

MOBILE X 4

Android and Cross Platform
with PhoneGap

SPEAKER

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AGENDA

Part I

- Android
 - Overview
 - Tools
 - Demo
 - Debugging
 - Database

Part II

- Future Mobile Development
- PhoneGap
 - Overview
 - Tools
 - Demo
 - Debugging
 - Database

PART I

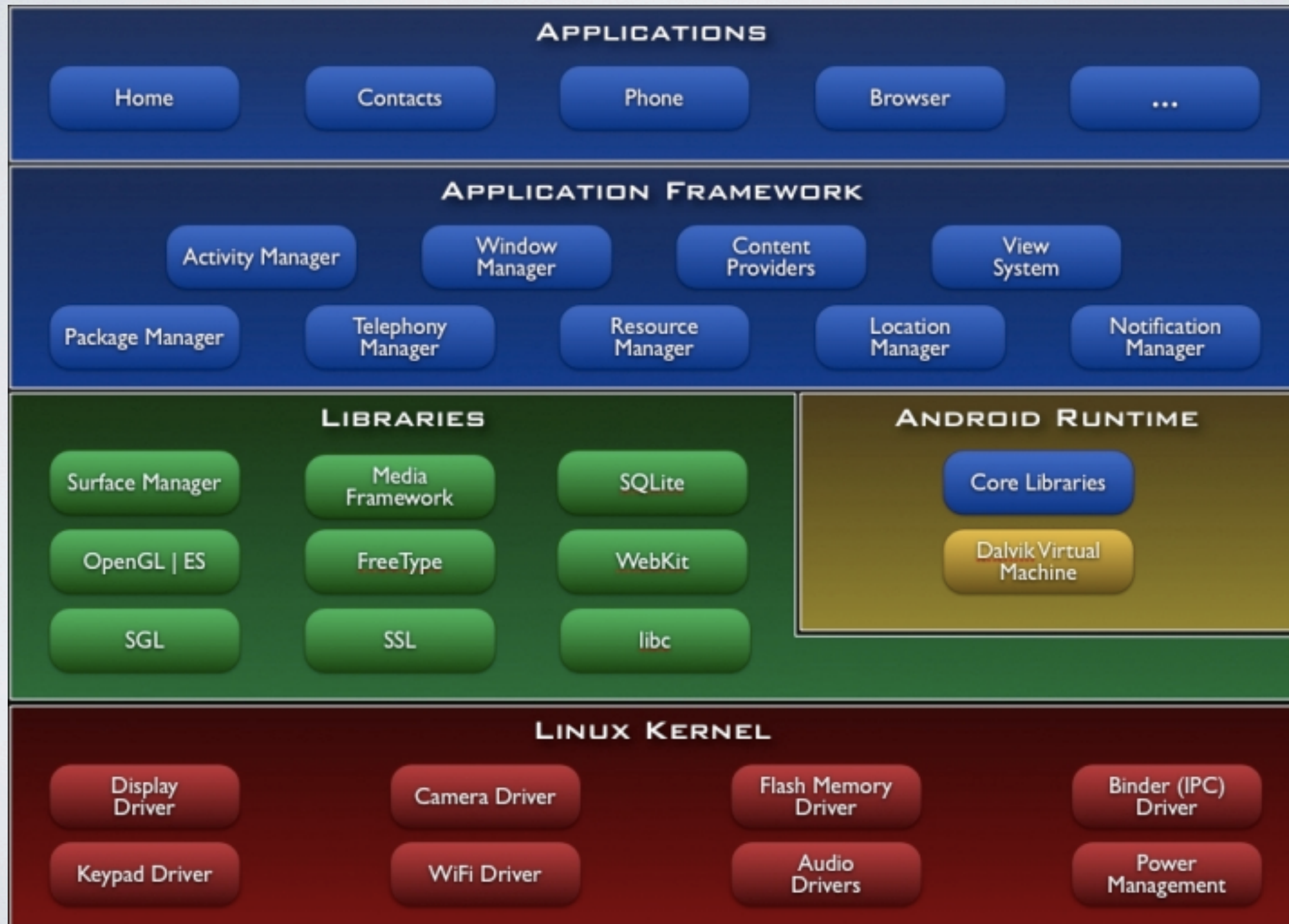
ANDROID OVERVIEW

- Android is a software stack for mobile devices that includes an operating system, middleware and key applications.

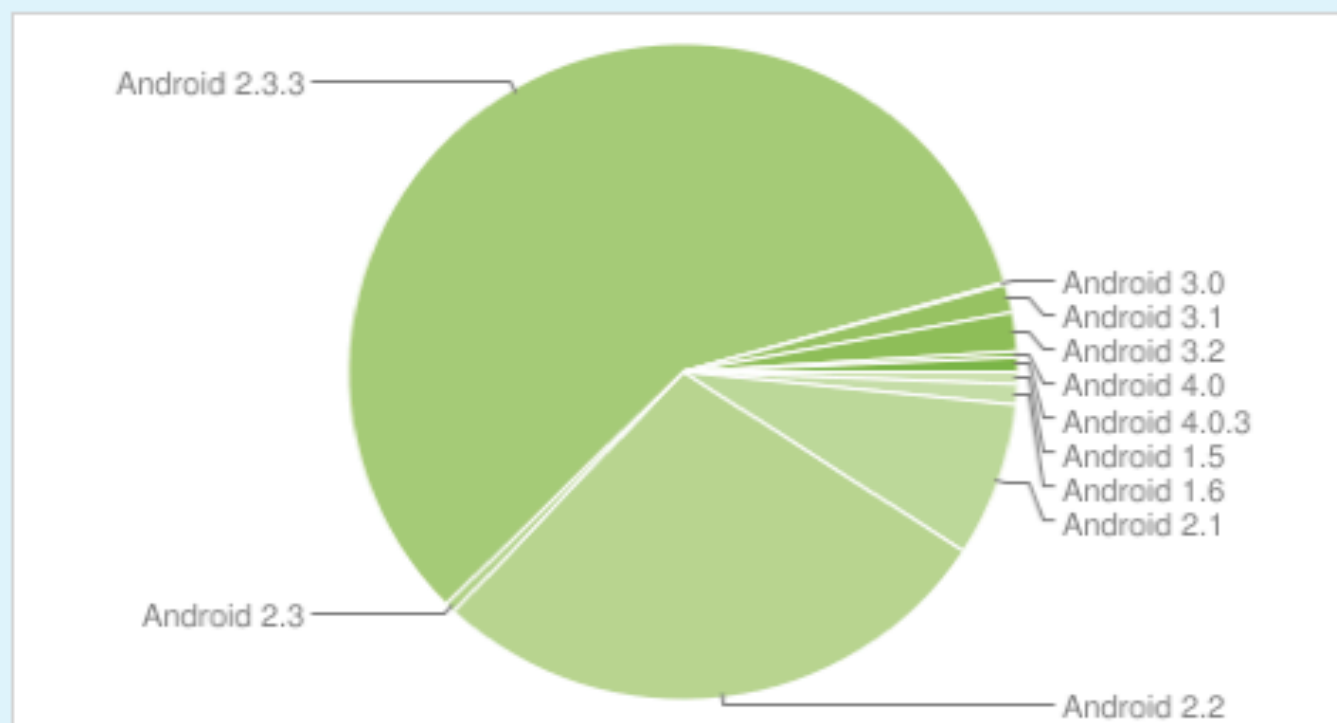
Features

- **Application framework** enabling reuse and replacement of components
- **Dalvik virtual machine** optimized for mobile devices
- **Integrated browser** based on the open source [WebKit](#) engine
- **Optimized graphics** powered by a custom 2D graphics library; 3D graphics based on the OpenGL ES 1.0 specification (hardware acceleration optional)
- **SQLite** for structured data storage
- **Media support** for common audio, video, and still image formats (MPEG4, H.264, MP3, AAC, AMR, JPG, PNG, GIF)
- **GSM Telephony** (hardware dependent)
- **Bluetooth, EDGE, 3G, and WiFi** (hardware dependent)
- **Camera, GPS, compass, and accelerometer** (hardware dependent)
- **Rich development environment** including a device emulator, tools for debugging, memory and performance profiling, and a plugin for the Eclipse IDE

ANDROID ARCHITECTURE



ANDROID OS MARKET SHARE



Platform	Codename	API Level	Distribution
Android 1.5	Cupcake	3	0.6%
Android 1.6	Donut	4	1.0%
Android 2.1	Eclair	7	7.6%
Android 2.2	Froyo	8	27.8%
Android 2.3 - Android 2.3.2	Gingerbread	9	0.5%
Android 2.3.3 - Android 2.3.7		10	58.1%
Android 3.0	Honeycomb	11	0.1%
Android 3.1		12	1.4%
Android 3.2		13	1.9%
Android 4.0 - Android 4.0.2	Ice Cream Sandwich	14	0.3%
Android 4.0.3		15	0.7%

[http://developer.android.com/resources/dashboard/
platform-versions.html](http://developer.android.com/resources/dashboard/platform-versions.html)

TOOLS

- Eclipse Classic
- Android SDK
- Android Developer Tools Plugin for Eclipse



DEMO

DEBUGGING

- ADB (Android Debug Bridge) - Command line tools that enable you to interact with your emulator or device.
- DDMS (Dalvik Debug Monitor Service) - Graphical debugger which provides port-forwarding services, screen capture on the device, thread and heap information on the device, logcat, process, and radio state information, incoming call and SMS spoofing, location data spoofing, and more.
- AVD (Android Virtual Device) - an emulator that allows you to test your application on multiple versions of Android.

DATABASE

- Android provides a SQLite Database interface that developers can use to provide database functionality in their apps.
- SQLiteDatabase is the class for working with databases. It provides insert(), update() and delete() methods which are obvious. It also provides execSql() which allows you exec SQL directly. Finally there are query() (parameterized) and rawQuery() to retrieve data from the database.
- Great tutorial at: <http://www.vogella.de/articles/AndroidSQLite/article.html>

SUBMIT APP TO MARKET

- Remove debugging or logging code.
- Version your application.
- Sign your application.
- Upload to the Android Marketplace. Before you can publish software on the Android Market, you must do three things:
 1. Create a developer profile
 2. Agree to the [Android Market Developer Distribution Agreement](#)
 3. Pay a registration fee (\$25.00) with your credit card (using Google Checkout)

http://ofps.oreilly.com/titles/9781449383268/ch08_id35815995.html

PART II

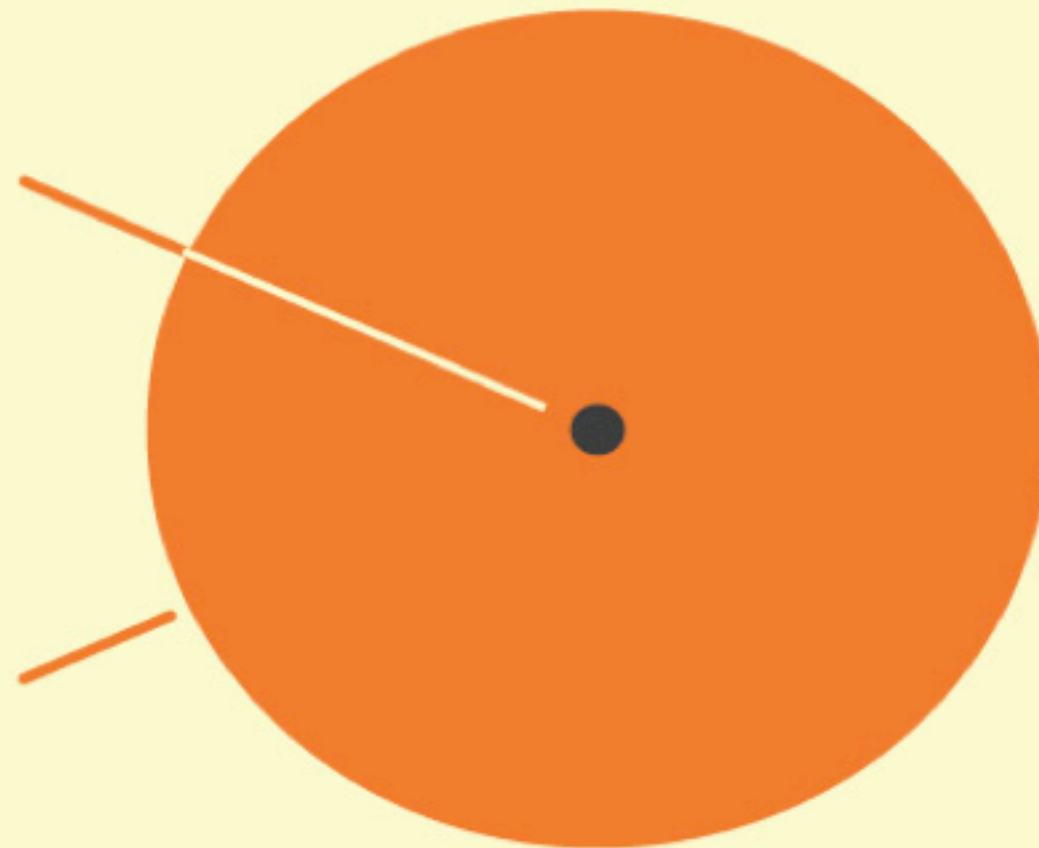
MOBILE SPACE

MOBILE APP DOWNLOADS BY YEAR

300 MILLION
(2009)



5 BILLION
(2010)

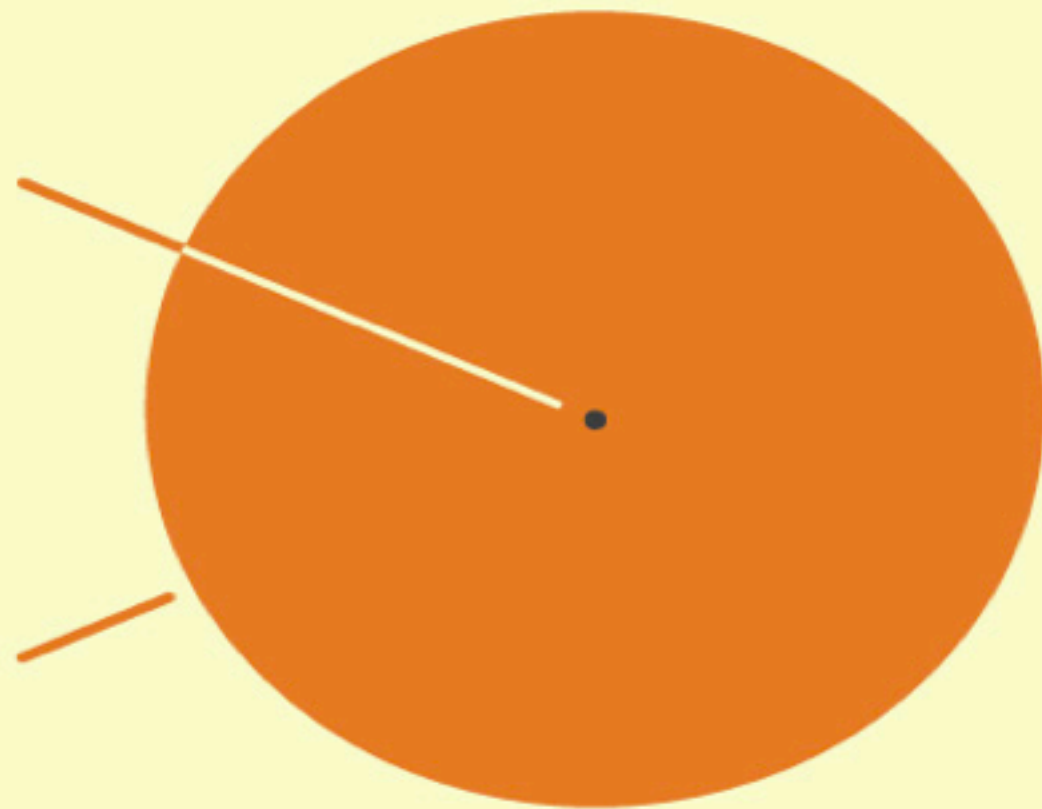


MOBILE SPACE

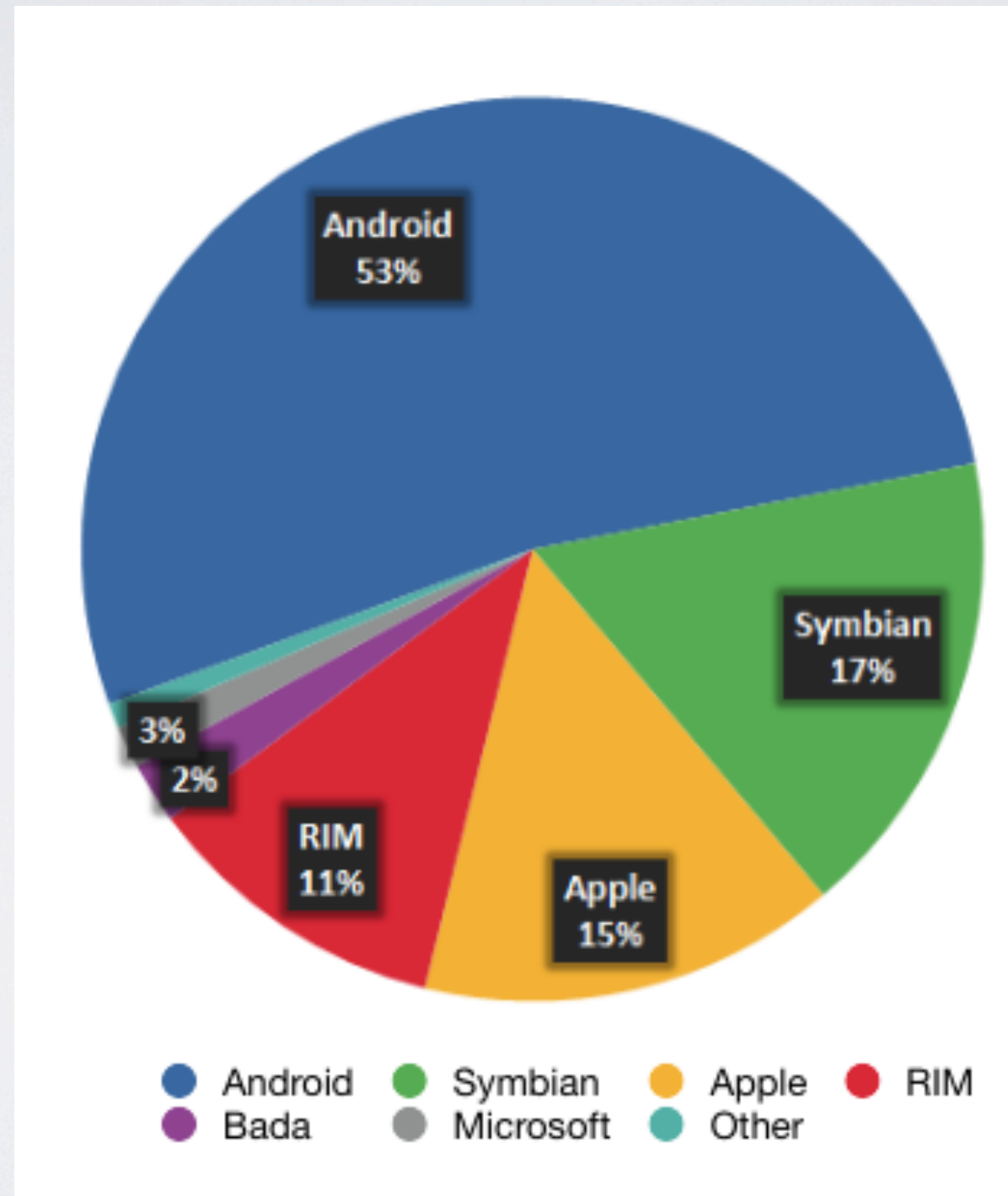
DOLLARS SPENT ON MOBILE DEVICES

IN 2010
AMERICANS SPENT
\$42.8 MILLION

IN 2015
AMERICANS WILL SPEND
\$1.8 BILLION



EVERYONE WANTS A PIECE OF THAT PIE!

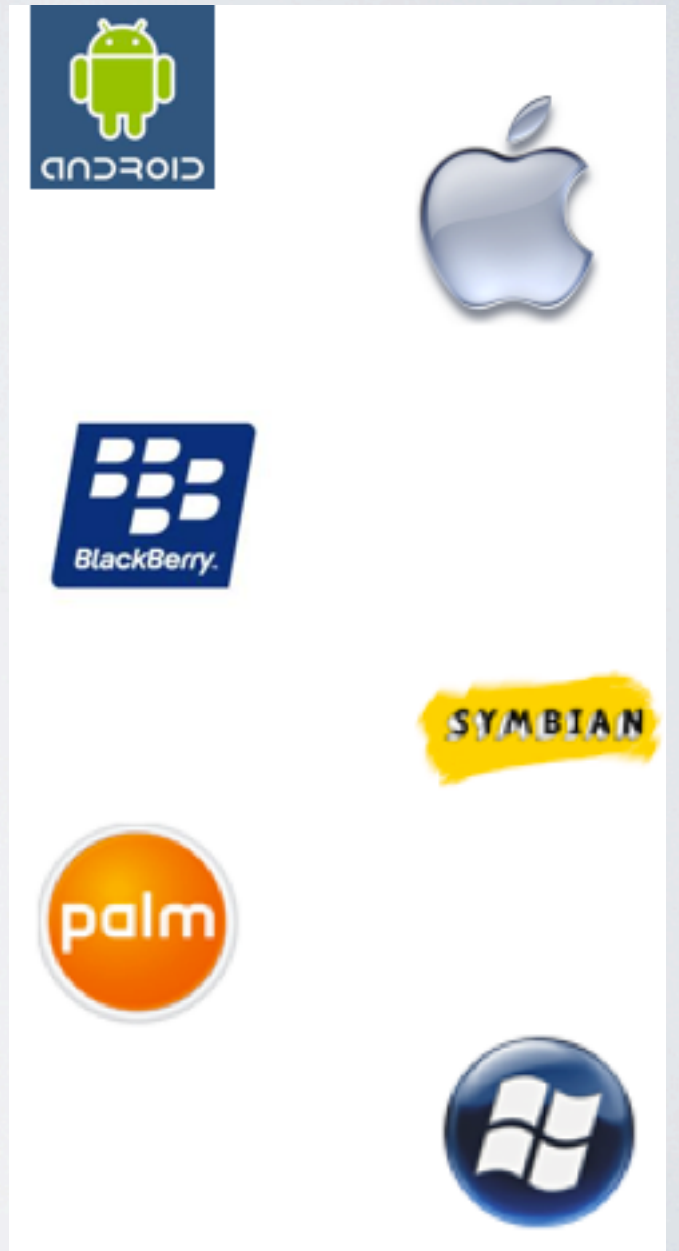


MOBILE APP DEVELOPMENT

- Native Mobile App
- Mobile Web App
- Hybrid Mobile App

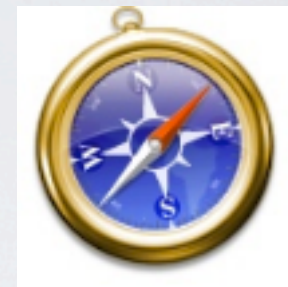
NATIVE MOBILE APPS

- Platform Specific
- Sold via App Stores
- Specific technologies and development environments
- Licensing agreements

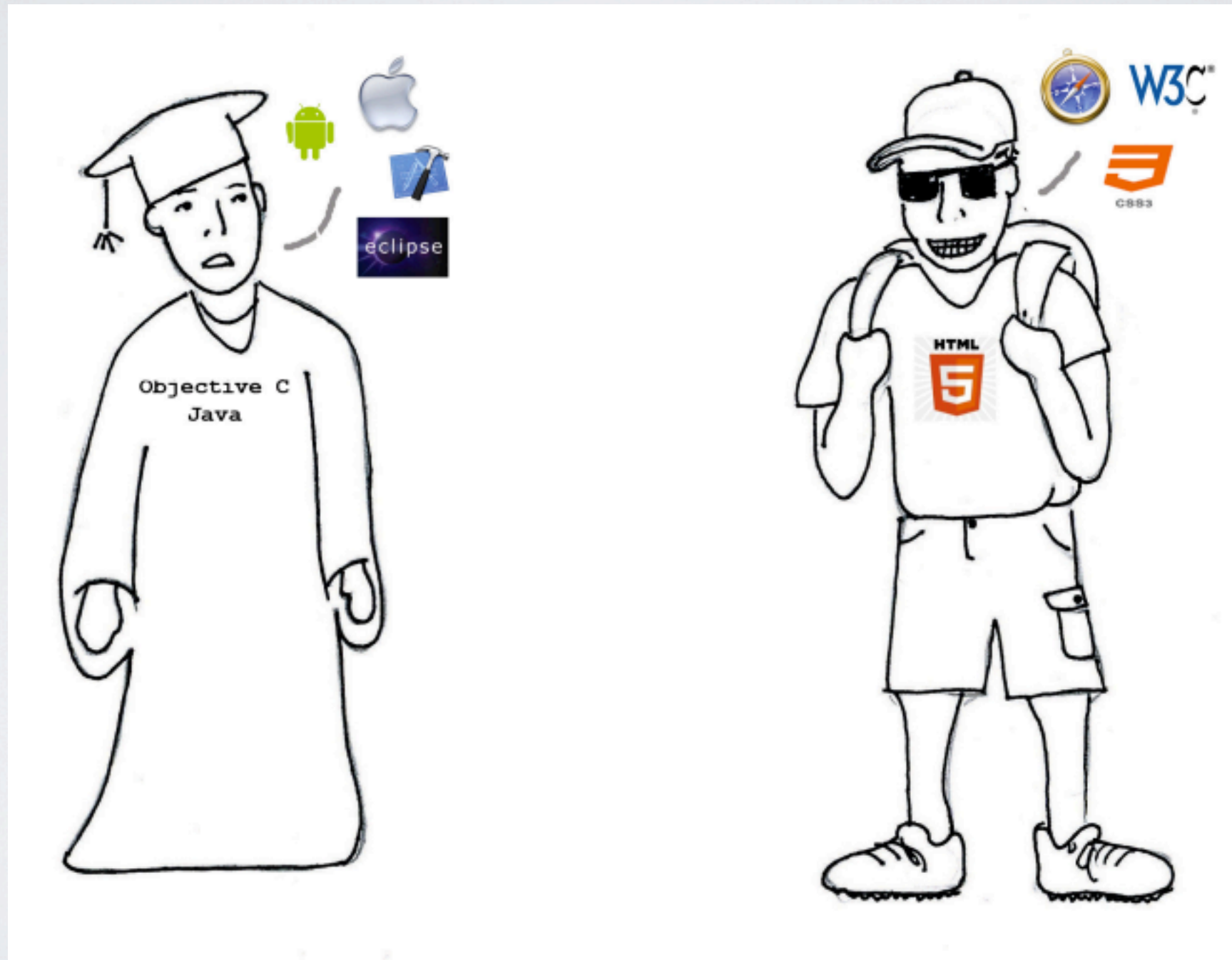


MOBILE WEB APPS

- Fast, easy, simple
- Run in mobile browsers
- Built on W3C technologies
- Minimal access to device features



WHAT'S A DEVELOPER TO DO?



HYBRID WEB APPS

- Built with Web Technologies
- Access to Device Features
- Distributed via App Stores
- Some platform specific knowledge
- Licensing Agreements

PHONEGAP OVERVIEW

It's a tool for building mobile apps using Web technologies



HTML For Layout

JavaScript to access device functionality

navigator.notification.vibrate();

CSS for rich look and feel

Standards Based

TYPICAL PHONEGAP ARCHITECTURE

- **HTML/JS/CSS** + graphic assets are on the device, packaged as part of the build process.
- **JavaScript** can store retrieved data in a SQLite database or from localStorage (key/value pair) for offline access.
- Often a server component involved.
- JavaScript communicates with the server via **XHR** to get retrieve data.
- Yes, you can load your app remotely with caveats.

TOOLS

- PhoneGap SDK
- A Webkit based browser like Safari or Chrome.
- If you have to pick a machine to develop cross platform mobile applications. Get a Mac. The iOS tools only run on a Mac, the Android tools run great on a Mac, the BlackBerry tools are getting better but you can run them in a virtual PC along with your Windows Phone development environment.

DEMO

DEBUGGING

- Console.log is your friend!
- Try weinre!
 - Pronounced “Wine Er Ee”, not “We Ner”!
 - Stands for **Web Inspector Remote**

<https://github.com/apache/incubator-cordova-weinre>

<http://debug.phonegap.com/>

DATABASE

- All mobile devices support **WebSQL** Databases.
<http://www.w3.org/TR/webdatabase/>
- Even though the specification is no longer maintained it will be around for awhile until device vendors support **IndexedDB**.
<http://www.w3.org/TR/IndexedDB/>



**KEEP
CALM
AND
CARRY
ON**