



Understanding Advantages of Web 2.0/3.0 Technologies

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Abstract : The World Wide Web has been passed through different development stages since its inception. Web 2.0 sites allow for user interaction and participation by having a user-friendly interface where one can edit and publish the existing information. The term Web 3.0 describes sites where computers will be generating raw data on their own. A comparative study of the each stage of Web is done. The purpose of this paper is to understand and conceptualize the evolution of Web from the scratch to the upcoming trends in the field of Web Technology.

IndexTerms – Web Technology, Web 2.0/3.0 , Computer

I. INTRODUCTION:-

Web was introduced by Tim Burners-Lee in late 1989. His view of the capabilities of the World Wide Web was expressed by three innovations, typically associated with three phases: namely, the Web of documents (Web 1.0), the Web of people (Web 2.0) and the Web of data (the still-to-be-realised Web 3.0). Through its life cycle, the World Wide Web has been through various phases of development. Going by the trend of constant evolution, the Web is now slowly but surely transiting to more data centric phase in the context of Web Version 3.0. Web 2.0 was defined by Dale Dougherty in 2004 as a read-write web. The technologies of web 2.0 allow assembling and managing large global crowds with common interests in social Interactions. Web 2.0 is a two-way model. The advent of various networking sites, such as Blogger, Twitter and Face book, during the phase of Web 2.0, has revolutionized the way in which the information can be shared and collaborated among multiple users. The next generation Web, known as Web 3.0, is the combination of the features of both the phases and contains a few more features. Web 3.0 or semantic web desires to decrease human's tasks and decisions and leave them to machines by providing machine-readable contents on the web. In General, web 3.0 is included two main platforms, semantic technologies and social computing environment. The semantic technologies represent open standards that can be applied on the top of the web. The social computing environment allows human-machine co-operations and organizing a large number of the social web communities.

II. WEB 2.0

Tim O'Reilly defines web 2.0 on his website as follows. *"Web 2.0 is the business revolution in the computer industry caused by the move to the internet as platform, and an attempt to understand the rules for success on that new platform. Chief among those rules is this: Build applications that harness network effects to get better the more people use them."* Web 2.0 is also known the wisdom web, people-centric web, participative web, and read-write web. With reading as well as writing, the web could become bi-directional. Web 2.0 is a web as a platform where users can leave many of the controls they have been used to in web 1.0. In other words, the users of web 2.0 have more interaction with less control. Web 2.0 is not only a new version of web 1.0; Flexible web design, creative reuse, updates, collaborative content creation and modification were facilitated through web 2.0. One of outstanding features of web 2.0 is to support collaboration and to help gather collective intelligence rather than web 1.0.



Figure 1.

The categorization can be used to elaborate on the understanding of Web 2.0 achieved through varied definitions.

- **Technology Centric Definition:** Web has become a platform with software above the level of a single device. Technology that is associated with blogs, wikis, podcasts, RSS feeds etc.
- **Business Centric Definitions:** A way of architecting software and businesses. The business revolution in the computer industry caused by the move to internet as platform and an attempt to understand the rules for success on that of new platform.
- **User Centric Definitions:** The Social Web is often used to characterize sites that consist of communities. It is all about content management and new ways of communication and interaction between users. Web applications that facilitate collective knowledge production, social networking and increases user to user information exchange.

III. **Objectives of Web 2.0**

- Collaboration and/or distributed authorship.
- Active, open-access, “bottom-up” participation and interactive multi-way communication.
- Taking place on www, or to a large extent utilizing web.

IV. **Features of web 2.0**

- Users can modify the available content.
- Using Web pages to link different users.
- Content can be shared more efficiently.
- Information can be obtained by subscribing to a Web pages’ RSS. Apart from this, the subscriber can receive updates on any development in the Web page as long as there is access to the Internet.
- It allows one to access Internet through not only the computer but also mobiles, television etc

V. **Tools of web 2.0**

- Social networks
- Blogs
- Micro Blogging
- RSS and Aggregators
- Video Sharing
- Photo Sharing
- Wiki
- Podcast
- Book marks
- Virtual world
- Content Rating



Figure 2. Web 2.0

Web 3.0

John Markoff of the New York Times suggested web 3.0 as third generation of the web in 2006. The basic idea of web 3.0 is to define structure data and link them in order to more effective discovery, automation, integration, and reuse across various applications. Web 3.0 tries to link, Integrate, and analyze data from various data sets to obtain new information stream; It is able to improve data management, support accessibility of mobile internet, simulate creativity and innovation, encourage factor of globalization phenomena, enhance customers' satisfaction and help to organize collaboration in social web.



Figure 3. Web 3.0

VI. OBJECTIVES OF WEB 3.0.

- To provide a ubiquitous Web which facilitates accessibility of the net to anywhere and anytime with the available device.
- To break the barriers, such as bandwidth constraints, poor display on mobile devices, and reducing the cost of the devices which are involved with it.

Nova Spivack, CEO of **Radar Networks**, one of the leading voices of the new age Internet, defines Web 3.0 as the third decade of the Web (2010-2020) during which there would be several major complementary technology trends which will each reach a new level of maturity simultaneously. In other words, it can be explained as third-generation of the Web which is enabled by combination of various emerging technologies like:

- Ubiquitous connectivity, adoption of broadband networks and access to Internet through mobile devices.
- Network computing, SaaS business models, interoperability of Web services, distributed computing, grid computing and cloud computing.
- Open technologies, open APIs and protocols, open data formats, open-source software platforms and open data.
- Open identity, open reputation, roaming portable identity and personal data.
- The intelligent Web, semantic Web technologies, such as Resource Description Framework (RDF), Web Ontology Language (OWL), Semantic Web Rule Language (SWRL), SPARQL-SPARQL Protocol and RDF Query Language, Gleaning Resource Descriptions from Dialects of Languages (GRDDL), semantic application platforms and statement-based data stores.
- Distributed databases, the 'World Wide Database', and

- Intelligent applications, natural language processing, machine learning, machine reasoning, and autonomous agents.

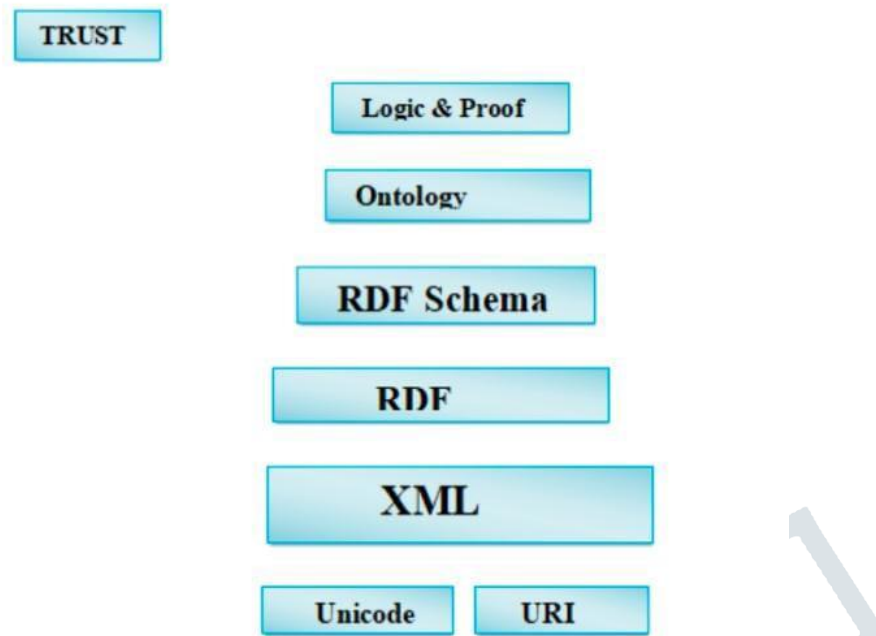


Figure 4: Semantic Web Layered Architecture

Fig. 4 shows the architecture of Semantic Web. The base of the architecture contains the URI (Uniform Resource Identifier) and Unicode which supports international character set. The data in Semantic Web is represented in graphical form by RDF (Resource Description Framework) which is based on the XML syntax. Taxonomies of classes and properties are represented by RDFS (RDF Schema). Web Ontology Language (OWL) provides standard vocabulary. RIF/SWRL enables us to write rules beyond RDFS and OWL. Simple Protocol and RDF Query Language (SPARQL) is used to query RDF data. The logic and proof layers ensure the trust ability of inputs. The origin of sources for the input data is verified by digital signatures. The user applications are developed at the top of all layers.

Components of web 3.0

Web 3.0 comprises two main platforms: Semantic technologies and social computing environment. Web 3.0 adopts the semantic technologies and open standards which can be applied to the current Web. The main focus of social computing environment is on human machine synergy which is required in organizing a large number of social web communities.

VII. Web 3.0 Technologies

In today's Internet dominated world, every business organization has recognized the need for having an effective Web 3.0 site. In the present always-on world, a company's website plays a very critical role in competing with others and in attaining success. The following are some of the technologies employed in web 3.0.

- Artificial Intelligence.
- Automated reasoning.
- Cognitive architecture.
- Composite applications.
- Distributed computing.
- Knowledge representation.
- Ontology (computer service).
- Recombinant text.
- Scalable vector graphics.
- Semantic Web.
- Semantic wiki, and
- Software agent.

Table 1: A Comparison of web 2.0 and web 3.0.

	WEB 2.0	WEB 3.0
Communication	Interactive	Engaged/invested
Information	Dynamic	Portable & Personal
Focus	Community	Individual
Personal	Blogs/Wikis	Life streams
Content	Sharing	Curation
Interaction	Web application	Smart Application
Search	Keywords/Tags	Context/Relevance
Metrics	Cost per Click	User Engagement
Advertising	Interactive	Behavioral
Research	Wikipedia	The Semantic web
Technologies	Flash/Java/XML	RDF/RDFS/OWL

CONCLUSIONS

This paper provided an overview from the evolution of the web. Web 2.0 and web 3.0 were described as two generations of the web. The characteristics of the generations are introduced. Web 2.0 is very helpful for employees in organizations to learn, interact and communication fast. The main purpose of Web 3.0 is to extend the ability of application to maximize the benefits obtained from resources available from WWW community with the help of linked data, devices and people across the Web. In a Web 3.0 world, the Internet will Be totally different to the users as the content and applications can easily accessed at their, thus breaking away from the traditional format.

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