

Web 3.0

Leveraging of Semantic Web

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Abstract— For some, changes and advancements in technology are intriguing. In the era of rapidly changing technology there is a strong and urgent need for constant updating and synchronization with the latest global technology trends. One needs a platform for the amalgamation of new horizons with existing technology. Without Web we cannot think of any kind of data communication and computer networks. This paper discusses mainly about Web 3.0 (Semantic Web or meaning of data) and its applications. Web 3.0 allows communication between devices and machines. It is the extension of traditional Web, like Web 1.0 and Web 2.0. This is based on integrating data and metadata concepts which can be stored, retrieved and evaluated. It is an emerging path to artificial intelligence, transforms web into database and work towards 3-Dimensional graphics.

Keywords- *Semantic Web; Web 3.0; Web 2.0; Web 1.0 & Web evolution*

I. INTRODUCTION

There can be communication and interaction between machines, computers and devices over the Internet using a software system known as Web service. So for communicating and interacting, we use Application Programming Interface, that is, rules and specifications to be followed by the software system. YouTube, Facebook, Twitter, Flickr, and emerging Google+ are examples of Web 2.0 social networking websites that provide a web service for searching, sharing and connecting with people and communities. Combining the features of Web 2.0, semantic Web and other Web services, Web 3.0 will dominate the existing Web services.

Web 1.0 was considered as a library. The primary focus was to give information by building web pages, making it accessible and commercializing for the first time. The key area of interest was HTML, HTTP and XML. Web 1.0 is the web as information portal. Information exclusivity, be the first to own the content dividing the World Wide Web into usable directories. Everyone has their own little corner in the cyberspace but it lacked context, interaction & scalability.

Darwin's theory stated "Survival of the Fittest" i.e. only the best makes it, similarly in the current era web was expanding

so much and expectations increased day by day and hence soon transformation was done to Web 2.0. The term "Web 2.0" was found in 1999 by Darcy DiNucci. Web 2.0 was all about power of networks and brought a social change. The technical part of Web 2.0 hasn't changed very much. It allowed colleagues, families and friends to connect worldwide. Web 2.0 uses relational databases for storing the data [1]. The web as a platform focuses on the power of the community to create and validate. The power of a seemingly free form of an organization setting up "hooks" for future integration (RSS, API), but it lacked true portability and interoperability.

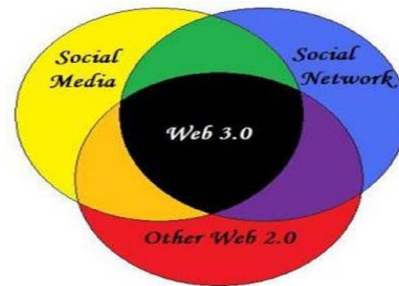


Figure1. Web 3.0 [6]

II. EVOLUTION OF WEB 3.0

Web 3.0 is about meaning of the data-SEMANTIC WEB. Web 3.0 is compared to a giant data base. Web 2.0 uses the Internet to make connections between people. Web 3.0 will use the Internet to make connections with the information. Web 3.0 is going to be like having a personal assistant who knows practically everything about you and can access all the information on the Internet to answer any question. Suppose we are in the mood of playing Billiards game followed by a comedy film and some incredibly spicy North Indian food. We visit half a dozen Web sites before you're ready to head out the door. Web 3.0 browser will analyze your response, search the Internet for all possible answers, and then organize the results for you.

Web 3.0 has many applications in the field of Artificial Intelligence and works on the concept of metadata used in Data Mining. Web 3.0 can behave like brain of human where

information is stored in form of neurons and this information is linked together as clustering of neurons. Data like audio, video, images, text etc. is organized and stored in XML format for use in software systems and other tools [2].

III. WHAT WILL BE WEB 3.0 LIKE

Some of the applications of Web 3.0 will look like as follows:

- A. Personal Desktop & Webspaces: It will allow bookmarking and tagging which will be browser independent. By just logging into your account It will offer space of 5GB or more i.e. virtual directory for personal browser data or other private data anywhere in this world.
- B. Remote Control: you can control your PC from distance about thousand miles or even more by just using internet. It is just like Windows Remote desktop control.
- C. Mobile Web: Internet is not just limited to computers but to your mobiles. It will be operating system independent i.e. we will be able to use applications of Android, Blackberry, Apple, ipads, OVI, Windows etc. simultaneously and will support GigaBytes of bandwidth.
- D. Surface PC: It will support Personal Computers, laptops, touch screen PCs and Surface PCs. Personal computers interact with the users through monitor and keyboard whereas Surface Pc will interact through the surface of any object.
- E. Internet Radio: This will be the audio streaming major in Web 3.0 with having digital quality sound and playing thousands of radio stations [4].
- F. E-Learning: Improvements can be brought in teaching-learning process using online learning, its resources and innovative pedagogy [11, 12].



Figure2.Platform independent Mobile Web [3]

IV. BENEFITS OF WEB 3.0

The biggest advantage of web 3.0 is that we can access our data from anywhere in the world wherever our data is kept. This is possible by many cloud applications and smart phones. It is capable of understanding human language. So, it is both human readable and machine readable. Exclusive content will be given more priority.

V. TECHNOLOGIES IN WEB 3.0

There are various technologies of computer and Internet that would be used by the semantic web like Virtual Reality, Artificial Intelligence, Automated Reasoning, Distributed Computing, Scalable Vector Graphics and Semantics Wiki etc.

VI. COMPONENTS OF WEB 3.0

The main components of web 3.0 are Semantic Web, Social Web and 3D Interactive Enabled Technologies (3Di).

Along with the features of Web 2.0, the components added to Web 3.0 are semantic web (RDFS, Ontology web language), RDF (Resource Description Framework) and SPARQL (SPARQL Query Language for RDF).

RDF or Resource Description Framework is the language used to construct metadata files. RDF is to the Semantic Web what HTML is to the traditional Web. Yu (2007) defines RDF as “the basic building block for supporting the Semantic Web”. OWL (Web Ontology Language) is the language used to create ontologies. OWL is built on RDFS and has the capability to express more complex and richer relationships [9].

RDFS or RDF Schema is a language used to create a vocabulary for describing classes and their relationships, and defining and associating properties with those classes. RDFS is written in RDF. SPARQL is the query language of RDF. Ontologies define the terms used to describe and represent a specific area of knowledge or domain and are “essential building blocks” of the Semantic Web [10]. For author/s of only one affiliation (Heading 3): To change the default, adjust the template as follows.

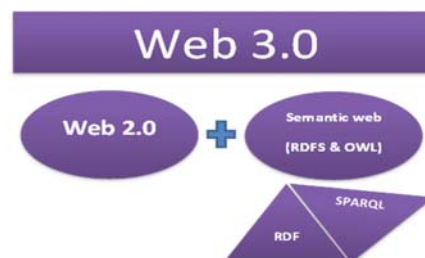


Figure3 Components of Web 3.0

VII. COMPARISON CHART OF WEB 1.0, WEB 2.0 AND WEB 3.0

<i>Web 1.0</i>	<i>Web 2.0</i>	<i>Web 3.0</i>
FrontPage	MySpace	SIOC-project.org
Encarta	Wikipedia	Edpedia
Streetmap/MapQuest	Google earth	3-D Street view
PC games	Online games	Online 3-D-games
Home Video	You Tube	Yetto come
Mp3.com	iTunes	Yetto come
Microsoft Office	Google Docs	Yetto come

Figure 4 Comparison Chart [16]

VIII. REAL EXAMPLES

There are some interactive examples of web 3.0 which will be based on HTML5.

- A. Dragging the list items over the dustbin, and dropping them to have the bin eat the items [21].
- B. Interactive canvas gradients in which Screen colour of the screen changes when you move your mouse [22].
- C. A film “The Technology Behind 3 DREAMS OF BLACK by Chris Milk” showing how Web 3.0 is going to look alike in future [23].
- D. Website like www.ro.me [7] created specially by Google took the first step in creating web 3.0 web sites. This web site can only be run in special browsers like Google Chrome Canary created by Google itself which supports the old features of web along with the new features.

IX. FUTURE SCOPE

The spark of Web 3.0 is lit now and is going to conquer the web soon. The future impacts have already been explained so far, though there is much more information here which is still uncertain. Security of metadata is still one of the challenges that may be faced by Web 3.0. The key role will be played by the relationship of man and machine in which man dominates over machines. Web 3.0 will provide a vision for bridging the gap between virtual and real [13].

X. CONCLUSION

Web 3.0 is the future of internet and web. Every technology is changing fast and so is the Web. It initially came up with Web 1.0, then Web 2.0 and finally Web 3.0. The third generation Web will understand and support the behavior of man and machine providing information and services at its best.

Web 3.0 will be more connected, open, and intelligent, with semantic Web technologies, distributed databases, natural language processing, machine learning, machine reasoning, and autonomous agents [8]. Thus in the future Web computer will manage, search and append the information according to personal demands making it a personal web and hence Web 3.0 leverages the Semantic Web thus integrating data [16].

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[20] <http://html5demos.com/drag>

[21] <http://html5demos.com/canvas-grad>

[22] <http://www.youtube.com/watch?v=ReH7zzj5GPc>