HTML5

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HTML5[a] is a markup language used for structuring and presenting content on the World Wide Web. It is the fifth and current version of the HTML standard.

It was published in October 2014 by the World Wide Web Consortium (W3C)[2][4] to improve the language with support for the latest multimedia, while keeping it both easily readable by humans and consistently understood by computers and devices such as web browsers, parsers, etc. HTML5 is intended to subsume not only HTML 4, but also XHTML 1 and DOM Level 2 HTML.[5]

HTML5 includes detailed processing models to encourage more interoperable implementations; it extends, improves and rationalizes the markup available for documents, and introduces markup and application programming interfaces (APIs) for complex web applications.[6] For the same reasons, HTML5 is also a candidate for cross-platform mobile applications, because it includes features designed with low-powered devices in mind.

Many new syntactic features are included. To natively include and handle multimedia and graphical content, the new `<video>`, `<audio>` and `<canvas>` elements were added, and support for scalable vector graphics (SVG) content and MathML for mathematical formulas. To enrich the semantic content of documents, new page structure elements such as `<main>`, `<section>`, `<article>`, `<header>`, `<footer>`, `<aside>`, `<nav>` and `<figure>`, are added. New attributes are introduced, some elements and attributes have been removed, and others such as `<a>`, `<cite>` and `<menu>` have been changed, redefined or standardized.

The APIs and Document Object Model (DOM) are now fundamental parts of the HTML5 specification[6] and HTML5 also better defines the processing for any invalid documents.[7]

HTML5
(HyperText Markup Language)

Filename extension	`.html`
Internet media type	`text/html`
Type code	TEXT
Uniform Type Identifier (UTI)	index.html[1]
Initial release	28 October 2014[2]
Extended to	XHTML5 (XML-serialized HTML5)
Standard	WHATWG HTML (https://html.spec.whatwg.org/multipage/)
Open format?	Yes

XHTML5
(XML-serialized HTML5)

Filename extension	`.xhtml, .html`
Internet media type	`application/xml`, `application/xhtml+xml`
Developed by	World Wide Web Consortium and WHATWG
Type of format	Markup language
Extended from	XML, HTML5
Open format?	Yes

Contents

History

The Web Hypertext Application Technology Working Group (WHATWG) began work on the new standard in 2004. At that time, HTML 4.01 had not been updated since 2000,[8] and the World Wide Web Consortium (W3C) was focusing future developments on XHTML 2.0. In 2009, the W3C allowed the XHTML 2.0 Working Group's charter to expire and decided not to renew it.[9] W3C and WHATWG are currently working together on the development of HTML5.[9]

The Mozilla Foundation and Opera Software presented a position paper at a World Wide Web Consortium (W3C) workshop in June 2004,[10] focusing on developing technologies that are backward compatible with existing browsers,[11] including an initial draft specification of Web Forms 2.0. The workshop concluded with a vote—8 for, 14 against—for continuing work on HTML.[12] Immediately after the workshop, the Web Hypertext Application Technology Working Group (WHATWG) was formed to start work based upon that position paper, and a second draft, Web Applications 1.0, was also announced.[13] The two specifications were later merged to form HTML5.[14] The HTML5 specification was adopted as the starting point of the work of the new HTML working group of the W3C in 2007.

WHATWG published the First Public Working Draft of the specification on 22 January 2008.[15]

"Thoughts on Flash"

While some features of HTML5 are often compared to Adobe Flash, the two technologies are very different. Both include features for playing audio and video within web pages, and for using Scalable Vector Graphics. However, HTML5 on its own cannot be used for animation or interactivity – it must be supplemented with CSS3 or JavaScript. There are many Flash capabilities that have no direct counterpart in HTML5. See Comparison of HTML5 and Flash. HTML5's interactive capabilities became a topic of mainstream media around April 2010[16][17][18][19] after Apple Inc's then-CEO Steve Jobs issued a public letter titled "Thoughts on Flash" where he concluded that "Flash is no longer necessary to watch video or consume any kind of web content" and that "new open standards created in the mobile era, such as HTML5, will win".[20] This sparked a debate in web development circles suggesting that, while HTML5 provides enhanced functionality, developers must consider the varying browser support of the different parts of the standard as well as other functionality differences between HTML5 and Flash.[21] In early November 2011, Adobe announced that it would discontinue development of Flash for mobile devices and reorient its efforts in developing tools using HTML5.[22]

Last Call, Candidate and Recommendation

On 14 February 2011, the W3C extended the charter of its HTML Working Group with clear milestones for HTML5. In May 2011, the working group advanced HTML5 to "Last Call", an invitation to communities inside and outside W3C to confirm the technical soundness of the specification. The W3C developed a comprehensive test suite to achieve broad interoperability for the full specification by 2014, which was the target date for recommendation.[23] In January 2011, the WHATWG renamed its "HTML5" living standard to "HTML". The W3C nevertheless continued its project to release HTML5.[24]

In July 2012, WHATWG and W3C decided on a degree of separation. W3C will continue the HTML5 specification work, focusing on a single definitive standard, which is considered as a "snapshot" by WHATWG. The WHATWG organization will continue its work with HTML5 as a "Living Standard". The concept of a living standard is that it is never complete and is always being updated and improved. New features can be added but functionality will not be removed.[25]

In December 2012, W3C designated HTML5 as a Candidate Recommendation.[26] The criterion for advancement to W3C Recommendation is "two 100% complete and fully interoperable implementations".[27][28]

On 16 September 2014, W3C moved HTML5 to Proposed Recommendation.[29]

On 28 October 2014, HTML5 was released as a stable W3C Recommendation,[30] bringing the specification process to completion.[2]

On 1 November 2016, HTML5.1 was released as a stable W3C Recommendation.[31]

Timeline

The combined timelines for HTML 5.0, HTML 5.1 and HTML 5.2:

	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[32]				1st Working Draft	

Features and APIs

The W3C proposed a greater reliance on modularity as a key part of the plan to make faster progress, meaning identifying specific features, either proposed or already existing in the spec, and advancing them as separate specifications. Some technologies that were originally defined in HTML5 itself are now defined in separate specifications:

- HTML Working Group – HTML Canvas 2D Context;
- Web Apps Working Group – Web Messaging, Web Workers, Web Storage, WebSocket, Server-sent events, Web Components[33] (this was not part of HTML5 though); Note that the Web Applications Working Group was closed in October 2015 and its deliverables transferred to the Web Platform Working Group (WPWG).
- IETF HyBi Working Group – WebSocket Protocol;
- WebRTC Working Group – WebRTC;
- Web Media Text Tracks Community Group – WebVTT.

After the standardization of the HTML5 specification in October 2014,[34] the core vocabulary and features are being extended in four ways.[35] Likewise, some features that were removed from the original HTML5 specification have been standardized separately as modules, such as Microdata and Canvas. Technical

specifications introduced as HTML5 extensions such as Polyglot Markup have also been standardized as modules. Some W3C specifications that were originally separate specifications have been adapted as HTML5 extensions or features, such as SVG. Some features that might have slowed down the standardization of HTML5 will be standardized as upcoming specifications, instead. HTML 5.1 is expected to be finalized in 2016, and it is currently on the standardization track at the W3C.

Features

Markup

HTML5 introduces elements and attributes that reflect typical usage on modern websites. Some of them are semantic replacements for common uses of generic block (`<div>`) and inline (`<span>`) elements, for example `<nav>` (website navigation block), `<footer>` (usually referring to bottom of web page or to last lines of HTML code), or `<audio>` and `<video>` instead of `<object>`.[36][37][38] Some deprecated elements from HTML 4.01 have been dropped, including purely presentational elements such as `<font>` and `<center>`, whose effects have long been superseded by the more capable Cascading Style Sheets.[39] There is also a renewed emphasis on the importance of DOM scripting (e.g., JavaScript) in Web behavior.

The HTML5 syntax is no longer based on SGML[40][41] despite the similarity of its markup. It has, however, been designed to be backward compatible with common parsing of older versions of HTML. It comes with a new introductory line that looks like an SGML document type declaration, `<!DOCTYPE html>`, which triggers the standards-compliant rendering mode.[42] Since 5 January 2009, HTML5 also includes *Web Forms 2.0*, a previously separate WHATWG specification.[43][44]

New APIs

In addition to specifying markup, HTML5 specifies scripting application programming interfaces (APIs) that can be used with JavaScript.[46] Existing document object model (DOM) interfaces are extended and *de facto* features documented. There are also new APIs, such as:

- Canvas;[47]
- Timed Media Playback;[48]
- Offline;[49]
- Editable content;[50]
- Drag-and-drop;[51]
- History;[52]
- MIME type and protocol handler registration;[53][54]
- Microdata;[55]
- Web Messaging;[56]
- Web Storage – a key-value pair storage framework that provides behaviour similar to cookies but with larger storage capacity and improved API.[57]

HTML5 related APIs[45]
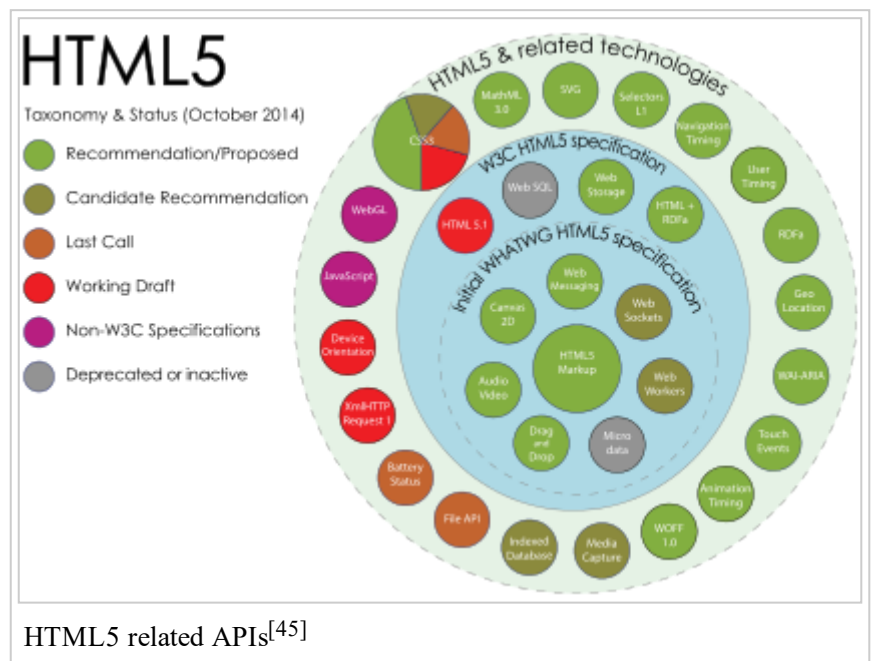
Not all of the above technologies are included in the W3C HTML5 specification, though they are in the WHATWG HTML specification.[58] Some related technologies, which are not part of either the W3C HTML5 or the WHATWG HTML specification, are as follows. The W3C publishes specifications for these separately:

- Geolocation;
- Web SQL Database – a local SQL Database (no longer maintained);[59]
- IndexedDB – an indexed hierarchical key-value store (formerly WebSimpleDB);[60]
- File[61] – an API intended to handle file uploads and file manipulation;[62]
- Directories and System – an API intended to satisfy client-side-storage use cases not well served by databases;[63]
- File Writer – an API for writing to files from web applications;[64]
- Web Audio[65] – a high-level JavaScript API for processing and synthesizing audio in web applications;
- ClassList.[66]
- Web Cryptography[67]
- WebRTC[68]

HTML5 cannot provide animation within web pages. Additional JavaScript or CSS3 functionality is necessary for animating HTML elements. Animation is also possible using JavaScript and HTML 4[69], and within SVG elements through SMIL, although browser support of the latter remains uneven as of 2011.

XHTML5 (XML-serialized HTML5)

XML documents must be served with an XML Internet media type (often called "MIME type") such as `application/xhtml+xml` or `application/xml`,[70] and must conform to strict, well-formed syntax of XML. XHTML5 is simply XML-serialized HTML5 data (e.g. not having any unclosed tags), sent with one of XML media types. HTML that has been written to conform to both the HTML and XHTML specifications – and which will therefore produce the same DOM tree whether parsed as HTML or XML – is called polyglot markup.[71]

Error handling

HTML5 is designed so that old browsers can safely ignore new HTML5 constructs.[6] In contrast to HTML 4.01, the HTML5 specification gives detailed rules for lexing and parsing, with the intent that compliant browsers will produce the same results when parsing incorrect syntax.[72] Although HTML5 now defines a consistent behavior for "tag soup" documents, those documents are not regarded as conforming to the HTML5 standard.[72]

Popularity

According to a report released on 30 September 2011, 34 of the world's top 100 Web sites were using HTML5 – the adoption led by search engines and social networks.[73] Another report released in August 2013 has shown that 153 of the *Fortune 500* U.S. companies implemented HTML5 on their corporate websites.[74]

Since 2014, HTML5 is at least partially supported by most popular layout engines.

Differences from HTML 4.01 and XHTML 1.x

The following is a cursory list of differences and some specific examples.

- New parsing rules: oriented towards flexible parsing and compatibility; not based on SGML
- Ability to use inline SVG and MathML in `text/html`
- New elements: `article`, `aside`, `audio`, `bdi`, `canvas`, `command`, `data`, `datalist`, `details`, `embed`, `figcaption`, `figure`, `footer`, `header`, `keygen`, `mark`, `meter`, `nav`, `output`, `progress`, `rp`, `rt`, `ruby`, `section`, `source`, `summary`, `time`, `track`, `video`, `wbr`
- New types of form controls: `dates and times`, `email`, `url`, `search`, `number`, `range`, `tel`, `color`[75]
- New attributes: `charset` (on `meta`), `async` (on `script`)

- Global attributes (that can be applied for every element): `id`, `tabindex`, `hidden`, `data-*` (custom data attributes)
- Deprecated elements will be dropped altogether: `acronym`, `applet`, `basefont`, `big`, `center`, `dir`, `font`, `frame`, `frameset`, `isindex`, `noframes`, `strike`, `tt`

dev.w3.org provides the latest *Editors Draft* of "HTML5 differences from HTML 4",[76] which provides a complete outline of additions, removals and changes between HTML5 and HTML 4.

Logo

On 18 January 2011, the W3C introduced a logo to represent the use of or interest in HTML5. Unlike other badges previously issued by the W3C, it does not imply validity or conformance to a certain standard. As of 1 April 2011, this logo is official.[77]

When initially presenting it to the public, the W3C announced the HTML5 logo as a "general-purpose visual identity for a broad set of open web technologies, including HTML5, CSS, SVG, WOFF, and others".[78] Some web standard advocates, including The Web Standards Project, criticized that definition of "HTML5" as an umbrella term, pointing out the blurring of terminology and the potential for miscommunication.[78] Three days later, the W3C responded to community feedback and changed the logo's definition, dropping the enumeration of related technologies.[79] The W3C then said the logo "represents HTML5, the cornerstone for modern Web applications".[77]

The W3C HTML5 logo

Digital rights management

Industry players including the BBC, Google, Microsoft, and Netflix have been lobbying for the inclusion of Encrypted Media Extensions (EME),[80][81][82][83][84] a form of digital rights management (DRM), into the HTML5 standard. As of the end of 2012 and the beginning of 2013, 27 organisations[85] including the Free Software Foundation[86] have started a campaign against including digital rights management in the HTML5 standard.[87][88] However, in late September 2013, the W3C HTML Working Group decided that Encrypted Media Extensions, a form of DRM, was "in scope" and will potentially be included in the HTML 5.1 standard.[89][90] WHATWG's "HTML Living Standard" continued to be developed without DRM-enabled proposals.[90]

Manu Sporny, a member of the W3C, said that EME will not solve the problem it's supposed to address.[91] Opponents point out that EME itself is just an architecture for a DRM plug-in mechanism.[92]

The initial enablers for DRM in HTML5 were Google[93] and Microsoft.[94] Supporters also include Adobe.[95] On 14 May 2014, Mozilla announced plans to support EME in Firefox, the last major browser to avoid DRM.[96][97] Calling it "a difficult and uncomfortable step", Andreas Gal of Mozilla explained that future versions of Firefox would remain open source but ship with a sandbox designed to run a content decryption module developed by Adobe.[96] While promising to "work on alternative solutions", Mozilla's Executive Chair Mitchell Baker stated that a refusal to implement EME would have accomplished little more than convincing many users to switch browsers.[97] This decision was condemned by Cory Doctorow and the Free Software Foundation.[98][99]

See also

- Cache manifest in HTML5
- Comparison of layout engines (HTML5)

- HTML5 in mobile devices
- Polyglot HTML5

Notes

a. In the W3C recommendation, there is no space between "HTML" and "5" in the name.[3]

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External links

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- Mozilla Demo Studio (https://developer.mozilla.org/en-US/demos/), Demos of HTML5 implementations
- HTML5 Frontend Comparison (http://www.capwell.nl/software-ontwikkeling/ria-html5-specialisten/artik elen/html5-frontend-comparison-58), Sheet showing HTML5 vs. other main frontend techniques
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Wikimedia Commons has media related to *HTML5*.

Retrieved from "https://en.wikipedia.org/w/index.php?title=HTML5&oldid=769981690"

Categories: HTML5 │ HTML │ 2014 software │ Emerging standards │ Markup languages │ World Wide Web Consortium standards │ XML-based standards