

World Wide Web, its Evolution and Future: A Historical Analysis at Cursory Glance

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Abstract - World Wide Web commonly known as Web gives solution to variety of problems and it gathers and contains global information. It is the toughest job to explore large content, usage pattern or hidden content structures and further more to generate knowledge from it. Gradually graphical, scripting as well as animation concepts enabled web browsers were developed. Research indicates that email system should be improved in the terms of knowledge mining for workflow enhancement. It should include machine learning filter, smart screen and spam trigger for more security. Video on the web also uses intelligent web aspects. Web applications which generate professionally produced videos automatically using patent-pending cinematic Artificial Intelligence as well as high-end motion design. Furthermore, apart from being a space browseable by humans it is necessary to allow the web, to contain rich data in the form understandable by machines. It allows machines to take a strapping part in analyzing the web, and solving problems.

Key Words : WWW, Artificial Intelligence, Semantic Web, Web Intelligence, Web Wisdom

1. Introduction

World Wide Web, mostly known as its abbreviation WWW and universally known as Web has plaiting solution variety for various problems and gathering global audience information requirements. Web is an interlinked hypertext document system via internet, also defined as network of networks, for multimedia access. In 1989, Web is highest data ordnance in existing world and providing main force for large scale of Information Communication Technology & Networking (ICTN). It is very toughest job to analyse large content, usage pattern or hidden content structures. Further crucial job is to generate knowledge from it. World Wide Web has invented by Tim Berners-Lee then after 20 years first connection was established known as an Internet. Many scientists with Tim at CERN, Switzerland participated in experiments to exchange data and results which were difficult for them and Tim understood unrealized impending of millions of interconnection of computers

through internet. At present, he is director of World Wide Web Consortium, abbreviated W3C and working to add semantics in existing web.

2. History of Web

Tim-Berners-Lee built ENQUIRE, during 1980, as a personal database of people in which hypertext and software utilities for accessing database was key stream. The main objective was global sharing of data without presentation software as well as common machine. First development by him was NeXT Workstation then after first web server and page with support of HTTP and web browser named World Wide Web was projected itself. Rather than NeXT it was modified further to be used on other machines. There was a short summery posted by Berners-Lee on the project of World Wide Web by 6th August 1991 on alt.hypertext newsgroup. The project intended to allow all links to be accessed from anywhere with any information, for that they have invited energy physicists with other experts to share data, information, documentation and news.

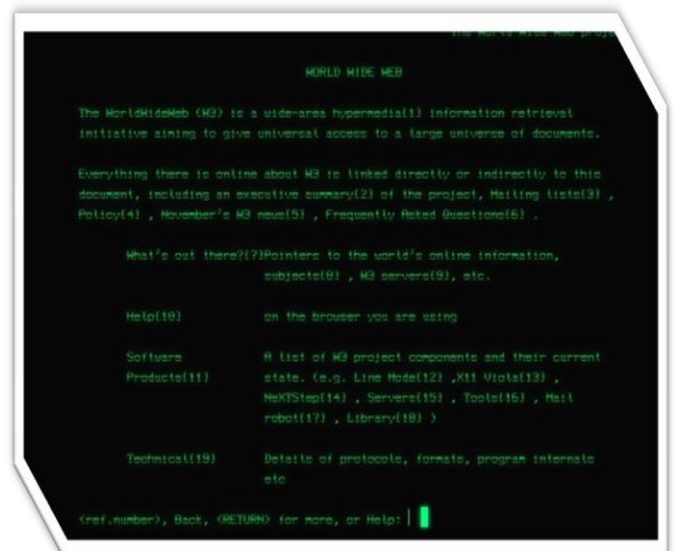


Figure 1 : First Website

Figure 1 shows snapshot of CERN website, the first website found in November 1992 which was publicly announced in August 1991. There was still no browser with graphical support existing for NeXT. This gap was

filled with Erwise, an application developed by Helsinki University of Technology, Finland and ViolaWWW by Pei-Yuan Wei in 1992 with ads on feature of scripting, graphics as well as animation.

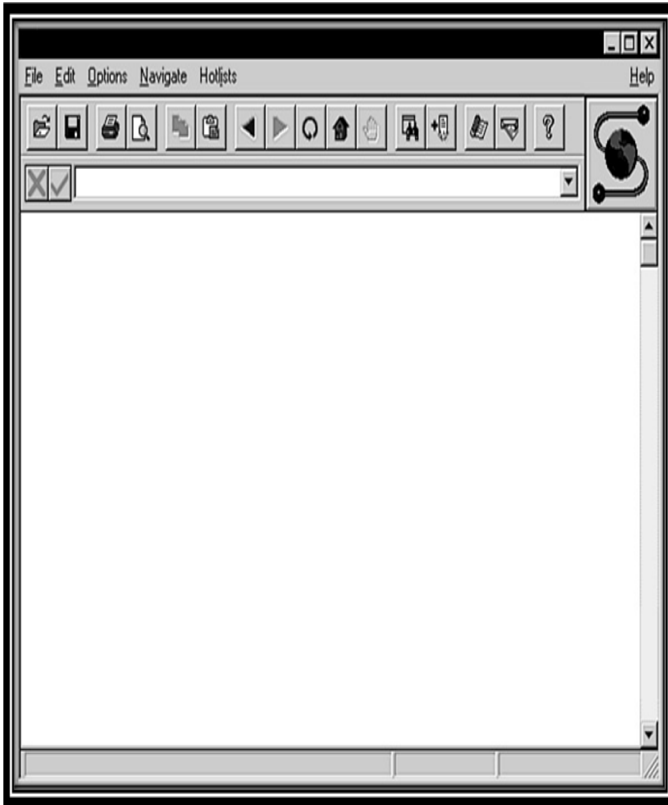


Figure 2 : First Web Browser - MOSAIC Browser V.1 Released in April 1993

There was a rising in the development of web browser after foundation of graphical, scripting as well as animation concepts in web browser. Netscape Navigator (now a day) was based on the Mosaic web browser which was the first graphical web browser. Then after W3C (World Wide Web Consortium) has founded by MIT (Massachusetts Institute of Technology) in 1994 with support of ARPA (Advance Research Project Agency) as well as European Commission. At the end of 1994 web was freely available by Berners-Lee without patent and royalty due which has motivated people to publish information online by worldwide and instantly. At present, web has opened direct web based commerce. The utilities like search engine and emails reached to common man. Social networking includes facebook, blogs, tweeter, LinkedIn and other popular webs are examples of web evolution. There are some typical areas of web include online learning and tutorials, E-Governance, E-Commerce, services and manufacturing as well as research and development.

Table 1 : The Evolution of the Web

Year	Growth of web in Browsers & Technologies
1991	HTTP (Hyper Text Transfer Protocol)

1992	HTML 1 (Hyper Text Mark-up Language – Version 1) & MOSAIC – The first web browser
1994	Netscape with HTML 2
1995	Opera & Internet Explorer (IE)with concept of Cookies & SSL
1996	JAVA with JavaScript as an HTML 3
1997	Flash & XML and HTML 3.2
1998	HTML 4 with CSS2
1999	AJAX
2002	SVG
2003	Safari Browser
2004	Firefox Browser
2005	Canvas, Initial version of Opera Mini
2006	XMLHttpRequest2
2007	First Iphone released with Safari Browser
2008	Chrome Browser with HTML 5 and Request Protocol Handler as well as Offline web Apps : AppCache
2009	CSS3 with 2D & 3D Transforms and Animation, Geolocation
2010	Date & Time Input types, Audio-Video elements, CSS3 Flexbox and Index DB and First Firefox Browser for Mobile
2011	Touch events, Chrome OS v1, Web RTC, File System API, WEB GL(Inbuilt Graphics support)
2012	Chrome for Android Beta released, Content security policy, Full Screen API, CSS3 Filters, Web Audio API,

The Table 1 shows evolution of web in terms of technology as well as browsers. Now let us refer WWW in the terms of invention includes social networking, tweets, blogs, wikis and videos.

3. Video Web Evolution

In 1997 shareyourworld.com was the first website for sharing videos. There were so many plagued problems because of not having advanced internet technologies. Then after, shareyourworld.com is no longer since 2001 due to bandwidth as well as financial problem of company. It was started by Chase Norlin who is now a head of audio/video search company pixsy. Chase took us down memory lane, during the last internet boom when he launched shareyourworld.com whose time was not quite right. In the interview with Andy Plesser (2007), Chase talked about challenges in bandwidth. He wondered about YouTube picked up which was not possible by him in 2001. Video sharing sites were not accepted until YouTube. YouTube changed video sharing everlastingly.

In 14th February 2005 YouTube has been launched by 3 former PayPal employees Chad Hurley, Steve Chen, and Jawed Karim. “Me at the Zoo, in figure 3, was the first video of YouTube which was uploaded at 8:27 pm on Saturday 23rd April 2005. The video was having very

poor quality and it was shot by Yakov Lapitsky at San Diego Zoo on elephants. The duration of video was 18 seconds."

Presently, high definition (HD) videos with high quality of resolution are available and streaming of video also uses intelligent web aspects. Additionally, web applications which generate professionally produced videos by using patent-pending cinematic Artificial Intelligence technology as well as high-end motion design.



Figure 3 : First video of YouTube

4. Web Based Electronic Mail Evolution

Email is as older as ARPANet or Internet. It was not invented but evolved from simple to highly digital. But after the foundation of WWW two companies, one is Hotmail and another is Yahoo, made available with friendly web interface. Hotmail was the first email service founded by Sabeer Bhatia and Jack Smith. The limitation for storage was 2 MB only. In December 1997 more than 8.5 million subscribers were there with Hotmail. Hotmail previously run in Solaris for mail services and Apache on FreeBSD for web services. After 1997 Hotmail is known as MSN Hotmail after having tie-up with Microsoft Corporation.

Rocketmail, Now Yahoo Mail, has founded by Yahoo in March 2002 which was paid mail service with charge of \$29. Yahoo Mail was having new design with additional features then Hotmail includes dropdown menus in DHTML and different categories tabs with new user customization in color scheme. In November 2002 yahoo launched Yahoo Mail Plus which was also paid services with having high storage capacity and other additional features in attachments and multiple domain sending, filtering of address and its storage.

Google mail, abbreviated with Gmail, is a free with support of advertisement as well as Email clients. It has been founded in 2004 by Paul Buchheit who was explored idea of web based mail in 1990. Google has started its work on Gmail in August 2001. Yahoo and Hotmail, who were ruling market at that time, were

using HTML which requires reloading entire webpage to get different services. In Gmail it has been given feature of HTML with supported JavaScript which is known as AJAX. Furthermore "Google mail is having high storage capacity, which is in Yahoo and Hotmail too, but Gmail is providing advanced search capacities".

However, today's research direction says email should improve in the terms of knowledge mining to workflow enhancement. It also includes machine learning filter, smart screen and spam trigger for more security.

5. Social Media Evolution

Social networking sites provide web based services to construct public or semi-public profile within bounded system. The first site of social networking was sixdegrees.com in 1997 which allows students to create profiles and list their friends. The purpose of these sites was to provide online dating of different profiles with each other. Classmate.com allowed people to affiliate with their high school and college with surfing facility of other list. In 2000 the service of sixdegrees.com has been closed. In the duration of 1997 to 2001 there were so many community tools with support of combination of profiles and publicly articulated friends. AsianAvenue, BlackPlanet and MiGente allowed users to create professional as well as personal profiles for dating.

In January 2004, Orkut, social networking website launched by Google Inc, and served worldwide in September 2004. The service is designed to help users to maintain existing relationships as well as to create new relations. The creator of Orkut is one of the employees of Google named Orkut Büyükkökten. It was most popular website in Brazil and India with 48.0% and 39.2% of users respectively. The numbers of users in US were 2.2% only. User of Orkut can also add videos in their profiles from YouTube and Google Videos. The supplementary option is creating restricted or unrestricted polls for polling community of users. There is one integrated option with GTalk enabling chatting and file sharing with like button. On June 2014 Google announced to close Orkut by upcoming September.

Facebook is the synonym of social networking presently. It was founded by Mark Zuckerberg in October 2003 as the name of Facemash. Previously it was for Harvard University only later on expanded to other colleges in Boston area and then after worldwide. In February 2004 Facebook service had been launched by Facebook **Company. It was based on "HOT or NOT" game for Harvard students** which allowed visitors to compare two pictures side by side and let them choose who is HOT and who is NOT. At present, Facebook with 7, 92,999,000 visitors is leading social networking website because of its unique features includes News Feed, Friend and Unfriend, Wall, Timeline, Like, Messages and inbox Notifications etc. It also supports applications like Event, Marketplace, Notes, Places, Platforms, Photos, Videos, Facebook Paper. Some of the group functionalities like

listen with friends, Facebook live, Mood faces, Poke, URL shorter etc. At March 2011 onward Facebook supports 70+ languages to prop up global audience.

There are other sites of social media includes Twitter, LinkedIn, Google+, MySpace which are very popular. Small messages, known as Tweet, become popular by social networking site Twitter Inc., at San Francisco. It has created by Jack Dorsey in 2006. Jack Dorsey is very reputed businessman at USA, American software architect as well. Twitter.com site offers to post message online up to 140 characters.

LinkedIn is another popular social networking website. Founded in December 2002 and launched in May 2003. This site is available in 20 different languages and having 259 million users across the world. Jeff Weiner is the CEO of LinkedIn who was previously working with Yahoo.

Google+ service has invented by Google for invitation only in 2011. The purpose of invention was to give an invitation to increase number of users for Google circle which was the old name of Google+. But because of having limitations to send number of request Google has launched Google+ for the users with having age of 18 and above without having any kind of invitation.

Table 2 : Service stacked up against Competitors (in 2011)

Sr.No	Worldwide	Unique Visitors (in 000)
1	Facebook	792,999
2	Twitter	167,903
3	LinkedIn	94,823
4	Google+	66,756
5	MySpace	61,037
6	Others	255,539

6. Wiki Evolution with Wikipedia

To add information from different locations at centralized place with attractive manner by multiple users with collaborative web platform is known as wiki. **In this, user doesn't require any kind of training. This concept introduced by Ward Cunningham in 1995 as "The Simplest online database that could possibly work".** He has given the name "WikiWikiWeb". This is also known as writable web as well as open editing concept. Jimmy Wales and Larry Sanger, American entrepreneur and founders of Wikipedia, introduced rather launched Wikipedia in January 2001. Previously in 1993 Rick Gates has given concept of online encyclopaedia but actual free encyclopaedia proposed by Richard Stallman, president of free software foundation, in 2000. The project named as Wikipedia, previously Nupedia which was not a Wiki, with domain wikipedia.com started on January 2001. Server located at San Diego donated by Bomis. Bomis was a dot com company supported free online content. Many former employee of Bomis.com contributed content to encyclopaedia. In February 2001,

total 1000 article gained by project. It reached up to 10,000 in September and 20,000 within a year. Then after, there was a ratio of 1500 articles per month and in August 2002 digit reached to 40,000. Presently in "English Wikipedia total numbers of articles are 4,583,831 with 33,571,242 pages and 835,702 files. There are total 731,253,050 edits since beginning and number of users are 22,202,218. In Wikipedia there are 1,401 administrators who are handling Wikipedia 129,524 active users".

7. Study of Web Generation

Web 1.0

In 1990s the first generation of web has been introduced with Netscape browser. As authors have discussed in introduction session the purpose of this web was online free information sharing. This web was very unattractive with slow turnaround, low quality of pictures, unreliable web hosting as well as email with terrible customer services.

Web 2.0

Second generation of web was beyond static web pages as well as web design. It allowed interact and collaborate with each other. The concept of web 2.0 launched in late 2004 although it suggested new version of World Wide Web. It didn't **only include technical specification but** cumulative changes to the web. Web 2.0 includes social networking sites, blogs, wikis, video sharing, folksonomies, hosted services and web applications. Web 2.0 allows users more than retrieving information. Instead of only reading information users can publish comments and their views in articles. They can create profiles with login and password. There are browsers with user interface, application software and file storage facilities. In short, web 2.0 also called network as platform computing.

Client side web, known as web browser, in Web 2.0 used Ajax and JavaScript framework for continuous integration of users with web pages. Server side web in Web 2.0 includes same languages of web programming or designing but, with attractive data format. In Web 2.0 it is possible to share data among multiple sites.

Web 3.0 (Semantic Web)

Web 3.0 is also known as semantic web is a mutual movement of W3C (World Wide Web Consortium) international standard. Semantic web is an attempt to enhance current web so that computers can process the information existing on WWW, understand and fix it, to help humans to discover required knowledge. It is proposed to form a huge distributed knowledge based system to share data instead of documents. In other words, we can say that semantic web is a common framework which allows data to be shared and reused across application, enterprise and community boundaries.

The aspect of semantic network was found by cognitive scientist Allan M. Collins, linguist M. Ross Quillian and psychologist Elizabeth F. Loftus in 1960 in many publications to represent semantically structured knowledge. The Tim Berners-Lee coined the term semantic web to extend the network of hyperlinked human readable content (web pages) by inserting machine readable content (metadata) about pages and their interaction by enabling agents to access the web more intelligently as well as perform tasks on behalf of users.

"A Web of data that can be processed directly and indirectly by machines is semantic web" – Tim Berners-Lee

8. Future of Web (Web Intelligence / Web Wisdom)

Presently, Millions of developers are creating and using web in their desktop, tablets, phones, televisions, automobiles, digital billboards, watches and everywhere. According to Tim Berners Lee, Very soon millions more sensors, appliances and other devices will take web to new places. He mentioned that future of web is under threat from governments to misuse of their powers, businesses which try to destabilize open market and from criminal activity. The future of web depends on normal people talking responsibility for tremendous resource and challenging those who seek to manipulate web against the public good. Tim has also mentioned that the improvement of the infrastructure to provide additional functional, robust, efficient and available service web will play very pivotal role. Furthermore, allow the web, apart from being a space browsable by humans, to contain rich data in the form understandable by machines, thus allowing machines to take a stronger part in analyzing the web, and solving problems for us.

9. Conclusion

World Wide Web has been emerged as solitary solution for various problems. It is also a global highway for information collection and needs. Web is a linkage of interlinked hypertext documents system which is accessible through internet. There are some typical areas of web that include E-learning, E-tutorials, E-Governance, E-Commerce as well as research and development. Presenting various forms of graphics was the prime need of web. High quality videos and its streaming on the web use intelligent web aspects. Professional videos use patent-pending cinematic Artificial Intelligence technology as well as high-end motion design. Emails facility is improved in terms of knowledge mining to workflow enhancement. It also includes machine learning filter, smart screen and spam trigger for more security. Millions of developments are going on to access web on desktop, tablets, phones, televisions, automobiles, digital billboards, watches and everywhere will take web to new stature.

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