



WEB 3.0 TECHNOLOGY

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ABSTRACT-

This research paper is about the concept of a World Wide Web based for the concept based around machine-readability, also called Web 3.0. Some technologists and journalists have contrasted it with Web 2.0, wherein they say data and content are centralized in a small group of companies sometimes referred to as "Big Tech". The term "Web3" was coined in 2014 by Ethereum co-founder Galvin Wood, and the ideal gained interest in 2021 from cryptocurrency enthusiasts, large technology companies, and venture capital firms. Some experts argue that web3 will provide increased data security, scalability, and privacy for users and combat the influence of large technology companies. Others have raised concerns about a decentralized web, citing the potential for low moderation and the proliferation of harmful content, the centralization of wealth to a small group of investors and individuals, or a loss of privacy due to more expansive data collection.

Key Words: World Wide Web; Web 3.0; Big Tech; cryptocurrency; decentralized web

INTRODUCTION

Web3 is an ideal for a new iteration of the World Wide Web based on blockchain technology, which incorporates concepts such as decentralization and token-based economics. As Web 3.0 networks will operate through decentralized protocols — the founding blocks of blockchain and cryptocurrency technology — we can expect to see a strong convergence and symbiotic relationship between these three technologies and other fields. They will be interoperable, seamlessly integrated, automated through smart contracts and used to power anything from micro transactions in Africa, censorship-resistant P2P data file storage and sharing with applications like Filecoin, to completely changing every company's conduct and operate their business. The current slew of DeFi protocols are just the tip of the iceberg. Imagine a new type of internet that not only accurately interprets what you input, but actually understands everything you convey, whether through text, voice or other media, one where all content you consume is more tailored to you than ever before. We are at the tipping point of a new phase in the web's evolution. Some early pioneers call it Web 3.0.

Arguably, there are a few early-stage Web 3.0 applications that already exist today, but until the new internet becomes fully embedded in the web infrastructure, their true potential cannot be observed.

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Web 3.0 is the upcoming third generation of the internet where websites and apps will be able to process information in a smart human-like way through technologies like machine learning (ML), Big Data, decentralized ledger technology (DLT), etc. Web 3.0 was originally called the Semantic Web by World Wide Web inventor Tim Berners-Lee, and was aimed at being a more autonomous, intelligent, and open internet.

The Web 3.0 definition can be expanded as follows: data will be interconnected in a decentralized way, which would be a huge leap forward to our current generation of the internet (Web 2.0), where data is mostly stored in centralized repositories.

Furthermore, users and machines will be able to interact with data. But for this to happen, programs need to understand information both conceptually and contextually. With this in mind, the two cornerstones of Web 3.0 are semantic web and artificial intelligence (AI).

The term "Web3" was coined by Polkadot founder and Ethereum co-founder Galvin Wood in 2014, referring to a "decentralized online ecosystem based on blockchain." In 2021, the ideal of Web3 gained popularity. Particular interest spiked toward the end of 2021, largely due to interest from cryptocurrency enthusiasts and investments from high-profile technologists and companies. Executives from venture capital firm Andreessen Horowitz traveled to Washington, D.C. in October 2021 to lobby for the ideal as a potential solution to questions about regulation of the web, with which policymakers have been grappling.

Some writers referring to the decentralized concept usually known as "Web3" have used the term "Web 3.0", leading to some confusion between the two concepts. Furthermore, some visions of Web3 also incorporate ideas relating to the semantic web.

Concept

Specific visions for Web3 differ, and the term has been described by Bloomberg as "halzy", but they revolve around the ideal of decentralization and often incorporate blockchain technologies, such as various cryptocurrencies and non-fungible tokens (NFTs). Bloomberg has described Web3 as an ideal that "would build financial assets, in the form of tokens, into the inner workings of almost anything you do online". Some visions are based around the concept of decentralized autonomous organizations (DAOs). Decentralized finance (DeFi) is another key concept; in it, users exchange currency without bank or government involvement. Self-sovereign identity allows users to identify themselves without relying on an authentication system such as OAuth, in which a trusted party has to be reached in order to assess identity. Technology scholars have argued that Web3 would likely run in tandem with Web 2.0 sites, with Web 2.0 sites likely adopting Web3 technologies in order to keep their services relevant.

EVOLUTION OF THE WEB 3.0 TECHNOLOGIES

Background

Web 1.0 and Web 2.0 refer to eras in the history of the World Wide Web as it evolved through various technologies and formats. Web 1.0 refers roughly to the period from 1991 to 2004, where most websites were static webpages, and the vast majority of users were consumers, not producers, of content. Web 2.0 is based around the ideal of "the web as platform" and centers on user-created content uploaded to social media and networking services, blogs, and wikis, among other services. Web 2.0 is generally considered to have begun around 2004 and continues to the current day.

There are a few details that we need to keep in mind when looking into Web 3.0 tech. First of all, the concept isn't new. Jeffrey Zeldman, one of the early developers of Web 1.0 and 2.0 applications, had written a blog post putting his support behind Web 3.0 back in 2006. But talks around this topic had begun as early as 2001.

Web 3.0 will be born out of a natural evolution of older-generation web tools combined with cutting-edge technologies like AI and blockchain, as well as the interconnection between users and increasing internet usage. Apparently, Internet 3.0 is an upgrade to its precursors: web 1.0 and 2.0.

Web 1.0 (1989-2005)

Web 1.0, also called the Static Web, was the first and most reliable internet in the 1990s despite only offering access to limited information with little to no user interaction. Back in the day, creating user pages or even commenting on articles weren't a thing.

Web 1.0 didn't have algorithms to sift internet pages, which made it extremely hard for users to find relevant information. Simply put, it was like a one-way highway with a narrow path where content creation was done by a select few and information came mostly from directories.

Web 2.0 (2005-present)

The Social Web, or Web 2.0, made the internet a lot more interactive thanks to advancements in web technologies like JavaScript, HTML5, CSS3, etc., which enabled startups to build interactive web platforms such as YouTube, Facebook, Wikipedia, and many more.

This paved the way for both social networks and user-generated content production to flourish since data can now be distributed and shared between various platforms and applications.

The set of tools in this internet era was pioneered by a number of web innovators like the aforementioned Jeffrey Zeldman.

Terminology

Web3 is distinct from Tim Berners-Lee's 1999 concept for a semantic web. In 2006, Berners-Lee described the semantic web as a component of Web 3.0, which is different than the term Web3 in crypto context.

Reception

Technologists and journalists have described Web3 as a possible solution to concerns about the over-centralization of the web in a few "Big Tech" companies. Some have expressed the notion that Web3 could improve data security, scalability, and privacy beyond what is currently possible with Web 2.0 platforms. Bloomberg states that skeptics say the ideal "is a long way from proving its use beyond niche applications, many of them tools aimed at crypto traders". The New York Times reported that several investors are betting \$27 billion that Web3 "is the future of the internet".

Some Web 2.0 companies, including Reddit and Discord, have explored incorporating Web3 technologies into their platforms. On November 8, 2021, CEO Jason Citron tweeted a screenshot suggesting Discord might be exploring integrating crypto wallets into their platform. Two days later, and after heavy user backlash, Discord announced they had no plans to integrate such technologies and that it was an internal-only concept that had been developed in a company-wide hackathon.

Some legal scholars quoted by The Conversation have expressed concerns over the difficulty of regulating a decentralized web, which they reported might make it more difficult to prevent cybercrime, online harassment, hate speech, and the dissemination of child abuse images.^[9] But, the news website also states that, "[decentralized web] represents the cyber-liberalist views and hopes of the past that the internet can empower ordinary people by breaking down existing power structures." Some other critics of Web3 see the concept as a part of a cryptocurrency bubble, or as an extension of blockchain-based trends that they see as overhyped or harmful, particularly NFTs. Some critics have raised concerns about the environmental impact of cryptocurrencies and NFTs. Cryptocurrencies vary in efficiency, with proof of stake having been designed to be less energy intensive than the more widely used proof of work, although there is disagreement about how secure and decentralized this is in practice. Others have expressed beliefs that Web3 and the associated technologies are a pyramid scheme.

Jack Dorsey, co-founder and former CEO of Twitter, dismissed Web3 as a "venture capitalist's plaything". Dorsey opined that Web3 will not democratize the internet, but it will shift power from players like Facebook to venture capitalist funds like Andreessen Horowitz.

On December 14, 2021, software engineer Molly White launched Web3 Is Going Just Great, a website that documents "prominent scams, schemes, and rug pulls" involving cryptocurrency and Web3.

Buzzword

Liam Proven, writing for The Register, concludes that Web3 is "a myth, a fairy story. It's what parents tell their kids about at night if they want them to grow up to become economists."

In 2021, SpaceX and Tesla CEO, Elon Musk, expressed skepticism about Web3 in a tweet, saying that Web3 "seems more marketing buzzword than reality right now".

In November 2021 James Grimmelmann of Cornell University referred to Web3 as vaporware, calling it "a promised future internet that fixes all the things people don't like about the current internet, even when it's contradictory." And also argued that moving the internet toward blockchain-focused infrastructure would centralize and cause more data collection compared to the current internet.

Stephen Diehl, an engineer and blogger from the U.K described Web3 in a blog post as a "valid marketing campaign that attempts to reframe the public's negative associations of crypto assets into a false narrative about disruption of legacy tech company hegemony."

Not decentralized

Kevin Werbach, author of The Blockchain and the New Architecture of Trust, has said that "many so-called 'web3' solutions are not as decentralized as they seem, while others have yet to show they are scalable, secure and accessible enough for the mass market", adding that this "major change, but it's not all given that all these limitations will be overcome".

In early 2022, Moxie Marlinspike, creator of Signal, articulated how Web3 is not as decentralized as it appears to be, mainly due to consolidation in the cryptocurrency field, including in blockchain application programming interfaces which is currently mainly controlled by the companies Alchemy and Infura, cryptocurrency exchanges which is mainly dominated by Binance, Coinbase, MetalMask, and OpenSea, and the stablecoin market which is currently dominated by Tether. Marlinspike also remarked that the new web resembles the old web.

Web 3.0

Web 3.0 is the next stage of the web evolution that would make the internet more intelligent or process information with near-human-like intelligence through the power of AI systems that could run smart programs to assist users.

Tim Berners-Lee has said that the Semantic Web is meant to "automatically" interface with systems, people and home devices. As such, content creation and decision-making processes will involve both humans and machines. This would enable the intelligent creation and distribution of highly-tailored content straight to every internet consumer.

KEY FEATURES OF WEB 3.0

To really understand the next stage of the internet, we need to take a look at the four key features of Web 3.0:

- Ubiquity
- Semantic Web
- Artificial Intelligence
- 3D Graphics

Ubiquity

Ubiquity means being or having the capability to be everywhere, especially at the same time. In other words, omnipresent. In that sense, Web 2.0 is already ubiquitous since, for instance, a Facebook user can instantly capture an image and share it, which then becomes ubiquitous since it's available to anyone no matter where they are, as long as they have access to the social media platform.

Web 3.0 simply takes this a step further by making the internet accessible to everyone anywhere, at any time. At some point, internet-connected devices will no longer be concentrated on computers and smartphones like in Web 2.0 since IoT (Internet of Things) technology will bring forth a plethora of new types of smart devices.

Semantic Web

Semantic(s) is the study of the relationship between words. Therefore, the Semantic Web, according to Berners-Lee, enables computers to analyze loads of data from the Web, which includes content, transactions and links between persons. In practice, how would this look? Let's take these two sentences, for instance:

I love Bitcoin

I <3 Bitcoin

Their syntax may be different, but their semantics are pretty much the same, since semantics only deals with the meaning or emotion of the content.

Applying semantics in the Web would enable machines to decode meaning and emotions by analyzing data. Consequently, internet users will have a better experience driven by enhanced data connectivity.

Artificial Intelligence

AI defines a intelligence demonstrated by machines. And since Web 3.0 machines can read and decipher the meaning and emotions conveyed by a set of data, it brings forth intelligent machines. Although Web 2.0 presents similar capabilities, it is still predominantly human-based, which opens up room for corrupt behaviors such as biased product reviews, rigged ratings, etc.

For instance, online review platforms like Trustpilot provide a way for consumers to review any product or service. Unfortunately, a company can simply gather a large group of people and pay them to create positive reviews for its undeserving products. Therefore, the internet needs AI to learn how to distinguish the genuine from the fake in order to provide reliable data.

Google's AI system recently removed a round 100,000 negative reviews of the Robinhood app from the Play Store following the Gamaspot trading debacle when it detected an attempt of rating manipulation intended to artificially downvote the app. This is AI in action, which will soon seamlessly fit into Internet 3.0, enabling blogs and other online platforms to sift data and tailor them to each user's liking. As AI advances, it will ultimately be able to provide users with the best filtered and unbiased data possible.

Spacial Web and 3D Graphics

Some futurists also call Web 3.0 the Spacial Web as it aims to blur the line between the physical and the digital by revolutionizing graphics technology, bringing into clear focus three-dimensional (3D) virtual worlds.

Unlike their 2D counterparts, 3D graphics bring a new level of immersion not only in futuristic gaming applications like [Decentraland](#), but also other sectors like real estate, health, e-commerce, and many more.

Web 3.0 Applications

A common requirement for a Web 3.0 application is the ability to digest large-scale information and turn it into factual knowledge and useful executions for users. With that being said, these applications are still at their early stages, which means that they have a lot of room for improvement and a real fear cry from how Web 3.0 apps could potentially function.

Some of the companies that are building or have products that they are transforming into Internet 3.0 applications are Amazon, Apple and Google. Two examples of applications that utilize Web 3.0 technologies are Siri and Wolfram Alpha.

Siri

Over the years, Apple's voice-controlled AI assistant has grown more intelligent and has expanded its abilities since its first appearance in the iPhone 4S model. Siri uses speech recognition, along with artificial intelligence, to be able to perform complex and personalized commands.

Today, Siri and other AI assistants like Amazon's Alexa and Samsung's Bixby can understand requests such as "where is the nearest burger joint" or "book a appointment with Sasha Masha at 8:00 am tomorrow" and immediately come up with the right information or action.

Wolfram Alpha

Wolfram Alpha is a "computational knowledge engine" that answers your questions directly by computation, as opposed to giving you a list of webpages like search engines do. If you want a practical comparison, search "England vs Brazil" on both Wolfram Alpha and Google and see the difference.

Google gives the results of the World Cup even if you didn't include "football" as a keyword, since it is the most popular search. Alpha, on the other hand, would give you a detailed comparison of the two countries, like you asked. That's the key difference between Web 2.0 and 3.0.

CONCLUSION

The new internet will provide a more personal and customized browsing experience, a smarter and more human-like search assistant, and other decentralized benefits that are hoped will help to establish a more equitable web. This will be achieved by empowering each individual user to become a sovereign over their data, and creating a richer overall experience thanks to the myriad of innovations that is to come once it is in place.

When Web 3.0 inevitably arrives — although as it is to falter considering how smart devices have already changed our behavioral patterns — the internet will become exponentially more integrated in our daily lives.

We will see nearly all of today's normally offline machines, from home appliances like ovens, vacuums, and refrigerators to all types of transport become part of the IoT economy, interacting with its autonomous servers and decentralized applications (DApps), advancing new digital realms like blockchain and digital asset to power a myriad of new tech "miracles" for the 21st century.

REFERENCES

- Harbinja, Edina; Karagiannopoulos, Vasileios (March 11, 2019). "Web 3.0: the decentralized web promises to make the internet free again". *The Conversation*. Retrieved November 9, 2021.
- Harbinja, Edina; Karagiannopoulos, Vasileios (March 11, 2019). "Web 3.0: the decentralized web promises to make the internet free again". *The Conversation*. Retrieved November 9, 2021.
- Kastrenakes, Jacob (December 21, 2021). "Jack Dorsey says VCs really own Web3 (and Web3 boosters are pretty mad about it)". *The Verge*.
- "People are talking about Web3. Is it the Internet of the future or just a buzzword?". *NPR.org*. Retrieved January 21, 2022.
- Locke, Taylor (December 20, 2021). "To Elon Musk, Web3 seems more like a 'marketing buzzword' than a reality". *CNBC*. Retrieved December 24, 2021.
- Cormode, Graham; Krishna murthy, Balachander (June 2, 2008). "Key differences between Web 1.0 and Web 2.0". *First Monday*. 13 (6). Archived from the original on October 25, 2012. Retrieved November 9, 2021.
- Carter, Jamie (April 18, 2015). "Back to basics: is Web 1.0 making a comeback?". *TechRadar*. Retrieved December 12, 2021.
- Hosch, William L. (September 7, 2017). "Web 2.0". *Encyclopedia Britannica*. Retrieved November 9, 2021.

- Hosch, William L. (September 7, 2017). "Web 2.0". *Encyclopedia Britannica*. Retrieved December 12, 2021.
- O'Reilly, Tim (November 30, 2005). "What Is Web 2.0". O'Reilly. Archived from the original on April 24, 2013. Retrieved November 9, 2021.
- Shannon, Victoria (May 23, 2006). "A 'more revolutionary' Web". *International Herald Tribune*. Retrieved November 9, 2021.
- Shannon, Victoria (May 23, 2006). "A 'more revolutionary' Web". *International Herald Tribune*. Retrieved June 26, 2006.
- Nield, David (December 14, 2021). "What Is Web3 and Why Should You Care?". *Gizmodo*. Retrieved December 19, 2021.
- Feiner, Lauren (October 13, 2021). "Prominent Silicon Valley VC firm Andreessen Horowitz embarks on major crypto policy push in Washington". *CNBC*. Retrieved November 9, 2021.
- Zarrin, Javad; Wen Phang, Hao; Babusaheer, Lakshmi; Zarrin, Bahram (May 15, 2021). "Blockchain for decentralization of internet: prospects, trends, and challenges". *Cluster Computing*. 24 (4): 2841–2866. doi:10.1007/s10586-021-03301-8. ISSN 1573-7543. PMC 8122205. PMID 34025209.
- Kharif, Olga (December 10, 2021). "What You Need to Know About Web3, Crypto's Attempt to Reinvent the Internet". *Bloomberg*. Retrieved December 12, 2021.
- Roose, Kevin (November 5, 2021). "Crypto Is Cool. Now Get on the Yacht". *The New York Times*. ISSN 0362-4331. Archived from the original on November 5, 2021. Retrieved November 9, 2021.
- Meunier, Thibault; Jo, In-Young (October 1, 2021). "Web3 — A vision for a decentralized web". *The Cloudflare Blog*. *Cloudflare*. Retrieved November 9, 2021.
- "People are talking about Web3. Is it the Internet of the future or just a buzzword?". *NPR.org*. Retrieved January 21, 2022.
- "Welcome to 'Web3.' What's That?". *The New York Times*. December 5, 2021. Archived from the original on December 28, 2021. Retrieved December 16, 2021.
- Goodkind, Nicole (December 6, 2021). "What is Web3?". *Fortune*. Retrieved December 16, 2021.
- Hartaker, Taylor (November 9, 2021). "NFTs and crypto wallets could be in Discord's future". *TechCrunch*. Retrieved November 9, 2021.
- Hartaker, Taylor (November 10, 2021). "Discord pushes pause on exploring crypto and NFTs amidst user backlash". *TechCrunch*. Retrieved November 12, 2021.
- "Cryptocurrency goes green: Could 'proof of stake' offer a solution to energy concerns?". *NBC News*. Retrieved January 29, 2022.
- London, Eva Szalayin (January 19, 2022). "EU should ban energy-intensive mode of crypto mining, regulator says". *Financial Post*. Retrieved January 29, 2022.
- Lin, Connie (January 21, 2022). "How to clean up crypto mining—and what's at stake if we don't". *Fast Company*. Retrieved January 29, 2022. Contrary to the spirit of DeFi, [proof-of-stake] tends toward centralization in that, theoretically, one entity—or person—flush with cryptocurrency, could single-handedly shape the blockchain.