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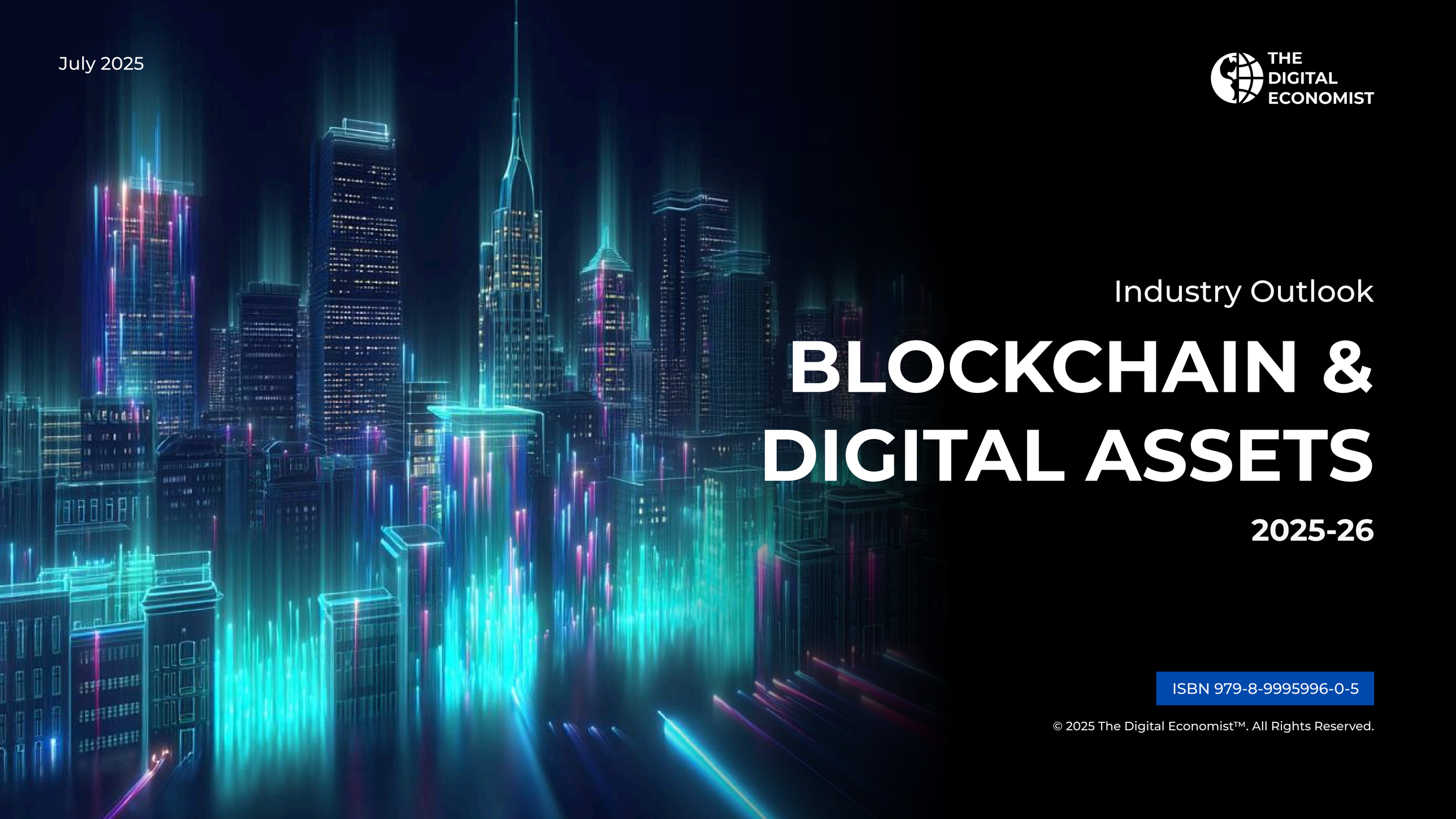

Industry Outlook

BLOCKCHAIN & DIGITAL ASSETS

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Executive Summary

Among the many promising use cases for blockchain and digital assets, one of the most significant is their potential to enable and enhance equitable financial inclusion and social justice by offering easily accessible, cost-effective financial services to marginalized populations everywhere and creating more secure, transparent, accountable, and decentralized financial systems.

At the same time, blockchain is an essential component to a broad set of "next wave" digitally transformative technologies that comprise Industry 5.0 (across all sectors) and will continue to weave strong through-line threads in the fabric of all other economic, environmental, social, and governance realms.

Bitcoin reached the historic $100,000 milestone in December 2024 and has continued to fluctuate, with an all-time high near $110,000 in January 2025. This breakthrough, coupled with the new US administration's pro-crypto stance established in early 2025, including the establishment of a Strategic Bitcoin Reserve and US Digital Asset Stockpile via executive order on March 6, 2025, has fundamentally reshaped the industry's trajectory.

This report dives deep into the rapidly evolving ecosystem of blockchain technology and digital assets and is covered here in three interwoven parts, offering a holistic perspective on this transformative sector:

- Part 1 explores the technical advancements shaping the blockchain and digital assets industry and the progress made in areas such as modularity, interoperability, stablecoins, and central bank digital currencies (CBDCs). These form a foundation for more advanced applications and use cases discussed later in this report.
- Next, part 2 turns our attention to the governance landscape, analyzing various measures being implemented globally to address challenges and opportunities that the blockchain and digital assets sector of ICT in Industry 5.0 presents. This section examines the impacts of these regulations on a broader ecosystem, including increased compliance costs and legal ambiguities facing adopting and adapting organizations, underscoring the criticality of robust, adaptable regulatory frameworks able to keep pace with this quickening segment of the fintech industry.
- Part 3 identifies emerging, innovative trends poised to shape the blockchain and digital assets in future ecosystems. It explores the potential of blockchain and digital assets to address challenges facing digital public goods. DPGs, under the UN Secretary-General's office of the Envoy on Technology, are key to the "roadmap to digital cooperation" intent on "unlocking a more equitable world, a global effort…to encourage and invest in the creation of DPGs: open source software, open data, open artificial intelligence models, open standards and open content. This is seen as "key to achieving Sustainable Development Goals [SDGs]." Importantly, this section explores what is truly meant by the concept of antifragility in the development of systems as differentiated from resiliency or robustness. Further, we cover the increasing adoption of blockchain by financial institutions, the evolving decentralization of finance (DeFi), and the opportunities for a positive and beneficial rise of the digital creator economy. Our forward-looking refracting lens offers sharp insights and clarity on blockchain's most likely evolutionary trajectory and its potential across a broad swath of sectors.

The interplay among these three parts—spanning technology art, regulatory landscapes, and digitally transformative innovation—gives a throughline to this report on a state-changing set of technologies, their potential speed-and-scale market growth trajectories, implications for various sectors, and the critical role policymakers and industry stakeholders play in shaping the future of the next generation of fintech and so much more.

Contents

PART 1

State of the Blockchain Art

1.1 Modularity

Modularity is an architectural approach where a blockchain is developed in a stack of component layers, each designed to perform distinct functions. Such architecture facilitates the integration of different blockchain platforms, enabling easier data transfer and system connections across networks through communication bridges.

Major financial institutions like JPMorgan, BlackRock, and Barclays are now leveraging modular blockchain architecture for tokenized collateral networks and other institutional applications. This institutional adoption has accelerated following Bitcoin's breakthrough beyond $100,000.

Such multilayered structures enhance security and scalability, optimizing both the performance and robustness of decentralized applications (dApps) (Beck, Avital et al. 2017).

Modular blockchains typically consist of four key layers:

1. The execution layer is the primary component layer where users initiate transactions and interact with decentralized applications via smart contracts. These interactions trigger state transitions that update on-chain accounts (Buterin 2020).

2. The settlement layer in this topology settles transactions by processing proofs from other chains, playing a crucial role in verifying and validating transactions, monitoring fraud, and resolving disputes (Zhang, Xue, and Liu 2019).

3. The consensus layer finalizes and orders transactions through a network of nodes, ensuring the verification of state transitions (Cachin and Vukolić 2017).

4. The data availability layer ensures that transaction data is accessible, preventing data withholding and supporting system transparency (Kalodner, Goldfeder et al. 2018).

1.2 Interoperability

Interoperability among blockchain systems is the capability of different blockchain networks to communicate and interact seamlessly, facilitating information exchange and validation across various platforms. This critical functionality extends to blockchain networks and dApps, enabling effective interaction and communication (Gudgeon, Moreno-Sanchez et al. 2020) and emphasizing the importance of cross-chain messaging in creating cross-chain dApps, where a single dApp can operate across multiple blockchain systems.

The establishment of the Strategic Bitcoin Reserve and US Digital Asset Stockpile by the new administration in March 2025 has accelerated interest in interoperability solutions that can connect traditional financial infrastructure with blockchain networks.

Cross-chain and multichain dApps differ significantly:

- Multichain applications deploy the same application on multiple blockchains, each instance operating as a set of isolated smart contracts without interconnections.

- Cross-chain dApps, in contrast, maintain unified logic across different blockchain systems, enhancing both critical systems functionality and the user experience. (Hardjono and Smith 2016).

1.3 Future Outlook and Insights

With Bitcoin's value above $100,000 and the new administration's pro-crypto stance, institutional adoption has accelerated dramatically. According to KPMG's "Virtual assets 2024 review and 2025 outlook," stablecoins now consistently dominate blockchain transactions, reflecting a maturation of the ecosystem beyond speculative use cases.

Modularity and interoperability principles are emerging as foundational pillars in the ongoing evolution of our blockchain *metropolis*. The modular design approach separates the four layers of the stack's topology. This allows for function-targeted optimization and independent evolutionary development of each component.

Such a strategy enhances scalability and addresses security concerns without necessitating an end-to-end overhaul of the blockchain network—much like urban development that focuses on upgrading specific districts or utilities independently.

Interoperability remains a pivotal challenge and opportunity. It's essential as decentralized models become more prevalent across various sectors. The development of cross-chain technologies and dApps

operating over multiple blockchain platforms is crucial for a truly integrated yet decentralized digital economy. In our metropolis analogy, we liken this development of this city's multimodal transportation systems that must integrate seamlessly, resiliently, and robustly, serving planned growth effectively.

Looking ahead, blockchain technology's most likely trajectory is to achieve ever-higher degrees of interoperability and modularity. Innovations such as cross-chain DeFi platforms, interoperable non-fungible tokens (NFTs) and coins, and the integration of blockchains in sectors like supply-chain management and health care highlight the expanding use cases of these technologies in a wide variety of settings.

Future advancements will most likely focus on enhancing efficiency, security, and user-friendliness, potentially revolutionizing how data and assets are managed across diverse blockchain systems.

As we look toward blockchain technology's future, the discussion centers on whether the next phase involves pioneering next-gen blockchain 4.0 or continuing to refine and stabilize existing solutions in Layers 2 and 3 within the blockchain 3.0 context.

An analogy would be that this strategic systems-thinking decision mirrors the kind of nuanced planning required in expanding a city, namely, assessing whether to build entirely new infrastructures or enhance and extend existing ones for backward compatibility while continuing to effectively meet growth needs (Varma 2024).

1.4 Limits and Practical Implications of Optimization

Blockchain 3.0—represents a significant advancement in scalability, interoperability, and efficiency over the earlier two developmental generations. Innovations, such as Hydra for Cardano, have pushed transaction times close to theoretical limits.

Hydra is an architecture layer atop ADA crypto coin developer Cardana's existing Settlement Layer 2, capable of generating significantly lower network latency and higher transaction throughputs. Hydra enables high-velocity scaling to meet global demand growth for ADA transactions. Yet, the necessity for such extreme speed in daily blockchain applications remains contentious.

Such high-frequency trading (HFT), however, may be one of a handful of use cases to benefit from such rapid processing speeds and volumes. In our fake metropolis transit systems development, HFT would be akin to, say, emergency services, where fast event response times (measured in minutes, not hours) are mission-critical. In contrast, standard delivery van services don't have the same requirements as ambulances or firefighting equipment; instead, they focus on route-mapping efficiencies and accurate package-delivery tracking.

Here, then, is the rub: Focusing solely on such high-stakes niche scenarios could lead to an imbalance in blockchain development and adoption, just as city transportation development planning solely based on emergency event management considerations might be prone to neglecting other important urban street needs.

Everyday transactions in areas like retail payments or public-service access are well-served through current blockchain 3.0 capabilities. Pushing beyond such practical limits can often yield higher costs with diminishing returns, similar to a city developing its infrastructure beyond what the served population realistically requires to accommodate growth.

1.4.1 The Cost of Complexity

The pursuit of ultra-fast systems introduces greater complexity and higher maintenance and operating costs, potentially making the system more expensive to the point of exclusivity, contradicting the human-centered equity and inclusivity ethos of blockchain and digital assets. Such a scenario is akin to a city becoming overly complex and expensive, and thus potentially alienating residents, becoming a barrier to entry and a detractor to quality of life and all characteristics of community equity, inclusion, and, likely, diversity.

1.5 Potential Directions for Blockchain Development

1.5.1 Blockchain 4.0: Next frontier or overreach?

The new US administration's establishment of a Strategic Bitcoin Reserve has accelerated interest in quantum-resistant blockchain technologies, recognizing that national digital asset stockpiles must be secured against future technological threats.

While blockchain 4.0 could likely introduce significant advancements—such as quantum resistance, integrated AI, and Web3 capabilities—

the necessity of these innovations must be critically evaluated for transformative performance gain or, as in the case of quantum resistance. Does the innovation address critical problems, or are they akin to constructing an impractically tall skyscraper?

This is the kind of design and systems thinking that such strategic paths require. Just as Hydra serves Cardano within blockchain 3.0's performance boundaries, considerable development scope remains alive and well inside 3.0 boundaries.

The human-centered digital economy approach to designing complex systems demands seeing through the technology to the people either now being—or intending to be—served by the system and what best meets both current and forecasted, reasonably projected needs in both time and space.

1.5.2 Stabilizing and Expanding Blockchain 3.0 Capabilities

Beyond Layers 2 and 3, could focusing on applications-specific frameworks based on blockchain 3.0's robust infrastructure for diverse use cases in sectors like DeFi, health care, and education prove more productive?

This approach mirrors the development of specialized zones in a city that is dedicated to fulfilling robust, fault-tolerant, resilient operational performance availability and infrastructural capacity, capability, and condition requirements unique to each.

Enhancing integration, interoperability, and connectivity that bridges different blockchain systems and traditional ICT infrastructure stack layers will broaden blockchain's practical utility and, thus, adoption rates. This is comparable to integrating various transportation modalities in a city to enhance overall mobility to best serve the unique use case of each mode (e.g., ensuring bicyclists' protection, safety, and ease of travel while simultaneously ensuring unimpeded response-time requirements of EMT and ambulance services). Seeing the user experience through the layers of technology is key in application-specific blockchain 3.0 design.

1.5.3 Balancing Innovation with Practical Utility

The future path for blockchain technology should not merely aim for faster speeds or newer generational architectures but should focus on creating meaningful, practical solutions that address real-world and real-people issues.

Enhancing and stabilizing existing Layers 2 and 3 solutions within blockchain 3.0 seems to be a more pragmatic and immediately beneficial approach. This strategy ensures that blockchain technology remains relevant and accessible, continuing to fulfill its transformative role in control, trustless security, transparency, and efficient decentralized custodianship—akin to a well-planned city that meets the services needs of all its diverse resident populations in such a way that they have the greatest level of custodial control possible over their participation in the service provision.

1.6 Stablecoins

The milestone collateral transaction using JPMorgan's Onyx dApp, where BlackRock tokenized shares in one of its money market funds and sent them to Barclays as collateral, has become a standard practice. According to KPMG's January 2025 Crypto regulatory round-up, similar transactions are now commonplace among major financial institutions.

A truly pivotal innovation in the realm of digital finance, stablecoins uniquely resolve challenges to cryptocurrency volatility, a major barrier to broader market adoption. By pegging the coin's value to stable reserve assets, such as established fiat currencies (e.g., USD, EUR) and sometimes commodities (e.g., gold), stablecoins provide a much-needed store-of-value buffer against unpredictable price swings, as has been historically experienced by in cryptocurrencies such as Bitcoin and Ethereum (Fiedler and Ante 2023; Mell, Mell and Yaga 2023).

The core design of stablecoins is purposefully strategic, aiming to leverage the inherent benefits of blockchain technology—such as decentralization, transparency, trustless security, and speed—while neutralizing extreme volatility that can undermine the usefulness of cryptocurrencies as reliable mediums of exchange.

Store-of-value stability both increases crypto coinage usability for consumers in daily transactions while also making them a practical tool for digital asset investors.

In recent news reports (Blockworks 2023), "Two financial heavyweights were involved in a milestone

collateral transaction deploying the Onyx dApp developed by JPMorgan Chase. BlackRock used the company's new Tokenized Collateral Network [TCN] to tokenize shares in one of its money market funds," JPMorgan told Blockworks (content publisher) in an email. It then sent those tokenized interests to Barclays as collateral for an over-the-counter (OTC) derivatives trade between the firms.

> TCN is a private blockchain application on JPMorgan's Onyx Digital Assets platform. This is the first collateral settlement for a live client OTC derivative transaction that TCN has facilitated. The ability to post money market fund shares as collateral without, first, redeeming for cash "offers the prospect of greater efficiency and stability in times of market stress," according to JPMorgan. (Blockworks, Strack 2023)

Another prominent use case of stablecoins to date has been remittances. Because of their less volatile pricing, decreased transaction fees, diminished reliance on intermediaries, and immediacy of transactions, stablecoins allow for immediate cross-border transactions (Davis 2023). In this way, stablecoins enable accessible and convenient ease of transcontinental transactions, eliminating the traditional clearance latency of money transfers.

Stablecoins can potentially transform financial systems by facilitating faster, cheaper, and more accessible transactions. In international finance, they could reduce the costs and complexities associated with currency conversion and cross-border transactions. For unbanked or underbanked populations, stablecoins can provide a point of entry to and participation in the relevant economy's financial system, offering basic services through mobile and web applications without the need for traditional banking infrastructure. Human-centered digital economy equity and inclusion are the promises.

1.6.1 Types of Stablecoins

- Fiat-collateralized coins are the most straightforward and common, where each token is backed by a corresponding unit of a fiat currency held as reserves. For instance, Tether (USDT) and TrueUSD (TUSD) are equivalently one-to-one pegged to the USD. Reserves for these currencies are held in bank accounts or other secure financial instruments and are regularly audited by independent third parties for verification that the issued stablecoins are properly backed—maintaining critical trust and regulatory compliance. As of March 2025, Tether (USDT) is now in talks with a "Big Four" accounting firm about a reserve audit (Reuters), signaling a move toward greater transparency in response to a maturing regulatory environment and the increasing integration of stablecoins into traditional finance (TradFi).

- Crypto-collateralized coins, unlike their fiat-collateralized counterparts, are backed by other cryptocurrencies. Given the inherent volatility of their collateral, these stablecoins often over-collateralize—holding a larger amount of collateralizing cryptocurrency to ensure stability even in volatile market conditions. For instance, DAI (formerly SAI), backed by Ethereum, maintains its peg through a dynamic system of smart contracts that automatically manage the issuance of new tokens and the collateral asset levels required to sustain its value (De 2020). Crypto-collateralized coins have seen significant innovation with the rise of Bitcoin above $100,000. The increased value and relative stability of Bitcoin have made it a more attractive collateral asset, leading to new crypto-collateralized stablecoin models that require less over-collateralization than previously needed.

- Non-collateralized (algorithmic protocol) stablecoins don't rely on traditional collateral but use algorithmic mechanisms to maintain their peg value. They simulate the role of a central bank by using algorithms to increase or decrease the supply of tokens based on changes in demand, aiming to keep the coin's value stable relative to its algorithmic peg. Markets (BASIS) is an example of such an algorithmic protocol-based stablecoin. However, it has been under investigation by US federal regulators. Non-collateralized (algorithmic protocol) stablecoins have faced increased regulatory scrutiny, particularly following the new administration's executive order concerning crypto on January 23, 2025. The establishment of an interagency task force has led to clearer guidelines for algorithmic stablecoins, with a focus on transparency and risk management.

1.6.2 Benefits of Stablecoins

- Reduced transaction processing times are a substantial benefit, especially in international contexts where traditional banking transactions can be slow and burdened by regulatory compliance. The technology underlying blockchain 3.0 stablecoins enables near-instantaneous transactions, irrespective of the geographic location of the parties involved, and of particular advantage in remittance markets, where they provide a faster, more cost-effective alternative to conventional money transfer services.

- Predictability of value is another primary advantage of stablecoins, which deliver their stability in comparison to more volatile cryptocurrencies such as Bitcoin. Such stability makes stablecoins an attractive option for both traders and businesses requiring certainty in value-stored digital assets and transactions. All business operations require fiscal controls, financial planning, and budgeting. Predictability of value is, therefore, crucial for operations across all sectors (Smith 2022).

- Enhanced liquidity of stablecoins in cryptocurrency exchanges benefits traders who can quickly enter and exit positions in other cryptocurrencies, reducing the spread and transaction costs associated with trading, factors vital for the efficient functioning of financial markets by reducing volatility across trading platforms.

1.6.3 Risks of Stablecoins

- Reserve management is the most significant risk associated with stablecoins. Their stability hinges directly on the value of the underlying digital assets. Any mismanagement, fraudulent practices, or inadequacies in reserve funding will likely lead to substantial financial loss. Ensuring transparent regulatory compliance management of reserves is critical for maintaining confidence in both business and consumer transaction users as well as digital asset investors.

- Market disruptions debilitate stability, and the reputation of the entire cryptocurrency market is put at risk by a major stablecoin failure, with the attendant possibility of generating widespread panic and rapid sell-offs, affecting not only the stablecoin in question but also other cryptocurrencies and even broader financial markets. The interconnectedness of financial systems means such impacts may extend beyond cryptocurrencies, influencing general transactions, market sentiments, and investor confidence (Manahov and Li).

1.6.4 Future Outlook and Insights

As digital currencies continue to gain prominence, stablecoins will play an increasingly critical role in the global cryptocurrency ecosystem because of their unique ability to provide stability in notoriously volatile markets. This makes them ideal for daily transactions and serves as a robust financial bridge between traditional fiat currencies and cryptocurrencies by addressing one of the previous major hurdles to mainstream market adoption.

The global prospect of successful integration of stablecoins with traditional payment and e-commerce systems holds the promise of an important leap forward. Financial services industry sectors—consumer finance, banking, real estate, insurance, and investment—are beginning to recognize the efficiencies and cost-effectiveness of using stablecoins for cross-border transactions, which can bypass intermediaries typically involved in such processes, thus reducing fees and transaction times.

For consumers, stablecoins could mean more accessible, straightforward ways to pay for goods and services, both online and in physical stores, further expanding and improving the utility of digital wallets and applications.

Financial inclusion is a profound, human-centered, democratizing economic promise stablecoins hold by providing banking and DeFi services—likely as not via 5G mobile and wireless smartphones—to unbanked and underbanked populations and communities where there is either no traditional banking infrastructure or, just as likely, any access to it. This will particularly hold true in frontier, emerging, and developing economies at any scale and anywhere. Blockchain control, resting in the hands of DAO stakeholders, completes the democratization process.

International regulatory considerations are complex and in a state of flux as government regulatory bodies worldwide try to understand and mitigate risks associated with stablecoin assets. Concerns over financial volatility, consumer protection, and monetary policy integrity are driving regulatory frameworks, but there is significant variation in approaches between different regulatory jurisdictions.

Addressing these jurisdictional challenges will require international cooperation and coordination among regulators and enforcement agencies (NS Uzougbo 2024). It is most likely that the US, Canada, and the EU will end up developing and policing regulatory policy and governance for much of the global cryptocurrency trade. Stablecoin will prove instrumental in cross-border cooperative harmony.

The need for harmonized regulatory frameworks is gaining growing consensus as the way to manage the challenges posed by stablecoins. Such frameworks must address issues like the following:

- Reserve transparency to ensure stablecoins are fully backed by reserves and that these reserves are managed transparently and regularly audited.

- DeFi consumer protection from fraud, scams, and mismanagement requires robust, trustless security measures at every necessary layer of the tech stack and every segment.

- Anti-money laundering (AML) and counter-terrorism financing (CTF) require strong, fully autonomous laws, policies, and rules to prevent and alert authorities in real time to any misuse of stablecoins for illegal activities, regardless of cross-border jurisdictional differences.

- Systemic risk assessment and mitigation, again in real time and autonomously, is critical as it may well affect the broader financial systems integrity, especially as stablecoins become more integrated into global finance.

1.6.5 Potential for International Collaboration

Given the growing global nature of stablecoins, international collaboration will be key to developing effective regulatory measures. Organizations such as the Financial Stability Board (FSB) and the International Monetary Fund (IMF) can play significant roles in facilitating joint cooperation among nations to ensure that stablecoins operate within frameworks that support and enhance global financial stability while simultaneously fostering both innovation and market growth. As we look to the future, the trajectory of stablecoins seems promising, with the potential for a significant impact on both the cryptocurrency markets and traditional financial systems. However, their successful integration and longevity will largely depend on how well regulatory challenges are navigated, ensuring that these digital assets contribute positively to the financial ecosystem while safeguarding against potential risks.

According to the FSB's thematic peer review of the global regulatory framework in February 2025, 56 percent of jurisdictions expect to reach alignment with the FSB Framework by 2025 for crypto-assets. The potential divergence between US and EU approaches to digital asset policy in 2025, as noted by the Atlantic Council, highlights the ongoing challenges in achieving full regulatory harmonization.

1.7 Centralized State Currencies and CBDCs

The development of CBDCs marks a transformative phase in the financial landscape as sovereign states shift from exploring to actively implementing digital versions of their national currencies. The trend toward mainstream adoption within the next decade has become more concrete, with several major economies now in advanced stages of CBDC development.

As discussed at the Paris Blockchain Summit (April 2024), various global pilots in countries like China and India showcase this shift, highlighting the potential for CBDCs to reshape how money is conceived and circulated, blending the benefits of digital technology with regulatory assurance.

- The Digital Rupee is the Reserve Bank of India's cryptocurrency-advancing development, with rollouts that began in 2023. Recent pilots have focused on retail consumer dApps such as bill payments and end-recipient aid distribution. This initiative has proven successful in broadening financial inclusion among unbanked or underbanked people and communities. India's non-interest-bearing digital currency is positioned to complement physical cash rather than replace it. However, balancing privacy concerns with the need to combat illicit financial activities presents a significant challenge, potentially impacting broader adoption rates (Reserve Bank of India 2023).

- Digital Yuan or e-CNY is China's push forward, which has already seen the equivalent of over $5 billion in transactions across pilot cities, including Shenzhen, involving millions of users. This digital coin asset aims to replace the physical yuan for seamless integration into everyday mobile payments. While the Beijing 2022 Winter Olympics provided a platform to demonstrate its cross-border capabilities, issues of surveillance and mandatory real-name registrations raised privacy concerns that could hinder international acceptance (People's Bank of China 2023). The integration into everyday mobile payments has progressed significantly, with the Beijing 2022 Winter Olympics having demonstrated its cross-border capabilities. While privacy concerns remain, the system has been refined to address some of these issues, potentially increasing international acceptance.

- Digital Euro is the European Central Bank's (ECB) explorative foray into digital currency that seeks to maintain the functionality of cash in an increasingly digital era. Coordination challenges across Eurozone countries in aligning legal and operational frameworks have delayed its development compared to peers. The emphasis on privacy and neutrality aims to build public

trust, providing a stark contrast to more control-oriented models like China's Digital Yuan (ECB 2023). The European Central Bank has moved from exploration to implementation planning. The coordination challenges across Eurozone countries have been largely addressed, with a clear legal and operational framework now in place.

- Digital Ruble is Russia's effort partly motivated by the desire to circumvent international payment barriers, particularly in light of economic sanctions. However, systemic fragmentation poses challenges in integrating the Digital Ruble into the global financial system. Domestic goals focus on modernizing Russia's economy and reducing currency volatility rather than replacing the USD-dominated SWIFT network (Central Bank of Russia 2023).

1.7.1 Types of CBDCs

CBDCs are categorized based on their ease of accessibility and intended use within the economy. The primary distinction is between *wholesale* and *retail* CBDCs, each serving specific functions and targeting different segments of the financial system. Understanding these types can provide insight into how central banks might implement these digital currencies to achieve various policy objectives.

Wholesale CBDCs are restricted to financial institutions that hold reserve deposits with a central bank. They are primarily used for interbank settlements or securities transactions, where the efficiency and security of high-value transfers are critical. Wholesale CBDCs improve payment systems' efficiency, reduce settlement risks, and enhance the security of financial transactions. Accessibility is restricted to financial institutions such as banks, insurers, investment houses, and credit unions generally participating in financial markets and requiring CB reserves. Use cases include interbank payments, securities settlement, and other high-value transactions requiring immediate clearing and settlement.

Retail CBDCs are designed for daily currency transactions by both consumers and businesses. Their accessibility means they can serve as the digital equivalent and complement to cash or, in some cases, replace physical currency altogether. The goals of retail CBDCs often include enhancing financial inclusion, making "shopping" easier and more efficient, expanding the tax base, minimizing illicit transactions, shrinking the informal "off-the-books" economy, and reducing the costs of traditional money management, thus increasing the efficiency of payment systems.

Retail CBDCs are made conveniently accessible to all citizens and residents (that being the point) through mobile smart-device applications, crypto cards (which act like prepaid credit cards), or crypto wallets, which are designed to store private keys, keeping crypto accessible to the owner at all times, and enabling payments and purchasing. Again, such accessibility aids in reaching and including underserved or unbanked people.

Common use cases include paying for goods and services, transferring money between individuals (peer-to-peer), and receiving payments from the government or employers. For example, the Bahamian sand dollar is a retail CBDC for this independent state within the fifty-six-member British Commonwealth, the purpose of which is to improve financial inclusion and reduce physical cash reliance within the archipelago.

Hybrid or dual-purpose CBDCs are designed to leverage the principle benefits of both wholesale and retail digital currency types—enabling broad public accessibility while serving specific financial sector needs such as secure, efficient, large-scale transactions.

The People's Bank of China's Digital Yuan, a digital currency/electronic payment (DCEP) system, also known as the Digital Yuan, is being tested as a hybrid or dual-purpose wholesale/retail dApps by the People's Bank of China. Other central banks are considering, designing, or developing CBDC systems that incorporate elements of both wholesale and retail functions.

Hybrids intend to serve the general public, consumers, businesses, and financial institutions under a unified framework. The advantages are that such systems can streamline the financial systems architecture of an entire country, reducing complex redundancies and enhancing interoperability between wholesale and retail transactions.

The Digital Euro, as proposed by the European Central Bank, is being examined for its potential to serve both public-facing and specific financial sector-facing purposes. Its exact structure, however, remains under consideration.

1.7.2 Future Outlook and Insights

Innovative developments and implementations of CBDCs vary widely across different national and multistate regional contexts, reflecting diverse economic agendas, regulatory frameworks, and societal needs. These differences underscore the varied approaches to digital currency adoption, influenced by each country's specific priorities and challenges.

Some countries prioritize the use of CBDCs to enhance governmental oversight of monetary flows, an approach often driven by concerns over financial crimes such as money laundering, fraud, and tax evasion. By implementing a CBDC, regulatory authorities can gain real-time insight into money movements, enabling more effective governance and enforcement actions. Countries with high rates of financial crime instances will likely find this capability particularly beneficial in stemming illicit funds flows.

Other nations, in contrast, will emphasize the role of CBDCs in benefitting people and businesses, stimulating greater financial access and inclusion. This approach is prevalent in regions where a significant portion of the population lacks access to traditional banking services. CBDCs can provide these underserved communities with inclusionary accessibility to secure and efficient financial services, thereby facilitating greater economic participation and equity. For example, the Bahamian sand dollar is designed to extend financial services to remote islands, improving residents' access to digital payments.

It's worth noting that local people and business interests find a social as well as trading benefit when the results of their decentralized community trade with outside visitors are localized and immediate. This is particularly true in global tourism and its young, growing offshoot branch of Digital Nomads, which is quite nearly everywhere. DeFi stablecoins provide a sense of convenience, ease of use, immediacy, and stakeholder pride, as well as a shared community.

Sidenote: Most ESG initiatives struggle to succeed unless there's a growing, empowered middle class. Outside aid, even with good intentions, often fails to create lasting change if communities lack a sense of decentralized ownership—or pride in that ownership. Without economic inclusion, progress on UN Sustainable Development Goals (SDGs) through Global North aid to the Global South remains limited. Such efforts frequently fall short because they don't equitably include local voices.

Whether CBDCs prove effective in successfully fostering global coordination or leading to fragmentation in financial systems will largely depend on the development of interoperable standards and effective cross-border payment protocols. The ability of CBDCs to function across national borders can potentially reduce costs and complexities associated with international trade and finance, but (and this remains a big "but") harmonious regulatory and technical frameworks are the requirement to manage the interactions among diverse CBDC systems seamlessly.

Paris Blockchain Week 2024 highlighted the crucial role of multilateral partnerships and open infrastructures in the successful global integration of CBDCs. Collaborative alignment efforts are mission-critical in addressing the interconnected nature of today's global capital flows in just, equitable, and highly accessible ways.

Institutions like the Bank for International Settlements (BIS) Innovation Hub are instrumental in bringing together the many stakeholders to foster innovation while simultaneously ensuring publicly beneficial and balanced oversight. Such institutions serve to lubricate knowledge exchange and collaboration on best practices among central banks and other financial authorities, helping to navigate highly complex CBDC implementations.

Uncertainties and conflicts are bound to arise as multinational financial systems seek to incorporate digital currencies, even as their national economies are working to accelerate and scale their own digital economy transformations. The ongoing mitigation of complex problems is a vital role to be played by open, organized professional and academic communication among all parties.

Long-term efforts for international standardization of technical and regulatory aspects of CBDCs—such as security protocols, transaction privacy, and legal frameworks—are essential to ensuring seamless interoperability and preventing economic fragmentation, particularly between globally developed regions and frontier/emerging economy regions.

CBDCs signal a worldwide paradigm shift in monetary systems and payments. Rapid technological and financial regulatory governance advancements demand senior-most design and systems thinking approaches and cooperative, collaborative, internationally oriented efforts to ensure the effective integration of CBDCs—at velocity and scale—into the global economy. No society is left behind, being included with equitable, inclusionary seats at the table. The discussions and partnerships formed at forums like the Paris Blockchain Summit serve as critical platforms for ongoing and globally collaborative navigation through this significant transition.

As nations and multistate trading regions (e.g., EU, AU, GCC, ASEAN, NAFTA, Mercosur) progress with their respective CBDC advancements, the global financial landscape will experience profound changes in how money is stored, used, and managed. The choices made regarding CBDC

models—whether retail, wholesale, or hybrid—will significantly influence these transformations, shaped by each country's economic priorities, existing financial infrastructure, and strategic goals.

CBDCs are intended to improve efficiency in financial systems, promote financial inclusion, and provide stable digital currency. However, CBDCs will most likely be powered by distributed ledger technology (DLT) or hybrid models. It may also be true that CBDCs and DeFi will (where and whenever possible) likely coexist and be integrated seamlessly and transparently. Blockchain DLT stablecoins on both sides of this equation are the commonality.

1.8 Decentralized Physical Infrastructure (DePIN)

DePIN represents the groundbreaking integration of blockchain and tokenization with physical infrastructure systems that leverage the decentralized, transparent, and secure nature of blockchain. Business process improvement (BPI) is dramatically enhancing the efficiency of operations, transparency, and inclusivity of the full physical infrastructure management value chain.

The DePIN sector has experienced remarkable growth, particularly following Bitcoin's rise above $100,000 and the new US administration's pro-crypto stance. This convergence of blockchain technology with real-world physical infrastructure has moved from experimental pilots to mainstream implementation across multiple sectors.

Applications of DePIN span a broad range of sectors where dramatic efficiency gains, and cost reduction, with high transparency and security, mark every link in the value chain. Some high-impact sectors for DePIN include the following examples:

Supply chain management (SCM), where complex networks of warehousing and transportation logistics span multiple geographic zones, are often transnational cross-border and comprise a large stakeholder community. Traditional warehousing and transportation logistics SCM systems often suffer from issues such as a lack of transparency and traceability, centralized-control inefficiencies, and fraud-risk vulnerabilities. DePIN addresses such challenges with these benefits:

- Enhanced transparency and traceability where each transaction or transfer within the supply chain is recorded on the blockchain, creating an immutable ledger of activities, accessible to all participants. This level of insight helps track the origin of goods, verify authenticity, and ensure compliance with regulatory requirements.

- Increased efficiency and reduced costs by automating processes like payments, settlements, and compliance checks through smart contracts. DePIN can cut overheads and delays resulting from any manual processing.

- Improved security and fraud prevention through the decentralized, distributed nature of blockchain DLT makes it extremely difficult for any single entity to manipulate any records, thereby enhancing SCM security.

Renewable energy is another sector where DePIN focuses on optimizing and sharing renewable energy on smart grids and microgrids where DePIN can play a pivotal role in this transformation:

- Decentralizing power grids where DePIN enables the creation of decentralized smart grids and microgrids where energy production and consumption are balanced locally, improving sustainability, efficiency, and resilience.

- Peer-to-peer energy trading via blockchain microgrids enables households, communities, farmers, or businesses to generate renewable energy, trading the power either directly on the microgrid to members or other customers without the need for traditional grid operators or intermediaries or tying in to sell the power to smart grid distribution operators. This not only makes power distribution more efficient but also encourages the adoption of solar and wind power generation and storage by making them economically viable.

Decentralized communication networks promise to enhance connectivity, especially in underserved areas, by reducing reliance on central infrastructure:

- Enhancing network access and reliability, whereby DePIN facilitates the creation of decentralized networks, where each node in the network acts as both a contributor and beneficiary, enhancing network robustness and reducing single points of failure.

- Community-driven networks, where, through tokenization and blockchain, communities build and manage their own communication infrastructure. Participants can earn tokens by hosting nodes or providing bandwidth. This serves to incentivize community-led network infrastructure expansion.

Integration of blockchain technology with DePIN offers transformative potential across a range of

sectors. By enhancing transparency, efficiency, and community participation, DePIN optimizes existing infrastructure and paves the way for sustainable innovation in areas like SCM, renewable energy, communications, and so much more. As the DePIN tech continues to evolve, it will unlock many new possibilities for managing and interacting with physical infrastructure in ways previously unimaginable.

1.8.1 Future Outlook and Insights

DePIN is pioneering a new era by merging blockchain tech with physical infrastructure systems and is capable of transformative, high-value, high-integrity development across multiple industries, offering unprecedented efficiency, transparency, and decentralized control.

Blockchain-based SCM systems are now being extensively tested and used by leading companies and consortia, such as IBM's Food Trust, Maersk's TradeLens, and the Blockchain in Transport Alliance (BiTA). Such groups are applying blockchain DLT to enhance the traceability and efficiency of their supply chains.

- IBM Food Trust deploys DLT to trace food products from farm to store shelves. Major retailers like Walmart have mandated certain suppliers to enter data into this system to improve food safety.
- TradeLens, a blockchain-based digital shipping platform developed by Maersk and IBM, provides real-time access to shipping data and documentation documents for all parties on the SCM blockchain system.

Renewable energy leverages blockchain for greatly improved smart grid power distribution logistics and peer-to-peer energy trading platforms:

- Brooklyn Microgrid was an early (2017) initiative in a small neighborhood of this New York Borough that enabled a community-level energy market where users traded electricity generated from rooftop solar installations directly with other users on the neighbored blockchain microgrid network.
- Powerledger is an Australian climate tech company that has developed a platform for decentralized energy trading. It allows renewable energy asset owners to decide who they want to sell their surplus energy to and at what price.

Decentralized communication networks are gaining fast traction as a means to increase resilience against single points of failure and enhance privacy:

- Helium Network provides a decentralized wireless network enabling digital devices to connect to the internet without cellular towers. Participants can install hot spots on their stationary or mobile devices, which not only provide network coverage but also mine Helium's native crypto coins as a reward. An added benefit is that Helium also provides a GPS service for all network hot spot participants as a functional benefit of being on the network. The Helium Network has expanded dramatically, with over 1.2 million hot spots now deployed globally, according to recent data. Its successful transition to the Solana blockchain in 2023 has resulted in increased transaction throughput and reduced costs.
- Althea L1 Liquid Infrastructure offers payment-layer infrastructure finance services (iFi) where, in the case of its Hawkeye service, provides internet access and bandwidth, whereby users pay for service provision directly to local Althea Hawkeye network hosts, Althea L1 autonomously, machine-to-machine, discovers and switches to the cheapest available connection, optimizing cost and bandwidth among small-scale internet service providers.

SmartCities IoT systems are integrating DePIN to automate a host of municipal functions and services to enhance urban security, safety, and social and environmental livability for resident populations. Dubai, a global digital urban hub, has implemented distributed ledger blockchain technology to manage systems such as traffic signal systems and environmental health monitoring, using smart contracts to automate operations and maintenance. Similar initiatives have been adopted in cities like Singapore, Toronto, and several European cities. The use of smart contracts has led to notable cost savings and efficiency improvements while transparent governance models have helped increase citizen trust.

- Mobile cryptophones create opportunities for decentralized data marketplaces with platforms such as those offered by the IOTA Foundation, which enable data on or intended for IoT devices to be securely traded using blockchain distributed ledger to ensure data transaction integrity. This is particularly beneficial in underserved regions in the emerging and developing world.

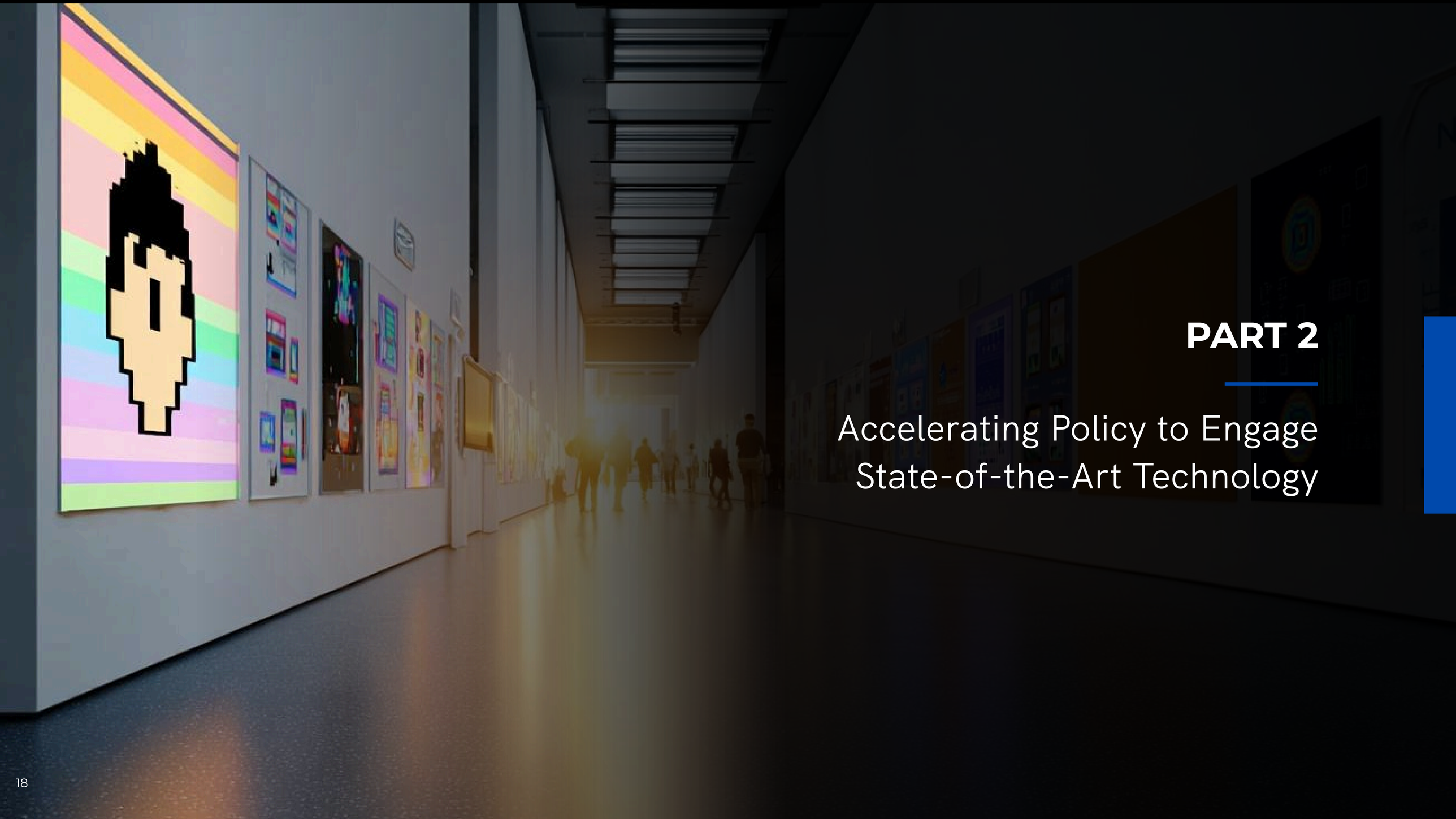
Real Estate is yet another marketplace where blockchain is being used to decentralize

transactions, reducing fraud and making all buy/sell processes more transparent and efficient:

- Propy provides a platform that enables buyers, sellers, brokers, and escrow/title agents to come together through an online, integrated real estate transaction interface, which simplifies the purchasing process and enhances security. According to their latest reports, Propy has processed over $4 billion in real estate transactions, with several US states now recognizing blockchain-based property transfers. Its integration with traditional title insurance providers has created a hybrid model that combines the security and efficiency of blockchain with the legal protections of established systems.

- Lofty AI is a newer entrant, deploying blockchain to allow investors to purchase tokenized fractional shares in rental properties, providing liquidity and making it possible for small investors to participate in real estate markets by lowering the barriers to entry. The platform has since expanded to include commercial properties and development projects, not just rental properties. The lowered barriers to entry have attracted a new class of real estate investors, with over one hundred thousand users now participating in fractional ownership of properties across multiple markets.

The future of DePIN is likely to be characterized by increased adoption across these sectors and beyond, with innovations focusing on enhancing the scalability, interoperability, and user-friendliness of blockchain platforms. Continued technological advancements and regulatory developments are expected to further drive the integration of blockchain into physical infrastructure, potentially making DePIN a standard approach in many more industries.



PART 2

Accelerating Policy to Engage State-of-the-Art Technology

2.1 Global Regulatory Measures

Know Your Customer (KYC) and Anti-Money Laundering (AML) are pivotal frameworks designed to combat financial crimes within the blockchain and cryptocurrency sectors. KYC regulations mandate businesses verify the identity of clients to prevent malicious actor misuse. Such regulatory-required information includes name, address, date of birth, and company incorporation documents.

- KYC processes often incorporate continuous transaction monitoring and customer screening measures such as politically exposed person (PEP) screening, sanctions screening, and adverse media screening.

- AML involves broader measures than KYC, requiring financial organizations to implement comprehensive policies to prevent and detect financial crimes like money laundering, terrorism financing, human trafficking, fair labor practices, etc.

An AML screening process entails the collection of customer data, risk assessment, and ongoing monitoring of transactions, considering factors such as the customer's source of funding and geographical location. Enforcement of such regulations ensures that financial platforms don't provide conduits for illicit activities, thereby hardening the integrity of financial transactions in the digital assets space.

The implementation of these frameworks has evolved significantly with the increased mainstream adoption of cryptocurrencies and the rise of

The implementation of these frameworks has evolved significantly with the increased mainstream adoption of cryptocurrencies and the rise of institutional participation following Bitcoin's breakthrough beyond $100,000.

According to KPMG's "Cryptocurrencies and other digital Assets" report (January 2025), the integration of AI with KYC processes has reduced false positives by up to 60 percent while improving the detection of suspicious activities.

The establishment of the interagency task force by the new US administration's executive order on January 23, 2025, has created a framework for coordinating AML efforts across different regulatory bodies, reducing duplication and inconsistency.

PwC's Global Crypto Regulation Report 2025 notes that combining blockchain analytics with traditional AML systems has created more effective monitoring capabilities, particularly for cross-border transactions.

The G20's implementation of the FSB Framework by 2025 represents a major step toward a more coordinated global approach to crypto regulation.

2.1.1 OECD Countries

A general trend among the thirty-eight-member countries of the Organization for Economic Cooperation and Development (OECD) is a cautious, structured approach to cryptocurrency regulation, focused on investor protection, money laundering, and integrating digital assets into the formal financial system under clear regulatory frameworks.

Notable examples:

- South Korea has moved beyond stringent regulations for crypto exchanges to a more comprehensive framework that includes support for blockchain innovation. The country's Digital Asset Basic Act, implemented in early 2025, provides clear guidelines for cryptocurrency businesses while establishing a sandbox for testing new blockchain applications.

- Japan recognizes cryptocurrencies as legal property under the Payment Services Act and requires crypto exchange operators to register and comply with financial regulations. Japan has expanded its regulatory framework to include DeFi and NFTs. The country's Financial Services Agency has established a dedicated blockchain innovation office to support the development of compliant blockchain applications.

- The EU has taken significant steps to integrate blockchain tech into its regulatory framework to avoid fragmentation, enhance innovation, and ensure consumer protection. The European Blockchain Partnership and the EC have collaborated on the development of the Pan-European Blockchain Regulatory Sandbox. This initiative supports the testing of blockchain applications in real-world scenarios, ranging from data portability to smart contracts within the European Blockchain Services Infrastructure (EBSI).

  With Markets in Crypto Assets Regulation (MiCA), the EU intends to thoroughly regulate crypto assets markets and associated activities. MiCA addresses issues such as insider trading and provides a structured regulatory

addresses issues such as insider trading and provides a structured regulatory environment for crypto asset issuers and service providers. According to KPMG's "Cryptocurrencies and other digital Assets" report (January 2025), the EU's landmark crypto asset regulatory framework provides a comprehensive approach to crypto regulation, addressing issues such as insider trading and providing a structured regulatory environment for crypto asset issuers and service providers.

- The United States had an uneven and fragmented regulatory system with both state and federal regulations. Key regulatory bodies include the Securities and Exchange Commission (SEC), the Commodities Futures Trading Commission (CFTC), and the Financial Crimes Enforcement Network (FinCEN).
Regulatory actions in the past included significant measures by the SEC against major platforms such as Binance, where legal actions are based on allegations of securities law violations and inadequate regulatory compliance, particularly concerning the operations and digital assets management practices of Binance US.

  The US focus was most recently on regulating stablecoins, and there were ongoing discussions around a potential US Federal Reserve-backed CBDC, such as a FED-backed digital currency. The US Securities and Exchange Commission approved eleven Bitcoin spot ETFs, which was an indicator of a cautious yet slowly evolving approach to cryptocurrency regulation.

  Since 2025, the United States has undergone a significant shift in its approach to cryptocurrency regulation, with the new administration taking office in 2025. The previously uneven and fragmented regulatory system is being streamlined through a series of executive orders and legislative initiatives.

  The most significant development is the establishment of the Strategic Bitcoin Reserve and US Digital Asset Stockpile via executive order on March 6, 2025. This move signals a fundamental shift in the US government's approach to cryptocurrencies, recognizing Bitcoin and other digital assets as strategic resources rather than merely speculative investments.

  The interagency task force established by executive order on January 23, 2025, is working to coordinate regulatory efforts across different agencies, including the SEC, the CFTC, and the FinCEN. This coordination aims to reduce the regulatory fragmentation that has been a significant challenge for the industry.

  The nomination of crypto-friendly officials to key regulatory positions, including Paul Atkins as SEC chair, has further signaled the administration's pro-crypto stance. According to Reuters, this nomination was a key factor in Bitcoin's surge above $100,000 in December 2024.

  The US focus has shifted from enforcement actions against major platforms to providing clear regulatory guidance to promote innovation. The administration has promised to provide clear regulatory guidance regarding crypto assets, a stark contrast to the previous approach that relied heavily on enforcement actions.

  The approval of Bitcoin spot ETFs has expanded beyond the initial eleven to include a wider range of cryptocurrency investment products. This expansion reflects the growing mainstream acceptance of cryptocurrencies as legitimate investment assets.

- South American countries present a widely varied stance toward cryptocurrencies—influenced by local conditions, including, both economic and political stability.
  - El Salvador adopted Bitcoin in 2021 as legal tender, representing a significant pivot toward cryptocurrency integration. However, by the end of 2023, the rate of adoption by El Salvodorans was only 22 percent. Recent data indicates that this rate has climbed to over 40 percent as of early 2025, reflecting growing confidence in the cryptocurrency.
  - Brazil and Argentina both display growing crypto adoption with increasing regulatory focus to protect consumers and integrate crypto services into their formal state economies.
- African Continent countries are generally in the early stages of developing cryptocurrency regulations.
  - Nigeria has moved beyond its previously oscillating stance on cryptocurrencies, establishing a clear regulatory framework through its Securities and Exchange Commission. The country's central bank has lifted restrictions on cryptocurrency transactions, recognizing the significant informal crypto use and the potential for financial inclusion.

- South Africa is advancing in its regulatory approach, treating cryptocurrencies as financial assets and implementing AML standards.

- Asian countries have taken diverse approaches ranging from strict bans to the full embrace of cryptocurrencies.

  - China has banned all cryptocurrency transactions and mining activities, citing financial risk and high energy consumption associated with mining operations.

  - India is slowly and conservatively planning but with significant progress. In 2018, the Reserve Bank of India (RBI) initially imposed a ban on bank dealings with crypto-related businesses. That ruling was subsequently overturned by the Supreme Court in 2020. After the court's decision, while the regulatory environment remains uncertain, it is moving toward structured regulation.

    In 2022, India introduced a tax on virtual digital assets, imposing a 30 percent tax on crypto gains and a 1 percent tax deducted at source (TDS) of crypto transactions, signaling a move toward formal recognition and regulation.

    India is actively experimenting with a digital version of the rupee as a CBDC. RBI launched a pilot for a digital rupee in the wholesale segment in November 2022 and similarly for the retail segment shortly thereafter.

    This initiative is part of broader efforts to modernize the financial system and offer a regulated alternative to decentralized cryptocurrencies.

    Since 2021, India has been planning a comprehensive Crypto Bill to balance regulation and innovation with a comprehensive focus on security, AML/CFT measures, and investor protection. As currently envisioned, it would prohibit all independent DeFi currencies, with the exception of a few, for the purpose of furthering innovation. Details and implications of this bill are highly anticipated.

    In 2024, India has made significant progress in its regulatory approach, moving beyond the initial uncertainty to a more structured framework. The comprehensive Crypto Bill—initially proposed in 2021—has now been enacted with modifications that strike a balance between regulation and innovation. Rather than prohibiting most independent DeFi currencies as initially envisioned, the bill establishes a licensing system for cryptocurrency exchanges and sets clear guidelines for token offerings.

    India's digital rupee CBDC has moved from pilot to limited production, with plans for broader implementation in 2025. According to the Reserve Bank of India, the digital rupee is part of a broader strategy to modernize the financial system and provide a regulated alternative to decentralized cryptocurrencies.

  - The UAE has implemented progressive regulations encouraging cryptocurrency and blockchain innovations throughout its forty-six multidisciplinary "free zones" scattered across the Emirates. These include the Dubai International Financial Centre (DIFC) and the Abu Dhabi Global Market (ADGM).

    Regulated by the Financial Services Regulatory Authority (FSRA), the ADGM offers a comprehensive regulatory regime for crypto businesses, which includes requirements for risk management, AML/CFT compliance, and consumer protection.

    For the DIFC, the Dubai Financial Services Authority (DFSA) has also tailored regulations to facilitate fintech services, including cryptocurrencies and their underlying blockchains and DLTs.

    The national strategy of the UAE government was to launch several initiatives integrating blockchain across essential services and other sectors by the end of 2021. Such timing positioned the UAE as being a leader in blockchain technology.

    As part of the Gulf Cooperation Council's six-country region's exploration of digital currencies, the UAE Central Bank is part of multiple CBDC bridging projects to fully integrate blockchain DLT for cross-border transactions and payments.

    The UAE continues to implement progressive regulations that foster cryptocurrency and

blockchain innovations throughout its free zones. The DIFC and the ADGM have expanded their regulatory frameworks to include decentralized finance and non-fungible tokens.

- Singapore and Hong Kong serve as state economy examples where proactive regulation aims to establish themselves as global crypto hubs with clear, stringent regulatory frameworks.

2.2 Market Headwinds Due to Cryptocurrency Regulation

The regulatory environment surrounding cryptocurrencies is an ever-evolving landscape that significantly impacts the pace of innovation as well as overall market development. Several strong headwinds arise from this regulatory scenario, each affecting various aspects of the cryptocurrency ecosystems, from operations to market confidence. Here's a more detailed analysis of these challenges:

- Investor confidence suffers from frequent shifts in regulatory stances or ambiguous legal guidelines that can deter investment in the cryptocurrency sector. Investors typically seek markets with stable, predictable, and transparent rules to mitigate risks associated with regulatory ambiguities. The lack of uniform regulations across different countries complicates operations for companies providing global services. A cryptocurrency exchange, for instance, which must navigate differing legal and regulatory requirements of each country in which it operates, will hinder its ability to offer seamless services.
- Compliance costs resulting from regulatory standards may present an unwelcome financial burden. These include expenses for implementing jurisdictionally unique security measures, maintaining records, conducting audits, and managing compliance operations. For start-ups and smaller enterprises, such costs may be prohibitively high.
- Resource allocation, including time and manpower that are required to ensure ongoing compliance in transnational cross-border jurisdiction with differentiated regulatory requirements, can present a significant barrier by diversion of resources that can detract from other areas of business development and innovation—especially for innovative start-ups and small-scale businesses.
- Market adaptation
  - Operational changes as new regulations are introduced require crypto businesses to quickly adapt to meet standards. This often requires overhauling existing systems and processes, with such adaptation likely being resource-intensive and disruptive.
  - Market maturity can be the long-term positive outcome of adapting to stringent regulations, leading to more mature business models and practices, leading to more resilient, robust market operations. Over time, strong regulatory governance enhances the stability and reliability of the cryptocurrency market, making it more attractive to both institutional investors and the general public.
- Innovation versus regulation
  - A balancing act where regulators face the challenge of how to ensure that the need for innovation is overshadowed by the oversight necessity. Overregulation can stifle creativity and slow the pace of digital tech advancement, potentially causing the jurisdiction to fall behind in globally competitive markets.
  - Safe innovation ought to be the aim of regulation—protecting consumers and financial systems while simultaneously allowing enough opportunity capacity for innovation. Frameworks should encourage and support new technology design, systems thinking, and business models without compromising safety through compliance.

Regulatory challenges underscore the complex relationships between the "need for speed" in innovation and tight regulatory control of the throttle within the digital economy transformational c. yptocurrency markets.

Regulation is essential for ensuring safety, transparency, fairness, equity, and cryptocurrencies' unique promise of inclusion to the un- and under-banked. For these reasons (and more), it must also be designed in a way that doesn't stifle innovation nor impose unsustainable burdens on crypto businesses.

Achieving this balance is crucial for the long-term health and growth of the cryptocurrency sector. As the digital economy markets continue to rise and

evolve, ongoing dialogue between regulators, businesses, and other stakeholders will be vital in shaping a regulatory environment that supports both needs—security and innovation.

PART 3

Looking into the Future

3.1 Open-Source Digital Public Goods (DPGs): Challenges and Blockchain Applications

DPGs form the essential components of the Digital Commons, the digital economy extension of traditional public goods and the commons, such as roadways and municipal water systems. DPGs are characterized by their inclusionary open-source and non-rivalrous nature.

This means that their use by one party doesn't prevent other parties from using them simultaneously. Freely available to all without direct fees. In the digital realm, these goods include open-source software, open data, open AI models, open standards, and open content, all designed to enhance the global quality of life and economic opportunities (Benmohamed, Shen, and Vlahu-Gjorgievska 2024).

The establishment of the Strategic Bitcoin Reserve and US Digital Asset Stockpile via executive order on March 6, 2025, has elevated the status of blockchain-based DPGs from experimental technologies to critical national infrastructure. This recognition at the highest levels of government has accelerated investment and innovation in blockchain-based DPGs, particularly in areas related to financial inclusion, digital identity, and cross-border transactions.

3.1.1 Security and Reliability Challenges

Ensuring the security and reliability of digital public goods is paramount due to their open and shared nature. The challenges here include the following:

- Security vulnerabilities where open systems are susceptible to various security threats that can compromise the integrity and availability of the services they provide (Kshetri 2018).
- Maintenance and updates are key in any case where continuous technological evolution requires frequent updating, a process that can be hampered by the absence of incentives for developers and maintainers (Hess and Ostrom 2005).

DPGs can often face coordination failures. These might include the following:

- Design issues where a lack of effective incentive structures can lead to underinvestment in mission-critical infrastructure needed to maintain and improve public goods (Benkler 2016).
- Execution challenges arise when asymmetric information and differing stakeholder objectives can lead to inefficiencies and suboptimal outcomes in the management of these goods (Ostrom 1990; Mansbridge 2010).

Security vulnerabilities in open systems continue to be a concern, but the increased economic value of blockchain networks following Bitcoin's rise above $100,000 has attracted more resources to security research and development. According to Deloitte's Tech Trends 2025, the integration of AI with blockchain security has created more sophisticated threat detection and prevention mechanisms, reducing the risk of successful attacks.

Maintenance and updates of blockchain-based DPGs have become more sustainable with the increased economic incentives for developers and maintainers. The new administration's pro-crypto stance has led to increased funding for open-source blockchain projects, addressing the previous challenge of underinvestment in critical infrastructure. Coordination failures in DPGs are being addressed through more sophisticated governance mechanisms, with DAOs (decentralized autonomous organizations) playing an increasingly important role in managing shared resources. According to a16z crypto's "7 Big Ideas for 2025," DAOs are expected to manage over $50 billion in assets by the end of the year, reflecting their growing importance in coordinating decentralized communities.

3.1.2 Blockchain as a Solution

Blockchains are inherently designed and particularly suited for DPGs, providing a decentralized, transparent mechanism for data management and transactions because of their common architectural characteristics, notably the following:

- Decentralization and open access are hallmarks of public blockchains, like Bitcoin and Ethereum, delivering open access to all and ensuring that there is no centralized control that can restrict access to DPGs.
- Governance through forking allows for a governance mechanism where dissatisfied participants can create a new chain (a "fork"), ensuring that the community can resolve conflicts democratically (Buterin 2013; Wood 2014).

The increased value and stability of major cryptocurrencies have made decentralized networks more economically sustainable, addressing previous concerns about the long-term viability of open blockchain networks. The integration of on-chain governance with legal frameworks has created hybrid models that combine the flexibility of blockchain governance with the certainty of legal recognition, which is particularly important for institutional adoption.

3.1.3 Use Cases in DPG Management

Blockchain technology has been effectively used to manage public goods:

- UN World Food Program's Building Blocks is a blockchain-based initiative in Jordan that facilitated cash transfers to over ten thousand Syrian refugees, ensuring transparency and reducing transaction costs (Barbosa 2021). The initiative has expanded beyond Jordan to multiple refugee camps globally, now serving over one million beneficiaries. The success of this program has led to the development of a broader UN blockchain strategy for humanitarian aid, recognizing the technology's potential for enhancing transparency and reducing transaction costs.

- Consensus and congestion pricing is a blockchain-based system demonstrating how blockchains can manage 'impure' public goods by allowing dynamic pricing based on real-time conditions (Li, Jiang et al. 2021). According to PwC's *Global Crypto Regulation Report 2025*, the integration of blockchain with IoT devices has created more efficient systems for managing shared resources like transportation networks and energy grids.

3.1.4 Challenges and Future Prospects

While blockchain offers significant benefits, it faces its own set of challenges:

- Scaling blockchain technology to handle large volumes of transactions swiftly remains a technical challenge that is continuously being addressed (Croman, Decker et al. 2016; Pandey, Fernandez et al. 2021).

- Centralization risks arise when—despite the decentralized ideal—key decisions often rest with a limited number of influential stakeholders, which could potentially lead to centralization pressures (Voshmgir 2019).

DPGs represent a critical component of our increasingly digital-economy world, offering unquestioned universal benefits but also facing significant challenges. Blockchain technology promises solutions to many of these challenges, particularly in terms of governance, transparency, and decentralized control. However, the technology must develop further to overcome hurdles related to scalability and potential pressures toward centralization and fully realize its potential in managing DPGs. Just the notion of scaling presents a shadow of centralization.

3.1.5 Antifragile Systems and Cross-Industry Spillover

Antifragile systems benefit and grow stronger from disorder and stress, in sharp contrast to fragile systems that break under stress (Taleb 2014).

Bitcoin exemplifies antifragility in the financial sector. By design, it inherently resists central authority control and inflationary pressures because of its capped supply of 21 million coins (Nakamoto 2008).

Bitcoin's rise above $100,000 has validated Nassim Taleb's concept of antifragility in the financial sector, demonstrating how a decentralized system can thrive amid economic uncertainty.

Bitcoin has a limited supply of 21 million coins. These will all be mined by 2140. This scarcity has driven its perceived value. Institutional investors have acknowledged this trait. Now the US government has also recognized it by creating the Strategic Bitcoin Reserve.

3.1.6 Blockchain's Role During Financial Crises

Originating out of the 2008 financial crisis and the Great Recession that followed, Bitcoin was a response to the vulnerabilities observed in centralized financial systems, offering a decentralized alternative that thrives amid economic turmoil (Vigna and Casey 2016).

Financial crises may most clearly make the case for blockchain's potential. Silicon Valley Bank's collapse in March 2023 put a spotlight on the criticality of real-time data transparency in banking. Blockchain technology potentially addresses these issues by enabling real-time data monitoring and transparent communication, thus mitigating the chances of a *run-on-the-bank* panic and supporting trust-building among stakeholders (Tapscott and Tapscott 2018). Blockchain's immutable ledger ensures all transactions are recorded accurately and accessible to all network participants, enhancing transparency and deterring fraud.

The new administration's establishment of the Strategic Bitcoin Reserve represents a significant validation of this role, recognizing Bitcoin as a strategic asset rather than merely a speculative investment.

According to KPMG's 2025 Futures Report, the integration of blockchain technology with traditional finance is no longer experimental but is becoming standard practice among forward-thinking institutions.

3.1.7 Financial Inclusion and Cross-Border Transactions

Financial inclusion and cross-border transactions are distinct beneficiaries of blockchain fintech, going well beyond crisis management to making a significant social contribution by providing stability for essential financial services to unbanked or underbanked populations, especially in regions with unstable currencies (Ohnesorge 2018).

Cryptocurrencies also facilitate cross-border transactions, bypassing traditional banking systems' hurdles, delays, and fees. Additionally, in hyperinflationary scenarios, such as those in countries like Venezuela, crypto can provide a hedge against local currency devaluation.

Blockchain technology is now a major tool for advancing financial inclusion. This focus has grown stronger under the new administration's supportive crypto policies. A key priority is using blockchain to provide financial services to unbanked or underbanked communities. Specific initiatives now aim to harness this technology for inclusive financial solutions.

The increased value and stability of major cryptocurrencies have made them more practical for everyday transactions, addressing previous concerns about volatility.

The G20's implementation of the FSB Framework by 2025 includes specific provisions for leveraging blockchain for financial inclusion, recognizing the technology's potential for providing banking and financial services to underserved populations. This represents a significant shift from previous regulatory approaches that focused primarily on risk mitigation.

3.1.8 The Revolutionary Impact of Tokenization

Tokenization is the process of converting content rights into digital asset tokens on the blockchain, signifying advancement in asset management and investment. A significant plus is that it now allows for fractional ownership in real estate, art, and other traditionally illiquid assets, making these markets more accessible and liquid (Chohan 2022). The advent of crypto-tokenized exchange-traded funds (ETF) further enhances this trend.

- Real estate (RE) tokenization means that investments can be divided into smaller, more affordable segments, allowing investors to buy or sell fractions of properties or portfolios of properties with ease, thus providing a solution to liquidity issues inherent in the sector (Fisch 2019).

  However, a recent development is that instead of digitally tokenizing the RE itself, it's possible to tokenize an option to buy the RE. This tokenized option can then become exchange tradable. Avoiding direct property tokenization eliminates a key burden: updating public registry records every time a real estate title or deed changes hands.Instead of tokenizing properties, tokenizing options to buy them has become popular. This sidesteps the hassle of constantly revising public ownership registries.

- Art and collectibles tokenization democratizes access to high-value investments like art and collectibles, previously available only to the wealthy. It also enhances the authenticity verification (provenance) process, reducing the risk of fraud (Kshetri 2017).

3.1.9 Economic Implications and Future Outlook

Citigroup's "Money, Tokens, and Games" report forecasts a surge in the tokenized securities market, predicting it could reach a value of four to $5 trillion by 2030 (Citigroup 2023).

This "sudden" proliferation of tokenization possibilities opens venture capital (VC) participation to broader audiences by allowing fractional and liquid investments in start-ups (Wright and De Filippi 2018) previously dominated by larger institutional investment funds, both VCs and private equity (PE) funds (Wright and De Filippi 2018).

Santander's use of Agrotokens in Argentina for loans illustrates a practical application of tokenization in traditional sectors such as agriculture, showing how it can streamline operations and provide new financing models.

The same will likely prove itself in the very tradition-bound world of philanthropy and charitable giving. Tokenization holds the potential of vastly improving charitable giving and, hand in hand, improving the

actuals of charitable project management through communications and transparency for all members of a tokenized project network.

As a hypothetical, one's passion may be protecting and rehabilitating the Amazon Rainforest and its biodiversity. If one could invest in crypto tokens targeting worthy projects in the region, knowing the high level of network transaction performance transparency, could that not be highly worthwhile? This kind of donor-stakeholder engagement can transform donor relationships into philanthropy and encourage greater giver participation.

As blockchain and digital-asset tokenization technologies reshape financial landscapes, regulatory frameworks will need to evolve. Authorities must balance innovation encouragement with consumer protection, financial stability, and fraud prevention (ECB 2020).

Antifragility properties of platform systems, such as Bitcoin, underscore the digital transformation potential of blockchain and tokenization, setting the stage for more robust, resilient, democratizing, inclusion-building, transparent, and efficient global financial systems.

This is key to the technology's future roadmap as they mature, and their integration into mainstream financial systems continues to offer promising prospects for economic growth, in large part, through the democratization of access to financial resources.

A significant milestone in this evolution was the collateral transaction using JPMorgan's Onyx dApp, where BlackRock tokenized shares in one of its money market funds and sent them to Barclays as collateral. This transaction has become a standard practice in the industry.

The approval of Bitcoin spot ETFs has expanded beyond the initial eleven to include a wider range of cryptocurrency investment products. This expansion reflects the growing mainstream acceptance of cryptocurrencies as legitimate investment assets, with traditional financial institutions now offering crypto-related products to their clients.

3.2 Adoption of Blockchain by Financial Institutions

The intersection of financial institutions and blockchain fintech trends raises pivotal questions about the future of finance. Here, we expand on the distinctions between *money crypto* and *tech crypto,* exploring implications for traditional financial systems and how these categories influence the adoption strategies of financial institutions.

3.2.1 Money Crypto: Integration into Traditional Finance

Money crypto's adoption by and integration into traditional finance systems reflects the gain in understanding of cryptocurrencies as investable assets and are, therefore, linked more closely to traditional financial frameworks and their associated risks.

This integration is evident in the ever-growing acceptance of crypto coins as legitimate digital assets akin to traditional securities. Spot Bitcoin ETFs are now incorporated in several countries, including the US, Canada, Australia, Brazil, and some European nations, with the biggest market share being in the US.

Additionally, just as this report was in drafting, the first six Asian-market spot Bitcoin and Ether ETFs opened trading on Hong Kong financial markets as of April 30, 2024, to somewhat tepid results, testing Asian investors' readiness for crypto assets. This debut was followed just three months after the first launch of spot crypto in the US.

While China prohibits all cryptocurrency, Hong Kong—much like Dubai—seeks recognition as an innovation, creative, and commercialization hub for digital assets, in large part to maintain and bolster its reputation as a global banking and finance center.

This international expansion rate will very likely prod more countries to approve crypto-related spot ETFs. Depending on each national financial system's legal and regulatory infrastructure, these ETFs may offer either cash or in-kind redemption; currently, only Hong Kong provides in-kind redemption.

With in-kind redemption, ETF units can only be redeemed for tokens of the ETF, whether Bitcoin or Ether, whereas cash redemption allows for ETF units to be redeemed for cash. The spot Bitcoin ETFs market in terms of assets under management (AUM) is dominated by BlackRock (IBIT), the Grayscale Bitcoin Trust (GBTC), and Fidelity (FBTC) with a combined command over 85 percent of AUM in the US (The Block 2024).

According to Bloomberg Senior ETF Analyst Eric Balchunas, BlackRock, the biggest asset manager in the world, with its Bitcoin ETF (IBIT), accounts for 24 percent of all flows among its one thousand ETFs globally, highlighting the substantial institutional

interest and investment in cryptocurrency-based financial products (Balchunas 2024).

Institutions are drawn to cryptocurrencies for several reasons; chief among them is the potential for risk-adjusted high returns and the diversification of investment portfolios.

A November 2023 study by Institutional Investor's Custom Research Lab found that 64 percent of the 250 US institutional investors surveyed plan to raise their crypto allocations over the next three years (Institutional Investor 2023).

Enabling and supporting infrastructure for institutional investment in crypto has also expanded. Many banks collaborate with qualified "crypto custodians," specialized fintech institution experts in securely storing and managing digital asset transactions.

Alternatively, some institutions prefer experimenting with their own blockchain systems to offer various crypto services.

- Build Secured Income Fund 1 (the Fund) is a pioneering example of this managed by Build Asset Management, Jefferson City, Missouri. The Fund continuously offers direct-lending private credit, providing investors with modest income and attractive yields by investing in Bitcoin-backed over-collateralized personal and business loans.

- Citi, under the Monetary Authority of Singapore (MAS), the central bank of that nation) and its Project Guardian uses blockchain to streamline the pricing and execution of bilateral spot EFT (Citi 2023).

- London Stock Exchange (LSE) has introduced a process for admitting Crypto Exchange Traded Notes (ETNs)—debt securities providing exposure to crypto assets—to be traded exclusively by professional investors.

- American Bitcoin exchanges have started collaborating with digital asset custodians for BTC custody services (Philip Stafford 2021).

This smattering of examples represents both innovative current and emerging solutions for the TradFi world in the crypto space, paving the way for greater institutional involvement, thus leveraging their extensive distribution capabilities to enhance overall market liquidity and facilitate more accurate price discovery within the cryptocurrency landscape.

The approval of crypto-tokenized ETFs has expanded beyond Bitcoin to include a wider range of digital assets, creating regulated investment vehicles that provide exposure to the crypto market. This development has significantly increased institutional participation in the crypto ecosystem, contributing to Bitcoin's rise.

3.2.2 Tech Crypto: Fostering Innovation and Efficiency

"Tech crypto" innovation emphasizes blockchain's utility, particularly in the context of Web3 and DAO networks. Financial institutions are increasingly exploring blockchain for its potential to enhance operational efficiencies and enable new services. Partnerships between traditional financial institutions and innovative blockchain projects are becoming more common.

- Circle Internet Financial Ltd., Boston, Massachusetts, is a peer-to-peer payments tech company that now manages the USDC, a stablecoin value-pegged to the USD. Circle's collaboration with SBI Holdings, Minato City, Tokyo, promises to increase USDC circulation in Japan. This exemplifies how regulatory advancements and strategic alliances can stimulate the adoption of blockchain technologies in traditional financial settings (PYMNTS 2023).

- Visa has integrated the Solana blockchain to expand its stablecoin payment capabilities, significantly improving the efficiency of cross-border transactions (Visa Corporate Communications 2024).

This is only the beginning. AI will play a crucial role in the development of Web3 and tech crypto. According to Deloitte's "Tech Trends 2025," the combination of these technologies is enabling more intelligent and adaptive systems that can respond to changing conditions in real time. The increased regulatory clarity following the G20's implementation of the FSB Framework has reduced the risk associated with enterprise blockchain adoption.

3.2.3 The Rise of Web3 and Web 3.0

Known as the decentralized semantic and spatial web, both Web3 and Web 3.0 are collections of

technologies creating the user-centric decentralized internet.

According to research firm Gartner, Web3 is a new stack of technologies that develops decentralized web applications that enable users to control their own identity and data. This includes blockchain as a trust verification mechanism, privacy-preserving and interoperability protocols, decentralized infrastructure and application platforms, decentralized identity, and support for applications like DeFi. These will eventually realize the vision of a decentralized web.

Web3 represents a paradigm flip in how information is managed and monetized and how web-based institutions will function. It democratizes and empowers users to own and securely control their data and identities and have a stake in decision-making.

These technologies include the following:

- Blockchain-based decentralized, distributed ledger that records all transactions digitally
- Smart contracts for autonomous execution when certain conditions are met
- Privacy-preserving protocols
- Interoperability protocols for secure peer-to-peer transactions
- Decentralized infrastructure and application platforms that support community network-driven projects (DAO).

Web 3.0, in contrast, focuses on intelligence and connectivity, envisioning a highly intelligent web that fosters seamless communication between various dApps and services by enabling machines to comprehend and interpret information.

Both nomenclatures epitomize the next generation of the global digital economy, but no, strictly speaking, they aren't interchangeable terms. However, their full architectural interconnection and integration of the technology stack layers is where the spatial and semantic Web's real power lies.

AI and Web3 form a symbiosis, with machine learning (ML) revolutionizing fundamental tenets of software infrastructure, from cloud computing to IoT edge networking. Web3, the most recent incarnation of the World Wide Web, is no different in this regard. Machine learning is set to play a crucial role in promoting AI-based Web3 technologies as they become more widely used.

The incorporation of AI into Web3, however, does pose several technological difficulties, however. To liberate the full potential of AI in Web3, the barriers to this convergence must be identified first, and creative approaches must be developed to remove them.

- The fundamental tenet of blockchain is decentralization.
- The fundamental tenet of AI is its centralization.
- How can AI adapt to this now decentralized setting?

As we go deeper into the decentralized realm of Web3, the issue arises of how can AI adapt to and survive in this new setting, shedding its centralization tendencies. Centralization has long been the standard tendency for AI-based solutions (AI Authority, Choudary 2024).

Successful integration of AI with blockchain will result in:

- Increased accessibility with blockchain and AI together, cutting down hassles associated with payment layer methods. While blockchain-based cryptocurrencies will put the currency barrier to an end and foster international trading, AI will improve the operational efficiency of the process, ensuring higher security and reducing the associated costs.

- Newly evolving business models leverage blockchain to provide frictionless access to the information of the complete business ecosystem, with all the stakeholders contributing immutable data without worrying about the ownership of the network. This will provide an AI system with the opportunity to get deeper insights from the patterns, behaviors, and other factors related to the working of a business. Thus, it delivers more factually accurate decisions and newer business models.

- Improved smart contracts can offer various perks to businesses, like higher speed, minimum to zero disputes, improved data storage, etc. Their use, however, is confined due to the sophistication of the program. By integrating with blockchain, AI will enable smart contracts to encode and validate complex commercial relationships on a blockchain. Thus, improved smart contracts will come into existence. Self-executing contracts will provide different levels of quality based on the price changes managed by AI-based systems (Appinventiv website, n.d.).

- User-accessible dApps will continue advancing the decentralization and democratization of

financial services. The integration of these various technologies will prove instrumental in their mass adoption and open doors to more efficient and groundbreaking innovations.

For example, AI algorithms could utilize transactional data, social media activity, and other unconventional sources to assess creditworthiness, storing credit scores and transaction histories on a blockchain to enable decentralized credit risk analysis (Gaur 2023).

While the distinction between "money crypto" and "tech crypto" may help understand the different interests and incentives, blockchain is a technology-driven revolution, and the two concepts are inseparable.

3.2.4 Tokenization's Role in Blockchain DLT for DeFi

Tokenization is the process of converting rights to real-world assets into a digital token on a blockchain. Crypto tokens represent a transformative shift in how assets are handled, traded, transferred, and stored in the financial sector (as well as many other sectors). Blockchain platforms like Ethereum for tokenization provide a robust framework for creating and managing digital assets that mirror characteristics of traditional financial instruments but with enhanced capabilities for accessibility, liquidity, security, and transparency.

A study by EY Parthenon surveyed 256 financial institutions, with 57 percent expressing interest in investing in tokenized assets while 47 percent were interested in tokenizing their own assets (EY Parthenon 2023).

Key benefits of tokenization. A very current prominent example of tokenization in action is BlackRock's March 2024 launch of its first tokenized fund:

- Blackrock USD Institutional Digital Liquidity Fund (BUIDL) is represented by the BUIDL token on the Ethereum (ETH) network, backed by US Treasury bills, repo agreements, and cash. Six weeks after launch, it accounted for $375 million of deposits, capturing 30 percent market share in the six weeks since its March 21, 2024 debut. BUIDL is the handiwork of tokenization services provider Securitize, San Francisco, and as of the completion of this report, the token fund's first four months of life had exceeded $500 million in deposits (Coindesk, Sandor 2024).

  BUIDL leverages the Ethereum blockchain to create a more accessible investment product, enabling investors to buy into the fund using digital tokens, which represent shares of the fund and can be traded or held just like traditional securities but are more flexible in terms of transaction speed and fractional ownership (BlackRock 2024). This token-based approach allows investors to engage with traditional financial markets in a manner that is not only more fluid but also inherently more aligned with "digital-native" practices.

- UBS Asset Management's pilot of a tokenized money market fund on Ethereum realizes both operational efficiency and cost reduction, illustrating how blockchain streamlines various fund activities.

  By moving these activities *on-chain,* transaction times are cut from days to minutes, even seconds, and without the need for intermediaries, driving operational costs down and jacking up efficiency (UBS 2024). Such an operational shift is of particular benefit in environments where speed and accuracy are paramount, such as in the handling of large volumes of market transactions where high liquidity is demanded.

- Enhancing liquidity of traditional assets and market depth are significant benefits of tokenization. By breaking down financial instruments into smaller, more affordable fractional units, tokenization opens investment opportunities to much broader audiences, including those likely priced out of certain market segments due to high entry costs. This increased participation contributes to deeper, more liquid markets, which in turn can lead to more stable pricing and a reduction in volatility.

3.2.5 Regulatory Compliance and Security in Tokenized Funds

The integration of blockchain technology into traditional financial systems, particularly through tokenization, presents unique challenges and opportunities in the realms of regulatory compliance and security. Financial institutions like BlackRock and UBS are at the forefront of developing and deploying tokenized funds that not only harness the advantages of blockchain but also align rigorously with existing regulatory frameworks.

- Adherence to regulatory standards: Compliance is paramount in the financial industry to ensure stability, protect consumers, and maintain the

integrity of markets. Tokenized funds, such as those launched by BlackRock and UBS, operate within these legal confines, demonstrating that blockchain technologies can conform to strict regulatory standards. For instance, BlackRock's BUIDL fund adheres to the US Securities and Exchange Commission regulations, ensuring that it meets all requirements for transparency, reporting, and investor protection.

- Enhancing transparency and auditability: An inherent benefit of blockchain technology is its ability to provide enhanced transparency and auditability. Every transaction on a blockchain is recorded on a distributed ledger, immutable and transparent to all participants. This feature is particularly advantageous for regulatory purposes and for increasing trust among investors. UBS's tokenized money market fund on Ethereum, for example, allows for real-time visibility of fund flows and holdings, which not only simplifies compliance reporting but also enhances investor confidence (UBS 2024).

- Security Measures: Security in tokenized funds is another critical area where financial institutions must excel. Blockchain offers advanced security features that traditional financial systems can find challenging to match, such as cryptographic encryption of transactions. However, the security of blockchain systems also depends on the robustness of the underlying technology and operational practices. To address these concerns, BlackRock has implemented multi-signature wallets and regular security audits to safeguard its tokenized assets from unauthorized access and cyber threats (Karayaneva 2024).

3.2.6 Navigating Global Regulatory Landscapes

Financial institutions operating globally must navigate a complex mosaic of regulatory environments. Tokenized funds must be designed to comply not only with national regulations but also with international standards wherever applicable. This can involve aligning with the Financial Action Task Force (FATF) recommendations on digital assets and engaging with regulatory bodies across different jurisdictions to ensure compliance (FATF 2023).

Despite these advancements, the regulatory landscape for tokenized funds remains a work in progress. Challenges such as varying international regulatory standards, the evolving nature of blockchain technology, and the need for continual education of regulators about the technology pose ongoing hurdles. Moreover, there is a pressing need for standardized regulatory frameworks that can accommodate the global nature of blockchain and the digital assets it supports.

As institutions like BlackRock and UBS continue to expand their tokenized offerings, their experiences and innovations play a crucial role in shaping the regulatory frameworks that govern digital assets. Their efforts not only enhance the security and compliance of blockchain applications but also pave the way for broader acceptance and integration of blockchain technology in the financial sector. By continuing to engage with regulatory bodies and refine their blockchain practices, these institutions are setting important precedents for the future of finance.

3.3 The Decentralized Finance (DeFI) Evolution

3.3.1 2024: The Year of Resurgence

DeFi has experienced a remarkable resurgence, with Total Value Locked (TVL) surging from $54 billion at the beginning of 2024 to $101 billion by June 18, 2024 (Defilama 2024).

This marks a significant rebound from a period of stagnation in 2023 and can be attributed to several key factors:

- Increased prominence of Layer 1 tokens: These foundational blockchain networks have become central to DeFi's expansion, enhancing both the security and efficiency of dApps.

- Innovative financial primitives: The introduction of over 250 new financial tools and products, such as liquid staking and yield farming, is revolutionizing the way finance is conceptualized and executed within the DeFi space. Moreover, liquid staking now emerges as a dominant protocol, capturing about one-third of TVL.

  (Financial primitives are different from software or cryptographic primitives and include liquid staking, yield farming, and high-yield products, which are redefining the potential and scope of DeFi. Of these, liquid staking emerges as a dominant protocol, capturing about one-third of TVL.)

- Dominance of Ethereum: With over 60 percent of the TVL (Defilama 2024), Ethereum continues to lead, bolstered by significant improvements in

transaction costs and scalability through the "DenCun" upgrades.

(DenCun or Cancun-Deneb upgrades comprise an improvement set that encompasses a sequence of enhancements to the Ethereum network's execution layer [Cancun] and consensus layer [Deneb]. Significant modifications will be implemented concurrently to improve scalability, security, and usability.)

Despite such positive trends, DeFi has yet to surpass its highest recorded TVL of slightly over $179 billion in 2021 (Defilama 2024), indicating room for further growth and stabilization.

The year 2024 proved to be a period of resurgence for DeFi, with total value locked in DeFi protocols reaching new heights following Bitcoin's rise to all-time highs in December. The increased mainstream acceptance of cryptocurrencies has led to greater participation in DeFi, both from retail users and institutional investors.

The regulatory clarity provided by the new administration's executive orders and the G20's implementation of the FSB Framework has reduced the risk associated with DeFi participation, leading to increased institutional involvement in this space.

3.3.2 Expected DeFi Developments

Looking forward, several trends and innovations are expected to shape the DeFi landscape in 2024 and beyond:

- Enhanced security measures: Integration of AI in smart contract audits and the introduction of account abstraction are set to significantly reduce risks associated with coding errors and external attacks. Such advancements will likely increase security and trust in DeFi platforms.
- Scalability and interoperability: As DeFi aims to achieve a global network effect, scalability and interoperability between various blockchain platforms and traditional financial systems are crucial. Innovations like Layer 2 solutions, data availability layers, and rollups are expected to address these needs, facilitating smoother and more efficient cross-chain transactions.
- AI-driven user experience improvement: AI technologies are poised to play a vital role in simplifying the complex DeFi landscape. By aiding in risk assessment, identifying lucrative investment opportunities, and providing autonomous decision-making, AI can make DeFi more accessible to a broader audience, enhancing user satisfaction and adoption.
- Intent-based DeFi systems simplify DeFi by allowing users to define objectives like token swaps or investment strategies. Solvers then execute these tasks efficiently across multiple blockchains, reducing complexity and risk. Platforms like Intentable.io and Anoma are examples of using this technology, enabling users to automate advanced DeFi functions (Lehavi 2024).
- Regulatory Developments: As DeFi continues to intersect more with traditional financial markets, regulatory frameworks are expected to evolve to better encompass and support the unique aspects of decentralized finance. This will likely lead to more structured growth and the integration of DeFi into mainstream financial services.
- Democratization of Finance: DeFi remains committed to its core mission of democratizing access to financial services. Through decentralized platforms, individuals in emerging economies and underserved communities are expected to gain better access to financial services, challenging the dominance of traditional financial institutions and fostering financial inclusivity.

DeFi transformations aren't just technical but also significantly impact the global financial systems landscape. By eliminating intermediaries and leveraging blockchain technology, DeFi is set to offer more unbiased, permissionless, and cost-effective financial services. The sector now not only replicates but also enhances core activities of traditional finance, including deposits, borrowing, lending, and collateral management. According to Deloitte's Tech Trends 2025, the combination of AI and blockchain is enabling more sophisticated risk management, fraud detection, and personalized financial services.

DeFi continues to evolve rapidly, driven by significant technological advancements and the introduction of innovative protocols that enhance functionality and user experience. Recent developments have seen improvements in smart contract algorithms, which have become more sophisticated and robust, reducing the risk of exploitation and increasing overall system security. Additionally, the adoption of cross-chain and multichain technologies is enhancing

interoperability, allowing for more fluid movement of assets across different blockchain systems, and broadening the scope of DeFi applications.

An intriguing trend in the current DeFi landscape is the integration of elements from TradFi, including the creation of DeFi products that mimic real-world financial instruments such as bonds, insurance, and derivatives. These offerings attract a broader user base and provide DeFi with a level of familiarity and legitimacy that appeals to traditional investors new to blockchain technologies.

New players are entering DeFi, adding substantial energy and innovation to the market. Among this new blood are the following:

- Tech giants not traditionally associated with financial services are now stepping in, bringing along with them vast user bases and robust tech infrastructures. For example, Google and Microsoft are exploring blockchain solutions that can integrate with their existing services, potentially transforming how users interact with DeFi products.

- Traditional financial institutions are either collaborating with existing DeFi platforms or developing their own blockchain solutions. Coined as institutional DeFi, it validates DeFi concepts and bridges existing gaps between DeFi and traditional finance, bringing deep expertise in areas such as risk management, regulatory compliance, and financial product structuring.

- Start-up innovator activity within the DeFi space is introducing fresh concepts, approaches, and energy. These start-ups are not only focusing on refining existing services, like lending and borrowing platforms, but also exploring underrepresented areas such as decentralized insurance and DAO-based governance models.

Regulatory engagement with DeFi continues to grow as regulatory bodies seek to understand and frame policies that ensure consumer protection without stifling innovation. This regulatory attention is prompting new and existing DeFi projects to prioritize compliance and security planning and development in their offerings, potentially leading to more stable, reliable services.

Challenges and opportunities still abound despite the new player influx and pace of continuous innovation. DeFi continues to face scalability issues, high transaction fees on congested networks, and an ongoing need for user education and ease-of-use improvements.

These challenges present ample opportunities for existing players and new entrants alike to make high-impact contributions by innovatively addressing these pain points through technological advancements and user-focused designs.

The vibrantly evolving DeFi sector is increasingly intersecting with TradFi systems. New-player entry —from tech giants to innovative start-ups—injects new energy and drives both competition and collaboration, fostering both growth and innovation. As DeFi matures, its potential to redefine the financial landscape becomes ever more tangible. The promise is for a future where finance is more broadly inclusive, efficient, and decentralized.

3.4 The Creator Economy

The global blockchain technology market size is projected to reach $72.6 billion by 2027, growing at a compound annual growth rate (CAGR) of 82.4 percent from 2020 to 2027 (Grand View Research). The World Economic Forum (WEF) estimates that blockchain could generate over $1.5 trillion in new value for business and industry globally over the next decade. In addition to the growth expected from sectors such as supply chain management and finance, the creator economy is a significant area for exploration.

The growing creator economy sector empowers people to create, market, and monetize content, products, or services online, primarily using digital platforms and technologies. This includes content creators on social media, bloggers, podcasters, online influencers, independent artists, and many, many others.

At the same time, the quick rise to fame and subsequent fall in popularity of NFTs during the last bull cycle raises clear questions about the real utility of blockchain in the creator space. Was it merely a short-lived trend? Or is there more to come?

Within the creator sector, blockchain offers the opportunity to redefine ownership, monetization, and engagement of art and content at large, opening up broader and even global market opportunities. The influx of both adoption and regulation in the blockchain space presents the creator industry sector with an opportunity not only to reshape payment structures but also how art is produced, distributed, and integrated into society.

To understand the future of blockchain in creator industries, it's essential to consider not only the response to the technology across various parts of the creator sector but also the infrastructure itself and the evolving role of art and creator work in society. Beyond the digitization of art assets and different payment structures that NFTs offer, blockchain has the potential to make significant long-term growth interventions into traditional creator economies.

NFTs in the creator economy have moved beyond initial hype and exploration phases into more strategic, long-term sustainable applications. Key areas of development include the following:

1. Ownership and rights management

- Blockchain's immutable ledger capabilities are increasingly being used to authenticate ownership and manage intellectual property rights across various creative fields. Platforms like Artory and Verisart are pioneering in this space, providing digital certificates of authenticity (*provenance*).

- Issues such as blockchain platform interoperability and the need for a universal standard in digital rights management remain crucial challenges.

2. Decentralized content distribution

- Decentralized platforms like Audius for music and Mirror for writing enable creators to distribute content directly to their audiences, bypassing traditional gatekeepers and improving revenue distributions. Scalability and user experience (UX) remain significant hurdles, with ongoing developments in Layer 2 solutions addressing these challenges.

3. Artist payment and monetization

- Blockchain tokenization enables new monetization models whereby artists can embed royalties into their digital works, ensuring ongoing recurring revenue streams from secondary sales.

- Smart contracts automate royalty distributions, though legal enforceability and integration with existing systems need further refinement.

4. Public art institutions

- Some museums and public institutions are beginning to explore blockchain for provenance tracking and more efficiently automating the management of collections.

- Adoption is still in the early stages, with significant growth potential, as these institutions seek to enhance public engagement and reduce administrative overheads.

- Introducing elements of blockchain into public art and institutions has the potential to make art more accessible to the public while drastically streamlining processes and costs of managing public art.

5. Virtual alternative assets and collectibles

- Collectibles represent one of the most commercially promising short- and medium-term areas of blockchain application.

- As of January 2024, the virtual real estate market has surpassed $1 billion in total sales, demonstrating growing demand for digital land and virtual experiences.

- NBA Top Shot illustrates the potential of NFTs in transforming collectibles into interactive, engaging digital assets. Since its launch in October 2020, NBA Top Shot has generated over $1 billion in sales, showcasing the potential of NFTs to transform the sports memorabilia collectible market and engage fans in new ways.

- Long-term, deeper transformation of creative economies, beyond easier payments and digitalization of art, is needed.

- There is a need to move to mainstream adoption that doesn't require as much technical engagement from the end user (the ease of the user experience).

3.4.1 Future Outlook and Insights

The regulatory clarity provided by the new administration's executive orders and the G20's implementation of the FSB Framework will reduce the risk associated with participation in the creator economy, leading to increased mainstream adoption of these new models.

Looking toward the future, the path for blockchain in the creator sectors involves both technological advancements and broader systemic changes:

1. Standardization and regulation

- Developing global standards for blockchain use in the creative industries will be crucial. This includes standardizing how digital rights are recorded, transferred, and enforced.

- Clearer regulations around NFTs and digital assets will help protect both creators and consumers, fostering a safer and more robust ecosystem.

2. Enhancing interoperability

- Interoperability among blockchain platforms will allow for a more fluid, accessible ecosystem where assets and data can seamlessly interact across borders and platforms.

- Platforms like Polkadot and Cosmos are currently working toward more interconnected blockchain environments, which would significantly benefit the creator economy.

3. Focusing on user experience

- To attract mainstream audiences, blockchain platform developers will need to focus on simplifying and making more intuitively natural UX front-end interfaces, reducing the technical knowledge required to fully engage and participate.

- Continued investment in educational resources will also play a crucial role in adoption.

4. Sustainable, ethical ESG- and human-centered growth

- Adoption of blockchain by the creator economy requires a consideration of the environmental impacts of blockchain technologies and a striving for solutions during the R&D phases that prioritize sustainability and circularity. Not as an afterthought.

- Ethically, it's vital to ensure that the growth of digital assets not only doesn't exacerbate but markedly improves upon the state of any existing inequities within creator communities.

5. Public sector integration

- Encouraging more public institutions to adopt blockchain can democratize access to and inclusion in art and culture. Collaborative projects between the public and private sectors can drive both innovation and public acceptance.

Blockchain and digital asset's role in the creator economy is poised on the brink of significant expansion, catalyzing a profound new chapter in human-centered digital economy transformation across the arts and cultural landscapes. Blockchain technology holds the potential to radically enhance the operational mechanics of creator industries by addressing current technological and regulatory challenges and focusing on strategic, long-term integration. More importantly, it can fundamentally redefine the intrinsic value of art and creativity within society.

Blockchain's ability to authenticate ownership, manage rights, and streamline transactions directly impacts how art is produced, distributed, and monetized, offering artists greater control, significantly broadened access to markets, and direct compensation for their work.

This state shift not only democratizes access to the arts but simultaneously encourages a more vibrant, diverse, and inclusive creative ecosystem. As blockchain integrates deeper into public sectors and institutions, its promise is to make art more accessible, reducing barriers and expanding the cultural dialogue across different communities.

This chapter in the book on digital transformation is complex, filled with challenges, and requires a supportive regulatory framework; however, these hurdles also present opportunities for innovation, collaboration, and the advancement and refinement of technology.

As we move forward, the convergence of blockchain with other emerging technologies could unlock even more sophisticated applications in the arts, creating and enhancing not only economic models but also

the interactive and immersive experiences of art itself.

The ongoing evolution of blockchain in the creator economy is an exciting frontier, rich with opportunities for cultural enrichment and innovation. It invites artists, technologists, policymakers, and audiences to reimagine the future of creativity and its role in society, promising a more accessible, inclusive, and dynamic cultural landscape in the digital economy age.

Conclusion

As we bring our journey through the landscape of blockchain and digital assets to a close, the horizon line of this revolutionary technology opens before us as broad and bright as it is promising. The discussions from the Paris Blockchain 2024 have not only enriched our perspectives but have also illuminated paths that lie ahead of us to venture along on in this dynamic industry.

Throughout this document, we have explored the intricate layers of blockchain architecture, the stabilizing role of stablecoins, the emerging frameworks of CBDCs, and the innovative potential of DePIN. These elements represent just a fraction of the blockchain ecosystem's vast capabilities and their potential impact on global industries and societal structures.

Key Takeaways

- Modularity and interoperability are the future of blockchain and its adaptability and interoperability across various platforms and industries. Such flexibility is essential for the seamless integration of new technologies and for enhancing the scalability and security of blockchain applications.
- Stablecoins and CBDCs will play pivotal roles as digital assets integrate more deeply into financial systems, bridging the gaps between traditional fiat currencies and cryptocurrencies and offering greater stability and regulatory compliance.
- Decentralized infrastructure innovations point toward a future where technology empowers greater autonomy, efficiency, and transparency of systems, potentially revolutionizing sectors such as supply chain management, health care, and public governance.
- The continuous evolution of global policy and regulation measures will be crucial to shaping the integration and growth of blockchain technologies. Ensuring that these regulations foster innovation while protecting users will be a delicate balance to maintain.

As we look ahead, the course is being charted right now for a profound voyage of transformation influenced by blockchain technology. Ongoing dialogue among technology developers, business leaders, policymakers, academics, and intended users is crucial for navigating challenges and leveraging opportunities that arise. This report serves as both a reflection of our current understandings and a beacon lighting the way toward future explorations and developments in the blockchain space.

As we move forward with the insights gained from Paris Blockchain 2024 and the comprehensive analysis provided herein, let us pledge to continue a path of innovation and collaboration toward the expansive adoption of blockchain technology in beneficial, sustainable, and revolutionary ways. This journey is far from over; indeed, it's just beginning to reveal its full potential.

We thank you for joining us in this exploration of exciting developments. Together, we can continue to shape a future where blockchain technology plays a central role in creating a more efficient, transparent, accessible, and equitable world.

APPENDIX

Summaries of Interviews

Alex Pruden

CEO, Aleo Network Foundation

Overview of Discussion

In this interview, key insights into the blockchain industry's developments and trends were discussed, focusing on advancements in data confidentiality, zero-knowledge cryptography, and the evolving landscape of blockchain technology. The conversation highlighted the industry's shift from speculative use cases to more practical applications and emphasized the importance of sustainable project development and pragmatic governance models.

Key Insights

Confidential Transaction Capabilities

Advancements in confidential transaction capabilities using zero-knowledge cryptography are crucial for mainstream adoption in areas like payments and salaries. These developments address privacy concerns while ensuring security and verifiability.

Current Use Cases and Market Trends

Blockchain applications are currently speculative, driven by NFT drops, meme coins, and DeFi airdrops. For broader adoption, integrating data confidentiality is essential to enable more practical uses.

Developer Ecosystem and Project Sustainability

Fostering high-quality, sustainable projects is prioritized over quantity. Attracting developers who build real applications with long-term value is vital for genuine ecosystem growth.

Governance Models

Decentralized governance faces significant challenges. A hybrid approach combining off-chain human processes with on-chain mechanisms is preferred to balance resilience and adaptability.

Future Use Cases

Zero-knowledge cryptography will be key in authentication and identity verification, distinguishing real users from bots. This has broader implications, potentially transforming the internet, with additional potential in on-chain financial ecosystems and gaming.

Abel Peña

Chief Sales Officer, Bit2Me

Overview of Discussion

The interview emphasized the importance of regulatory compliance in the industry, ensuring that companies follow KYC standards and conduct responsible practices. Abel Peña highlighted a bright industry outlook, discussing regulatory shifts, institutional adoption, and the implementation of KYC/AML laws worldwide. He also stressed the importance of security across the industry and the need to make technology more accessible.

Key Insights

Industry Outlook

Abel views the future of the digital assets sector as bright, especially with increasing institutional adoption, such as the Bitcoin ETF, which signals a positive trend in trading volumes and overall market health.

Regulatory Shifts

The implementation of MICA in 2025 is expected to ensure responsible practices and regulatory compliance, setting a new standard in the industry.

Accessibility

Abel mentioned that the nuances of the industry, particularly around custody, can complicate technology use. Simplifying these aspects is essential to making digital assets more user-friendly and facilitating mass adoption.

Security

Abel emphasized that security is a top priority for Bit2Me, ensuring the safety of user funds and data. He also pointed out that companies should focus on their core competencies and not try to handle everything, particularly custody unless they have the necessary expertise and resources.

Future Use Cases

Regulatory measures are crucial to protect consumers and maintain industry integrity. Abel noted that stringent KYC and AML processes are essential, but they should be balanced with the need to include those without access to traditional banking services.

AI and Blockchain Intersection

Abel recognized the significant potential of AI to enhance efficiency but cautioned against feeding confidential information into AI systems. AI can be a valuable tool for generating ideas and speeding up tasks, but it should be used with a strong focus on cybersecurity and responsible practices.

Azeem Khan

Founder and COO, Morph

Overview of Discussion

Conversation with Azeem Khan, Founder and CEO of Morph, explored his extensive experience in the crypto world, Morph's unique approach as an EVM Layer 2 solution, and the broader implications of blockchain technology. Azeem discussed the challenges and opportunities in driving crypto adoption among non-crypto native organizations, the evolving landscape of Ethereum and its competitors, and his vision for the future of decentralized technologies.

Key Insights

Adoption and Education

the importance of educating non-crypto native organizations about the real-world use cases and benefits of blockchain technology.

Global Financial Inclusion

Azeem strongly believes in the need for crypto in the non-Western world, where traditional financial infrastructure is lacking, which makes blockchain use cases important. He sees potential for crypto to enable banking, loans, and peer-to-peer transactions in regions where such services are not readily accessible.

Risk Mitigation

Many organizations remain cautious about adopting crypto due to its speculative nature and negative media coverage. Azeem stressed the importance of risk mitigation and careful exploration in the early stages to build confidence and ensure successful integration.

Technological Differentiation

Morph differentiates itself with unique technological features, such as a decentralized sequencer and an optimistic ZK rollup.

Outlook on Ethereum and Competition
Skepticism about Ethereum's guaranteed dominance, drawing parallels to past technologies like AOL and Napster that eventually faded; potential in various blockchains, such as Aptos, Sui, and Solana, which might cater to different industry needs; different industries, whether it's gaming, gambling, traditional finance, or real-world assets, all are going to have different needs regarding transactions per second, transaction cost, block time, and other technical requirements.

Collaboration Over Competition
need for a collaborative approach within the crypto community, recognizing the value in supporting projects that advance the overall ecosystem.

Bruce Fenton
Managing Director, Chainstone Labs

Overview of Discussion

The interview discussed the current state and future outlook of blockchain technology and digital assets. It emphasized Bitcoin as the strongest blockchain and best form of money, highlighting its potential for innovation. Key topics included the importance of maintaining the original ideals of human rights, freedom, and liberty, as well as the challenges posed by financial motivations and heavy-handed regulation. The interview advocated for market self-regulation over government intervention, promoting decentralized, free-market systems to disrupt existing power structures.

Key Insights

Bitcoin’s Unique Position
Bitcoin is seen as the strongest blockchain and best form of money, with significant potential for building on top of its technology.

Technology and Applications
There is interest in using blockchain for real-world assets and securities, while the original ideals of human rights, freedom, and liberty continue to drive early blockchain adoption.

Industry Challenges
The original ideals have been diluted by financial motivations and heavy-handed regulation, presenting significant obstacles to the industry's progress.

Regulation vs. Market Forces
The current regulatory approaches, such as AML/KYC, are flawed and ineffective. Market self-regulation and the wisdom of crowds are believed to be more effective than government intervention.

Vision for the Future
Advocating for the disruption of existing power structures, there is a push to promote decentralized, free-market systems while maintaining the foundational principles of liberty within the blockchain space.

Chris Donovan
COO, NEAR Foundation

Overview of Discussion

The interview explored the evolving landscape of blockchain technology, anticipating increased regulatory scrutiny in 2024. Discussions highlighted ongoing momentum in blockchain development, emphasizing quality and user sovereignty. Insights underscored blockchain's potential to enhance public good through data ownership and governance. Innovations like simplified blockchain experiences were discussed as pivotal for broader adoption. Global regulatory disparities were acknowledged as critical challenges, with proactive jurisdictions attracting blockchain innovation.

Key Insights

Regulatory Focus
There is a strong emphasis on regulatory developments expected in 2024, particularly in the US, impacting the blockchain industry. The discussion highlighted the need for clarity and fair regulation to foster sustainable growth and innovation.

Steady Momentum
Despite market fluctuations, there is a consistent momentum in blockchain development. The focus remains on delivering high-quality products and user experiences independent of broader market trends, reflecting a maturing industry.

Public Good
Blockchain technology is seen as a catalyst for enhancing public good by empowering users with data ownership and governance control. This shift towards a more transparent and equitable internet is viewed as fundamental to the industry's long-term goals.

Simplifying Complexity
Innovations aimed at simplifying blockchain complexities, such as Chain Signatures, are crucial for broader adoption. Efforts to streamline user experiences and reduce technical barriers were identified as key to expanding blockchain's user base beyond tech-savvy individuals.

Cinderella Amar
Founding Partner and Managing Partner, Glass Ventures

Overview of Discussion

The interview explored insights into the blockchain industry, highlighting its current state and future prospects, especially in light of recent challenges and developments. The discussion focused on the interplay between blockchain and AI, the importance of regulation, usability for mass adoption, and the role of institutional investors in the evolving landscape.

Key Insights

Industry Outlook for 2024
Despite recent crises and a confidence slump, the blockchain market is on the cusp of a bull market, marking an exciting phase for the industry.

AI and Web3
AI could be a way for mass adoption of Web 3, and thus, massive investments in this area can be expected.

Challenges
Key challenges include finding the right balance in regulation at the right time to avoid stifling innovation and improving education to shift mainstream perceptions from threat to opportunity.

Usability and User Experience
Access and inclusiveness, as originally envisioned in blockchain principles, are now becoming more practical with technological advancements, making blockchain more user-friendly and accessible.

Institutional Investors
While their capital and risk management expertise is valuable, it is essential to maintain the collaborative, community-driven spirit of the blockchain industry. The approval of ETFs signifies increasing institutional interest and capital inflow, which is a positive indicator of the sector's growth.

Cleve Mesidor

Executive Director, Blockchain Foundation

Overview of Discussion

Cleve Mesidor, the Executive Director of Blockchain Foundation, delved into the challenges and opportunities facing underrepresented communities in the blockchain industry. She emphasized the importance of inclusive policymaking, visibility for diverse voices, and the need for balanced regulatory frameworks that promote both consumer protection and financial inclusion.

Key Insights

Industry Focus
Mesidor's work centers around inclusive policymaking, aiming to bridge gaps for underrepresented communities in blockchain.

Visibility Challenges
Mesidor highlighted the absence of representation for communities of color, immigrants, and women in mainstream discussions within the crypto industry and traditional media.

Market Dynamics
Despite being significant contributors to the blockchain industry, these communities often face challenges in accessing investments and opportunities.

Consumer Protection
She pointed out the disconnect between consumer protection measures and financial inclusion, advocating for policies that empower individuals to mitigate risks.

Policy Advocacy
Mesidor's efforts extend to advocating for policy changes that promote diversity, inclusion, and equitable access to opportunities within the blockchain space.

Dotun Rominiyi

Director of Emerging Technology, London Stock Exchange

Overview of Discussion

The interview provided a comprehensive look into the blockchain industry, focusing on its integration with TradFi, the evolving regulatory landscape, the relationship between centralized and decentralized finance, and the importance of enhancing security measures.

Key Insights

Industry Maturation
Despite challenges, the crypto market is maturing with increased institutional interest and evolving regulations like the SEC's stance and MiCA in Europe.

TradFi Innovations
Traditional finance is integrating crypto through initiatives like the London Stock Exchange's crypto indices and tokenized financial instruments, enhancing efficiency in asset management.

Balanced Regulation
New regulations aim to balance innovation with stability, providing a framework for technological advancements while managing risks in the financial markets.

Institutional Adoption
Growing institutional interest, exemplified by Blackrock's initiatives, highlights the need for robust risk management and security frameworks adapted to crypto assets.

Security Enhancement
The industry's growth necessitates improved security measures, adapting traditional risk management to address the unique challenges of the crypto space, and ensuring operational governance and cybersecurity resilience.

David Newns

Head SIX Digital Exchange

Overview of Discussion

David Newns provided insights into the adoption and evolution of blockchain technology in the financial sector. He discussed the tokenization of real-world assets, regulatory advancements, institutional adoption, interoperability with traditional infrastructure, and the future outlook for decentralized finance (DeFi).

Key Insights

Tokenization and Adoption
Newns highlighted the significant milestone of crossing the 1 billion franc threshold of issuances on the SIX's platform, showcasing the growing adoption of blockchain-based financial products.

Institutional Trust
The World Bank's issuance of a 200 million franc bond on regulated blockchain infrastructure and settlement in wholesale Central Bank digital currency (CBDC) signifies institutional trust and adoption of blockchain technology.

Regulatory Framework
Switzerland's clear and effective regulation of digital assets, coupled with regulated blockchain implementation for capital markets, has laid a robust foundation for blockchain adoption.

Interoperability
SIX has established interoperability between blockchain infrastructure and traditional exchanges, enabling seamless issuance, trading, and settlement of digital assets across platforms.

Coexistence with Traditional Infrastructure
Newns discussed the gradual supersession of traditional infrastructure by blockchain-based solutions, emphasizing the need for coexistence and interoperability during the transition period.

DeFi and Regulatory Challenges
The challenges faced by decentralized finance (DeFi) in achieving censorship resistance while addressing regulatory requirements for risk management and compliance.

Future Vision
A continued evolution in the regulatory landscape and market dynamics, with blockchain technology reshaping financial market infrastructure and operational efficiencies.

Elise Soucie
Executive Director, Global Digital Finance

Overview of Discussion

The interview discussed the evolution of regulation in the digital finance space, particularly in the areas of stablecoin, custody and wallet regulation, and DeFi governance. Elise Soucie also emphasized the importance of collaboration between regulatory bodies to ensure stability and security in the industry. Moreover, she furthered the importance of collaborating with regulators to develop industry frameworks and highlighted areas where regulation is already being implemented, developed, and scaled across the industry.

Key Insights

EU Regulations
Elise Soucie explained how the EU is the most advanced in its regulatory frameworks, as they are actively rolling out the frameworks for Level 1 and Level 2 measures, which will then go into force around 2025. The United Kingdom has also begun consultation into retail stablecoins.

Global Implementation of Regulation
In Japan, Switzerland, and Dubai, the regulatory efforts for digital assets are well underway, and Elise suspects that after the U.S. elections, the United States will follow regulatory frameworks as well.

Expanding the Global Conversation
Elise explained how different regulatory bodies communicate with each other in the discussion of digital assets. Since digital asset technologies are a global industry, regulatory actors across the world communicate with each other to develop cross-border, holistic strategies for regulating digital asset technologies.

Incorporating Regulation in Innovation
For the industry to scale, technologists should consider the regulation in financial services, noting the proportional regulatory aspects of finance, so that corporations can situate themselves in the global financial ecosystem. Regulation should be considered in ideation and innovation so that the industry can scale at a faster pace.

Emma Joyce
Head of EMEA, Financial Service Lead, and Senior Managing Director, Global Blockchain Business Council (GBBC)

Overview of Discussion

The interview provides an optimistic outlook for the blockchain industry in 2024, highlighting positive shifts toward regulatory clarity and growing institutional interest. Key advancements and challenges in regulation, security, institutional adoption, interoperability, AI integration, and sustainability are discussed.

Key Insights

Blockchain Industry Outlook
The industry is cautiously optimistic about 2024, with expectations of positive developments following a challenging 2023. Increased dialogue with regulators and a push for regulatory clarity across jurisdictions are encouraging signs.

Regulatory Developments
Significant achievements include the approval of the first US digital assets taxonomy by the CFTC and progress in Europe with the MiCA regulation. Cross-border collaboration and harmonized regulations are essential for industry growth and consumer protection.

Security in Blockchain
Balancing innovation with consumer protection remains a critical challenge for regulators. Cross-jurisdictional collaboration is vital for enhancing security and ensuring comprehensive regulatory frameworks.

Institutional Adoption
Institutional adoption of blockchain is growing and is driven by clear regulatory frameworks. Large financial institutions are increasingly exploring blockchain projects despite recent challenges.

AI and Blockchain Integration
The intersection of AI and blockchain is a hot topic with potential for significant developments. While practical use cases are still emerging, the convergence of these technologies is anticipated to bring transformative changes.

Sustainability
Sustainability is a crucial focus within the blockchain industry, with initiatives and working groups dedicated to this cause. Efforts are underway to integrate blockchain technology with sustainable practices, particularly in energy and carbon management.

Eugeno Joo
Founder and CEO, Nectar

Overview of Discussion

The Interview discussed the dominance of traditional exchanges like Binance, the resilience of DeFi amidst market volatility, and blockchain's role in transforming financial technology. Challenges include usability and trading efficiency, areas where Nectar aims to innovate. Despite hurdles, optimism prevails for blockchain's expansion into gaming and decentralized applications, signaling a promising future for the industry.

Key Insights

Increasing Trading Volume and Market Dynamics
Traditional exchanges like Binance and Coinbase dominate trading volumes, highlighting a significant market share. However, the industry faces challenges of usability and approachability, paving the way for user-friendly platforms like Nectar to democratize access.

Pivotal Use Cases: DeFi and Gaming
DeFi (Decentralized Finance) emerges as a resilient use case, even during market downturns (crypto winter). This resilience underscores its potential as a fundamental application of blockchain technology. Gaming, initially a focus for Nectar, also shows promise but pivoted towards DeFi due to market dynamics.

Technology and Innovation
Blockchain's innovative potential is evident in its ability to enhance financial technology, particularly in trading platforms and decentralized finance. This adaptability positions blockchain as a transformative force in financial ecosystems.

Challenges in Efficiency and Professionalization
Despite the growth, challenges persist in trading efficiency and professional trader engagement. These areas present opportunities for further innovation and refinement within blockchain-based trading platforms.

Outlook on Adoption and Future Trends
The industry outlook remains bullish, with expectations of continued growth in trading volumes and adoption of blockchain technology across sectors beyond finance, such as gaming and decentralized applications (dApps).

Evan Auyang
Group President, Animoca Brands

Overview of Discussion

The interview explored blockchain's evolution, focusing on advances in infrastructure, the transformative impact of blockchain gaming and the metaverse, and the tokenization of real-world assets. It highlighted geopolitical influences on regulatory frameworks and the industry's movement towards decentralized financial solutions. Auyang emphasized blockchain's expanding influence on global finance and digital economies, which are driven by innovations in gaming, AI integration, and increased institutional adoption.

Key Insights

Infrastructure Focus
Currently, there is a significant emphasis on blockchain infrastructure. Projects are focusing on improving scalability, interoperability, and integrating AI with web3 technologies. This infrastructure development is crucial for supporting large-scale adoption and enhancing blockchain's capabilities beyond its current limitations.

Metaverse and Gaming
Blockchain gaming and the concept of the metaverse are pivotal areas driving innovation. Projects like Sandbox, which Animoca Brands is involved in, highlight the integration of digital assets and virtual worlds. This sector aims to revolutionize gaming experiences and create new economies around virtual assets.

Financial Innovation
There is a notable shift towards tokenizing real-world assets like real estate and bonds. This trend is supported by institutions exploring blockchain for financial services, including tokenized deposits and stablecoins. The aim is to create a more efficient and transparent financial infrastructure globally.

Regulatory and Geopolitical Dynamics
Geopolitical factors, such as varying regulatory approaches globally (from China's cautious stance to the US's evolving regulations), impact blockchain's development and adoption. The push for decentralized financial infrastructure is a response to these dynamics, aiming for neutrality and resilience.

Frank Holmes
Executive Chairman, HIVE Blockchain Technologies

Overview of Discussion

In this interview, Frank Holmes shares his insights into the blockchain industry, discussing its growth, sustainability, use cases, interoperability with traditional finance, and future challenges. The conversation provides an in-depth look at the current state and future potential of blockchain technology.

Key Insights

Blockchain Industry Impact
The blockchain industry in 2024 impresses with its intellectual capital and supportive community. It mirrors historical transformative events akin to the printing press's impact on literacy and religion. Blockchain's challenge to established norms underscores its role in shaping a new era.

Sustainability and Evolution
Sustainability in blockchain evolves through a complex adaptive system (CAS), fostering network growth and information sharing. Digital property rights, enabled by blockchain, are pivotal. Holmes draws parallels to the printing press's effect on literacy, emphasizing blockchain's exponential adoption.

Use Cases and Interoperability
Beyond cryptocurrencies, blockchain gains validation from institutions exploring its applications in accounting and settlement, enhancing transparency. Holmes cites examples like property rights and crisis financial transactions. He envisions seamless integration with traditional finance, boosting interoperability and trust.

Challenges and Future Outlook
Regulatory hurdles and public skepticism challenge blockchain's growth, reminiscent of historical scientific skepticism. Holmes predicts innovations like the Lightning Network and Bitcoin's role as a global digital wealth mechanism will drive industry growth. AI's synergy with blockchain parallels electricity's impact on industrialization, promising transformative possibilities.

Gary Sheng
Associate, Business Analyst, Global Financial Markets Technology, DBS Bank

Overview of Discussion

Gary Sheng shared insights on his journey from a software engineer at Google to becoming a leader in the Web3 and impact space. He detailed his involvement in democracy reform, the establishment of Dream DAO, and his work on the Flow States protocol, which aims to leverage crypto for funding impactful projects.

Key Insights

Introduction to Crypto
Sheng's interest in crypto and blockchain was sparked by the potential to redesign societal incentives. This led to his involvement with the Ethereum Foundation and the creation of Dream DAO, which educates young people on using Web3 technologies for social good.

Flow States Protocol
A new initiative by Sheng aiming to use crypto to empower funders to stream cryptocurrency in real time to impact creators. This protocol uses Superfluid, which allows for continuous, real-time crypto transfers.

Vision and Mechanism
A future where public servants and impact creators receive continuous, meritocratic funding. This system aims to increase accountability and transparency, allowing individuals to stop funding if trust is broken. A future where crypto enables the creation of thousands of impact jobs, addressing market failures by funding undervalued public goods and services.

Future Outlook
Sheng aims to continue working on projects that use crypto to create positive social impact, closing gaps left by market failures and

traditional funding mechanisms. His focus remains on making crypto undeniably useful for humanity by fostering a more meritocratic and democratic funding ecosystem.

Gijs Koning

COO, VanEck Europe

Overview of Discussion

The interview explored industry insights into blockchain technology, focusing on various aspects such as the tokenization of real-world assets, security, regulation, institutional adoption, the intersection of blockchain and AI, the future of decentralized finance (DeFi) versus centralized finance (CeFi), sustainability, and factors driving individual adoption and market liquidity.

Key Insights

Industry Insights for 2024

VanEck aims to make traditional investments like digital money market funds accessible to crypto-native people by tokenizing their products.

Challenges in Tokenization

Key issues include regulation, liquidity, and ensuring proper data for valuation.

Security in Blockchain

Emphasis on regulatory frameworks to protect assets and enable asset recovery.

Institutional Adoption

Building trust through regulation, with events like the FTX collapse highlighting the need for stability.

DeFi vs. CeFi

Potential integration, with DeFi's robustness being highlighted and the need for AML and KYC compliance.

Sustainability

Concerns over Bitcoin's energy consumption, with skepticism about the industry's commitment to sustainability.

Factors Driving Adoption

Trust, regulation, and improved liquidity are essential for wider adoption.

Harry Halpin

CEO, Nym Technologies

Overview of Discussion

Harry Halpin discussed the challenges and opportunities in the realm of digital identity, privacy, and decentralized governance. With a background in AI and extensive work on security and privacy, Halpin highlighted the importance of these issues in the evolving technological landscape.

Key Insights

Privacy vs. Anonymity

Privacy is the right to selectively disclose data, whereas anonymity ensures no data is linked to the actor. Technologies like mixed nets help achieve anonymity by unlinking messages from their senders.

Nym Technologies

Nym focuses on providing holistic privacy through a decentralized network that adds noise (entropy) to data, disrupting surveillance efforts. This approach is essential for secure internet usage, especially in conflict zones.

Defense Focus

Nym's technology is geared toward defense, offering nation-state-grade protection against sophisticated adversaries like Russia or the US, which is crucial given the rise in offensive cyber technologies.

Selective Disclosure

Privacy and identity systems should enable users to share data selectively and under their control. Advances in cryptography, such as zero-knowledge proofs and homomorphic encryption, support this selective disclosure.

Decentralized Governance

There is a global desire for democratic governance of technology. Despite the current inadequacies in tools and privacy measures, the next generation is eager to participate in the democratic governance of technology.

Future Outlook

A future where privacy-enhancing technologies and democratic control empower individuals, leading to a more secure and equitable technological landscape.

Ian Taylor

Chief Operating Officer & Partner, ht.digital

Overview of Discussion

The interview highlighted the UK's proactive regulatory approach to fostering blockchain adoption while protecting consumers. It emphasized blockchain's synergy with AI for transparent, decentralized applications and the upcoming Digital Security Sandbox's role in innovation. Stablecoins were noted as transformative in global payments, promising faster, cheaper transactions. These insights underscored regulatory support's crucial role in driving industry growth and shaping future financial landscapes.

Key Insights

Increased Adoption Facilitated by Regulatory Support

The UK's proactive regulatory framework for blockchain and crypto projects aims to spur innovation while safeguarding consumers, setting a precedent for global jurisdictions.

Convergence of Blockchain and AI

The interview underscored blockchain's potential synergy with AI, particularly in decentralized models that enhance data transparency and security, contrasting with centralized AI systems vulnerable to privacy breaches and external influence.

Role of Regulatory Sandboxes

The launch of the UK's Digital Security Sandbox was highlighted as pivotal for fostering innovation in financial services and crypto sectors. These controlled environments enable the testing of new technologies, ensuring regulatory compliance and driving industry advancement.

Emerging Impact of Stablecoins on Global Payments

Stablecoins are poised to revolutionize payment infrastructures with faster, cost-effective transactions compared to traditional banking. Regulatory acceptance is expected to unlock new applications in retail, cross-border remittances, and institutional settlements, reshaping global finance.

Igor Bershadskiy

Regional Advisor, Hacken

Overview of Discussion

The interview delved into industry insights regarding blockchain technology, covering critical topics such as security, standardization, interoperability, institutional adoption, and the influence of AI on the industry. The interview explored various perspectives on the evolving landscape of blockchain and its associated challenges and opportunities, highlighting significant trends and developments within the industry.

Key Insights

Industry Outlook for 2024

The blockchain industry is rapidly maturing with significant progress and emerging projects, displaying optimistic growth despite market instability.

Security in Blockchain

The industry prioritizes security due to pressure from communities, investors, and projects. Efforts are being made to enhance security measures, though perfection has not yet been achieved.

Standardization

The importance of standardizing smart contracts is emphasized to ensure regulatory compliance and set guidelines for project requirements, which are seen as crucial for the industry's future stability.

Interoperability

The ability to transfer assets between different blockchains and integrate with traditional financial systems is vital for broader adoption and functionality. Efforts are ongoing to improve these capabilities.

AI and Blockchain Security

AI is being explored to enhance security processes, particularly in code review, but it is still in the early stages. The integration of AI in security is anticipated to grow, although human expertise remains crucial for now.

James Bowater

Founder and CEO, The Digital Commonwealth

Overview of Discussion

The conversation opened with an exploration of the blockchain industry's evolution since Bitcoin's inception 15 years ago. Emphasis was placed on recent developments such as ETF approvals and institutional entry, raising pertinent questions about potential centralization as institutions gain prominence in the space. The interviewee underscored the need for comprehensive legislation and regulation to steer the industry responsibly amidst rapid technological advancements.

Key Insights

Overview of the Blockchain Industry

The discussion started with an overview of the blockchain industry's evolution since Bitcoin's inception, highlighting the normalization through ETF approvals and concerns about institutional centralization.

AI, Blockchain, and Quantum Integration

AI's convergence with blockchain and quantum computing was explored, predicting a cognitive revolution and emphasizing the need for agile regulation to keep pace with industry advancements.

Blockchain Beyond Cryptocurrencies

Focus shifted to the digitization and standardization of assets, including real-world applications in sectors like real estate and insurance amidst ongoing regulatory developments. Loretta Joseph's initiative to create the virtual asset model for the Commonwealth exemplifies efforts to establish regulatory frameworks suitable for diverse global jurisdictions, aiming to integrate virtual assets into the financial system while ensuring compliance and stability.

Security Challenges in Blockchain

Security concerns, including cybersecurity vulnerabilities and the impending threat of quantum computing, were addressed, advocating for simplified yet effective security measures and accessible custody solutions.

Drivers for Blockchain Adoption

The conversation concluded with insights into drivers for blockchain adoption, featuring innovative examples such as tokenizing rare assets like jade and leveraging NFTs for asset digitization and trading, alongside the importance of education and comprehensive supply chain management in fostering adoption.

Jiten Varu

Head of Growth, Building Rayls, Parfin

Overview of Discussion

The interview emphasized the importance of building consumable solutions in the digital assets space. Rather than focusing solely on the technology, Jiten Varu highlighted the importance of consumable, real-world use cases as the focus of innovation—rather than vice-versa. He also suggested that there might be a different approach to Bitcoin halving this year since Bitcoin ETFs and Ethereum ETFs have absorbed a lot of free liquidity. He hopes for continuity and stability in the digital asset markets, which will bring the industry closer to comfortable mass adoption.

Key Insights

Consumable Solutions

It is critical to approach digital assets with a focus on consumable solutions that provide real value. This approach ensures that technology is made with the consumer in mind and can best support businesses, developers, and users.

Market Stability

Halving this year might be more subtle and subdued, given that Bitcoin and Ethereum ETFs are decreasing excess free liquidity, which could bring the industry to a more comfortable mass adoption.

Regulatory Adaptation

As companies strive to provide a more neutral marketplace, regulators are naturally attracted to these types of conversations, which bridge the regulatory and innovative landscapes.

Jesse Paterson

Founding Member, ATX DAO

Overview of Discussion

In the interview, Jesse discusses the transformative potential of decentralized governance for cities and governments, where every community member has a voice and a stake. He also shares his vision for Austin to become the world's Web 3 capital, leveraging Web 3 technologies and principles to create a model for decentralized governance and innovation, paving the way for a more inclusive, community-driven future.

Key Insights

Web 3 Capital

Austin is poised to become the global hub for Web 3 innovation, with a series of events and initiatives aimed at harnessing the potential of Web 3 technologies to transform the city into a model for the world.

Policy for Web 3

Educating the people of Austin on emerging technology in this digital economy and educating governments to shape policies that are friendly to our community and the broader Web 3 community.

Decentralized Governance

The DAO operates on a fully decentralized system devoid of hierarchical structures, where all members are rewarded based on their contributions. The rewards are distributed through a coordination model, ensuring that each member receives a share proportional to their work and involvement, promoting a fair and community-driven approach.

Scaling Decentralized Organization

Utilizing social media and other platforms for basically voting and evaluating which actions are impactful and which are least effective. This is also how the project is distributed among the members.

Representative Democracy

Governments and cities should adopt a decentralized governance model, where decision-making power is distributed among community members, and coordination is achieved through a collaborative and inclusive process, ensuring that every individual has a voice and a stake in shaping their community's future.

Jorgen Ouaknine

Global Head of Innovation and Digital Assets, Euroclear

Overview of Discussion

The discussion highlighted the essential role of financial markets in sustainable economic growth, stressing the need for innovation, security, and efficiency. Jesse advocated embracing digital assets for growth, introduced a security control principle for digital asset safety, and emphasized enhancing financial inclusion through seamless transactions.

Key Insights

Financial Markets for Economic Growth

To achieve sustainable economic growth, financial markets require innovation, safety, connection, and efficiency. To this end, Europe has Euroclear, one of the world's largest settlement banks, which holds around $38 trillion in assets and plays a vital role in promoting stability and facilitating secure financial transactions.

Innovation

Financial markets have been evolving for decades, but the current pace of innovation is unprecedented. Rather than resisting this change, we should harness its potential and accelerate the transition to digital assets, embracing the opportunities they offers for growth, efficiency, and progress.

Security Control Principle

A security control principle was recently introduced to enable the safe scaling of digital assets. While DLT has gained widespread adoption, the crucial principles and actions necessary to ensure safety in the DLT ecosystem are often overlooked. Our focus is on addressing this critical gap.

Financial Inclusion

Unlock greater financial inclusion by harnessing digital assets to facilitate seamless money flows. Our solution connects issuers and investors, bridging the gap between them with a comprehensive range of services, ensuring market liquidity and trust. By streamlining the entire ecosystem, we enable efficient and secure transactions, promoting financial accessibility for all.

Regulation and Innovation

Regulation serves as a vital license to operate, ensuring that products meet rigorous standards before launch. We call this 'proof of value,' demonstrating a product's worth and building trust with clients. While innovation is crucial, maintaining client trust is equally important. Regulation provides the necessary framework to balance innovation with trust, preventing its erosion and fostering a secure environment for clients.

Kaj Burchardi

Practice Area Lead for Banking and Insurance, Global Lead for Digital Asset, BCG Platinion

Overview of Discussion

The interview covered key trends shaping finance and technology, emphasizing the digitization of legacy systems in financial institutions, evolving regulations for digital assets, and the impact of AI on hardware innovation. It highlighted the need for climate-friendly infrastructure due to stringent regulations and explored the tokenization of real-world assets, such as real estate and shipping, to enhance liquidity and efficiency.

Key Insights

Digitization of Processes

Financial infrastructure in a lot of banks and other financial institutions still uses legacy as the base layer. So, these processes need to be digitized or even computerized.

Regulation

A regulatory framework for digital assets, including stablecoins, is taking shape, with the approval of Ethereum ETFs paving the way for clearer guidelines and greater mainstream acceptance.

Hardware Infrastructure

The surge in AI adoption has triggered a huge demand for specialized hardware and chips optimized for AI processing, driving innovation and research in this field. This leads to the development of more efficient, advanced, and powerful infrastructure, unlocking new possibilities and applications for AI technology.

Tokenization of RWAs
The tokenization of real-world assets, such as real estate, is underway, with a current market size of millions and the potential to grow to trillions. Another significant sector poised for transformation is the shipping industry, where tokenized assets will create secondary markets, unlocking greater liquidity and efficiency.

Kristofer Daynes Penseyres

Cofounder and Chief Brand Officer, Dogami

Overview of Discussion

The interview analyzed the intersections between Web2 platforms and Web3 platforms, as well as the overlap between digital assets and AI technologies. Kristofer provided an analysis of the challenges and opportunities surrounding industry visibility and how companies can aim to expand their audience and user base. He emphasized both the use cases and challenges that are being explored in 2024, especially through partnerships and the mass adoption of Web3 technology.

Key Insights

Web2-Web3 Intersections
In gaming, there are more free-to-play platforms rather than token-gated platforms. Integrated wallets will also help the adoption of NFT-driven platforms in the gaming space.

Industry Visibility
More traditional firms are entering the digital assets space, increasing industry visibility and outreach. Dogami formed a partnership with GAP last year, creating visibility in mainstream fashion.

Use-Cases
Through digital asset partnerships, traditional firms are realizing there is a convergence between Web3 technologies and their historical target consumers, as users of Web3 overlap with customers of traditional firms, providing opportunities for exploring new cross-industry verticals.

Challenges
Emphasis was placed on the challenge of accessibility and adoption, particularly due to existing barriers within companies to advertise and promote Web3 technology.

Logik Gilliam

Co-founder, Studio LOGIK

Overview of Discussion

The interview delved into the transformative potential of NFTs and blockchain for artists, offering an innovative way to recognize and reward their creative work. Logik highlighted how these technologies enable artists to monetize their art, connect with their audience, and even reward their fans and patrons. He also shared his vision of creating an immersive digital world akin to a virtual Disneyland, where creativity and imagination can thrive. Furthermore, he discussed how blockchain and NFTs can accelerate positive change and drive meaningful impact in the art world and beyond.

Key Insights

Blockchain for Creative Economy
Blockchain technology has empowered artists to monetize their creative work through Non-Fungible Tokens (NFTs), providing a novel way to reward artists for their creations. This innovative approach enables artists to benefit from their art while also allowing collectors and fans to easily buy, sell, and trade unique digital assets.

Digital World
Advocated for the creation of an immersive digital realm where people can engage with a diverse range of creative expressions, including art, fashion, animation, painting, and more. This virtual world would be akin to a digital Disneyland, offering a magical and interactive experience for all who enter.

Catalyzing Impact
It's fascinating to consider the potential socio-economic implications of this technology. Blockchain, in particular, has the potential to be a powerful tool for the betterment of society, as it is inherently decentralized and accessible to all.

Mashal Waqar

Head of Marketing, Octant

Overview of Discussion

The interview explored key points on Web 3 development, including over $1 billion in innovative grants, challenges in grants management, the early stages of open-source projects, and efforts to boost women's participation through equitable funding and training cohorts.

Key Insights

Grants and Funding
Over $1 billion in grants have been committed to supporting Web 3 development, encompassing a range of funding mechanisms. These include innovative approaches like quadratic funding and retroactive funding, which aim to stimulate growth and innovation in the Web 3 ecosystem.

Grants Management
Currently, it's challenging to assess the effectiveness of these grants, as there's a lack of transparency and accountability in tracking their impact. For instance, it's hard to determine whether funded projects are active or dormant. Therefore, establishing robust governance structures for grant management is a critical focus area for us to ensure that funds are utilized efficiently and effectively.

Open-Source Project
Open-source projects, where individuals can build upon existing work, are still in their early stages of development. Currently, no one has yet perfected this model, and it remains a work in progress. These projects rely on community collaboration, where others can take what you've created and expand upon it, but the optimal approach has yet to be determined.

Women participation
Cohorts provide a valuable opportunity for women to receive training and recognize the significance of their voice and vote. Through quadratic funding, every individual has an equal say, regardless of their financial contribution, whether it's $1 or $100. Unfortunately, women often receive limited funding in the ecosystem. Our cohorts aim to address this disparity by empowering women to access greater funding opportunities and amplify their impact.

Mathias Leys

Founding ML Engineer, atla

Overview of Discussion

The interview explored the concept of blind computation as a new computing paradigm, highlighting its encryption-based approach that ensures privacy and security in computational processes. The discussion also touched on the integration of blockchain and AI in incentivizing decentralized computations.

Key Insights

Blind Computation Paradigm

The shift towards blind computation, where computations are performed by encrypted nodes in a network, ensuring data privacy and security. This paradigm eliminates the need for trust in centralized servers, making it a promising approach for various applications.

Integration of Blockchain and AI

Blockchain technology is being utilized as an incentivization mechanism for decentralized computations in the blind computation paradigm. This integration addresses the need for secure and privacy-preserving computational processes in AI and other applications.

Focus on Meaningful Problem Solving

The importance of focusing on solving meaningful problems rather than getting caught up in the noise of technological trends. Innovators should tackle significant challenges, such as privacy-preserving AI, infrastructure for blind computation, and governance in AI development.

Innovative Approaches

There is a need for innovators to bet on suitable approaches to solve critical problems in areas like AI control, privacy, and infrastructure. He stressed that meaningful problem-solving should drive innovation in technology rather than following secondary trends.

Dr. Max Bernt

Global Head of Regulatory Affairs & Managing Director, Europe, TaxBit

Overview of Discussion

The interview explored industry insights into blockchain technology, focusing on the impact of Bitcoin halving, regulatory developments, institutional adoption, DeFi, taxation, the role of AI, sustainability, and factors driving individual adoption. Max Bernt shared his perspective on the current and future state of the blockchain industry, emphasizing the significance of regulatory frameworks and the increasing role of institutional investors in driving market dynamics. He also highlighted the challenges and opportunities presented by the evolving landscape of decentralized finance, compliance, and the integration of artificial intelligence.

Key Insights

Regulatory Clarity

Global regulatory frameworks, especially in the EU with MiCA and AML packages, are crucial for legitimizing institutional investments in crypto. Clear regulations are pivotal for institutional adoption.

DeFi Challenges

True decentralized finance (DeFi) faces regulatory hurdles due to its nature. Future regulation might leverage digital identities and zero-knowledge proofs to create a viable regulatory framework for DeFi.

Compliance Complexity

Anti-money laundering (AML) regulations and taxation pose significant challenges. The OECD's framework aims to standardize reporting globally, impacting how compliance is managed across jurisdictions.

Tax Harmonization

Expectations for global tax harmonization by 2026 suggest a uniform approach to reporting and taxing crypto transactions, affecting industry practices worldwide.

Technology Integration

Integration of AI and machine learning in compliance processes, like proof of source, promises innovative applications. This fusion could enhance data analysis and regulatory adherence in the blockchain space.

Nicolas Cary

Cofounder and President, Blockchain.com

Overview of Discussion

The interview underscored the importance of institutional adoption, technological advancements such as DeFi on Bitcoin, and the growing intersection of blockchain with AI. Regulatory advancements across various global jurisdictions were highlighted as pivotal enablers of industry growth and essential for ensuring consumer protection. The conversation also delved into governance issues within decentralized systems and the enduring resilience of blockchain technologies. Carey's insights portrayed a confident outlook for 2024, driven by regulatory clarity and expanding mainstream adoption.

Key Insights

Institutional Adoption and Market Expansion

The introduction of ETFs and institutional partnerships is significantly broadening access to cryptocurrencies, marking a decisive step toward mainstream financial integration, as discussed.

Technological Convergence with DeFi on Bitcoin

The interview emphasized how developments like DeFi expanding onto Bitcoin’s platform are extending its utility beyond its original design, highlighting substantial advancements in blockchain technology.

Regulatory Landscape and Governance

The discussion underscored Europe’s proactive regulatory initiatives and the UK’s potential regulatory framework for stablecoins and staking. These efforts are seen as crucial in providing regulatory clarity and fostering confidence within the market, which are essential for sustained industry growth.

Security Challenges and Consumer Protection

Carey addressed ongoing security concerns within the blockchain space, stressing the importance of robust industry standards and effective regulatory oversight to maintain consumer trust and mitigate risks effectively.

Nitin Gaur

Serial Entrepreneur

Overview of Discussion

Insights into the blockchain industry were explored, focusing on cryptocurrency’s evolution into DeFi, democratizing global investment management. Key requirements include interoperability across blockchain and TradFi, scalability for global transactions, and improved usability. Blockchain combined with AI enhances financial services’ trust and efficiency, with ‘Ledger Link’ pivotal for integrating digital assets like RWA into traditional finance.

Key Insights

DeFi Evolution
The evolution of cryptocurrency from personal financial control to DeFi has democratized investment management globally. It offers complex financial tools traditionally reserved for elites, marking a shift from mere ownership to active portfolio management and market participation.

Requirements for DeFi to Thrive
Interoperability is key across blockchain ecosystems and traditional finance (TradFi). Scalability is crucial for handling global transaction volumes and ensuring Web 3's digital value accessibility. Usability improvements and simplifying key management are vital for mainstream adoption and user retention.

RWA and TradFi
The concept of 'Ledger Link' as a Web 2.5 platform facilitates interoperability and a harmonized operational framework, bridging enterprises and TradFi to adopt digital assets such as RWA effectively.

Blockchain and AI
Blockchain accelerates AI, cloud, and IoT adoption by embedding trust. AI enhances blockchain with decentralized data insights. Together, they enable new business models and automation, revolutionizing financial services with transparency and efficiency.

Pat White
CEO, Bitwave

Overview of Discussion

The interview delved into the challenges and solutions related to digital asset finance in businesses utilizing crypto, particularly focusing on the complexities faced by CFOs when integrating digital assets into their balance sheets.

Key Insights

Digital Asset Integration Challenges
Bringing digital assets onto a business's balance sheet introduces various challenges for CFOs, including accounting, tax implications, payment collection, financial forecasting, and managing revenue fluctuations due to asset price volatility.

Payment Innovation and Cost Reduction
The innovative aspects of crypto payments emphasize low transaction fees, instant settlement, and elimination of middlemen's excessive charges, which can significantly reduce costs for businesses.

Regulatory Environment
Optimism about regulatory developments in the crypto industry, noting that increased regulatory clarity reduces risks for businesses and fosters innovation and growth in the digital asset space.

Future Outlook
The potential of crypto payments, especially in the B2B sector, as a key driver of industry growth and the importance of user-friendly interfaces and account abstractions to drive mass adoption of crypto among consumers who may not be familiar with traditional crypto tools like Metamask or private keys.

Renato Mariotti
Partner, Paul Hastings

Overview of Discussion

The interview focused on the legal and regulatory landscape of the crypto industry, particularly from the perspective of litigation and enforcement matters. The discussion highlighted challenges due to the lack of a clear regulatory framework and emphasized the impact of SEC enforcement actions on the sector.

Key Insights

Regulatory Clarity and Enforcement Actions
The need for a regulatory framework in the crypto industry was emphasized, highlighting the current approach of "regulation by enforcement" and its implications for businesses. Ongoing SEC litigation against firms like Coinbase was discussed, showcasing the difficulties in navigating regulatory requirements.

Impact on Innovation and Investment
Regulatory uncertainty and aggressive enforcement actions have led some companies to consider moving operations overseas. This lack of clarity stifles innovation and investment in the United States, prompting companies to seek more favorable regulatory environments abroad.

Political Dynamics and Bipartisanship
Political considerations have influenced the stance of Democrats and Republicans on crypto-related issues. Bipartisan support for regulatory initiatives was seen as crucial for providing certainty and fostering growth in the industry.

Industry Challenges and Strategies
Challenges faced by companies like Binance and Coinbase in dealing with enforcement actions and regulatory compliance were highlighted. Proactive engagement with regulators and risk-minimizing practices were suggested for industry players.

Future Outlook
Cautious optimism was expressed about potential bipartisan support for regulatory initiatives, although significant changes might take time due to the slow pace of political processes.

Robert Kopitsch
Secretary General, Blockchain for Europe

Overview of Discussion

The conversation centered on the role of Blockchain for Europe as an EU-based trade association focused on representing the digital assets industry and the need for collaboration with policymakers to ensure effective regulation and industry growth.

Key Insights

Regional vs. Global Perspective
The global nature of blockchain technology and the necessity of engaging with global entities to establish cohesive regulatory standards across regions.

Industry Outlook and Collaboration
Optimism about the future of the blockchain industry, anticipating convergence among traditional finance players, DeFi platforms, and other sectors, highlighting the importance of collaboration between industry stakeholders and policymakers to drive innovation and regulatory clarity.

Engagement with Policymakers
The significance of engaging with policymakers is in shaping regulatory frameworks conducive to industry growth. Good regulation facilitates business development, investment, and consumer protection within the crypto industry.

Robert Materazzi

CEO, Lukka

Overview of Discussion

The interview discussed the evolution of Lukka from consumer tax software to essential infrastructure for crypto funds. Lukka's products support exchanges, OTC desks, and now ETFs like Bitcoin and soon Ether, highlighting regulatory milestones and challenges in mainstream adoption. Their focus on data management, audits, and expanding product offerings reflects the industry's shift towards institutional integration and regulatory compliance, essential for bridging traditional finance with digital assets on a global scale.

Key Insights

Data Complexity in Crypto Accounting

Lukka started as a solution for tax reporting after the ICO boom, highlighting the unique challenges in data management for crypto assets due to diverse data requirements and custom reporting needs.

Evolution to Data Products

Initially focusing on tax software, Lukka evolved into a data business, creating bespoke data products for crypto exchanges and OTC desks. These products include market data, risk modeling tools, and proprietary data aligned with accounting standards.

Regulatory Milestones

Supporting traditional financial products like ETFs requires robust infrastructure, including market data integration and compliance with regulatory standards. Lukka's acquisition of Coin Firm enhances its capability in AML compliance, addressing critical infrastructure gaps.

Infrastructure Challenges

Supporting traditional financial products like ETFs requires robust infrastructure, including market data integration and compliance with regulatory standards. Lukka's acquisition of Coin Firm enhances its capability in AML compliance, addressing critical infrastructure gaps.

Educational Imperative

Amidst skepticism and regulatory scrutiny, education remains crucial. Lukka emphasizes the importance of continuous learning and education within the industry to build confidence and legitimacy.

Robleh Ali

General Manager, Wadagso Inc

Overview of Discussion

The interview discussed advancements and challenges in the blockchain space, focusing on digital currencies and tokenized assets. Robleh Ali emphasized the potential of blockchain technology to transform the financial system by making it safer, more efficient, and more equitable. The conversation highlighted the importance of integrating AI, the role of big institutions in adopting new technologies, and the necessity of using secure programming languages like Rust to build robust systems.

Key Insights

Blockchain Potential

The interview highlighted blockchain's potential to transform financial systems by improving safety, efficiency, and equity. It was emphasized that blockchain technology has the capability to streamline financial transactions securely, potentially eliminating the need for intermediaries.

Tokenized Assets

A significant focus was placed on the growing market for tokenized assets, which is expected to grow to $13 trillion by 2030. The interviewee emphasized how tokenization facilitates the digital representation and efficient trading of assets on blockchain platforms.

Institutional Adoption

Large financial institutions are increasingly adopting blockchain to enhance capital efficiency and reduce systemic risks. The interviewee discussed how these institutions are integrating blockchain solutions to automate operations and bolster operational resilience.

Software Development

The interviewee's company specializes in developing robust software platforms for digital asset transactions. They prioritize using Rust, a memory-safe programming language known for its security. They advocate for open-source solutions to ensure neutrality and accessibility in software development.

Programming Language

The interviewee stressed the importance of secure programming languages, particularly endorsing Rust for its memory safety and efficiency. They highlighted Rust's potential to significantly enhance the security and reliability of blockchain-based financial systems.

Sabrina Goerlich

Founder and CPO, asenauers.studio

Overview of Discussion

The discussion revolves around the interplay between Web3 technologies and AI, highlighting their mutual benefits and the advancements over the past year. The conversation touches on new use cases, challenges, and the future direction of these technologies. Key areas of focus include the integration of AI in blockchain projects, the rise of AI agents, and the role of regulation in fostering innovation and trust.

Key Insights

Mutual Benefits and Advancements

Over the past year, AI and Web3 technologies have started to significantly benefit each other. AI's ability to manage and analyze large amounts of data complements blockchain's immutable and trust-building capabilities. This intersection has led to numerous new use cases.

Emerging Use Cases

AI can enhance blockchain projects by providing intelligent data management, while blockchain can offer secure, trustable data for AI. Examples include AI-powered chatbots monetized through crypto coins and companies like Limewire using AI to innovate their business models. Additionally, AI agents, particularly in financial services, are gaining traction through micro-payment capabilities enabled by blockchain networks like Bitcoin's Lightning Network.

Challenges and Investment Needs

Despite the promising advancements, there are challenges, particularly in the early stage of integration and the need for substantial investment. The niche nature of this intersection requires more exploration and innovation to attract broader participation and investment.

Regulation and Trust
Regulation remains a significant hurdle, with varying degrees of maturity across regions. The new MiCA regulation in Europe aims to create a more agile and iterative regulatory environment, fostering trust and stability. However, the overall regulatory landscape needs to evolve to support the rapid advancements in blockchain and AI.

Samuel Leichman
Member, Operators Guild

Overview of Discussion

The discussion centered on the accounting and financial management challenges faced by startups in the blockchain and crypto industry. It highlighted the unique complexities of crypto transactions and the importance of specialized financial services to ensure compliance, effective cash management, and strategic financial planning. The conversation provided insights into the evolving regulatory landscape and the necessity of adapting traditional accounting practices to accommodate digital assets.

Key Insights

Crypto Transaction Complexity
Translating digital asset transactions into US GAAP-compliant financial statements is challenging and requires both advanced tools and human expertise to accurately categorize and report on-chain activities.

Client Compliance and Financial Health
Ensuring clients are tax-compliant and have a clear understanding of their cash runway is crucial, especially as crypto-assets do not equate to liquid cash for operational expenses.

Importance of Accurate Bookkeeping
Maintaining accurate financial records is vital for startups to manage their finances effectively and to prepare for future funding rounds, where scrutiny from investors is increasing.

Regulatory Challenges
The evolving and often ambiguous regulatory environment presents significant challenges for crypto startups. Clear and informed regulations are necessary to support innovation and provide stability in the industry.

Integration of Traditional and Crypto Accounting
The need for specialized knowledge to handle both traditional financial activities and crypto transactions within the same organization underscores the complexity of the blockchain financial ecosystem.

Sebastian Rodriguez Cabrera
Vice President of Product, Polygon ID

Overview of Discussion

The interview discusses the development and goals of Polygon ID, an identity solution project. The conversation highlights the transition from the original protocol, Item 3, to the current product, the strategic reasons for spinning off from Polygon, and the emphasis on creating an open ecosystem for self-sovereign identity. The aim is to provide a neutral, interoperable identity solution that addresses the complexities and privacy concerns associated with identity verification across various platforms.

Key Insights

Evolution of Blockchain Identity
From foundational protocols to advanced self-sovereign identity solutions, blockchain technology has enabled secure and verifiable credentials, enhancing trust and reducing reliance on centralized authorities.

Importance of Interoperability and Neutrality
There is a pressing need for identity solutions that are neutral across blockchain ecosystems. This ensures broad integration and user trust, allowing identities to be seamlessly verified across different platforms.

Technological Advancements
Innovations like on-chain presentations of off-chain information and zero-knowledge proofs are pivotal. These advancements enhance security and privacy, which are crucial for maintaining user control over their digital identities.

Regulatory Drivers
Legislative mandates, particularly in Europe, are accelerating the adoption of digital identity solutions. This regulatory framework not only shapes market dynamics but also sets standards for privacy and data protection.

Emerging Use Cases
Applications such as age verification, proof of uniqueness, and content provenance are gaining prominence. These use cases highlight the expanding role of blockchain in addressing diverse identity verification needs across industries.

Shavonne Wong
Co-Founder, NFT Asia

Overview of Discussion

The interview delved into the intersection of blockchain technology, NFTs, and the art industry, exploring the evolution and impact of digital assets on artistic expression and market dynamics. The discussion provided insights into the broader implications of blockchain for provenance, accessibility, and global reach in the arts.

Key Insights

Technology and Art Integration
Blockchain technology, particularly through NFTs, has facilitated a significant evolution in how artists create, distribute, and monetize their work, reshaping traditional art market dynamics.

Early Adoption Advantage
Early movers in the NFT space have benefited from reduced competition and heightened visibility, leveraging these advantages to establish a significant market presence and explore new creative avenues.

Accessibility and Globalization
NFTs have lowered barriers to entry for artists worldwide, enabling broader participation in the art market and facilitating direct engagement with a global audience without geographical constraints.

Financial Innovations
Instant payment capabilities inherent in NFT transactions have streamlined financial transactions for artists, addressing traditional challenges such as delayed payments and financial administration.

Silvia Attanasio

Head of Innovation, ABI

Overview of Discussion

The interview explored insights into the pragmatic future of distributed ledger technology (DLT), exploring institutional and commercial adoption, on-ramps, and the incorporation of blockchain technologies in financial services and modern banking. Silvia Attanasio emphasized how the Italian banking system has begun to introduce and incorporate blockchain-based transactions and transparency mechanisms and is producing real-world use cases. She elaborated on the propensity of consumers to engage with blockchain technologies for financial transactions and explained how regulatory measures may offer new opportunities in the sector.

Key Insights

Institutional Adoption

Across the Italian banking sector, 200 million transactions are being processed per year, involving 91 Italian banks across 91 geographically distributed nodes. This adoption has allowed Italian banks to learn about and begin applying DLT and blockchain use cases in financial technologies.

Customer Demand

Customers are becoming more keen to transact in cryptocurrency. Especially given the adoption of MICA in the European Union, banks now have the ability to manage regulated assets to offer value-added services.

Regulatory Uncertainty

There is still much uncertainty surrounding how banks and institutional lenders may adjust and adapt to regulatory measures like MICA.

Security Measures

Cybersecurity is a key priority. Especially in the banking sector, information security is vital. Despite the complexity of blockchain technologies, security measures need to adapt to the complex nature of DLT applications.

Sunny Lu

Cofounder and CEO, VeChain Foundation

Overview of Discussion

The interview delved into the sustainability applications of blockchain technology in accelerating the adoption of green technologies and climate-sustainable practices. Sunny Lu emphasized the role that blockchain and tokenization can play in incentivizing and tracking sustainable progress since the decentralized climate crisis requires a decentralized blockchain-based solution. He also elaborated on the security and regulatory shifts in the digital assets sector, as regulations are likely going to mature the industry and allow further and continued growth.

Key Insights

Sustainability Use-Cases

Blockchain can allow individuals to log daily actions for the public good, track and verify sustainable practices, and enable a token-based rewards system. Last November, in Torino, VeChain's technologies resulted in 2400 people over two months logging 450,000 actions from daily life, ultimately saving an estimated 3000 tons of CO_2 and 9 million gallons of water as a collective value.

Industry Maturation

Emphasis on how the approval of the Bitcoin ETF has been a positive predictive indicator of the markets, resulting in a more bullish outlook. The Bitcoin ETF approval is a good signal that blockchain is entering the mainstream for mass adoption.

Security

Awareness must remain high to prevent breaches and hacks. Quality control is also vital to ensure that products are not rushed, preventing issues in security and data protection. Security should be an integral component of quality control.

Tara Harris

Head, Nifty Gateway Studio

Overview of Discussion

This interview explored the maturity of NFTs in the crypto space, discussing mass adoption and use cases of NFT technology. Tara Harris emphasized the importance of deriving real consumer value in the NFT space, highlighting accessibility and ease of use. She also noted the challenge of security, especially as it relates to mainstream adoption. She additionally maintained that the largest industry challenge, as it affects blockchain maturity, is the number of users. Tara Harris provided ways in which the industry can capture more frequent users and spur adoption rates among consumers.

Key Insights

Mainstream Adoption

Adoption is likely the greatest challenge facing the industry. More consumers can be incentivized to use blockchain technology by making the industry more accessible and easy to understand. By focusing on real consumer value, the blockchain and digital assets industry can simplify their message and make technology more enticing for users.

NFTs Role

NFTs can attract many blockchain users. This is because NFTs are harmless and risk-free. Since they are collectibles, NFTs are another form of art and entertainment, which is less threatening or daunting than global banking or finance.

Creative Economy

The intersection of AI and blockchain can have potential spillover in the creative economy as it pertains to the creation of art, allowing artists to develop something that is unique to them.

Yat Siu

Cofounder and Chairman of the Board, Animoca Brands

Overview of Discussion

The outlook for the blockchain industry in 2024 is positive and significantly better than the previous year. The narrative surrounding Bitcoin spot ETFs is expected to continue, with markets outside the US, such as Hong Kong, London, and other regions in Europe and Asia, looking to launch their own versions. This will likely drive more value into the ecosystem. Additionally, there are discussions about Ethereum smart ETFs and CF benchmarks, indicating potential growth in game-fi tokens like Axie Infinity and Sandbox. The entire blockchain space has grown substantially, with NFTs making a strong comeback and industries like gaming and education experiencing exciting new growth.

Key Insights

Positive Outlook for 2024 and Emerging Trends

The outlook for 2024 is better compared to the previous year, with an ongoing focus on Bitcoin spot ETFs and the emergence of Ethereum smart ETFs and CF benchmarks. This includes the potential inclusion of game-fi tokens in ETFs.

Industry and Sector Growth

The blockchain industry is now valued at $2.7 trillion, with NFT sales recovering and reaching up to $2 billion per month. The gaming and education sectors are seeing substantial growth, driven by increased value locked in NFTs.

Gaming and Interoperability

Significant investments in gaming are bringing high-quality games into the ecosystem, with new types of gamers participating through token ownership and NFTs. Interoperability is crucial for Web3, allowing for shared network effects and potentially increasing NFT interoperability.

Security and Education

Security in the blockchain industry has improved over the past decade but can still be enhanced. Education is key to improving security and understanding in Web3, supported by regulation and technological advancements.

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References

a16zcrypto. "7 Big Ideas for 2025 [and More Trends to Watch]." January 5, 2025. https://a16zcrypto.com/posts/article/big-ideas-trends-2025/.

Balchunas, E. 2024. "BlackRock Spot Bitcoin ETF's over 400 Holders Is 'Mind-Boggling': Bloomberg Analyst." W. RT.

Barbosa, L. 2021. "Blockchain and Impact Investment-Case Study of the Blockchain for Zero Hunger Initiative and Its Contribution to the United Nations Sustainable Development Goals." *Economic and Social Development: Book of Proceedings.* 146-153.

Beck, R. et al. 2017. "Blockchain Technology in Business and Information Systems Research." *Springer* (59): 381-384.

Benkler, Y. 2016. "Peer Production and Cooperation." In *Handbook on the Economics of the Internet.* Edward Elgar Publishing. 91-119.

Benmohamed, N. et al. 2024. "Public Value Creation Through the Use of Open Government Data in Australian Public Sector: A Quantitative Study from Employees' Perspective." *Government Information Quarterly* 41 (2): 101930.

BlackRock. 2024. "BlackRock Launches Its First Tokenized Fund, BUIDL, on the Ethereum Network."

Chua, J., Nagesh, M., Sharma, S., and Chen, B. 2024. "Binance Research: Full-Year 2023 and Themes for 2024." Binance.

Build Asset Management. 2023. "Build Asset Management Debuts Bitcoin-backed Private Credit Fund in Partnership with Unchained." Retrieved from https://getbuilding.com/build-asset-management-debuts-bitcoin-backed-private-credit-fund-in-partnership-with-unchained/.

Buterin, V. 2013. "Ethereum White Paper." *GitHub Repository* (1): 22-23.

Buterin, V. 2020. "A Rollup-Centric Ethereum Roadmap."

Cachin, C. and M. Vukolić. 2017. "Blockchain Consensus Protocols in the Wild." arXiv preprint arXiv:1707.01873.

Chohan, U. W. 2022. "Cryptocurrencies: A Brief Thematic Review." Available at SSRN 3024330.

Citi. 2023. "Citi Develops Blockchain FX Solution under the Monetary Authority of Singapore: Project Guardian." Retrieved from https://www.citigroup.com/global/news/press-release/2023/citi-develops-blockchain-fx-solution-under-the-monetary-authority-of-singapore-project-guardian.

Citigroup. 2023. "Money, Tokens, and Games." Citi GPS, Global Perspectives & Solutions.

Croman, K. et al. 2016. "On Scaling Decentralized Blockchains: [A Position Paper]." *International Conference on Financial Cryptography and Data Security, Springer.*

Davis, M. 2023. "Stablecoin Use Cases: Merchant Adoption and E-commerce." https://www.doubloin.com/learn/stablecoins-merchant-adoption-ecommerce.

Davis, M. 2023. "Stablecoin Use Cases: Remittances and Cross-Border Payments." https://www.doubloin.com/learn/stablecoin-use-cases-remittances.

DeFiLlama. n.d. "DeFi Llama: DeFi Dashboard and Analytics." Retrieved from https://defillama.com/.

Deloitte Insights. "Tech Trends 2025." https://www2.deloitte.com/us/en/insights/focus/tech-trends.html?&id=us:2ps:3gl:fwfy25:awa:greendot:022525:nonem:na:kwd-344138231035:171998019042:734084212200:p:Brand_Brand-Building-Themes-Services:Brand_BB-TS-Tech_Phrase:br:203682024198&gad_source=1&gbraid=0AAAADenGPDN6RcoP73Sl-EJbG44otbQN&gclid=Cj0KCQjw_JzABhC2ARIsAPe3ynqOnB35djig40SEESS2_7TlioxQAOzl0yYAHAztY1b5pqeziWCcYWgaApYDEALw_wcB&gclsrc=aw.ds.

European-Central-Bank. 2020. Report on a Digital Euro.

EY Parthenon. (2023). Staying the Course: Institutional Investor Sentiment Toward Blockchain and Digital Assets (Summary Report). Retrieved from https://static.poder360.com.br/2024/04/relatorio_blockchain_institucionais_Ernest-Young_2023. pdf

FATF. 2023. The FATF Recommendations.

Fiedler, I. and L. Ante. 2023. "Stablecoins." In *The Emerald Handbook on Cryptoassets: Investment Opportunities and Challenges.* Emerald Publishing Limited. 93-105.

Gaur, N. 2023. "Blockchain at the Nexus of Technology: Exploiting AI Momentum." Retrieved from https://www.linkedin.com/pulse/blockchain-nexus-technology-exploiting-ai-momentum-nitin-gaur/.

Guadamuz, A. and C. Marsden. 2015. "Blockchains and Bitcoin: Regulatory responses to Cryptocurrencies." *First Monday* 20 (12-7).

Gudgeon, L. et al. 2020. "Sok: Layer-Two Blockchain Protocols." *Financial Cryptography and Data Security: 24th International Conference, FC 2020, Kota Kinabalu, Malaysia, February 10-14, 2020. Revised Selected Papers 24. Springer.*

Hardjono, T. and N. Smith. 2016. "Cloud-Based Commissioning of Constrained Devices Using Permissioned Blockchains." *Proceedings of the 2nd ACM International Workshop on IoT Privacy, Trust, and Security.*

Hess, C. and E. Ostrom. 2005. "A Framework for Analyzing the Knowledge Commons: A Chapter from Understanding Knowledge as a Commons: From Theory to Practice."

Institutional Investor. 2023. "2023 Digital Assets Outlook Survey." Retrieved from https://www.coinbase.com/en-fr/institutional/research-insights/resources/education/2023-institutional-investor-digital-assets-outlook-survey.

Kalodner, H. et al. 2018. "Arbitrum: Scalable, Private Smart Contracts." *27th USENIX Security Symposium* (USENIX Security 18).

Karayaneva, N. 2024. "BlackRock's $10 Trillion Tokenization Vision: The Future of Real World Assets." Digital Assets, Forbes.

Kshetri, N. 2017. "Blockchain's Roles in Strengthening Cybersecurity and Protecting Privacy." *Telecommunications Policy* 41 (10): 1027–1038.

Kshetri, N. 2018. "1 Blockchain's Roles in Meeting Key Supply Chain Management Objectives." *International Journal of Information Management* (39): 80–89.

Lehavi, N. 2024. "Intents Could Frog Leap the Complexity of DeFi." Forbes. Retrieved from https://www.forbes.com/sites/nimrodlehavi/2024/05/28/intents-could-frog-leap-the-complexity-of-defi/.

Li, Y. et al. 2021. "Pricing Strategies for Blockchain Payment Service Under Customer Heterogeneity." *International Journal of Production Economics* (242): 108282.

London Stock Exchange. n.d. "Crypto ETN Admission Factsheet." Retrieved June 18, 2024. https://docs.londonstockexchange.com/sites/default/files/documents/crypto_etn_admission_factsheet.pdf.

Manahov, V. and M. Li. "How [Un] Stable are Stablecoins? New Evidence from the Most Significant Depegs in History." New Evidence from the Most Significant Depegs in History.

Mansbridge, J. 2010. "Beyond the Tragedy of the Commons: A Discussion of Governing the Commons: The Evolution of Institutions for Collective Action." Perspectives on Politics 8 (2): 590–593.

Mell, P. et al. 2023. "Understanding Stablecoin Technology and Related Security Considerations." US Department of Commerce, National Institute of Standards and Technology.

Nakamoto, S. 2008. "Bitcoin: A Peer-to-Peer Electronic Cash System."

Ohnesorge, J. 2018. "A Primer on Blockchain Technology and Its Potential for Financial Inclusion." Discussion Paper.

Ostrom, E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action.* Cambridge University Press.

Pandey, A. A. et al. 2021. "Maintaining Scalability in Blockchain." *International Conference on Intelligent Systems Design and Applications, Springer.*

Philip Stafford, E. S., and A. S. 2021. "German and US Regulators Tighten Focus on Booming Crypto Market." *Financial Times.* London.

PwC. "PwC Global Crypto Regulation Report 2025: Navigating the Global Landscape." March 2025. Updated April 3, 2025. https://legal.pwc.de/content/services/global-crypto-regulation-report/pwc-global-crypto-regulation-report-2025.pdf.

PYMNTS. 2023. "Circle and SBI Holdings Partner to Promote Stablecoins in Japan." PYMNTS.

Reuters. "Experts React to Bitcoin's $100,000 Milestone." December 5, 2024. https://www.reuters.com/technology/view-bitcoin-surges-above-100000-2024-12-05/.

Strack, B. 2024. "Investors Are 'the Clear Winners' as Bitcoin ETF Fee Battle Comes into Focus." *Blockworks*.

Taleb, N. 2014. *Antifragile: Things That Gain from Disorder*. Random House Publishing Group.

Tapscott, D. and A. Tapscott. 2018. "How Blockchain Will Change Organizations."

The Block. 2024. "Spot Bitcoin ETF On-Chain Holdings [USD]." The Block. Retrieved from https://www.theblock.co/data/crypto-markets/bitcoin-etf/spot-bitcoin-etf-onchain-holdings-usd.

UBS. 2024. "UBS Launches Pilot for an Ethereum-Based Money Market Fund."

Varma, N. 2024. "Building the Future: Navigating the Sprawling Metropolis of Blockchain Evolution." Retrieved from https://www.linkedin.com/pulse/building-future-navigating-sprawling-metropolis-nikhil-varma-phd-nfyle/.

Vigna, P. and M. J. Casey. 2016. *The Age of Cryptocurrency: How Bitcoin and the Blockchain Are Challenging the Global Economic Order.* Macmillan.

Visa-Corporate-Communications. 2024. "Solana and Visa: Bridging the Gap Between Crypto and Payments."

Voshmgir, S. 2019. *Token Economy: How Blockchains and Smart Contracts Revolutionize the Economy*.

Wood, G. 2014. "Ethereum: A Secure Decentralised Generalized Transaction Ledger." *Ethereum Project Yellow Paper* 151 (2014): 1–32.

Wright, A. and P. De Filippi. 2018. *Blockchain and the Law: The Rule of Code*. Harvard University Press.

Zhang, R. et al. 2019. "Security and Privacy on Blockchain." *ACM Computing Surveys (CSUR)* 52 (3): 1–34.

Blockchain and Digital Assets Practice

The Blockchain & Digital Assets Workgroup explores how decentralized technologies are redefining systems of value, ownership, and identity. From blockchain infrastructure and smart contracts to tokenized economies and digital assets, the group investigates how these innovations enable secure transactions, inclusive finance, and new governance models.

Bringing together experts across technology, policy, and economics, this workgroup focuses on the responsible adoption of blockchain solutions that balance market innovation with societal impact. This report reflects our collective efforts to shape a more transparent, resilient, and equitable digital economy.

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