<HTML5>

NEW AND IMPROVED

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Who Am I

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- Less Header Code
- More Semantic HTML tags
- Media Tags
- Geolocation
- Canvas
- Input Types
- Form Validation
- Local Storage
- WebSQL Storage
- Offline Applications
- Draggable
- Cross-Domain Messaging
- Web Sockets
- Web Workers
- History API

- HTML5 Support
- Progressive Enhancement

HTML5 History

- Specification of HTML published by W3C
- W3C HTML5 Spec => 900+ pages
- Work started on HTML5 in late 2003
- First Working Draft published January 2008
- Expected Candidate Recommendation - 2012
- W3C Recommendation - 2022 or later *

* Requires 2 100% complete and fully interoperable implementations

http://dev.w3.org/html5/spec/

Less Header Code

Pre HTML5:

```
<!DOCTYPE HTML PUBLIC "-//W3C//Dtd HTML 4.01 Transitional//EN" "http://
www.w3.org/tr/html4/loose.dtd">
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=utf-8">
        <title>Awesome Stuff</title>
    </head>
...
```

With HTML5:

```
<!DOCTYPE HTML>
<html>
    <head>
        <meta charset=”utf-8”>
        <title>Awesome Stuff</title>
    </head>
...
```

No Need for Type Attribute

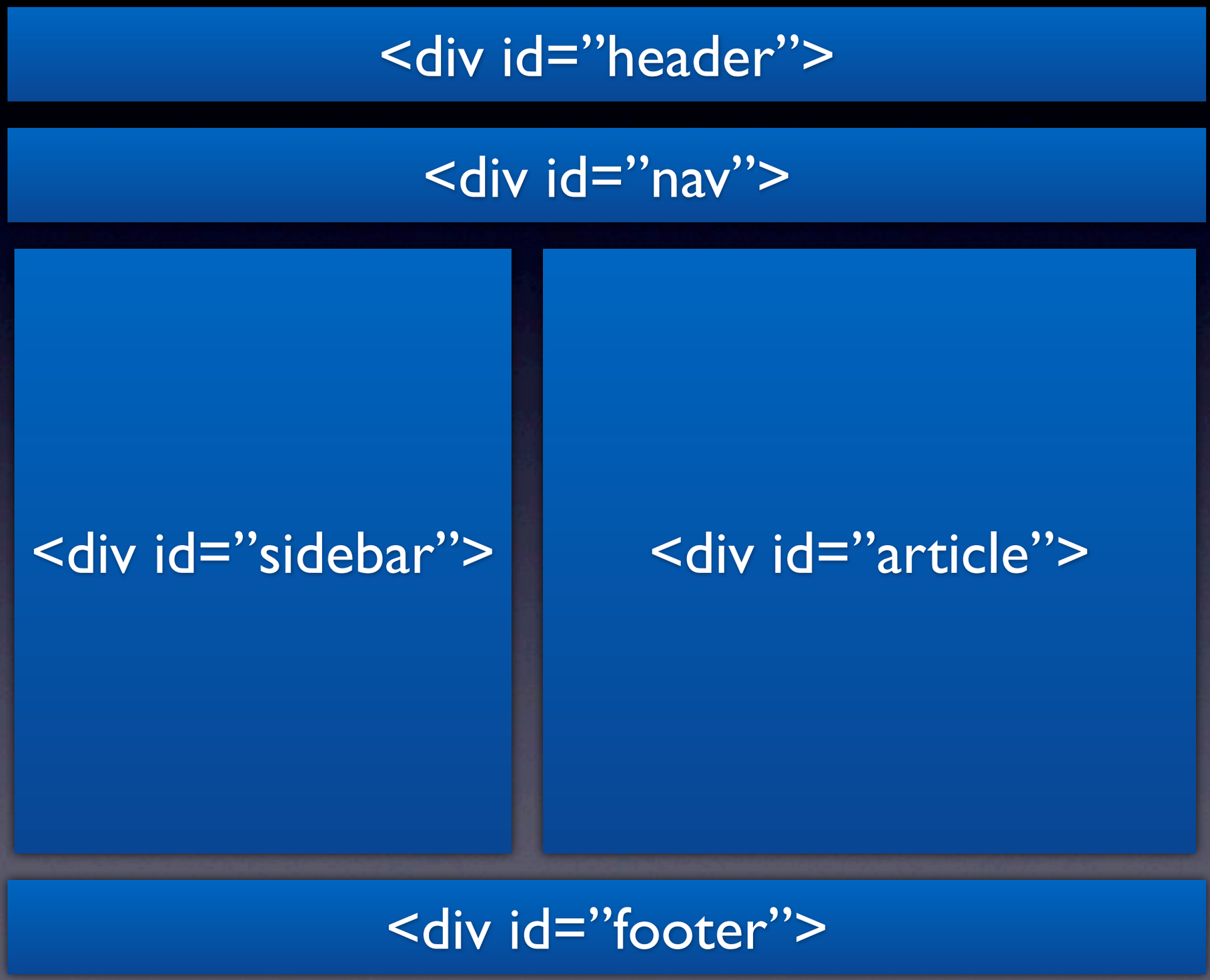
Pre HTML5:

```
<script type=”text/javascript” src=”script.js”> </script>
<link type=”text/css” href=”style.css”></link>
```

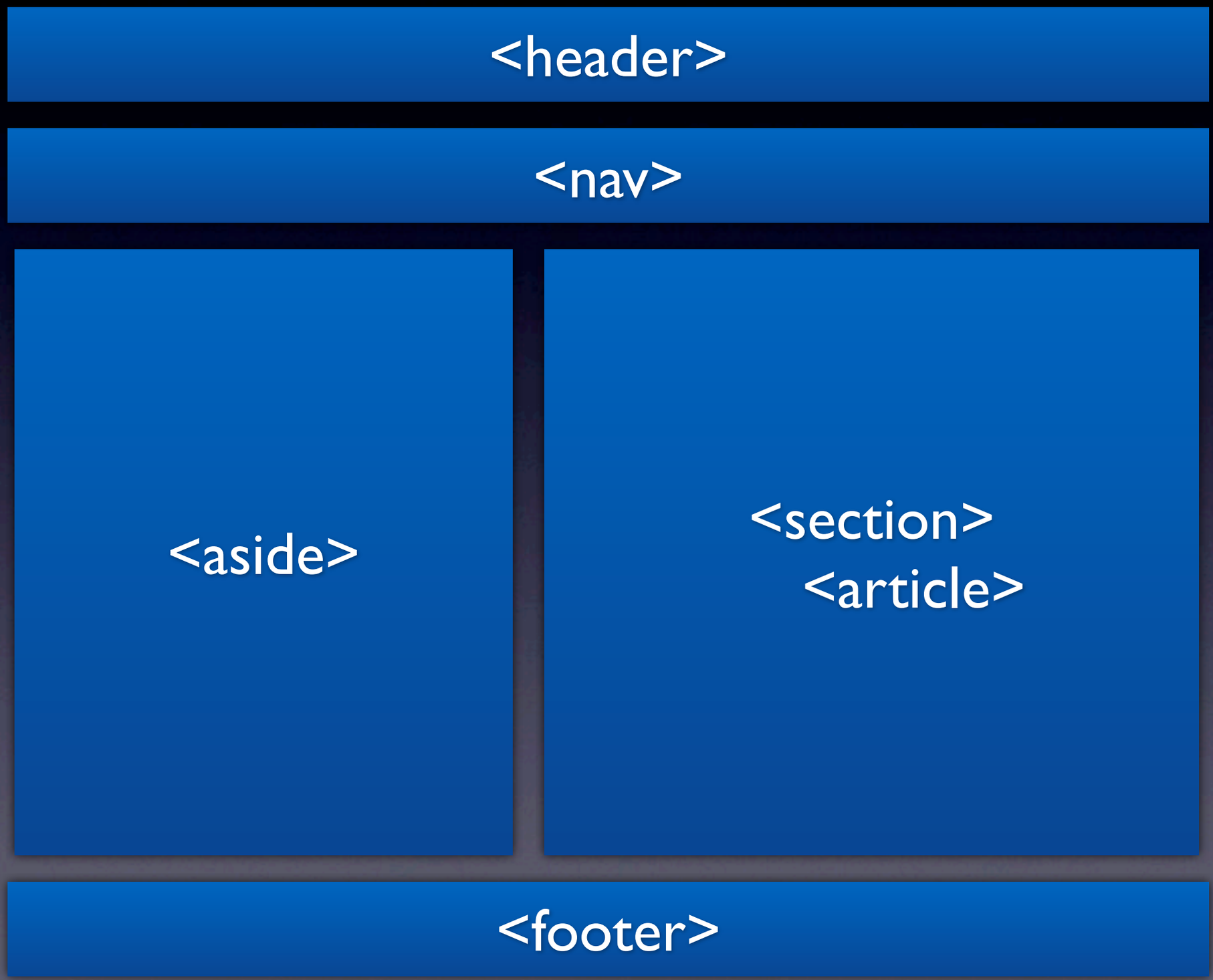
With HTML5:

```
<script src=”script.js”> </script>
<link href=”style.css”></link>
```

More Semantic HTML Tags



More Semantic HTML Tags



More Semantic HTML Tags

Output

```
<output name="result"></output>
```

Progress

```
<progress id="p" max=100><span>0</span>%</progress>
```

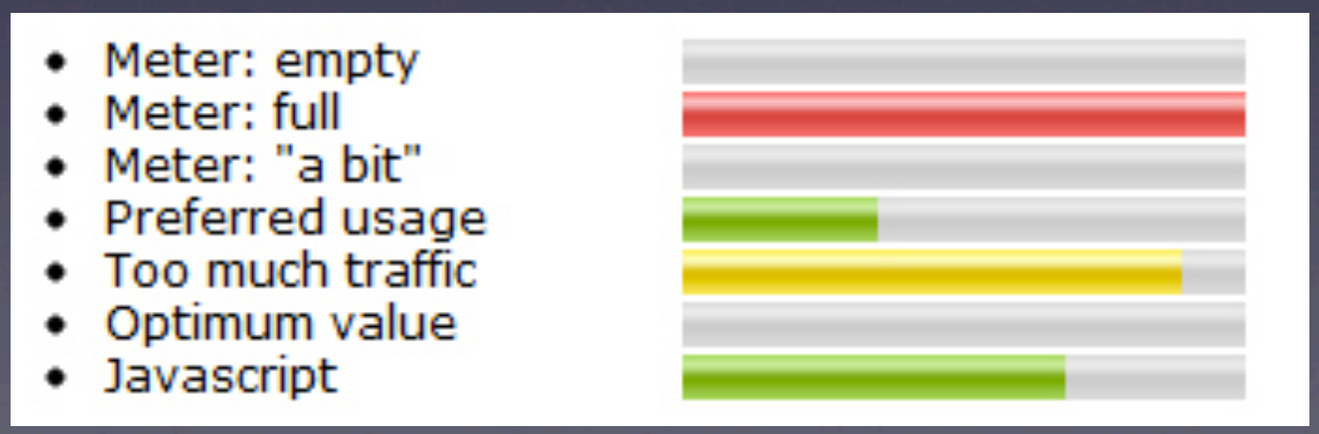
More Semantic HTML Tags

Meter

Storage space usage:
<meter value=6 max=8>6 blocks used (out of 8 total)</meter>

Voter turnout:
<meter value=0.75><img alt="75%" src="graph75.png"></meter>

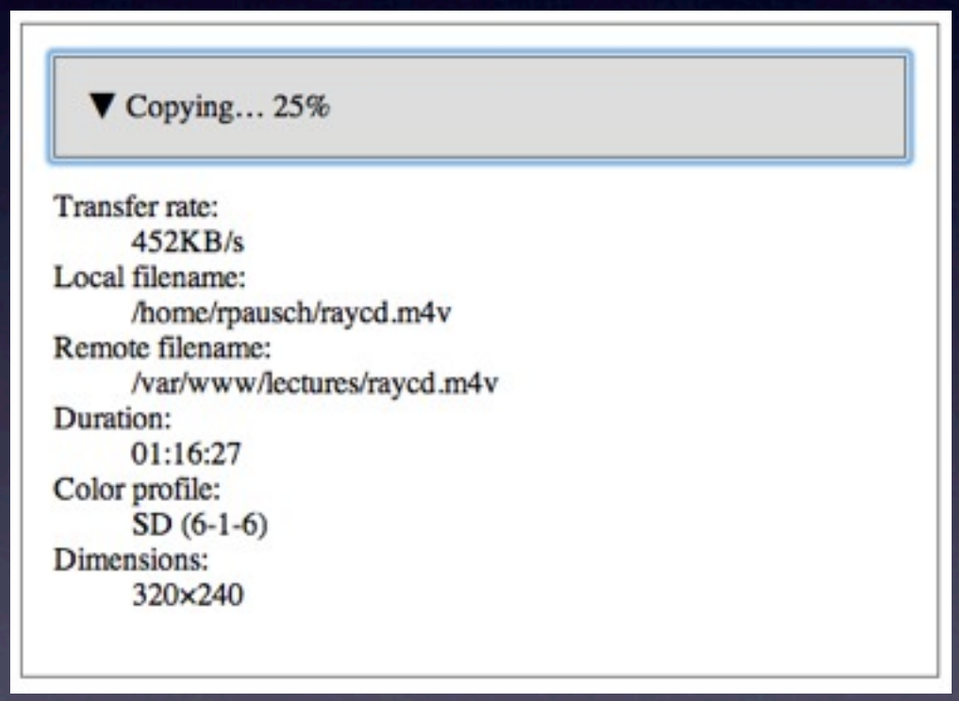
Tickets sold:
<meter min="0" max="100" value="75"></meter>



More Semantic HTML Tags

Details and Summary

```
<details>
    <summary>
        American League Central Division
    </summary>
    Detroit Tigers<br/>
    Minnesota Twins<br/>
    Chicago White Sox<br/>
    Cleveland Indians<br/>
    Kansas City Royals<br/>
</details>
```



Use to create an expanding and contracting element that you can use to hide details without JavaScript

More Semantic HTML Tags

Address

```
<address>
    Written by:<br/>
    <a href="/people/show/23">Timothy Fisher</a>, <br/>
    Address: 25296 Hunter Lane, Flat Rock, MI  48134 <br/>
    Phone: 555-1212
</address>
```

Address applies to the nearest Article or Body tag.

Prior to HTML5 the Address element applied to the document/body as a whole

More Semantic HTML Tags

Data Attributes

```
<div class="car" data-brand="ford" data-model="mustang">
    <button class="fire">
</div>
```

```
//Using DOM's getAttribute() property
var brand=mydiv.getAttribute("data-brand") //returns "ford"
mydiv.setAttribute("data-brand", "mazda") //changes "data-brand" to "mazda"
mydiv.removeAttribute("data-brand") //removes "data-brand" attribute entirely

//Using JavaScript's dataset property
var brand=mydiv.dataset.brand //returns "ford"
mydiv.dataset.brand='mazda' //changes "data-brand" to "mazda"
mydiv.dataset.brand=null //removes "data-brand" attribute
```

Custom data attribs were always possible but prior to HTML5 they would cause validation errors.

More Semantic HTML Tags

Section, hgroup, Article

```
<article>
    <hgroup>
        <h1>Mobile Phones</h1>
        <h2>Different Smart Phones</h2>
    </hgroup>
    <p>Some of the more popular mobile smart phones</p>
    <section>
        <h1>Apple iPhone</h1>
        <p>A popular smart phone from Apple.</p>
    </section>
    <section>
      <h1>Android-based Phones</h1>
      <p>A series of smart phones that use the Google Android operating system.</p>
    </section>
</article>
```

These elements replace many of your divs

More Semantic HTML Tags

Figure and Figure Caption

```
<figure>
    <img src="ninja_guy.jpg" alt="A Standing Ninja Guy.">
    <figcaption>Cool Ninja Guy</figcaption>
</figure>
```

Cool Ninja Guy

The browser can position the caption for you

More Semantic HTML Tags

Menu and Command

```
<menu label="Hero List">
   <command type="radio" radiogroup="herolist" label="Spiderman">
   <command type="radio" radiogroup="herolist" label="Superman">
   <command type="radio" radiogroup="herolist" label="Batman">
</menu>
```

a simple radio button group

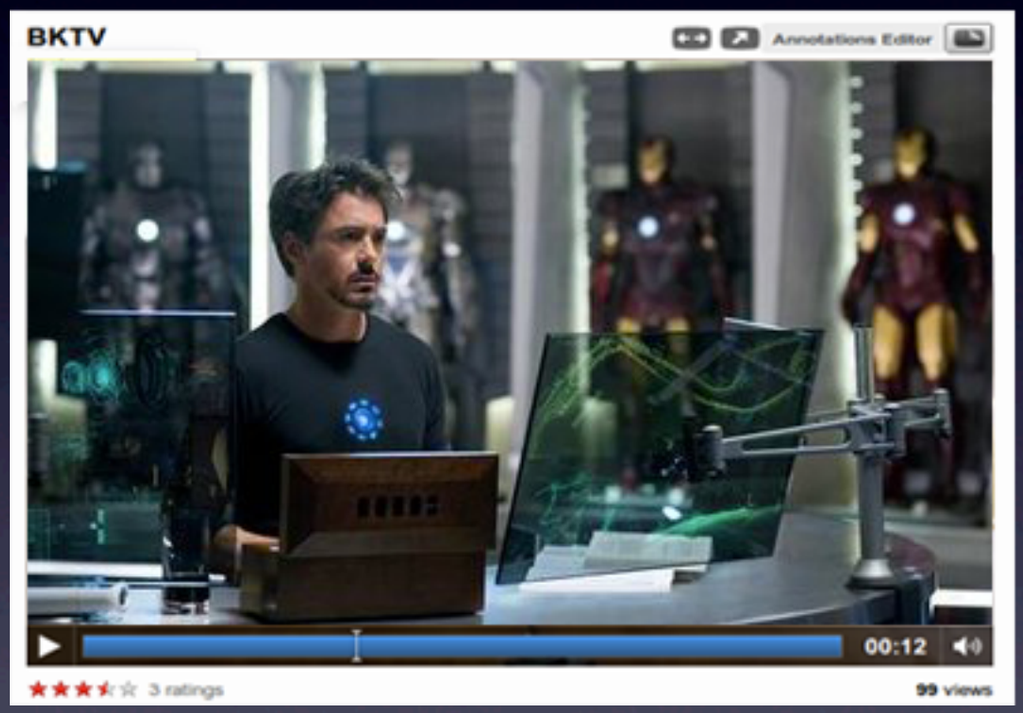
More Semantic HTML Tags

Menu (continued)

```
<menu type="toolbar">
    <li>
        <menu label="File">
            <button type="button" onclick="file_new()">New...</button>
            <button type="button" onclick="file_open()">Open...</button>
            <button type="button" onclick="file_save()">Save...</button>
            <button type="button"onclick="file_saveas()">Save As...</button>
        </menu>
    </li>
    <li>
        <menu label="Edit">
            <button type="button" onclick="edit_copy()">Copy...</button>
            <button type="button" onclick="edit_cut()">Cut...</button>
            <button type="button" onclick="edit_paste()">Paste...</button>
        </menu>
    </li>
</menu>
```

Media Tags

<video src=” ironman.ogg” />

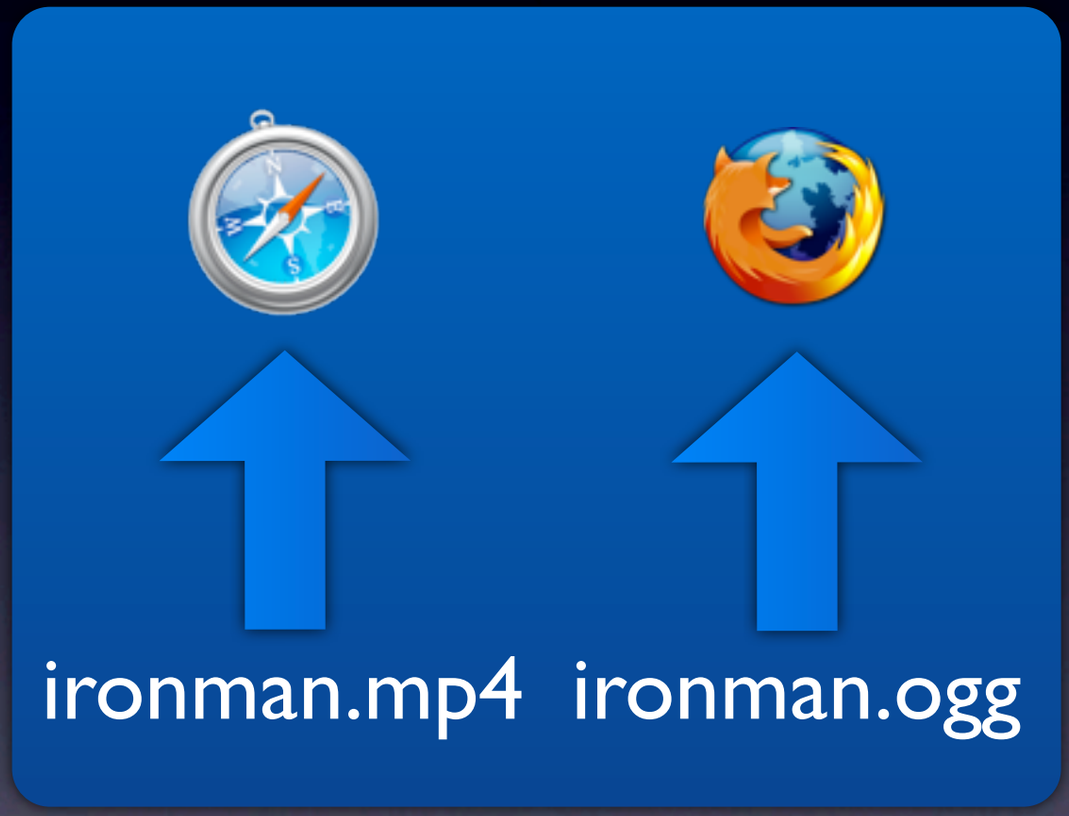


Automatically show native controls
<video src=”ironman.ogg” controls />

http://www.youtube.com/html5

Media Tags

```
<video controls/>
    <source src=”ironman.mp4” />
    <source src=”ironman.ogg” />
</video>
```



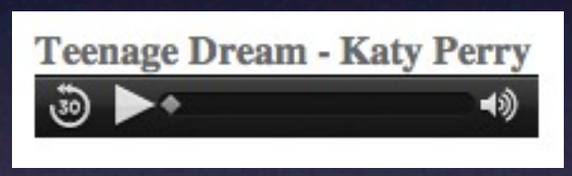
Specify multiple source elements to support more browsers

(i.e. mp4 willl work in Safari, ogg will work in Firefox)

Media Tags

```
<audio src=” teenage_dream.mp3”></audio>
```

```
<audio controls>
    <source src=”teenage_dream.mp3”/>
    <source src=”teenage_dream.ogg”/>
</audio>
```



Provides a download link for non-supporting browsers:

```
<audio src=”teenage_dream.ogg” autoplay controls loop>
    <a href=” teenage_dream.ogg”>download</a>
</audio>
```

Native GeoLocation

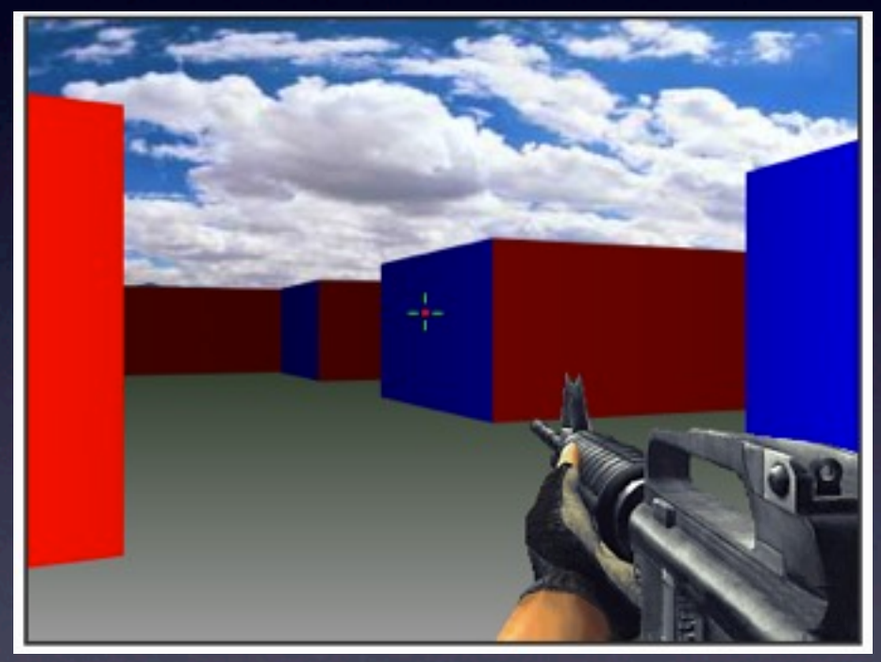
Build location-aware apps without access to native mobile apis

```
navigator.geolocation.getCurrentPosition(
    function(position) {
        // display position
    }
);
```

Canvas

A complete drawing and animation API

```
<canvas id=”square”>
    fallback content
</canvas>

<script>
    // create basic filled square
    canvas = canvas.getElementById(‘square’);
    context = canvas.getContext(‘2d’);
    context.fillStyle = “#000000”;
    context.fillRect(0, 0, 100, 100);
</script>
```



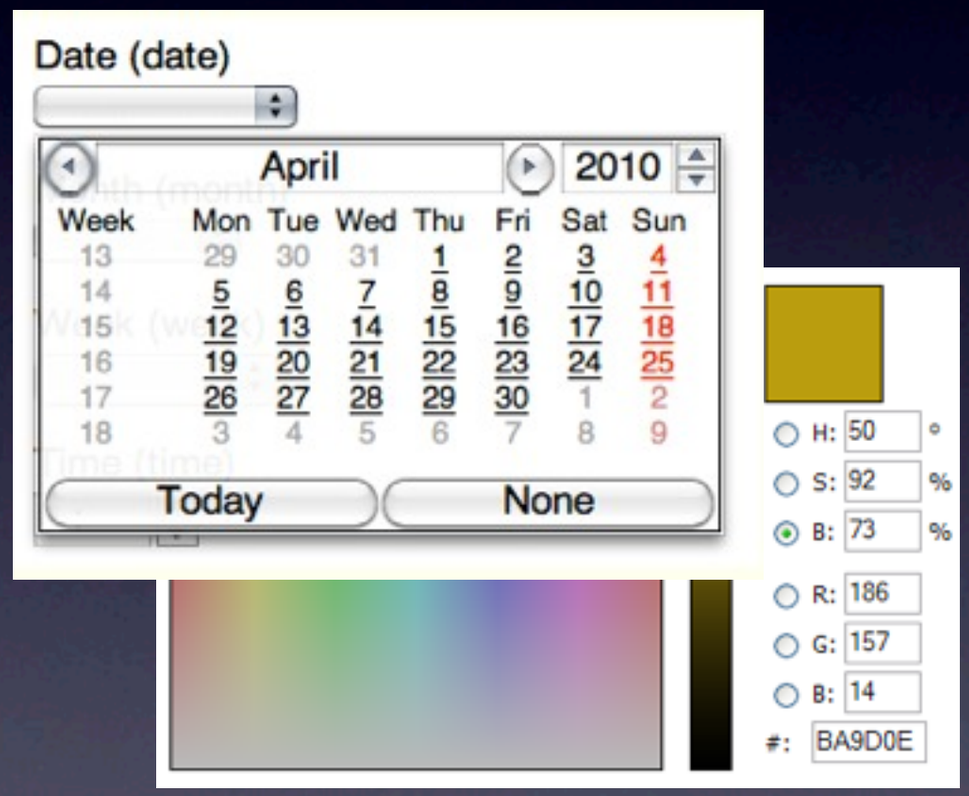
http://www.theopensourcery.com/keepopen/2010/html5-canvas-demo/

http://www.benjoffe.com/code/demos/canvascape/

Input Types

<input type=”email” />

tel	datetime
search	date
email	range
url	color



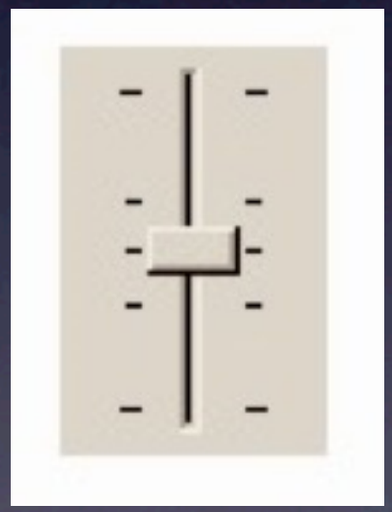
Unsupported browsers default to text type

Future browsers will display appropriate UI controls

Input Types

Input Type Range + Datalist

```
<input type="range" min="-100" max="100" value="0"
       step="10" name="power" list="powers">
<datalist id="powers">
    <option value="0">
    <option value="-30">
    <option value="30">
    <option value="+50">
</datalist>
```



Input Types

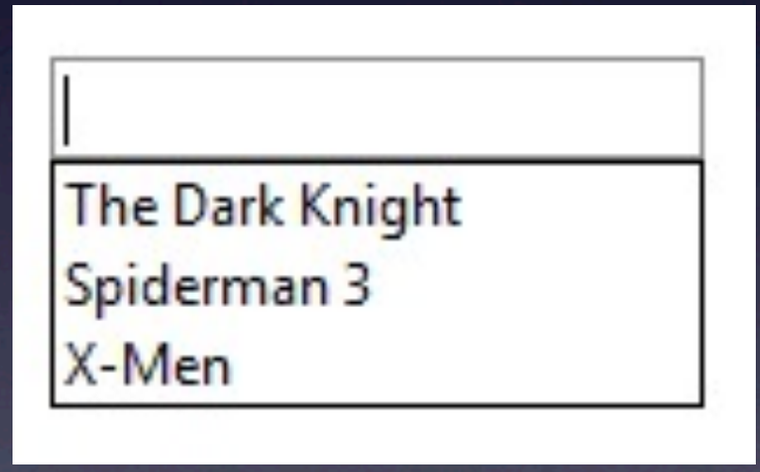
File Upload Multiple

<input type=file multiple>

Input Types

Datalist

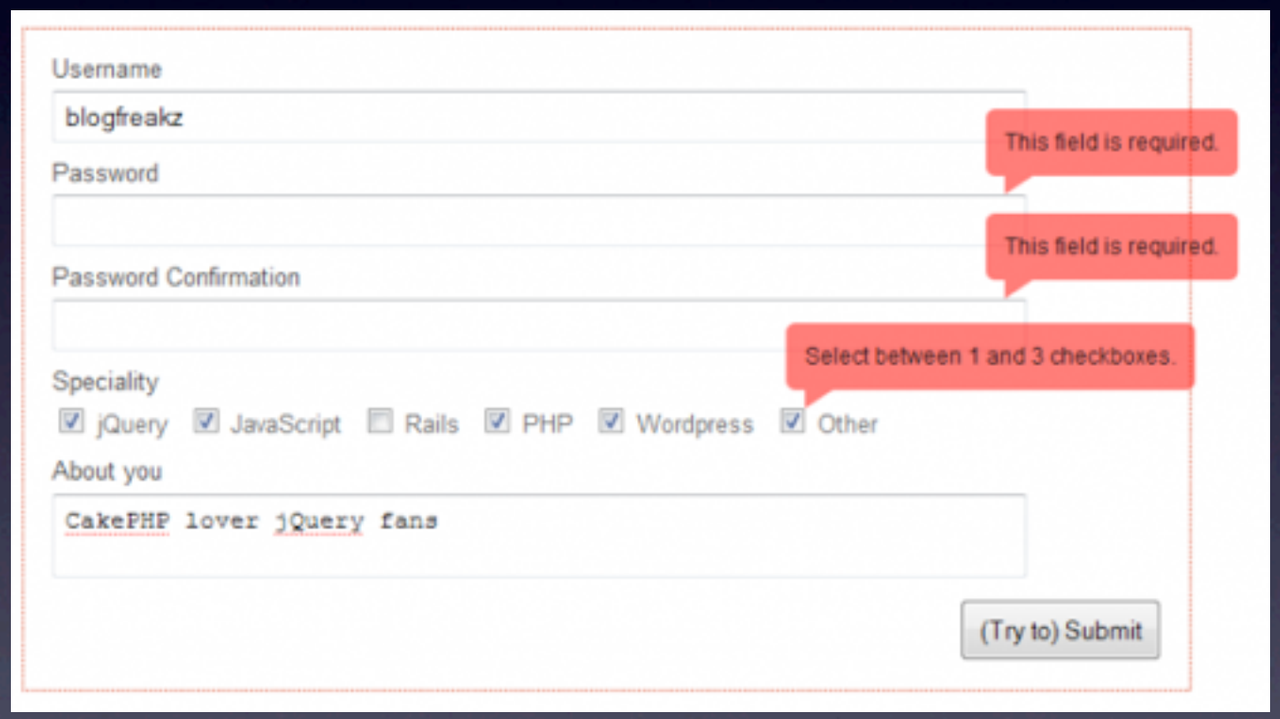
```
<input list="movies" />
<datalist id="movies">
    <option>The Dark Knight</option>
    <option>Spiderman 3</option>
    <option>X-Men</option>
</datalist>
```



Used to provide Auto Complete feature

Form Validation

```
<input name="custname" required>

<script>
    form.checkValidity();
</script>
```



By adding ‘required’ attribute you can take advantage of validity checking without custom JavaScript.

Form Validation

Custom Validation

```
<label>Gender: </label>
 <input name=”gender” type="text" oninput="check(this)">

<script>
    function check(input) {
        if (input.value != "male" && input.value != "female") {
            input.setCustomValidity('"' + input.value + '" is not a gender.');
        }
        else {
            // input is good - reset error message
            input.setCustomValidity('');
        }
    }
</script>
```

Local / Session Storage

```
sessionStorage.setItem(key, value);
sessionStorage.getItem(key);

localStorage.setItem(key, value);
localStorage.getItem(key);
```

Save key/value pairs to a client-side data store implemented by browser

Session store expires when the browser is closed

WebSQL Storage

A set of APIs to manipulate client-side databases using SQL

```
// open/create a database
var db = openDatabase(db_name, version, db_desc, est_size);

// create a table and insert some data
db.transaction(function (tx) {
    tx.executeSql('CREATE TABLE foo (id unique, text)');
    tx.executeSql('INSERT INTO foo (id, text) VALUES (1, "synergies")');
});

// select data and display it
tx.executeSql('SELECT * FROM foo', [], function (tx, results) {
    var len = results.rows.length, i;
    for (i = 0; i < len; i++) {
        alert(results.rows.item(i).text);
    }
});
```

Offline Applications

Offline Applications using manifest

<html manifest=”cache.manifest”>

provide a cache.manifest file:

```
CACHE MANIFEST
clock.html
clock.css
clock.js
```

uses MIME type:
text/cache-manifest

Run a web application in offline mode, disconnected from Internet

Of course your app will still have failures if it tries to pull live data from the Internet

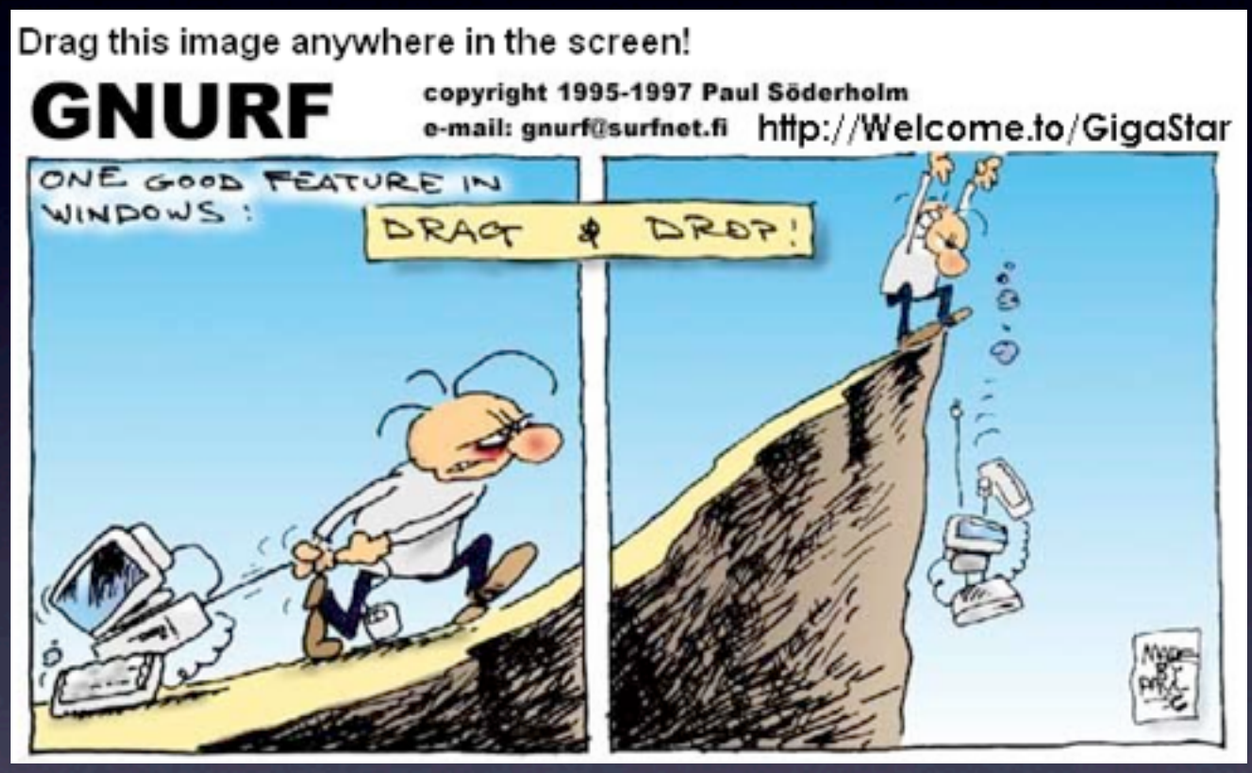
Offline Applications

Detect Online or Offline

```
window.addEventListener("online", function() {
        do_something();
    }, true);


window.addEventListener("offline", function() {
        do_something();
    }, true);
```

Draggable

```
<div draggable=”true”></div>

// set data to access at target
addEvent(div, “dragstart”, function(e) {
    e.dataTransfer.setData(‘foo’, ‘bar’);
}, true);

// access data from dragged object
addEvent(div, ‘dragend’, function(e) {
    e.dataTransfer.getData(‘foo’);
}, true);
```



HTML5 drag and drop should work across frames, and **across browser windows**.

HTML5 drag and drop also allows users to drag and drop data **to and from non-web applications**, i.e. out of the browser or into the browser

Cross-Domain Messaging

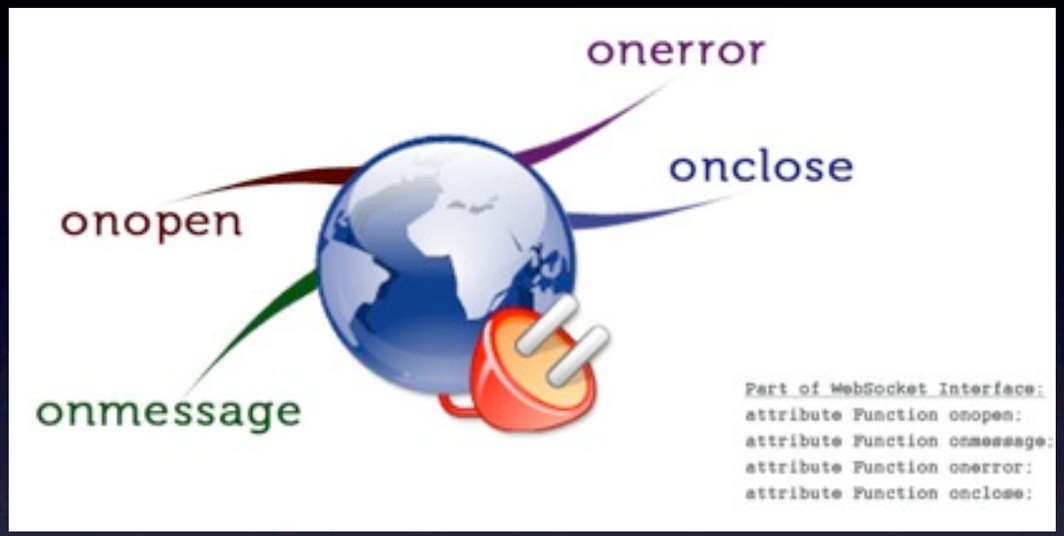

```
// sender
var o = document.getElementsByTagName('iframe')[0];
o.contentWindow.postMessage('Hello world', 'http://b.example.org/');


// recipient
addEvent(window, "message", function(e){
  document.getElementById("rcvd_message").innerHTML = e.origin + " said: " + e.data;
});
```

Editable Content

Turn any element into an editable area

```
<script>
    document.getElementById(‘notepad’).contentEditable = true;
</script>
```

Web Sockets



- Opens a persistent connection to the server
- Can be used for server to browser push
- Restricted communication to origin server
- Eliminates need to poll for data

```
var ws = new WebSocket("ws://friendfeed.com/websocket");
ws.onopen = function() {
    ws.send("This is a message from the browser to the server");
};
ws.onmessage = function(event) {
    alert("The server sent a message: " + event.data);
};
```

Web Workers

- Provide “threads” for JavaScript execution
- Don’t have access to DOM or page.
- Have to communicate through postMessage API

Web Workers

In the Browser

```
// Create a Web Worker
var worker = new Worker("worker.js");

// Post a message to the Web Worker
worker.postMessage(0);

// Triggered by postMessage in the Web Worker
worker.onmessage = function(evt) {
    // evt.data is the values from the Web Worker
    alert(evt.data);
};

// Catch Web Worker error
worker.onerror = function(evt) {
    alert(evt.data);
};
```

Web Workers

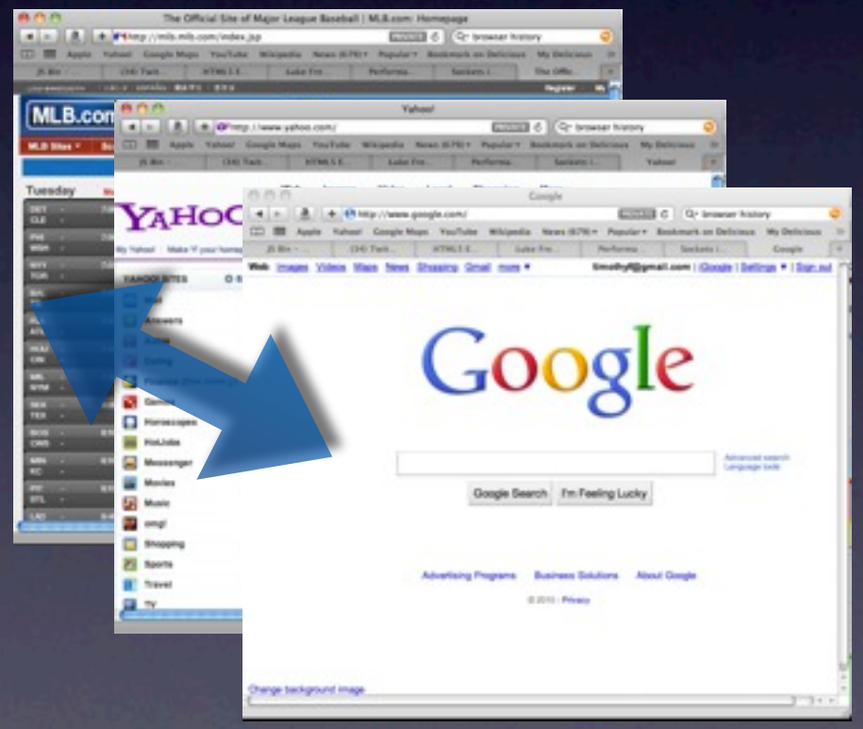
In the Web Worker

```
// Triggered by postMessage in the page
onmessage = function(evt) {
    // evt.data will be 0 here
    for (var i=evt.data, k=1000001;  i<k; i++) {
        // Continually sends data back
        postMessage(i);
    };
};
```

History API

JavaScript API for moving through browser history

```
window.history.back();
window.history.forward();

window.history.go(2);

window.history.length;

window.history.pushState(data, title, url);
window.history.replaceState(data, title, url);
```



HTML5 Compatibilty

HTML5Test.com scores browsers according to the following criteria:

- Parsing Rules
- Canvas
- Video
- Audio
- Local Devices
- Elements
- Forms
- User Interaction
- Microdata
- Web Applications
- Geo Location
- WebGL
- Communication
- Files
- Storage
- Workers

HTML5 Compatibilty

Safari 5

Chrome 7

Firefox 3.6

your browser scores

208

AND 7 BONUS POINTS

out of a total of 300 points

your browser scores

231

AND 12 BONUS POINTS

out of a total of 300 points

your browser scores

139

AND 4 BONUS POINTS

out of a total of 300 points

http://www.HTML5test.com/

HTML5 Compatibilty

IE 8

your browser scores

27

AND NO BONUS POINTS

out of a total of 300 points

IE 9 Beta

your browser scores

96

AND 3 BONUS POINTS

out of a total of 300 points

Opera

your browser scores

159

AND 7 BONUS POINTS

out of a total of 300 points

http://www.HTML5test.com/

Progressive Enhancement

- Use HTML5 when available
- Fallback to a different mechanism when not available
- Supported by many libraries including jQuery.

if HTML5 video is not supported, flash video will load

```
<video controls width="500">
    <source src="video.ogg" />
    <source src="video.mp4" />
    <embed src="http://blip.tv/play/gcMV" type="application/x-shockwave-flash"
           width="1024" height="798" allowscriptaccess="always"
           allowfullscreen="true"></embed>
</video>
```

DON'T FORGET CSS3

- Rounded corners
- Box shadows
- Transitions
- Rotate
- Gradients
- Text shadow
- Web fonts

http://www.webhostingsearch.com/20-of-the-best-examples-of-css

Recommended Sites

http://html5.timothyfisher.com

http://www.HTML5test.com

http://html5demos.com

http://caniuse.com

This Presentation:
http://www.slideshare.net/timothyf/html5-new-and-improved