

<HTML5>

NEW AND IMPROVED

Thanks to Timothy Fisher

<http://www.slideshare.net/timothylvf/html5-new-and-improved>

- 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

- HTML 5 Support



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
- Present Working Draft 5.1- 2015
- Recommendation - 2022 or later *

* Requires 2 100% complete and fully interoperable implementations

Less Header Code

re HTML5:

```
DOCTYPE HTML PUBLIC "-//W3C//Dtd HTML 4.01 Transitional//EN" "http://www.w3.org/tr/html4/loose.dtd
```

With HTML5:

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

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>
```

```
<div id="header">
```

```
<div id="nav">
```

```
<div id="sidebar">
```

```
<div id="article">
```

More Semantic HTML tags

`<header>`

`<nav>`

`<aside>`

`<section>`
`<article>`

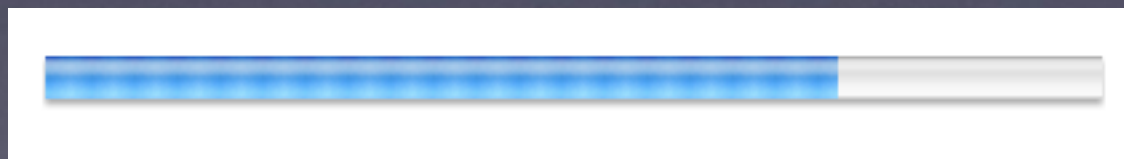
More Semantic HTML tags

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>
```

Power turnout:

```
<meter value=0.75></meter>
```

Tickets sold:

```
<meter min="0" max="100" value="75"></meter>
```

- Meter: empty
- Meter: full
- Meter: "a bit"
- Preferred usage
- Too much traffic
- Optimum value



More Semantic HTML tags

Details and Summary

etails>

<summary>

American League Central Division

</summary>

Detroit Tigers

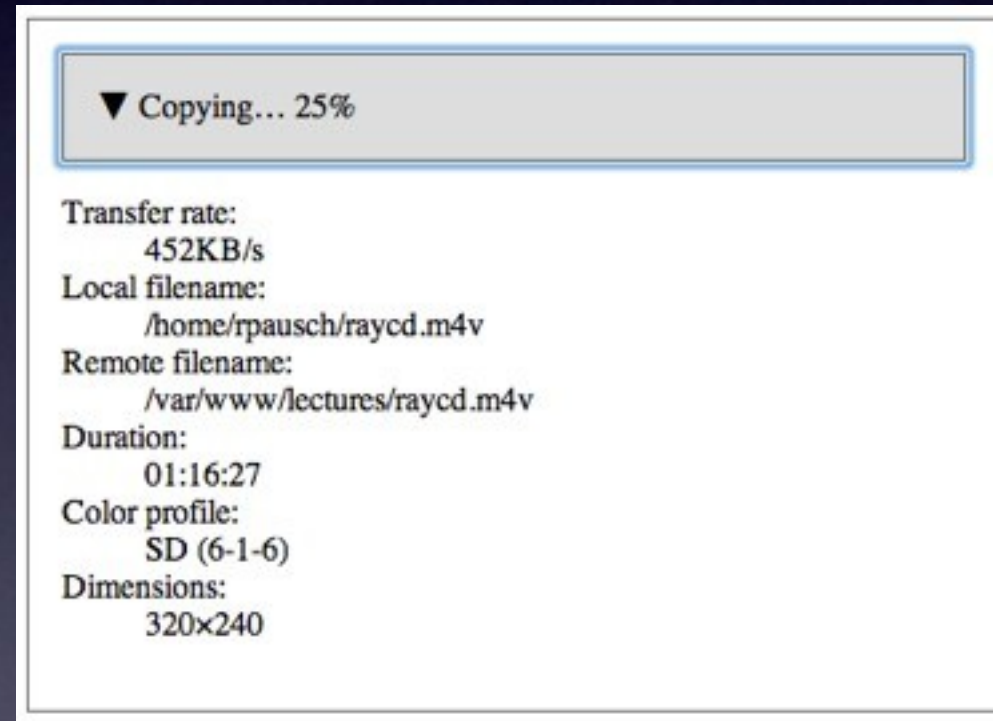
Minnesota Twins

Chicago White Sox

Cleveland Indians

Kansas City Royals

etails>



Use to create an expanding and contracting element that you can use to hide

More Semantic HTML tags

Address

```
address>
```

```
  Written by:<br/>
```

```
  <a href="/people/show/23">Timothy Fisher</a>, <br/>
```

```
  Address: 25296 Hunter Lane, Flat Rock, MI48134 <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

```
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

```
brand=mydiv.dataset.brand //returns "ford"  
mydiv.dataset.brand='mazda' //changes "data-brand" to "mazda"  
mydiv.dataset.brand=null //removes "data-brand" attribute
```

More XHTML tags

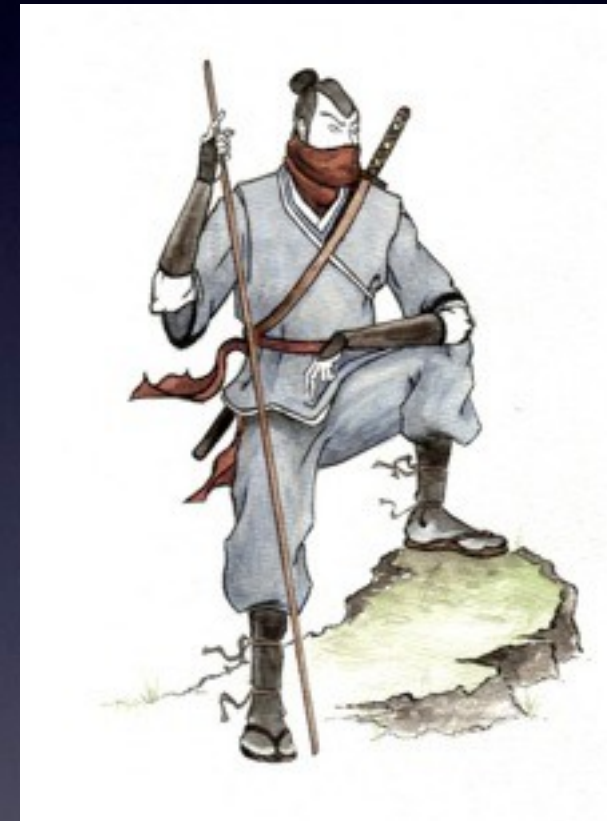
section, hgroup, Article

```
<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>
```


More Semantic HTML tags

Figure and Figure Caption

```
figure>  
    
  <figcaption>Cool Ninja Guy</figcaption>  
</figure>
```



Cool Ninja Guy

More XHTML 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 radiobutton group

More XHTML 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>
```

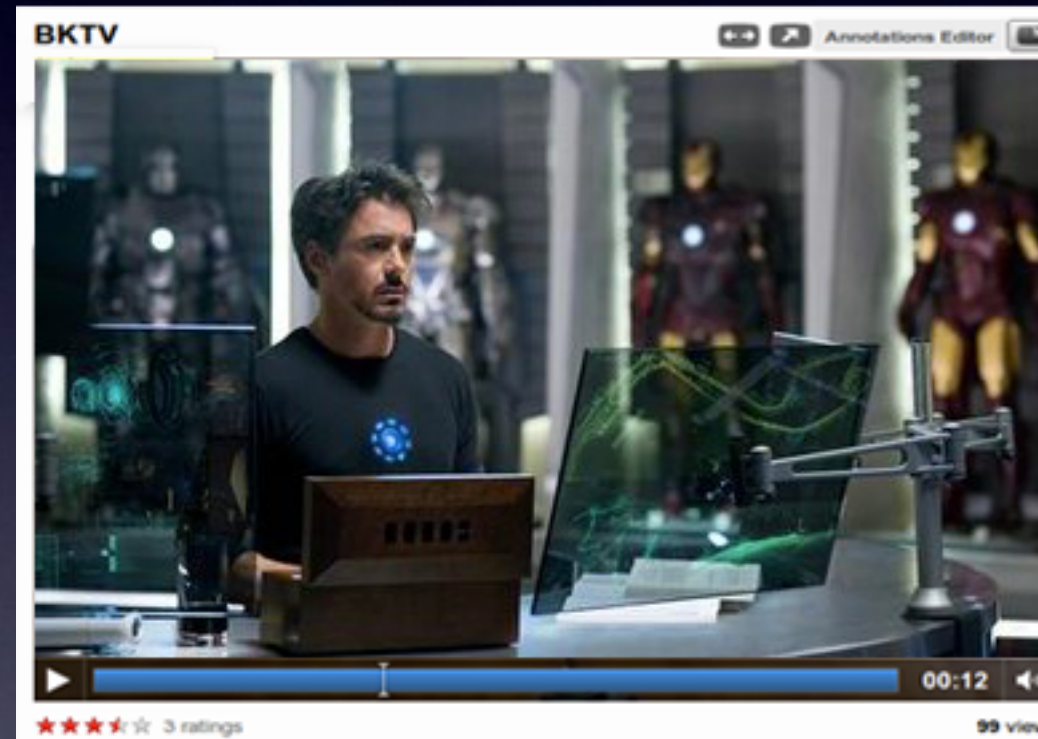
```
</menu>
```

Media Tags

```
<video src="ironman.ogg" />
```

Automatically show native controls

```
<video src="ironman.ogg" controls />
```



Media Tags

video controls/>

<source src="ironman.mp4" />

<source src="ironman.ogg" />

video>



ironman.mp4



ironman.ogg

Specify multiple source elements to support more browsers

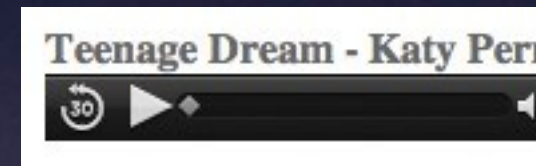
(i.e. mp4 will work in Safari, ogg will work in Firefox)

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 a

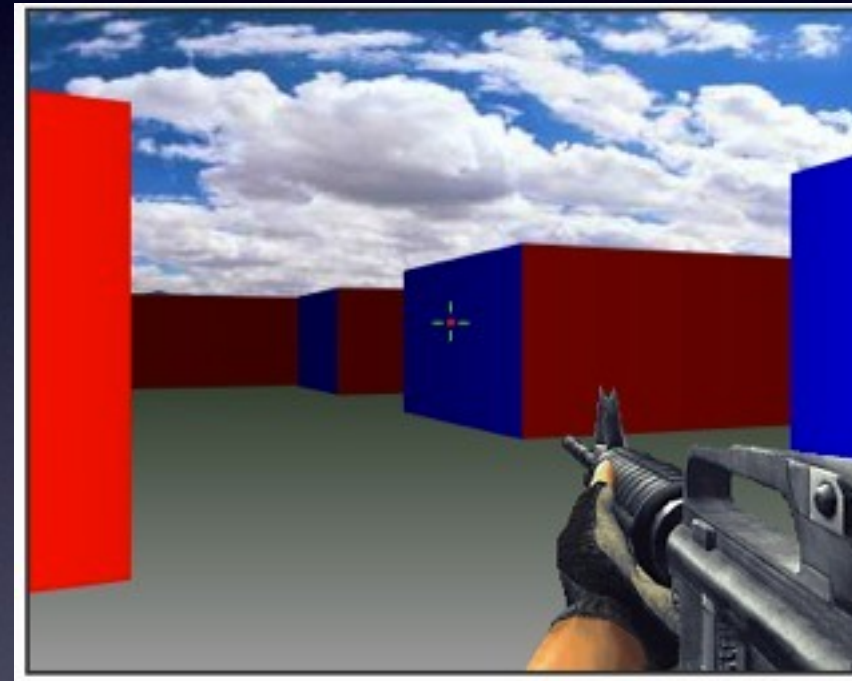
```
navigator.geolocation.getCurrentPosition(  
  function(position) {  
    // display position  
  }  
);
```



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>
```



Input types

`input type="email" />`

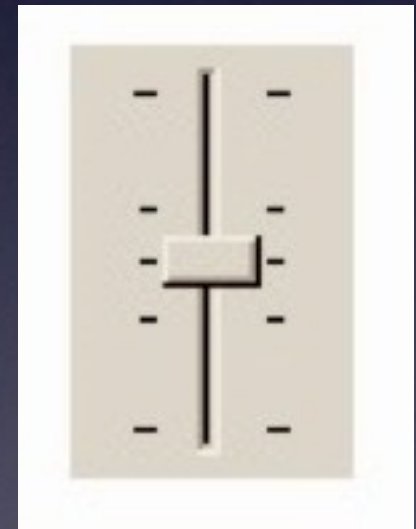
el
search
email url
datetime
date range
color



Unsupported browsers default to text type

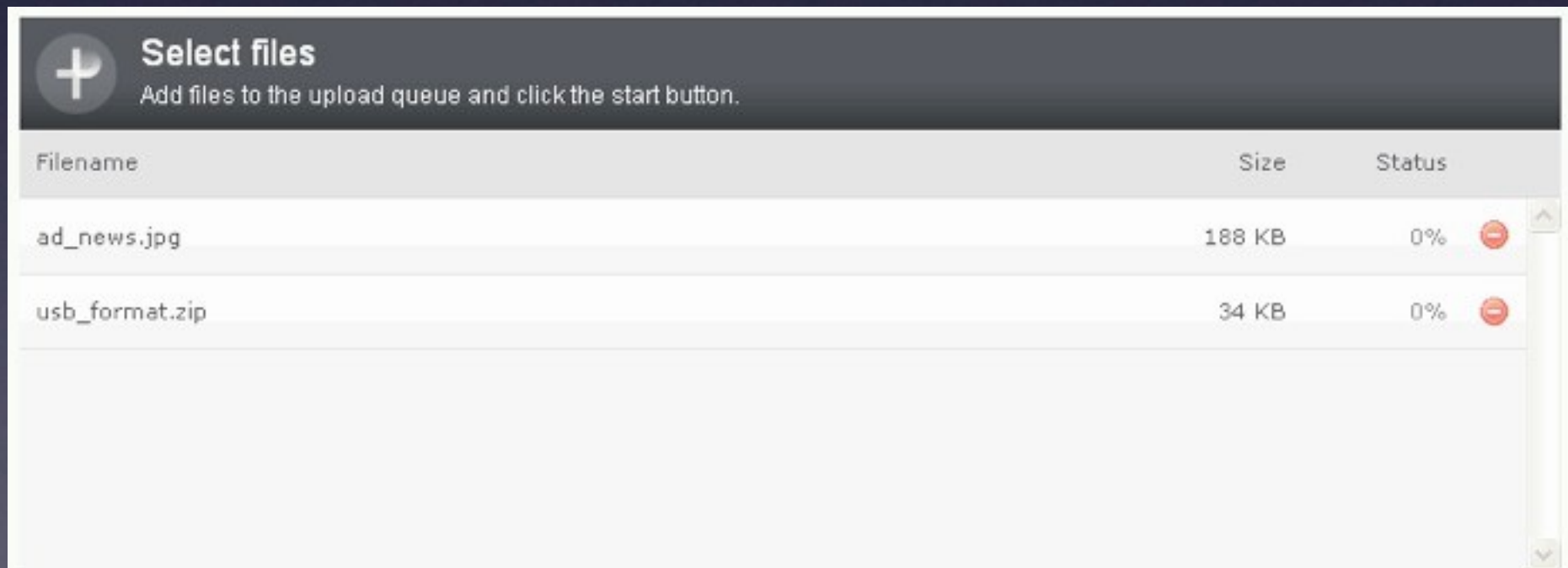
Input Type Range + Datalist

```
<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>
```



File Upload Multiple

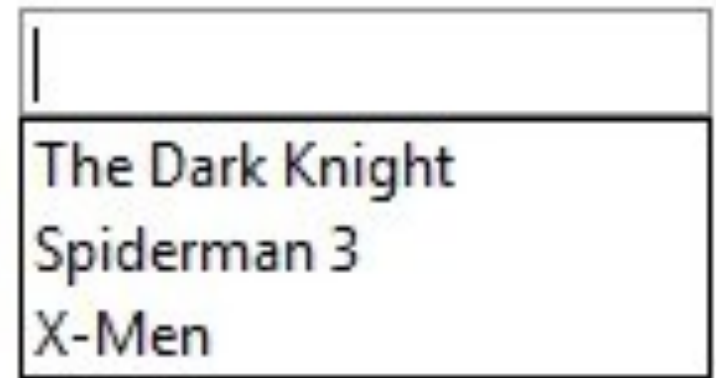
`<input type=file multiple>`



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

```
put name="custname" required>
```

```
cript>
```

```
form.checkValidity();
```

```
cript>
```

The screenshot shows a web form with the following elements:

- Username:** A text input field containing "blogfreakz". A red error message bubble next to it says "This field is" (partially visible).
- Password:** A text input field. A red error message bubble next to it says "This field is" (partially visible).
- Password Confirmation:** A text input field. A red error message bubble next to it says "Select between 1 and 3 checkb" (partially visible).
- Speciality:** A section with several checkboxes:
 - ☒ jQuery
 - ☒ JavaScript
 - ☐ Rails
 - ☒ PHP
 - ☒ Wordpress
 - ☒ Other
- About you:** A text input field containing "CakePHP lover jQuery fans".
- Submit Button:** A button labeled "(Try to) Subm" (partially visible).

Red dashed lines outline the form fields, and red error message bubbles are positioned next to the Username, Password, and Password Confirmation fields.

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("");
  }
}
```

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

WebSQL Storage

Use 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

```
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

Online Applications

Detect Online or Offline

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

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



Draggable

```
</div>  
/ draggable="true"></div>
```

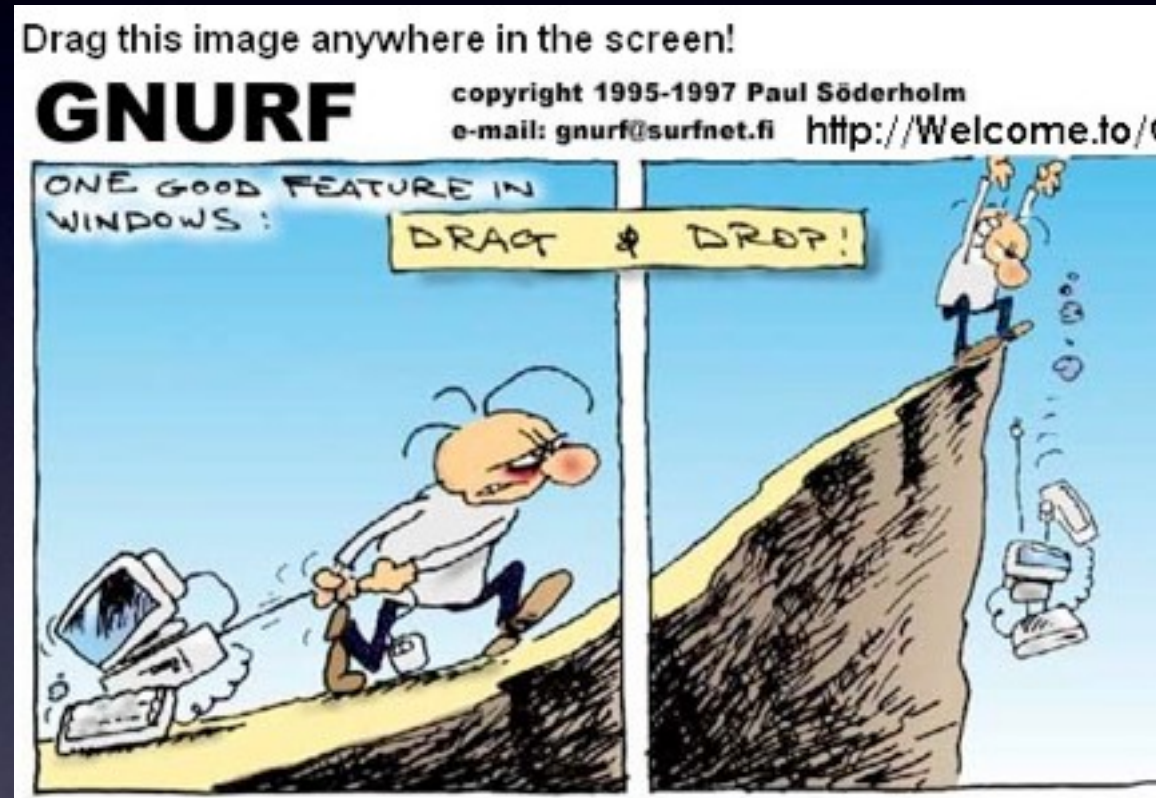
Set data to access at target

```
Event(div, "dragstart", function(e)  
[ e.dataTransfer.setData('foo',  
bar');  
ue);
```

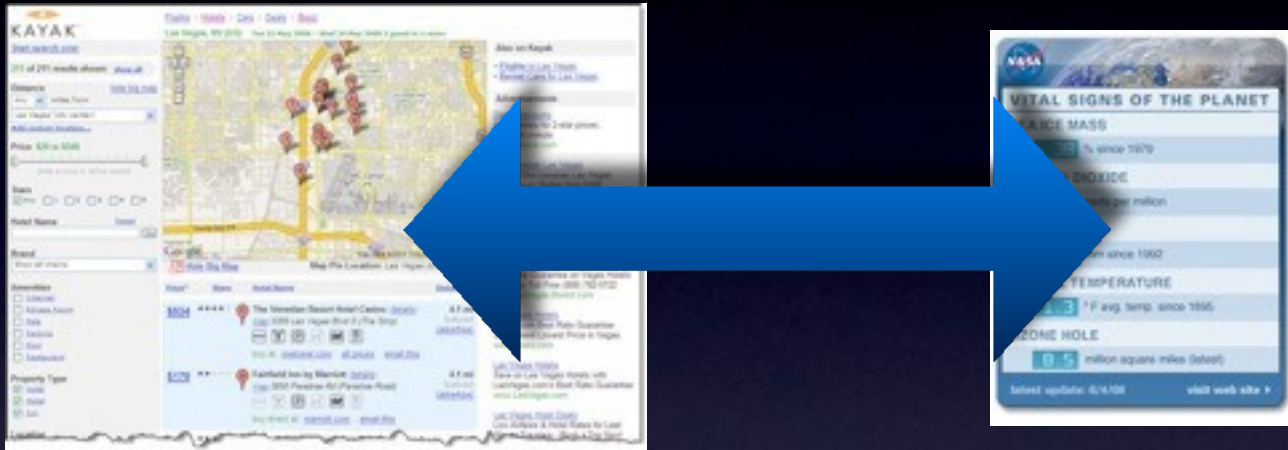
Access data from dragged object

```
Event(div, 'dragend', function(e)  
[ e.dataTransfer.getData('foo');  
ue);
```

ML5 drag and drop should work across frames, and **across browser windows.**



Cross-Domain Messaging



Sender

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

Recipient

```
addEventListener(window, "message", function(e)  
{  
    document.getElementById("rcvdr_message").innerHTML += e.origin + " said: " +  
    e.data + "  
    }  
});
```

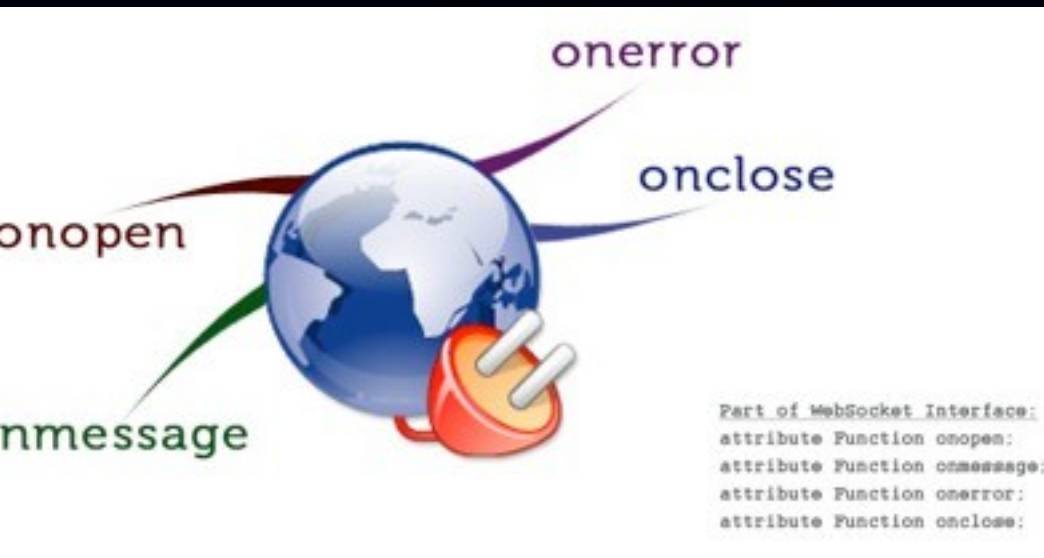

Editable Content



Turn any element into an editable area

```
ipt>  
document.getElementById('notepad').contentEditable = true;  
ript>
```

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



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);
```



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();
```

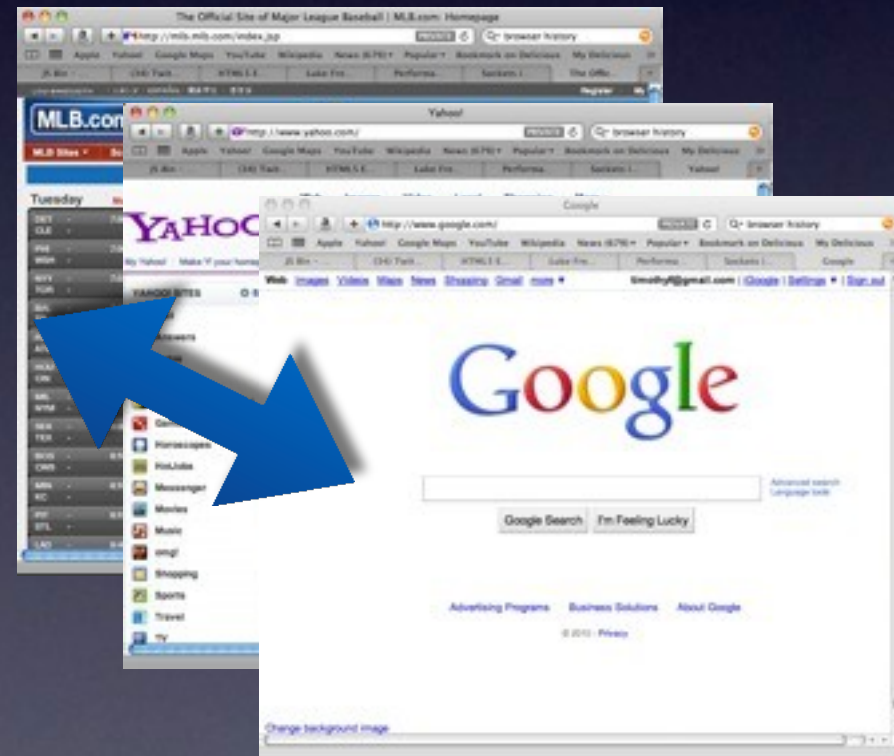
```
window.history.forward();
```

```
window.history.go(2);
```

```
window.history.length;
```

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

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



HTML5 Compatibility

HTML5Test.com scores browsers according to the following criteria:

- Parsing Rules
- Canvas
- ^sVideo
- Audio
- Local Devices
- Elements
- Forms
- User Interaction
- Microdata
- Web Applications
- Geo Location
- WebGL
- Communication
- File ^sStorage
- Workers

HTML5 Compatibility

<http://www.HTML5test.com/>

Progressive Enhancement

Use HTML5 when available

Fallback to a different mechanism when not available

Supported by many libraries including jQuery.

HTML5 video is not supported, flash video will load

```
video controls width="500">
```

```
<source src="video.ogv" />
```

```
<source src="video.mp4" />
```

```
<embed src="http://blip.tv/play/gcMV" type="application/x-shockwave-flash"  
width="1024" height="798" allowscriptaccess="always"
```


DON'T FORGET CSS3

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



Recommended Sites

<http://www.HTML5test.com>

<http://html5demos.com>

<http://caniuse.com>