

# An Overview of Evolutionary Steps in Web Movement: The Web before and Beyond 3.0

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## Abstract

The World Wide Web has been passed through different development stages since its' inception. Web 1.0 provided a vector for exposure, and removed the geographical restrictions associated with a brick-and-mortar business. Web 2.0 enabled users to interact with each other to contribute in content creation through a social media dialogue. A huge database of documents created by Web 1.0 and Web 2.0 were human readable only. The emergence of Web 3.0 added machine readability to the web documents. Web 4.0 is considered as the future phenomena where the web will be symbiotic and always on. This survey paper also points out document types and technologies employed to predicate the future of the Web (Web 4.0, Web 5.0 and Web 6.0). This paper is designed to understand and conceptualize the evolution of web from the scratch to the upcoming trends in the field of Web Technology.

**Keywords:** Web 3.0, Web 4.0, Web 5.0, Web 6.0

## 1. Introduction:

Web was introduced by Tim Burners-Lee in 1989. Web 1.0 is referred as a web of information, Web 2.0 as web of verbalization, web 3.0 as web of affiliation, web 4.0 as a web of integration and Web 5.0 as web of Decentralized smart communicator., Anyone can view web pages that may contain text, image, videos, and other multimedia and navigate between them via hyperlinks with a web browser.

## 2. From Web 0.5 to Web 1.0

*“The services of Web 0.5 are distributed and content-offering precursors to Web pages using non-standard technologies, protocols and tools such as Gopher, FTP or Usenet”.*

Web 1.0 is considered as first generation read-only Web. *“The services of Web 1.0 are presentation-oriented content viewing services based on technologies supporting static Web pages (mainly hard-coded HTML pages) and used to display information such as Altavista, Yahoo or Netscape with other basic supportive tools such as web development tools (e.g., HTML editors) and basic search engines, such as AliWeb”*

The major characteristics of web 1.0 are:

- Read only content.
- Static web pages and use basic HTML.
- Asymmetrical information flow.
- Consumer dispersion.
- Content created by organizations.

The major limitations of web 1.0 are:

- No machine compatible content.
- Lack of Dynamic representation

### 3. From Web 1.5 to Web 2.0:

*“The services of Web 1.5 are commerce-oriented content-viewing services based on technologies supporting dynamic pages (e.g., DHTML) and form-based interaction that often had closed APIs and closed IDs for presenting company-generated content such as Google, Amazon, or eBay, as well as basic supportive tools such as Content Management Systems”.*

Web 2.0 was the second generation of web which facilitates reading and writing on the web and makes the web transaction bi-directional. *“The services of Web 2.0 are user-oriented, content-sharing (upload, edit, and download), social networking (personal data) or static mashup services based on technologies supporting dynamic micro pages which supports an open API with closed data and closed ID in order to use the Web as a distributed file system (user-generated content) or collaboration system (networking effects) such as YouTube, LinkedIn or MySpace along with basic supportive tools such as Wikis or blogs”.*

The major characteristics of web 2.0 are:

- Technology Centric Characteristics:
- Business Centric Characteristics:
- User Centric Characteristics:

The major limitations of web 3.0 are:

- Ethical issues
- Interconnectivity and knowledge sharing

### 4. From Web 2.5 to Web 3.0: (Mobile Web to Semantic Web)

*“The services of Web 2.5 will be (mobile) device-oriented, user-, link-, or time-sensitive, cross-site, content-moving, virtual-reality-based, or dynamic mashup services based on technologies supporting rich user interfaces and user-sensitive interfaces that might support an Open ID and Open Data in order to support RUE (Rich User Experiences) and personal data portability such as Diigo or Yahoo pipes”.*

Web 3.0 is stated as Executable Web or semantic web which defines structure data and link them in order to more effective discovery, automation, integration and reuse across various applications and also helps to improve data management, support accessibility of mobile internet, simulate creativity and innovation, encourage factor of globalization phenomena, enhance customer's satisfaction and help to organize collaboration in social web. Web 3.0 is also known as semantic web. *“The services of Web 3.0 are content-oriented, semantic-based, context-sensitive services based on technologies supporting semantically enriched websites that might support portable IDs in order to use the Web as a database and an operating system such as AskWiki or Freebase”.*

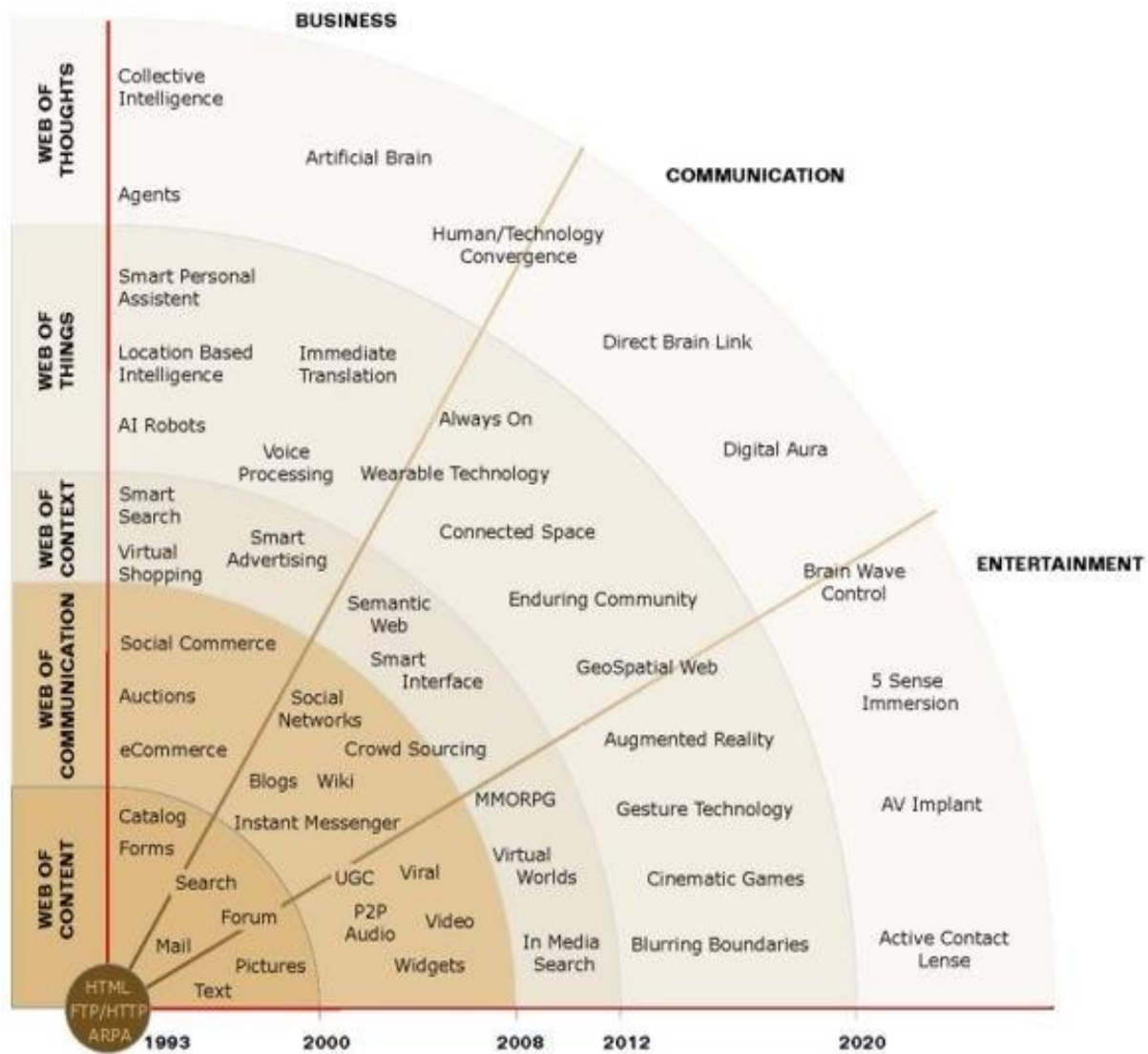


Fig 1: Web journey from 1993 to 2020

The Semantic web provides a framework which allows data to be shared and reused across application, enterprise and community boundaries. It consists different layers such as Unicode and URI, XML, RDF, Logic Layer, Proof Layer and Trust Layer.

Web 3.0 consists of five key components

- Microblogging: sites that consist of sharing one's thoughts in few characters such as Twitter
- Virtual reality worlds: spaces visited by users to interact with other users in a 3D platform.
- Customization/personalization: features that allow users to create a unique and individual experience such as Google and Amazon.
- Mobility: mobile devices and the ability to connect to the red through them make possible a huge amount of new applications.
- On demand collaboration: users interact by supervising documents, collaborating and making changes all in real time such as Google Drive, slideshare.net.

The major characteristics of web 3.0 are:

- SAAS Business Model.
- Open source software platform.
- Distributed Database or Worldwide Database.
- Web Personalization.
- Resource Pooling.
- Intelligent Web.

The major limitations of web 1.0 are:

- Redundancy in data
- Inconsistency:

### 5. From Web 3.5 to Web 4.0: (Ubiquitous Web to Intelligent Web)

“The services of Web 3.5 will be fully pervasive, interactive, and autonomous agents considering the personal context based on advanced semantic technologies supporting reasoning and basic AI that might bring the virtual and the real world closer together such as 3D-enhanced virtual social networks or natural language services”.

Web 4.0 ((2020 – 2030) will be the Ultra-Intelligent Electronic Agent, Symbiotic web and Ubiquitous web which ensures global transparency governance, distribution, participation, collaboration in to key communities such as industry, political, social and other communities. “The services of Web 4.0 will be autonomous, proactive, content-exploring, self-learning, collaborative, and content-generating agents based on fully matured semantic and reasoning technologies as well as AI which supports adaptive content presentation that will use the Web database via an intelligent agent such as services interacting with sensors and implants, natural language services or virtual reality services”.

### 6. Web 5.0: (Symbiotic Web or Telepathic Web)

Web 5.0 will be considered as Symbiotic web, decentralized which will be able to use a part of "memory and calculation power" of each interconnected SC, in order to calculate the billions and billions needed data to build the 3D world. The current situation says that Web is "emotionally" neutral: do not feel the user perceives. Neurotechnology is created by Emotive Systems through headphones that allow users to interact with content that meets their emotions or change in real time facial expression an "avatar".

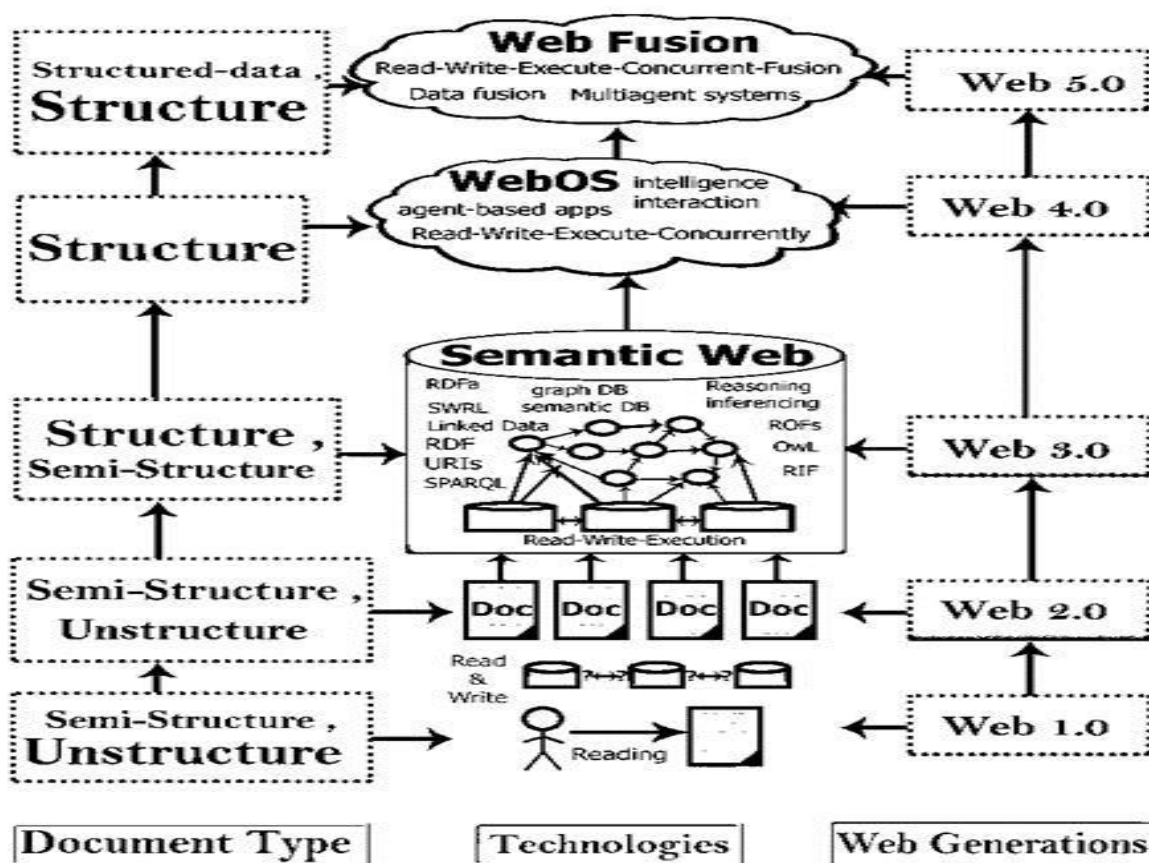


Fig 1: Comparison of different Web

## 7. Web 6.0

Web Service Extensions has been added to the Internet Information Services Manager (ISM) in Internet Information Services (IIS) 6.0 which are programs that extend the basic IIS functionality of serving static content such as Web service extensions (ASP, ASP.NET), FrontPage Server Extensions, Server-side includes (SSI), Internet Database Connector, Web Distributed Authoring and Versioning (Web DAV), Common Gateway Interface (CGI), Internet Server API (ISAPI).

## 8. Conclusion:

This paper highlights an overview from the evolution of the Web, Web 1.0, Web 2.0 Web 3.0, web 4.0 web 5.0 and web 6.0 were described which concludes web as an information space has had much progress since 1989 and it is moving toward using artificial intelligent techniques to be as a massive web of highly intelligent interaction in close future.

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