# **Web Technology**

# World Wide Web

The World Wide Web—commonly referred to as **WWW**, **W3**, or **the Web**—is an interconnected system of public webpages accessible through the [Internet](https://developer.mozilla.org/en-US/docs/Glossary/Internet). The Web is not the same as the Internet: the Web is one of many applications built on top of the Internet.

Tim Berners-Lee proposed the architecture of what became known as the World Wide Web. He created the first web [server](https://developer.mozilla.org/en-US/docs/Glossary/Server), web [browser](https://developer.mozilla.org/en-US/docs/Glossary/Browser), and webpage on his computer at the CERN physics research lab in 1990. In 1991, he announced his creation on the alt.hypertext newsgroup, marking the moment the Web was first made public.

The system we know today as "the Web" consists of several components:

* The [**HTTP**](https://developer.mozilla.org/en-US/docs/Glossary/HTTP) protocol governs data transfer between a server and a client.
* To access a Web component, a client supplies a unique universal identifier, called a [**URL**](https://developer.mozilla.org/en-US/docs/Glossary/URL) (uniform resource locator) or [URI](https://developer.mozilla.org/en-US/docs/Glossary/URI) (uniform resource identifier) (formally called Universal Document Identifier (UDI)).
* [**HTML**](https://developer.mozilla.org/en-US/docs/Glossary/HTML) (hypertext markup language) is the most common format for publishing web documents.

Linking, or connecting resources through [hyperlinks](https://developer.mozilla.org/en-US/docs/Glossary/Hyperlink), is a defining concept of the Web, aiding its identity as a collection of connected documents.

Soon after inventing the Web, Tim Berners-Lee founded the [W3C](https://developer.mozilla.org/en-US/docs/Glossary/W3C) (World Wide Web Consortium) to standardize and develop the Web further. This consortium consists of core Web interest groups, such as web browser developers, government entities, researchers, and universities. Its mission includes education and outreach.

# **Comparison Between Web 1.0, Web 2.0 and Web 3.0**

**Web 1.0 –**

Web 1.0 refers to the first stage of the World Wide Web evolution. Earlier, there were only a few content creators in Web 1.0 with a huge majority of users who are consumers of content. Personal web pages were common, consisting mainly of static pages hosted on ISP-run web servers, or free web hosting services.

In Web 1.0 advertisements on websites while surfing the internet are banned. Also, in Web 1.0, Ofoto is an online digital photography website, on which users could store, share, view, and print digital pictures. Web 1.0 is a content delivery network (CDN) that enables the showcase of the piece of information on the websites. It can be used as a personal website. It costs the user as per pages viewed. It has directories that enable users to retrieve a particular piece of information. The era of Web 1.0 was roughly from 1991 to 2004.

**Four Design Essentials of a Web 1.0 Site Include:**

1. Static pages.
2. Content is served from the server’s file system.
3. Pages built using Server Side Includes or Common Gateway Interface (CGI).
4. Frames and Tables are used to position and align the elements on a page.

**Web 2.0 –**

2004 When the word Web 2.0 become famous due to the First Web 2.0 conference (later known as the Web 2.0 summit) held by Tim O’Reilly and Dale Dougherty, the term was coined by Darcy DiNucci in 1999. Web 2.0 refers to worldwide websites which highlight user-generated content, usability, and interoperability for end users.  Web 2.0 is also called the participative social web. It does not refer to a modification to any technical specification, but to modify the way Web pages are designed and used. The transition is beneficial but it does not seem that when the changes occur. Interaction and collaboration with each other are allowed by Web 2.0 in a social media dialogue as the creator of user-generated content in a virtual community. Web 2.0 is an enhanced version of Web 1.0.

The web browser technologies are used in Web 2.0 development and it includes [**AJAX**](https://www.geeksforgeeks.org/ajax-introduction/)and JavaScript frameworks. Recently, AJAX and [**JavaScript**](https://www.geeksforgeeks.org/javascript/)frameworks have become a very popular means of creating web 2.0 sites.

**Five Major Features of Web 2.0:**

1. Free sorting of information, permits users to retrieve and classify the information collectively.
2. Dynamic content that is responsive to user input.
3. Information flows between the site owner and site users using evaluation & online commenting.
4. Developed APIs to allow self-usage, such as by a software application.
5. Web access leads to concerns different, from the traditional Internet user base to a wider variety of users.

**Usage of Web 2.0 –**

The social Web contains several online tools and platforms where people share their perspectives, opinions, thoughts, and experiences. Web 2.0 applications tend to interact much more with the end-user. As such, the end-user is not only a user of the application but also a participant in these 8 tools mentioned below:

1. Podcasting
2. Blogging
3. Tagging
4. Curating with RSS
5. Social bookmarking
6. Social networking
7. Social media
8. Web content voting

**Web 3.0 –**

It refers to the evolution of web utilization and interaction which includes altering the Web into a database, with the integration of DLT (Distributed Ledger Technology blockchain is an example) and that data can help to make Smart Contracts based on the needs of the individual. It enables the up-gradation of the back-end of the web, after a long time of focusing on the front-end (Web 2.0 has mainly been about AJAX, tagging, and other front-end user-experience innovation). Web 3.0 is a term that is used to describe many evolutions of web usage and interaction among several paths. In this, data isn’t owned but instead shared but still be, where services show different views for the same web / the same data.

The Semantic Web (3.0) promises to establish “the world’s information” in a more reasonable way than Google can ever attain with its existing engine schema. This is particularly true from the perspective of machine conception as opposed to human understanding. The Semantic Web necessitates the use of a declarative ontological language like OWL to produce domain-specific ontologies that machines can use to reason about information and make new conclusions, not simply match keywords.

**Main features That can Help us Define Web 3.0:**

1. **Semantic Web**   
   The succeeding evolution of the Web involves the Semantic Web. The semantic web improves web technologies in demand to create, share and connect content through search and analysis based on the capability to comprehend the meaning of words, rather than on keywords or numbers.
2. **Artificial Intelligence**   
   Combining this capability with [natural language processing](https://www.geeksforgeeks.org/introduction-to-natural-language-processing/), in Web 3.0, computers can distinguish information like humans to provide faster and more relevant results. They become more intelligent to fulfill the requirements of users.
3. **3D Graphics**   
   The three-dimensional design is being used widely in websites and services in Web 3.0. Museum guides, computer games, e-commerce, geospatial contexts, etc. are all examples that use 3D graphics.
4. **Connectivity**   
   With Web 3.0, information is more connected thanks to semantic metadata. As a result, the user experience evolves to another level of connectivity that leverages all the available information.
5. **Ubiquity**   
   Content is accessible by multiple applications, every device is connected to the web, and the services can be used everywhere.
6. **DLT and Smart Contracts**  
   With the help of DLT, we can have a virtually impossible to hack database from which one can have value to their content and things they can own virtually, this is the technology that enables a trustless society by the integration of smart contracts which does not need to have a middle man to be a guarantor to make that contract occur on certain cause its based on data from that DLT. It’s a powerful tool that can make the world a far better place and generate more opportunities for everyone on the internet.

**Difference Between Web 1.0, Web 2.0, and Web 3.0 –**

| S. No. | Web 1.0 | Web 2.0 | Web 3.0 |
| --- | --- | --- | --- |
| 1. | Mostly Read-Only | Wildly Read-Write | Portable and Personal |
| 2. | Company Focus | Community Focus | Individual Focus |
| 3. | Home Pages | Blogs / Wikis | Live-streams / Waves |
| 4. | Owning Content | Sharing Content | Consolidating Content |
| 5. | WebForms | Web Applications | Smart Applications |
| 6. | Directories | Tagging | User behavior |
| 7. | Page Views | Cost Per Click | User Engagement |
| 8. | Banner Advertising | Interactive Advertising | Behavioral Advertising |
| 9. | Britannica Online | Wikipedia | The Semantic Web |
| 10. | HTML/Portals | XML / RSS | RDF / RDFS / OWL |
| 11. | Data was not Focused. | Data of many was controlled by some mediatory. | Data was personalized and no use of mediatory. |
| 12. | Information sharing is the goal. | Interaction is the goal. | Immersion is the goal. |
| 13. | It connects information as its primary goal. | It aims to connect people. | Focuses on relating knowledge. |
| 14. | Static websites | Introduction of web applications | Intelligent web-based functions and apps |
| 15. | A simpler, more passive web. | An enhanced social Web | A semantic web exists. |
| 16. | Web and File Servers, HTML, and Portals are technologies connected to Web 1.0. | AJAX, JavaScript, CSS, and HTML5 are examples of related technology. | Web 3.0 technologies include blockchain, artificial intelligence, and decentralized protocols. |
| 17. | **Associated Technologies:-**   * Web and File Servers * Search Engines (including AltaVista and Yahoo!) * E-mail accounts (Yahoo!, Hotmail) * Peer-to-Peer File Sharing (Napster, BitTorrent) and others. | **Associated Technologies:-**   * Frameworks for Ajax and JavaScript * Microsoft.NET * Blogs * Wikis and others. | **Associated Technologies:-**   * Searching Using Semantics * Databases of Information * Ontologies * Intelligent Digital Personal Assistants and others. |

Hence, these were the major difference between Web 1.0, Web 2.0, and Web 3.0 having their own uniqueness. All three were used at their respective time and revolutionized the world of the web accordingly.