Responsible Responsive Web Design

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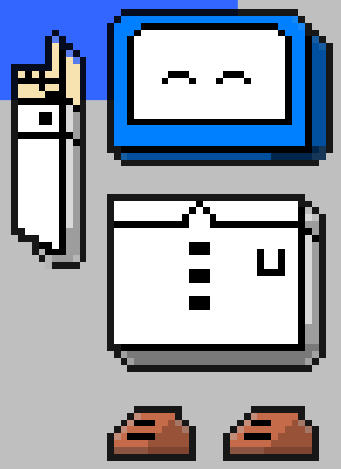

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What is Responsive Web Design?

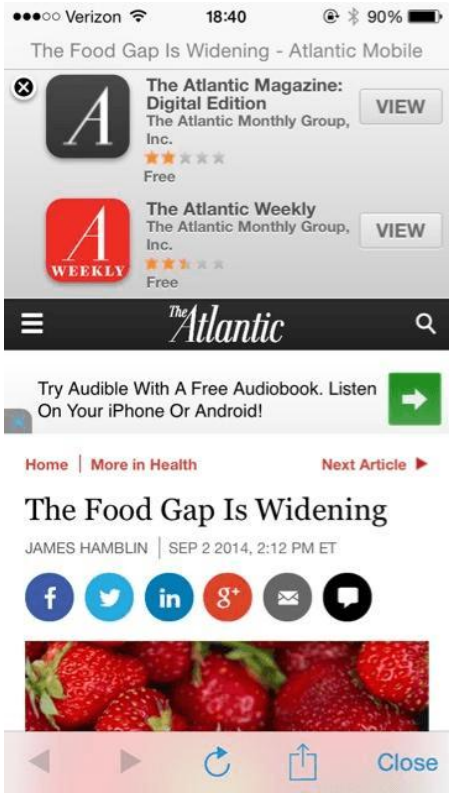
- an approach
- provide optimal user experience
- platform agnostic
- content first
- not a separate website

What is Responsive Web Design?

- not a separate site
- one codebase
- no context
- m.espn m.espn2
- mobile, desktop, UA sniffer
- SEO, device, orientation

Why Responsive Design?

- users don’t want an app



Why Responsive Design?

- you have mobile users
- don’t have money for apps
- accessible from any device
- SEO matters

How does it work?

- CSS3 spec
- media query
- IE9, FF3.5, Chrome 2
- 93.92%

How does it work?

- link and @import selectively* load
- window pixels

```
<link media="only screen and (max-width: 768px)"
  href="css/tablet.css" rel="stylesheet">

<style type="text/css">
  @import url(mobile.css) (max-width:479px);

  @media only screen and (max-width: 959px) {
    /* Smaller than standard 960 (devices and browsers) */
  }
</style>
```

How does it work?

- foolproofing the viewport
- meta tag not w3c standard

```
<meta name="viewport" content="width=device-width; initial-scale=1">
<style type="text/css">
  @-webkit-viewport{width:device-width}
  @-moz-viewport{width:device-width}
  @-ms-viewport{width:device-width}
  @-o-viewport{width:device-width}
  @viewport{width:device-width}
</style>
```

How does it work?

- meta tag; no meta

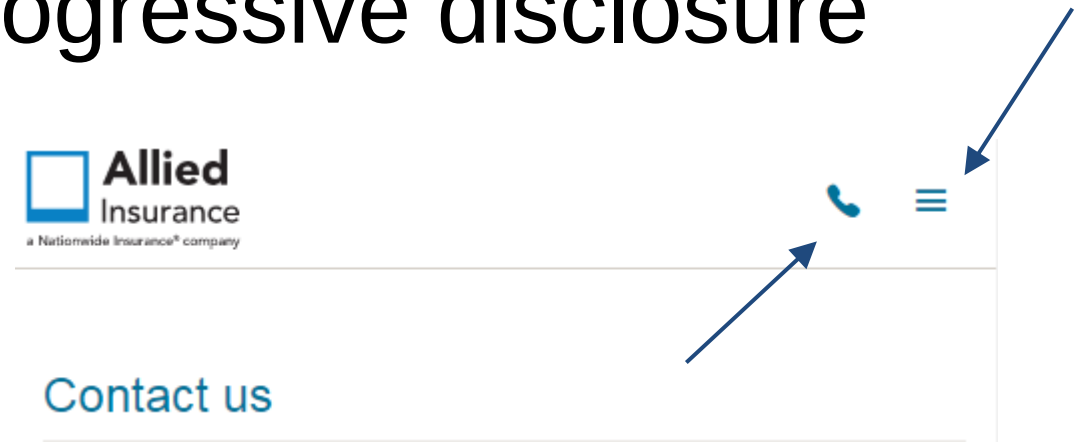
```
pre { white-space: pre-wrap; font-family: "Courier New", Courier, monospace; }
body { background: yellow; }
@media only screen and (min-width: 768px) and (max-width: 959px) {
  /* Tablet Portrait size to standard 960 (devices and browsers) */
  body { background: #87CEFA; }
}

@media only screen and (max-width: 767px) {
  /* All Mobile Sizes (devices and browser) */
  body { background: red; }
  pre { font-family: "Times New Roman", Times, serif; }
}

@media only screen and (min-width: 480px) and (max-width: 767px) {
  /* Mobile Landscape Size to Tablet Portrait (devices and browsers) */
  body { background: green; }
}

@media only screen and (max-width: 479px) {
  /* Mobile Portrait Size to Mobile Landscape Size (devices and browsers) */
  body { background: orange; }
  pre { font-family: "Courier New", Courier, monospace; }
}
```

Layout Process

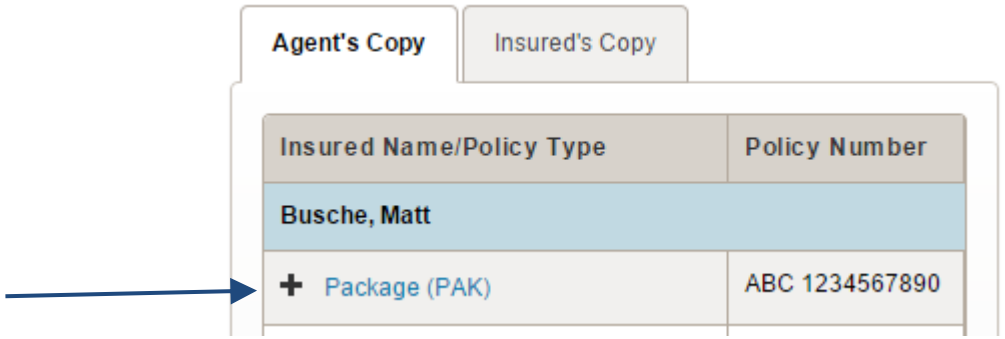
- identify constraints
- mobile first!
- useful for some, useful for all
- design for touch screen

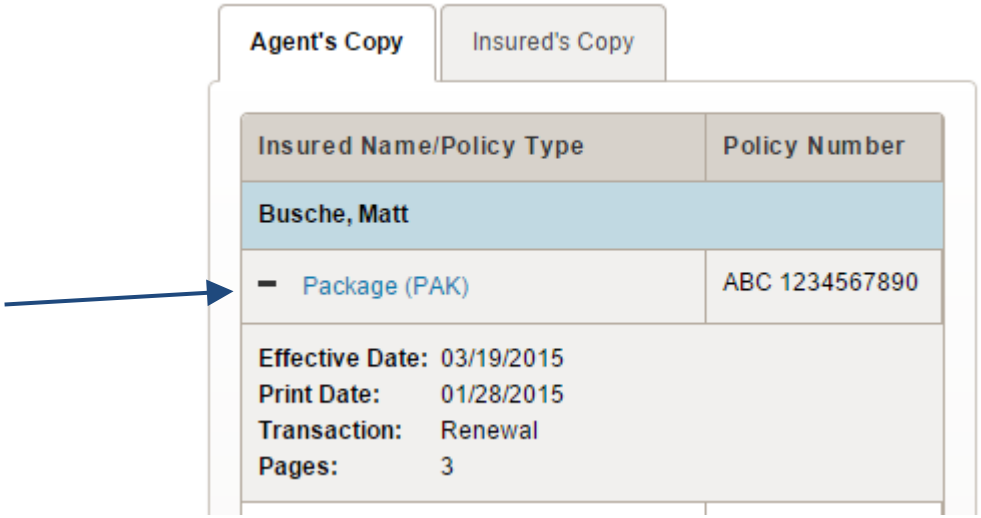
Layout Process

- identifying breakpoints
- progressive disclosure



Progressive disclosure





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Mobile First Development

- can cause issues with unsupported browsers
- determine what's important
- progressive enhancement

Supporting the unsupported

- respond.js IE 6+, FF2+
- HTML5shiv
- PIE.js - CSS3 (Prog IE)
- selectivizr - CSS3 pseudo classes

```
<!--[if lt IE 9]>
  <asset:javascript src="js/html5shiv.js"/>
  <asset:javascript src="js/respond.js"/>
  <asset:javascript src="js/PIE.js"/>
  <asset:javascript src="js/selectivizr.js"/>
<![endif]-->
```

Determining the unsupported

- graceful degradation
- media queries

```
@media only all {
  /*only inserted if browser supports css3*/
}
```

- HTML4 or HTML5

```
if ('querySelector' in document
  && 'localStorage' in window
  && 'addEventListener' in window) {
  // bootstrap the javascript application
}
```

Detecting features

- modernizr

```
<html lang="en" class="js flexbox canvas webgl no-touch
geolocation indexeddb draganddrop no-websockets">
```

```
.no-borderradius .box { border: solid 2px blue; }

.borderradius .box { border: solid 1px blue; }
```

```
if (!Modernizr.input.placeholder) {
  // placeholder isn't supported
  // use a polyfill
}
```

Detecting other features

- @supports

```
@supports ( display: flex ) {
  #content { display: flex; }
}
@supports not ( display: flex ) {
  body { width: 100%; height: 100%; background: white; }
}
```

- user agent detection

```
Mozilla/5.0 (Windows NT 10.0; WOW64) AppleWebKit/537.36 (
KHTML, like Gecko) Chrome/39.0.2171.71 Safari/537.36 Edge/12.0
```

Progressive Enhancement

- EnhanceJS
- upgrading images for HD screens

```
@media (-webkit-min-device-pixel-ratio: 1.5),
  (min--moz-device-pixel-ratio: 1.5),
  (-o-min-device-pixel-ratio: 3/2),
  (min-device-pixel-ratio: 1.5),
  (min-resolution: 144dpi) {
  /* Styles for HD screens here */
}
```

Lang attribute

- no lang then unknown
- accessibility - screen readers
- hyphens
- internationalization (i18n)

```
p { hyphens: auto; }
```

```
<html lang="en" class="js flexbox canvas webgl no-touch
geolocation indexeddb draganddrop no-websockets">
```

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Load times

- average page size is 1.977MB
  - 63% Images (1260 KB)
  - 16% Other (212)
  - 15% JavaScript (301)
  - 3% CSS (60)
  - 3% HTML (59)
- most are not responsive

Decreasing image load time

- PNG - decrease # of colors
- JPEG - better encoding
- grunt imagemin - svg and gif
- ImageOptim (mac)
- icons.png 78.3KB -> 22.0KB
- NW banner 80.7KB -> 21.9KB

Decreasing image load time

- svg images require fallback
- svg is not always “better”
- 93.83% support

```
<svg width="190" height="60">
  <image xmlns:xlink="http://www.w3.org/1999/xlink"
    xlink:href="ai.svg" src="ai.png" width="190" height="60">
  </image>
</svg>
```

ai	PNG image	3 KB
ai	SVG Document	13 KB

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Decreasing image load time

- svg images
- CSS shapes [47.88%]

```
<svg>
  <polygon fill="black" points="6.504,0 8.509,4.068,13,4.722 9.755,7.
  887 10.512,12.357 6.504,10.246,2.484,12.357 3.251,7.887 0,4.722 4.
  492,4.068">
</svg>
```

Decreasing image load time

- data uri - 96.78%
- ajax load data
- <picture>; one request 40.06%
- Picturefill (polyfill)

```
<picture>
  <source media="(min-width: 720px)" srcset="ai.png">
  <source media="(min-width: 500px)" srcset="ai2.png">
  <img src="ai3.png" alt="allied">
</picture>
```

Grunticon

- grunt.js task
- takes folder of svg/png files
- outputs css; graceful degradation
    - svg data url
    - png data url
    - png image

Decreasing CSS load time

- minify files
    - remove comments
- reduce # of files (concat)
- development vs production
- gzip

CSS nw-styles.css?r=44 static.nationwide.com/stati...	GET	200 OK	text/css	www.nationwi... Parser	34.8 KB 254 KB
CSS d?3bb2a6e53c9684ffdc9a9... use.typekit.net/c/54a6a7/1...	GET	200 OK	text/css	uii5kiq.js:8 Script	100 KB 131 KB

Pros/Cons one CSS file

- only one http request
- may send more than you need
- css is redundant; gzip is great

Decreasing JS load time

- minify files
- reduce # of files (concat)
- development vs production
- minify/gzip better with one file

jquery-1.11.2	278 KB
jquery-1.11.2.min	94 KB

```
var c = [],
d = c.slice,
e = c.concat,
f = c.push,
g = c.indexOf,
h = {},
```

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Enabling Gzip

- .htaccess file

```
<IfModule mod_deflate.c>
  # Compress HTML, CSS, JavaScript, Text, XML and fonts
  AddOutputFilterByType DEFLATE text/css
  AddOutputFilterByType DEFLATE text/html
  AddOutputFilterByType DEFLATE text/javascript
```

Load times with basic tricks

- 60% savings on images, JS, CSS
- average page size is .931MB
  - 54% Images (504 KB)
  - 23% Other (212)
  - 13% JavaScript (120)
  - 4% CSS (36)
  - 6% HTML (59)
- excludes (potential) gzip savings

Page layout

- CSS in head
- script at end of the body

```
<!doctype html>
<html lang="en">
  <head>
    <link rel="stylesheet" type="text/css" href="style.css">
  </head>

  <body>
    <div class="container">
      Page content
    </div>
    <script src="script.js"></script>
  </body>
</html>
```

Flexible images/videos

- flexible images

```
<img src="image.png"
  style="max-width: 100%; width: auto; height: auto;">
```

- flexible videos

Perceived performance

- mobile users have short attention spans
- detecting above the fold css
- lazy load content

Testing

- use real devices
- chrome dev tools
- network tools
- timeline
- slow connections!

Testing

- opendevicelab.com
- WebPagetest
- PageSpeed Insights