University Smartphone Development:

Jeff Salvage

Nathaniel Bomberger

1993 Apple Newton

Scully coined the term PDA*

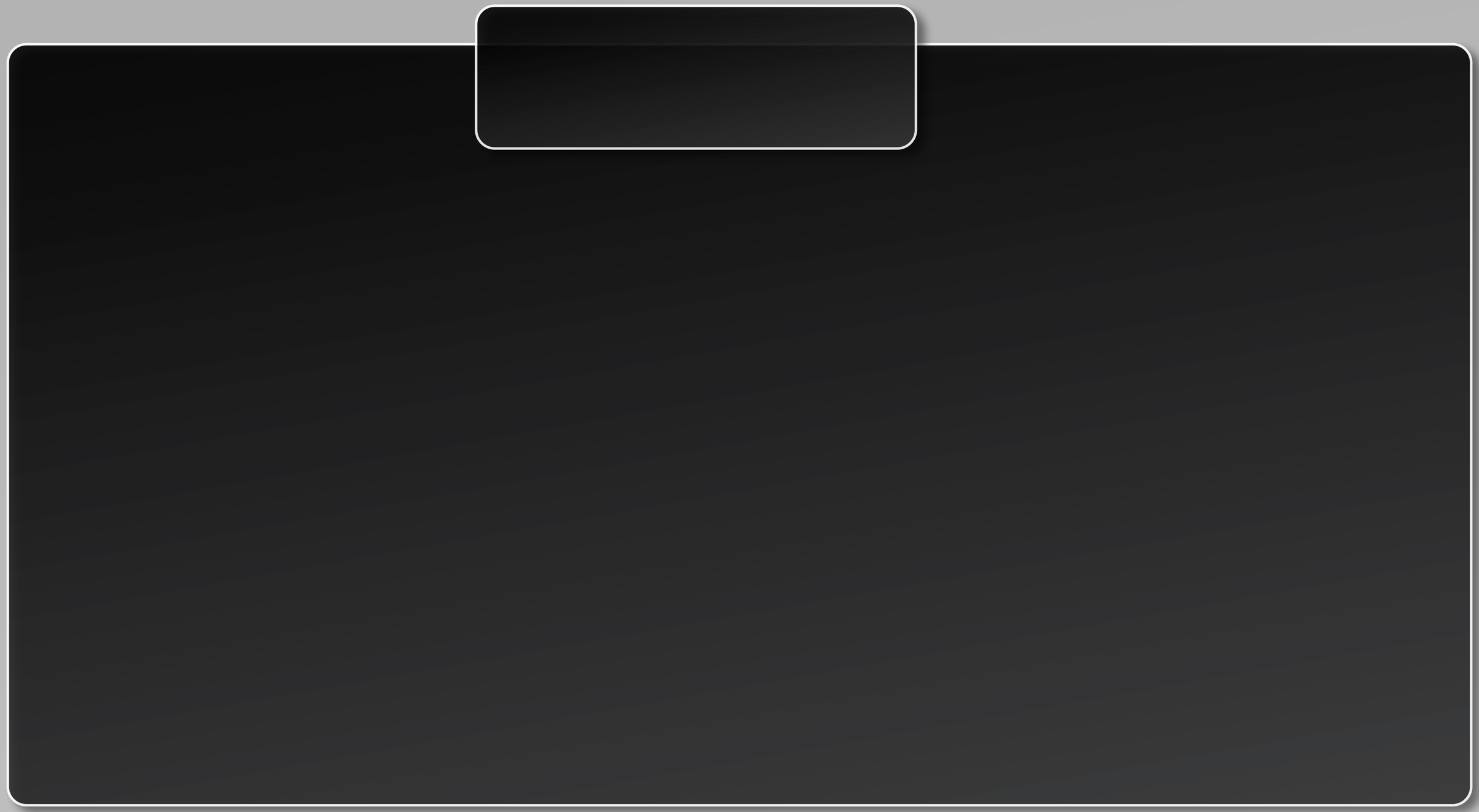
History

1993 Apple Newton

Smartphones have their roots in PDA's

- Handwriting recognition
- 3rd Party apps
- Desktop sync

Scully coined the term PDA*



History

1996 Palm Pilot

- 128 KB RAM
- 160 x 160 pixel screen

1996 - 2000 Windows CE

History

1996 - 2000 Windows CE

Lead to...

- Pocket PC (custom platform of PDA's)
- Windows Mobile

History

1999, RIM Blackberry

- Smart Phones starting to take over
- Push Technology
- By 2003 evolved into true mobile platform

History

Dawn of "modern" smartphone, iOS

New feature drops on scene..

- Released in 2007
- No external keyboard
- Industry changer

First multi-touch mobile OS

2:47 PM
Dialer
Contacts
Browser
Maps
MENU
2:47 PM
Home Gmail Calendar Reader More
Google
Web Results 1 - 10 of about 3,620,000
MENU

History

Google joins the fray in 2008

- Google financed and bought Android
- First phone in 2008
- Open source!

! not backward compatible !

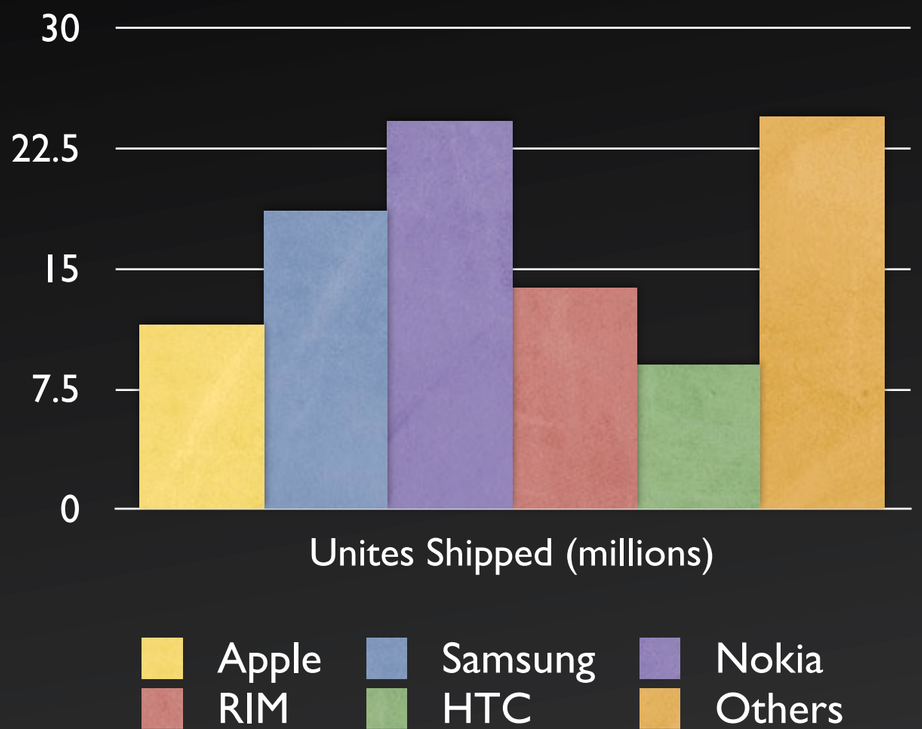
History

Windows 7 Phone/Windows 8 Phone

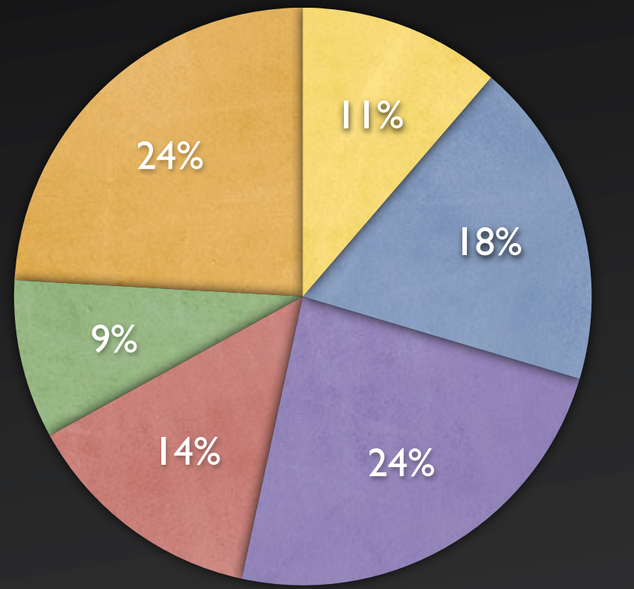
- Windows 7 Phone - Released 2010 for consumers not the enterprise
- Incompatible with previous versions and Windows 8
- Metro Interface
- By 2003 evolved into true mobile platform
- Windows 8 release eminent

! not backward compatible !

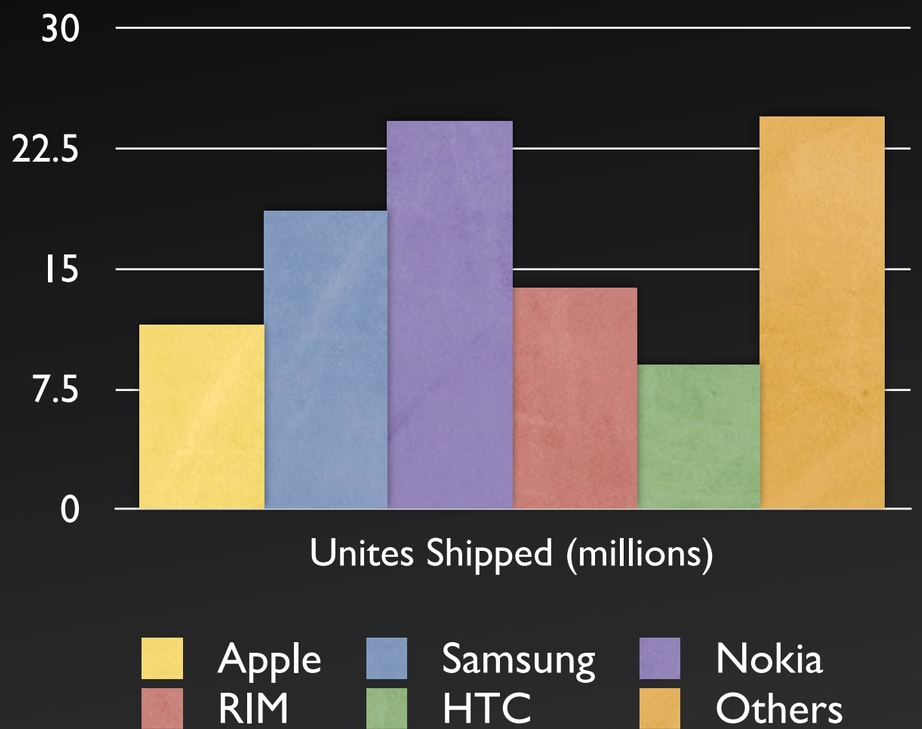
2011 First Quarter Shipments



2011 First Market Share



2011 First Quarter Shipments



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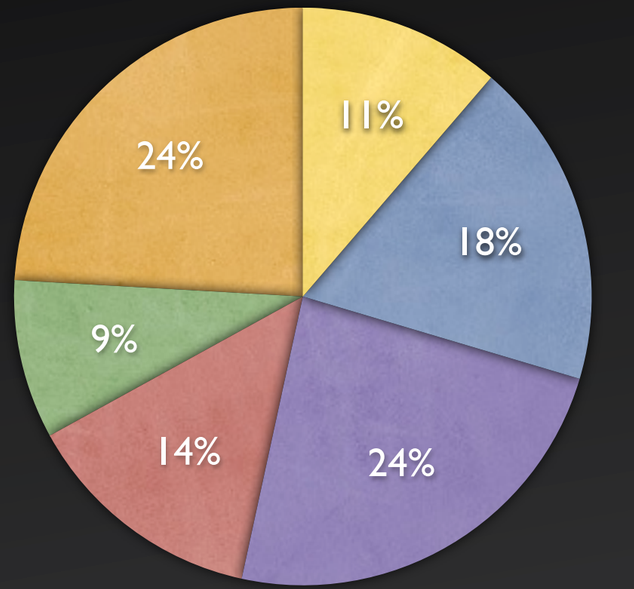
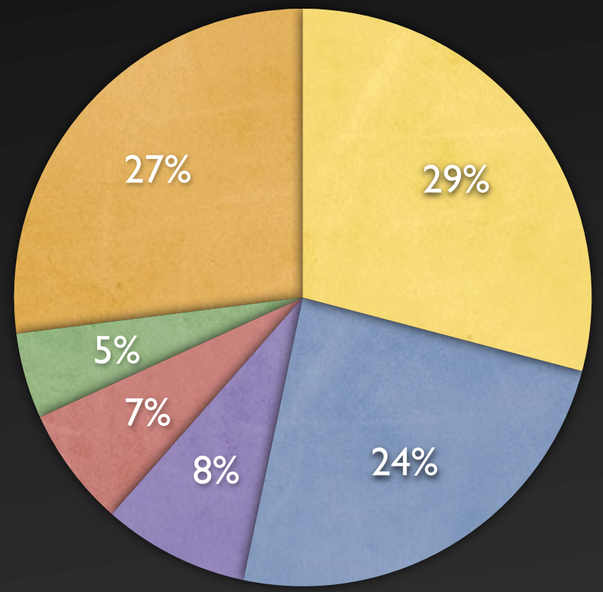


2012 First Quarter Shipments

Apple
Samsung
Nokia
RIM
HTC
Others

2012 First Market Share



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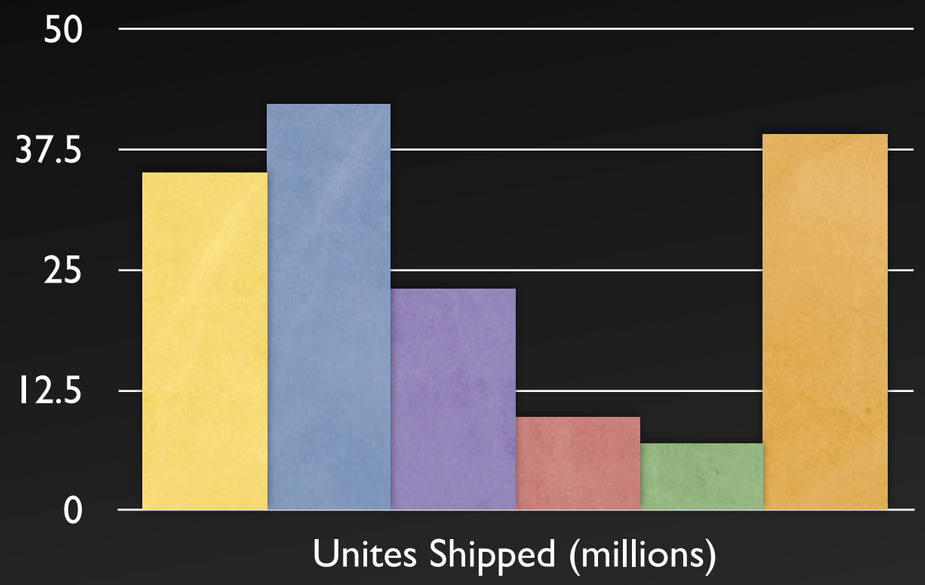
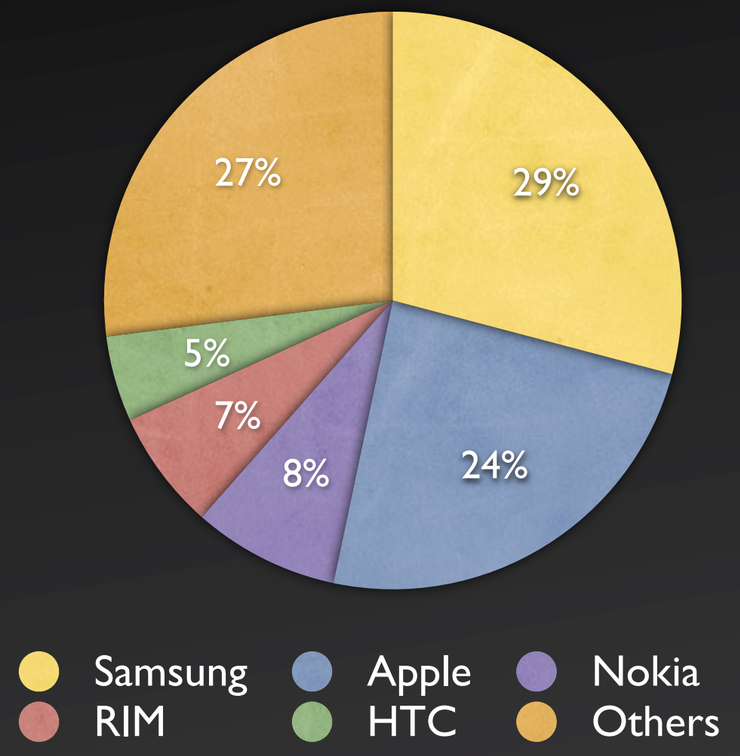
2012 First Quarter Shipments



2012 First Market Share



Invasion of the tables

History

Invasion of the tables

Lead to...

- Ipad release 2010
- Honeycomb (Android)

2004 Emergence of Mobile Apps at Drexel

Drexel

2004 Emergence of Mobile Apps at Drexel

More students doing projects with mobile

- 2 of the top 4 top projects
- 6 of 20 projects were mobile

2005 Taking a step backwards

Drexel

2005 Taking a step backwards

More students doing projects with mobile

- No significant Mobile projects
- Projects could have benefited!

2011 Maturation of Mobile Apps

DistroWhale wins Computer Science Design Contest

Drexel

2011 Maturation of Mobile Apps

DistroWhale wins Computer Science Design Contest

VISASSIST

Math
Dash

Drexel

Dominance of Mobile Apps

- Students develop social centric smartphone apps
- 6 of 10 projects for Senior Design involved mobile development
- VisAssist wins College of Engineering Senior Design Contest
- MathDash wins Microsoft Imagine Cup

Teach

Benefits of Mobile Platform for University Development

- Inexpensive platforms
- Projects are quickly distributable
- Engaging content
- Wide range of audiences for projects

Microsoft®
Visual Studio

THE
C
ANSI
C
PROGRAMMING
LANGUAGE

Java

javadoc online

skype™

eclipse

EMMA

JUnit

Tools of the Trade

VisAssist 18

0.5 miles
101

iOS 6

iOS features

- iOS
- Closed and Open source
- Fickle review process
- Multitasking
- 37% of apps are free
- More games

iOS 6

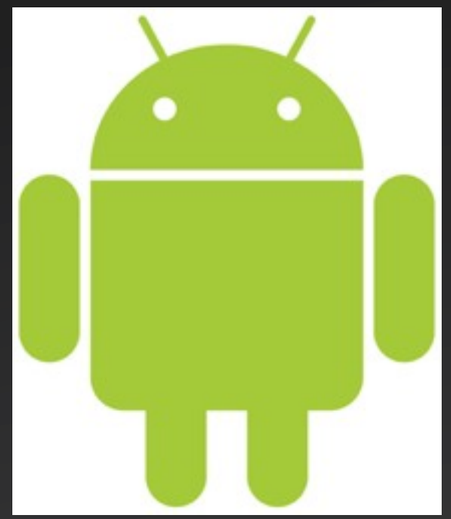
Xcode

- Xcode 4.5 is now free
- Can develop on all iOS devices
- Student license discounts
- Growing community
- MUST HAVE A MAC

iOS 6

Languages and Tools

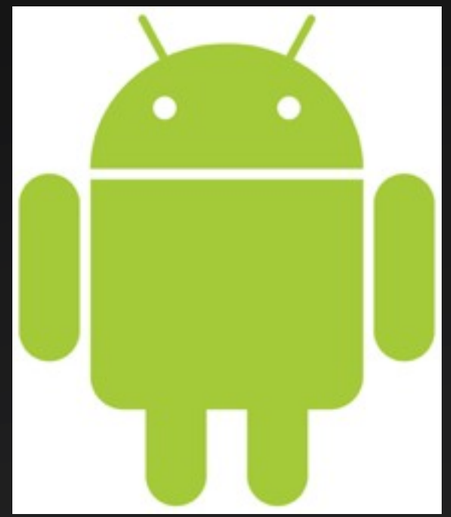
- Objective C
- Must use public APIs for store
- ARC - memory management
- Very Design Pattern friendly
- Can not deploy without license



Android

Android features

- Open Source
- Very easy to put into market
- Fragmented Hardware
- No limits on API use
- All tools are free - can develop on Mac Windows, Linux
- Java very familiar to students



eclipse

Android

Languages and Tools

- Eclipse is free Java-centric IDE
- Has large plugin suite - Most open source
- JVM
- javadocs, emma all work nicely
- MUST HAVE A MAC

people
recent

Android

You can do anything with Android....

- XML layout for view
- Breaks MVC
- JNI - C for optimizations
- Auto generates views! (R file)
- More control - build listeners,

Activity starts
onCreate()
User navigates back to your Activity
onStart()
onRestart()
Process is killed
onResume()
Activity is running
Your Activity comes to the foreground
New Activity is started
Other applications need memory
onPause()
Your Activity comes to the foreground
Your Activity is no longer visible
onStop()
onDestroy()
Activity is shut down

Android

Languages and Tools

- UI like Swing - easy transition
- Intents - easy messaging
- Message passing is simple Very
- Controller - view is Activitya

iOs & Android

Both platforms support common feature requets such as...

- Maps, Location services
- Social network integration
- Cloud support
- Push Notification
- Camera, Accelerometer, Bluetooth stack

Developer /Customer/Student preference!

Which one?

Developer /Customer/Student preference!

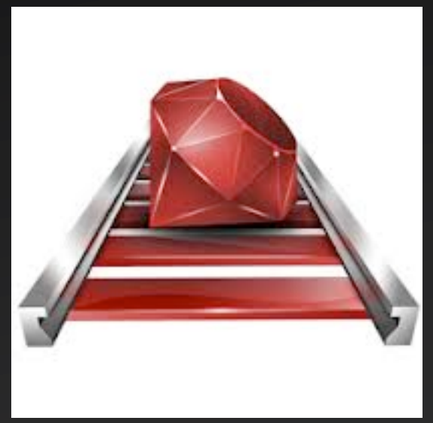
2 Most Popular Platforms

Middleware

2 Most Popular Platforms

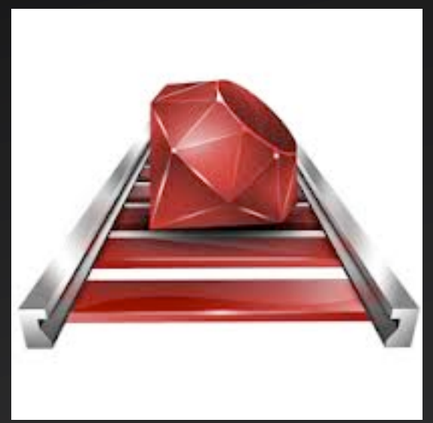
- Cross platform
- Rapid prototyping
- HTML/Javascript
- Speed is not our friend..
- Native hardware support, but not as fast as other Native

More and more mobile applications are reliant on the cloud. The future lies in finding ways to integrate with Cloud services. Its hard to build a good mobile app without the cloud!



Full stack?

More and more mobile applications are reliant on the cloud. The future lies in finding ways to integrate with Cloud services. Its hard to build a good mobile app without the cloud!



Questions?

0.5 miles
101