

HTML



Intro to HTML 5, Canvas, WebGL

Overview

- History of HTML
- HTML5
 - Feature overview
 - Browser support
 - Creating an HTML5 page
 - Canvas 2D
 - 2D drawing on the client
 - Does many things that use to require Flash
 - Examples

History

- 1990-2 HTML 0.x

- Oldest surviving page: Tue, 13 Nov 1990 15:17:00 GMT

- `<title>Hypertext Links</title>`

- `<h1>Links and Anchors</h1>`

- A link is the connection between one piece of
`hypertext` and another.

- Example new tags:

- `<html>` `<a>` `<title>` `` `` `<h1>` `<h6>` `<p>` `<pre>`
`<!-- -->` `<body>` `<header>` `<i>` `` `<u>` ...

- 1993 HTML 1.0: Hypertext Markup Language draft

Hypertext Markup Language (HTML)
Internet Draft
IIIR Working Group

Tim Berners-Lee, CERN
Daniel Connolly, Atrium
June 1993

Hypertext Markup Language (HTML)

A Representation of Textual Information and MetaInformation
for Retrieval and Interchange

proposed new tag: IMG

Marc Andreessen (marca@ncsa.uiuc.edu)
Thu, 25 Feb 93 21:09:02 -0800

- Messages sorted by: [\[date \]](#) [\[thread \]](#) [\[subject \]](#)
- Next message: [Tony Johnson: "proposed new tag: IMG"](#)
- Previous message: [Bill Janssen: "Re: xmosaic experience"](#)
- Next in thread: [Tony Johnson: "Re: proposed new tag: IMG"](#)

I'd like to propose a new, optional HTML tag:

IMG

Required argument is SRC="url".

This names a bitmap or pixmap file for the browser to fetch over the network and interpret as an image at the point of the tag's occurrence.

An example is:

```
<IMG SRC="file://foobar.com/foo/bar/bla"
```

(There is no closing tag; this is just a standard HTML convention)

This tag can be embedded in an anchor like `img`; happens, it becomes an icon that's sensitive to mouse clicks, like a regular text anchor.

Browsers should be afforded flexibility as to how to handle this tag. support. Xbm and Xpm are good ones to support. If a browser cannot interpret a given format, it should just ignore it instead (X Mosaic will pop up a default bitmap).

Re: proposed new tag: IMG

Tony Johnson (TONYJ@scs.slac.stanford.edu)
Thu, 25 Feb 1993 23:13 PDT

- Messages sorted by: [\[date \]](#) [\[thread \]](#) [\[subject \]](#) [\[author \]](#)
- Next message: [Guido van Rossum@cwi.nl: "Re: xmosaic experience"](#)
- Previous message: [Marc Andreessen: "proposed new tag: IMG"](#)
- Maybe in reply to: [Marc Andreessen: "proposed new tag: IMG"](#)
- Next in thread: [Tim Berners-Lee: "Re: proposed new tag: IMG"](#)

I have something very similar in Mosaic 2.0 (in use here at SLAC), and due for release soon. It's different, and it's not the same as the proposed tag.

Re: proposed new tag: IMG

Tim Berners-Lee (timbl@www3.cern.ch)
Fri, 26 Feb 93 14:04:55 +0100

- Messages sorted by: [\[date \]](#) [\[thread \]](#) [\[subject \]](#) [\[author \]](#)
- Next message: [Tony Johnson: "Handling + in document searches"](#)
- Previous message: [Kim Peter Nyberg: "re: xmosaic experience"](#)
- Maybe in reply to: [Marc Andreessen: "proposed new tag: IMG"](#)
- Next in thread: [Jim Davis: "Re: proposed new tag: IMG"](#)

I had imagined that figures would be represented as

```
<a name=fig1 href="fghjkdghj" REL="EMBED, PRESENT">Figure </a>
```

where the relationship values mean

EMBED Embed this here when presenting it
PRESENT Present this whenever the source document is presented

History

- **1995 HTML 2**
 - Oldest recognized W3C version
 - Four variants:
 - Level 1: no forms or attributes
 - Strict: prohibits deprecated tags
 - Examples new tags:
`<meta>` `<html version>` ...

Hypertext Markup Language - 2.0

September 22, 1995

T. Berners-Lee (1)
D. Connolly (1)
(1) MIT/W3C

- [Introduction](#)
 - [Scope](#)
 - [Conformance](#)
 - [Documents](#)
 - [Feature Test Entities](#)
 - [User Agents](#)
- [Terms](#)
- [HTML as an Application of SGML](#)
 - [SGML Documents](#)
 - [HTML Lexical Syntax](#)
 - [Data Characters](#)
 - [Tags](#)
 - [Names](#)
 - [Attributes](#)
 - [Comments](#)
 - [HTML Public Text Identifiers](#)
 - [Example HTML Document](#)
- [HTML as an Internet Media Type](#)
 - [text/html media type](#)
 - [HTML Document Representation](#)
 - [Undeclared Markup Error Handling](#)
 - [Conventional Representation of Newlines](#)
- [Document Structure](#)
 - [Document Element: HTML](#)

History

- 1997 HTML 3.2

- Tables, applets, text flow around images

- Examples new tags:

- `<table>` `<map>` `` `<big>` `<small>` `<applet>` ...

- Many proprietary extensions:

- `<blink>` `<layer>` `<marquee>` `<embed>` `<vbscript>` ...

W3C REC-html32

HTML 3.2 Reference Specification

W3C Recommendation 14-Jan-1997

Author: *Dave Raggett* <dsr@w3.org>

Introduction to HTML 3.2


HTML 3.2 is W3C's specification for HTML, developed in early '96 together with vendors including IBM, Microsoft, Netscape Communications Corporation, Novell, SoftQuad, Spyglass, and Sun Microsystems. HTML 3.2 adds widely deployed features such as tables, applets and text flow around images, while providing full backwards compatibility with the existing standard HTML 2.0.

W3C is continuing to work with vendors on extensions for accessibility features, multimedia objects, scripting, style sheets, layout, forms, math and internationalization. W3C plans on incorporating this work in further versions of HTML.

History

- 1999 HTML 4.01
 - Multimedia, scripting, style sheets, accessibility
 - Deprecated many presentation features from 3.2:
`<center>` `<applet>` `` `<u>` ...
 - New tags:
`<frame>` `<style>` `<button>` `<object>` `<acronym>` ...

[next](#) [table of contents](#) [elements](#) [attributes](#) [index](#)



HTML 4.01 Specification

W3C Recommendation 24 December 1999

Abstract

This specification defines the HyperText Markup Language (HTML), the publishing language of the World Wide Web. This specification defines HTML 4.01, which is a subversion of HTML 4. In addition to the text, multimedia, and hyperlink features of the previous versions of HTML (HTML 3.2 [\[HTML32\]](#) and HTML 2.0 [\[RFC1866\]](#)), HTML 4 supports more multimedia options, scripting languages, style sheets, better printing facilities, and documents that are more accessible to users with disabilities. HTML 4 also takes great strides towards the internationalization of documents, with the goal of making the Web truly World Wide.

History

- 2000 XHTML

- Nearly same tags as HTML 4.01, but in lowercase
- Conversion to XML-based language
- Prevent things like:
 - Omitting end tags `<p>Paragraph 1<p> Paragraph 2`
 - Unquoted attributes `<td rowspace=3>`
 - Improper nesting `<i>Text</i>`



XHTML™ 1.0 The Extensible HyperText Markup Language (Second Edition)

A Reformulation of HTML 4 in XML 1.0

W3C Recommendation 26 January 2000, revised 1 August 2002



XHTML™ 1.1 - Module-based XHTML - Second Edition

W3C Recommendation 23 November 2010



XHTML™ 2.0

W3C Working Group Note 16 December 2010

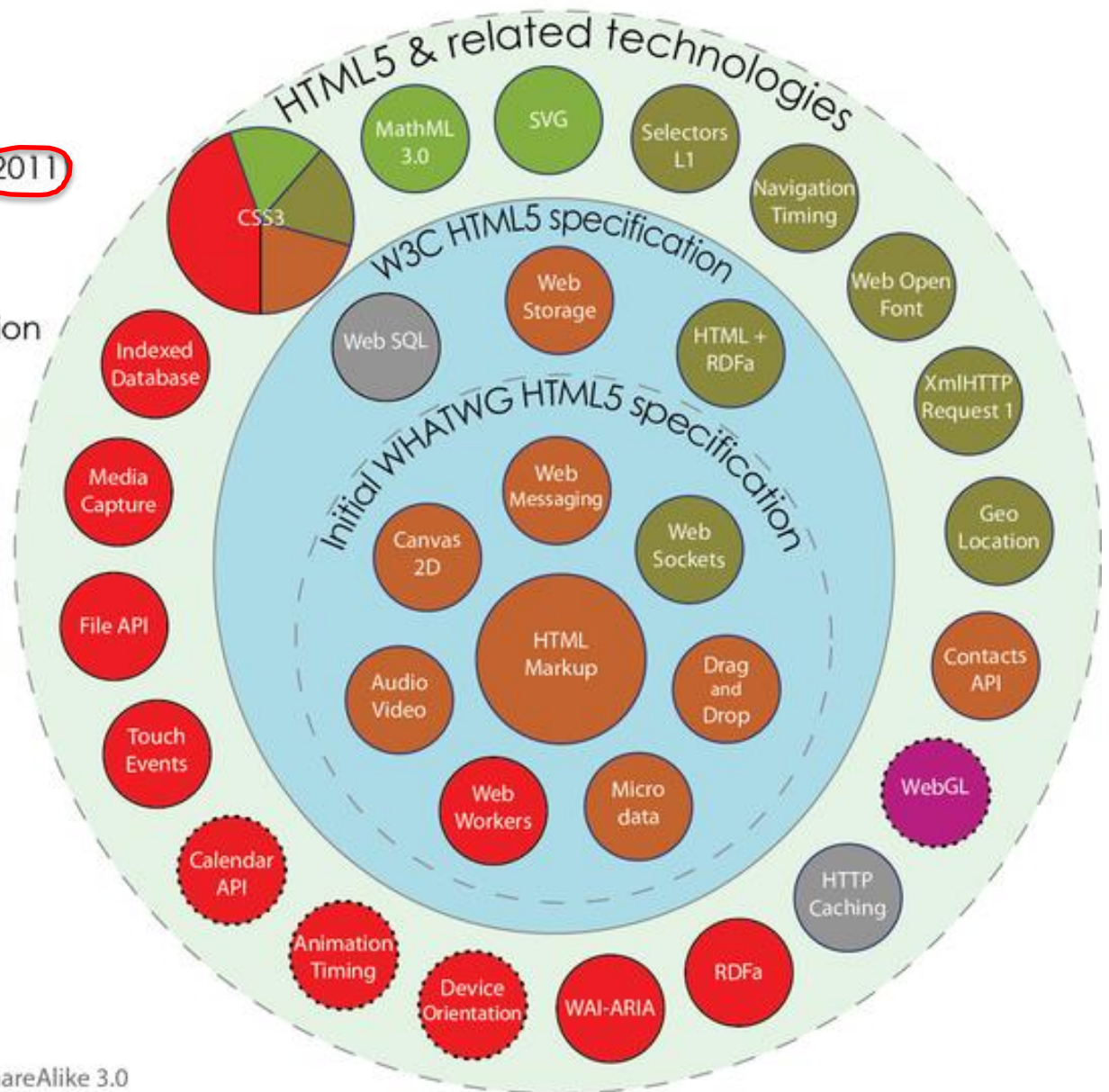
"The attempt to get the world to switch to XML ... all at once didn't work. The large HTML-generating public did not move ... Some large communities did shift and are enjoying the fruits of well-formed systems ... The plan is to charter a completely new HTML group."

-Time Berners-Lee, October 2006

HTML5

Taxonomy & Status (December 2011)

- W3C Recommendation
- Candidate Recommendation
- Last Call
- Working Draft
- Non-W3C Specifications
- Deprecated W3C APIs

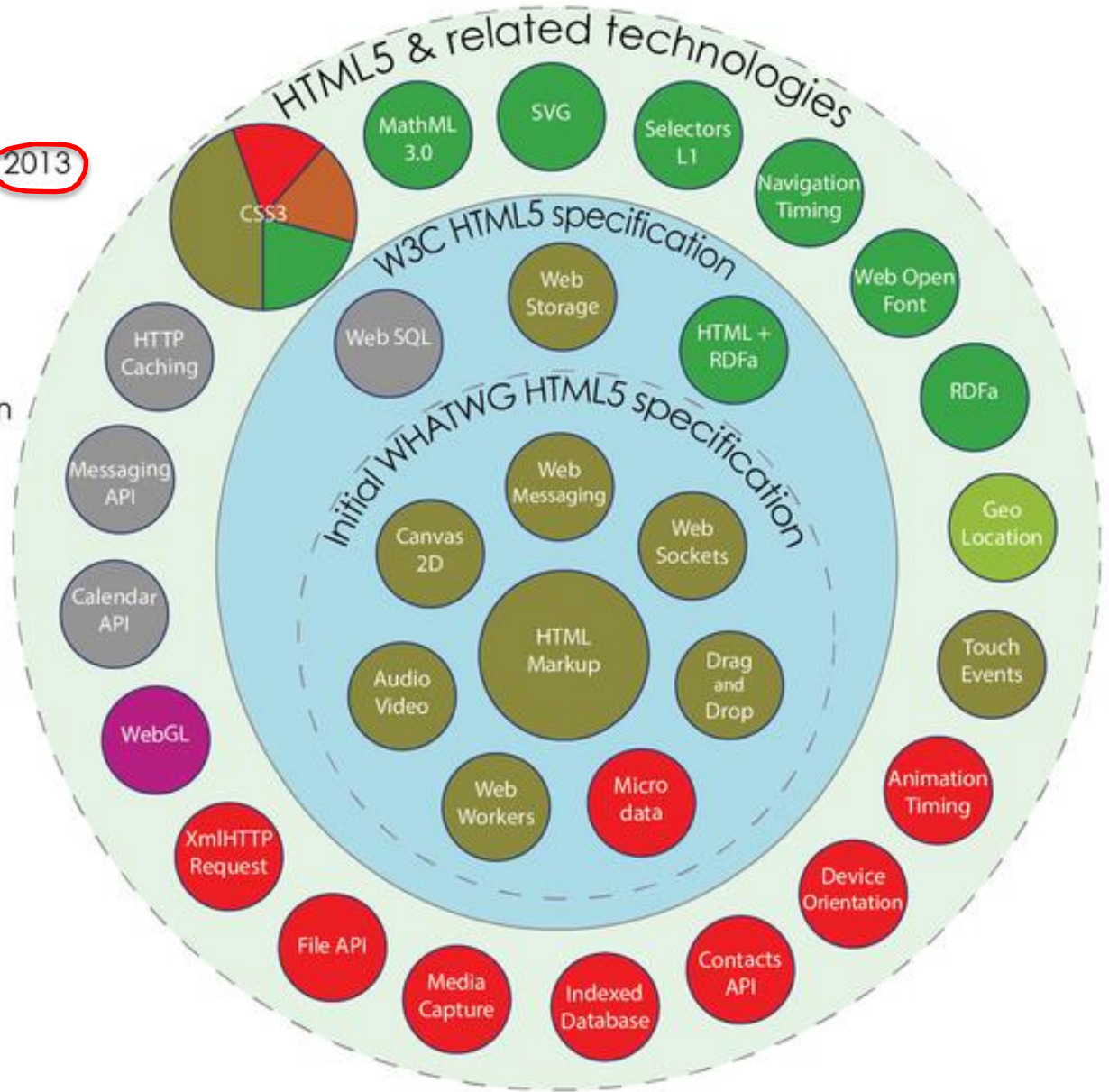


By Sergey Mavrody 2011 | CC Attribution-ShareAlike 3.0

HTML5

Taxonomy & Status on January 20, 2013

- W3C Recommendation
- Proposed Recommendation
- Candidate Recommendation
- Last Call
- Working Draft
- Non-W3C Specifications
- Deprecated



by Sergey Mavrody (CC) BY · SA

your browser scores

374

AND 13 BONUS POINTS

out of a total of 475 points

You are using Chrome 17 on Windows 7 Correct? ✓ X

your browser scores

141

AND 5 BONUS POINTS

out of a total of 475 points

You are using Internet Explorer 9.0 on Windows 7 Correct? ✓ X

your browser scores

183

AND 4 BONUS POINTS

out of a total of 475 points

You are using Firefox 3.6.27 on Windows 7 Correct? ✓ X

your browser scores

187

AND 4 BONUS POINTS

out of a total of 475 points

You are using Opera 10.51 on Windows 7 Correct? ✓ X

2013

YOUR BROWSER SCORES

505

OUT OF 555 POINTS

You are using Chrome 33 on Windows 7

Correct? ✓ ✕

YOUR BROWSER SCORES

369

OUT OF 555 POINTS

You are using Internet Explorer 11.0 on Windows 7

Correct? ✓ ✕

2014

YOUR BROWSER SCORES

448

OUT OF 555 POINTS

You are using Firefox 27.0 on Windows 7

Correct? ✓ ✕

YOUR BROWSER SCORES

392

OUT OF 555 POINTS

You are using Opera 12.16 on Windows 7

Correct? ✓ ✕

YOUR BROWSER SCORES

511

OUT OF 555 POINTS

You are using Chrome 40 on Windows 7

Correct? ✓ ✕

YOUR BROWSER SCORES

336

OUT OF 555 POINTS

You are using Internet Explorer 11.0 on Windows 7

Correct? ✓ ✕

2015

YOUR BROWSER SCORES

449

OUT OF 555 POINTS

You are using Firefox 35.0 on Windows 7

Correct? ✓ ✕

YOUR BROWSER SCORES

507

OUT OF 555 POINTS

You are using Opera 27.0 on Windows 7

Correct? ✓ ✕



WEB

Congrats, HTML5—You're All Grown Up Now

After years of use, the W3C finally recommends it.

ADRIANA LEE · OCT 28, 2014

W3C Recommendation



Add developer-view styles

HTML5

A vocabulary and associated APIs for HTML and XHTML

W3C Recommendation 28 October 2014

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01//EN"
```

```
"http://www.w3.org/TR/html4/strict.dtd">
```

```
<html>
```

```
<head>
```

```
<title>My test page</title>
```

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

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

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

```
</head>
```

```
<body>
```

```
<h1>Welcome to my home page!</h1>
```

```
<p></p>
```

```
</body>
```

```
</html>
```

A red cloud-shaped logo containing the text "HTML 4.01" in red.

```
<!doctype html>
```

```
<html>
```

```
<head>
```

```
<title>My test page</title>
```

```
<meta charset="utf-8">
```

```
<link rel="stylesheet" href="stylin.css">
```

```
<script src="scriptin.js"></script>
```

```
</head>
```

```
<body>
```

```
<h1>Welcome to my home page!</h1>
```

```
<p></p>
```

```
</body>
```

```
</html>
```

A red cloud-shaped logo containing the text "HTML 5" in red.

Method of generating fast, dynamic graphics using JavaScript.

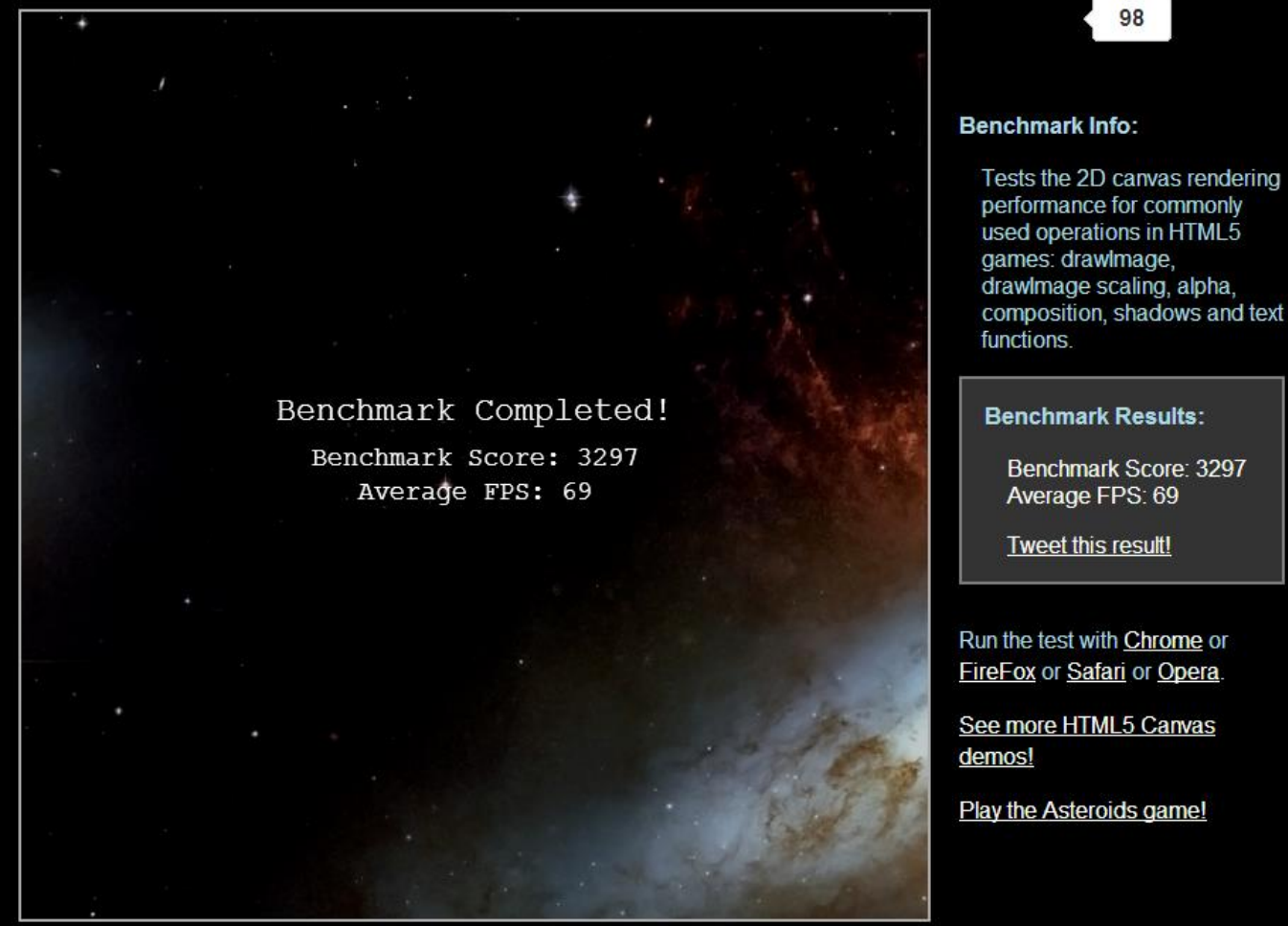
Current aligned Usage relative Show all

IE	Firefox	Chrome	Safari	Opera	iOS Safari *	Opera Mini *	Android Browser *	Chrome for Android
		31						
		36						
		37					4.1	
8		38					4.3	
9		39					4.4	
10	35	40	7.1		7.1		4.4.4	
11	36	41	8	27	8.1	8	37	40
TP	37	42		28				
	38	43		29				
	39	44						

Method of defining the effect resulting from overlaying two layers on a Canvas element.

Current aligned Usage relative Show all

IE	Firefox	Chrome	Safari	Opera	iOS Safari *	Opera Mini *	Android Browser *	Chrome for Android
		31						
		36						
		37					4.1	
8		38					4.3	
9		39					4.4	
10	35	40	7.1		7.1		4.4.4	
11	36	41	8	27	8.1	8	37	40
TP	37	42		28				
	38	43		29				
	39	44						



Benchmark Info:

Tests the 2D canvas rendering performance for commonly used operations in HTML5 games: drawImage, drawImage scaling, alpha, composition, shadows and text functions.

Benchmark Results:

Benchmark Score: 3297
Average FPS: 69

[Tweet this result!](#)

Run the test with [Chrome](#) or [FireFox](#) or [Safari](#) or [Opera](#).

[See more HTML5 Canvas demos!](#)

[Play the Asteroids game!](#)

<http://www.kevs3d.co.uk/dev/asteroidsbench/>

	Benchmark	FPS
Chrome 24.0.1312.57 m (Win7)	3297	69
Firefox 11.0 (Win7)	1832	39
Opera 12.02 (Win 7)	1662	35



CANVASMARK 2013 - HTML5 CANVAS 2D RENDERING AND JAVASCRIPT BENCHMARK

Tests the HTML5 <canvas> rendering performance for commonly used operations in HTML5 games: bitmaps, canvas drawing, alpha blending, polygon fills, shadows and text functions.

Run benchmark using HTML5 compatible browser: Chrome | FireFox | Safari | Opera | IE9/10.

This benchmark suite uses a number of elements from my HTML5 games including Asteroids and Arena5. See more HTML5 Canvas experiments.

Important notes for Windows + Chrome users! [+]

How to interpret the results [+]

How does it work [+]

Benchmark version 1.1 [25-03-2013]

Source code now available on GitHub.

<http://www.kevs3d.co.uk/dev/canvasmark/>

	Benchmark
Chrome 33 on Windows	7241
Firefox 27 on Windows	5220
Opera 12.16 on Windows	6658
IE11, Mozilla 11 on Windows	5930

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

Current aligned Usage relative Show all

IE	Firefox	Chrome	Safari	Opera	iOS Safari *	Opera Mini *	Android Browser *	Chrome for Android
		31						
		36						
		37					4.1	
8		38					4.3	
9		39					4.4	
10	35	40	7.1		7.1		4.4.4	
11	36	41	8	27	8.1	8	37	40
TP	37	42		28				
	38	43		29				
	39	44						

Khronos Specification



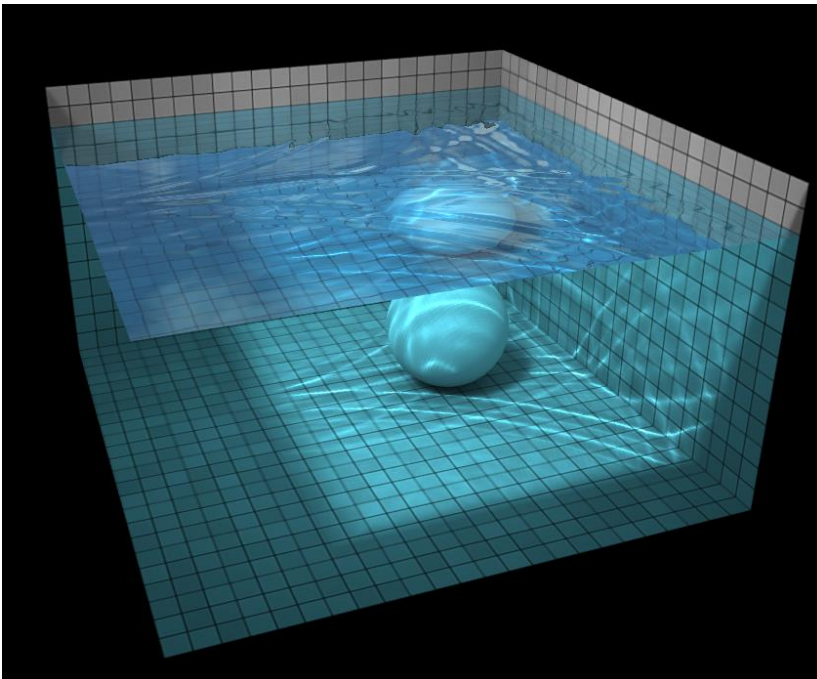


WebGL Specification

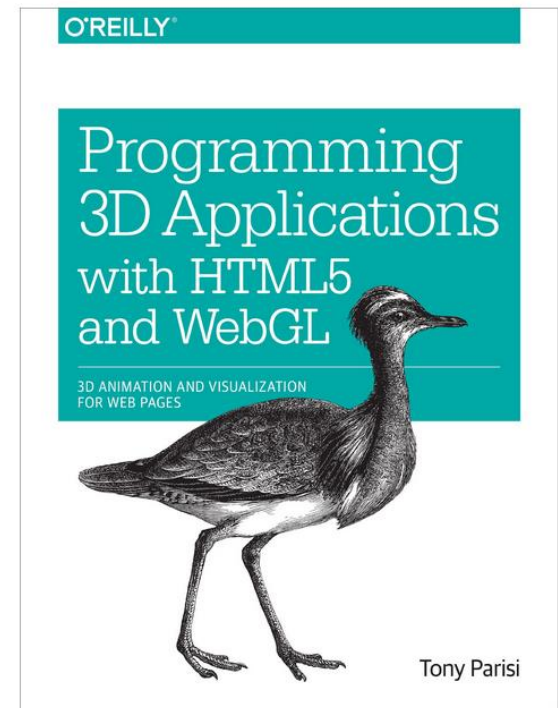
Version 1.0.3, 27 October 2014

WebGL

- **WebGL: 3D graphics for the web**
 - Runs in the HTML5 Canvas element
 - Based on OpenGL ES 2.0
 - Hardware accelerated
 - Low-level API: "not for the faint of heart"



<http://madebyevan.com/webgl-water/>



Summary

- HTML 5, a long time coming:
 - 1990 HTML 1.0
 - 1999 HTML 4.01 (XHTML ...)
 - 2000-2006 XHTML
 - 2014 HTML5
- Many features well-supported
 - In both desktop and mobile browsers
 - Some features in spec: e.g. 2D canvas drawing
 - Some in related standards: e.g. WebGL