Hybrid Mobile Applications using PhoneGap

QCon SF 2011
@davejohnson

Adobe <3 PhoneGap

Schedule

- Overview
- What is PhoneGap?
- How to write apps
- Community
- API overview
- How to extend PhoneGap
- Tooling
- Libraries
- Web VS Native

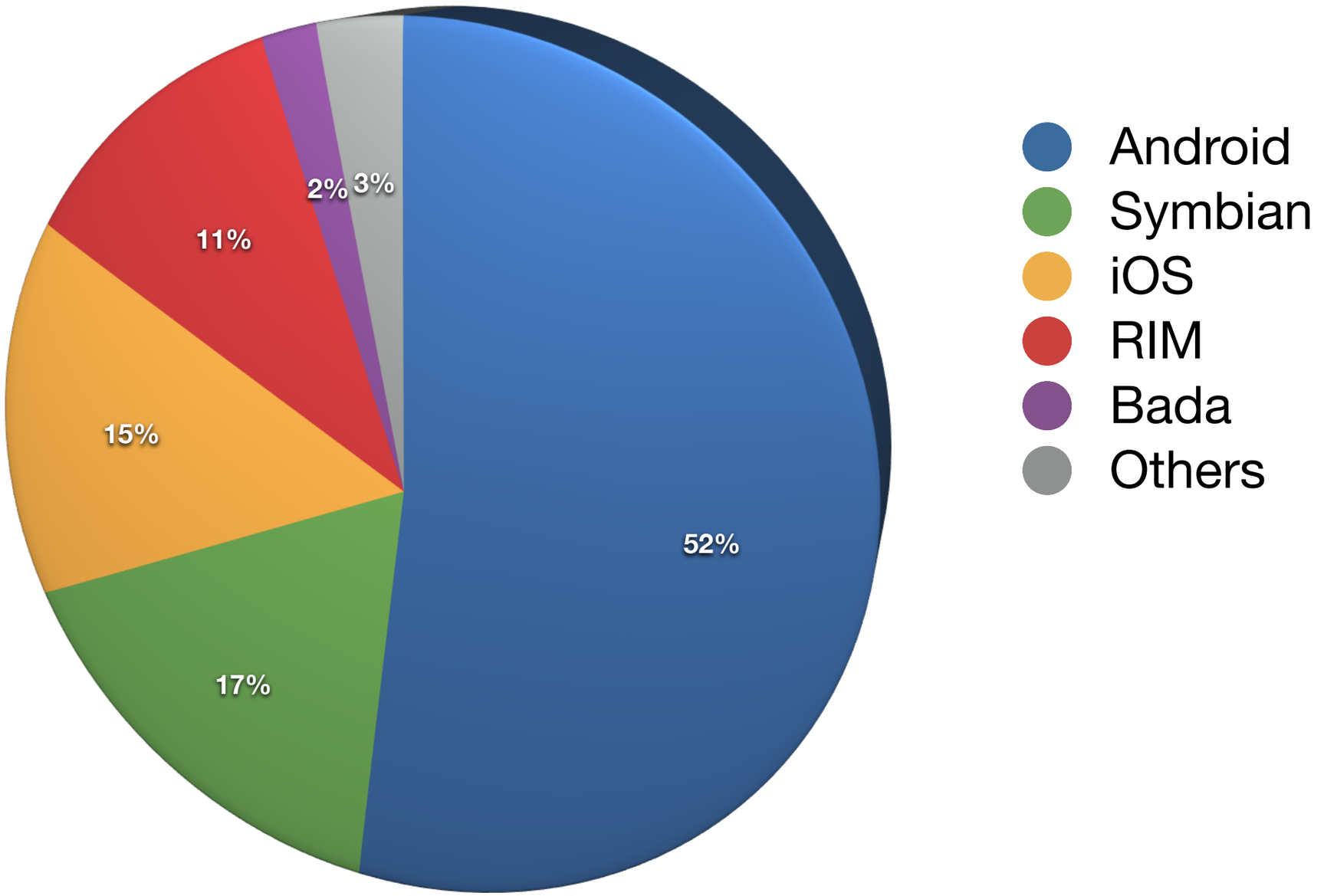
HTML

Monday, November 21, 2011

Monday, November 21, 2011

PhoneGap

Worldwide Smartphone Sales Q3 2011



What is PhoneGap?

PhoneGap Pattern

1. Embed a chromeless browser in a native app
2. Create a “bridge” between the browser and the native code
3. Write a web app
4. Package the web app with the native code and deploy to devices!

Write once *debug* everywhere

Monday, November 21, 2011

Enchanted Unicorn BANDAGES
FREE TOY INSIDE!
15 LARGE STERILE STRIPS
3" x 1"
(25mm x 76mm)
© ACCOUTREMENTS

Supported Platforms

iOS >= 3.2

Android >= 1.5

BlackBerry >= 4.6

webOS >= 1.4.5

Symbian >= 1

Windows Phone >= 7.5

Lay of the Land

iOS ..... Objective C

Android ..... Java 'Harmony' / C++

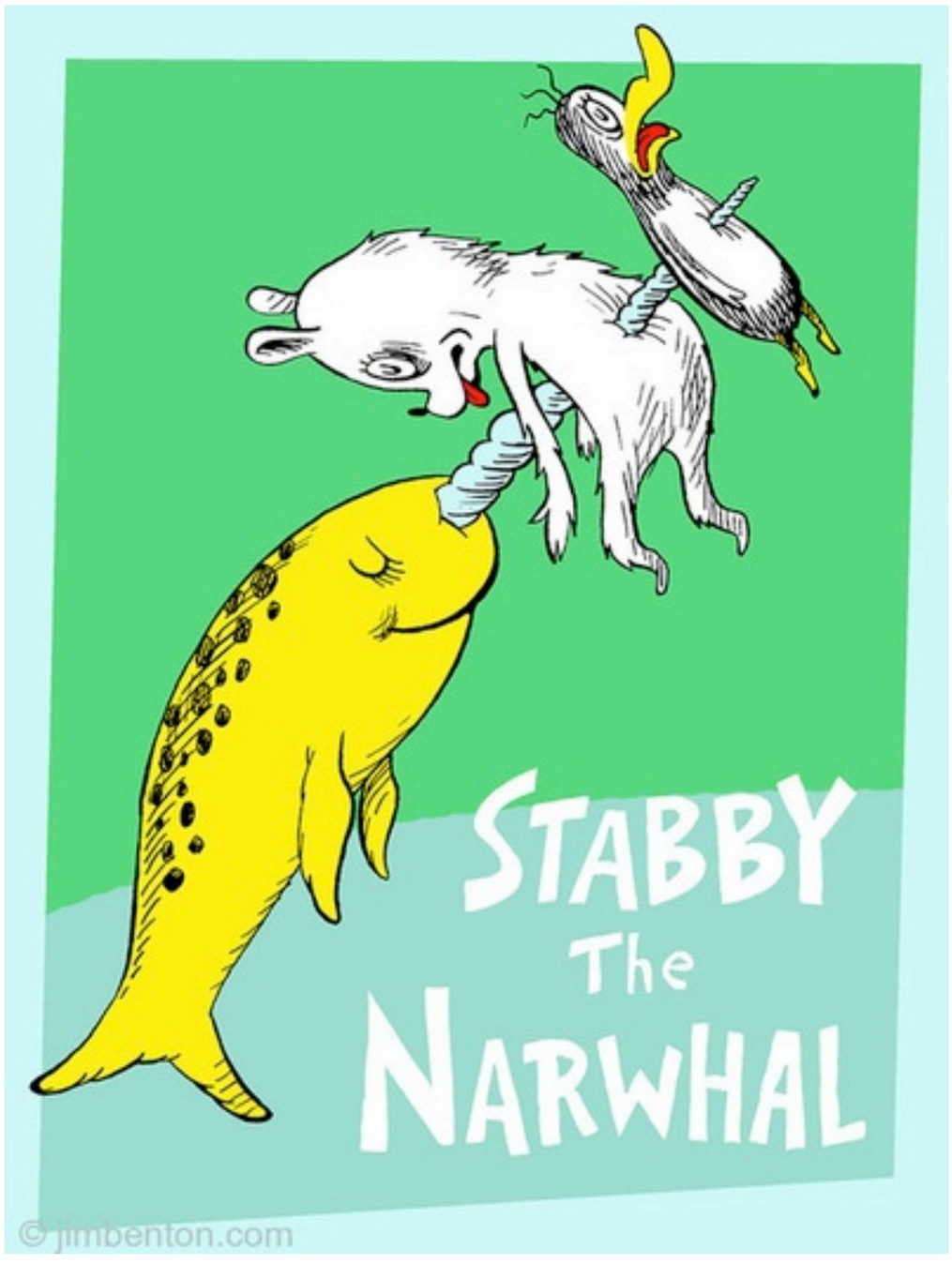
BlackBerry ..... Java J2ME / C++ (maybe?)

webOS ..... HTML, CSS and JS

Windows Phone 7 ... .NET bs

Bada ..... C++

Deprecated



Prototype Platforms

Qt

OS X

Windows

PlayBook

MIT/BSD/APACHE

Our Community

Community Stuff

600,000
downloads

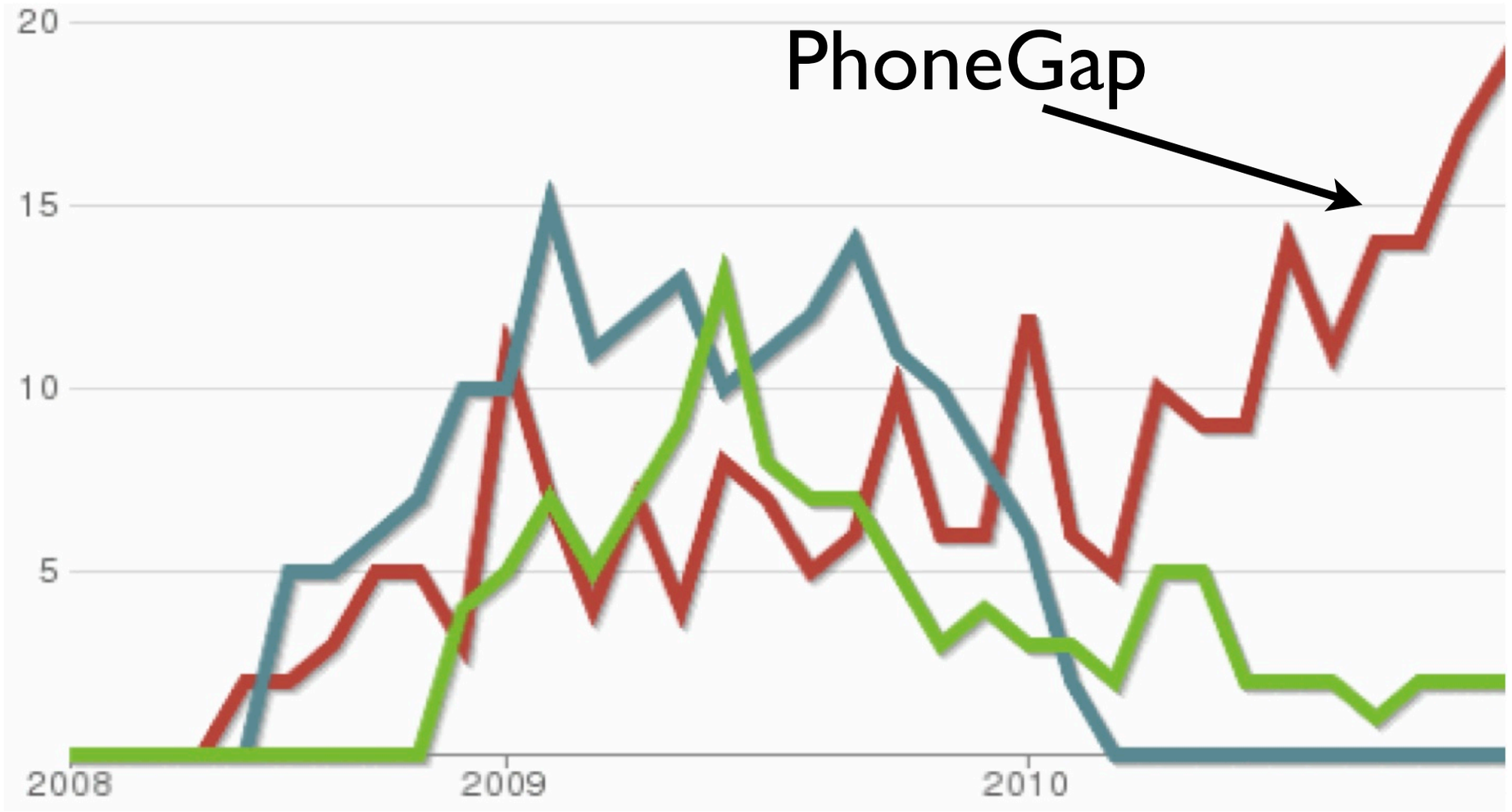
30,000
messages

40+
tools

50+
contributors

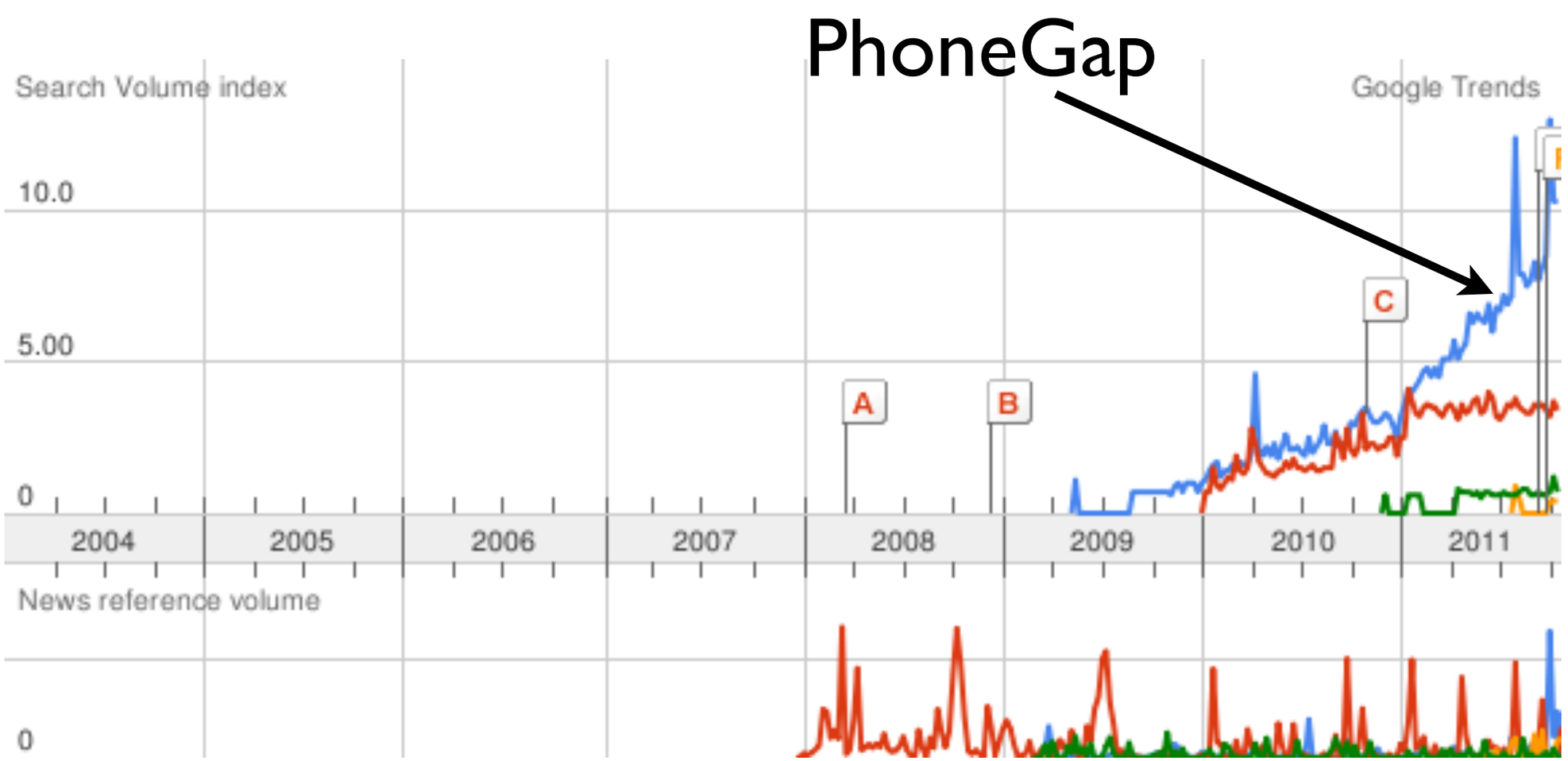
750,000
visits/month

Contributors



-- ohloh.net

Google Trends



Contributors

- Adobe
- IBM
- Microsoft
- RIM
- Salesforce.com

Users

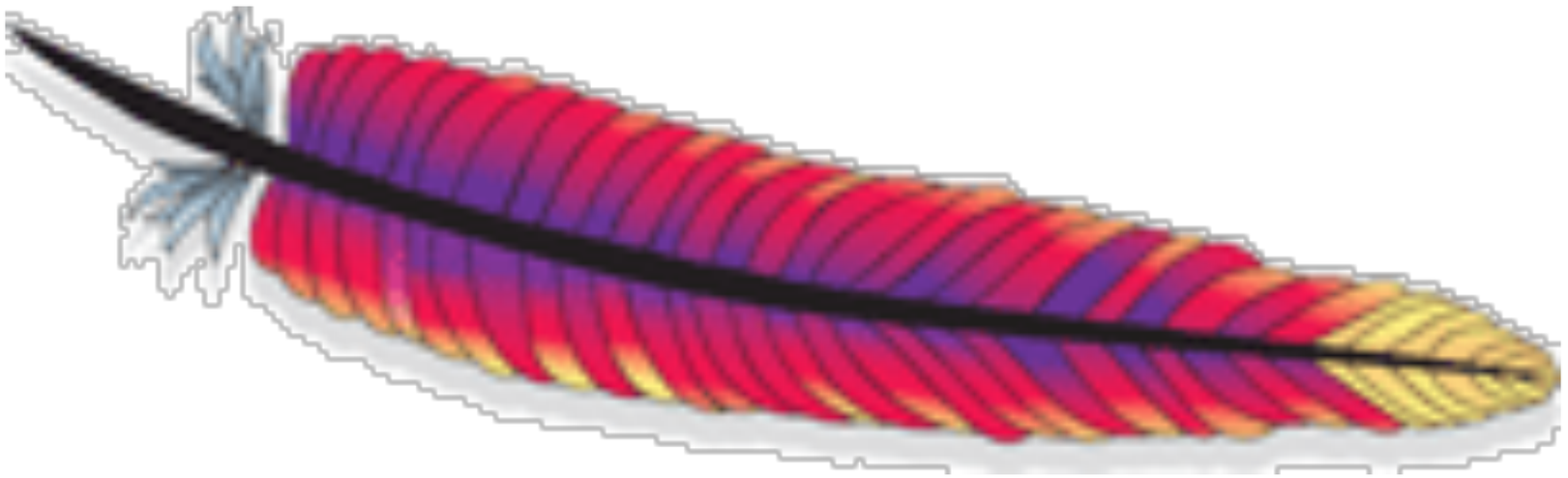
- Alcatel-Lucent
- Zynga
- Microsoft
- Travelocity
- Vodafone
- Wikipedia
- Salesforce.com

Thousands of Apps

Traction

- ~15,000 PhoneGap apps in the App Store
- Most popular categories?
  - medical
  - news
  - business

Governance



PhoneGap === Callback

http://github.com/callback/

How do you write PhoneGap apps?

HTML

Monday, November 21, 2011

Mobile web first!

- Basics.
- Tooling.
- Libraries.

HTML(5)

```
<button>I'm native codes!</button>
```

Setup the Viewport

```
<meta name="viewport" content="
    width=device-width, initial-scale=1.0,
    maximum-scale=1.0, user-scalable=no;" />
```

Android Trick

target-densitydpi=device-dpi

Basics: CSS3

- Media queries come in handy for tablets
- Many folk using precompilers these days
- Opacity, rounded corners, gradients and fucking drop shadows fuck ya!

Transformations

```
-webkit-transform:

   translate3d(x,y,z) scale3D(1,1,1.0)
```

Media Queries

```
<link rel="stylesheet"
      media="all and (max-device-width: 480px)"
      href="iphone.css">
```

Media Values

```
<link rel="stylesheet"
    media="all and (max-device-width: 480px)"
    href="iphone.css">
```

- all
- max-device-width: 480px
- min-device-width: 481px
- orientation: portrait
- -webkit-min-device-pixel-ration: 2

General Tricks

- window.devicePixelRatio

Startup

```
<script>
document.addEventListener('deviceready',
    function() {
        alert('WINNING!');
    }, false);
</script>
```

```
<!DOCTYPE html>
<html>
    <head>
        <title>Vanilla</title>
        <meta name="viewport" content="
            width=device-width, initial-scale=1.0,
            maximum-scale=1.0, user-scalable=no;
        " />
        <link rel="stylesheet" href="css/app.css"
            type="text/css" media="screen">
    </head>
<body>
    <h1>Vanilla!</h1>
    <p>Ice Ice Baby</p>
<!-- always put phonegap.js first!!! -->
    <script src="phonegap-0.9.4.js"></script>
    <script>
document.addEventListener('deviceready', function(){
    alert('rock a mic like a vandal')
}, false);
    </script>
</body>
</html>
```

Monday, November 21, 2011

Can you put PhoneGap apps in the App Store / Android Market / whatever?

Monday, November 21, 2011

Take note

- HTML, JS, CSS etc included in app package
- HTML loaded on file:// URI scheme, no cross domain request restrictions
- Engineering wise, approach is simple to extend to new platforms

Who dreamed up the PhoneGap APIs?

PhoneGap APIs

- Sensors
- Data
- Events

http://docs.phonegap.com

Sensors

- GPS
- Accelerometer
- Compass
- Network
- Camera

Data

- Contacts
- Media
- File system
- Notifications

Events

- onload
- onnativeready
- onresume
- onpause
- ondeviceready
  (onnativeready + ondomcontentloaded)

W3C

- dev.w3.org/geo
  - geolocation + deviceorientation + devicemotion
- dev.w3.org/dap (device apis and policy)
  - contacts, calendar, HTML media capture, Media capture api, Messaging, System info
- webapi
  - Web notifications

HTML

Monday, November 21, 2011

HTML5

- <canvas>
- <audio>
- <video>
- Drag and drop
- File API
- History API
- Cache manifest
- postMessage
- Web SQL
- localStorage
- Sockets
- Workers

http://dev.w3.org/html5/spec/Overview.html

API “design”

The “standards” are a mess.

Quotes here are not ironic.

Browser APIs...

```
navigator.geolocation.getCurrentPosition(win, fail, {});
```

Or maybe like this?

```
window.ondevicemotion = function(e) {
    var x = e.accelerationIncludingGravity.x
    ,   y = e.accelerationIncludingGravity.y
    ,   z = e.accelerationIncludingGravity.z
}

window.ondeviceorientation = function(e) {
    var x = e.beta
    ,   y = e.gamma
    ,   z = e.alpha
}
```

Browser Persistence APIs

- SQLite has been a complete fuck up.

WAC

- formerly JIL and BONDI
- a carrier consortium

WAC

```
deviceapis.accelerometer.getCurrentAcceleration(function(a) {
    var x = a.xAxis
    ,   y = a.yAxis
    ,   z = a.zAxis
});
```

Browser Media APIs

- Lets not even go here..
- Audio and video are horribly fucked up
- ESPECIALLY on mobile
- We fix ‘em (attempt to) w/ PhoneGap tho!

DAP Media Capture

```
navigator.device.capture.captureImage(success, error, {});

// of course media capture also means:
// - audio
// - video
// - static images
```

DAP System Info

```
navigator.system.watch("Power", win, null, {lowThreshold:0.2});
```

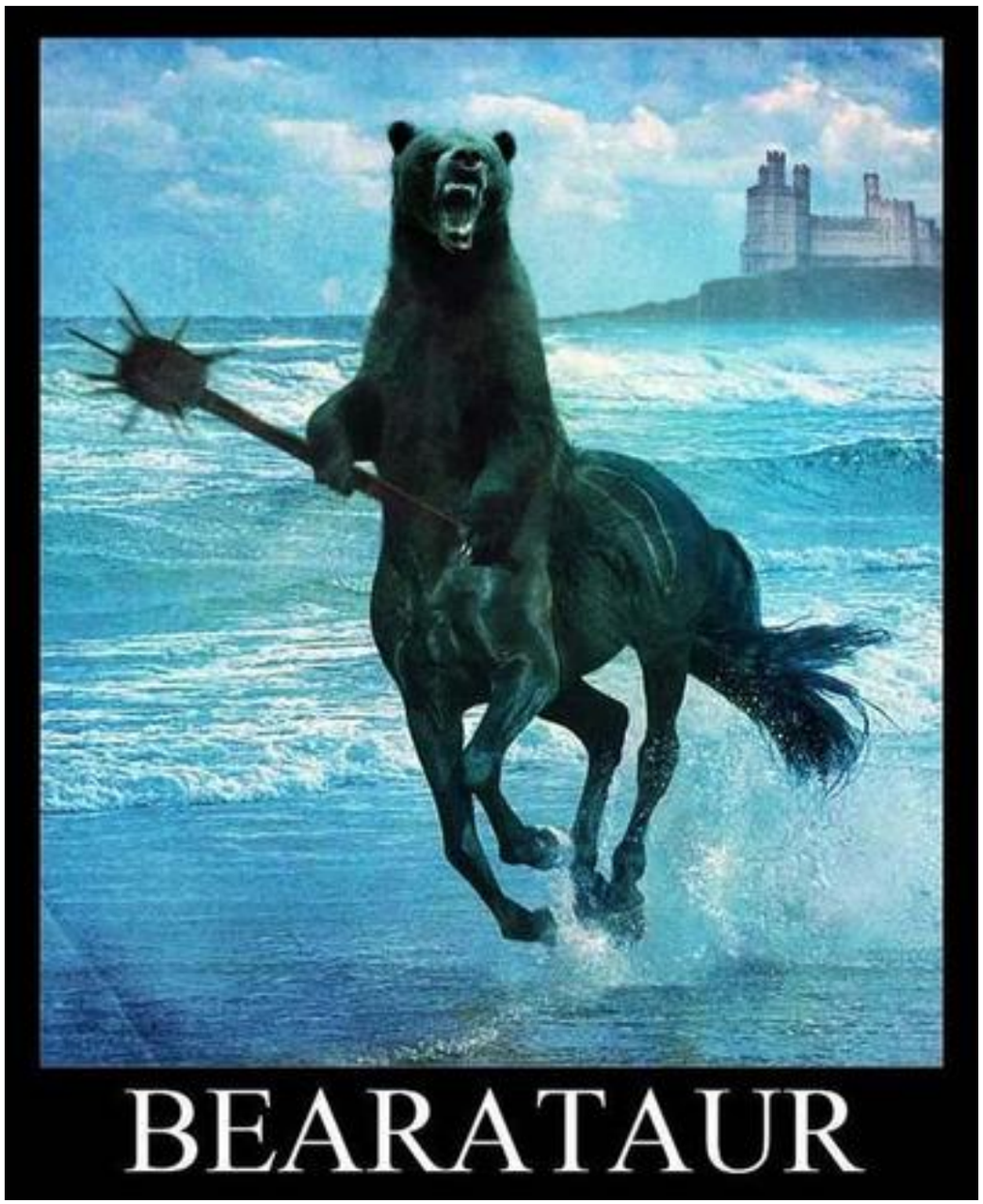
DAP Sys Info

```
navigator.system.get("Network", win, null);
```

DAP API Overview

Contacts
Calendar
Media Capture
Messaging
System Info
Permissions
Gallery
App Launcher
Tasks

2.0



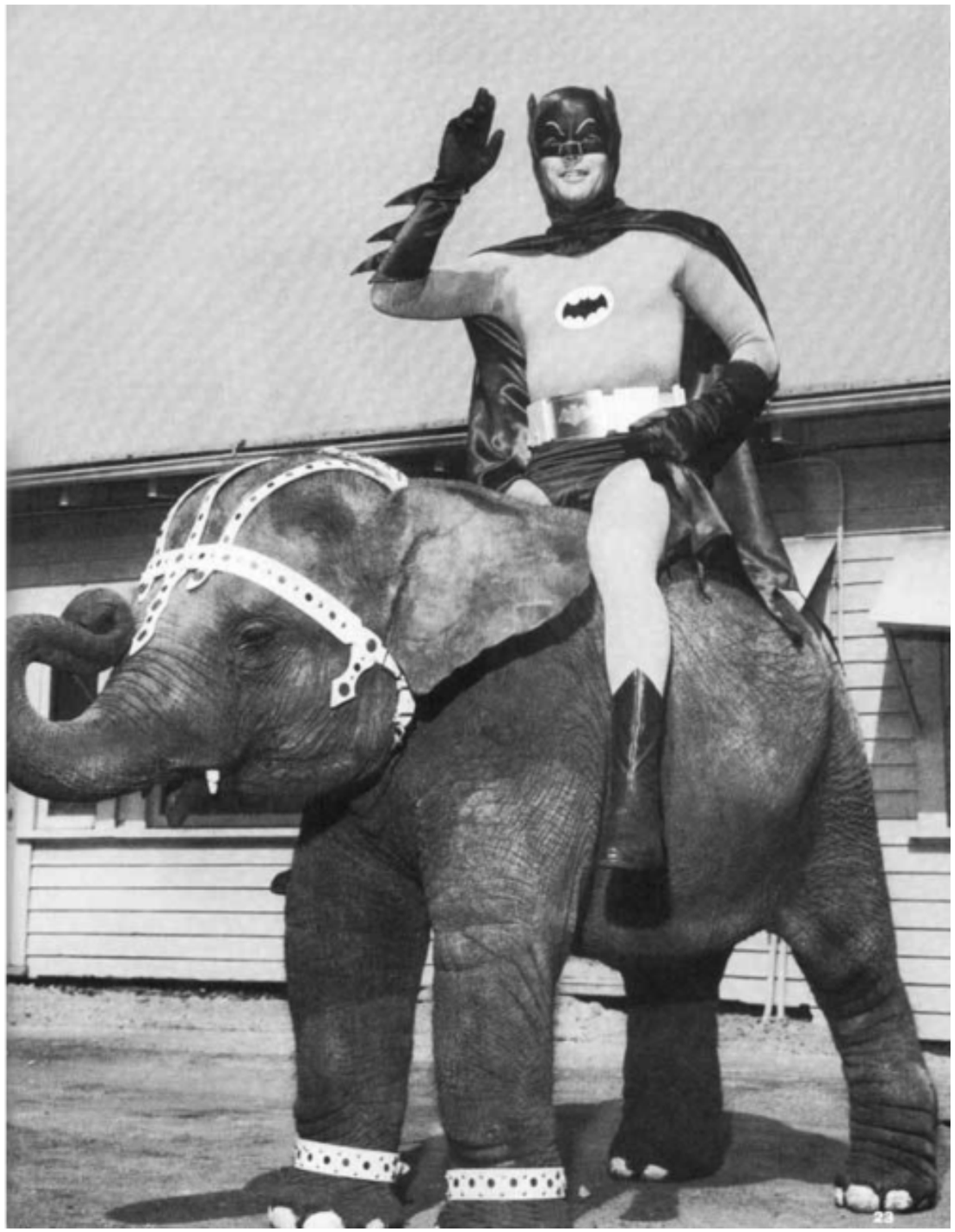
The Future

- Tooling (command line and otherwise)
- WebGL
- Web Intents
- Continue polyfilling HTML5

DANGER
DO NOT PULL
HANDLE
"MAVERICK"

How do I extend PhoneGap?

Plugins to the rescue



Monday, November 21, 2011

Remaining work

- Discovery
- Packaging
- Installation
- Identity

PhoneGap Plugins 1.0

Core

Maintained by us.

Community

Wild west!

Partner

Maintained by you; verified by us. =)

Plugins

- HTML5 Menu
- Push notifications
- Ads
- Analytics
- Barcode scanning
- Facebook Connect

http://github.com/phonegap/phonegap-plugins

What tooling is available?

Compilers / Minifiers

- YUICompressor
- Google Closure
- UglyfyJS

IDES

- Textmate (PhoneGap bundle)
- Eclipse (AppLaud plugin for Android)
- Dreamweaver (CS 5.5)
- Vim

Emulators

- Every SDK has one. Most of them suck.
- WebKit
- Ripple

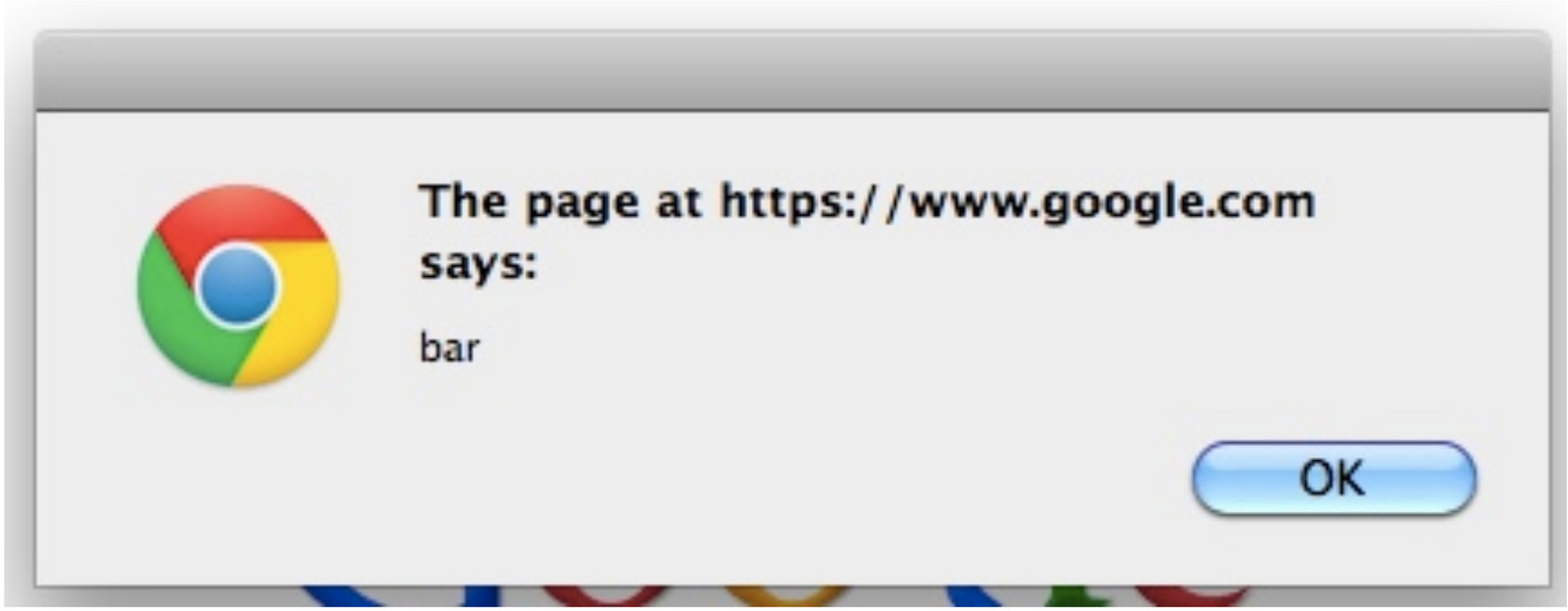
Debuggers

- WebKit nightly is your friend. Mine too.
- Weinre

HTML5 Debugging

```
> console.log('foo')
> foo
```

HTML4 Debugging



HTML

Monday, November 21, 2011

What libraries are available?

DOM Libs

- XUI
- Zepto
- jQuery
- Dojo

Canvas Game Libs

- PropulsionJS
- EaselJS
- GameJS
- CraftyJS
- LimeJS
- jGen

Style / GUI Libs

- jQuery Mobile
- Sencha Touch
- Dojo Mobile
- Jo
- GloveBox
- Ekiben

Persistence Libs

- Lawnchair
- StorageJS
- PersistJS

Testing Libs

- QUnit
- Jasmine
- DominatorJS
- ThumbsJS

HTML

Monday, November 21, 2011

Web VS Native?

http://www.flickr.com/photos/40336611@N08/3705419486/sizes/z/

The Web *is* Native

EVERNOTE

Monday, November 21, 2011

"We could probably *save 70% of our development budget* by switching to a single, cross-platform client, but we would probably *lose 80% of our users*."

-- Phil Libin, Evernote CEO

"97.25% of statistics are wrong"

-- Anonymous

"we'd be shut out of most app stores and go back to worrying about distribution."

-- Phil Libin again

“huh?”

-- Me

Monday, November 21, 2011

$4,000,000,000

Monday, November 21, 2011

What would Reed say?

“What’s wrong with Qwikster?!?!?”

-- Maybe Reed Hastings, Netflix CEO

“Are you crazy!?!?!”

-- Maybe Reed Hastings, Netflix CEO

Why are they using it?

Skills reuse

Time to market

Less code

App updates

A/B Testing

Building for ***hundreds*** of devices!!1!1

http://functionsource.com/post/netflix-feature

PhoneGapView

LinkedIn

Walmart

facebook

AT&T 3G 8:47 PM

facebook Most Recent

Photo Status Check In

Jeremiah Smith I guess I'm not leaving DC... Or the airport even for that matter with a canceled flight and booked hotels:(

Just now

Michael Clark likes a link.

June 21, 2011: Michael Clark

the3six5.posterous.com

2 minutes ago

Chuq Von Rospach Lytro and the Magic Camera: Back of my mind I'm like damn, no way translate español, no way Jose —Kanye West, Bi... http://bit.ly/iCZKFE

9 minutes ago via Twitter · @chuq on Twitter

Jeremiah Smith I guess I'm not leaving DC... Or the airport even for that matter with a canceled flight and booked hotels:(

Just now

Michael Clark likes a link.

June 21, 2011: Michael Clark

the3six5.posterous.com

2 minutes ago

Chuq Von Rospach Lytro and the Magic Camera: Back of my mind I'm like damn, no way translate español, no way Jose —Kanye West, Bi... http://bit.ly/iCZKFE

9 minutes ago via Twitter · @chuq on Twitter

Jon Tirsen likes Menya Noodle Bar and

AT&T 8:19 AM

Facebook

m.facebook.com/hom... Google

facebook

Profile Messages More

Thomas Bass wants to be your friend. Confirm · Not Now

Top News · Most Recent

What's on your mind? Share

Or: Check In

Michael Clark My contribution to the3six5 project got accepted and is up, warts and all. Not my finest literary hour, but give it a go, anyways. My ego needs you.

June 21, 2011: Michael Clark

the3six5.posterous.com

Just now

Jeremiah Smith I guess I'm not leaving DC... Or the airport even for that matter with a canceled flight and booked hotels:(

Just now

Chuq Von Rospach Lytro and the Magic Camera: Back of my mind I'm like damn, no way translate español, no way Jose —Kanye West, Bi... http://bit.ly/iCZKFE

10 minutes ago via Twitter · @chuq on

Can the Web *feel* Native?

Monday, November 21, 2011

Monday, November 21, 2011

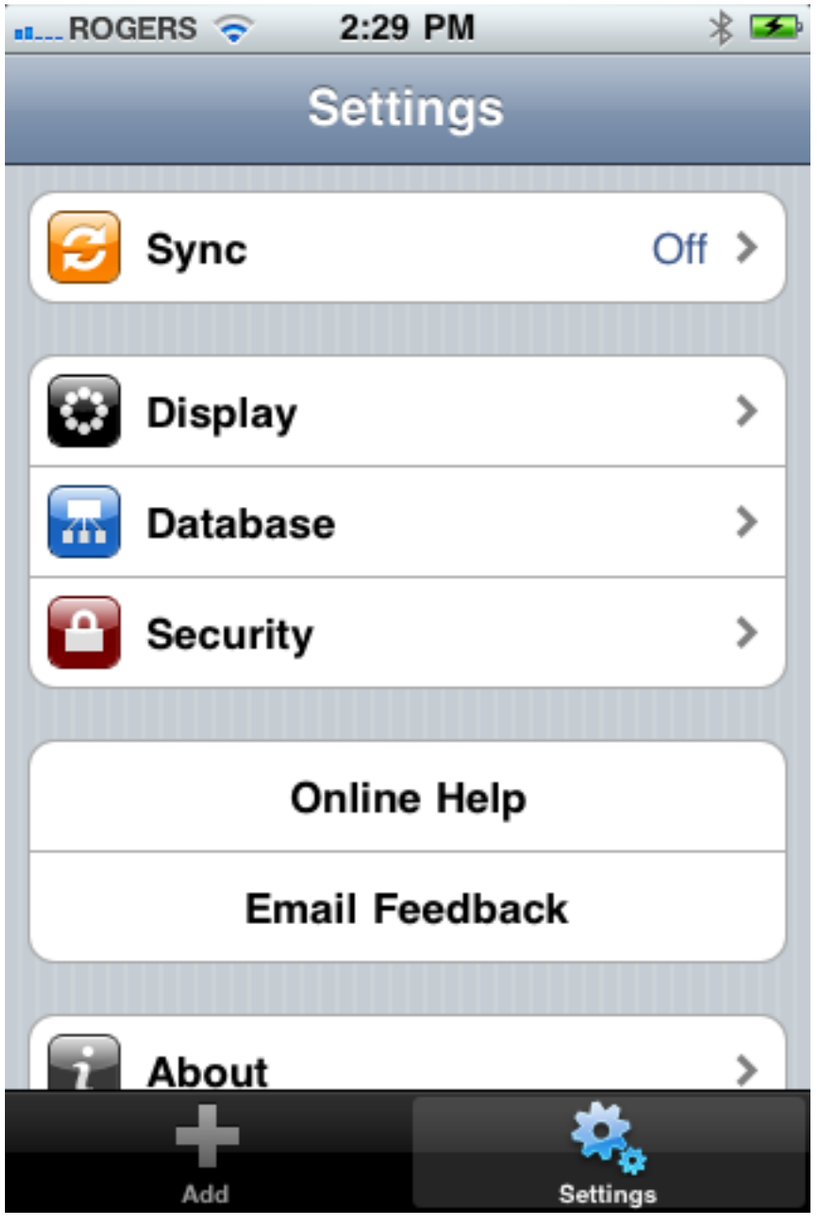
“What you call love was invented by guys like me to sell nylons”

-- Don Draper, Mad Men

“What you call APPS were invented by guys like me to sell HARDWARE”

“Be the needle not the haystack”

-- Don Draper, Mad Men


ROGERS
2:29 PM
Settings
Sync
Off
Display
Database
Security
Online Help
Email Feedback
About
Add
Settings

Mass
Stone + Pound → Kilogram
FROM
11 st 6 lb
TO
72.57478 kg
st + lb
kg

Games?

zynga

Mafia Wars
SHAKEDOWN
Back
Rare Gems
Rewards:
CHRIS
VS
MIKE
FIGHT
BATTLE FRIENDS • DEFEAT BOSSES • RULE THE WORLD

More examples?

Featured | Top Charts | Categories | Purchases | Updates

New & Noteworthy See All ›

Broken Sword - Th...
Games
$7.99 BUY

Vinoteka
Lifestyle
$49.99 BUY

Skitch
Productivity
$9.99 BUY

Starfall
Games
$4.99 BUY

Desktop Poet
Entertainment
$1.99 BUY

Pro Zombie Soccer AE
Games
$2.99 BUY

Cockpit
Utilities
$9.99 BUY

Mishap 2: An Intenti...
Games
$6.99 BUY

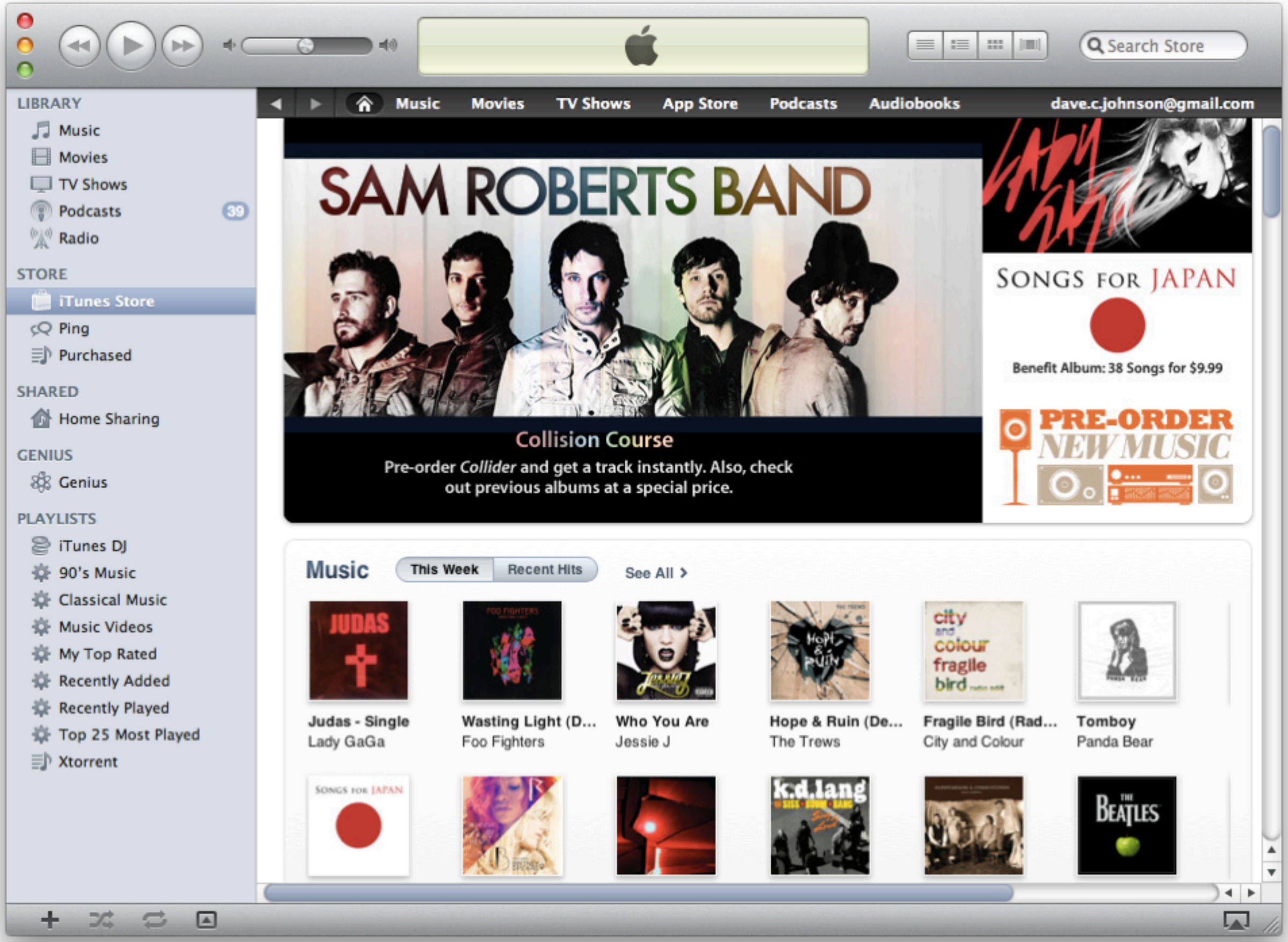
SpeedTask
Productivity
$4.99 BUY

Quick Links

Sign In
Account
Redeem
Support

All Categories

iLife '11
iWork
Personal Projects
Better Together
Gorgeous Games
Macs In Class
Popular Puzzlers
Retro Games
Playtime With Mac
Best Games You Never Played


Search Store
LIBRARY
Music
Movies
TV Shows
Podcasts 39
Radio
STORE
iTunes Store
Ping
Purchased
SHARED
Home Sharing
GENIUS
Genius
PLAYLISTS
iTunes DJ
90's Music
Classical Music
Music Videos
My Top Rated
Recently Added
Recently Played
Top 25 Most Played
Xtorrent
Music
Movies
TV Shows
App Store
Podcasts
Audiobooks
dave.c.johnson@gmail.com
SAM ROBERTS BAND
Collision Course
Pre-order Collider and get a track instantly. Also, check out previous albums at a special price.
SONGS FOR JAPAN
Benefit Album: 38 Songs for $9.99
PRE-ORDER NEW MUSIC
Music
This Week
Recent Hits
See All ›
Judas - Single
Lady GaGa
Wasting Light (D...
Foo Fighters
Who You Are
Jessie J
Hope & Ruin (De...
The Trews
Fragile Bird (Rad...
City and Colour
Tomboy
Panda Bear

In a Nutshell

In a Nutshell

- Write once run on 6+ platforms

In a Nutshell

- Write once run on 6+ platforms
- Write using HTML, JavaScript and CSS

In a Nutshell

- Write once run on 6+ platforms
- Write using HTML, JavaScript and CSS
- Write using standards based APIs

In a Nutshell

- Write once run on 6+ platforms
- Write using HTML, JavaScript and CSS
- Write using standards based APIs
- Open source in spirit *and* in practice

In a Nutshell

- Write once run on 6+ platforms
- Write using HTML, JavaScript and CSS
- Write using standards based APIs
- Open source in spirit *and* in practice
- Keep the option of adding native code

In a Nutshell

- Write once run on 6+ platforms
- Write using HTML, JavaScript and CSS
- Write using standards based APIs
- Open source in spirit *and* in practice
- Keep the option of adding native code
- Beer?

project resources

phonegap.com
docs.phonegap.com
wiki.phonegap.com
groups.google.com/group/phonegap
twitter.com/phonegap
#phonegap on freenode

thank you