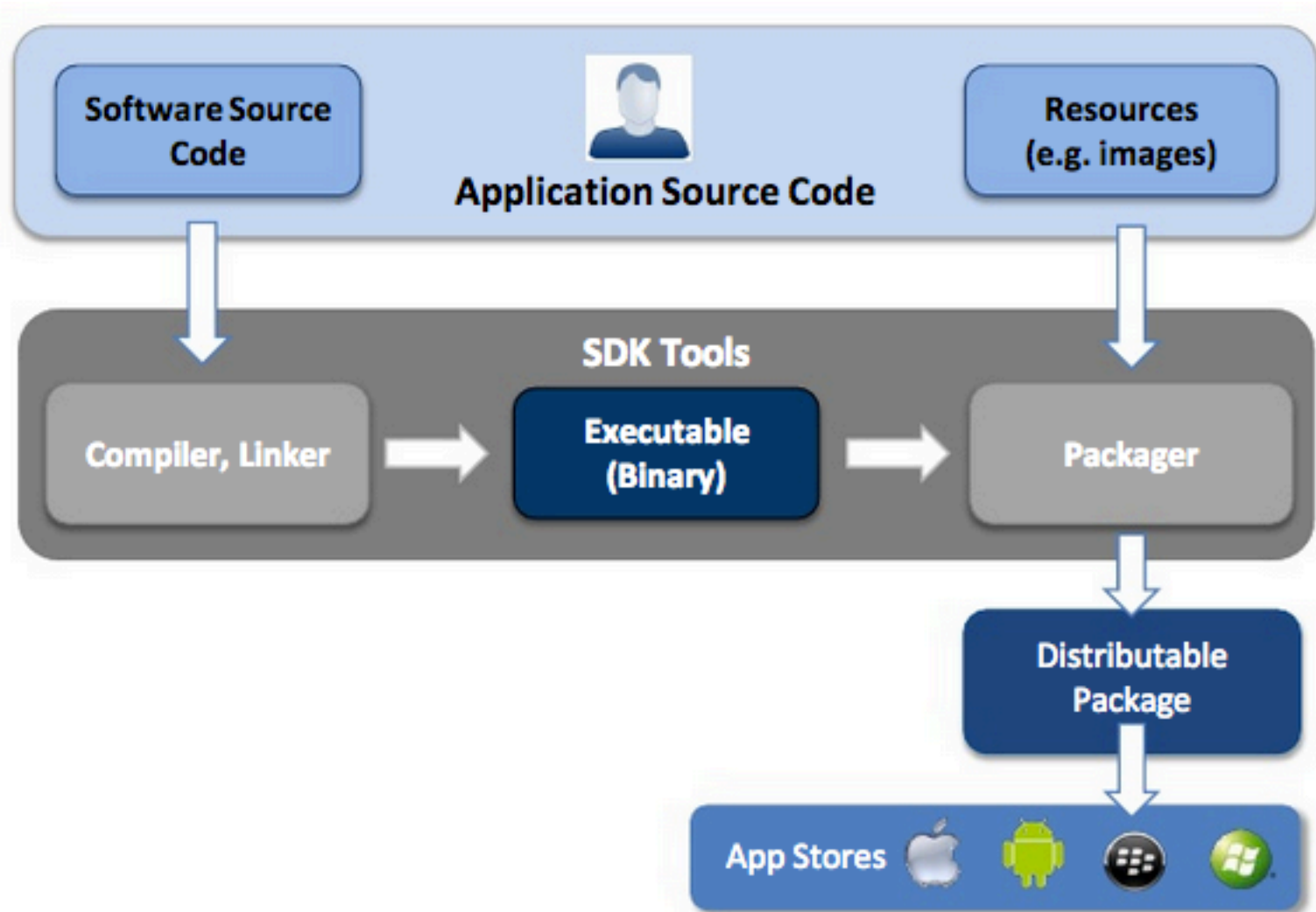
### PAPERS



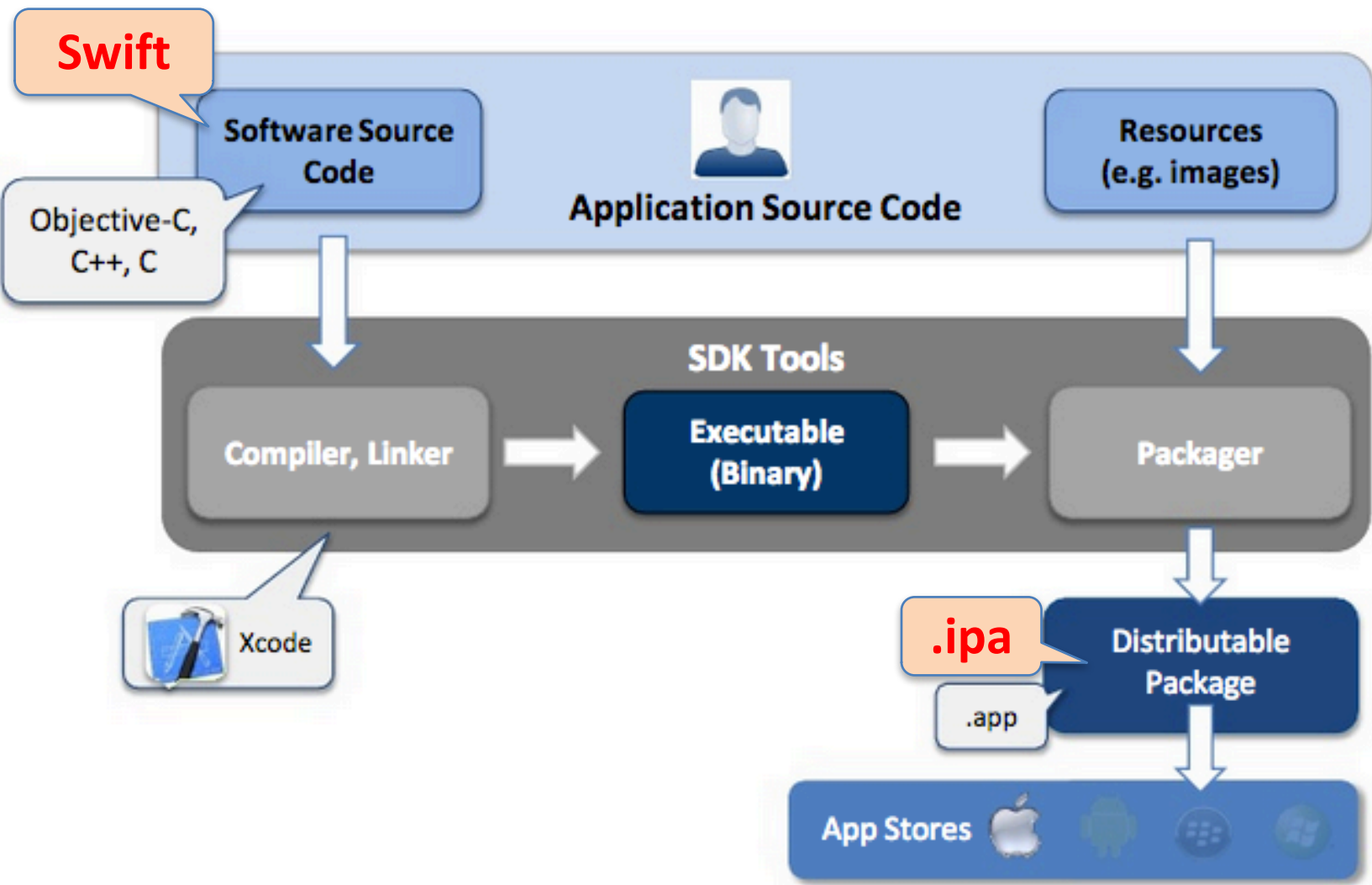
# Characteristics of a Purely-Native Mobile App

- A **binary** “executable image”, that is explicitly downloaded and stored on the file system of the mobile device
- **Distributed** through the popular app store or marketplace of the device, or via an enterprise distribution mechanism
- **Executed directly** by the operating system
  - Launched from the home screen
  - Does not require another “container app” to run it
- Makes explicit use of **operating-system APIs**

# Native App Development



# iOS - Native App Development



# Swift Language



A new programming language for iOS and OS X.

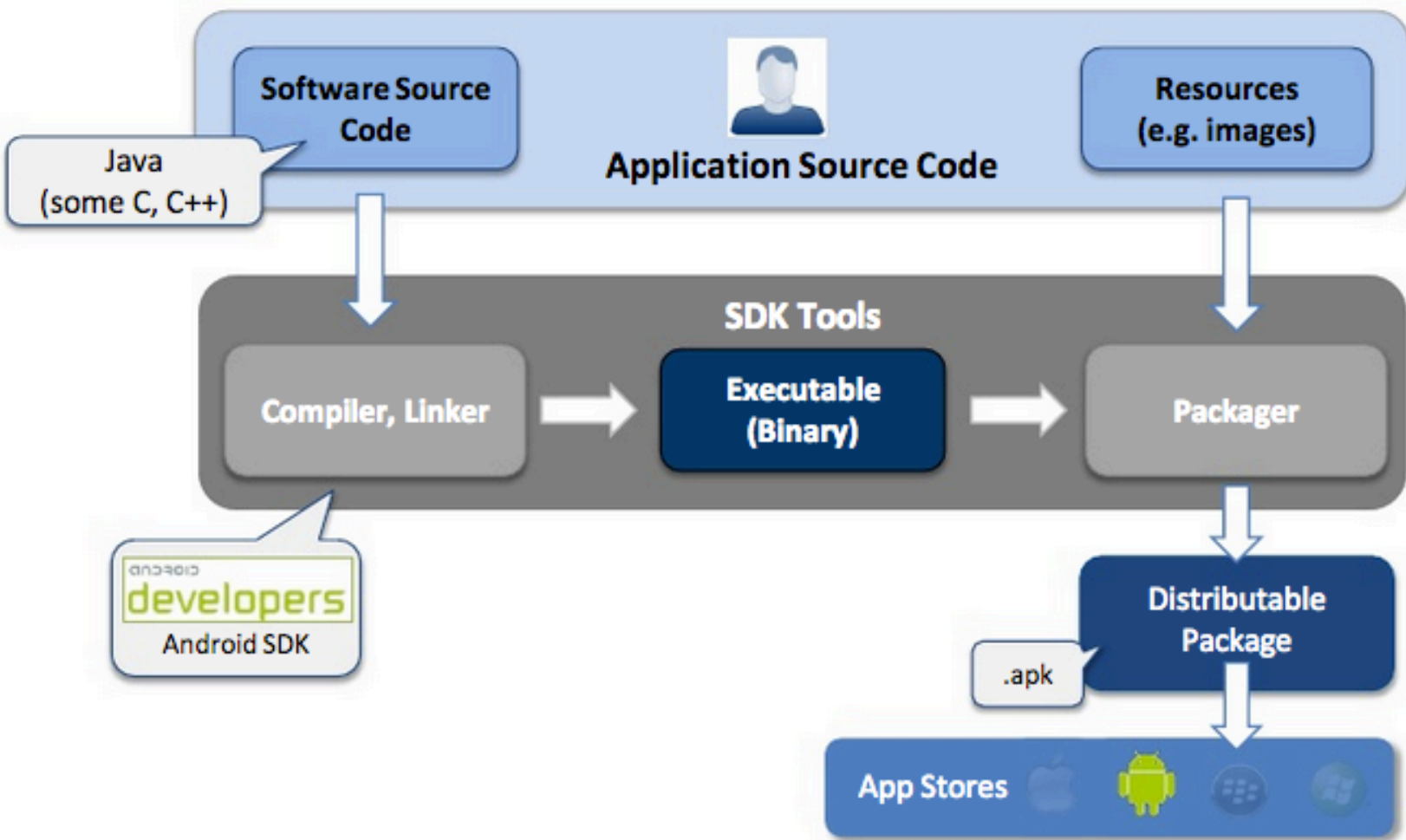
- Swift is a new **object-oriented programming language** for **iOS and OS X development**.
- Swift is **modern, powerful, expressive,** and **easy to use**.

# Swift Language

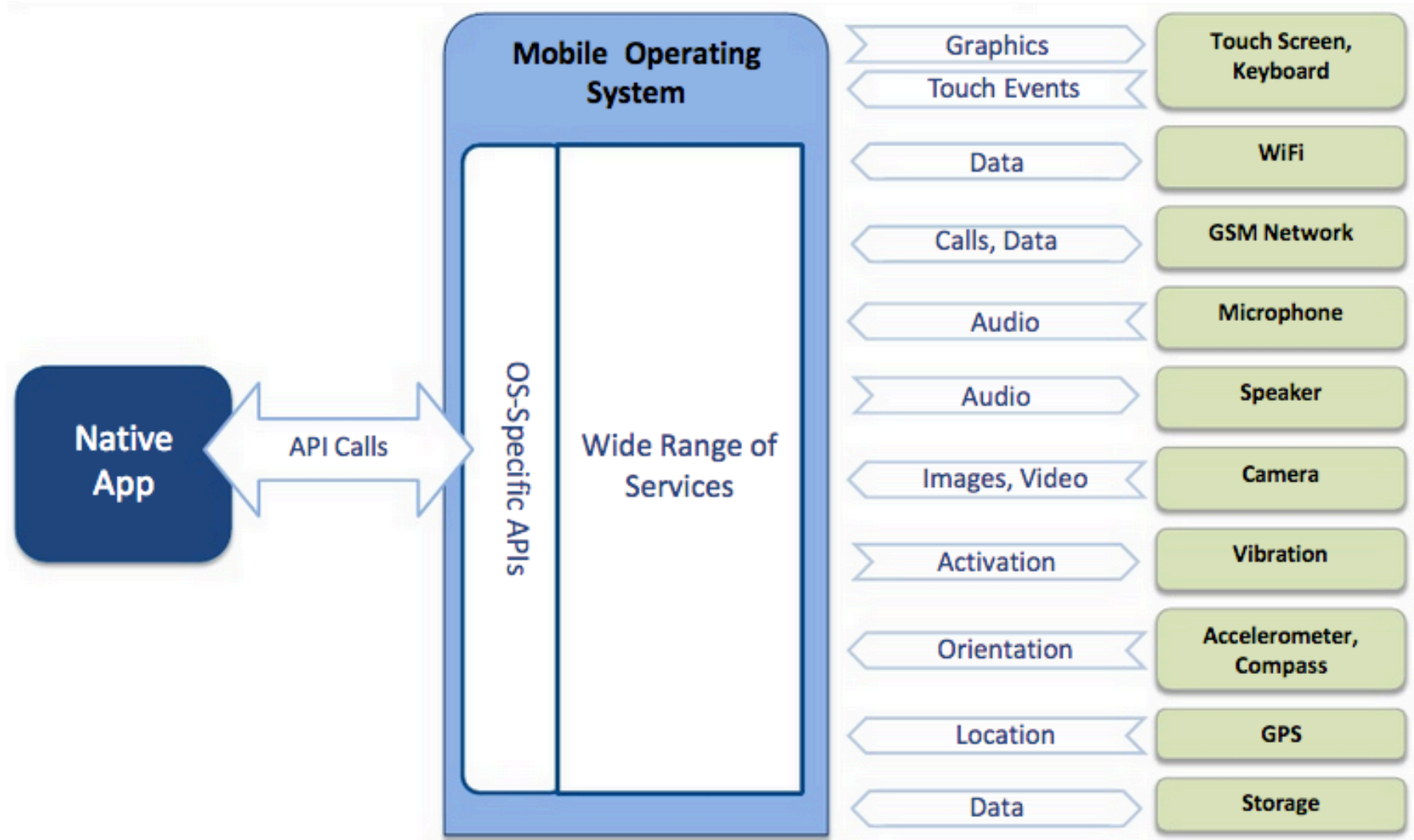


- **Unified**  
A **complete replacement** for both the **C** and **Objective-C** languages.
  - Swift provides full object-oriented features, and includes low-level language primitives such as types, flow control, and operators.
- **Fast**
- **Complete platform**
- **Safe by design**
- **Modern**
- **Interactive**

# Android - Native App Development

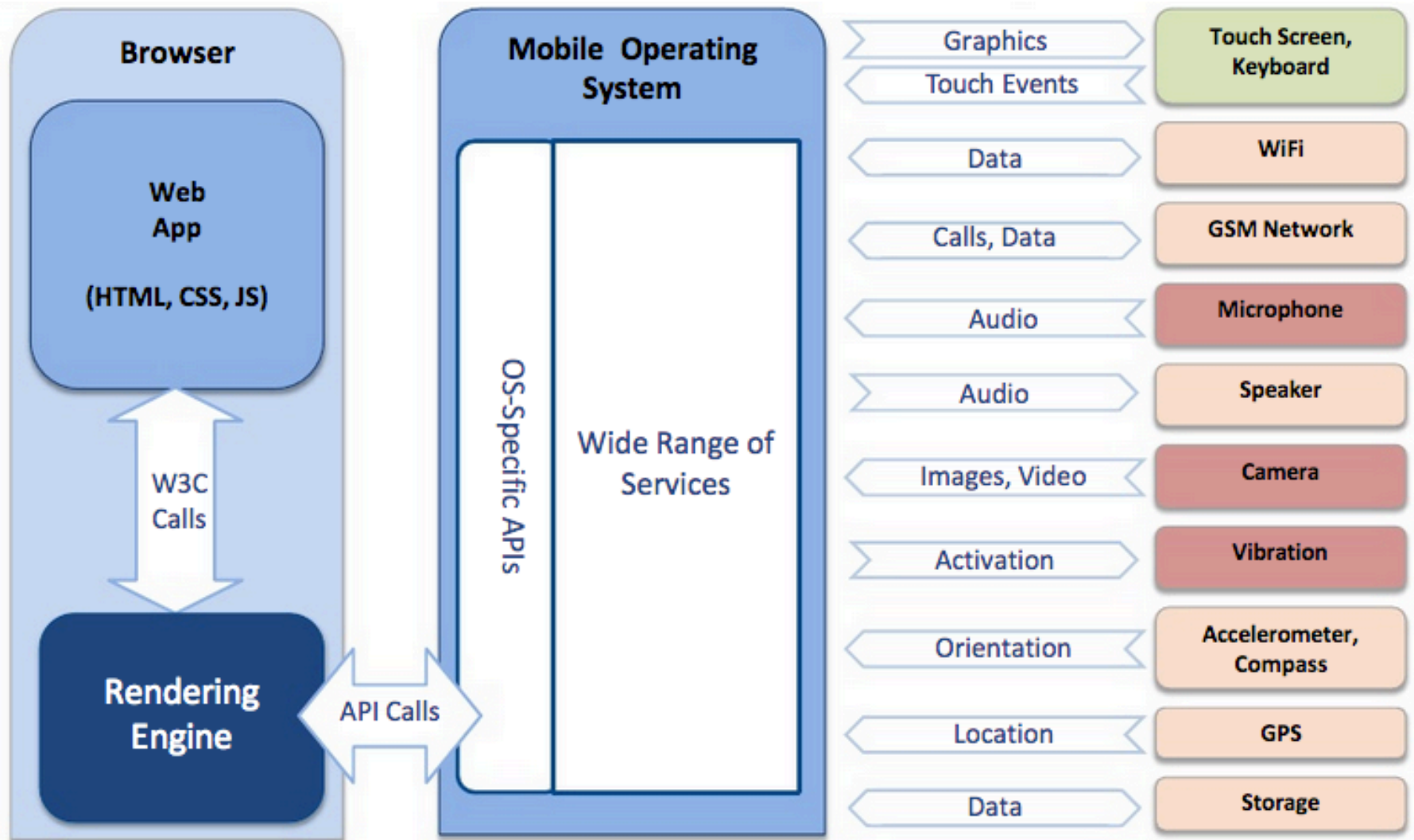


# Native App – Interaction with Mobile Device

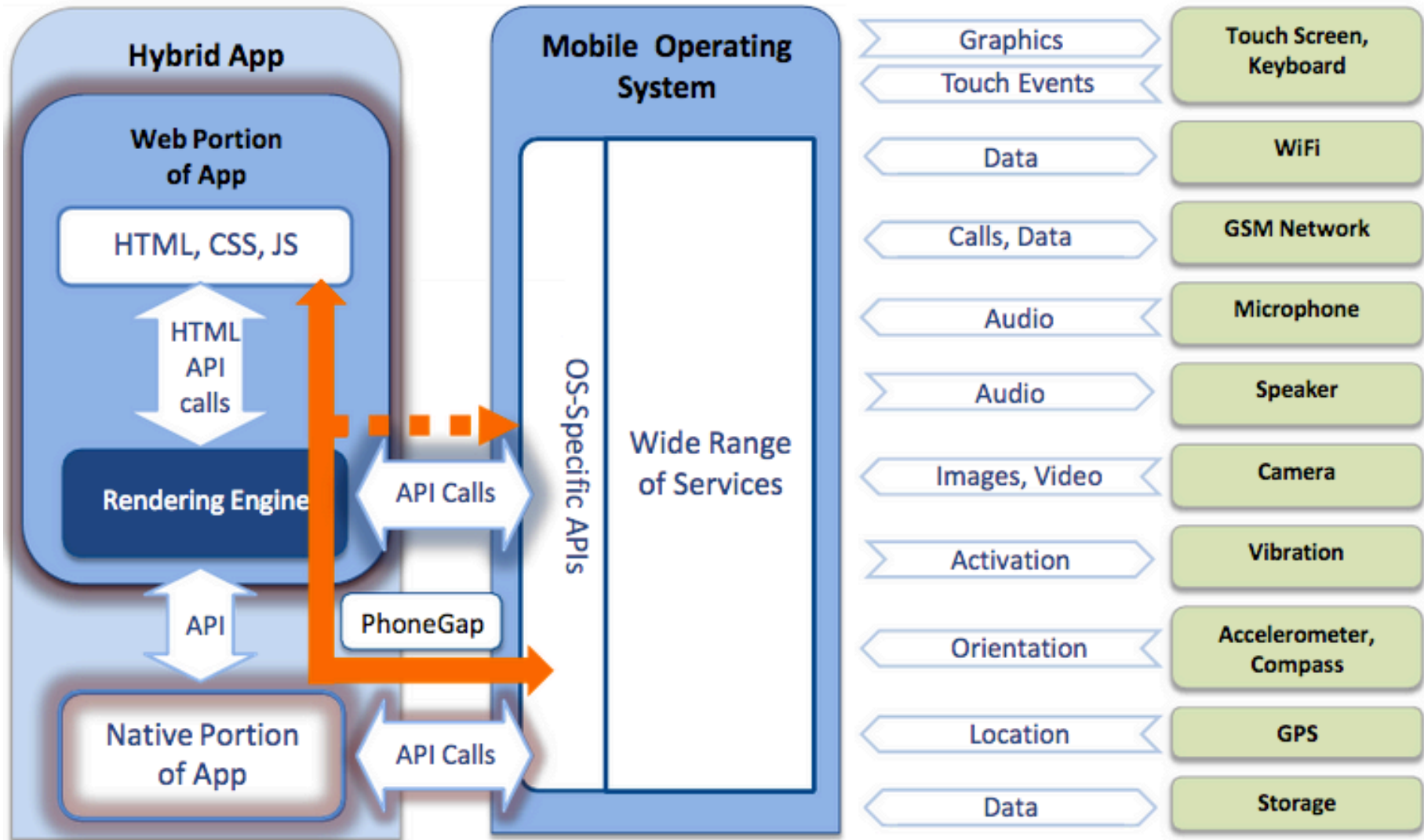




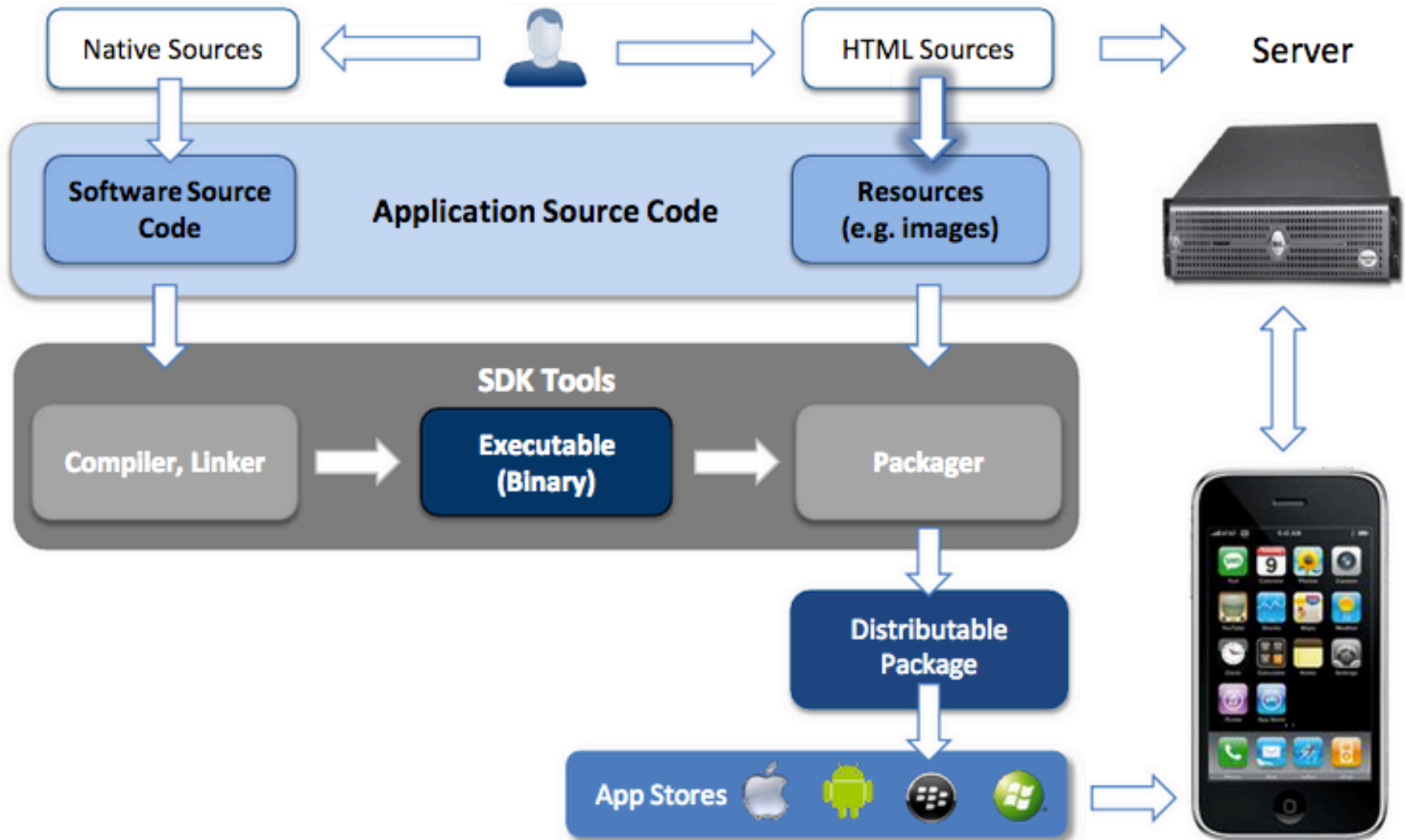
# Web App – Interaction with Mobile Device



# Hybrid App – Interaction with Mobile Device

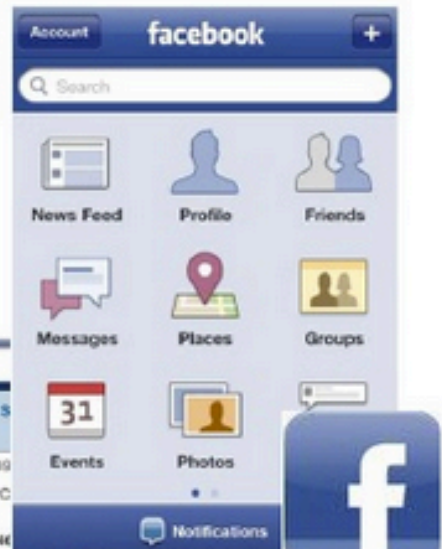


# Hybrid App Development



# Hybrid App Examples

Bank of America



Facebook

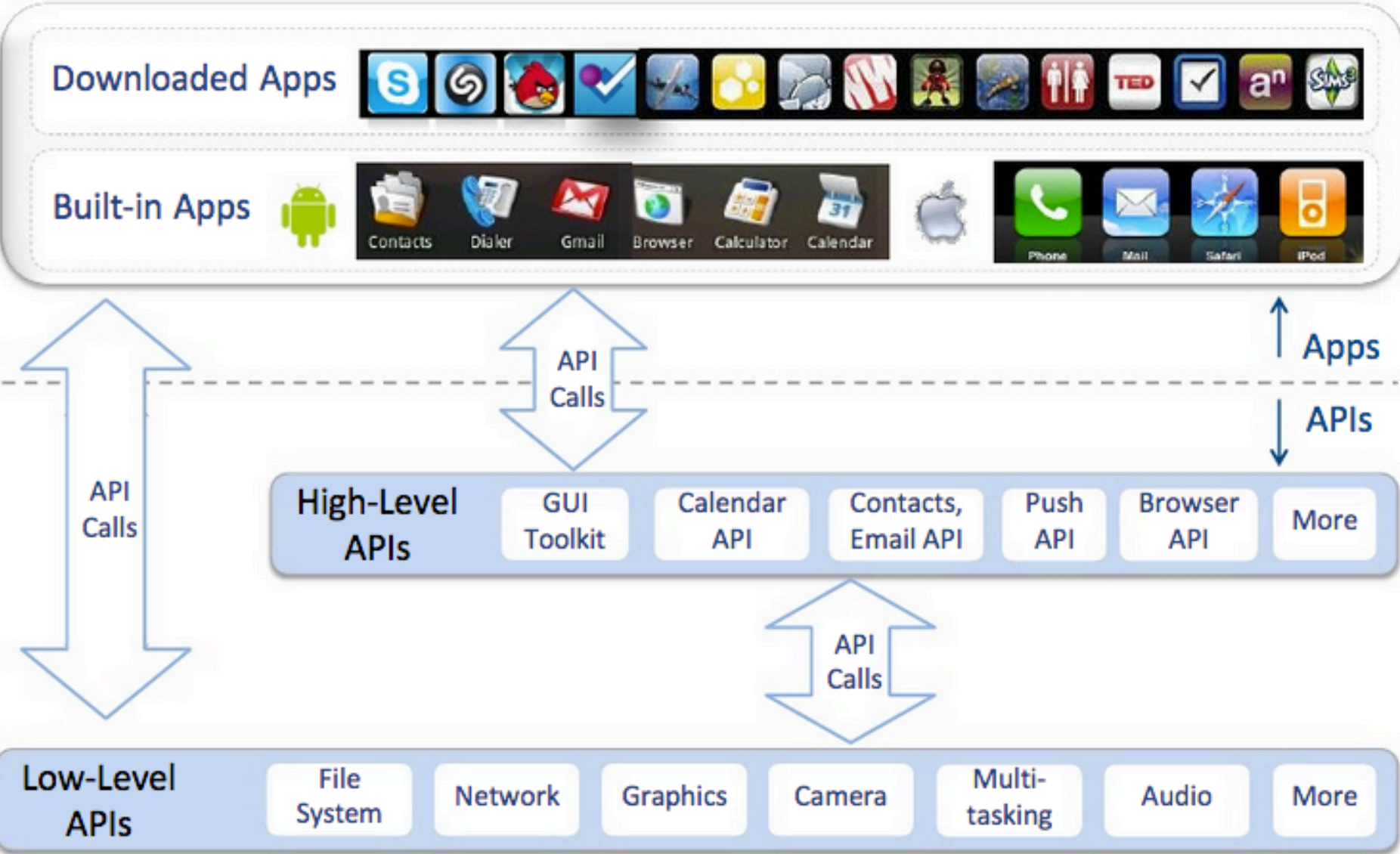


Morgan Stanley

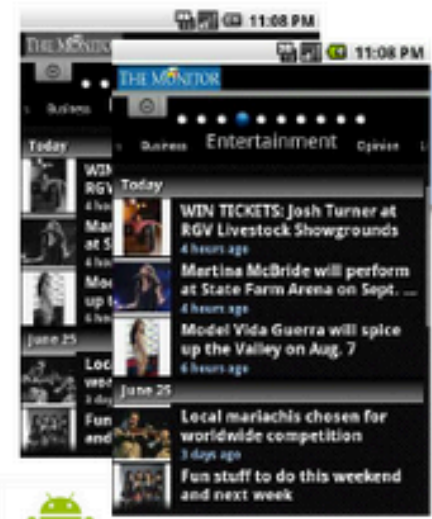
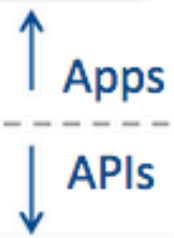
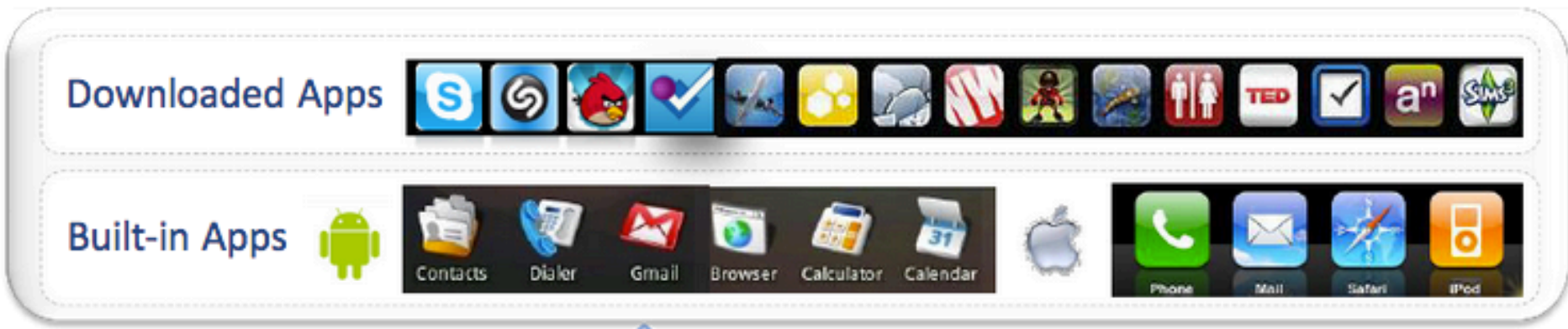


Lotte Card (Korea)

# Native App – High-level APIs and Built-in Apps



# GUI Toolkit Provides App With “Native” Look



GUI Toolkit



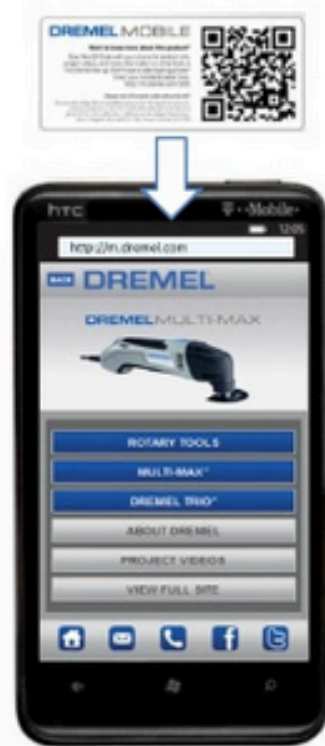
# Mobile Web Apps and Mobile Browsing



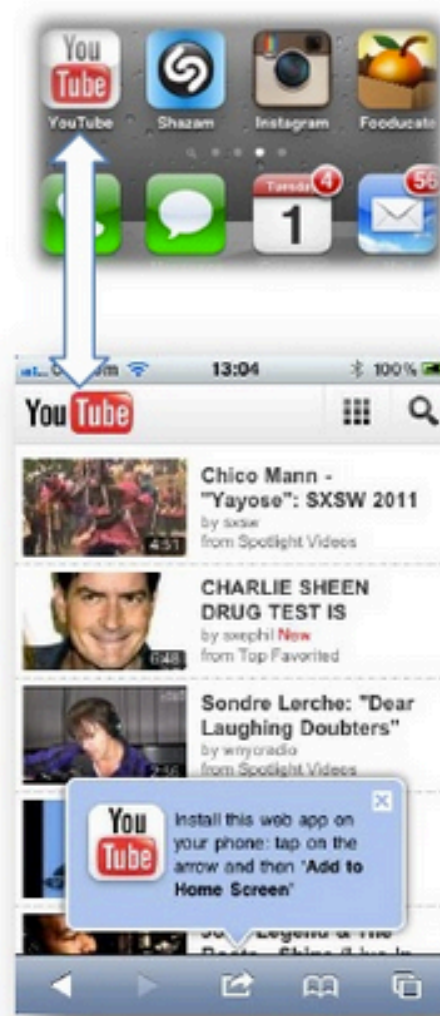
# Mobile Browsing and Mobile Web Apps



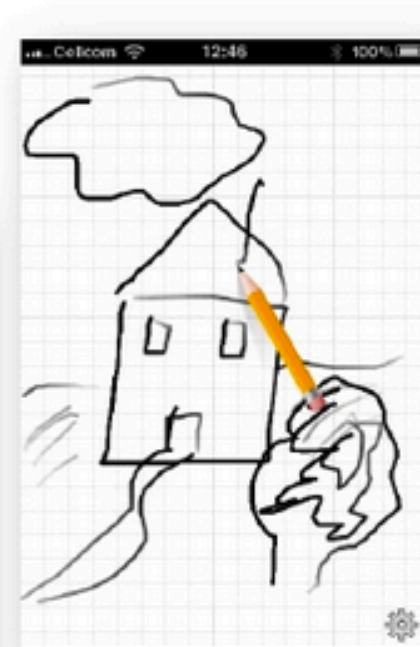
Google, Wikipedia:  
Mobile-optimized  
websites



Dremel:  
Launch using  
QR-Codes



YouTube: Web App



2B: Web App



# Mobile Browsing vs. Mobile Web Apps



## Pure Mobile Web Sites

- Visited by browsing
- Static, navigational UI
- Generic look & feel
- Server-side rendering
- Require connectivity

... Gray Area ...

## Pure Mobile Web Apps

- Installed and launched
- Interactive UI
- Touch optimized
- Client-side rendering
- Available offline

# Characteristics of Mobile Web Apps

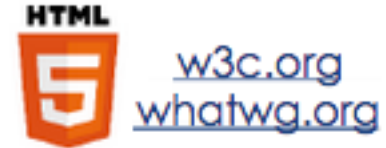
- Entirely written using web technologies
  - HTML, CSS and JavaScript
- Code is executed by the browser, not by the OS
- Various launch mechanisms
  - Typing URL, clicking hyperlink, scanning QR Code or clicking home-screen shortcut
- Installation is optional
- Combine cross-platform HTML5 and device-specific features optimize apps
  - Touch-optimized look & feel
  - No address bar
  - Suggestion to pin to home screen
  - Offline availability

# HTML5 and related technologies

Static Pages

Dynamic Pages

Web Applications

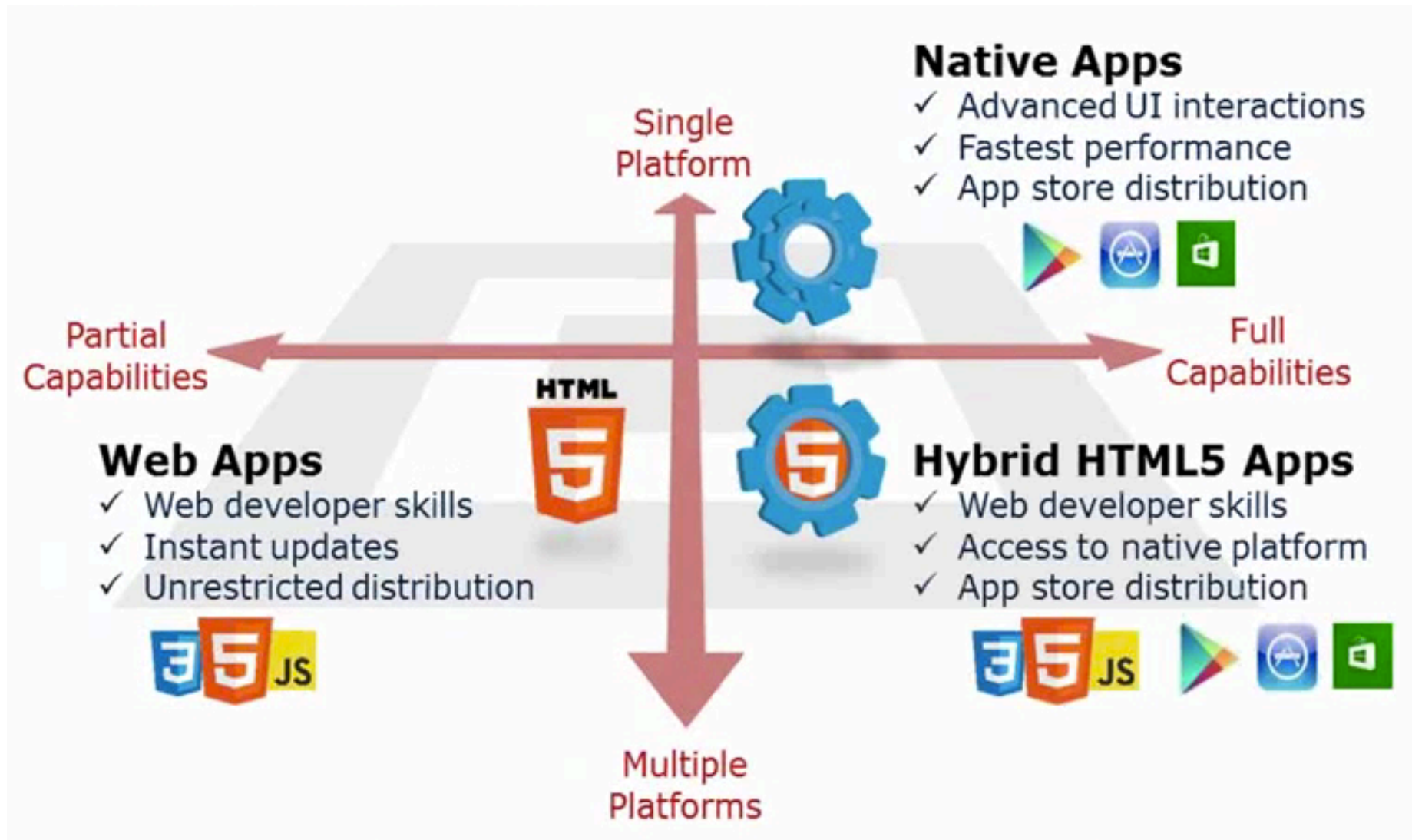


- Main HTML5/CSS3 features on mobile
  - Bitmapped and vector graphics, including animations
  - Offline support and data URLs
  - Geolocation
  - Video and Audio
  - Continuous communications with the server
  - More...

# Characteristics of Hybrid Apps

- A Hybrid App is a native app with embedded HTML
- It has all the benefits of native apps: full access to APIs, app-store presence, etc.
- Selected portions of the app are written using web technologies
- The web portions of the app can either be downloaded from the web or packaged within the app

# Native Apps vs. Hybrid HTML5 Apps



# HTML5, JavaScript, CSS3

**HTML**



**CSS**



**JS**



# jQuery Mobile

<http://jquerymobile.com/>

jquerymobile.com

Plugins Contribute Events Support jQuery Foundation



Your donations help fund the continued development and growth of jQuery.

SUPPORT THE PROJECT

Demos Download API Documentation Themes Resources Blog About

Search

## A Touch-Optimized Web Framework

jQuery Mobile is a HTML5-based user interface system designed to make responsive web sites and apps that are accessible on all smartphone, tablet and desktop devices.

### Download jQuery Mobile

Custom download

Latest stable

Version 1.4.5

jQuery 1.8 - 1.11 / 2.1

### Seriously cross-platform with HTML5

jQuery Mobile framework takes the "write less, do more" mantra to the next level: Instead of writing unique applications for each mobile device or OS, the jQuery mobile framework allows you to design a single highly-branded responsive web site or application that will work on all popular smartphone, tablet, and desktop platforms.

[Browser Support](#)



### Developer Links

- [Source Code \(GitHub\)](#)
- [jQuery Mobile Git \(WIP Build\)](#)
  - [JavaScript](#)
  - [CSS](#)
- [Report an issue](#)
- [Browser Support](#)
- [Changelog](#)

# Bootstrap

<http://getbootstrap.com/>



Aww yeah, Bootstrap 4 is coming!

[Bootstrap](#)

[Getting started](#)

[CSS](#)

[Components](#)

[JavaScript](#)

[Customize](#)

[Themes](#)

[Expo](#)

[Blog](#)



Bootstrap is the most popular HTML, CSS, and JS framework for developing responsive, mobile first projects on the web.

[Download Bootstrap](#)

Currently v3.3.7



Speed up your design workflow with over 175 templates and 500 polished UI elements

ads via Carbon



# PhoneGap

<http://phonegap.com/>

← → ↻ ⓘ phonegap.com



 Adobe

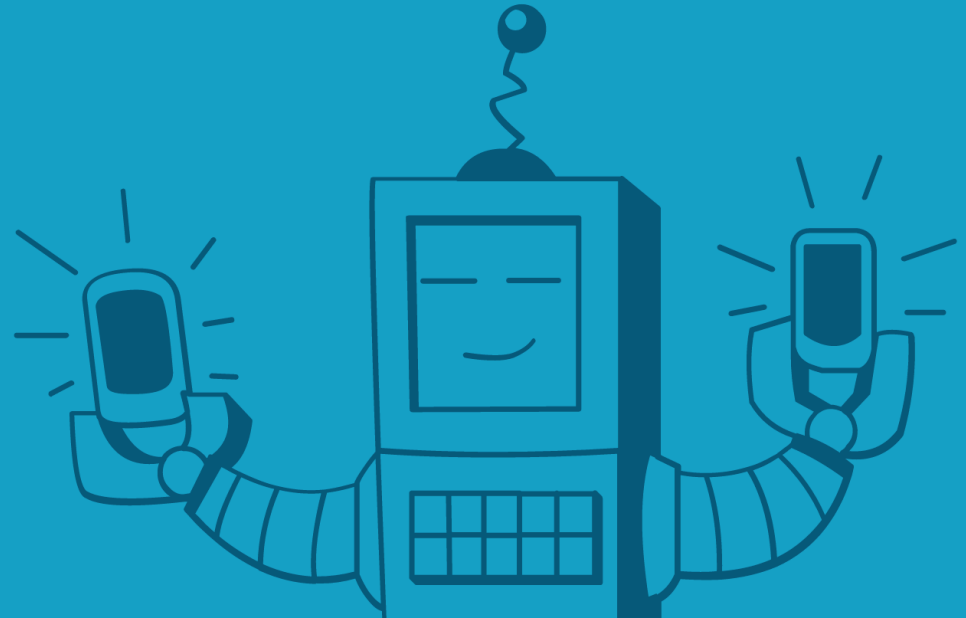
 Adobe PhoneGap

[Products](#) [Get Started](#) [Docs](#) [App Showcase](#) [Blog](#)

Build amazing mobile apps  
powered by open web tech.

START NOW

[LEARN MORE](#)



## Create your app with PhoneGap

Reuse existing web development skills to quickly make hybrid applications built with HTML, CSS and JavaScript. Create experiences for multiple platforms with a single codebase so you can reach your audience no matter

## Package your app in the cloud

PhoneGap Build takes the pain out of compiling PhoneGap apps. Get app-store ready apps without the headache of maintaining native SDKs. Our PhoneGap Build service does the work for you by compiling in the cloud.

# PhoneGap: <http://phonegap.com/>

The screenshot shows the PhoneGap website homepage. At the top, there is a navigation bar with links for 'About', 'Developer', 'Community', 'Apps', and 'Support', along with an 'Install' button. The main content area features the headline 'Easily create apps using the web technologies you know and love: HTML, CSS, and JavaScript'. Below this is a sub-headline: 'PhoneGap is a free and open source framework that allows you to create mobile apps using standardized web APIs for the platforms you care about.' There are two buttons: 'Install PhoneGap' and 'Getting Started Guides'. A video player is embedded on the right with a 'Watch Intro' button. At the bottom, a process flow diagram illustrates the steps: 'Wrap your app with PhoneGap' and 'Deploy to mobile platforms!'.

PhoneGap | Home

phonegap.com

PhoneGap About Developer Community Apps Support Install

## Easily create apps using the web technologies you know and love: **HTML, CSS, and JavaScript**

PhoneGap is a free and open source framework that allows you to create mobile apps using standardized web APIs for the platforms you care about.

Install PhoneGap ▶ Getting Started Guides ▶

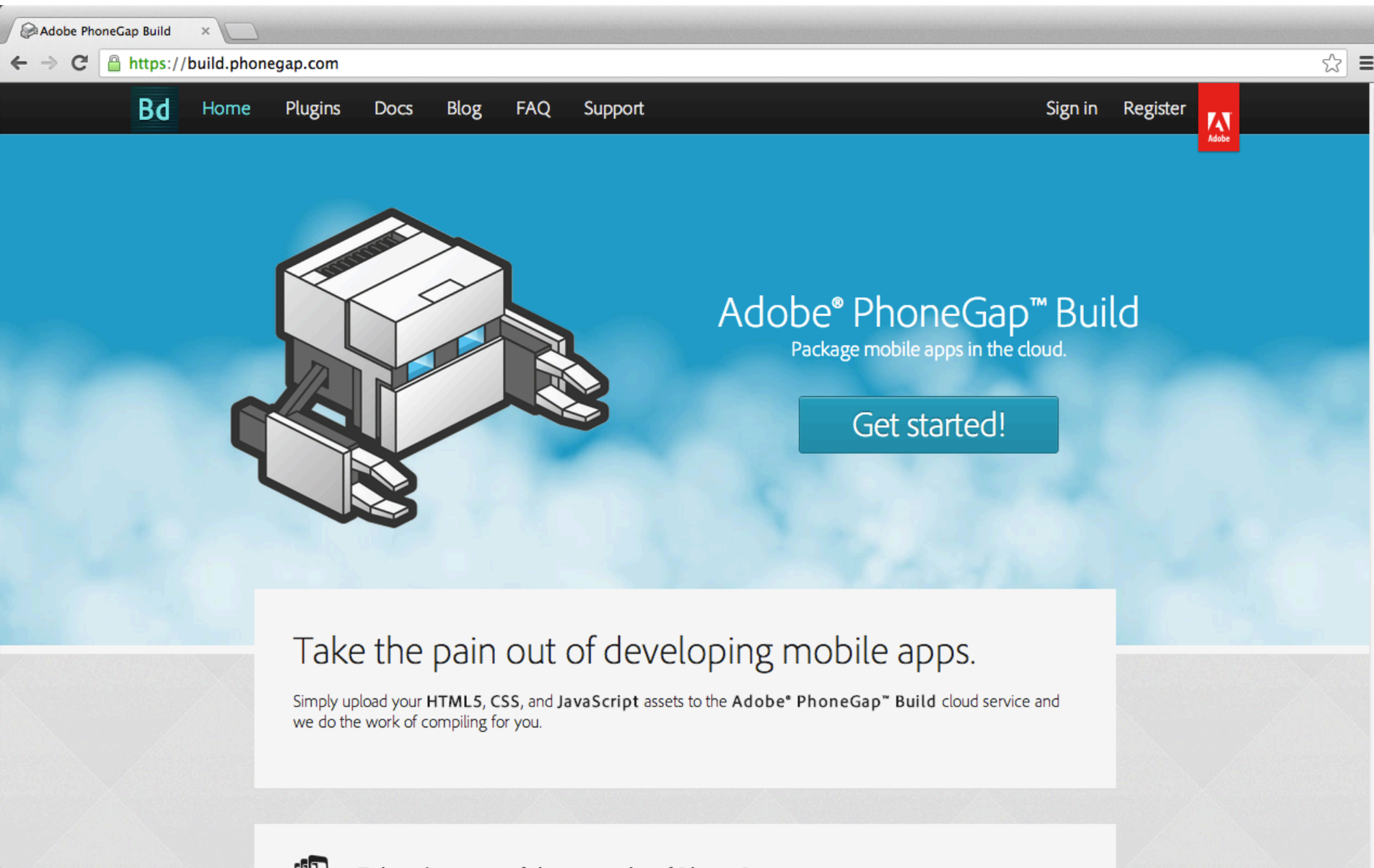
Watch Intro

Wrap your app with PhoneGap

Deploy to mobile platforms!

# Adobe PhoneGap Build: Package mobile apps in the cloud

<https://build.phonegap.com/>



The screenshot shows the Adobe PhoneGap Build website. The browser's address bar displays the URL <https://build.phonegap.com/>. The navigation menu includes links for Home, Plugins, Docs, Blog, FAQ, and Support, along with Sign in and Register options. The Adobe logo is visible in the top right corner. The main content area features a large illustration of a white, boxy mobile phone with a screen and a camera. To the right of the phone, the text reads "Adobe® PhoneGap™ Build" and "Package mobile apps in the cloud." Below this text is a prominent teal button labeled "Get started!". A white text box below the main content area contains the headline "Take the pain out of developing mobile apps." and a sub-headline: "Simply upload your **HTML5**, **CSS**, and **JavaScript** assets to the **Adobe® PhoneGap™ Build** cloud service and we do the work of compiling for you."

# Demo

CompileOnline: Try jQueryMobile  
Online

[http://www.compileonline.com/try\\_jquerymobile\\_online.php](http://www.compileonline.com/try_jquerymobile_online.php)



# CompileOnline: Try jQueryMobile Online

The screenshot shows the CompileOnline website interface for trying jQueryMobile online. The browser address bar shows the URL [www.compileonline.com/try\\_jquerymobile\\_online.php](http://www.compileonline.com/try_jquerymobile_online.php). The page title is "compileonline.com - Try jQueryMobile online". The interface includes a navigation bar with links for Home, Languages, Web Editors, About, and Help. The main workspace is divided into two panes: "Result Preview" and "HTML with jQuery Mobile".

The "Result Preview" pane shows the following HTML code:

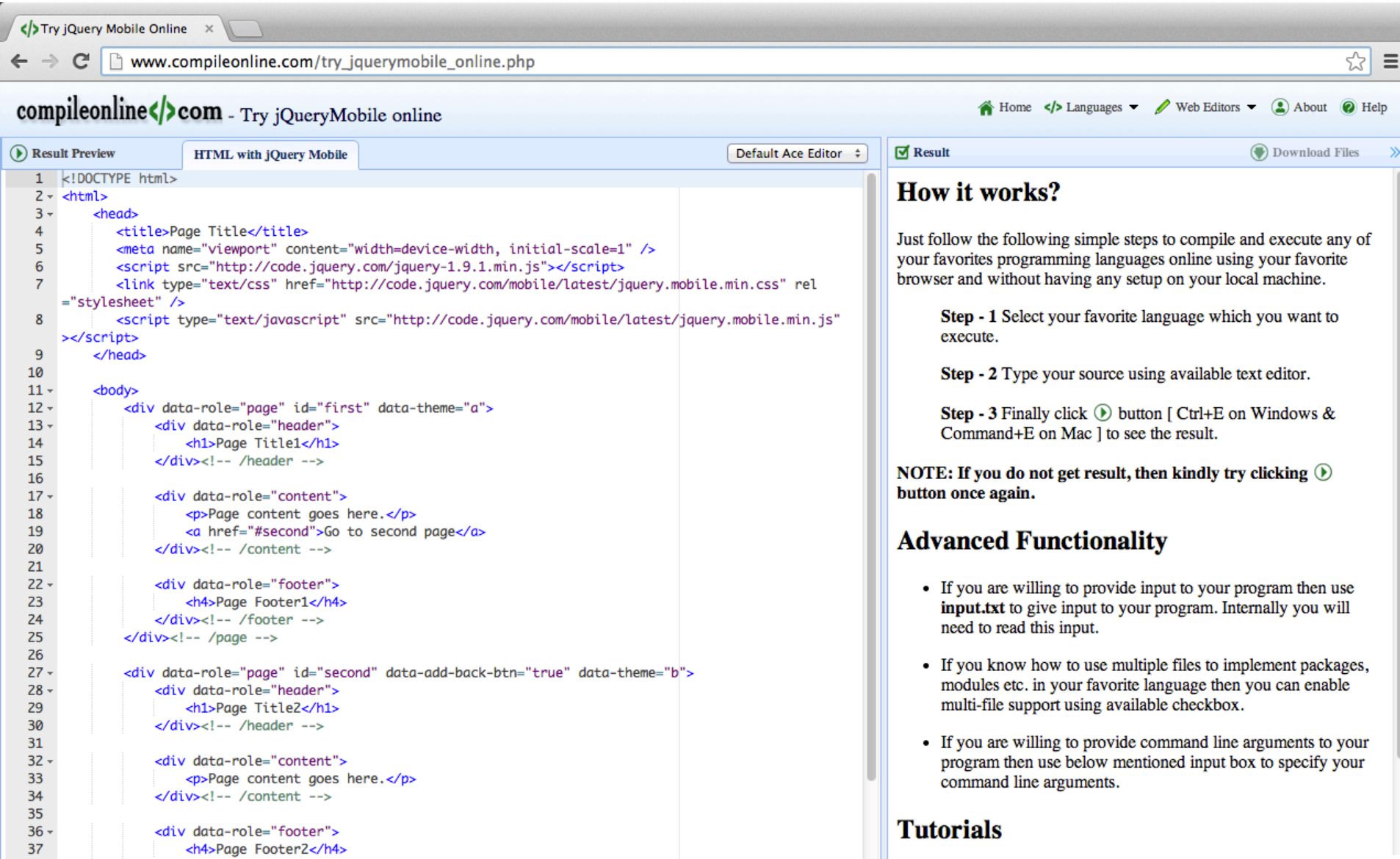
```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title>Page Title</title>
5     <meta name="viewport" content="width=device-width, initial-scale=1" />
6     <script src="http://code.jquery.com/jquery-1.9.1.min.js"></script>
7     <link type="text/css" href="http://code.jquery.com/mobile/latest/jquery.mobile.min.css" rel
8   ="stylesheet" />
9     <script type="text/javascript" src="http://code.jquery.com/mobile/latest/jquery.mobile.min.js"
10  ></script>
11   </head>
12   <body>
13     <div data-role="page" id="first" data-theme="a">
14       <div data-role="header">
15         <h1>Page Title1</h1>
16       </div><!-- /header -->
17
18       <div data-role="content">
19         <p>Page content goes here.</p>
20         <a href="#second">Go to second page</a>
21       </div><!-- /content -->
22
23       <div data-role="footer">
24         <h4>Page Footer1</h4>
25       </div><!-- /footer -->
26     </div><!-- /page -->
27
28     <div data-role="page" id="second" data-add-back-btn="true" data-theme="b">
29       <div data-role="header">
30         <h1>Page Title2</h1>
31       </div><!-- /header -->
32
33       <div data-role="content">
34         <p>Page content goes here.</p>
35       </div><!-- /content -->
36
37       <div data-role="footer">
38         <h4>Page Footer2</h4>
39       </div><!-- /footer -->
40     </div><!-- /page -->
41   </body>
42 </html>
```


The "HTML with jQuery Mobile" pane shows the same code. The "Default Ace Editor" pane is empty. The "Result" pane shows the heading "How it works?" and the following text:

Just follow the following simple steps to compile and execute any of your favorites programming languages online using your favorite browser and without having any setup on your local machine.

**Step - 1** Select your favorite language which you want to execute.

**Step - 2** Type your source using available text editor.

**Step - 3** Finally click  button [ Ctrl+E on Windows & Command+E on Mac ] to see the result.

**NOTE:** If you do not get result, then kindly try clicking  button once again.

**Advanced Functionality**

- If you are willing to provide input to your program then use **input.txt** to give input to your program. Internally you will need to read this input.
- If you know how to use multiple files to implement packages, modules etc. in your favorite language then you can enable multi-file support using available checkbox.
- If you are willing to provide command line arguments to your program then use below mentioned input box to specify your command line arguments.

**Tutorials**

[http://www.compileonline.com/try\\_jquerymobile\\_online.php](http://www.compileonline.com/try_jquerymobile_online.php)

Try jQuery Mobile Online

www.compileonline.com/try\_jquermobile\_online.php

compileonline.com - Try jQueryMobile online

Home Languages Web Editors About Help

Result Preview HTML with jQuery Mobile Default Ace Editor Result Download Files

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title>Page Title</title>
5     <meta name="viewport" content="width=device-width, initial-scale=1" />
6     <script src="http://code.jquery.com/jquery-1.9.1.min.js"></script>
7     <link type="text/css" href="http://code.jquery.com/mobile/latest/jquery.mobile.min.css" rel
8   ="stylesheet" />
9     <script type="text/javascript" src="http://code.jquery.com/mobile/latest/jquery.mobile.min.js"
10  ></script>
11  </head>
12  <body>
13    <div data-role="page" id="first" data-theme="a">
14      <div data-role="header">
15        <h1>Page Title1</h1>
16      </div><!-- /header -->
17
18      <div data-role="content">
19        <p>Page content goes here.</p>
20        <a href="#second">Go to second page</a>
21      </div><!-- /content -->
22
23      <div data-role="footer">
24        <h4>Page Footer1</h4>
25      </div><!-- /footer -->
26    </div><!-- /page -->
27
28    <div data-role="page" id="second" data-add-back-btn="true" data-theme="b">
29      <div data-role="header">
30        <h1>Page Title2</h1>
31      </div><!-- /header -->
32
33      <div data-role="content">
34        <p>Page content goes here.</p>
35      </div><!-- /content -->
36
37      <div data-role="footer">
38        <h4>Page Footer2</h4>
39      </div><!-- /footer -->
40    </div><!-- /page -->
41  </body>
42 </html>
```

Page Title1

Page content goes here.

[Go to second page](#)

Page Footer1

javascript:void(0)

Try jQuery Mobile Online

www.compileonline.com/try\_jquerymobile\_online.php

compileonline.com - Try jQueryMobile online

Home Languages Web Editors About Help

Result Preview HTML with jQuery Mobile Default Ace Editor

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title>Page Title</title>
5     <meta name="viewport" content="width=device-width, initial-scale=1" />
6     <script src="http://code.jquery.com/jquery-1.9.1.min.js"></script>
7     <link type="text/css" href="http://code.jquery.com/mobile/latest/jquery.mobile.min.css" rel
8   ="stylesheet" />
9     <script type="text/javascript" src="http://code.jquery.com/mobile/latest/jquery.mobile.min.js"
10  ></script>
11  </head>
12  <body>
13    <div data-role="page" id="first" data-theme="a">
14      <div data-role="header">
15        <h1>Page Title1</h1>
16      </div><!-- /header -->
17
18      <div data-role="content">
19        <p>Page content goes here. Hello World Myday</p>
20        <a href="#second">Go to second page</a>
21      </div><!-- /content -->
22
23      <div data-role="footer">
24        <h4>Page Footer1</h4>
25      </div><!-- /footer -->
26    </div><!-- /page -->
27
28    <div data-role="page" id="second" data-add-back-btn="true" data-theme="b">
29      <div data-role="header">
30        <h1>Page Title2</h1>
31      </div><!-- /header -->
32
33      <div data-role="content">
34        <p>Page content goes here.</p>
35      </div><!-- /content -->
36
37      <div data-role="footer">
38        <h4>Page Footer2</h4>
39      </div><!-- /footer -->
40    </div><!-- /page -->
41  </body>
42 </html>
```

Result

Download Files

Page Title1

Page content goes here.

[Go to second page](#)

Page Footer1

Try jQuery Mobile Online

www.compileonline.com/try\_jquerymobile\_online.php

compileonline.com - Try jQueryMobile online

Home Languages Web Editors About Help

Result Preview HTML with jQuery Mobile Default Ace Editor

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title>Page Title</title>
5     <meta name="viewport" content="width=device-width, initial-scale=1" />
6     <script src="http://code.jquery.com/jquery-1.9.1.min.js"></script>
7     <link type="text/css" href="http://code.jquery.com/mobile/latest/jquery.mobile.min.css" rel
8     ="stylesheet" />
9     <script type="text/javascript" src="http://code.jquery.com/mobile/latest/jquery.mobile.min.js"
10    ></script>
11  </head>
12  <body>
13    <div data-role="page" id="first" data-theme="a">
14      <div data-role="header">
15        <h1>Page Title1</h1>
16      </div><!-- /header -->
17
18      <div data-role="content">
19        <p>Page content goes here. Hello World Myday</p>
20        <a href="#second">Go to second page</a>
21      </div><!-- /content -->
22
23      <div data-role="footer">
24        <h4>Page Footer1</h4>
25      </div><!-- /footer -->
26    </div><!-- /page -->
27
28    <div data-role="page" id="second" data-add-back-btn="true" data-theme="b">
29      <div data-role="header">
30        <h1>Page Title2</h1>
31      </div><!-- /header -->
32
33      <div data-role="content">
34        <p>Page content goes here.</p>
35      </div><!-- /content -->
36
37      <div data-role="footer">
38        <h4>Page Footer2</h4>
39      </div><!-- /footer -->
40    </div><!-- /page -->
41  </body>
42 </html>
```

Result

Download Files

Page Title1

Page content goes here. Hello World Myday

[Go to second page](#)

Page Footer1



```

<!DOCTYPE html>
<html>
  <head>
    <title>Page Title</title>
    <meta name="viewport" content="width=device-width, initial-scale=1" />
    <script src="http://code.jquery.com/jquery-1.9.1.min.js"></script>
    <link type="text/css" href="http://code.jquery.com/mobile/latest/jquery.mobile.min.css" rel="stylesheet" />
    <script type="text/javascript" src="http://code.jquery.com/mobile/latest/jquery.mobile.min.js"></script>
  </head>

  <body>
    <div data-role="page" id="first" data-theme="a">
      <div data-role="header">
        <h1>Page Title1</h1>
      </div><!-- /header -->

      <div data-role="content">
        <p>Page content goes here. Hello World Myday</p>
        <a href="#second">Go to second page</a>
      </div><!-- /content -->

      <div data-role="footer">
        <h4>Page Footer1</h4>
      </div><!-- /footer -->
    </div><!-- /page -->

    <div data-role="page" id="second" data-add-back-btn="true" data-theme="b">
      <div data-role="header">
        <h1>Page Title2</h1>
      </div><!-- /header -->

      <div data-role="content">
        <p>Page content goes here.</p>
      </div><!-- /content -->

      <div data-role="footer">
        <h4>Page Footer2</h4>
      </div><!-- /footer -->
    </div><!-- /page -->
  </body>
</html>

```

```
<!DOCTYPE html>
<html>
  <head>
    <title>Page Title</title>
    <meta name="viewport" content="width=device-width, initial-
scale=1" />
    <script src="http://code.jquery.com/jquery-
1.9.1.min.js"></script>
    <link type="text/css"
href="http://code.jquery.com/mobile/latest/jquery.mobile.min.css"
rel="stylesheet" />
    <script type="text/javascript"
src="http://code.jquery.com/mobile/latest/jquery.mobile.min.js"></s
cript>
  </head>
```

```
<body>
  <div data-role="page" id="first" data-theme="a">
    <div data-role="header">
      <h1>Page Title1</h1>
    </div><!-- /header -->

    <div data-role="content">
      <p>Page content goes here. Hello World Myday</p>
      <a href="#second">Go to second page</a>
    </div><!-- /content -->

    <div data-role="footer">
      <h4>Page Footer1</h4>
    </div><!-- /footer -->
  </div><!-- /page -->
```

```
<div data-role="page" id="second" data-add-back-btn="true"
data-theme="b">
  <div data-role="header">
    <h1>Page Title2</h1>
  </div><!-- /header -->

  <div data-role="content">
    <p>Page content goes here.</p>
  </div><!-- /content -->

  <div data-role="footer">
    <h4>Page Footer2</h4>
  </div><!-- /footer -->
</div><!-- /page -->
</body>
</html>
```

Try jQuery Mobile Online

www.compileonline.com/try\_jquerymobile\_online.php

compileonline.com - Try jQueryMobile online

Home Languages Web Editors About Help

Result Preview HTML with jQuery Mobile Default Ace Editor

```
6 <script src="http://code.jquery.com/jquery-1.9.1.min.js"></script>
7 <link type="text/css" href="http://code.jquery.com/mobile/latest/jquery.mobile.min.css" rel
="stylesheet" />
8 <script type="text/javascript" src="http://code.jquery.com/mobile/latest/jquery.mobile.min.js"
></script>
9 </head>
10
11 <body>
12 <div data-role="page" id="first" data-theme="a">
13 <div data-role="header">
14 <h1>Page Title1</h1>
15 </div><!-- /header -->
16
17 <div data-role="content">
18 <p>Page content goes here. Hello World Myday</p>
19 <a href="#second">Go to second page</a>
20 </div><!-- /content -->
21
22 <div data-role="footer">
23 <h4>Page Footer1</h4>
24 </div><!-- /footer -->
25 </div><!-- /page -->
26
27 <div data-role="page" id="second" data-add-back-btn="true" data-theme="b">
28 <div data-role="header">
29 <h1>Page Title2</h1>
30 </div><!-- /header -->
31
32 <div data-role="content">
33 <p>Page content goes here.</p>
34 </div><!-- /content -->
35
36 <div data-role="footer">
37 <h4>Page Footer2</h4>
38 </div><!-- /footer -->
39 </div><!-- /page -->
```

Result Download Files

Page Title1

Page content goes here. Hello World Myday

[Go to second page](#)

Page Footer1

www.compileonline.com/download.php

project.tar.gz

Show All

[http://www.compileonline.com/try\\_jquerymobile\\_online.php](http://www.compileonline.com/try_jquerymobile_online.php)

Try jQuery Mobile Online

www.compileonline.com/try\_jquerymobile\_online.php

compileonline.com - Try jQueryMobile online

Home Languages Web Editors About Help

Result Preview HTML with jQuery Mobile Default Ace Editor

```
8 <script type="text/javascript" src="http://code.jquery.com/mobile/latest/jquery.mobile.min.js"
></script>
9 </head>
10
11 <body>
12 <div data-role="page" id="first" data-theme="e">
13 <div data-role="header">
14 <h1>Page Title1</h1>
15 </div><!-- /header -->
16
17 <div data-role="content">
18 <p>Page content goes here. Hello World Myday</p>
19 <a href="#second">Go to second page</a>
20 </div><!-- /content -->
21
22 <div data-role="footer">
23 <h4>Page Footer1</h4>
24 </div><!-- /footer -->
25 </div><!-- /page -->
26
27 <div data-role="page" id="second" data-add-back-btn="true" data-theme="b">
28 <div data-role="header">
29 <h1>Page Title2</h1>
30 </div><!-- /header -->
31
32 <div data-role="content">
33 <p>Page content goes here.</p>
34 </div><!-- /content -->
35
36 <div data-role="footer">
37 <h4>Page Footer2</h4>
38 </div><!-- /footer -->
39 </div><!-- /page -->
40 </body>
41 </html>
42
```

Result Download Files

Page Title1

Page content goes here. Hello World Myday

[Go to second page](#)

Page Footer1

project.tar.gz Show All

Try jQuery Mobile Online

www.compileonline.com/try\_jquermobile\_online.php

compileonline.com - Try jQueryMobile online

Home Languages Web Editors About Help

Result Preview HTML with jQuery Mobile Default Ace Editor

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title>Page Title</title>
5     <meta name="viewport" content="width=device-width, initial-scale=1" />
6     <script src="http://code.jquery.com/jquery-1.9.1.min.js"></script>
7     <link type="text/css" href="http://code.jquery.com/mobile/latest/jquery.mobile.min.css" rel
8     ="stylesheet" />
9     <script type="text/javascript" src="http://code.jquery.com/mobile/latest/jquery.mobile.min.js"
10    ></script>
11  </head>
12  <body>
13    <div data-role="page" id="first" data-theme="e">
14      <div data-role="header">
15        <h1>Page Title1</h1>
16      </div><!-- /header -->
17
18      <div data-role="content">
19        <p>Page content goes here. Hello World Myday</p>
20        <a href="#second">Go to second page</a>
21      </div><!-- /content -->
22
23      <div data-role="footer">
24        <h4>Page Footer1</h4>
25      </div><!-- /footer -->
26    </div><!-- /page -->
27
28    <div data-role="page" id="second" data-add-back-btn="true" data-theme="b">
29      <div data-role="header">
30        <h1>Page Title2</h1>
31      </div><!-- /header -->
32
33      <div data-role="content">
34        <p>Page content goes here.</p>
35      </div><!-- /content -->
36    </div><!-- /page -->
37  </body>
38 </html>
```

Result Download Files

Back Page Title2

Page content goes here.

Page Footer2

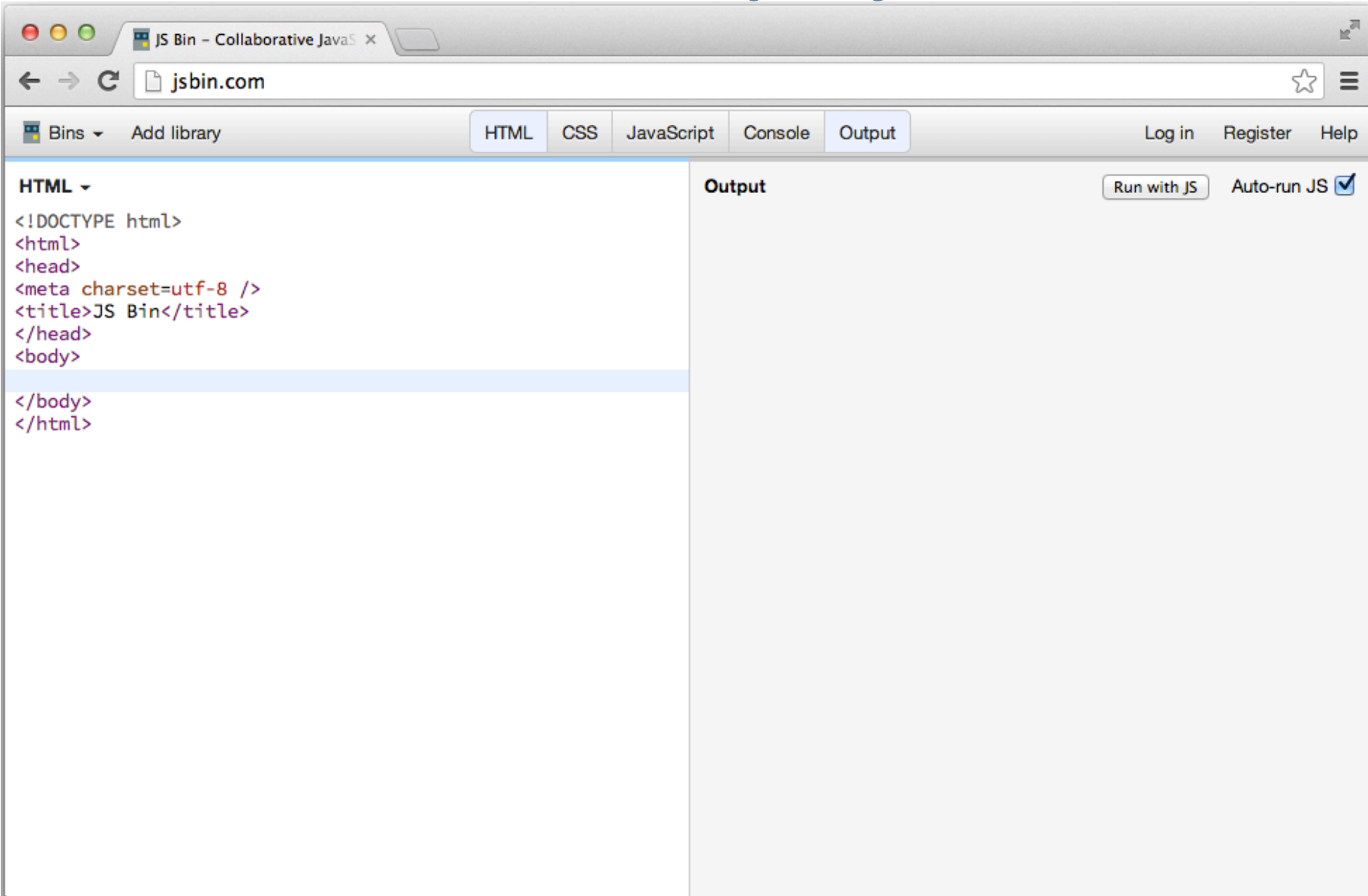
project.tar.gz Show All

```
TextWrangler File Edit Text View Search Go Window #! Help
index.htm
File Path: ~/Downloads/Project1/index.htm
index.htm (no symbol selected)
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <title>Page Title</title>
5 <meta name="viewport" content="width=device-width, initial-scale=1" />
6 <script src="http://code.jquery.com/jquery-1.9.1.min.js"></script>
7 <link type="text/css" href="http://code.jquery.com/mobile/latest/jquery.mobile.min.css" rel="stylesheet" />
8 <script type="text/javascript" src="http://code.jquery.com/mobile/latest/jquery.mobile.min.js"></script>
9 </head>
10
11 <body>
12 <div data-role="page" id="first" data-theme="a">
13 <div data-role="header">
14 <h1>Page Title1</h1>
15 </div><!-- /header -->
16
17 <div data-role="content">
18 <p>Page content goes here. Hello World Myday</p>
19 <a href="#second">Go to second page</a>
20 </div><!-- /content -->
21
22 <div data-role="footer">
23 <h4>Page Footer1</h4>
24 </div><!-- /footer -->
25 </div><!-- /page -->
26
27 <div data-role="page" id="second" data-add-back-btn="true" data-theme="b">
28 <div data-role="header">
29 <h1>Page Title2</h1>
30 </div><!-- /header -->
31
32 <div data-role="content">
33 <p>Page content goes here.</p>
34 </div><!-- /content -->
35
36 <div data-role="footer">
37 <h4>Page Footer2</h4>
38 </div><!-- /footer -->
39 </div><!-- /page -->
40 </body>
41 </html>
42
43
Recent Documents
index.htm
Line 18 Col 1 HTML Unicode (UTF-8) Unix (LF) Last saved: 13/9/30 上午06:40:32 1,455 / 154 / 43
```

[http://www.compileonline.com/try\\_jquerymobile\\_online.php](http://www.compileonline.com/try_jquerymobile_online.php)



# Online Editor: <http://jsbin.com>



The screenshot shows the jsbin.com online editor interface. The browser window title is "JS Bin - Collaborative JavaScript". The address bar shows "jsbin.com". The interface has a top navigation bar with tabs for "HTML", "CSS", "JavaScript", "Console", and "Output". The "HTML" tab is selected. Below the navigation bar, there are buttons for "Bins", "Add library", "Log in", "Register", and "Help". The main editor area is split into two panes: "HTML" on the left and "Output" on the right. The "HTML" pane contains the following code:

```
<!DOCTYPE html>
<html>
<head>
<meta charset=utf-8 />
<title>JS Bin</title>
</head>
<body>

</body>
</html>
```

The "Output" pane is currently empty. In the top right corner of the "Output" pane, there are two buttons: "Run with JS" and "Auto-run JS" with a checked checkbox.

<http://jsbin.com/>

# appery.io

Mobile App Builder for HTI x

appery.io

SIGN UP LOGIN

appery.io® Platform Customers Pricing Services Dev Center Blog About Us

## Accelerate Mobile Innovation in the Enterprise

The only cloud-based platform with visual development tools and integrated backend services

Try Our Free Plan

Featured by Mashable TechCrunch Forbes CIO

<http://appery.io/>

# appery.io

The screenshot displays the Appery.io editor interface. At the top, the browser address bar shows the URL: `appery.io/app/project/f044ff9d-24e0-4f68-9962-f855b35bff3e/editor`. The main workspace is divided into several sections:

- Left Sidebar:** Contains a 'CREATE NEW' button and a project tree with folders for 'Project', 'App settings', 'Model and Storage', 'Pages', 'Screen1', 'startScreen', 'Dialogs', 'Templates', 'Themes', 'CSS', 'Services', 'JavaScript', and 'Custom components'.
- Top Bar:** Includes navigation icons (back, forward, refresh) and menu options: 'CLOSE', 'SAVE', 'EXPORT', and 'TEST'. On the right, it shows 'Database', 'Push', 'Server Code', and user/notifications icons.
- Design Canvas:** Shows a mobile screen layout for 'Screen1 / mobileheader'. A green header bar is visible with the text 'Caption'. A dashed red border indicates the selected element.
- PALETTE (Left):** A 'DESIGN' palette with 'CONTROLS' and 'DATA' categories. Controls include Button, Group Buttons, Input, Textarea, Datepicker, Label, Link, Radio, Checkbox, Slider, Toggle, and Select. Data includes List and Image. A 'Grid' and 'Navbar' are also listed.
- PROPERTIES (Right):** A 'PROPERTIES - Header' panel with sections for 'OPERATIONS' (Zoom Level slider at 100), 'CUSTOM' (Text: 'Caption', Swatch: 'Inherit', Back Button: unchecked, Back Button Text: 'Back', Position: 'fixed', Full Screen: unchecked), and 'COMMON' (Name: 'mobileheader', Class Name: 'Enter Class Name'). A 'More properties' link is at the bottom.

<http://appery.io/>

# Summary

- Native Apps
- Mobile Apps (Web Apps)
- Hybrid Apps

# References

- Building Android Apps with HTML, CSS, and JavaScript: Making Native Apps with Standards-Based Web Tools, Jonathan Stark & Brian Jepson, O'reilly, 2012
- Building iPhone Apps with HTML, CSS, and JavaScript: Making App Store Apps Without Objective-C or Cocoa, Jonathan Stark, O'reilly, 2010
- Chris Adamson and Janie Clayton, iOS 9 SDK Development: Creating iPhone and iPad Apps with Swift, Pragmatic Bookshelf, 2016
- Native, Web or Hybrid Mobile Apps?, <https://www.youtube.com/watch?v=Ns-JS4amITc>
- Swift, <https://developer.apple.com/swift/>
- Porting your Apple iOS and Android Apps to HTML5, <https://www.youtube.com/watch?v=-k43St4LCe0>
- jQuery Mobil: <http://jquerymobile.com/>
- PhoneGap: <http://phonegap.com/>
- Adobe PhoneGap Build: Package mobile apps in the cloud, <https://build.phonegap.com/>
- Try jQueryMobile Online: [http://www.compileonline.com/try\\_jquerymobile\\_online.php](http://www.compileonline.com/try_jquerymobile_online.php)
- Online Editor jsbin: <http://jsbin.com/>
- appery.io: <http://appery.io/>