WORLD Interactive Agency

EVENT

PHILLY TECH WEEK 2014 DEV DAY

PRESENTATION

INTRODUCTION TO RESPONSIVE WEB DESIGN

April 5, 2014

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#introRWD

INTRODUCTIONS

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(626) 286-8328 www.huyfong.com

INTRODUCTIONS

(and Spirit Animal)

WHAT ARE WE GONNA COVER?

- *Learn what is Responsive Web Design (RWD)*
- *Understand why RWD is the new hotness*
- *Get hands-on with the building blocks of RWD*
- *Performance considerations*
- *Review tools for testing your responsive builds*

WHAT IS RESPONSIVE WEB DESIGN?

~~WHAT IS RESPONSIVE WEB DESIGN?~~

HOW DID WE GET HERE?

cingular
11:38 AM
The New York Times - Breaking News...
http://nytimes.com/
The New York Times

1st CRACK AT MOBILE SOLUTION

*http://**m.**awesomesaucewebsite.com*

*http://**mobile.**awesomesaucewebsite.com*

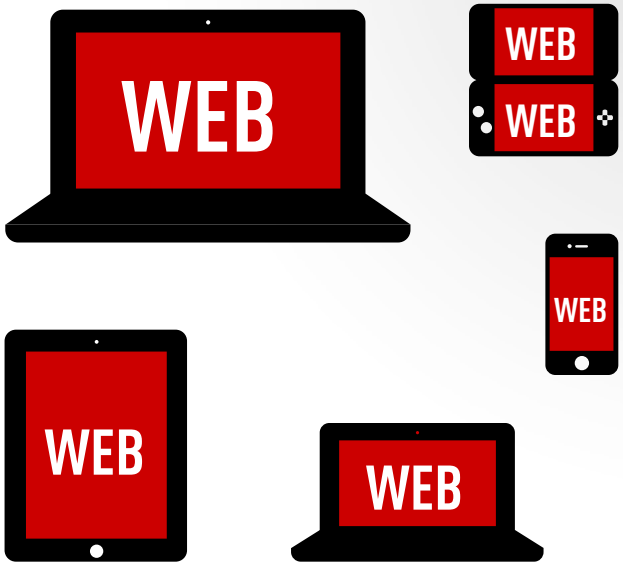
M.ISSUES

- *Without a CMS, **two versions of content** to update*
- *With a CMS, you had **multiple sets of code** to update*
- ***Trimmed down features** to avoid repetition*
- *Users were **forced onto mobile website***
- ***Developers choose device** to target*

THOSE DEVICES ARE MULTIPLYING

WEB

WEB


WEB
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WEB

WEB

WEB

WHAT IS RESPONSIVE WEB DESIGN?

WHAT IS RESPONSIVE WEB DESIGN?

*The concept of **Responsive Web Design** was **introduced by Ethan Marcotte** in a 2010 article on the website A List Apart*

http://bit.ly/0sf9I9

WHAT IS RESPONSIVE WEB DESIGN?

*A **collection of techniques** for progressively enhancing a website that enables a quality user experience **for different contexts***

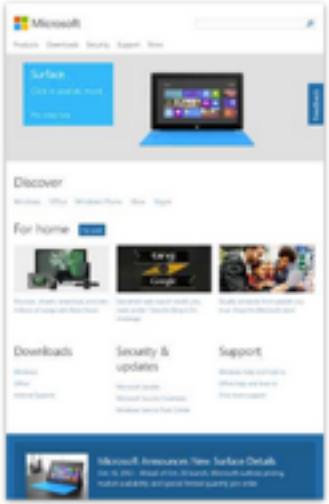
RWD, Y U SO HOT?!

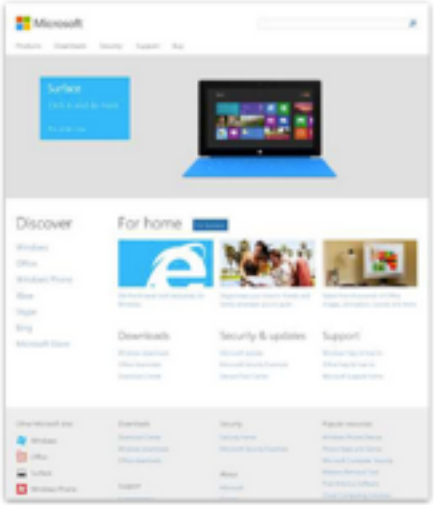
RWD, Y U SO HOT?

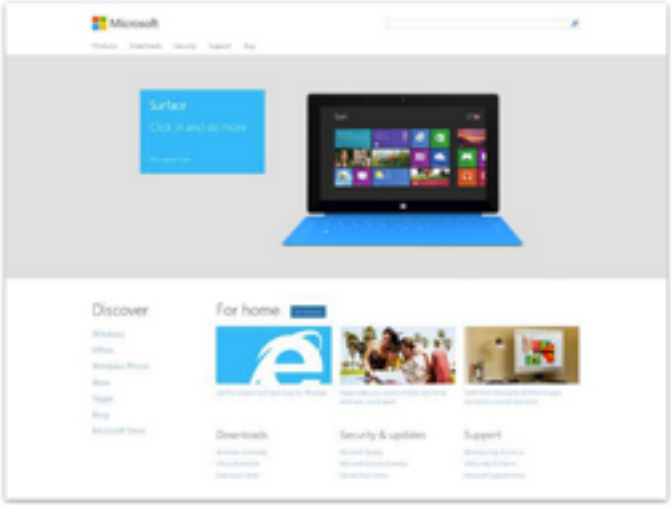
TIME

http://mediaqueri.es/ti/

RWD, Y U SO HOT?
MICROSOFT





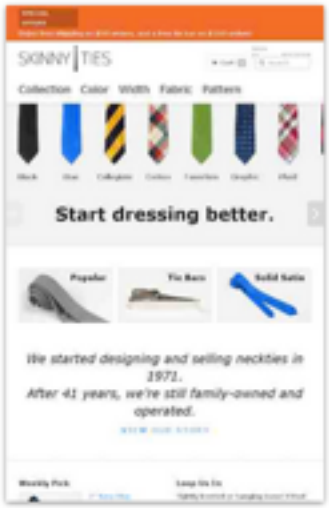


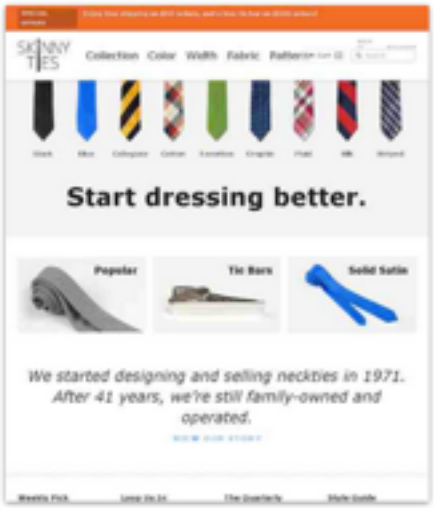
http://mediaqueri.es/ms/

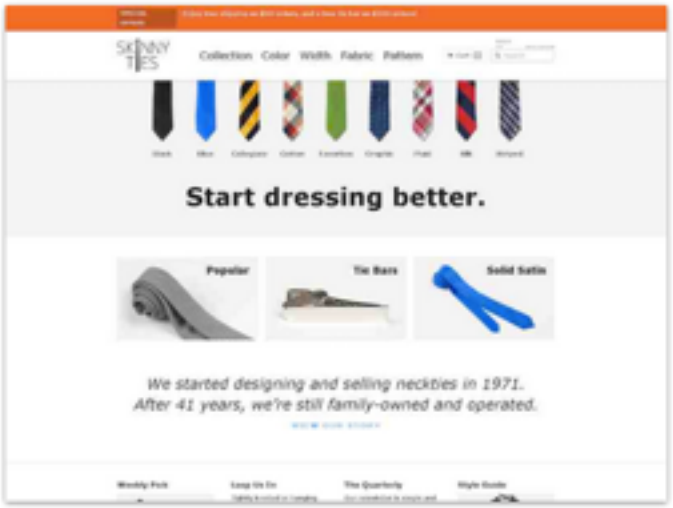
RWD, Y U SO HOT?
STARBUCKS

http://mediaqueri.es/st/

RWD, Y U SO HOT?
SKINNY TIES







http://mediaqueri.es/skt/

RWD, Y U SO HOT?

- *Google says so because they know...*
  - *67% of visitors are more likely to frequent and purchase from a mobile-friendly site*
  - *Broken social links discourage engagement*
  - *Prompting for app downloads with interstitials = bad*

TODAY'S PROJECT

TODAY'S PROJECT

Explore the elements of Responsive Web Design by taking an existing page layout and converting it to a ***fluid responsive layout***

TODAY'S PROJECT

https://github.com/o3world/intro-rwd-workshop

TODAY'S PROJECT

- ***Web Browser*** *(Chrome or Firefox)*
- ***Development Toolkit*** *(Inspector or Firebug)*
- ***Text Editor*** *(Sublime Text 2 - www.sublimetext.com/2)*

https://github.com/o3world/intro-rwd-workshop

< hands-on >... 10 mins

https://github.com/o3world/intro-rwd-workshop

RWD BUILDING BLOCKS

RESPONSIVE WEB DESIGN BUILDING BLOCKS

- *Flexible Grid Layout*
- *Fluid Media (images and video)*
- *Media Queries*

RESPONSIVE WEB DESIGN BUILDING BLOCKS

- ***Flexible Grid Layout***
- *Fluid Media (images and video)*
- *Media Queries*

FLEXIBLE GRID LAYOUT

FIXED GRID LAYOUT

FLEXIBLE GRID LAYOUT

- ***Eliminate pixel-based measurements*** *for widths, margins, and paddings in CSS*
- *Still* ***respecting the ratios*** *of content areas in our design*

FLEXIBLE GRID LAYOUT

FLEXIBLE GRID LAYOUT

target / context = result

FLEXIBLE GRID LAYOUT

target / context = result

The **target** is the desired width for the current element in pixels

FLEXIBLE GRID LAYOUT

target / context = result

The **context** is the width of the container of the current element (target) in pixels

FLEXIBLE GRID LAYOUT

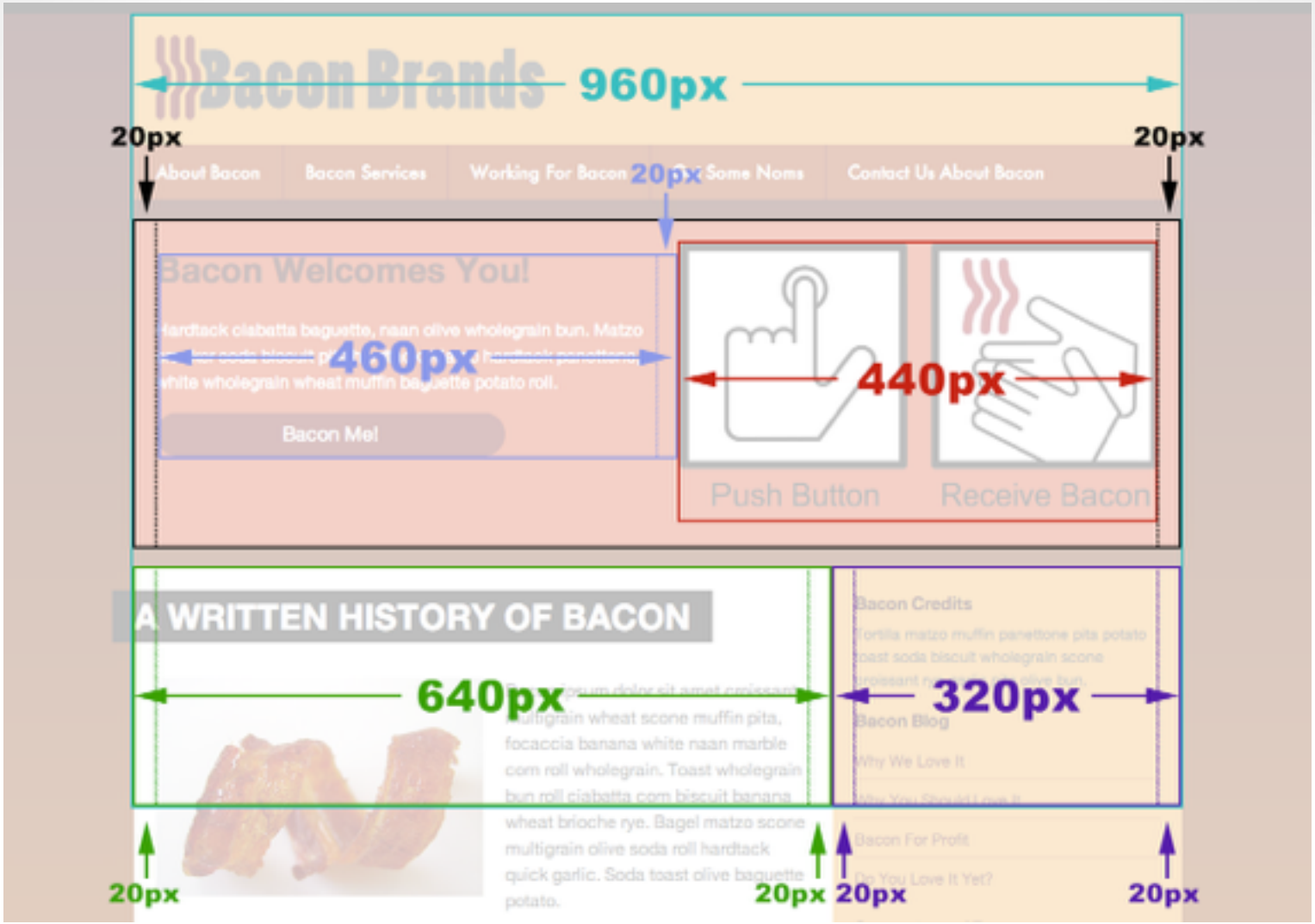
target / context = result

The **result** is the percentage equivalent that will now represent the elements width in our CSS

FLEXIBLE GRID LAYOUT

```
/*
 * Main Content
 *
 ***********************************************************/

.container-content { margin: 20px 0; background-color: #fff; }

main { float: left; padding: 20px; width: 640px; }

main img { margin-right: 20px; margin-bottom: 10px; float: left; }


/*
 * Complementary Content
 *
 ***********************************************************/

aside { float: left; padding: 20px; width: 320px; background: #f2a950; }

aside p { font-size: .875em; }

.list-links li { border-top: 1px solid #a6370f; padding: 5px 0; list-style: none; }

.list-links li:first-child { border-top: none; }

.list-links a { font-size: .875em; color: #731010; }
```

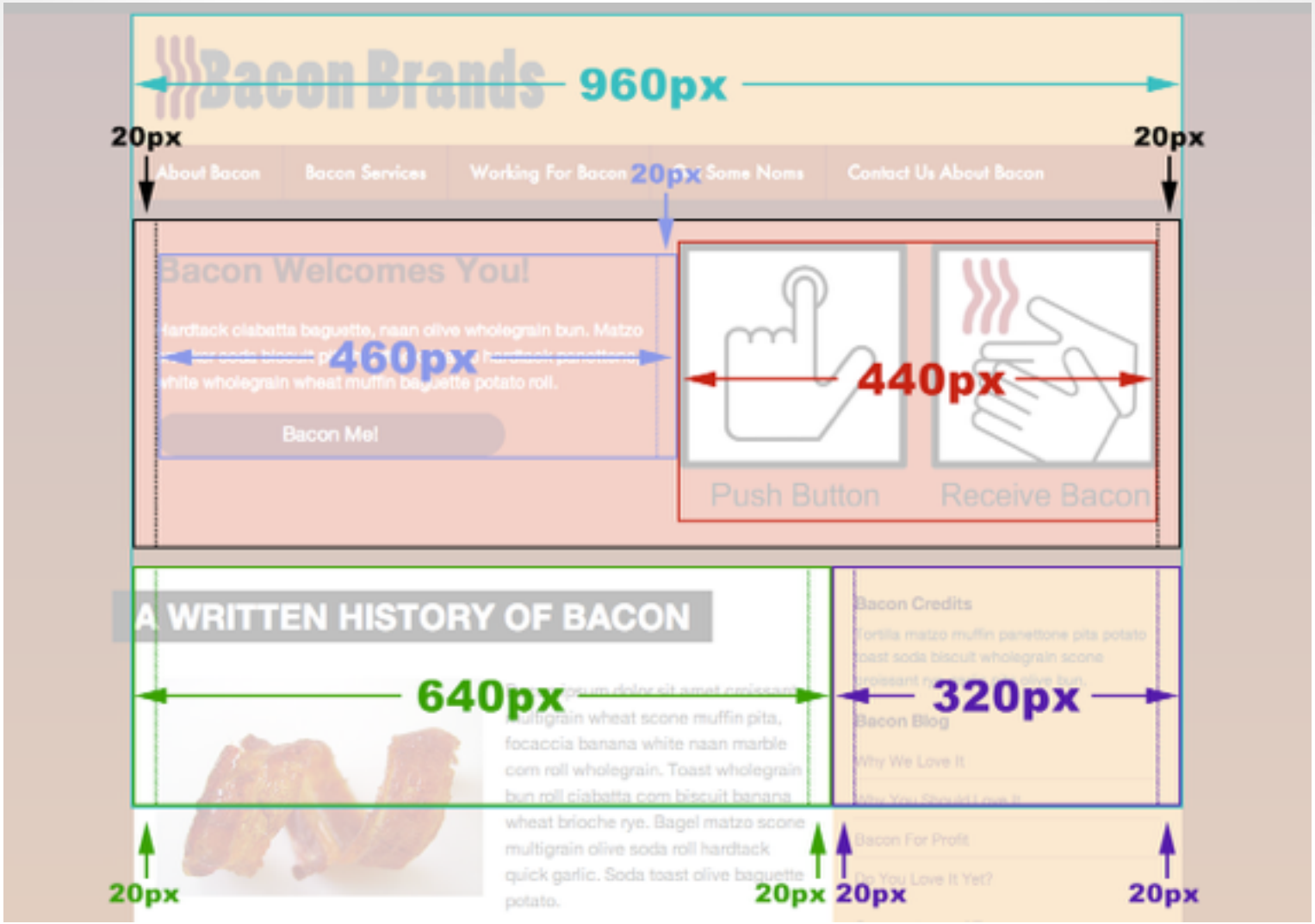
FLEXIBLE GRID LAYOUT



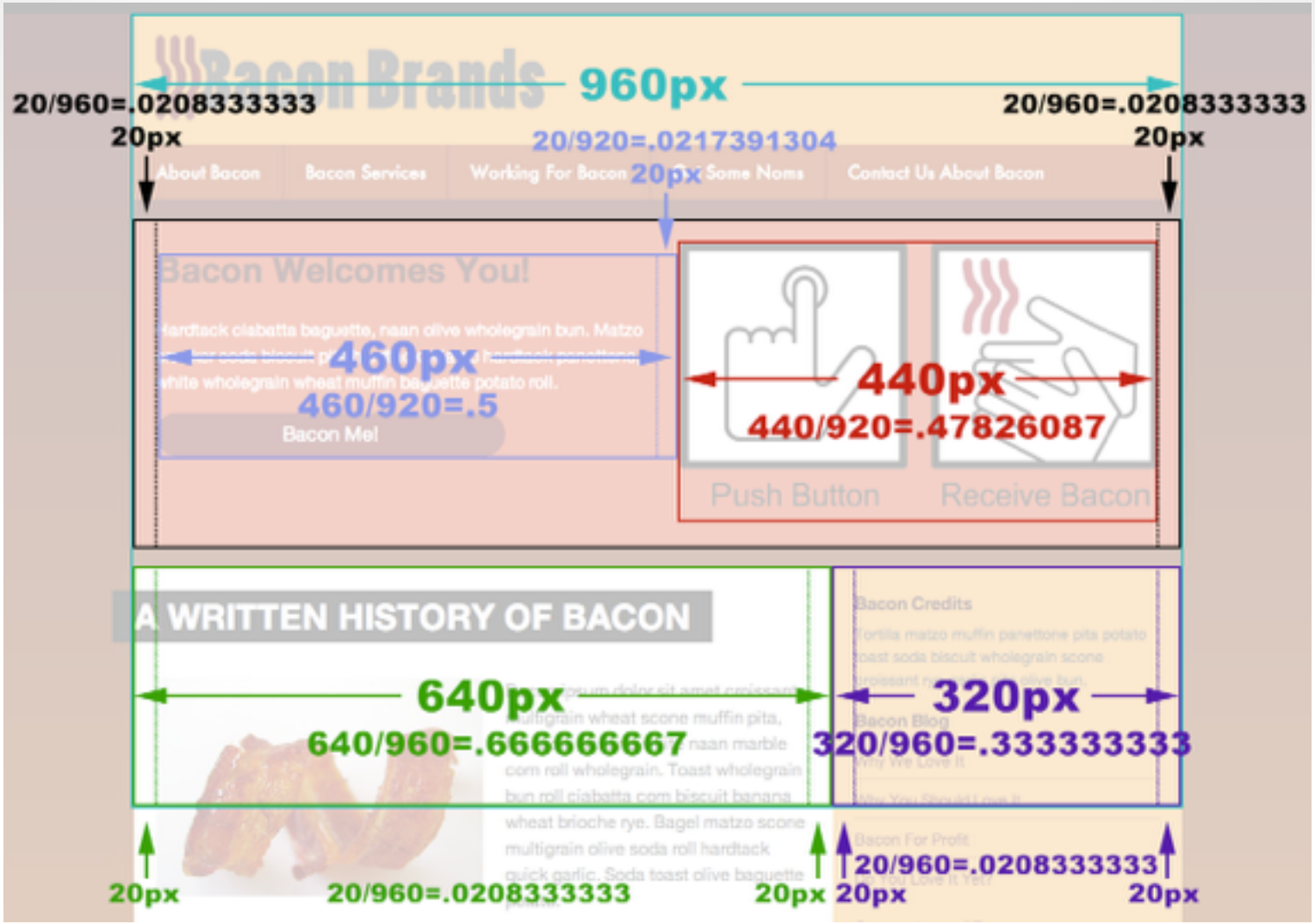
FLEXIBLE GRID LAYOUT

```
/*
 * Global Selectors
 *
 ***********************************************************************/

*,
*:before,
*:after {
    -moz-box-sizing: border-box;
    -webkit-box-sizing: border-box;
    box-sizing: border-box; }
```

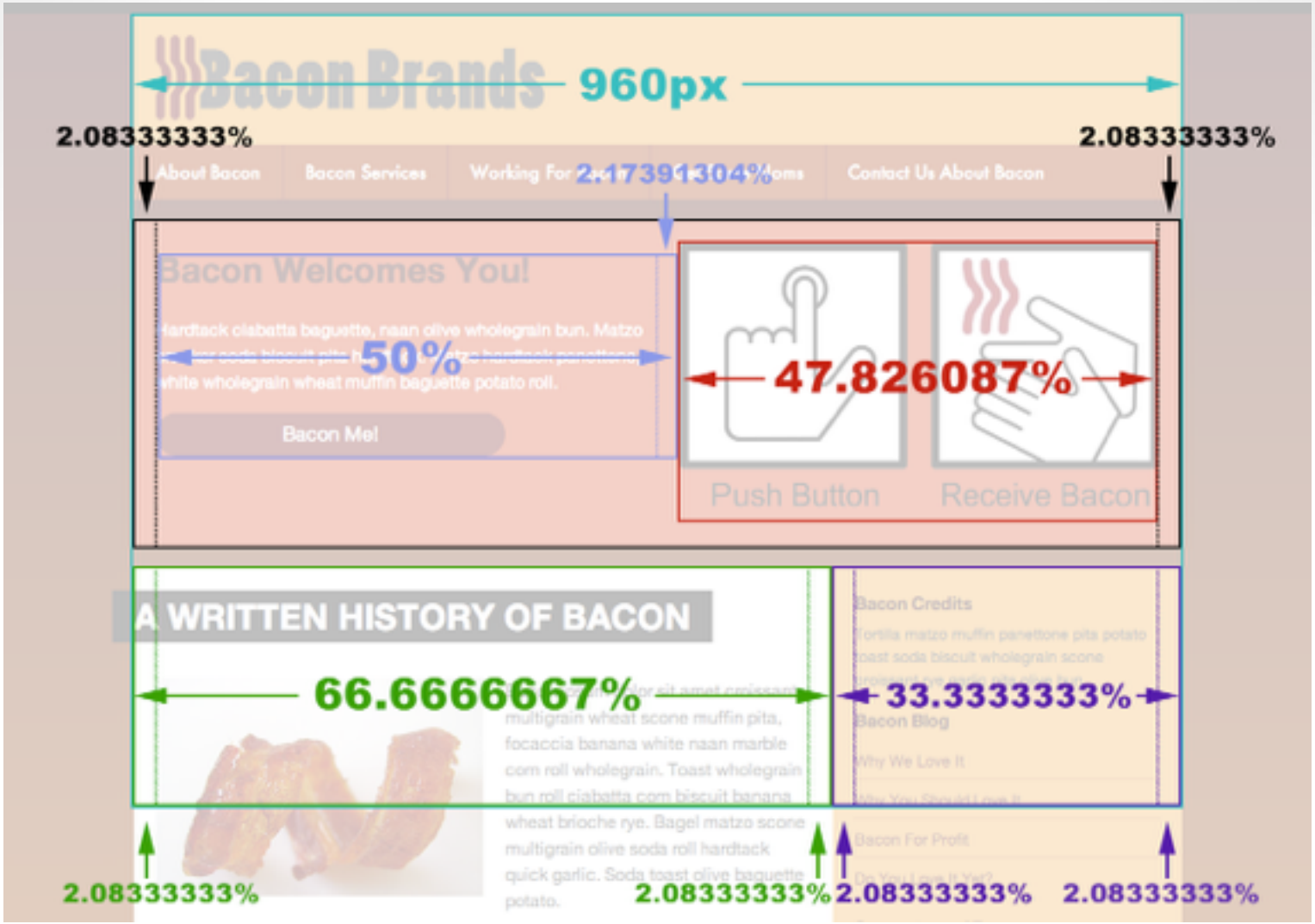
FLEXIBLE GRID LAYOUT



FLEXIBLE GRID LAYOUT



FLEXIBLE GRID LAYOUT



FLEXIBLE GRID LAYOUT

```
/*
 * Main Content
 *
 ***********************************************************/

.container-content { margin: 20px 0; background-color: #fff; }

main { float: left; padding: 20px 2.08333333%; /* 20/960 */ width: 66.6666667%; /* 640/960 */ }

main img { margin-right: 3.125%; /* 20/640 */ margin-bottom: 10px; float: left; }


/*
 * Complementary Content
 *
 ***********************************************************/

aside { float: left; padding: 20px 2.08333333%; /* 20/960 */ width: 33.3333333%; /* 320/960 */ background: #f2a950; }

aside p { font-size: .875em; }

.list-links li { border-top: 1px solid #a6370f; padding: 5px 0; list-style: none; }

.list-links li:first-child { border-top: none; }

.list-links a { font-size: .875em; color: #731010; }
```

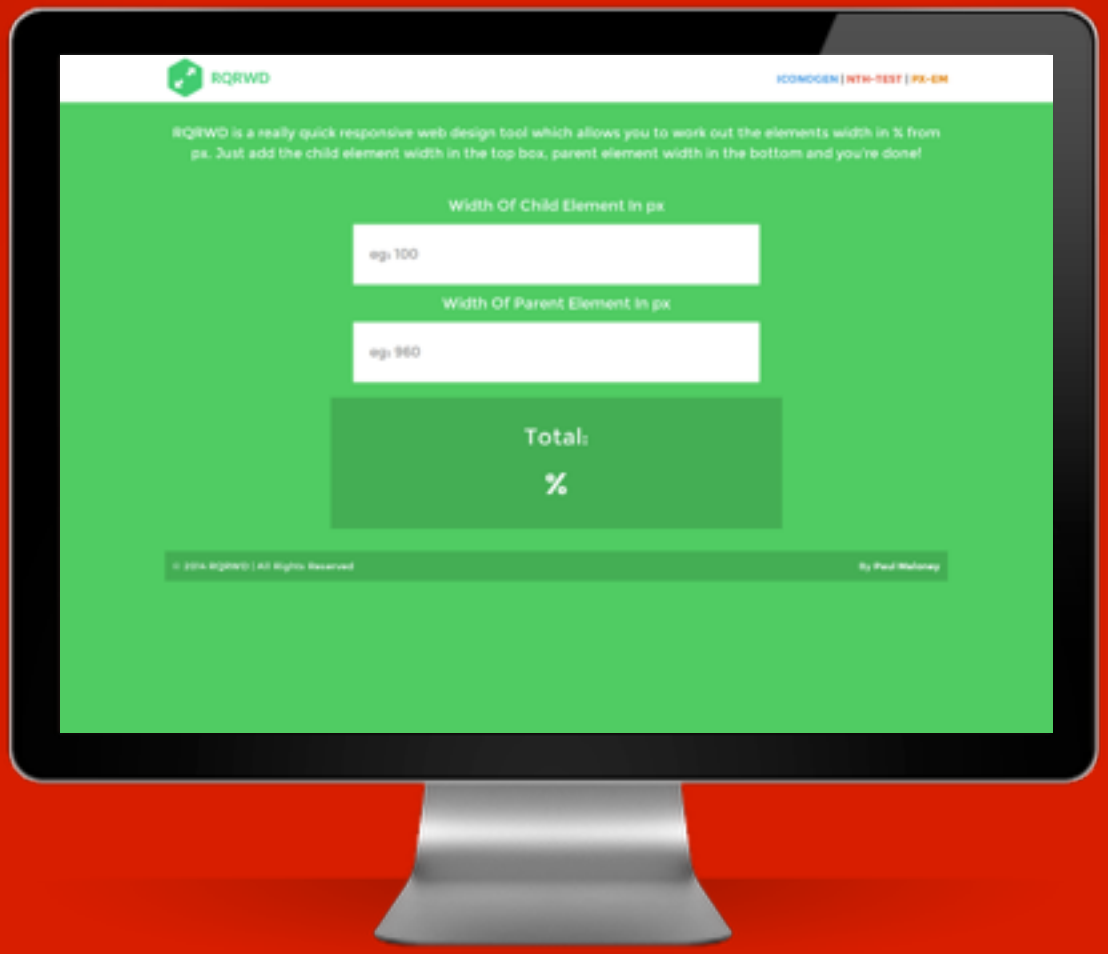
FLEXIBLE GRID LAYOUT

```
h4, .h4 {
    margin-bottom: .6em; font-size: 1.125em; color: #a6370f; }

h5, .h5 {
    margin-bottom: .4em; color: #400a0a; }


.container-site {
    margin: 0 auto;
    width: 960px; }


.btn {
    display: inline-block; margin: 0 auto 1em auto; border-radius: 20px; padding: 0 30px; max-width: 320px; width: 100%;
background-color: #731010; line-height: 40px; text-align: center; text-decoration: none; font-size: 1.125em; color: white; -
webkit-transition: background-color 0.2s linear; }
```

```
h4, .h4 {
    margin-bottom: .6em; font-size: 1.125em; color: #a6370f; }

h5, .h5 {
    margin-bottom: .4em; color: #400a0a; }


.container-site {
    margin: 0 auto;
    max-width: 960px; /* container */ }


.btn {
    display: inline-block; margin: 0 auto 1em auto; border-radius: 20px; padding: 0 30px; max-width: 320px; width: 100%;
background-color: #731010; line-height: 40px; text-align: center; text-decoration: none; font-size: 1.125em; color: white; -
webkit-transition: background-color 0.2s linear; }
```

FLEXIBLE GRID LAYOUT

REALLY QUICK RESPONSIVE WEB DESIGN



http://www.rqrwd.com/

< hands-on >... 20mins

RESPONSIVE WEB DESIGN BUILDING BLOCKS

- ***Flexible Grid Layout***
- *Fluid Media (images and video)*
- *Media Queries*

FLUID MEDIA

(Images and Video)

NOT-SO FLUID MEDIA

FLUID MEDIA (IMAGES)

```
<!-- hero banner -->
<div class="banner cf" role="banner">

    <div class="hero-desc">
        <h1>Bacon Welcomes You!</h1>
        <p>Hardtack ciabatta baguette, naan olive wholegrain bun. Matzo cracker soda biscuit pita hardtack. Matzo
hardtack panettone, white wholegrain wheat muffin baguette potato roll.</p>
        <a href="#link" class="btn" title="Bacon Me Now!">Bacon Me!</a>
    </div>

    <div class="hero-img">
        <img src="images/banner.png" alt="Push Button... Receive Bacon" width="439" height="255" />
    </div>
</div>
```

FLUID MEDIA (IMAGES)

```
/*
 * Global Selectors
 *
 ***********************************************************/

*,
*:before,
*:after {
    -moz-box-sizing: border-box;
    -webkit-box-sizing: border-box;
    box-sizing: border-box; }

html {
    background: -webkit-linear-gradient(top, #400a0a 0%, #d96b0b 100%) no-repeat; }

body {
    border-top: 10px solid #000;
    font-family: "Helvetica Neue", Helvetica, Arial, sans-serif;
    font-size: 1em; }

a {
    color: #a6370f;
    text-decoration: none; }

a:hover, a:active {
    text-decoration: underline; }

img {
    max-width: 100%; }

body { }
```

FLUID IMAGES

< hands-on >... 10 mins

FLUID MEDIA (VIDEO)

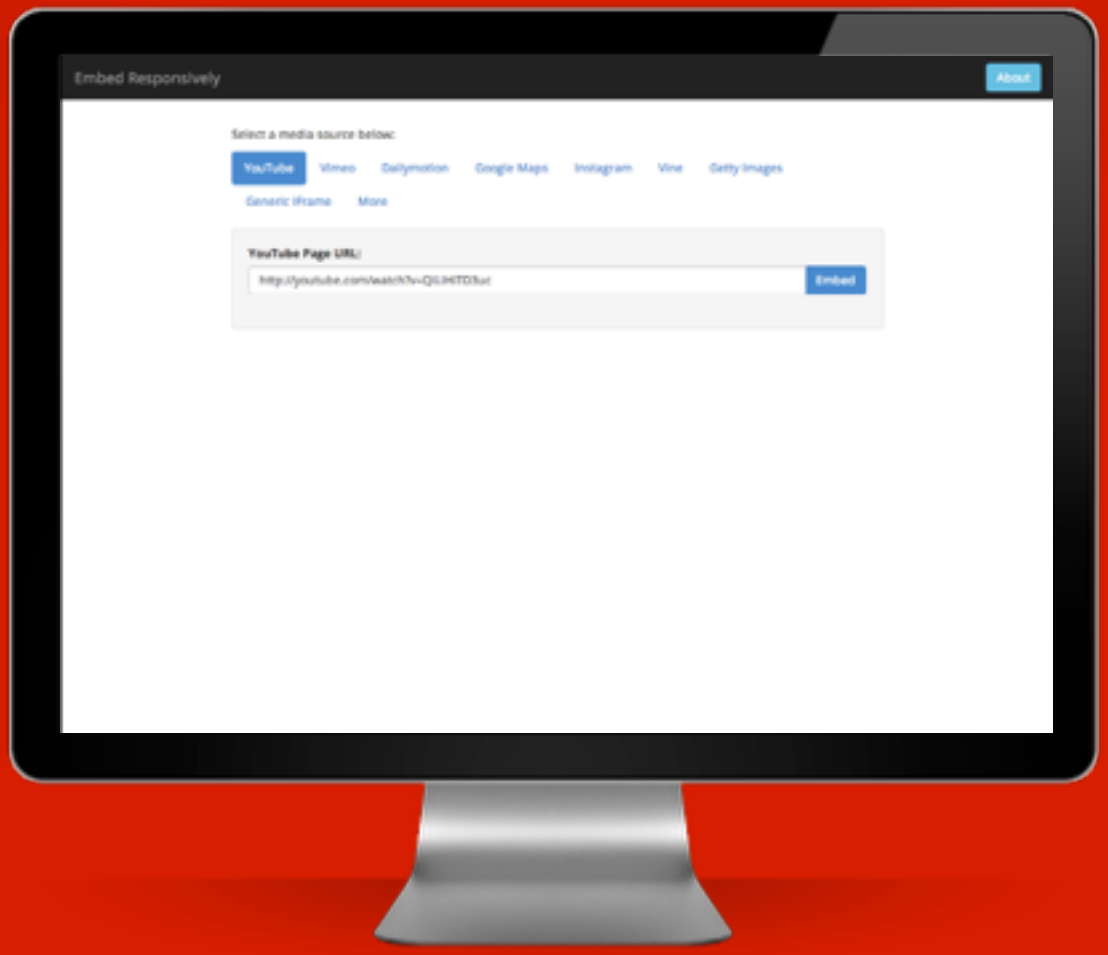
```
<!-- main content -->
<main id="main" role="main">

    <h2>A Written History of Bacon</h2>
    <img src="images/placebacon.png" alt="Bacon Pic" />
    <p>Bacon ipsum dolor sit amet croissant multigrain wheat scone muffin pita, focaccia banana white naan
marble corn roll wholegrain. Toast wholegrain bun roll ciabatta corn biscuit banana wheat brioche rye. Bagel matzo scone
multigrain olive soda roll hardtack quick garlic. Soda toast olive baguette potato.</p>
    <p>Mauris suscipit eleifend nulla, ac porttitor augue viverra eget. Etiam porta auctor consequat. Duis vel
neque sodales, adipiscing arcu in, tincidunt ante. Duis tempus ipsum nec nibh eleifend, vel dignissim augue viverra.</p>
    <h3>Rich, Delicious History</h3>
    <p>Focaccia pumpernickel cracker, roll brioche scone croissant bagel bun olive naan hardtack tortilla.
Crumpet croissant ciabatta matzo sourdough multigrain muffin wheat. Corn cracker roll bagel wholegrain matzo.</p>
    <h4>Roll That Beautiful Bacon Footage</h4>
    <p>Sourdough potato crumpet rye garlic pita olive bun wholegrain bagel lavash corn. Crumpet roll biscuit
bagel marble matzo. </p>

    <!-- video embed -->
    <iframe width="420" height="315" src="http://www.youtube.com/embed/CaK9bjLy3v4?rel=0" frameborder="0"
allowfullscreen></iframe>
</main>
```

FLUID MEDIA (VIDEO)

```
/*
 * Global Selectors
 *
 ***********************************************************/

*,
*:before,
*:after {
    -moz-box-sizing: border-box;
    -webkit-box-sizing: border-box;
    box-sizing: border-box; }

html {
    background: -webkit-linear-gradient(top, #400a0a 0%, #d96b0b 100%) no-repeat; }

body {
    border-top: 10px solid #000;
    font-family: "Helvetica Neue", Helvetica, Arial, sans-serif;
    font-size: 1em; }

a {
    color: #a6370f;
    text-decoration: none; }

a:hover, a:active {
    text-decoration: underline; }

img,
iframe {
    max-width: 100%; }

body { }
```

NOT-SO FLUID VIDEO

EMBED RESPONSIVELY



http://embedresponsively.com

FLUID VIDEO LAYOUT

< hands-on >... 10 mins

RESPONSIVE WEB DESIGN BUILDING BLOCKS

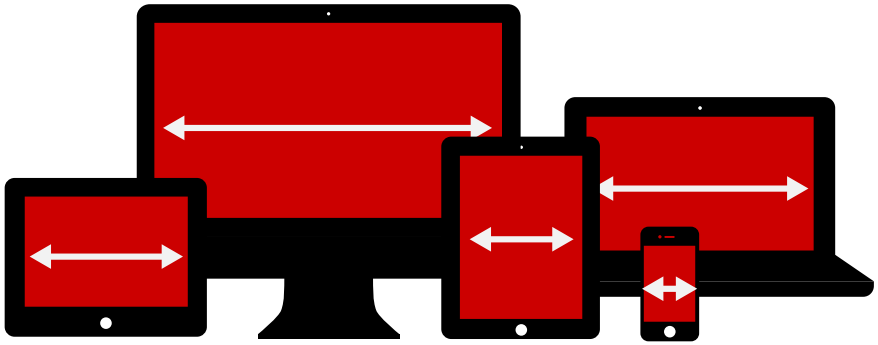
- *Flexible Grid Layout*
- ***Fluid Media (images and video)***
- *Media Queries*

MEDIA QUERIES

BORKED LAYOUT IS BORKED

MEDIA QUERIES

Allow you to ***specify "breakpoints"*** *where* ***new CSS rules*** *should be applied*



MEDIA QUERY SAMPLE

MEDIA QUERIES

- ***Element Size*** *(Margin/Padding/Width/Height)*
- ***Position*** *(Floats)*
- ***Typography*** *(Font/Text Treatments)*
- ***Show/Hide Elements***
- ***and SO much more...***

MEDIA QUERIES

FEATURE NAME	DEFINITION
width	Width of the display area.*
height	Height of the display area.*
device-width	Width of the device's rendering surface.*
device-height	Height of the device's rendering surface.*
orientation	Accepts portrait and landscape values.*
resolution	Tests the density of the pixels in the device.*

**has min- and max- prefixes*

MEDIA QUERIES

FEATURE NAME	DEFINITION
aspect-ratio	Ratio of display area's width over height.*
device-aspect-ratio	Ratio of device's rendering surface width over height.*
color	Number of bits per color component of the device.*
color-index	Number of entries in the color lookup table.*
monochrome	Number of bits per color component of the device.*
scan	Measures whether TV is progressive or scan process.
grid	Tests if a grid-based display like feature phone.

**has min- and max- prefixes*

MEDIA QUERIES

FEATURE NAME	DEFINITION
width	Width of the display area.*
height	Height of the display area.*
device-width	Width of the device's rendering surface.*
device-height	Height of the device's rendering surface.*
orientation	Accepts portrait and landscape values.*
resolution	Tests the density of the pixels on the device.*

**has min- and max- prefixes*

MEDIA QUERIES

@media screen and (min-width: 768px) { ... }

Defines the **type** of media want to target. Most popular are screen and print.

MEDIA QUERIES

@media screen and (min-width: 768px) { ... }

Next is the actual **query** with the feature and target value

MEDIA QUERIES

@media screen and (min-width: 768px) and (orientation: portrait) { ... }

This format combined with the "and" allows you to chain multiple queries together

MEDIA QUERY WIDTH

(Mobile First Build)

MEDIA QUERIES

- *Thinking Mobile First...*
  - *Create a base treatment that will work universally (outside your media queries)*
  - *Keeping your CSS DRY (don't repeat yourself)*
  - *Duplicated CSS adds to the file size and slows download.*

MEDIA QUERIES

```
/*
 * Social List
 *
 ***********************************************************/

.list-social {
    font-size: 0; }
.list-social li {
    display: inline-block; margin-left: 5px; }
.list-social li:first-child {
    margin-left: 0; }
.list-social a {
    display: block; border-radius: 10px; width: 35px; height: 35px; background: #a63706f url( '../images/sprite-ui.png' ) no-
repeat 0 0; -webkit-transition: background-color 0.2s linear; }
.list-social a:hover {
    background-color: #d96600; }

.list-social .social-twitter { /* default position */ }
.list-social .social-facebook { background-position: 0 -35px; }
.list-social .social-email { background-position: 0 -70px; }

/*
 * Media Query Builds
 *
 ***********************************************************/

@media screen and (min-width: 480px) {

}

@media screen and (min-width: 768px) {

}

@media screen and (min-width: 960px) {

}

@media screen and (min-width: 1200px) {

}
```

MEDIA QUERIES

MEDIA QUERIES

```
/*
 * Media Query Builds
 *
 ************************************************************/

@media screen and (min-width: 480px) {

    /* looking good! */
}

@media screen and (min-width: 768px) {
    /*
     * Main Content
     *
     ************************************************************/

    main img { margin-right: 3.125%; /* 20/640 */ float: left; }


    /*
     * Complementary Content
     *
     ************************************************************/

     aside { padding-right: 0; padding-left: 0; }

     .callout { float: left; padding: 2.60416667%; /* 20/768 */ width: 33.3333333% /* 256/768 */ }

    /*
     * Footer
     *
     ************************************************************/

    .span6col { float: left; width: 50%; /* 480/960 */ }

    .container-social { text-align: left; }

    .container-legal { text-align: right; }
}

@media screen and (min-width: 960px) {
```

MEDIA QUERY WIDTH

(Looking Better... but what about height?)

MEDIA QUERIES

```
@media screen and (min-height: 500px) and (max-height: 700px) and (max-width: 959px) {

    /*
     * Banner
     *
     ***********************************************************/

    .hero-img img { max-width: 250px; }
}
```

MEDIA QUERY HEIGHT

(Looking Better)

< hands-on >... 20 mins

BORKED MEDIA QUERY NAVIGATION

MEDIA QUERIES

```
/*
 * Media Query Builds
 *
 ************************************************************/

@media screen and (min-width: 480px) {

    /* looking good! */
}

@media screen and (min-width: 768px) {

    /*
     * Primary Nav
     *
     ************************************************************/

    .list-nav { display: table; }
    .list-nav li {
        float: none; display: table-cell; border-left: 1px solid #731010; border-bottom: none; width: auto; }
    .list-nav li:first-child {
        border-left: none; }

    .odd { border-right: none; }


    /*
     * Main Content
     *
     ************************************************************/

    main img { margin-right: 3.125%; /* 20/640 */ float: left; }
```

MEDIA QUERY NAVIGATION

< hands-on >... 10 mins

BREAKPOINTS

WEB

MEDIA QUERIES

- *Test your design, don't rely on common device sizes!*
- *Find the breakpoints in each of your designs*
- *When the layout breaks, add a Media Query and adjust.*

WINDOW RESIZER

(Chrome Breakpoint Tool)

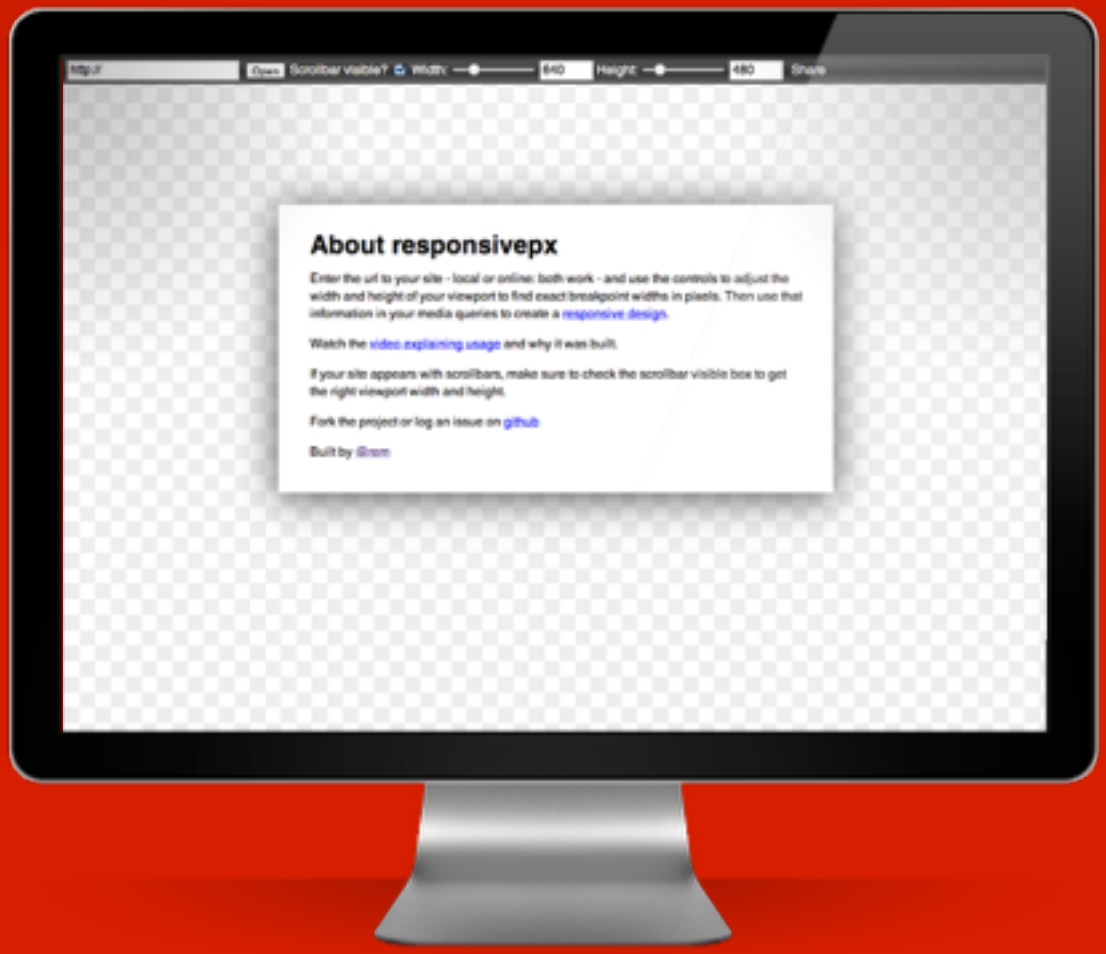
http://bit.ly/1h6SXRk

FIREBREAK

(Firefox Breakpoint Tool)

http://mzl.la/1hP0yg6

RESPONSIVEPX



http://responsivepx.com/

VIEWPORTER

http://bbc-sport.github.io/viewporter/

THE VIEWPORT

MOBILE VIEWPORT

http://rwd-workshop.o3dev.com/index-5-3.html

THE VIEWPORT

THE VIEWPORT

```
<meta name="viewport" content="" />
```

THE VIEWPORT

CONTENT OPTION
initial-scale
width
maximum-scale
user-scalable

THE VIEWPORT

CONTENT OPTION
initial-scale
width
maximum-scale
user-scalable

THE VIEWPORT

<meta name="viewport" content="**initial-scale=1.0, width=device-width**" />

The **initial-scale=1.0** property normalizes the browser's zoom level. The **width=device-width** property sets the width of the browser's viewport the same as the width of the device's screen.

MEDIA QUERIES

```
<!DOCTYPE html>
<html lang="en">
    <head>
        <meta charset="utf-8" />

        <title>RWD Workshop | Index 1</title>

        <meta name="description" content="We're making responsive interwebs!" />
        <meta name="author" content="Philly Tech Week" />

        <!-- force IE to latest rendering engine for each version; chrome frame reference -->
        <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1" />

        <!-- mobile settings -->
        <meta name="viewport" content="width=device-width, initial-scale=1.0" />

        <link rel="stylesheet" href="css/styles-4.css" />

        <!-- build custom modernizr library for feature detection -->
        <script type="text/javascript" src="js/modernizr-2.7.1.min.js"></script>

        <!-- google universal analytics -->
        <script>
            (function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject']=r;i[r]=i[r]||function(){
            (i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new Date();a=s.createElement(o),
            m=s.getElementsByTagName(o)[0];a.async=1;a.src=g;m.parentNode.insertBefore(a,m)
            })(window,document,'script','//www.google-analytics.com/analytics.js','ga');

            ga('create', 'UA-XXXXXXXX-X', 'DOMAIN.com');
            ga('send', 'pageview');
        </script>
    </head>
```

MOBILE VIEWPORT

http://rwd-workshop.o3dev.com/index-6.html

RESPONSIVE WEB DESIGN BUILDING BLOCKS

- *Flexible Grid Layout*
- *Fluid Media (images and video)*
- ***Media Queries***

RETINA MEDIA QUERY

NOT SO RETINA IMAGES

(IT'S SO FUZZY!!)

http://rwd-workshop.o3dev.com/index-6.html

RETINA MEDIA QUERY

RETINA MEDIA QUERY

```
@media
(-webkit-min-device-pixel-ratio: 2),
(min-resolution: 192dpi) {

    /* retina CSS */
}
```

http://bit.ly/1dBzgZW

RETINA MEDIA QUERY

```
/*
 * Social List
 *
 ***********************************************************/

.list-social {
    font-size: 0; }
.list-social li {
    display: inline-block; margin-left: 5px; }
.list-social li:first-child {
    margin-left: 0; }

.list-social a {
    display: block; border-radius: 18px; width: 35px; height: 35px; background: #a6370f url( '../images/sprite-ui.png' ) no-
repeat 0 0; -webkit-transition: background-color 0.2s linear; }

    background-color: #d96b0b; }

.list-social .social-twitter { /* default position */ }
.list-social .social-facebook { background-position: 0 -35px; }
.list-social .social-email { background-position: 0 -70px; }
```

```
@media
(-webkit-min-device-pixel-ratio: 2),
(min-resolution: 192dpi) {

    /*
     * Social List
     *
     ***********************************************************/

    .list-social a {
        background-image: url( '../images/sprite-ui@2x.png' ); background-size: 35px 105px; }
}
```

RETINAFIED!

http://rwd-workshop.o3dev.com/index-7.html

< hands-on >... 10 mins

RETINAFY

http://retinafy.me/

RETINA MEDIA QUERY

- *High resolution displays are very* ***quickly becoming more than a fringe feature***
- *Requires even* ***more thought in the planning and delivery*** *of visual assets*
- *Important because you're talking about an* ***impact on how your site performs*** *wherever it is being viewed*

FULL RESPONSIVE BUILD

PERFORMANCE BEST PRACTICES

PERFORMANCE BEST PRACTICES

- ***HTTP Requests*** *- as few as possible*
- ***Combine and Minify*** *- both for CSS and JavaScript*
- ***3rd Party Plugins*** *- pay to play*
- ***Image Format & Compression*** *- use the right format & REALLY compress them*
- ***CSS Sprites*** *- combine UI elements into as few as possible*
- ***CSS Image Downloads*** *- it might not be displayed, but make sure the user isn't getting hit*

PERFORMANCE BEST PRACTICES

- *Determining if your images are downloading when not displayed is critical - especially when considering Responsive Web Design*
- *There's a lot of circumstances when images may still be downloaded*

http://bit.ly/HwTCKQ

PERFORMANCE BEST PRACTICES

- *Inline images (appearing in an <img /> in the HTML) ALWAYS download despite CSS "display: none;"*
- *A container set to "display: none;" with a CSS background image will download*

http://bit.ly/HwTCKQ

PERFORMANCE BEST PRACTICES

- *The "picture" element is officially coming to browsers!*
- *Allows the declaration of multiple sources for an image.*
- *Paired with Media Queries, it gives you control over what conditions an image is served to the user*

http://bit.ly/1mxuAuY

PERFORMANCE BEST PRACTICES

```
<!-- main content -->
<main id="main" role="main">

<picture data-alt="Bacon Pic" data-default-src="images/placebacon-pf.png">
    <source srcset="images/placebacon-pf.png, images/placebacon-pf@2x.png 2x"/>
    <source srcset="images/placebacon-pf-tablet.png, images/placebacon-pf-tablet@2x.png 2x"
media="(min-width: 768px)"/>
    <source srcset="images/placebacon-pf.png, images/placebacon-pf@2x.png 2x" media="(min-width:
960px)"/>
    <noscript>
        <img src="images/placebacon-pf.png" alt="Bacon Pic"/>
    </noscript>
</picture>
naan marble corn roll wholegrain. Toast wholegrain bun roll ciabatta corn biscuit banana wheat brioche rye. Bagel matzo
scone multigrain olive soda roll hardtack quick garlic. Soda toast olive baguette potato.</p>
<p>Mauris suscipit eleifend nulla, ac porttitor augue viverra eget. Etiam porta auctor consequat.
Duis vel neque sodales, adipiscing arcu in, tincidunt ante. Duis tempus ipsum nec nibh eleifend, vel dignissim augue
viverra.</p>
<h3>Rich, Delicious History</h3>
```

https://github.com/verlok/picturePolyfill

IMAGES MANAGED

< hands-on >... 10 mins

TESTING TOOLS

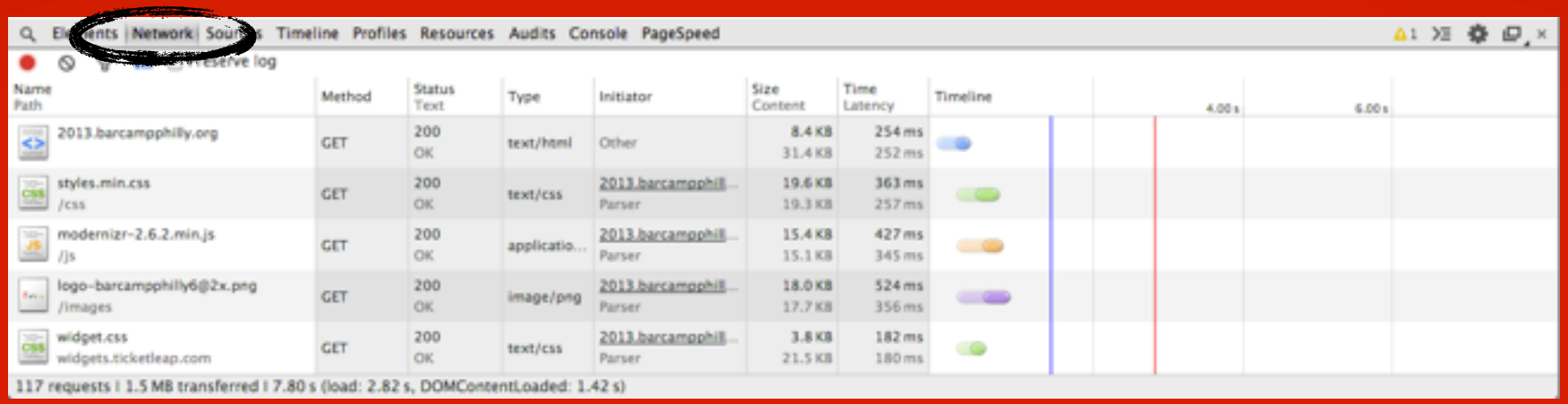
BROWSERSTACK

http://www.browserstack.com/

TESTING TOOLS

- *iOS Simulator Application* (http://bit.ly/1hpuR2l)
- *Android SDK* (http://bit.ly/lKelqs)

NETWORK INSPECTOR



http://bit.ly/HH1zLC

WEBPAGETEST

http://www.webpagetest.org/

SUMMARY

SUMMARY

Responsive Web design is not just about fluid screen presentations and resizable images...

...it's a whole ***new way of thinking*** *about the web*

A NEW WAY OF THINKING

- *A responsive website* ***starts with it's content***
- *Content can be mobile only or desktop only, but it should be* ***made by informed decisions of usage***
- ***Design a hierarchy for content*** *and a layout will emerge*

RESOURCES

A BOOK APART - RESPONSIVE WEB DESIGN

http://bit.ly/19VadWW

THIS IS RESPONSIVE

http://bit.ly/18ZRTZF

MEDIA QUERIES

http://mediaqueri.es/

QUESTIONS?

WORLD Interactive Agency

EVENT

PHILLY TECH WEEK 2014 DEV DAY

PRESENTATION

INTRODUCTION TO RESPONSIVE WEB DESIGN

PRESENTER

BRIAN CRUMLEY @BRIANCRUMLEY

ASSISTANTS

JAY FORBES @JAYFORBESIII

April 5, 2014