

**al6z**

# **How to Win the Future: An Agenda for the Third Generation of the Internet**

**October 2021**

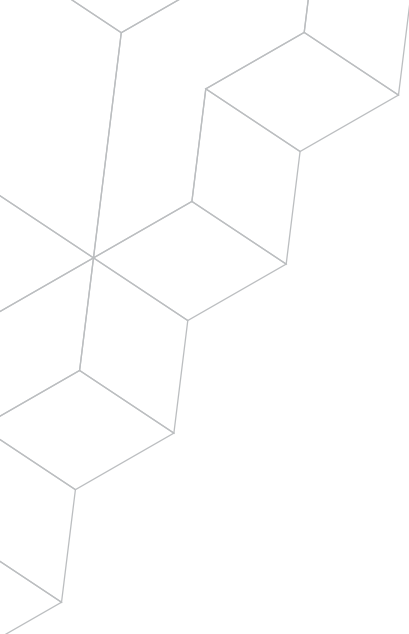


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# Foreword





web3—a group of technologies that encompasses blockchain, cryptographic protocols, digital assets, decentralized finance and social platforms, NFTs, and DAOs—is the third generation of the internet. These innovations have garnered an incredible amount of attention, both good and bad, over the past few years, and are still very early in their evolution. They will serve as the basis for new forms of economic and social interaction arising from platforms that allow people to collaborate, create, exchange, and take ownership of their digital identity and assets.

Web 2.0 has transformed our economic and social interactions in ways that have profoundly benefited society. At the same time, few would debate that Web 2.0—social media and today’s large tech platforms—took a wrong turn along the way. Neither the public sector nor the private sector has figured out how to grapple with the Pandora’s Box of privacy breaches, disinformation, monopolistic practices, and algorithmic biases that have come to define much of the internet. Meanwhile, authoritarian governments have never had more data with which to surveil, censor, and manipulate their citizens and those of other nations.

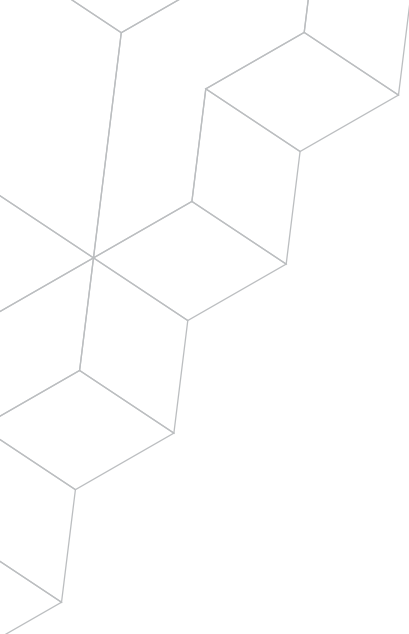
If the past decade has taught us anything, it’s that we need to have a serious conversation about the role we want technology to play in open societies. In this sense, web3 isn’t just a new wave of innovation. It’s an opportunity for a reset that allows us to obtain new benefits, while solving some of the thorniest problems arising out of the disruptive technologies of the past. We’ve learned a lot over the last two generations of digital innovation. Many leaders around the world have started expressing clear views on what they don’t want from technology. We believe it’s time for an affirmative vision of what we do want. As a society, we can decide how we want to use these tools, establish the principles that should guide our innovation, and spell out the role these technologies could play in improving people’s lives. The technology will be what we make it.

Defining that vision is a task too large and too important for any organization to tackle on its own. Policymakers, innovators, companies, universities, civil society organizations, and investors all need to collaborate in this work. But it’s time to begin. It’s time to build.

What do we want from web3? We need the next generation of the internet to be:

- Open and inclusive
- Participatory and well-governed
- Distributed and resilient
- Sustainable
- Accountable
- Efficient
- Secure



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- Equipped to protect privacy
  - Designed to help individuals and communities, not middlemen, capture more of the value they create for society

web3 technologies have the potential to help realize all these objectives. But we need a clear policy framework to get there. We are radically optimistic about the potential of these solutions to restore trust and enable new kinds of cooperation and governance. We believe these tools can help communities break through the stalemates that define too many aspects of public life and make collective decisions, including about critical issues such as how networks will evolve, what behaviors are permitted online, and how economic benefits are distributed.

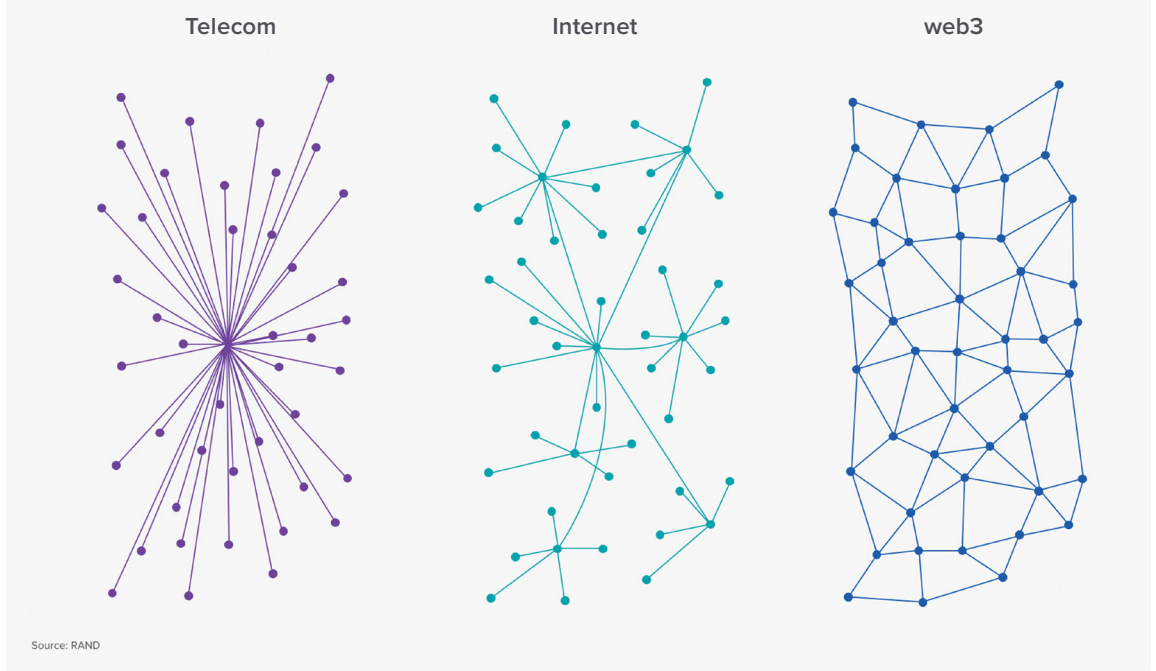
Our team includes former officials drawn from across government. As the largest investor in the space, we know web3—but we also understand public service. We see the potential of web3 as a force for good, and we are eager to work with policymakers to define a vision for how to use these powerful new technologies to benefit society and ensure they realize their full potential.

# Executive Summary



At a fundamental level, web3 is a set of technologies for coordinating resources and human activity. These systems build on existing internet infrastructure and leverage the power of cryptography to distribute power, resources, returns, and information across stakeholders. The fact that they are distributed and cryptographically secured gives rise to a host of new characteristics that have the potential to fix many of our existing institutions.

## web3 is Decentralized and Distributed



We believe in three core principles to guide policymakers:

- 1. web3 systems offer a better vision for how societies should use technology.**  
Open, distributed technology platforms that are directly accountable to their users provide an alternative to a digital status quo that is dominated by big tech and subject to exploitation by potentially oppressive regimes and malicious non-state actors.
- 2. Decentralization is the organizing principle of our past and future success.**  
Decentralized competition was at the foundation of American growth and dynamism in the 20th century when it helped the country outcompete authoritarian adversaries. It can help us succeed in the face of new challenges today. Decentralization fosters democratized technology platforms that embody the values of open societies and will provide the infrastructure to power tomorrow's economy and institutions.



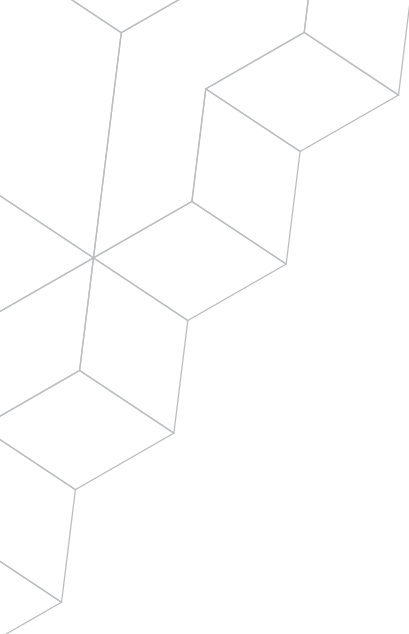
**3. Policymakers should work with market participants to unlock the potential of web3 technologies and design regulatory frameworks that are carefully calibrated to address perceived risks.** America’s technological and financial leadership depends on developing world-class systems that support better payments, digital identity management, data protection, and broader access to opportunity. Those systems will emerge from public-private collaboration, sensible regulation, and standards that are tailored to the different levels of risk inherent in different sectors and projects.

In the sections that follow, we aim to catalyze a conversation with policymakers about the future of web3. We cover some of the ways in which web3 could help deliver resilience and efficiency; secure, inclusive digital infrastructure; greater economic prosperity; and participatory, accountable governance. We conclude by offering some thoughts on how to move forward. We intend for this paper to be a living document. It will evolve as more stakeholders join the effort to define our digital future. We look forward to working with partners in government, the private sector, and civil society to shape what promises to be one of the most consequential conversations of our time.



# An Agenda for Policymakers





Technological innovation is a starting point for social progress and economic growth, but without a well-conceived public policy framework to provide scaffolding for technology’s proper role, we may never realize its benefits. Or, worse, a new technology may evolve on a path that actively harms individuals and society.

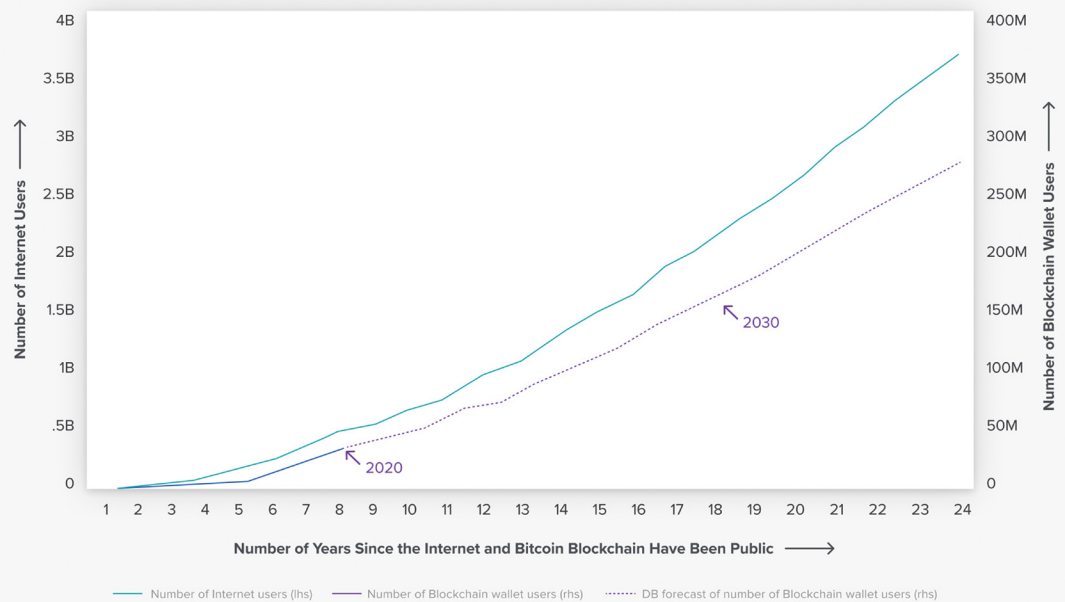
Defining 20th century innovations such as automobiles and aviation only became practical and trusted for use after serious national efforts to develop regulatory frameworks and infrastructure.

In 1997, the Clinton Administration published the groundbreaking Framework for Global Electronic Commerce, which presented nine recommendations and five key principles:

- The private sector should lead.
- Governments should avoid undue restrictions on electronic commerce.
- Where governmental involvement is needed, its aim should be to support and enforce a predictable, minimalist, consistent and simple legal environment for commerce.
- Governments should recognize the unique qualities of the Internet.
- Electronic commerce on the Internet should be facilitated on a global basis.

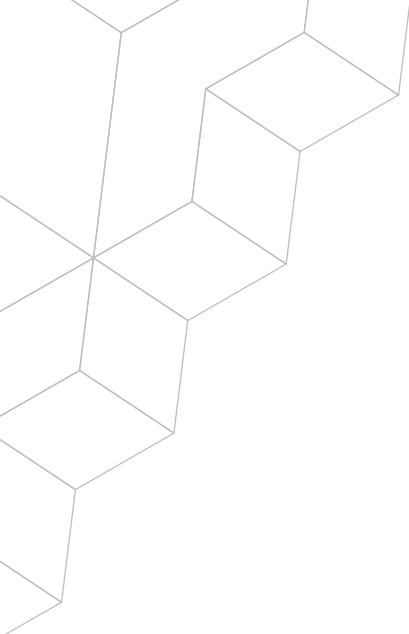
We stand at a similar moment for web3, where policymakers can establish the principles on which the next generation of the internet will be founded. While policy is far behind, there is still time. If you compare user growth of digital wallets against the user growth of the internet, 2020 for web3 was the year 2000 in internet terms—that is to say, two years after Google was founded and four years before Facebook launched.

### Adoption Curve of web3 vs. Internet



Source: Deutsche Bank. Year one for the internet is 1991 and for bitcoin it is 2011. To forecast the number of blockchain wallet users, study authors applied the growth rate of the number of internet users.





With web3 adoption skyrocketing and mainstreaming in 2021, now is the time for policymakers to take action. In this section, we lay out an affirmative vision for an agenda to realize the transformative potential of web3. It's important to note that these proposals are aimed at two equally critical targets: promoting innovation and minimizing abuse. We need to encourage technological breakthroughs while ensuring the existence of safeguards that limit harm to individuals along the way.

## **Establish a national strategy to prioritize the development of world-class, decentralized digital infrastructure**

One of the major shortcomings of recent policy efforts around technology in general, and decentralized technology in particular, has been severe fragmentation. Policymakers should be leading the conversation and setting a broad vision for the future of U.S. digital infrastructure, not merely reacting to private sector and international developments such as China's digital renminbi. Leaders in the United States have two options: assume the responsibility of shepherding web3 innovation in a manner that's consistent with the country's values, or cede this role to others with a different, divergent set of priorities. The choice should be clear.

The United States should establish an overarching national strategy to foster the development of world-class, decentralized digital solutions. As we explain in further detail in the following section, web3 infrastructure promises dramatic improvements over our existing slate of fragile, centralized, exclusionary systems. At a minimum, a national strategy should provide a framework for:

- Digital identity
- Property rights and ownership, including of digital goods
- Securing financial systems
- Expanding access to financial services
- Individual data sovereignty and data usage
- Privacy-first architecture
- Systems resilience and cybersecurity

A coherent national strategy that addresses these issues would provide a foundation for the country's long-term competitiveness and send a signal that the U.S. can reemerge as a global leader in developing digital systems that benefit all citizens. It could also create a starting point for the public-private partnerships that will be needed to achieve these goals.



## **Forge partnerships to oversee functions that are critical to society**

The web3 community has already developed compelling solutions for many of the most critical digital infrastructure challenges including payments, decentralized digital identity, and data protection. This is knowledge that the public sector can and should leverage. For example, as governments worldwide are grappling with ransomware attacks, web3 platforms have created permanent, distributed data layers, which—given sufficient adoption—have the potential to dramatically reduce the threat of these attacks. Similarly, while states and the federal government continue to grapple with how best to write data ownership and privacy statutes, web3 innovators have developed a suite of privacy-enhancing alternatives to the traditional web.

## **Create targeted, risk-calibrated regulatory solutions for different web3 activities**

web3 comprises a wide array of human behavior. Art creation and curation. Video games and collecting. Data archiving and preservation. Publication. Borrowing and lending. Remittances. The easiest way to lose out on all of this potential is to treat web3 as if it were a monolith. Policymakers should focus on calibrating regulatory activities to specific applications and their associated risks. Many legislative proposals that have been introduced treat all digital assets as if they were the same; this makes little sense in a world where applications of web3 technology already extend far beyond finance. Treating web3 as a monolith is analogous to having a single regulatory regime that covers stocks, real estate, cars, art, watches, and trading cards.

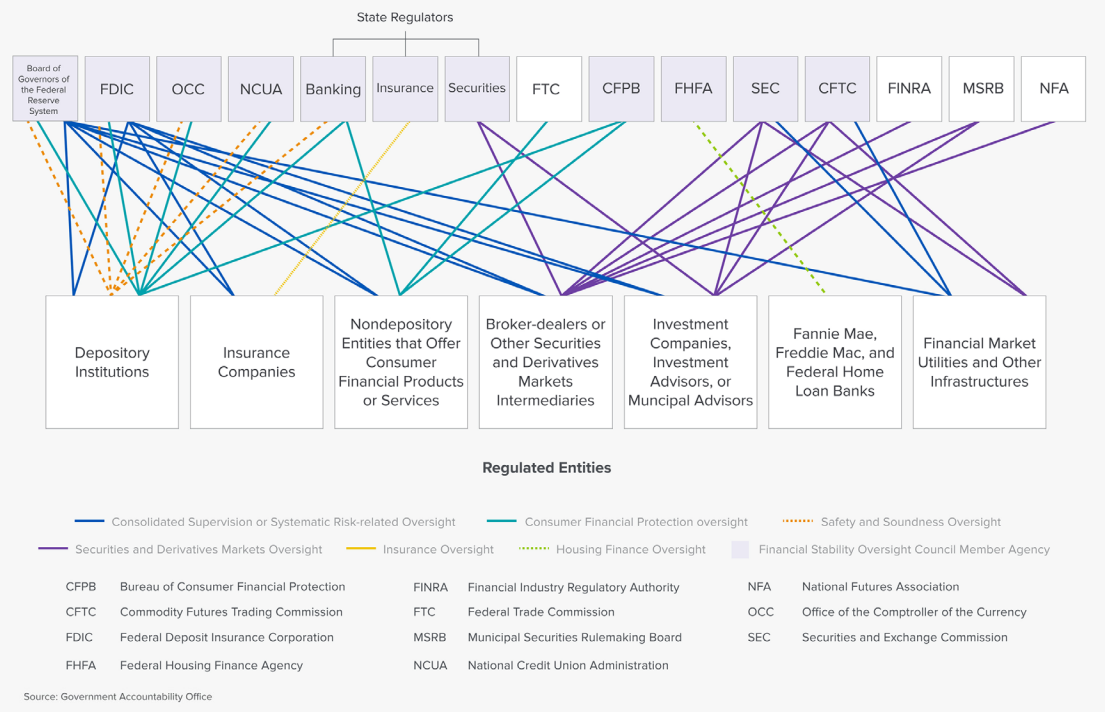
## **It is time to look beyond the SEC as a catchall regulator, establish cross-agency groups where appropriate, and consider whether a tailored and comprehensive approach to the regulation of digital infrastructure may be needed**

The SEC was established in 1934 to address innovations and issues in financial markets. Its triple mandate is to protect investors, maintain orderly, efficient capital markets, and facilitate capital formation. While some of these policy objectives overlap with the risks inherent in web3, there are a host of other activities and opportunities in the space that demand different expertise in subjects encompassing intellectual property, network security, data protection, net neutrality, consumer protection, property rights, banks, currencies, derivatives, corporate governance, telecommunications, energy, and any of the many other areas that web3 platforms might touch. Cross-agency working groups—not regulatory land grabs—should be

the default mode of moving ahead with federal regulation. Forcing all digital assets into a regulatory framework designed to cover investments in centralized enterprises such as corporations does not work and could frustrate innovative solutions that, if allowed to develop, would offer broad benefits to consumers and society.

Regulating web3 platforms effectively requires its own set of literacy, training, and expertise. Over the medium term, a new approach tailored to the unique attributes of web3 platforms may be more appropriate and efficient than stretching the existing jurisdictional authority of a dozen or more agencies. In Europe, there is already conflict between the European Data Protection Board, which oversees GDPR and consumer privacy, and the European Financial Commission over the latter's anti-money laundering rules. This lack of jurisdictional harmonization is an outcome the United States should seek to avoid. As the Government Accountability Office found with respect to financial regulation, "fragmentation and overlap have created inefficiencies in regulatory processes, inconsistencies in how regulators oversee similar types of institutions, and differences in the levels of protection afforded to consumers." Shoehorning web3 regulation into what is already a splintered regulatory framework is likely a losing approach.

### U.S. Financial Regulatory Structure, from the GAO Report



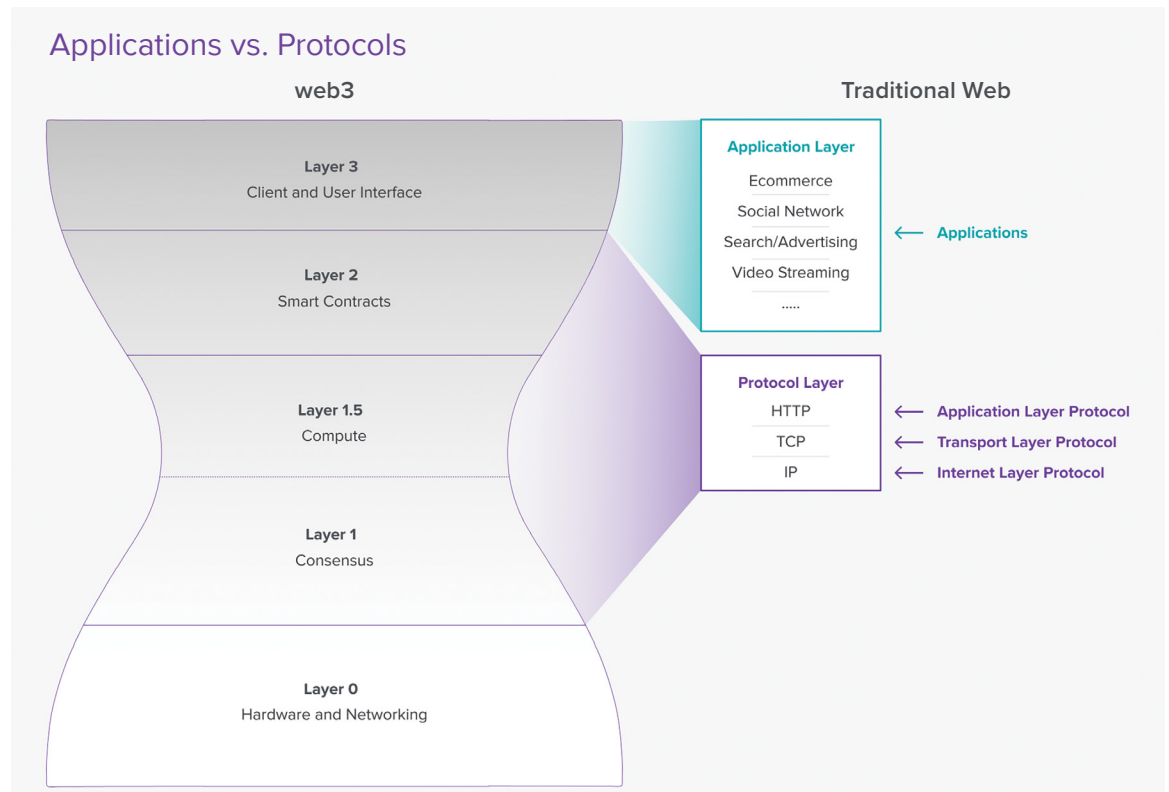
### Make room for one or more industry-led organizations

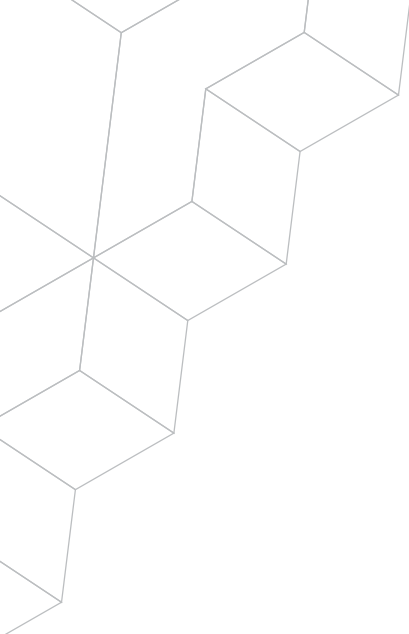
Industry leaders—many of whom have come from careers in public service—have accumulated a reservoir of technical and legal expertise. To some, the situation today looks analogous to the one faced by traditional financial exchanges before the creation of the National Association of Securities Dealers (now FINRA) or that faced

by automated clearing house corporations before the consolidation into NACHA, which oversees rules and standards used for ACH payments nationwide. In both of these cases, as well as in countless other examples like ICANN, expertise on the inside of the industry provided the foundation for effective organizations to oversee and shepherd innovation. Making room for one or more web3 SROs or nonprofit corporations does not mean leaving industry to its own devices: FINRA supports and facilitates the regulation of securities and capital markets, over which the SEC has ultimate authority. However, such organizations are a valuable, proven approach to help regulators benefit from the knowledge and agility of the private sector.

## Participate in standard-setting for protocols

TCP/IP, HTTP, SMTP, and TLS/SSL are all protocols with which we interact on a daily basis. They are the building blocks of the internet and basic applications such as email and file transfers. The technical standards for these protocols were developed by a smattering of government agencies, nonprofit organizations, private sector entities, and academic institutions. Importantly, no one controls these protocols. Nonprofit organizations such as the Internet Engineering Task Force, composed of volunteers, may set particular standards, but the protocols themselves are open and jointly developed. Similarly, ethereum has adopted an open model for web3, with a nonprofit organization (the Ethereum Foundation) funding development of related technologies, as part of a much larger ecosystem of developers.





Much of web3 consists of open protocols, including protocols for storage, computation, lending, and value exchange. Like the internet protocols developed over the past six decades, web3 protocols have flourished due to the robust communities supporting their development. Since development is open, distributed, and transparent, these protocols also benefit from resistance to arbitrary changes and neutrality with respect to the applications that are developed on top of them. Protocols that fit this bill should therefore be treated similarly to their predecessor internet protocol layers—nonprofits and governments should provide input into standards-setting, but regulating them directly is both futile and incongruent, since they consist of nothing more than open-source codebases that thrive only if they continue to serve the needs of the communities that use and contribute to them. Meanwhile, applications built on top of these protocols may be controlled by companies that have management teams to actually implement effective compliance programs. An effective regulatory framework will clearly differentiate between applications and protocols.

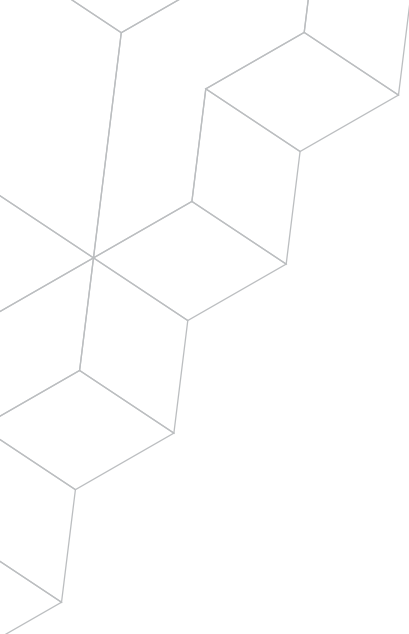
### **Bring disclosure-based regulation into the 21st century**

Disclosure-based regulation was resoundingly successful in developing efficient, safe capital markets over the course of the 20th century. However, the thicket of registration statements, audited financials, and other traditional forms of disclosure that dominated the 20th century regulatory landscape is not well designed to address some of the unique aspects and benefits of crypto and web3 platforms, which historically have been highly transparent, open source, and auditable. A web3 platform could, for instance, generate financials and operating reports hourly instead of quarterly. New disclosure standards that focus on consumer understanding rather than strict technical adherence to legacy rules could take advantage of such capabilities. And, since not every consumer has the skill set to review open source code, there should be incentives to facilitate the routine, independent auditing of web3 platforms.

### **Create regulatory sandboxes and safe harbors for emerging use cases**

Since 2017, a great deal of debate has been dedicated to the question of whether, and under what circumstances, certain crypto tokens may be deemed securities. Some, like SEC Commissioner Hester Peirce, have called for regulatory sandboxes for projects moving towards decentralized governance over a short time horizon. Policymakers need to go one step further, since much of web3 is unquestionably not within the bounds of securities law. Policymakers should give agencies across the government the authority to experiment with lightweight, low-risk, small-scale regulatory regimes for emerging applications. Such sandboxes make regulators more nimble and establish open channels of communication with industry that can





help address challenges before they become deeply rooted, and they should be structured in such a way that they provide clarity for existing projects. In addition, regulators need to use opportunities to engage with innovators as an opportunity to seek solutions, not as an excuse to target companies or projects seeking dialogue and engagement for enforcement action. Ironically, the innovators that seem most interested in ensuring compliance and pursuing constructive dialogue with regulators often find their willingness to engage makes them vulnerable to regulatory action, while others operating in a less transparent fashion escape scrutiny.

### **Embrace well-regulated USD-denominated stablecoins to ensure the ongoing primacy of the dollar and the centrality of the U.S. financial system in the global economy**

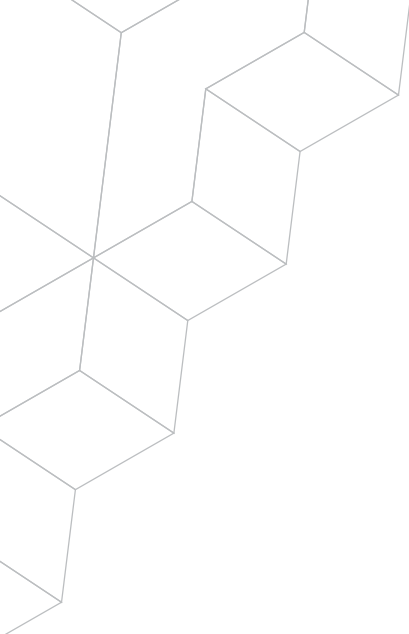
Policymakers should embrace responsibly regulated stablecoins. The existing, thriving ecosystem of private USD-denominated stablecoins can help the U.S. act quickly to win the emerging geopolitical arms race in financial innovation. The United States should condemn the surveillance authoritarianism embodied in China's digital renminbi project—not attempt to imitate it. American policymakers should be cautious about building massive, centralized payments infrastructure. Doing so would impose unprecedented demands on the government's limited capacity to stand up critical technology platforms, present significant privacy risks, and create an immensely attractive target for attackers. These privacy and security risks can and should be solved, but CBDCs and stablecoins can coexist. Fostering a range of USD-backed stablecoin projects will support our policy objectives and enhance the resilience of our financial infrastructure by avoiding a single point of failure.

### **Provide clear, fair tax rules for the reporting of digital assets, and consider technical solutions for tax compliance**

The U.S. stands to benefit enormously from the economic growth driven by web3. Already, with the bipartisan infrastructure bill, policymakers have looked to the industry to help fund the largest piece of public works legislation since the New Deal. Yet, the IRS has been slow to give consumers and businesses the basic guidance they need to comply with tax reporting obligations. Hundreds of thousands if not millions of individuals pay a premium for third-parties to help them with their digital asset taxes each year, and yet have no assurance that they've done it correctly.

The irony is that—between blockchains and privacy protocols—the technical building blocks already exist for the IRS to create a system for secure and detailed tax reporting of digital assets. This is better than the 1099s already that many centralized





exchanges have already been providing for years. Rather than put the onus on individuals and industry players to fill in tax reporting forms that were created for traditional brokerage firms, policymakers should instead push the IRS to collaborate with the sector to implement solutions that leverage the technological leap forward offered by web3. This would help bring the U.S. in line with best practices found in other advanced economies.

### **Leverage the compliance benefits of web3 technology, with a privacy-first approach**

The auditability of web3 platforms, combined with privacy infrastructure like zero-knowledge cryptography, promises to dramatically enhance compliance and reduce compliance costs across the economy. To take one example: the FEC ruled in 2014 that political committees were allowed to accept small cryptocurrency donations of \$100, the risk of larger amounts being attributed to concerns about anonymity. However, with appropriate reporting guidelines in place, the use of digital currency as the primary mode of election spending could significantly ameliorate the problem of dark money in politics.

### **Unlock the potential of DAOs**

The corporation was the default mode of organizing human activity in the private sector over the course of the 20th century. DAOs (decentralized autonomous organizations) may become the default mechanism for facilitating collaboration in the 21st. DAOs enable individuals to collaborate, manage projects, own assets, invest, and operate like a traditional organization, but they can provide far greater levels of transparency, openness, and democratic governance. Policymakers should create space for this new cooperation mechanism to flourish.

Despite their benefits, there is currently no clear path for DAOs to perform three basic functions of an organization: enter into legal contracts, benefit from limited liability, and pay taxes. Many of the potential solutions to these challenges are relatively simple, and some are already being enacted at the state level. Federal policymakers should establish a clear framework for DAOs to participate fully in the economy.

### **Align web3 with sustainability**

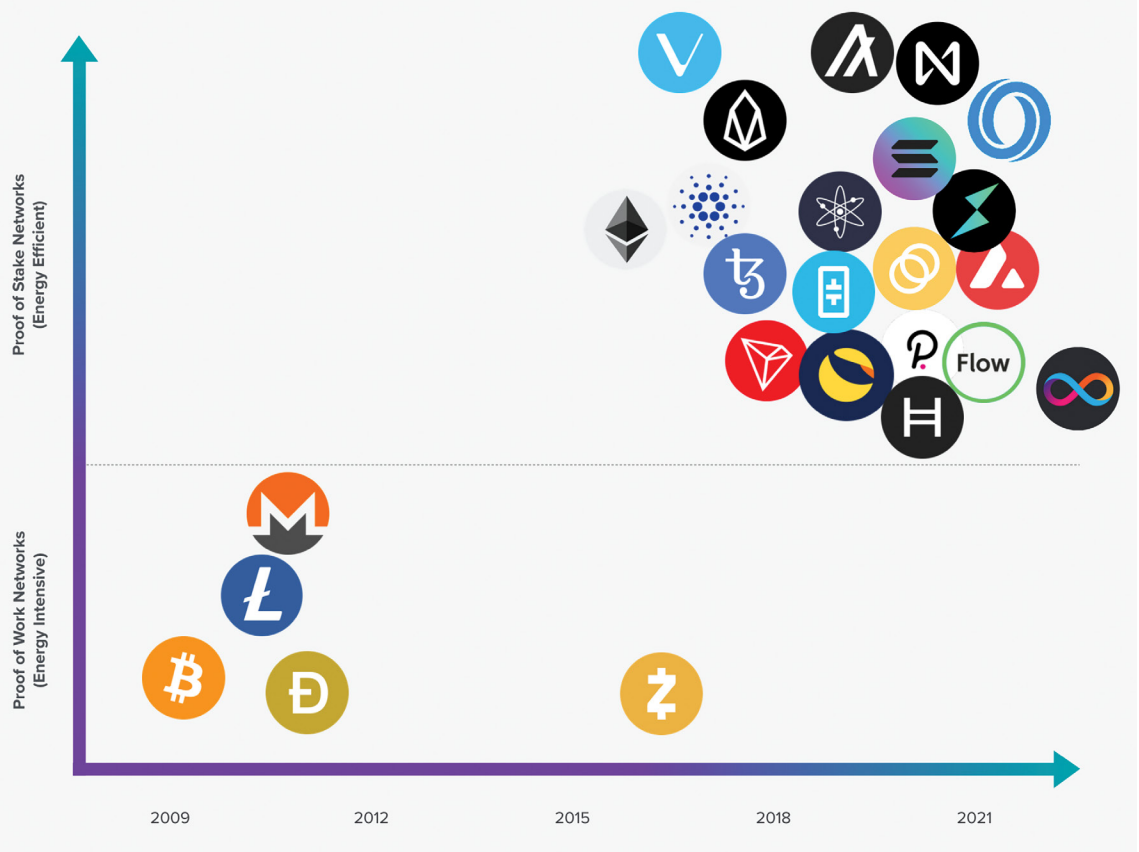
Despite headlines, web3 projects need not—and, in most cases, do not—consume vast amounts of energy. Ethereum, the most commonly used protocol for web3 applications, will soon use an energy-efficient proof-of-stake (PoS) consensus mechanism, reducing energy consumption by a factor of 1,000. Indeed, most modern

blockchains use PoS. The Flow blockchain, which powers games and apps like NBA Top Shot, uses PoS and consumes a de minimis amount of energy per year; meanwhile, Celo, a PoS blockchain that processes tens of thousands of transactions a day, is carbon negative.

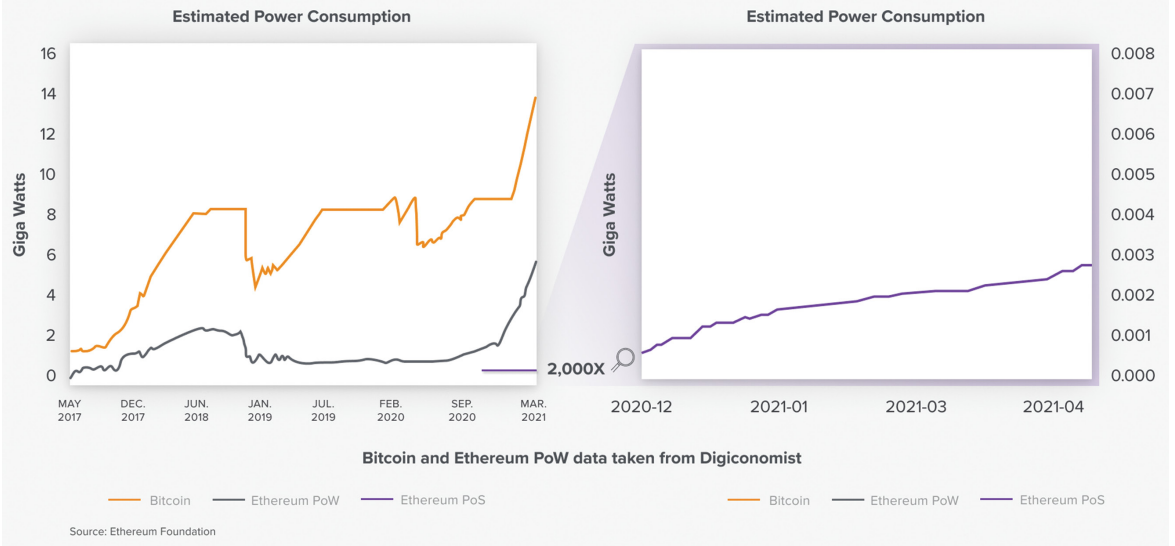
Policymakers should continue working with the bitcoin community to bring greater levels of sustainability and renewable power use to the bitcoin blockchain. Efforts are already underway: the Cambridge Center for Alternative Finance found that 76% of bitcoin miners use renewables as part of their energy mix, and 39% of bitcoin mining’s total power consumption comes from renewables—twice as much as the U.S. grid.

Rather than fixating on bitcoin’s energy consumption as an excuse to dismiss the potential of the whole industry, policymakers should embrace the value of web3 platforms to support sustainability objectives, such as enhancing the liquidity, integrity, and utility of carbon markets.

### Most Modern Blockchains Are Energy Efficient



## Following Its Transition to PoS in the Coming Months, the Ethereum Blockchain Will Consume 99.95% Less Energy

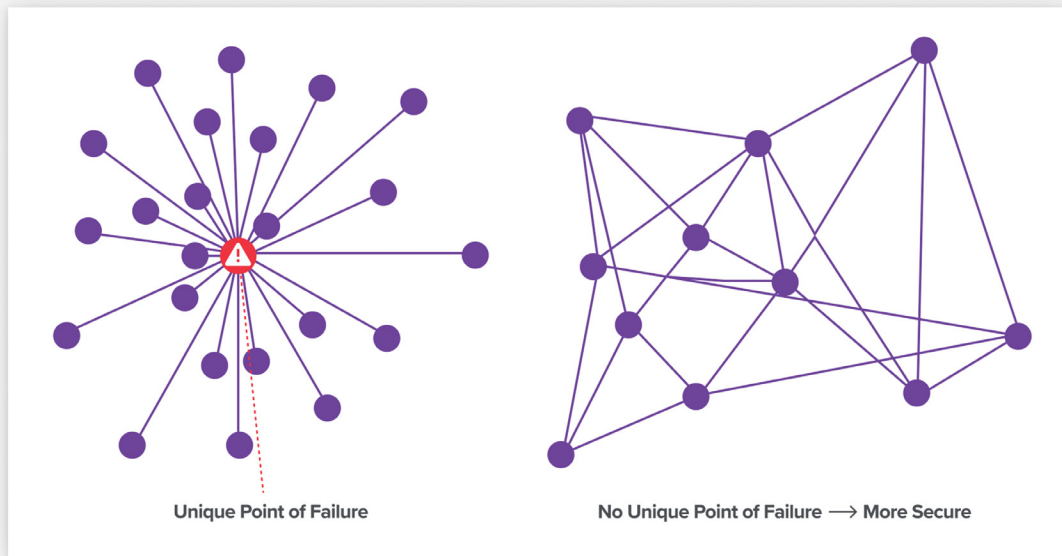


# web3 and Infrastructure



We believe that web3 will be the foundation of new financial and digital infrastructure that changes lives for the better. In decentralized systems, value accrues to the platform and its users rather than intermediaries. These systems are much more resilient by virtue of being distributed.

### Distributed Systems Are More Resilient

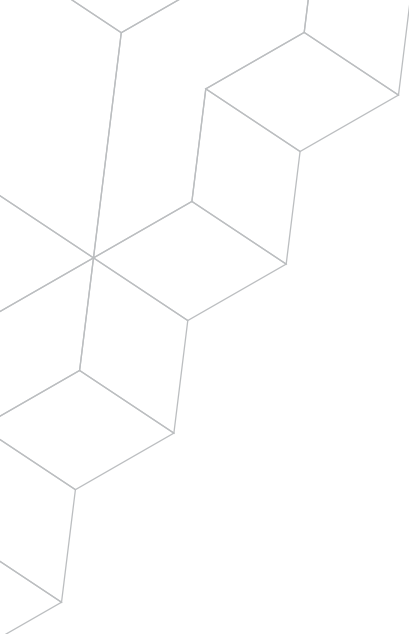










Source: Voshmgir (2019)

In the next section, we outline some of the exciting new infrastructure that is already being built by web3 projects.

### Open Decentralized/Distributed Platforms = Better Infrastructure

	Component	Centralized Solution	web3 Solution	Examples
Financial Sector	Banking Services	High fee checking accounts, low yield savings accounts. American consumers providing zero-interest loans to highly centralized banking system.	Low fee consumer finance products. High yield automated lending protocols.	eco Compound AAVE
	Consumer Lending	Credit bureau oligopoly with opaque credit scoring systems.	Competitive market for on-chain credit scoring based on transparent and auditable data.	truefi
	Payments	Venmo, PayPal layered on top of existing banking relationship with its attendant complexity and fees.	Fast payments for the underbanked and unbanked.	valora WORLD COIN



	Component	Centralized Solution	web3 Solution	Examples
Digital Sector	ISPs	Comcast, AT&T, Verizon. No choice of provider in most markets, slow and expensive. Fights over net neutrality.	Participatory, community supported networks.	 helium
	Cloud Computing	AWS, Google Cloud. Centralized and often fragile targets.	High-throughput blockchains that are decentralized and resilient.	 SOLANA
	Web Infrastructure (e.g., DNS, content delivery)	Cloudflare, Fastly. Can result in arbitrary censorship. Also fragile.	Censorship resistance. Resilience.	 handshake 
	Identity & Personal Data	Facebook, Twitter, Google. Business models designed to leverage value of personal data.	Data and identity portability.	 arweave
	Privacy	Ad-supported businesses have a conflict between maintaining income streams and protecting privacy.	Applications built with privacy from the ground up. Businesses that don't rely on exploiting user data for profit. Enhanced compliance without sacrificing privacy.	 Aleo
	Art, Entertainment & Content Creation	High take rates, in which a large percentage of revenue goes to the tech platforms that host content.	Singular digital authenticity with micropayment royalty streams to content creators and artists.	 flow  rally

## Financial Infrastructure

The state of America's existing financial infrastructure is neither desirable nor sustainable. The pandemic demonstrated the failings of existing payment systems, as families waited weeks or months for paper relief checks and foreign crime rings took advantage of weaknesses in the country's financial architecture to steal an estimated \$100B in CARES Act funding. Payday lending has been a continued focus of the CFPB, and one of its direct causes is the archaic biweekly payday system.

Our financial system needs to be revamped for fast payments. It also needs to be more inclusive; for instance, by improving access to credit through better credit scoring that incorporates more data sources. web3 has demonstrated the potential of alternatives to the current system. Decentralized finance, or DeFi, is also supplying a wave of new infrastructure to support more sophisticated financial products such as derivatives and credit products. These solutions are faster, more auditable, and more transparent alternatives to existing systems.



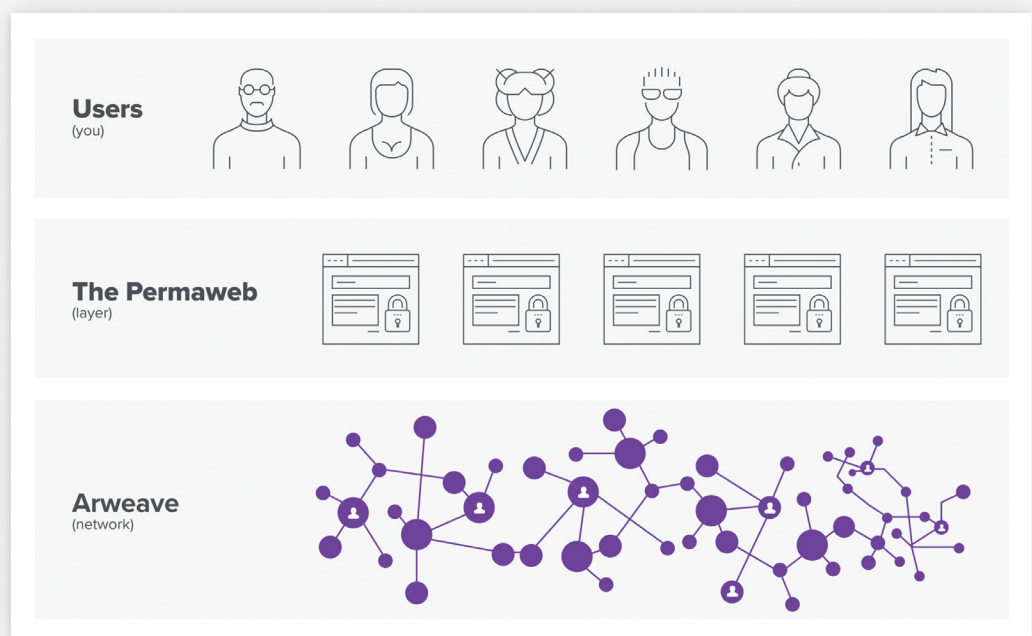
## Digital Infrastructure

In June 2021, a customer of Fastly, the content delivery network, changed a single setting, which led to a bug that took down The New York Times, The Guardian, Twitch, Reddit, and the British government’s homepage. A month prior, in May 2021, the Colonial Pipeline ransomware attack caused an enormous crisis of confidence in the cybersecurity around America’s core physical infrastructure. And as the Electronic Frontier Foundation recently quipped: “There’s not much that the political left and right agree on these days, but there’s one subject that reliably crosses the political divide: frustration with monopolists’ clumsy handling of online speech.” Our digital infrastructure has seen better days.

web3 protocols offer a better vision for digital architecture. To take one example: an interesting and unfortunate side effect of Web 2.0 architecture is that it creates “memory holes”—if someone hosting a website changes its contents, or stops paying hosting fees, the content can simply vanish entirely. This shows up, for instance, in the footnotes to Supreme Court opinions. A Harvard study found that nearly half of these footnotes contained broken links to pages that have been moved or no longer exist, a process known as “link rot.” Since Twitter has become such an important communications platform, many media outlets, such as The New York Times, have adopted the practice of embedding tweets from politicians and others. This led to the ultimate version of link rot in January 2021, when former President Trump was suspended from Twitter. Until a fix was delivered, millions of articles that cited his tweets instead featured blank memory holes.

Arweave is a web3 protocol that underpins the “permaweb,” a permanent data storage layer of internet content.

### The Permaweb



Source: Arweave

The permaweb has multiple use cases beyond fighting link rot and memory holes, including censorship resistance—Arweave had a major success in preserving globally distributed, censorship-resistant copies of the Apple Daily newspaper, which was recently forced to close by authorities in Hong Kong. Permanent, distributed data backups could also help thwart ransomware attackers.

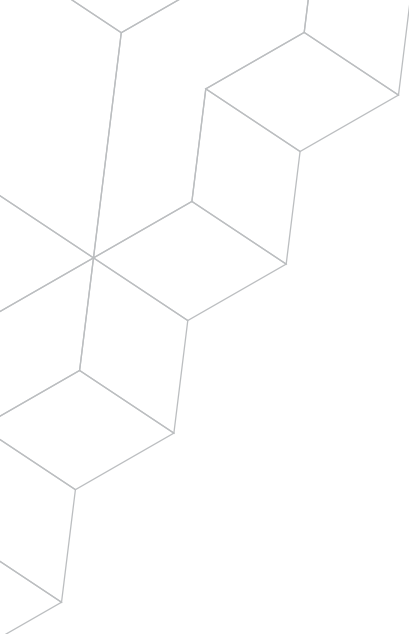
The Traditional Web	The Permaweb
— Mutable	+ Immutable
— Centralized	+ Decentralized
— Monopolized	+ Controlled by You
— Link Rot	+ Zero Upkeep
— Expensive	+ Pay Once, Store Forever

Source: Arweave

Telecom is another example of web3’s promise as a tool for upgrading the country’s digital infrastructure. Millions of Americans only have access to a single ISP (internet service provider) for broadband access. Many have access to none at all. It’s no wonder, then, that broadband access became a key point of focus in discussions around the bipartisan infrastructure bill. These same ISPs have come under fire in the net neutrality debate by privileging certain content or charging content providers for premium delivery to consumers.

Helium is a web3 platform sometimes referred to as “The People’s Network.” It is the fastest growing wireless network ever, with nearly 100,000 hotspots today. Helium is community-owned and community-operated: everyday people operate hotspots out of their homes and offices, for which they are compensated in tokens that are also redeemable for data access. Helium has embarked on the path to rolling out 5G capabilities, which would introduce much-needed competition to the ISP market with a self-sustaining, community-owned network where value accrues to community members.





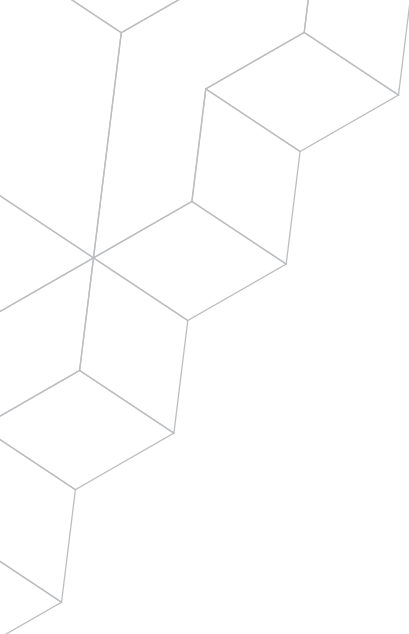
As we discuss in greater detail below, non-fungible tokens, or NFTs, are unique digital artifacts that enable artists and content creators to build communities and sell media and content directly to fans. Yet NFTs also have a variety of other compelling use cases. Since they cannot be altered and their provenance is auditable, NFTs could prove to be a powerful authentication antidote to disinformation, manipulated videos, and deepfakes. That is, using NFTs, you can ensure that information content hasn't been changed, and you can determine where the information came from with great accuracy. With NFTs, you can also digitize, authenticate, and trace property rights.

## Privacy-First Infrastructure

Privacy breaches are now so commonplace that we have become resigned to the regular exploitation and abuse of personal data. One reason for the uptick in cybersecurity attacks is that organizations are using and storing much more personal data than reasonably needed for their operations. However, companies like Aleo have leveraged zero-knowledge protocols to develop compliance-forward toolkits for developers, enabling digital and financial applications to be built with data privacy from the ground up. By reducing unnecessary data sharing, privacy-first infrastructure cleans up the personal data currently littered around the internet and corporate databases. This puts control back in the hands of consumers and drastically improves data security. The U.S. also stands to benefit geopolitically from privacy-first infrastructure: while the current iteration of the internet has given authoritarian governments the tools they need to use information as a means of manipulating behavior both domestically and internationally, privacy-first infrastructure can give citizens the tools they need to fight back.

# web3 and Economic Opportunity





For creators—entertainers, artists, musicians, game developers—Web 2.0 platforms have been both a blessing and a curse. Platforms like YouTube, TikTok, and the App Store have given them access to audiences that span the globe. But these platforms have notoriously high take rates, and capture much of the value generated in the creative economy before passing along payments to creators. These platforms have also become highly bureaucratic as they’ve grown. The arcane rules involved in keeping an app on the App Store have led to lawsuits alleging abuse of monopoly power, including exorbitant 30% fees for the privilege of getting content to smartphone users.

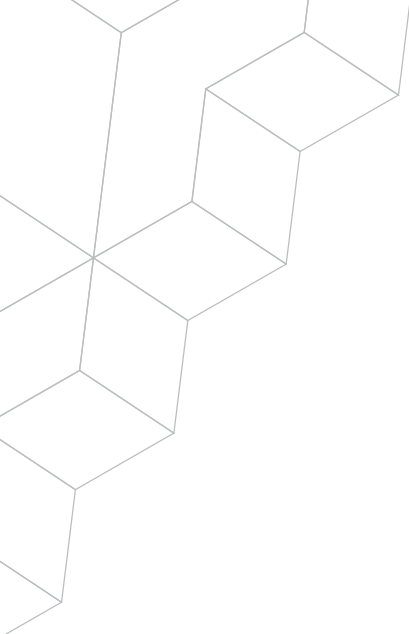
Decentralization is a solution that lets creators connect directly with fans and communities at scale, and reduces the role and power of middlemen. web3 is an internet of value. For creators, this means that they now have the technology to make their digital content one-of-a-kind and therefore more valuable, leading to a new universe of opportunities in the creative economy.

The music industry is a helpful point of comparison: Metallica famously sued Napster out of existence because it enabled people to copy and share the same mp3 millions of times. Apple and iTunes stepped in next, imposing high fees on musicians to distribute their music. The current iteration of music distribution and streaming services fail to generate enough proceeds for most musicians to make a living. Even artist-owned streaming platforms, such as Tidal, have been unable to craft a model that works.

With web3, musicians and content creators have the ability to transact over the internet, directly with their fans, by selling unique digital artifacts including music, experiences, and art. And with users able to own unique digital content, robust secondary markets are also springing up—think record stores, thrift shops, eBay, or Etsy, but for digital content—creating additional thriving economies. Certain platforms are also experimenting with fractionalized ownership, allowing a community to pool its resources and collectively own a multimillion dollar artwork, with individuals then able buy and sell their fractional stake to other individuals without the community selling the underlying artwork.

In web3 networks, value is created by and accrues to network participants—the community. This also means that individuals have new opportunities to earn a living by participating in these communities. While Wikipedia is a stellar example of a robust, nonprofit community that has created value for the world, it consists almost entirely of volunteers, limiting the number of people able to contribute. web3 platforms are now being introduced to create economic incentives for maintenance, such as routine upkeep and knowledge creation. This enables volunteers to be rewarded for the value and contributions they bring.

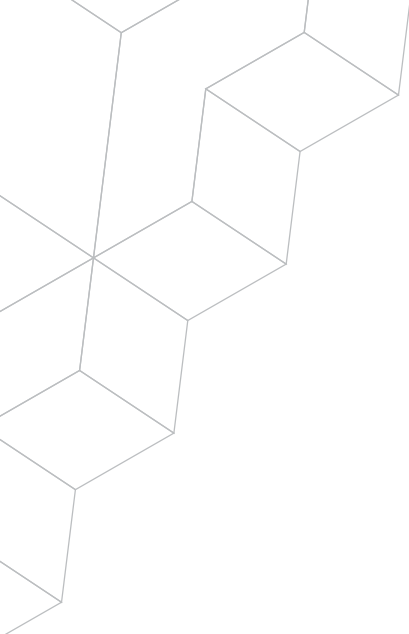




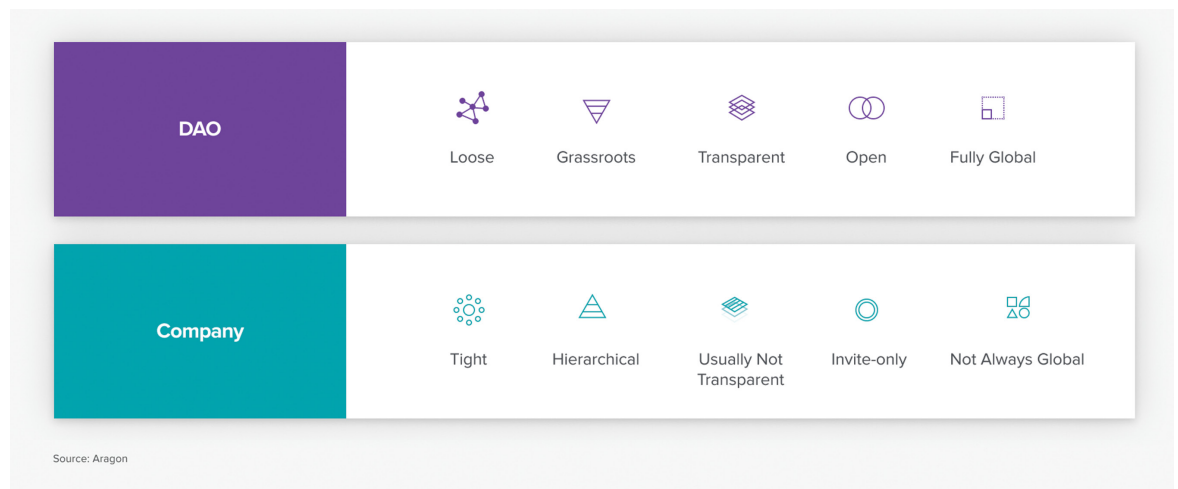
payments, and finance native to the internet—laying new pipes and rails that are easier to use, access, audit, upgrade, and build on. This will lead to better user experiences, expanded access, and market efficiencies, such as better price discovery as more people are able to participate in financial markets. Historically, capital markets have been notoriously restricted and inaccessible to both individuals and small businesses. By democratizing access—with the appropriate guardrails in place to protect consumers—we can foster economic growth and distribute wealth more equitably. DeFi also enables individuals to fully control their own digital assets in the same way they control their real assets, without being locked into a single brokerage or platform.

# web3 and Participatory Governance





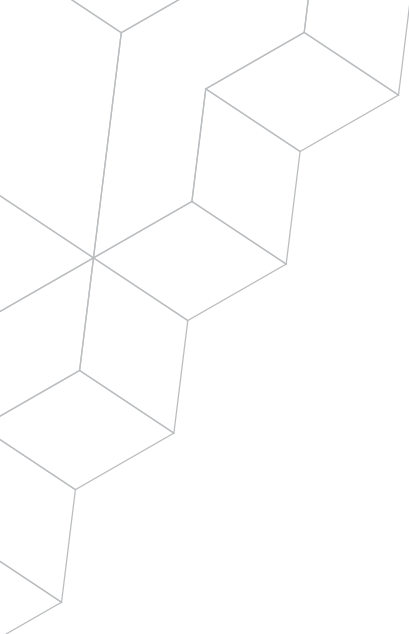
DAOs are providing a path toward community governance of any kind of organization—nonprofits, collectives, cooperatives, companies, or investment funds. This is the web3 version of a credit union or cooperative: think of a community of people that contribute to the joint development of a product, rather than a product being engineered and sold to individuals. DAOs are already being used with great success to oversee the development of software protocols. They can be a highly efficient, auditable, form of governance for any kind of multi-stakeholder project. They also create a decentralized market for talent that enables people anywhere to contribute to value creation in a truly meritocratic fashion. We shouldn't expect that every DAO will facilitate fully transparent corporate governance, but they can change the default mode for managing organizations.



# Conclusion







Many of the core institutions that power our economy and society are struggling. web3 offers a new set of tools to help policymakers meet the needs of average Americans. As a fundamentally new technology paradigm, the advantages of decentralized, digitally secured platforms cut across sectors. Virtually every industry and sector of society could benefit from more secure, resilient, and inclusive infrastructure; greater economic prosperity; and new modes of participatory, accountable governance.

We believe these tools can help build a better vision for how to use technology in society—one that moves beyond the excesses of surveillance capitalism and protects people from the abuses of surveillance authoritarianism. Policymakers who want to create a better alternative to the status quo will need to act quickly to ensure these breakthroughs realize their full potential.

Of course, many questions surrounding this work remain to be answered, among them:

- What is the optimal way to harmonize the regulatory landscape while ensuring that risks are curtailed?
- How should we think about the touchpoints between web3 and traditional sectors, such as media and entertainment or finance, and what stakeholders from those sectors need to be involved in shaping policy discussions?
- How can the U.S. translate national leadership on a web3 strategy into a global agenda?
- Under what circumstances is federal preemption a preferred alternative to state-level regulation?

It is difficult to overstate the importance of the task ahead. Leaders will need to deal with complex questions of jurisdictional harmonization; engage standards-setting organizations; and enlist experts from industry, academia, and civil society to bring our regulatory regime into the 21st century. But while the work will be significant, the benefits could be nearly incalculable. web3 technology can usher in a renaissance of creativity, innovation, democratic participation, and prosperity with few parallels in human history. That opportunity is why we are here—and why we are committed to working with policymakers to answer the many questions that will emerge along the way. Together, we can build a third generation of the web that looks less like the internet we have, and more like the digital future we want and deserve.



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