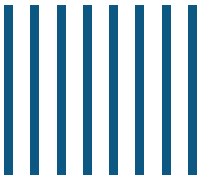

Web 3.0
The Internet of the New Era

# Table of contents





# Overview

The internet has been growing exponentially over decades. Initially in its earliest forms, no one could comprehend the full potential of it and its impact upon us. In the 60s and the 70s, computer networking was limited to research and communication purposes and there was no commercial application permitted. As advancements took place, the number of applications grew significantly, and it has all led us to where we are now.

**Web 1.0:** Web 1.0 was majorly a military computer network called the Advanced Research Projects Agency Network (ARPANET) which was the first full-fledged working prototype of the modern-day internet. The aim was to develop the computing power that overcame geographic limitations and to enhance the posture of the US military. The ARPANET developments were directed towards academia in the later stages and as more academic institutions joined, a web of interconnected universities was created.

- **Web 1.0 was basically 'read-only' in nature**
- **The web pages were mostly connected by hyperlinks, and it wasn't interactive**
- **It was called the era of static web pages**
- **It was read-only and most of the content was written offline**

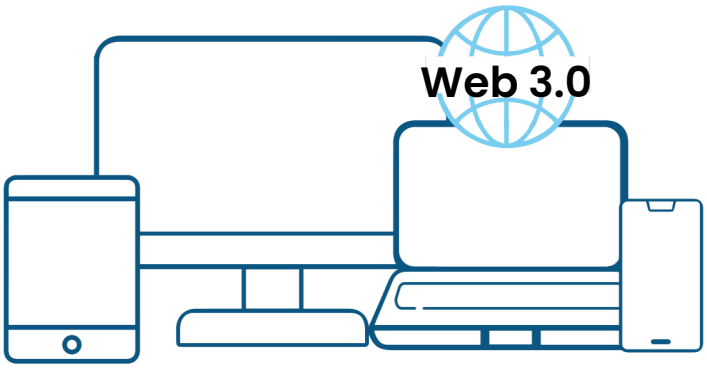
**Web 2.0:** It is the most prevalent form of the web, the one we use today.

- **The key features of Web 2.0 are - fast, vast, and highly interactive.**
- **Web 2.0 takes an active approach in contrast to Web 1.0's passive approach; the users are mainly the ones who provide content and curate the web.**
- **With the rapid increase in internet penetration and push for digitalization, globally the status of the internet has shifted from just good 'to have' to a 'must have' for business and personal growth.**
- **Current innovations such as smartphones, mobile Internet access, and social networks have been the key factors for the exponential growth of Web 2.0.**

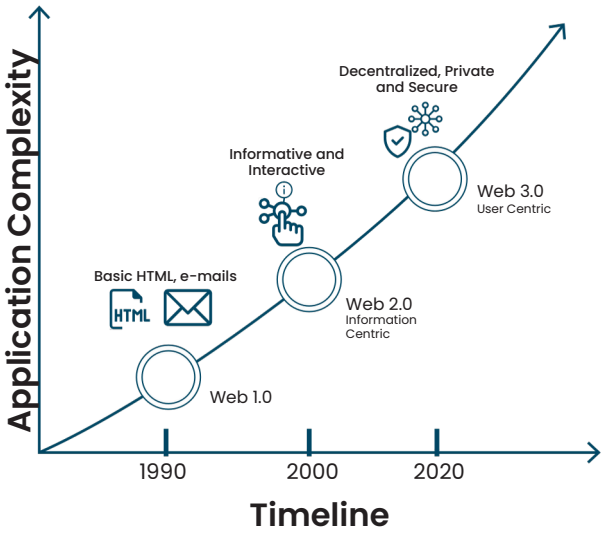
## Key differences between Web 1.0, 2.0 and 3.0:

| Area | Web 1.0 | Web 2.0 | Web 3.0 |
|---|---|---|---|
| **Data** | Mostly Read-Only | Widley Read-Write | Portable and Personal |
| **Target audience** | Company Focus | Community Focus | Individual Focus |
| **Format** | Home Pages | Blogs / Wikis Sharing | Live streams / Waves |
| **Content** | Owning Content | Content | Consolidating Content |
| **Applications** | WebForms | Web Applications | Smart Applications |
| **Data analytics** | Directories | Tagging | User Behaviour |
| **Digital marketing** | Page Views | Cost Per Click | User Engagement |
| **Advertising** | Banner Advertising | Interactive Advertising | Behavioural Advertising |
| **Examples** | Britannica Online | Wikipedia | The Semantic Web |
| **Tech stack** | HTML/Portals | XML / RSS | RDF / RDFS / OWL |

# Web 3.0




(https://101blockchains.com/web-3-0-examples/)




Web 3.0 is the third iteration to the internet, that combines a bouquet of disruptive technologies such as blockchain, AR, VR, Cloud, Edge, IoT, Geolocation tech, 5G, digital twin and runs on an AI-based analytics layer for data-driven insights. The underlying blockchain technology enables trust through mathematical proof and smart contracts. This facilitates creation of a network with minimal managerial requisites, thereby helping drive the new internet economy as a group or individuals, rather than giving into the centralized controls of large tech giants. Web 1.0 introduced a new platform for digital content, and Web 2.0 gave us user-driven feedback, Web 3.0 represents a new phase in the internet's evolution i.e., a **visually dynamic, semantic and spatial Web**.

**Blockchain tech would serve as the backbone of Web 3.0.**

The goal of *Web 3.0 is to create an intelligent, autonomous, connected, and open internet.* Tim Berners Lee labelled Web 3.0 as the semantic web (Semantic Web technologies enable people to create data stores on the Web, build vocabularies, and write rules for handling data).

**"Web 3.0 represents the next iteration or phase of the evolution of the web/Internet and potentially could be as disruptive and represent as big a paradigm shift as Web 2.0. Web 3.0 is built upon the core concepts of decentralization, openness, and greater user utility."**

The impressive capabilities of Web 3.0 such as understanding information like a human, through hyper-intelligent networks, coupled with underlying secure digital ledger layer to track financial interactions, and convergence of AI, 5G telecommunications will open new avenues of growth and exploration for the digital ecosystem. It is forecasted to revolutionize the modus operandi of today's network and enhance it manifold. It has the potential to blur the lines between the physical and digital world and provide a seamless interaction.

The complete potential of Web 2.0 still hasn't been fully capitalized; there is still room for innovation and the creation of ground-breaking and industry disrupting applications. However, as next-gen technologies are being created and adopted, right from basic RPA to hyper-intelligent machines and autonomous environments. It is only natural that the internet also evolves at par with the environment. Web 3.0 has four foundational pillars: semantic *markup, blockchain and cryptocurrency, 3D visualisation, and artificial intelligence*.

## Defining Features of Web 3.0:

| | | | |
|---|---|---|---|
| Open or transparent | Trustless and permissionless | Decentralization | Artificial intelligence (AI) and machine learning |
| Semantic Web | 3D visualisation | Connectivity and ubiquity | Immersive |

**01**

### Open or transparent

One of the major characteristics of Web 3.0 is the open network, all applications and programs are developed using open-source software. Essentially the code for development, which is a virtual resource is public for the community and the development process is also kept transparent.

**02**

### Trustless and permissionless

The blockchain's peer-to-peer network helps siphon the need for an intermediary or governing body, that looks over the transactions and interactions happening over the internet. The centralized control over data by platform companies moves into the hands of the individuals using smart protocols over the blockchain that eliminate the need for third parties. Therefore, pushing a trustless and permissionless ecosystem.

**03**

### Decentralized

With the underlying blockchain technology, the data will not be stored in silos by gatekeepers of the internet. Instead with a distributed network of the Web 3.0, the data generated from smart devices, appliances, and sensors, can be sold by users through decentralized data networks, ensuring that users retain ownership control.

**04**

### Artificial Intelligence (AI) and machine learning

Web 3.0 will be able to assimilate and process data very similar to humans by using technologies based upon semantic web concepts and natural language processing. The underlying technology interprets and presents relevant results to search queries by analysing and iterating the search outputs in accordance with the user.

**05**

### 3D visualisation

By usage of augmented reality, virtual reality and mixed reality, Web 3.0 will be able to create a spatial web when combined with technologies such as IoT and digital twin. This will help maintain the real-life scale and experience. Examples: museum guides, operation theatre, assembly line, industrial machinery, automotive, computer games, eCommerce, geospatial contexts, etc.

**06**

### Semantic Web

The semantic web improves web technologies and assimilates information similar to a human, than a machine depending on keyword.S

**07**

### Connectivity and ubiquity

Web 3.0 with the help of IoT would emerge ubiquitously and will connect all smart devices. This will help in providing a 360-degree view of all assets and the rich data generated can also be analysed for drawing a range of insights depending on the users' needs.

**08**

### Immersive

The ongoing merger between the physical and virtual world can be seen by the dramatic growth of online gaming, digital twin architectural design, and augmented and virtual reality (AR/VR). Combining 5G and IoT, the ongoing evolution in computing and information technology is now moving to create a graphic-intensive commercial landscape.



## Difference between Web 2.0 and 3.0

| Area | Web 2.0 | Web 3.0 | Future prospect |
|---|---|---|---|
| **Type of web** | Social | Semantic and spatial | Web 3.0 will offer a more immersive experience that will offer information and services in XR |
| **Structure** | Oligopoly/ centralized | Decentralized | Web 3.0 has a blockchain enabled architecture that enables necessary decentralization. This is further augmented by a balanced economy, where creators and users are compensated for their time, effort, and information. |
| **Target audience** | Communities | Individuals | Web 3.0 is focused on reaching individual users, and offers a custom tailored experiences based on their online behavior |
| **Viewability** | 2D | Mix of 2D and 3D | Web 3.0 combines 2D and 3D by using immersive realities to render an enriched UX. |
| **Application type** | Apps | dApps | Using smart contracts dApps are self-executing and require minimum governance. |
| **App development** | Open code plus proprietary | 100% open source | This will provide complete transparency and will be available to everyone for inspection and development |

## Beyond the Platform Economy

01

Web 2.0 was majorly leveraged to capture and control the flow of data and advertise through centralized platforms. Web 3.0 is designed to use Distributed Ledger Technologies (DLT) like blockchain to support decentralized network security and storage. This allows the flow and management of data without a centralized control and minimum management.

02

Currently we use a hybrid model where it's a mix of centralized organizations and decentralized collaboration networks. Moving forward, the internet would be more open to all with an equal opportunity to monetize and grow. The key to it is the DLT that will enable the users to own and control their data.

03

Automated social organization can be referred to as a Decentralized Autonomous Organization (DAO) that will help grow Web 3.0 ecosystem further. DAO has the following features:

- Minimal hierarchical organizational management using software-driven contracts.
- Governance is executed by voting- DAOs leveraging the feedback loops provided by users.

## Benefits of WEB 3.0:

• **Semantic web:** The incorporation of technologies such as AI/ML improves the creation of applications in new areas and user interaction.

• **Data ownership and monetization:** Users will benefit from greater control and visibility over their personal data. This will limit the practice of data extraction.

- With blockchain technology as the backbone, users can directly interact with their peers through the network. It also allows complete ownership and control of their data and choose which websites they want to share their data with; users can decide on how and when their data is used with the help of applications and their private key. With the help of an internet connection and a crypto wallet they can bypass the middleman.
- While becoming the only custodians of their data, the responsibility to secure it also falls on them.

• **Anti-monopoly:** It will curb the network effects and wouldn't allow a single entity to have control.

• **Secure networks:** While using blockchain technology as a foundation, the data becomes immutable, transparent and hard to hack.

- All the transactions are self-executing smart contracts based on mathematical proofs.

• **Ubiquity and interoperability:** While leveraging technologies like IoT and cloud, Web 3.0 offers a common ground where all the technologies can merge, enabling a faster & higher amount of data to be processed.

- It ties up the physical world with the spatial web and spans all spheres of technologies.

### Three tiers of IT infrastructure and building the Spatial Web

**As the technologies and capabilities that compose and connect IT architecture converge, the Spatial Web will mature. The figure below shows how key enabling technologies drive their respective computing eras.**

| Architectural layer | Web 1.0 (1990s-2000s)* | Web 2.0 (2010s-2020s)* | Web 3.0/Spatial Web (2020s and beyond)* |
|---|---|---|---|
| Interaction | Desktop browser (cick and type) | Mobile touch screen (touch and swipe) | Wearable AR/VR, voice, and IoT devices (show and tell) |
| Computation | Situated server (via wire) | Cloud computing (via 3-4G) | Distributed computing (via AI, 5G + Edge) |
| Information | Structured(SQL) | Unstructured (big data) | Distributed ledger technology (blockchain) |

*Note: Date rages are approximate and ment for directional purposes only.
Source: Deloitte analysis adapted from Gabriel Rene and Dan Mapes, The Saptial Web: How WEb 3.0 Will Connect Humans, Machines, and AI to Transform the World (Amazon, 2019).



*https://www2.deloitte.com/us/en/insights/topics/digital-transformation/web-3-0-technologies-in-business.html*

# Web 3.0 and the Metaverse

Metaverse is the new way of using the internet, the experience while interacting is made more realistic and interactive by converting the 2D web into a three-dimensional virtual space. Instead of using desktops and mobile screens, one can enter this world of virtual reality using VR glasses. This simulated world allows users to carry out various functions such as gaming, shopping, etc. The scope is limitless as it can extend to any real-life scenario converted into virtual space using avatars. Right from professional collaboration to conducting a surgical operation, tactical training and simulating a high-risk environment, all of it can be done in the metaverse. The space is very nascent and limited now and requires a massive scaleup of the existing technologies and infrastructure and the user behaviour would be required to be shifted radically.

When it comes to Web 3.0 there are similarities and differences between both, right from function to operation to applications. The metaverse application can be based on Web 3.0's distributed internet. There can be several metaverses created by different organizations, but if there needs to be an element of interoperability linked then web 3.0 can help bridge this gap.

Simply put Web 3.0 is the next iteration to the internet and the Metaverse is an experience. There are many similarities and differences between the two. The Web 3.0 mainly propels the advancement of the internet from a de-centralized to a distributed network. On the other hand, the Metaverse tends to provide the experience that assimilates the feeling of the real world into a virtual space with the help of AR/VR/MR technology.

**To better understand the two, we can delve into the following areas:**

### Objectives

The objective of Web 3.0 is to create a decentralized web, where individuals can own, monetize, and control their data based on their discretion. The metaverse is a digital world where the users can interact with the physical world in a virtual environment using VR gear.

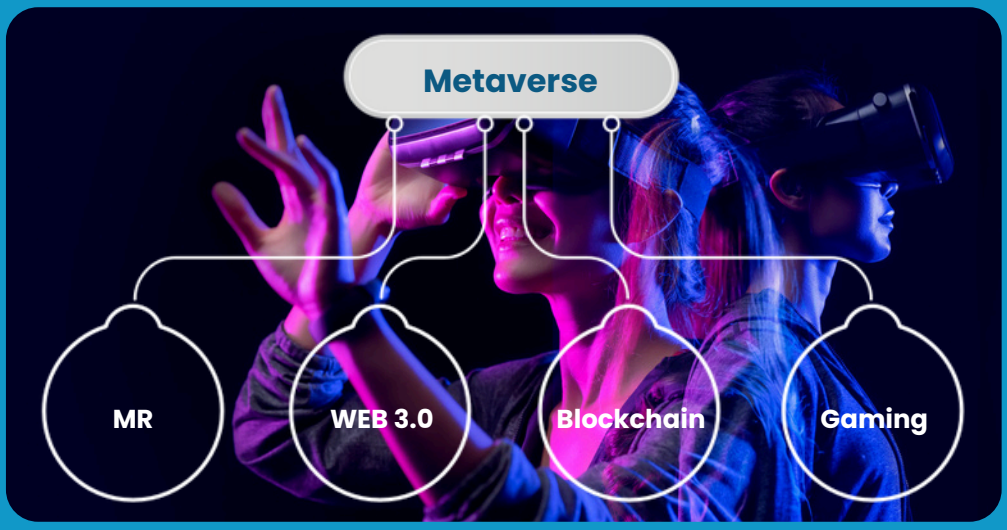
### Underlying technology

The metaverse and Web 3.0, both have blockchain as the key underlying technology. In the case of metaverse, an ecosystem needs to be created with connectivity, interfaces, decentralization, creator economy, experiences, and other enabling technologies such as IoT and AR/VR for experiencing a seamless metaverse. Web 3.0 deeply relies on blockchain tech for the creation of Non-Fungible Tokens (NFTs), Decentralized Autonomous Organizations (DAOs), Decentralized Finance (DeFi), and Decentralized Apps (Dapps). Web 3.0 is a concept that aims to shift the technology onto a distributed network.

### Scope of application

Metaverse is a newly emerging dimension that aims to enhance real-world applications and provide an interactive and immersive experience for current movies, entertainment, gaming, education, simulation-based training, and social platforms into one virtual platform. On the other hand, Web 3.0 can be considered as a standard for the new generation of the internet. It can be thought of as a new set of rules governing the internet.

All blockchain programs that would be built on the Web 3.0 engine can power the Metaverse goods and services. The NFTs and DApps can fit right into the metaverse. No single entity can control the internet, however, the metaverse will be centralized to a certain degree as the most prominent platforms will be hosted on centralized servers. Taking into consideration, the Web 3.0 internet remains as an open, trustless, and permissionless network that can give anyone access to the virtual world for free. Moving forward the key objective of them both is to work on new internet technologies that will change how people share, interact, and experience the digital world through the internet.




## Metaverse Applications:

• **Healthcare applications:** The deployment of augmented reality in the healthcare sector has substantial potential in training and strengthening skills and knowledge base of future medical professionals. Surgical assistive tools like the Microsoft Hololens that surgeons utilize to help them with remote operations and speed surgical procedures.

• **Military applications:** Military applications of AR and VR have seen considerable breakthroughs as well. Tactical Augmented Reality (TAR) is a technology that appears to be similar to Night-Vision Goggles (NVG), but it has many more capabilities. It may display a soldier's precise location as well as the positions of ally and hostile forces.

• **Real estate applications:** The capacity to give potential clients a realistic and immersive experience is VR's greatest strength. Real estate marketers may take advantage of this power by allowing clients to virtually experience the property before making a choice.

• **Current development towards Metaverse:** Meta (formerly Facebook) is considering opening retail stores to sell virtual reality, augmented reality, and other digital connection tools. Meta plans to get more of these tools into more homes to nudge users toward Meta's conception of the Metaverse, an immersive digital world of infinite possibilities. Physical stores can leverage to be more options to build direct-to-consumer supply chains while also facilitating new showcase opportunities to produce more sales.

## Industry betting big on Metaverse

**Tim Cook, Apple CEO** announced that Apple envisions a huge potential in the metaverse space and plans to invest in this technology accordingly.

- We're a company in the business of innovation and we have over 14,000 AR apps in the App Store. Apple CEO Tim Cook said that the company sees a "lot of potential" in metaverse and is investing in the technology

**Microsoft's** ambition in the metaverse is reflected in its **CEO Satya Nadella's** statement, Just like the first wave of the internet allowed everybody to build a website, I think the next wave of the internet will be a more open world, where people can build their own metaverse world, whether they are organisations or game developers or anyone else

- Microsoft is positioning its cloud services to be the fabric of the metaverse, using its Mesh Platform to enable avatars and immersive spaces to thread into the collaboration environments, such as Teams, over time

- "I believe the metaverse is the next chapter for the internet." **Mark Zuckerberg, Meta (Formerly- Facebook)**

- Leadership of tech company **'Nvidia'** believes that investing in metaverse simulations of such things as manufacturing and logistics will reduce waste and accelerate better business solutions.

- **Jensen Huang, Nvidia CEO**, said, "Omniverse or the Metaverse is going to be a new economy that is larger than our current economy." Many investors look for large addressable markets, so to hear a CEO state that a technology could surpass the size of our current economy is a statement to pay close attention to.

**Microsoft and NVIDIA** are already coming up with their own strategies to build around the metaverse. They believe the future to have a completely integrated virtual world and digital twins that resembles physical counterparts. They further added that technology will take a dramatic turn in the coming decade where every business is upgraded to a virtual space or more likely, to the metaverse.

Is the estimated Metaverse- maayr-kbet- 8s0iz0e-b iislli opnr-emdaicrktetd-n t

Has been invested in the Metaverse by Meta (Facebook)'s Reality labs Segement

Contract signed by Microsoft for Mixed Reality technology

Was the worth Metaverse in 2020

Raised by Epic Games for metaverse plans

**USD 200Mn** Investment from Sony for Epic games metaverse vision

**10.7Mn** Users participated in Fortnite concerts online

**USD 5.2Mn** Raised by Supersocial to make games on the Roblox platform

**10K** Jobs estimated to be created over a five-year period by Facebook

**50K** Individual creators have downloaded Nvidia Omniverse beat version

*https://earthweb.com/metaverse-statistics/
*https://www.bloomberg.com/professional/blog/metaverse-may-be-800-billion-market-next-tech-platform/

Within the metaverse, the cryptocurrencies and NFT's along with other digital assets created on the blockchain will play a pivotal role in process of value exchange within the metaverse and Web 3.0. Innovation and a robust infrastructure need to be prioritized as large enterprises, individual developers, SMEs and the governments work towards building the metaverse. The applications for new data monetization's methods, building digital assets and a digital financial ecosystem inclusive of investments, funding and trade needs to be built on a foundation of trust, that will come from creating global standards, best practices, and a secure framework. Decentralized autonomous organizations (DAOs) will take up the spotlight as industry disrupters with their mathematically created rules on a blockchain and a new way of conducting business.

# India Outlook

Web 3.0 can be a USD 1.1Tn* growth opportunity for India and help grow GDP in the next 11 years. in 2013, the market capitalization of the digital asset market was approximately $1.5 billion, and today, the market capitalization is at nearly $3.0 trillion. Web 3.0 can play a very crucial role in economy's overall growth. While we weren't the first movers in forging the internet, the adoption of Web 3.0 can open a new world of possibilities. The Semantic Web's effect will ripple across the world, and India can adapt and capitalize on this opportunity. Web 3.0 can help close the digital divide, propel innovation, and incentivise participation in the digital economy. The Government of India can chalk out a well-thought-out plan to be ready for the next internet revolution. The Ministry of Electronics and Information Technology (MeitY) has released a "National Strategy on Blockchain", which identifies 44 potential areas of using the technology and lays out the broad contours of how it can be leveraged across different sectors.

## Key Metaverse Statistics & Facts

- **Antler India** has committed to invest in 25-30 *shttatprtsu://pths einsm thaellb Bulosicnkecsshbaloing .annetd/m* years.
  - It plans to deploy $100 million - $150 million in over 100 Indian startups over the next 3 years, of which up to $50 million is committed to the Web 3.0 space.
  - The fund will make a minimum investment of $250,000 and will come in at a pre-product market fit stage.

- **Sequoia India** has made about 20 investments in Web 3.0 startups including Betafinance, Clearpool, Coinshift and Faze, through a combination of equity and token investments focused on consumer applications that get to scale.

- **International funds** have invested over $500 million this year in the Indian startups and blockchain ecosystem.

**https://www.business-standard.com/article/economy-policy/web-3-0-a-1-1-trn-growth-opportunity-for-india-usispf-crosstower-research-121120601207_1.html*
**https://thesmallbusinessblog.net/metaverse-statistics/*

# Challenges

As impressive as the idea of building Blockchain based solutions can be, it doesn't come without a few challenges. Building a good Blockchain based solutions can be complex. The addition of more layers on top of the Blockchain is required for ease of operation. This is to facilitate specific user functions such as the creation of tokens, integration of zero knowledge proof for privacy, and other additional requirements. The best way to incorporate more functions is through an Application Programming Interface (API). There are relevant APIs for different functions that can be customized as per requirement. This will help simplify the usage of the Dapps, the problem now arises from the fact that nearly all APIs rely on centralized software and infrastructure. This will be counterproductive to the idea of a distributed and open web, and the extensive use of API will lead to the centralization of critical blockchain functions. Leveraging open-source APIs can solve this issue to a great extent.

The second matter of concern is data privacy, governance, and regulations. As Web 3.0 would be an open internet with more power to the users, there might also be bad actors promoting hate speech, cybercrimes, and misinformation. This will create legal and regulatory nightmares for regional authorities. Problems such as data validation and suppression of fake news will arise. Policing such events will be complicated in terms of deciding the jurisdiction of governance and reaching a mutual understanding of the laws to be regulated. Every country will have its take on how the internet should be shaped and what sharing of what type of data would be in the best interest of people. The creation of frameworks, standards, and a list of best practices can help curb governance and regulation issues.

The third area of concern is centralized computing power. The basic Bitcoin Blockchain verifies data based on proof of work, in this when a majority of the miners agree on the creation of a new block through hashing, the new block is added. If a superpower decides to divert all its resources to mining, then the blocks added may be manipulated. This scenario is very unlikely however safeguards can be put in creating a threshold limit for mining activity.

The last area of concern is the ecological and sustainability issues. Mining requires enormous infrastructure, resources, and computing power globally. This can affect energy utilization and global warming. There are other blockchain protocols available such as proof of stake, proof of capacity, proof of elapsed time, proof of authority, and proof of activity that can be explored to minimize ecological impact and promote sustainable growth.

# Way Forward

Web 3.0 is the natural iteration of the internet technology. As all technologies evolve, the evolution of the internet is inevitable. As we progress, the business strategies and consumer behaviours will be designed in lir with the Spatial Web's growing ability to provide highly customized, personal, and intuitive interactions based on user data.

Web 3.0 may be in a very nascent stage right now, but the roots have been planted firmly, as a significant amount of work and effort is being put into this space. Much more effort will be required currently by the government and other stakeholders to realize its full potential and benefit from the spatial web. A reason to change needs to be given to the individuals along with proper incentivization to drive adoption.
Moving forward, the Spatial Web will present new opportunities to enhance the internets efficiency, experience, and communication exponentially. It will also help businesses draw a competitive advantage and venture into new avenues. The future of work in the post-COVID era can be very enticing with the possibilities of distributed social organization and new models of collaboration.

# Recommendations——

The need to warrant actions presently might seem untimely, as the technology is in a very nascent stage. However, it is imperative to act now to be able to shape, prepare and benefit from this upcoming internet revolution. The road map for action plans may vary from industry to industry. Nonetheless, the following recommendations will benefit everyone:

**Focus on interoperable and ethical standards:** For making Web 3.0 a strong propellant of economic growth for all organizations and individuals alike, prompt actions need to be taken by industry associations and business committees to have an open, ethical, and interoperable systems through the creation of solid standards.

A

**Exploration in the field of IoT and geolocation:** As the Spatial Web is intended to close the barrier between the real and the virtual, exploration in the field of sensors is much needed. Today almost all objects and appliances are made smart and are emitting insightful data that can be captured and analysed. IoT sensor enhancements, combined with the geo-location tech can help drive impactful business insights and mirror the physical world in the virtual plane.

B

**Adopt technology while being cognizant of your end goal:** While adding new tech stacks or integrating cutting-edge solutions, always have the end goal in mind and adopt the appropriate technologies that will help you reach your target destination. If you are working in a manufacturing setup, technologies such as digital twin and geolocation can help chalk out your asset state and location of the product. Adding AI/ML, IoT, and blockchain tech along with AR/VR can provide benefits of authenticity, real time data ingestion and analysis, and virtual access to the factory floor.

C

**Build with the future in mind.** Most large companies have already started working with many of the technologies enabling the Spatial Web, but often they aren't building with that end-state in mind. This can cause them to miss valuable efficiencies. For example, start looking for ways to streamline and connect 3D assets—if you're a manufacturing company, bring 3D product models from product ideation to factory technician training, all the way through to marketing and customer support. For other types of business, it may help in maintaining inventory, boost production/sales and business growth and marketing channels.

D

# Ecosystem Players

**Crypto Wallet**
METAMASK
imToken

**Gaming**
REVV RACING

**DeFI**
tether
UMA
Bancor
SYNTHETIX

**DAO**
Balancer
Olympus

**Advertisement**
adXchain
Adrealm

**Programming**
GO
SOLIDITY
Dart
parity substrate
Rust

**Scaling**
polygon
loom

**Oracles**
Chainlink
Band Protocol

**Interledger**
OneLedger
ripple

**Data/File**
IPFS
swarm

**Shard**
NEAR
zilliqa

**Interoperability**
Polkadot
COSMOS

Smart contract | Proof of Work [PoW] | Proof of History [PoH] | Proof of Stake [PoS] | Proof of Activity [PoA]

SOLANA
CARDANO
vechain

## INFRASTRUCTURE

**Tech Stack for DAO [Protocols and Interfaces]**
DAOstack

**Development Suite [APIs & Tools]**
INFURA

**Data Storage & Retrieval [Decentralized Storage Network]**
Filecoin

**Audio Streaming [Streaming & Fanbase Platform]**
AUDIUS

**Decentralized Cloud Infra [Blockchain-as-Service]**
Flux

**Network for IoT [Decentralized Wireless Infra]**
helium

**Indexing protocol for Querying [Open API | Like google Index]**
the graph

**Network for Developers [Blockchain of blockchains]**
Polkadot

**Video Streaming [DApp, NFT, API, P2P]**
THETA

**Complex Computation [Off Chain Execution]**
truebit

**APIs and Tools [Web3 Development]**
alchemy

**Interoperability of Smart Contracts**
Juno

## DeFi

**Exchange Liquidity Pool [Stable Coin Exchange]**
Curve

**Deposit & Lending [P2P] [Liquidity Protocol]**
AAVE

**Crypt Launchpad**
TrustSwap

**Cryptocurrency Auction**
POLKASTAR

**Decentralized Credit [Crypto Loans without Collateral]**
Goldfinch

**Interest Rate Protocol [Community Governed]**
Compound

**Stable Decentralized Currency [Associated with US Dollar]**
MAKER

**Middleware Protocol for DeFi [Manage Multiple DeFi Apps]**
INSTADAPP

**Web3 Data Economy [Ocean Liabraries]**
ocean

**Privacy Preserving DeFi [Array of Apps]**
shade

**World's DAO- Directed Treasury [Investing in DeFi]**
BitDAO
EVERY BIT COUNTS

**Global Payment [High Performance Payment]**
ripple

## DAO and SOCIAL CAUSES

**Legal Engineering Guild [Open Legal Infrastructure]**
LexDAO

**Funding Hollywood Movies [Movie Finance Democratization]**
HOLLYWOODDAO

**Engage to Earn [Pay for Social Media Use]**
ELONGATE

**Restoring Earth's Body [Financing NGO by Taxing]**
AQUARI

**Saving and Reward [Lottery Platform]**
pool together

**Global Coin for UBI [Eye Scan for UBI]**
WORLDCOIN

**Decentralized Blogging [Turn Writing into NFTs]**
Mirror

**Funding Artists & Creators [Prioritize BIPOC & LGBTQIA]**
MINT FUND

**Employment Cooperative [Benefits to Gig Workers]**
OPOLIS

**DeFi for Causes [Holders, Environment, Causes]**
AnjiEco

**Carbon Offset Coin [Reward for Removing Carbon]**
terrapass

**Donate Tree [DApp for Tree Plantation]**
rTrees