What is Web 1.0?

Web 1.0 is known as the **first generation of the World Wide Web**, which existed roughly between **1991 and 2004**. During this time, **very few people created content**, and most users just **read or viewed** the information available on websites.

In this stage:

- People mostly had **personal websites** with **static (unchanging) pages**.
- These pages were usually hosted on servers run by Internet Service Providers (ISPs) or through **free web hosting platforms**.
- Websites mainly showed information – **no interaction or user feedback** was involved.
- **Advertising** on websites was not allowed during this time.
- One example from Web 1.0 is **Ofoto**, a website where people could **store, view, share, and print digital photos online**.
- Web 1.0 used a **Content Delivery Network (CDN)** model, where websites were used just to **showcase content**. Users were **charged based on the number of pages they visited**. Also, the system used **directories** to help people **find specific information easily**.
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Main Features of Web 1.0:

- **Static web pages** (the content didn't change unless updated manually).
- Pages were created using **Server Side Includes (SSI)** or **Common Gateway Interface (CGI)**.
- Content came directly from the **server's file system**.
- Layout was managed using **frames and tables**.
- **Low user interaction** – users could only read, not respond.
- Supported **HTML 3.2**, **GIF images**, and **buttons**.
- Users could **submit forms via email**.
- It was mostly a **one-way communication** — from the website to the user.

What is Web 2.0?

Web 2.0 is the **second stage** in the evolution of the internet. The term became popular in **2004** during the **first Web 2.0 Conference** (later called the Web 2.0 Summit), organized by **Tim O'Reilly** and **Dale Dougherty**. However, the phrase **"Web 2.0"** was first used in **1999 by Darcy DiNucci**.

Unlike Web 1.0, where users only read content, **Web 2.0 focuses on user participation**. People can **create, share, and interact** with content. That's why it's often called the **"participative" or "social web."**

It doesn't mean that there were big changes in technology, but it changed **how websites were designed and used**—making them **more interactive and user-friendly**.

Now, users are not just visitors, they also **create content**, comment, share, and interact through social media, blogs, wikis, and more. Web 2.0 is an **improved version of Web 1.0** with **more collaboration and communication**.

Technologies Used in Web 2.0:

Web 2.0 websites are built using web browser technologies like:

- **AJAX (Asynchronous JavaScript and XML)**
- **JavaScript frameworks**

These tools help create websites that are **fast, dynamic, and responsive** to users' actions.

Key Features of Web 2.0:

- **Users can freely sort, organize, and share information.**
- **Dynamic content**: Websites respond and update based on user actions.
- **Two-way communication**: Users can comment, give feedback, and interact with site owners.
- **APIs (Application Programming Interfaces)** are used to let other software access and use services.

- **More diverse user base**: Web access is no longer limited; more people from different backgrounds use it.

Uses of Web 2.0:

Web 2.0 is the foundation of the **social web**—platforms and tools where people:

- Share their **thoughts**, **opinions**, and **experiences**.
- **Interact** directly with other users and content.
- Become **active participants** instead of just passive viewers.

Some common Web 2.0 tools include:

1. Blogs
2. Wikis
3. Social media (like Facebook, Twitter)
4. Video sharing (YouTube)
5. Podcasting
6. Forums
7. Web-based applications
8. Collaborative platforms (like Google Docs)

What is Web 3.0?

Web 3.0 is the **next generation of the internet**, focused on making the web **smarter, more secure, and more personalized**. It shifts from just showing information (like in Web 1.0) or interacting with it (like in Web 2.0) to a web that understands, connects, and **processes data like a human would** — but with the power of machines.

One major part of Web 3.0 is the use of **blockchain** and **DLT (Distributed Ledger Technology)**. These technologies help create **smart contracts** — agreements that happen automatically based on data, without needing a middleman.

While Web 2.0 focused mostly on the **frontend (design and user interaction)**, Web 3.0 upgrades the **backend (data, logic, and security)**.

Web 3.0 also changes how data is used. Instead of being owned by companies, data can be **shared securely** and **controlled by the users themselves**.

Semantic Web (A Key Part of Web 3.0)

Web 3.0 also includes the **Semantic Web**, which helps computers understand the **meaning** of data (not just keywords).
It uses special languages like **OWL (Web Ontology Language)** to build **ontologies**—these are structures that help machines understand and reason with data.

This means that computers can **analyze information more intelligently** and even **draw new conclusions**, not just match search terms.

Key Features of Web 3.0

1. **Semantic Web**
    - Helps machines understand the **meaning of content**, not just words.
    - Improves searching and data linking based on meaning.
2. **Artificial Intelligence (AI)**
    - Combines with **natural language processing** so that computers can understand and deliver **relevant, human-like responses**.
3. **3D Graphics**
    - Used in websites, games, virtual tours, e-commerce, and more.
    - Offers a more **immersive experience** to users.
4. **Connectivity**
    - Data is better connected using **semantic metadata**, making user experiences **smarter and more useful**.
5. **Ubiquity**
    - Content can be accessed across **many apps and devices**, anytime and anywhere.
6. **DLT (Distributed Ledger Technology) & Smart Contracts**
    - Blockchain-based systems allow for **secure, tamper-proof records**.

- **Smart contracts** run automatically based on conditions, without needing a third party.
- Enables **digital ownership**, **trustless transactions**, and **greater online freedom**.

Conclusion

Web 3.0 is still evolving but promises a future where:

- **Users own their data**
- **Web experiences are more intelligent**
- **Trust is built into the system using blockchain**
- **Applications are more powerful and personal**