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DevCon5

HTML5 & Mobile App Developers Conference

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HTML5
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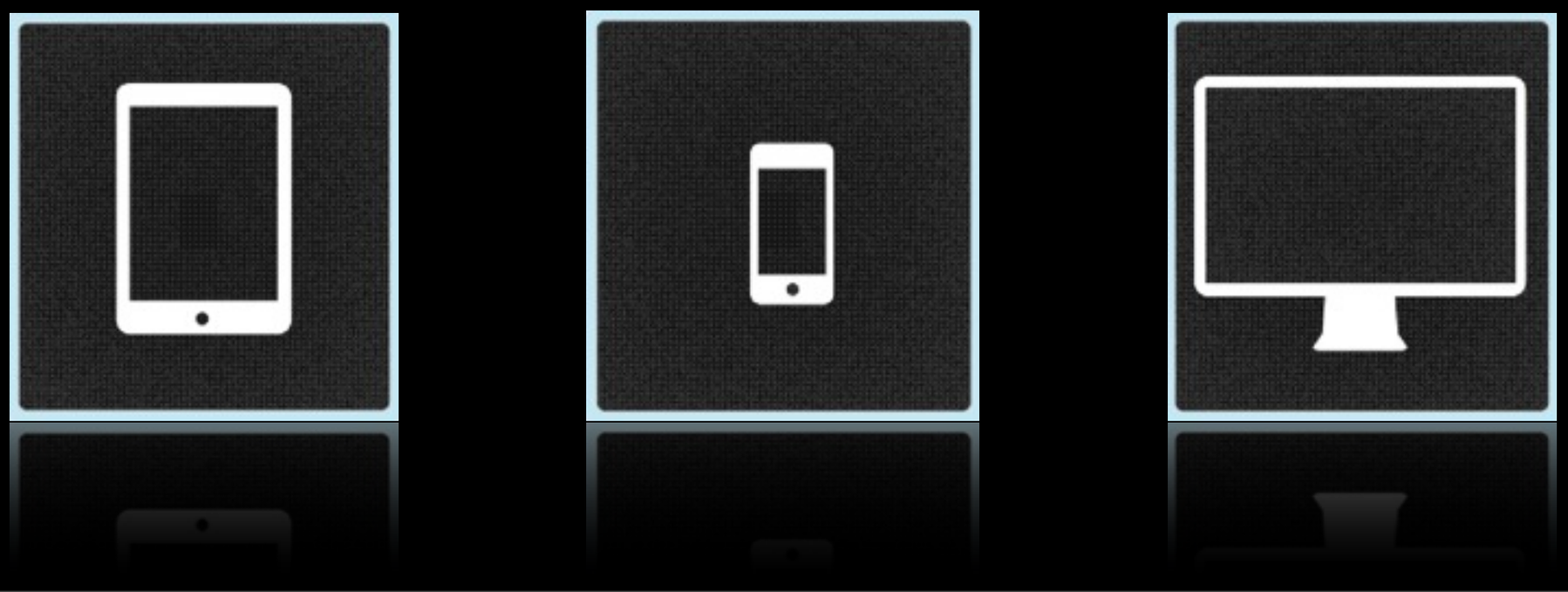
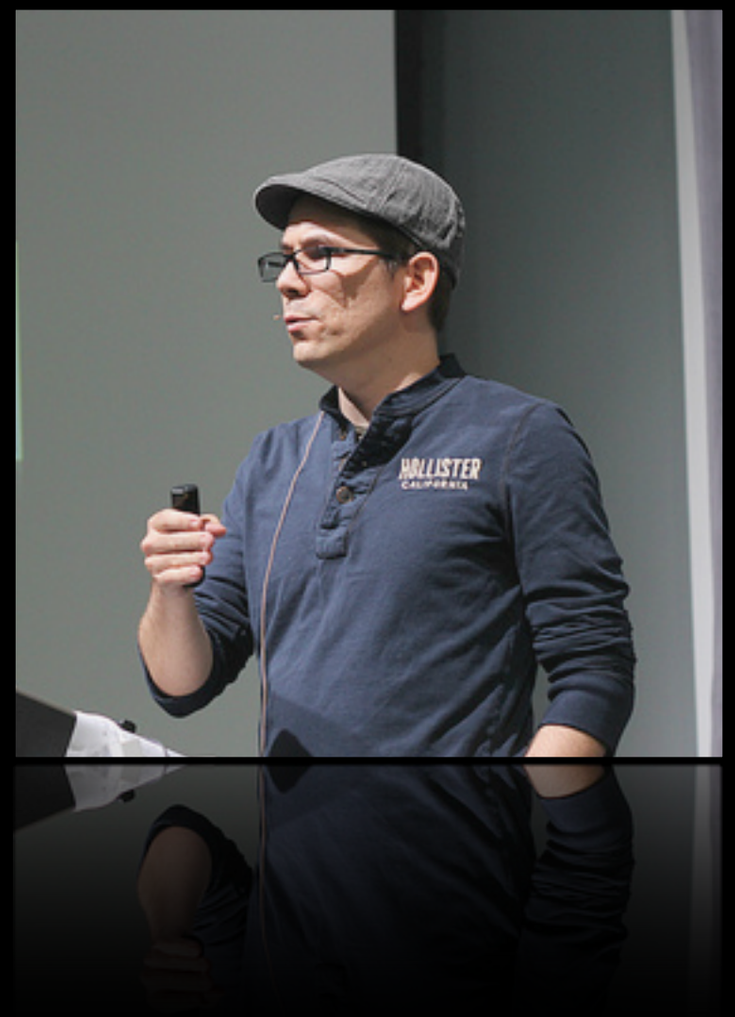
Expanding *Axis* across 3 screens with Mojito



Caridy Patino

Principal Engineer at Yahoo! Search
YUI Evangelist & Mojito Ambassador

caridy@yahoo-inc.com
@caridy



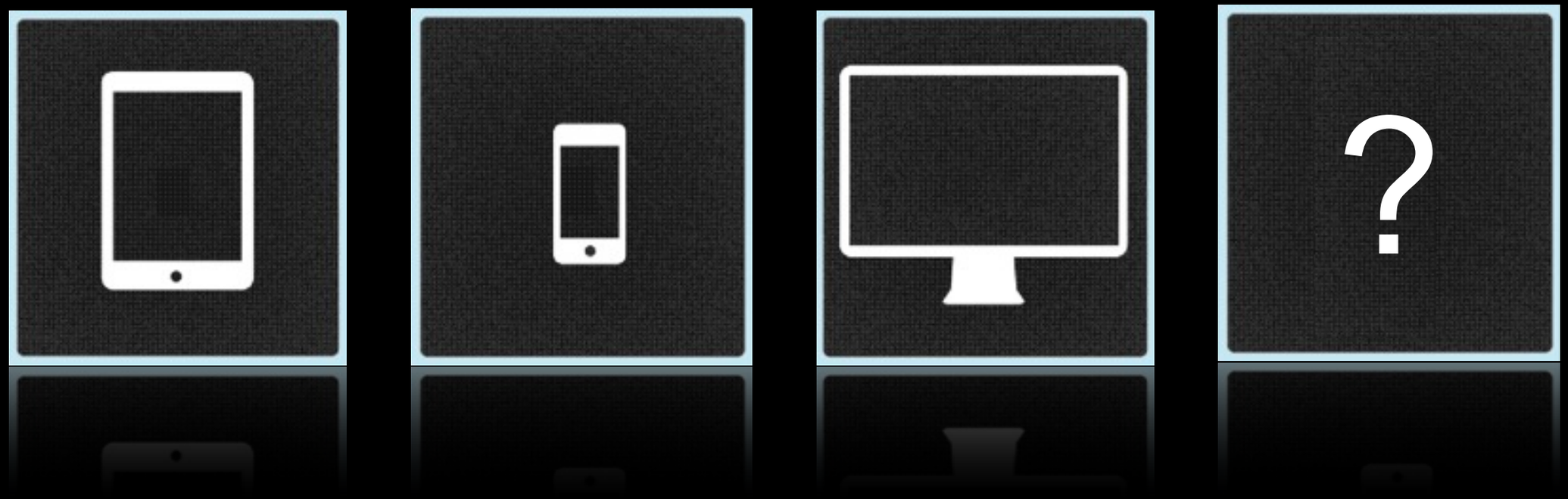
Agenda:

- 12 Lessons from Axis

- Mojito for Mobile Apps

Axis demo video from axis.yahoo.com for better context!

From day one:



iPhone/iPad/Desktop

12 Lessons

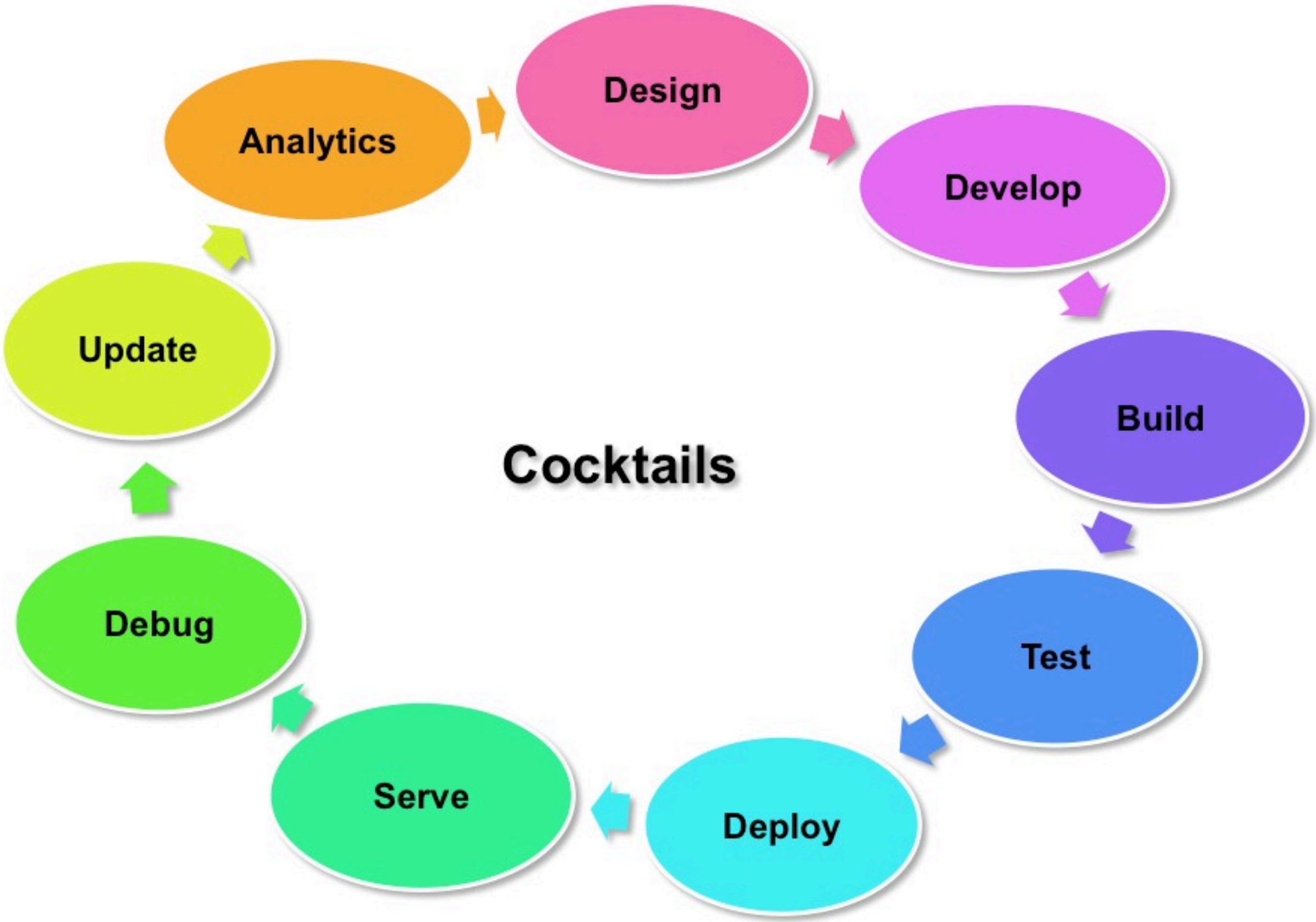
Illustration by [Kevin Cornell]

Lesson #1
Build mobile products on top of platforms designed primarily for mobile products

Yahoo! Cocktails

Yahoo! Cocktails is set to become the *de facto* infrastructure for mobile applications at Yahoo!

Yahoo! Cocktails Umbrella

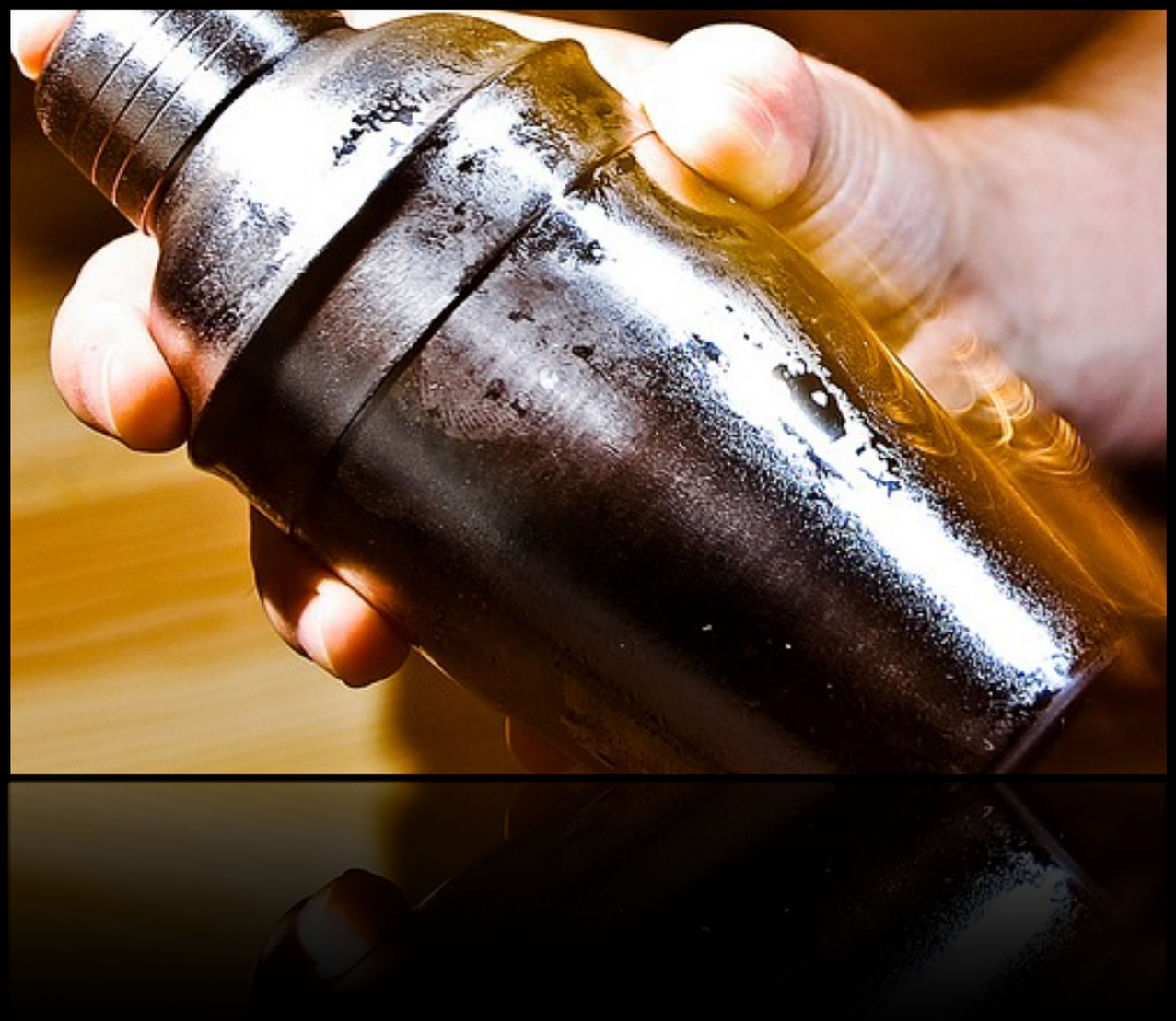


Mojito JavaScript Application Framework

http://github.com/yahoo/mojito

Manhattan

Hosting infrastructure for Node.js applications.



Mojito Shaker

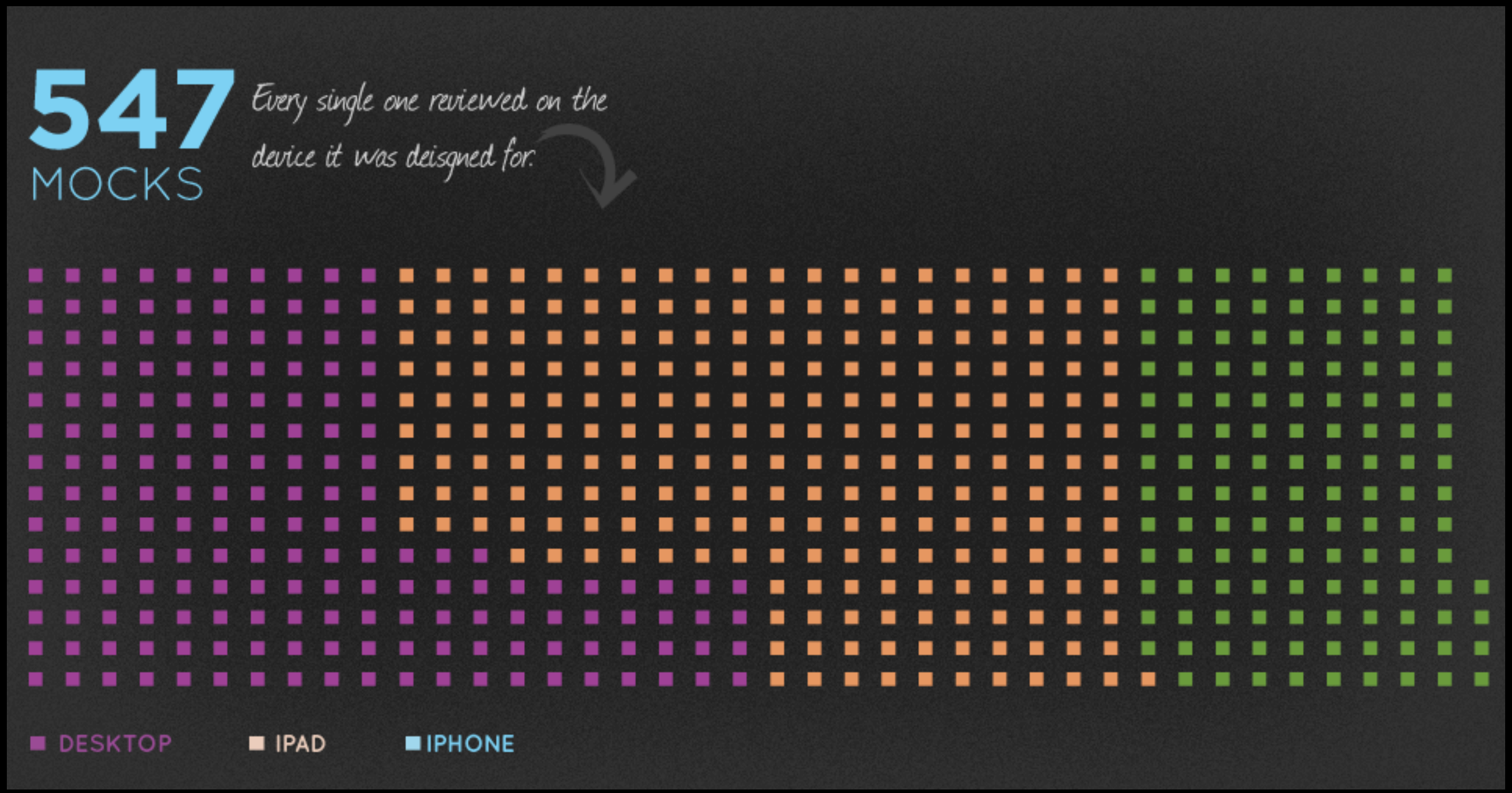
Shaker is a static asset rollup manager for Mojito applications.

http://github.com/yahoo/mojito-shaker

Lesson #2

"write once, run everywhere", no so fast!

Axis design specs per device



Can you imagine a car that works *exceptionally* well under *any* condition?

Cocktails is a suite of technologies to create user experiences optimized for each connected device

Lesson #3

"divide & conquer",

yes, it works on mobile too

Verizon 3:31 PM 84%

aegon classic

YAHOO!

SEARCH:

Web

Images

aegon classic

aegon classic tennis

aegon classic birmingham

aegon classic 2010

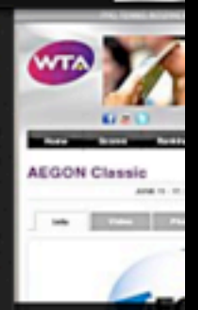
aegon classic 2011

aegon classic 2009

aegon classic live scores

LTA - AEGON Classic

www.lta.org.uk/fans-major-events/A...



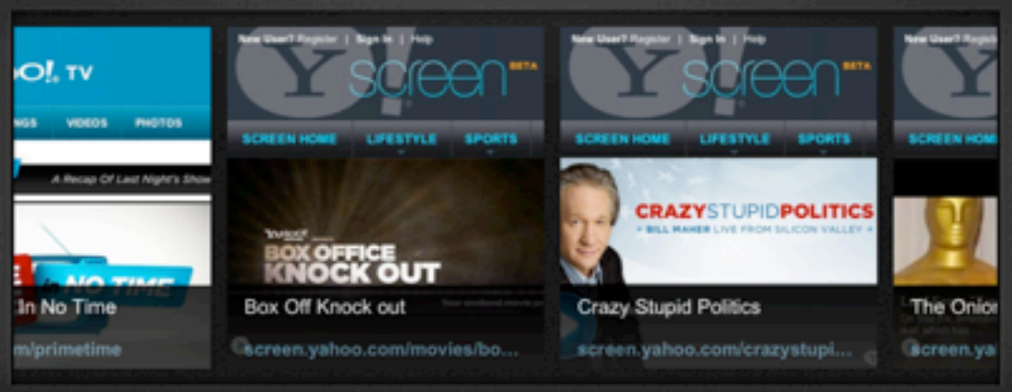
WTA | Tournar
Info | BIRMING

www.wtatennis.

SEARCH WEB

Yahoo! Axis Home

READ LATER



In No Time

m/primetime

Box Off Knock out

screen.yahoo.com/movies/bo...

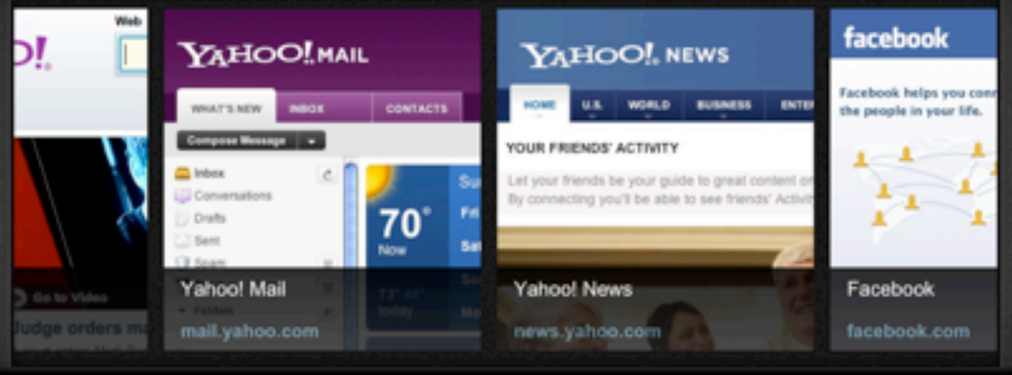
Crazy Stupid Politics

screen.yahoo.com/crazystupi...

The Onio

screen.ya

MY FAVORITES



Yahoo! Mail

mail.yahoo.com

Yahoo! News

news.yahoo.com

Facebook

facebook.com

4 Tabs

Hi, Caridy

Verizon 3:31 PM 84%

aegon classic

YAHOO!

SEARCH:

Web

Images

aegon classic

aegon classic tennis

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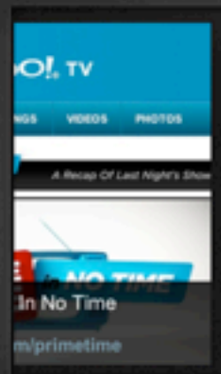
READ LATER



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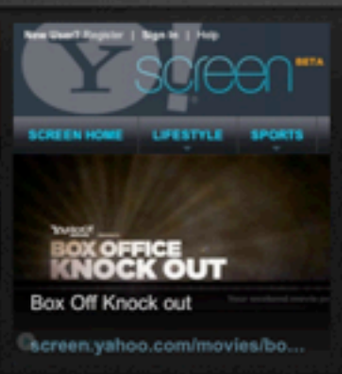
m/primetime



Box Off Knock out

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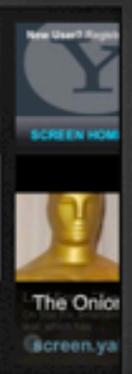
Crazy Stupid Politics

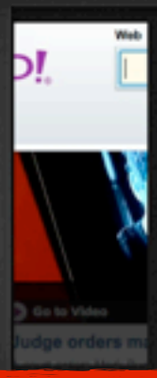
screen.yahoo.com/crazystupi...



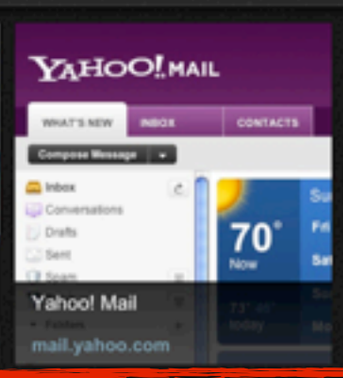
The Onio

screen.ya

MY FAVORITES



Judge orders m



Yahoo! Mail

mail.yahoo.com

Yahoo! News

news.yahoo.com

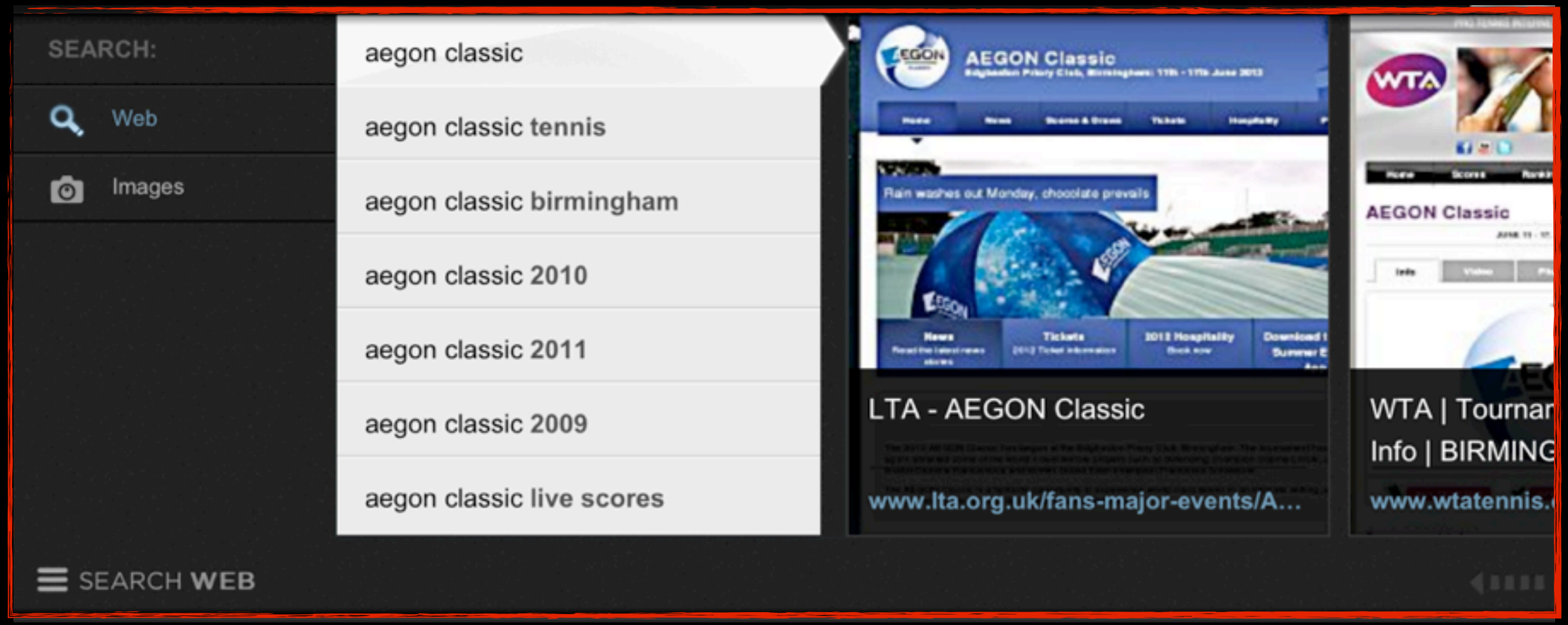
Facebook

facebook.com

4 Tabs

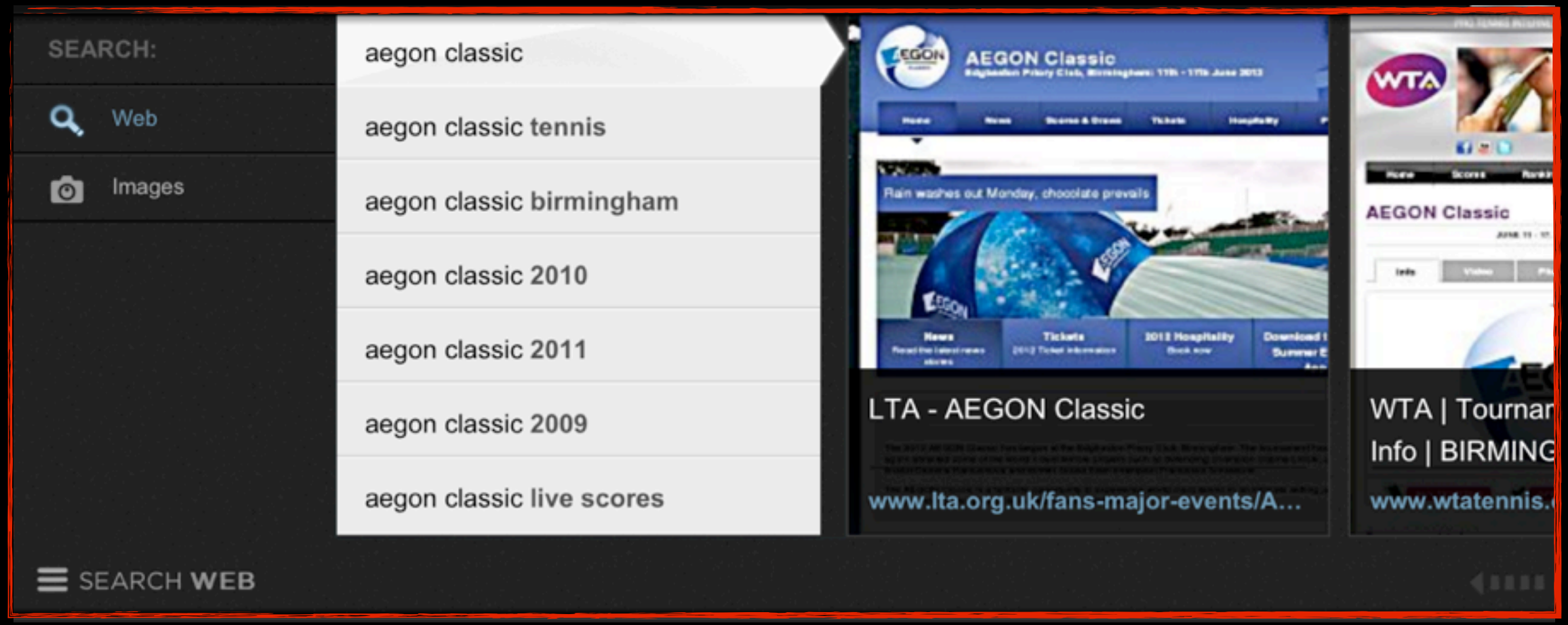
Hi, Caridy

Sub-applications



Axis “Search Layer” is a completely independent sub-application

Sub-applications



In mojito, it is a Mojit or a composition of Mojits

Lesson #4

Analyze each UI element individually

VS

Native

Web

+

Native

Web

VS

Compiled

Web-based

VS

$ mojito build

$ mojito start

The three choices

vs

vs

Native

Compiled

Web-based

Lesson #5

Abstract communication when possible

In Axis, we connect the pieces together using “Y.CL” abstraction!

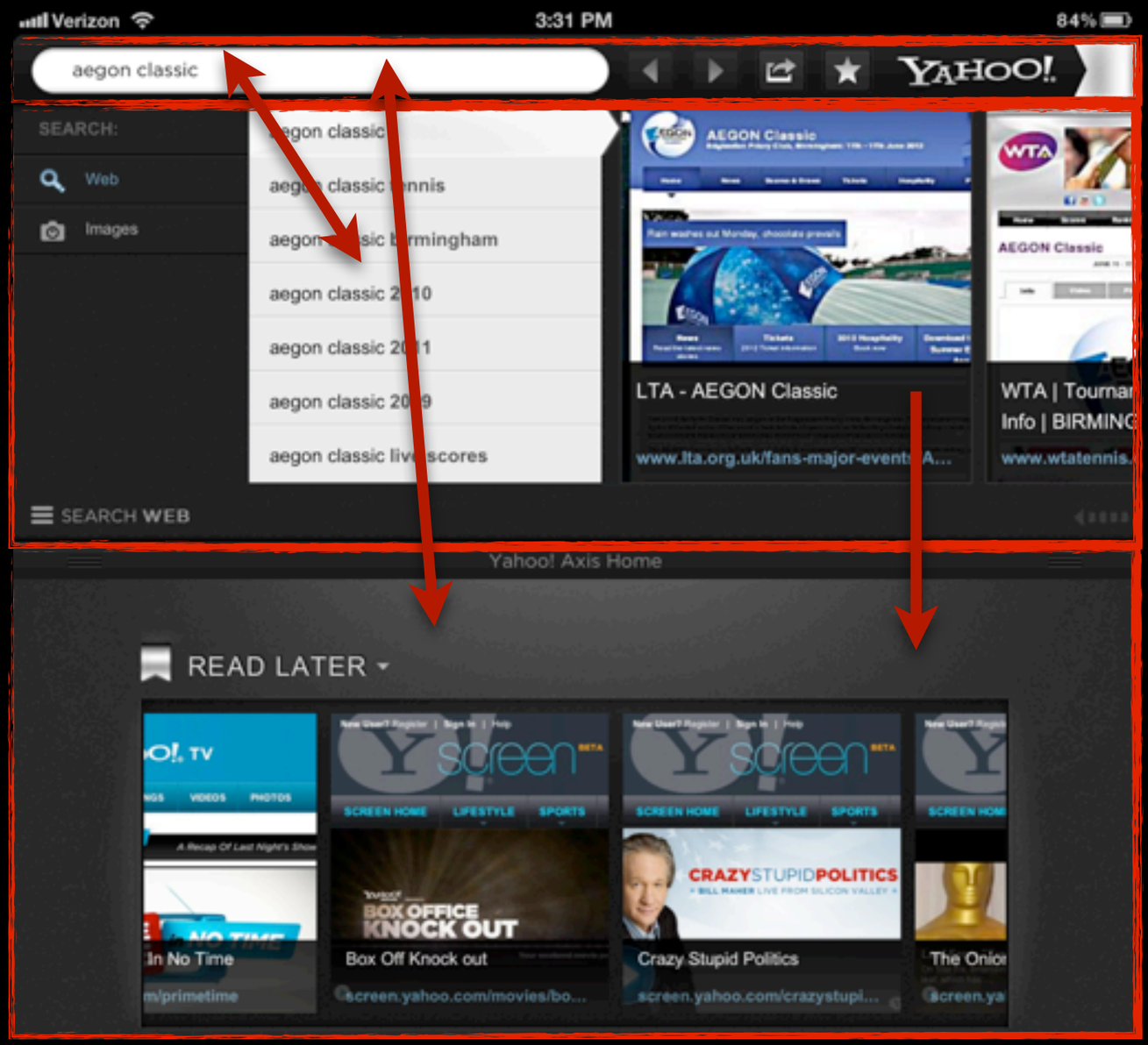
“Y.CL” enables Mojito Applications to talk to Native counterparts

Native

Compiled

Web-based

Y.CL in Axis


Verizon
3:31 PM
84%
aegon classic
YAHOO!
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A Recap Of Last Night's Show
In No Time
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LIFESTYLE
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Box Off Knock out
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CRAZYSTUPIDPOLITICS
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screen.yahoo.com/crazystupi...
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screen.ya

YUI Communication Layer
(aka “Y.CL” is also open source)

http://yuilibrary.com/gallery/show/communication-layer

Lesson #6
Try to reduce fragmentation

No need to issue an app update
when using web-based sub-applications

Lesson #7

Refreshing WebViews (HTML parts) can be painful

The *code* and *content* in a WebView might need to be refreshed programmatically

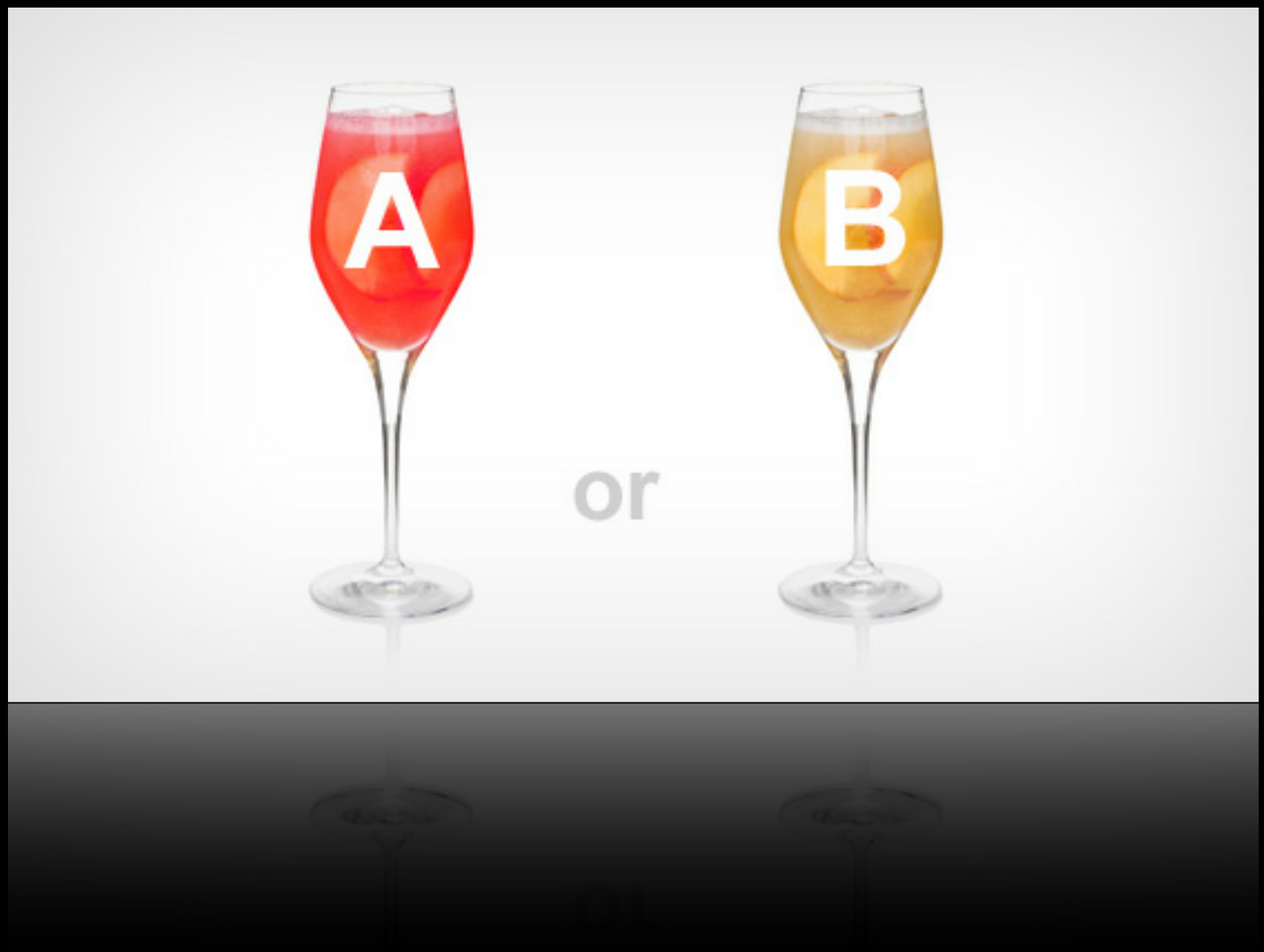
Refresh webviews when returning from background is enough for most cases

meteorjs, derbyjs and others
are experimenting with
hot-patches

Lesson #8

It is very hard to experiment in iOS and Android

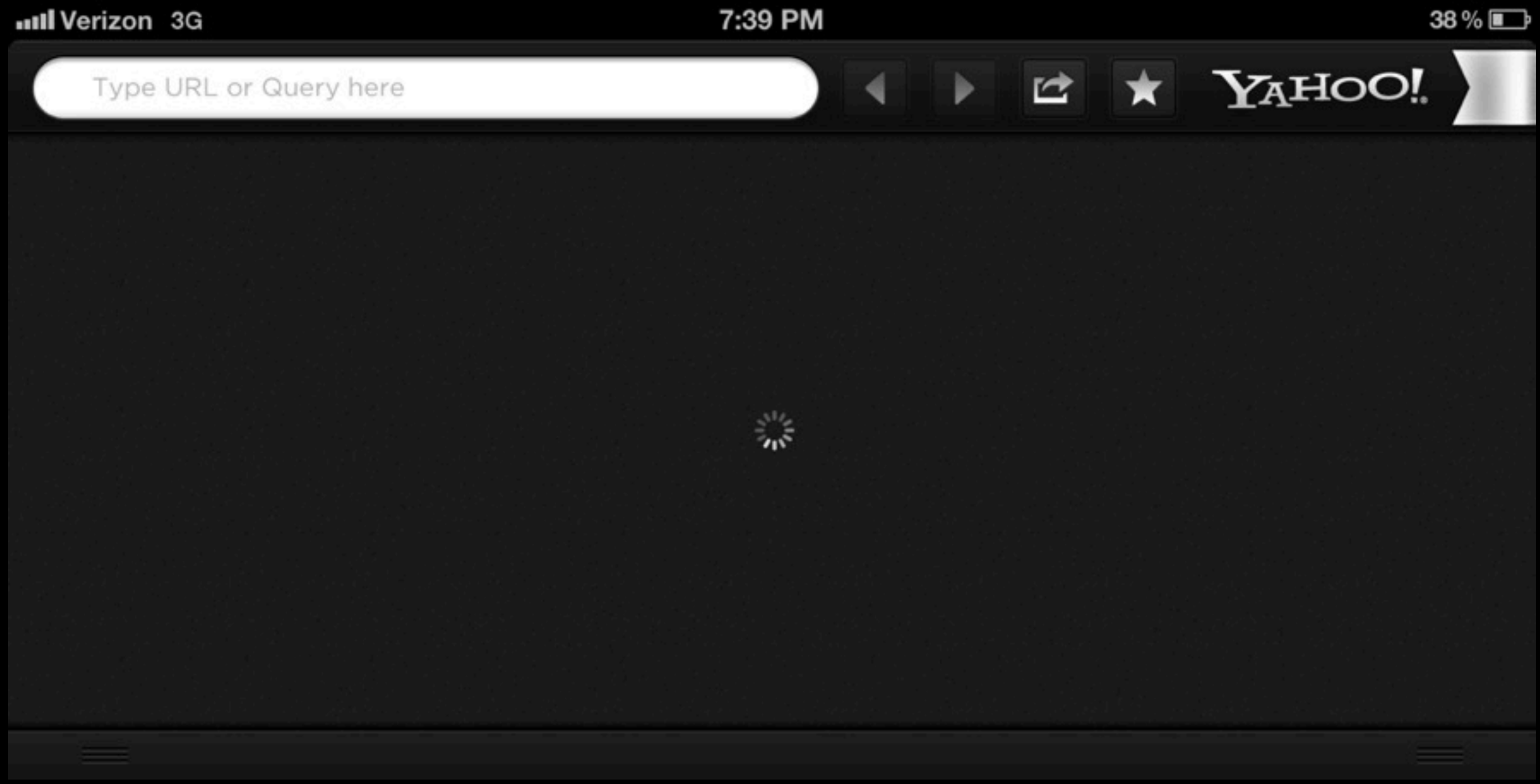
Ideal for experiment-driven development



http://www.bluefountainmedia.com/blog/how-to-be-successful-using-ab-and-multivariate-testing/

Lesson #9

Expect network craziness



Network failures need to be controlled

Lesson #10

CSS *can also* fail when loading web-based apps

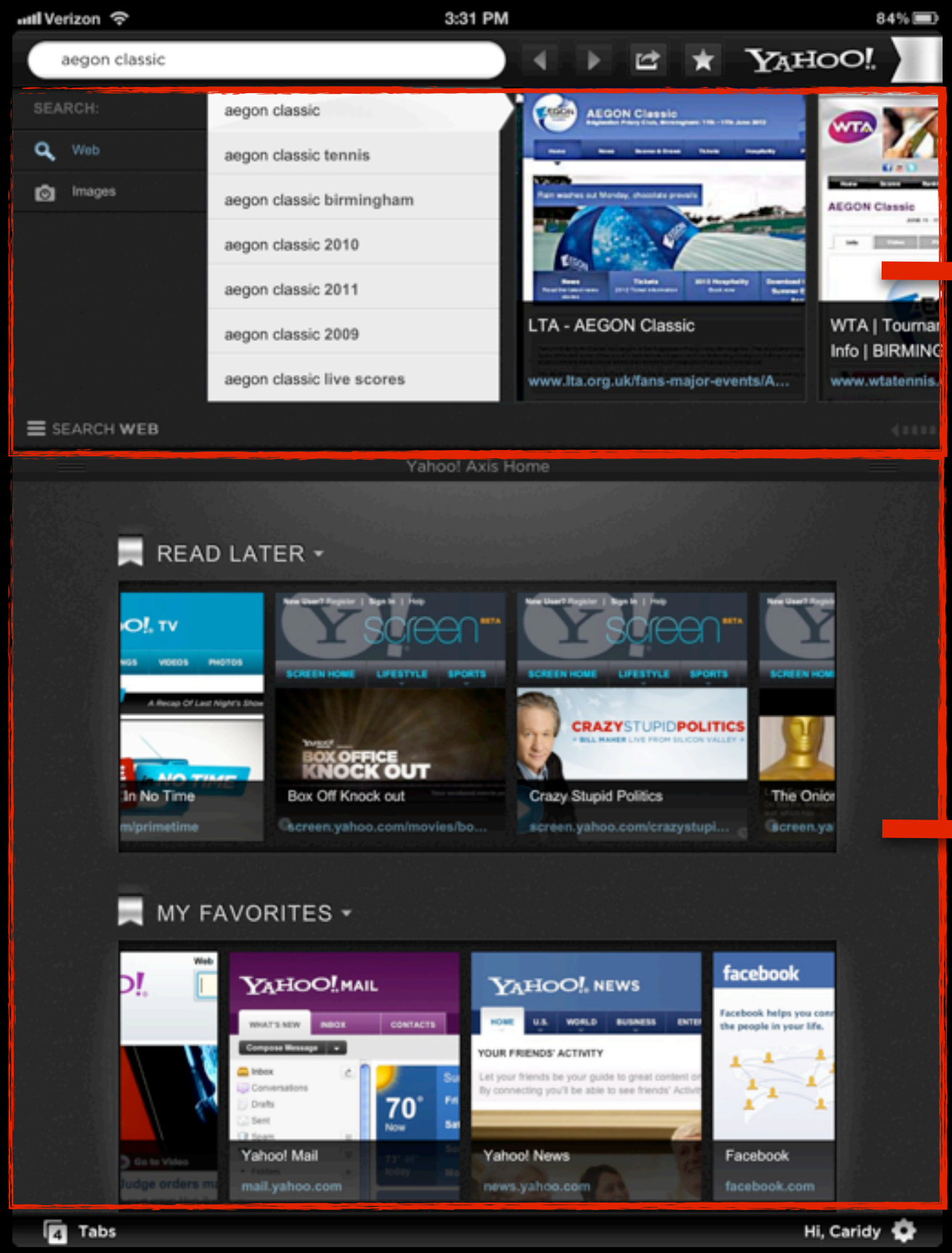
Initialization needs to be controlled

http://blog.mobtest.com/2012/05/heres-why-the-facebook-ios-app-is-so-bad-uiwebviews-and-no-nitro/

Lesson #11

WebViews are not first class citizen in iOS

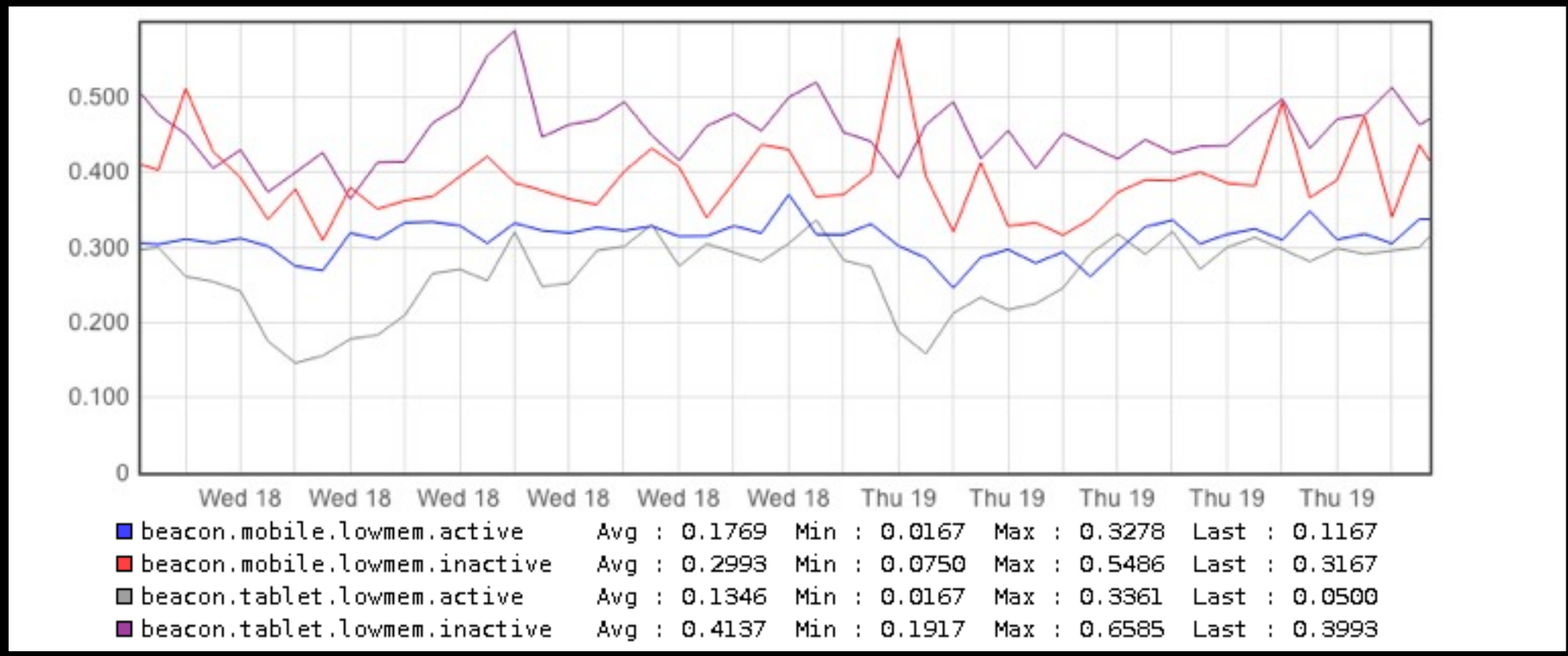
Memory Warnings Experiment in iOS



Search Layer
WebView

Browser
WebView

Low Memory Warnings in iOS



Axis experiment

Lesson #12

We need "*Compiled* + *Web-based*" *auto-updating* capabilities on WebViews NOW!

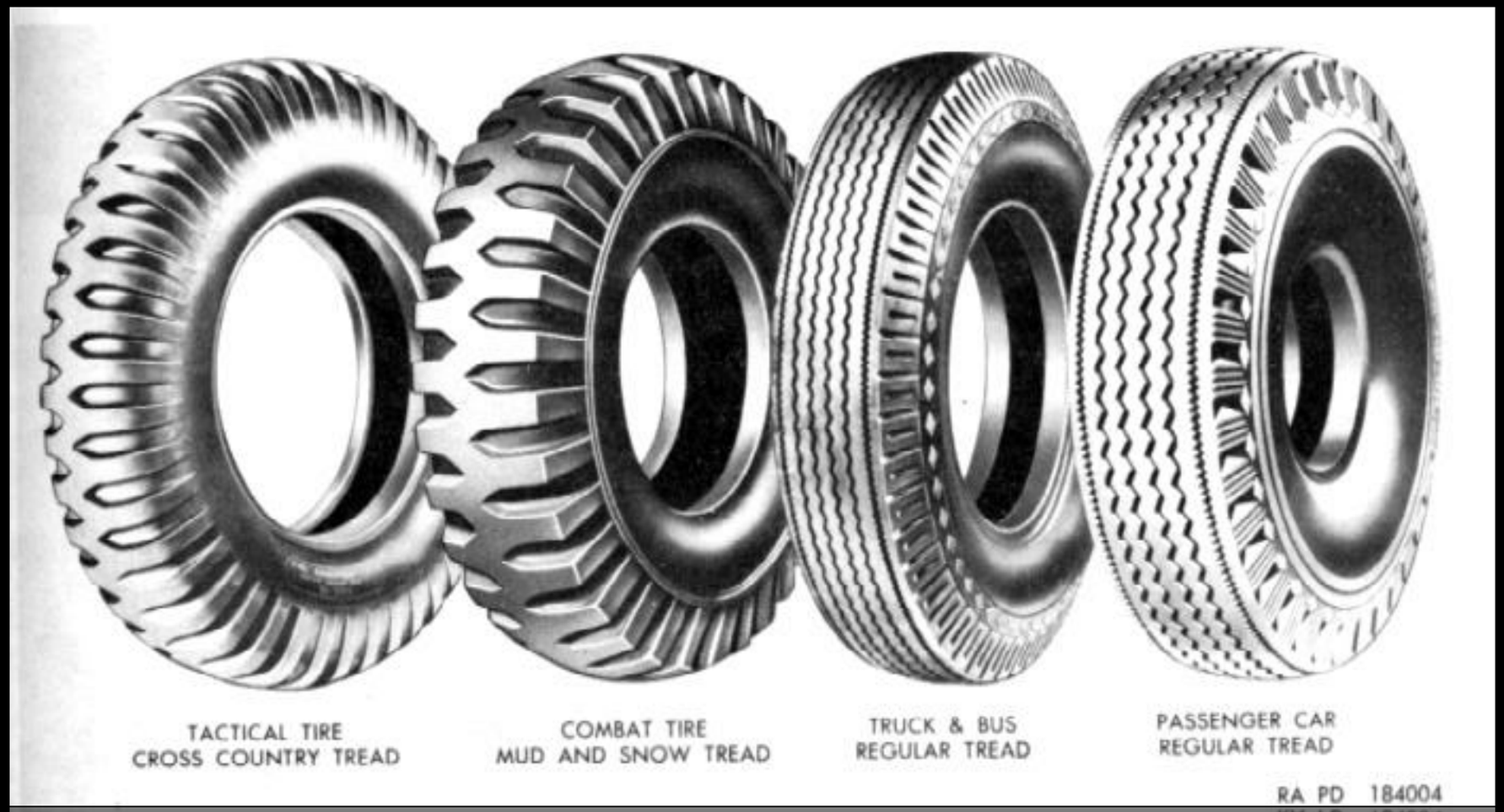
Compiled + Web-based

- Keep sub-apps locally
- Update them over the network
- Refresh them when possible
- Delegate actions over the network

Loading over the network is still easier and safer than stepping into the gray area of auto-upgrading HTML5 apps

Optimization vs Adaptation

Optimization vs Adaptation Analogy



Optimization in Mojito

Performance as a product *feature*

Optimization in Mojito is about customizing the way your product behaves per *runtime* and per *request*.

It is about producing the right HTML, JS and CSS per *runtime* and per *request*.

Mojito Runtimes

Javascript on the browser

Native Bridges

iOS | Android

Javascript on the server

Mojito Context

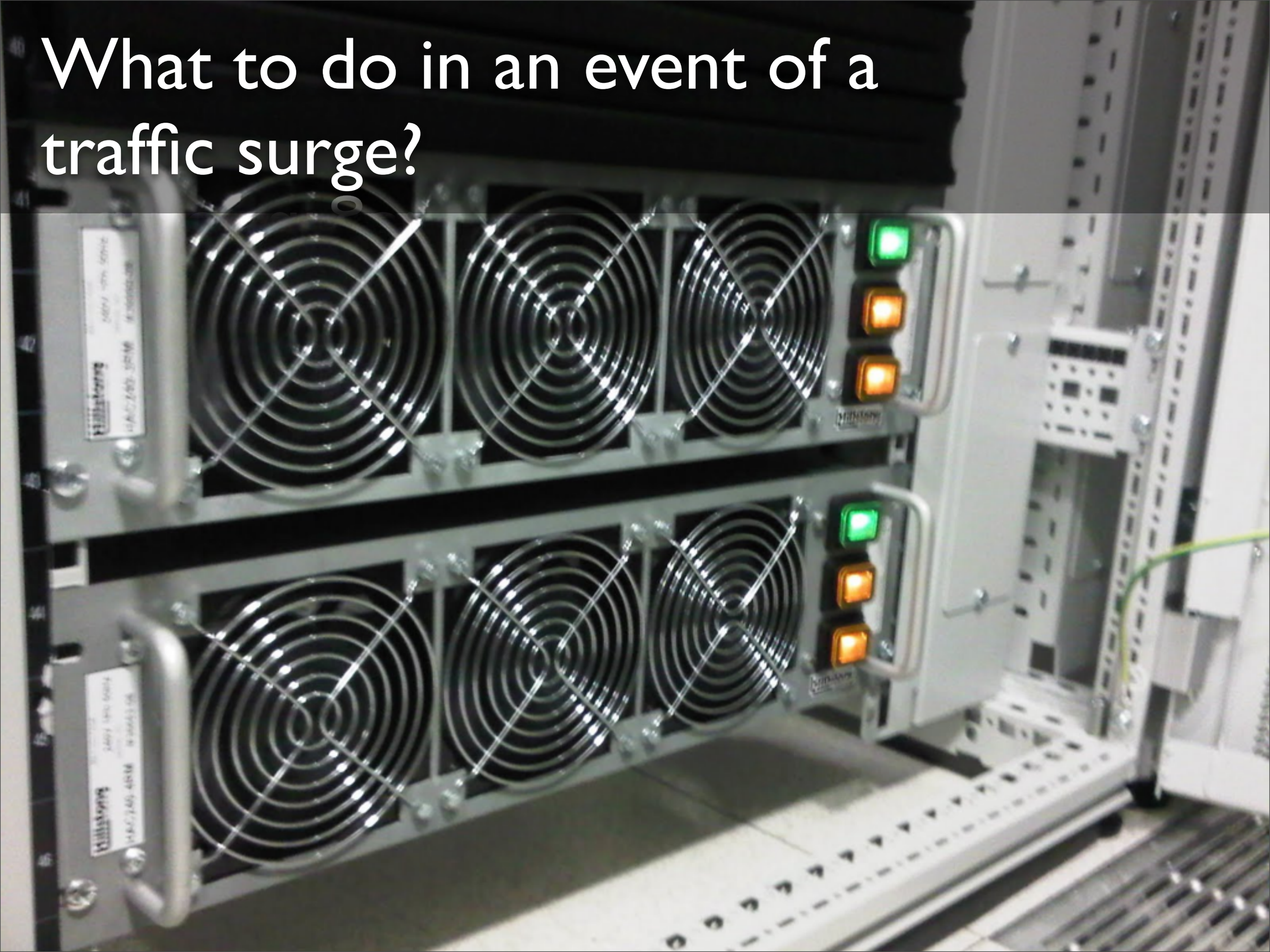
- Locale (en-US. pt-BR)
- Device type (iphone, ipad)
- Network (AT&T, Verizon)
- CPU (low, medium, high)

Optimize per context

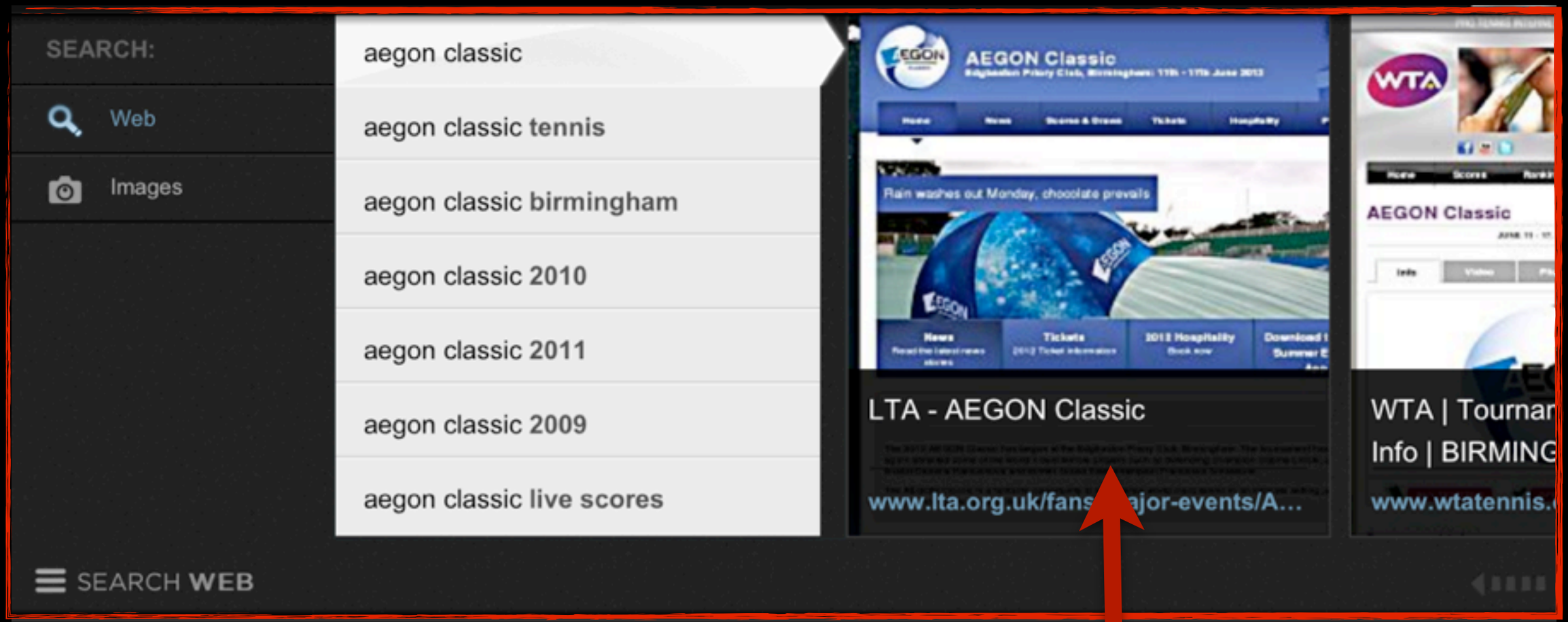
/Mojits/Foo/definition.json

```
[
    {
        "settings": ["master"],

        "config": {
            "scrollview": {
                "deceleration": 0.883,
                "bounce": 0.65,
            }
        },
        "metas": {
        }
    },
    {
        "settings": ["device:mobile"],

        "config": {
            "scrollview": {
                "bounce": 0.01
            },
        },
        "metas": {
            "viewport": "width=device-width, ..."
        }
    }
]
```

What to do in an event of a traffic surge?



Where to render?



card

/Mojits/Bar/definition.json

```
[
    {
        "settings": [ "master" ],

        "config": {
            "serverSideRendering": true
        }
    },
    {
        "settings": ["device:mobile"],

        "config": {
            "serverSideRendering": false
        }
    },
    {
        "settings": ["cpu:high"],

        "config": {
            "serverSideRendering": false
        }
    }
]
```

Control your dimensions in Mojito

/dimensions.json

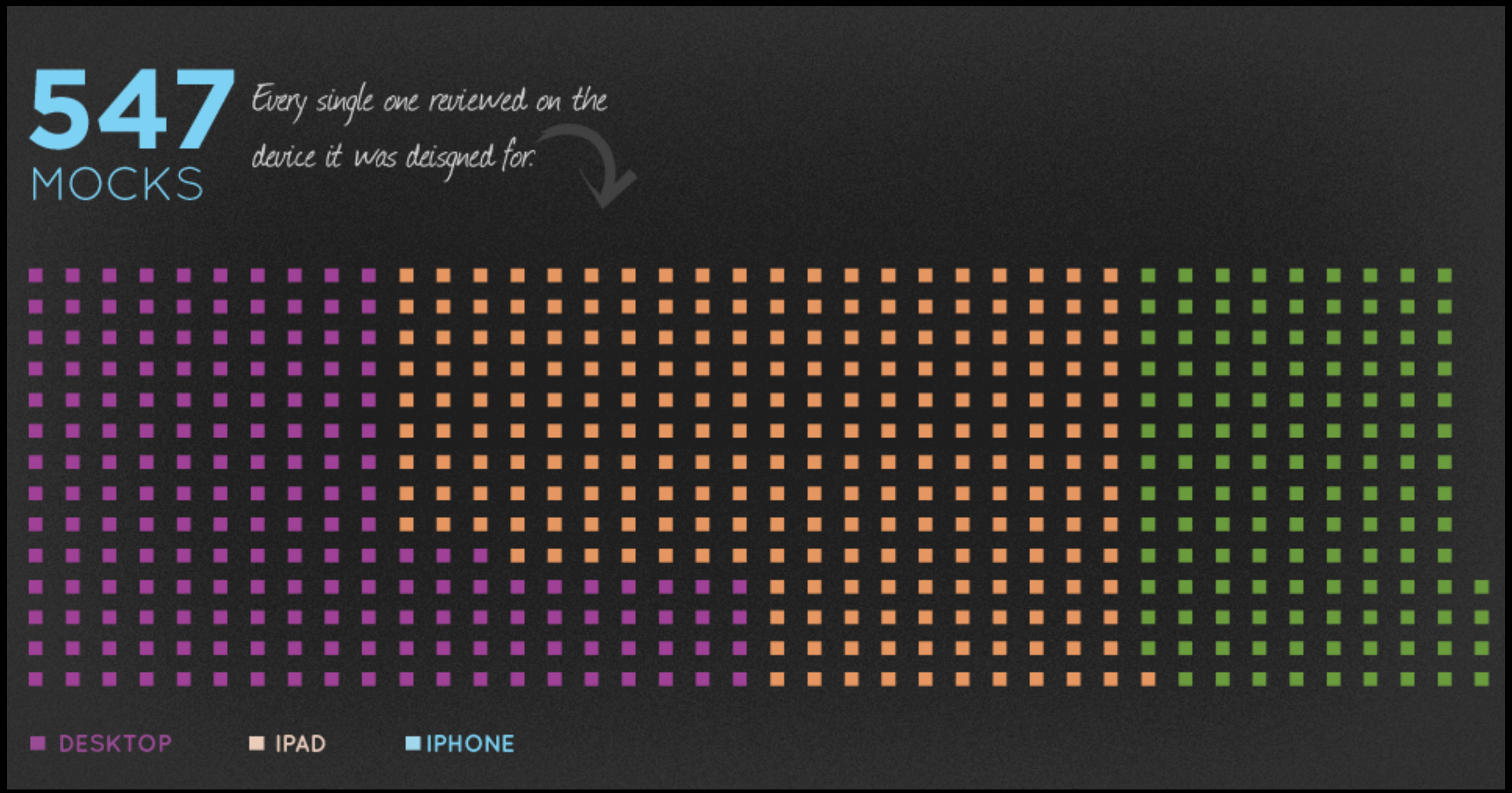
```
[
    {
        "dimensions": [
            {
                "network": {
                    "verizon": null,
                    "att": null
                }
            },
            {
                "device": {
                    "mobile": {
                        "android": null,
                        "iphone": null
                    },
                    "tablet": {
                        "ipad": null,
                        "kindle": null
                    },
                    "tv": null
                }
            }
        ]
    }
]
```

Adaptation in Mojito

Adaptability as a product *feature*

Adaptation in Mojito is about customizing the UI per screen size, per connection speed, per feature detection, etc.

It is about responsive UI



In Mojito, YUI covers a lot in terms of adaptation:

```
1  YUI().use('cache-offline', function() {
2
3      var cache = new Y.CacheOffline({
4          max: 99,
5          sandbox: 'foo' // prefix all entries with "foo"
6      });
7
8      cache.add('bar', {baz: 'data to store'});
9
10 });
```

Adapt per:

- Screen size (css media queries)
- Orientation (landscape vs portrait)
- Connection Speed (3G)
- Memory (iOS memory warning)
- Feature

Let’s recap

Axis runs on Yahoo! Cocktails

Axis is a hybrid application composed of independent small native and HTML5 sub-applications

HTML5 parts were written on Yahoo! Mojito, an open source application framework on top of YUI and Node.js

Axis leverages Mojito context to optimize and adapt those HTML5 parts

Axis leverages Y.CL as the main infrastructure to connect different parts

Mojito JavaScript Application Framework

http://github.com/yahoo/mojito

Thank you!

@caridy