James Pearce

Director, Developer Relations

@jamespearce

jamesp@sencha.com

HTML5 and the dawn of rich mobile web applications

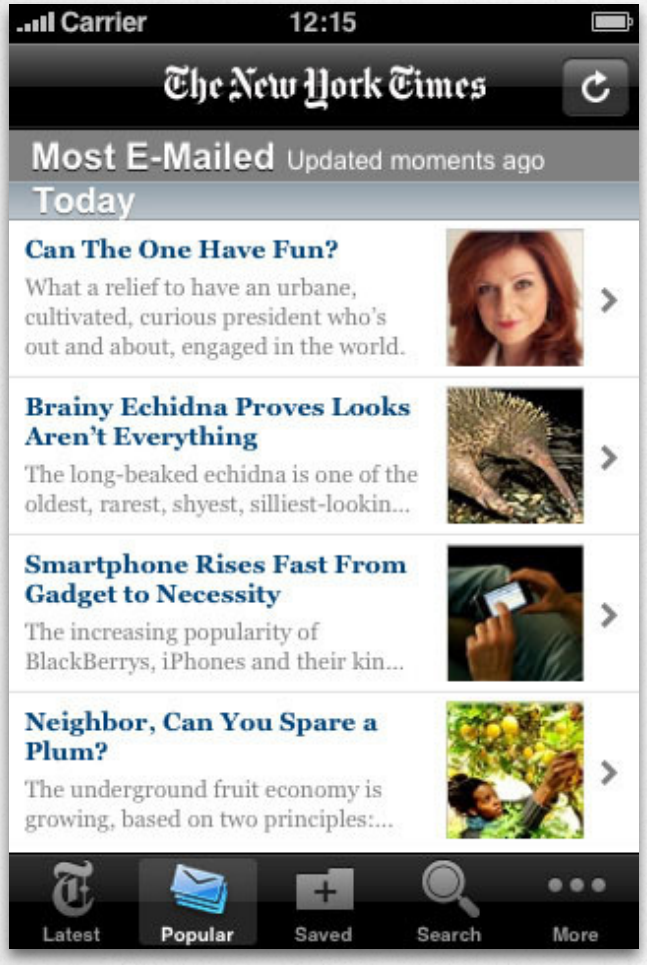
or

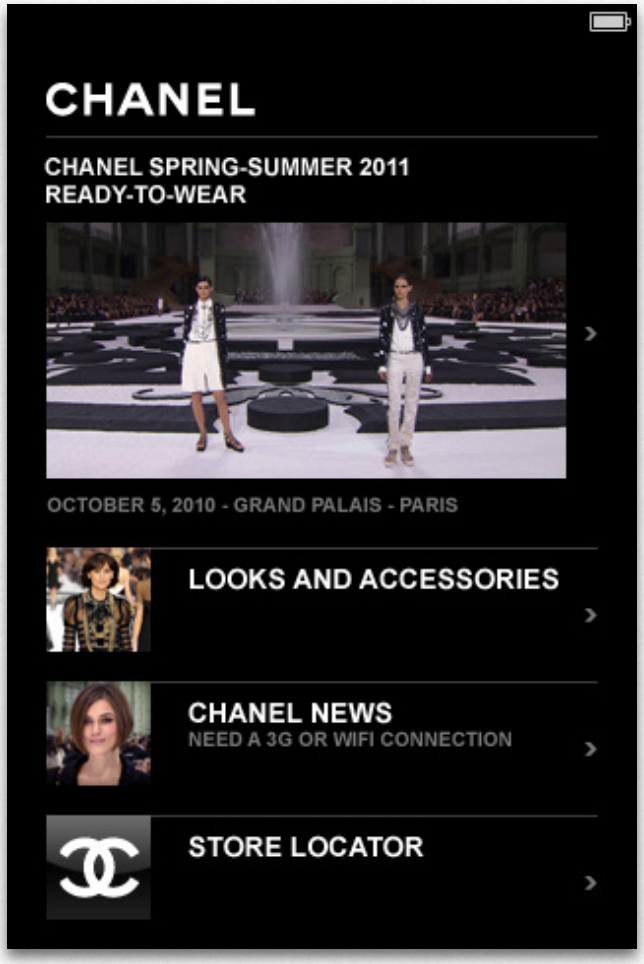
Everything I know about HTML5 I learned from
THE INCREDIBLES
IN THEATERS 11.5.04
© Disney Enterprises, Inc./Pixar Animation Studios. All Rights Reserved.

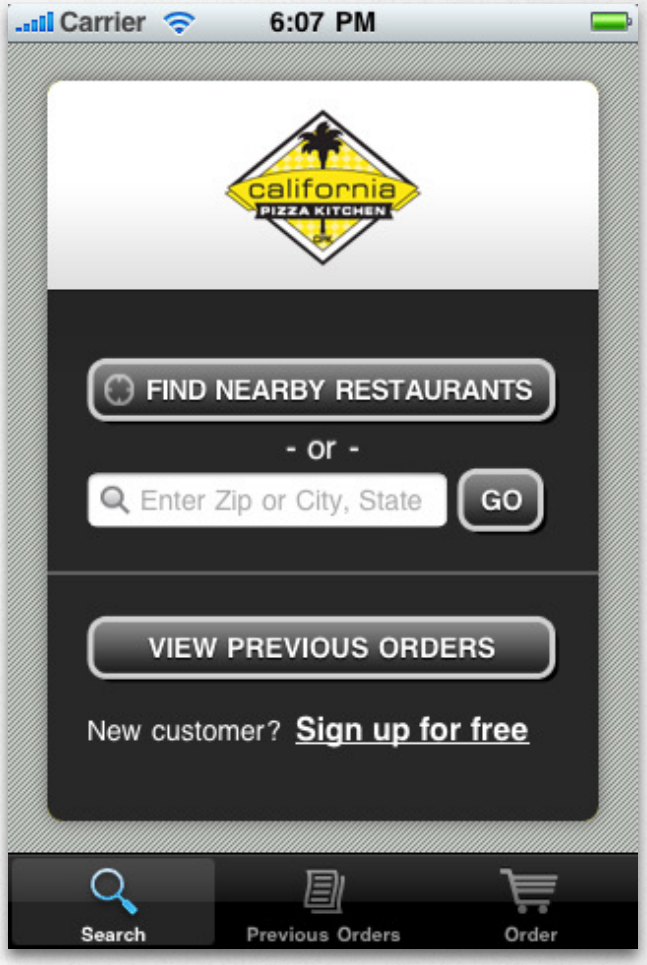
How Mobile Rolls

2008

We must have an iPhone App!


Carrier
12:15
The New York Times
Most E-Mailed Updated moments ago
Today
Can The One Have Fun?
What a relief to have an urbane, cultivated, curious president who's out and about, engaged in the world.
Brainy Echidna Proves Looks Aren't Everything
The long-beaked echidna is one of the oldest, rarest, shyest, silliest-lookin...
Smartphone Rises Fast From Gadget to Necessity
The increasing popularity of BlackBerrys, iPhones and their kin...
Neighbor, Can You Spare a Plum?
The underground fruit economy is growing, based on two principles:...
Latest
Popular
Saved
Search
More


CHANEL
CHANEL SPRING-SUMMER 2011
READY-TO-WEAR
OCTOBER 5, 2010 - GRAND PALAIS - PARIS
LOOKS AND ACCESSORIES
CHANEL NEWS
NEED A 3G OR WIFI CONNECTION
STORE LOCATOR


Carrier
6:07 PM
california
PIZZA KITCHEN
FIND NEARBY RESTAURANTS
- or -
Enter Zip or City, State
GO
VIEW PREVIOUS ORDERS
New customer? Sign up for free
Search
Previous Orders
Order

iPad
9:41 AM
Calendar
Contacts
Notes
Maps
Videos
YouTube
iTunes
App Store
Settings
Safari
Mail
Photos
iPod
The New York Times
Obama Orders Improvements in Security Policies
E.P.A. Seeks Stricter Rules for Pollutants Causing Smog
Alabama Holds on to Win Championship

2010

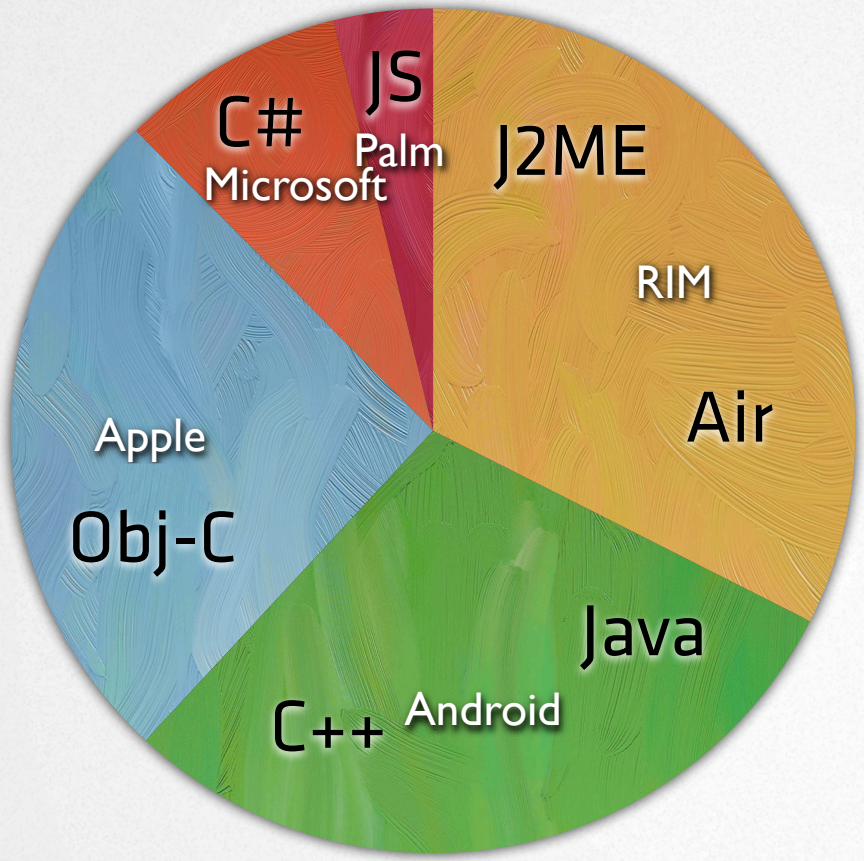
We must have an Android App!

T-Mobile
Latest
Amateur Finds New Earth-Sized Blot on Jupiter
MENU
T-Mobile
23:30
The New York Times
Amateur Discovers Earth-Sized Blot on Jupiter
Pace of Decline Seems to Have Slowed, Fed Chief Says
U.S. Withheld Data on Risks of Distracted Driving
The Unwelcome Mat Is Out for Beckham
MENU
T-Mobile
23:31
The New York Times
U.S.
Politics
N.Y./Region
Business
Technology
MENU

10 03
12 00
10 23

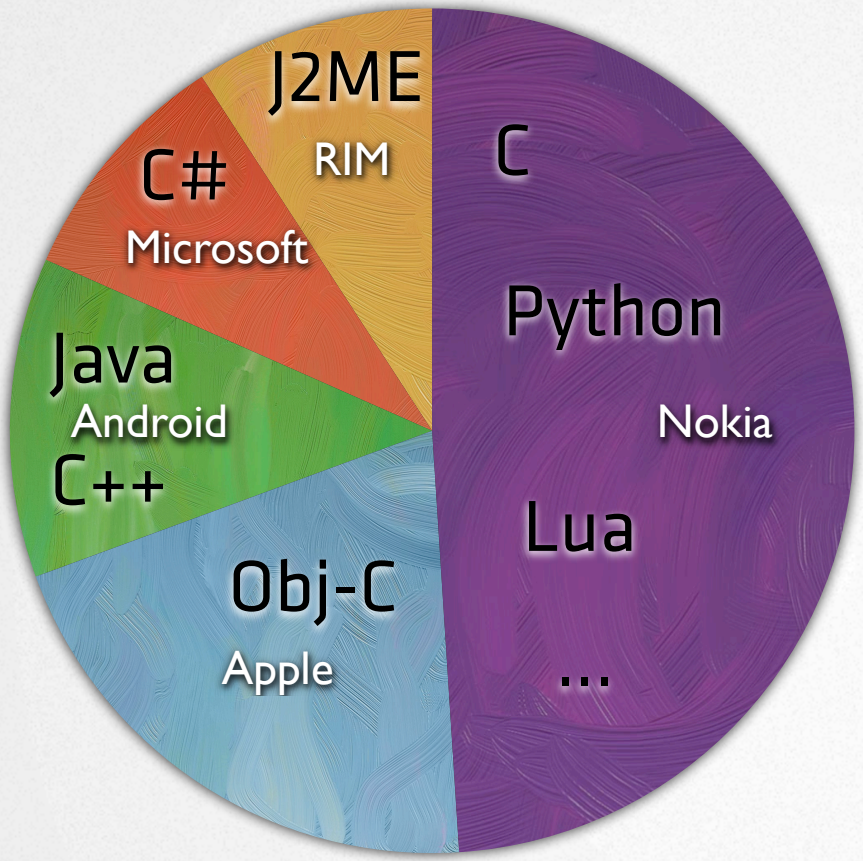
2011

omfg



- RIM
- Android
- Apple
- Microsoft
- Palm

Top U.S. Smartphone Platforms,
3 Month Average Ending December 2010
comScore MobiLens 2010

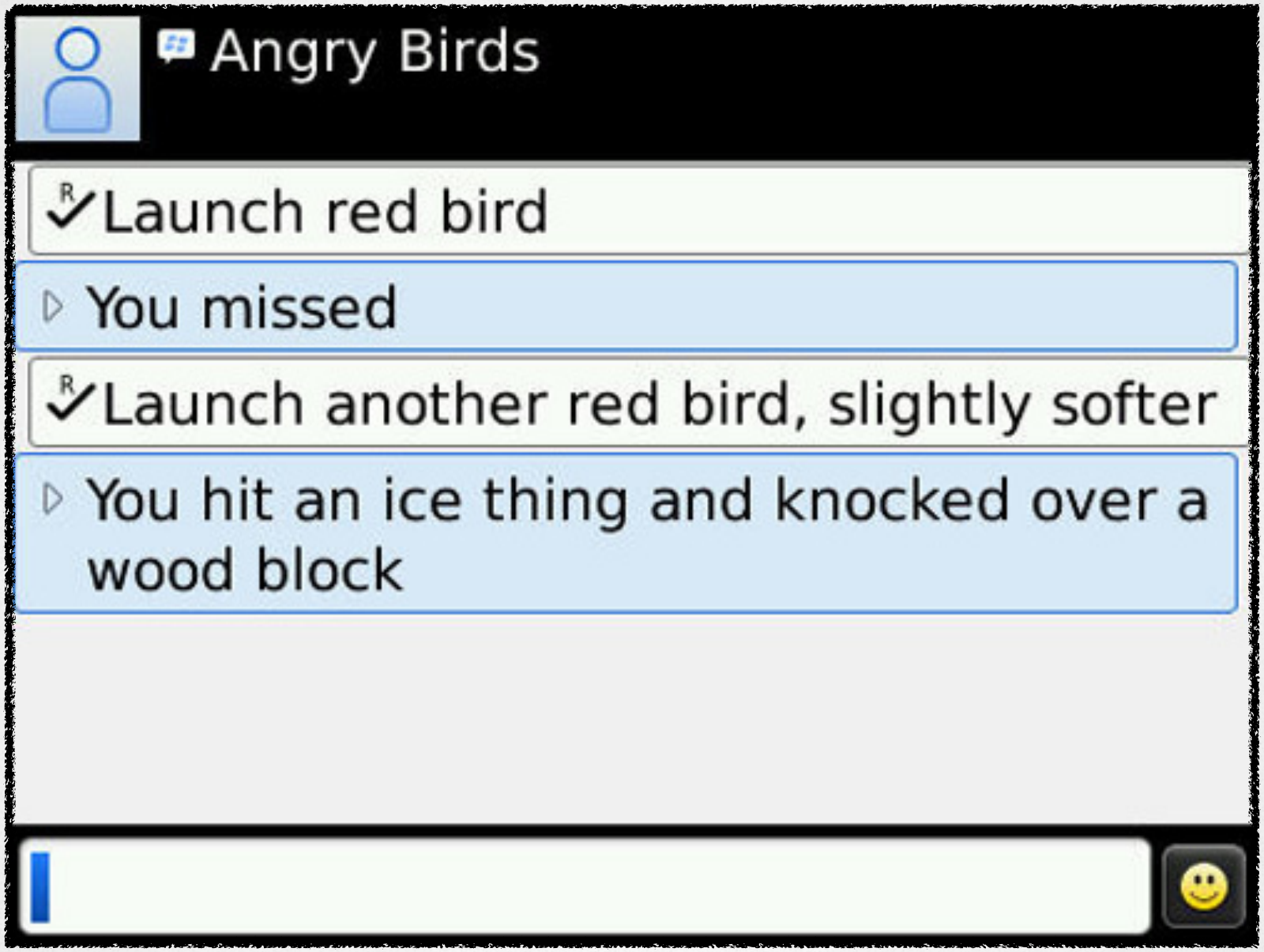


- Nokia
- Apple
- Android
- Microsoft
- RIM

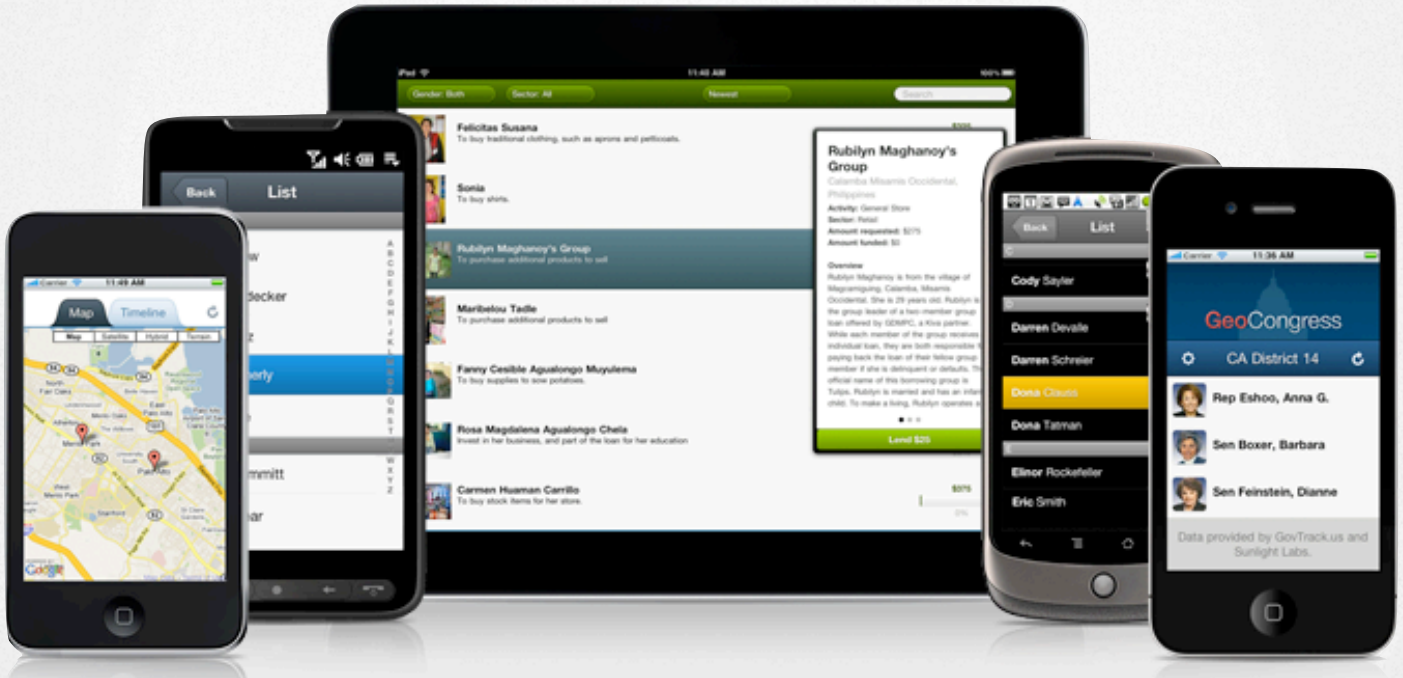
Top EU5 Smartphone Platforms,
3 Month Average Ending December 2010
comScore MobiLens 2010

http://www.cloudfour.com/a-comprehensive-guide-to-mobile-statistics/

HIGHSCORE: 103270
SCORE: 0
TNT
TNT
TNT


Angry Birds
Launch red bird
You missed
Launch another red bird, slightly softer
You hit an ice thing and knocked over a wood block

Device diversity



App Stores

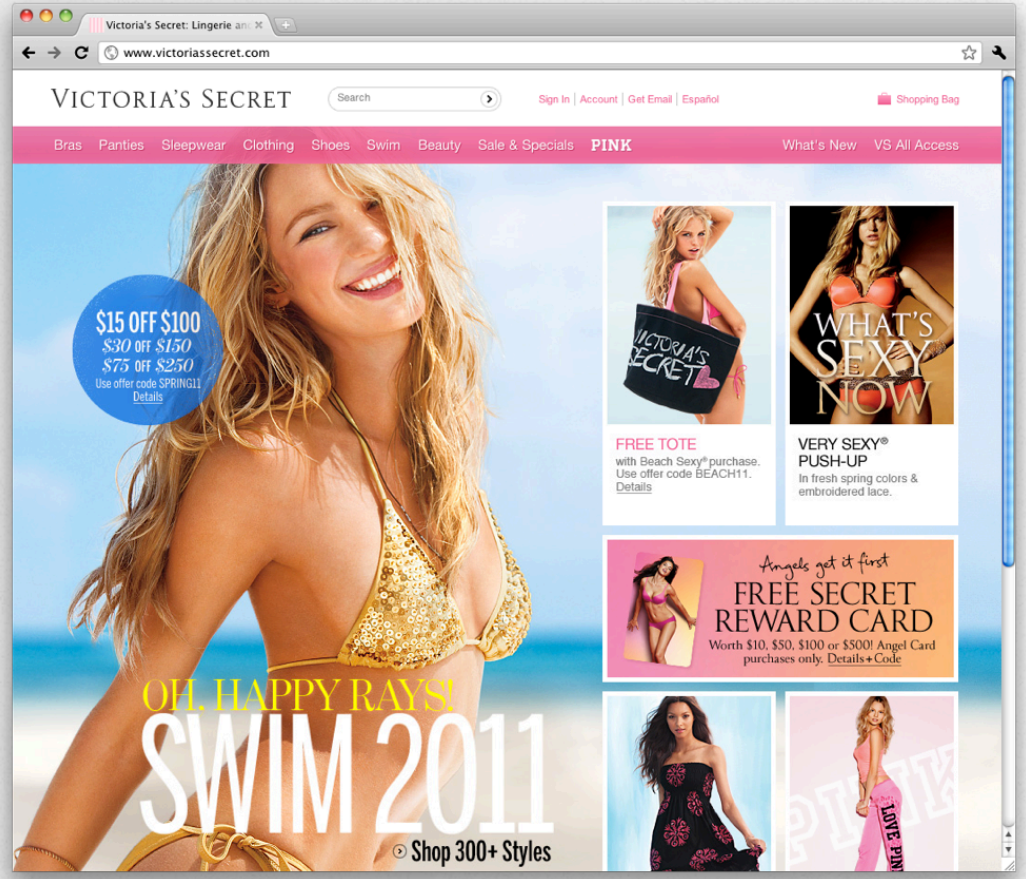
Updates

The Promise of Web Technologies

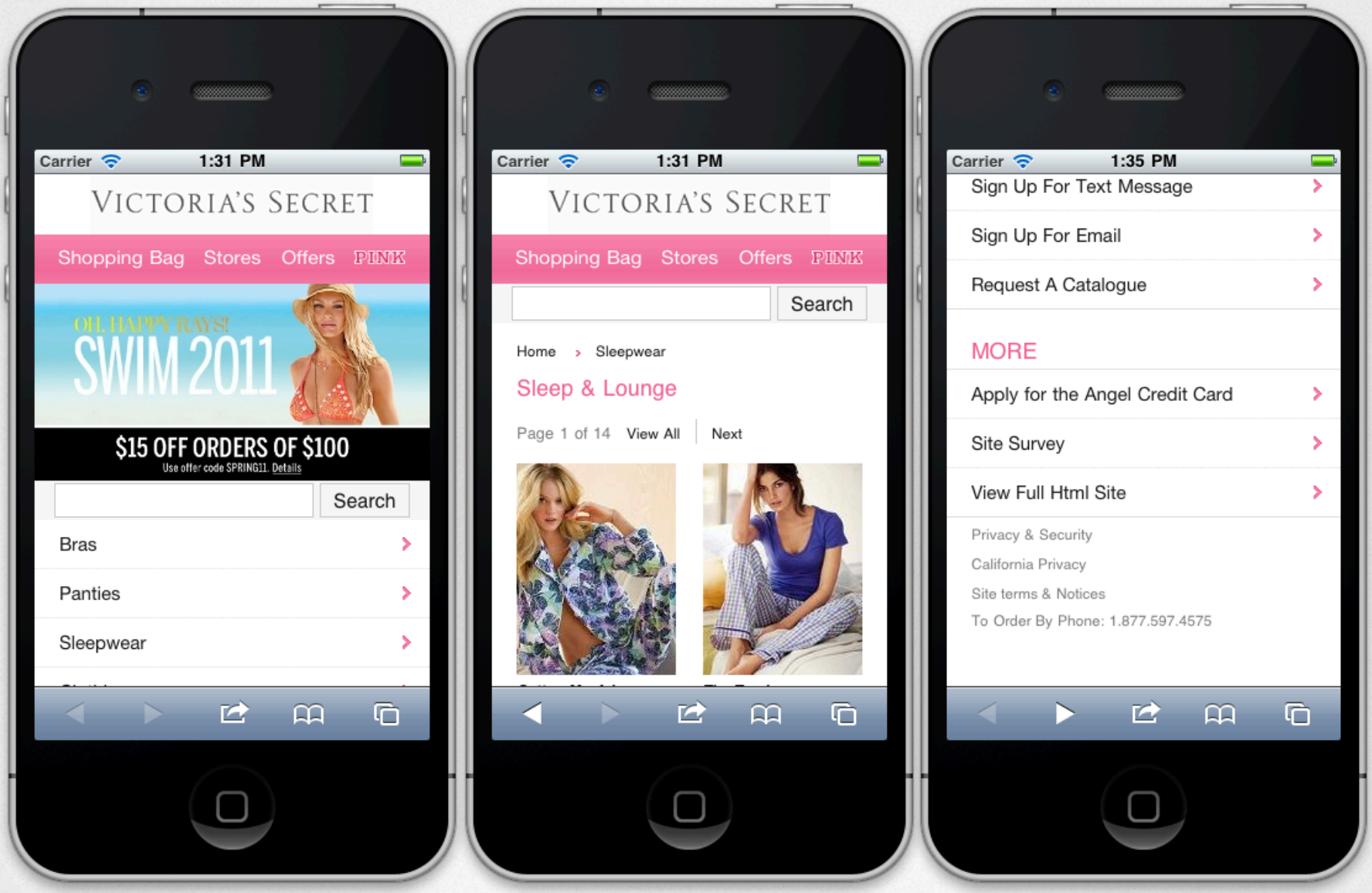
The Web

Cross-platform
Familiar skills & tools
Decentralized
Easily updated
Indexed
Well-understood
…

Mobile: the next era of the web as we know it

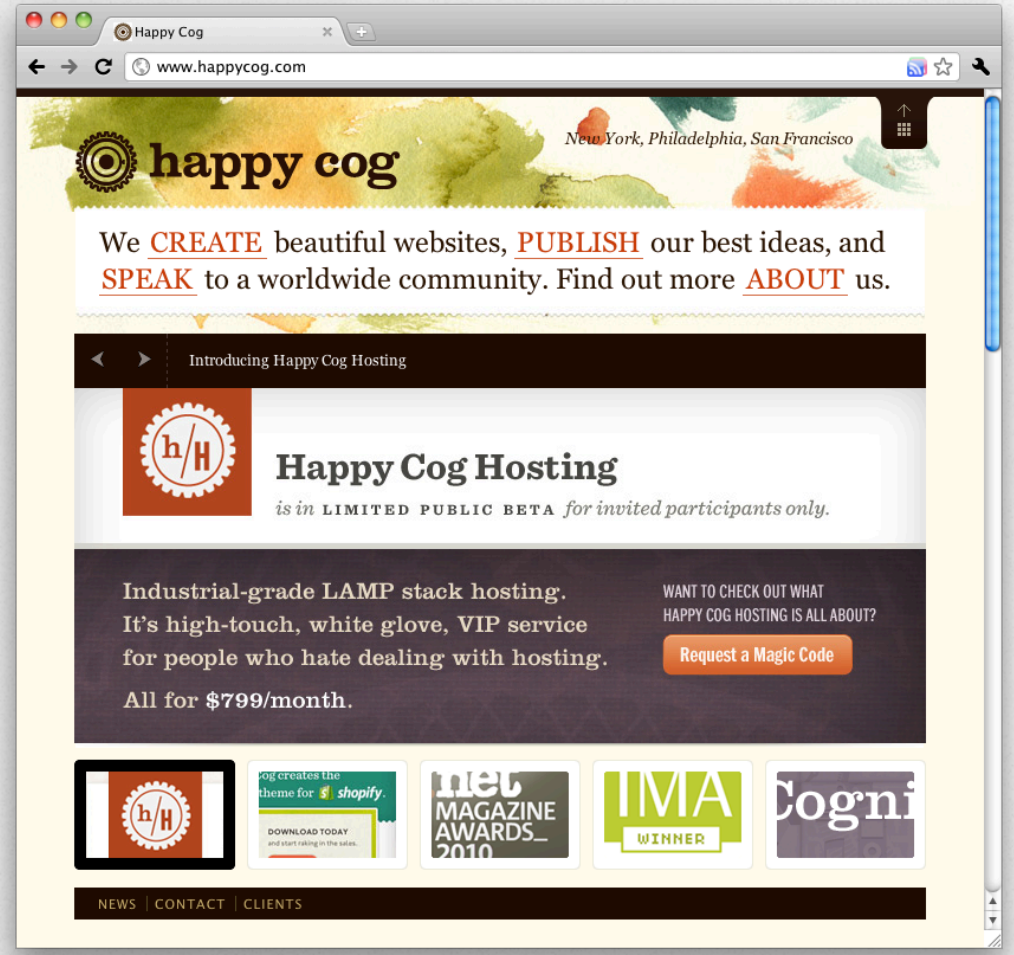


http://www.victoriassecret.com

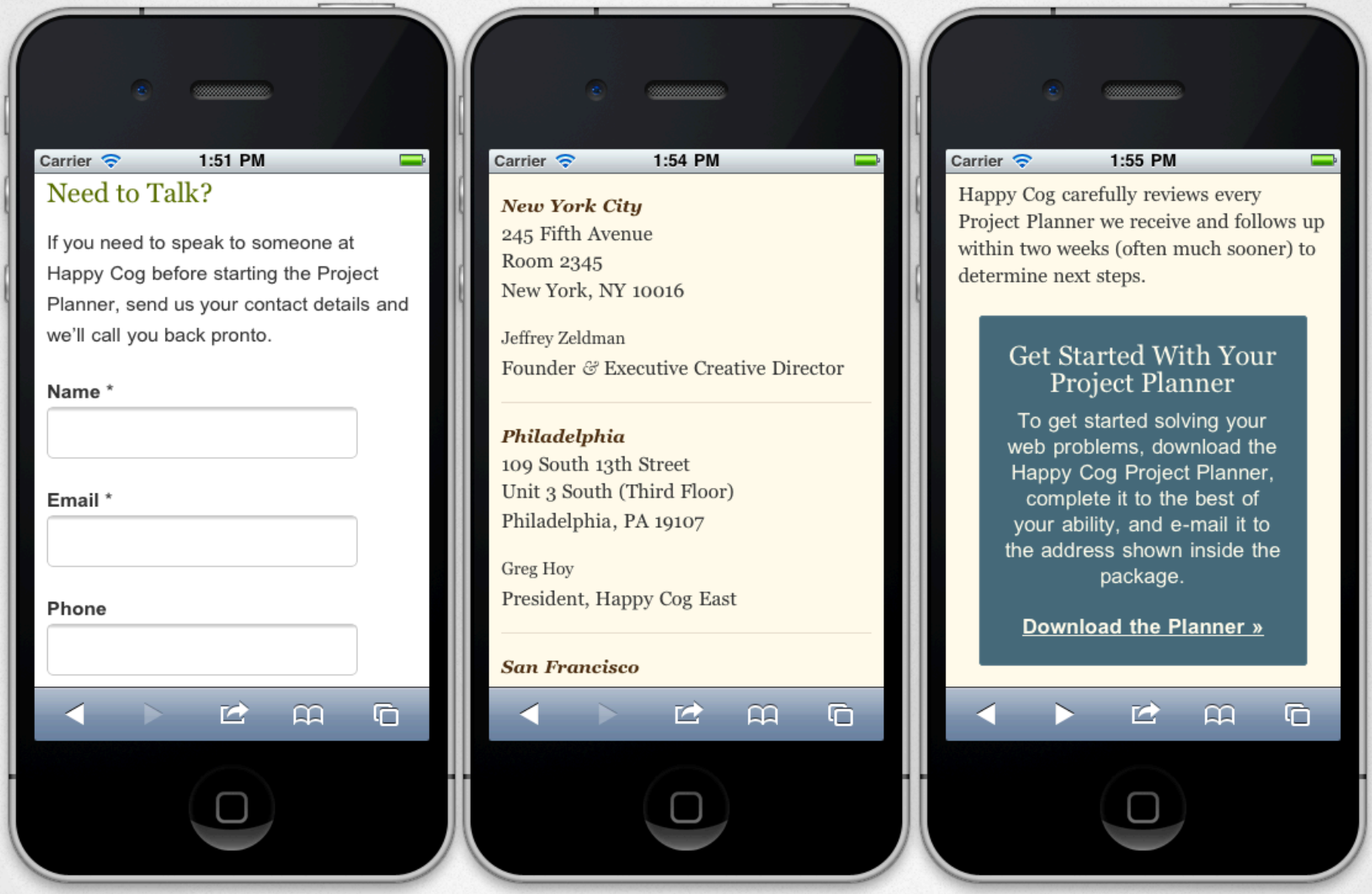


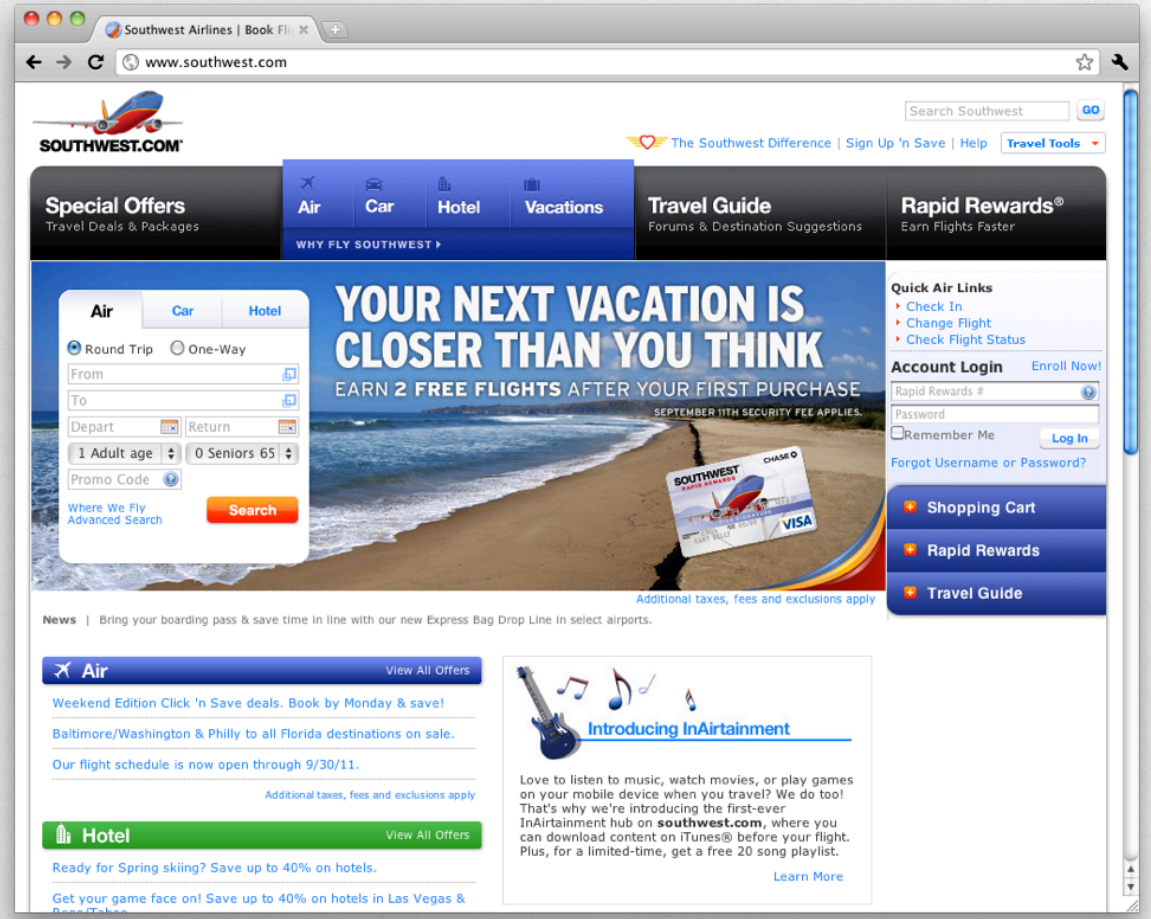
http://mobile.victoriassecret.com

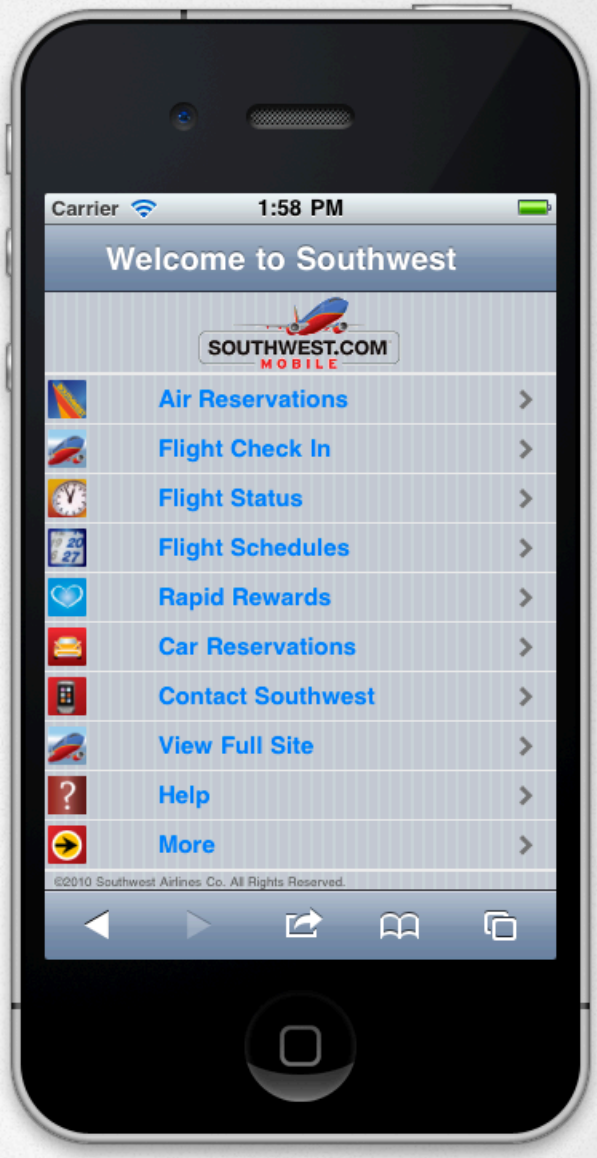
The mobile web is not a 320px web

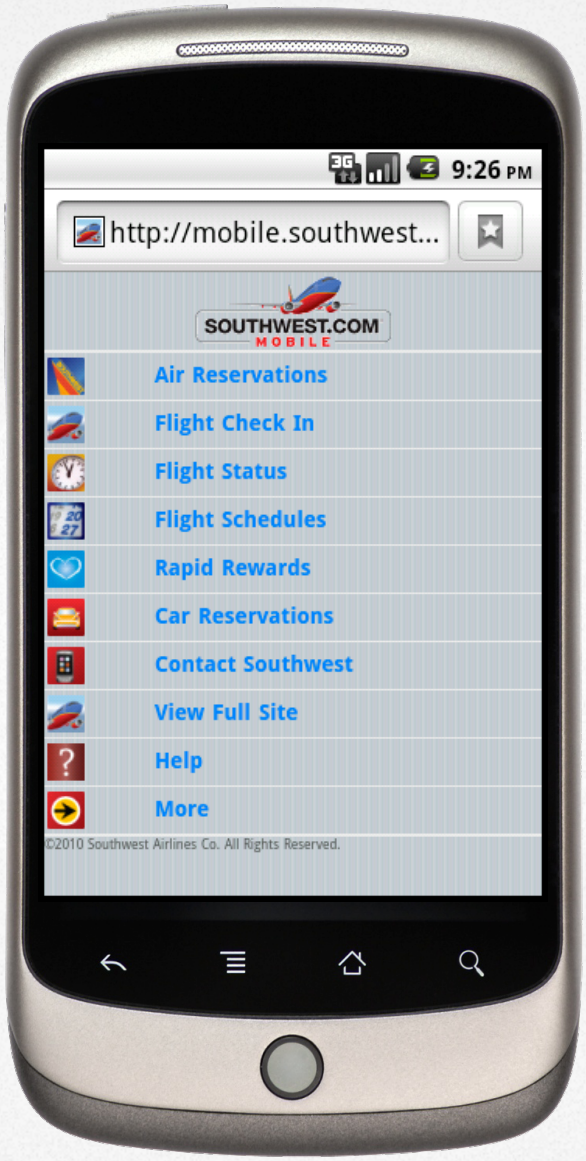


("responsive web design")


Carrier
1:51 PM
Need to Talk?
If you need to speak to someone at Happy Cog before starting the Project Planner, send us your contact details and we'll call you back pronto.
Name *
Email *
Phone
Carrier
1:54 PM
New York City
245 Fifth Avenue
Room 2345
New York, NY 10016
Jeffrey Zeldman
Founder & Executive Creative Director
Philadelphia
109 South 13th Street
Unit 3 South (Third Floor)
Philadelphia, PA 19107
Greg Hoy
President, Happy Cog East
San Francisco
Carrier
1:55 PM
Happy Cog carefully reviews every Project Planner we receive and follows up within two weeks (often much sooner) to determine next steps.
Get Started With Your Project Planner
To get started solving your web problems, download the Happy Cog Project Planner, complete it to the best of your ability, and e-mail it to the address shown inside the package.
Download the Planner »


Southwest Airlines | Book Fli
www.southwest.com
SOUTHWEST.COM
Search Southwest
GO
The Southwest Difference | Sign Up 'n Save | Help
Travel Tools
Special Offers
Travel Deals & Packages
Air
Car
Hotel
Vacations
WHY FLY SOUTHWEST
Travel Guide
Forums & Destination Suggestions
Rapid Rewards®
Earn Flights Faster
Air
Car
Hotel
Round Trip
One-Way
From
To
Depart
Return
1 Adult age
0 Seniors 65
Promo Code
Where We Fly
Advanced Search
Search
YOUR NEXT VACATION IS CLOSER THAN YOU THINK
EARN 2 FREE FLIGHTS AFTER YOUR FIRST PURCHASE
SEPTEMBER 11TH SECURITY FEE APPLIES.
Additional taxes, fees and exclusions apply
Quick Air Links
Check In
Change Flight
Check Flight Status
Account Login
Enroll Now!
Rapid Rewards #
Password
Remember Me
Log In
Forgot Username or Password?
Shopping Cart
Rapid Rewards
Travel Guide
News | Bring your boarding pass & save time in line with our new Express Bag Drop Line in select airports.
Air
View All Offers
Weekend Edition Click 'n Save deals. Book by Monday & save!
Baltimore/Washington & Philly to all Florida destinations on sale.
Our flight schedule is now open through 9/30/11.
Additional taxes, fees and exclusions apply
Hotel
View All Offers
Ready for Spring skiing? Save up to 40% on hotels.
Get your game face on! Save up to 40% on hotels in Las Vegas &
Introducing InAirtainment
Love to listen to music, watch movies, or play games on your mobile device when you travel? We do too! That's why we're introducing the first-ever InAirtainment hub on southwest.com, where you can download content on iTunes® before your flight. Plus, for a limited-time, get a free 20 song playlist.
Learn More


Carrier
1:58 PM
Welcome to Southwest
SOUTHWEST.COM
MOBILE
Air Reservations
Flight Check In
Flight Status
Flight Schedules
Rapid Rewards
Car Reservations
Contact Southwest
View Full Site
Help
More
©2010 Southwest Airlines Co. All Rights Reserved.


9:26 PM
http://mobile.southwest...
SOUTHWEST.COM
MOBILE
Air Reservations
Flight Check In
Flight Status
Flight Schedules
Rapid Rewards
Car Reservations
Contact Southwest
View Full Site
Help
More
©2010 Southwest Airlines Co. All Rights Reserved.

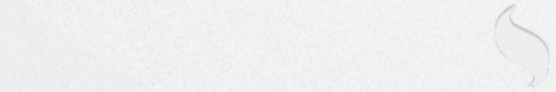
The Web

Cross-platform
Familiar skills & tools
Decentralized
Easily updated
Indexed
Well-understood
…

But wait! Weren't we talking about apps?

Hypothesis:

Web technologies are a *viable alternative* to native development



The Web is Evolving...

Documents	→	Applications
Declarative HTML	→	Programmatic DOM
Templates	→	APIs
URLs	→	Arguments
Request/Response	→	Synchronization
Thin client	→	Thick client

HTML

accelerometer

-webkit

@page

localStorage

CSS Text

@media

manifest

transform

<video>

WebSQL

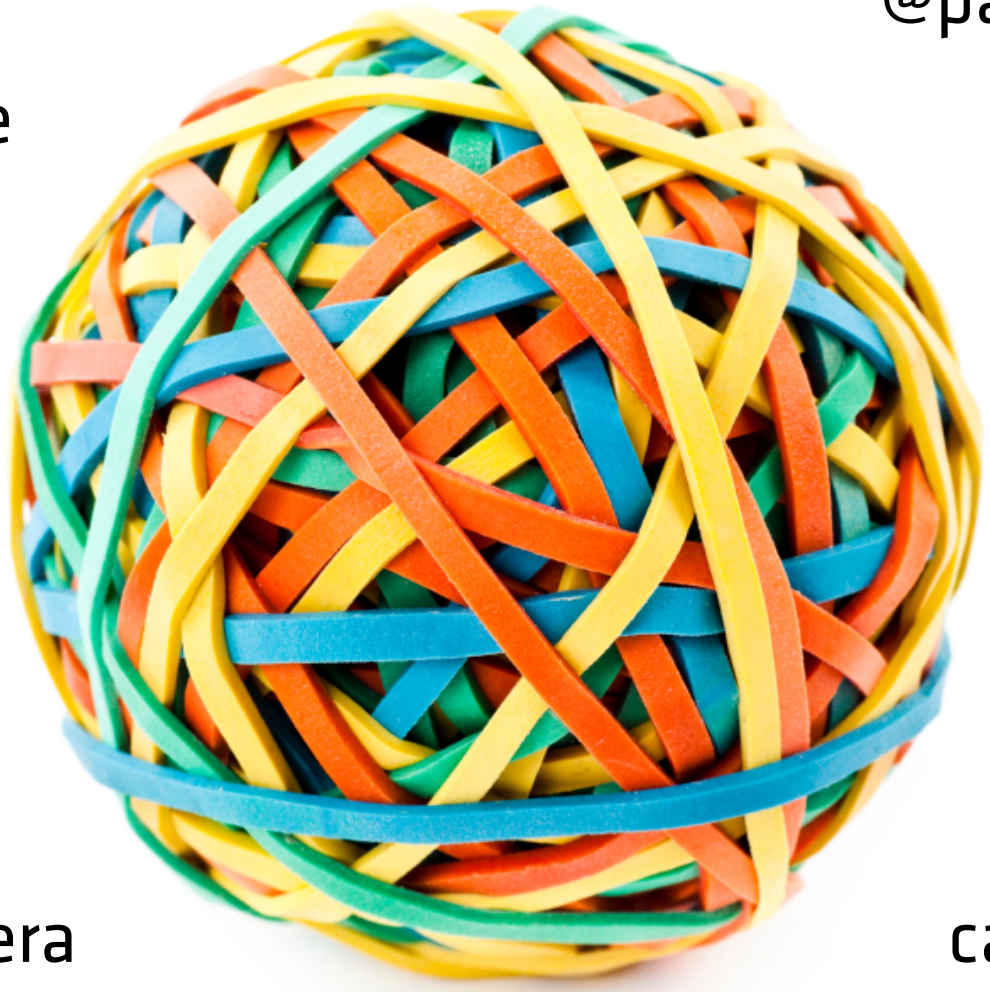
GeoLocation

type=camera

canvas

keyframe

gradient



HTML
HTML5
SEMANTICS
OFFLINE &
STORAGE
DEVICE
ACCESS
CONNECTIVITY

MULTIMEDIA
3D, GRAPHICS,
EFFECTS
HTML
PERFORMANCE &
INTEGRATION
CSS3
STYLING

E A.K.A. EDNA MODE
this is uncanny
CSS3
STYLING
DISNEY PRESENTS A PIXAR FILM
THE INCREDIBLES
IN THEATERS 11.5.04
© Disney Enterprises, Inc./Pixar Animation Studios. All Rights Reserved.

A New Mobile App Stack

Rich Media & Styling

Full Resource Access

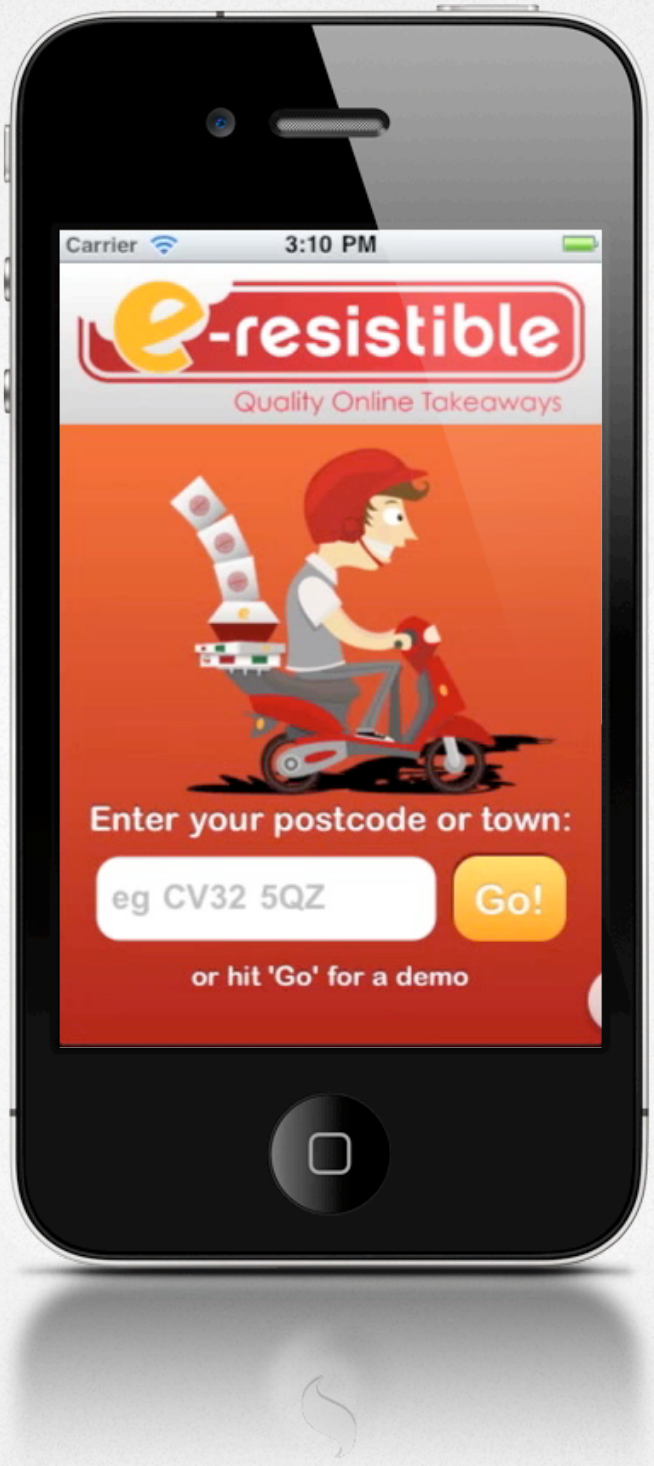
Parallel Processing

Inter-App Communication

Full Offline Capability

COMPLETE MODERN APP PLATFORM

Carrier
3:36 PM
E-Resistible
Leverate Mob
TravelMate
VFA Mobile
Contacts
Safari


Carrier
3:10 PM
e-resistible
Quality Online Takeaways
Enter your postcode or town:
eg CV32 5QZ
Go!
or hit 'Go' for a demo

Carrier
3:30 PM
E-Resistible
Leverate Mob
TravelMate
VFA Mobile
Contacts
Safari

Web technologies
are a
viable alternative
to native development

Caveats?

Performance

Browser support

Device access

Discoverability

Monetization

App ‘experience’

All less of a issue
than you might think

Progressive enhancement

assumption

HTML

JS

CSS

progressive enhancement

doc

app

VS

assumption

HTML

JS

CSS

app

State of the Art: Mobile HTML5

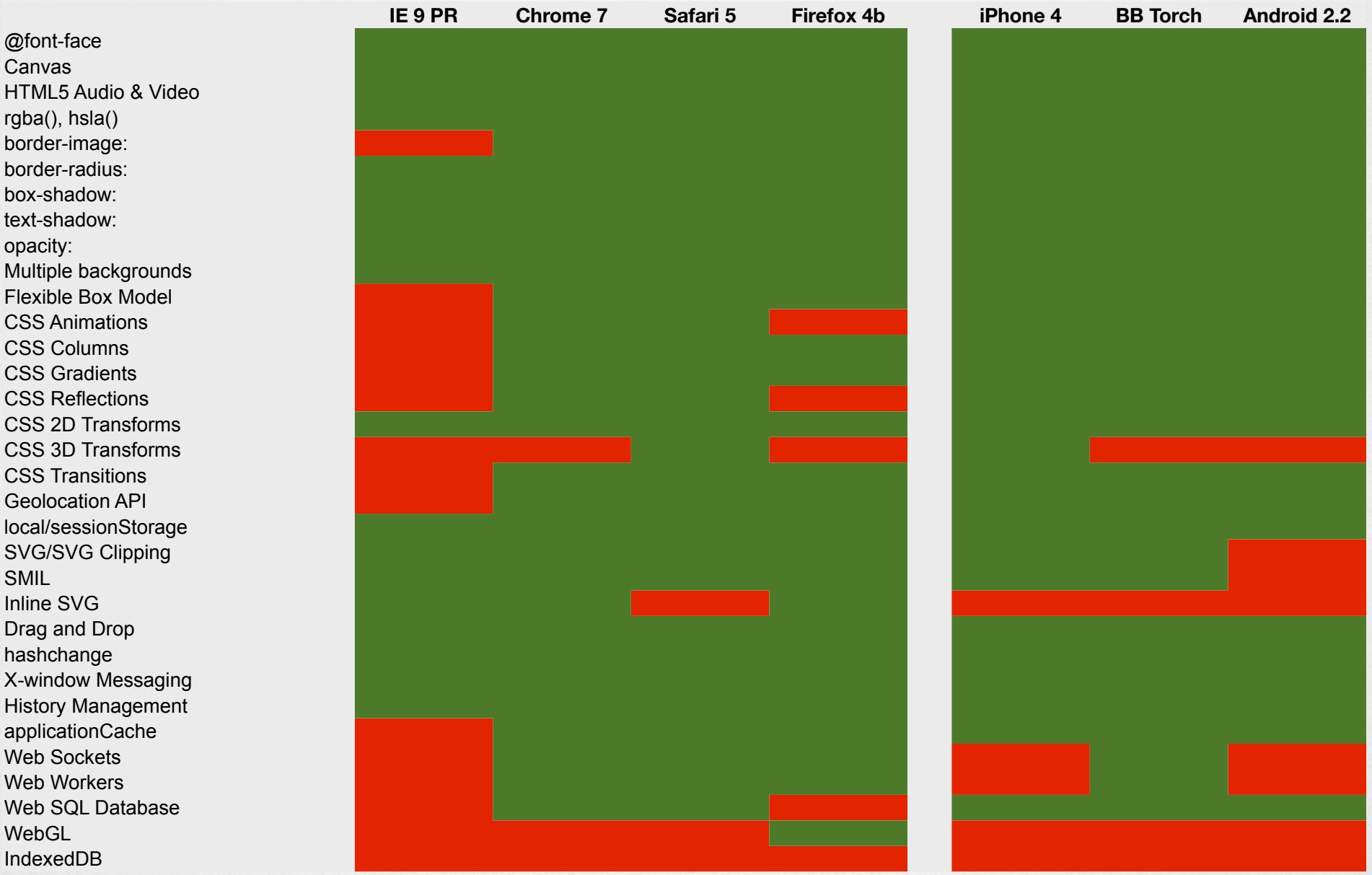
Environments

Browsers

WebKit

FOEs

HTML5 support

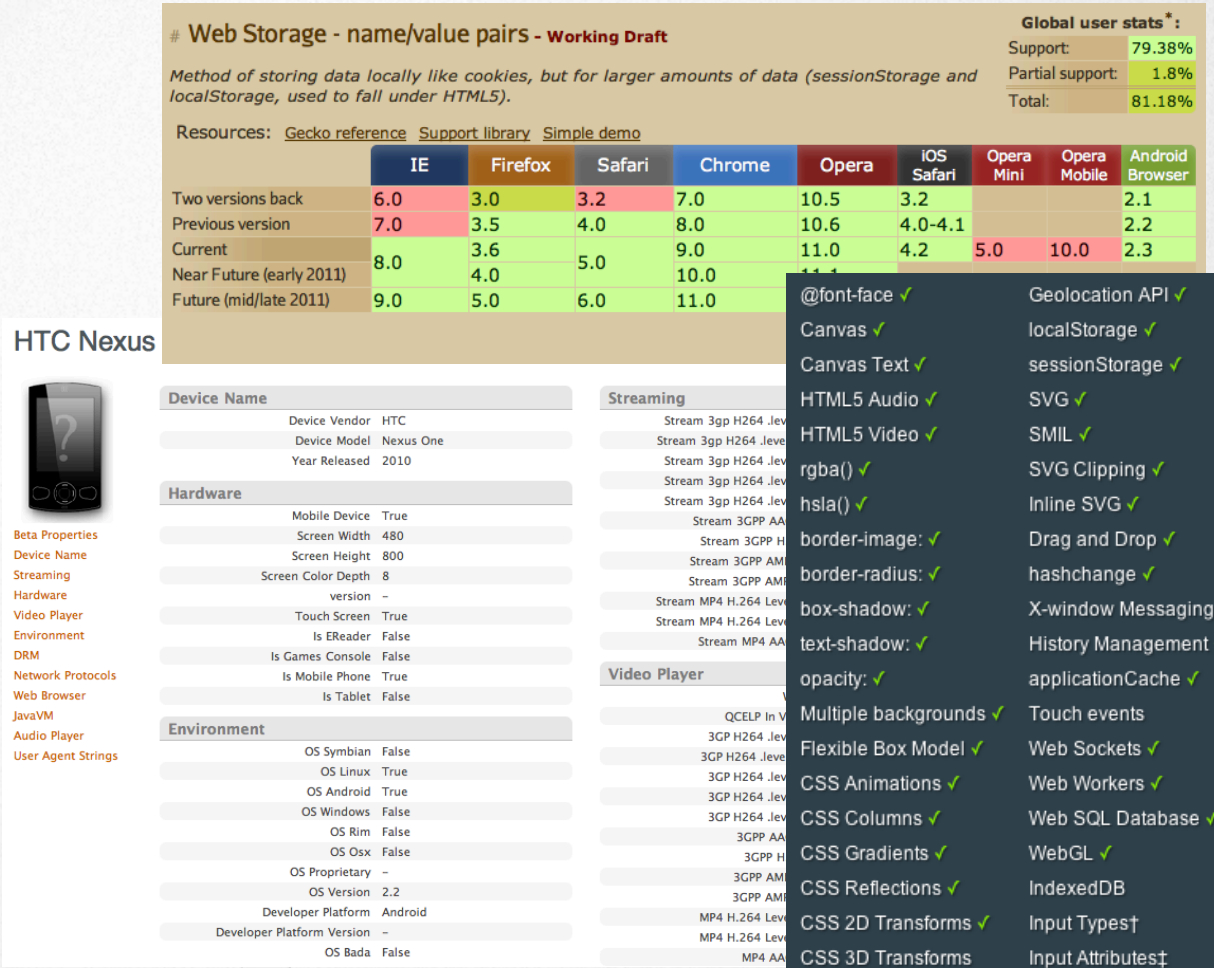


Stay on top of diversity

Can I Use?
http://caniuse.com

Modernizr
http://modernizr.com

DeviceAtlas
http://deviceatlas.com



Web Storage - name/value pairs - Working Draft

Method of storing data locally like cookies, but for larger amounts of data (sessionStorage and localStorage, used to fall under HTML5).

Resources: Gecko reference Support library Simple demo

Global user stats*:
Support: 79.38%
Partial support: 1.8%
Total: 81.18%

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	6.0	3.0	3.2	7.0	10.5	3.2			2.1
Previous version	7.0	3.5	4.0	8.0	10.6	4.0-4.1			2.2
Current	8.0	3.6	5.0	9.0	11.0	4.2	5.0	10.0	2.3
Near Future (early 2011)		4.0		10.0					
Future (mid/late 2011)	9.0	5.0	6.0	11.0					

HTC Nexus

Beta Properties
Device Name
Streaming
Hardware
Video Player
Environment
DRM
Network Protocols
Web Browser
JavaVM
Audio Player
User Agent Strings

Device Name

Device Vendor	HTC
Device Model	Nexus One
Year Released	2010

Hardware

Mobile Device	True
Screen Width	480
Screen Height	800
Screen Color Depth	8
version	–
Touch Screen	True
Is EReader	False
Is Games Console	False
Is Mobile Phone	True
Is Tablet	False

Environment

OS Symbian	False
OS Linux	True
OS Android	True
OS Windows	False
OS Rim	False
OS Osx	False
OS Proprietary	–
OS Version	2.2
Developer Platform	Android
Developer Platform Version	–
OS Bada	False

Streaming

Stream 3gp H264 .lev
Stream 3gp H264 .leve
Stream 3gp H264 .lev
Stream 3gp H264 .lev
Stream 3gp H264 .lev
Stream 3GPP AA
Stream 3GPP H
Stream 3GPP AM
Stream 3GPP AM
Stream MP4 H.264 Leve
Stream MP4 H.264 Leve
Stream MP4 AA

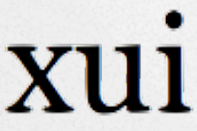
Video Player

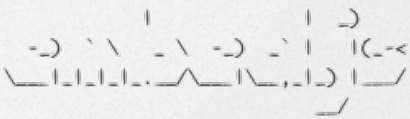
QCELP In V
3GP H264 .lev
3GP H264 .leve
3GP H264 .lev
3GP H264 .lev
3GP H264 .lev
3GPP AA
3GPP H
3GPP AM
3GPP AM
MP4 H.264 Leve
MP4 H.264 Leve
MP4 AA

@font-face ✓
Canvas ✓
Canvas Text ✓
HTML5 Audio ✓
HTML5 Video ✓
rgba() ✓
hsla() ✓
border-image: ✓
border-radius: ✓
box-shadow: ✓
text-shadow: ✓
opacity: ✓
Multiple backgrounds ✓
Flexible Box Model ✓
CSS Animations ✓
CSS Columns ✓
CSS Gradients ✓
CSS Reflections ✓
CSS 2D Transforms ✓
CSS 3D Transforms
CSS Transitions ✓

Geolocation API ✓
localStorage ✓
sessionStorage ✓
SVG ✓
SMIL ✓
SVG Clipping ✓
Inline SVG ✓
Drag and Drop ✓
hashchange ✓
X-window Messaging ✓
History Management ✓
applicationCache ✓
Touch events
Web Sockets ✓
Web Workers ✓
Web SQL Database ✓
WebGL ✓
IndexedDB
Input Types†
Input Attributes‡

Enter The Framework





Why use a framework?

Provide user interface components

Smooth browser inconsistencies

Mimic native or server paradigms

Create consistent application architectures

...and more

Strokes for folks

Sites & Documents	———	Applications
Declarative HTML	———	Programmatic DOM
Templates	———	APIs
URLs	———	Arguments
Request/Response	———	Synchronization
Thin client	———	Thick client

jQTouch

UI layer on top of jQuery
Declarative HTML
Library progressively enhances
Browsers:

- iOS (iPhone/iPod)
- Android
- BlackBerry v6
- Most WebKit-based browsers

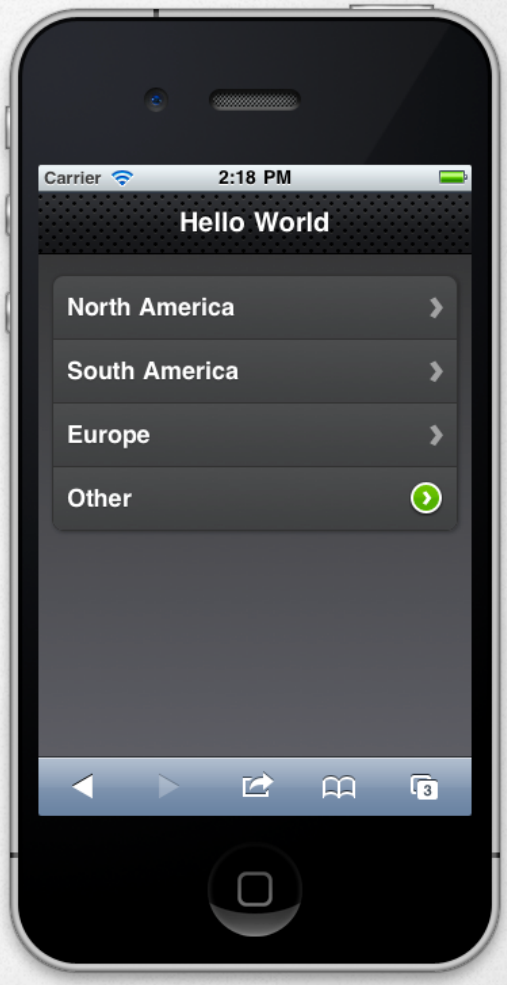
http://jQTouch.com

jQTouch

```
<!DOCTYPE html>
<html>
    <head>
        <title>jQTouch</title>
        <script src="jq.js"></script>
        <script src="jqt.js"></script>
        <link rel="stylesheet" href="jqt.css" />
        <link rel="stylesheet" href="jqt-theme.css" />

        <script type="text/javascript" charset="utf-8">
            var jQT = new $.jQTouch({});
        </script>

    </head>
    <body>

        <div id="home">
            <div class="toolbar">
                <h1>Hello World</h1>
            </div>
            <ul class="rounded">
                <li class="arrow"><a href="/na.html">North America</a></li>
                <li class="arrow"><a href="/sa.html">South America</a></li>
                <li class="arrow"><a href="/eu.html">Europe</a></li>
                <li class="forward"><a href="/other.html">Other</a></li>
            </ul>
        </div>

    </body>
</html>
```

Scripts & stylesheets

CSS classes for semantics & config



jQuery Mobile (alpha)

UI layer on top of jQuery
Declarative HTML
Library progressively enhances
Browsers:

- iOS (iPhone/iPad)
- Android
- BlackBerry v5+
- Symbian v5, MeeGo, webOS

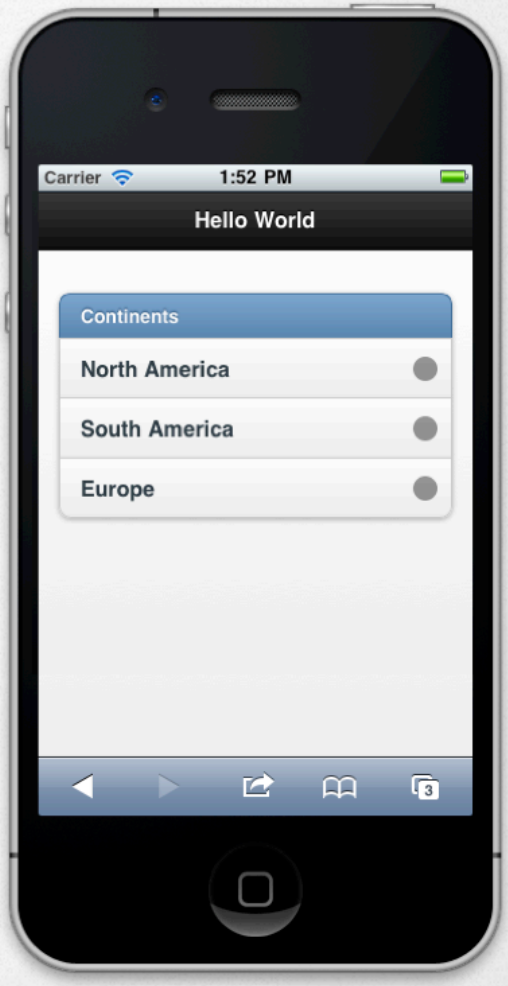
http://jquerymobile.com

jQuery Mobile

```
<!DOCTYPE html>
<html>
    <head>
        <title>jQuery Mobile</title>
        <script src="jq.js"></script>
        <script src="jqm.js"></script>
        <link rel="stylesheet" href="jqm.css" />
    </head>
    <body>

        <div data-role="page" id="home">

            <div data-role="header">
                <h1>Hello World</h1>
            </div>

            <div data-role="content">
                <ul data-role="listview" data-inset="true">
                    <li data-role="list-divider">Continents</li>
                    <li><a href="/na.html">North America</a></li>
                    <li><a href="/sa.html">South America</a></li>
                    <li><a href="/eu.html">Europe</a></li>
                </ul>
            </div>

        </div>
    </body>
</html>
```

Scripts & stylesheet

data-* for semantics & config



Sencha Touch

Self-contained library
Programmatic Javascript
Standalone MVC applications
Browsers:
- iOS (iPhone/iPad)
- Android
- BlackBerry v6 & QNX
- Bada, MeeGo & other WebKit
- Windows Phone 7*

http://sencha.com/touch

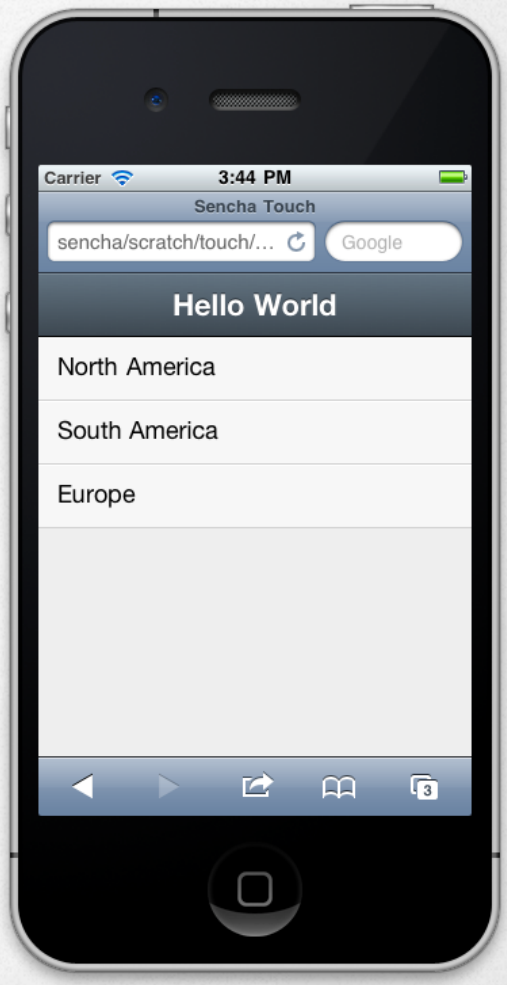
* to come

Sencha Touch

```
<!DOCTYPE html>
<html>
    <head>
        <title>Sencha Touch</title>
        <script src="st.js"></script>
        <link rel="stylesheet" href="st.css" />

        <script type="text/javascript" charset="utf-8">

            new Ext.Application({
                launch: function() {

                    Ext.regModel('Continent', {fields: ['name', 'link']});

                    var continents = new Ext.data.Store({model: 'Continent',
                        data: [
                            {name: 'North America', link:'na'},
                            {name: 'South America', link:'sa'},
                            {name: 'Europe', link:'eu'}
                        ]
                    });

                    new Ext.Panel({
                        fullscreen: true,
                        dockedItems: [{
                            xtype: 'toolbar', title: 'Hello World',
                        }],
                        items: [{
                            xtype: 'list', itemTpl: '{name}', store: continents
                        }]
                    });
                }
            });

        </script>
    </head><body></body>
</html>
```

Data model & records

Programmatically create toolbar & list

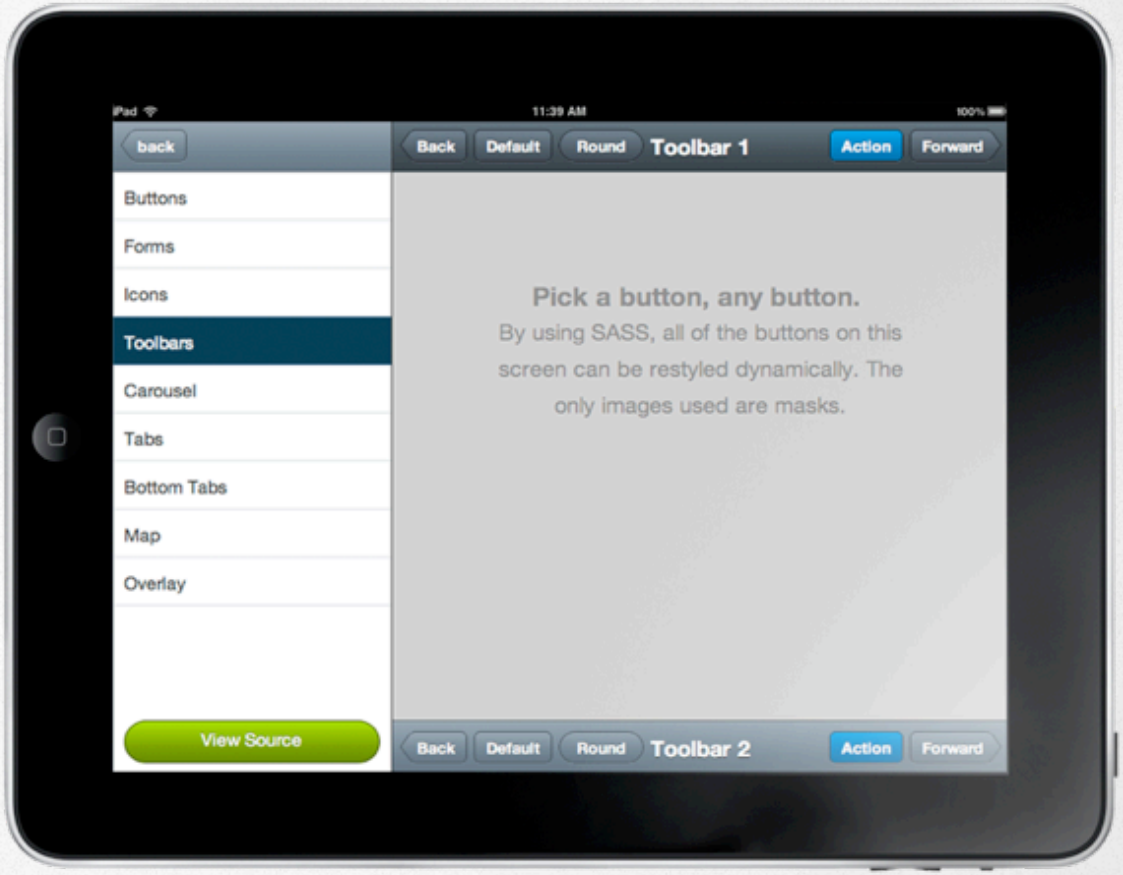


What's in a good framework?

Layouts & components
Theming & icons
Orientation & animation
Touch events & scroller
Data package
MVC framework

Components

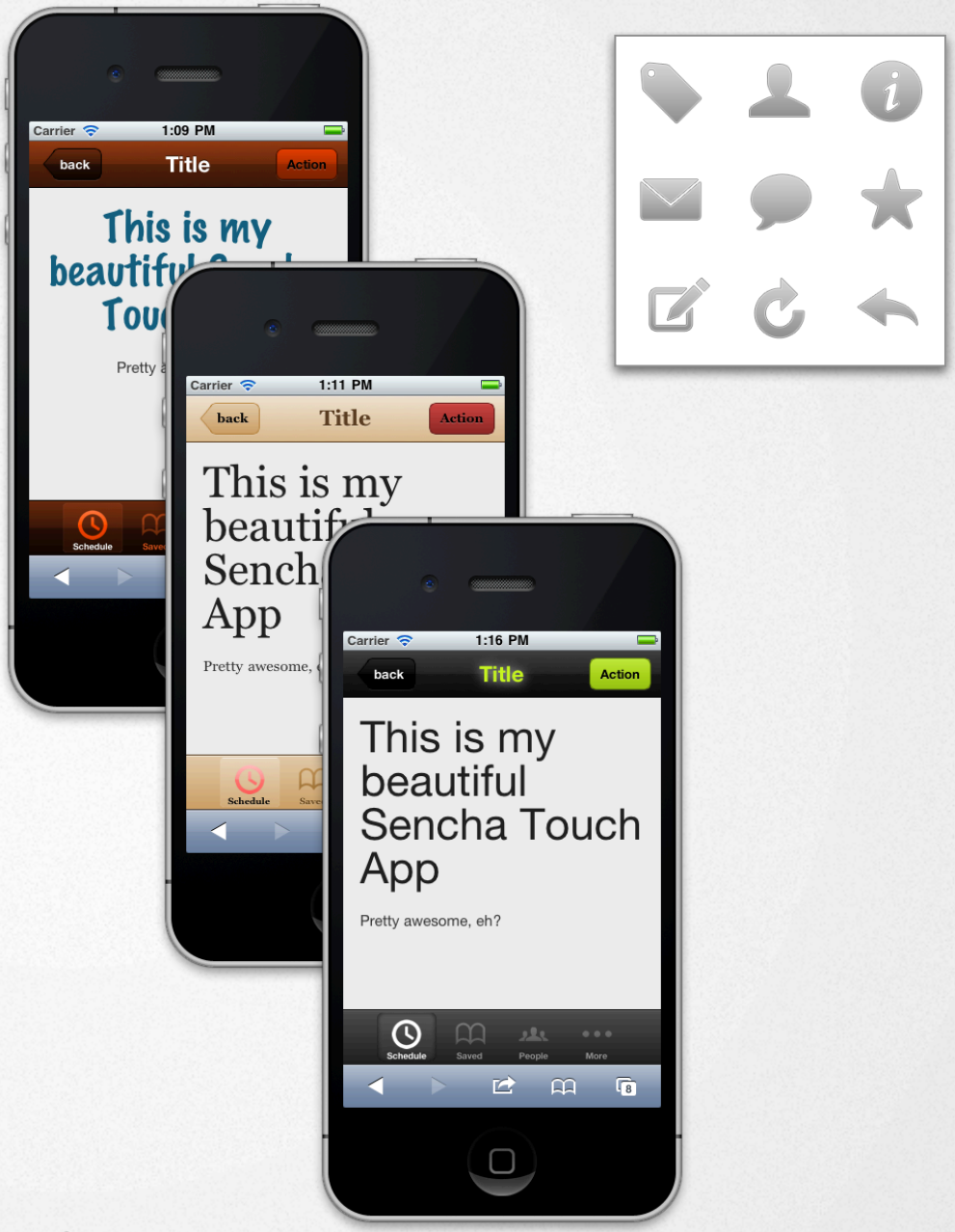
Lists
 - Nested, Grouped, Sortable
Carousel
Picker
Overlay
Slider
Forms & fields
Toolbars & buttons
HTML5
 - Audio
 - Video
 - GeoLocation



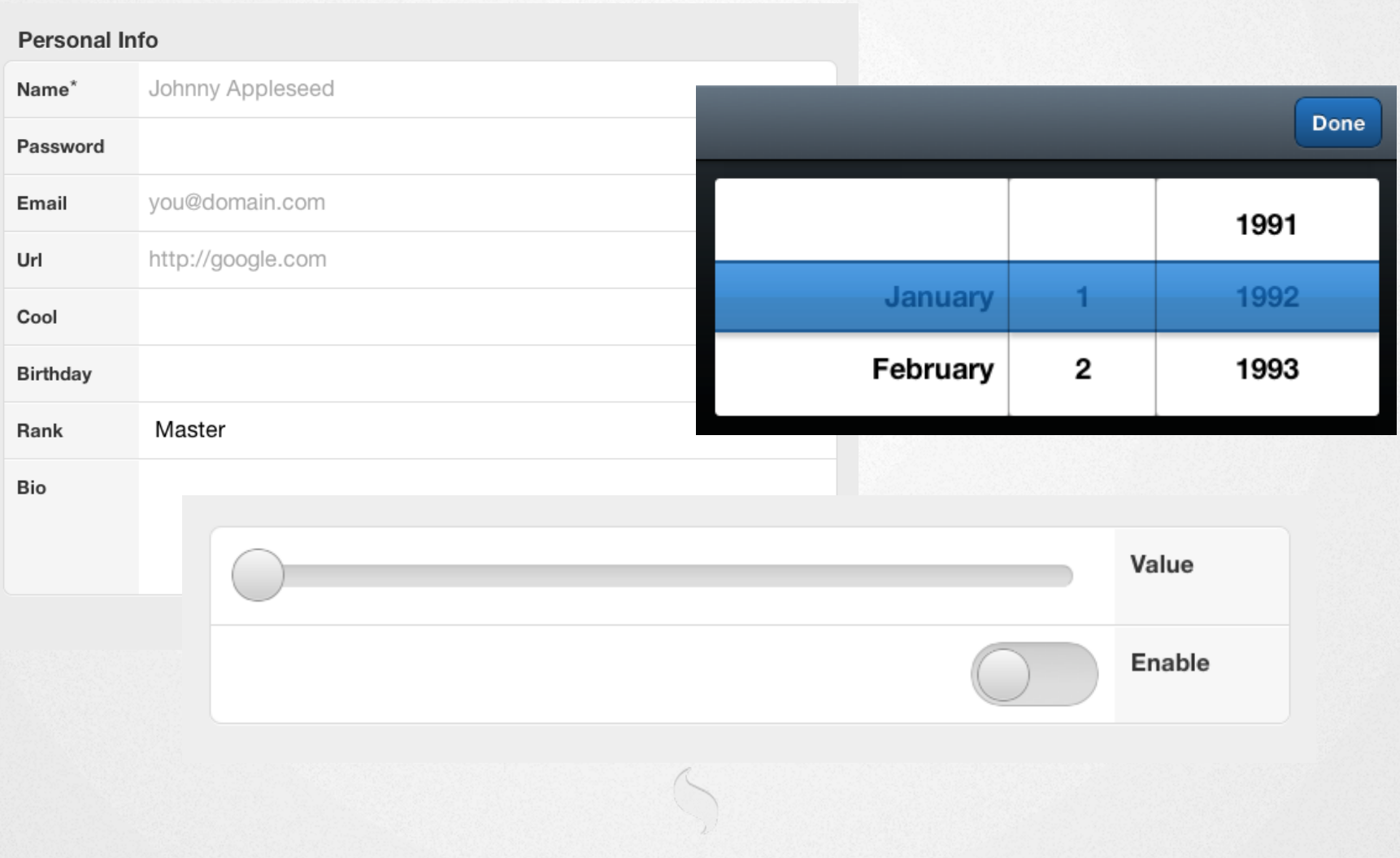
Theming

Use CSS3 & SASS

- Flexible themes
- Highly optimized



Forms


Personal Info
Name*
Johnny Appleseed
Password
Email
you@domain.com
Url
http://google.com
Cool
Birthday
Rank
Master
Bio
Done
1991
January
1
1992
February
2
1993
Value
Enable

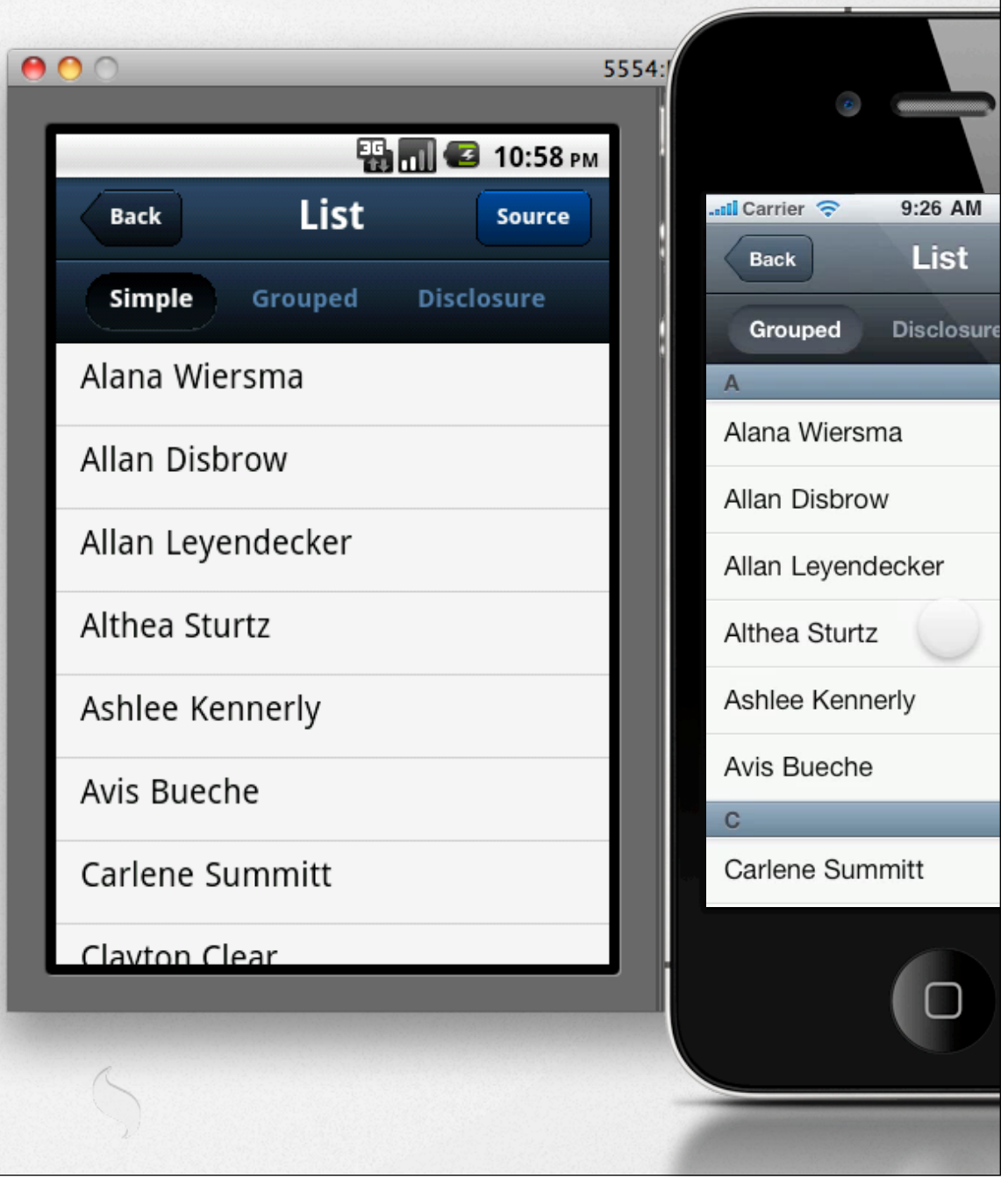
Scrolling

Momentum/bounce physics

Hardware accelerated

Throughout all components:

- Lists
- Carousel
- Pickers



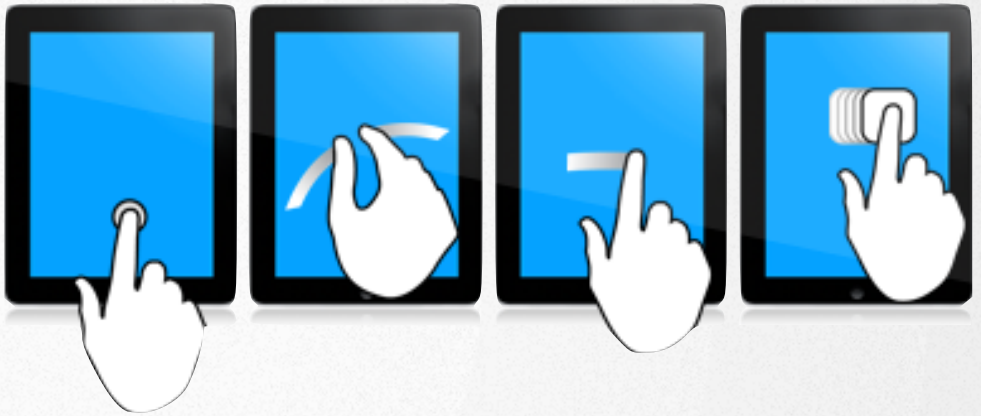
Touch Events

Built on native events

Abstracted for performance

Additional events

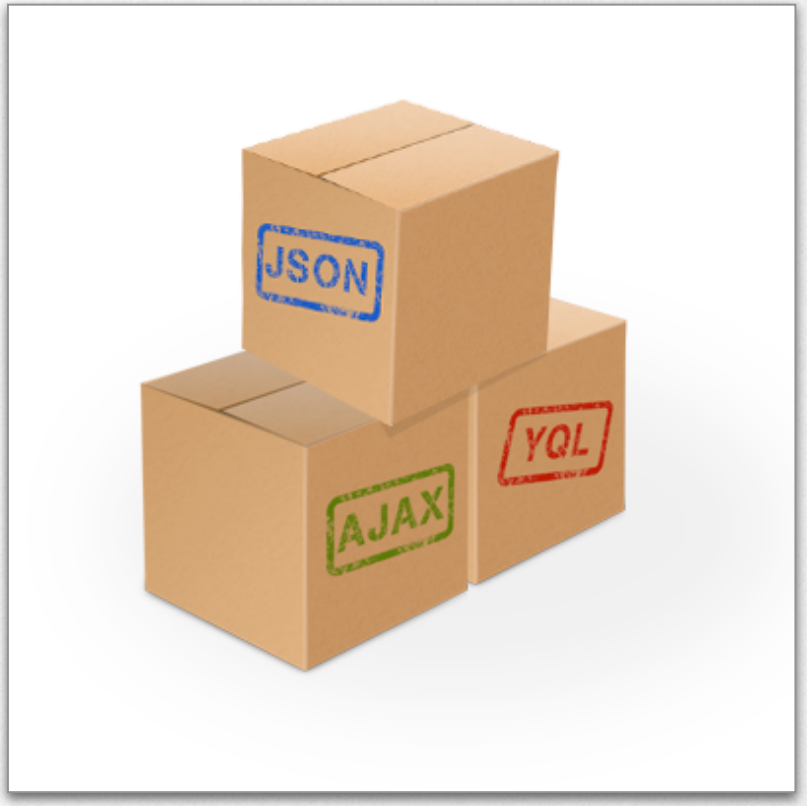
- Tap
- Double tap
- Tap and hold
- Swipe
- Rotate
- Drag & drop



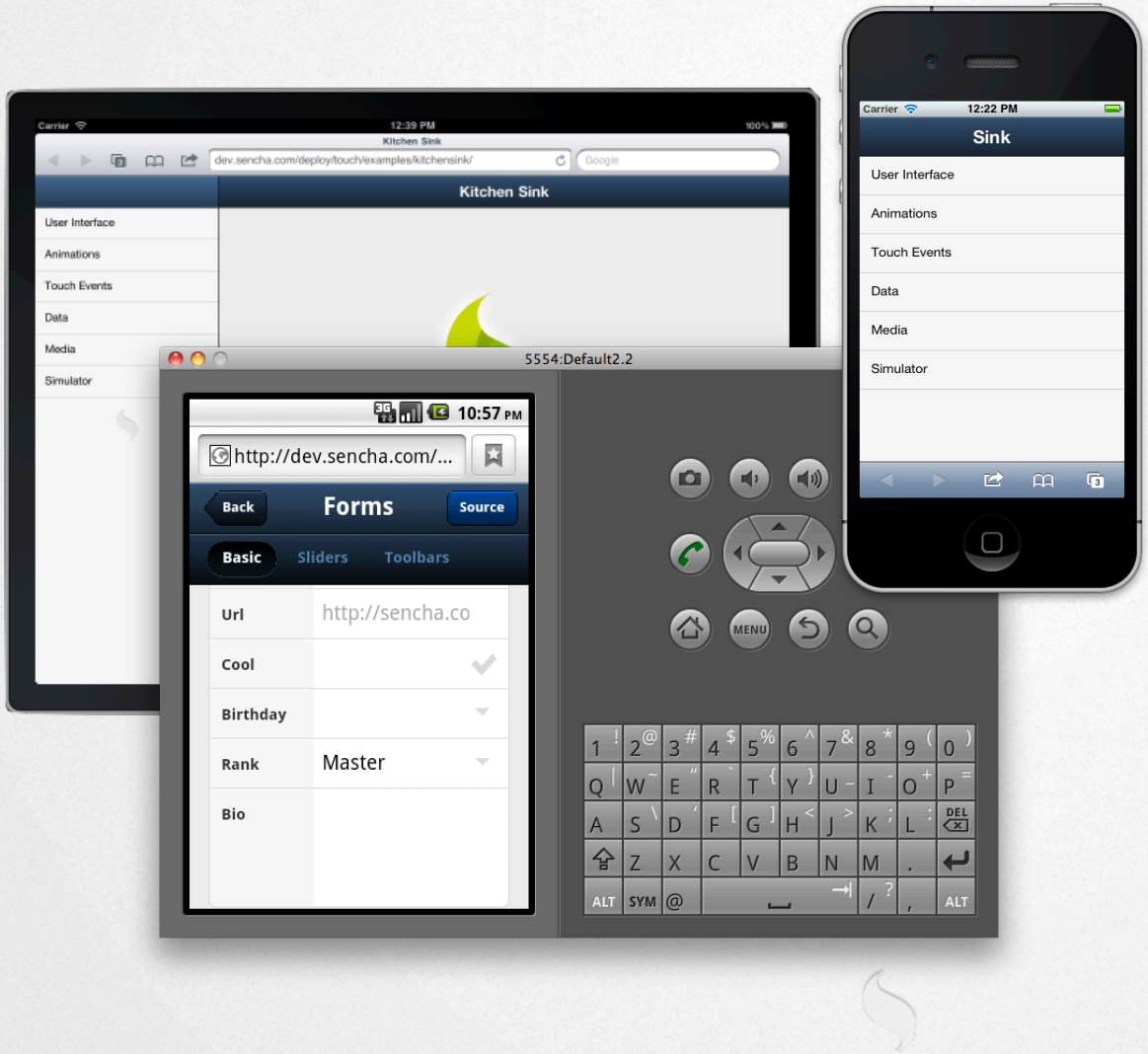
Data Package

Models, Stores, and Proxies
- Associations
- Validation
- Local & server storage

Easily consume web services
- JSON/P
- XML
- YQL



“The Kitchen Sink”



http://sencha.com/x/5e

Implementing Mobile Web Sites|Apps

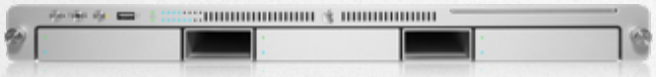
Evolving sites for mobile

Views

Controllers

Models

HTML, CSS...



Evolving sites for mobile

Switcher

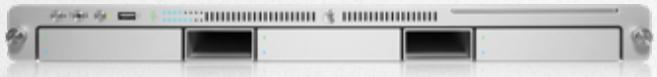
Desktop

Mobile

Controllers

Models

HTML, CSS...

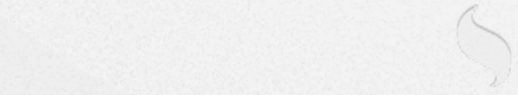


Mobile detection

```
class ApplicationController < ActionController::Base
    has_mobile_fu
end
```

```
*.mobile.erb

is_mobile_device?
in_mobile_view?
```

https://github.com/brendanlim/mobile-fu

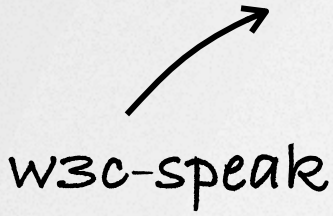


Smart detection & user choice

"Switch to our desktop site"

HI!
I'M A SERVER!
WHO ARE YOU?
I'M A BROWSER.
I'D LIKE TO SEE
THIS ARTICLE.
OH BOY! I CAN HELP!
LET ME GET IT FOR—
...WHOA! YOU'RE A
SMARTPHONE BROWSER?
YEAH.
COOOOL! HEY, I'VE
GOT THIS NEW MOBILE
VERSION OF MY SITE!
CHECK IT OUT!
ISN'T IT PRETTY?
SURE. BUT THIS IS
JUST YOUR MOBILE
SITE'S MAIN PAGE.
WHERE'S THE
ARTICLE I WANTED?
WHAT ARTICLE?
THE ONE I—
WHO ARE YOU?
I—
HI! I'M A SERVER!

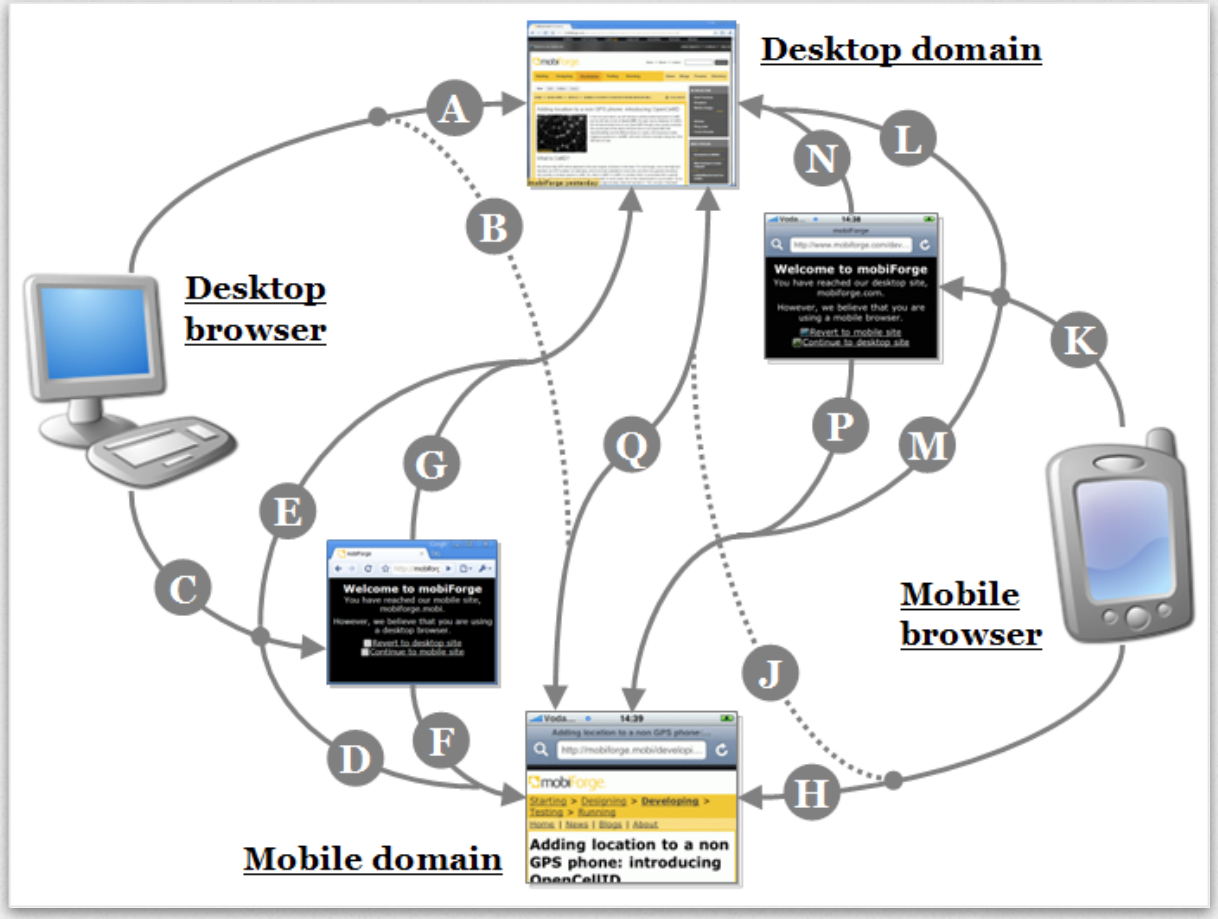
Thematic consistency



http://mysite.com/posts/123

http://mysite.mobi/posts/123

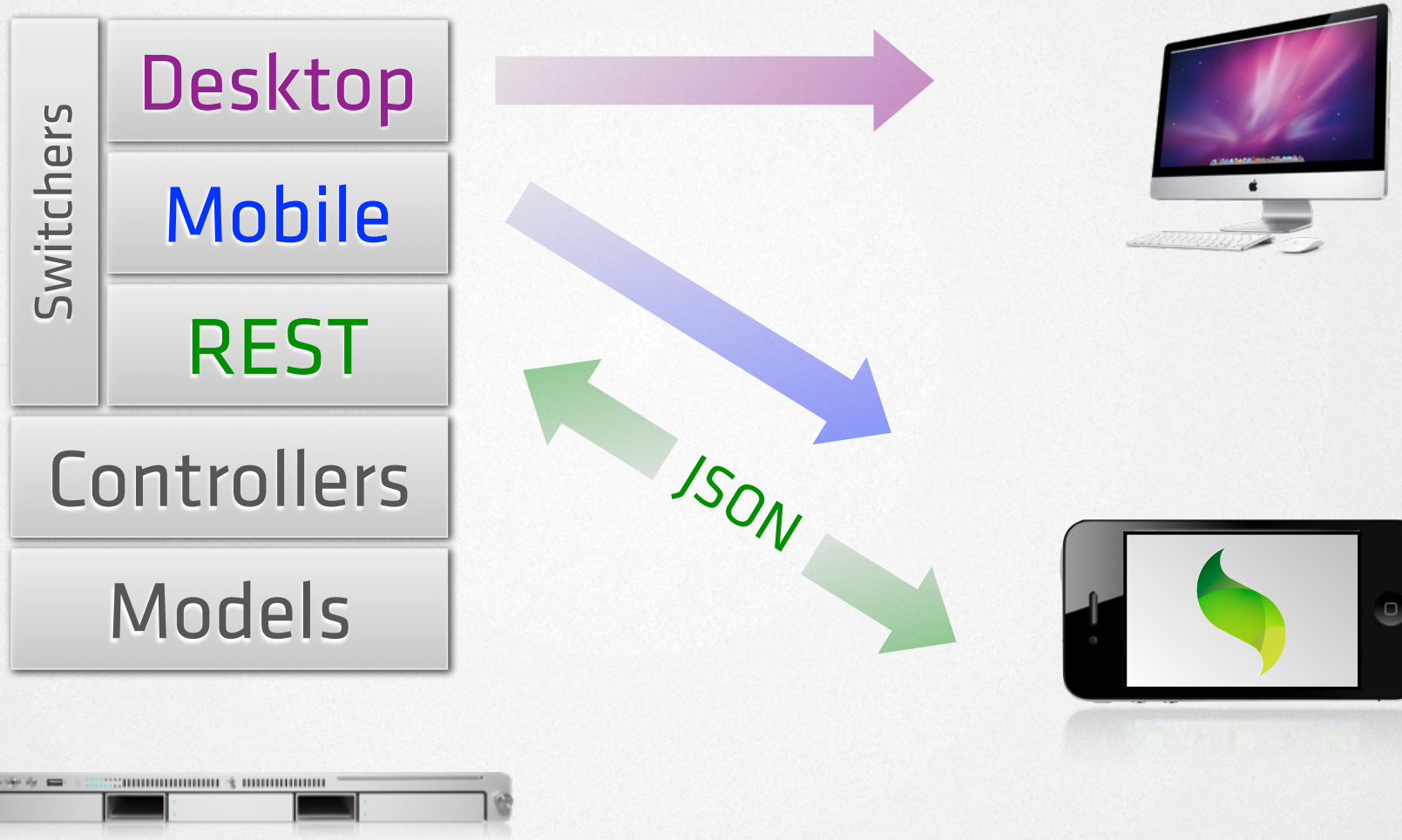
Mobile switching



http://tinyurl.com/mobswi1 http://tinyurl.com/mobswi2

mobiForge

Then to an app...



Thematic consistency

http://mysite.com/posts/123

http://mysite.com/#!/posts/123

The stack of the present

User interface

Business logic

Storage

req/res

Rendering

The stack of the future

User interface

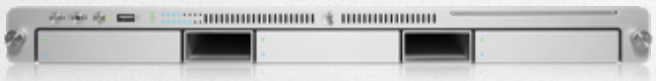
Business logic

Storage

sync

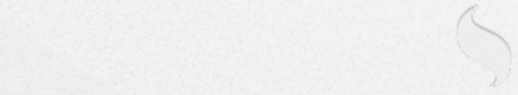
Security

Storage

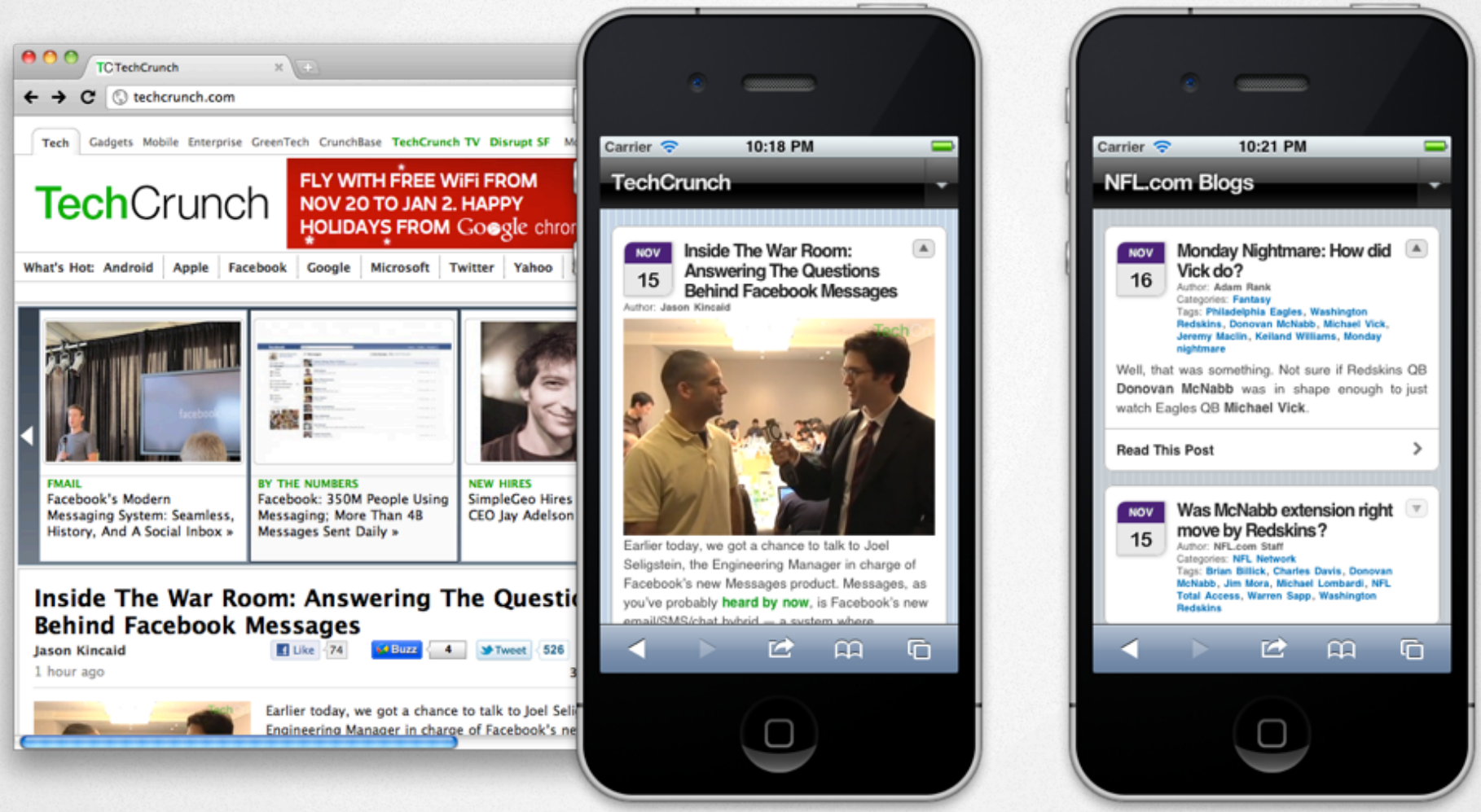


The return of
the thick client!

Do we have time for some code?



Brand consistency



Getting help from the cloud

http://i.tinysrc.mobi/http://mysite.com/myimage.png

http://tinysrc.net/

Mobile devices are different

Geolocation

Telephony

Camera

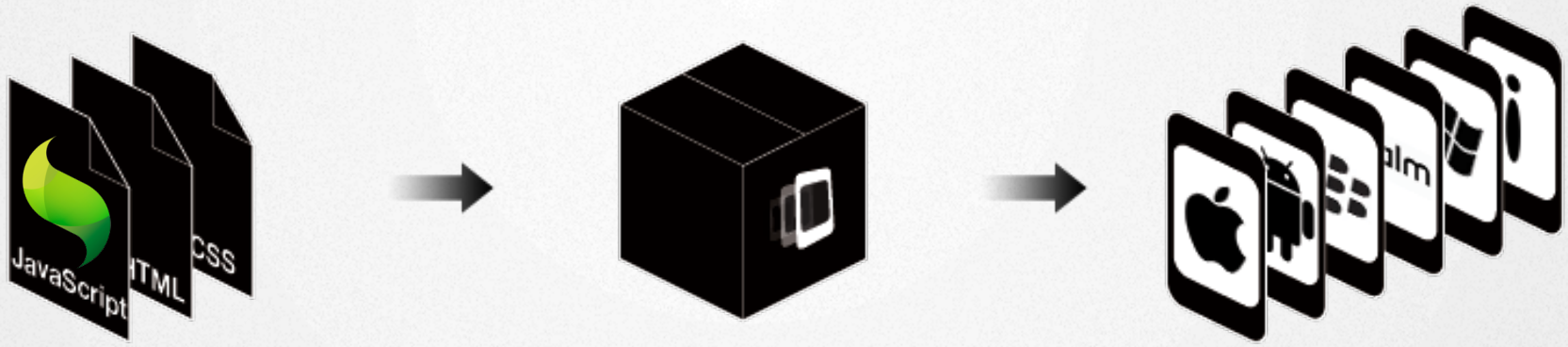
Messaging

And mobile users are different too!

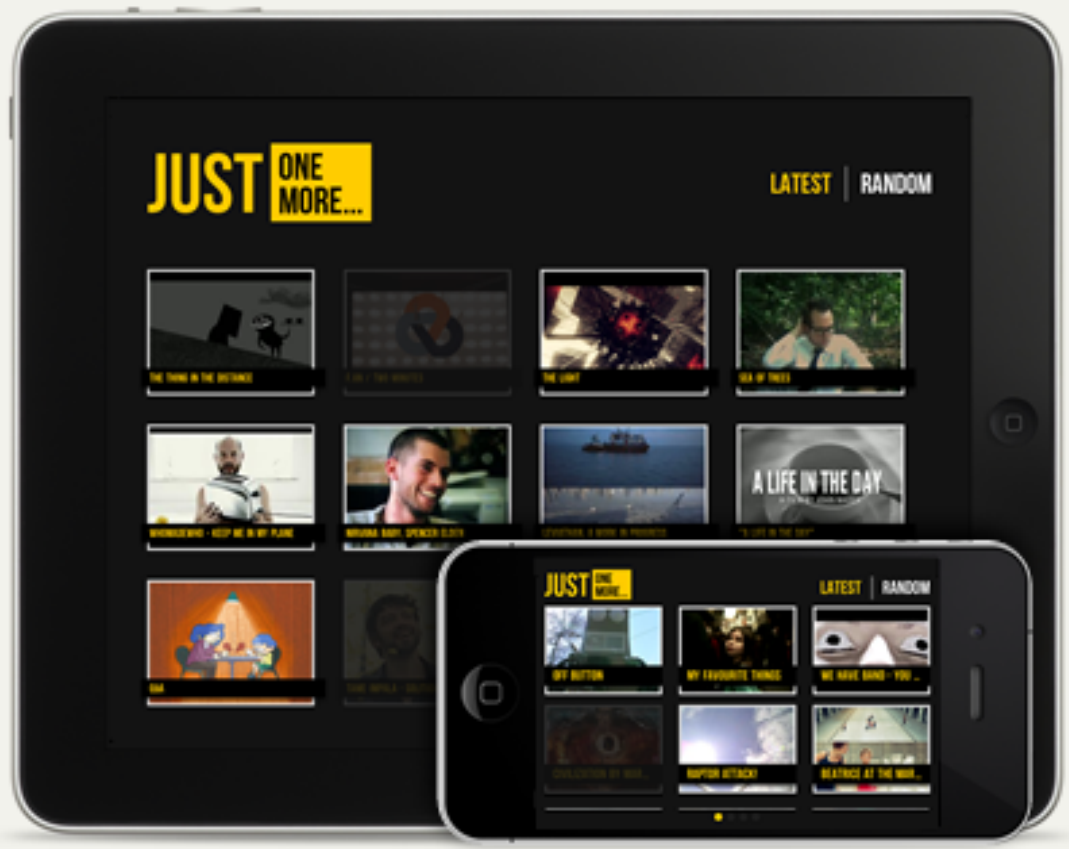
Going Hybrid

PhoneGap

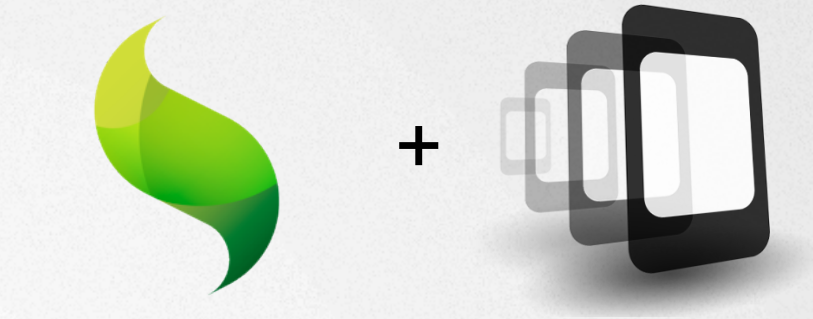
A platform that allows you to author native applications with web technologies and get access to device APIs

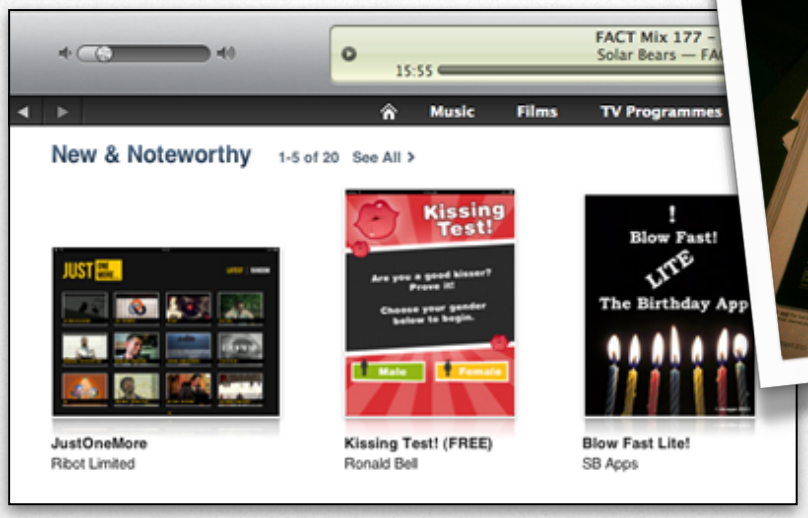


http://phonegap.com


JUST ONE MORE...
LATEST | RANDOM
A LIFE IN THE DAY

+



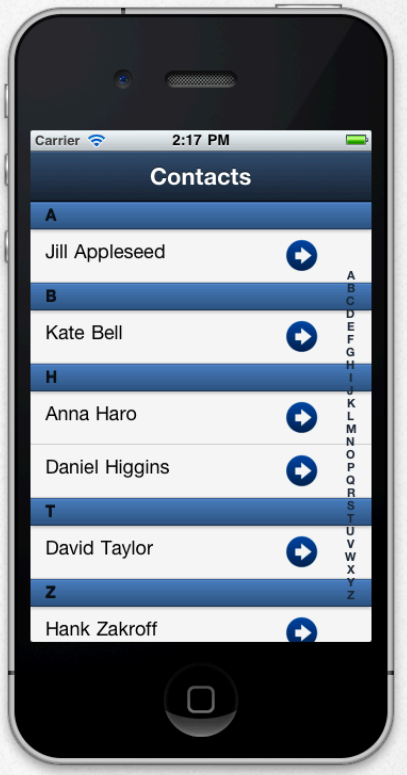

Music
Films
TV Programmes
New & Noteworthy
1-5 of 20 See All >
JustOneMore
Ribot Limited
Kissing Test!
Are you a good kisser? Prove it!
Choose your gender below to begin.
Male
Female
Kissing Test! (FREE)
Ronald Bell
Blow Fast!
LITE
The Birthday App
Blow Fast Lite!
SB Apps

/iPad/build an app with Sencha Touch

Full API list:

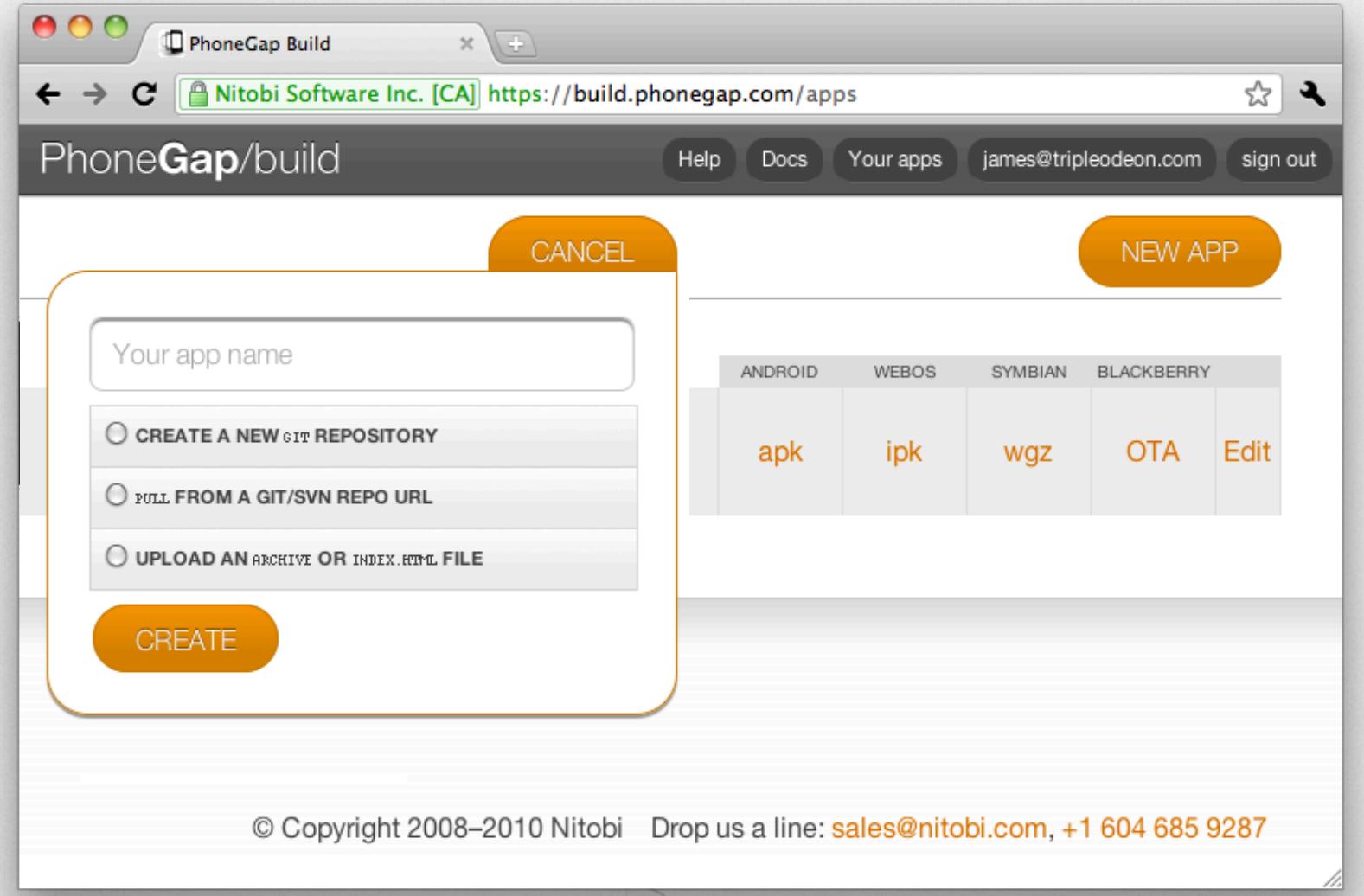
Accelerometer	File
Camera	Geolocation
Compass	Media
Contacts	Network
Device	Notification
Events	Storage

http://docs.phonegap.com



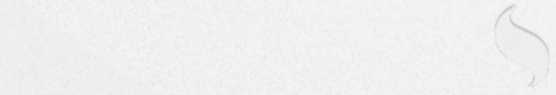
http://www.sencha.com/learn/Tutorial:Sencha_Touch_PhoneGap

PhoneGap Build



A word about app stores

(pssst: they're an admission of defeat)



Doing mobile right

Everyone loves apps - but native development sucks

This is the year of the mobile web - but caveats apply

Web technologies *are* a viable alternative to native apps

built with

Apps ~~vs~~ Web technology

James Pearce

Director, Developer Relations

@jamespearce

jamesp@sencha.com