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Transforming Product Development

WHITE PAPER

HTML5 – the new standard for Interactive Web

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HTML5 is everywhere these days. Whether desktop or mobile, windows or Mac, or just about any other modern form factor and operating system, you will find an HTML5-savvy web browser.

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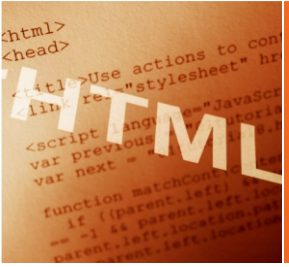


HTML5 – the new standard for Interactive Web

What is HTML5?

HTML5 is the W3C's next major revision to HTML, which it started developing in 2004. HTML5 is not some new language or development tool. It is just HTML with an extended layer of standardized tags and attributes for graphic and visual effects that reduces the need for special plug-ins.

Future RIA is HTML5

Next generation of cloud applications is going to be RIA based, incorporating the interactivity and responsiveness we expect from a desktop application. Future of RIA isn't going to be built around proprietary technologies like Flex or Silverlight but rather on the about open standards - HTML5 and JavaScript.

To be more specific, it's going to be HTML5/JavaScript/CSS3. We have already witnessed strong endorsement from leaders like Apple, Google, Facebook, and Microsoft.

It is also obvious from Adobe's recent initiative towards HTML5 related tools (Adobe Wallaby pre-release) that they understand the change coming in the Rich Internet Applications (RIA) space.

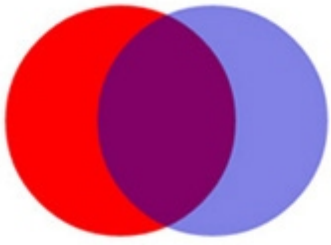
As a pioneer of the RIA movement, Adobe created the right awareness and tools around it. Microsoft and Sun followed this path and created their own tools to grab the RIA market share (Silverlight/JavaFx)

FEATURES OF HTML5

A) Native Audio & Video Controls

Built-in media support via the <audio> and <video> elements, offering the ability to easily embed media into HTML documents. Mobile browsers have the ability to natively control multimedia display, codec and user interfaces.

B) 2D Canvas Animation API



<canvas> New canvas functionality and JavaScript 2D canvas API allow two-dimensional drawing, graphics and animations. With this enhancement, cross-platform games become possible for mobile browsers.

C) Web Storage

Web Storage provides a way for websites to store information on your computer and retrieve it later.

localStorage - stores data with no time limit
sessionStorage - stores data for one session

Similar to cookies, but it's designed for larger quantities of information. Cookies are limited in size, and your browser sends them back to the web server every time it requests a new page (which takes extra time and precious bandwidth). HTML5 Storage stays on your computer, and websites can access it with JavaScript after the page is loaded

D) Web Database

Web SQL Database API is a specification which covers storing and accessing data through SQL. It allows Web pages to contain code that interacts with an embedded client database, which is useful for applications wanting to store data locally or for off-line browsing. For example, phonebook contact information and preloading of data in preparation for 'off-line' mode are all easily within reach.

E) Web Workers

Web Workers are basically a API specification that lets you create background JavaScript threads to process CPU intensive tasks. Normally in browsers a single thread is created to handle all the JavaScript code.So whatever JavaScript code is run in the browser, all of them is executed in one single thread; whether you are doing some calculation or updating page elements.

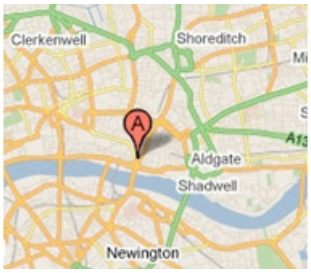
F) Web Sockets

Web Sockets is a technique for two-way communication over one (TCP) socket, a type of PUSH technology. Web sockets can replace long-polling.This is an interesting concept; the client sends a request to the server – now rather than the server responding with data it may not have, it essentially keeps the connection open until the fresh, up-to-date data is ready to be sent – the client next receives this, and sends another request.

G) Offline Access (AppCache)

HTML5 introduces new methods for enabling a web site or web application to function without a network connection.Using the cache interface gives your application advantages of using cache for Offline browsing, Higher speed, Reduced server load etc

H) GeoLocation



GeoLocation API makes the mobile device's geographic location available to a Web app. In the past, obtaining device location was only possible using proprietary JavaScript extensions or server-side integration via mobile operator API.

I) Drag and Drop

HTML5 comes with a Drag and Drop (DnD) API that brings native DnD support to the browser, making it much easier to support on devices such as mobile phones.This includes dragging of content and files from outside the browser, e.g. drag and drop to upload files or photos.

HTML5 and Mobile

Mobile Web development is a hotspot for HTML5 apps. A recent McKinsey report highlighted that more than 50% of all mobile apps will move to new HTML5 standards within 3-5 years. Already 46% of videos available online can be viewed via HTML5 instead of Flash. According to ABI research, "By 2016, more than 2.1 billion mobile devices will have HTML5 browsers, up from just 109 million in 2010".

WebKit-powered browsers have the least market share on the desktop, but the highest market share on mobile devices. HTML5 is currently supported on:

- **iPhone, iPad**
- **Google Android**
- **BlackBerry**
- **Smartphones running Symbian**

Table below shows the main mobile browsers available today and their current support for HTML5. Mobile platforms on this table are Windows Phone, iPhone, Android and Blackberry respectively. Each cell indicates from which version of the platform the feature is supported.

Feature	Safari on iOS	Android Browser		BlackBerry Browser		Nokia Browser		Internet Explorer	Opera		Firefox	webOS Browser
Version tested	iPhone, iPad	Phones (1-2.3, 4.0)	Tablets (3.0+)	Phones	Tablet	Meego - Nokia N9	Symbian	Windows Phone	Mobile	Mini	Android	
Minimum version tested	3.2	1.5	3.0	5.0	1.0	1.2	*3	9	11	5	6	1.4
Application Cache W3C API Offline package installation	✓	✓ 2.1+	✓	✓ 6.0+	✓	✓			✓		✓	✓
Web storage W3C API Persistent and session storage	✓	✓ 2.0+	✓	✓ 6.0+	✓	✓		✓	✓		✓	✓
Web SQL storage W3C API (no active) Persistent SQLite storage	✓	✓ 2.0+	✓	✓ 6.0+	✓	✓			✓			✓
Geolocation W3C API Geolocation & tracking using GPS, cells or Wi-Fi	✓	✓ 2.0+	✓	✓ 6.0+	✓	✓		✓	✓		✓	✓
Multimedia W3C API Video & Audio Players	✓	✓ 2.3+	✓	✓ 7.0+	✓	✓		✓	✓		✓	✓
Server-Sent Events W3C API EventSource pattern to mantain the connection to the server open	✓ 4.1+					✓			✓		✓	
Web Sockets W3C API Newbidirectional protocol over HTTP	✓ 4.2+			✓ 6.1+	✓				✓		✓ 7+	

Source: **http://mobilehtml5.org/**

Note

Not all HTML5 features are listed but only the most popular and widely implemented ones. Additionally, third-party HTML5 browsers are becoming available such as

- **Opera Mini**
- **Firefox Mobile**

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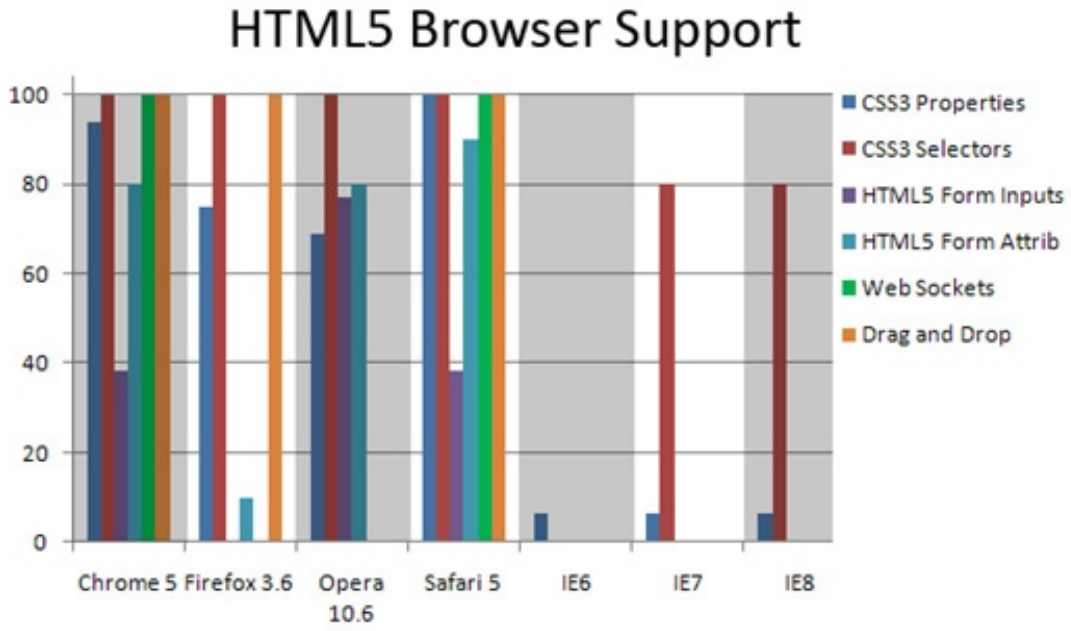
HTML5 for Desktop

As HTML5 allows for more sophisticated user experience development, it is starting to become a rival to desktop software development. HTML, JS and CSS are already installed cross-platform on the vast majority of the world's computers. It is not a proprietary technology and has numerous open source implementations, free of patents.

There are plenty of solutions that provide the ability to build a Web app into a self-contained installable bundle, ready for distribution. This opens up the desktop application field immensely, and helps to reduce concerns about cross browser support.

The up and coming Chrome OS will be making heavy use of HTML5. Google is adding numerous HTML5 features into their online apps, such as the ability to drag and drop attachments into Gmail. Google wants to tempt more users away from the traditional desktop to its Web-based products.



Source: http://www.madhueadara.com/2011/04/html5-browser-support.html

Current Downsides

HTML5 specification is not yet completed. It will take longer to evolve since it is a combination of standards that are developed by different groups. Main problem with HTML5's acceptance is that most modern browsers support about everything except for Internet Explorer. The new version IE9 offers excellent support, but as of this writing it's not quite out of beta.

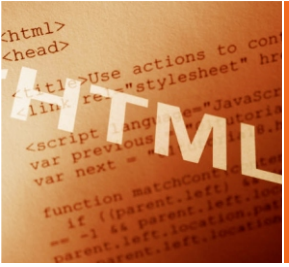
<Video> tag does not yet support real-time streaming protocol.

Also for developing mobile apps on the browser there is a lack of direct hardware integration. However, we can expect this to change in the near future as HTML5 contains standards for accessing file systems and Webcams. Additionally, not all the APIs are standardized in HTML5 yet (e.g. camera) and not all HTML5 is implemented completely on all phones. As it stands, we will never be able to fully replace a native app - but there are a whole range of apps with requirements that do not need to be native, such as messaging and social network apps.

Future of HTML5

HTML5 is rapidly advancing and will continue to evolve. While HTML5 competes directly against technologies like Flash, Flex and Silverlight, it seems to be working its way into everything. Currently, it may not be capable of creating as impressive a user experience as its competitors, but the sheer audience it will have access to will make it a serious player.

HTML5 still will not totally solve the mobile device fragmentation. However, it will act as a strong catalyst to increase convergence of the market, as it sets a new standard with many features, and the first signs indicate that this standard is moving much faster than any previous attempts made by the W3C alone, thanks to the WHATWG.



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To get the most out of your mobile site, achieve the widest reach and get the best experience on each mobile device you would still need specialized solutions that can adjust media rendering based on the device and/or browser recognition and are able to adapt the level of HTML5 features based on the current available browser support.

Conclusion

HTML5 is a formidable technology and has the potential to make the web even more ubiquitous and pervasive as it is today from desktop computers to mobile devices and in the future maybe even domestics appliances.

Mobile web provides the best hope for building a cross-device mobile ecosystem & HTML5 is definitely a critical piece to achieve this.

Other References

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http://diveintohtml5.info/

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HTML: The Markup Language Reference
http://dev.w3.org/html5/markup/

Building Web Pages with HTML5
http://www.webmonkey.com/2010/02/building_web_pages_with_html_5/

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