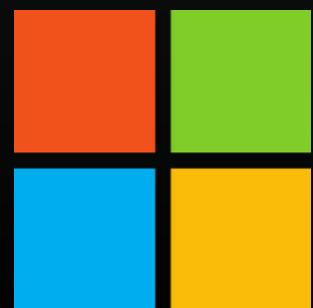


PLANNING ADAPTIVE INTERFACES



Aaron Gustafson
@AaronGustafson
slideshare.net/AaronGustafson

Web design is **HARD**

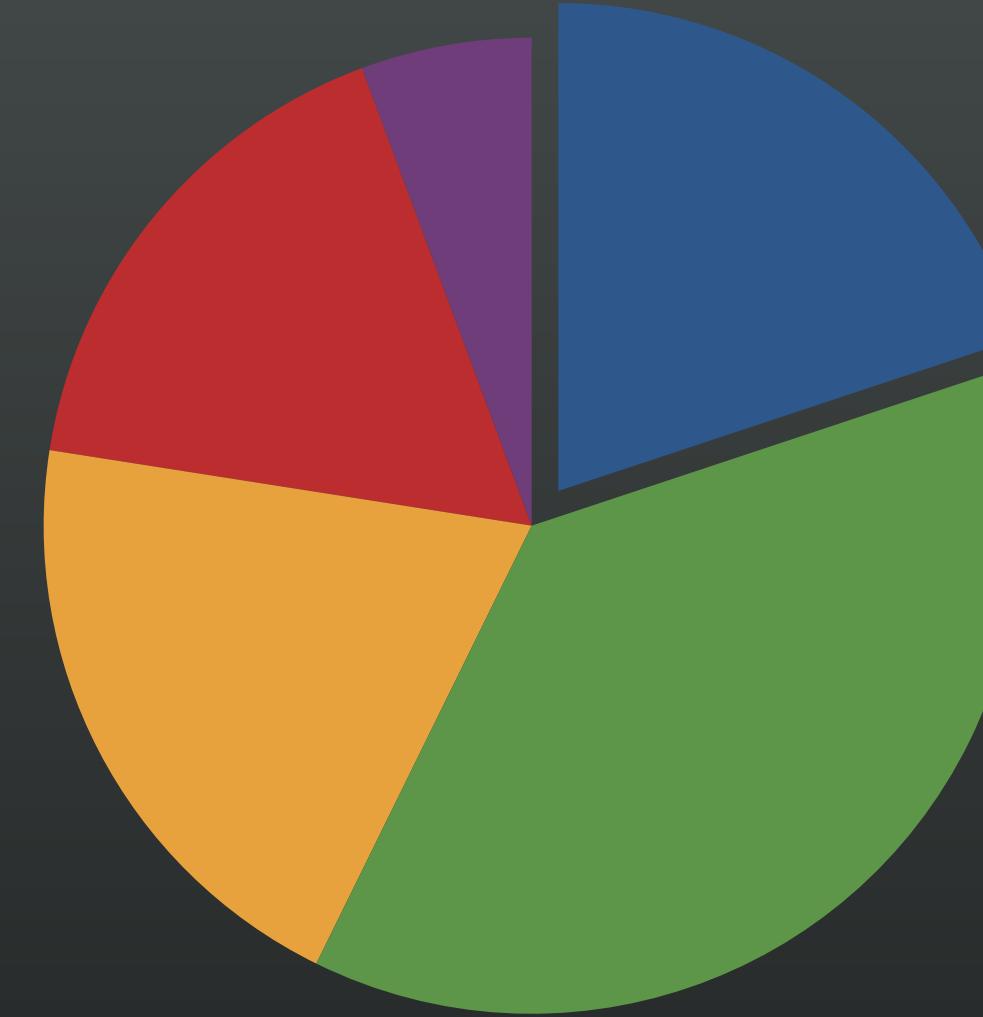
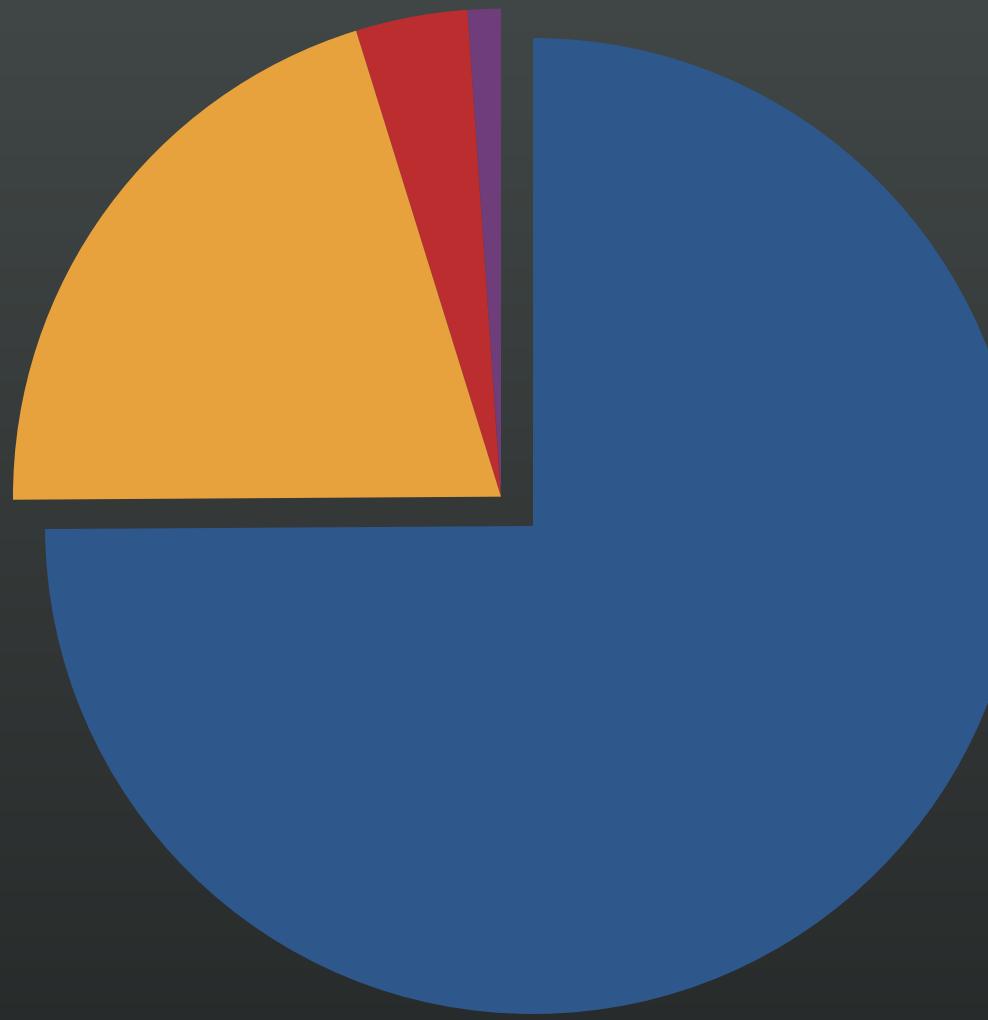
“ [In 2008] the majority of our visitors saw our website in Internet Explorer on a Windows computer on a minimum 1,024 pixel wide screen. Times have really changed.

**Jason Samuels
IT Manager,
National Council on Family Relations**



“Windows users used to comprise 93.5% of our web visits. Now that percentage is 68.2%.

“ The percentage visiting from a mobile device or tablet ... was just 0.2% in 2008. It has since grown exponentially to **14.4%** today.



“ [In 2008] 74.9% of our web visitors used Internet Explorer. That number has fallen to 19.7%. Firefox now comprises 20%, Safari 16.7%, and Chrome 37%.

**“ In the second quarter of 2008
we detected 71 different
screen resolutions among our
visitors. In the first quarter of
2014 we detected**

“In the second quarter of 2008
we detected 71 different
screen resolutions among our
visitors. In the first quarter of
2014 we detected

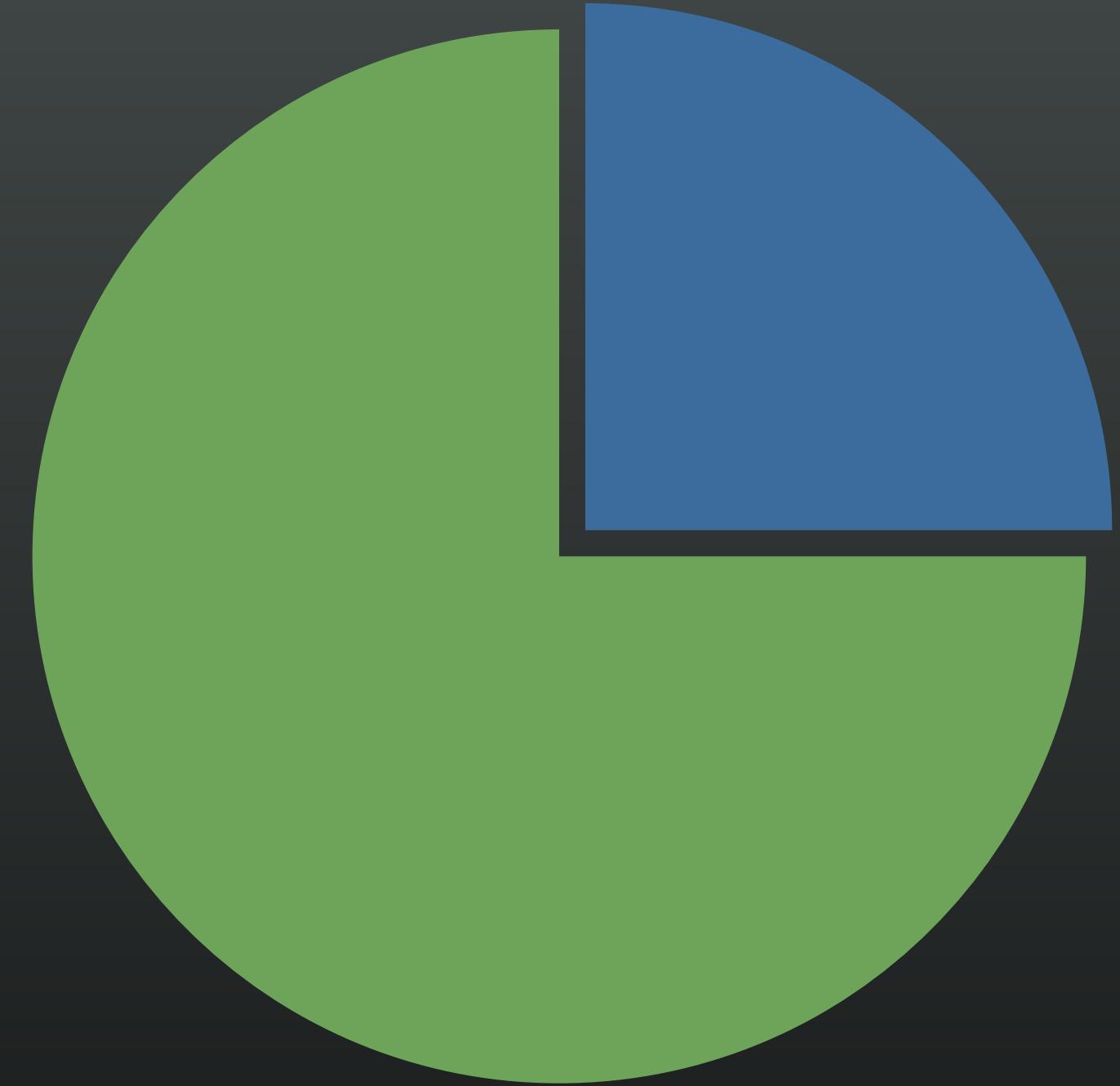
1 062

“ In 2008, 27 screen
resolutions showed up with
more than 10 visits, in 2014
that number was **200**

Chasing screen
sizes is a
FOOL'S ERRAND

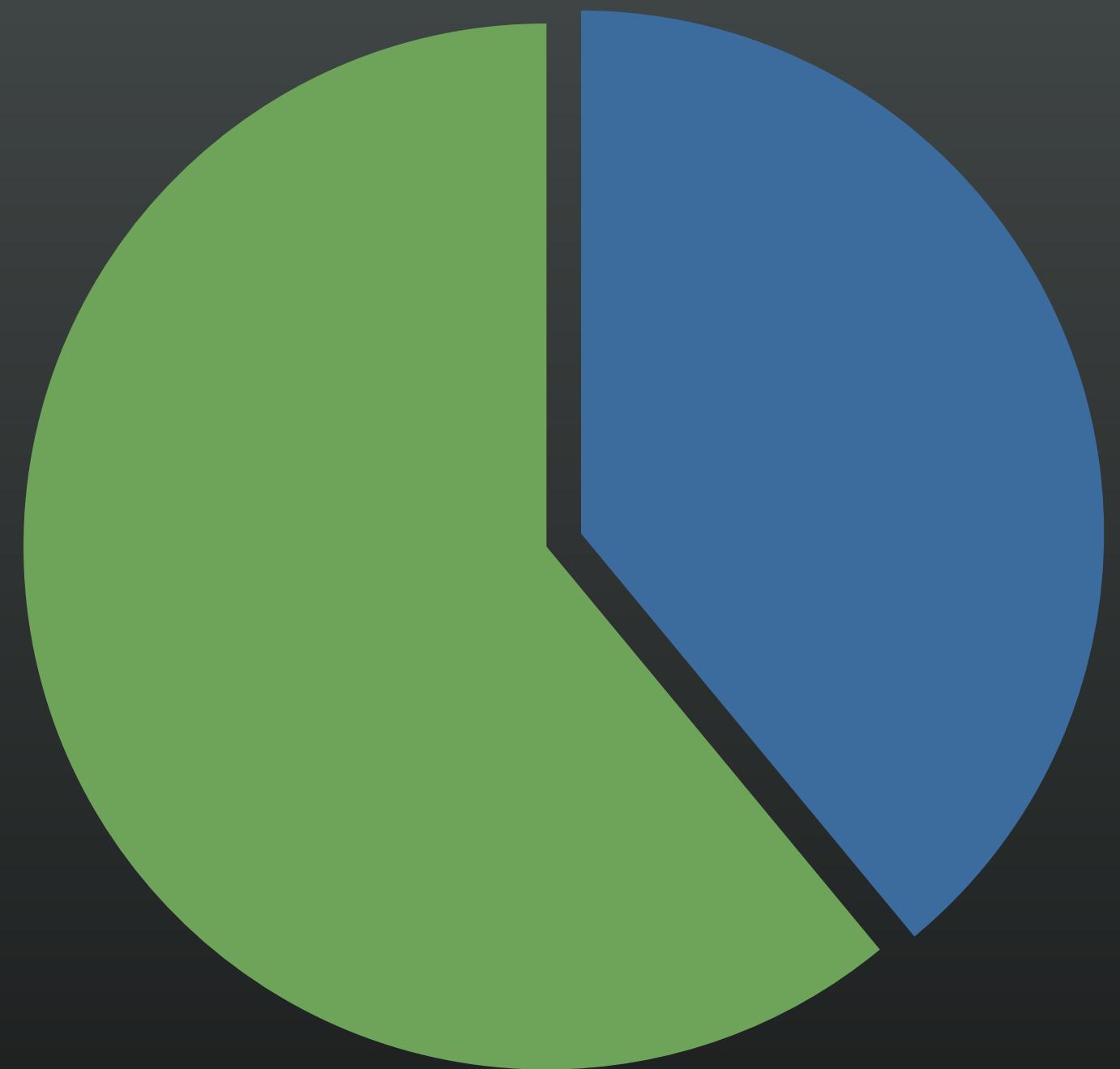






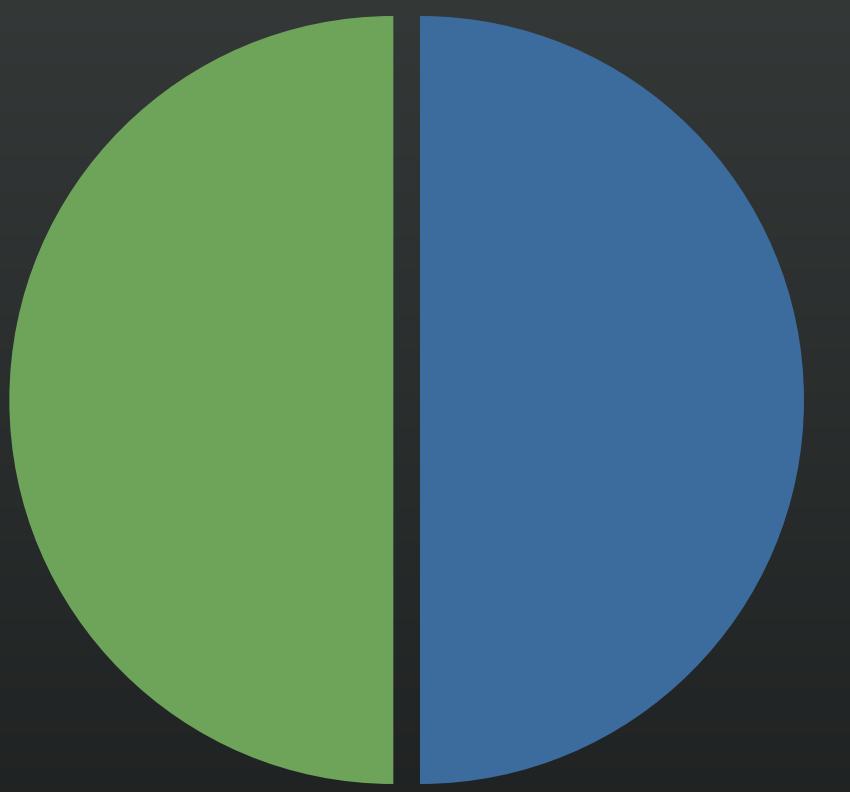
“ Smartphones have reached
75% penetration in the US...

Source

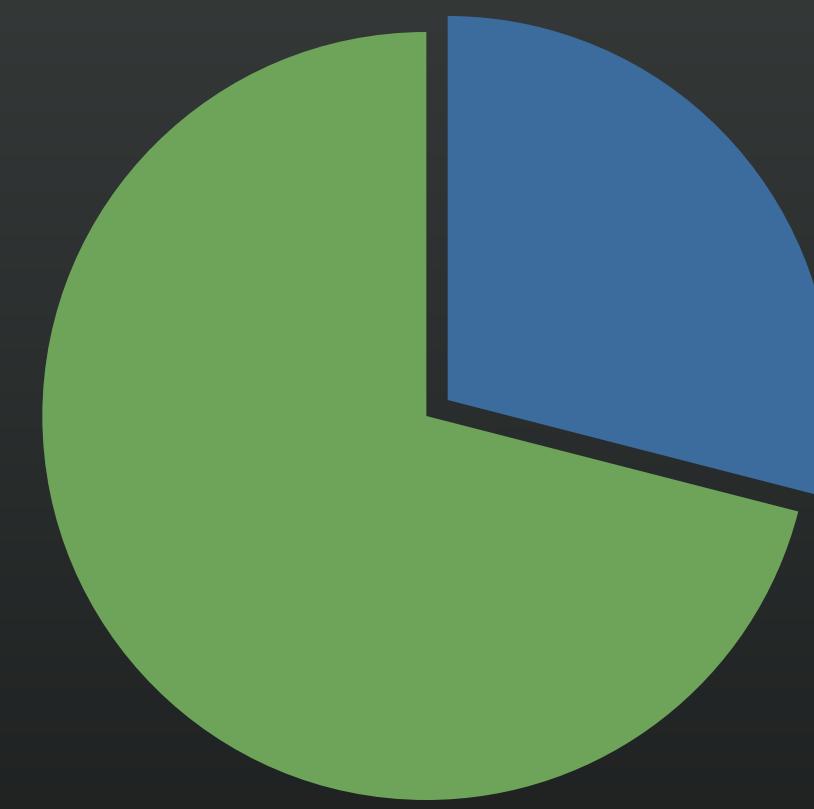


**...but that's concentrated in
61% of households**

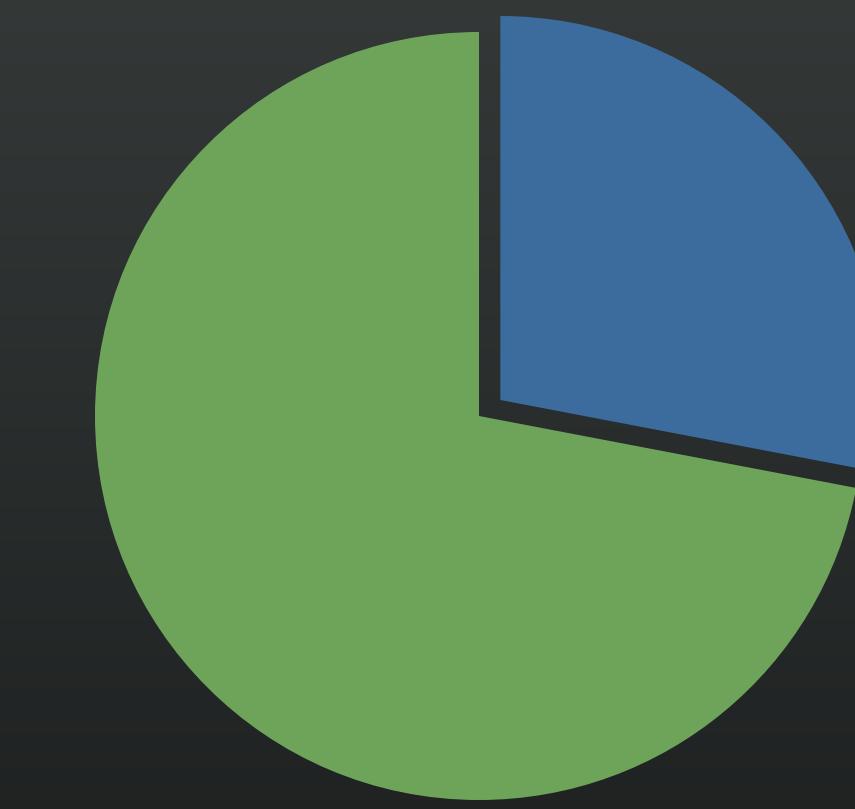
U.S. Smartphone penetration #s released in March 2015



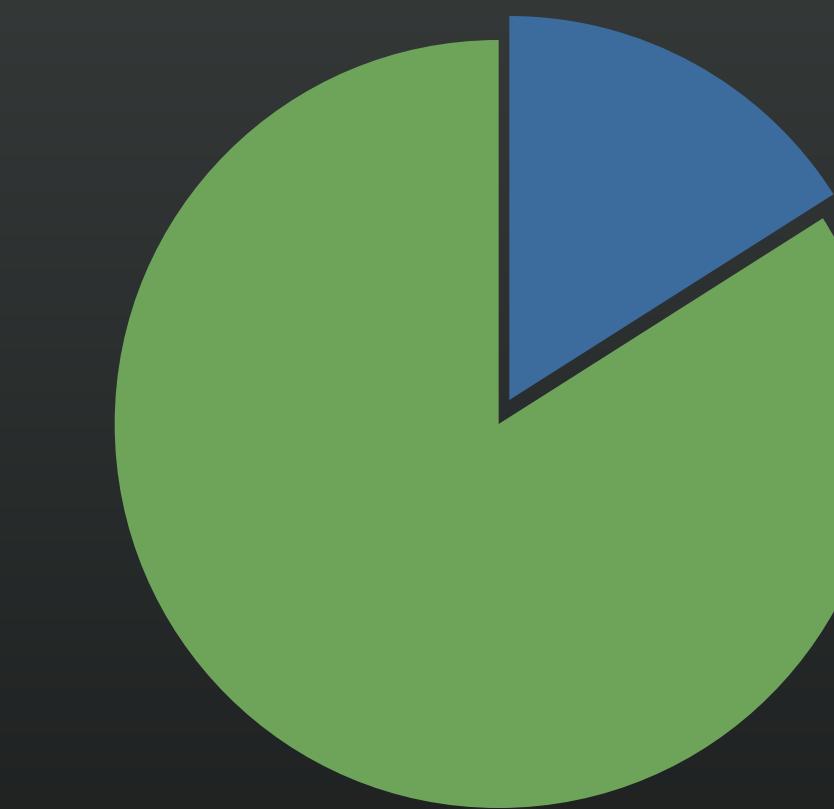
< \$30k
50%



\$30-50k
71%



\$50-75k
72%



>\$75k
84%

Source

U.S. Smartphone penetration #s released in March 2015



< \$30k

50%

\$30-50k

71%

\$50-75k

72%

>\$75k

84%

\$30k = Average US income 2013

Source

U.S. Smartphone vs. Income distribution



< \$30k
50%

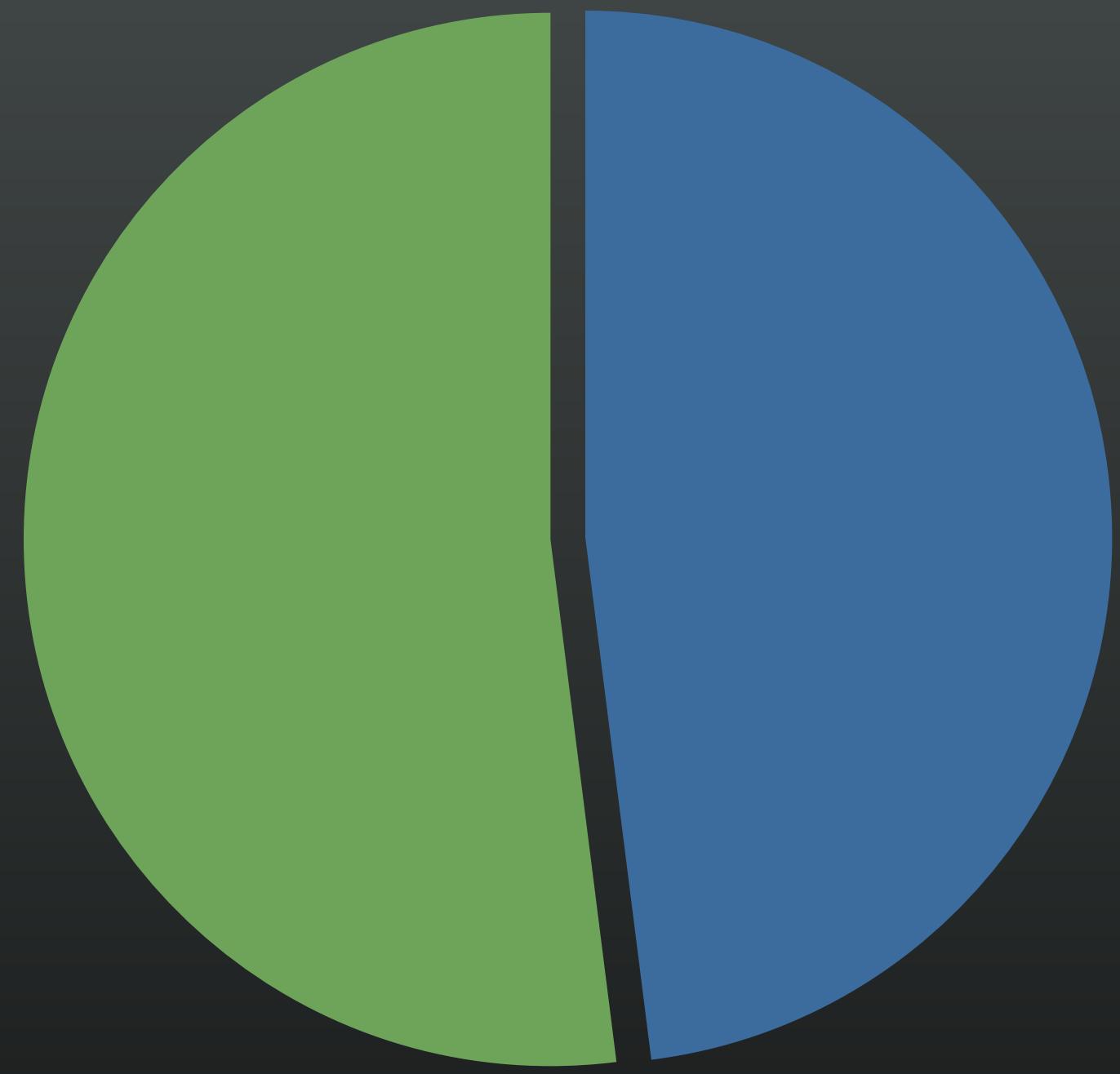
\$30-50k
71%

\$50-75k
72%

>\$75k
84%



Opportunity!



**Smartphone users making < \$30k/yr
experienced app errors
52% of the time**

Source

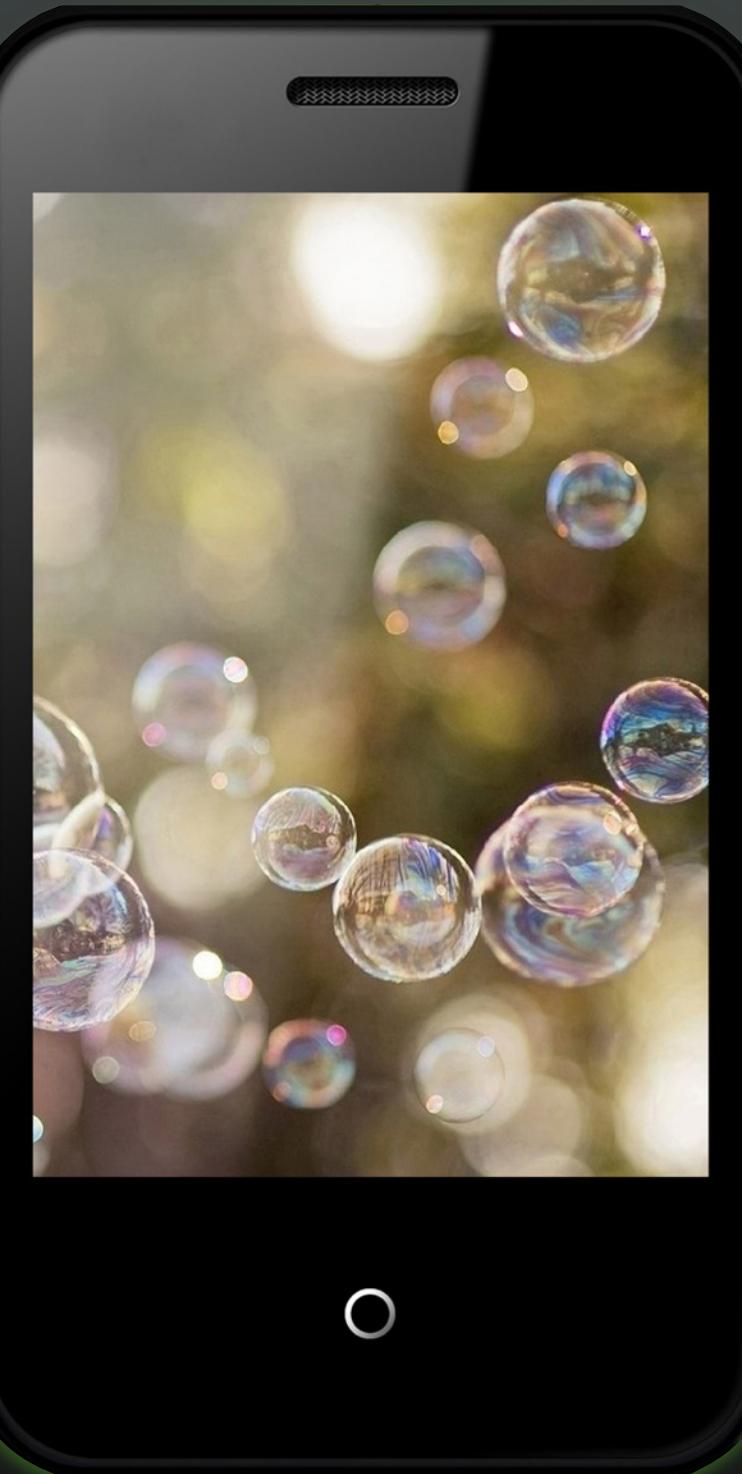


Galaxy S5

5.1" (1920 × 1080)
2GB RAM
16GB Storage
16MP Camera
2.5GHz Quad-core
Android 4.4
\$799

Cloud FX

3.5" (480 × 320)
128MB RAM
256MB Storage
2MP Camera
1GHz Single-core
Firefox OS 1.3
\$35





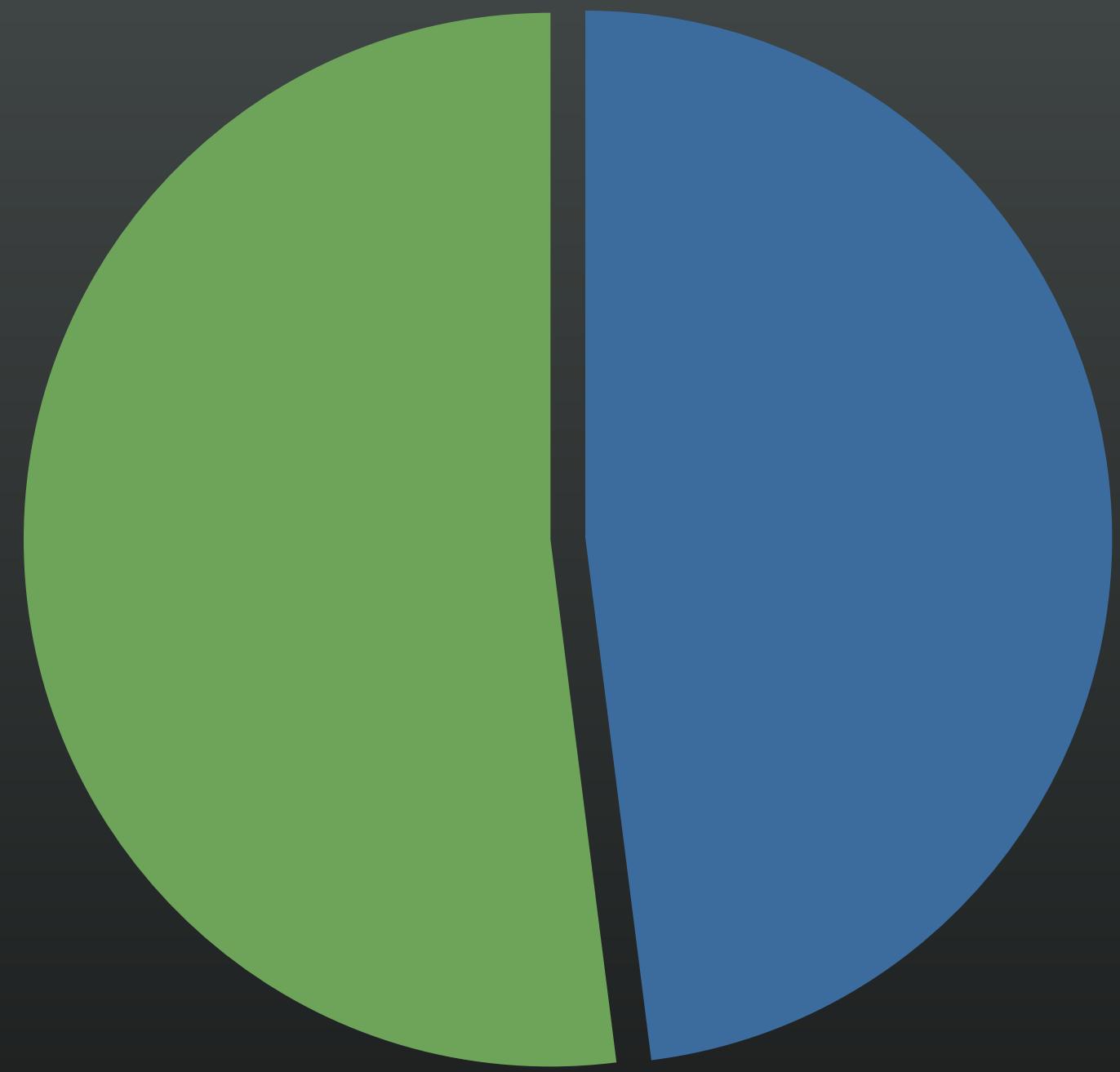
Galaxy S5

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2GB RAM
16GB Storage
16MP Camera
2.5GHz Quad-core
Android 4.4
\$799

Dash JR K

3.5" (480 × 320)
256 MB RAM
512MB Memory
2MP camera
1.3 GHz Dual-core
Android 4.4
\$43





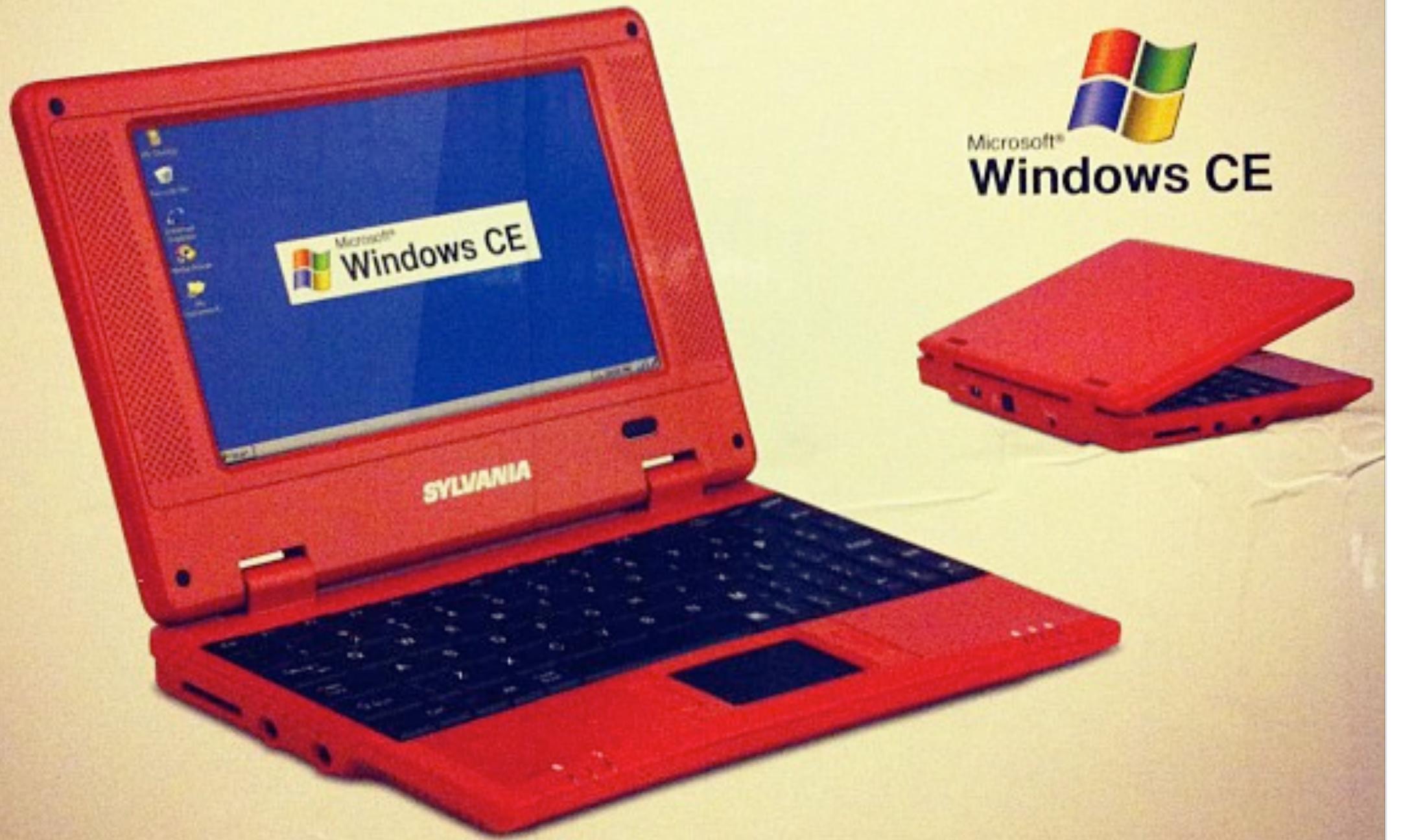
As of Q4 2014, **62%** of new
non-phone AT&T subscriptions are
connected cars

Source



SYLVANIA

WIRELESS MOBILE INTERNET DEVICE



Microsoft®
Windows CE



E-mail



Web Browsing

facebook

Social Networking

YouTube™
YouTube
Video Streaming

We DON'T know

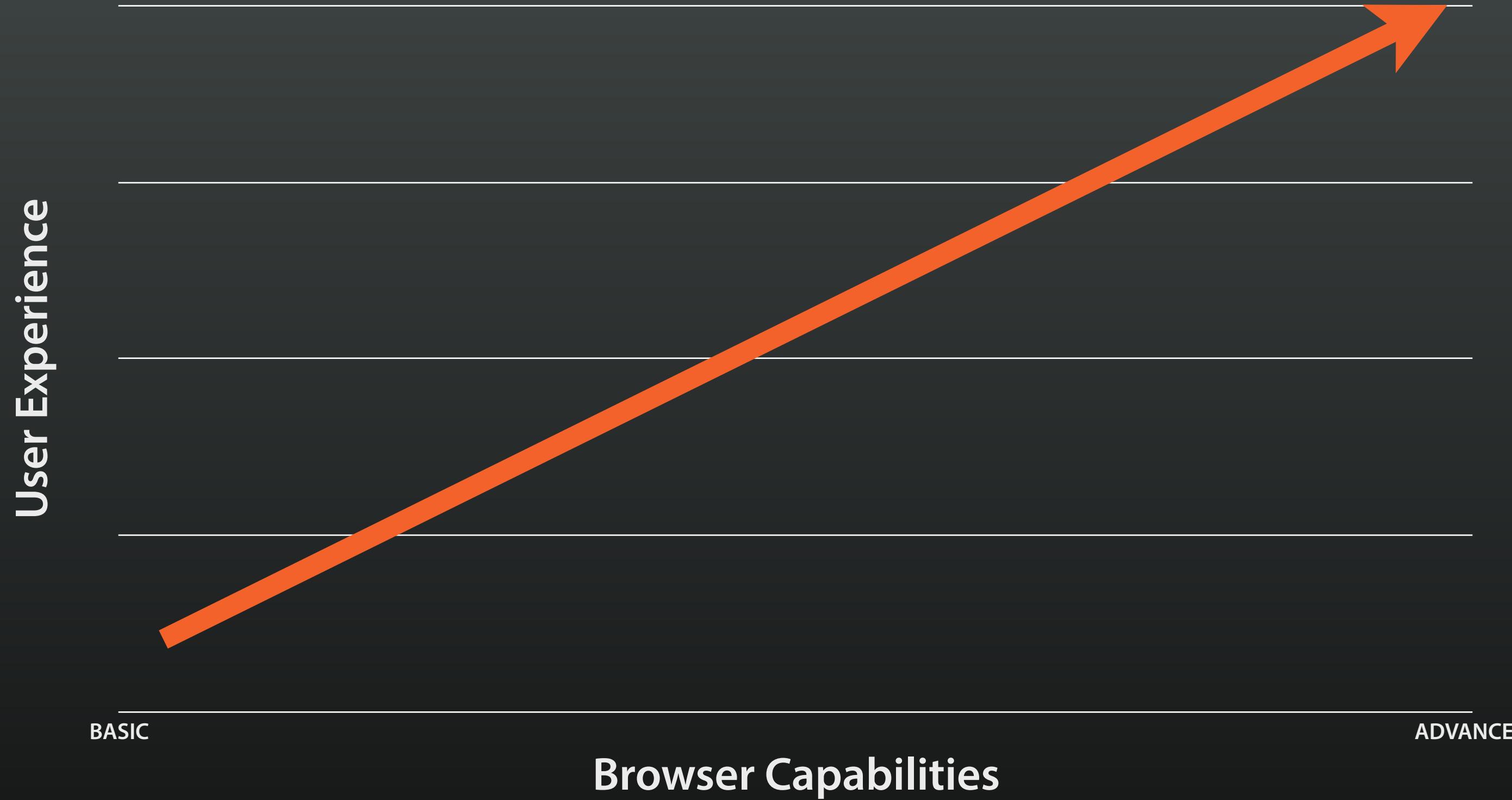
Even when we
think we know,
we're probably
WRONG

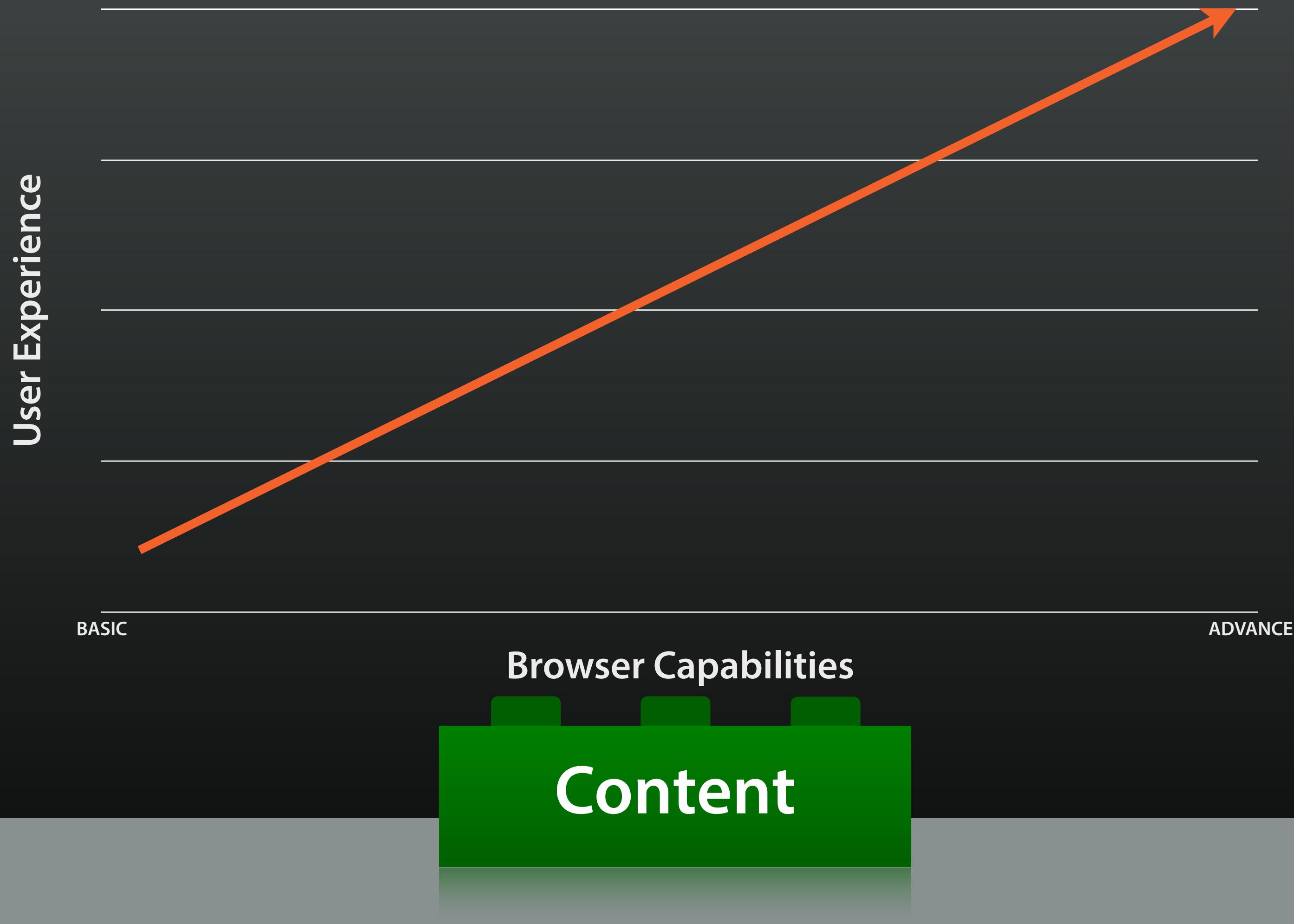
So how
do we **COPE**?

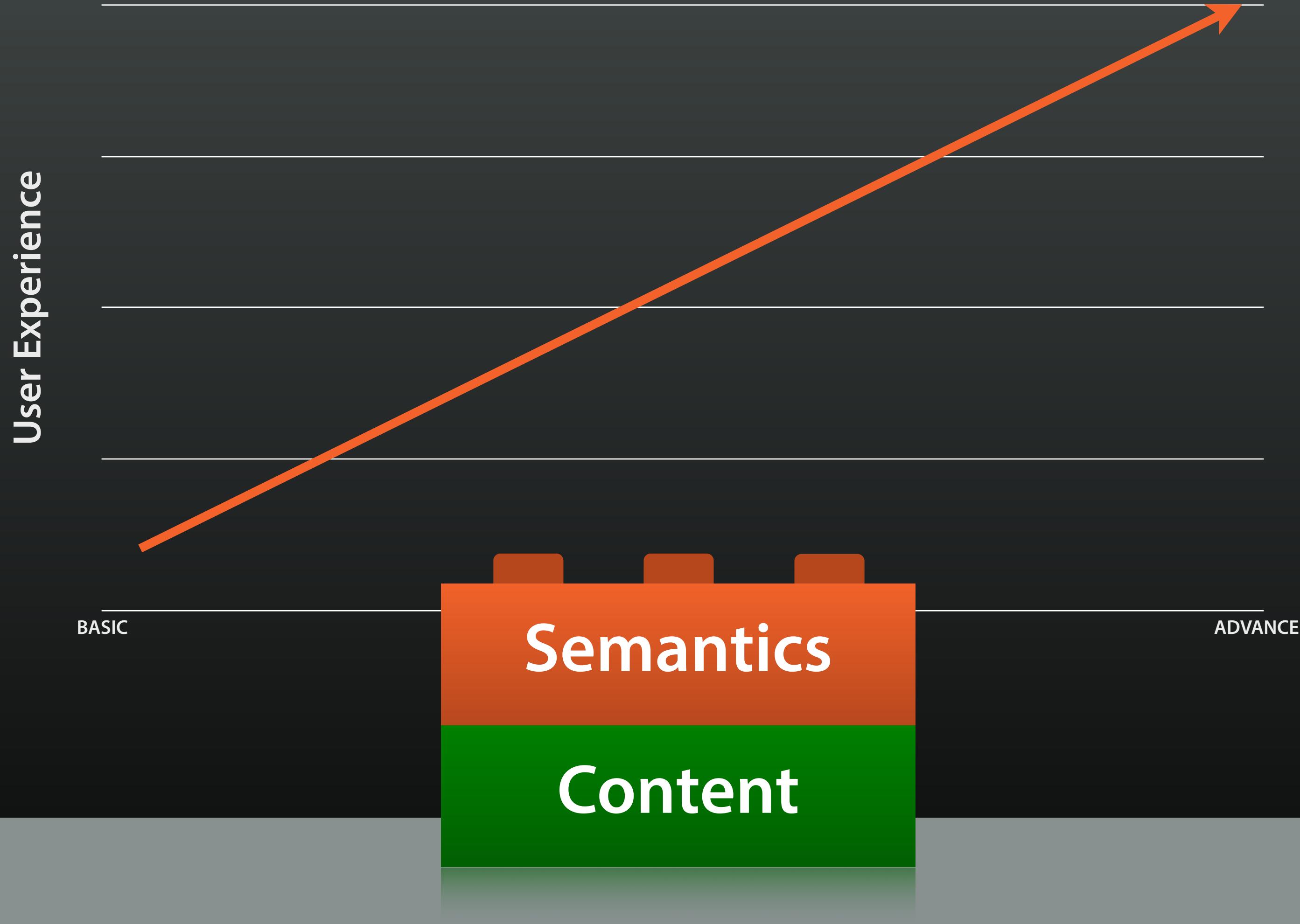
Progressive Enhancement

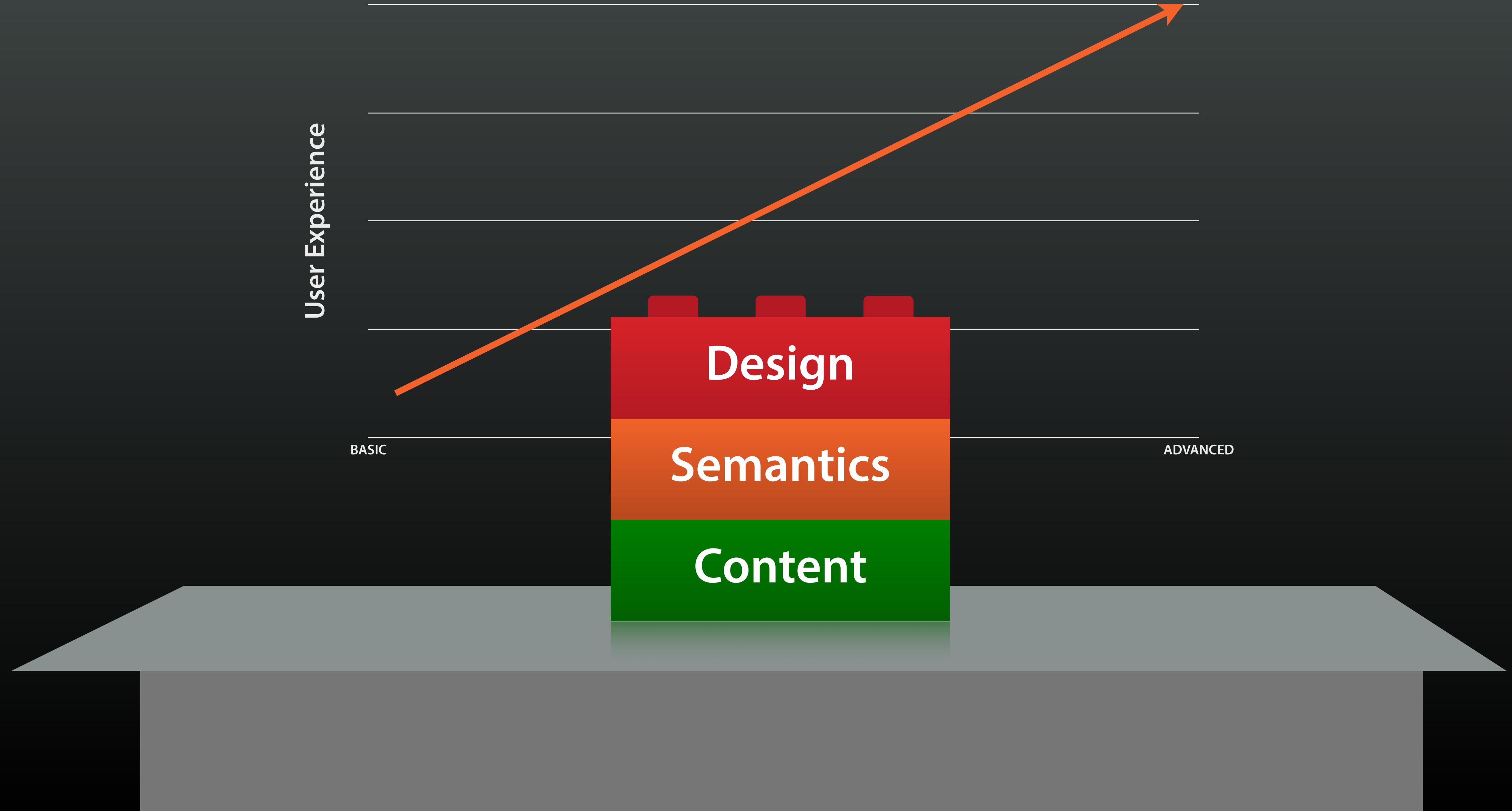


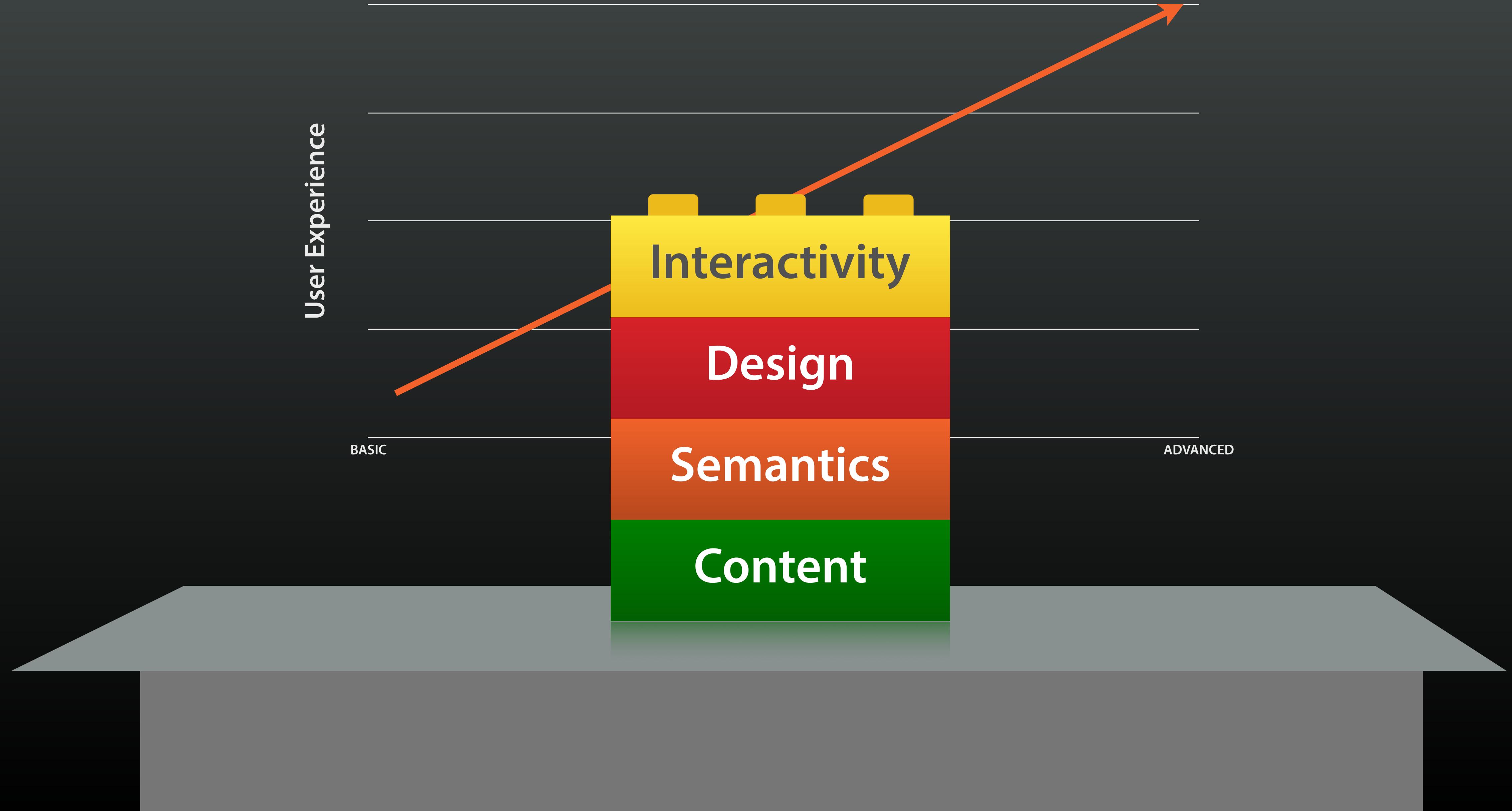
Technological
restrictions

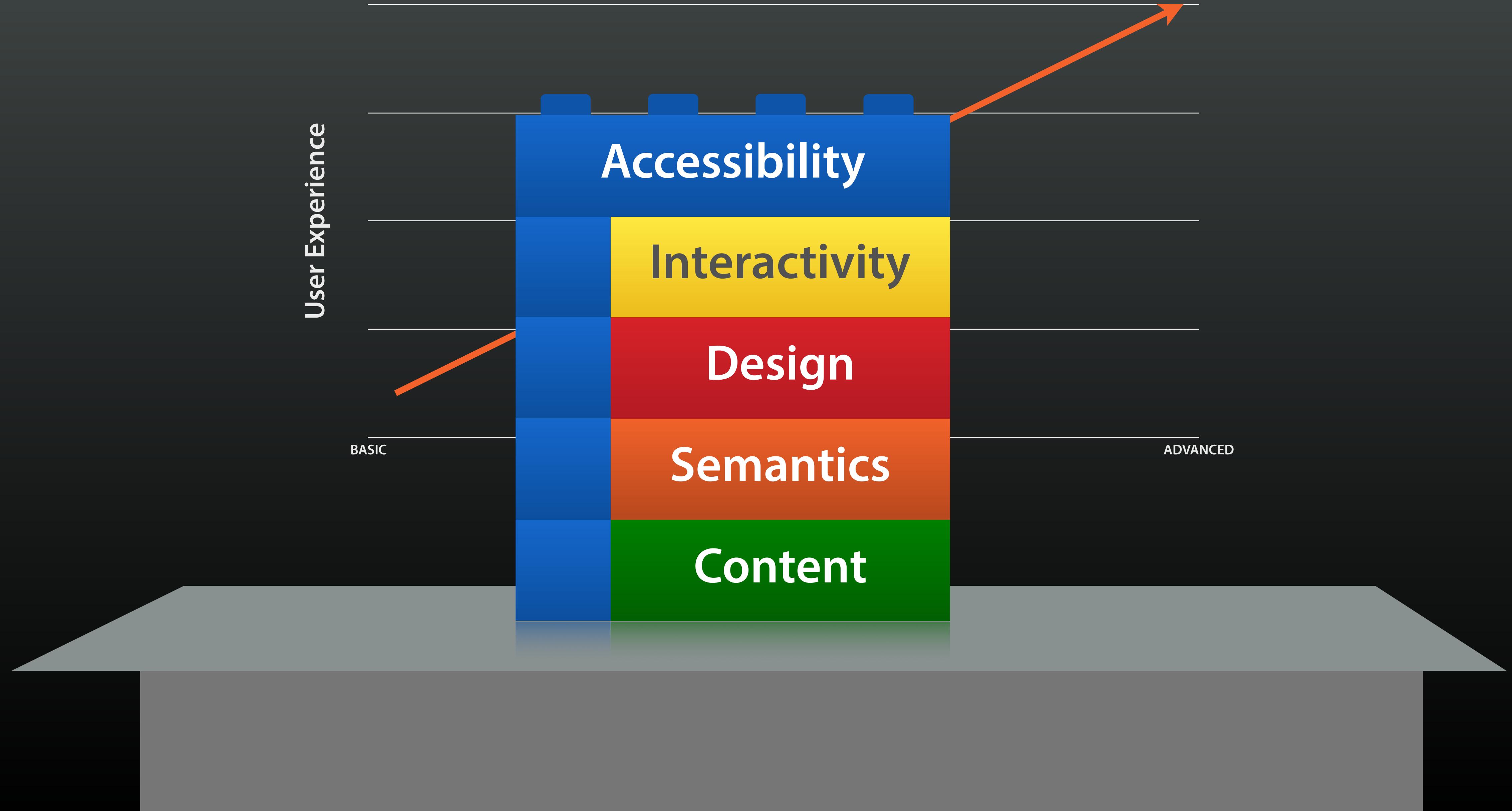


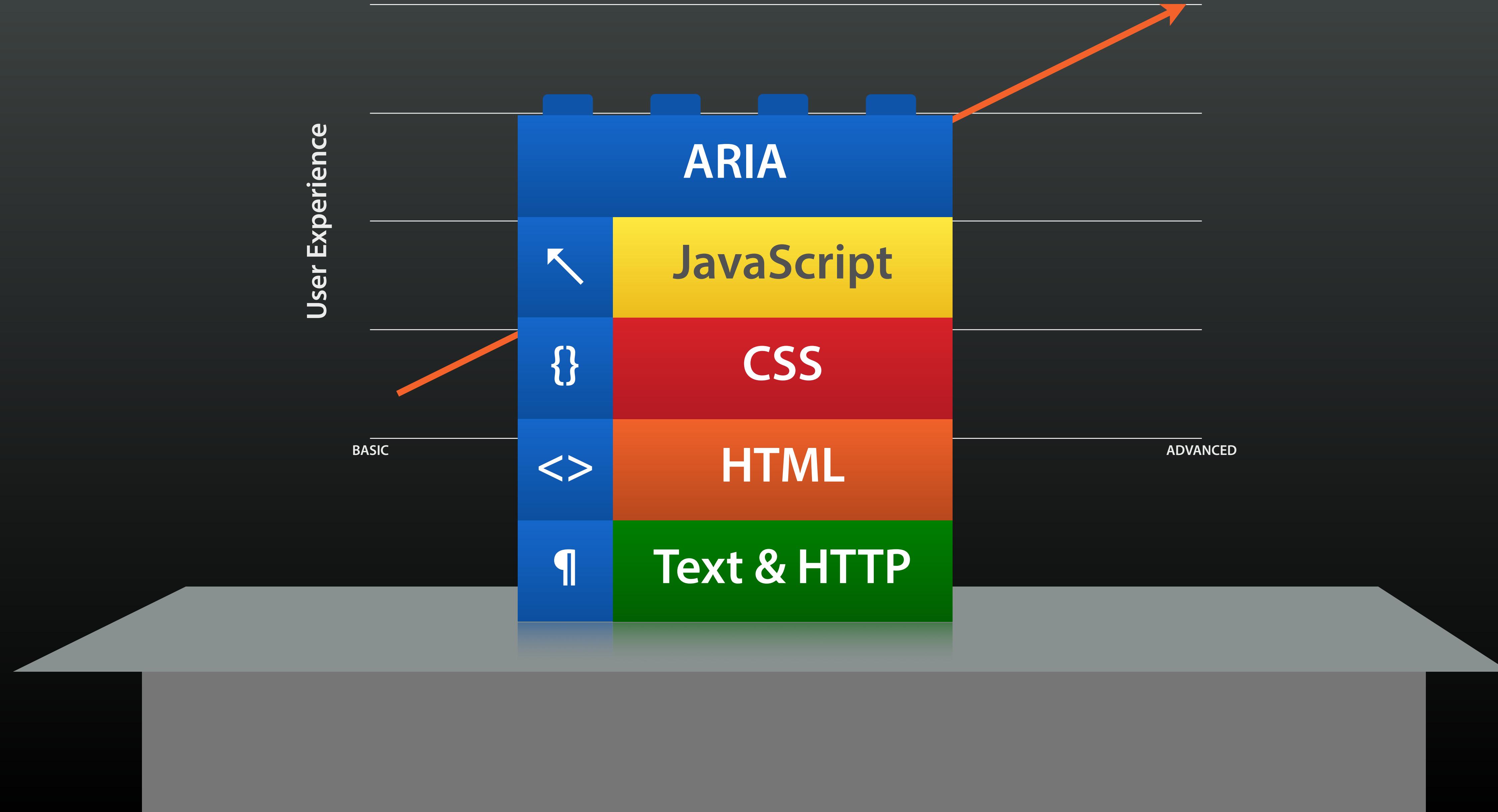














HTML

HTML5

The diagram consists of three orange rectangular blocks stacked vertically on a black background. The top block contains the text "HTML5". The middle block contains the text "Microformats". The bottom block contains the text "HTML4". Each block is separated by a thin horizontal line. Above each block is a smaller, rounded rectangular cutout.

Microformats

HTML4

Browsers ignore
what they don't
understand



*I like an escalator because
an escalator can never break,
it can only become stairs.*

— Mitch Hedberg



WEEKENDHACKER

WEEKENDHACKER

Make the Best of Your Travel Plans This Weekend

The holidays are upon us, and if you're going to spend them you're probably going to be dealing with the stress that is travel. Here are some tips for making travel as pain-free as possible. [More »](#)

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WEEKENDHACKER

5:00 PM

Make the Best of Your Travel Plans This Weekend



FOR WHAT IT'S WORTH

4:00 PM

Remains of the Day: Ice Cream Sandwiches, Gooey Butter Cakes, and More

a dynamic web page can never break, it can only become a web page.

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TIPS AND DOWNLOADS FOR
GETTING THINGS DONE

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lifehacker

TOP STORY

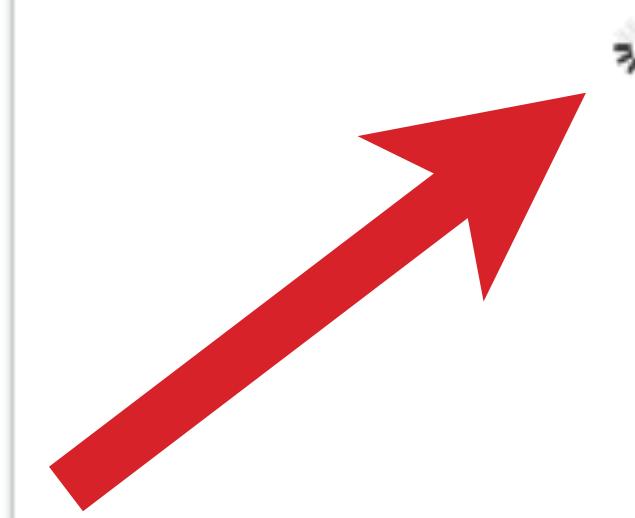


↑ 🔥

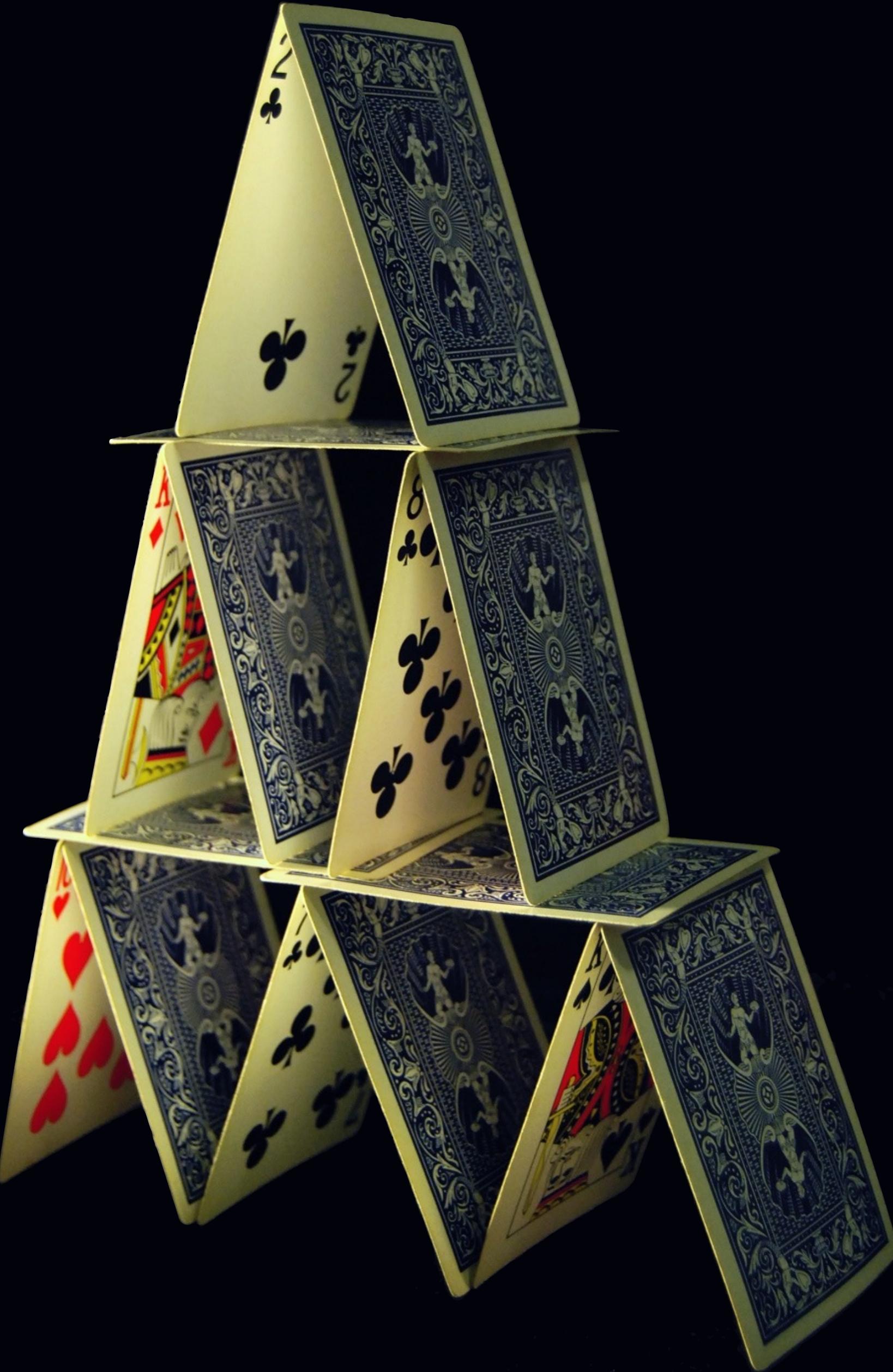
SEARCH

LATEST

LOGIN



- Bugs
- Browser Add-ons
- Overzealous Firewalls
- Underpowered devices
- Page is still loading



112✉️🌐 EDGE

HTTP Error 413: Request Entity Too Large

The page you requested could not be loaded. Please try loading a different page.

OK

Details

Loading...

Sky's internet service mistakenly blocks web-critical plugin

Sky blocked jQuery, a plugin crucial to the operation of many of the internet's biggest websites, after wrongly classifying it as malware on Sunday night

Alex Hern

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theguardian.com, Tuesday 28 January 2014 07.51 EST

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Parts of the web were broken after a crucial plugin was mistakenly blocked.

Photograph: Culture RM/Alamy

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Web filtering · Internet ·
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Media

BSkyB

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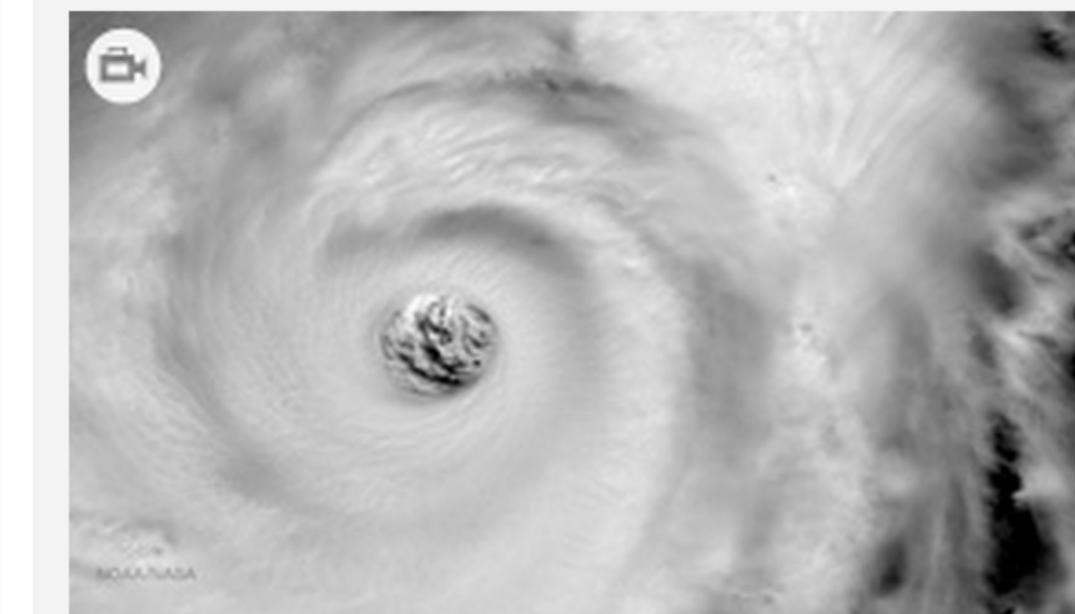
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BSkyB signs new five-year deal for exclusive rights to HBO TV catalogue
Broadcaster struck

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Japan's Typhoon Vongfong seen from International Space Station - video

Nasa footage shows the powerful eye of Typhoon Vongfong as it makes its way towards Okinawa, Japan



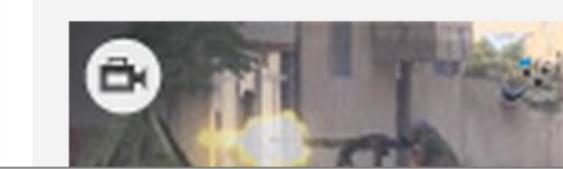
Ukrainian Darth Vader makes election run

Who knew Star Wars villain Darth Vader was in fact a Ukrainian Cossack at heart?



Robotic suit helps explore ancient wreck

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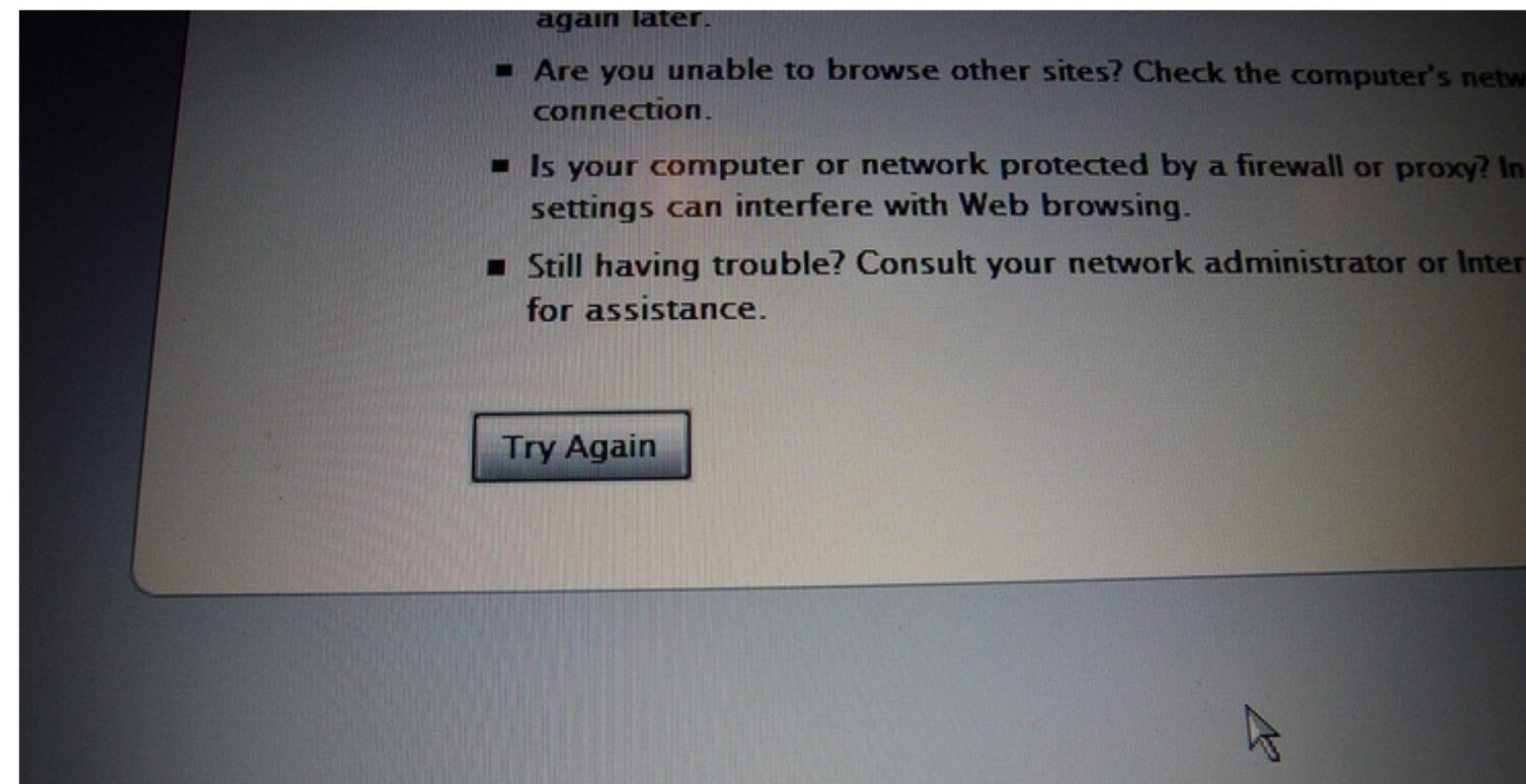
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FCC to Marriott: No, you can't force your customers onto terrible hotel WiFi

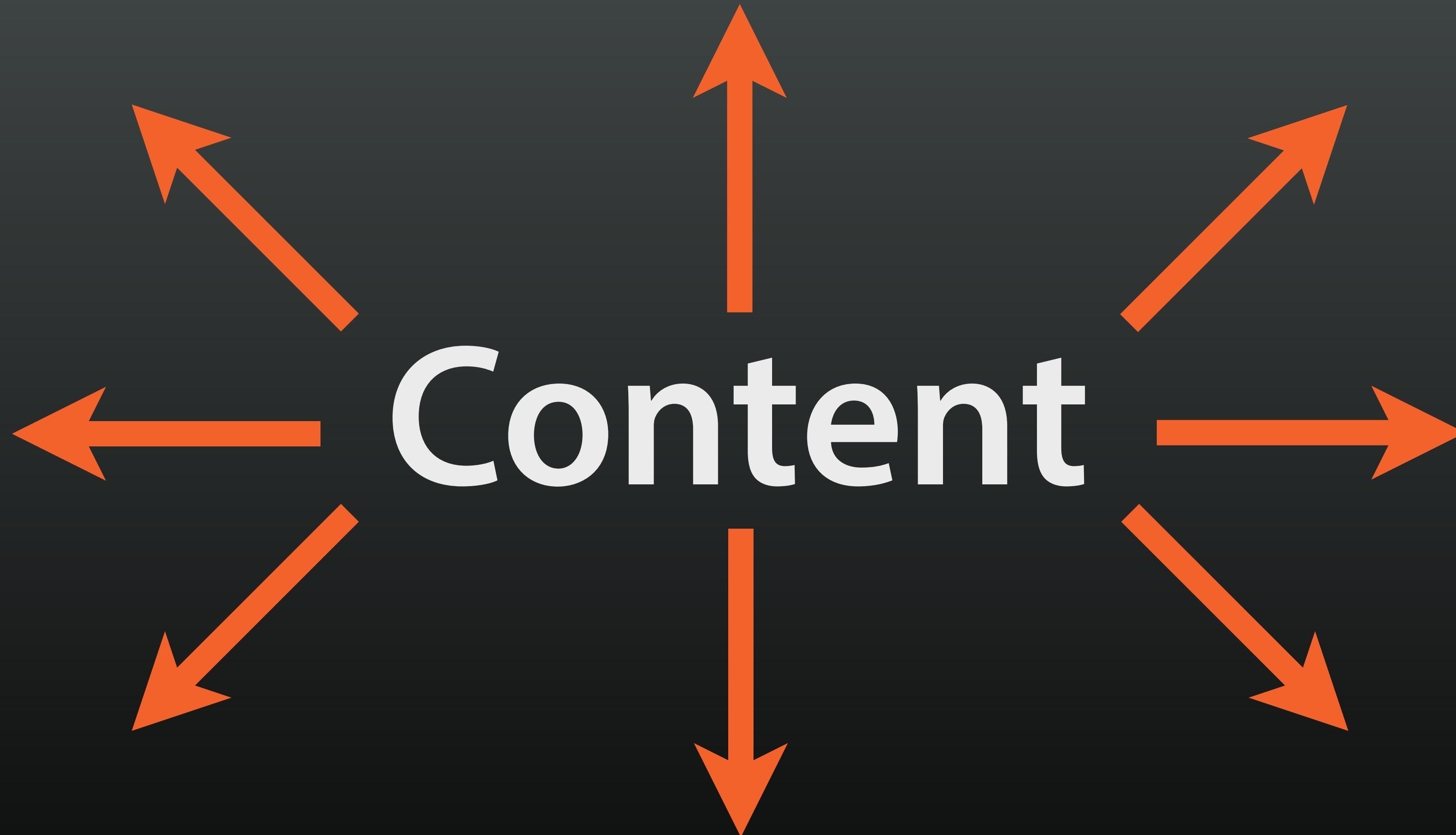


By Brian Fung October 3 Follow @b_fung



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SPOF





YOU MUST BE THIS TALL
TO RIDE WITH AN ADULT

So how do we **PLAN**
for the unexpected?

Lightboxes



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Our curriculum is created for today's practitioner, integrating instruction in web standards with new technologies and emerging trends in both design and development.

Our facilitators are giants in the field, with years of hands-on experience in the trenches and the classroom.

Our approach to teaching is dynamic, like the web, and at the heart of it all is our love for sharing best practices.

Lightboxes



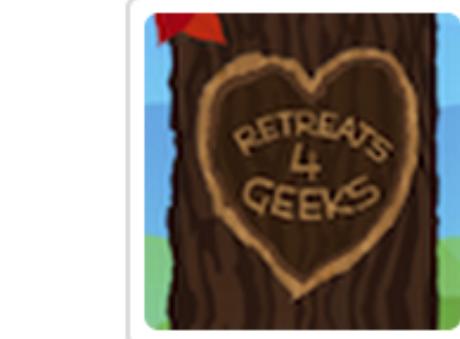
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IxMap



IxMap

Load



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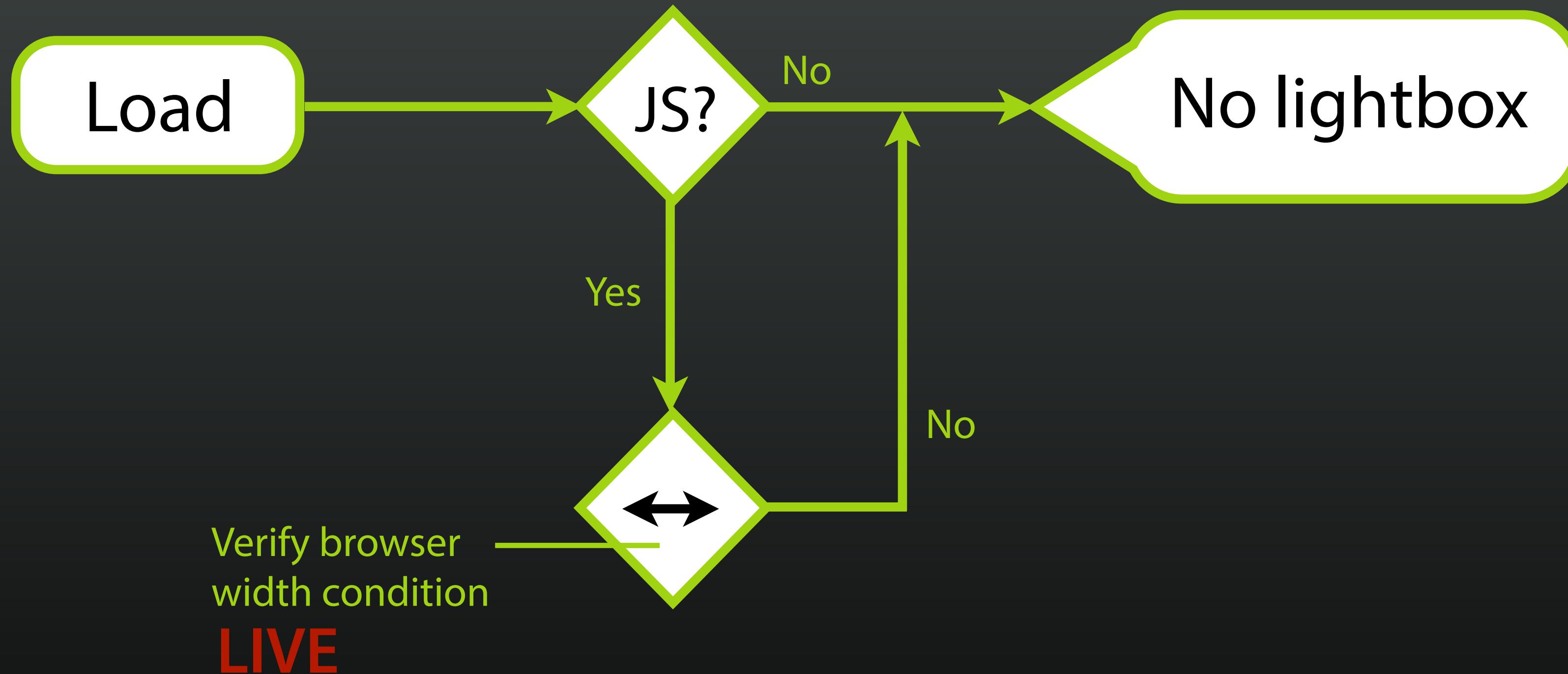
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ightbox

IxMap

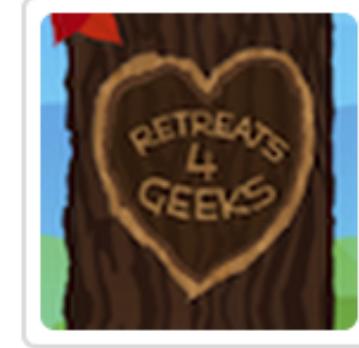


IxMap

Load

Verify bro
width cor

LIVE



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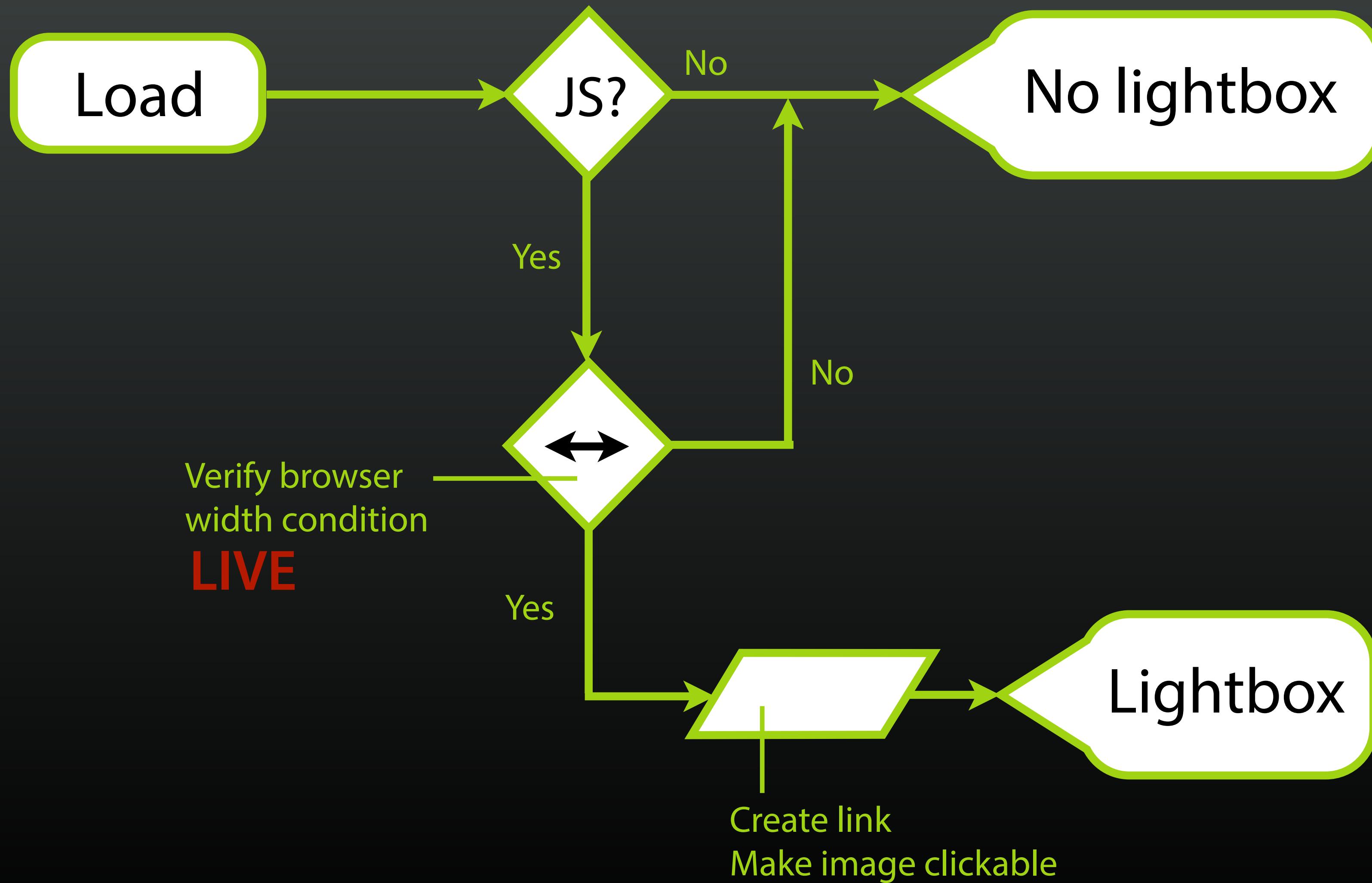
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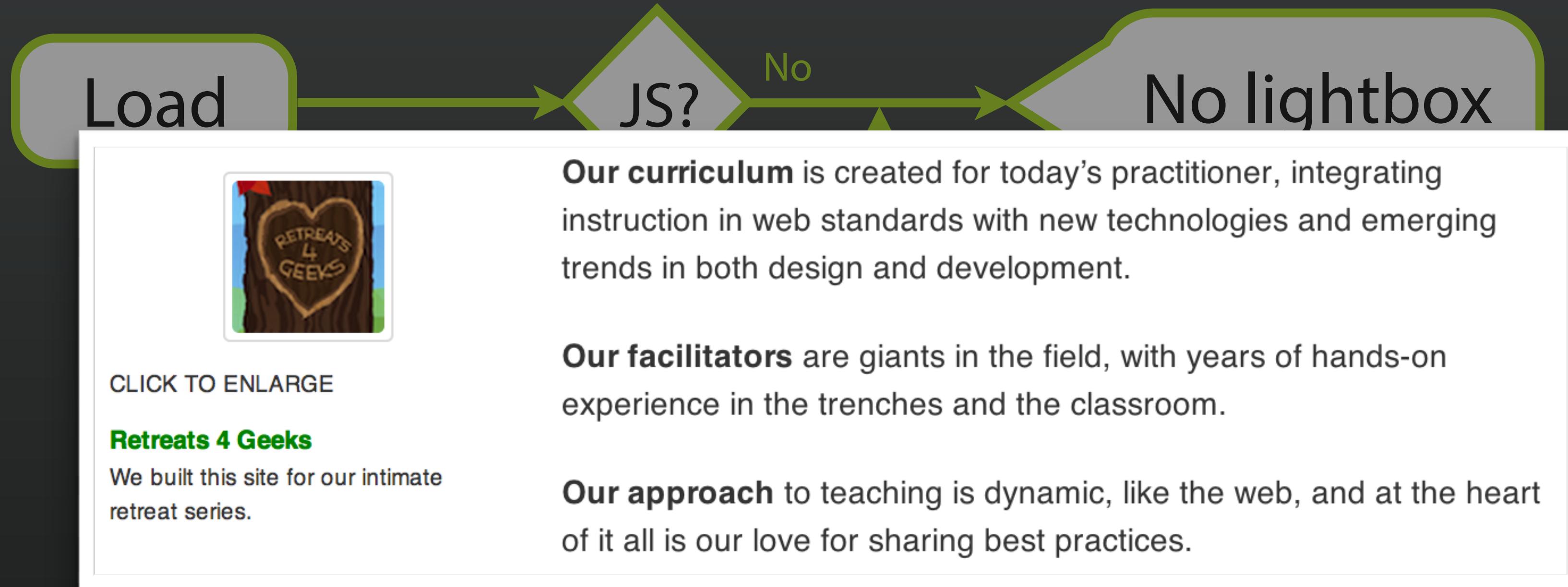
Our approach to teaching is dynamic, like the web, and at the heart of it all is our love for sharing best practices.

ightbox

IxMap



IxMap



LIVE

No need to link

```
<figure id="fig-1">
  
  <figcaption>
    <h6>Retreats 4 Geeks</h6>
    <p>We built this site for our intimate retreat series.</p>
  </figcaption>
</figure>
```

Make the connection

```
<figure id="fig-1">
  
  <p class="enlarge"><a href="#enlarge">Click to
    Enlarge</a></p>
  <figcaption>
    <h6>Retreats 4 Geeks</h6>
    <p>We built this site for our intimate retreat series.</p>
  </figcaption>
</figure>
```

Lightboxes



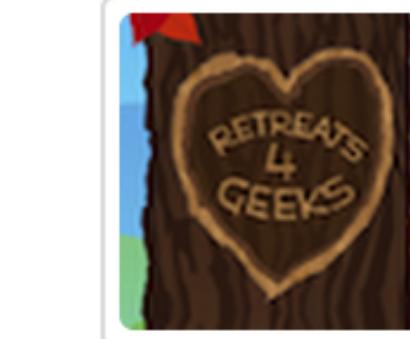
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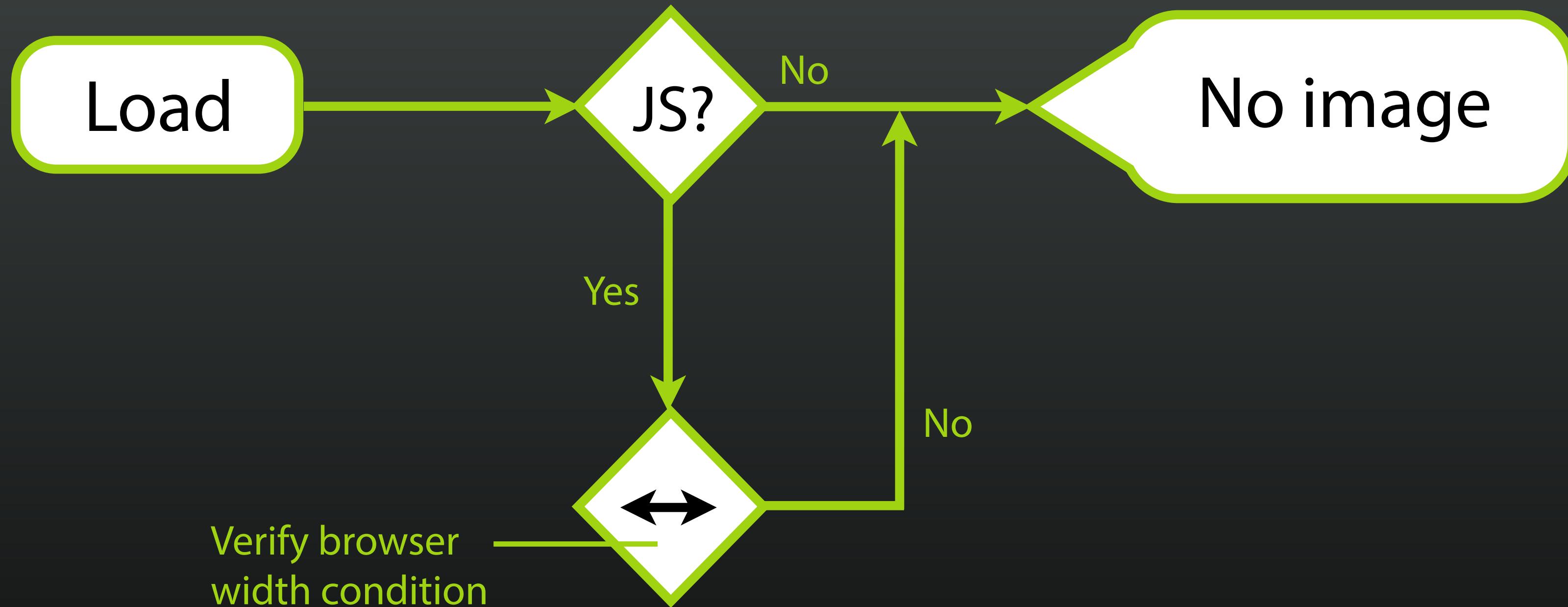
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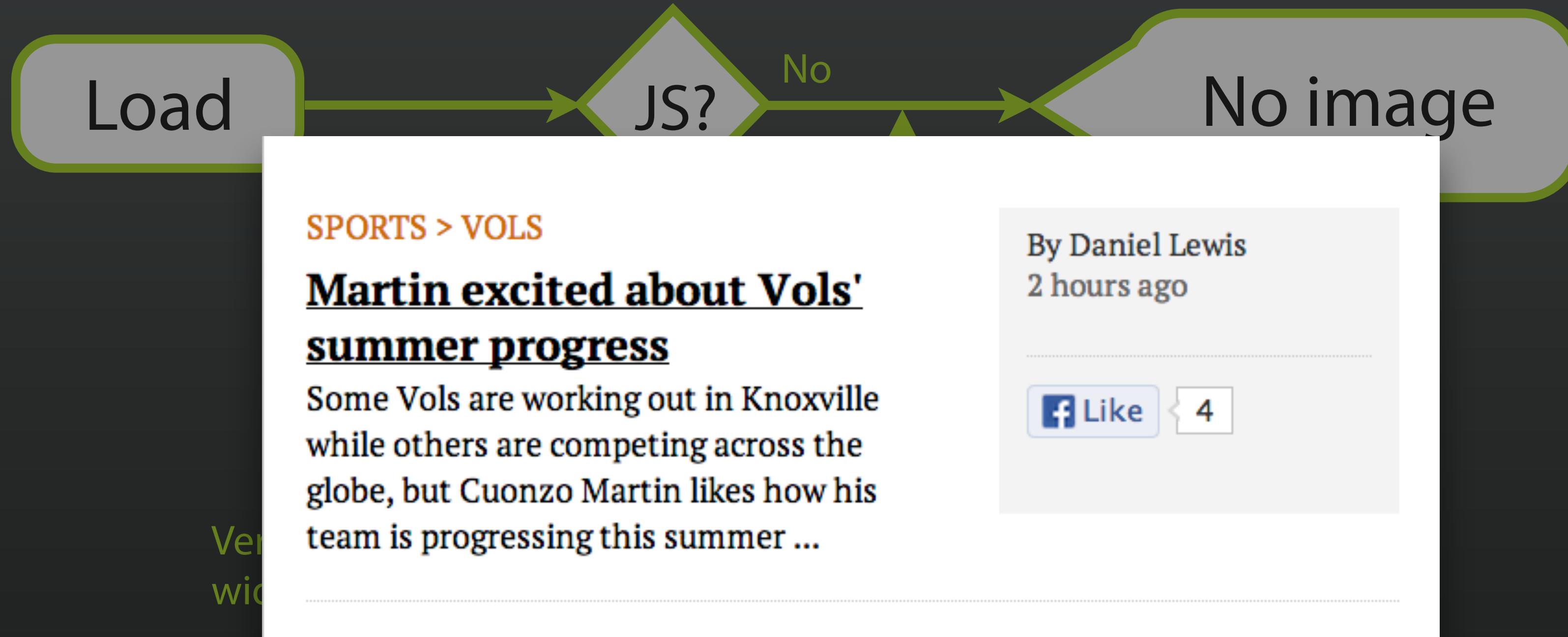
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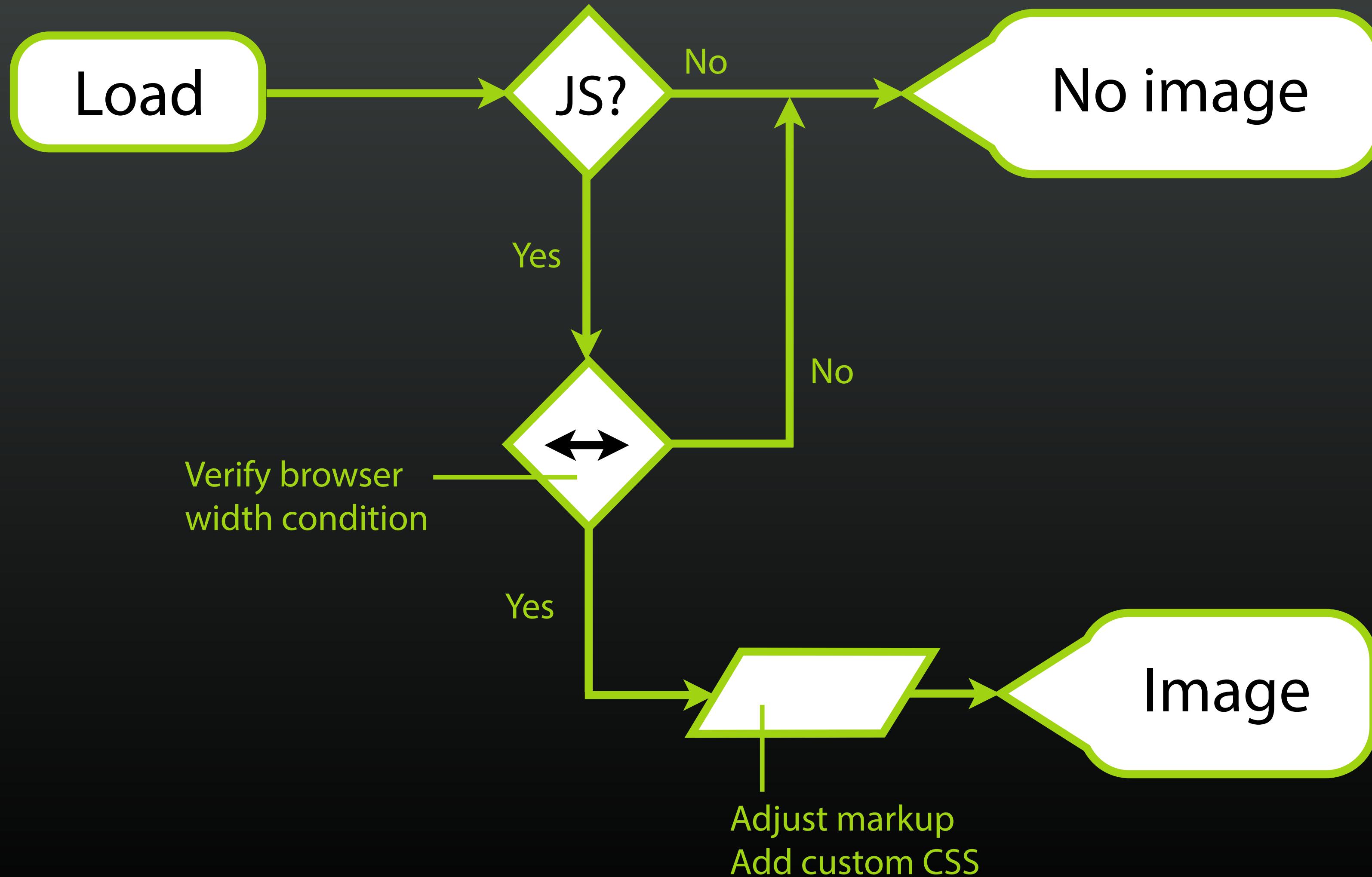
IxMap



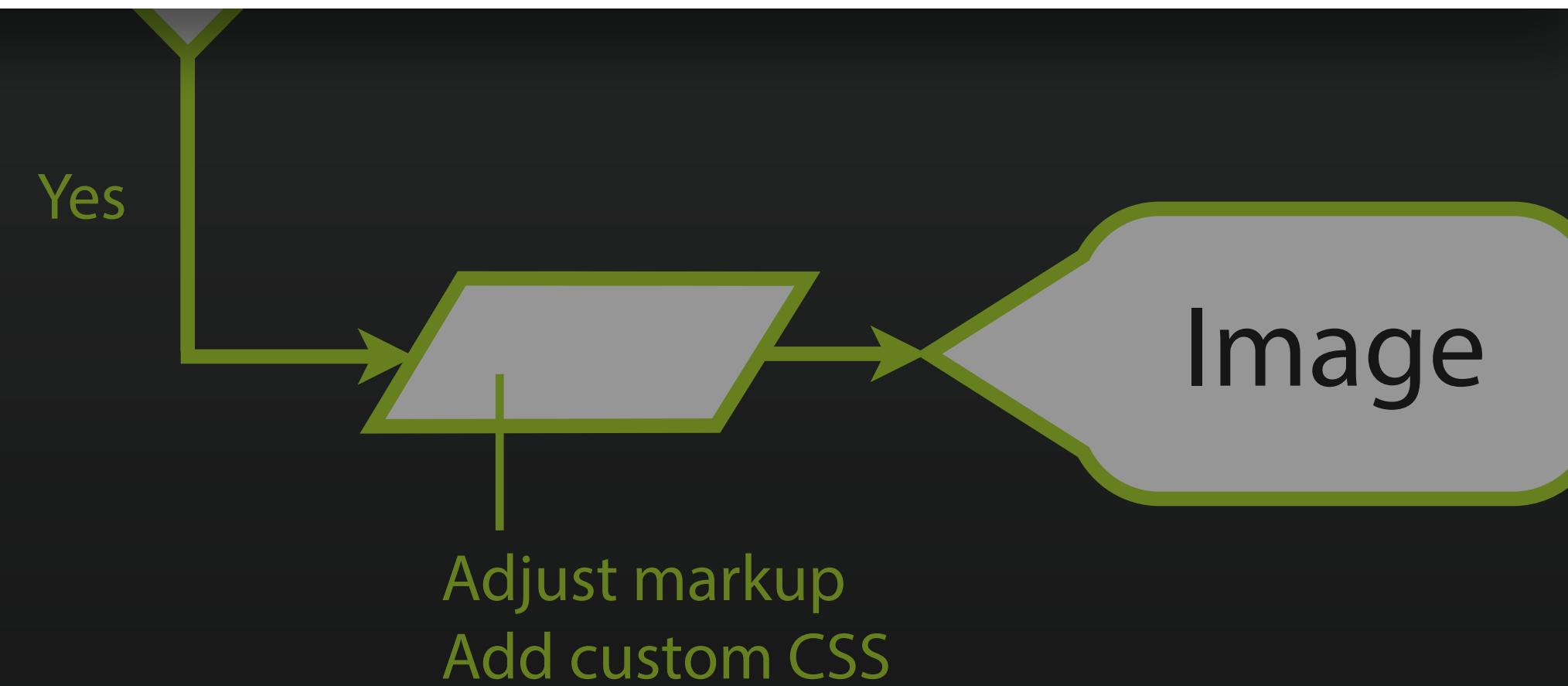
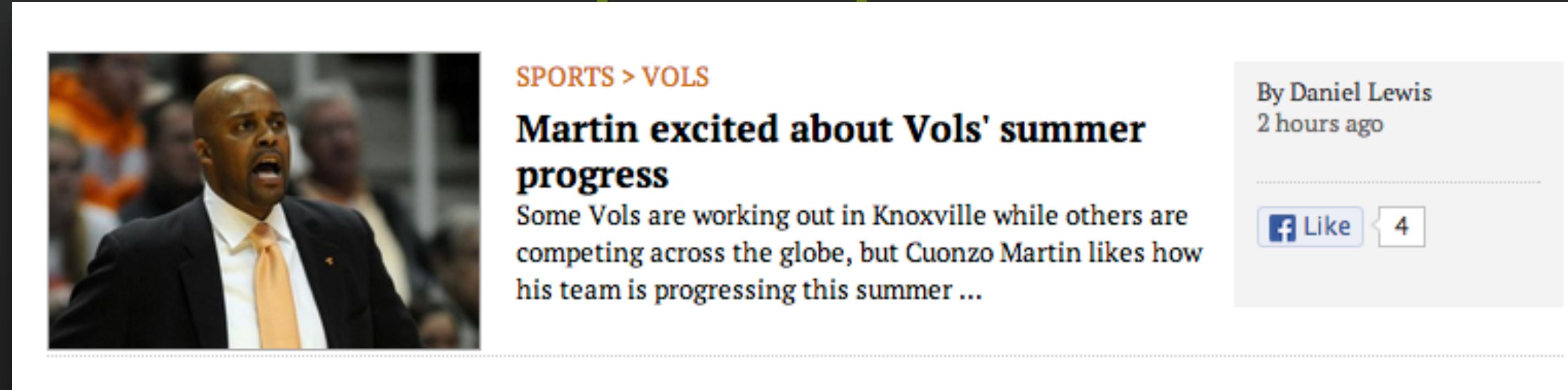
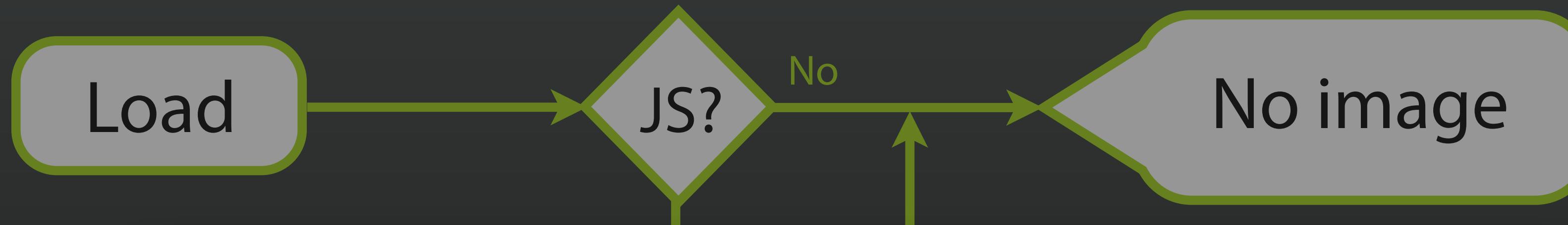
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Riverwalk Bird of the Week: Canada goose

The folks in the Riverwalk Bird Club don't just watch birds. The group includes some excellent photographers. ...

By Staff Report
5 hours ago[Like](#) 0

There is no image...

```
<p class="entry-image"  
    data-image-src="/i/sample.jpg"></p>
```

Until there is

```
<p class="entry-image"  
    data-image-src="/i/sample.jpg"></p>
```



```
<p class="entry-image"  
    data-image-src="/i/sample.jpg"  
    data-has-image="true">  
      
</p>
```

CSS at rest

```
[data-image-src] {  
    display: none;  
}
```

CSS at play

```
[data-image-src][data-image-loaded] {  
    display: block;  
}
```

JS Watcher

```
window.watchResize = function(callback)
{
    var resizing;
    function done() {
        clearTimeout( resizing );
        resizing = null;
        callback();
    }
    window.onresize = function(){
        if ( resizing ) {
            clearTimeout( resizing );
            resizing = null;
        }
        resizing = setTimeout( done, 50 );
    };
    callback();
};
```

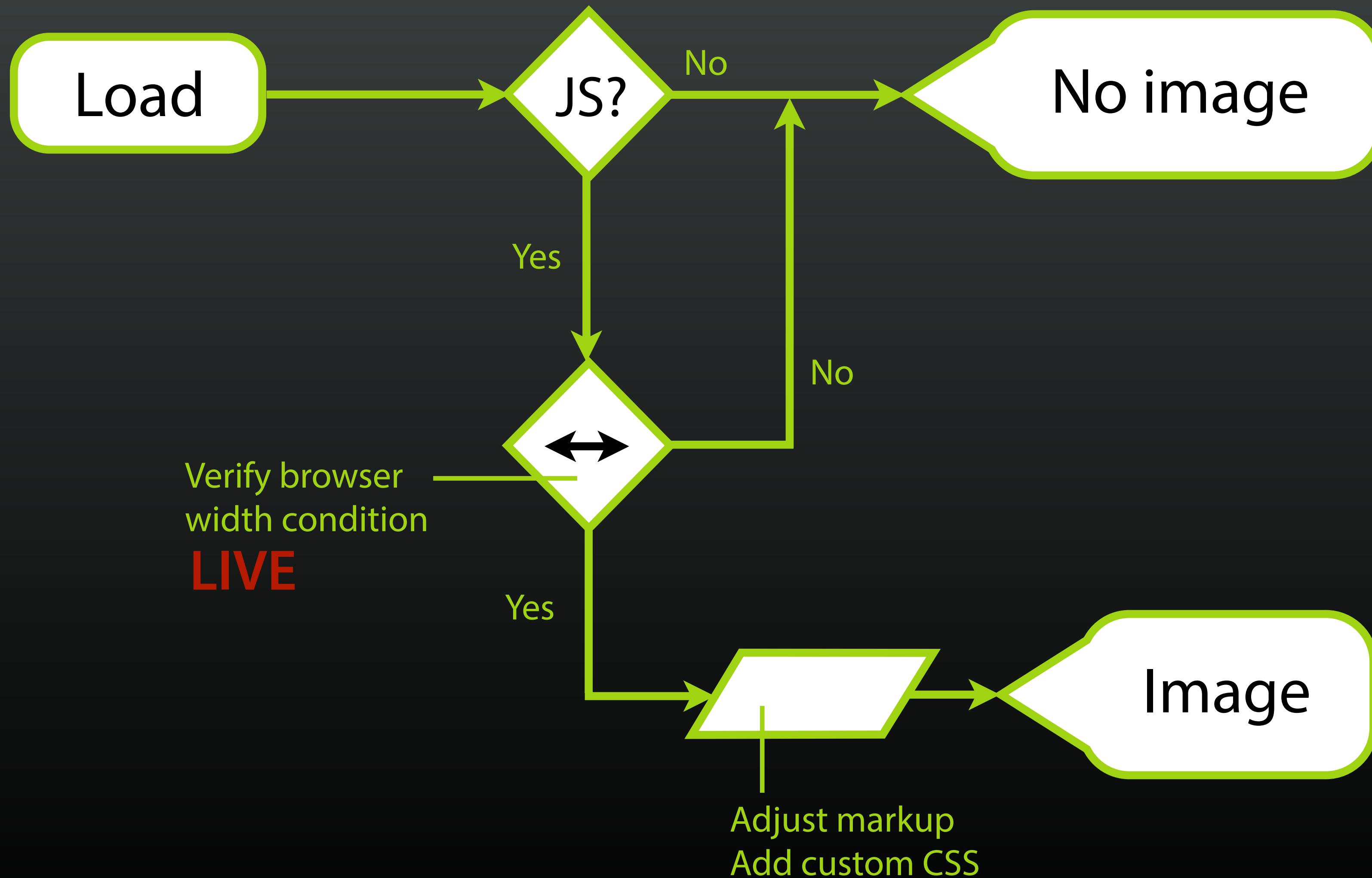
JS Watcher

```
var browser_width = 0;  
window.watchResize(function(){  
    browser_width = window.innerWidth ||  
        document.body.offsetWidth;  
});
```

JS Watcher

```
window.watchResize(function(){
    var threshold = 400,
        image = document.createElement('img'),
        paragraphs = document.getElementsByTagName('p'),
        i = paragraphs.length,
        p, loaded, src, img;
    if ( browser_width >= threshold ) {
        image.setAttribute('alt','');
        while ( i-- ) {
            p = paragraphs[i];
            src = p.getAttribute('data-image-src');
            loaded = p.getAttribute('data-image-loaded');
            if ( src != null && loaded == null ) {
                img = image.cloneNode(true);
                img.setAttribute('src',src);
                p.appendChild( img );
                p.setAttribute('data-image-loaded','');
            }
        }
        image = paragraphs = p = img = null;
    }
});
```

IxMap



Smart CSS

```
[data-image-src][data-image-loaded] {  
    display: block;  
}
```

Smart CSS

```
[data-image-src][data-image-loaded] {  
    display: block;  
}
```



```
@media only screen and (min-width:400px) {  
    [data-img-src][data-image-loaded] {  
        display: block;  
    }  
}
```

Thumbnails



SPORTS > VOLS

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By Daniel Lewis
2 hours ago

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Super Ffly T-shirt

\$23 ★★★★☆ 8 Reviews



QTY

1

SIZE

S



ADD TO CART

SHARE FIND NEARBY

http://is.gd/lazyloading_demo



Super Ffly T-shirt

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QTY

1

SIZE

S

ADD TO CART

SHARE FIND NEARBY

Behold, your new favorite shirt! This built-to-last tee adapts to your size and capabilities, starting off XS then stretches and scales to keep you comfortable as you grow taller and wider. The future is here, so look sharp.

Similar T-shirts

21WUJSL I-2UILC2

http://is.gd/lazyloading_demo

QTY 1 SIZE S

ADD TO CART

SHARE FIND NEARBY

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Similar T-shirts +

8 Reviews +

T-SHIRTS HOODIES PANTS

http://is.gd/lazyloading_demo

Similar T-shirts



Annotations:
OFF

8 Reviews



★★★★★

Awesome shirt!

11/12/2011 By Bruce Bosco

This shirt looks awesome and is really comfortable to wear. It did shrink quite a lot when washed, but that could have just been how I ran it. All in all, it's my favourite shirt, and I love wearing it.



★★★★★

Nice shirt

11/12/2011 By Nick McKinsey

This shirt is a great addition to any simple wardrobe. Can be worn by itself or complimented with accessories. Nice and soft to the touch!

NO!!!!

```
#reviews {  
    display: none;  
}  
  
@media only screen and (min-width:50em) {  
    #reviews {  
        display: block;  
    }  
}
```

IxMap



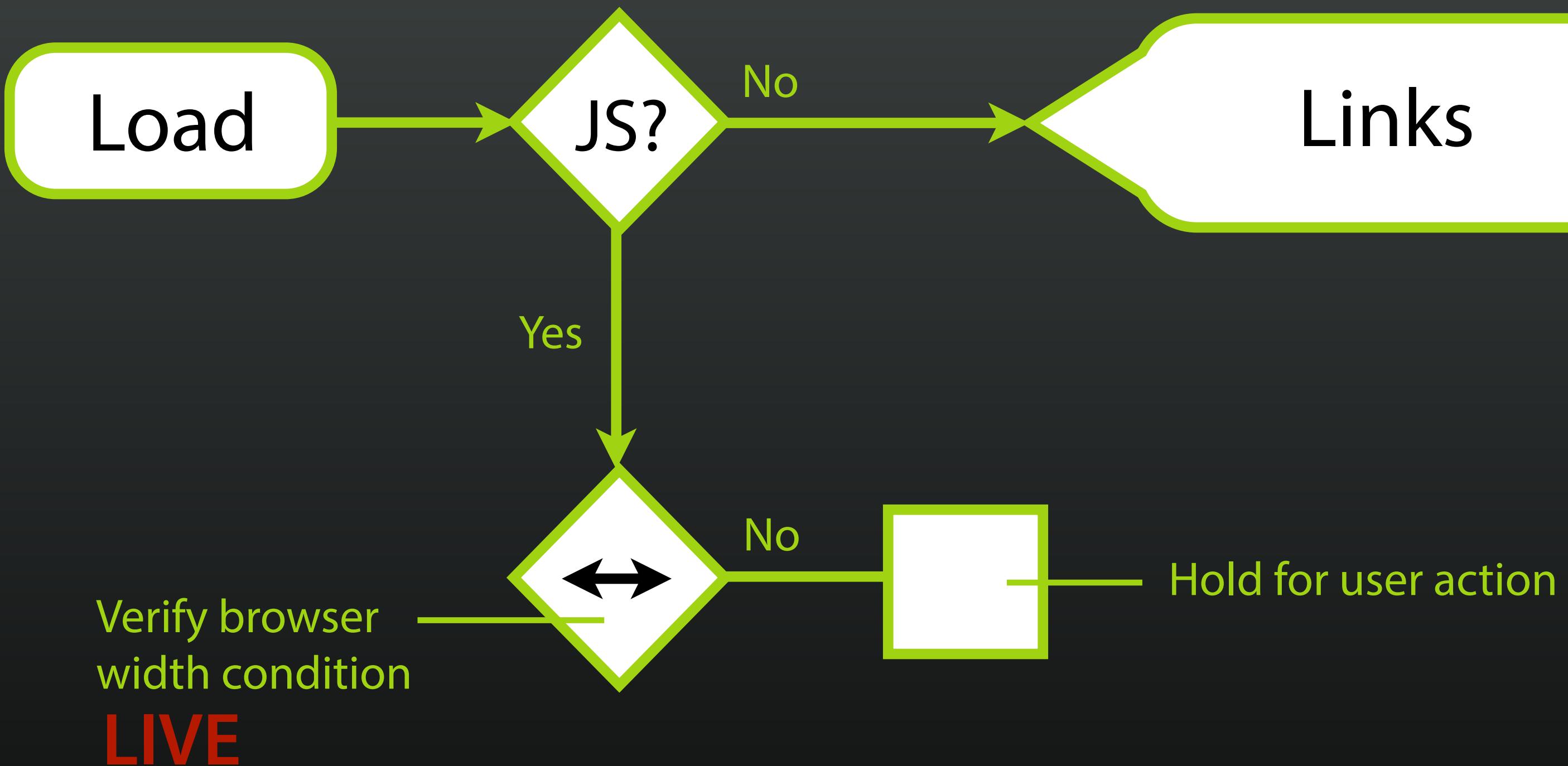
IxMap



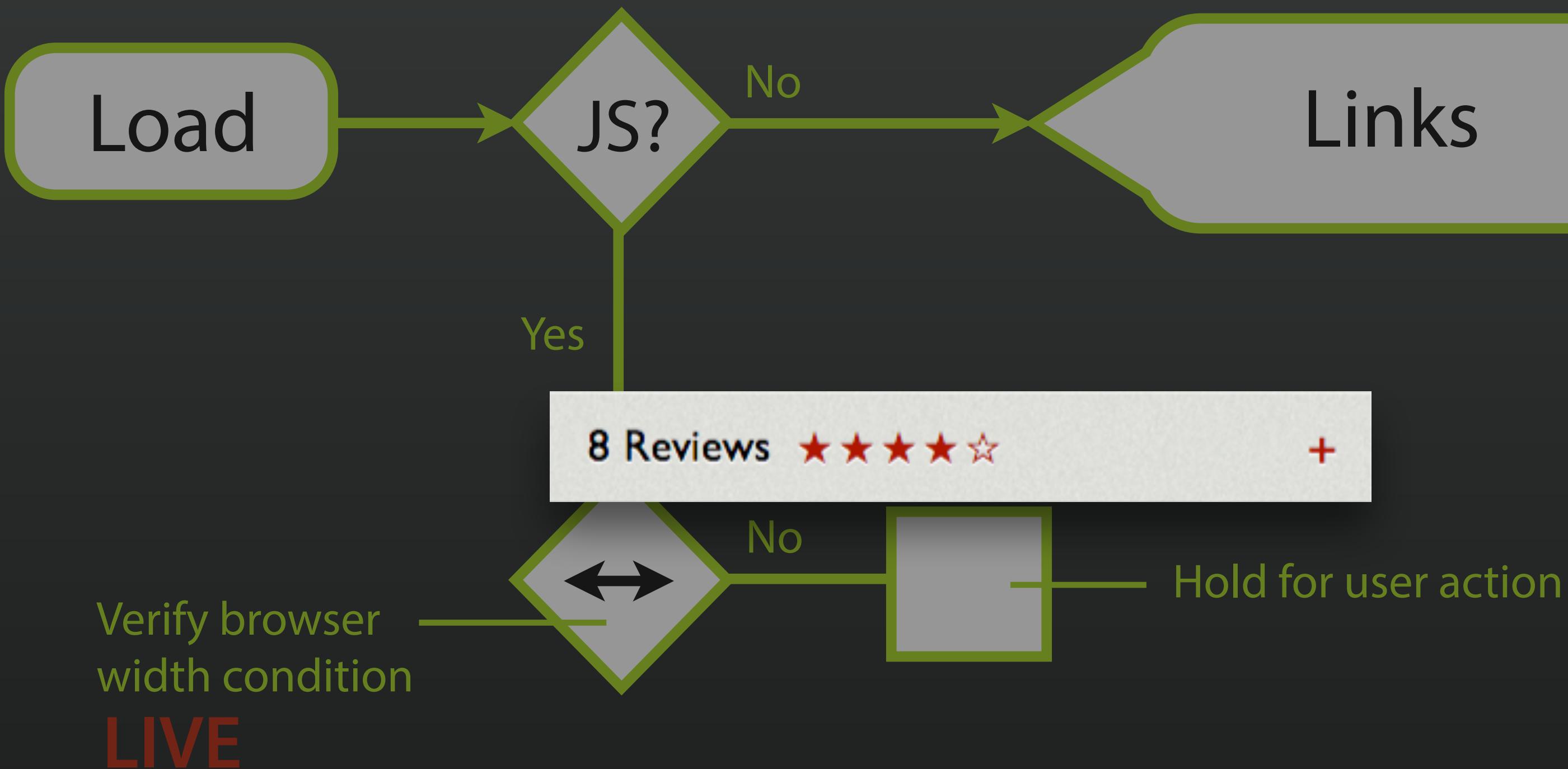
8 Reviews ★★★★☆

+

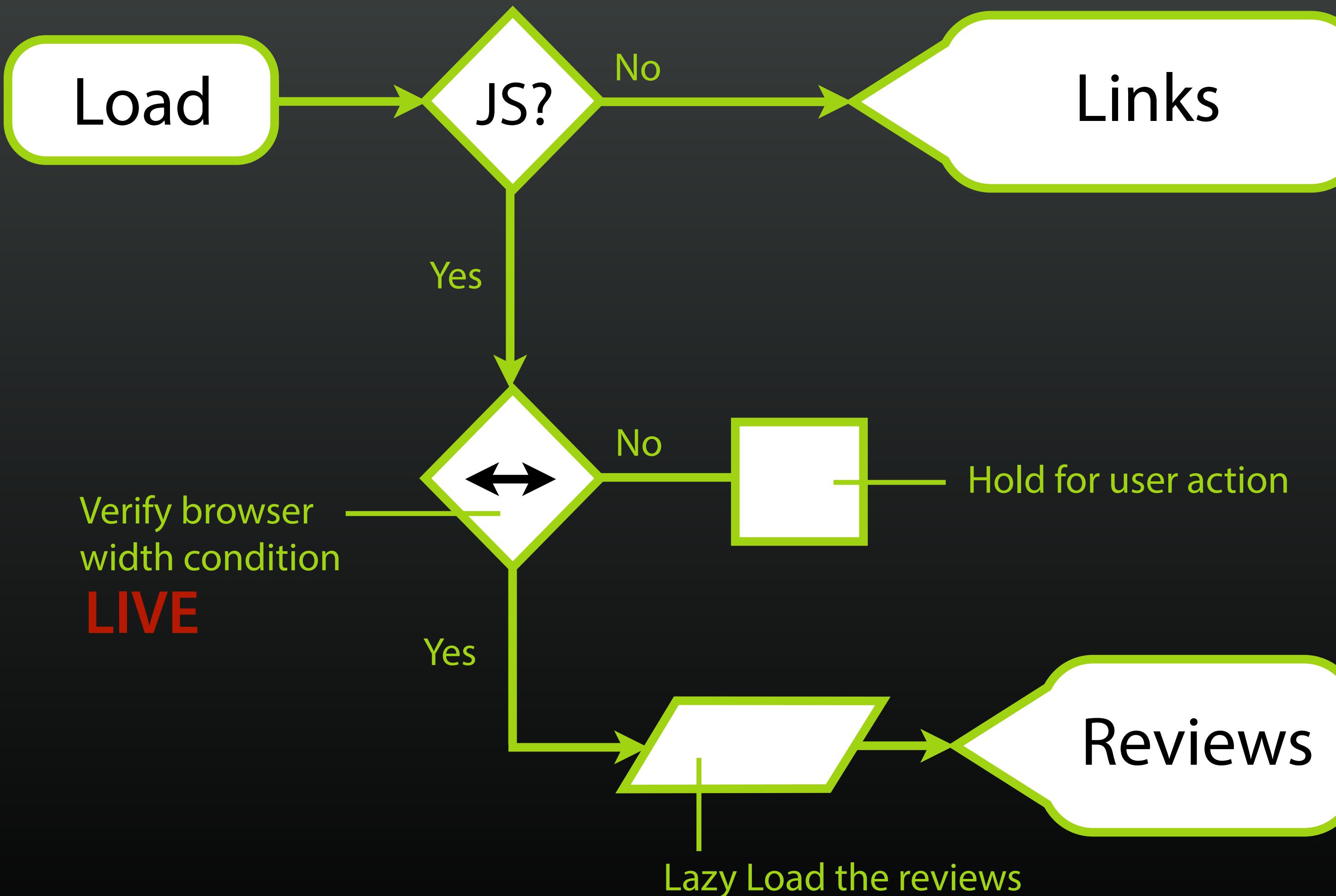
IxMap



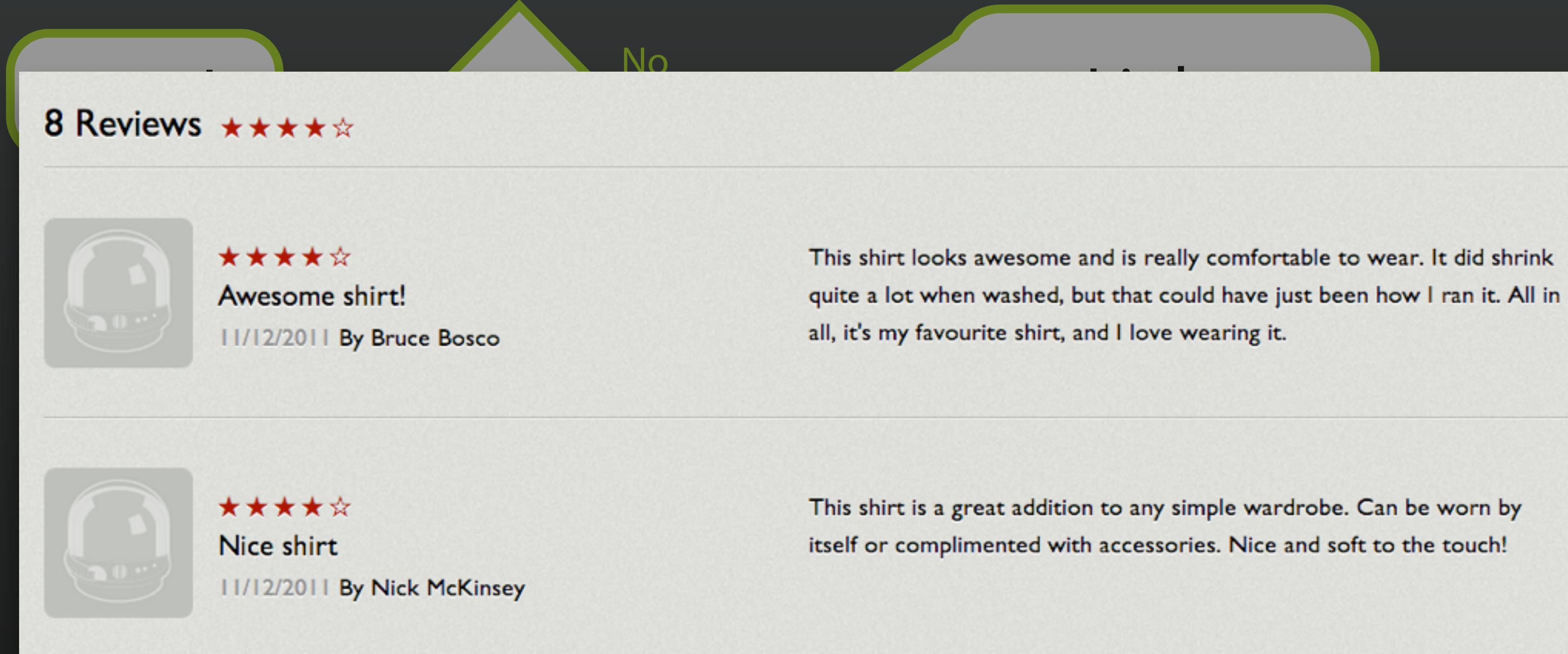
IxMap



IxMap



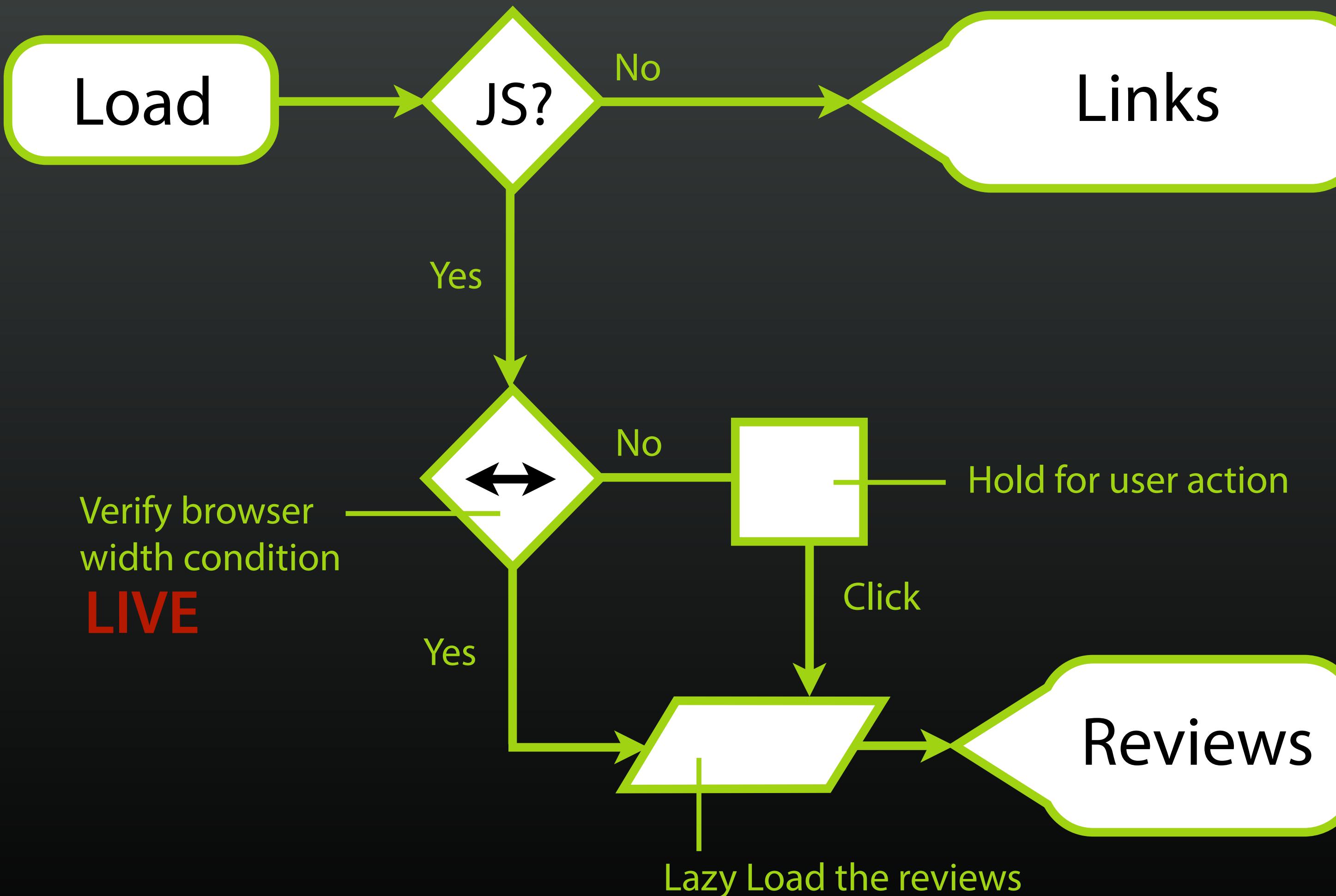
IxMap



Reviews

Lazy Load the reviews

IxMap



IxMap

Load

Verify browser
width condition

LIVE

8 Reviews ★★★★☆

★★★★☆
Awesome shirt!
11/12/2011 By Bruce Bosco

This shirt looks awesome and is really comfortable to wear. It did shrink quite a lot when washed, but that could have just been how I ran it. All in all, it's my favourite shirt, and I love wearing it.

★★★★☆
Nice shirt
11/12/2011 By Nick McKinsey

This shirt is a great addition to any simple wardrobe. Can be worn by itself or complimented with accessories. Nice and soft to the touch!

anks

user action

reviews

Lazy Loading

```
<section class="aux reviews" id="reviews">
  <header id="tab-reviews">
    <a href="reviews.html" class="disabled">...</a>
  </header>
</section>
```

Lazy Loading

```
<section class="aux reviews loaded" id="reviews">
  <header id="tab-reviews">
    <a href="reviews.html" class="disabled open">...</a>
  </header>
  <div role="tabpanel">
    <div id="p-reviews" aria-labeledby="tab-reviews">
      <ol class="reviews-list">
        <li>
          
          <div class="review-meta">
            <h3>Awesome shirt!</h3>
            <a href="#"><time datetime="2010-01-20" pubdate="">11/12/2011</time></a>
            By Bruce Bosco
          </div>
          <div class="review-content">
            <p>This shirt looks awesome and is really comfortable to wear. It did shrink quite a lot when washed, but that could have just been how I ran it. All in all, it's my favourite shirt, and I love wearing it.</p>
          </div>
        </li>
        <!-- ... -->
      </ol>
    </div>
  </div>
</section>
```

Super Ffly T-shirt

\$23 ★★★★☆ 8 Reviews



QTY

1

SIZE

S



ADD TO CART

SHARE FIND NEARBY

http://is.gd/lazyloading_demo

Tabbed Interface

Pumpkin Pie

OVERVIEW INGREDIENTS DIRECTIONS NUTRITION

Whether you're hosting a festive party or a casual get-together with friends, our Pumpkin Pie will make entertaining easy!

Original recipe yield: 1 × 9-inch deep dish pie

Prep Time: 10min
Cook Time: 1hr
Ready In: 1hr 10min



Traditional approach

```
<h1>Pumpkin Pie</h1>
<div class="container">
  <ul class="tabs">
    <li><a href="#">Overview</a></li>
    <li><a href="#">Ingredients</a></li>
    <li><a href="#">Directions</a></li>
    <li><a href="#">Nutrition</a></li>
  </ul>
  <div class="section">
    <h2>Overview</h2>
    
    <p>Whether you're hosting a festive party or a casual
       get-together with friends, our Pumpkin Pie will make
       entertaining easy!</p>
    <!-- ... -->
  </div>
  <!-- ... -->
</div>
```

Cleaner approach

```
<h1>Pumpkin Pie</h1>
<div class="tabbed-interface">
  <h2>Overview</h2>
  
  <p>Whether you're hosting a festive party or a casual
  get-together with friends, our Pumpkin Pie will make
  entertaining easy!</p>
  <!-- ... -->
  <h2>Ingredients</h2>
  <ul>
    <li>1 (9<abbr title="inch">in</abbr>) unbaked deep
        dish pie crust</li>
    <li> $\frac{1}{2}$  cup white sugar</li>
    <!-- ... -->
  </ul>
  <h2>Directions</h2>
  <!-- ... -->
</div>
```

Cleaner approach

```
<h1>Pumpkin Pie</h1>
<div class="tabbed-interface">
  <h2>Overview</h2>
  
  <p>Whether you're hosting a festive party or a casual
  get-together with friends, our Pumpkin Pie will make
  entertaining easy!</p>
  <!-- ... -->
  <h2>Ingredients</h2>
  <ul>
    <li>1 (9<abbr title="inch">in</abbr>) unbaked deep
        dish pie crust</li>
    <li> $\frac{1}{2}$  cup white sugar</li>
    <!-- ... -->
  </ul>
  <h2>Directions</h2>
  <!-- ... -->
</div>
```

No JS, basic CSS

Pumpkin Pie

OVERVIEW

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Original recipe yield: 1 × 9-inch deep dish pie

Prep Time: 10min

Cook Time: 1hr

Ready In: 1hr 10min



INGREDIENTS

1 (9in) unbaked deep dish pie crust
½ cup white sugar
1 tsp ground cinnamon
½ tsp salt
½ tsp ground ginger
¼ tsp ground cloves
2 eggs
1 can (15oz) pumpkin puree
1 can (12fl oz) evaporated milk

DIRECTIONS

1. Preheat oven to 425°F
2. Combine sugar, salt, cinnamon, ginger and cloves in small bowl.
3. Beat eggs lightly in large bowl.
4. Stir in pumpkin and sugar-spice mixture.

IxMap



IxMap

Load

Pumpkin Pie

OVERVIEW

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INGREDIENTS

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1 tsp ground cinnamon

½ tsp salt

½ tsp ground ginger

¼ tsp ground cloves

2 eggs

1 can (15oz) pumpkin puree

1 can (12fl oz) evaporated milk

DIRECTIONS

1. Preheat oven to 425°F
2. Combine sugar, salt, cinnamon, ginger and cloves in small bowl.
3. Beat eggs lightly in large bowl.
4. Stir in pumpkin and sugar-spice mixture.
5. Gradually stir in evaporated milk.
6. Pour into pie shell.
7. Bake for 15 minutes.
8. Reduce temperature to 350°F; bake for 40 to 50 minutes or until knife inserted near center comes out clean.
9. Cool on wire rack for 2 hours.
10. Serve immediately or refrigerate.

NUTRITION

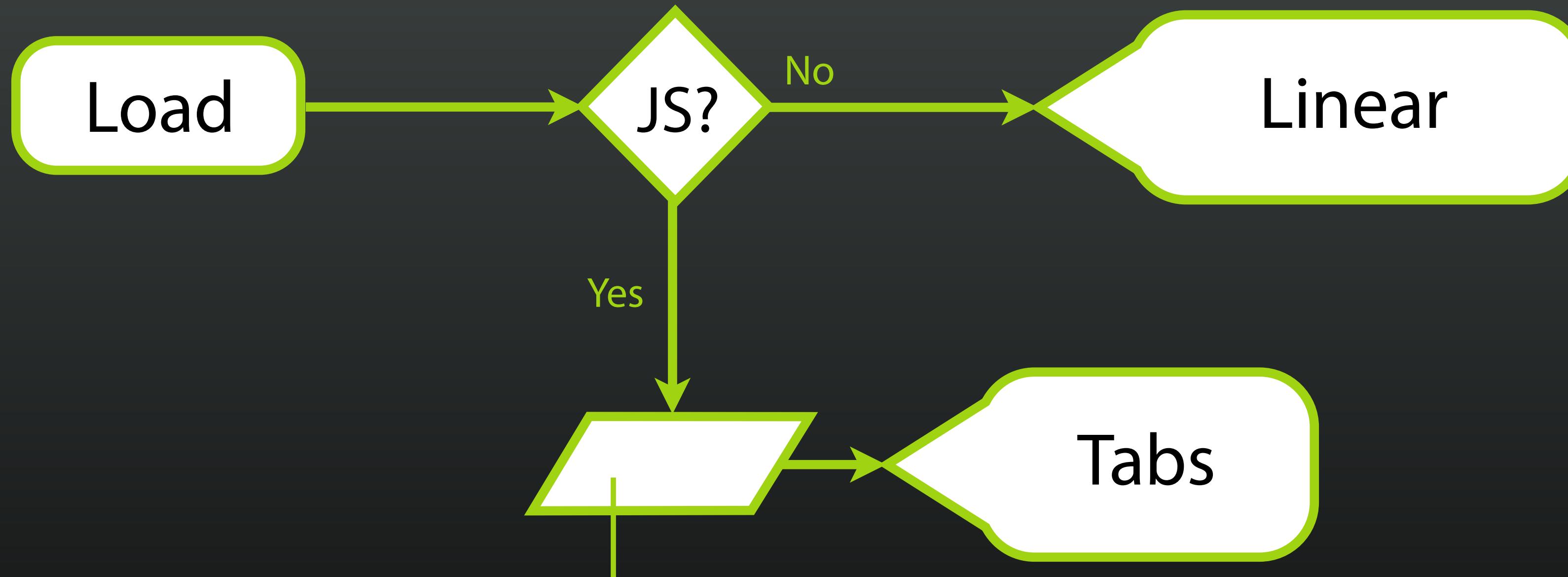
Servings Per Recipe: 8

Amount Per Serving

Calories: 321

linear

IxMap



Split content into sections
Make tabs
Assign event handlers (mouse & keyboard)

IxMap

Load

Pumpkin Pie

OVERVIEW INGREDIENTS DIRECTIONS NUTRITION

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ear

Linear HTML

```
<h1>Pumpkin Pie</h1>
<div class="tabbed-interface">
  <h2>Overview</h2>
  
  <p>Whether you're hosting a festive party or a casual
  get-together with friends, our Pumpkin Pie will make
  entertaining easy!</p>
  <!-- ... -->
  <h2>Ingredients</h2>
  <ul>
    <li>1 (9<abbr title="inch">in</abbr>) unbaked deep
        dish pie crust</li>
    <li> $\frac{1}{2}$  cup white sugar</li>
    <!-- ... -->
  </ul>
  <h2>Directions</h2>
  <!-- ... -->
</div>
```

Tabbed

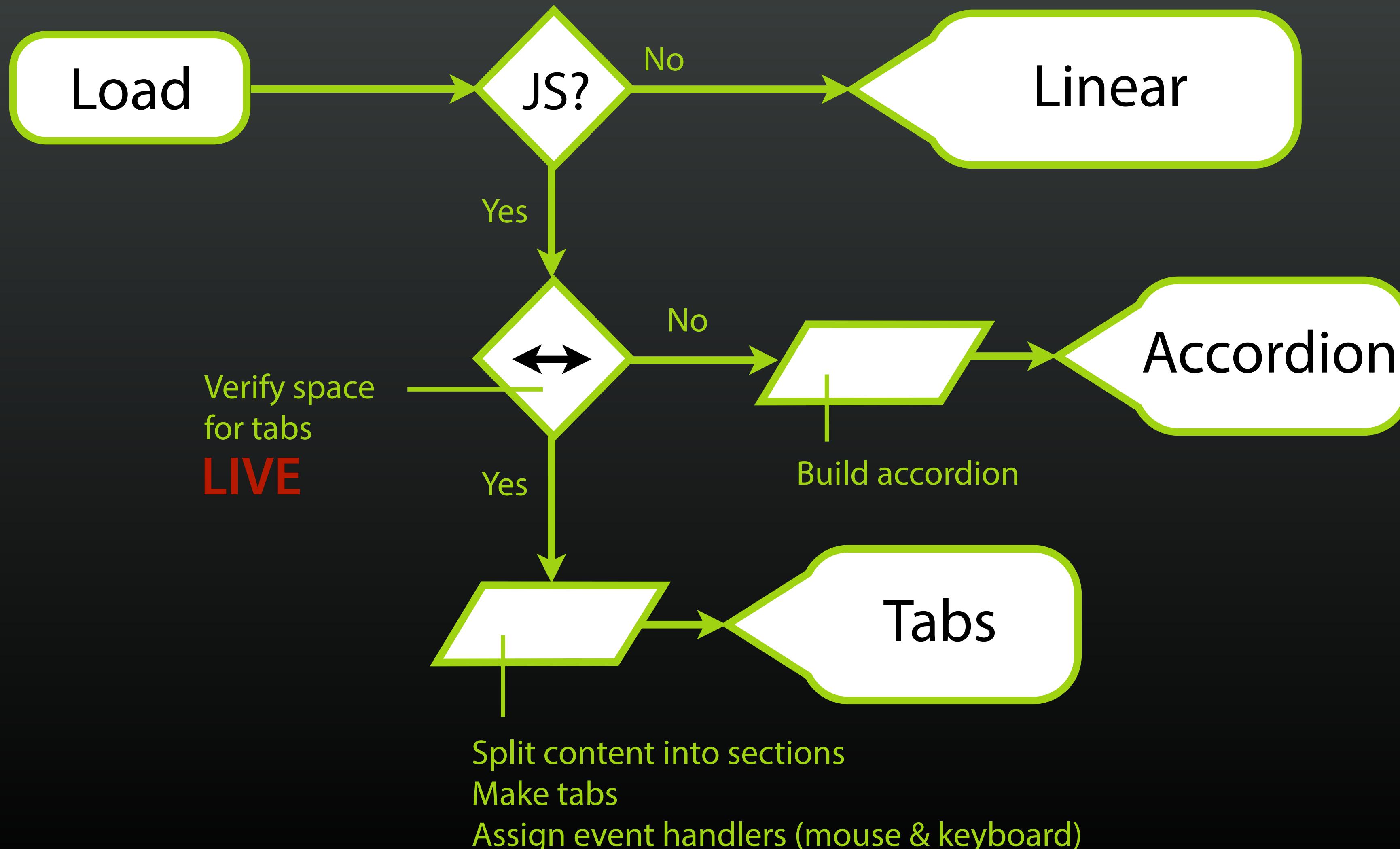
```
<h1>Pumpkin Pie</h1>
<div class="tabbed-interface TabInterface-enabled">
  <ul class="tabs">
    <li><a href="#folder-1">Overview</a></li>
    <li><a href="#folder-2">Ingredients</a></li>
    <li><a href="#folder-3">Directions</a></li>
    <li><a href="#folder-4">Nutrition</a></li>
  </ul>
  <section id="folder-1">
    <h2>Overview</h2>
    
    <p>Whether you're hosting a festive party or a casual get-together with friends, our Pumpkin Pie will make entertaining easy!</p>
    <!-- ... -->
  </section>
  <!-- ... -->
</div>
```

Tabbed

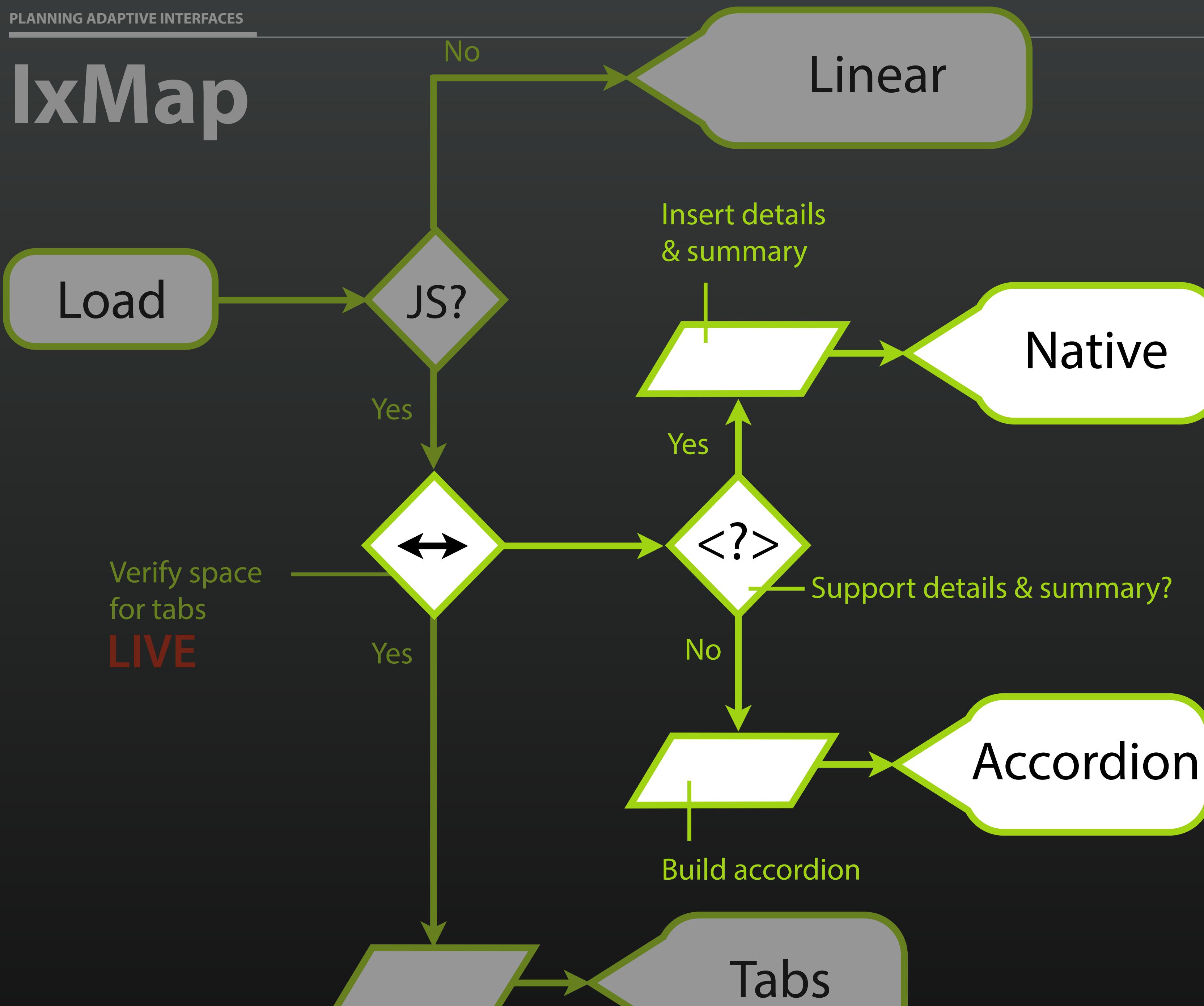
```
<h1>Pumpkin Pie</h1>
<div class="tabbed-interface TabInterface-enabled">
  <ul class="tabs">
    <li><a href="#folder-1">Overview</a></li>
    <li><a href="#folder-2">Ingredients</a></li>
    <li><a href="#folder-3">Directions</a></li>
    <li><a href="#folder-4">Nutrition</a></li>
  </ul>
  <section id="folder-1">
    <h2>Overview</h2>
    
    <p>Whether you're hosting a festive party or a casual get-together with friends, our Pumpkin Pie will make entertaining easy!</p>
    <!-- ... -->
  </section>
  <!-- ... -->
</div>
```



IxMap



IxMap



Adding ARIA

role="tablist"

Pumpkin Pie

OVERVIEW INGREDIENTS DIRECTIONS NUTRITION

Whether you're hosting a festive party or a casual get-together with friends, our Pumpkin Pie will make entertaining easy!

Original recipe yield: 1 × 9-inch deep dish pie

Prep Time: 10min
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Ready In: 1hr 10min



Adding ARIA

Pumpkin Pie

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Ready In: 1hr 10min



role="tab"
aria-selected="true"
aria-controls="folder-1"

Adding ARIA

role="tab"
aria-selected="false"
aria-controls="folder-4"

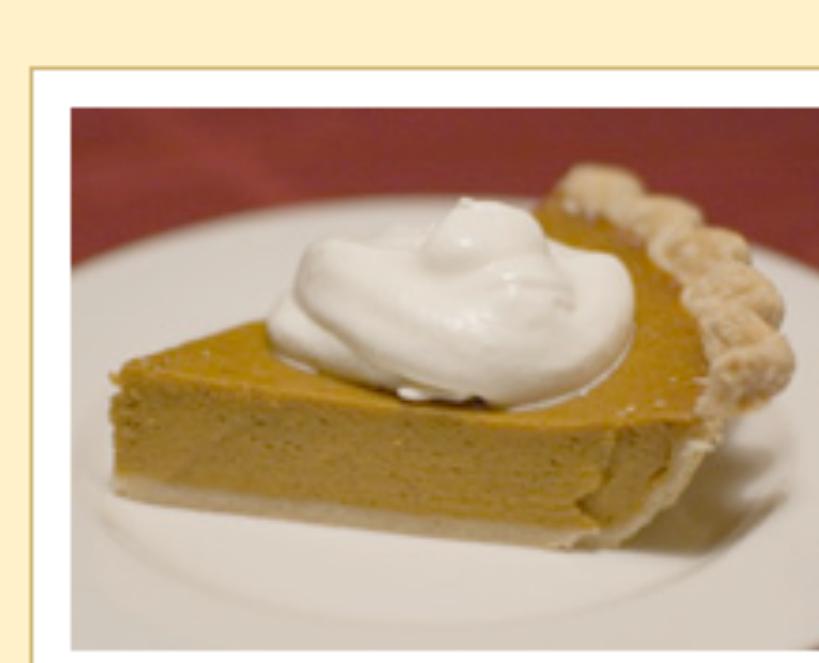
Pumpkin Pie

OVERVIEW INGREDIENTS DIRECTIONS NUTRITION

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Adding ARIA

Pumpkin Pie

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Original recipe yield: 1 × 9-inch deep dish pie

Prep Time: 10min
Cook Time: 1hr
Ready In: 1hr 10min



```
role="tabpanel"
aria-hidden="false"
aria-labelledby="folder-1-tab"
```

Result!

Pumpkin Pie

OVERVIEW INGREDIENTS DIRECTIONS NUTRITION

Whether you're hosting a festive party or a casual get-together with friends, our Pumpkin Pie will make entertaining easy!

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Ready In: 1hr 10min



Pumpkin pie Mozilla Firefox

Photo by [Paul Covette](#), licensed under [Creative Commons](#).

Questions?

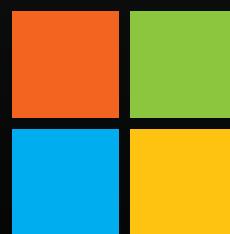
Tweet me at
@AaronGustafson

Thank you!

@AaronGustafson

aaron-gustafson.com

slideshare.net/AaronGustafson



Microsoft