



HTML5 & CSS3

Trainer : Son Nguyen

Introduction



- Your role
- Your background and experience in the subject
 - HTML, CSS, JavaScript
- What do you want from this course

Course Objectives



At the end of the course, you will have acquired sufficient knowledge to:

- Basic knowledge on HTML5 & CSS3

Course Audience and Prerequisite

- The course is for everyone who works with web/mobile development
- The following are prerequisites to this course:
 - Basic knowledge on HTML/CSS/JavaScript
 - Understand website layout

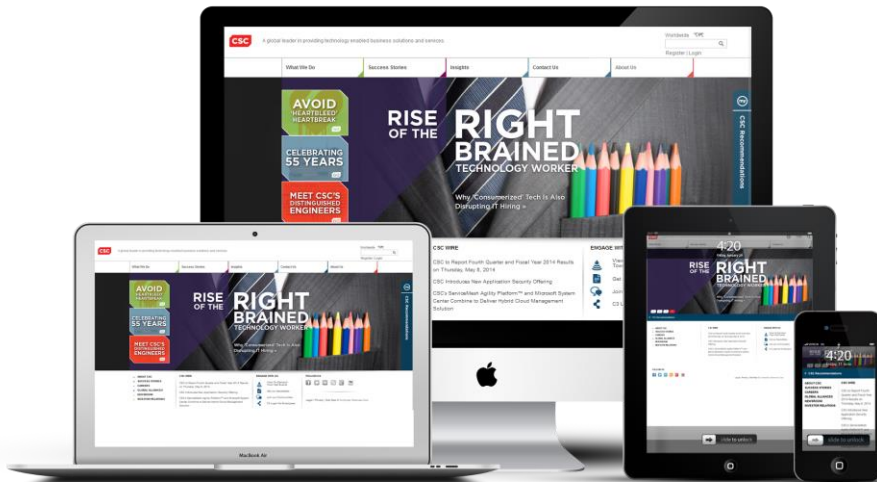




Agenda



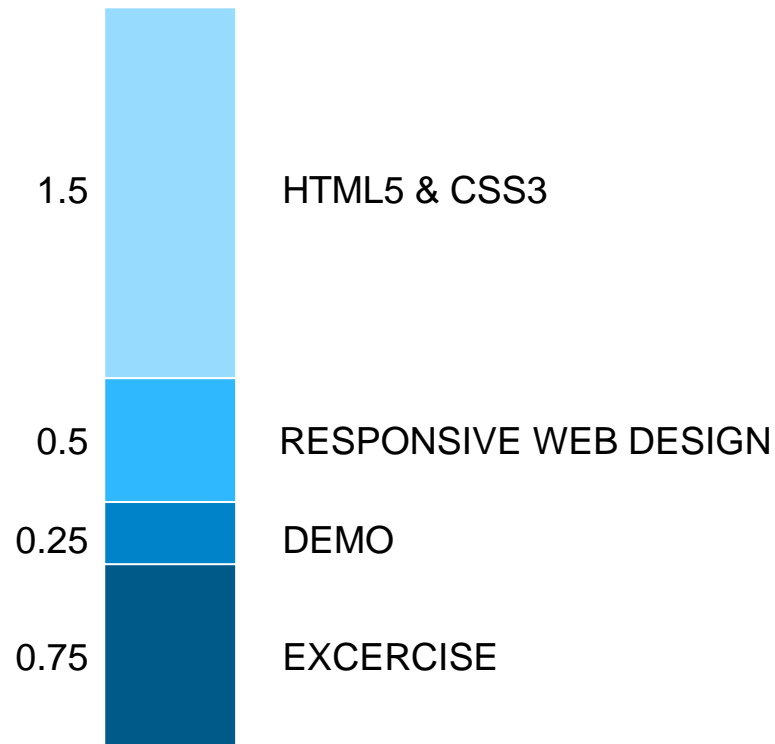
- I. HTML5
- II. CSS3
- III. Practice





Duration and Course Timetable

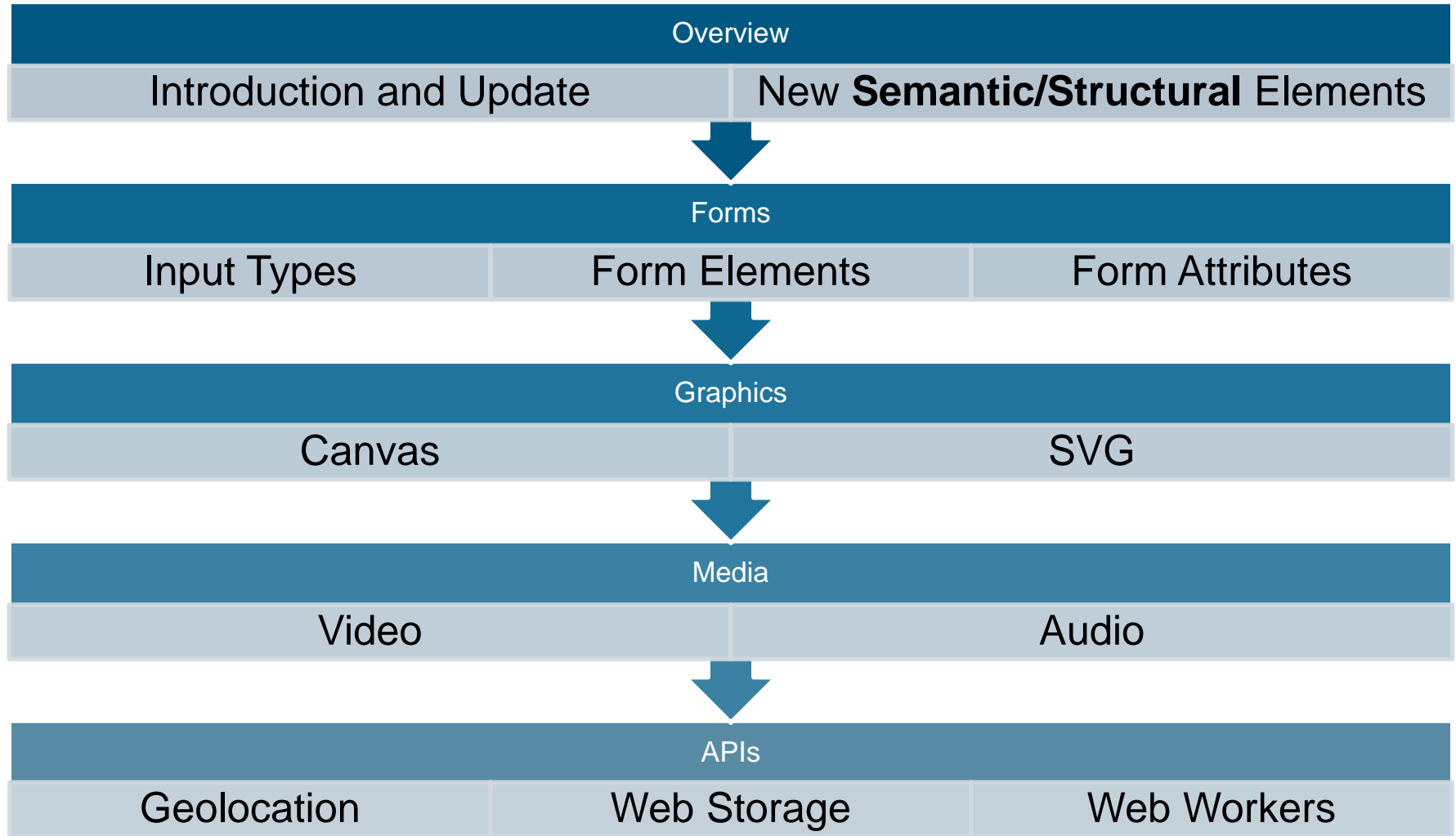
- Course Duration: 3 hours
- Course Timetable:





HTML5

HTML 5



Introduction

What is HTML5?

- HTML5 is the latest standard for HTML.
- HTML5 is a cooperation between the W3C and the WHATWG
- It was specially designed to deliver rich content without the need for additional plugins. The current version delivers everything from animation to graphics, music to movies, and can also be used to build complicated web applications.
- HTML5 is also cross-platform. It is designed to work whether you are using a PC, or a Tablet, a Smartphone, or a Smart TV.

Introduction

Principles that HTML5 rely on:

- New features should be based on HTML, CSS, DOM, and JavaScript
- Reduce the need for external plugins (like Flash)
- More markup to replace scripting
- HTML5 should be device independent
- Better error handling
- The development process should be visible to the public

Introduction

HTML 5.0 Plan to release

- The HTML5 specification isn't finished yet!
- Release a stable HTML5 Recommendation by the end of 2014
- HTML 5.1 specification Recommendation by the end of 2016.

	2012	2013	2014	2015	2016
HTML 5.0	Candidate Rec	Call for Review	Recommendation		
HTML 5.1	1st Working Draft		Last Call	Candidate Rec	Recommendation
HTML 5.2				1st Working Draft	

Introduction

Browser Support



	Chrome	Firefox	Internet Explorer	Opera	Safari
Upcoming	37 512	32 471	DC 378		8.0 429
Current	36 509	30 467	11 376	22 498	7.0 397
Older	35 507	28 448	10 335	20 496	6.0 380
	34 505	26 446	9 128	18 494	5.1 305
	30 501	24 436	8 43	15 441	5.0 246
	26 494	17 397	7 27	12.10 392	
	18 408	10 349			
	10 345				

Result from <http://html5test.com/results/desktop.html>

Introduction

Obsolete Elements

The following elements are not in HTML. Because their effect is purely presentational and they are better handled by CSS:

- center
- font
- strike

The following elements are not in HTML because using them damages usability and accessibility:

- frame
- frameset
- noframes

`<hgroup>` element used for grouping titles with their associated subtitles but it is removed from HTML5 specification.

Introduction

A Minimum HTML5 Document

Below is a simple HTML5 document, with the minimum of required tags:

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="UTF-8">
    <title> Title of the document </title>
  </head>
  <body>
    Content of the document.....
  </body>
</html>
```

Introduction

Updated HTML5 elements

HTML 4.01 Transitional:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://  
www.w3.org/TR/html4/loose.dtd">
```

The meta declaration in HTML4

```
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
```

In HTML 4.01, we specify the type attribute as text/javascript:

```
<script type="text/javascript" src="file.js"></script>
```

The link tag in HTML 4.01:

```
<link rel="stylesheet" type="text/css" href="file.css">
```

Introduction

Updated HTML5 elements

- **<!DOCTYPE html>**
Always add the !DOCTYPE tag so that the browser knows what type of document to expect.
- **Meta declaration**
<meta charset="UTF-8">
- **Script tag**
<script src="file.js"></script>
- **Link tag**
<link rel="stylesheet" href="file.css">

Introduction

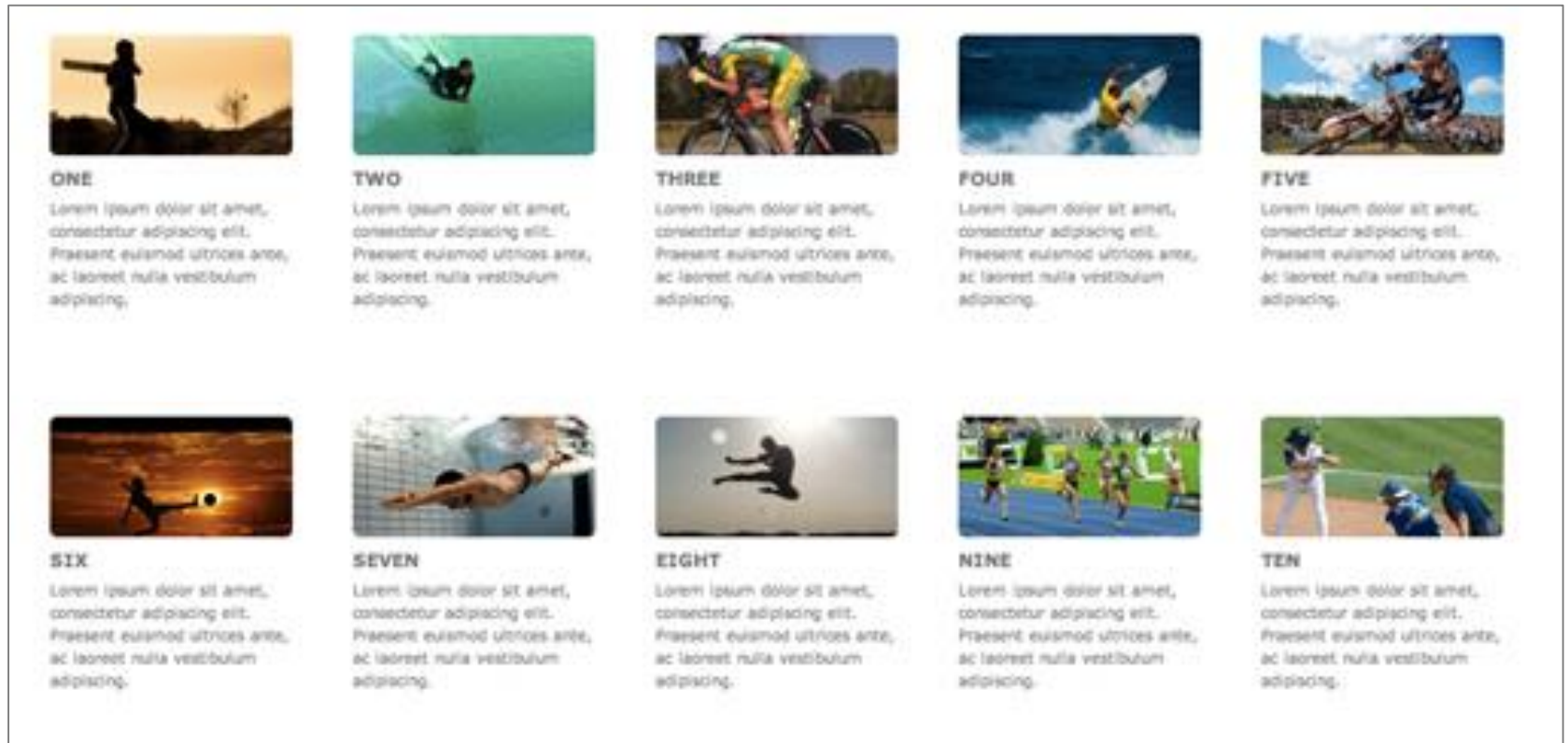
New Semantic/Structural Elements

Tag	Description
<code><article></code>	Defines an article in the document
<code><aside></code>	Represents content related to the main area of the document. This is usually expressed in sidebars that contain elements like related posts, tag clouds, etc.
<code><header></code>	Defines a header for the document or each section contained in the page
<code><main></code>	Defines the main content of a document. You should only use this element once per page
<code><footer></code>	Defines a footer for the document or each section contained in the page
<code><nav></code>	Defines navigation links in the document
<code><section></code>	Defines a section in the document
....

New Semantic/Structural Elements

`<section>....</section>`

- The section element represents a generic document or application section.
- It's used for grouping together thematically related content. It's not like a div has no semantic meaning, but the section element does.



New Semantic/Structural Elements

<header>....</header>

- Usually appears at the top of a document or section
- It is defined by its content rather than its position.
- There can be many different headers on a page.

Example :

```
<section>
  <header>
    <h1>The heading of the section</h1>
    <p>This is content in the header.</p>
  </header>
  <p>This is some information within the section.</p>
</section>
```

New Semantic/Structural Elements

`<footer>....</footer>`

- Usually appears at the bottom of a document or section
- It is defined by its content rather than its position.
- There can be many different footer on a page.

Example:

```
<section>
  <header>
    <h1>The heading of the section</h1>
    <p>This is content in the header.</p>
  </header>
  <p>This is some information within the section.</p>
  <footer>
    <p>By "Author Name"</p>
  </footer>
</section>
```

New Semantic/Structural Elements

<aside>....</aside>

- An aside element is appropriate when it is used to represent content that is not the primary focus of an article or page, but it is still related to the article or page..

Example :

```
<section>
  <header>
    <h1>The heading of the section</h1>
    <p>This is content in the header.</p>
  </header>
  <p>This is some information within the section.</p>
  <aside>
    <p>Some secondary information.</p>
  </aside>
  <footer>
    <p>By "Author Name"</p>
  </footer>
</section>
```

New Semantic/Structural Elements

<article>....</article>

- Determining if a particular piece of content is “self-contained:”

Some uses for the article tag:

- A blog post
- A news story
- A comment on a post
- A review

New Semantic/Structural Elements

`<main>....</main>`

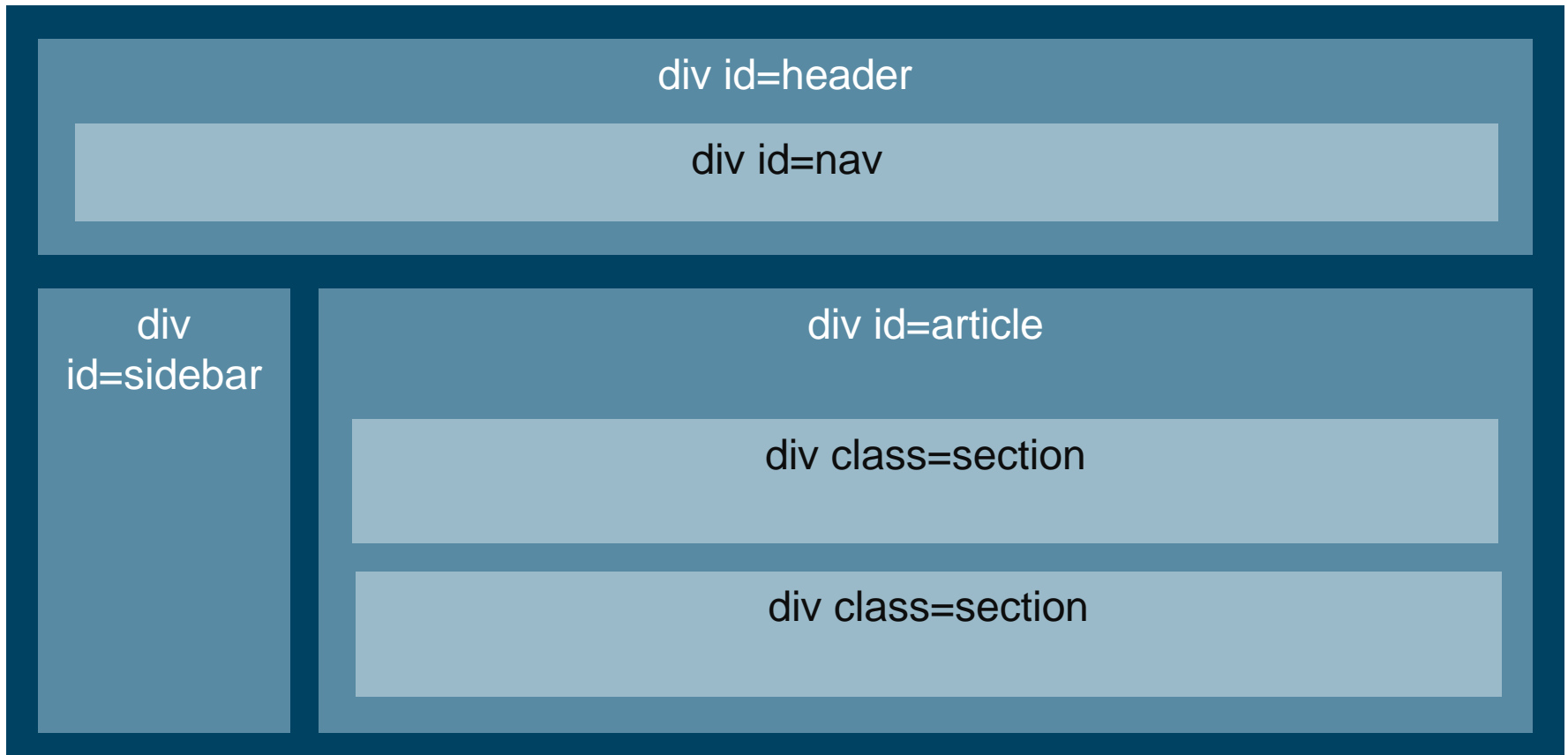
- Determining if a particular piece of content is “self-contained:”
- The main content area consists of content that is directly related to or expands upon the central topic of a document or central functionality of an application.

Some uses for the main tag:

- Do not include more than one main element in a document
- Do not include the main element inside of an article, aside, footer, header, or nav element

Introduction

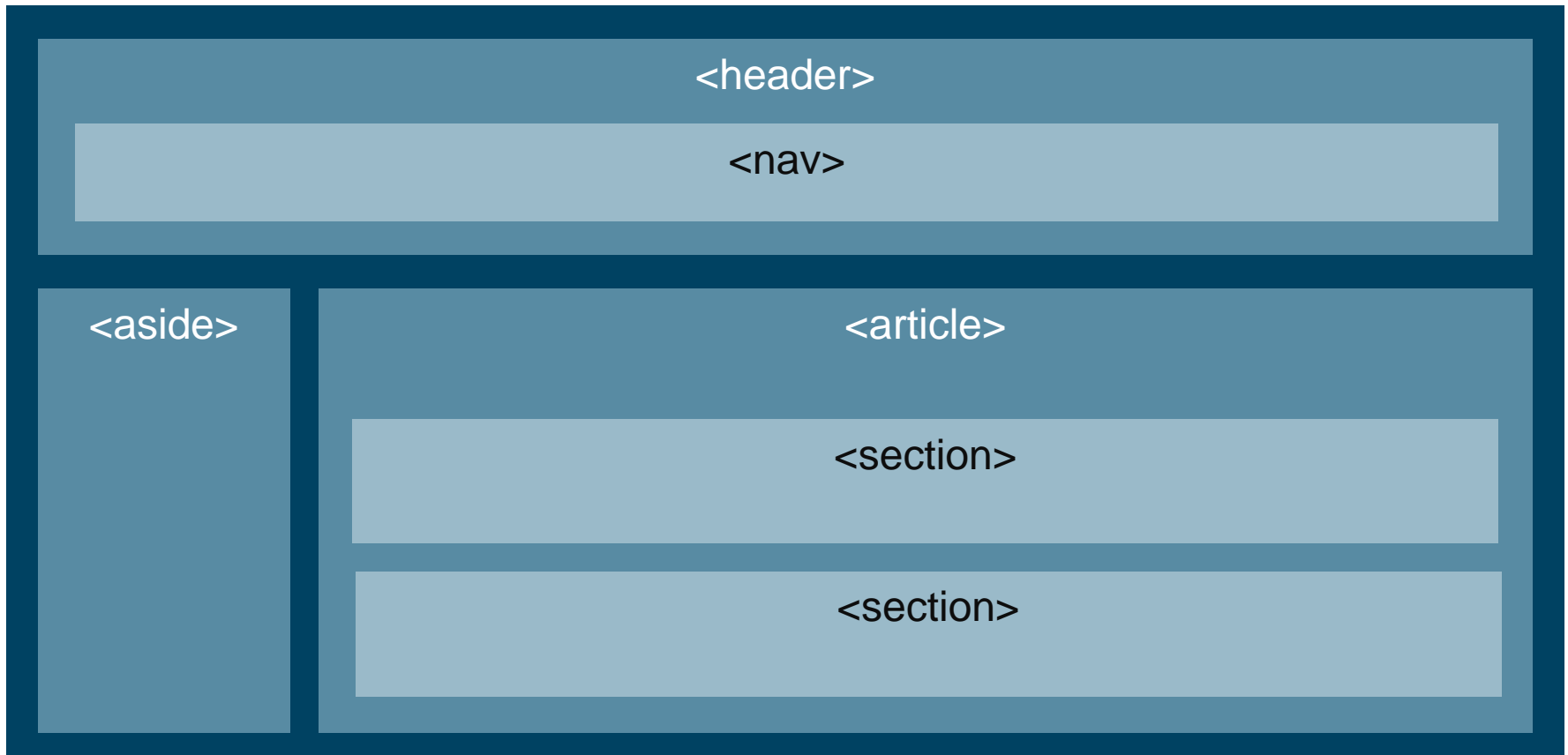
HTML4 structure



Introduction

Semantic elements in HTML5

- Our code become more readable and maintainable.



New Semantic/Structural Elements

<figure>....</figure>

- A common use of the figure tag is for an image within an article

Example

```
<figure>  
  <figcaption>My image</figcaption>  
    
</figure>
```



- Using instead of
- Using instead of <i>

Introduction

HTML 5 elements for OLD Browser

You can "teach" old browsers to handle "unknown" HTML elements.

- Define HTML5 Elements as Block Elements

```
header, section, footer, aside, nav, main, article, figure {  
    display: block;  
}
```

- Adding New Elements to HTML

```
<script>document.createElement("aside")</script>
```

HTML5Shiv

```
<!--[if lt IE 9]>  
<script src="http://html5shiv.googlecode.com/svn/trunk/html5.js">  
</script>  
<![endif]-->
```

Forms

New Input Types

<input>

type

Text

text

Search Term

search

http://google.com

url

0812-392-23

tel

02:02 AM

time

4

number



range



color

07/02/2013 x date

July, 2013

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

ember, 2014 x month

September, 2014

Sun	Mon	Tue	Wed	Thu	Fri	Sat
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4

ek 03, 2016 x week

January, 2016

Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat
53	27	28	29	30	31	1	2
1	3	4	5	6	7	8	9
2	10	11	12	13	14	15	16
3	17	18	19	20	21	22	23
4	24	25	26	27	28	29	30
5	31	1	2	3	4	5	6

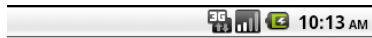
Not all browsers support all the new form elements. However, you can already start using them; If they are not supported, they will behave as regular text fields.

Form

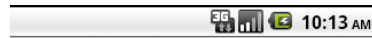
Input type on mobile

- Added usability on mobile devices

type="text"



type="number"



type="email"



type="tel"

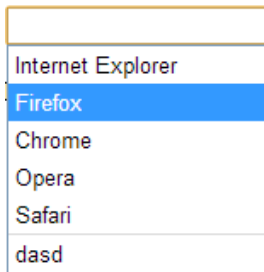


Form

New form elements

HTML5 has the following new form elements:

<datalist> : Specifies a list of pre-defined options for an **<input>** element



```
<input list="browsers" name="browsers">
<datalist id="browsers">
  <option value="Internet Explorer">
  <option value="Firefox">
  <option value="Chrome">
  <option value="Opera">
  <option value="Safari">
</datalist>
```

Form

New form attributes

HTML5 provides several new form attributes:

Name	Description
Placeholder	<ul style="list-style-type: none">• The short hint is displayed in the input field before the user enters a value.• Note: The placeholder attribute works with the following input types: text, search, url, tel, email, and password.
Autocomplete	<ul style="list-style-type: none">• The autocomplete attribute specifies whether a form or input field should have autocomplete on or off.• When autocomplete is on, the browser automatically complete values based on values that the user has entered before.
Required	<ul style="list-style-type: none">• it specifies that an input field must be filled out before submitting the form.
Autofocus	<ul style="list-style-type: none">• The autofocus attribute is a Boolean attribute.• When present, it specifies that an <code><input></code> element should automatically get focus when the page loads.
.....

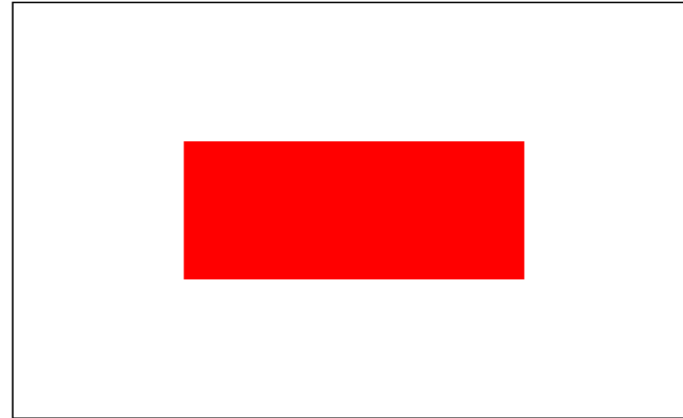
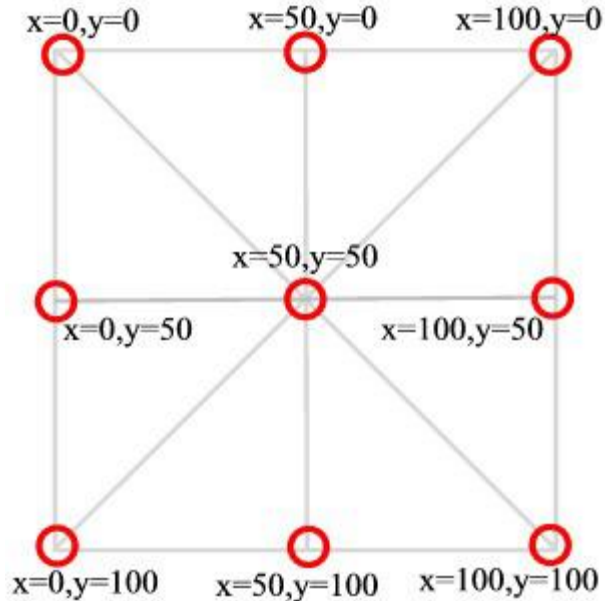
Graphics

What is Canvas?

- The HTML5 <canvas> element is used to draw graphics, on the fly, via scripting (usually JavaScript).
- The <canvas> element is only a container for graphics. You must use a script to actually draw the graphics.
- Canvas has several methods for drawing.
 - Shapes
 - Defining paths
 - Creating gradients
 - Applying transformations

Graphics

Canvas



```
<canvas id="myCanvas" width="400" height="300"></canvas>
```

```
<script type="text/javascript">
```

```
function drawRect() {  
    var myCanvas = document.getElementById("myCanvas");  
    var myCanvasContext = myCanvas.getContext("2d");  
    myCanvasContext.fillStyle = "#FF0000";  
    myCanvasContext.fillRect(100, 100, 200, 100);  
}
```

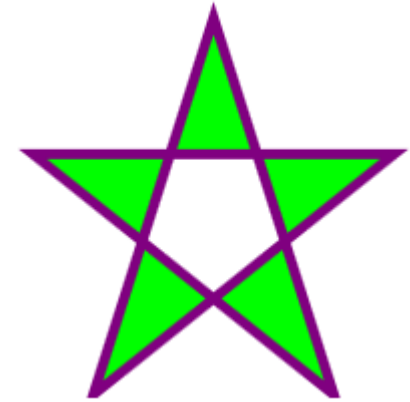
```
drawRect();
```

```
</script>
```

Graphics

What is SVG?

- SVG stands for Scalable Vector Graphics.
- SVG defines graphics in XML format.



Differences Between SVG and Canvas

Canvas

- Resolution dependent
- No support for event handlers
- Poor text rendering capabilities
- You can save the resulting image as .png or .jpg
- Well suited for graphic-intensive games

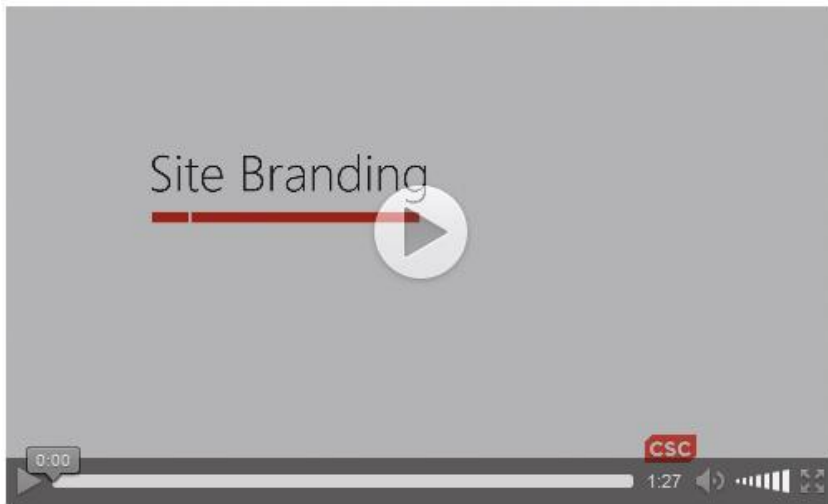
SVG

- Resolution independent - responsive
- Support for event handlers
- Best suited for applications with large rendering areas (Google Maps)
- Slow rendering if complex (anything that uses the DOM a lot will be slow)
- Not suited for game applications

Media

Video

- Problem with Flash Player on your device?
- Easy to have a video on your page



```
<video width="500" height="300" controls>  
  <source src="video\CSC.MP4" type="video/mp4">  
  <source src="video\CSC.ogv" type="video/ogg">  
  Your browser does not support the video tag.  
</video>
```



Media

Audio



```
<audio controls>  
  <source src="audio/Song.mp3" type="audio/mpeg">  
  <source src="audio/Song.ogg" type="audio/ogg">  
  Your browser does not support this audio format.  
</audio>
```

Media

Video Formats and Browser Support

Browser	MP4	WebM	Ogg
Internet Explorer	YES	NO	NO
Chrome	YES	YES	YES
Firefox	YES Update 1: Firefox 21 on Windows and Android now supports MP4 Update 2: Firefox 30 on Linux now supports MP4	YES	YES
Safari	YES	NO	NO
Opera	NO	YES	YES

Audio Formats and Browser Support

Browser	MP3	Wav	Ogg
Internet Explorer	YES	NO	NO
Chrome	YES	YES	YES
Firefox	NO Update: Firefox 21 running on Windows 7, Windows 8, Windows Vista, and Android now supports MP3	YES	YES
Safari	YES	YES	NO
Opera	NO	YES	YES

APIs

Geolocation

Figure out where you are in the world by:

- Your IP address
- Your wireless network connection
- Which cell tower your phone is talking to
- Dedicated GPS hardware

```
function initiate_geolocation() {  
    navigator.geolocation.getCurrentPosition(handle_geolocation_query);  
}  
  
function handle_geolocation_query(position){  
    alert('Lat: ' + position.coords.latitude + ' ' +  
        'Lon: ' + position.coords.longitude);  
}
```



Where are you?

APIs

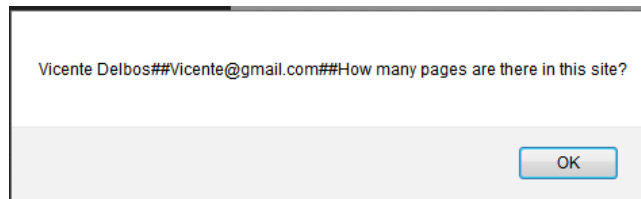
Web Storage

- localStorage - stores data with no expiration date
- sessionStorage - stores data for one session
- Problem with cookies?
- The data is stored in key/value pairs

```
function getLocalValue(key)
{
    return localStorage[key];
}

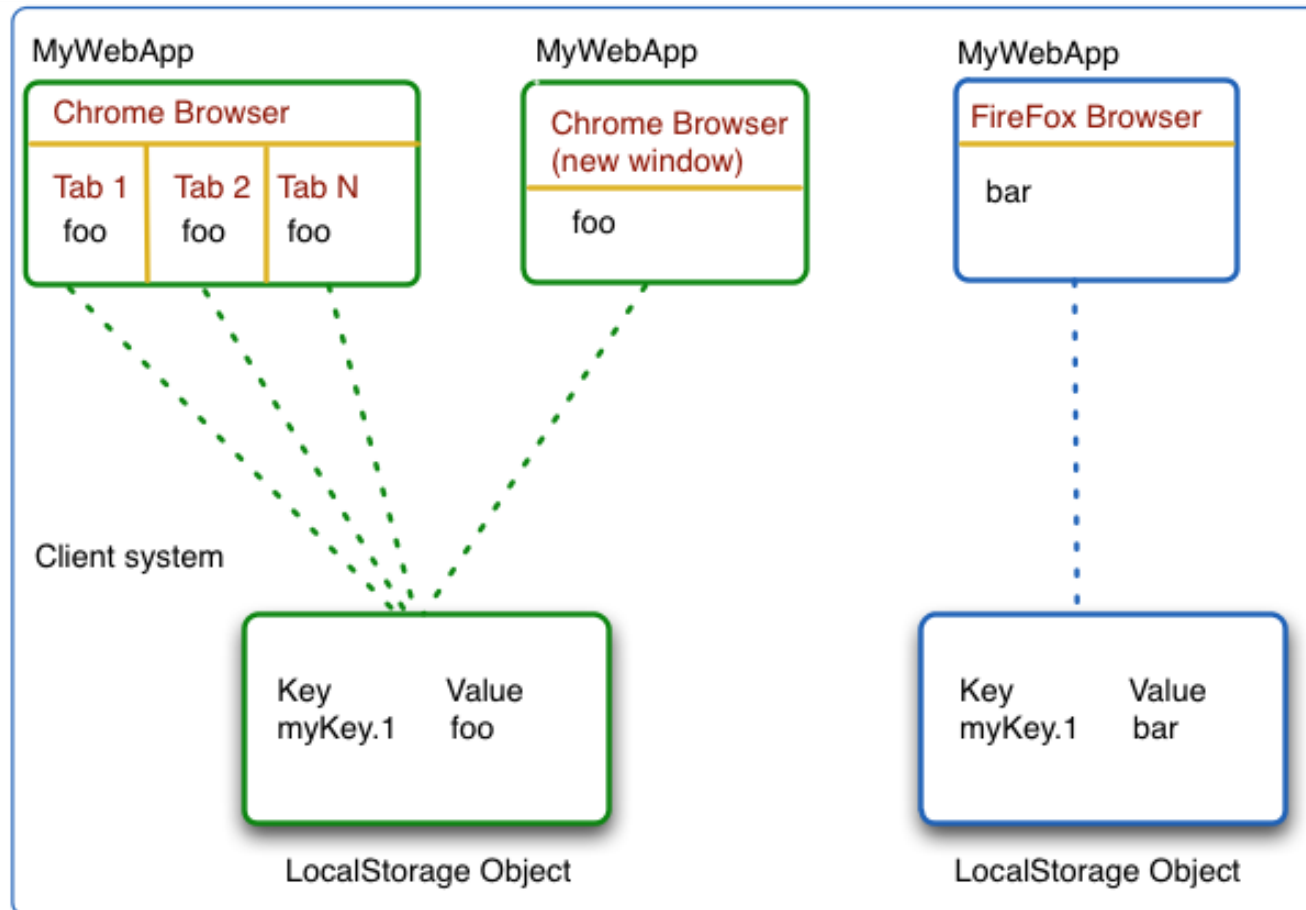
function setLocalValue(key, value)
{
    localStorage[key] = value;
}

setLocalValue("CSCVGuest_vicente@gmail.com", "Vicente Delbos##Vicente@gmail.com##How many pages are there in this site?");
alert(getLocalValue("CSCVGuest_vicente@gmail.com"));
```



APIs

Web Storage



APIs

WebWorker

- An API for running scripts in the background independently of UI scripts
- Inside web worker can:
 - XMLHttpRequest
 - Application Cache
 - Web SQL
 - create other web workers
 - navigator object
 - location object
 - setTimeout, clearTimeout method
 - setInterval, clearInterval method
 - importScripts method

APIs

WebWorker

```
<p>Count numbers: <output id="result"></output></p>
<button onclick="startWorker()">Start Worker</button>
<button onclick="stopWorker()">Stop Worker</button>

<script>
  var w;
  function startWorker()
  {
    if (typeof(Worker) !== "undefined")
    {
      if (typeof(w) == "undefined")
      {
        w = new Worker("demo_workers.js");

        w.onmessage = function (event) {
          document.getElementById("result").innerHTML = event.data;
        };
      }
      else
      {
        document.getElementById("result").innerHTML = "Sorry, Web Workers is not supported...";
      }
    }

    function stopWorker()
    {
      w.terminate();
    }
  }
</script>
```

demo_workers.js

```
var i=0;
function timedCount()
{
  i=i+1;
  postMessage(i);
  setTimeout("timedCount()",500);
}
timedCount();
```

Count numbers: 951

Start Worker

Stop Worker



CSS3

CSS3

- Introduction
- New Properties
- Transition
- Transforming



CSS3

@font-face

```
@font-face {  
    font-family: 'MyWebFont';  
    src: url('webfont.eot'); /* IE9 Compat Modes */  
    src: url('webfont.eot?#iefix') format('embedded-opentype'), /* IE6-IE8 */  
        url('webfont.woff2') format('woff2'), /* Super Modern Browsers */  
        url('webfont.woff') format('woff'), /* Pretty Modern Browsers */  
        url('webfont.ttf') format('truetype'), /* Safari, Android, iOS */  
        url('webfont.svg#svgFontName') format('svg'); /* Legacy iOS */  
}  
  
body {  
    font-family: 'MyWebFont', Fallback, sans-serif;  
}
```

[Font Awesome](#) is an icon font designed specifically for use with Twitter Bootstrap. It includes over 150 icons, is free for commercial use, offers infinite scalability, and is screen reader compatible.

<http://fontawesome.github.io/Font-Awesome/>

Refer to <http://www.fontsquirrel.com/> for some free font set

CSS3

border-radius

The border-radius property applies rounded corners to borders.

```
.box {  
  border-radius: 50%;  
}
```

```
.box {  
  border-top-left-radius: 15px;  
  border-top-right-radius: 15px;  
  border-bottom-right-radius: 15px;  
  border-bottom-left-radius: 15px;  
}
```

```
.box {  
  -webkit-border-radius: 0; /* Safari, Chrome */  
  -moz-border-radius: 0; /* Firefox */  
  border-radius: 0;  
}
```

```
.box {  
  border-radius: 4px 15px 12px 10px;  
                /* tl    tr    br    bl */  
}
```

CSS3

box-shadow

The box-shadow property specifies a shadow on an element.

box-shadow: <inset> <offset-x> <offset-y> <blur-radius> <spread-radius> <color>

- <inset> If it is not specified (which is the default), a drop shadow is created, rather than an inset shadow.
- <blur-radius> : The blur-radius alters the blur amount of the shadow, causing it to become bigger and lighter (with a larger value).
- <spread-radius> : The spread-radius causes the shadow to expand or shrink.

```
div {  
    -moz-box-shadow: 10px 10px 5px #888;  
    -webkit-box-shadow: 10px 10px 5px #888;  
    box-shadow: 10px 10px 5px #888;  
}
```

CSS3 > Text Effects

Word wrapping

This paragraph contains a very long word:
thisisaveryveryveryveryveryverylongword.
The long word will break and wrap to the next line.

This paragraph contains a very long word:
thisisaveryveryveryveryveryverylongword.
The long word will break and wrap to the next line.

```
p {  
    word-wrap: break-word;  
}
```


CSS3 > Text Effects

Property	Description
hanging-punctuation	Specifies whether a punctuation character may be placed outside the line box
punctuation-trim	Specifies whether a punctuation character should be trimmed
text-align-last	Describes how the last line of a block or a line right before a forced line break is aligned when text-align is "justify"
text-emphasis	Applies emphasis marks, and the foreground color of the emphasis marks, to the element's text
text-justify	Specifies the justification method used when text-align is "justify"
text-outline	Specifies a text outline
text-overflow	Specifies what should happen when text overflows the containing element
text-shadow	Adds shadow to text
text-wrap	Specifies line breaking rules for text
word-break	Specifies line breaking rules for non-CJK scripts
word-wrap	Allows long, unbreakable words to be broken and wrap to the next line

CSS3

Gradients



CSS3 defines two types of gradients:

- **Linear Gradients** (goes down/up/left/right/diagonally)
- **Radial Gradients** (defined by their center)

Syntax:

background: linear-gradient(*direction*, *color-stop1*, *color-stop2*, ...);

background: radial-gradient(*center*, *shape size*, *start-color*, ..., *last-color*);

CSS3

CSS3 Color Module

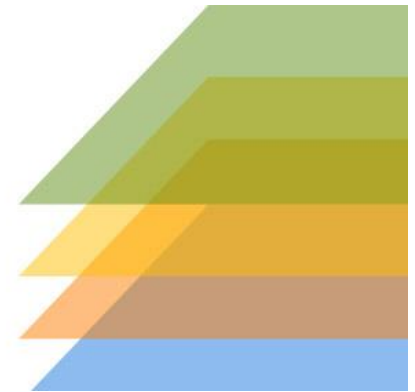
New color formats in CSS3

- HSL – `hsl(hue, saturation, lightness)`
- CMYK – `cmyk(cyan, magenta, yellow, black)`
- HSLA – `hsl(hue, saturation, lightness, alpha)`
- RGBA – `rgba(red, green, blue, alpha)`

```
div {  
    background-color: hsl(0,100%, 50%);  
}
```

CSS3

Multiple Background Images



```
div {  
    background-image: url(sheep.png), url(betweengrassandsky.png);  
    background-position: center bottom, left top;  
    background-repeat: no-repeat;  
}
```

CSS3

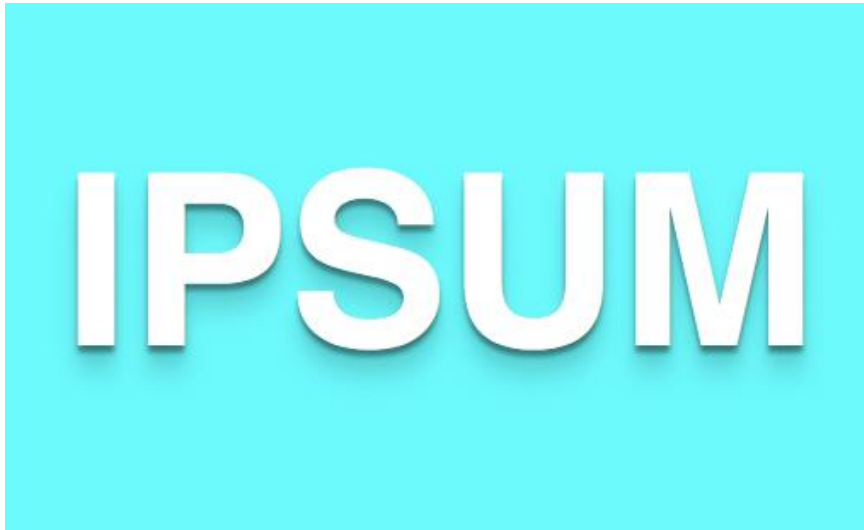
Multiple Columns

Cras urna metus, aliquam sed, condimentum eget, pellentesque scelerisque, massa. Nullam et est id augue blandit tincidunt. Ut consectetur, justo eleifend varius facilisis, tortor lorem pharetra nunc, ac sodales purus nunc semper tortor. Integer nec	urna. Praesent scelerisque, ipsum nec aliquet volutpat, sem ante sagittis risus, sed condimentum magna libero luctus elit. Donec pede purus, hendrerit non, laoreet vel, porta ut, neque. Cras eu lacus. Pellentesque tempus mattis magna. Nullam id nisl. Quisque dolor lorem,	commodo ac, pharetra sed, nonummy nec, nulla. Mauris purus. Suspendisse eget mauris nec justo eleifend vestibulum. Nunc ut eros sed pede pretium congue. Etiam in elit ut nisi ultrices hendrerit. Cras vulputate ultrices quam. Curabitur venenatis. Cras sed nisi.
--	---	--

```
div {  
  -moz-column-count: 3;  
  -moz-column-gap: 1em;  
  -moz-column-rule: 1px solid black;  
  
  -webkit-column-count: 3;  
  -webkit-column-gap: 1em;  
  -webkit-column-rule: 1px solid black;  
}
```

CSS3

Text Shadow



```
h1 {  
  text-shadow: 2px 2px 2px #000;  
}
```

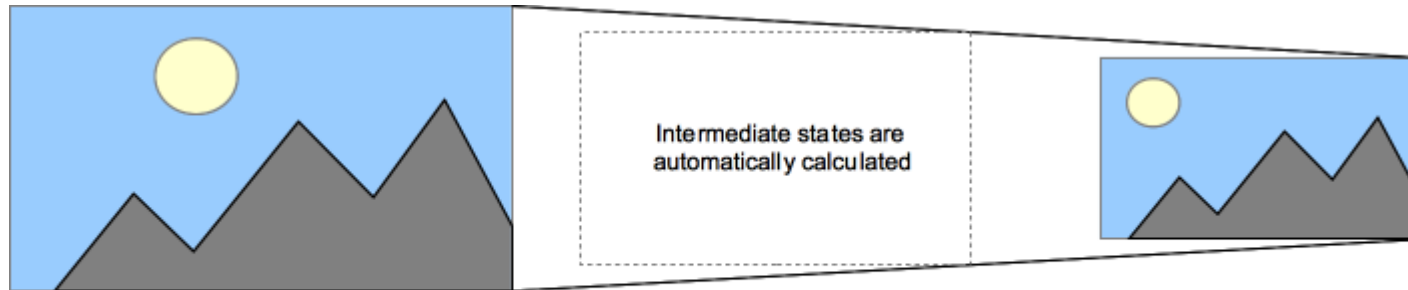
CSS3 Opacity

```
a:hover img {  
  opacity:.40;  
  filter:alpha(opacity=40);  
  filter: "alpha(opacity=40)";  
}
```



CSS3

Transition



Initial state

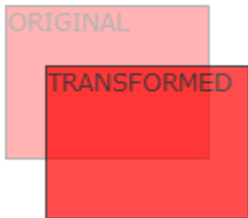
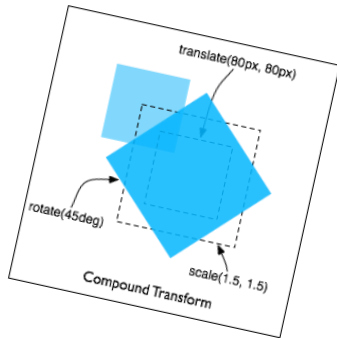
Final state

```
div
{
  width:100px;
  height:100px;
  background:red;
  transition: width 2s height 8s;
  -webkit-transition: width 2s height 8s; /* Safari */
}

div:hover
{
  width:200px;
  height: 200px;
}
```

CSS3

Transforming

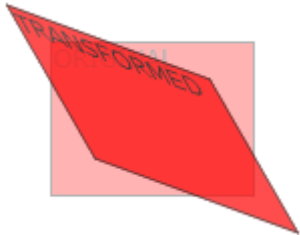


```
div
{
    transform: rotate(30deg);
    -ms-transform: rotate(30deg); /* IE 9 */
    -webkit-transform: rotate(30deg); /* Safari and Chrome */
}
```

```
div
{
    transform: translate(50px,100px);
    -ms-transform: translate(50px,100px); /* IE 9 */
    -webkit-transform: translate(50px,100px); /* Safari and Chrome */
}
```

```
div
{
    transform: scale(2,4);
    -ms-transform: scale(2,4); /* IE 9 */
    -webkit-transform: scale(2,4); /* Safari and Chrome */
}
```


CSS3 > Transforming



```
div
{
  transform: skew(30deg,20deg);
  -ms-transform: skew(30deg,20deg); /* IE 9 */
  -webkit-transform: skew(30deg,20deg); /* Safari and Chrome */
}
```



```
div
{
  transform: matrix(0.866,0.5,-0.5,0.866,0,0);
  -ms-transform: matrix(0.866,0.5,-0.5,0.866,0,0); /* IE 9 */
  -webkit-transform: matrix(0.866,0.5,-0.5,0.866,0,0); /* Safari and Chrome */
}
```

CSS3 > Animations

@keyframes

- The @keyframes rule is where the animation is created.
- Specify a CSS style inside the @keyframes rule and the animation will gradually change from the current style to the new style.

```
div {
  -webkit-animation: myfirst 5s; /* Chrome, Safari, Opera */
  animation: myfirst 5s;
}

/* Chrome, Safari, Opera */
@-webkit-keyframes myfirst {
  from {background: red;}
  to {background: yellow;}
}

/* Standard syntax */
@keyframes myfirst {
  from {background: red;}
  to {background: yellow;}
}
```

CSS3 > User Interface

Property	Description
appearance	Allows you to make an element look like a standard user interface element
box-sizing	Allows you to define certain elements to fit an area in a certain way
icon	Provides the author the ability to style an element with an iconic equivalent
nav-down	Specifies where to navigate when using the arrow-down navigation key
nav-index	Specifies the tabbing order for an element
nav-left	Specifies where to navigate when using the arrow-left navigation key
nav-right	Specifies where to navigate when using the arrow-right navigation key
nav-up	Specifies where to navigate when using the arrow-up navigation key
outline-offset	Offsets an outline, and draws it beyond the border edge
resize	Specifies whether or not an element is resizable by the user



Responsive Web Design

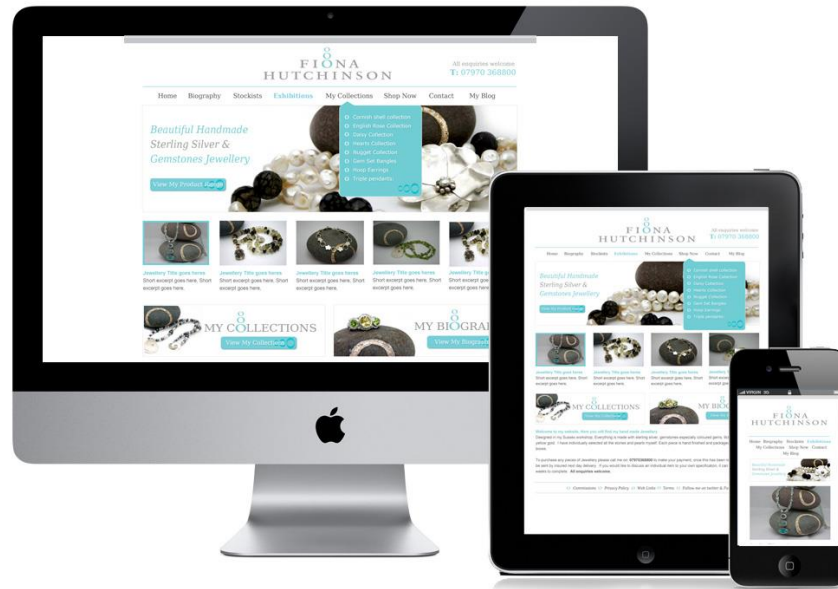
Responsive Web Design

What is Responsive Web Design?

How to design a Responsive Web

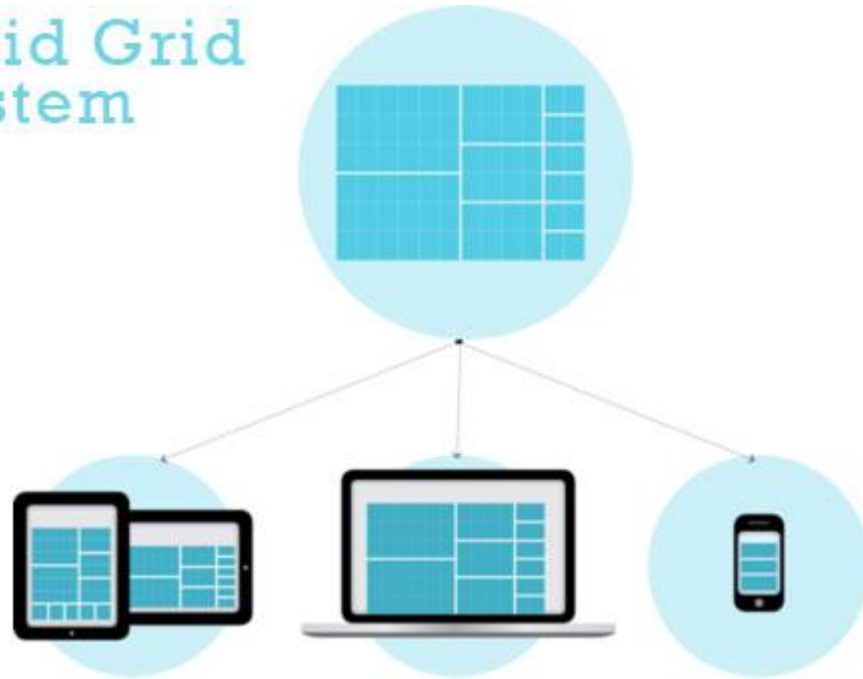
What is Responsive Web Design?

How does your website display on PC, tablet, smartphone?
They have difference resolution

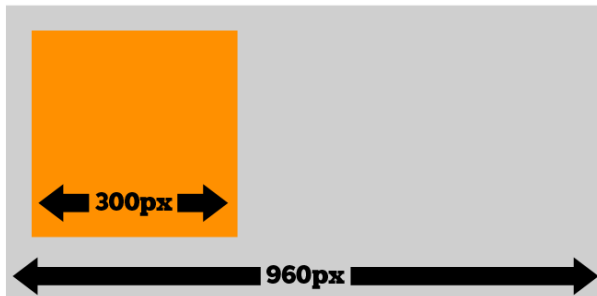


How to design a Responsive Web?

Fluid Grid System



target / context = result



$$300\text{px} / 960\text{px} = 31.25\%$$

*These measurements are not to scale.

CSS3 > Media Type

- The @media rule allows different style rules for different media in the same style sheet.



```
@media screen {
  p {
    font-family: verdana,sans-serif;
    font-size: 14px;
  }
}

@media print {
  p {
    font-size: 20px;
    color: red;
  }
}
```


Reference

HTML5

<http://www.w3schools.com/html/default.asp>

HTML5: Up and Running by Mark Pilgrim

Introducing HTML5 (Voices That Matter) by Bruce Lawson

HTML5 Canvas by Steve Fulton

CSS3

<http://www.w3schools.com/css3/>

<http://www.css3.info/preview/>

Responsive Web Design

<http://msdn.microsoft.com/en-us/magazine/hh653584.aspx>

<http://www.abookapart.com/products/responsive-web-design>





Q&A



Thank You

Revision History

Date	Version	Description	Updated by	Reviewed and Approved By
July 1 2013	1	Release	Phat Nguyen	
June 30 2014	2	Modify/Update	Thanh Vo	
June 12 2015	3	Modify/Update	Son Vo	



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