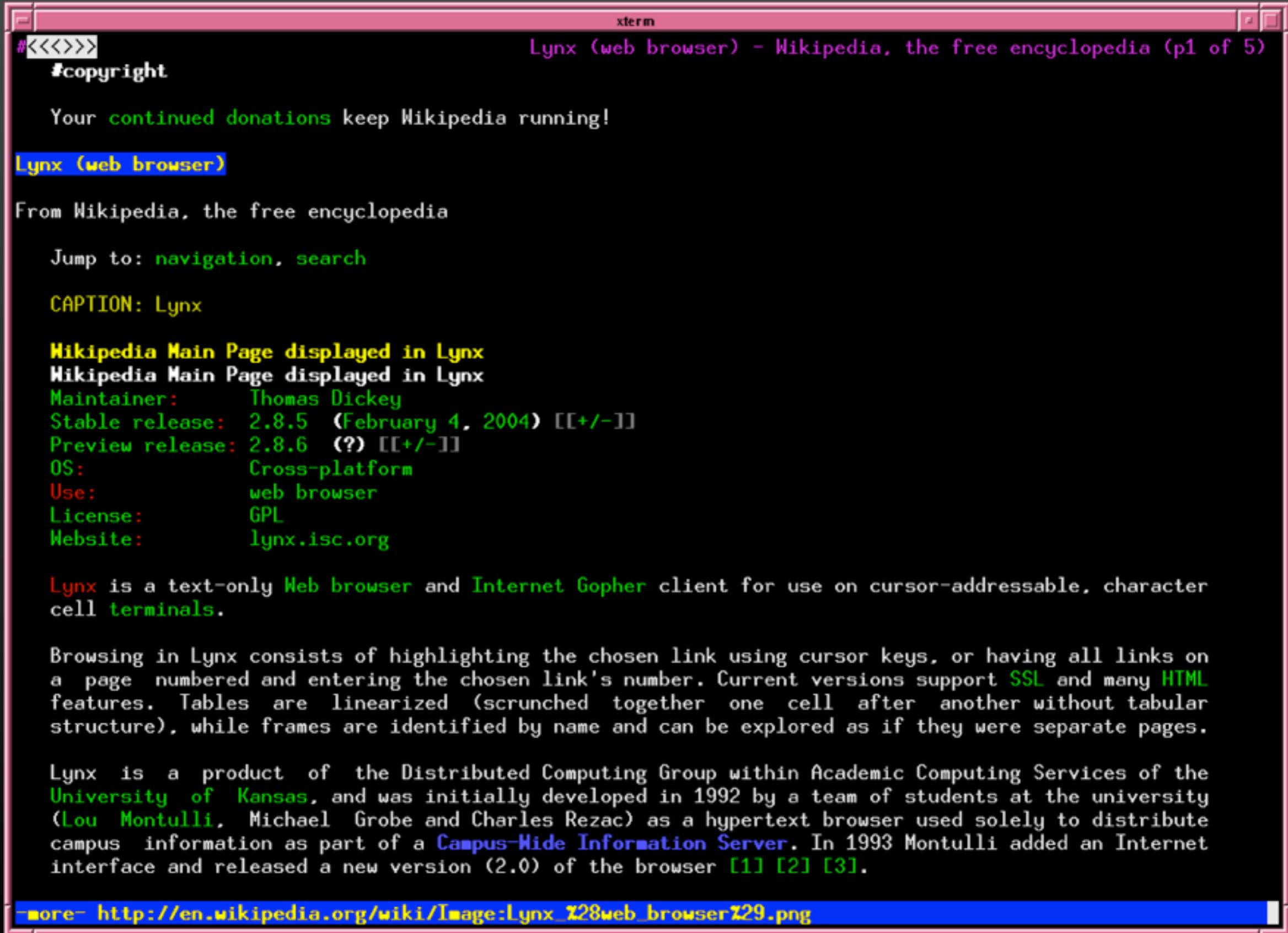


BUILDING ADAPTIVE DESIGNS NOW

Aaron Gustafson
[@aarongustafson](https://twitter.com/aarongustafson)
slideshare.net/AaronGustafson

**BROWSERS ARE A
PAIN IN THE ASS**







N



O











THIS IS NOT
THE WEB.

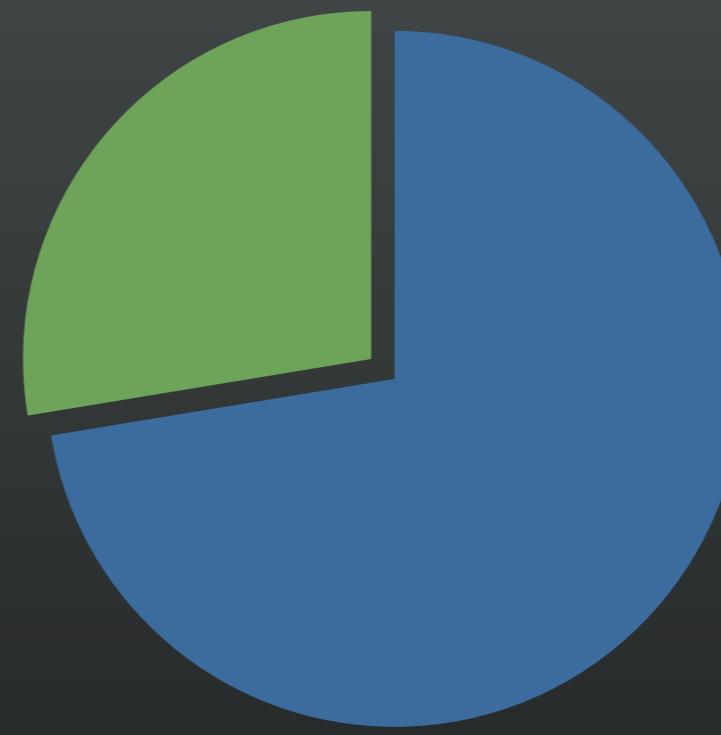
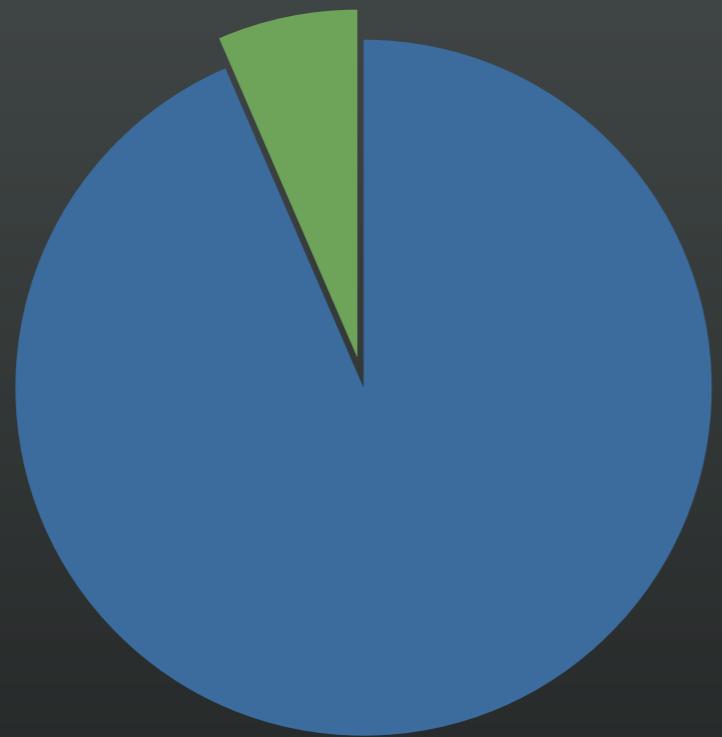


THIS IS THE WEB.



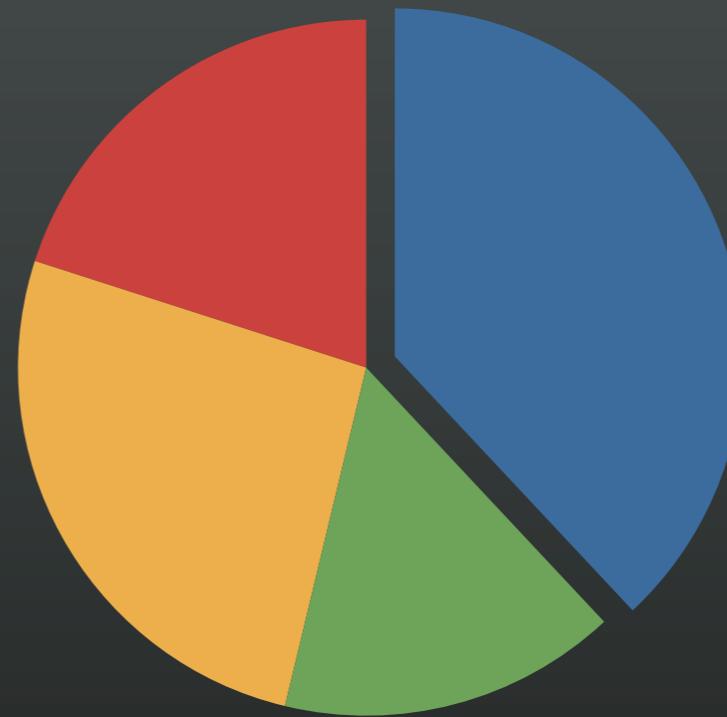
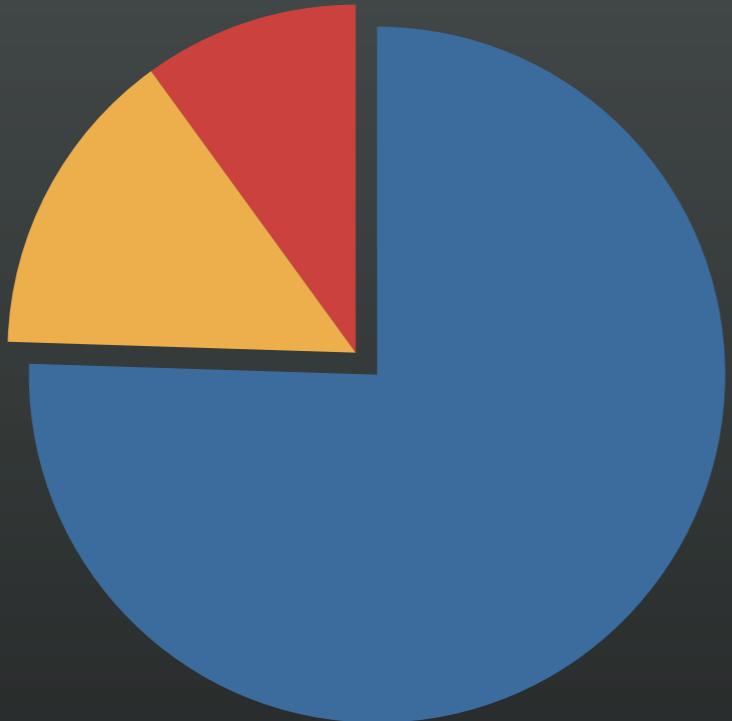
“ Just four years ago the majority of our visitors saw our website in Internet Explorer on a Windows computer on a minimum 1,024 pixel wide screen. Times have really changed.

Jason Samuels
IT Manager,
National Council on Family Relations
[Source](#)



“ Windows users used to comprise 93.5% of our web visits. Now that percentage is 72.4%. Visitors using a Mac have more than tripled.

“The percentage visiting from a mobile device or tablet ... was just 0.1% in 2008. It has since grown exponentially,
200-400% per year, to 6.2% today.

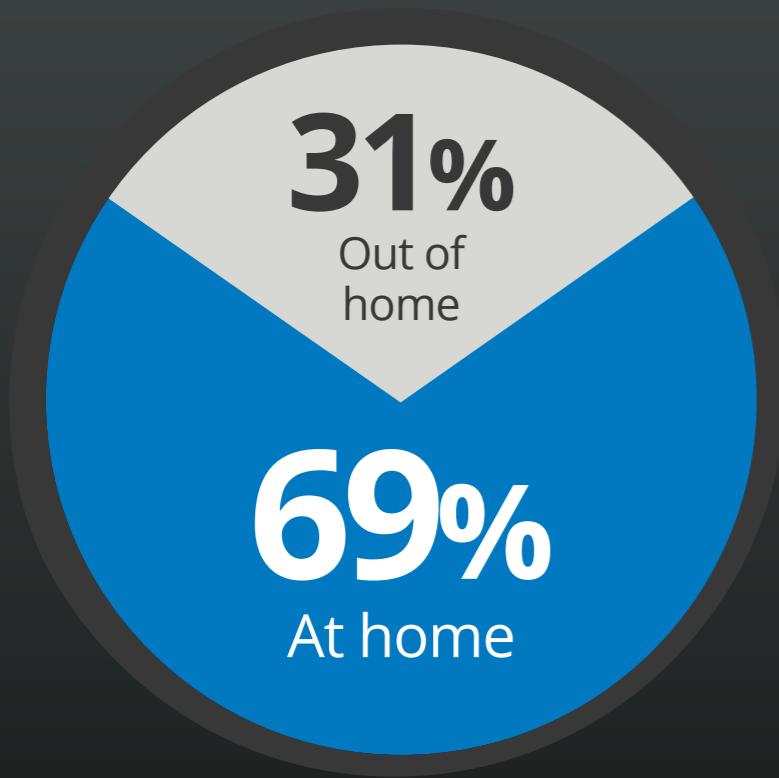


“ Four years ago 75.5% of our web visitors used Internet Explorer. That number has fallen to 37%. Firefox now comprises 25.5%, Safari 19.5%, and Chrome 15.3%.

“ In the second quarter of 2008
we detected 71 different
screen resolutions among our
visitors. In the first quarter of
2012 we detected **830**

**LET'S TALK
MOBILE**

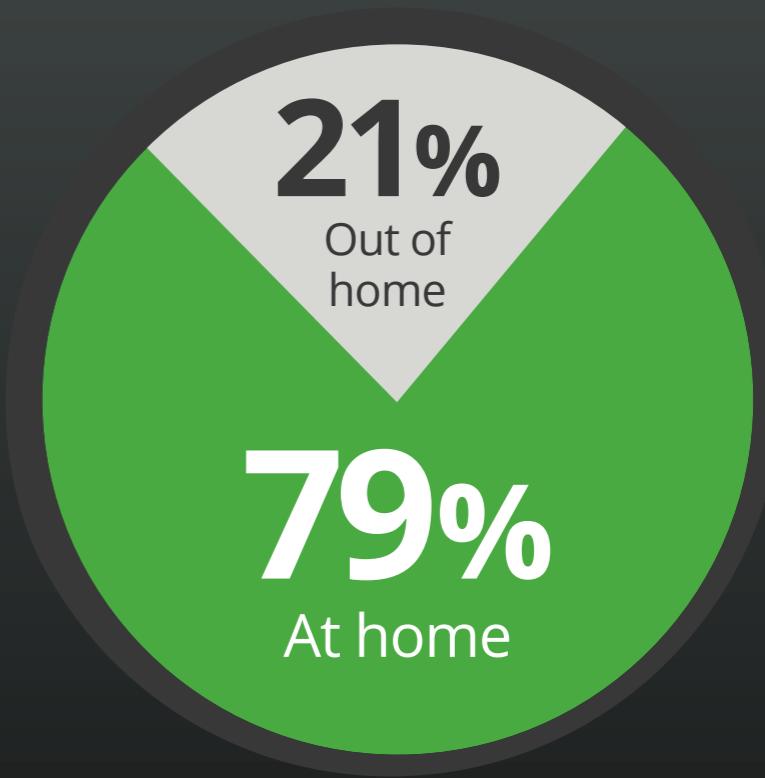
FIRST OFF
MOBILE
IS NOT THE
BEST WORD



Computer

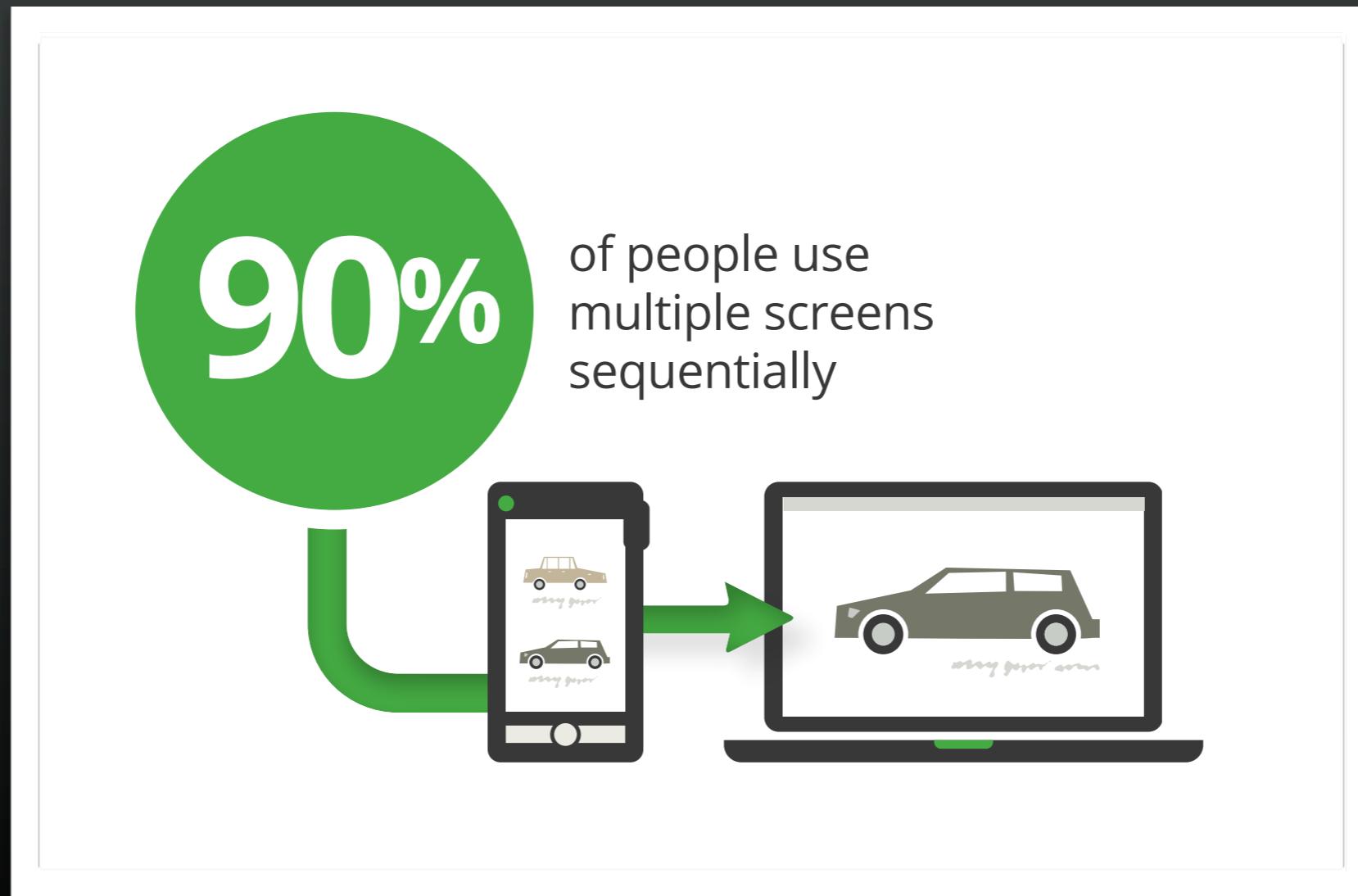


Smartphone



Tablet

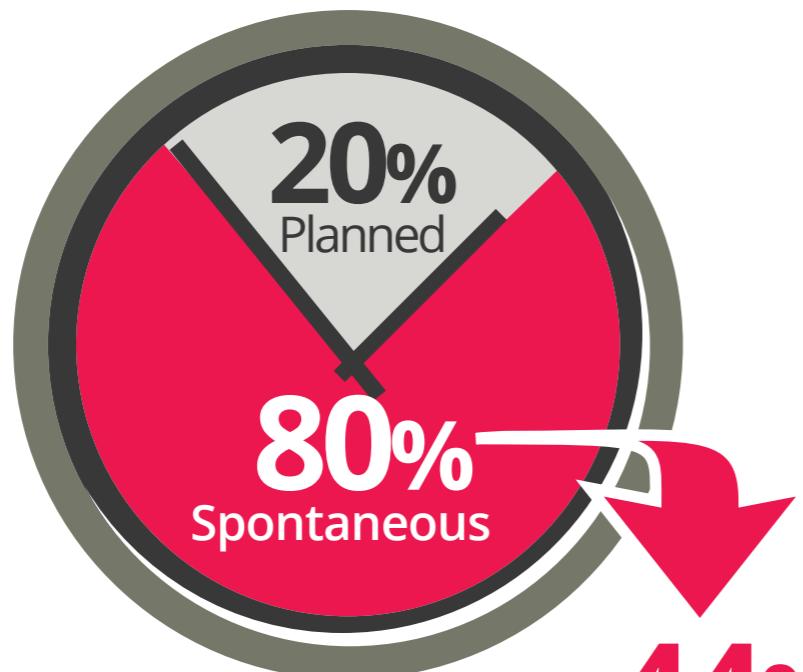
MOBILE IS NOT ISOLATED





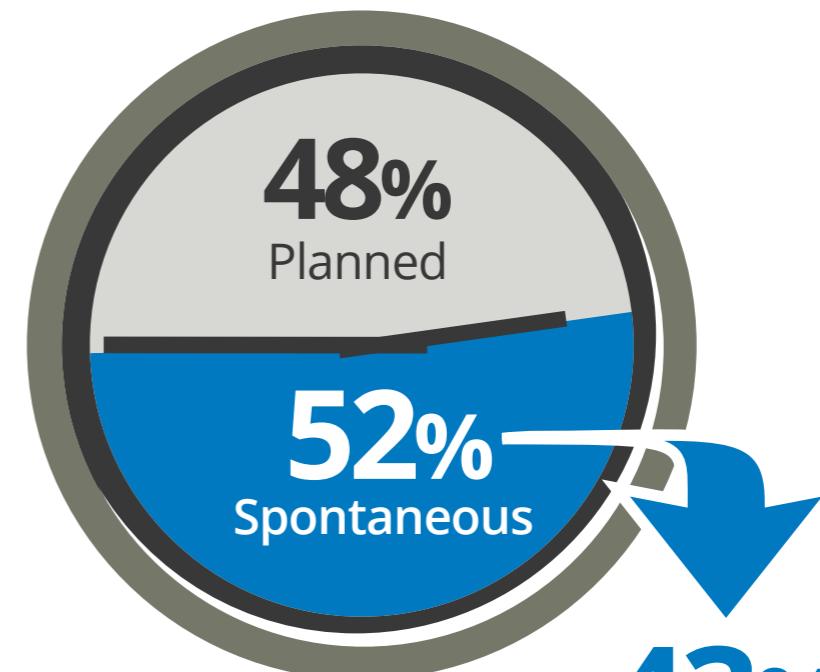
MOBILE = OPPORTUNITY

Smartphone



44%
of all **spontaneous** searches
on smartphones were to
accomplish a goal

PC/Laptop

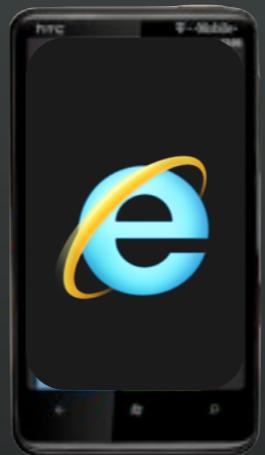
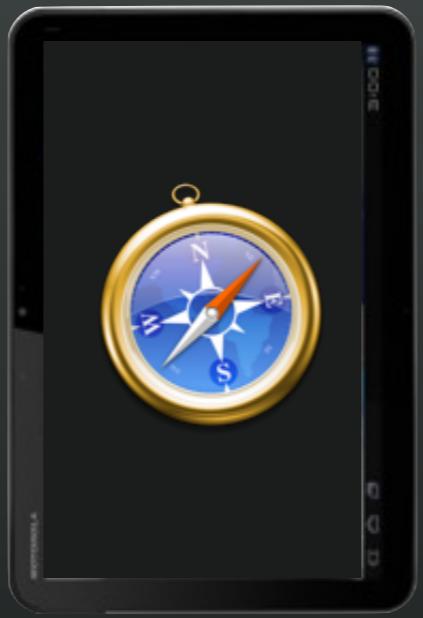


43%
of all **spontaneous**
searches on PCs were to
accomplish a goal

PERCEPTION



PERCEPTION



“There is no WebKit
on Mobile

— Peter-Paul Koch

WebKit *vs.* Acid3

Test	Symb 1	Symb 2	Symb 3	S40	iOS 2.2	iOS 3.1	iOS 4.2	And 1.0	And 1.6	And 2	And 3	Dolphin	BB 6	BB PB	Phantom	Palm 2.0	Palm 2.1	Bolt 1.5	Ozone 0.9	Obigo 10	WeTab
Acid3 Test	fail	47	fail	74	100	72	92	93	100	98	100	91	69	92	76	93	93	100			

Score in the [Acid3 test](#)
90 points

Android 1.6 scores 93 points instead of 92.

1. 100 : Yes
2. 91-99 : Almost
3. 71-90 : Alternative
4. 51-70 : Incomplete
5. 31-50 : Incorrect
6. 11-30 : Minimal
7. 0-10 : No

- Obigo WK encounters an unsupported media type after getting 69 points. Remove the error message, wait for a few seconds, and it will resume the test and end up at 93 points.
- Palm 2.1 does something similar, although you don't have to remove the error message.

http://www.quirksmode.org/webkit_mobile.html

“Surely there’s
platform
consistency!?!
— Any sane individual

“There is no Android
— Stephanie Rieger

17.	Android	993x1688	6	1.50	00:00:46	100.00%	50.00%
18.	Android	480x679	2	1.50	00:00:15	100.00%	50.00%
19.	Android	993x1574	4	2.00	00:01:20	100.00%	50.00%
20.	Android	993x1537	1	1.00	00:00:00	100.00%	100.00%
21.	Android	320x201	3	1.33	00:00:04	100.00%	66.67%
22.	Android	993x663	1	2.00	00:00:33	100.00%	0.00%
23.	Android	600x937	1	3.00	00:03:23	100.00%	0.00%
24.	Android	800x1125	21	1.19	00:00:20	80.95%	85.71%
25.	Android	480x369	1	1.00	00:00:00	100.00%	100.00%
26.	Android	320x473	45	2.09	00:00:30	64.44%	66.67%
27.	Android	369x628	2	5.50	00:02:34	100.00%	0.00%
28.	Android	800x447	1	6.00	00:03:14	100.00%	0.00%
29.	Android	993x514	9	1.44	00:00:53	88.89%	88.89%
30.	Android	993x616	1	1.00	00:00:00	100.00%	100.00%
31.	Android	1025x508	1	2.00	00:00:28	100.00%	0.00%
32.	Android	993x444	4	2.00	00:00:36	100.00%	75.00%
33.	Android	480x762	525	4.53	00:02:47	87.81%	6.86%
34.	Android	320x320	1	1.00	00:00:00	100.00%	100.00%
35.	Android	470x725	1	1.00	00:00:00	100.00%	100.00%
36.	Android	993x1149	2	1.50	00:00:15	100.00%	50.00%
37.	Android	600x1024	2	13.00	00:18:31	100.00%	0.00%
38.	Android	480x700	1	8.00	00:01:34	100.00%	0.00%

<http://yfrog.com/z/ob5kndj>

BUT ANDROID
IS NOT UNIQUE
IN THIS

THE CULPRITS? **SCREEN SIZE**

THE CULPRITS? EMBEDDED VIEWS

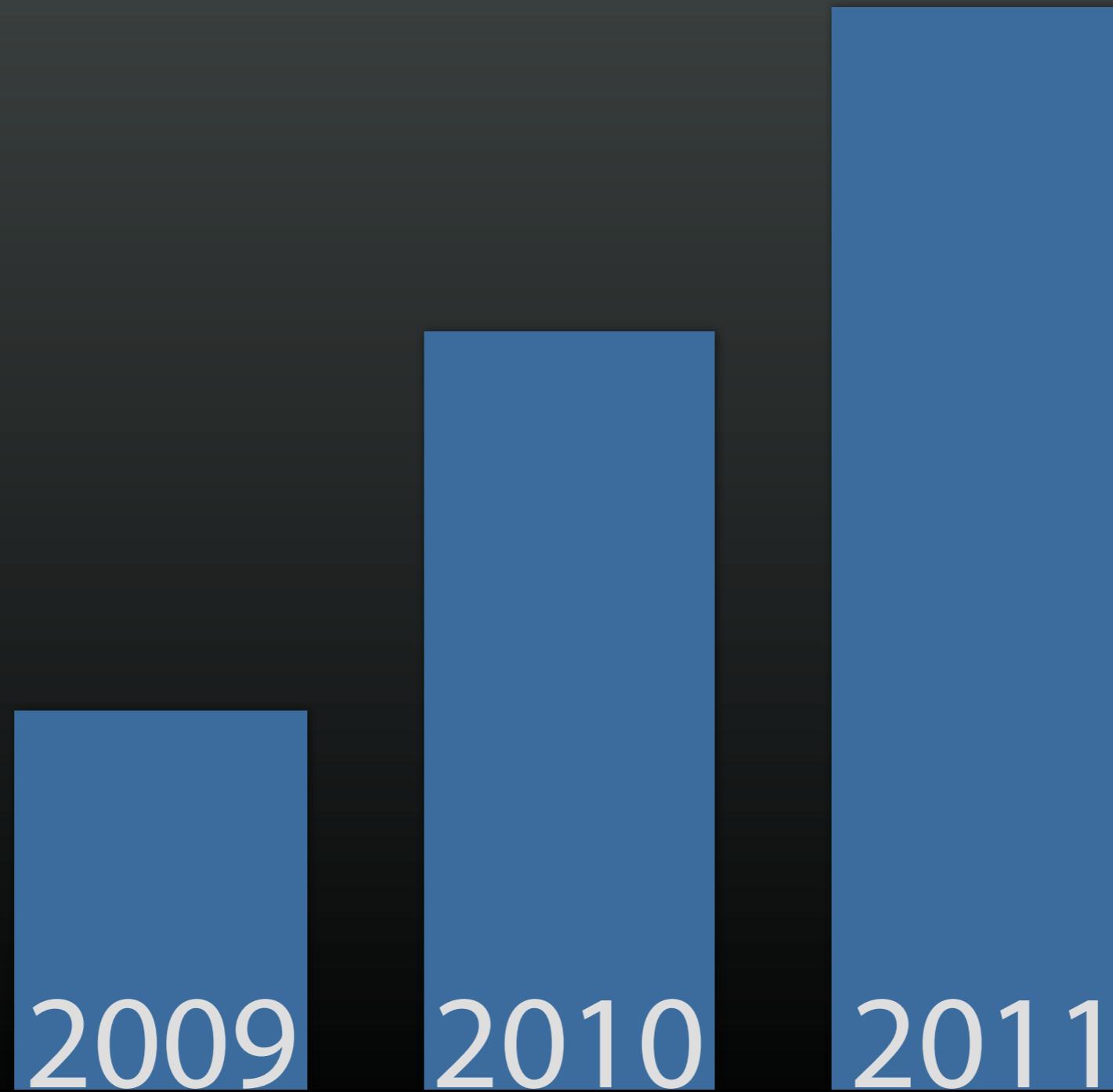
THE CULPRITS? BROWSER CHROME

THE CULPRITS? ZOOM LEVEL

THE CULPRITS? ZOOM LEVEL

(Ok, this one's on Android)

6 Billion



OVER 80%
OF THESE ARE
FEATURE PHONES,
NOT SMARTPHONES

ESPECIALLY TRUE IN
DEVELOPING
COUNTRIES

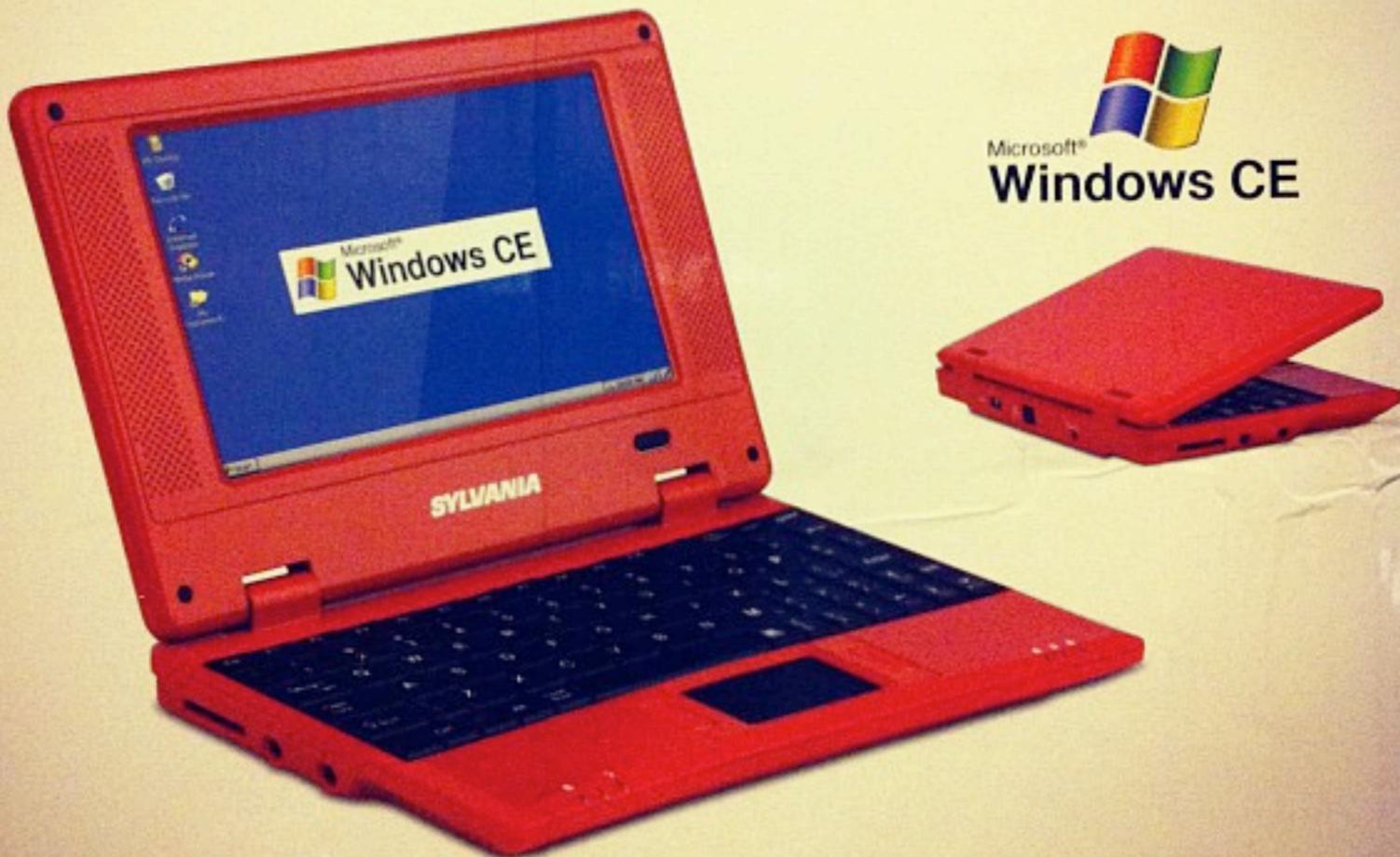
**INTERNET IN KENYA
MOBILE = 90%**

THE REALITY



SYLVANIA

WIRELESS MOBILE INTERNET DEVICE



Microsoft®
Windows CE



E-mail



Web Browsing

facebook

Social Networking

YouTube™

YouTube
Video Streaming



A photograph of a zombie walk or costume event on a city street. Numerous people are dressed in zombie makeup, including fake blood and pale skin. They are walking in a group, some carrying bags. In the background, there are palm trees, buildings, and a red double-decker bus. A "NO SKATEBOARDING" sign is visible on a pole. The scene is set during the day.

"The commoditization of smartphone hardware is just the beginning ... of a huge new wave of cheap devices about to invade our lives—a zombie apocalypse of electronics, if you will.

— Scott Jenson

Um... I think I'll just
build an iPhone app.
kthxbye.

NATIVE *v.s.* WEB



THIS IS THE WEB.



THIS WILL BE THE WEB.



WE DON'T KNOW



WE DON'T KNOW

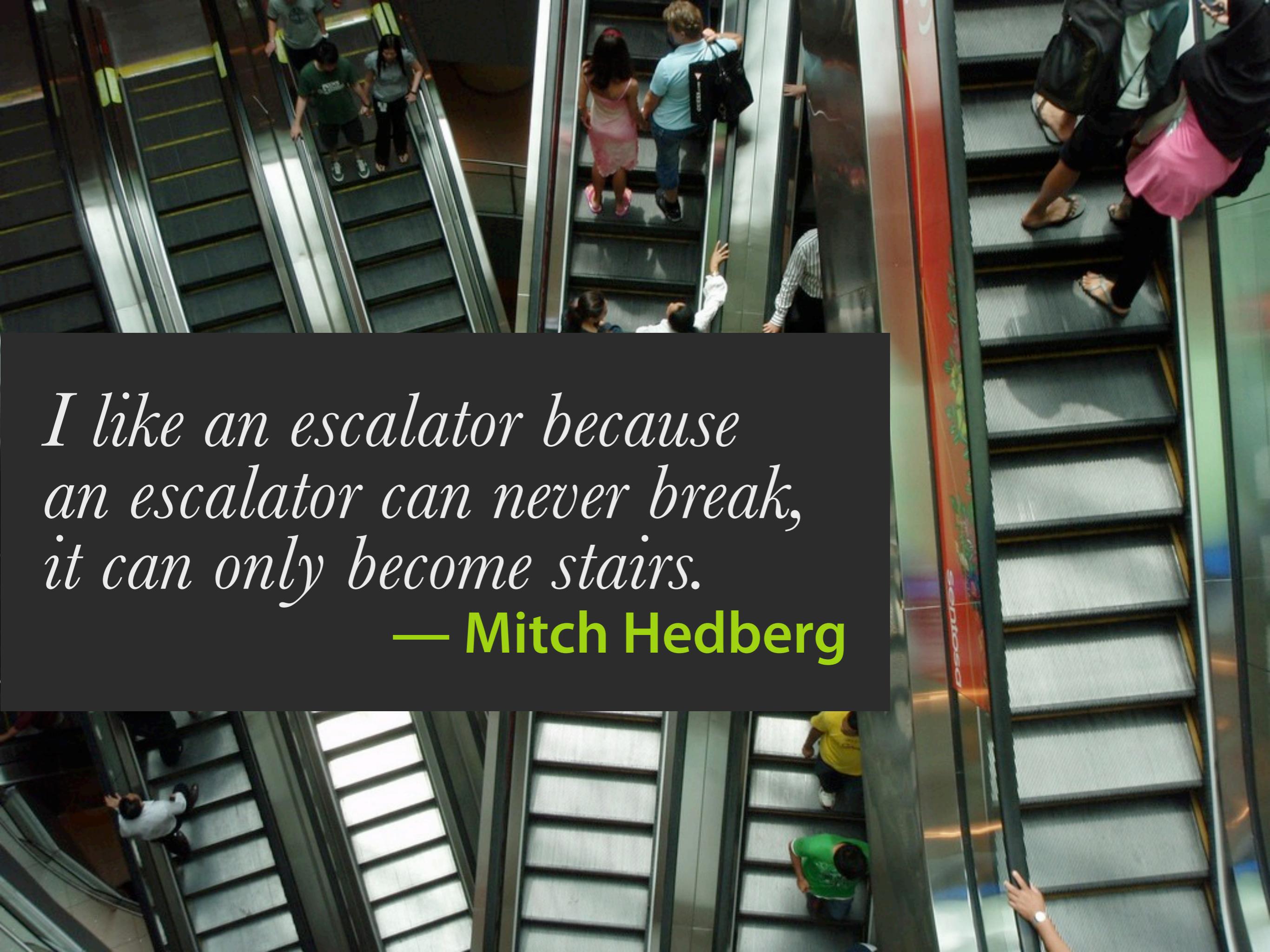
EVEN WHEN
WE THINK
WE KNOW,
WE ARE
PROBABLY
WRONG

**SO HOW DO WE
COPE?**

PROGRESSIVE ENHANCEMENT

**TECHNOLOGICAL
RESTRICTIONS**





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

— Mitch Hedberg

GRACEFUL DEGRADATION

MODERN BROWSERS



OLDER BROWSERS

MODERN BROWSERS



OLD R BROWSERS



Andrew Wight

@AndrewUX

Progressive enhancement is an escalator that becomes stairs.
Graceful degradation is building a lift then having to add
stairs.

14 May 12



Reply



Retweet



Favorite



WEEKENDHACKER

WEEKENDHACKER

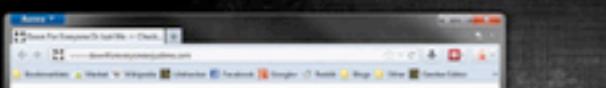
Make the Best of Your Travel Plans This Weekend

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 »](#)

RELATED STORIES

- [Avoid a Weekend of Boredom](#)
- [Discover Some New Music This Weekend](#)
- [Find Yourself Some Great Deals This Weekend](#)

WEB SITES



TAXES



...you'll find it waiting in your basket online.



£10
OFF
your first
online shop*

[Start saving](#)

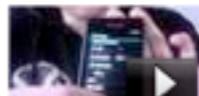
www.tesco.com

*When you spend £50 or more. Excludes delivery charge. [Terms here.](#)



WEEKENDHACKER

Make the Best of Your Travel Plans This Weekend



FOR WHAT IT'S WORTH

Remains of the Day: Ice Cream

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

[» The Ultimate Black Friday Gadget](#)

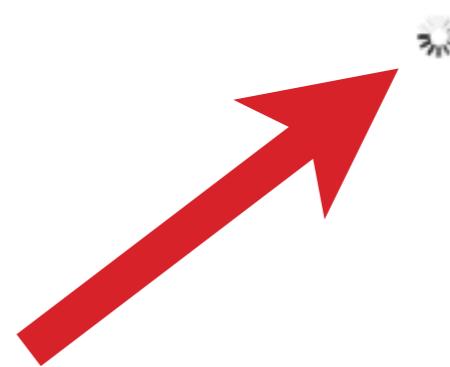
MORE STORIES...

[App Deals](#)

[» The Ultimate Black Friday Gadget](#)

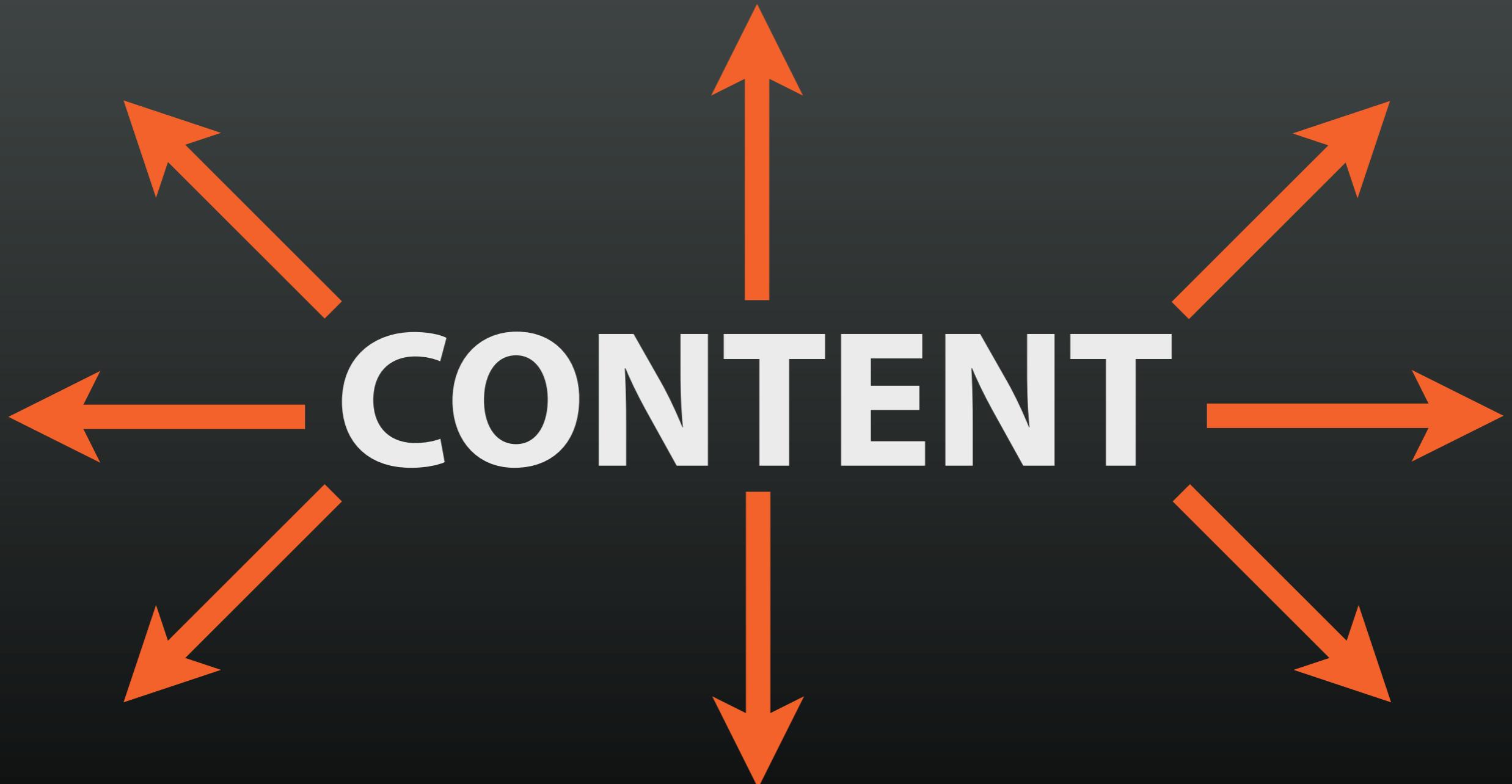
TIPS AND DOWNLOADS FOR
GETTING THINGS DONE

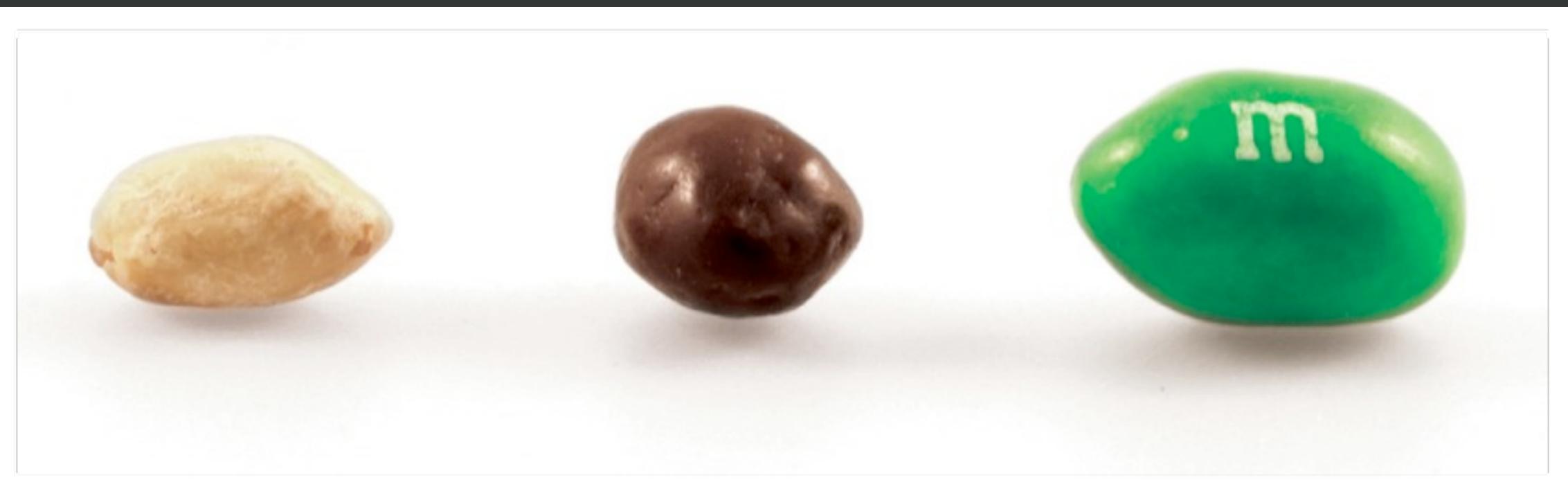
[MORE STORIES...](#)





PROGRESSIVE ENHANCEMENT





ACCESSIBILITY

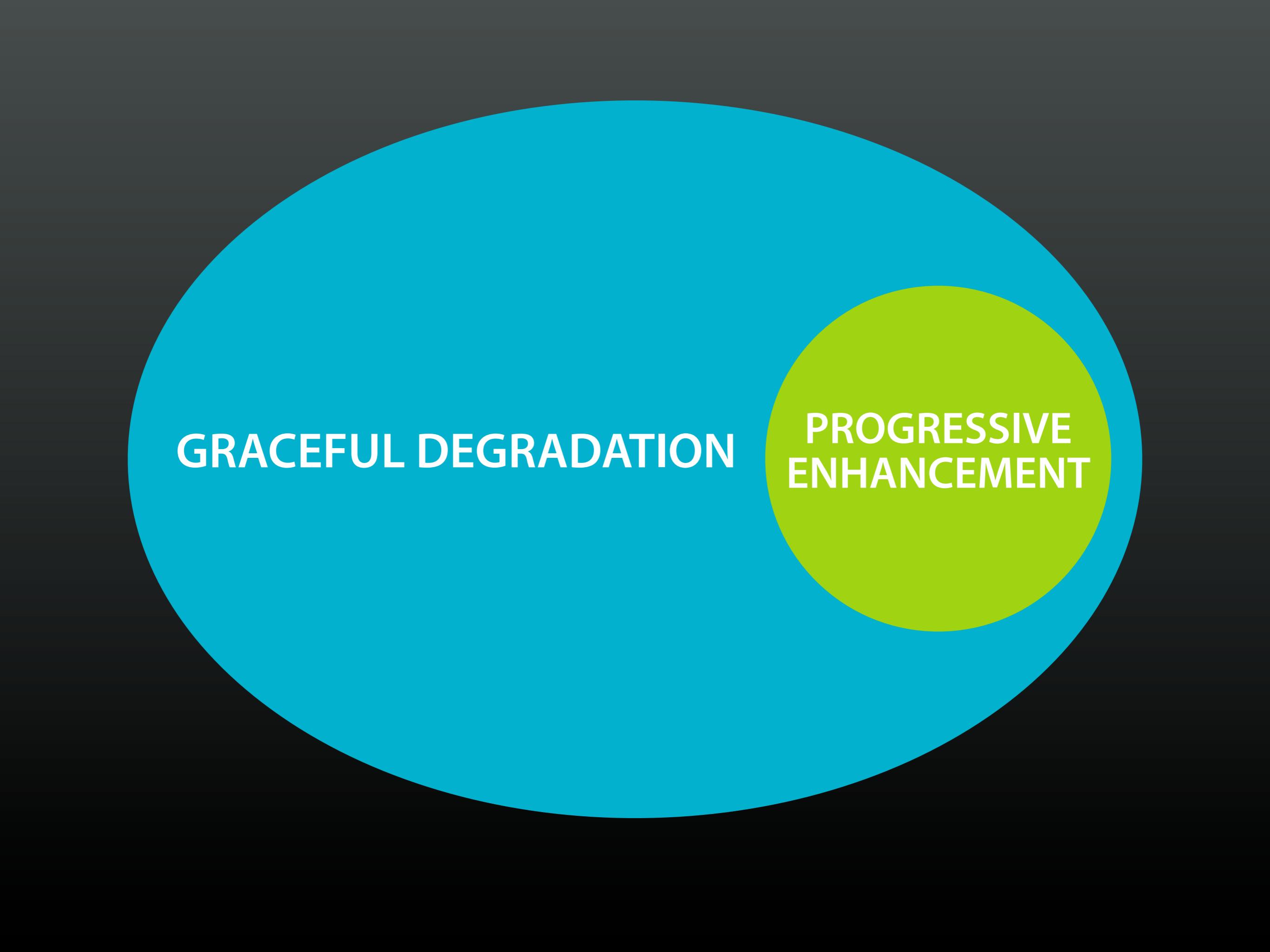
“SPECIAL NEEDS”

**“SPECIAL NEEDS”
CAN BE
CONTEXTUAL.**



**YOU MUST BE THIS TALL
TO RIDE WITH AN ADULT**





GRACEFUL DEGRADATION

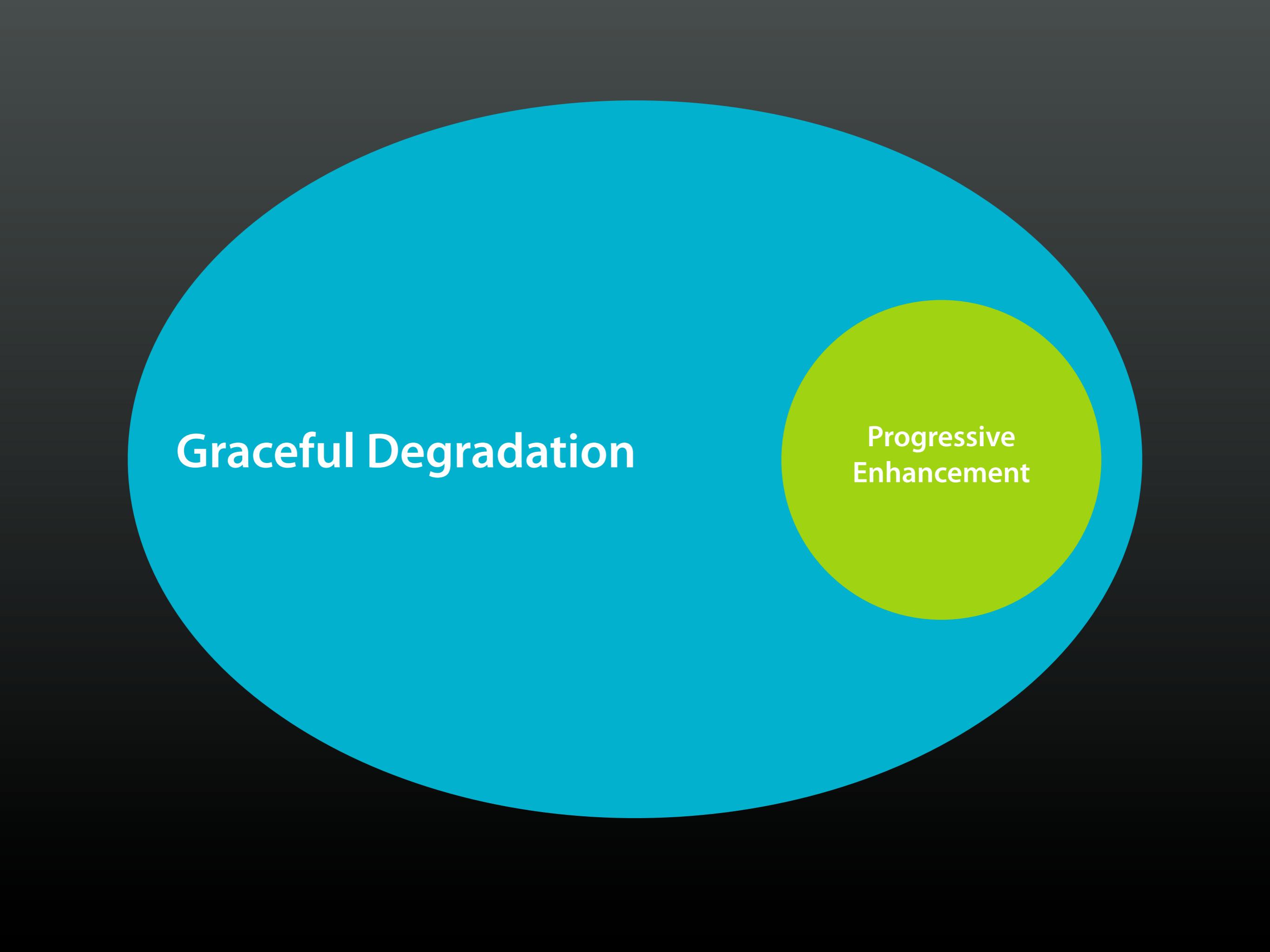
**PROGRESSIVE
ENHANCEMENT**

OOOH, SHINY!

PROGRESSIVE
ENHANCEMENT
ISN'T ABOUT
BROWSERS

**BROWSERS AND
TECHNOLOGIES
COME AND GO**

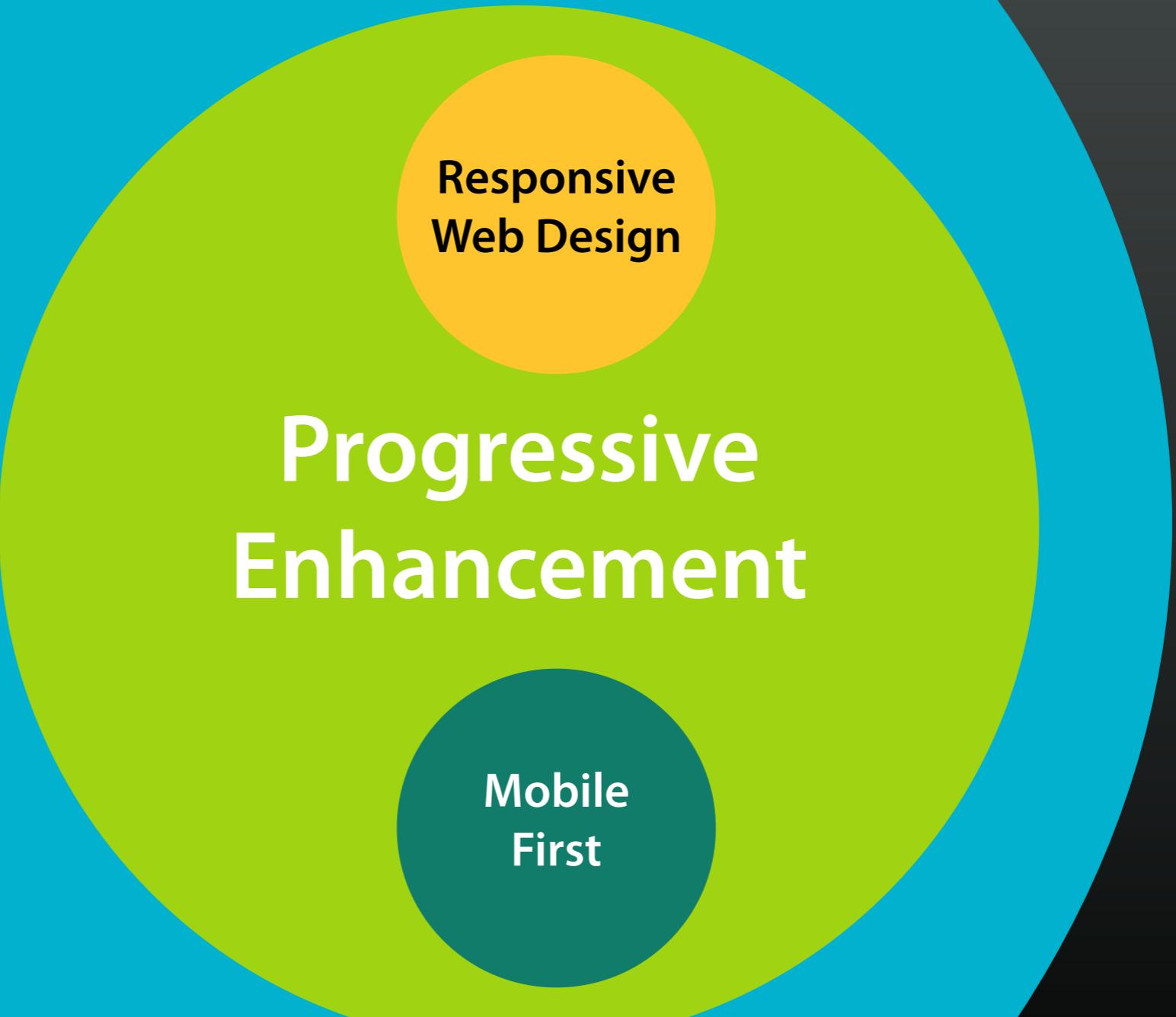
DON'T LOSE SIGHT
OF YOUR USERS

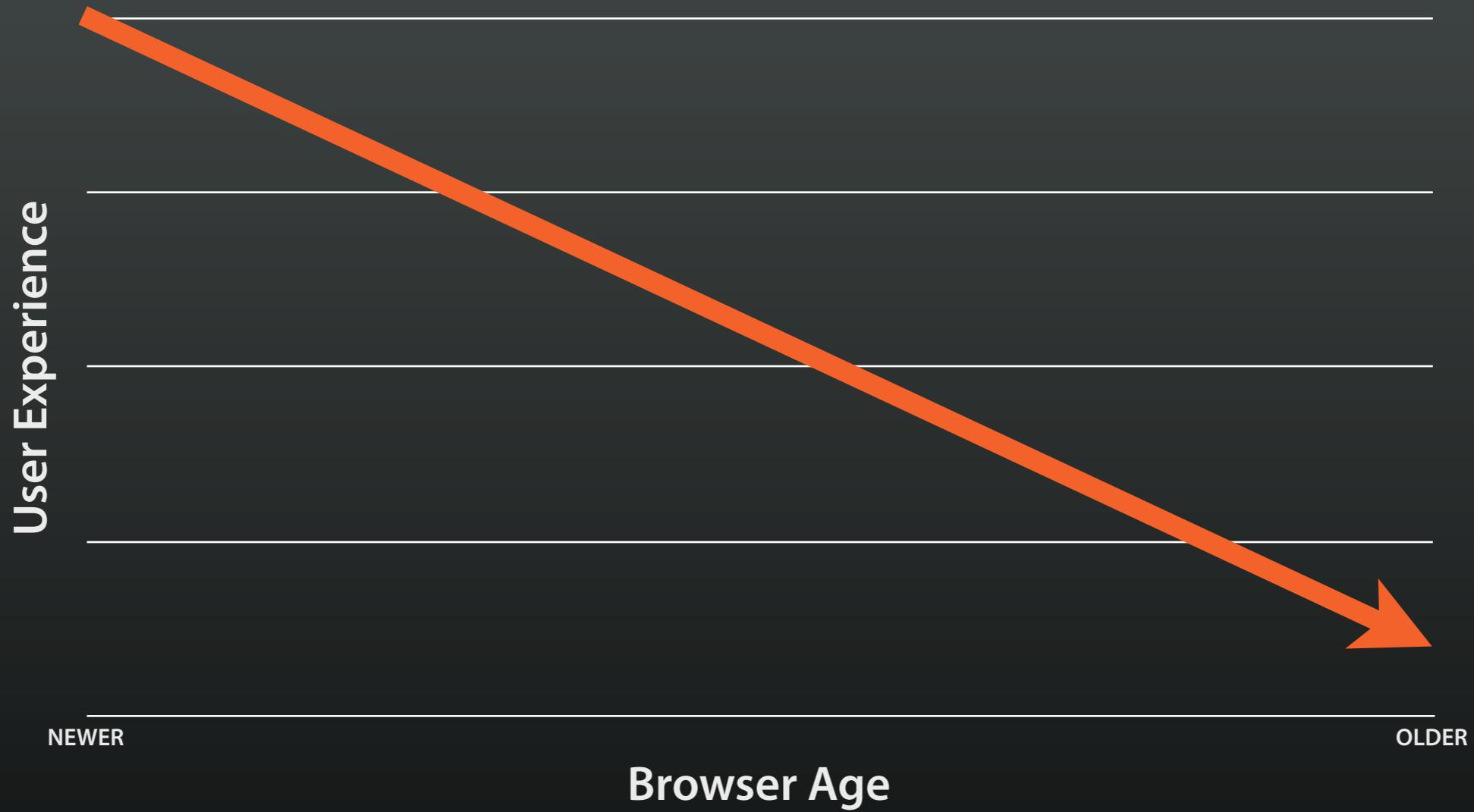


Graceful Degradation

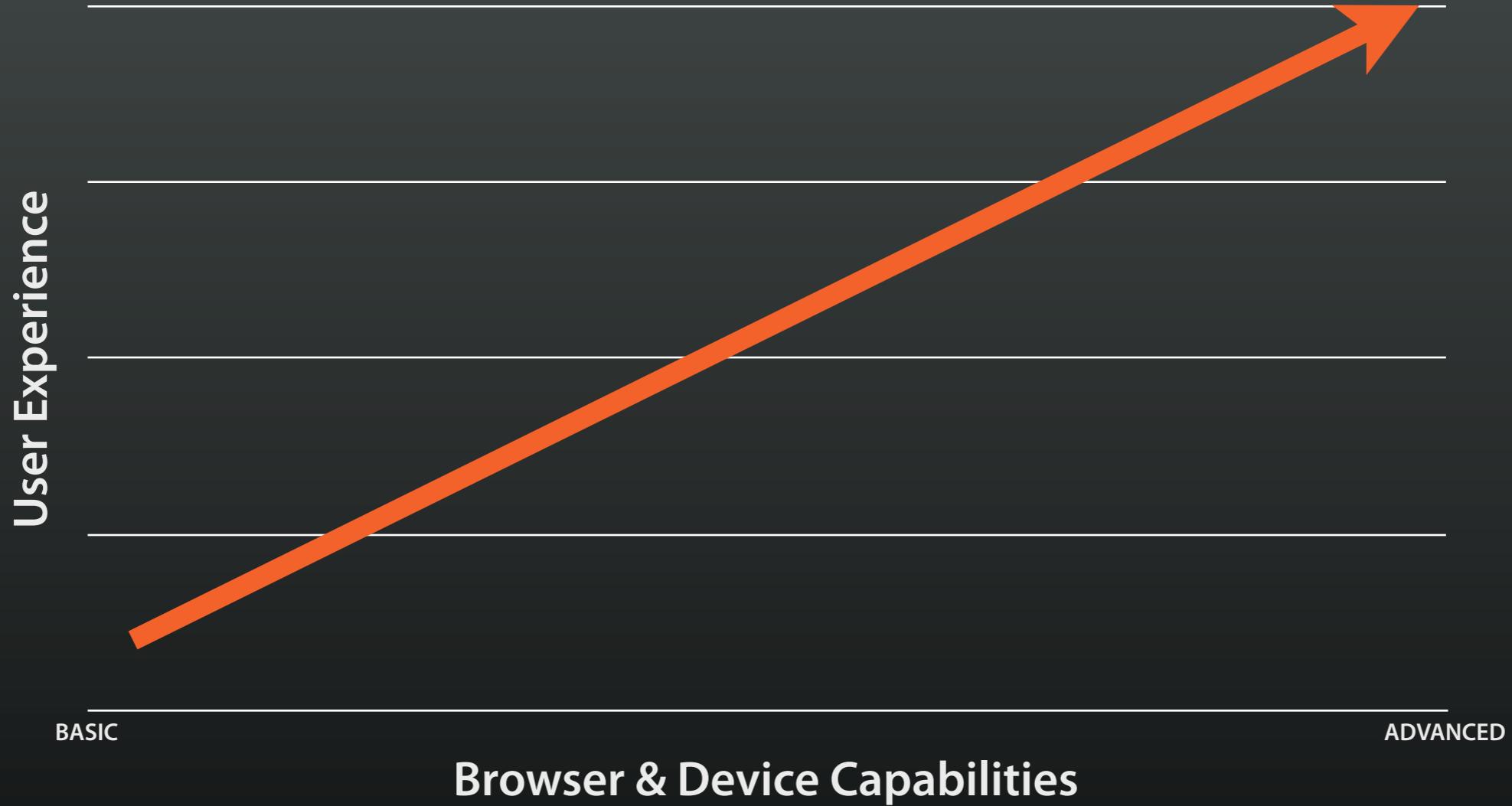
Progressive
Enhancement

on

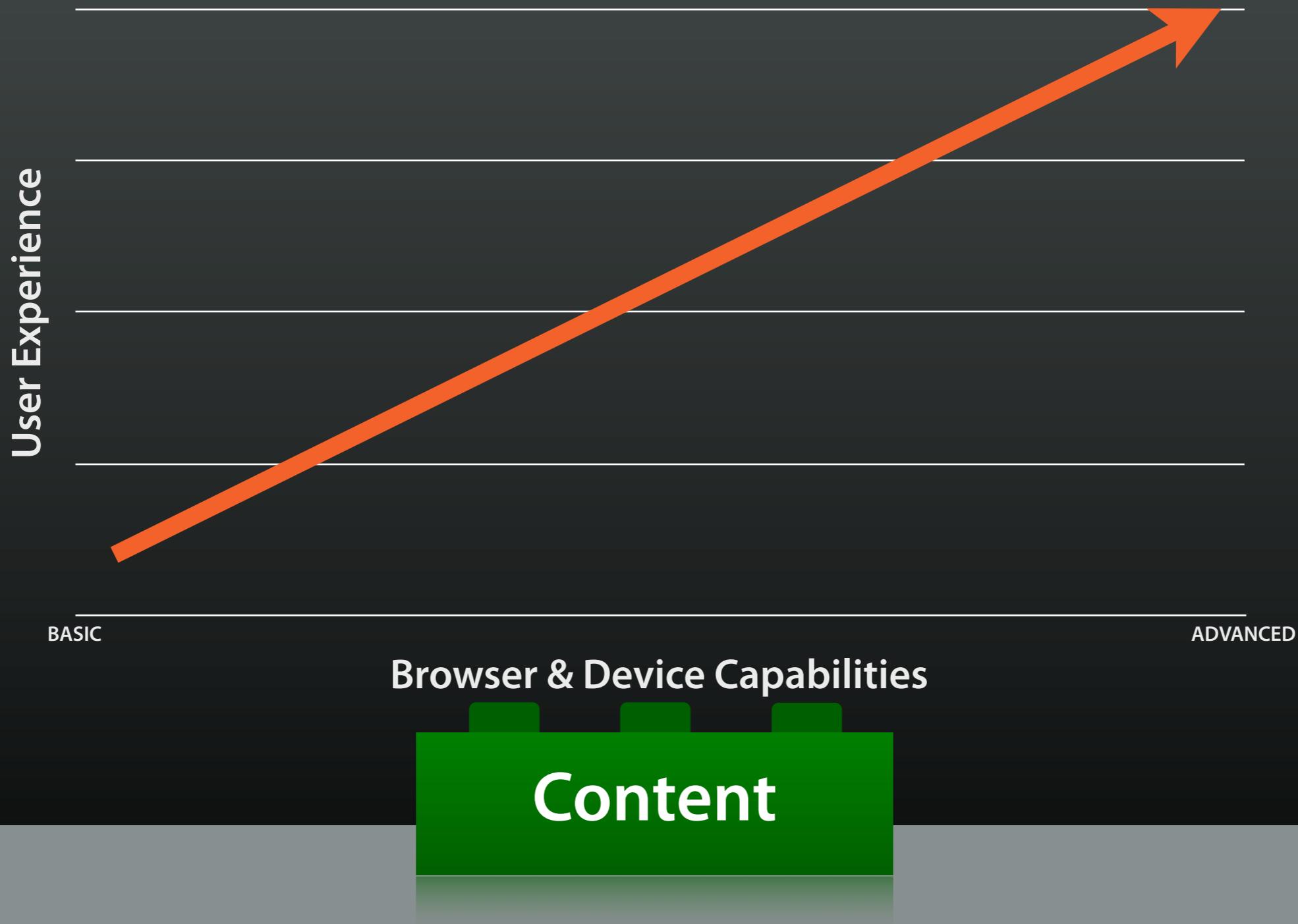


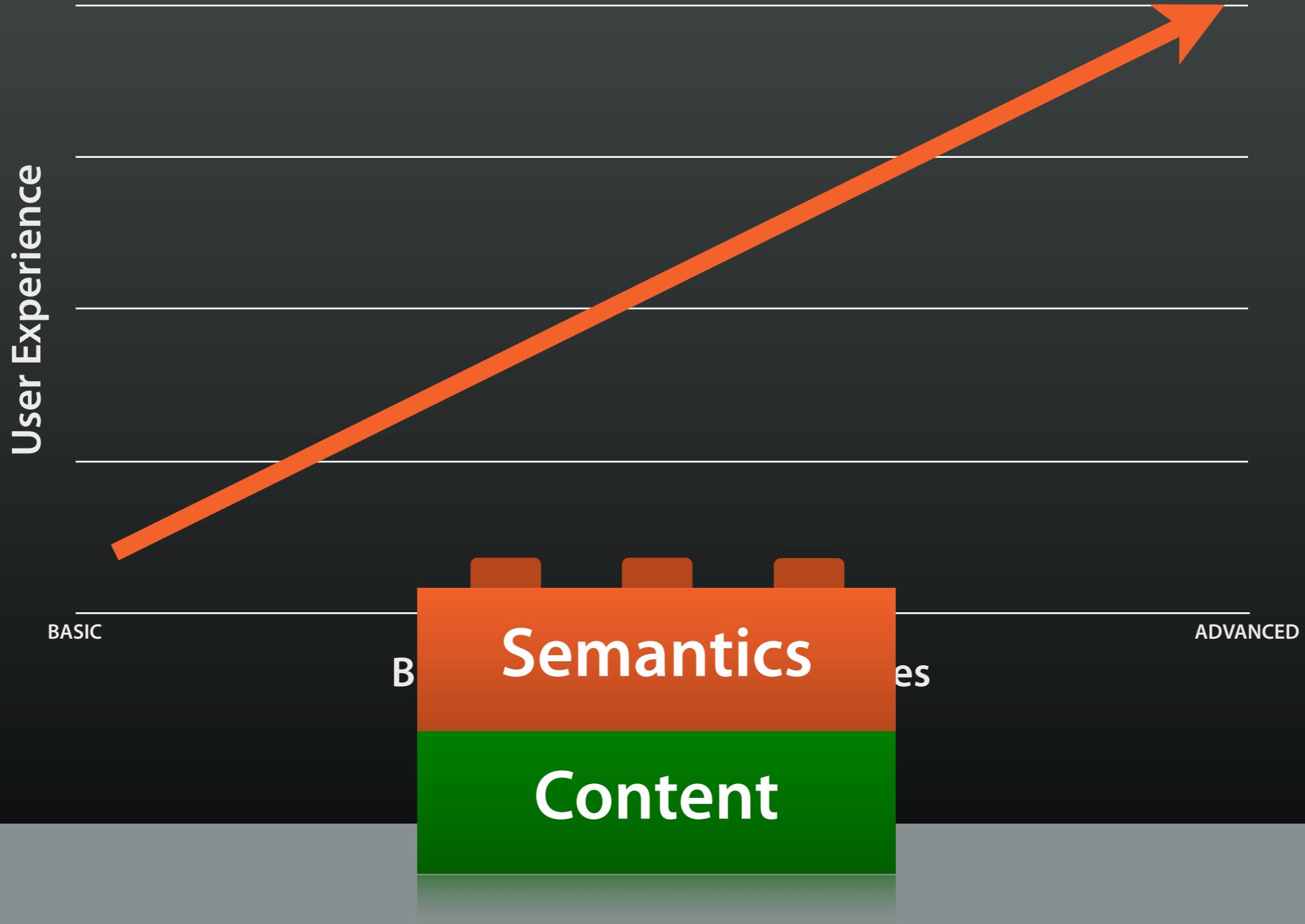


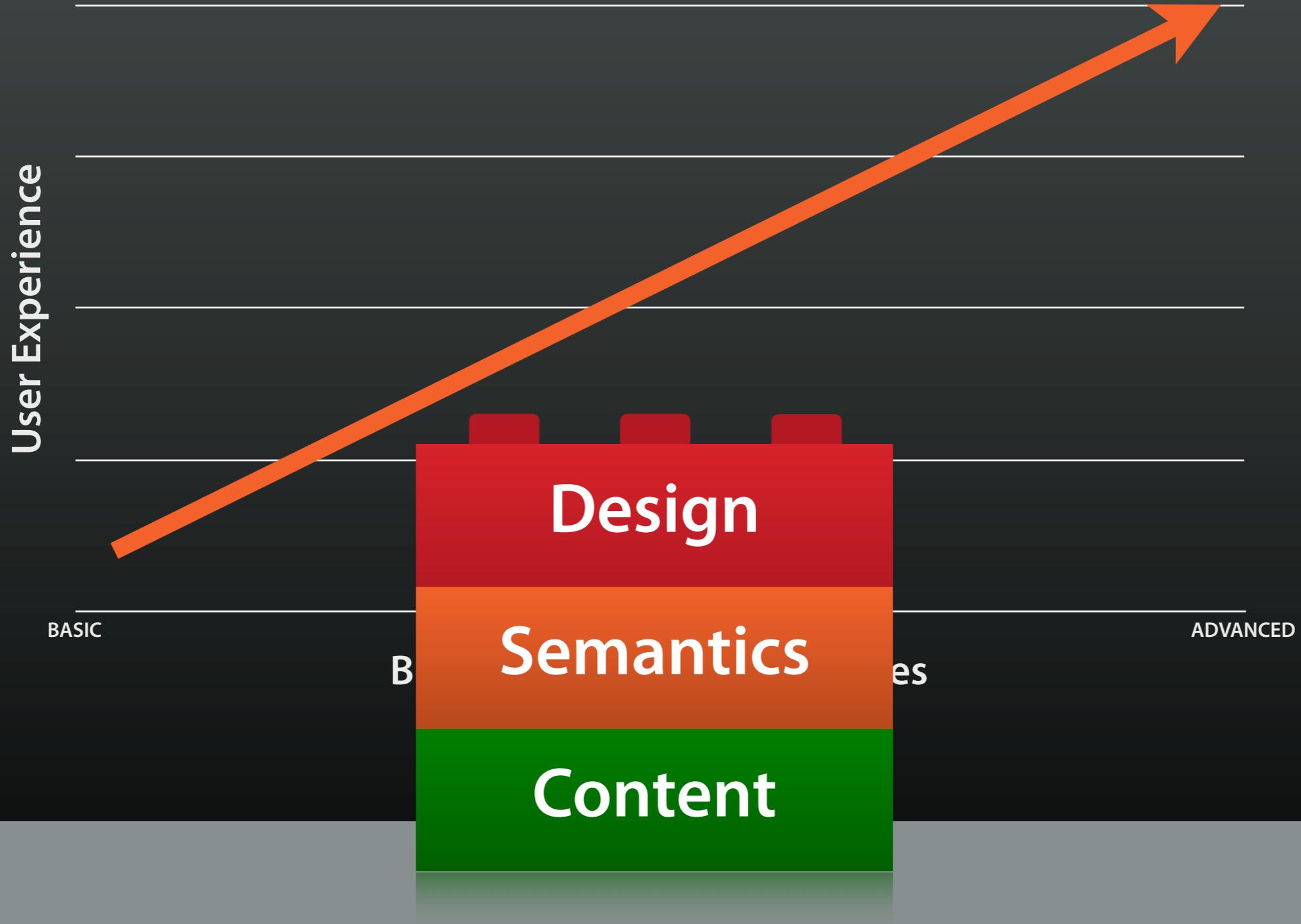
Graceful Degradation

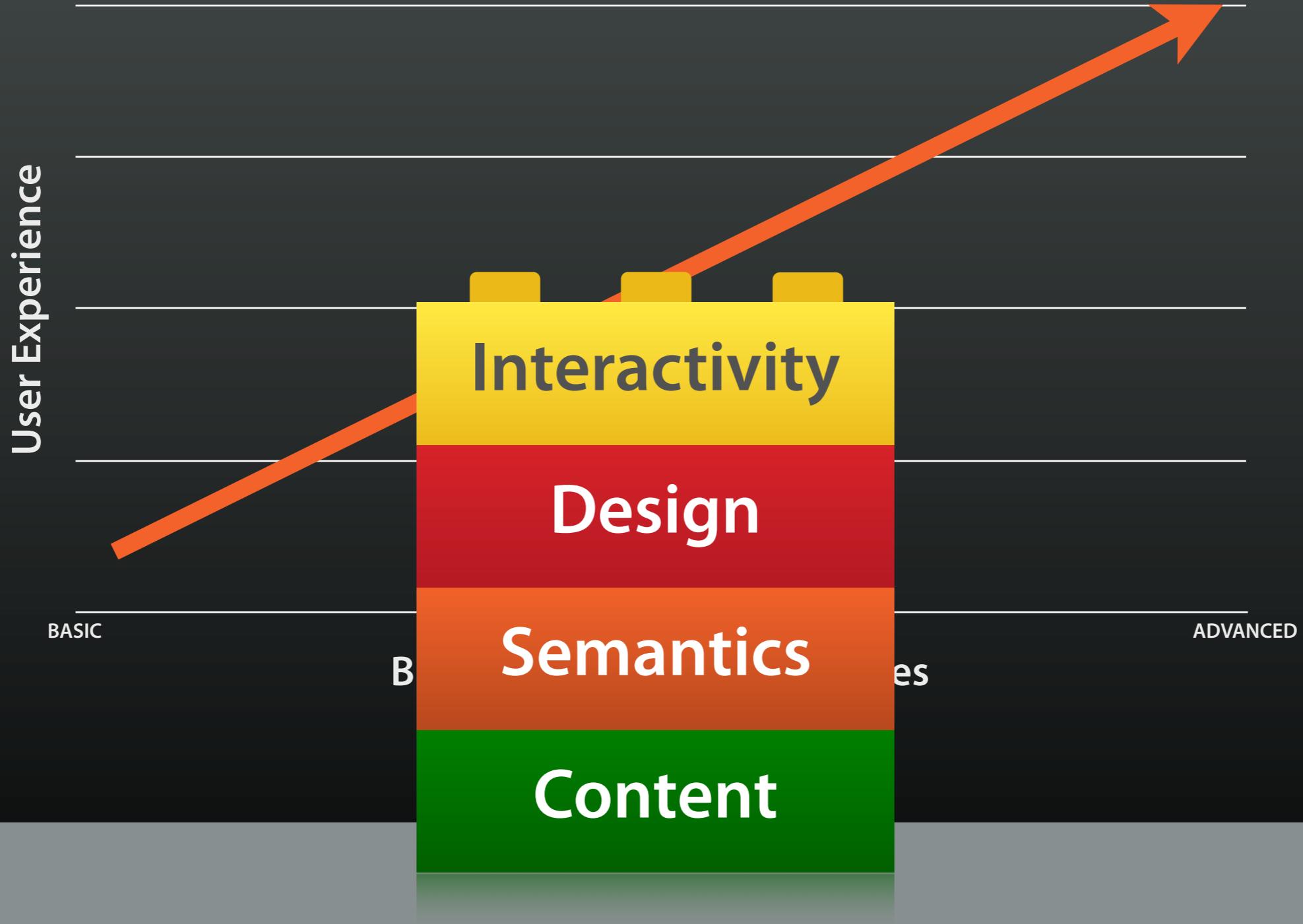


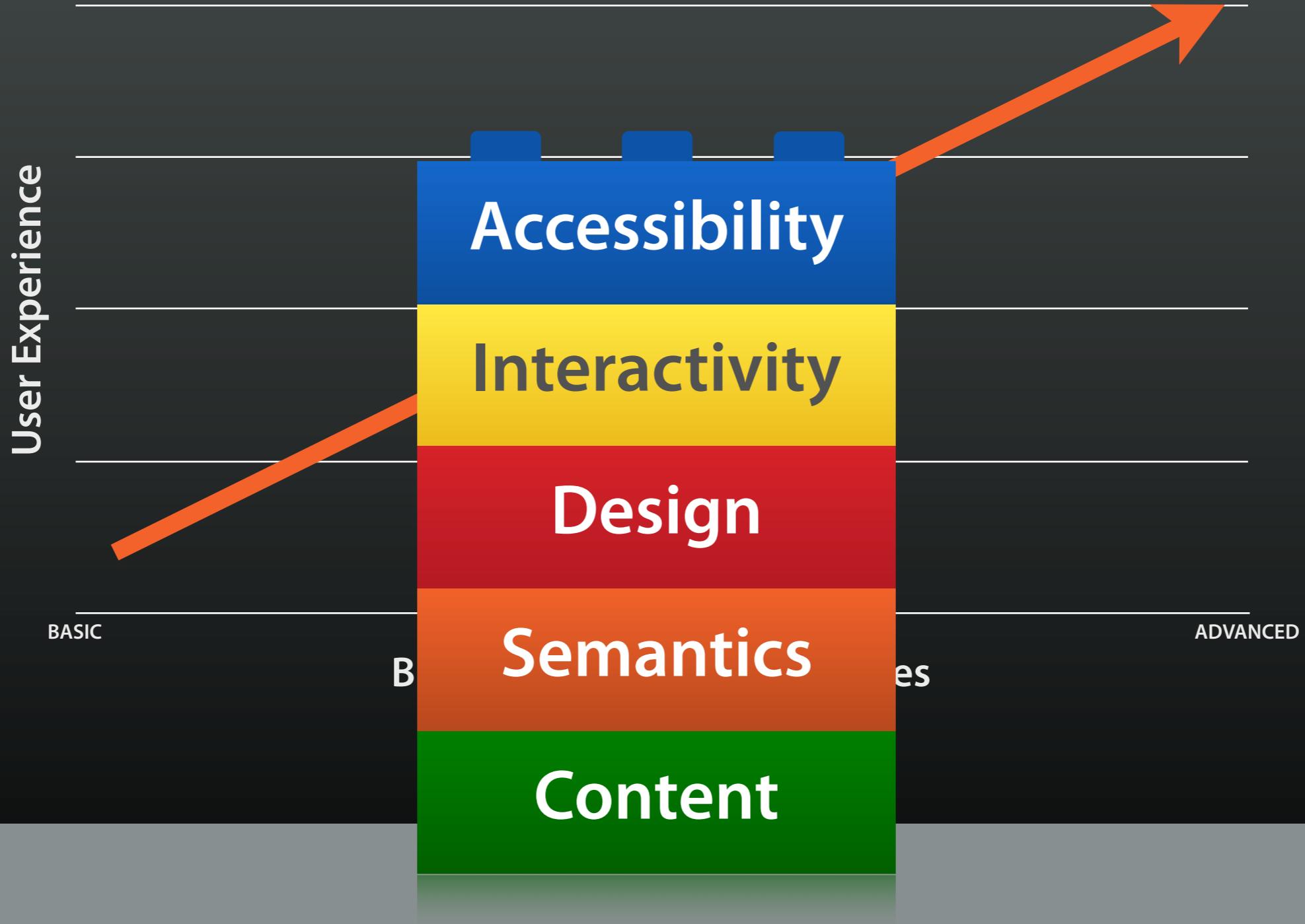
Progressive Enhancement















HTML

HTML5

The diagram consists of three orange rectangular blocks stacked vertically on a dark gray 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 from the others by a thin black horizontal line. Above each block is a smaller, solid orange rectangle of the same height as the line.

Microformats

HTML4

EXAMPLES



Semantics 101

```
<p>HTML5 introduces several <em>really</em>  
useful elements and a ton of new APIs.</p>
```

```
<p>Please fill out the form below.  
<strong>Note: all fields are required.</strong></p>
```

```
<p>I like to work with markup languages because  
<strong>they are simple and easy to read</strong>. They also have that certain <i lang="fr" title="I don't know what">je ne sais quoi</i>.</p>
```

PE with HTML

```
<video poster="poster.png">
  <source src="video.m4v"/>
  <source src="video.webm"/>
  <source src="video.ogv"/>
  
  <ul>
    <li><a href="video.m4v">Download MP4</a></li>
    <li><a href="video.webm">Download WebM</a></li>
    <li><a href="video.ogv">Download Ogg</a></li>
  </ul>
</video>
```

PE with HTML

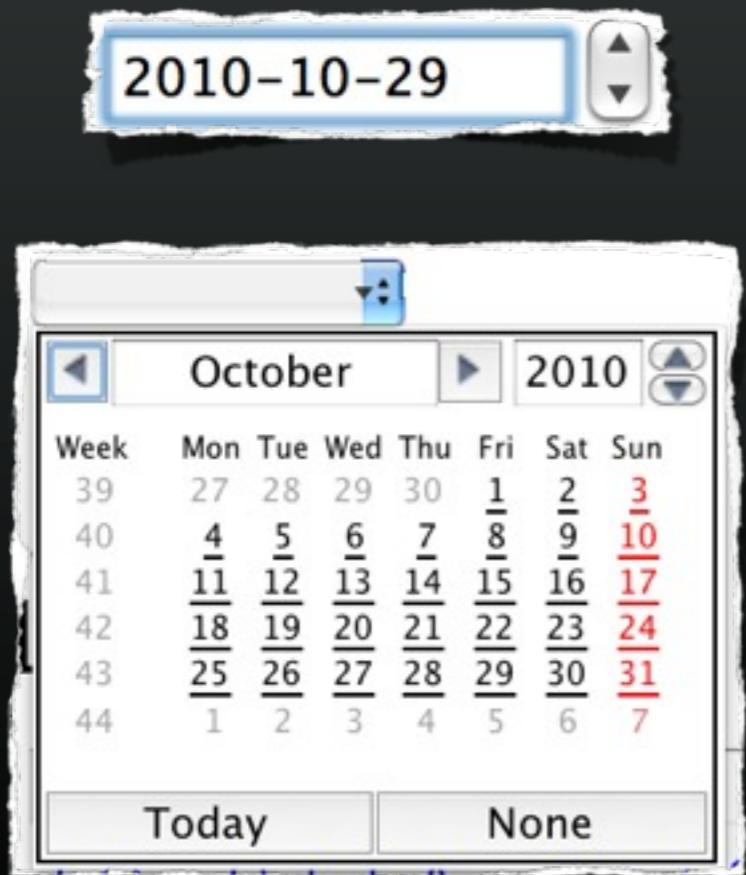
```

<ul>
  <li><a href="video.m4v">Download MP4</a></li>
  <li><a href="video.webm">Download WebM</a></li>
  <li><a href="video.ogv">Download Ogg</a></li>
</ul>
```

PE with HTML

```
<input type="date" name="dob"/>
```

I get it!



I don't get it :-(



PE with Microformats

```
<section class="vcard">
  <figure>
    
  </figure>
  <h1 class="fn">Aaron Gustafson</h1>
  ...
  <p>Aaron ... is <b class="role">Group Manager</b> of the
    <a class="org" href="http://webstandards.org">Web
      Standards Project (WaSP)</a> ....</p>
</section>
```

In his personal time, [Aaron Gustafson](#), List Chaperone, enjoys a good meal whenever possible, and considers almost no type of music to be worthless. He lives in Cleveland Heights with his wife and daughters.

Aaron Gustafson

Aaron has been working on the web for nearly 15 years and, in that time, has cultivated a love of web standards and an in-depth knowledge of website strategy and architecture, interface design, and numerous languages (including XHTML, CSS, JavaScript, and PHP). Aaron and his wife, Kelly, own [Easy! Designs](#), a boutique web consultancy based in Chattanooga, TN. When not neck deep in code, Aaron is usually found evangelizing his findings and sharing his knowledge and passion with others in the field.

Aaron has trained professionals at *The New York Times*, Gartner, and the US Environmental Protection Agency (among others), and has presented at the world's foremost web conferences, such as An Event Apart and Web Directions. He is Group Manager of the [Web Standards Project \(WaSP\)](#) and serves as an Invited Expert to the World Wide Web Consortium's [Open Web Education Alliance \(OWEA\)](#). He created [eCSStender](#), serves as Technical Editor for [A List Apart](#), is a contributing writer for [.net Magazine](#), and has filled a small library with his technical writing and editing credits. His next book, *Adaptive Web Design: Crafting Rich Experiences with Progressive Enhancement*, is due out in early 2011.

Looking for a detailed curriculum or more information to help sell your boss on this event? [Download the HTML5 & CSS3 fact sheet](#) or view our [frequently asked questions](#). Ready to attend? [Register now](#).

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RETREATS 4 GEEKS

Details Schedule Lodging Location Instructors

In his personal time, Eric also lists Chape

Aaron Gustafson

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[HTML5 & CSS3 fact sheet](#) or view our [frequently asked questions](#). Ready to attend? [Register now](#).

PE with HTML & ARIA

```
<header role="banner">
  <h1></h1>
  <nav role="navigation">
    <ol>
      <li><a href="#details">Details</a></li>
      <li><a href="#schedule">Schedule</a></li>
      <li><a href="#instructors">Instructors</a></li>
      <li><a href="#lodging">Lodging</a></li>
      <li><a href="#location">Location</a></li>
    </ol>
  </nav>
</header>
```

These *are* the droids you seek

```
<span role="button">0K</span>
```

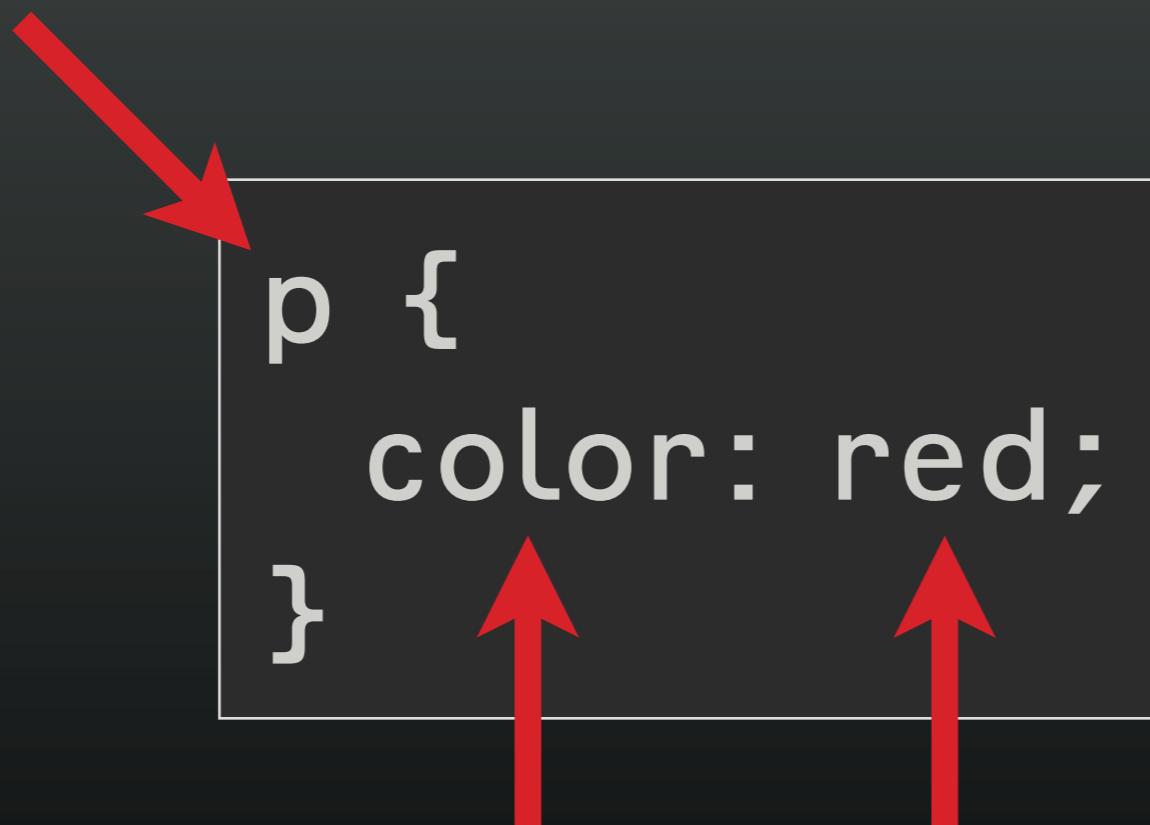
```
<div role="alert">
  <p>Something went wrong.</p>
</div>
```

```
<div role="alertdialog">
  <p>Something went wrong.</p>
  
</div>
```

Parsing errors

```
p {  
  color: red;  
}
```

Parsing errors



Parsing errors

```
p {  
  color: red;  
  font-weight: bold;  
}
```

Parsing errors



Parsing errors

```
p {  
  color: #ccc;  
  color: rgba( 0, 0, 0, .5 );  
}
```

Parsing errors

```
html[lang] p {  
  color: #ccc;  
  color: rgba( 0, 0, 0, .5 );  
}
```

Parsing errors

```
@-moz-document url-prefix() {  
    html[lang] p {  
        color: #ccc;  
        color: rgba( 0, 0, 0, .5 );  
    }  
}
```

```
#intro {
    /* Basic Layout */
}

/* ... */

body[id=css-zen-garden] #intro {
    /* Advanced Layout */
}
```

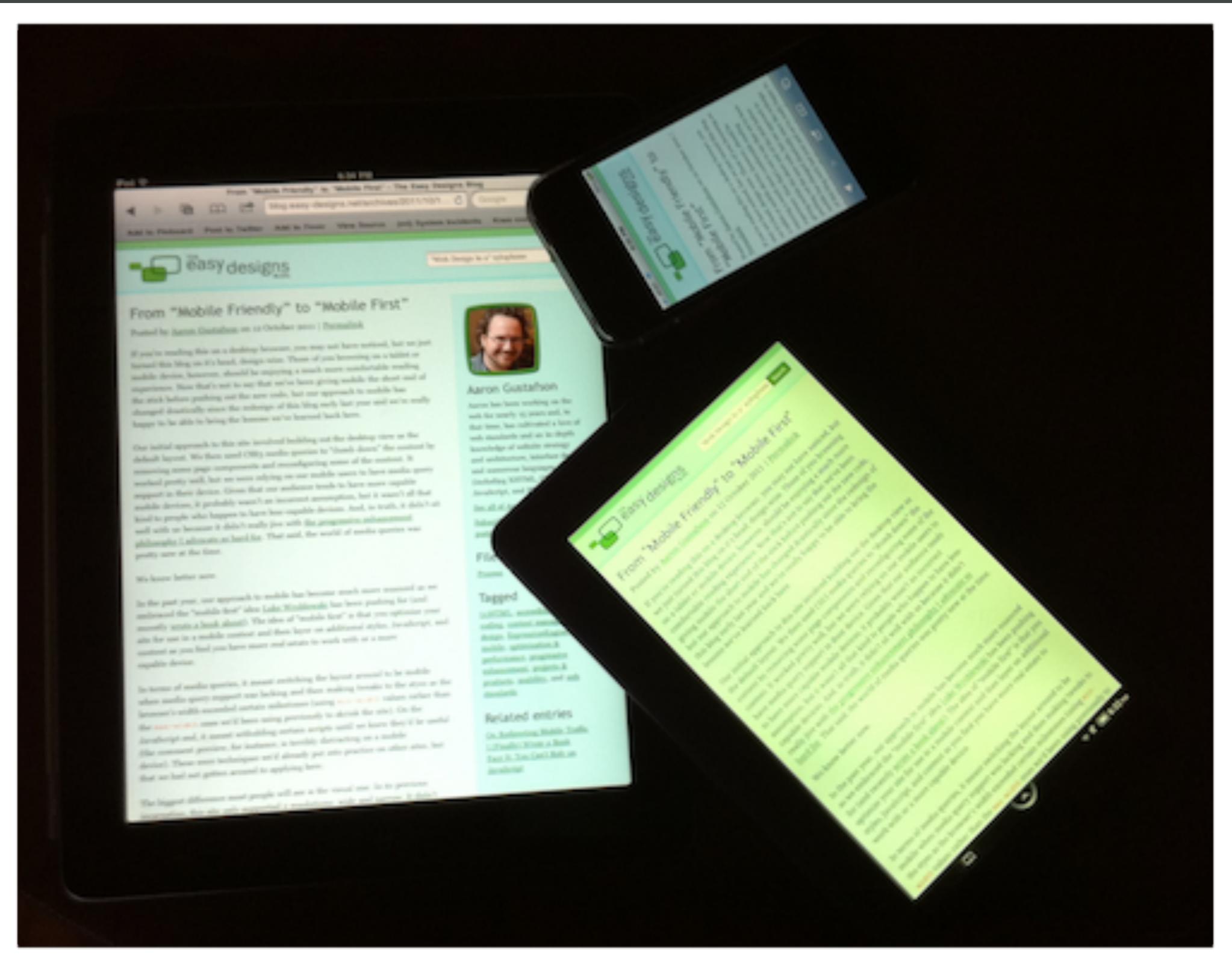
```
#intro {
    /* Basic Layout */
}

/* ... */

[foo], #intro {
    /* Advanced Layout */
}
```

Parsing errors

```
@media screen, print, refrigerator {  
  /* IE will get these rules */  
}
```



@Media blocks

```
@media screen {  
  /* Styles for screen media only */  
}
```

@Media blocks+

```
@media only screen and (max-width:450px) {  
    /* Styles for screen media when browser  
       is 450px wide or below */  
}
```

Don't do this

```
@media  
  screen and (min-device-width:1024px)  
    and (max-width:989px),  
  screen and (max-device-width:480px),  
  screen and (max-device-width:480px)  
    and (orientation:landscape),  
  screen and (min-device-width:481px)  
    and (orientation:portrait) {  
  /* Layout for narrower desktop (below 990px)  
   or  
   iPhone running iOS 3 (or equivalent)  
   or  
   iPhone running iOS 4 (or equivalent) in "landscape" view  
   or  
   iPad (or equivalent) in "portrait" view */  
}
```

Mobile First w/ media queries

```
/* Universal Layout */  
  
@media screen {  
    /* Styles for all screens */  
}  
  
@media only screen and (min-width:481px) {  
    /* Styles for all screens 480px+ width */  
}  
  
@media only screen and (min-width:754px) {  
    /* Styles for all screens 754px+ width */  
}
```

Super Ffly T-shirt

\$23 ★★★★☆ 8 Reviews



QTY

1

SIZE

S

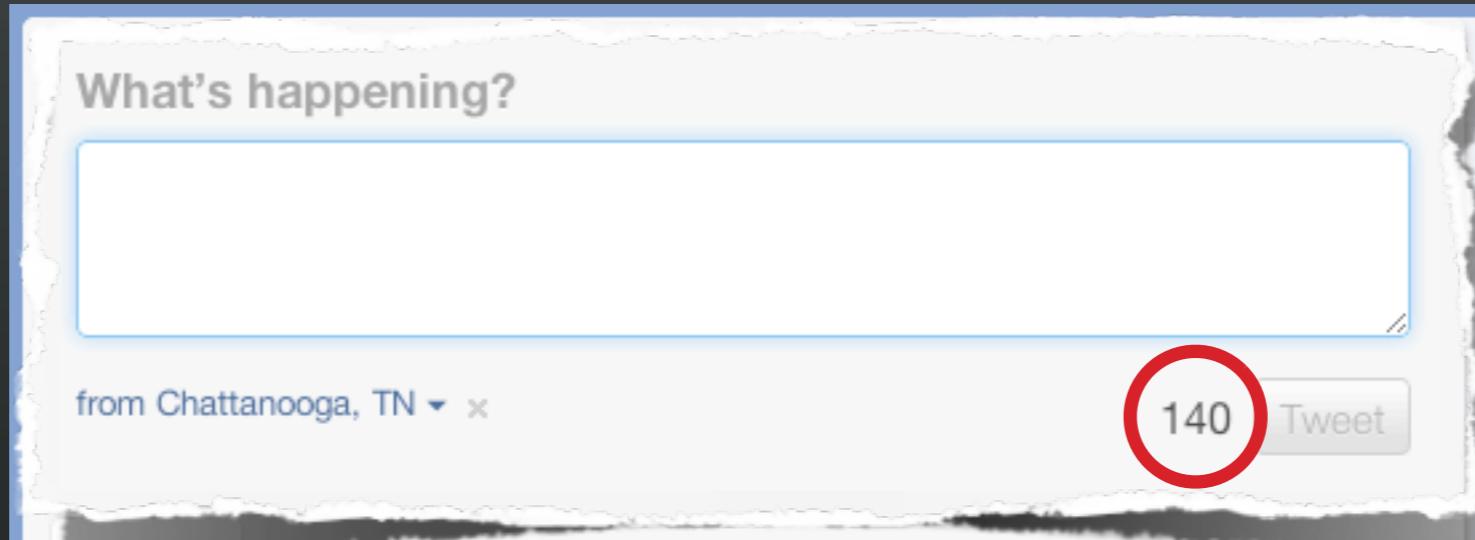


ADD TO CART

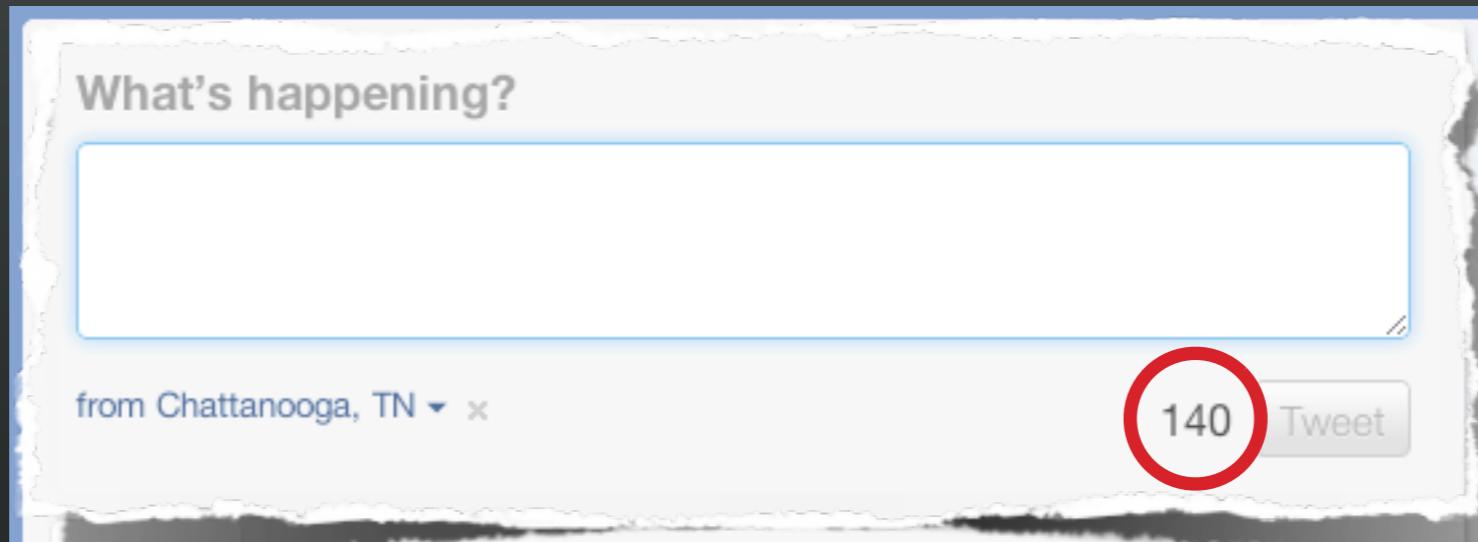
SHARE FIND NEARBY

http://is.gd/lazyloading_demo

PE with JavaScript

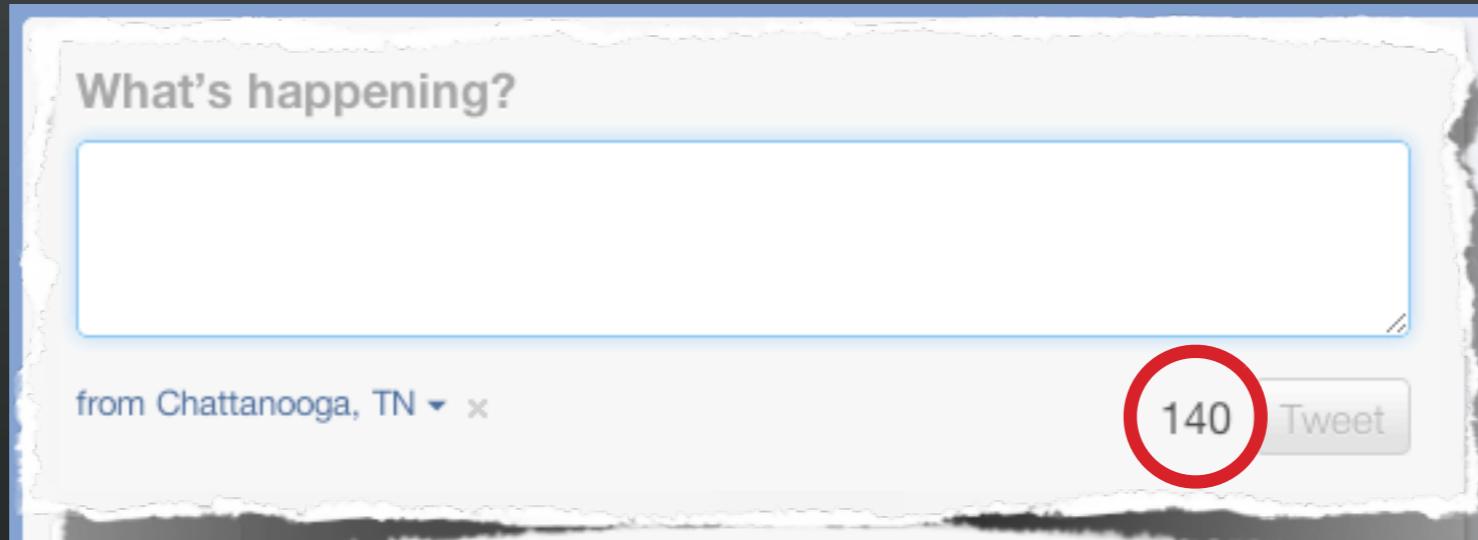


PE with JavaScript



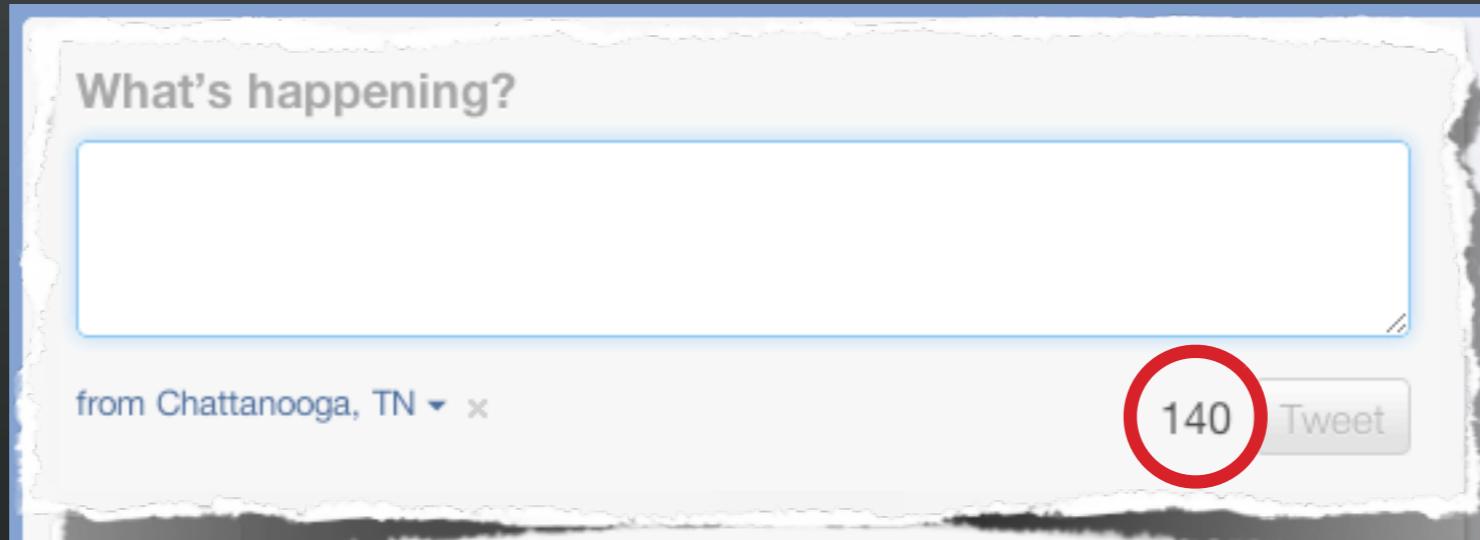
```
<input class="tweet-counter" value="140" disabled="disabled">
```

PE with JavaScript



```
<span id="chars_left_notice" class="numeric">
  <strong id="status-field-char-counter"
    class="char-counter">140</strong>
</span>
```

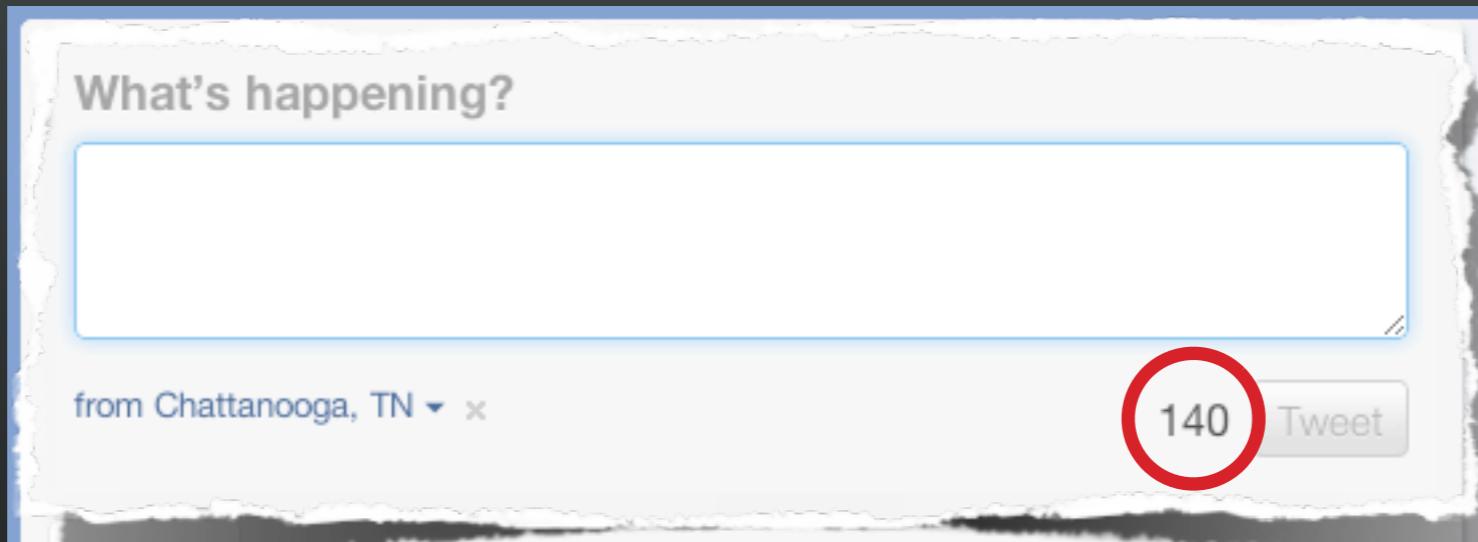
PE with JavaScript



```
<span class="tweet-counter">140<br><b class="hidden"> characters remaining</b></span>
```

```
.hidden {<br> position: absolute;<br> left: -999em;<br>}
```

PE with JavaScript

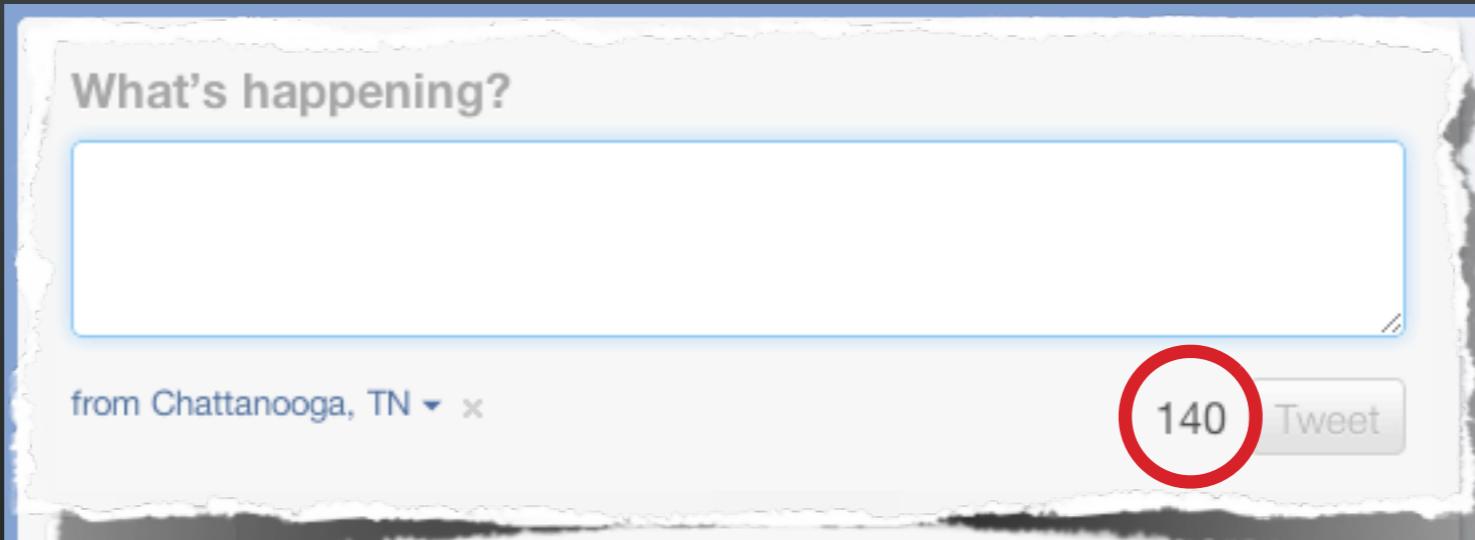


```
<span class="tweet-counter">maximum of 140 characters</span>
```



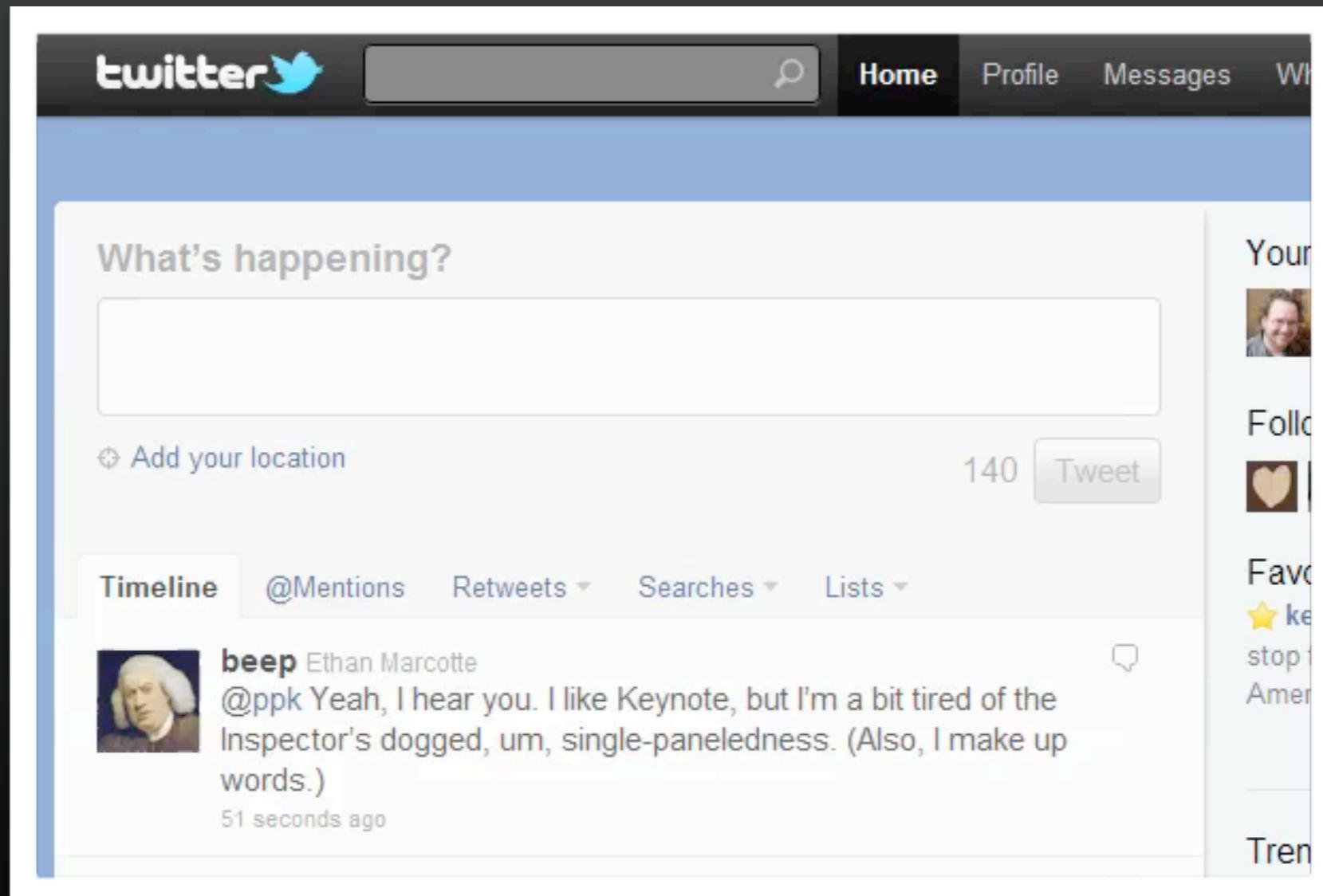
```
<span class="tweet-counter">140
  <b class="hidden"> characters remaining</b></span>
```

PE with JavaScript & ARIA



```
<span aria-live="polite" aria-atomic="true"  
      class="tweet-counter">140<b class="hidden">  
      characters remaining</b></span>
```

PE with JavaScript & ARIA



Complex interfaces

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">
  <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>
  <!-- ... -->
  <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>
```

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>
```

PE with JavaScript & ARIA

Pumpkin Pie

OVERVIEW

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



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

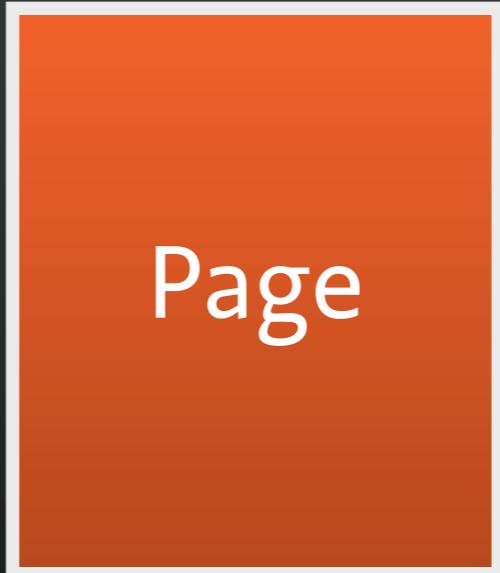
1 can (15oz) pumpkin puree

1 can (12fl oz) evaporated milk

DIRECTIONS

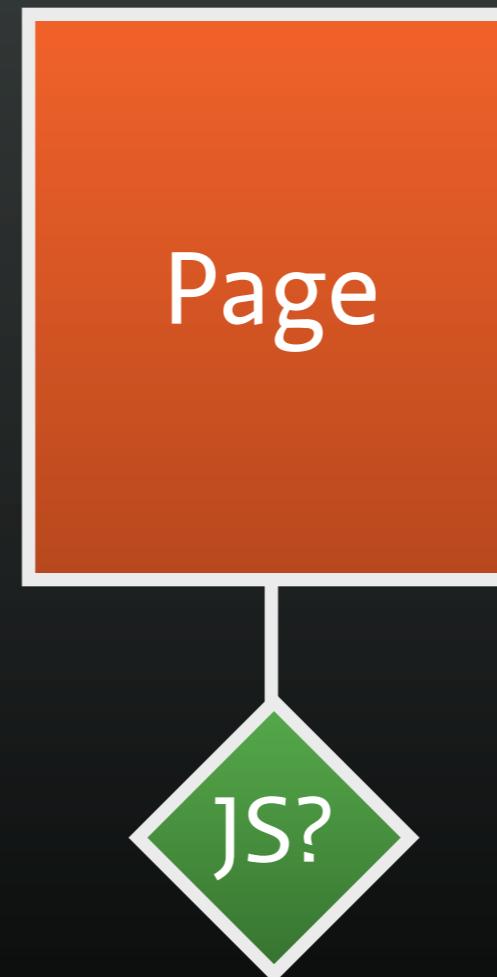
1. Preheat oven to 425°F
2. Combine sugar, salt, cinnamon, ginger and cloves in small bowl.
3. Beat eggs lightly in large bowl.
4. Stir in pumpkin and sugar-spice mixture.

Widget logic

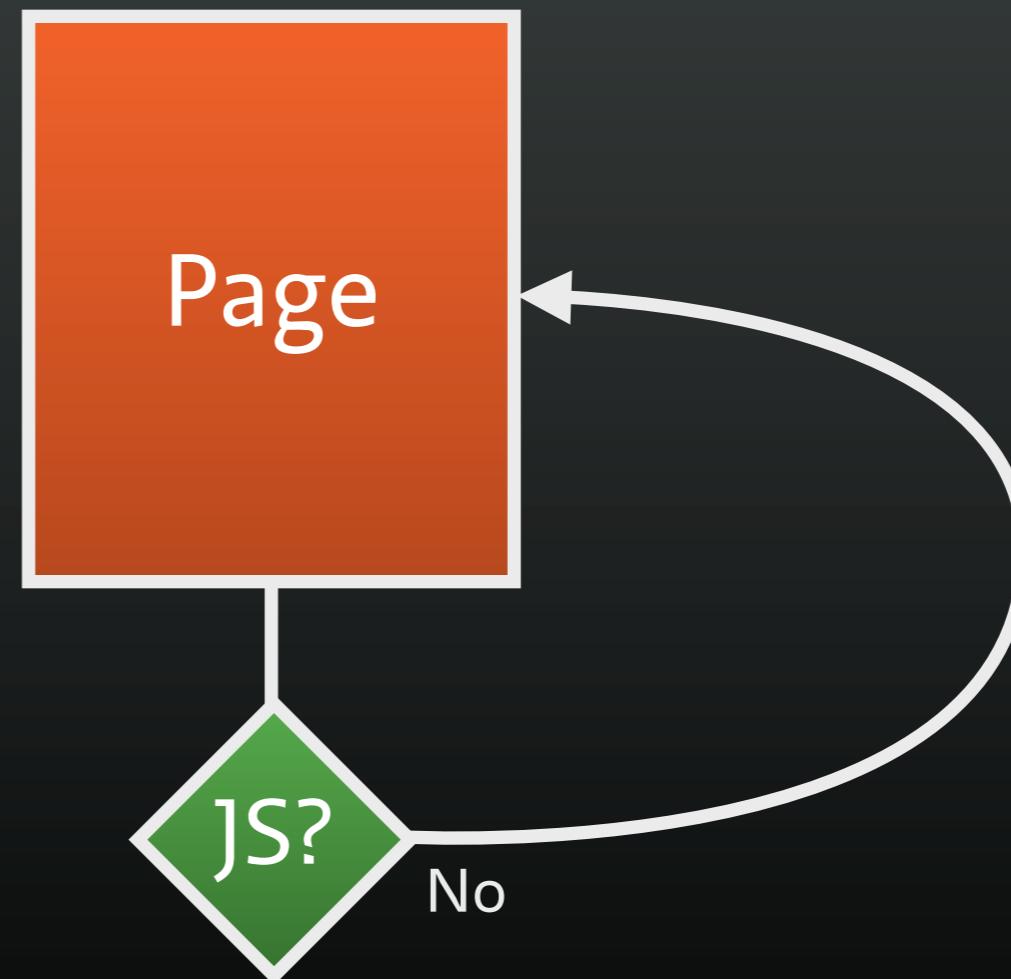


Page

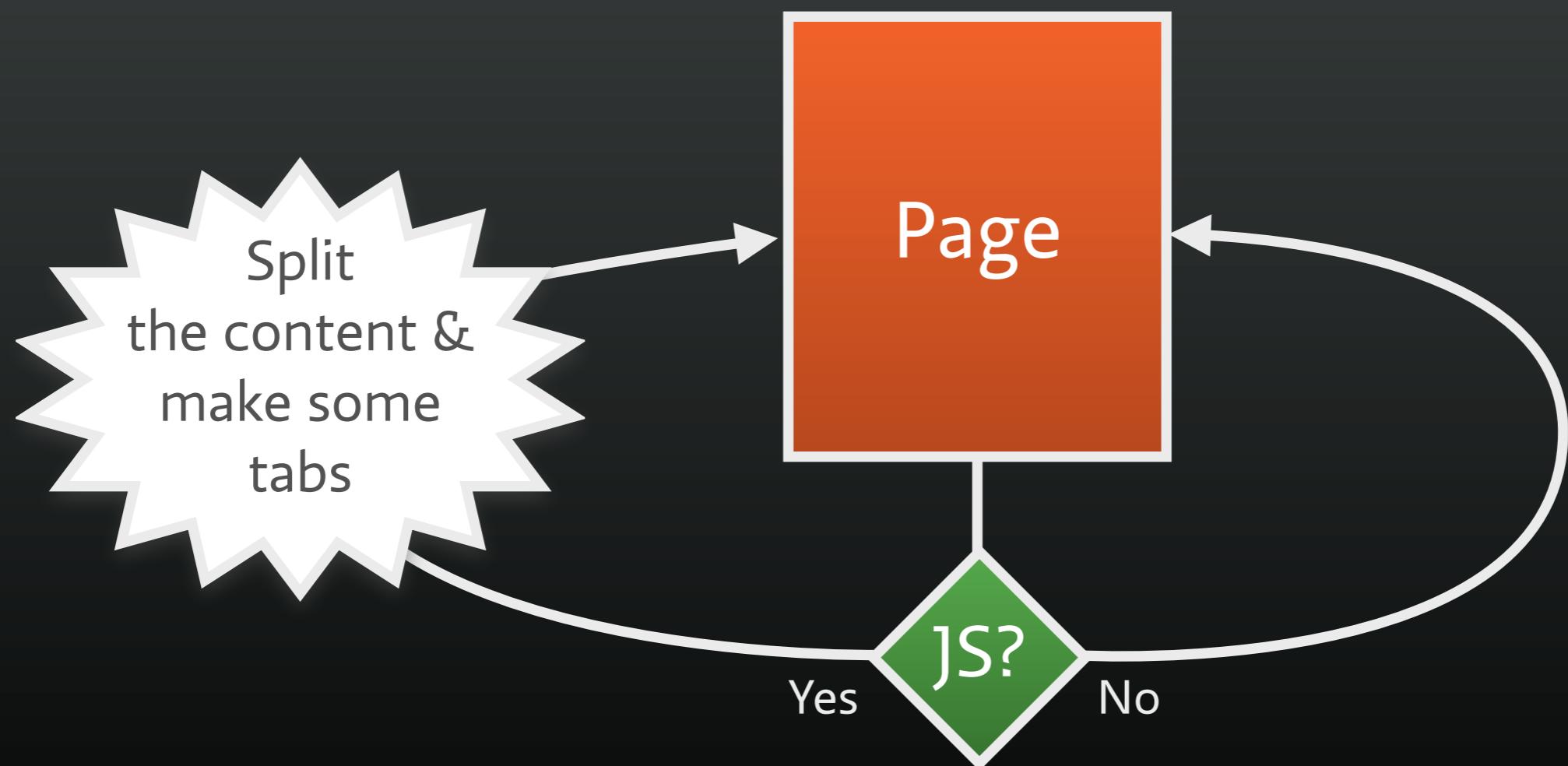
Widget logic



Widget logic



Widget logic



On DOM ready

```
<h1>Pumpkin Pie</h1>
<div class="tabbed-interface TabInterface-enabled">
  <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>
    <!-- ... -->
  </section>
  <!-- ... -->
  <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>
```

Adaptive UI

```
<div class="tabbed-interface" data-tab-threshold="800">

<h2>Overview</h2>
<!-- ... -->

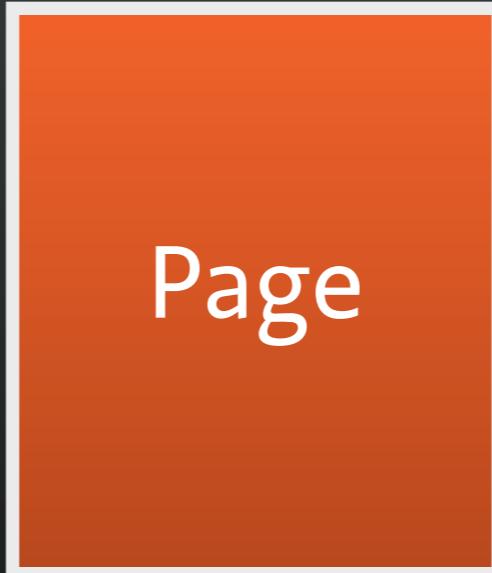
<h2>Ingredients</h2>
<!-- ... -->

<h2>Directions</h2>
<!-- ... -->

<h2>Nutrition</h2>
<!-- ... -->

</div>
```

Adaptive widget logic

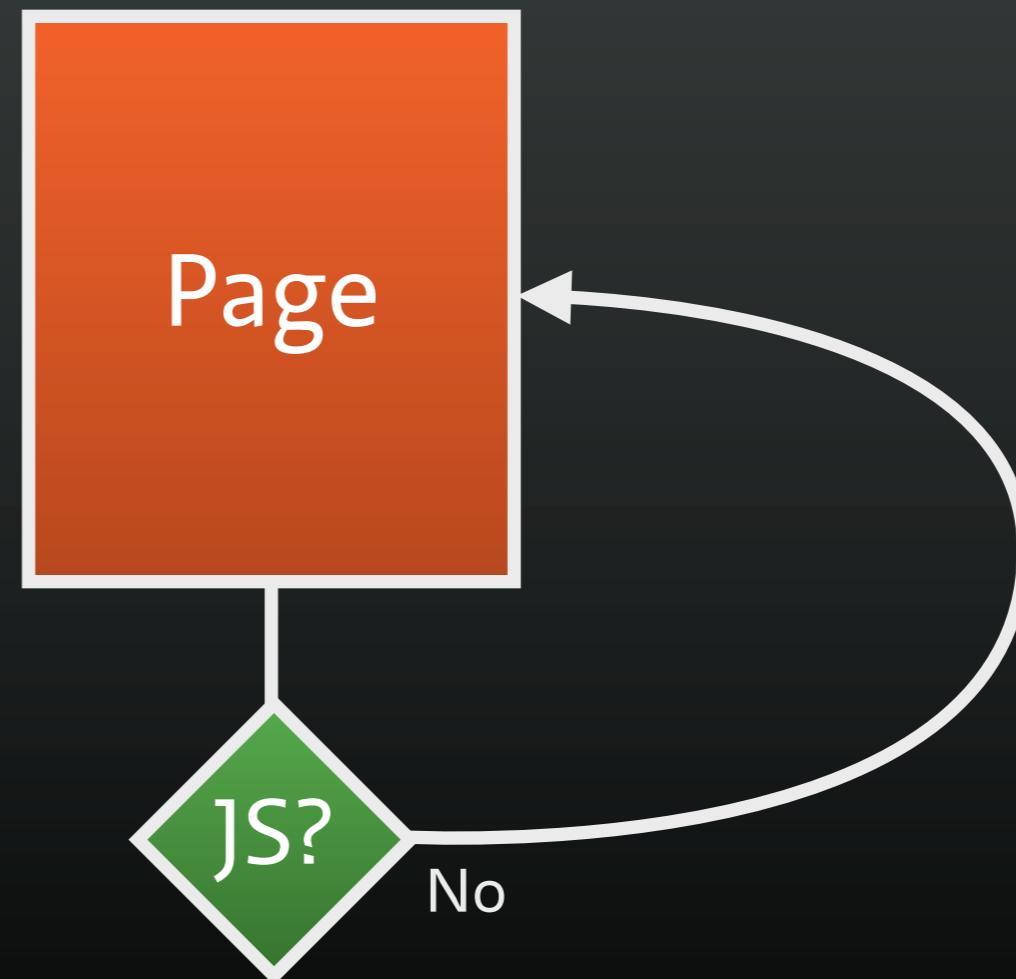


Page

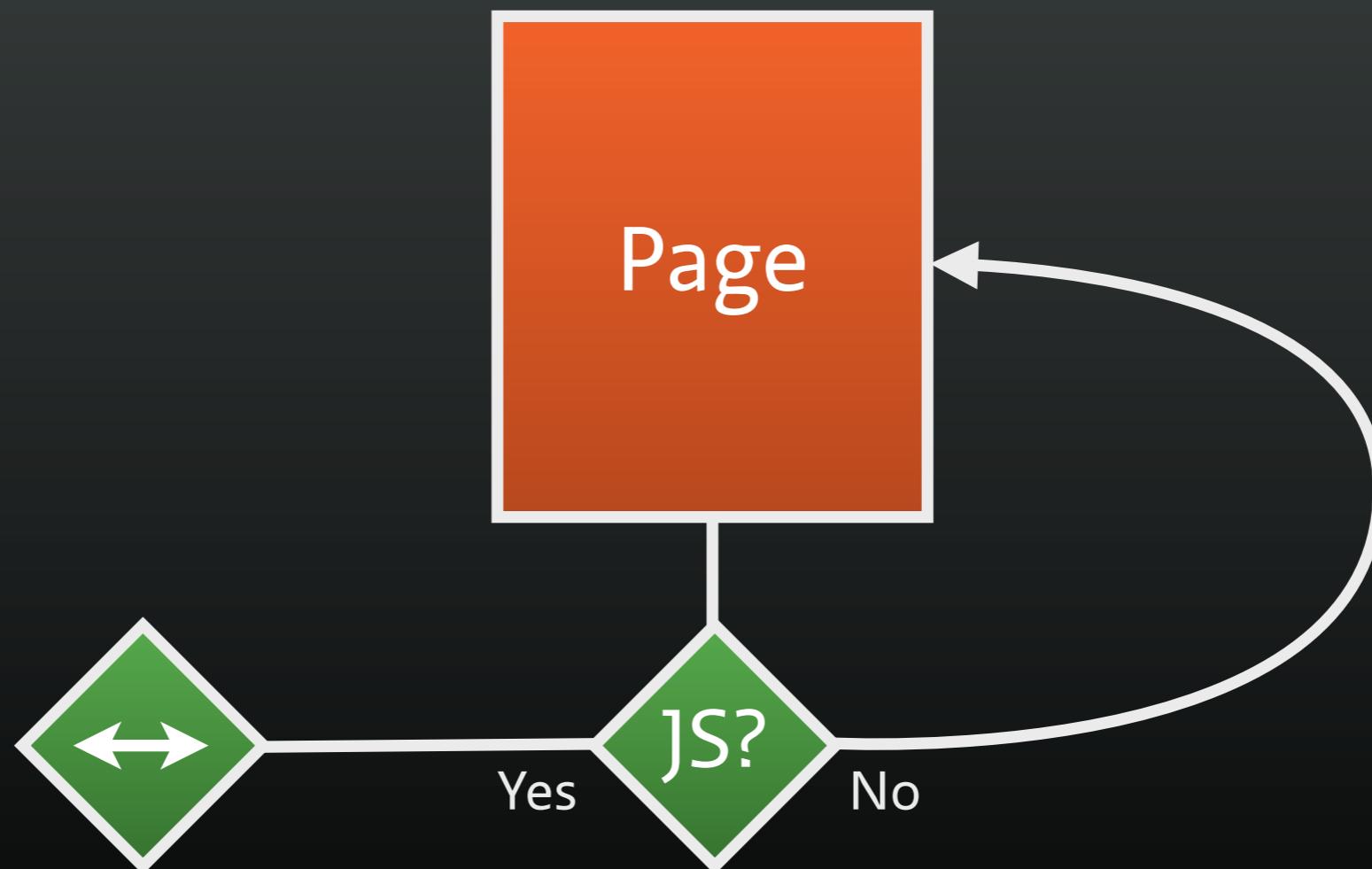
Adaptive widget logic



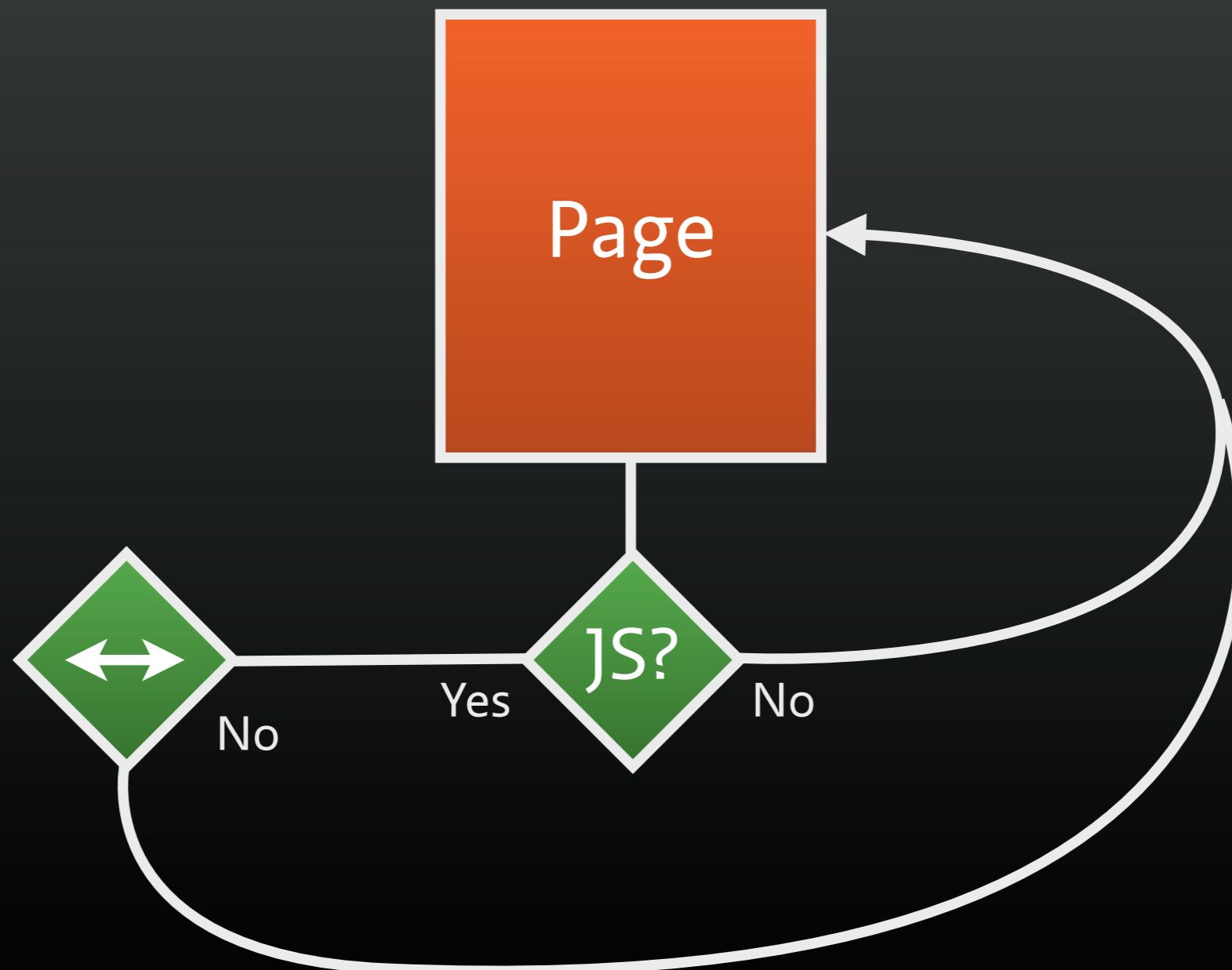
Adaptive widget logic



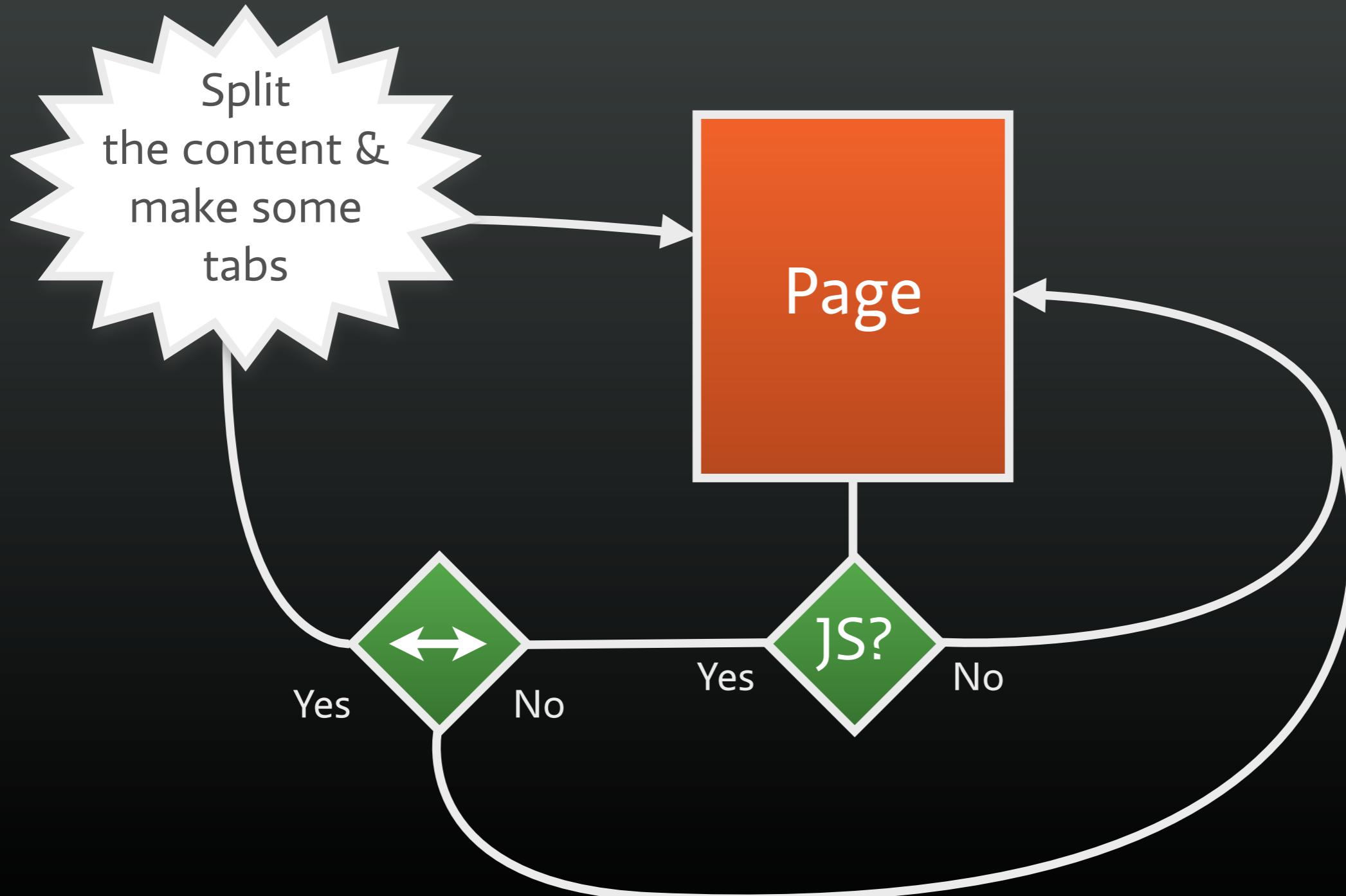
Adaptive widget logic



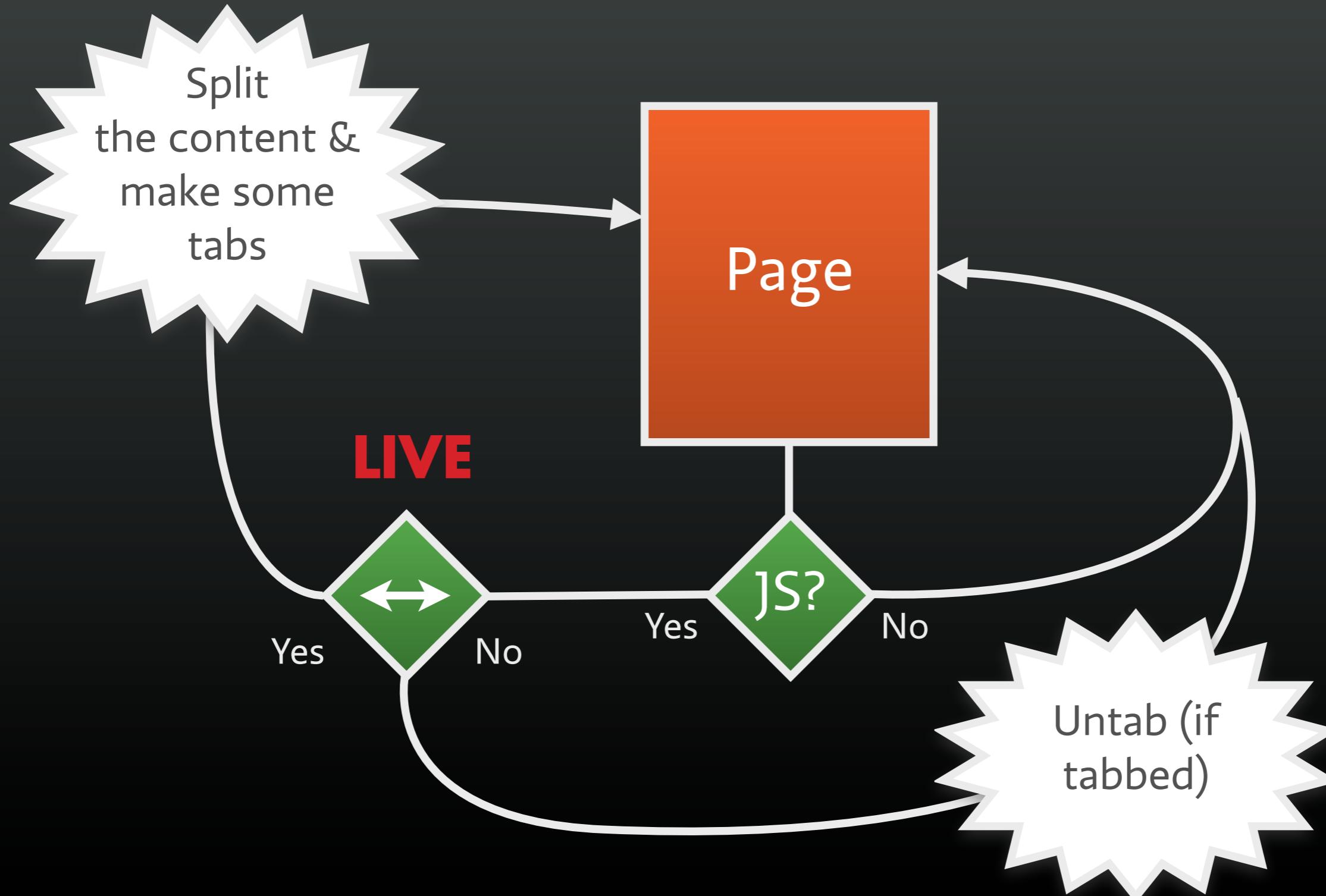
Adaptive widget logic



Adaptive widget logic



Adaptive widget logic



PE with JavaScript & ARIA

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



`role="application"
aria-activedescendant="folder-1"`

PE with JavaScript & 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!

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Ready In: 1hr 10min



PE with JavaScript & ARIA

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

Pumpkin Pie

OVERVIEW **INGREDIENTS** **DIRECTIONS** **NUTRITION**

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

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



PE with JavaScript & ARIA

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

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



PE with JavaScript & ARIA

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



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

PE with JavaScript & ARIA

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 x 9-inch deep dish pie

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



Pumpkin pie Mozilla Firefox
Photo by [Paul Goyette](#), licensed under [Creative Commons](#).



THANK YOU!

<http://readlists.com/7d414b24/>

Building Adaptive Designs Now

by Aaron Gustafson

@AaronGustafson

Further reading:

<http://adaptivewebdesign.info>

<http://blog.easy-designs.net>

<http://mobilewebbestpractices.com>

Slides available at

<http://slideshare.net/AaronGustafson>

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