

A Snapshot of the Mobile HTML5 Revolution

@ jamespearce



2008

We must have an iPhone App!



2009

We must have an Android App!



2010

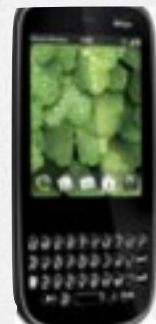
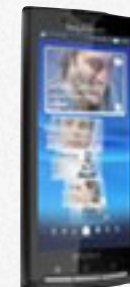
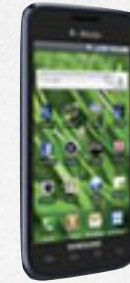
We must have an iPad App!



2011

We must have a...





omfg



Single device
Sedentary user
Declarative
Thin client
Documents



Single device	Multi device
Sedentary use	Mobile user
Declarative	Imperative
Thin client	Thick client
Documents	Applications



Single device	Multi device
Sedentary use	Mobile [*] user
Declarative	Imperative
Thin client	Thick client
Documents	Applications

* or supine, or sedentary, or passive, or...

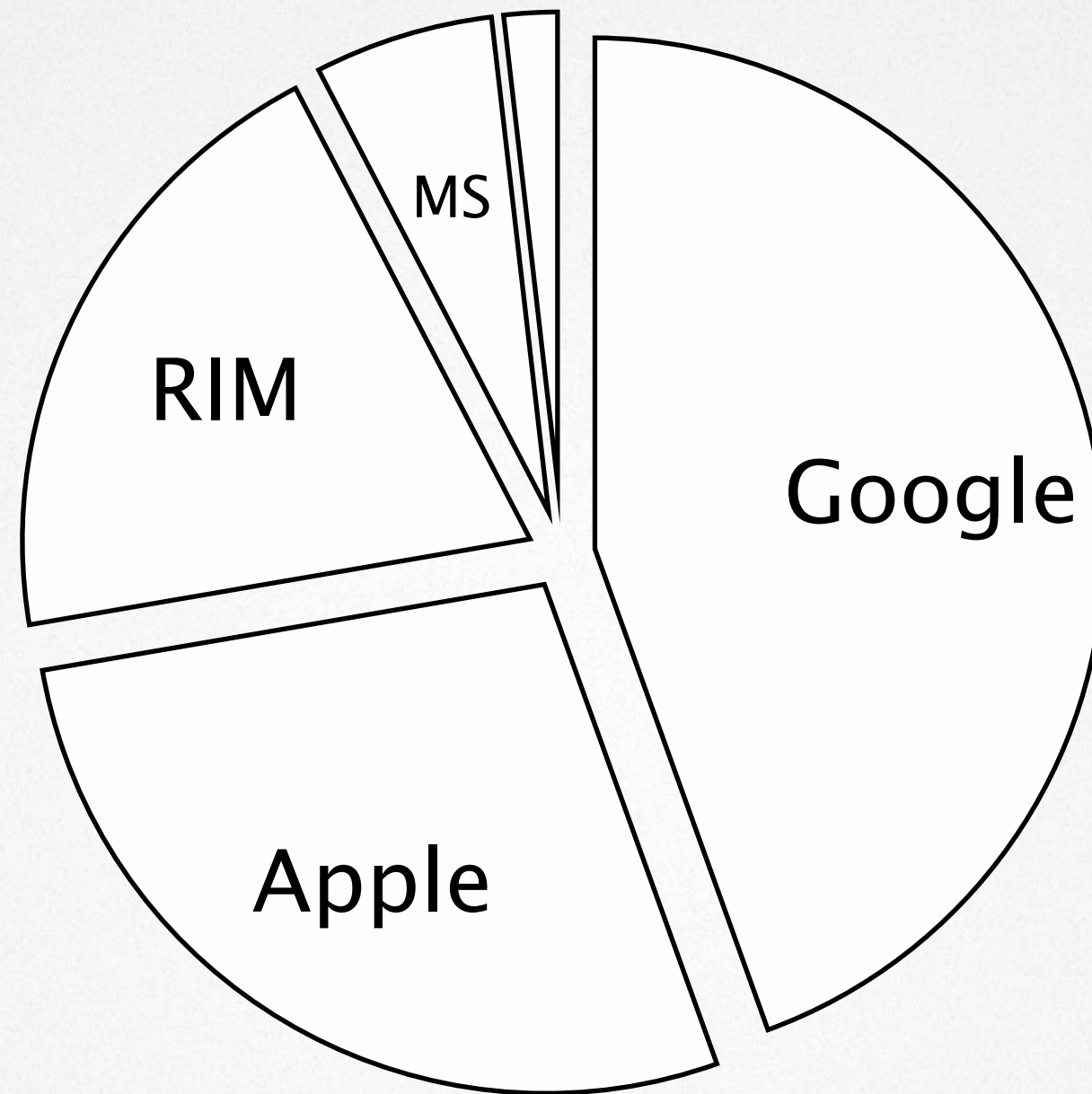


HTML



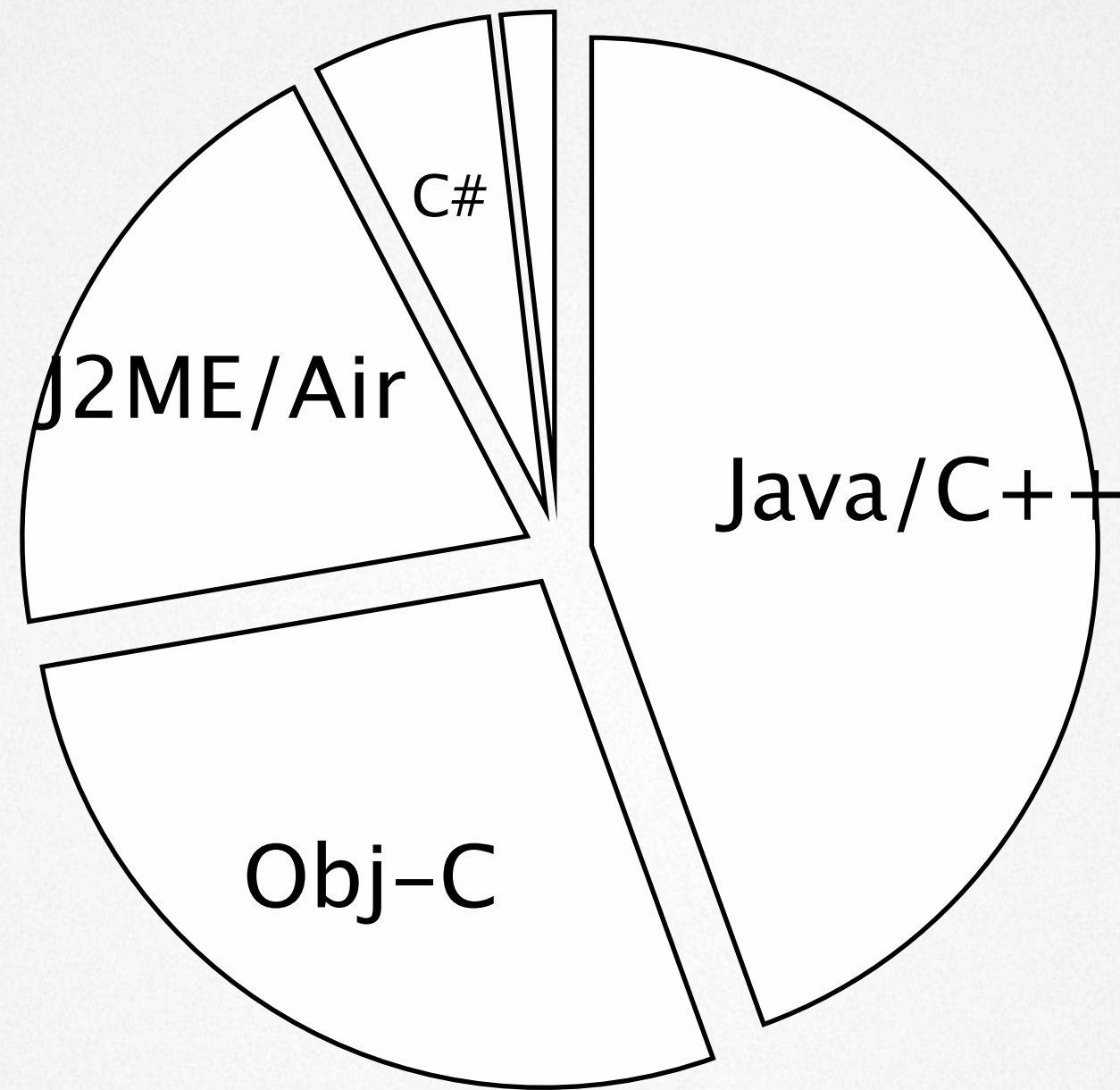
A badge for all these ways
the web is changing





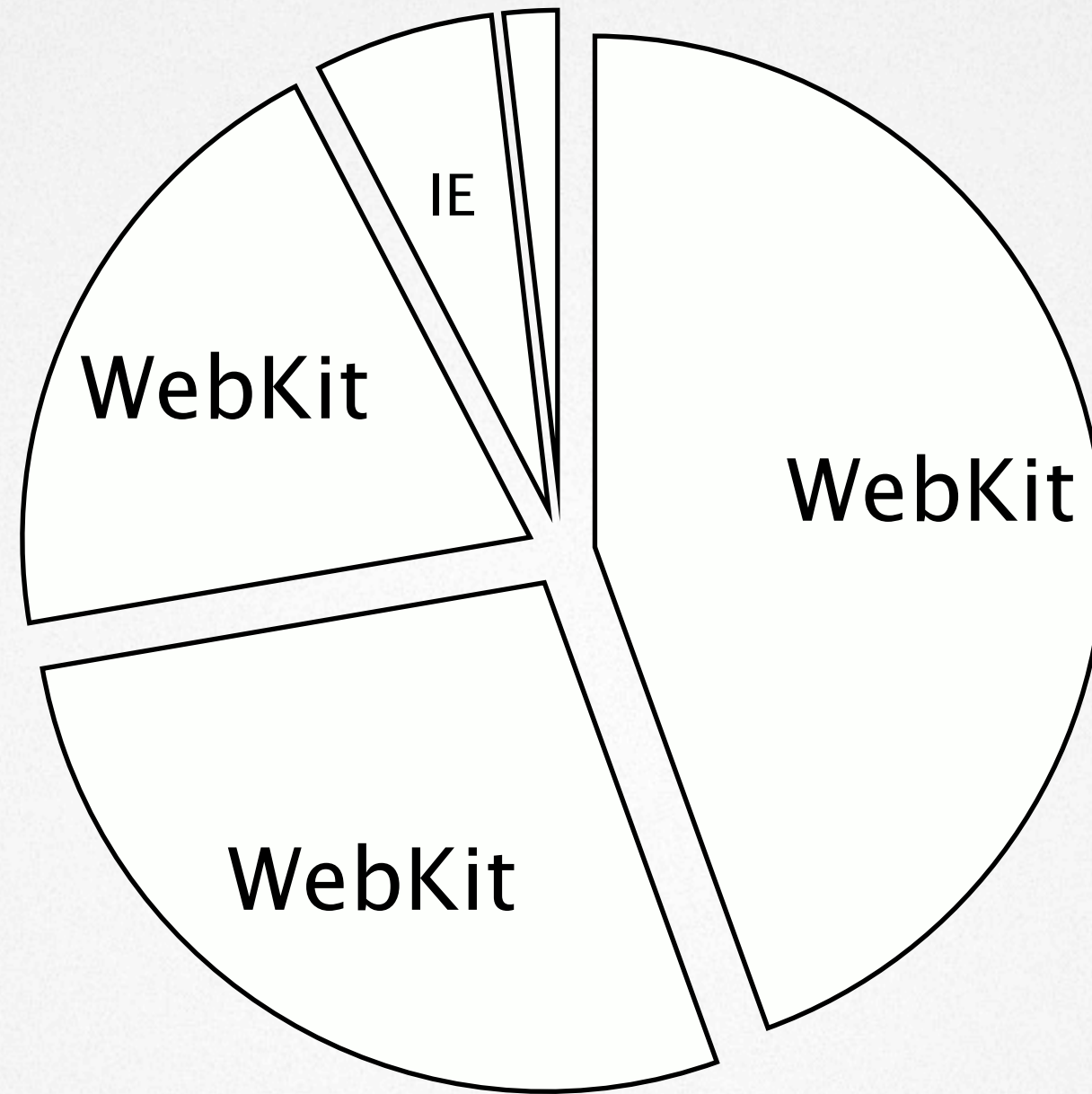
**Top US Smartphone Platforms
August 2011, comScore MobiLens**





Native programming languages you'll need
US Smartphones, August 2011





Browser platforms to target
US Smartphones, August 2011



There is no WebKit on Mobile

– @ppk



But at least we are
using
one language,
one markup,



One Stack



One Stack





HTML5
SEMANTICS



MULTIMEDIA



PERFORMANCE &
INTEGRATION



CONNECTIVITY



OFFLINE &
STORAGE



3D, GRAPHICS,
EFFECTS



DEVICE
ACCESS



CSS3
STYLING

Camera

Location

Contacts

SMS

Orientation

Gyro

WebFont

Video

Audio

Graphics

CSS Styling & Layout

JavaScript

Semantic HTML

File Systems
Databases
App Caches

Workers &
Parallel
Processing

Cross-App
Messaging

HTTP

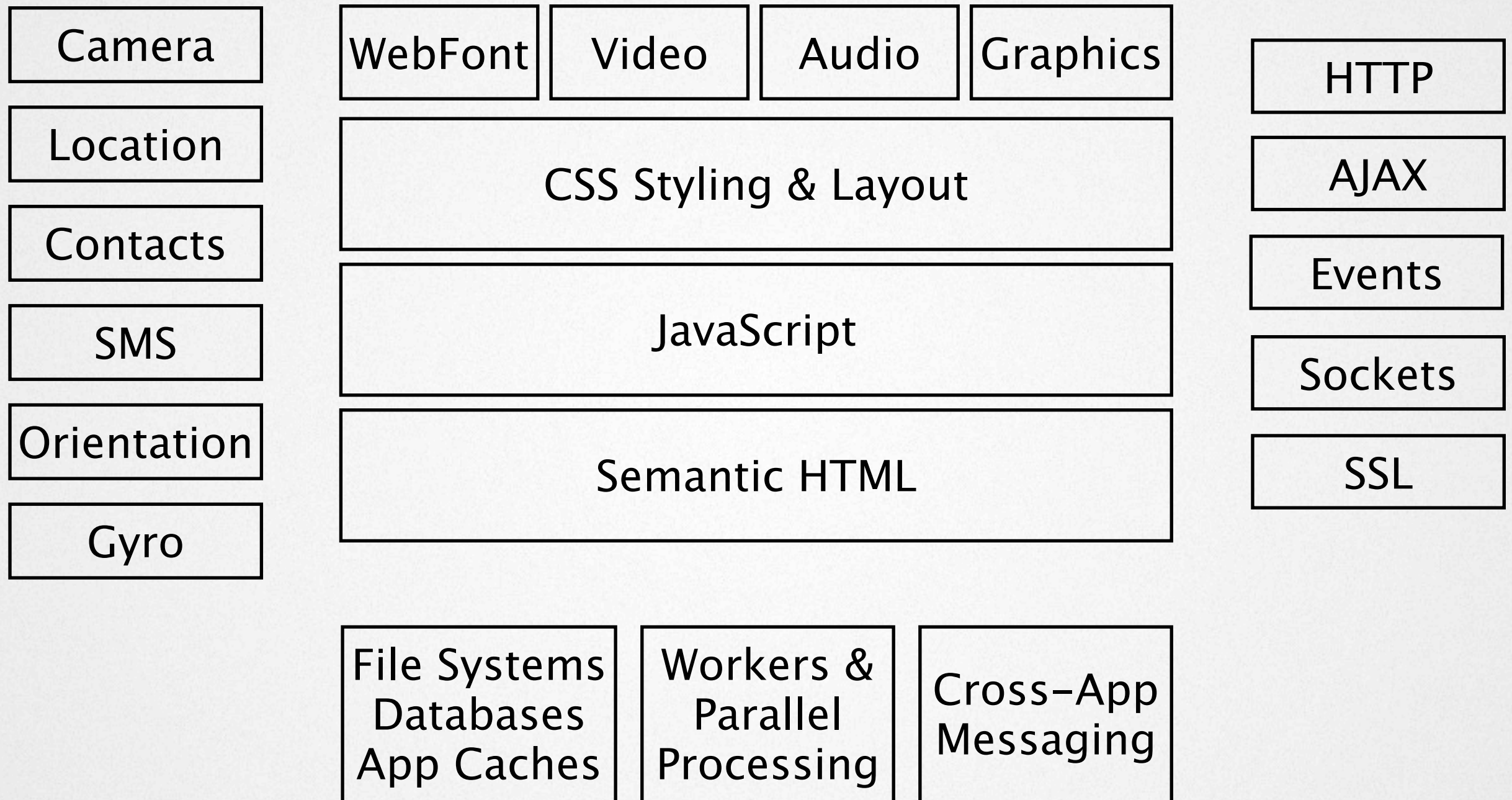
AJAX

Events

Sockets

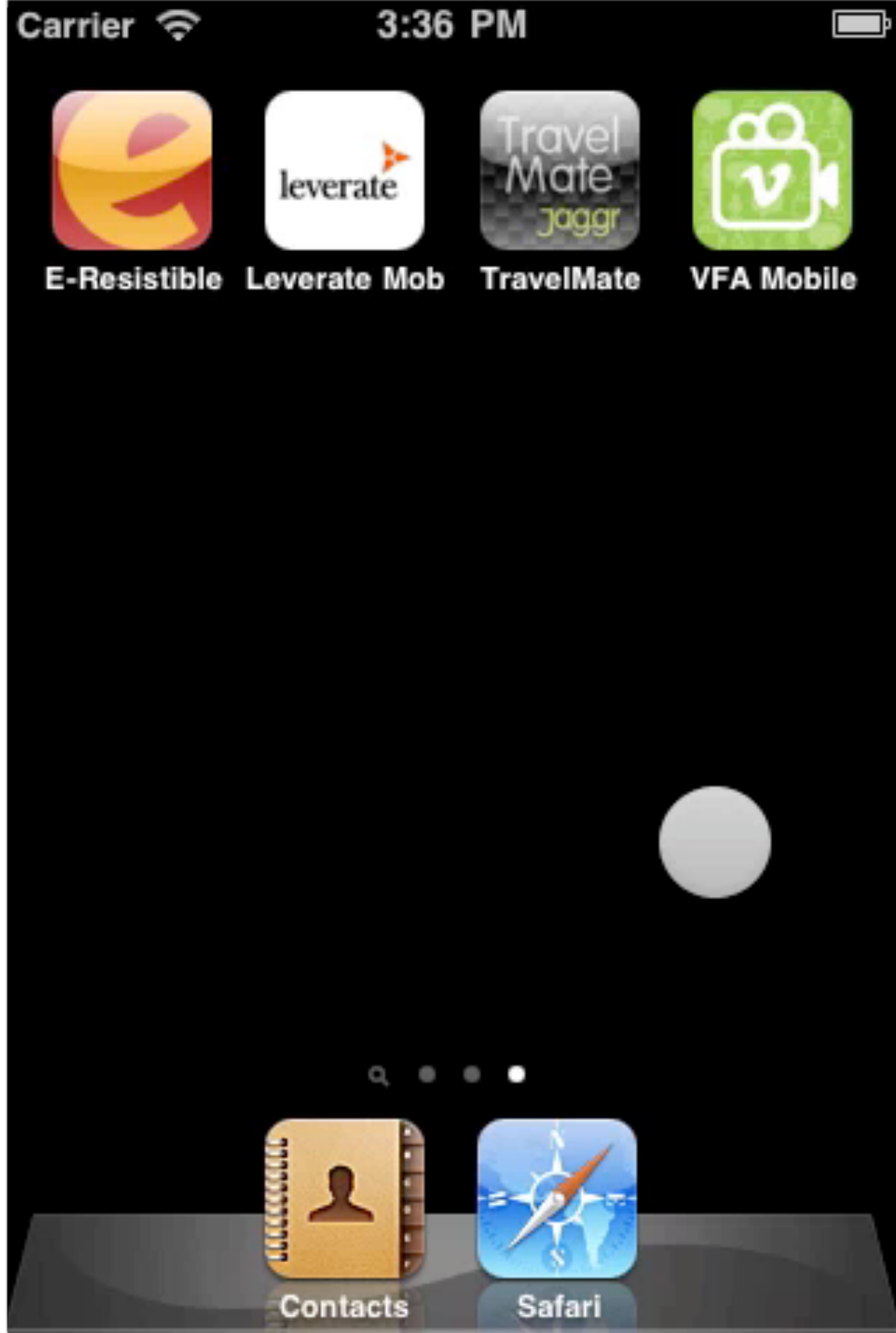
SSL





(all the elements of a modern application platform)





Carrier



3:10 PM



Quality Online Takeaways



Enter your postcode or town:

eg CV32 5QZ

Go!

or hit 'Go' for a demo



Are we nearly there yet?



	IE	Chrome	Safari	Firefox	iOS	BBX	Android
@font-face							
Canvas							
HTML5 Audio & 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							
local/sessionStorage							
SVG/SVG Clipping							
SMIL							
Inline SVG							
Drag and Drop							
hashchange							
X-window Messaging							
History Management							✓
applicationCache							✓
Web Sockets							✓
Web Workers							✓
Web SQL Database	✓			✓			
WebGL	✓			✓			
IndexedDB			✓				



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](#)

	IE	Firefox	Safari	Opera
Two versions back	6.0	3.0	3.2	7.0
Previous version	7.0	3.5	4.0	8.0
Current	8.0	3.6	5.0	9.0
Near Future (early 2011)		4.0		10.0
Future (mid/late 2011)	9.0	5.0	6.0	11.0

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

HTC Nexus One



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

Device Name	Device Vendor	Device Model	Year Released
	HTC	Nexus One	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

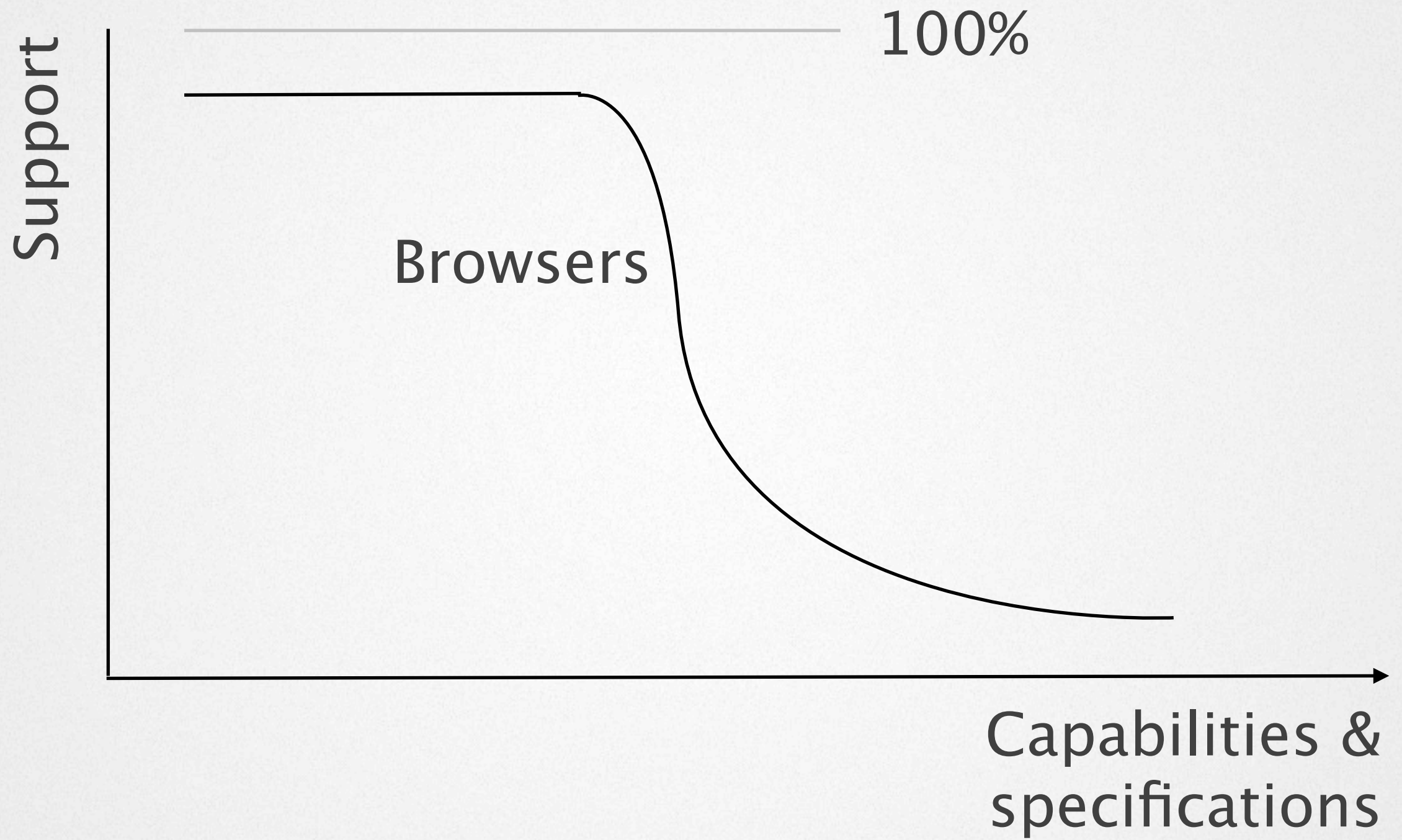
Environment

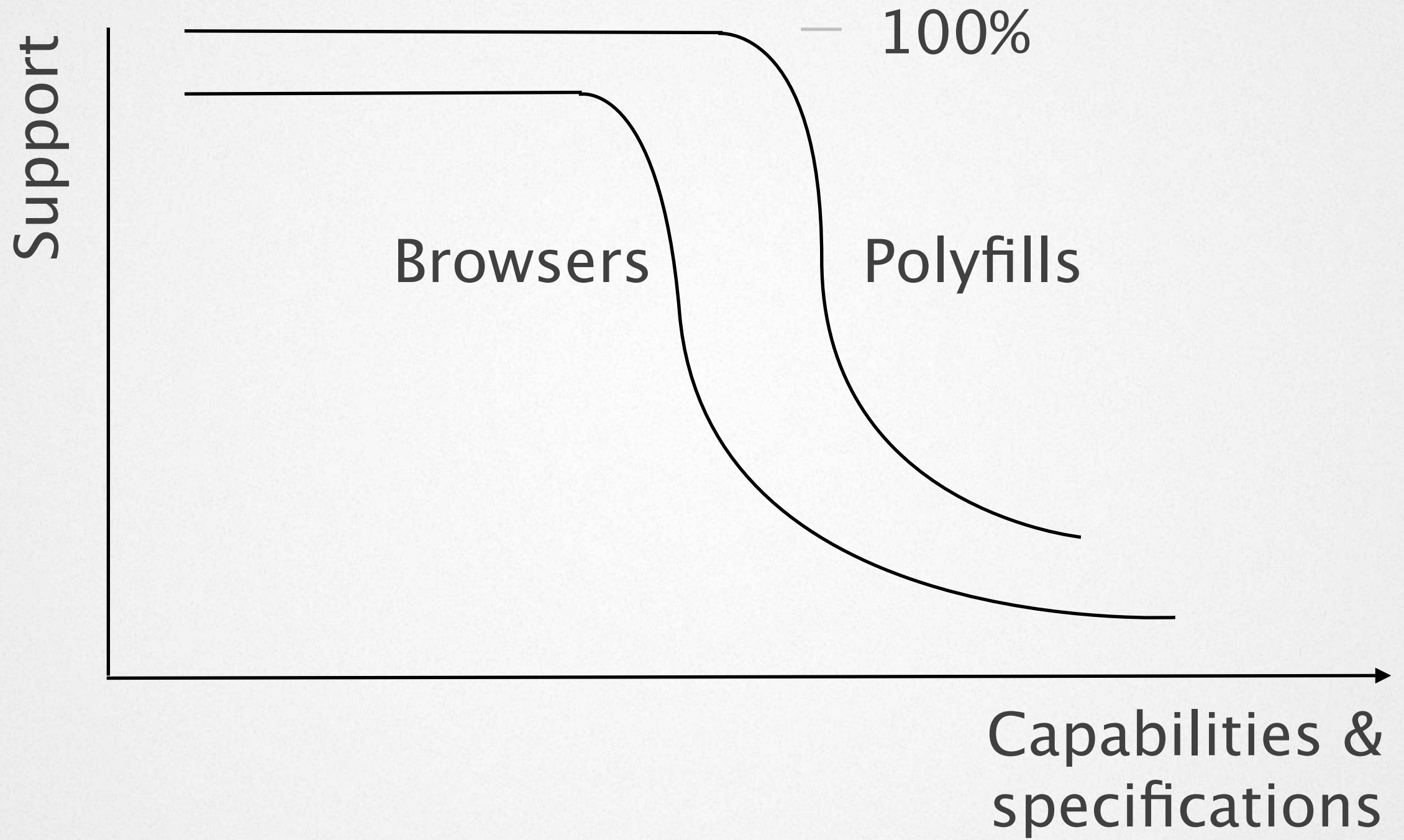
OS Symbian	False
OS Linux	True
OS Android	True
OS Windows	False
OS Rim	False
OS Osx	False
OS Proprietary	-
OS Version	2.2
Developer Platform	Android
Developer Platform Version	-
OS Bada	False

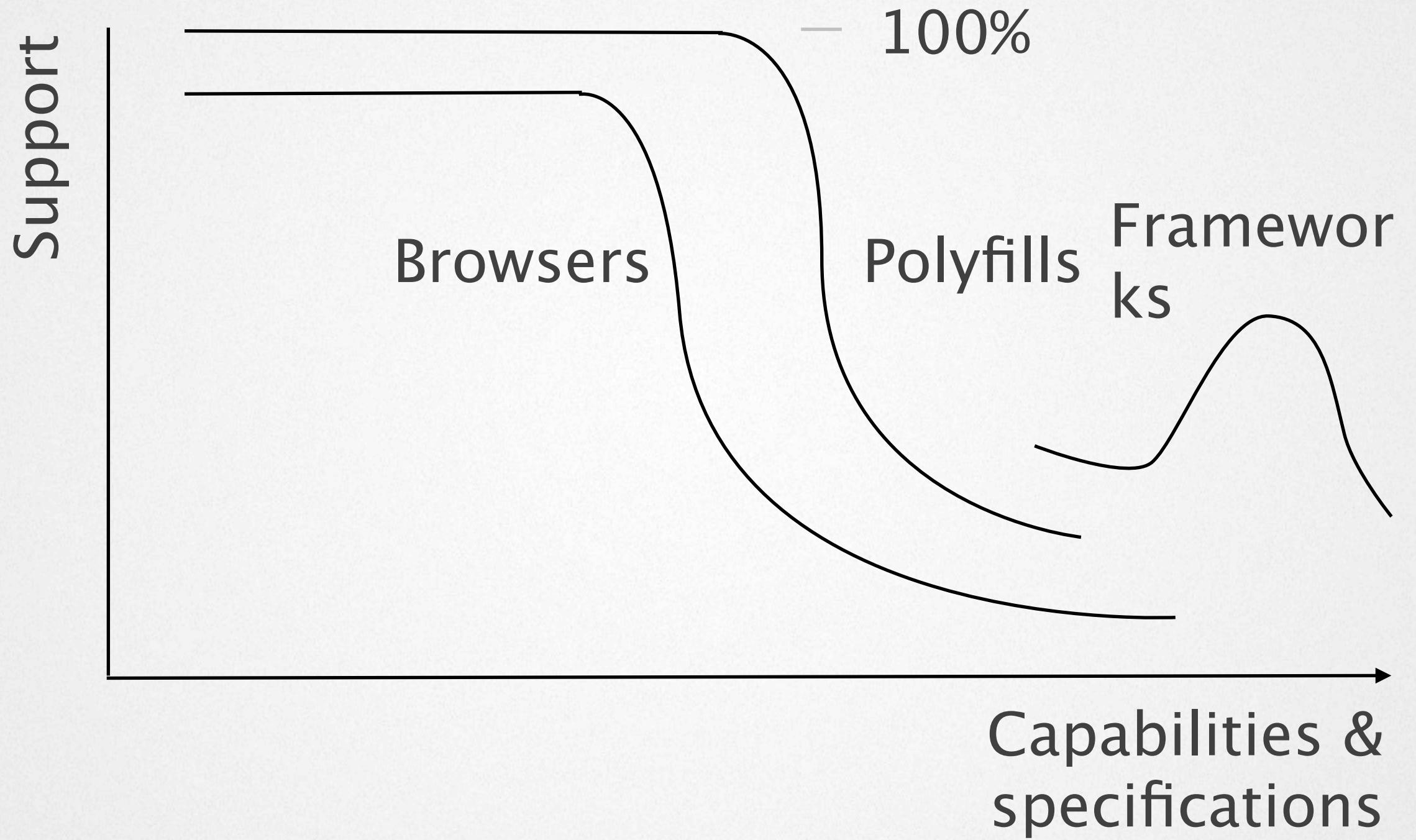
Streaming
Video Play

MP4 H.264 Level 13 True
MP4 AAC LC True

- @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 Type†
- Input Attribute‡

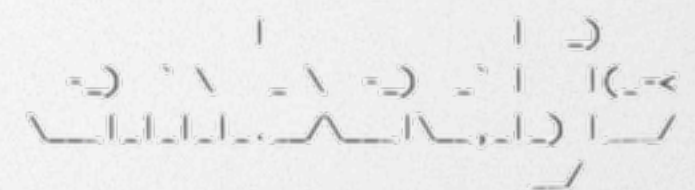






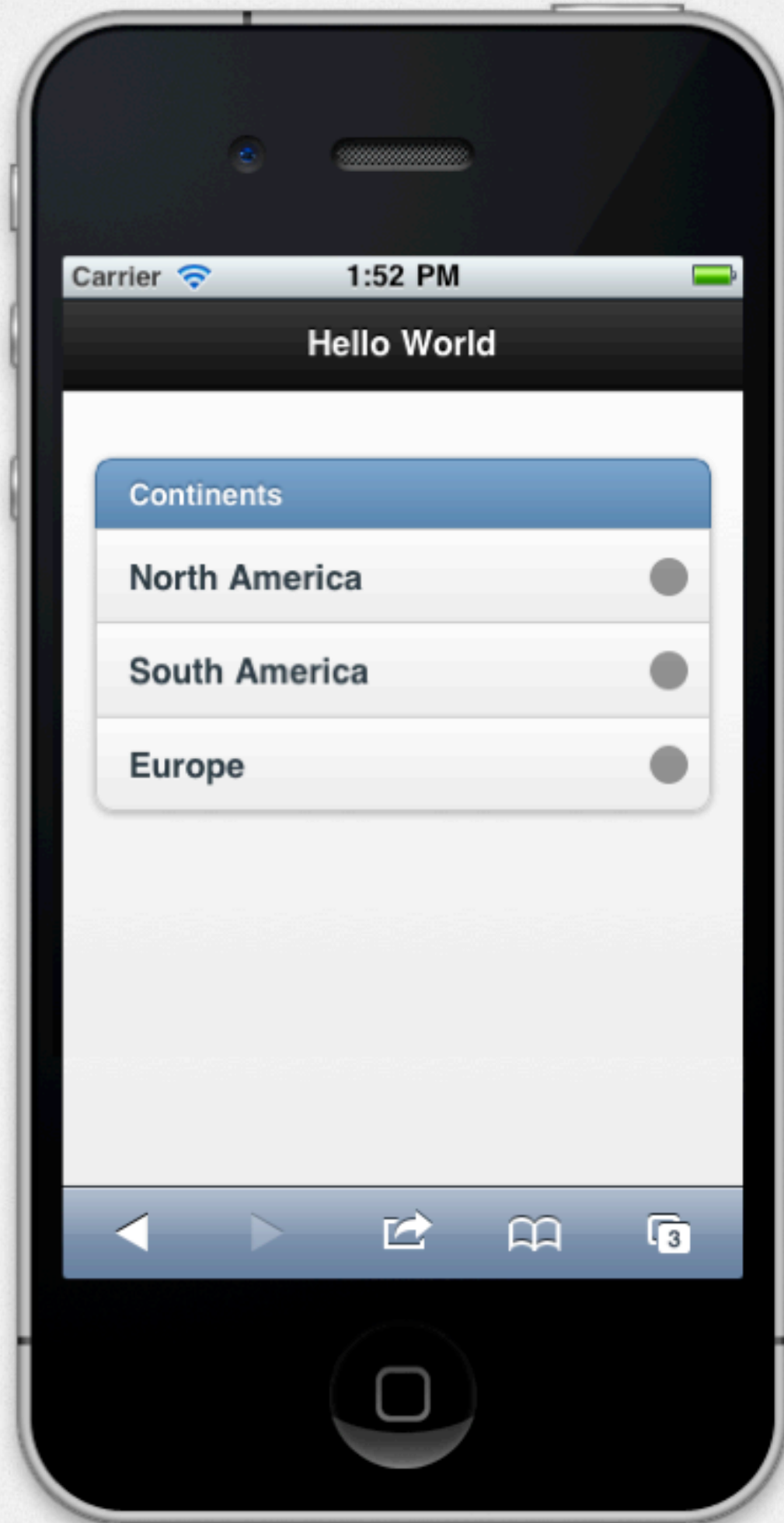


xui



```
<!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>
```



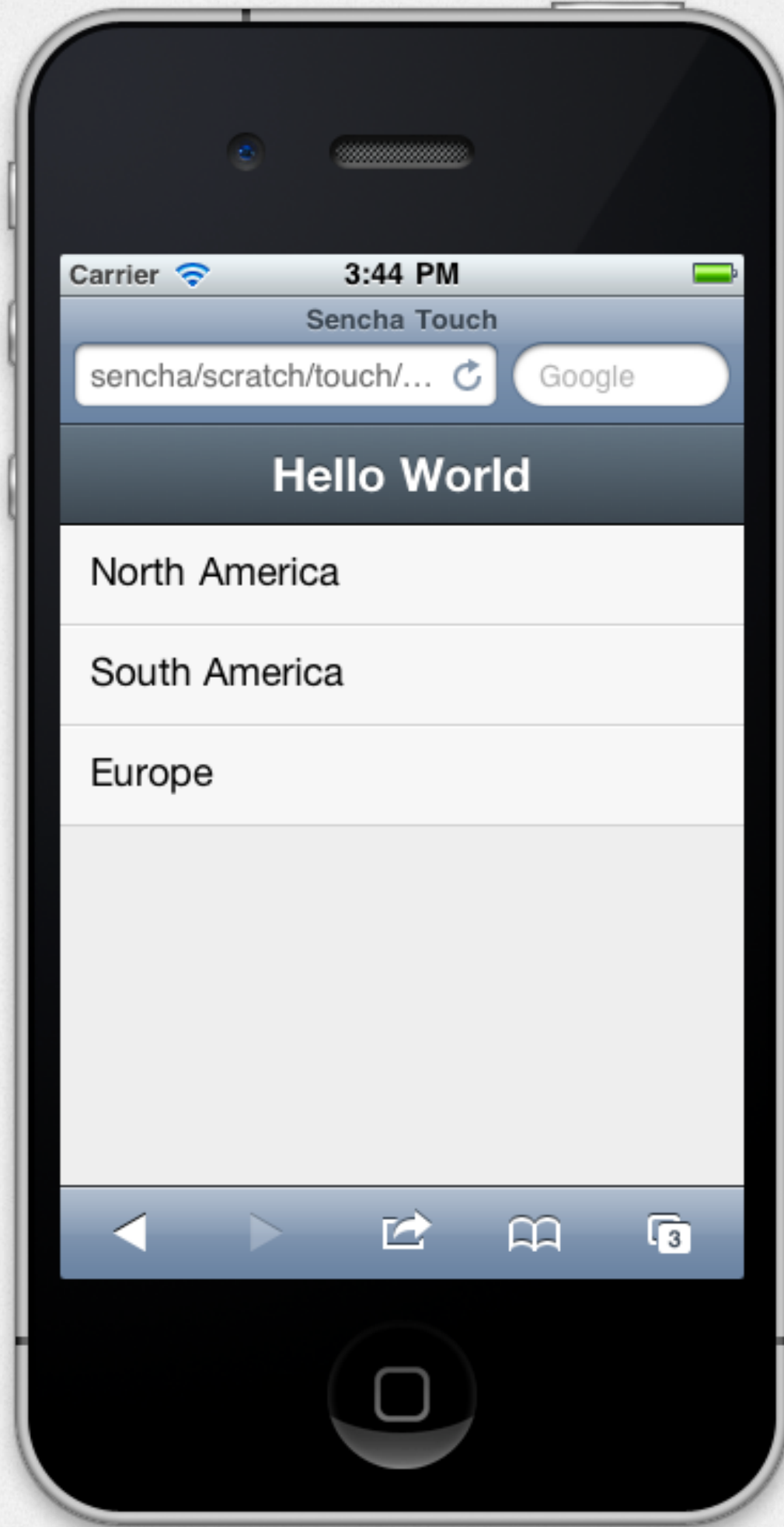


```
<!DOCTYPE html>
<html>
  <head>
    <title>Sencha Touch</title>
    <script src="st.js"></script>
    <link rel="stylesheet" href="st.css" />
    <script type="text/javascript" charset="utf-8">

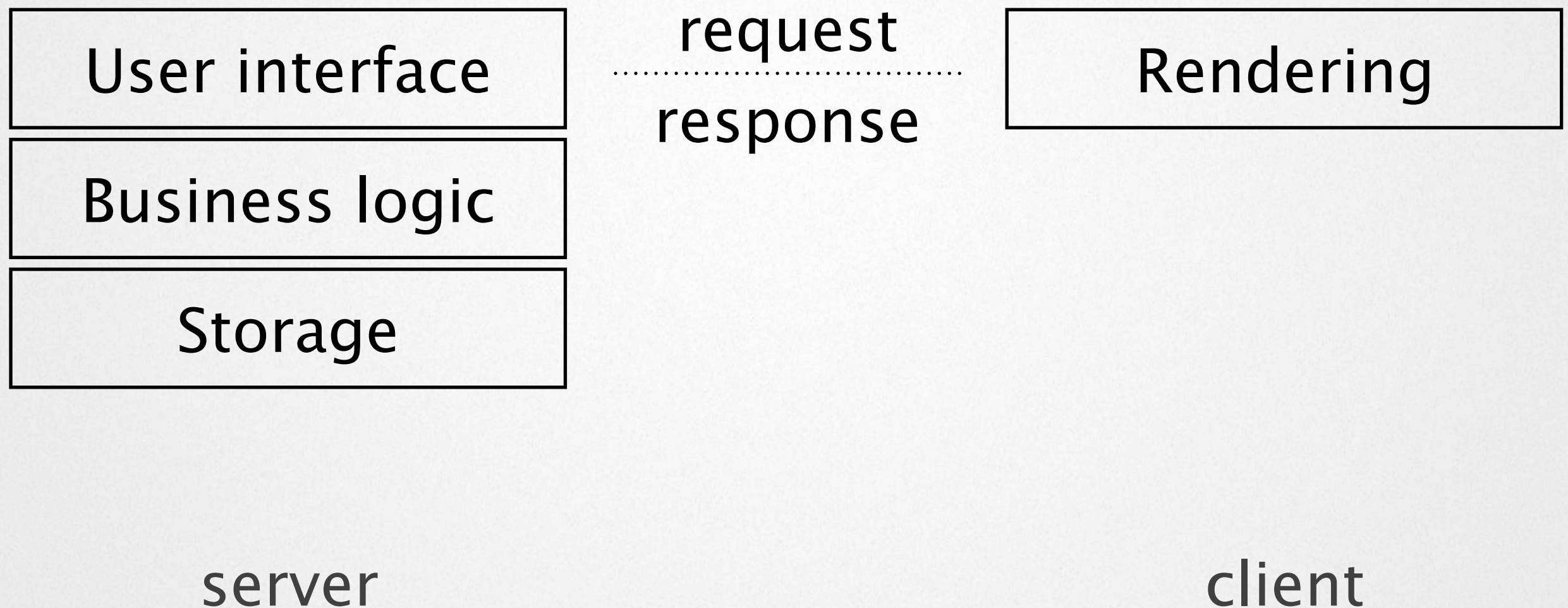
      new Ext.Application({
        launch: function() {
          var continents = new Ext.data.Store({
            model: Ext.regModel('', {fields: ['name', 'link']}),
            data: [
              {name: 'North America', link: 'na'},
              {name: 'South America', link: 'sa'},
              {name: 'Europe', link: 'eu'}
            ]
          });
          new Ext.Panel({
            fullscreen: true,
            dockedItems: [{
              xtype: 'toolbar', title: 'Hello World',
            }],
            items: [{
              xtype: 'list', store: continents, itemTpl: '{name}'
            }]
          });
        }
      });

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

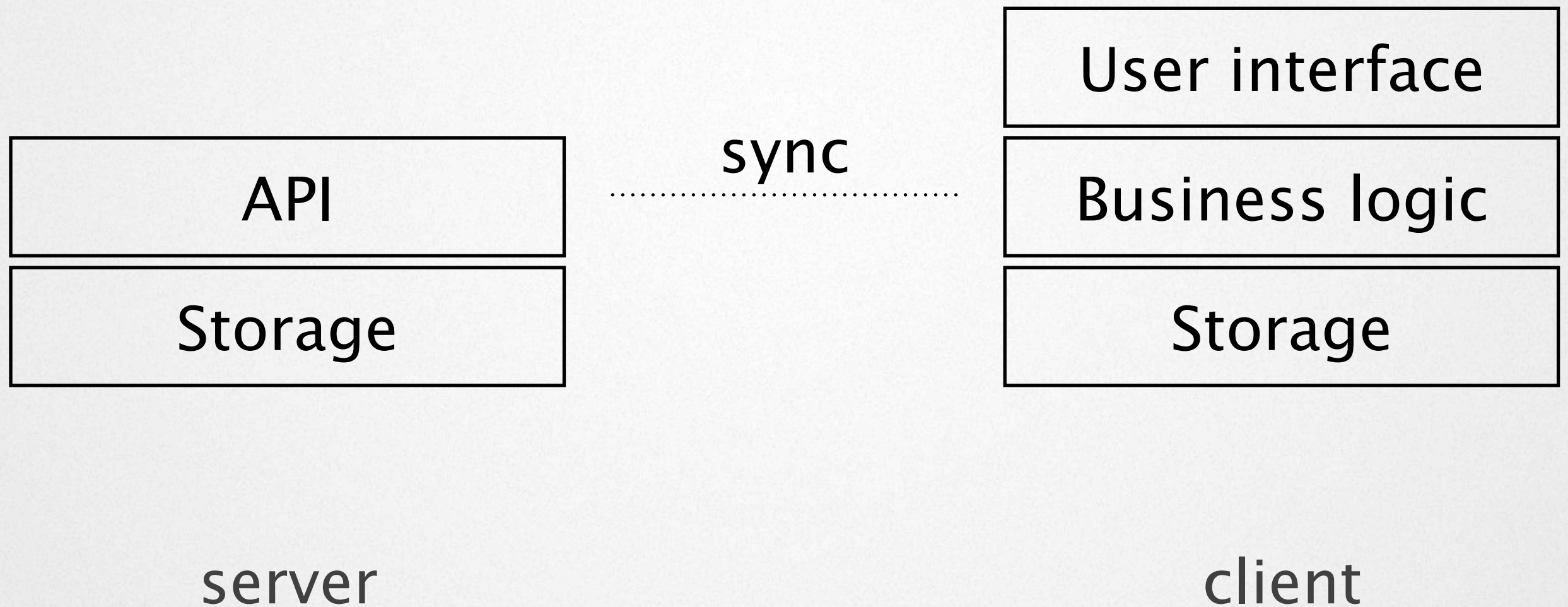




The classic web architecture



A new web architecture



But there is a
a place for both



The Boston Globe

bostonglobe.com

Introducing BostonGlobe.com digital subscriptions, just 99¢ for your first 4 weeks.


BOSTON.COM CARS | JOBS | REAL ESTATE THURSDAY, OCTOBER 27, 2011 TEXT SIZE | GET ACCESS

43° Rain WEATHER | TRAFFIC

The Boston Globe

Search

NEWS METRO ARTS BUSINESS SPORTS OPINION LIFESTYLE MAGAZINE TODAY'S PAPER MY SAVED



PARAMOUNT PICTURES

EXCLUSIVE FRIDAY PREVIEW | MOVIE REVIEW

'Puss in Boots' soars into action

This film, which features the voice of Antonio Banderas, may not be enough to save 3-D technology, but man, does it look good.

- New films reunite Antonio Banderas with Pedro – and 'Puss'

MOVIE REVIEW

Elizabeth Olsen's haunting


Mass. economy continues to outpace US

Better-than-expected growth will help the state likely avoid another recession, but future growth could slow, according to a new report. 1 minute ago

- US economy expands on consumer spending
- Stocks surge on European debt deal, GDP growth

Probation official placed on leave amid hiring probe

Christopher Hoffman was suspended indefinitely with pay amid questions of whether he would be indicted as part of a patronage hiring scandal. 1 minute ago



DEGAS AND THE NUDE

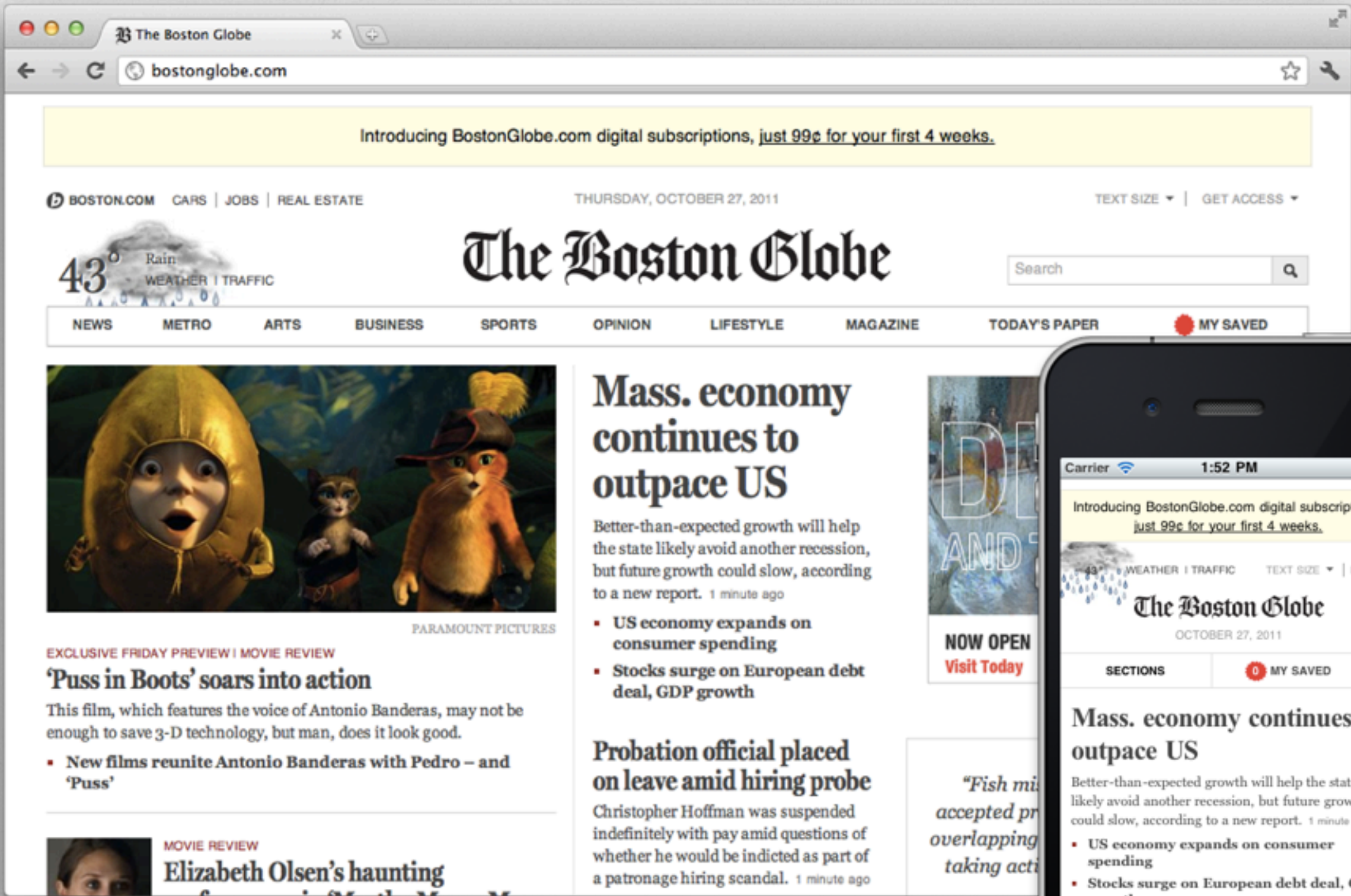
NOW OPEN Visit Today

the new mfa

“

“Fish mislabeling has become an accepted practice. There appears to be overlapping responsibility but no one is taking action. This needs to change.”

S



Boston Deals

boston.com/deals

BOSTON (ALL)




Follow us on:  

\$15 for \$30 toward dinner at The Mockingbird Restaurant & Martini Lounge in East Bridgewater



Value	Discount	You save
\$30	50%	\$15

The Deal is **ON**

\$15 [BUY NOW!](#) **ENDING:** Wednesday 11/2, 11:59PM EDT 6 days 10 hours 5 mins 57 secs **SHARE:**    Recommend 6

Description

deals.boston.com/deal/3737/the-mockingbird-restaurant-and-martini-lounge-in-east-bridgewater?s_campaign=Deals_hp_Widget_TheMoc...

Log in | Sign up | Refer a friend and get \$10

Boston Deals
boston.com/deals

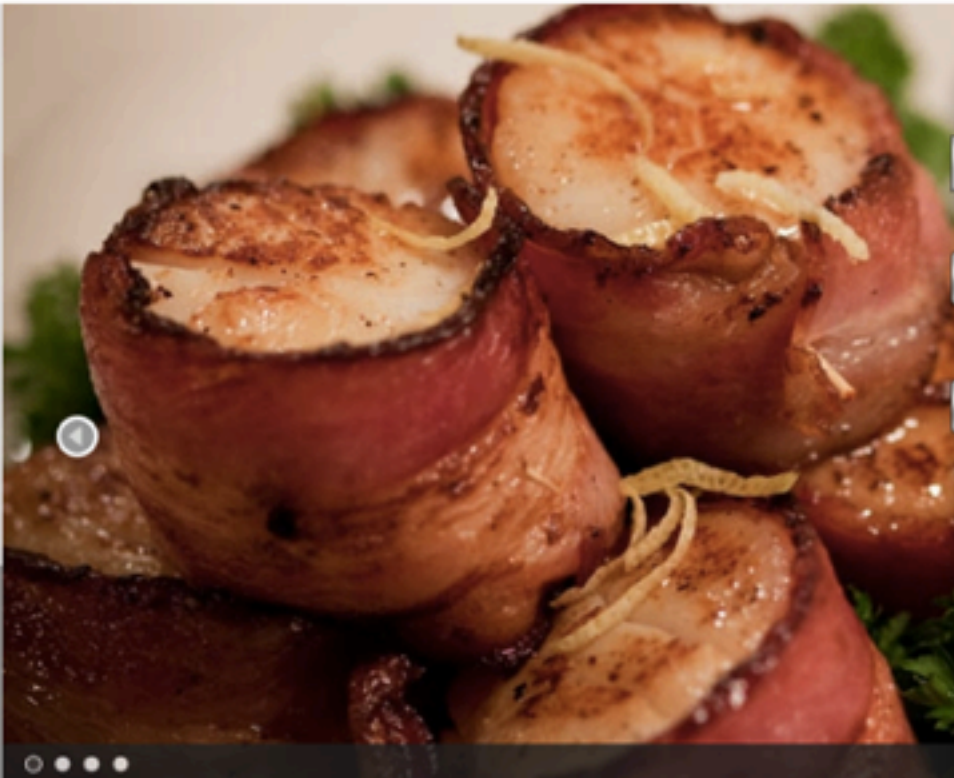
BOSTON (ALL) | Follow us on:

\$15 for \$30 toward dinner at The Mockingbird Restaurant & Martini Lounge in East Bridgewater

Value	Discount	You save
\$30	50%	\$15


The Deal is **ON**

\$15 **BUY NOW!** **ENDING: Wednesday 11/2, 11:59PM EDT** 6 days 10 hours 5 mins 57 secs **SHARE:**



AT&T 7:36 PM 60%

Back **Boston Deals** Buy



The Clam Box
\$5 for \$10 worth of famous fried clams and more at The Clam Box on Wollaston Beach in Quincy

Get this deal for **\$5**

BUY NOW!



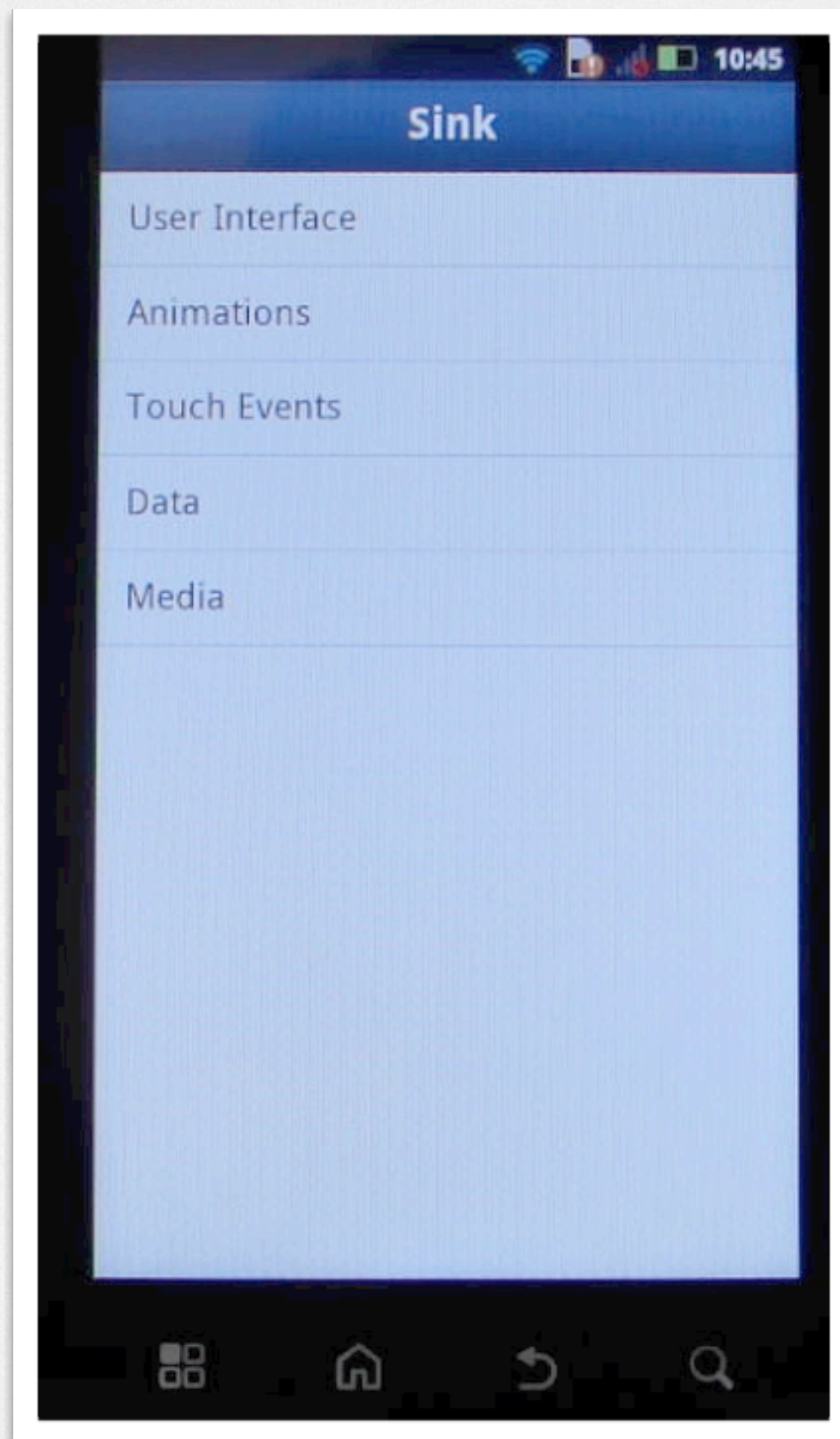
Hit & myth



HTML5 apps can't
match native
performance

HTML5 apps can't
match native
performance

(true, sometimes)



Are HTML5 apps more
efficient to develop?



Are HTML5 apps more
efficient to develop?

(yes, in theory)





Carrier 7:44 AM

FINANCIAL TIMES

Downloading articles

Beijing intervenes to help stabilise banks



The domestic arm of China's sovereign wealth fund is to buy stakes in the 'big four' banks to help stabilise the country's financial system 5:43am Monday

European leaders delay summit



Meeting put back by a week to October 23 is expected to set course for revisions to Greece's second €109bn bail-out



24 dev-months for iOS

<http://blog.cohen-rose.org/2011/10/over-air-2011-ft-web-app-weve-got.html>



12 further dev-months for Android & BlackBerry

<http://blog.cohen-rose.org/2011/10/over-air-2011-ft-web-app-weve-got.html>



...but more
engagement
than
the native
app



Mobile HTML5
lacks good tooling



Mobile HTML5 lacks good tooling

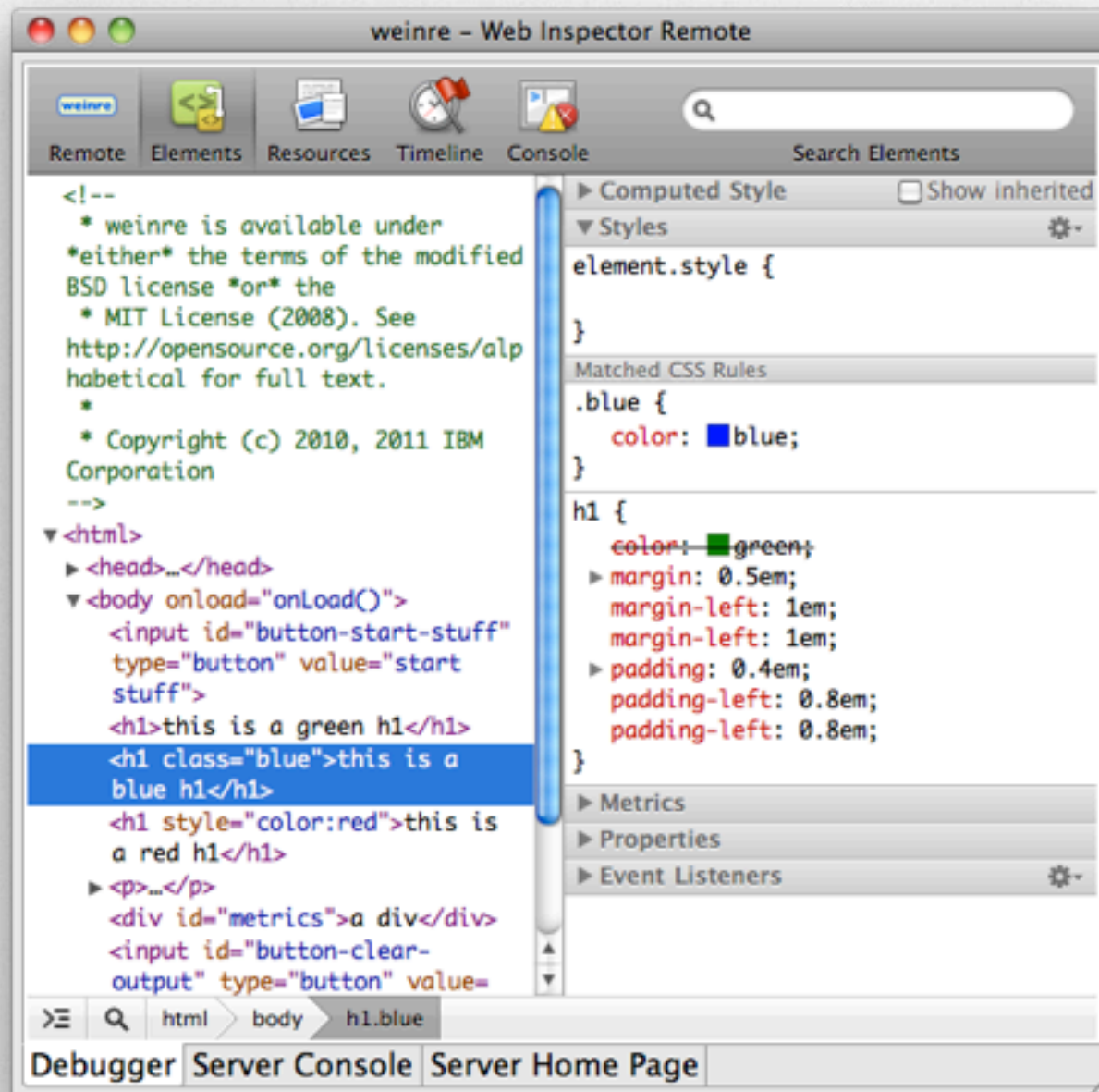
(yes, but changing fast)



Sencha Designer &



Weinre



confess.js

```
<!DOCTYPE html>
<html manifest="app.manifest">
  <head>
    <title>Hello World</title>
    <script type="text/javascript">
    <link href="lib/touch/"
    <script type="text/javascript">
```

CACHE MANIFEST

```
app/app.js
lib/touch/sencha-touch.js
lib/touch/resources/css/sencha-touch.css
```

```
http://i.tinysrc.mobi/320/http://chuvachienes
http://i.tinysrc.mobi/320/http://www.unc.edu/
```

NETWORK:

*

<http://github.com/jamesgpearce/confess>

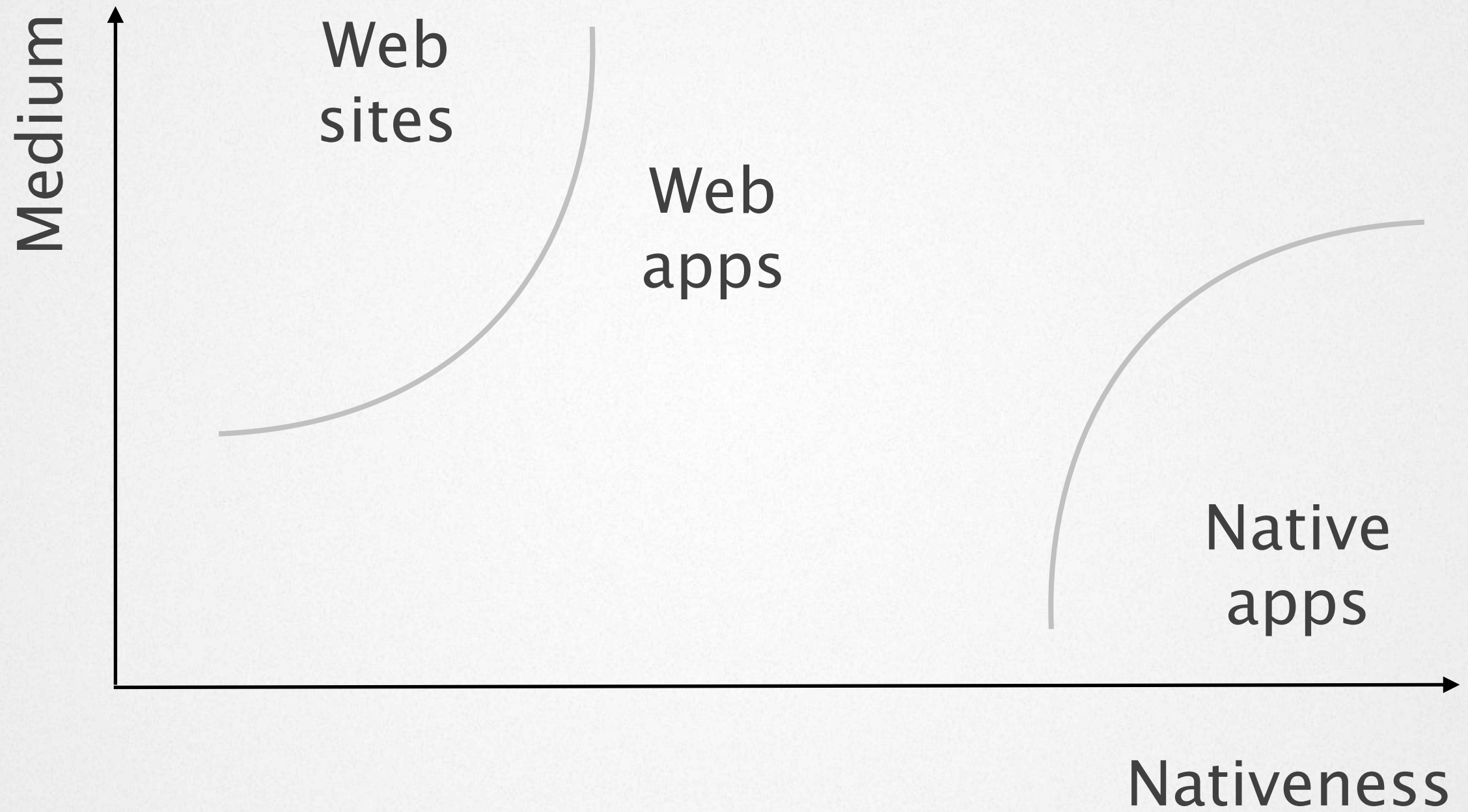
HTML5 apps
can't be monetized,
can't be distributed

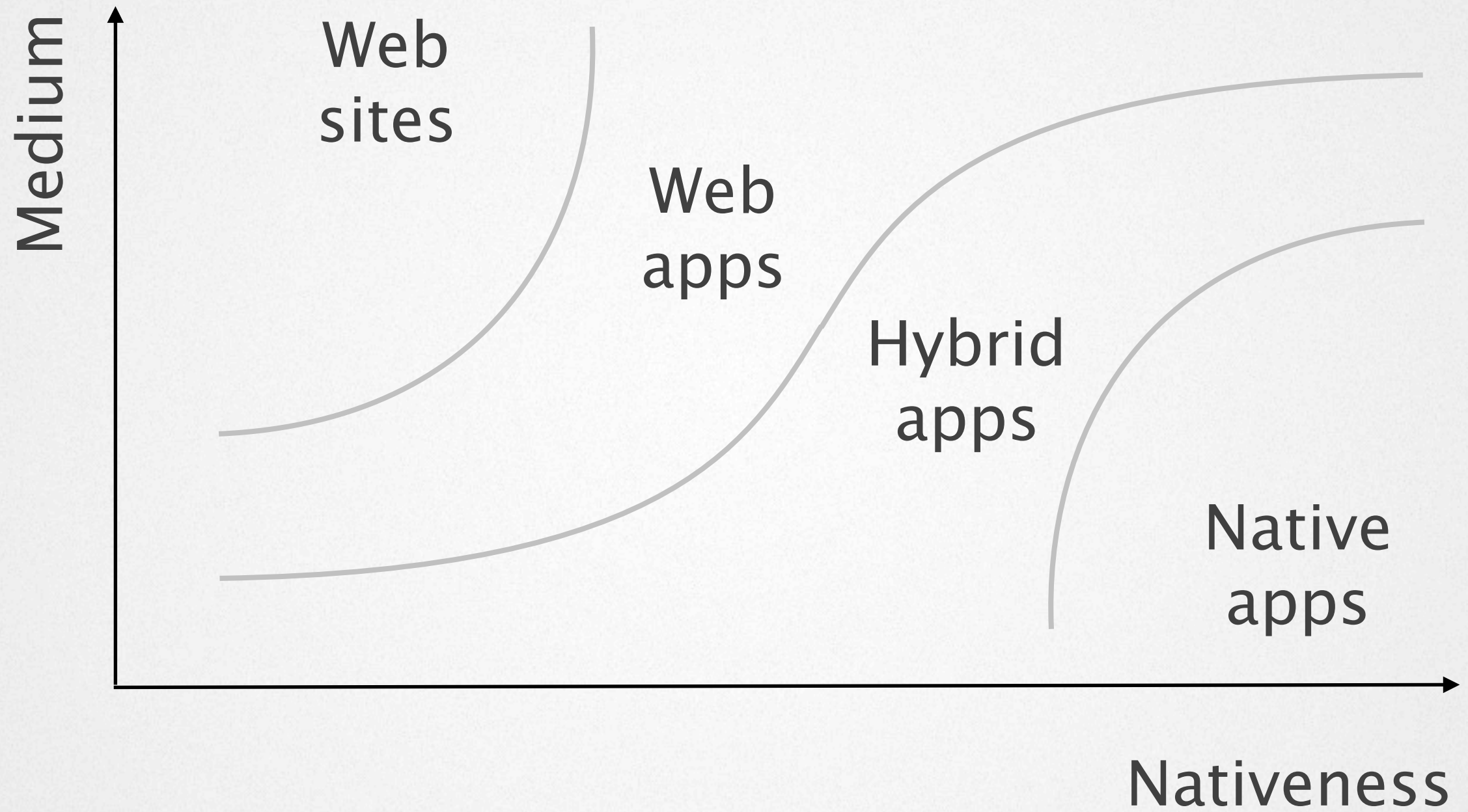


HTML5 apps
can't be monetized,
can't be distributed

(not a technology problem)







Camera
Location
Contacts
SMS
Orientation
Gyro

WebFont Video Audio Graphics

CSS Styling & Layout

JavaScript

Semantic HTML

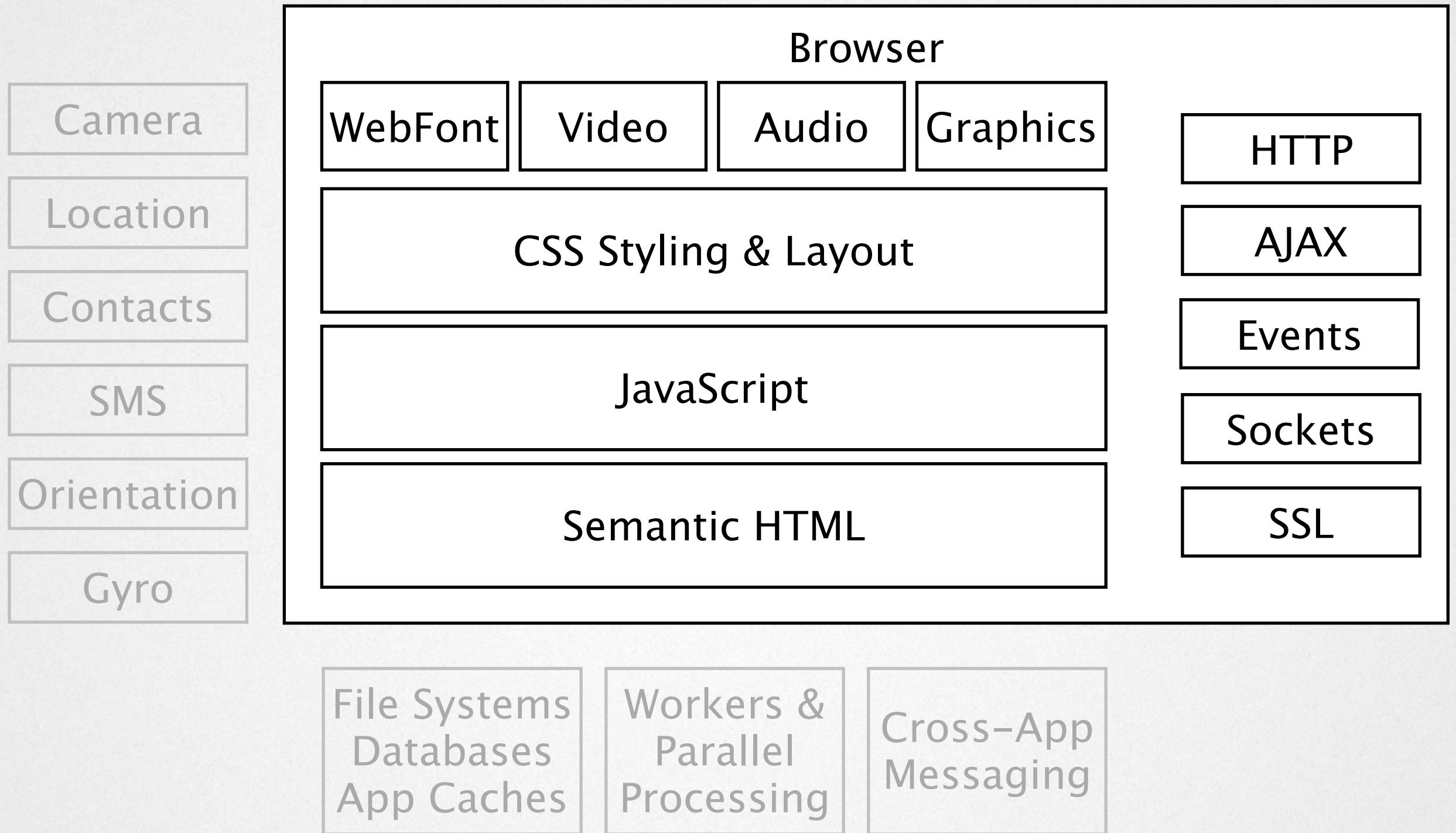
File Systems
Databases
App Caches

Workers &
Parallel
Processing

Cross-App
Messaging

HTTP
AJAX
Events
Sockets
SSL





Native Wrapper

WebView

WebFont

Video

Audio

Graphics

HTTP

CSS Styling & Layout

AJAX

JavaScript

Events

Sockets

Semantic HTML

SSL

Camera

Location

Contacts

SMS

Orientation

Gyro

File Systems
Databases
App Caches

Workers &
Parallel
Processing

Cross-App
Messaging





13:12

93% (100)

JUST ONE MORE...

LATEST | RANDOM



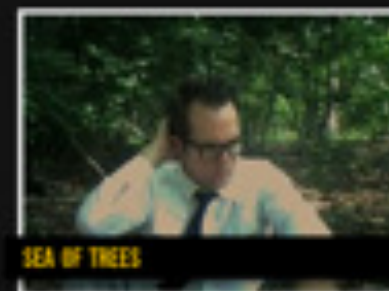
THE THING IN THE DISTANCE



F.A.N. / TWO MINUTES



THE LIGHT



SEA OF TREES



WHOMADEWHO - KEEP ME IN MY PLANE



NIRVANA BABY, SPENCER ELDEN



LEVIATHAN, A WORK IN PROGRESS



"A LIFE IN THE DAY"



O&A



TRAME IMPALA - SOLITUDE IS BLISS



BILLY CASH - LIVE IN VEGAS



TOXIC GARBAGE ISLAND EPISODE 1



Native app stores
have a dirty secret



LATEST: Five die in stampede in Nairobi after blast at rally by groups opposed to new constitution

TOP STORIES



Thousands flee
Kyrgyzstan
unrest



Gunmen attack
Iraqi central
bank



Five killed in
Kenyan rally
crush



Arab chief
meets Hamas in
Gaza

AMERICAS



US urges
quicker BP oil
strategy



Hunt for
missing after
US floods

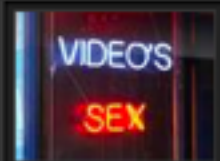


American
teenage sailor
rescued

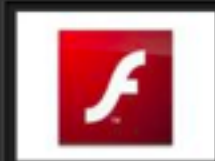


Cuba frees
paraplegic
dissident

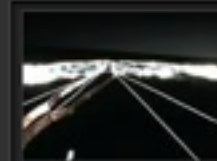
TECHNOLOGY



'Threat' to porn
site visitors



Adobe fixes
'critical' Flash
flaw



Japan unfurls
solar sail in
space



ITV HD viewers
miss England
goal

FEATURES AND ANALYSIS



What future for
US-backed Plan
Colombia?



Aboard the
Victoria Falls
Express



The prudent
US-UK
diplomacy of...



Iranian views: A
year on

Page last updated at 11:51 CST, Sunday, 13 June 2010

Thousands flee Kyrgyzstan unrest



Escalating ethnic violence in Kyrgyzstan has prompted tens of thousands of ethnic Uzbeks to flee the country.

A third day of fighting in the south of the country has claimed nearly 100 lives, officials say.

Witnesses speak of Kyrgyz men shooting ethnic Uzbeks and setting property alight; a BBC correspondent in the city of Osh has heard heavy gunfire.

On Saturday the interim government gave security forces shoot-to-kill powers.

Kyrgyzstan's interim government



HTML5 apps
can't access
device functionality

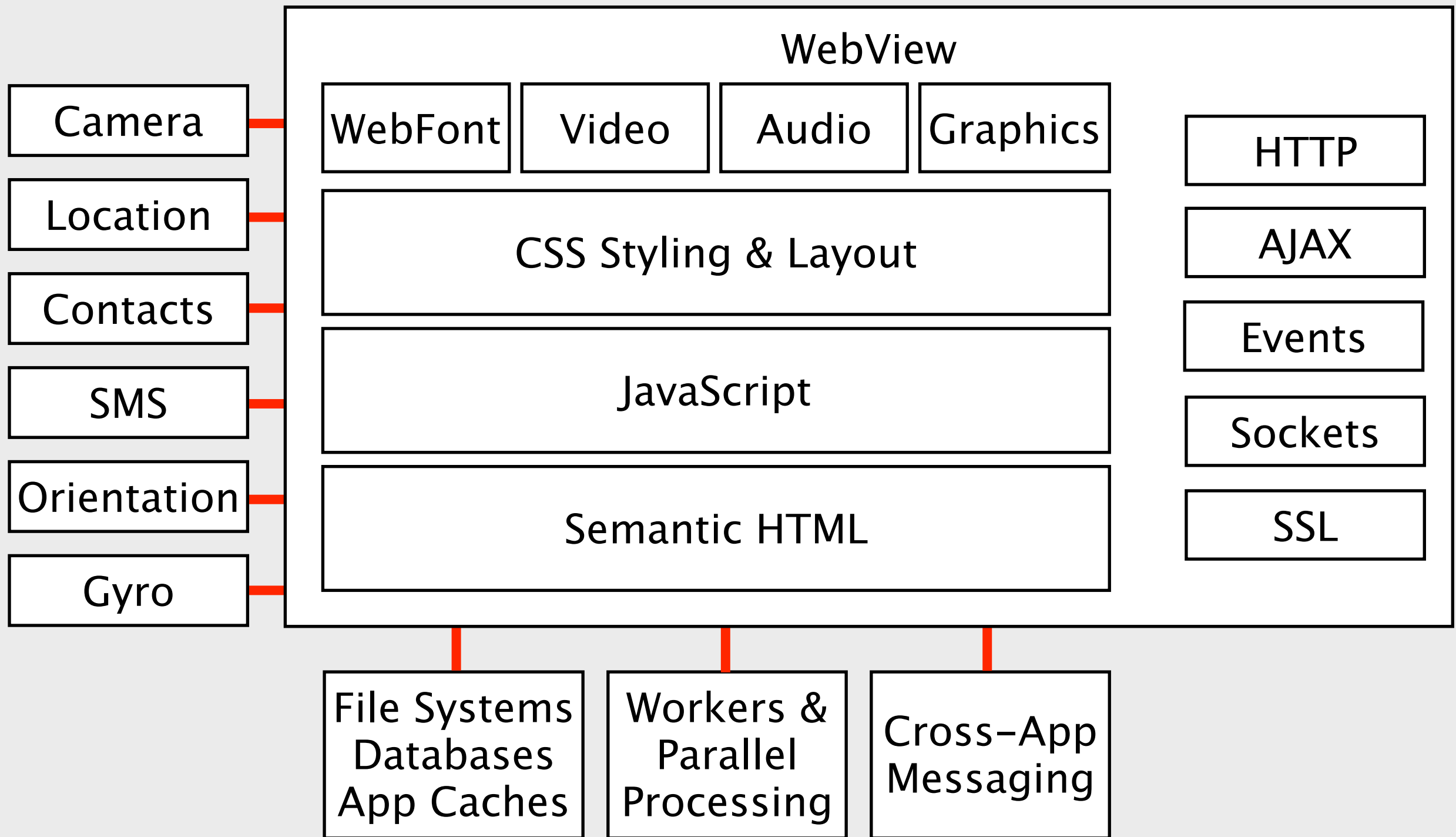


HTML5 apps
can't access
device functionality

(goddamn it)



Native Wrapper



Hybrid apps – the ultimate polyfill



Apache Callback/
Cordova
AppMobi
NimbleKit



Recent developments



iOS 5

Input types
contenteditable
position:fixed
classList
XHR2
Script defer & async
Inline SVG
Web Workers




```
overflow: scroll;  
-webkit-overflow-scrolling: touch;
```





<http://jamesgpearce.github.com/compios5/>




```
window.addEventListener('deviceorientation', function(e) {  
    var heading = e.webkitCompassHeading + window.orientation;  
    spinner.style.webkitTransform = 'rotateZ(-' + heading + 'deg)';  
}, false);
```

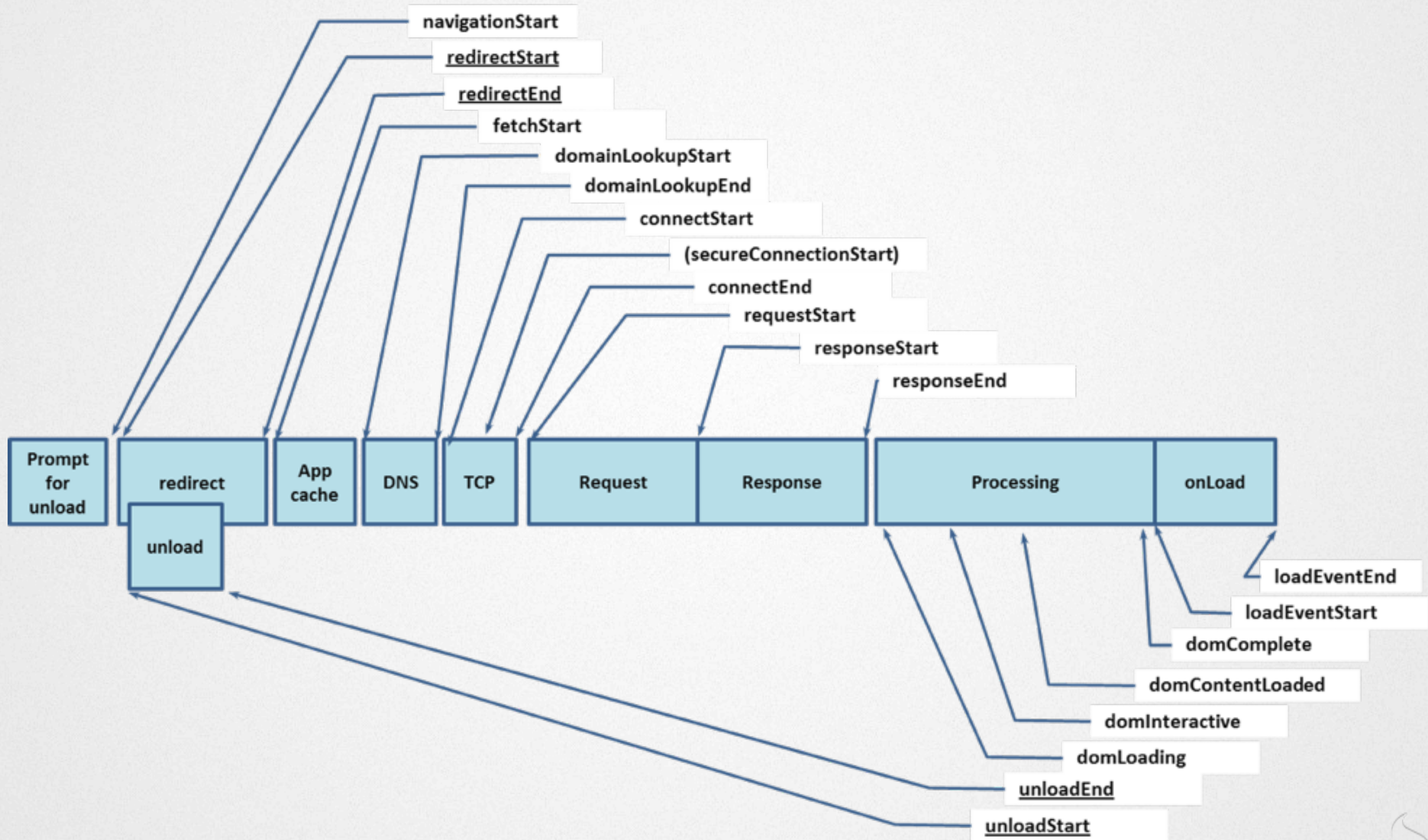


Android 4

SVG at all
CSS3 3D transforms
classList
XHR2
Script defer & async
<details> & <summary>
File reader
Device orientation
Navigation timing



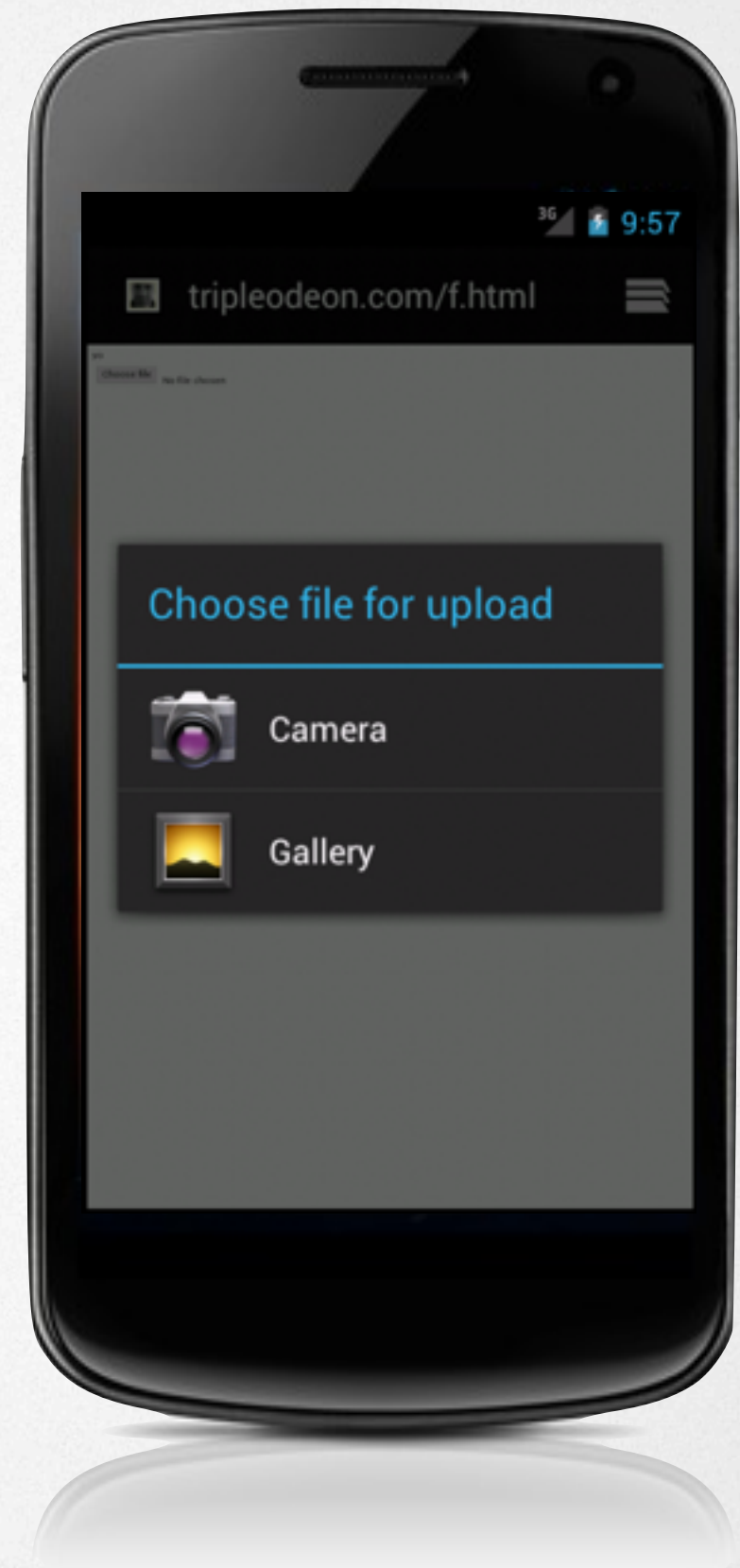
window.performance



```
<input type="file" id="picker"  
  accept="image/*"  
  capture="camera"  
>
```

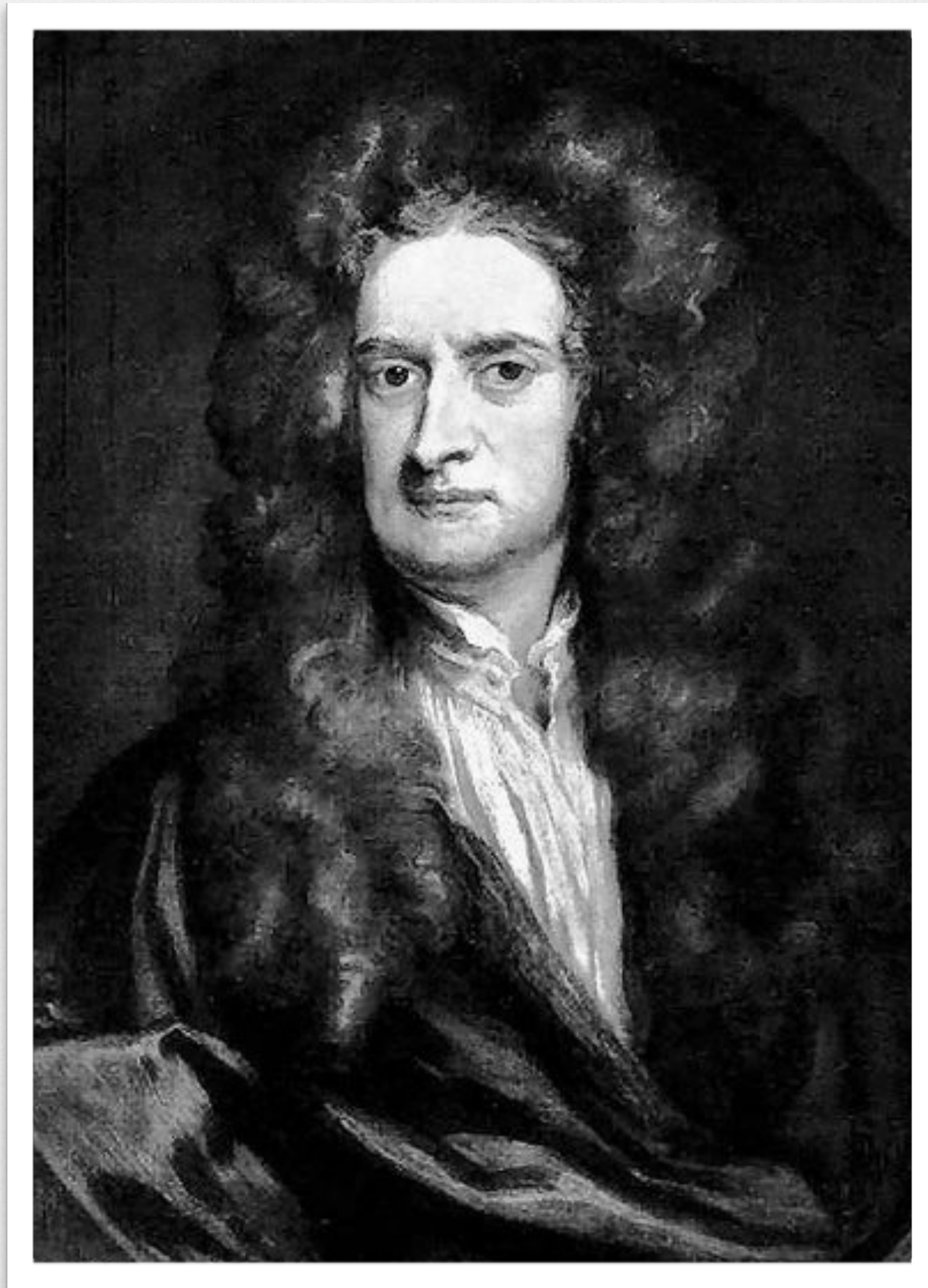
```
// camcorder  
// microphone  
// filesystem
```

```
var image = picker.files[0];
```



We haven't even started





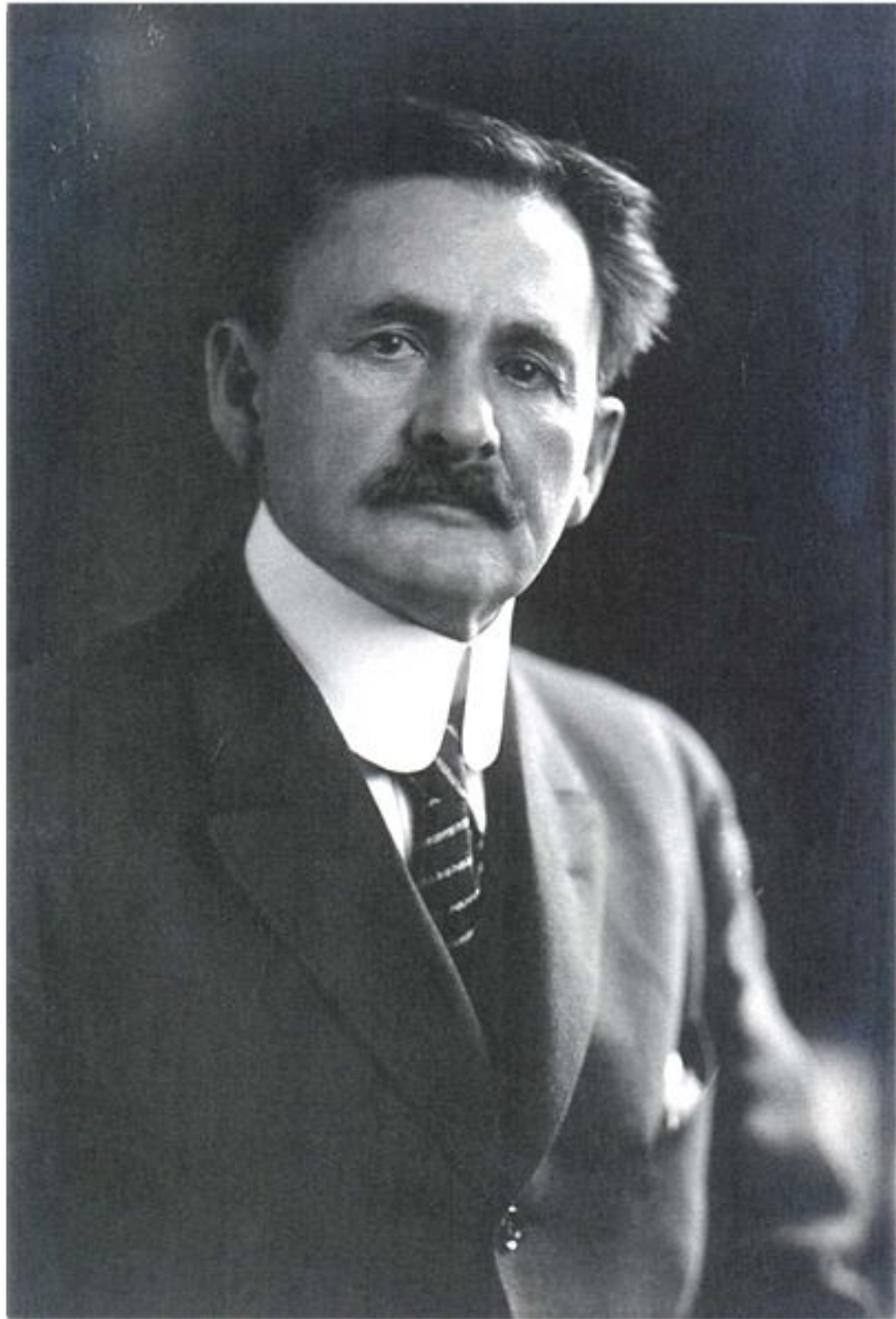
Sir Isaac Newton



Three Laws of Motion

(the universe works as we might expect it to)





Albert Michelson



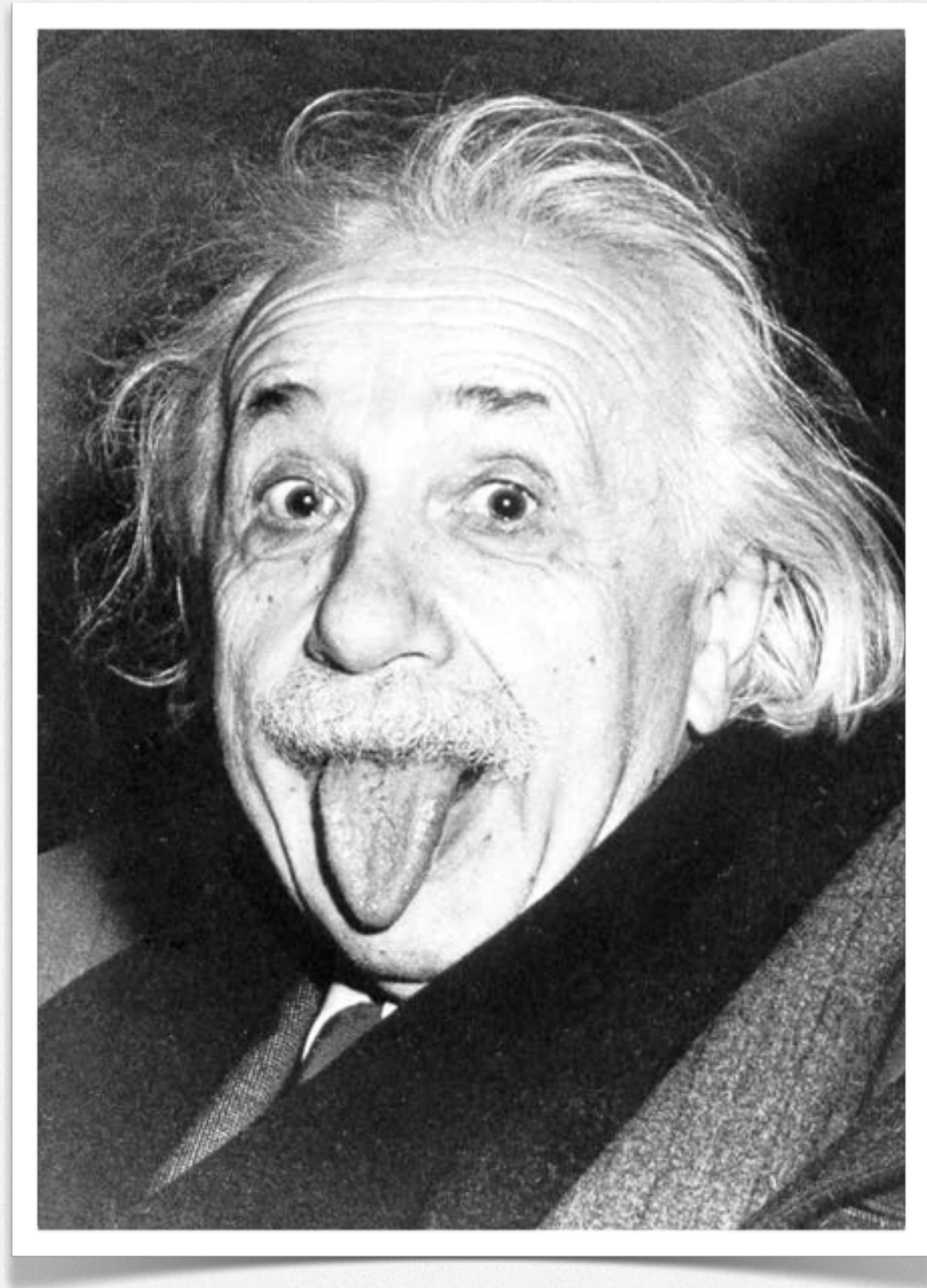
Edward Morley

S

Light Travels at a Constant Speed

(the universe doesn't work as we thought it would)





S

Relativistic Mechanics

Classical Mechanics

Quantum Mechanics



Relativistic Mechanics

Classical Mechanics

Quantum Mechanics

Familiarity



Relativistic Mechanics

Classical Mechanics

Quantum Mechanics

Exploration



Familiarity



Exploration



The Web Today
is like
Physics in 1900



Mobile is our Michelson–Morley Experiment



Apps or Sites?
Responsive Design?
Browser diversity?
Mobile Context?
One Web?



Apps or Sites?
Responsive Design?
Browser diversity?
Mobile Context?
One Web?

(an inability to answer these questions does
not constitute an excuse not to innovate)



What does the web look
like when you have...



Camera
Microphone
Contacts
Calendar
Messaging
Telephony
NFC
?





Media Capture (HTML)

Battery status

Contacts

Messaging (SMS, MMS...)

Network Information API

Audio Volume

Beep

Gallery

Systems info and events

Tasks

Media Capture (API)

Application Registration

Calendar

Feature Permissions

Sensor API

Vibration API

Menu API

Permissions for APIs





Device APIs

Accelerometer

Orientation

Camera

DeviceStatus

Filesystem

Messaging

Geolocation

PIM

Contacts

Calendar

Tasks

DeviceInteraction

APDU (SmartCard)

Bluetooth

Crypto

DLNA

Server Push

Sensor

Telephony





Telephony

Messaging

Contacts

Clock

Camera

Filesystem

Calculator

Device Status

Settings

Accelerometer

Mouse Lock

Maps



Mobile device APIs
– the web's great leap
forward



The mobile web
becomes more than a
320px web




```
window.addEventListener(
  'appointmentdue',
  function(appt) {
    if (device.near(WORK)) {
      siri.remind(
        contacts.get('Peter'),
        calendar.getDetails(appt)
      );
    }
  },
  false
);
```



```
window.addEventListener(
  'appointmentdue',
  function(appt) {
    if (device.near(WORK)) {
      siri.remind(
        contacts.get('Peter'),
        calendar.getDetails(appt)
      );
    }
  },
  false
);
```

(PS: This code does not work. Yet.)



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