An Article on Current & Emerging Advanced Web Technologies

The History of the Internet

The Internet is said to be the most powerful marketing medium of this century. It can be used for a range of services including electronic mail, remote control, news services, file transfers and accessing the World Wide Web. It is a worldwide system of computer networks that allows continuous communication across the globe. If a user has permission, they can get information from any computer in the world. Each computer has a unique IP address, which is the Internet's equivalent of the telephone number and every computer is always connected through an Internet Service Provider either on a dial-up connection or an 'always-on' connection such as broadband. This is the type of culture and society we have moved into now. This is the World Wide Web.

The World Wide Web

Personal computers were introduced in the late 1970's. In 1989 Tim Berners-Lee, now a director of the World Wide Web Consortium (W3C) developed the technology underlying the Internet. The World Wide Web is the reason the Internet has become as popular as it is. Back in 2006 for example, according to large web survey, the web grew by 17 million websites, 1 million more than the famous 2000 boom. The web is built around software, protocols and conventions. Anyone is capable of roaming, browsing and contributing to the web, through the use of hypertext and multimedia techniques.

The immense collection of data and web pages that are stored on web servers (computers that are continually connected to the Internet) can be accessed through a web browser such as Mozilla FireFox, Google Chrome or Internet Explorer. Search engines such as Google are the most common way to source information on the internet.

Introducing Web 2.0

Many complex aspects influence the development of web systems, ranging from clients to political affairs. However the prevailing element that continues to direct the web design industry is technology. New technologies recently adopted in the industry have enforced a new attitude to development. Known as "Web 2.0", these latest visions of web

development expect a new set of tools to become the frontier of innovative design. These tools include for example, RSS aggregators, API's (application programming interfaces, which connect to data elsewhere), blogging, podcasting, wikis, VoIP communication and web services. Services such as Skype, Google maps and Wikipedia are working examples of Web 2.0. In "Web 1.0", visual design involved designers using clever HTML table techniques and more recently CSS to help separate style from structure.

In Web 2.0, XML is the technology, proving that words and semantics are more important than layout and presentation in my point of view. Facebook, YouTube and Twitter are all prime examples of social networking and applications that have formed the latest in technological advances, and large scale projects within the Web 2.0 movement. These are current technologies, which make use of several different web programming technologies.

Current Web Programming Technologies

The reality of web programming technologies can be placed into two basic groups: client side and server-side. Casting back into the history of the web, in the late nineties, programmers were developing a common standard that would let computers from different companies interact with each other over the Internet. This standard was based on the extensible mark-up language (XML) - a language used on the Internet to create different data formats. W3C (The World Wide Web Consortium) recommends this mark-up language and those technologies based on it are defined in a formal way. It has been used to create a stricter version of the HTML language, called XHTML, describing the way in which a web page should look to a standard user.

HTML is an SGML (a language for describing mark-up languages) application that is commonly known as the standard programming language of the Internet. Anyone can produce HTML files using a simple text editor such as notepad or a sophisticated WYSIWIG authoring tool such as Dreamweaver.

Client Side Technologies

Client side technologies refer to the scripts that are run and executed on the client's computer and generally within the context of a browser, instead of the web server. Web authors embed languages such as JavaScript and VBScript within HTML documents, but their performance ultimately depends on the web browser's understanding of the script. Operations such as basic data validation will be performed client-side using JavaScript.

This method reduces the amount of data being sent to the server, which increases the swiftness of different web applications, who choose to implement this method.

Server Side Technologies

CGI is the oldest server-side programming technology and is commonly associated with Perl. Initially, these UNIX based languages were the only languages available but are known to be slow and insecure compared to newer programming languages. Other competing server-side technologies generally work the same and include ASP (Active Server Pages) and PHP (PHP: Hypertext Pre-processor). Their basic principle is that a combination of HTML and scripting language are executed server side to build a resulting webpage for the client-side. They often build dynamic pages from databases, personalise content for users and generate reusable components in pages. The syntax is different for each language and some extremely high-volume websites cannot rely solely on server side scripting.

These websites often require server API programs, which can be thought of as plug-ins to a web server such as Apache Modules for Apache and ISAPI for Microsoft's IIS server. Other methods of programming web content can involve object-oriented languages, namely, VB, ASP.NET and Java. ASP.NET is a windows client programming model and part of Microsoft's .NET framework.

PHP is an open source scripted programming language. When ASP.NET was released, PHP turned to professional use with the aid of LAMP (Linux Apache MySQL PHP) and can be run on most major operating systems and web servers. The most popular choice of database systems that it can interact with is MySQL. MySQL acts as the database component of the LAMP platform, while Apache acts as the web server component. Apache HTTP server is open source software, maintained by a community of developers. It is notable for playing a key role in the initial growth of the World Wide Web, and continues to be the most popular web server in use to this day.

Newer Web Technologies – HTML 5

HTML was developed by the W3C until 2004, when members of the HTML working group grew disturbed with the direction the W3C was going with HTML. They felt that the W3C was not paying enough attention to the real-world development needs of the language and focusing too much on XML and XHTML. So they formed a new group called WHATWG (Web Hypertext Application Technology Working Group) devoted to evolving the Web. At

the current edge of HTML development, HTML 5 is the new version of HTML 4.01 and XHTML 1.0. It focuses on the needs of Web application developers as well as evolving HTML and addressing issues found in the current specifications.

Being the newest specification for HTML, and many browsers are going to start supporting it in the future. One nice thing about HTML 5 is that it attempts to stay backwards compatible. So if you don't want to learn it just yet, you don't need to. This is a brilliant way of not shocking the development of the web and allows this new technology to emerge more seamlessly. At this point in time, there is not a lot of support for HTML 5, but that support is growing all the time.

HTML5 is completely open and controlled by a standards committee. It allows video to be embedded in the documents. Apple is a prime example of a company that promotes open standards for the web. For example, Apple began with a small open source project and created WebKit, a complete open-source HTML5 rendering engine that is the heart of the Safari web browser. WebKit has been widely adopted. Google uses it for Android's browser, Palm uses it, Nokia uses it, and RIM (Blackberry) has announced they will use it too. Almost every Smartphone web browser other than Microsoft's uses WebKit. By making its WebKit technology open, Apple has set the standard for mobile web browsers.

HTML5, the new web standard that has been adopted by Apple, Google and many other companies, and lets web developers create advanced graphics, typography, animations and transitions without relying on third party browser plug-ins such as Adobe Flash.

Web 3.0 and Future Technologies

Web 2.0 has brought in technologies that can be used to create a more interactive and superior experience for the user. Some of the technologies that have been developed include RSS (Really Simple Syndication), jQuery, Ajax. Ajax is a technology that makes pages more responsive, thus making them more functional and faster. Every time a user would make a change or interact with a website, or online content, the entire web page does not have to reload. These are still part of the Web 2.0 movement though.

Casting back to the section about HTML 5, this latest version of HTML will cater a lot more for the mobile web. Apple adopts it, and they are the leaders in mobile applications and mobile devices, such as the iPhone, and heavily support open source technology.

Web 3.0 is an example of the semantic web and this future web movement (which is in motion as we speak) will be much more intuitive. In essence, the “Semantic Web” (a saying from the legendry Sir Tim Berners-Lee is a place where machines can read web pages much as we humans read them, a place where search engines and software agents can better troll the internet and find what we're looking for.

Conclusion

Web 3.0 is still a relatively unknown. But my guess is that with the advent of such advanced technology from companies like Apple, who churn out devices such as the iPad and popular iPhone, applications, gaming and mobile web browsing are becoming more popular with more interactive designers and programmers racing to make their fortune, and move humanity, and society we live in further.

With technology advancing at such a rapid rate, you have potentially a faster, but yet alien-like future to look forward to. I predict that with the support of emerging technologies, the web will become more of a human brain model, more semantic, and it will be more intuitive than ever to meet the user needs. In the fast paced society we live in and, seem to be progressing with, this will bode well to deliver information and content on the go when we need it, changing how we socialise and communicate forever.

Watch out, Web 3.0 is coming.

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