

HTML

ITSC CodeXtermApp Introduction to HTML5 development

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What you should expect

- Introduction to HTML5
- Basic overview of HTML5 capabilities with some code walkthrough



What you should already know

- HTML
- Javascript
- Some CSS



You should have your own laptops with

- As many of the following browsers as possible:
 - Chrome 11 and above
 - Firefox 4.x (with Firebug add-on)
 - Safari 5.x and above
 - Opera 11.x and above
 - IE9 and above
- A web server that you know how to administer
 - could be Apache web server or IIS
- A good text editor for experimenting with the code



Demo Source Codes

- Can be found at https://github.com/cclow/itsccxa_html5
- Download either using GIT, or as tar.gz / zip file, and install into your web server



Outline for today

- Introduction to HTML5
- Basic HTML5 Markup Changes
- Forms
- Geolocation
- Video and Audio
- Canvas and SVG
- Web Storage
- Application Cache
- Drag and Drop
- File Drag and Drop
- Web Workers

HTML



HTML5: An Introduction



HTML5 is

- Successor to HTML 4.01 and XHTML 1.1
- Just “HTML” to WhatWG
- Collection of enhancements and new capabilities in HTML, Javascript and CSS for building web applications
- Cross platform, browser based application platform



Brief History of HTML from 1997

- Dec 1997: W3C published HTML 4.0 and shut down HTML Working Group
- Feb 1998: W3C published XML 1.0
- May 1998: At W3C workshop, “Shaping the Future of HTML”: “it was agreed that further extending HTML 4.0 would be difficult, as would converting 4.0 to be an XML application. The proposed way to break free of these restrictions is to make a fresh start with the next generation of HTML based upon a suite of XML tag-sets.”



Brief History of HTML from 1997

- Dec 1999: HTML 4.01 published
- Jan 2000: XHTML 1.0, “A Reformulation of HTML 4.0 in XML 1.0” published
- May 2001: XHTML 1.1 published
- Oct 2003: XForm 1.0 published
- XHTML 2 efforts floundered



Brief History of HTML from 1997

- Jun 2004: At Workshop on Web Applications and Compound Documents, Mozilla and Opera proposed evolving HTML and CSS for Web Applications. Vote was 11-8 against.
- WHAT Working Group formed by Apple, Mozilla and Opera. Works on Web Application 1.0 and Web Forms 2.0.



Brief History of HTML from 1997

- Oct 2006: W3C announced participating with WhatWG to evolve HTML
- Jan 2008: W3C published first working draft of HTML5
- Jul 2009: W3C announced shutdown of XHTML 2 Working Group and increase resource to HTML5
- May 2011: Last Call Working Draft



HTML 5 Design Principles

- <http://www.w3.org/TR/html-design-principles/>

I. Compatibility

- Support Existing Content
- Degrade Gracefully
- Do not Reinvent the Wheel
- Pave the Cowpaths
- Evolution Not Revolution



HTML 5 Design Principles

2. Utility

- Solve Real Problems
- Priority of Constituencies:
 - Users > Authors > Implementors > Specifiers > Theoretical Purity
- Secure By Design
- Separation of Concerns
- DOM Consistency



HTML 5 Design Principles

3. Interoperability

- Well-defined Behavior
- Avoid Needless Complexity
- Handle Errors

4. Universal Access

- Media Independence
- Support World Languages
- Accessibility



HTML 5 Timeline

- 2012: HTML5 Candidate Recommendation
- 2022: HTML5 Proposed Recommendation



Using HTML5 Today

“Many of these features are ready to implement today. We don’t have to wait for the entire specs to be completed, we can start using some hawtness now.” —
html5readiness.com

- Checking Compatibility and Support Status
 - <http://caniuse.com>
 - <http://html5test.com>
 - <http://html5readiness.com>



To Address Cross Browser Support

- Detection
 - Modernizr: <http://www.modernizr.com>
- Fallbacks and Substitutions
 - jQuery
- IE Enabling Scripts (already in Modernizr)
 - HTML5Shiv: <http://code.google.com/p/html5shiv/>
 - IE Print Protector: <http://www.iecss.com/print-protector/>



HTML5: Semantic Markups



HTML Head Section

```
<!doctype html>
<html lang="en">
  <head>
    <meta charset="utf-8">
    <title>My Title</title>
    // other stuff
  </head>
```

- meta charset must be in first 512 bytes
- Case insensitive, and does not need closing tag or quotation on attribute values



New Semantic Tags

~~<div id="header">~~

<header>

<footer>

<nav>

<article>

<section>

<aside>

<hgroup>

<figure>

<figcaption>



Removed Tags

~~<basefont>~~

~~<big>~~

~~<center>~~

~~~~

~~<strike>~~

~~<tt>~~

~~<frame>~~

~~<frameset>~~

~~<noframes>~~

~~<acronym>~~

~~<applet>~~

~~<dir>~~



HTML5 Differences

- <http://www.w3.org/TR/html5-diff/>



Enhanced Forms



HTML5 Forms

- Previously Web Forms 2.0
- Backward compatible
- Graceful degradation
 - Unknown input types are treated as text type
 - Unknown attributes are ignored silently



Progress and Meter Elements

```
<progress min='0' max='1.0' value='0.5'></progress>
```

```
<meter min='0' max='1.0' value='0.5' ></meter>
```

```
<meter min='0' max='100' value='20' low='40'  
high='70'></meter>
```



Progress and Meter Status

Progress & Meter - Working Draft

Global user stats*: Support: 17.69%

Method of indicating a progress state (progress element) or the current level of a gauge (meter element).

Resources: [Dev.Opera article](#) [HTML5 Doctor on <meter>](#) [Examples of progress and meter elements](#)

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0		13.0	11.5				
Farther future	10.0	6.0	5.1	14.0	12.0				

Note: The progress element is available in Firefox nightlies, may or may not appear in Firefox 6.

Parent feature: [HTML5 form features](#)

Feedback

Credit: <http://caniuse.com> 8 June 2011



Input Attributes

```
<input placeholder="Placeholder text...">
```

```
<input autofocus>
```

```
<input required>
```

```
<input pattern="[a-zA-Z]{2}[0-9]*" maxlength="10">
```

```
<input type="number" min="0" max="100">
```

```
<input novalidate>
```



Validations Status

Form validation - **Working Draft**

Method of setting required fields and field types without requiring JavaScript

Global user stats*:

Support:	30.99%
Partial support:	3.56%
Total:	34.55%

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0		13.0	11.5				
Farther future	10.0	6.0	5.1	14.0	12.0				

Note: Partial support in Safari refers to lack of notice when form with required fields is attempted to be submitted.

Feedback

Parent feature: [HTML5 form features](#)

Credit: <http://caniuse.com> 8 June 2011

Saturday, June 18, 2011



Input Types

```
<input type="range" min="20" max="100" value="80">
```

```
<input type="email">
```

```
<input type="url">
```

```
<input type="tel">
```

```
<input type="search">
```




<form>

<input type="email">

<input type="submit" value





Input Types

Color and Datetime

```
<input type="color" value="#ffa842">
```

```
<input type="date">
```

```
<input type="datetime-local">
```

```
<input type="time">
```

```
<input type="month">
```

```
<input type="week">
```



Forms Status

 = Supported  = Not supported  = Partially supported  = Support unknown

HTML5 form features - **Working Draft**

Expanded form options, including things like date pickers, sliders, validation, placeholders and multiple file uploads. Previously known as "Web forms 2.0".

Global user stats*:

Support:	0.58%
Partial support:	36.34%
Total:	36.92%

Resources: [HTML5 inputs and attribute support page](#) [Cross-browser JS implementation \(based on original spec\)](#)

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0		13.0	11.5				
Farther future	10.0	6.0	5.1	14.0	12.0				

Note: Older Opera implementations are based on the original WHATWG specification. Chrome 8 still lacks support for autocomplete, datalist and color pickers. Opera 11 has almost complete support, but does not support placeholder on textarea fields.

[Feedback](#)

Sub-features: [Form validation](#) [Progress & Meter](#) [Datalist element](#)

Credit: <http://caniuse.com> 8 June 2011

Saturday, June 18, 2011



Devise Access: Geolocation



No.

isgeolocationpartofhtml5.com



Geolocation Status

 = Supported  = Not supported  = Partially supported  = Support unknown

Global user stats* :

Support: 54.84%
Partial support: 0.11%
Total: 54.95%

Geolocation - Working Draft

Method of informing a website of the user's geographical location

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0	5.1	13.0	11.5				
Farther future	10.0	6.0		14.0	12.0				

Feedback

Credit: <http://caniuse.com> 8 June 2011



Geolocation API

```
navigator.geolocation // Geolocation property
```

```
void navigator.geolocation.getCurrentPosition  
(successCallback, errorCallback, options);
```

```
long navigator.geolocation.watchPosition  
(successCallback, errorCallback, options);
```

```
void navigator.geolocation.clearWatch(watchID)
```



Geolocation API Callbacks

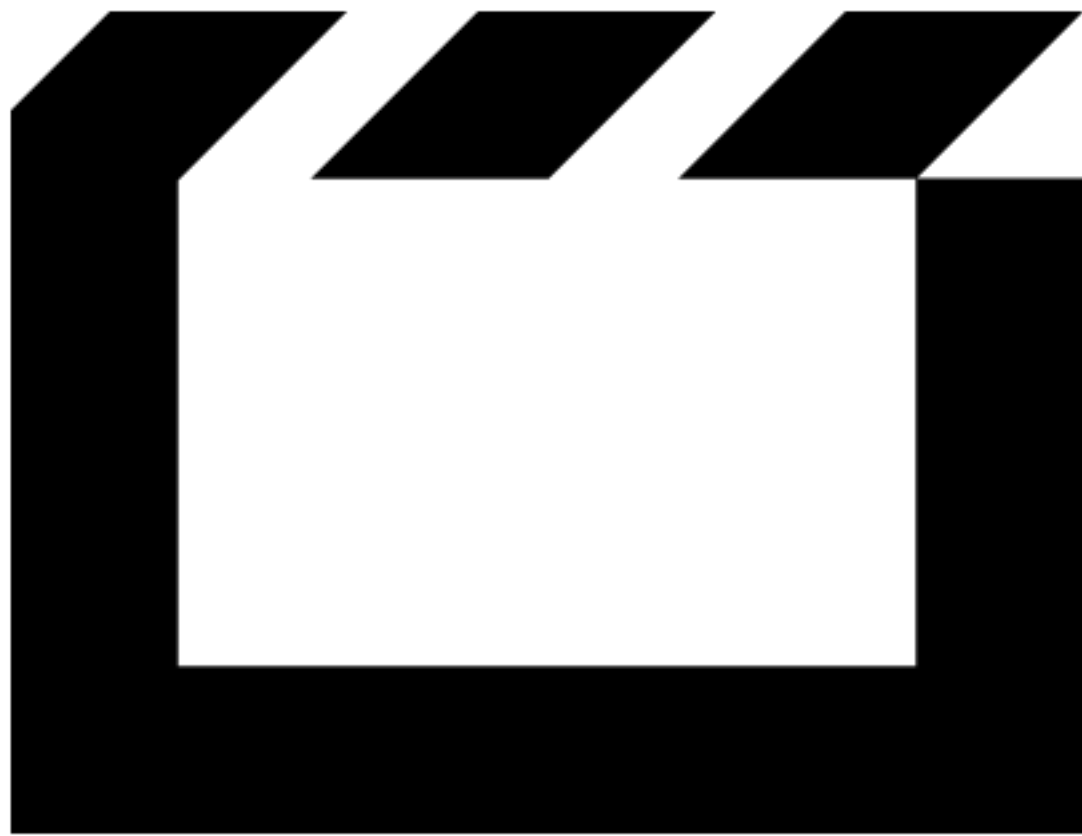
```
function successCallback(position) {  
    var lat = position.coords.latitude;  
    var lng = position.coords.longitude;  
    var accuracy = position.coords.accuracy;  
};
```

```
function errorCallback(error) {  
};
```



Geolocation References

- <http://www.w3.org/TR/geolocation-API/>
- <http://plugins.jquery.com/project/Geolocation>
- <http://www.html5rocks.com/en/tutorials/#geolocation>



MultiMedia: Video and Audio



Video Status

= Supported = Not supported = Partially supported = Support unknown

Video element - **Working Draft**

Method of playing videos on webpages (without requiring a plug-in)

Resources: [Detailed article on video/audio elements](#) [WebM format information](#) [Video for Everybody](#)
[Video on the Web](#) - includes info on Android support

Global user stats*:

Support:	54.13%
Partial support:	0.97%
Total:	55.1%

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3
Near future		5.0	5.1	13.0	11.5				3.0
Farther future	10.0	6.0		14.0	12.0				

Note: Different browsers have support for different video formats, see sub-features for details. The Android browser (before 2.3) requires [specific handling](#) to run the video element.

Feedback

Sub-features: [WebM/VP8 video format](#) [MPEG-4/H.264 video format](#) [Ogg/Theora video format](#)

Credit: <http://caniuse.com> 8 June 2011



Ogg Theora /Vorbis

- Free and Open, Not Many Tools, Not Web Optimised

# Ogg/Theora video format - other									
Free lossy video compression format.									
Resources: Wikipedia article									
	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0	5.1	13.0	11.5				
Farther future	10.0	6.0		14.0	12.0				
Parent feature: Video element									
Global user stats* : Support: 44.9%									
Feedback									

Credit: <http://caniuse.com> 8 June 2011



WebM VP8

- Google owned, Newly Proposed, Royalty-free, BSD Licensed, Web Optimised

WebM/VP8 video format - Other

Global user stats*: Support: 31.47%

Multimedia format designed to provide a royalty-free, high-quality open video compression format for use with HTML5 video.

Resources: [Official website](#) [Info on supporting WebM in Safari](#) [Codecs for IE9 support](#)

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0		13.0	11.5				
Farther future	10.0	6.0	5.1	14.0	12.0				

Note: Will work in IE9 provided the user has the WebM codecs installed.

Parent feature: [Video element](#)

Feedback

Credit: <http://caniuse.com> 8 June 2011



MP4 H.264 Status

- Well established, Patent Encumbered, Licensing / Royalties, Hardware Accelerated

# MPEG-4/H.264 video format - Other										Global user stats*:	
Commonly used video compression format (not royalty-free)										Support:	27.2%
Resources: Wikipedia article Firefox extension allowing support in Win7										Partial support:	0.98%
										Total:	28.18%
	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser		
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1		
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2		
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3	3.0	
Near future		5.0		13.0	11.5						
Farther future	10.0	6.0	5.1	14.0	12.0						
Note: Support in Chrome will <u>be dropped</u> in some upcoming version. The Android 2.3 browser currently requires <u>specific handling</u> to play videos. Firefox and Opera have both stated that they will not support the format.										Feedback	
Parent feature: Video element											

Credit: <http://caniuse.com> 8 June 2011



Video Element

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

```
<video>
```

```
  <source src="movie.webm" type='video/webm; codecs="vp8, vorbis"' />
```

```
  <source src="movie.mp4" type='video/mp4; codecs="avc1.42E01E, mp4a.40.2"' />
```

```
  <source src="movie.ogv" type='video/ogg; codecs="theora, vorbis"' />
```

```
  Video tag not supported. Download the video <a href="movie.webm">here</a>.
```

```
</video>
```



Video MIME Content Type

- Ensure that Video contents are served with the correct Content-Type

```
# /etc/apache2/http.conf
```

```
AddType video/ogg .ogg
```

```
AddType video/mp4 .mp4
```

```
AddType video/webm .webm
```



Video Element Flash Fallback

```
<video>
  <source src="..." type='...' />
  <source src="..." type='...' />
  <source src="..." type='...' />
  <object width="..." height="..." type="application/
x-shockwave-flash" data="player.swf">
    <param name="..." value="..." />
  </object>
</video>
```




Video Element Attributes

`width="300px"`

`height="300px"`

`poster= "poster.png"`

`controls`

`preload="none|metadata|auto"`

`autoplay`

`loop`

`muted`



Video API and Properties

```
movieController.play();
```

```
movieController.pause();
```

```
movieController.volume = 1.0;
```

```
movieController.currentTime = 25.0;
```

```
movieController.duration
```

```
movieController.paused
```

```
movieController.muted = false;
```



Video Events

```
addEventListener('loadeddata', function() {...}, true);  
addEventListener('play', function() {...}, true);  
addEventListener('pause', function() {...}, true);  
addEventListener('ended', function() {...}, true);  
addEventListener('volumechange', function() {...}, true);
```



Audio Status

 = Supported  = Not supported  = Partially supported  = Support unknown

Audio element - **Working Draft**

Method of playing sound on webpages (without requiring a plug-in)

Global user stats*:

Support:	54.13%
Partial support:	0.08%
Total:	54.21%

Resources: [HTML5 Doctor article](#) [Detailed article on video/audio elements](#) [Demos of audio player that uses <audio>](#)
[Detailed article on support](#) [File format test page](#) [The State of HTML5 Audio](#)

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0		13.0	11.5				
Farther future	10.0	6.0	5.1	14.0	12.0				

Feedback

Credit: <http://caniuse.com> 8 June 2011



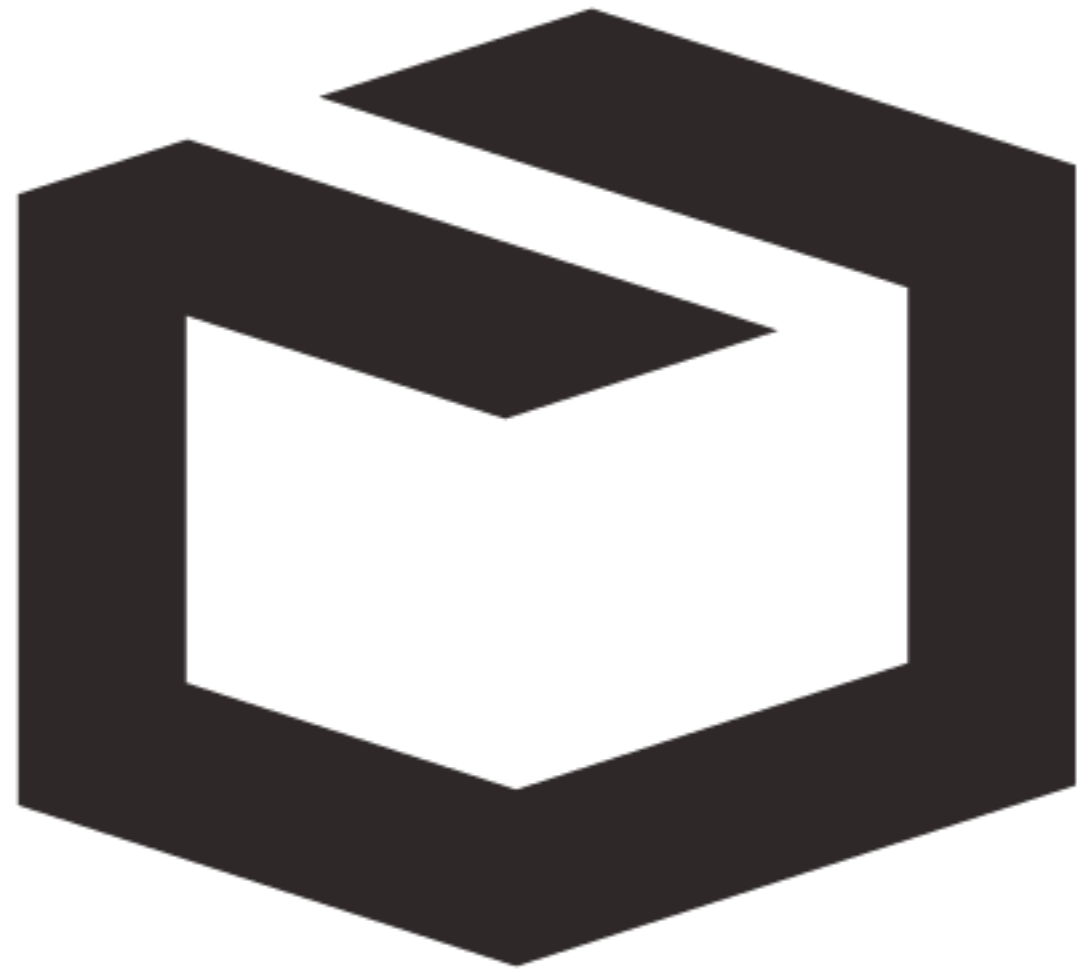
Audio Codecs

	MP3	Ogg Vorbis
Opera		✓
Chrome	✓	✓
Firefox		✓
Safari	✓	
IE9	✓	



HTML5 Multimedia References


- <http://www.w3.org/TR/html5/video.html>
- <http://diveintohtml5.org/video.html>
- <http://www.html5rocks.com/features/multimedia>



Graphics: Canvas



Canvas Status

 = Supported  = Not supported  = Partially supported  = Support unknown

Canvas (basic support) - **Working Draft**

Method of generating fast, dynamic graphics using JavaScript

Global user stats*:

Support:	56.64%
Partial support:	1.08%
Total:	57.72%

Resources: [Tutorial by Mozilla](#) [Showcase site](#) [Animation kit](#) [Another tutorial](#) [Implementation for Internet Explorer](#)

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0	5.1	13.0	11.5				
Farther future	10.0	6.0		14.0	12.0				

Note: Opera Mini supports the canvas element, but is unable to play animations or run other more complex applications.

[Feedback](#)

Sub-features: [Text API for Canvas](#) [WebGL - 3D Canvas graphics](#)

Credit: <http://caniuse.com> 8 June 2011



Canvas

Text API Status

Text API for Canvas - Working Draft

Global user stats* :
Support: 55.32%

Method of displaying text on Canvas elements

Resources: [Examples by Mozilla](#) [Support library](#)

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser	
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1	
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2	
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3	3.0
Near future		5.0	5.1	13.0	11.5					
Farther future		6.0		14.0	12.0					

Parent feature: [Canvas \(basic support\)](#)

Feedback

Credit: <http://caniuse.com> 8 June 2011



Canvas Element

```
<canvas id="my_canvas"  
  width="300px"  
  height="300px">  
</canvas>
```



Canvas Context API

```
var canvas= document.getElementById("my_canvas");  
var context = canvas.getContext("2d");  
context.moveTo(x, y);  
context.lineTo(x, y);  
context.strokeStyle(colorOrPattern);  
context.stroke();  
context.fillStyle(colorOrPattern);  
context.fill();
```



Canvas 2D Context API

```
context.strokeRect(x, y, w, h);
```

```
context.fillRect(x, y, w, h);
```

```
context.arc(x, y, radius, startAngle, endAngle,  
anticlockwise);
```

```
context.arcTo(x1, y1, x2, y2, radius);
```

```
context.bezierCurveTo(cp1x, cp1y, cp2x, cp2y, x, y);
```

```
context.quadraticCurveTo(cpx, cpy, x, y);
```



Canvas 2D Context API

```
context.font = font;
```

```
context.textBaseline = baseline;
```

```
context.textAlign = alignment;
```

```
context.fillText("text", x, y, maxWidth);
```

```
context.strokeText("text", x, y, maxWidth);
```



Canvas 2D Context API

```
context.scale(x, y);
```

```
context.rotate(angle);
```

```
context.translate(x, y);
```

```
context.transform(a, b, c, d, e, f);
```

```
context.strokeText("text", x, y, maxWidth);
```



Canvas 2D Context API

```
context.shadowColor = color;  
context.shadowOffsetX = offsetX;  
context.shadowOffsetY = offsetY;  
context.shadowBlur = blurLevel;
```



Canvas 2D Context API

```
gradient = context.createLinearGradient(x0, y0, x1,  
y1);
```

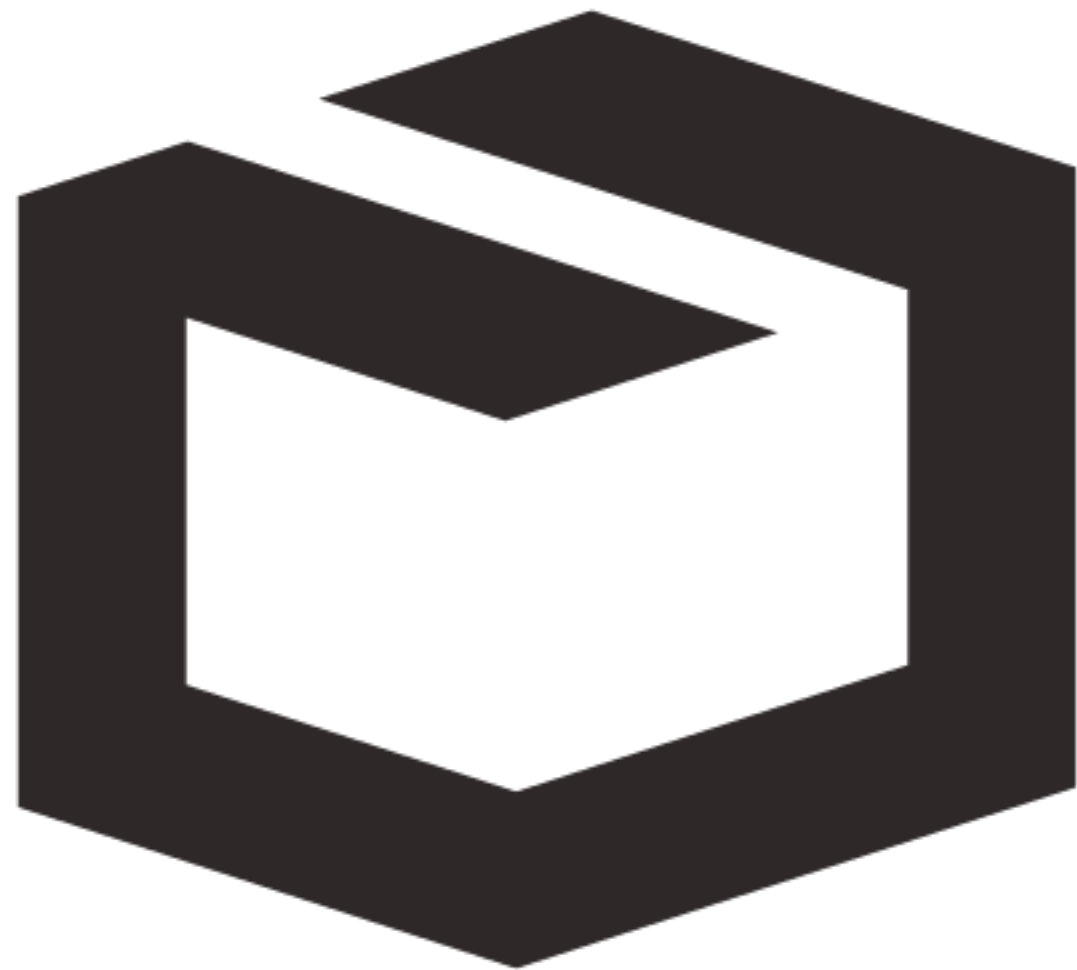
```
gradient = context.createRadialGradient(x0, y0, r0,  
x1, y1, r1);
```

```
gradient.addColorStop(offset, color);
```




Canvas References

- <http://www.whatwg.org/specs/web-apps/current-work/multipage/the-canvas-element.html>
- <http://dev.w3.org/html5/2dcontext/>
- Canvas On Internet Explorer 6 to 8
 - <http://code.google.com/p/explorercanvas/>



Graphics: SVG



Canvas 2D vs SVG

- Canvas 2D
 - High performance
 - Pixel graphics model
 - Limited text capabilities
 - Script based
- SVG
 - Resolution independency
 - Good animation support
 - Slow down with complexity
 - DOM based



Canvas SVG Status

 = Supported  = Not supported  = Partially supported  = Support unknown

SVG (basic support) - Recommendation

Method of displaying basic Vector Graphics features using the embed or object elements

Global user stats* :

Support: 56.55%

Partial support: 0.19%

Total: 56.74%

Resources: [Wikipedia](#) [Sample files](#) [SVG showcase site](#) [SVG Web: Flash-based polyfill](#)

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0		13.0	11.5				
Farther future	10.0	6.0	5.1	14.0	12.0				

Feedback

Credit: <http://caniuse.com> 8 June 2011

Saturday, June 18, 2011



Canvas

Inline SVG Status

# Inline SVG in HTML5 - Working Draft									
Method of using SVG tags directly in HTML documents. Requires HTML5 parser.									
Resources: Mozilla Hacks blog post Demo of multi-browser support using the SVGWeb library Test suite									
	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0		13.0	11.5				
Farther future	10.0	6.0	5.1	14.0	12.0				
Note: Support in Opera 12 is based on support in experimental builds and is not certain to be included.									
Feedback									



SVG Pro-Tip

- SVG is XML based
- Remember to close your tags

```
<rect x="100" y="20" rx="25"  
width="100" height="335" fill="#eee"  
stroke="black" stroke-width="2" />
```



SVG Elements

```
<rect x="100" y="100" width="50" height="50" rx="5"
ry="5" />
```

```
<circle cx="100" cy="100" r="50"/>
```

```
<ellipse cx="100" cy="100" rx="50" ry="25" />
```

```
<line x1="100" y1="100" x2="150" y2="250" />
```

```
<polyline points="0,0 100,50 200,10" />
```

```
<polygon points="100,50 50,200" />
```

```
<path d="..." />
```

```
<text x="50" y="10">Text Goes Here</text>
```

```
<marker ...><path d="..." /></marker>
```



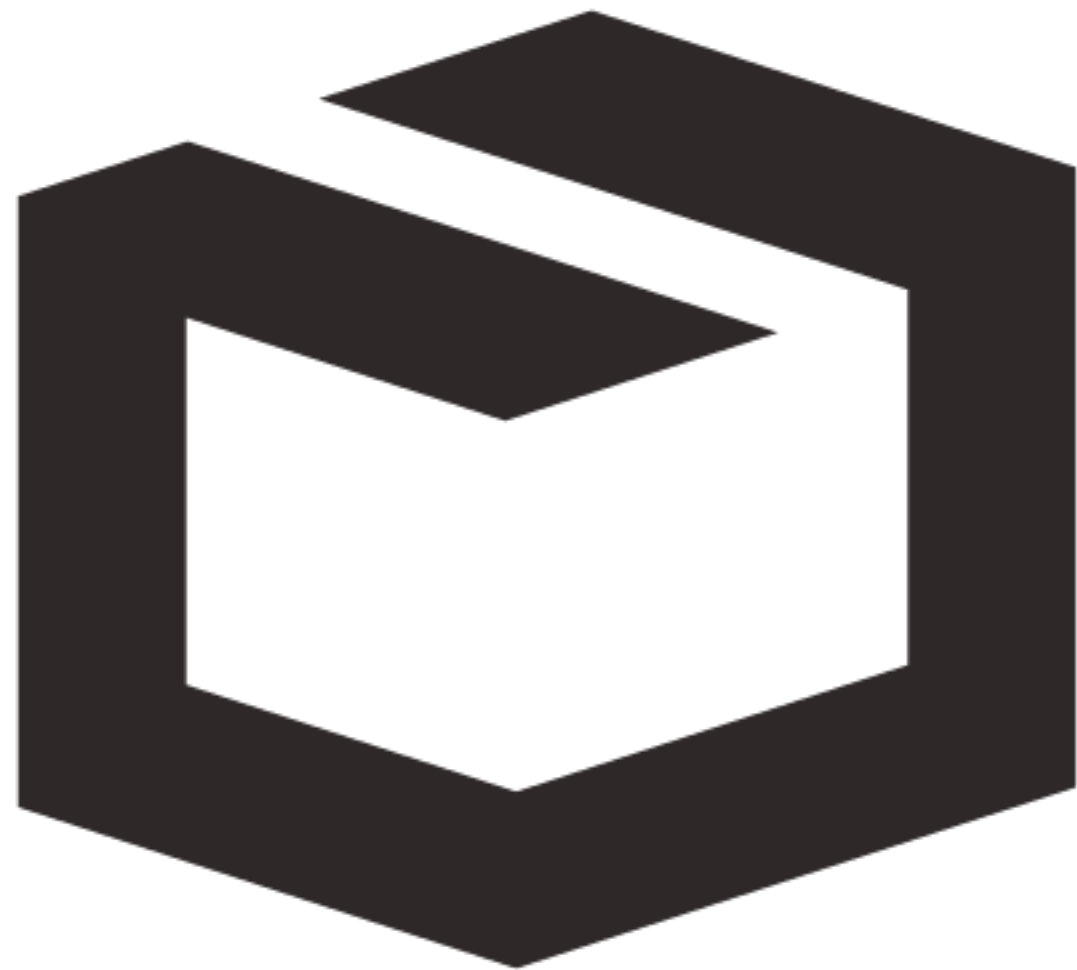
SVG Capabilities

- Grouping
- Gradients and Patterns for Fill and Stroke
- Transform
- Clipping, Masking, Opacity
- Filters: Blend, Offset, GaussianBlur, Tile, DiffuseLighting, SpecularLighting, ...
- Animation: Color, Motion, Transform



SVG References and Libraries

- <http://www.w3.org/TR/SVG/index.html>
- <http://www.learnsvg.com/tutorials/index.svg>
- <http://raphaeljs.com/>



Graphics: WebGL



Canvas WebGL Status

 = Supported  = Not supported  = Partially supported  = Support unknown

WebGL - 3D Canvas graphics - Other

Method of generating dynamic 3D graphics using JavaScript, accelerated through hardware

Global user stats*:

Support:	0%
Partial support:	30.89%
Total:	30.89%

Resources: [Instructions on enabling WebGL](#) [Tutorial](#) [Firefox blog post](#) [Webkit blog post](#) [Opera blog post \(not WebGL\)](#)

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0		13.0	11.5				
Farther future	10.0	6.0	5.1	14.0	12.0				

Note: All support is currently listed as "partial" because not all users with these browsers have WebGL access. This is due to the additional requirement for users to have up to date video drivers. Note that WebGL is part of the Khronos Group, not the W3C. Support in Opera 12 is based on support in experimental builds and is not certain to be included.

Feedback

Parent feature: [Canvas \(basic support\)](#)



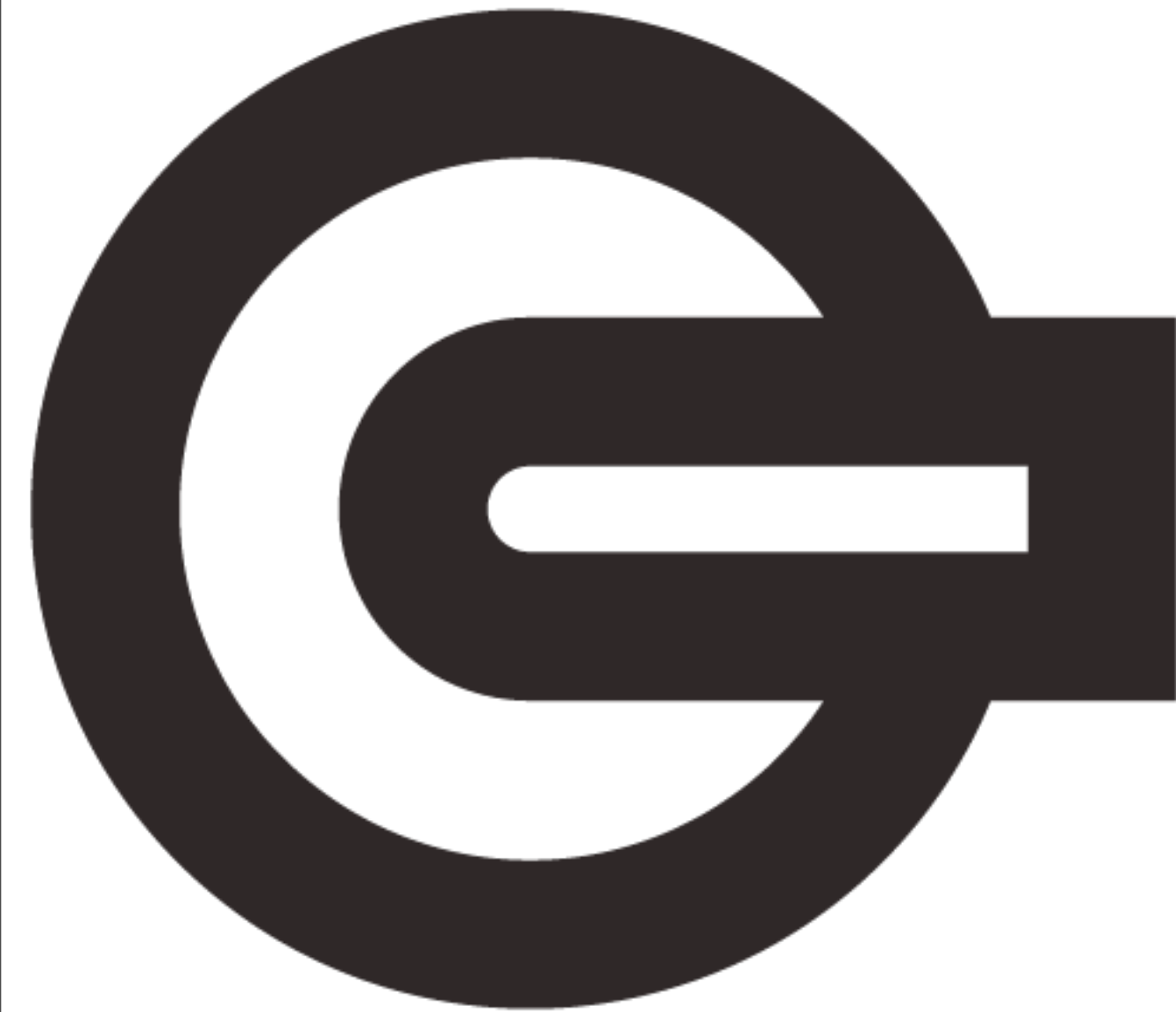
WebGL References

- http://learningwebgl.com/blog/?page_id=1217
- <https://github.com/mrdoob/three.js/>



3D Graphics JS Library

- <https://github.com/mrdoob/three.js>



Offline: Storage



Web Storage Status

= Supported = Not supported = Partially supported = Support unknown

Web Storage - name/value pairs - **Working Draft**

Method of storing data locally like cookies, but for larger amounts of data (sessionStorage and localStorage, used to fall under HTML5).

Global user stats* :

Support:	82.71%
Partial support:	1.02%
Total:	83.73%

Resources: [Gecko reference](#) [Support library](#) [Simple demo](#)

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0		13.0	11.5				
Farther future	10.0	6.0	5.1	14.0	12.0				

Feedback

Credit: <http://caniuse.com> 8 June 2011

Saturday, June 18, 2011



Local and Session Storage API

```
var storage = window.localStorage;  
var value = storage.getItem(key);  
storage.setItem(key, value);  
storage.removeItem(key);  
storage.clear();
```

- Session Storage has the same API



Web SQL Database Status

- Specification work in W3C has stopped

# Web SQL Database - unoff									
Method of storing data client-side, allows Sqlite database queries for access and manipulation									
Resources: HTML5 Doctor article									
	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0		13.0	11.5				
Farther future	10.0	6.0	5.1	14.0	12.0				
Note: The Web SQL Database specification is no longer being maintained and support may be dropped in future versions.									
Feedback									



Web SQL Database API

```
var db = window.openDatabase(dbName, version,  
    displayName, byteSize);
```

```
db.transaction(sqlTransaction);
```

```
db.readTransaction(sqlTransaction);
```

```
function sqlTransaction (tx) {  
    tx.executeSql(sqlStatement, arguments,  
        sqlCallback, errorCallback); }  
function sqlCallback (tx, result) { ... }  
function errorCallback (tx, error) { ... }
```

- SQL Statements in SQLite 3.6.19



Indexed DB Status

 = Supported  = Not supported  = Partially supported  = Support unknown

IndexedDB - Working Draft

Global user stats*:

Support:  28.84%

Method of storing data client-side, allows indexed database queries. Previously known as WebSimpleDB API.

Resources: [Mozilla Hacks article](#)

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0		13.0	11.5				
Farther future	10.0	6.0	5.1	14.0	12.0				

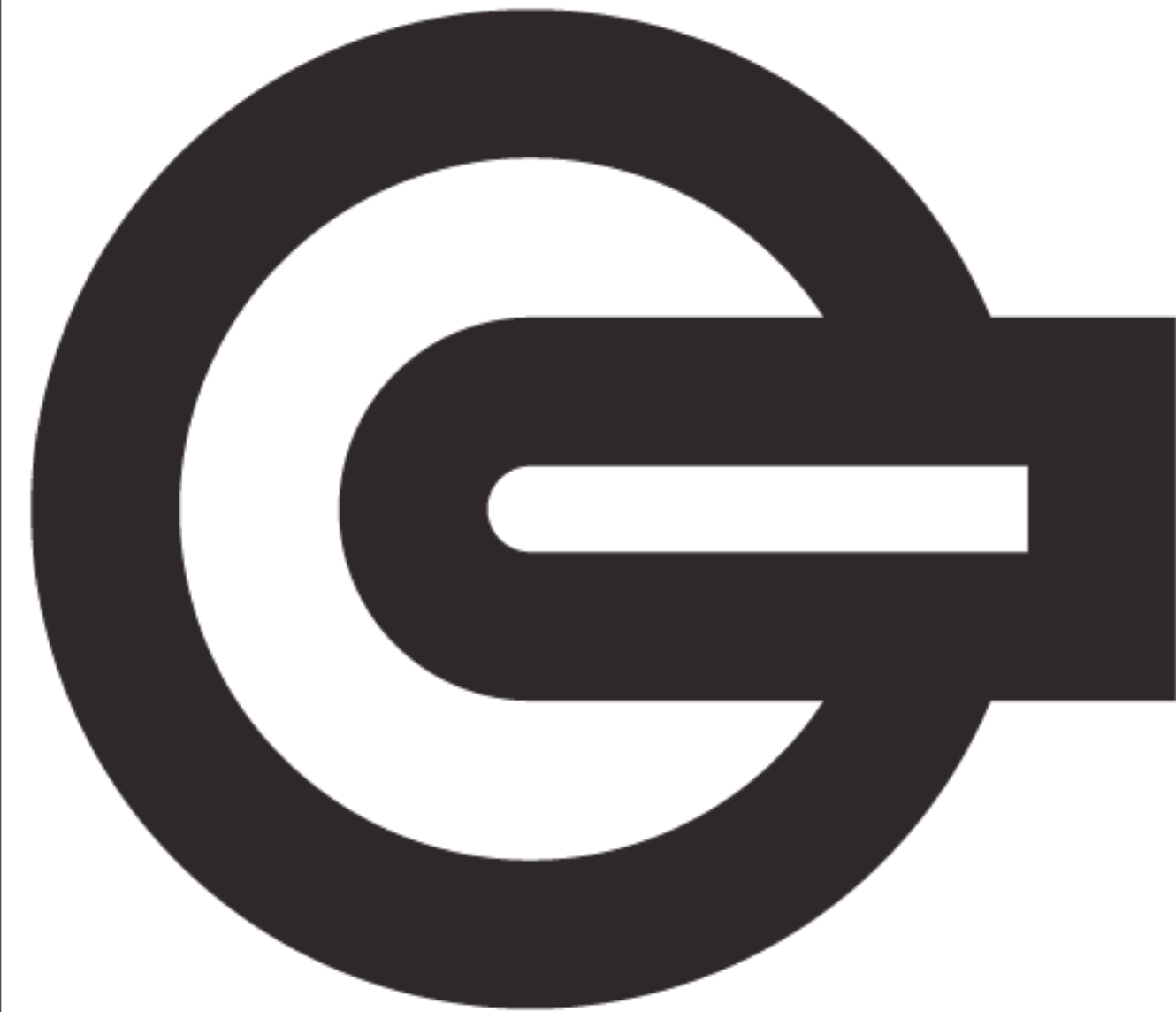
Note: Supported in Chrome using webkitIndexedDB. Microsoft is currently [experimenting](#) with the technology.

[Feedback](#)



Web Storage References

- <http://dev.w3.org/html5/webdatabase/>
- <http://www.w3.org/TR/IndexedDB/>



Offline: Application Cache



Application Cache Status

 = Supported  = Not supported  = Partially supported  = Support unknown

Offline web applications - **Working Draft**

Method of defining web page files to be cached using a cache manifest file, allowing them to work offline on subsequent visits to the page

Global user stats*:

Support:	50.98%
Partial support:	0.85%
Total:	51.83%

Resources: [Sitepoint tutorial](#) [Dive Into HTML5 article](#) [Mozilla Hacks article/demo](#)

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0		13.0	11.5				
Farther future	10.0	6.0	5.1	14.0	12.0				

Note: Currently not supported in some versions of Chrome on Linux.

Feedback

Credit: <http://caniuse.com> 8 June 2011

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Application Cache Manifest File

- First line of the manifest file must be:

`CACHE MANIFEST`

- File must be served with MIME type:

`text/cache-manifest`

- On Apache, you can use the following directive to set the type for the .appcache extension

`AddType text/cache-manifest .appcache`



Application Cache Manifest File

- Versioning

`# version number / timestamp / hash of file contents`

- Main cache section

CACHE:

`index.html`

FALLBACK:

`online.js offline.js`

NETWORK:

`login.jsp`

`/online/*`



Application Cache

- To indicate the manifest file for application cache, use the manifest attribute in html element

```
<html manifest="example.appcache">
```



Application Cache API

```
var appCache = window.applicationCache;  
appCache.update();  
appCache.swapCache();  
appCache.status;
```



Drag & Drop

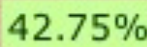


File Drag & Drop Status

 = Supported  = Not supported  = Partially supported  = Support unknown

File API - **Working Draft**

Global user stats*:

Support:  42.75%

Method of manipulating file objects in web applications client-side, as well as programmatically selecting them and accessing their data.

Resources: [MDN article](#)

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3
Near future		5.0	5.1	13.0	11.5				3.0
Farther future	10.0	6.0		14.0	12.0				

Note: Microsoft is currently experimenting with the technology.

Feedback

Credit: <http://caniuse.com> 8 June 2011

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Enabling Drag and Drop

- Element Attribute

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

- Drag and Drop Events

```
draggableDiv.ondragstart = handleDragStart;
```

```
draggableDiv.ondragend = handleDragEnd;
```

```
dropzoneDiv.ondragenter = handleDragEnter;
```

```
dropzoneDiv.ondragleave' = handleDragLeave;
```

```
dropzoneDiv.ondragover' = handleDragOver;
```

```
droppableDiv.ondrop = handleDrop;
```

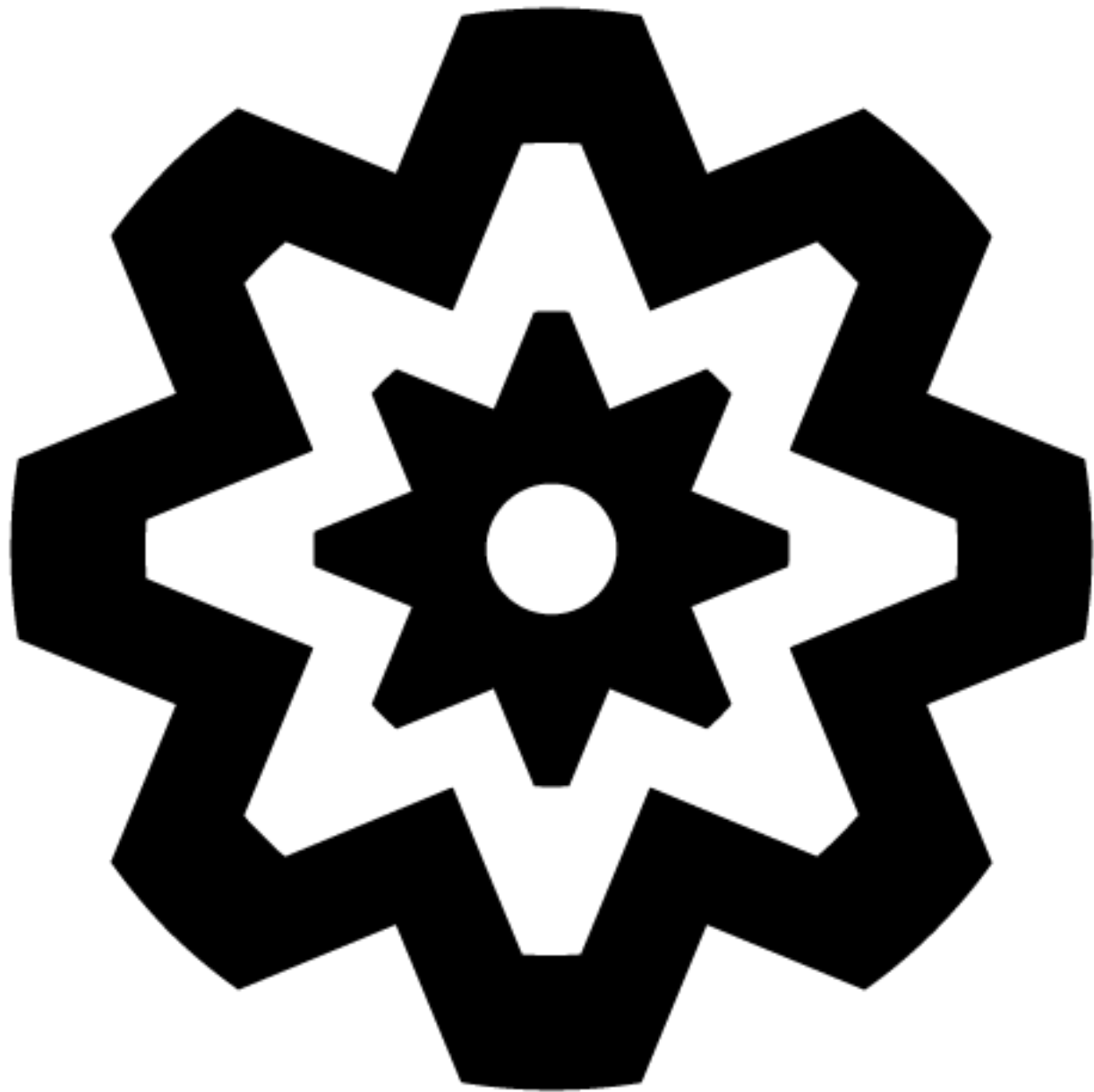


Data Transfer

```
function handleDragStart(e) {  
    e.dataTransfer.effectAllowed = 'move|copy|link';  
    e.dataTransfer.setData(type, data);  
    e.dataTransfer.setDragImage(imageType, image);  
}
```

```
function handleDragOver(e) {  
    e.dataTransfer.dropEffect = 'move|copy|link';  
}
```

```
function handleDrop(e) {  
    e.stopPropagation();  
    e.preventDefault();  
    result = e.dataTransfer.getData(type);  
}
```



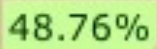
Performance: Web Workers



Web Workers Status

 = Supported  = Not supported  = Partially supported  = Support unknown

Web Workers - **Working Draft**

Global user stats* :
Support:  **48.76%**

Method of running scripts in the background, isolated from the web page

Resources: [MDN article](#) [Web Worker demo](#)

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0	3.5	3.2	10.0	10.6	3.2			2.1
Previous version	8.0	3.6	4.0	11.0	11.0	4.0-4.1		10.0	2.2
Current	9.0	4.0	5.0	12.0	11.1	4.2-4.3	5.0-6.0	11.0	2.3 3.0
Near future		5.0		13.0	11.5				
Farther future	10.0	6.0	5.1	14.0	12.0				

Feedback

Credit: <http://caniuse.com> 8 June 2011

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Web Worker API

- Spawn web worker from JS file

```
var worker = new Worker(jsFile);
```

- Handle messages from worker

```
worker.onmessage = function() {...};
```



Web Worker API

- Spawn web worker from inline JS

```
<script id='worker' type='javascript/worker'>...</script>

window.BlobBuilder = window.BlobBuilder ||
window.WebKitBlobBuilder || window.MozBlobBuilder;

window.URL = window.URL || window.webkitURL;

var bb = new window.BlobBuilder();

bb.append(document.querySelector('#worker').textContent);

var worker = new Worker(window.URL.createObjectURL
(bb.getBlob()));
```



Web Worker API

- Post message from web worker

```
postMessage( 'Message' );
```

- Accept message in web worker

```
self.addEventListener('message', function(e) {  
    messageHash = e.data;  
    ...  
});
```

- Stop web worker

```
self.close();
```

HTML



Closing



With Thanks To

- <http://www.w3.org/TR/html5/>
- <http://www.whatwg.org/specs/web-apps/current-work/multipage/>
- <http://www.html5rocks.com/en/>
- <http://diveintohtml5.org>
- <http://diveintohtml5.org/peeks-pokes-and-pointers.html>
- and many others



Useful Tools and Templates

- HTML5Boilerplate: <http://html5boilerplate.com/>
- Initializr: <http://initializr.com/>
- jQuery: <http://jquery.com>
- CoffeeScript: <http://jashkenas.github.com/coffee-script/>



Useful Tools and Templates

- SproutCore: <http://www.sproutcore.com/>
- Modernizr: <http://www.modernizr.com>
- HTML5Shiv: <http://code.google.com/p/html5shiv/>
- IE Print Protector: <http://www.iecss.com/print-protector/>



HTML5 Showcases

- <http://studio.html5rocks.com/>
- <http://www.chromeexperiments.com/>
- <http://playground.html5rocks.com/>

I've seen the
FUTURE
It's in my
BROWSER



Thank You!