METI
Ministry of Economy, Trade and Industry

Approach to Improving Web3.0 Business Environment

From token economies to the foundation of Society5.0

December 16, 2022

Web3.0 Policy Office

Background and purpose of today's discussion

(Positioning)

- This discussion document summarizes the current policy perspective for the environment for Web3.0 businesses that was newly identified as a key subject matter to be examined in the first interim report (June 2022) of the Committee on New Direction of Economic and Industrial Policies after issues were raised at the Industrial Structure Council (May 2022) and includes updates for the recent sixth months .

(Recognition of Issues and History of Discussions)

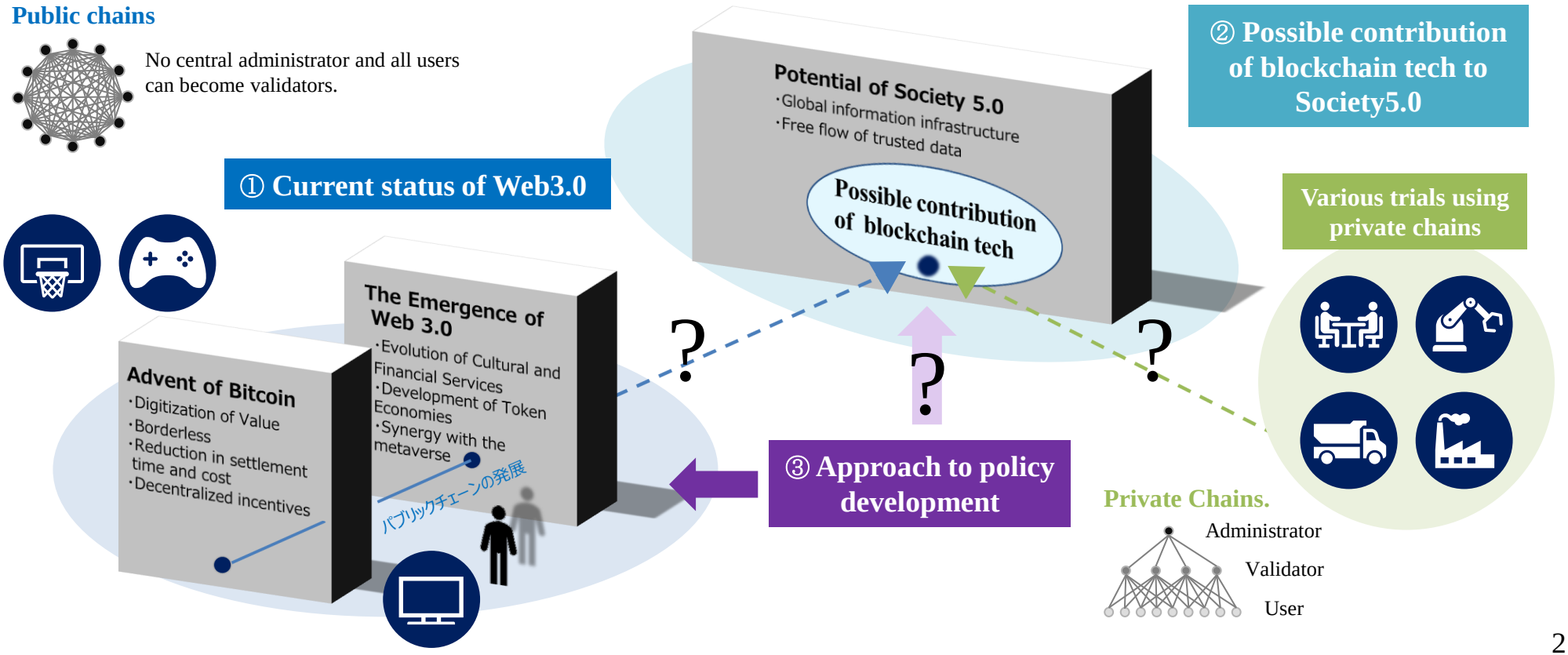
- As Web1.0 that enabled the transmission of information through email and HTTP evolved into Web2.0 in which collective information and big data accumulated value, there was a great deal of concern over the monopoly of information managed by centralized platforms. The concept of Web3.0 to autonomously and decentrally manage and process information emerged as an antithesis against such information oligarchies.
- Web3.0 businesses centered on the restructuring of cultural, economic, and financial values are being developed on public blockchains with tokens acting as digital assets and value-exchange mediums as well as providing financial incentives. The development of such decentralized technologies such as blockchain may lead to the foundation of Society5.0 which requires massive amounts of data-exchange.
- With this in mind, METI established the Web3.0 Policy Office, a cross-departmental team under the Minister's Secretariat in July of 2022. This discussion material was compiled based on six months of discussions with over 100 professionals (including entrepreneurs, engineers, as well as legal, tax, and accounting professionals) not only in Japan but also in the United States, Singapore, and UAE.

(Function of today's discussion)

- **The Committee on New Direction of Economic and Industrial Policies will discuss the following and any other matters in line with "Future Progress" outlined in the previous committee (November 2, 2022).**
  - **Contribution to Major Objectives: How can we contribute to the expansion of domestic investment, acceleration of innovation, and income growth?**
  - **The ambition of the mission: What policy stance should be taken to stimulate technological innovation and business expansion in an environment of operational uncertainty?**
  - **Synergies with other agendas: Items to be particularly considered and noted in order for the 14 themes of the Committee on New Direction of Economic and Industrial Policies to organically reinforce each other**

How we look ahead to blockchain technology and Web3.0 (the overall layout of this discussion)

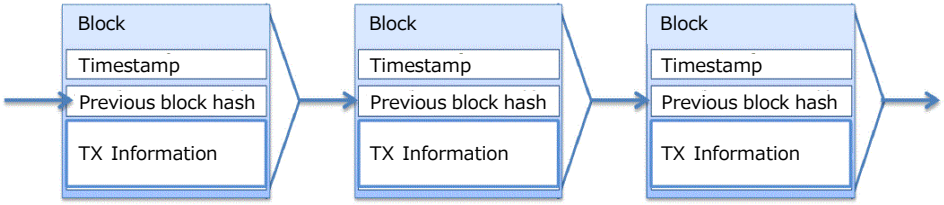
- Blockchains use digital assets and tokens as a medium for exchanging value and financial incentives. While there are various trial projects such as trade finance and clinical trial data management using private blockchain technology (see P.5, P.21), Web3.0 businesses built on public blockchains have grown mainly around cultural economies and financial services.
- The outcome is yet unknown, but the development of distributed ledger technologies such as blockchain may lead to the technologies that support Society5.0 that require massive data-processing.
- With the above issues in mind, we would like to discuss the following: ① the current state of Web3.0 businesses, ② the contribution potential of blockchain technology to Society5.0 and ③ policy development to enable such a transformation.



(Reference) Blockchain Technology

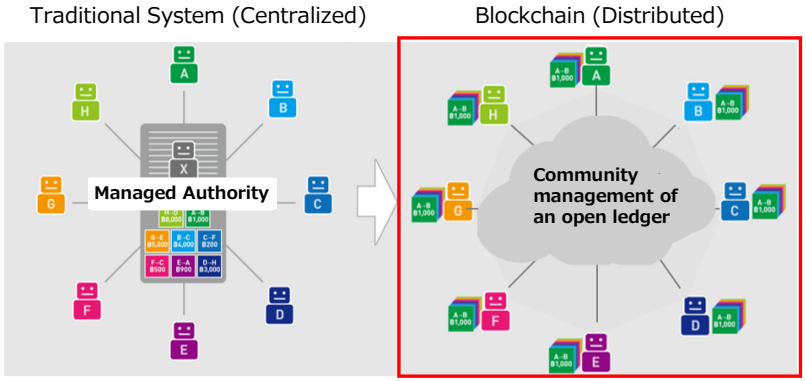
- A technique for recording information in a way that leads to a collection of blocks as a single chain with a unique and unalterable transaction history. To alter a particular transaction or block in the past, it is generally necessary to alter all subsequent blocks and thus typically provides a high level of security.
- It employs a system in which the entire ledger is managed and stored by decentralized entities. Even if one node is destroyed, as long as the data held by other nodes is safe, continuity of system operation is ensured.

Conceptual Diagram of Blockchain



Modification of the blockchain is nearly impossible as the hash* of the subsequent block takes a completely different value if any previous block is modified.

*Hash - a cryptographic value of specific length derived by certain encryption procedures on any given data.

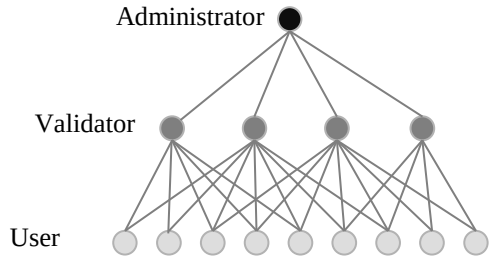
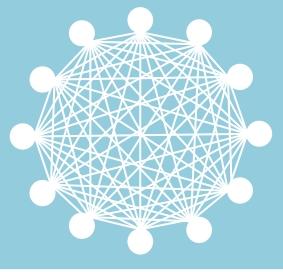


Blockchain Characteristics *Public Type

1	Decentralization	Individual nodes, not a central entity, retain the complete history of transactions (Decentralized management)
2	Immutability	To modify transactions in the past, it is necessary to modify all transactions that have occurred since then. ※Note that modification is possible if malicious actors cooperate and account for 51% or more of voting power of the consensus algorithm.
3	Permanence	Even if individual nodes become inoperable, the continuity of system operation is ensured as long as the data possessed by other nodes is safe (the retention of data is not affected by the discontinuation of a single entity)
4	Transparency	Data on the blockchain open to the public to increase verifiability.
5	Smart Contract	Transaction and process automation (automatic program execution when certain conditions are met)

(Reference) Comparison of private chains and public chains

- Blockchains have private, consortium and public types, but Web3.0 often refers to the use of public chains.

Private type		Public Type
	**Hierarchy**	There is no management, and all users have the opportunity to become validators. 
○ **High-speed transactions of several tens of thousands of transactions per second**	**Speed**	× Not suitable for high-speed transactions (6 to 7 transactions per second*1)
× Possibility of falsification by central entities	**Security**	○ **Bitcoin has never been hacked (*2)**
× Centralized due to management control of data	**Decentralization**	○ **Open networks lead to increase in innovation because anyone can participate**
× Poor in terms of cost-effectiveness compared to existing databases	**Economic Incentives**	○ **Direct incentives for users to innovate with public blockchains and crypto**

(*1) The case of Bitcoin. There are examples of high processing speeds on public blockchains such as Avalanche which can process up to 4500 transactions per second.
(*2) Issues exist such as the possibility of a 51% attack or losing crypto assets when a private key is stolen, etc.

Shinichiro Matsuo: Professor, Center for Blockchain Research, Georgetown University

Private blockchains are no different from the timestamping technology introduced in the 1990s, thus making blockchains meaningless unless they are public.
While private blockchains are confined to the extent of the operator's ideas, public blockchain services are open and increase innovation by welcoming ideas from anyone that wishes to participate.

(Reference) Issues with Private Chains

- **<u>Since 2010, many possible ideas of private chain utilization have emerged both domestically and overseas in areas such as supply chain management and data management.</u>**
- Unfortunately projects that have been able to commercialize and reached large-scale success have yet to be seen (although there remains the possibility that they will continue to develop separately from public chains depending on purpose and use cases).

Examples of Private Chain Use

	Private type (including consortium type)	
	Overseas	**Domestic**
Distributed ledger	・Star Governments & HSBC, etc. (Identity verification) ・EverLedger (Diamond Distribution) ・Wal-Mart & IBM (Food Logistics) ・Government of Estonia (medical information sharing) ・Pfizer,Amgen, etc. (clinical trial data distribution) ・Stampery (Intellectual Property Control)	・SBI&NEC (Identity verification) ・SEINO (Logistics) ・Hitachi (Supply Chain) ・Tokio Marine (Medical Information) ・Susmedo (Clinical trial data distribution) ・LIFULL, etc. (real estate data management) ・University of Tsukuba (Copyright)z
Smart Contract	**Overseas** ・Innogy (P2P power trading) ・Chromaway (real estate transactions) ・HSBC, etc. (trade finance) ・IBM & Samsung (IoT Devices) ・NASDAQ Linq (financial transactions) ・AgriDigital (food distribution) ・Allianz (insurances payments)	**Domestic** ・Chubu Electric Power & mijin (P2P Electric Power Transactions) ・Sekisui House (real estate transactions) ・NTT data (trade procedures) ・Courage (EV Battery Control) ・Japan Stock Exchange (financial transactions) ・Optim (Agricultural Distribution) ・Sompo Japan Insurance (Insurance claim payments)

Example of a terminated trade finance project

- Danish shipping companies MAERSK and IBM had jointly developed TradeLens, a trade supply chain platform that utilizes private chains for the shipping industry. They had completed the trial operation of paperless trade finance transactions, but announced that the project would be shut down on November 29, 2022.

Unfortunately, while we successfully developed a viable platform, the need for full global industry collaboration has not been achieved. As a result, TradeLens has not reached the level of commercial viability necessary to continue work and meet the financial expectations as an independent business.

MAERSK
Rotem Hershko
Head of Business Platform

Source: https://www.maersk.com/news/articles/2022/11/29/maersk-and-ibm-to-discontinue-tradelens

(Reference) Beginning of public chains: Bitcoin

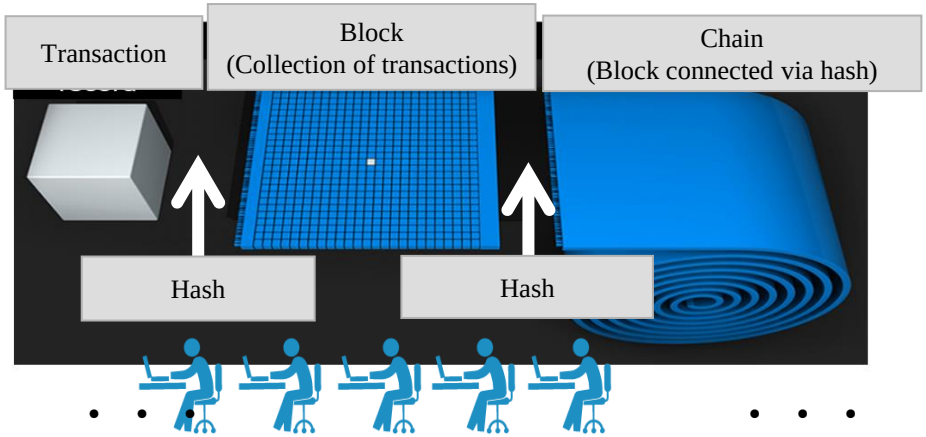
- In 2008, based on a "white paper" released under the pseudonymous "Satoshi Nakamoto", a protocol for issuing bitcoin (BTC) was developed and released by a group of core developers using blockchain technology and began the automatic issuance of coins.
- **Bitcoin, in principle, is used for payments such as "remitting 1BTC from account A to account B."** Transactions can be viewed and tracked at any time from Blockchain.com or any other public explorers, but they are anonymous and are not linked to individuals.

"Miners" record transactions on the blockchain and earn BTC

Transaction records such as "remittance of 1BTC from account A to account B" are consolidated into "blocks" and the transaction information strings are converted into a hash(*), which ultimately leads to sequential blocks on a single "chain."

If a block is modified, the hash of the subsequent linked blocks becomes completely different, thus preventing tampering.

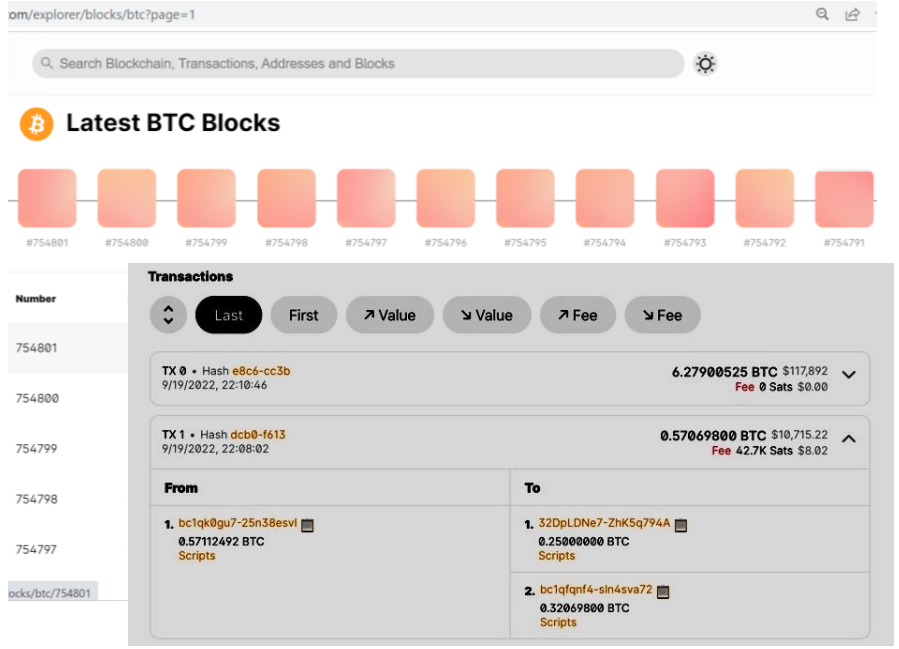
*Hash: The transformation of data such as “Remittance 1BTC from Account A to Account B" using cryptographic methods that can not be calculated in reverse.



Miners - Entities calculating the hash rate to win the reward, currently 6.25BTC

All transaction information is "anonymous," but can be viewed and tracked

All transaction records (bitcoin addresses and transaction values) recorded on the blockchain are open and can be verified but bitcoin addresses (accounts) are not linked to individuals.



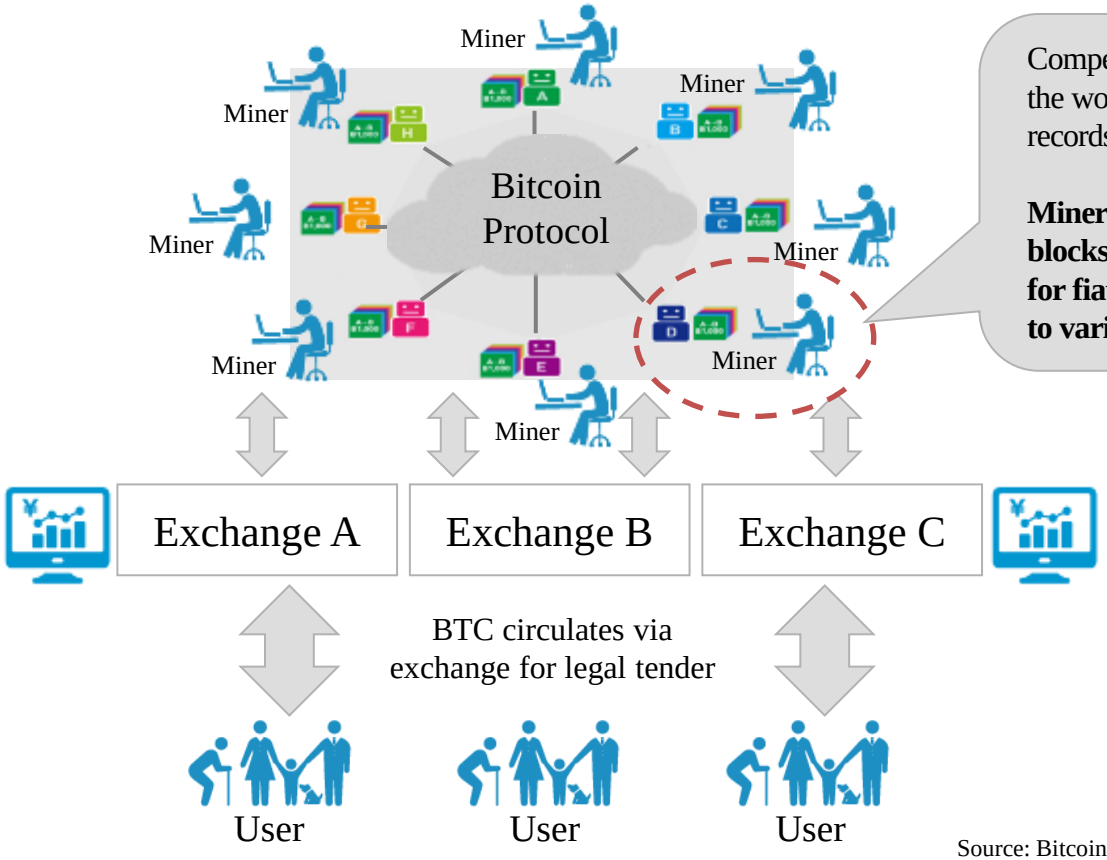
Source: From the "Blockchain.com" https://www.blockchain.com/explorer/blocks/btc

(Reference) Bitcoin issuance and distribution

- The Bitcoin protocol automatically issues new bitcoin (around ¥14 million or 6.25BTC as of November 2022) as compensation to “miners”, who provide large amounts of computing power and compete for the validation and recording of bitcoin transactions onto the blockchain ledger.
- Bitcoin issuance goes through a “halving” event once every four years in which the mining reward is cut in half, and the protocol is designed to issue a maximum of 21 million BTC (of which over 90% has already been issued as of the fall of 2021) to prevent supply inflation and currency devaluation.

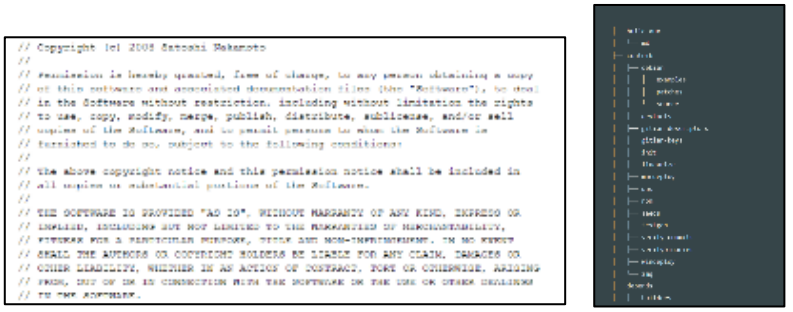
Distribution mechanism of BTC earned by miners as compensation for recording

The Bitcoin protocol, developed and released by core developers based on Satoshi Nakamoto’s white paper automatically issues bitcoins.



Competition for calculating hash values is conducted by miners around the world to validate and record "blocks" (a collection of transaction records) generated at a rate of one in 10 minutes.

Miners who win the competition to “hash” transaction records into blocks receive 6BTC as compensation. These rewards are exchanged for fiat currency through various exchanges, providing circulation to various institutional and retail consumers.



Bitcoin white paper (left) and source code (right)
※Open source for anyone to verify

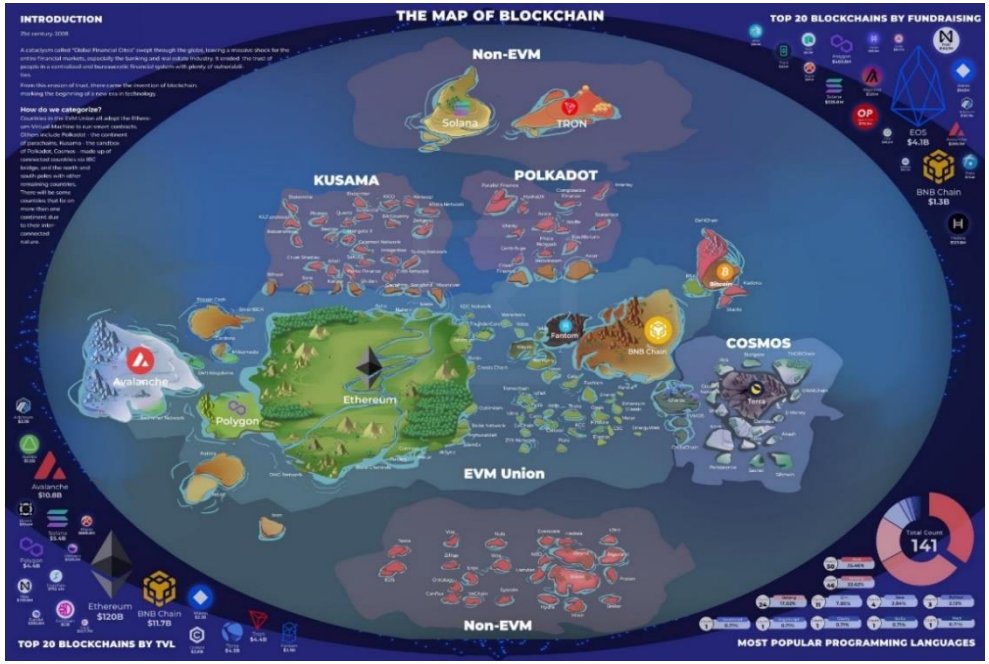
Source: Bitcoin: A Peer-to-Peer Electronic Cash System"Satoshi Nakamoto.https://bitcoin.org/bitcoin.pdf

(Reference) Post Ethereum and "Web3.0"

- **<u>In 2013, the crypto currency ETH was founded as the native token on top of the Ethereum blockchain.</u>**
- The era of “Web3.0” begins, where applications such as ① NFT transactions, ② gaming (GameFi), and ③ decentralized finance (DeFi) are created that can automatically execute contracts (smart contracts).
- Thereafter, various blockchains dubbed “Ethereum Killers” such as Polkadot (DOT), Avalanche (AVAX), and Solana (SOL) emerge. Various protocol tokens issued by applications running on top of these chains are also introduced to the market.

Web3.0’s “rival factions"

Various blockchains such as polkadot, avalanche, solana and their corresponding native tokens are born. Each compete as Ethereum rivals but at the same time the movement to pursue compatibility is also accelerating.



Web3.0 layered structure

Protocol token: Cryptographic assets used by each application

i.e.) Aave
GST

AAVE GMT

Applications: Services running on various blockchains

i.e.) Aave
STEPN

STEPN

Native Tokens: Cryptographic assets that are used at the base of each blockchain

e.g., ETH (Ethereum), DOT (Polkadot),
SOL (Solana), AVAX (avalanche)

ETH

Blockchain

i.e.) Ethereum,
Polka dot,
Solana,
Avalanche etc.

SOLANA Polkadot AVALANCHE

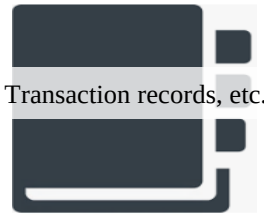
Source: Kyros Ventures

(Reference) Emergence of Ethereum and the "Smart Contract" feature

- As Bitcoins functionality remains in the distributed ledger and recording of transaction information realm, Ethereum was developed to allow for programmable money (“smart contracts”) in addition to the distributed ledger. For example, a contract can be automated to execute against unknown counterparties only when they satisfy specific terms established by the contract owner.
- In addition, smart contracts are open source, transparent and thus verifiable, expanding the capabilities of various individuals and companies to openly transact with one another.

Distributed ledger only

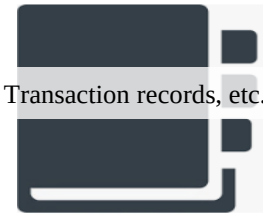
Distributed ledger only



bitcoin

"Smart Contract"
= Distributed ledger + programmable contracts

Distribution ledger



＋

If deposit
Then send product
Else don’t send product

Program

Ethereum

○ Able to record static information on the blockchain	Value (information) Storage and transfer	○ Able to record static information on the blockchain
× Can only document information regarding transactions and the exchange of coins	Automation of transactions	○ **Automatic execution of contracts** **Open and transparent** **Less counterparty risk due to codified terms**

※Attention should be paid to the emergence of technologies capable of smart contracts on higher layers of Bitcoin in response to the emergence of Ethereum

Distributed apps (DApps) can expand applications and features of smart contracts more effectively by decentralized development.

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1. Current state of Web3.0 businesses

2. Potential contribution to Society5.0 using blockchain technology

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Token economics and the Internet of Value

- With the rise of blockchain technology, a reimagination of the Internet with the addition of Web3.0, a layer of “Internet of Value” (an open system of value creation and exchange by leveraging technology such as blockchain) has been developing on top of the conventional internet architecture.
- Token economies were born as a startup environment for new services, consumer activities, and wealth creation, utilizing newly issued tokens and NFTs. A new economic model is being formed alongside the metaverse with specific use cases in the forefront such as cultural economies (games, art, sports, etc.) and finance (decentralized version of finance and wealth creation using digital assets).

Parallel with
the metaverse

1990s
Client-server model
E-mail, etc.,
"Read only"

Web1.0

2010s
Interactive platforms,
social media
"Read and Write"

Web2.0

2020s

Any and all value becomes tokenized
allowing anyone to hold and exchange.
"Read & Write & Own/Join"

Web3.0

Source: Images cited from Amusement Japan website

(Reference) What is the Internet of Value?

- The internet protocol only transfers digital bytes that can be copied and pasted, and as such has been is suitable for “information transmission” but not for “value transmission.” Unlike physical currency, any digital value transfer needed a trusted intermediary (i.e. banks) to make sure the currency was not copied (the so called “double spend problem”). Blockchain solved this problem, enabling the creation, preservation, and exchange of value without trusted intermediaries, which was not previously possible with the Internet.

Internet + Blockchain Potential

01 Digitization of value

In addition to financial assets such as currencies, bonds, stocks, and real estate, it is possible to create, store, and exchange non-traditional assets such as art, digital content, and certificates. Due to the lack of business incentives, an exchange system for these types of values was never widely developed. However, with blockchain it has become easier to record, store and exchange such assets.

02 Borderless

Because the Internet is borderless and accessible to anyone, it is easier to transfer value across borders by leveraging blockchains, and it also becomes possible to move value between platforms due to their open source nature. There is also the potential to lower the cost of KYC (identity verification) and AML/CFT (anti-money laundering and countering the financing of terrorism) by improving transactional transparency and traceability with automated monitoring.

03 Reduction in time and costs

Transactions are easier to execute based on predetermined and codified rules, which reduces the time and cost of transactions over the long term. However, at present there are issues with blockchain processing speed and transaction fees (so called “gas” fees).

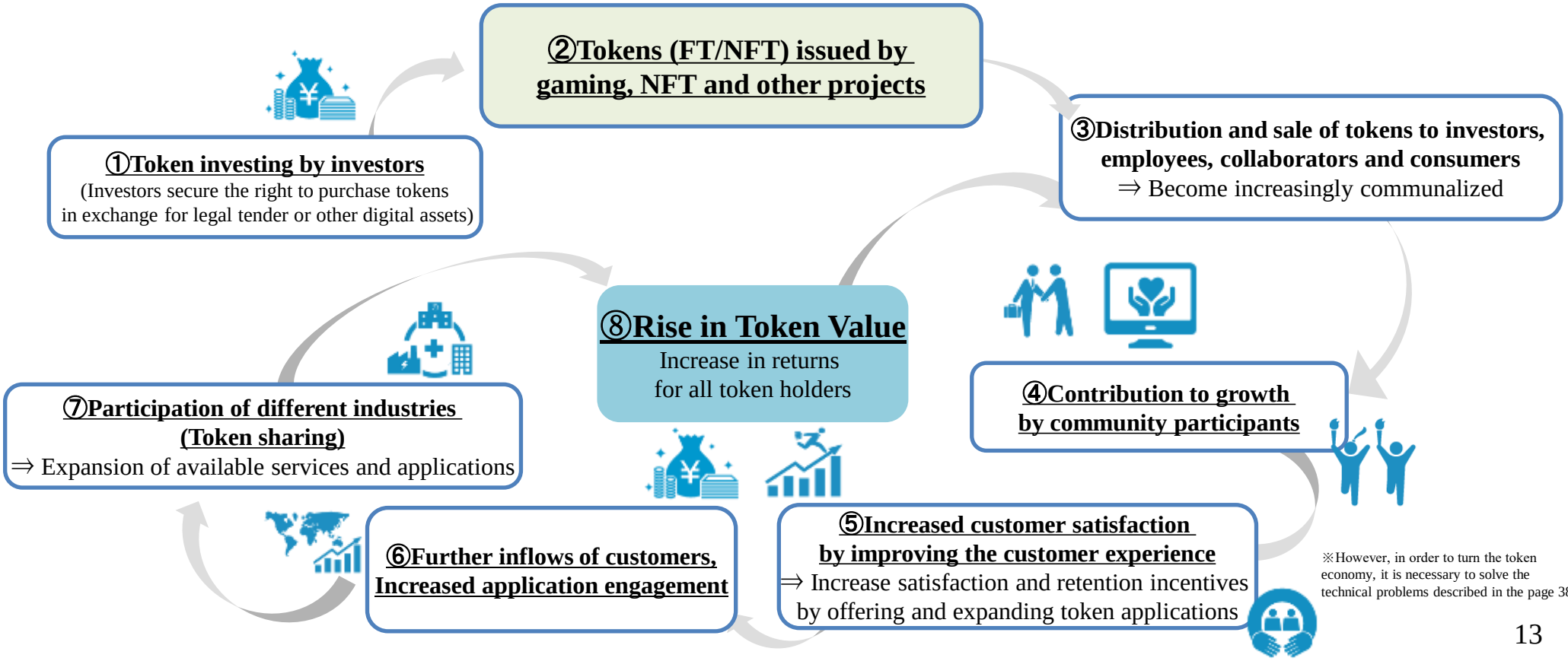
04 Aligned incentives

Along with the digitization of value, it becomes possible to provide economic incentives to users of the system by adding value to what was previously non-monetary online and allowing participants to realize such value (e.g., a mechanism in which the ownership history of a fan token proves the owners fan history, and the longer the ownership history, the greater the value).

Incentive Innovation using Token Economics

- A token is a representation of value enveloped on a blockchain (a Web3.0 value exchange medium). It is broadly split into ①”Fungible tokens" (FT) and ② "Non-Fungible tokens" (NFT).
- Within growing Web3.0 projects, employees and consumers actively promote community development to engage service consumption, as the increase in token value acts as an incentive to "contribute to enhancing project value." This can create a positive feedback loop that leads to an increase in token value. So far however, for cases such as in-game tokens, short term cycles of boom and busts have been overly repeated, creating a major challenge and questioning long term sustainability.

“Positive cycle" case of a token economy using blockchain games as an example



※However, in order to turn the token economy, it is necessary to solve the technical problems described in the page 38

Token economy case study (fan tokens of the world's most prestigious sports clubs)

- Management of soccer and other professional sports clubs issues a fan token. Fan token holders earn the right to participate in specific token holder only events and vote in certain management functions. (Fan tokens are also granted to athletes, etc.). For clubs, provides another alternative to procure funds, and through the effectiveness of fan engagement, a positive feedback loop can lead to further enhancement of token value.

Example of Fan Tokens on Socios.com

Socios.com

- A platform where you can buy sports club fan tokens.
- By owning fan tokens, earn rights to
  - Participate in specific events and matches (e.g. VIP tickets for the Milano Derby)
  - Purchase official goods/trading cards
  - Voting rights to club operations (anthem selection, uniform design)
- Already introduced for European and other soccer teams (FC Barcelona, Juventus, Paris-SG, etc.).

1 **Operating club team issues a fungible fan token**

2 **Fans purchase team tokens on Socios.com using Chiliz token**

3 **Tokens also distributed to athletes**

4 **Participation rights for specific events for fan token holders**

⇒ Increase in community engagement

5 **Support for club team growth by the community**

6 **Enhancement of events and goods for club team fans ⇒ Improve customer satisfaction**

7 **Further inflow/engagement of fans ⇒ Increase in revenue**

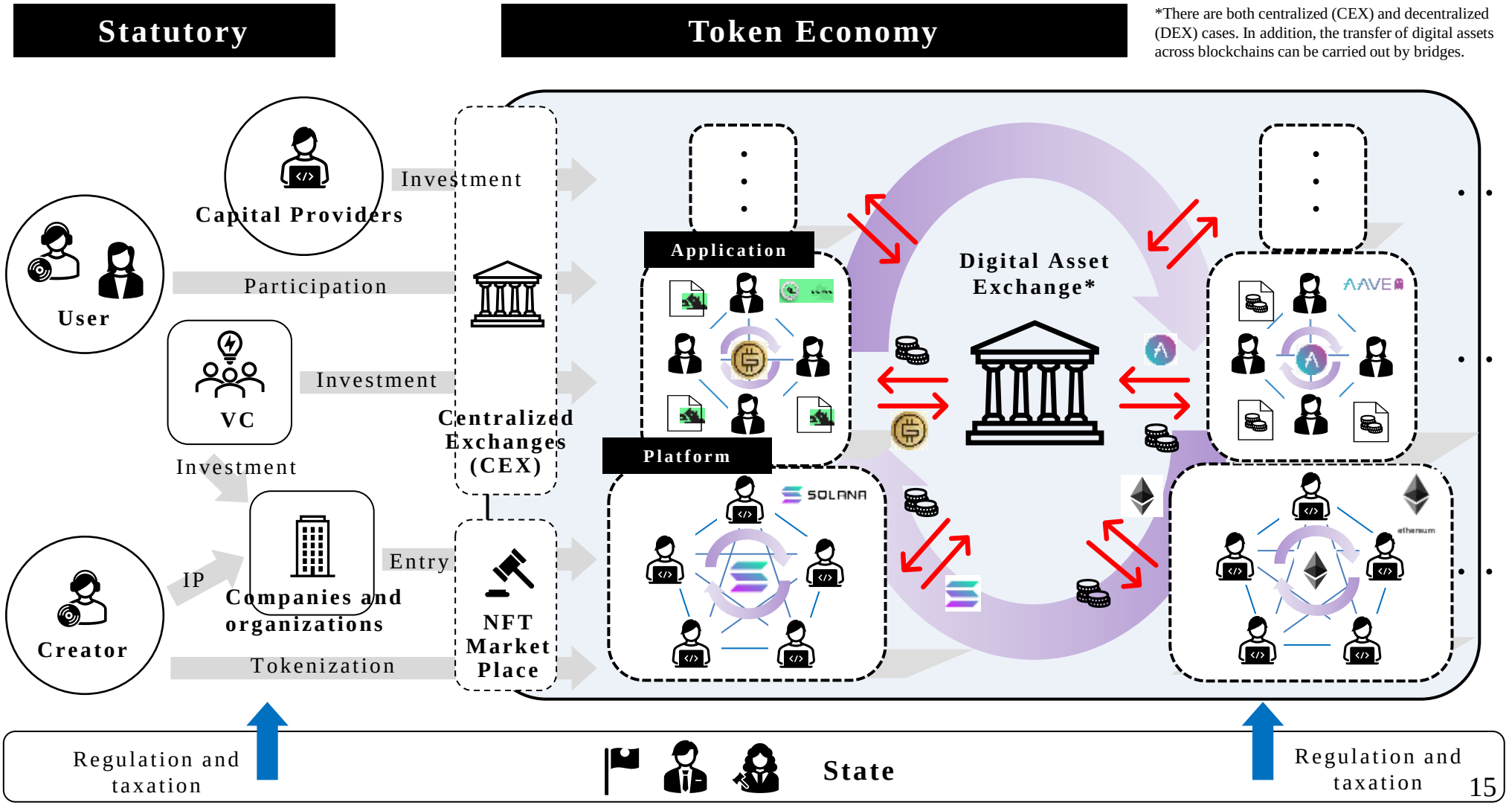
8 **Rise in Token Value**
※Convertible with legal currency through Chiliz

=Expected returns for all Token holders

Source: From Socios.com website

Token economics and the relationship with the real economy

- In Web3.0, tokens (FT (fungible tokens)) and NFTs (non-fungible tokens) issued by each project can be used for value exchange, thus creating individual "token economies ". There is also a movement to connect each token economy and make them interoperable.



(Reference) Cumulative impact of the "Metaverse"

- Although the definition of Web3.0 generally does not include the metaverse, it is well known that the metaverse has the potential to become the predominant space where web 3.0 native concepts such as NFTs become mainstream.
- It is noted however that blockchain technology is not essential for metaverses and as of the moment most of the prominent metaverses (Fortnite, etc.) do not employ blockchain technology.

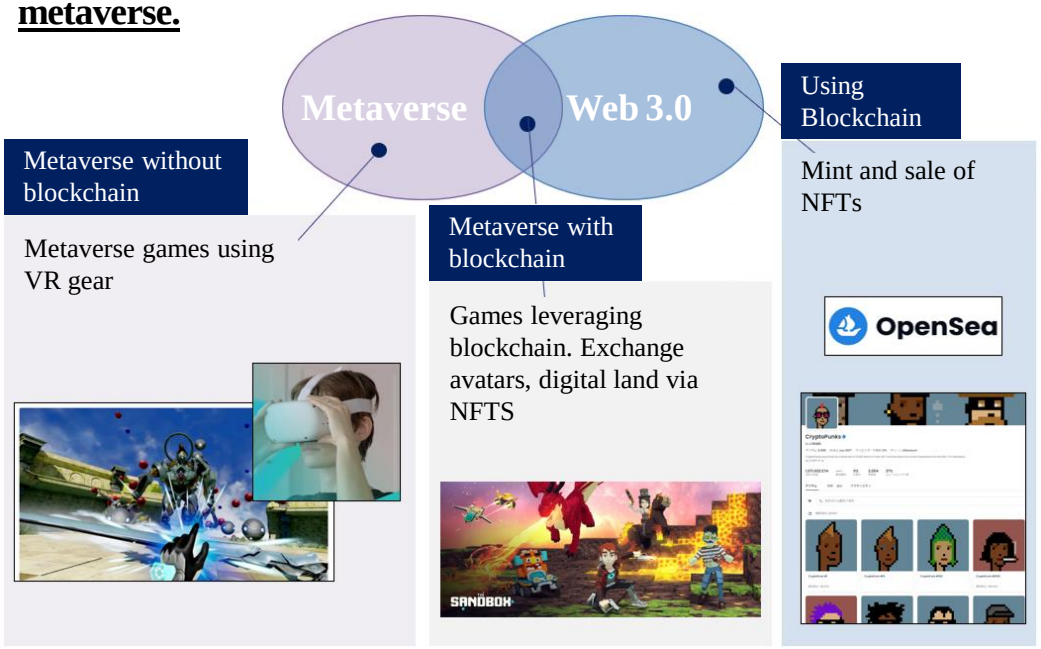
Metaverse x Blockchain Potential

SHIBUYA109 partnered with The Sandbox, a blockchain game, to open SHIBUYA109LAND. Activities include original NFT sales, mini-games for which NFTs are earned, advertising, etc.

Source: PR TIMES"SHIBUYA109's full-fledged entry into the metaverse NFToperation!"https://prtimes.jp/main/html/rd/p/000000150.000033586.html

Relationship between metaverse and Web3.0

Although the venn dragram for the Metaverse and Web3.0 overlap, the general definition of Web3.0 does not include the metaverse.



Source: Thirdverse, Opensea, Sandbox website, etc.

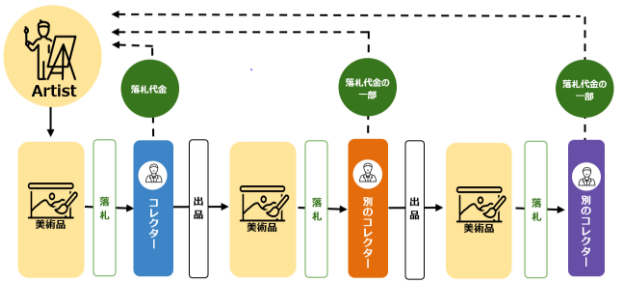
Social impact ① Generating economic value in cultural economies

- Potential to generate economic value in cultural economies (content, games, art, sports, etc.) that are traditionally Japan‘s strengths by ①Diversifying revenue streams of creators, ② capturing and maintaining loyal fans, and ③ building a new business model for the game industry.

※However, with regard to NFTs, even if there is a NFT tied to a digital content, it should be noted that unless there is a special legal basis behind it, it does not prove the ownership or distribution rights pertaining to the digital content, nor does it prevent the reproduction of such content or guarantee that the NFT tied to the digital content is unique.

① Diversification of incomes for creators

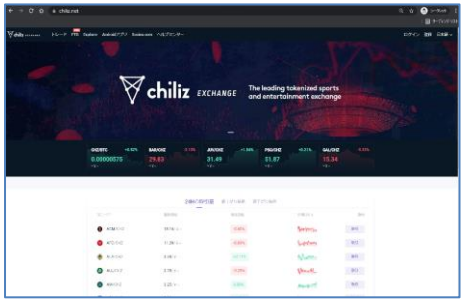
- It is possible to build a mechanism in which revenue is returned to creators for secondary sales, not just for initial distribution.



Source: Starting Barn Corporation

② Capture and retain loyal fans

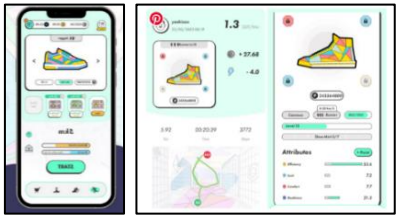
- Sports clubs in Europe, North America, and elsewhere issue fan tokens in order to capture and retain loyal fans.
- Fan token holders have the right to participate in certain events and buy official goods like trading cards. They also have the right to vote on the management of the team (such as the anthem played for team goals and the design of team uniforms).



Source: Chiliz's website

③ New business model for the game industry

- Games utilizing blockchain could lead to the unlocking of new entertainment value = expansion of new game users, and are attracting attention as a new model for the game industry. ※Issues persist such as how to overcome becoming a Ponzi.



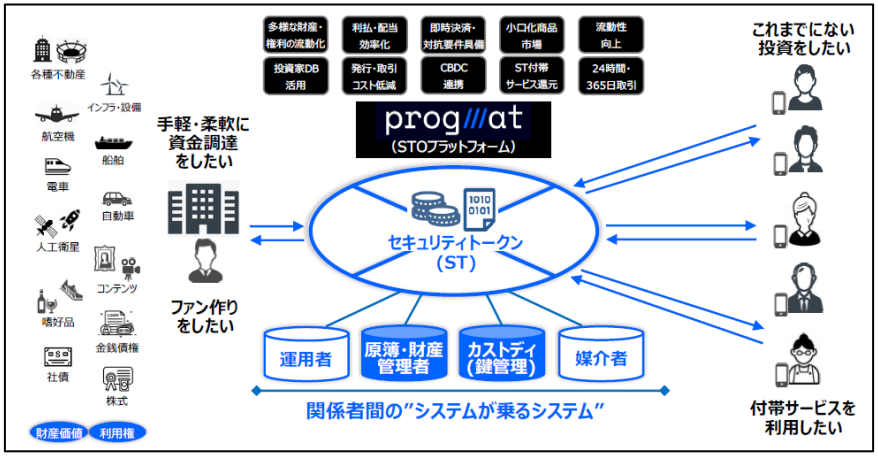
Source: Axie Infinity, STEPN

② Investment and Economic Revitalization through Diversification of Financial Products for Individuals

- By utilizing blockchain technology, it is possible to **sell tokenized (digitized) financial and other products that have traditionally been difficult to sell to individual investors** due to prohibitive costs such as management of the transfer of rights. The diversification of financial products to individuals could lead to the revitalization of the economy.

Tokenization of real estate rights

- **Mitsubishi UFJ Trust and Banking Corporation has built a platform that leverages blockchain that enables retail investors to purchase real estate rights in a token format.**
- The transfer of rights of financial instruments that securitized real estate, etc. are individually managed to meet third-party requirements and as such, sales to individual investors were traditionally too costly.
- By enabling the management of rights transfer on the blockchain, sales to individual investors was made possible.

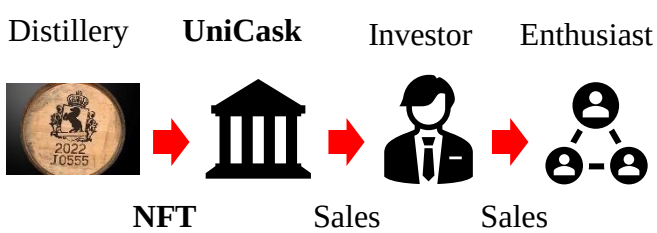


A Tokenization model to connect various investments previously unavailable to individuals.

Source: Mitsubishi UFJ Trust and Banking Corporation website

NFT of whiskey

- **UniCask Co., Ltd. sells the distilled liquor in whisky barrels in partial lots as a "CASK NFT".**
- By utilizing blockchain technology, they digitized and fractionalized ownership, insured the authenticity of data, increased trade distribution, including the use of existing marketplaces, and increased opportunities by capturing overseas demand.
- As it is possible to sell tokens from the start of production, it is expected to greatly improve the distiller's financial position at the time of commencement of operations and the potential benefits to SMEs are significant.



Source: UNICASK

Social Impact ③ Addressing Social Issues

- NFTs and tokens are also attracting attention as a new method of financing and community management for local governments and non-profit organizations. It has the potential to contribute to solving social problems such as revitalization of local economies.
- **Globally, it could make possible the ability to attract a variety of people who are interested in the same social issues and make it easier to form active online communities.**

Yamakoshi-mura DAO

Background

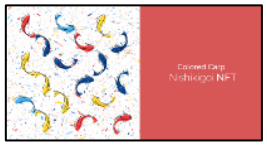
- Yamakoshi Village experienced the Chuetsu Earthquake in 2004, and marginal settlements including Yamakoshi village disappeared as administrative districts as a result of municipal mergers due to population decline. With the goal of recalling people, a plan was created to issue an NFT that would allow people to participate in decision-making at the Yamakoshi Village Residents' Meeting.

Summary

- The organization sells NFTs of Nishikigoi, a symbol of Yamakoshi-mura. Those who purchase NFTs become digital villagers. Currently there are over 1000 digital villagers for about 800 real villagers (as of the end of November 2022), and the proceeds from NFT sales are being planned for regional projects in Yamakoshi village.

Points to Note

- Smart contracts are not used for decision-making, execution, etc., but rather is an active as community leveraging NFTs.



(right) A Nishikigoi NFT
Source: From the official Nishikigoi NFT website

Toucan

Summary

- Toucan tokenized carbon credits that are traditionally traded exclusively between institutions and made them available for sale to individuals.

Significance

- The purchase of tokenized carbon credits by individuals leads to a shortage of supply compared to demand, increasing the value of carbon credits, and encouraging companies to make efforts to reduce emissions, thereby contributing to global environmental issues. At the same time, individual investors can expect financial returns due to the increase in carbon credit value.
  (purchased by individuals interested in environmental issues)
- As of November 2022, more than 100 climate change projects were tokenized and 21.9 million tons of carbon credits were traded.

Source: From Toucan website

Social Impact ④ Empowering Individuals

- As a permissionless space in which no central authority can arbitrarily eliminate users, it makes it easier for **all people to enter fields where there have traditionally been barriers to entry** (e.g. content production, sales and marketing involvement in the services they support) and with stronger economic incentives, **empowers individuals by promoting diverse and free working styles**. It may also contribute to **an expansion in options for individuals in financial transactions and wealth formation in developing and other countries that suffer from insufficient financial inclusion**.

Active role of individual creators

Zombie Zoo Keeper, a third-year elementary school student, released a collection of NFTs as a summer project that has attracted attention from NFT buyers around the world. He continues to publish NFTs in English and his turnover is 124ETH (about 24 million yen).

Contribution to services as fans

Aru-chan was broadcasting his favorite game as a Youtuber when he was asked by a game operator to become a Japanese ambassador. He is quoted saying that “the dream has come true.” Today, he is also involved in the management of his favorite game.

Wealth building for individuals in developing countries

DeFi and blockchain games among other services can facilitate financial inclusion and personal wealth building, particularly in developing nations where the cost to provide services to local regions by financial institutions is prohibitive.

Source: (left) "Zombie Zoo" https://www.zombiezookeeper.com/, (center) "Axie King Aruchan-YouTube", (right) Created based on "Axie Infinity” official website

Social Impact ⑤ Diversification and sophistication of organizational structures

- A DAO (Decentralized Autonomous Organization) is a community based organization in which individuals that share the organization's vision can gather and contribute beyond geographical constraints. Anyone can contract to receive token-based compensation according to their degree of contribution. This structure can **increase the number of active project participants with diverse skills and facilitate project growth.**

※DAO types of organizational structure can be used by companies that do not use blockchain technologies in providing services.

Yamakoshi-mura DAO

Background

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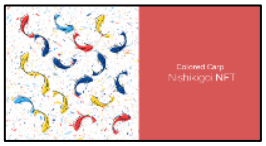
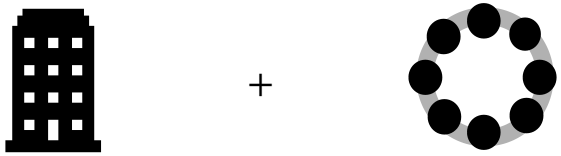


(right) A Nishikigoi NFT
Source: From the official Nishikigoi NFT website

Possibility of a corporation + DAO

- When an enthusiast at a corporation starts a new project, as tokens are distributed to people who share the project's vision by investing or earn tokens by contribution to the success of the project, the benefits can be distributed to not only shareholders but also users and fans as the project expands.



Example of DAO Community-Based Activity

- **My Crypto Heroes**

A game that utilizes NFTs where early users voluntarily created game explanation pages, provided user support and conducted campaigns, incentivized by the rise in value of their own NFT and governance tokens. This organizational structure contributes to a grass roots type expansion of the game as proposals are made with more focus on areas that require improvement from a users point of view.

Source: From My Crypto Heroes user interviews

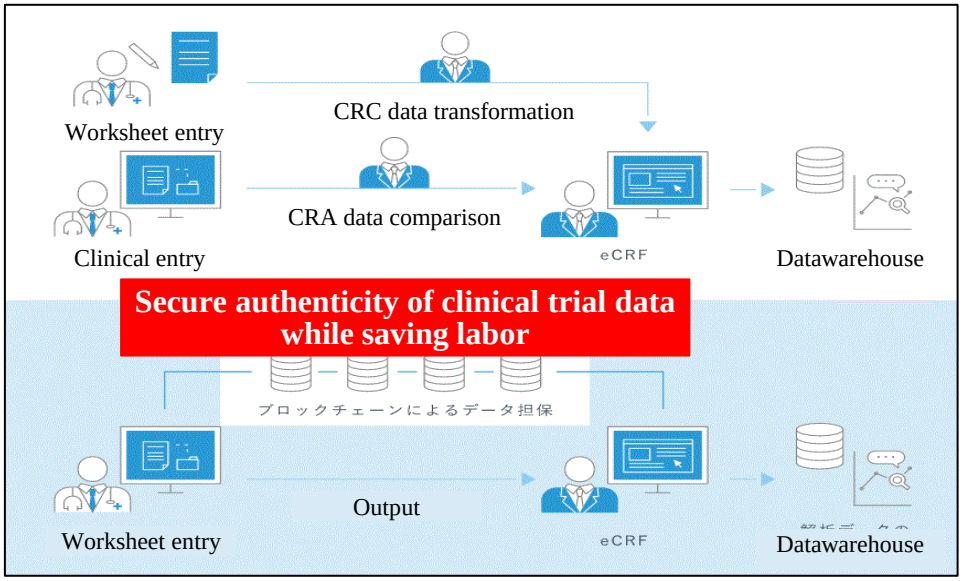
Social Impact ⑥ Development in Regulations Based on Digital Principles

- Blockchain is a technology that ensures the authenticity and transparency of data. The use of blockchains could **enable revisions to analog regulations** (procedures and operations requiring document posting, visual inspection, residence, on-site audits, etc.) without violating the underlying protection laws' interests and contribute to compliance of Digital Principles.

Example of Regulatory Sandbox Experiment

・In the conventional clinical trial process, monitoring was conducted in a way that required manual reconciliation of clinical trial data with original materials, and was costly to monitor.
・SUSMED used the immutability of blockchain technology to ensure the authenticity of the data. This reduces the manpower and man-hours required for the clinical trial process.

※Note that this is an initiative utilizing a private chain



Source: Processed from SUSMED's website

Digital Principles for structural reform

① Digital automation and completion as a principle
In principle, the complete digital processing, automation and the realization of an end-to-end digital response regarding procedures and operations that require document postings, visual inspection, residence, on-site audits, etc., including administrative bodies. To promote the creation of an organizational culture and concrete responses to digitalization by national and local governments.

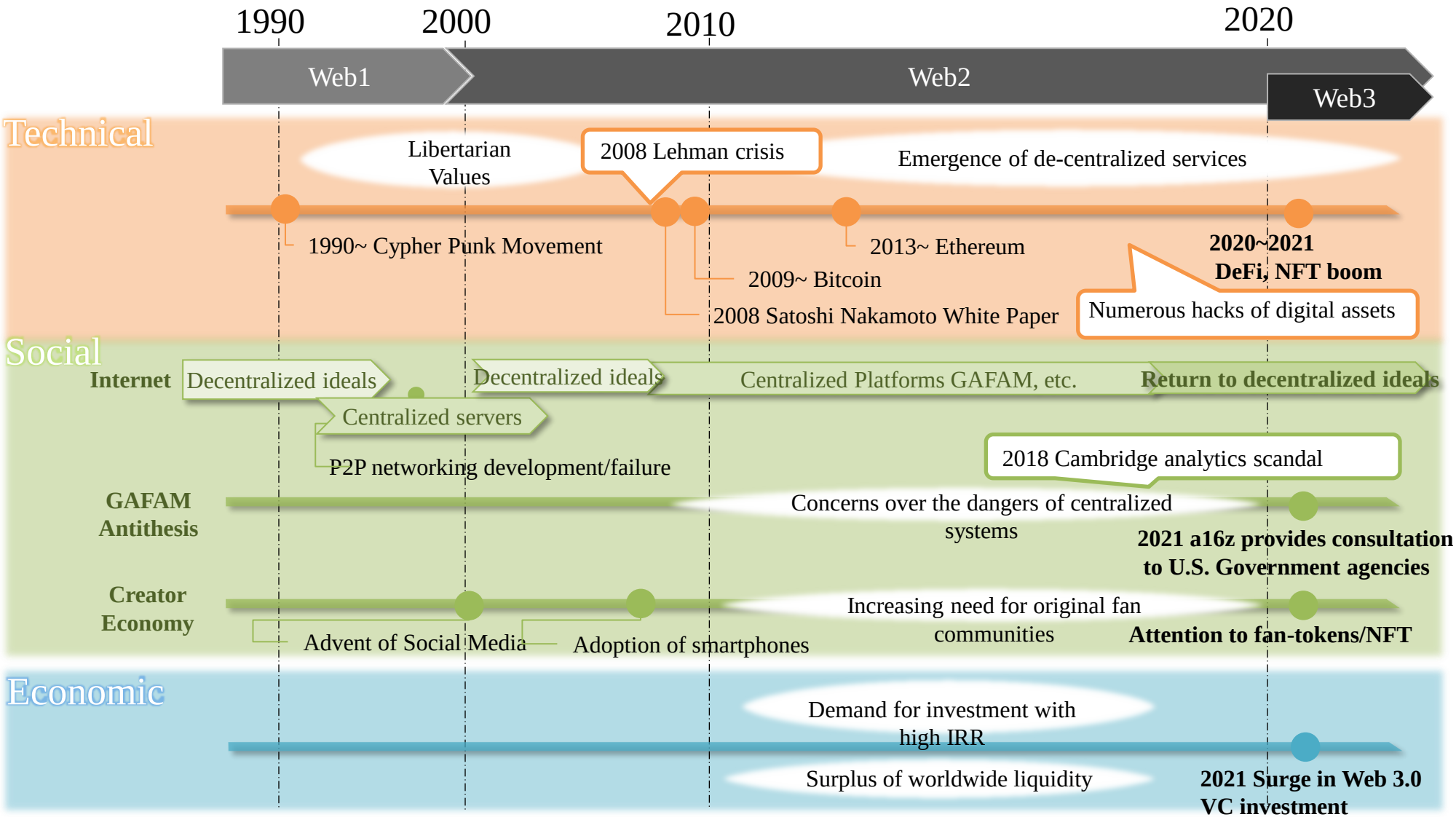
② Agile Governance Principles
③ Principles for Public-Private Partnerships (GtoBtoC)
④ Interoperability principles
⑤ Principles for the use of open infrastructure

Leveraging blockchain technology that can guarantee the authenticity and transparency of data can lead to a revision of regulations

Source: Digital Extraordinary Administrative Committee

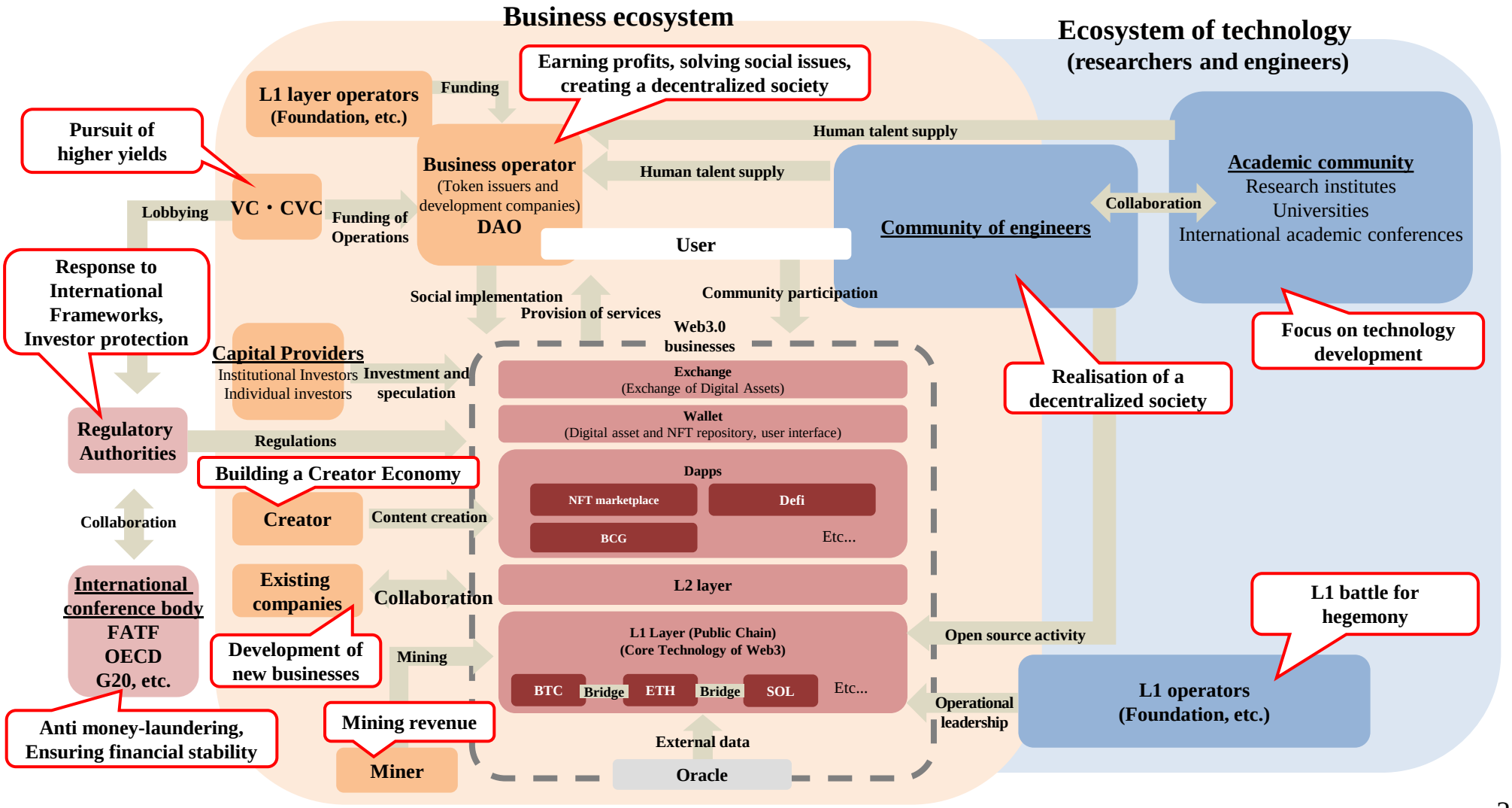
Varying movements at the heart of Web3.0

- Web3.0 could be described as a fusion of "ideology" and "social implementation of technology" that resulted from the interaction of several technological, social, and economic movements.



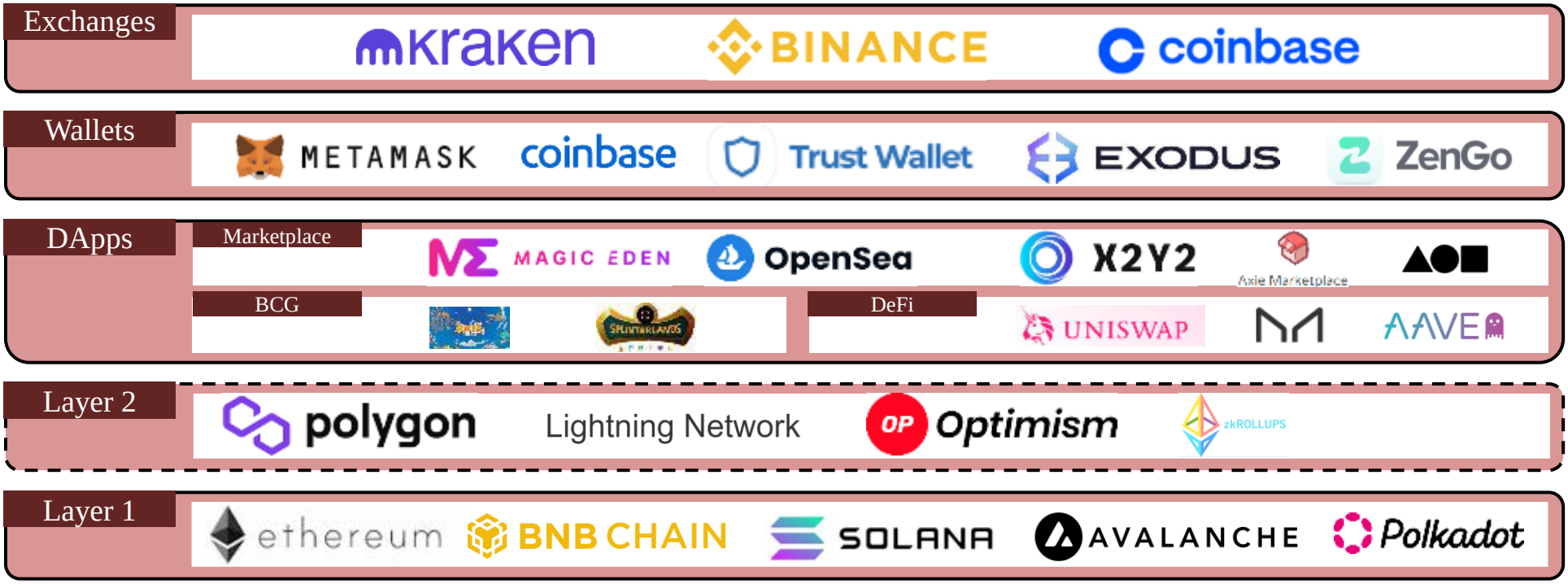
Web3.0's ecosystem and structure

- The Web3.0 ecosystem consists of individuals and entities with various backgrounds, skills and ideals.
- Divergence between the business side (seeking profit) and the academic/engineering side (pursuing intellectual and technological ideals) can occur.



Current state of the business ecosystem

- **<u>Infrastructure is layered. Layer 1 provides the public chain underlying the entire system and Layer 2 can provide scalability. The upper layer consists of various applications, as well as interfaces such as wallets and exchanges.</u>**
- There is intense competition in the base infrastructure layers, especially Layer 1. It is thought that the value of blockchain would accrue at the base protocol layer (called the “fat protocol thesis”), and as a result, there has been a massive investment in Layer 1 technology compared to the original internet protocol. Foundations that operate Layer 1 protocols have provided subsidies to applications to promote their own ecosystem but there are not many use cases in the application segment that have penetrated the general public yet.



※The layer structure is not based on any standardization, and there remains the possibility that the structure changes in the future.

Current state of the technology ecosystem (engineers and researchers)

- **<u>The technology ecosystem consists of the academic and the engineering communities that are furthering the understanding of cryptography and developing new decentralized technologies.</u>**
- In the academic community, international conferences and journals regarding blockchain started appearing in 2015. Universities and university consortia play a central role in the development of cryptography and the supply of talent to the business ecosystem.
- **<u>The engineering community lacks organization and structure, and engineers typically participate in open source activities independently. In recent years efforts have been made to develop technologies for Web3.0 by large tech institutions such as Microsoft.</u>**

Consortium of international academic conferences and universities

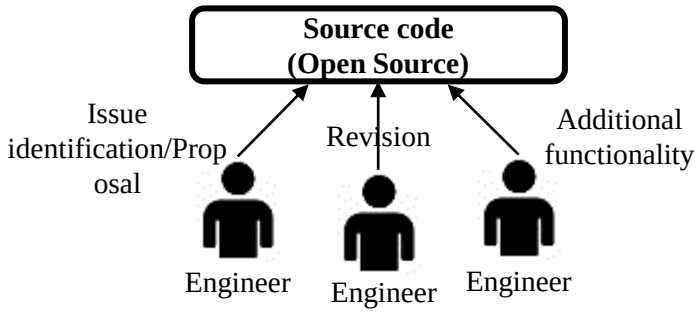
IEEE ICBC

- Academic conference hosted by IEEE on blockchain and cryptocurrency.
- Established in 2019 to publish papers and provide exhibitions by industry-leading businesses and research institutes as well as hold hackathons and other events.

The Initiative for CryptoCurrencies and Contracts

- A community of researchers based in Cornell tech, NYC, consisting of universities such as Carnegie Mellon University, Cornell University, and UC Berkeley.

Open source activity



- A community of engineers fix bugs and add functions to blockchains for which the author has published the source code (=open source).

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Potential contribution to Society5.0 ① Global data-sharing platform

- For the realization of Society5.0, **a global data-sharing platform (including distributed ledgers) across international borders is required**. Blockchains, the most prominently used distributed ledger technology to date (beginning with Bitcoin) could possibly lead to the foundation of a global data sharing platform

Characteristics of Public Blockchains

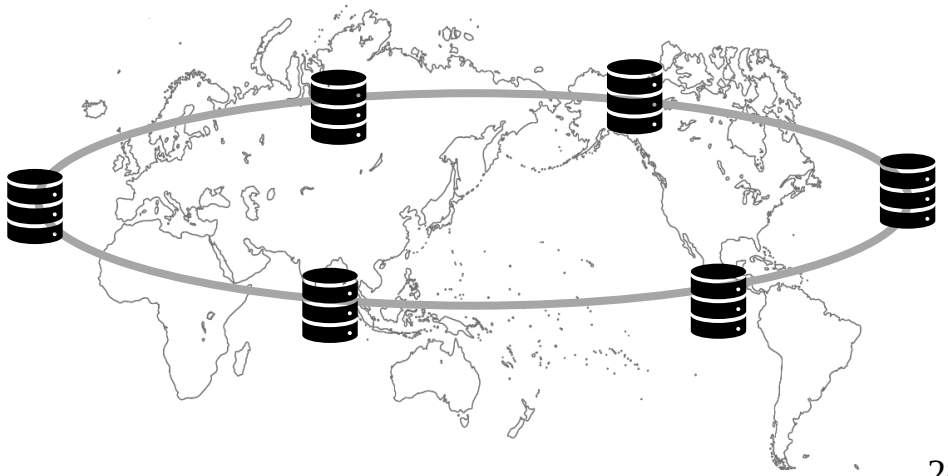
①Alteration extremely difficult
②Transparency (data can be viewed by anyone)
③Smart contracts (automation of processing and exchange)
④Distributed (Decentralized)
⑤Permanence (Unaffected by single failures)

Possibility of a data-sharing platform with no owners, similar to the Internet

① **Efficiency increase of back-end systems and operations**
(← Smart Contracts)

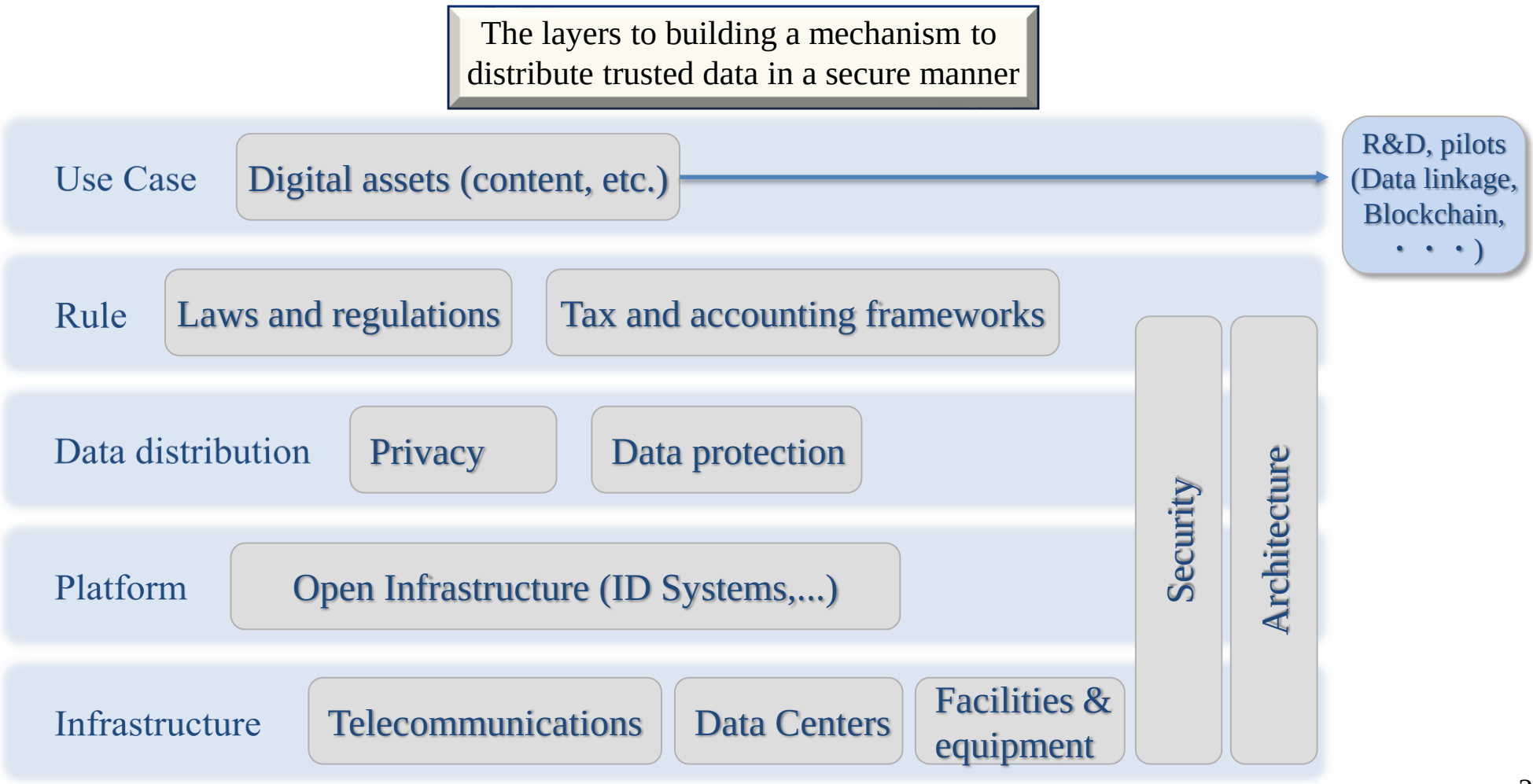
② Easier to make corporate information transparent. Asymmetry of information decreases, potentially driving optimization of the economy.
(← Increase in transparency and difficulty of alteration of records)

③ Possibility of influencing existing institutional systems such as accounting frameworks (if rules are developed together with technology)



Potential contribution to Society5.0 ② Free Flow of Trusted Data

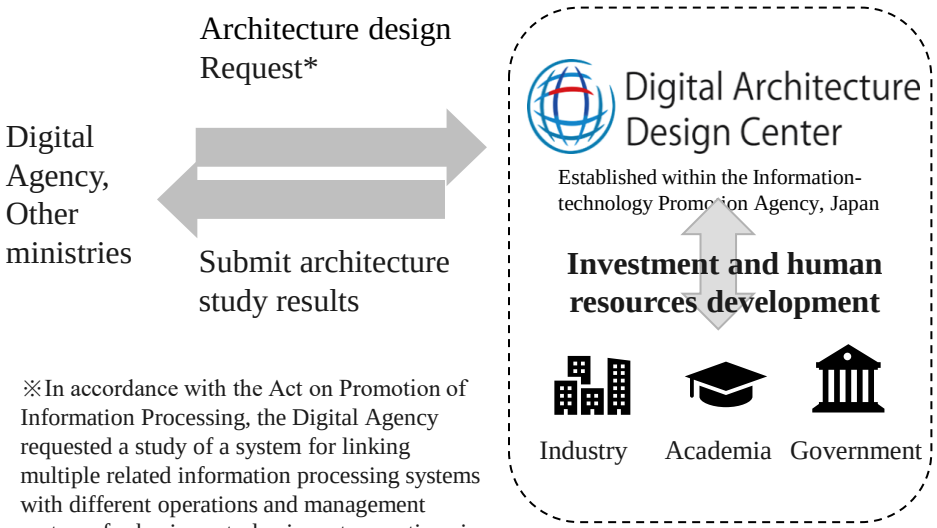
- A system that makes it easier to **distribute data while securing trust is essential to realize Society5.0** (a human-centered society that seamlessly combines physical space and cyberspace while achieving economic development and resolving social issues). In order to construct such a system, we need to address various issues in an integrated manner such as the development of regulations, taxation rules, identification systems, and the strengthening of telecommunications/computational infrastructure. Blockchain technology can contribute as a solution to these issues.



(Reference) National Comprehensive Development Plan for Digital Social Implementation

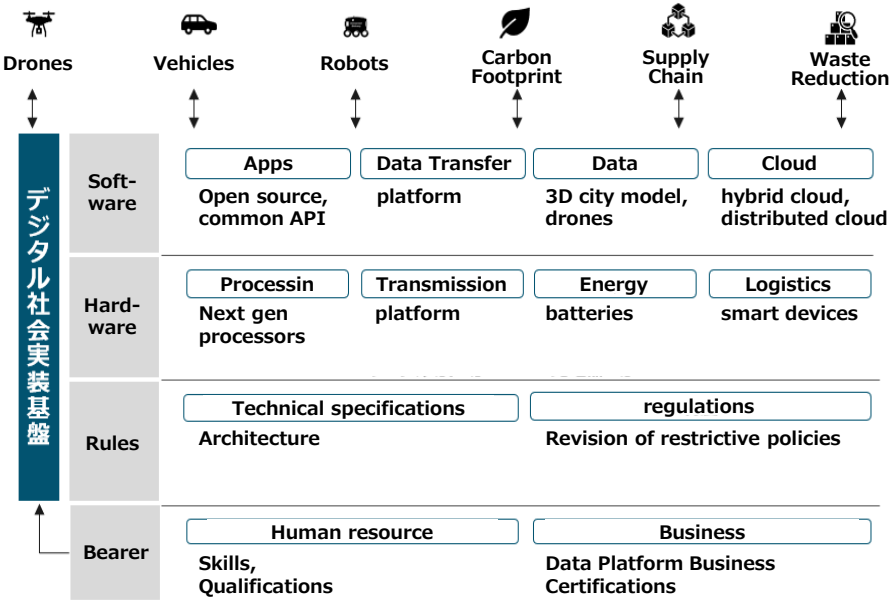
- The Digital Architecture Design Centre (DADC) is bringing together the expertise of industry, academia, and government to prepare a framework that organizes the whole landscape of hardware, software, and rules required for a digital society.
- To ensure that the benefits of digitalization spread efficiently and effectively throughout the country, the public and private sectors should invest together in line with the architecture designed in DADC and formulate a long-term plan called the “National Comprehensive Development Plan for Digital Social Infrastructure Implementation (tentative name)" to develop the infrastructure for implementing digital societies nationwide. ※In formulating the plan, attention will also be paid to consistency with existing plans and measures.
- Relevant ministries and agencies should strive for realization through cross mobilization to avoid redundancy and focus on relevant policies as well as establish a governing body to follow up on policy development to enhance effectiveness.

<Architecture Review System>



※In accordance with the Act on Promotion of Information Processing, the Digital Agency requested a study of a system for linking multiple related information processing systems with different operations and management systems for business-to-business transactions in October 2021 and autonomous mobile robots in December.

<Components of the Digital Social Implementation Infrastructure>



※Specific examples in the above table are listed as one item for convenience although there are some that span multiple items such as data centers.

(Example) Seamless Distribution of Trusted Data: Supply chains

- There are initiatives to utilize blockchain for supply chains (semiconductors, batteries, carbon credits, etc.). In particular, **there is a possibility of blockchain exploitation in areas (economic security, emissions trading, etc.) where the importance of ensuring the authenticity of data that transcends national borders and requires strict traceability is high.**

Existing supply chain Challenges

- End-to-end information uncertainty from prohibitive costs to assure the credibility and accuracy of exchanged data due to the complex structure of supply chains that transcend national borders and involve numerous companies.
- Strict traceability is required from the viewpoint of economic security, especially in areas such as semiconductors and batteries, among others.
- In the context of emissions trading, etc., authenticity of information on the quality of carbon credits is required.

Future Direction of the Supply Chain

1 Transaction openness

- Inventory information which is typically segregated, and trade information which is concentrated downstream, are shared to revitalize/improve the efficiency of the entire supply chain.
- Achieving traceability in important areas contributes to improving economic security and sustainability.
- Cooperation among companies using blockchain eliminates waste in production and procurement volume, increases the efficiency of manufacturing, shipping, and sales to promote a circular economy which is difficult to do with siloed company data.

2 Full automation and increased credibility of transactions

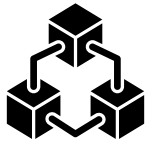
- Replace most of the back-office operations (contract and transaction execution, payment and settlement, etc.).
- Architecture (Smart Contract) ensures data credibility without relying on specific companies or people, such as system administrators.

Applicable

Technical Characteristics of Blockchain

Immutability

Smart Contracts (Automated Transactions)



Distributed

(Reference) Relationship between Blockchain and Society5.0

- **It is imperative to keep an eye on whether public or private blockchain can contribute to the foundation of Society5.0. This would require overcoming technological issues in blockchain.**
- Note that “diversified” in Japanese can mean both Distributed or Decentralized

Major Technical Issues in Blockchain

1. **Scalability**
   Blockchain is slower than the existing centralized processing system. Solutions are being explored (leverage of layer 2 blockchains, etc.).

2. **Security**
   Management of private keys is a problem.

3. **Privacy and confidentiality**
   Because all information on a public chain is open, it is not possible to carry private or sensitive information. However, technical solutions are being sought (zero knowledge proofs, etc.).

4. **Power consumption issue**
   Large power consumption is required for mining.
   However, the transition to a mechanism (Proof of Stake) that reduces power consumption has also progressed.

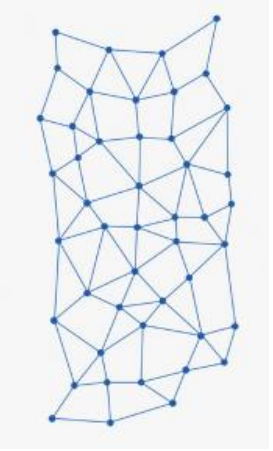
Diversified: Distributed vs Decentralized

Distributed

- Distributed as an architecture but operators exists at each core.

Decentralized

- No central entity,
- authority is decentralized



Example: Public Chain

Source: From "a16z "How to Win the Future"

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The importance of establishing a favorable business environment for the next generation of Web 3.0 businesses

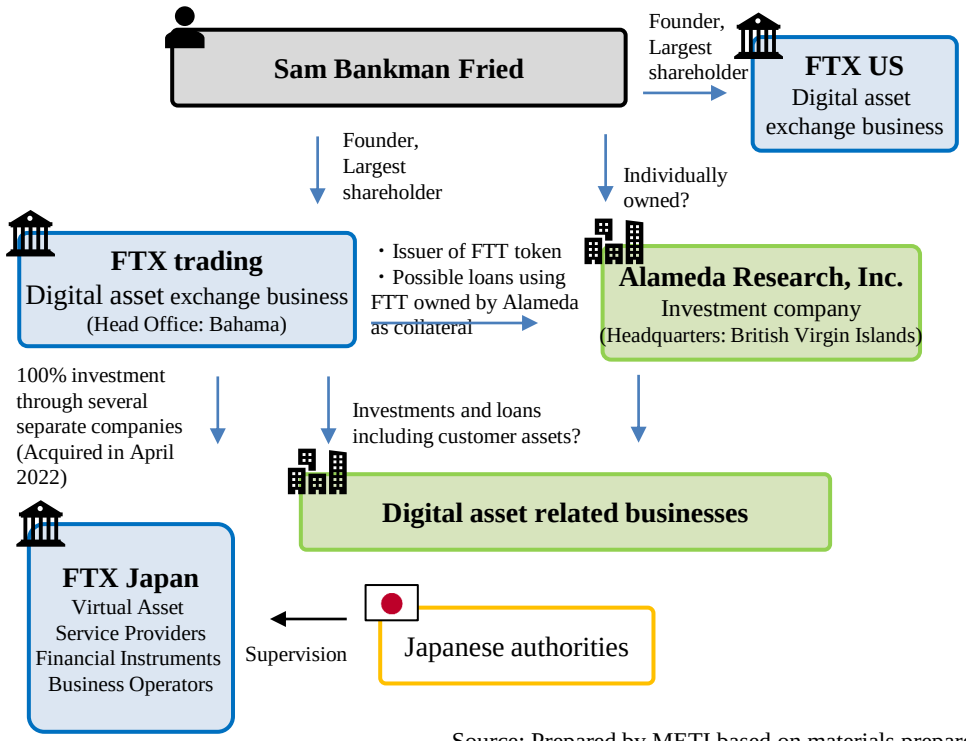
- The value of digital assets has gone through several boom and bust cycles. It reached a peak of $3 trillion in November 2021 (boom), but fell sharply as of December 2022 (bust).
- However, it is during bear markets, when the speculative personnel and companies exit the market, that the companies and individuals who aspire to create value and drive innovation lay the groundwork for the next cycle. It is for these times that **it is necessary to improve policies and provide a business environment that does not stifle innovation**.

Source: Prepared by METI based on Coin Merket Cap

Current Understanding of Web3.0: Japan needs to first develop business conditions on par with those of other countries

- Following the FTX bankruptcy, other countries are moving strengthen regulations. **In Japan, regulations on user protection have already been implemented at a high level and damage appears to be limited**. The FTX turmoil occurred due to factors such as underdeveloped regulatory frameworks and lack of corporate governance. **The incident is not attributable to flaws in blockchain technology.**
- In light of the future potential of blockchain technology, **such incidents should not stop the resolving of current business environment-related issues that make Web3.0 business difficult in Japan**.

(Reference) Outline of FTX Trouble



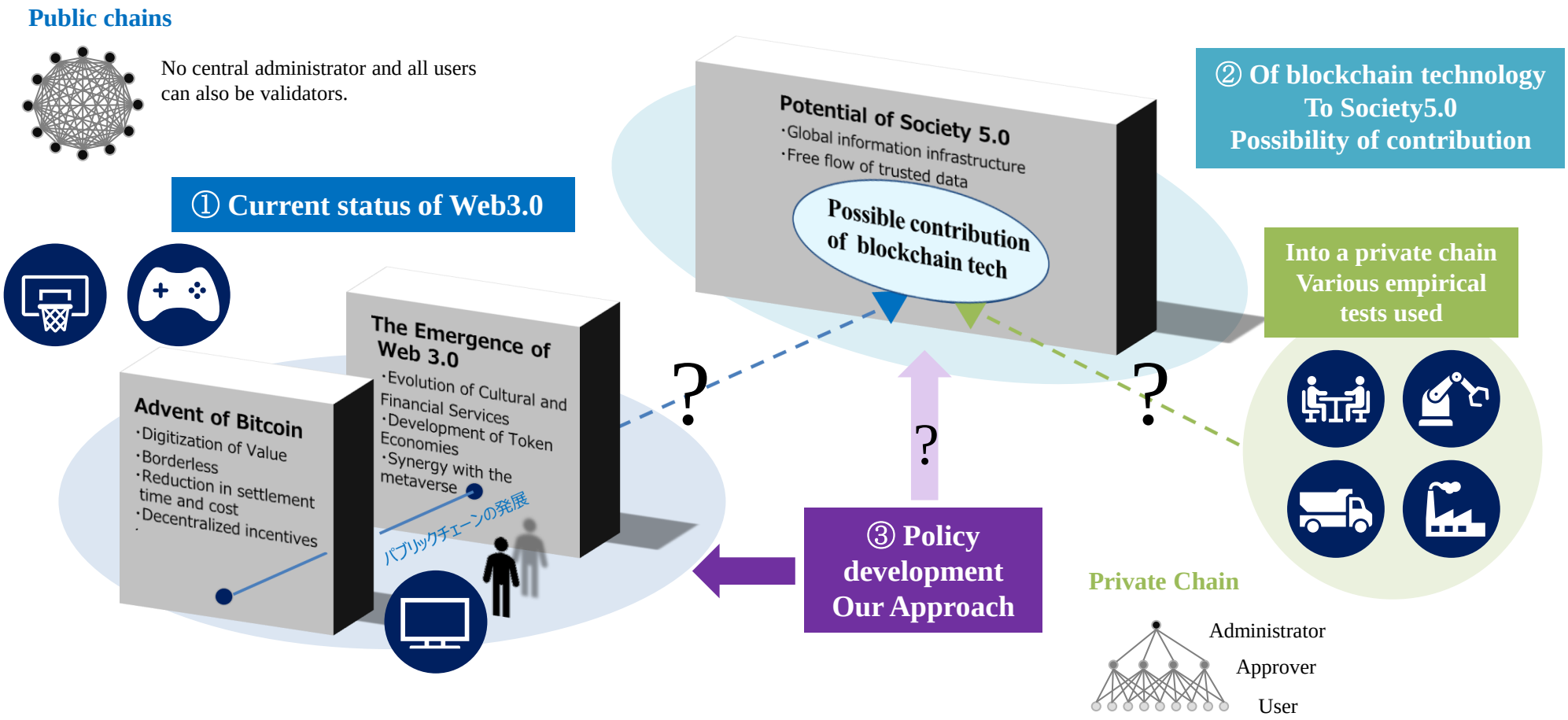
Source: Prepared by METI based on materials prepared by the Financial Services Agency

(Reference) Laws and regulations protecting users in Japan

- Following the Mount Gox incident in 2014, Japan introduced a registration system for Virtual Asset Service Providers (former virtual currency exchangers). In response to the coin check incident, regulations were tightened in 2019 (offline management of user assets, etc.). In addition, virtual asset service regulations are applied when raising capital via ICO. Japan was the first in the world to introduce regulations for user protection on cryptographic assets.
- Regulations on digital assets have not been developed in many other countries and the need for tighter regulations is being called upon from the viewpoint of user protection and anti money-laundering.
- In the FTX turmoil that occurred in November 2022, it became clear that Japanese user-protection regulation is functioning better than in other countries, as client assets in FTX Japan were managed separately compared to client assets that were misappropriated between FTX related companies.

The short-term perspective (Web3.0) to the long-term perspective (Society5.0)

- With Society5.0 as the goal and the contribution potential of blockchain technology to this idea unknown, in order to explore the possibility that advances in blockchain technology will lead to the foundation of a global data sharing platform and Society5.0, policies should simultaneously address issues related to Web3.0 business environment that are currently emerging such as tax systems, legal systems, and practices (over the next two to three years) as well as tackle R&D and human talent development.



Current Understanding of Web3.0: Challenges should be faced head on

- Web3.0 businesses face many challenges, from divergence/contradiction of ideals between reality/ideology to fraud such as FTX and hacks occurring frequently. Nevertheless, it is important to identify and support the “true” companies and personnel who strive to create valuable innovation through the implementation of appropriate regulations and technological development such as Regtech.

Centralization vs Decentralization

Web3.0 philosophy	Current situation
✓ Focus on decentralization. ✓ Resolve issues faced by centralized business models such as GAFA.	✓ Infrastructure layers are decentralized but centralization is starting to emerge in higher layers.

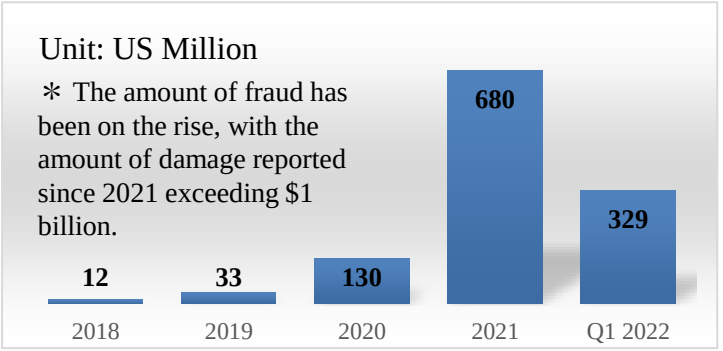
Speculation, fraud and hacks

Ideal Web3.0	Current reality
✓ Various use cases with social significance and value to the real economy are created in which general users can interact safely and securely.	✓ Appropriate regulation and Regtech technologies are still being developed and fraud, hacking, etc. frequently occur. ✓ Speculators comprise the largest group of participants.

< The reality of "centralization" varies >

Layers such as NFT marketplaces	High
Infrastructure layer (e.g., Ethereum, Polkadot, etc.) ∗ Primarily the transaction approval process	Low

< Digital Asset Fraud in the U.S >



∗ Can the gap between reality and ideal be bridged by appropriate regulation, technological development and capital investment from those providing value to the real economy.

From Federal Trade Commission (https://www.ftc.gov/news-events/data-visualizations/data-spotlight/2022/06/reports-show-scammers-cashing-crypto-craze)

Current Understanding of Web 3.0:
Policies need to be based on the presumption that technological issues will be resolved

- There are a number of technical challenges to overcome in order for Web3.0 to evolve into a technology that affects the public. However, it is necessary to adopt a mid-to long-term perspective based on the fact that throughout history, the initial challenges revolutionary technologies have always been overcome by the wisdom and ingenuity of researchers and engineers as well as natural selection of the market.

1 **Scalability**
Blockchain is a mechanism in which a large number of network participants (miners) jointly monitor transaction records to increase the immutability. However, in order to increase security, processing speed must be sacrificed which makes it slower than that of the existing centralized processing systems. Various solutions are currently being debated and tested (usage of L2 layers, etc.).

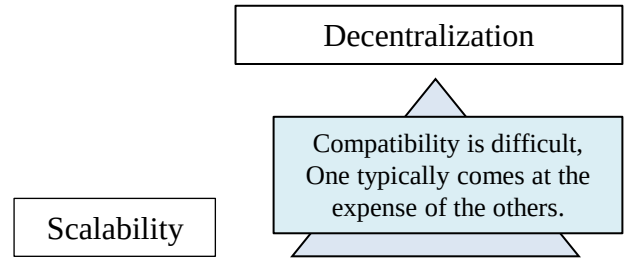
2 **Security**
Incidents such as the hacking and theft of digital assets caused by issues like management of keys on exchanges have been a common occurrence. This could prompt the need for development of a Regtech framework.

3 **Anonymity and privacy**
Because of its strong anonymity, blockchain has become a forum for money laundering. However, because all information in the public chain is publicly available, it is not desirable to post privacy-related information either. Technical solutions are being sought (zero knowledge proofs, etc.).

4 **Oracle problem**
Blockchain technology does not guarantee the authenticity of information newly put on the blockchain from the outside. eKYC of objects and people on the blockchain is required. In particular, there are issues such as copyright control of NFTs and eKYC of un-hosted wallets.

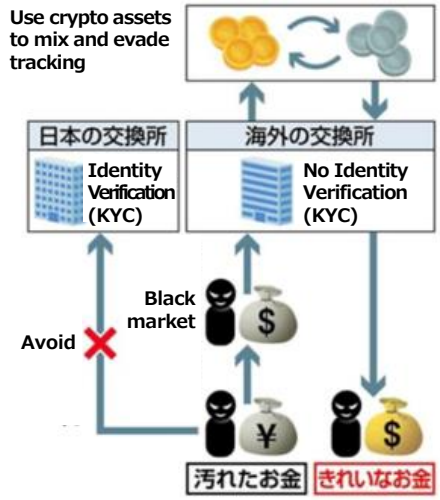
5 **Power consumption issue**
Huge power consumption is required for mining.
However, the transition to a mechanism (Proof of Stake) that reduces power consumption has also progressed.

Blockchain trilemma



Decentralization of the blockchain leads to a more anti-fragile network with better security. However, it typically requires the acceptance of smaller participants, often reducing processing speed.

Money laundering



Source: From SankeiBiz created images

Hacking incidents

Year of occurrence	Company name (Country)	Amount of damage
2014	Mt.Gox (JP)	62.9b yen
2018	Coincheck (JP)	72.1b yen
2021	Polynetwork (CN)	81.7b yen
2022	Wormhole (US)	43.6b yen
2022	Ronin Network (VN)	83b yen

Source: NordVPN https://nordvpn.com/ja/blog/biggest-crypto-hacks/

Mission Statement for the Mid to Long Term

- Mid-term: Revitalize the economy by creating a large number of sustainable and valuable Web3.0 related businesses in cultural economies, finance, social issues and other areas. At the same time, empower individuals by promoting the activities of creators and fans through Web3.0 related businesses.
- Long-term: In the era of Society5.0 (a cyber-physical convergent society) in which blockchain technology will processes an enormous volume of data on a daily basis, pursue the development of potential technologies that may lead the construction of a global data sharing platform and the free flow of secure data.

Mid-to long-term objectives based on the mission statement

- In the short term, **focus on improving the business environment, which has been quoted “difficult to operate Web3.0 related businesses in Japan."**
- Over the mid to long term, **increase the number of companies, businesses and highly skilled experts that have the potential to generate technical and business innovations in blockchain that operate out of Japan.** Furthermore, enhance the possibility of generating sound and valuable technical and business innovation by **establishing KPIs around international business activities and R&D conducted.**

(Reference) Basic Approach to Policy Discussion

① **Global & Agile** (Improve the environment for the creation of healthy, valuable global projects in an agile fashion)

② **Balancing between regulation and freedom of innovation** (balancing between allowing builders to freely innovate and protecting consumers)

③ **Mid-to long-term thinking** (based on the assumption that relocation of Japanese entrepreneurs overseas may not stop in the immediate term).

1 Global & Agile

- ✓ In order to generate healthy and valuable technical/business innovation, we need to develop projects for the global market composed of international talent, given that: (1) there are no borders in Web3.0, (2) that the market is small in Japan, and (3) that advanced engineers are often found overseas.
- ✓ Currently there is a trend toward isolation in Japan. Ideally it is necessary to develop an environment that attracts global human talent to build sound and valuable global projects.
- ✓ Web3.0 is a fast-moving business, and agile governance is crucial. Factors that prevent business expansion in Japan need to be eliminated as soon as possible and authorities must consider a system where regulation can respond flexibly in accordance with changes in the real environment.

2 Balance between regulation and innovation

- ✓ In order for the use of Web3.0 related services to expand to ordinary consumers, it is necessary to develop a safe and secure user environment. If the services used by ordinary consumers become rampant with fraud, theft, etc. a resulting overbearing regulation could stifle responsible innovation of a promising technology.
- ✓ On the other hand, excessive user protection regulations may be a drag on entities that generate innovation such as startups, and leads to outflows to other countries that have lighter regulations.
- ✓ In Japan, where the system of user protection is among the more sophisticated compared to the world, it is necessary to maintain necessary levels of user protection while reviewing regulations that no longer mitigate real risks and implement measures to promote innovation.

3 Medium-to long-term thinking

- ✓ Due to issues such as tax systems and regulations, there is a growing opinion in the industry that “Web3.0 businesses cannot be carried out in Japan.” In the midst of Singapore, Dubai and other countries becoming the de facto location for Web 3.0 startups, the outflow of business and entrepreneurs abroad may not be stopped with lackluster policies.
- ✓ As a start, it is necessary to make efforts to improve the business environment in Japan on par with other countries as much as possible. At the same time it is also important to consider how Japan will repatriate the success of Japanese entrepreneurs who have gone abroad on the assumption that overseas outflow will not stop in the immediate term.

Overview of policies to be considered by the government

- The government needs to develop business conditions for the development of Web3.0 and blockchain technologies, while also working to protect investors and combat money laundering in order to develop sound markets.

Finance

- Investor protection
- Anti Money Laundering and Countering of Terrorist Financing
- Coexist with the existing financial order

Cultural economy

- Application of gambling laws
- Measures against NFTs fraud (copyright-protection)

Regional revitalization

- Creation of use cases by utilizing subsidies for promoting the concept of a Digital Garden City Nation

Society 5.0

- Development of a global data sharing platform
- Implementing the concept of Data Free Flow with Trust

Legal system (regulations on digital assets, etc.)

Tax system

Accounting and Auditing (Development of Accounting Standards/Issues on Auditing)

Investment vehicles (token-holding issues by LPS)

Budget (Use Case Creation, Human Resource Development and R&D Support)

International policy (regulatory discussion and attracting foreign talent through international conferences)

ID Authentication (DID)

Key issues in Web3.0 policy-making

- As a start, it is essential to improve the business environment which is said to be “difficult to operate Web3.0 related business (in Japan)." The main issues are outlined as follows.

  ① Financial regulation reform: Clarification of the interpretation of digital assets

  ② Tax system reform: Corporate tax system (year end mark-to-market value taxation of digital assets)

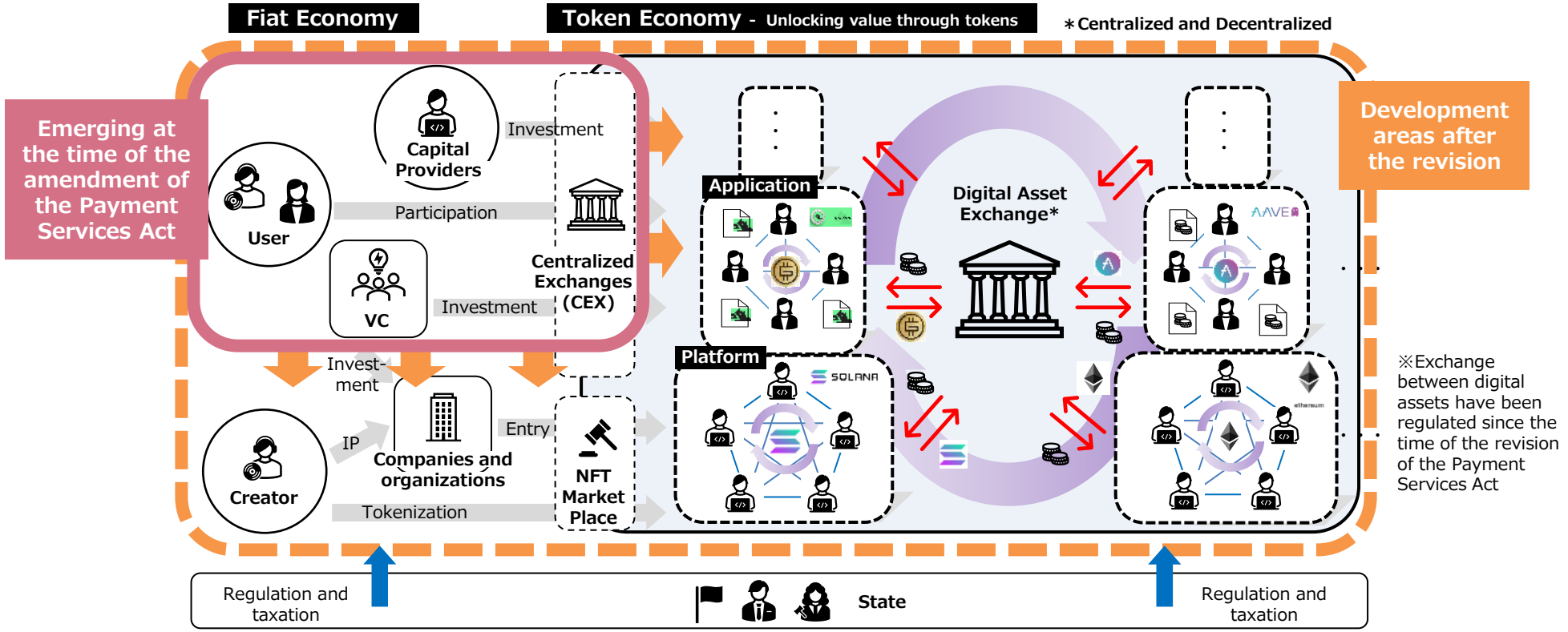
  ③ Others: Accounting issues by auditing firms, LPS laws, the relevance of gambling laws, measures against unauthorized NFTs, etc.

- In addition, from a mid-to long-term perspective, **measures for the development of blockchain technology (R&D support, human resource development, etc.) are also important**.

Regulations	1	**Clarification of digital assets**	✓ Support for the formulation of the Financial Services Agency's interpretation guidance on the qualification of digital assets, such as when there are multiple digital items and content issued on the blockchain that are of the same type.
Tax system	2	**Corporate tax system reform (year end mark-to-market value taxation)**	✓ Request for tax reform to exclude self-issued and self-owned digital assets from fair value taxation at the end of the period ✓ Consider reviewing taxation of cryptographic assets held by startups and investors supporting business growth.
Others	3	**Accounting issues by auditing firms**	✓ There are a number of cases where an audit firm declines to provide services due to the perceived risks of providing an audit opinion on digital assets. In the future, we plan to cooperate and collaborate with the Financial Services Agency and private-sector associations to develop an environment that enables audits by certified public accountants and auditing firms.
	4	**Holding of Tokens by LPS**	✓ Clarification on whether security tokens are included as a vehicle of investment under LPS. As for investing in tokens, after investigation of the current situation and issues of financing, we will revisit the applicability of LPS Law.
	5	**Measures for unauthorized NFTs**	✓ Report on measures against "unauthorized NFTs" and usage of content not licensed by rights holders
	6	**Interpretation of gaming laws with regard to NFTs**	✓ In the Sports DX Report, we summarized and published our opinions on the randomly packaged sale of NFTs and operation of secondary distribution markets, as well as the relevance of gaming laws for NFTs combined with Fantasy Sports services.
	7	**Support for creation of use cases**	✓ Support for the creation of new use cases in the content and sports businesses, etc. (budgetary support)
	8	**Attracting foreign human talent**	✓ Supporting international events and invitation of global leaders in collaboration with the private sector
	9	**R&D support and human resource development**	✓ Issues include R&D and human resource development to solve technical and social issues in blockchain

Issues of the current Legal and Regulatory Framework

- Japan was the first in the world to introduce laws and regulations regarding digital assets. Regulations were introduced with a focus around service providers that deal with the exchange of legal currencies for crypto currencies that function as payment settlements such as bitcoin.
- At the time of the implementation, Ethereum and subsequent realms had not yet materialized, and it is unclear how far the regulations of the Payment Services Act and the FIEA applied to Ethereum and the subsequent applications of tokens. (For example, in the case of NFTs linked to digital art, etc., it has been pointed out that if there are several of the same types of product, it is unclear whether they fall under digital assets.)
- **<u>The tax and accounting system was designed with digital assets thought to fall under the Payment Services Act which has lead to issues such as the taxation of these assets at fair value at the end of the period.</u>**



Regulation: Classification of digital assets

- It has been pointed out that if there are multiple digital items and contents of the same type issued on a blockchain, it is unclear whether they correspond to digital assets.
- The Ministry of Economy, Trade and Industry will support the FSA's formulation of interpretation guidelines for the classification of digital assets.

Token complexity and diversification

Token type	Specific examples
❶ Crypto currency	bitcoin, ETH
❷ Utility Token	AAVE, GMT
❸ Governance Token	UNI, CAKE
❹ Stable coin	USDT, USDC
❺ Security Token	TESLA, LAND SHARE
❻ Meme Coin/ Fan token	Paris Sangelman, FC Barcelona Corporation
❼ NFT	TOP SHOT, BAYC
❽ Soulbound token	Binance Account Bound

※The left table is a convenient classification focused on what is considered the primary use of the token. The applicability of the Payment Services Act and whether or not they fall under the category of securities tokens under the FIEA is not considered.

(Reference) Official Government Statement

Grand Design and Implementation Plan for New Capitalism
(June 7, 2022)
V. Multi-polar management of economic communities
2. From an environment of centralized digital management to a decentralized cyberspace
(4) Promotion of Fintech
（Omitted）
If there are multiple digital items or content issued on a blockchain of the same type, it is unclear whether they correspond to digital assets. Interpretation guidelines need to be presented with consideration to functionality, the primary being whether it can be used as a means of settlement.

(Reference) Applicability of Virtual Asset Service Providers (VASP)

- It has also been pointed out that there are cases where it is unclear whether enterprises that operate Web3.0 related services using digital assets fall under the category of virtual asset service providers and this is a factor that causes enterprises to hesitate to launch new businesses.
- Given international discussions (including compliance with FATF recommendations) and user-protection demands, there may be room to clarify the applicability of virtual asset service providers.

Regulations Related to VASP

- Against the backdrop of the bankruptcy of virtual asset service providers and the loss of customers' digital assets and
- For the purpose of securing the protection of users and countermeasures against money laundering,
- Measures such as safeguarding customer assets and confirming customer identity are required.

Clarification of the scope of VASP

Is it possible to specifically show cases that may not fall under the category of virtual asset services?

(Examples that may not qualify as crypto property exchange businesses from our view)

- When a startup obtains funding from a VC, etc., granting crypto assets free of charge in addition to shares

※In addition, the following examples are also considered not to fall under the category of virtual asset services

- When virtual assets are used as a means of settlement (for example, when payments for outsourcing are made using digital assets)

(Reference) FATF Recommendations (Mar 2022)

- Recommendation 15: Preventing misuse of new technologies

- Virtual asset service providers should be regulated for the purpose of AML/CFT (anti money laundering/combating the financing of terrorism) and be subject to a license or registration system
- Countries should monitor and ensure compliance with FATF recommendations

- Defining a virtual asset (VA)

- Refers to assets that can be transacted or transferred digitally and used for payment or investment purposes.

- Defining a virtual-asset service provider (VASP)

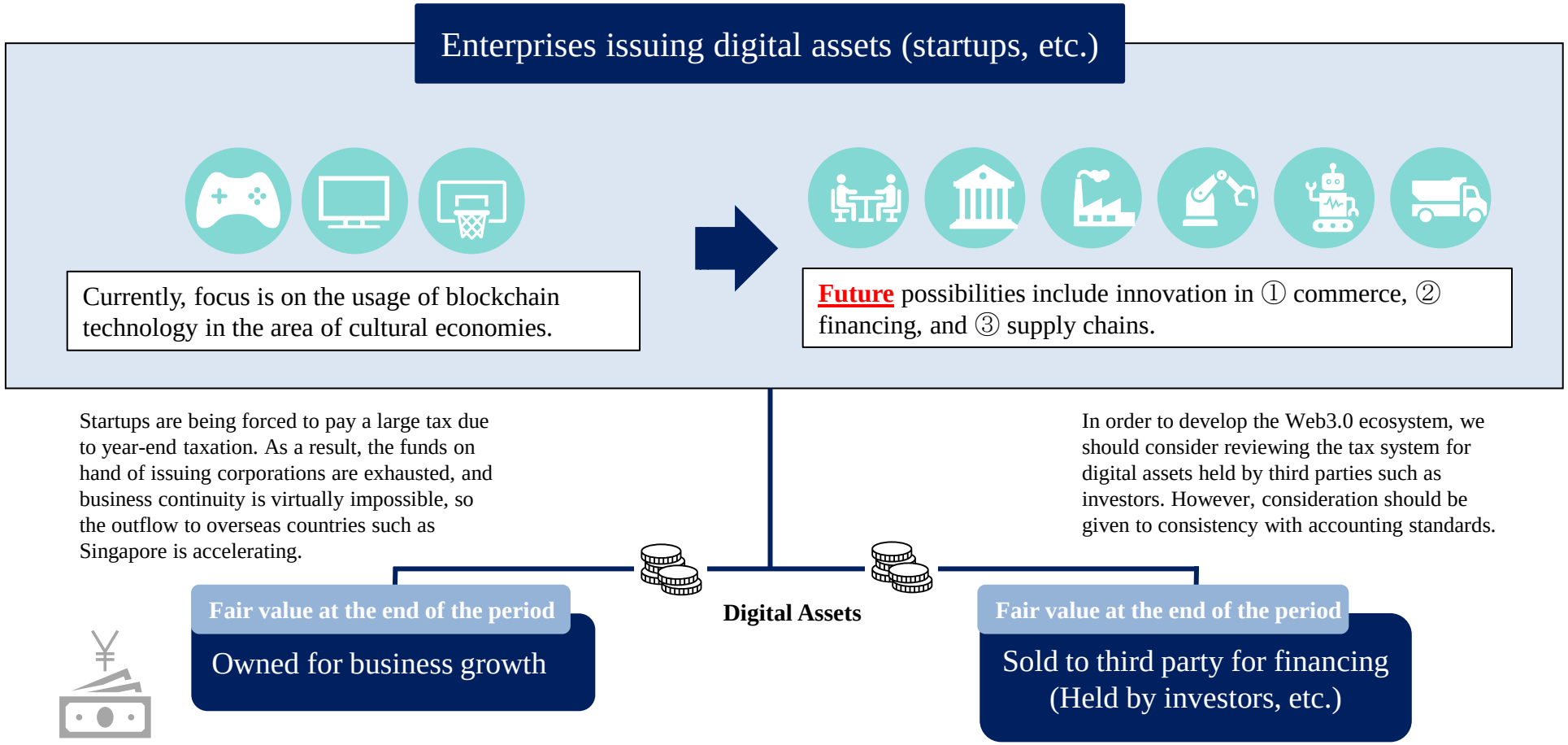
Natural persons or corporations that are not covered elsewhere in the recommendations, who do any of the following as a business on behalf of other natural persons or corporations:

i. Exchange of virtual assets for legal currency
ii. Exchange of virtual assets
iii. Transfer of virtual assets
iv. Protection and/or management of virtual assets or instruments that enable control of virtual assets
v. Participating in and providing financial services with respect to offers and/or sales of virtual assets (including ICO financing)

・ FATF "UPDATED GUIDANCE FOR A RISK-BASED APPROACH " (October 2021)
・ FATF "The FATF Recommendations " (March 2022)

Corporate tax system (year end mark-to-market taxation of digital assets)

- Under the current tax system, ① in addition to digital assets held by the issuer, those held by investors other than the issuer are marked to market at the end of the period for tax purposes and subject to taxation.
- As a result of this rule, it has become difficult to operate as a startup in Japan and there has been an overseas outflow of blockchain-related startups.



✓ **To be exempt from the current valuation tax at period end**

✓ **Consider the reviewing of the current valuation tax**

(Reference) Corporate tax system: Issues related to the taxation of digital assets held by investors

- Year end fair value taxation of digital assets held by investors is a prominent issue hindering business growth and the development of the web 3.0 ecosystem.
- Taxation of third-party ownership needs to be examined in consideration with other systems, such as ① consistency with the fact that digital assets are subject to fair value accounting for accounting purposes, and ② holding by LPS is not permitted..

Review of taxation rules when held by investors

- Web3.0 startups need aggressive funding to launch and grow their businesses.
- For example, tokens received by investors as consideration for financing a Web3.0 startup is usually held for the long term but under the current tax system it is subject to year-end fair value taxation.
- There are also cases where third parties holds tokens of a startup as partners without intention to sell. These tokens are also subject to year-end taxation, disincentivizing investment in Web 3.0 business.

→ Leads to the lack of funding for promising Web3.0 startups and the inability to collaborate with large companies.

Issues requiring ongoing consideration (consistency with other systems)

- Under current accounting standards, digital assets held by third parties are subject to fair value accounting at year end.
- Current legislation does not allow LPS (Limited Partnership for Investment) to acquire or hold digital assets.

→ **Consideration should be given to consistency with accounting standards.**

	Accounting treatment	Tax treatment
Treasury holdings by the issuer	**Not established** ※ **No accounting standards**	Fair value at the end of the period
Third-party holdings (Investors, etc.)	**Fair value at the end of the period** ※ **Accounting standards**	Fair value at the end of the period

(Reference) Income Tax Issues

- In principle, income related to transactions of crypto assets is classified as "miscellaneous income" and is subject to comprehensive taxation of up to 55% (including the 10% inhabitant tax). There is a request from industries that a 20% separate self-assessment taxation should be adopted, as is the case with listed stocks, etc. and futures transactions including FX.
- However, in comparison with the tax system for employment income and business income (up to 55%), there are issues such as the public's awareness of setting the income tax rate of digital assets at 20%, as well as the validity of recommending households purchase digital assets in a similar fashion to stocks as a country.

Transaction Flow

Comparison of foreign income tax systems

Japan

Miscellaneous income
(up to 55%)
＊ Progressive taxation

United States

Capital gains tax
(Up to 20%)
＊For holdings of more than one year

United Kingdom

Capital gains tax
(Up to 20%)
＊ However, it is evaluated as an individual's business income.
Taxed separately in some cases

Germany

Tax exempt
＊ For holdings of more than one year
Capital gains tax
(up to 45% progressive taxation)
＊ Less than one year

Current taxation of financial income and the taxation ofdigital asset income

Type of transaction	Taxation method	Background to the current tax system
Stocks, etc.	Separate taxation (uniform 20%)	Policy demand for "savings to investment." Build a simple and neutral tax system that is easy for ordinary investors to invest.
Futures transactions including FX		In light of the fact that futures trading plays an important role in avoiding the risk of price fluctuations and providing fair and transparent price indicators, the government encourages a wide range of investors to participate in the market.
Crypto asset transactions	**Comprehensive tax (up to 55%)**	Since the legal nature of digital assets is positioned as a means of settlement, the income generated is classified as "miscellaneous income" on par with foreign exchange gains, etc.

Other ① Accounting audit issues by auditing firms

- There are many cases in which Web3.0 related companies are unable to undergo accounting audits by auditing firms, etc. Possible causes include ① insufficient accumulation of cases on the part of auditing firms, ② insufficient governance related to digital assets on the part of audited firms, and ③ insufficient accounting standards.
- In the future, we plan to cooperate and collaborate with the Financial Services Agency and private-sector industry associations to develop an environment that enables audits by certified public accountants and auditing firms.

Issues

- There have been insufficient audit cases on the part of the auditing firms due to a variety of factors, including the increased cost of the audit that is required to take on such risk, as auditing firms are typically very risk averse.
- Entities engaged in digital assets and token business have not developed a sufficient governance system (legal compliance and security measures in the context of gray zones). In addition, there typically is no specification of the rights and obligations in white papers, and thus it becomes costly to grasp the evidence necessary for audit.
- Accounting standards for the issuance of digital assets are not in place. The lack of accounting standards causes audit costs to increase.

(Reference) Development of Accounting Standards

- There is no formal accounting standard specifically for digital assets, but there is guidance from the Institute of Certified Public Accountants (AICPA) on accounting and auditing of digital assets.

- There are no accounting standards specific to digital assets. General accounting principles are applied.

- There is a Practical Response Report (Accounting Standards) for holding digital assets issued by other parties. There is no practical response report on self-issued digital assets. We are in the process of examining the issues.

Source: Revised by the Ministry of Economy, Trade and Industry based on a survey by the New Economic Federation
https://jane.or.jp/app/wp-content/uploads/2022/09/220907document.pdf

Others ② Token Holding Issue by LPS (Limited Partnership)

- Many VC funds adopt LPS from the viewpoint of limited liability of union members. Currently, it is difficult for VCs to invest in Web3.0 projects because many Web3.0 startups choose to fundraise using tokens and it is not clear whether tokens can be acquired or held. In the future, we will summarize the interpretation of LPS, such as whether security tokens are included as an investment vehicle. Regarding investment in tokens other than security tokens, we will examine the treatment of LPS after investigating real situations regarding issues of financing.

Description of business (Article 3-1 of LPS Act)
***Partial list of projects that can be implemented by LPS]**

①Acquisition and holding of shares issued by stock companies (kabushiki kaisha) upon their establishment and acquisition and holding of equity shares issued by a limited liability company (yugen kaisha) or enterprise cooperatives (kigyo kumiai) upon their establishment

②Acquisition and holding of securities designated by LPS Law and the Cabinet Order among securities stipulated in the Financial Instruments and Exchange Act

③Acquisition and holding of monetary claims against an enterprise or monetary claims owned by an enterprise

④New loans to an enterprise

⑤Acquisition and holding of equity interest in the silent partnership agreement or trust beneficial interest in the trust with the enterprise as the other party

⑥Acquisition and holding of industrial property or copyrights (including granting a license to use the rights relating thereto) owned by an enterprise

⑦ Management or technical guidance for entrepreneurs whose shares, etc. are held by LPS

⑧Investment in voluntary partnerships that conduct investment businesses under Private Law or similar organizations located in foreign countries

⑨Acquisition and holding of shares, stock acquisition rights, or designated securities, etc. issued by foreign corporations (within 50% of the amount already invested)
※Investments exceeding 50% of the investment amount can be made if the company receives special approval under the Competition Act.

⑩ Business activities ancillary to ①~ ⑨ (Acquisition of promissory notes, etc.)

⑪ Investment management of surplus funds

○Acquiring and holding tokens

- Under the current LPS law, it is unclear whether or not tokens may be acquired and held

Others ③ Measures against unauthorized NFTs

- In the NFT marketplace, many unauthorized NFTs are distributed using content without licenses or legal rights and infringement of content is rampant.
- The Ministry of Economy, Trade and Industry will carry out an investigation project to clarify the actual state of distribution and the ideal measures for the development of legitimate IP and compile a commissioned investigation report within the fiscal year.

Survey items

(1) Understanding the status of pirated NFTs realting to Japanese IPs

- ✓ Understanding the actual state through interviews with major domestic IP holders and platformers
- ✓ Research trends of discussions on issues of NFT piracy and protection of IP in various countries

(2) Understand responses of IP holders

- ✓ What measures are being taken by major domestic IP holders, etc. in response to the actual conditions in ①?
- ✓ Research trends of IP holder responses in various countries

(3) Consideration of approach to distribution of legitimate versions (tentative)

- ✓ Consider options to counter-measure pirated NFTs
- ✓ Consider initiatives for the development of legitimate IPs

Schedule of research

November 2022-February 2023

- ✓ Investigative Committee on Building a Sound NFT Marketplace (scheduled three times in total)

  First meeting: Held in November 2022

  Second meeting: Held in December 2022

  Third meeting: Scheduled for February 2023

March 2023.

- ✓ Preparation of Report

Other ④ Interpretation of the relevance of gambling laws

- There are issues regarding the applicability of gaming laws regarding NBA Top Shot and other business models conducted abroad (NFT services with a random component and secondary distribution markets or services that combine NFTs and fantasy sports*).
  (※) A game in which users form their own custom team based on real athletes and compete with others based on real performance
- At the "Study Group on the Rights to Expand the Sports Content Business" held by the Ministry of Economy, Trade and Industry (Sports Industry Office) and the Sports Agency, we examined the applicability of gaming laws for services such as NBA TOP SHOT. On December 7, 2022, we published a summary of our legal opinions in the Sports DX Report.
- Furthermore, in response to the study by the above-mentioned workshop, the Council for Sports Ecosystem Promotion, a group of companies advancing sports DX, has published the "Guidelines for Packaged Sales of NFT Utilizing Sports Content and the Consolidation of Secondary Distribution Markets (NFT Guidelines)" which presents business models considered possible to develop domestically.

NBA Top Shot

■ Summary

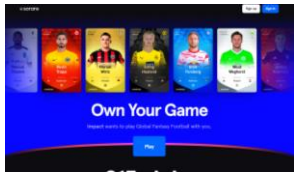
- Customers buy a package that contains several random 10-20 second video highlights (NFTs) of players. The price range varies depending on the NFT and the content is unknown until opened.
- Purchased NFTs are freely traded on the secondary marketplace offered by the service.

Source: https://nbatopshot.com/

Sorare (NFT x Fantasy Sports)

■ Summary

- A service that incorporates digital trading cards as NFTs and fantasy sports. League participation is free and NFT cards can be traded on the marketplace.



Source: From https://thebridge.jp/2021/09/sorare-funding-round-softbank-investment-nft-blockchain-pique-griezmann-pickupnews

Excerpt from the sporting DX report

■ On the applicability of gaming laws when NFTs are randomly packaged and traded on secondary markets, these is room for interpretation that these activities do not violate gaming laws if:

- ✓ The economic value of NFTs is clearly determinable and
- ✓ The operating entity does not engage in unfair practices such as intentionally packaging low value NFTs to buyers or acquiring NFTs on the secondary market for less than market value

■ Combining NFT and Fantasy Sports Services

- ✓ In foreign countries, purchased NFTs grant participation rights to fantasy sports services in which prizes are granted to top performing participants. In such cases, participation in the competition itself can be considered to have no cost as the total purchase cost of the NFT is associated with value of the NFT itself. In this case, there is room to conclude that the participation in fantasy sports does not violate gaming laws as NFTs and their respective value are retained by the participant and thus would not be considered wagering.

Source: From https://www.meti.go.jp/press/2022/12/20221207004/20221207004.html

Others ⑤ Support creation of use cases (content, sports, etc.)

- The creation of use cases in business (especially entertainment, sports, etc.) is required.
- Support (budgetary accommodations) will be considered for the creation of new services in the sporting field that utilizes content such as live entertainment with new technologies such as Web3.0, metaverses, NFTs and fan tokens.

Entertainment

Program to promote overseas expansion of content and strengthen infrastructure [20 billion yen]

<Operation Overview>

- Support will be provided for initiatives that actively expand overseas by utilizing new technologies such as NFTs and the metaverse.
- For example, initiatives to create a fan community by issuing and selling NFTs related to live events, live events in cyber space in which foreign fans can participate, etc.

Possibility of content x metaverse

■TOKYO GAME SHOW VR

Source: From https://panora.tokyo/archives/53744

Sports

Sporting DX facilitation project (FY 2023 budget request in progress)

<Operation Overview>

- Issues will be clarified/addressed and demonstrations will be held for creating and disseminating new services through sports DX (such as the leveraging of content and data of sports leagues and clubs).
- Market size, business environment, legal systems, etc. will be investigated in nations where the development of new services for sporting DX can be expected.

Sports×NFT case

■Spectator tickets

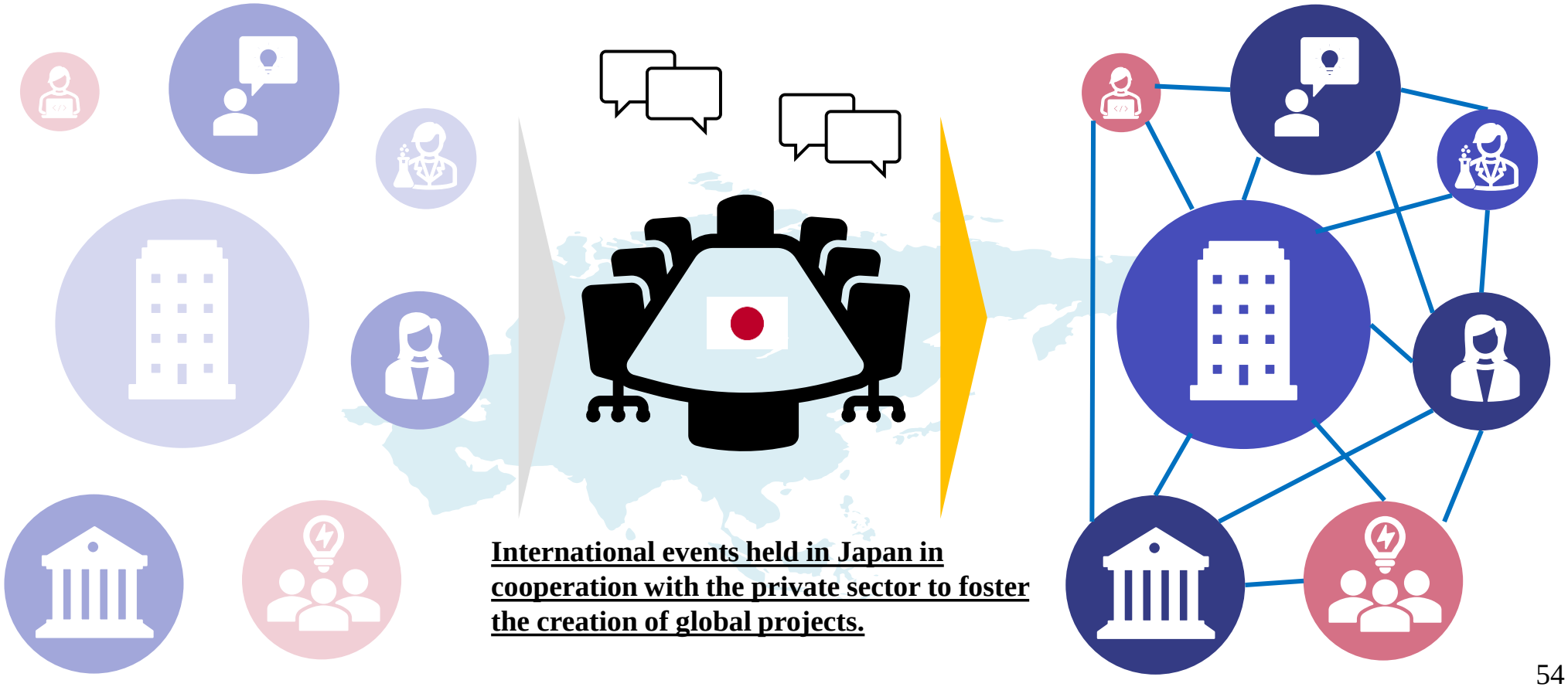
Source: Kamakura International FC

■Digital card and video sales

Source: https://playback9.jp

Others ⑥ Attract foreign human talent and create global projects

- In order for global projects to emerge, it is important for Japan to deepen connections with foreign entrepreneurs, investors, engineers, academia and regulatory authorities among other relevant personnel and encourage collaboration, investment, and securing of human talent.
- Consideration of collaboration with the private sector to support the hosting of international events that attract global first-movers (as an example).



International events held in Japan in cooperation with the private sector to foster the creation of global projects.

Others ⑦ R&D support and human resource development for blockchain technology

- In order for Web3.0 related services to spread to the mass and for distributed ledger technology such as blockchain to contribute to the construction of a global data-sharing platform in Society5.0, there are technical/social issues of blockchain and the development of blockchain related engineers that must be resolved.

Technological Issues for Blockchain

1 **Scalability**
Blockchain is a mechanism in which a large number of network participants (miners) jointly monitor transaction records to increase the immutability. However, in order to increase security, processing speed must be sacrificed which makes it slower than that of the existing centralized processing systems.
Various solutions are currently being debated and tested (usage of L2 layers, etc.).

2 **Security**
Incidents such as the hacking and theft of digital assets caused by issues like management of keys on exchanges have been a common occurrence. This could prompt the need for development of a Regtech framework.

3 **Anonymity and privacy**
Because of its strong anonymity, blockchain has become a forum for money laundering. However, because all information in the public chain is publicly available, it is not desirable to post privacy-related information either. Technical solutions are being sought (zero knowledge proofs, etc.).

4 **Oracle problem**
Blockchain technology does not guarantee the authenticity of information newly put on the blockchain from the outside. eKYC of objects and people on the blockchain is required. In particular, there are issues such as copyright control of NFTs and eKYC of un-hosted wallets.

5 **Power consumption issue**
Huge power consumption is required for mining.
However, the transition to a mechanism (Proof of Stake) that reduces power consumption has also progressed.

Path to the 3 Positive Feedback Loops (Expansion of Domestic Investment, Acceleration of Innovation, Income Growth)

- Expansion of Domestic Investment: Level the business environment in Japan comparable or superior to that of other countries to attract global Web3.0 related businesses and human talent, and increase investment.
- Acceleration of innovation: Creation of new services in cultural and other economies, securing global data sharing infrastructure/facilitation of trusted data, and acceleration of service/innovation through the concentration of global human talent, etc.
- Income growth: Production and income distribution that integrates producers and consumers, in which creators receive a fair distribution of income and fans committed from the beginning earn ancillary income. Furthermore, if the diversification of financial instruments for individuals is realized through securitization, fractionalization, and digitization of financial products, it can lead to income growth as it contributes to a more diverse portfolio of assets.

Current Status and Progress

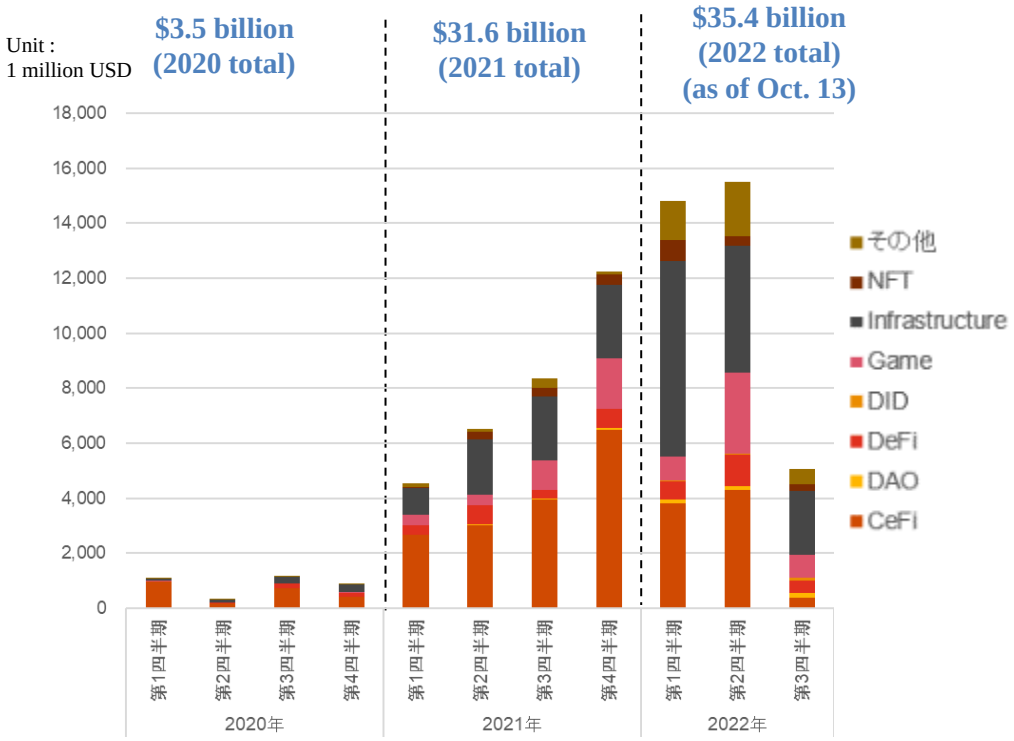
- Currently, companies and human talent are flowing overseas due to the difficulty of conducting Web3.0 related businesses in Japan.
- In order to improve the above condition, we are working with the Financial Services Agency to improve the business environment, such as requesting the revision of the corporate tax system related to digital assets, and we should also act quickly resolve other points of discussion.

Reference Materials

Trends in Web3.0 investment

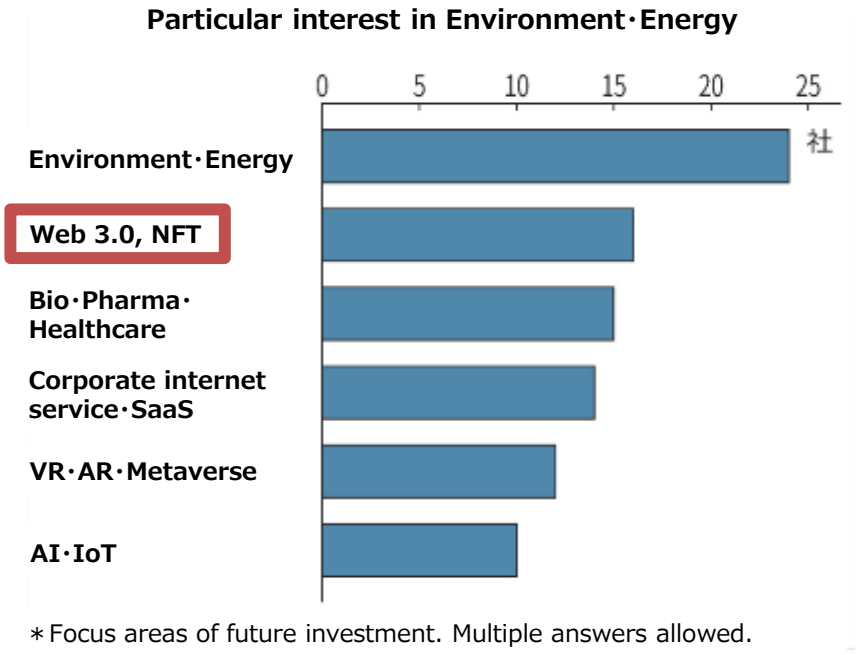
- Fundraising increased sharply in 2021, including Silicon Valley‘s top VCs. Potential gains and investments were seen in Web3.0 infrastructure and exchanges rather than individual projects.
- In a survey of major domestic venture capital firms (VC) in September 2022, "Web3.0, NFT (non-fungible token)" was ranked No. 2 as the sector in which investment should be strengthened. (Actual investment however has cooled due to the crypto winter downturn.)

Global Web3.0 fundraising



Source: Commissioned survey of Messari data as of 2022/10/13 (https://messari.io/)

Domestic VC Focus Areas



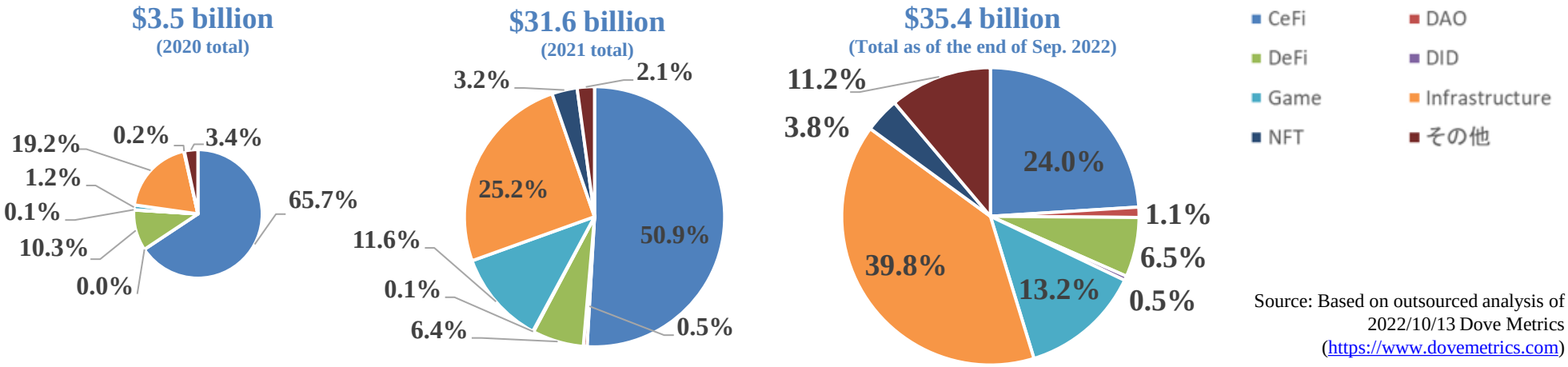
＊Focus areas of future investment. Multiple answers allowed.

Source: Nikkei, September 1, 2022 morning edition
"Difficulties in the creation of domestic venture capitals and funds

(Reference) Web3.0 Investments by VCs

- Investment of VC used to be centered on financial services such as exchanges but the proportion of investment in infrastructure and gaming increased from 2021 to 2022.
- Temasek, a Singapore government-sponsored fund, has invested in a wide range of projects from exchanges and wallets that act as "gateways from the real world to Web3.0" to protocol layers that are the fundamental technology of blockchain.

Trend in web3.0 investments of the VC industry



Source: Based on outsourced analysis of 2022/10/13 Dove Metrics (https://www.dovemetrics.com)

Singapore Government fund Temasek investment

Exchanges (CEX)/Banks | Access | Use Case | Infra | Protocol

Digital Stock Exchange
(November, 2018)
Participate in seed round
(Amount undisclosed)

OTC for institutional investors
(February, 2022)
Series B+ Lead $200M

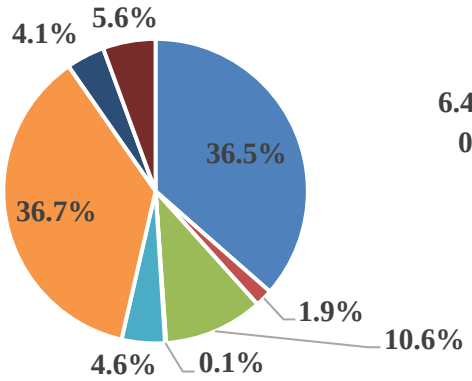
Developer of major wallet Metamask
(March, 2022)
Series D $450M

Ethereum L2 Chain specializing in NFT transactions
(March, 2022)
Series C, Lead $200M

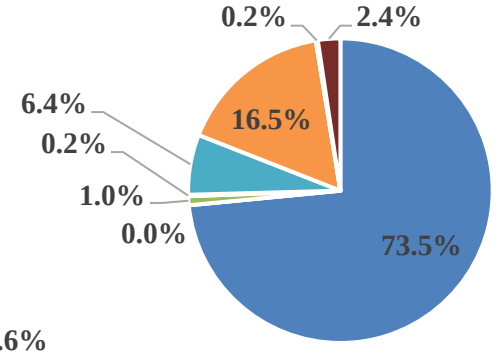
Interbank payment NW (Blockchain SWIFT)
(April, 2021)
Jointly established with JPMorgan, DBS

Gateway/Bridge from Real-world to Web3.0

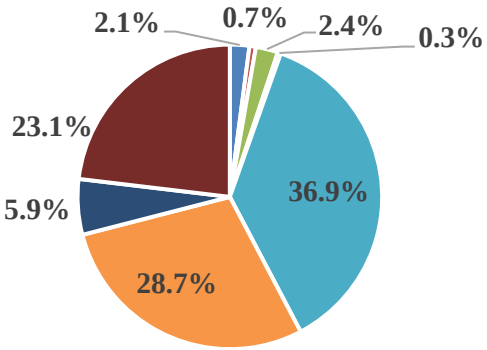
(Reference) Web3.0 Investments by Top VC's



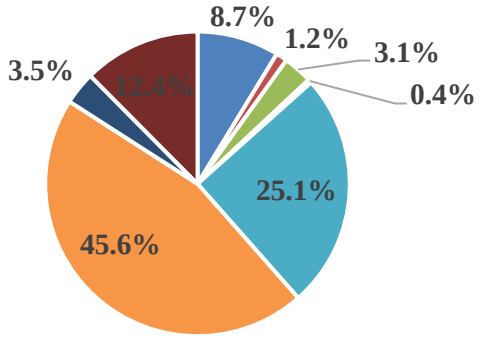
Coinbase Ventures



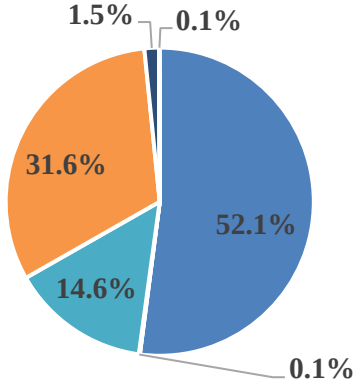
Sequoia Capital



Animoca Brands



Andreessen Horiwitz



Softbank

(Unit: Millions of $)

	CeFi		DAO		DeFi		DID		Game		Infrastructure		NFT		その他		総計	
	Total	Count	Total	Count	Total	Count	Total	Count	Total	Count	Total	Count	Total	Count	Total	Count	**Total**	**Count**
Coinbase ventures	2,382	40	121	7	689	53	7	1	299	10	2,398	81	266	13	365	23	**6,531**	**228**
Animoca Brands	95	2	31	5	108	15	15	2	1,692	89	1,317	37	270	23	1,061	26	**4,591**	**199**
Andreessen Horowitz	770	5	106	6	272	11	34	1	2,214	25	4,024	42	306	10	1,097	13	**8,826**	**113**
Sequoia Capital	5,814	15	0	0	75	11	12	1	505	9	1,302	18	17	1	187	4	**7,914**	**59**
Softbank	3,490	10	0	0	7	2	0	0	978	4	2,120	19	102	2	5	1	**6,703**	**38**

Source: Prepared by commissioned survey based on 2022/10/13 Messari data (https://messari.io/). Note: As the proportion of the amount of investment for each VC is unknown for individual projects, if a project lists multiple VCs, the entire amount is recorded for each VC listed.

Web3.0 entry of global companies

- From 2020 to 2021, a succession of global companies entered the Web3.0 business. Traditional financial institutions, branded companies, and major internet companies have also entered the market. In addition to investment in the digital asset space, these companies are exploring the future of blockchain technology as well as the possibility of collaboration.

米ブラックロック、コインベースと提携　仮想通貨取引で

暗号資産（仮想通貨） ✓フォロー済み

2022年8月5日 1:04 (2022年8月5日 7:06更新)

- BlackRock, the largest property manager in the U.S. formed an alliance with CoinBase Global, a major crypto-asset exchange firm.
- Provides investment vehicles for bitcoin and other products through their risk management system geared towards to institutional investors.
- Along with traditional assets such as stocks and bonds, BlackRock makes it easier to assess portfolio risk.

ナイキ、「デジタル靴」駆ける　仮想空間でブランド磨く

若い世代とつながり　ECも活用、直販率6割へ

DXTREND ＋フォローする

2022年5月11日 9:00 [有料会員限定]

- Nike enters the sneaker business in the metaverse.
- In addition to selling virtual sneaker NFTs, the company also has stores on popular online games combining for over 40 million downloads worldwide.
- It wields its brand popularity in the real world to expand into cyber space and increase its presence in both the real and digital world.

AstridDAO

May 24 · 3 min read

Microsoft Adopts AstridDAO to Accelerate Growth of Decentralized Money Market and Stablecoin, $BAI

- Microsoft provides a wide range of support of up to $350,000, including marketing support and network connections to startup companies that apply and qualify.
- Formed alliances with companies that innovate in Web3.0 such as AstridDAO which provides decentralized financial markets.

Source: Nikkei Shimbun U.S. lock, CoinBase and Alliance Virtual Currency Transaction (https://www.nikkei.com/article/DGXZQOGN04DKV004082022000000/); Nike; Enhance Brand even in Virtual Space for "Digital Shoes" (https://www.nikkei.com/article/DGKKZO60676860R10C22A5TB1000/) and Microsoft Adopts AstridDAO to Accelerate Growth of Decentralized Money Market and Stablecoin, $BAI (https://medium.com/@astrid_dao/microsoft-adopts-astriddao-to-accelerate-growth-of-decentralized-money-market-and-stablecoin-bai-8ef9f826fb67)

Entry by major Japanese companies using private chains, not Web3.0

- There is interest in Web3.0 from a variety of industries, including IT companies, financial institutions, and IP holders. However, in Japan it often stays within the use of private chains due to the tax system, legal issues and established business practices.

Examples of Entry by Major Domestic Companies

■ Rakuten's NFT marketplace

Launched the “Professional Market” for IP to be sold by IP holders and the “ C2C Marketplace” for secondary transactions between users on private chains on its own platform in April 2022.

■ LINE Token Economy utilizing “LINK”

LINK is a digital token issued on the LINE Blockchain, a private blockchain developed independently by LINE.
In April 2022, the comprehensive NFT marketplace “LINE NFT” was also launched on the chain.

Why Private Chain-Based

- The following risks faced by public chains, digital assets, and NFTs lead to the use of private chains.

-Major IP holders need to give consideration to existing fans, and there are fans who do not like the speculative aspect of NFTs.
-The cost and risk of protecting users is large due to the need for a high degree of digital literacy among users as fraud is rampant and key mismanagement by users can contribute to assets being lost forever as they can not be reissued.
-The infringement of rights and the difficulty of responding to such infringements is high.

Private Chain Issues

1. **Lack of purpose in using blockchain**
As the use of a private chain is no different from other database formats, it does not have to be a blockchain in the first place.

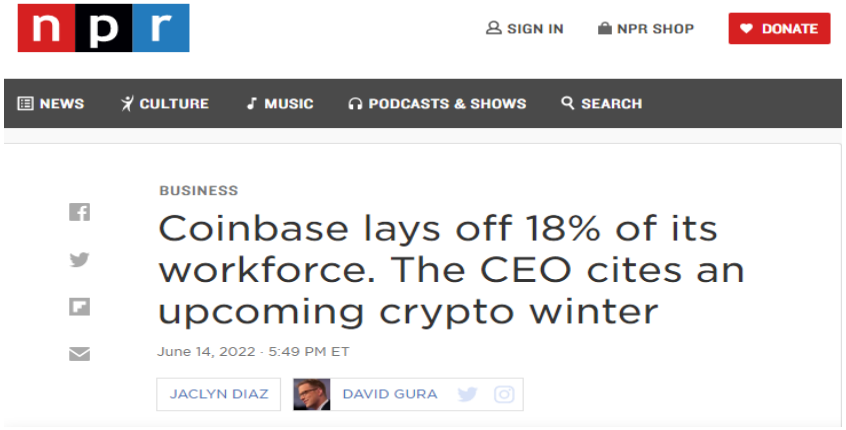
2. **Low interoperability**
Currently, it is impossible to move assets to other chains, and it is not possible to transfer NFTs purchased or held by private chains to public chains.
※Interoperability between public chains is also a challenge

3. **Global market reach**
Reaching global users already using public chains is difficult as private chain operators.

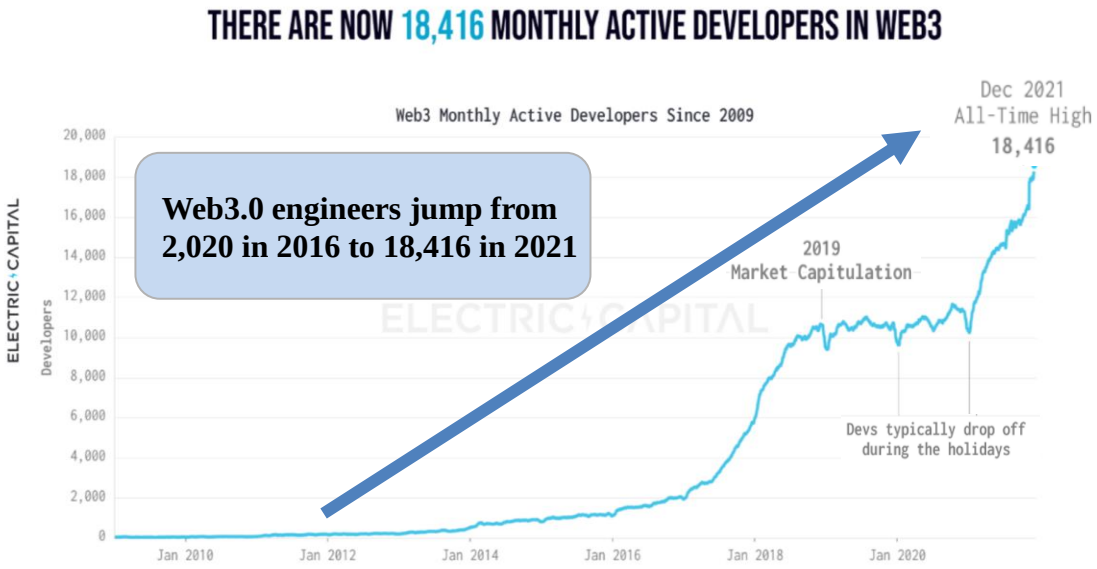
Trends in human capital

- During the bubble period (2020Q1～2022Q1), it was reported that top-class engineers and management personnel belonging to GAFA and prominent investment banks flowed into Web3.0. However, not immune to the slump in stock prices in Fintech business, Web3.0 entities have continued to lay-off employees since May 2022 and inflow of human talent may have stopped.
- **<u>Still, from the mid to long term view the number of developers entering Web3.0 appears to be on the rise.</u>**

Reporting by foreign media



Transition of Web3.0 developers



Figures based on “ELECTRIC CAPITAL[DEVELOPER REPORT JANUARY-DECEMBER 2021” and the 0.5 million repositories and 160 million code commits for Web3 related open source projects (developer signatures, etc.). Note: These numbers do not reflect developers working on closed phases of open-source projects. There may also be double counting for developers who use multiple signatures.

Source: Upper left: NewYorkTimes (https://www.nytimes.com/2021/12/20/technology/silicon-valley-cryptocurrency-start-ups.html), Lower left: NPR https://www.npr.org/2022/06/14/1105026558/coinbase-cryptocurrency-layoffs right: "ELECTRIC CAPITAL[DEVELOPER REPORT JANUARY-DECEMBER 2021"

Resonance with millennials and generation z

- Web3.0 has resonated with generation Z and the millennial youth in particular, and it is viewed that these youth are at the focus of business startups, employment and consumption of web 3.0 services and there is an expectation of continuation of this trend.

Active participation of youth in Web3.0

Vitalik Buterin (28)
Ethereum founder,
Global Web3.0
influencer

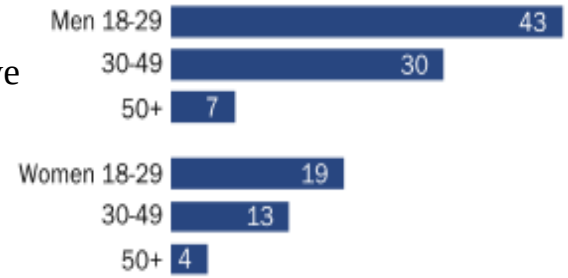
Olaf Carlson-Wee (33)
Founder of World-famous
Cryptofund Polychain
Capital

BLOCKCHAIN AT BERKELEY

A student body at Berkeley University. Provides blockchain consulting and other services to companies such as Microsoft.

Generational purchase of crypto assets

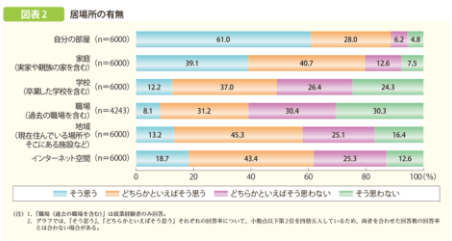
In the United States, 43% of men between the ages of 18 and 29 have bought digital assets



Source: Pew Research

Resonance with young people's values

- The following values and actions of generation z and millennials are said to resonate with Web3.0's philosophy and implementation.
  - ✓ The want of a free way of life and work in the VUCA age not bound by conventional customs and fixed ideas.
  - ✓ As the digitally native generation, less resistance to digitization in areas where interpersonal communication has traditionally been emphasized.
  - ✓ Communities based on region or relation are becoming weaker as people connect digitally with others who think alike.
  - ✓ High interest in social issues and the desire to personally contribute.



Young people increasingly reside in cyber space > schools, workplaces, and regions

Source: 2017 White Paper on Children and Young

Government Trends surrounding Web3.0

- Governments have begun work to enhance their competitiveness in Web 3.0 while reducing risk. Web3.0 entities seeking favorable business environments are increasingly flowing to Singapore, UAE and other web 3.0 friendly countries.
- **<u>While each country is searching for a balance between regulation and freedom of innovation, there is a trend toward tightening regulation starting with Europe and the United States.</u>**

■United States
- In March 2022, President Biden signed the Presidential Decree to Ensure Responsible Development of Digital Assets. Instructed ministries and agencies to report to the President on a framework for strengthening U.S. competitiveness, the possibility of issuing central bank digital currencies, the impact of digital assets on consumers, investors, and businesses, the relationship between blockchain technology and energy conversion, and risks to finance stability.
- In September of the same year, the White House released a framework for the responsible development of digital assets based on the above decree with a focus on regulatory content such as strengthening of consumer protection and financial stability.

■EU
- At the end of June 2022, MiCA, a comprehensive regulatory bill for crypto assets was tentatively agreed. Businesses are required to report to the regulators of their member states and to make certain disclosures when conducting business in the EU region. In addition, under the supervision of the European Banking Authority (EBA) for consumer protection, providers that issue stable coins are required to secure a certain level of liquidity. Thorough anti-money laundering measures were stipulated in a separate bill.

■Singapore
- Many digital asset-related businesses flowed inward in search of a favorable business environment, such as the absence of capital gains taxation. Support measures for human resource and technology development based on blockchain technology (though mainly in the enterprise domain as opposed to digital asset domain).
- On the other hand there have also been moves toward risk management, such as authorities announcing guidelines not recommending digital asset transactions for the general public.

■United Arab Emirates (UAE)
- In May 2021, the ccountry established an incubation center for Fintech related businesses in a special zone that allows for the establishment of corporations with 100% foreign equity and exempt from income and corporation tax to actively attract foreign companies. Currently, over 400 crypto-related businesses are developing in the UAE.

Sources: Japan Cryptocurrency Business Association; Government website of each country; Various reports

Use Case: NFT

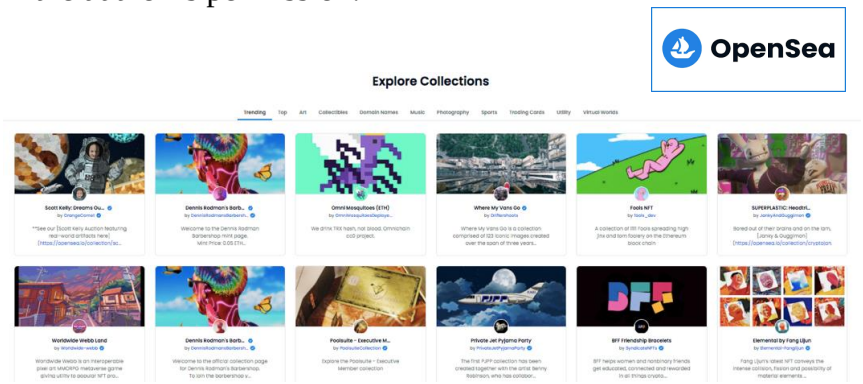
- With the emergence of NFTs (Non-Fungible Token linked to digital content) using blockchain technology, marketplaces have developed to handle the daily exchange between users and creators.

  ＊However, with regard to NFTs, even if there is a NFT tied to a digital content, it should be noted that unless there is a special legal basis behind it, it does not prove the ownership or distribution rights pertaining to the digital content, nor does it prevent the reproduction of such content or guarantee that the NFT tied to the digital content is unique.

- It also contributes to the development of the creator economy by distributing a certain percentage of the resale fees to creators when NFTs are sold on the secondary market.

OpenSea

- The largest NFT online marketplace worldwide. A large selection of digital art, music, trading cards, etc.
- Users can mint and manage NFTs or buy and sell them via auctions. Many well-known collections such as “CryptoPunks” and “Bored Ape Yacht Club” are bought and sold on OpenSea, increasing platform demand.
- **<u>Creators can receive a fixed percentage of the resale fee at the time of redistribution.</u>**
- However there are issues such as unauthorized NFTs without the author‘s permission.



Source: From https://opensea.io/ja

NBA TOPSHOT

- The digital collectible market of players in the NBA. Users can buy a package containing a number of random NFTs of 10-20 second highlighted videos with potential resale of purchased NFTs for financial gain.
- Of the approximately $230 million in transaction value during the five months following the launch of the service in the fall of 2021, 95% was from secondary sales.
- As for resale revenue, a certain percentage of fees is also distributed to the NBA (league) and NBPA (players association).

LeBron James’s NFT valued at $230,000 (As of February 2021)

TOPSHOT

Source: NBA Top Shot | Officially Licensed Digital Collectibles; NBA TopShot | From DappRadar

Use Case: Blockchain Games

- "XX to Earn" game apps operated on blockchains such as "Play to Earn" or "Move to Earn," which enables players to earn tokens by playing games, became popular internationally.

※However, there is also criticism that these games are similar to Ponzi schemes. There have been repeated boom and bust cycles in a short period of time, and the number of users and tokens have fallen.

Axie Infinity

Summary

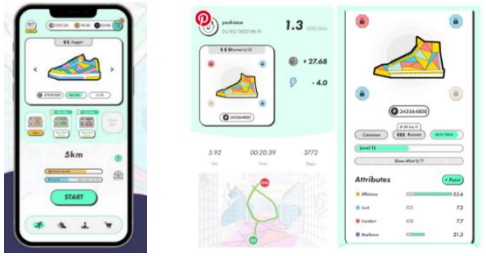
- Using in-game character NFTs called "Axies", this game app is the pioneer app in the "Play to Earn" genre of earning tokens in-game.
- Purchase of NFTs of in-game characters costing tens of thousands of yen is required to participate in the game. You can get in-game currency-tokens by fighting characters or selling NFTs you have raised. It is also possible to earn tokens by lending your NFTs to other players (the scholarship system).
- No longer able to work overseas due to the corona crisis, the number of users in the Philippines expanded rapidly, and some players were able to earn more than the average monthly income of 20,000 yen in the Philippines.
- **Criticisms exist that it is similar to a Ponzi scheme. Currently, the number of users and the value of tokens have fallen significantly from the highs.**

Source: https://axieinfinity.com/

STEPN

Summary

- A gaming app in the "Move to Earn" category where users can earn tokens through walking.
- It requires the purchase of "digital sneaker" NFTs to participate. (The value of sneaker NFTs ranged from several tens of thousands of yen to hundreds of thousands of yen during the highs of the pandemic.)
- Tracked via smartphone GPS, the longer the distance actually moved the more tokens can be acquired (with added health benefits).
- **Along with exchanging tokens for legal currency, they are also used to repair and replace digital sneakers that wear out due to usage. This mechanism serves to sustain the token economy.**
- **Criticisms exist that it is similar to a Ponzi scheme. Currently, the number of users and the value of tokens have fallen significantly from the highs.**



Source: https://www.stepn.com/

Use case: Fan token

- Especially in the sports field, fan tokens are expanding as a method of fan base engagement. The entry of not only fans but investors into the market creates a new source of capital for the industry.

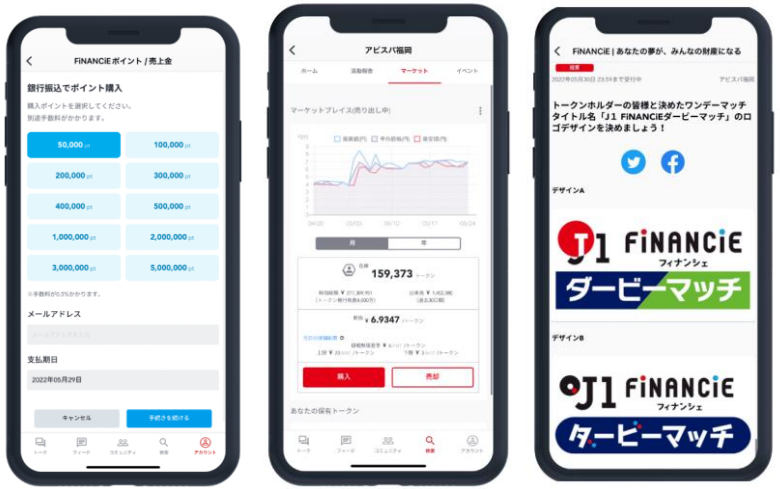
Socios.com

- A platform where you can win sports club fan tokens.
- Owning fan tokens earns the rights to
  - Participate in specific events and matches (e.g. VIP tickets for the Milano Derby)
  - Purchase official goods/trading cards
  - Voting rights to club operations (e.g. anthem selection, design of uniforms)
- Already introduced for European soccer and other sports teams (FC Barcelona, Juventus, Paris-St Germain, etc.).
- Fan tokens can be purchased at Socios.com using the native CHZ token required for purchasing. CHZ can be traded with fiat currency on major crypto-exchanges.

Source: Socios.com website, Nikkei businesses, etc.

FiNANCiE

- Fan token purchasing platform for sports clubs, etc. If you purchase a fan token, you can participate in voting within the community in which you own the token, as well as have a place to directly communicate your opinions and enjoy special benefits.
- Purchase financie points with cash and purchase fan tokens using the financie points.
- Private chain as opposed to usage of a public chain.



Source: https://financie.jp/

Use Case: DAO

- There are cases in which groups interested in solving social issues use NFTs and tokens to procure funds, manage communities, and invest capital.
- Globally, NFTs and tokens can attract a variety of skilled people with interests in the same social issues to facilitate community-building.

Yamakoshi-mura DAO

Background

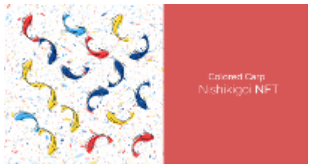
- Yamakoshi Village experienced the Chuetsu Earthquake in 2004, and lost status as an administrative district as a result of municipal mergers of marginal settlements due to population decline. With the goal of recalling people, a plan was created to issue an NFT that would allow people to participate in decision-making at the Yamakoshi Village Residents' Meeting.

Summary

- The organization sells NFTs of Nishikigoi, a symbol of Yamakoshi-mura. Those who purchase NFTs become digital villagers. Currently there are over 1000 digital villagers for about 800 real villagers (as of the end of Nov 2022), and the proceeds from NFT sales are being planned for regional projects in Yamakoshi village.

Points to Note

- Smart contracts are not used for decision-making, execution, etc., but rather is an active as community leveraging NFTs.



(right) Nishikigoi NFT
Source: From the official Nishikigoi NFT website

Klima DAO

Summary

- An DAO consisting of a group of individuals who buy carbon credits. Klima DAO tokenized carbon credits that had previously been traded between companies to make them available for sale to individuals.

Significance

- The purchase of tokenized carbon credits by individuals leads to a shortage of supply relative to demand, increasing the value of carbon credits and encouraging companies to make efforts to reduce emissions, thereby contributing to the betterment of global environmental issues. At the same time, individual investors can expect financial returns due to the increase in carbon credit value.

Points to Note

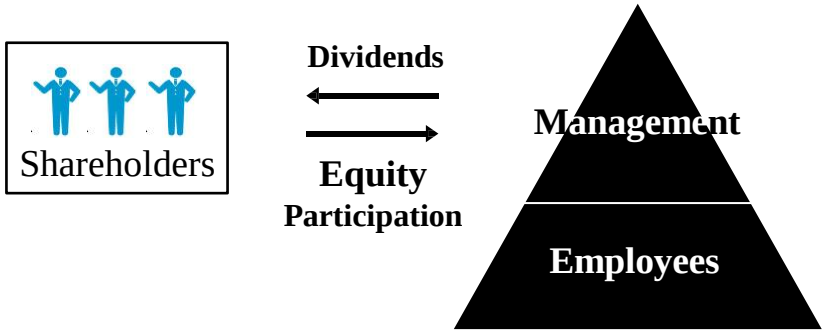
- There are criticisms that the method of purchasing carbon credits contributes little to actual emission reductions as users are selling them as a speculative investment, far from the original purpose of reducing carbon emissions.

Source: Klima website, etc.

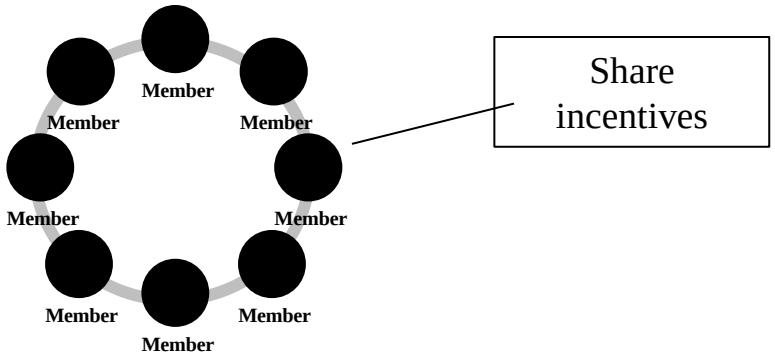
(Reference) Comparison of DAOs and corporations

- The advent of governance tokens among other means is creating new ways of organizing business.
- With DAOs, those who endorse the philosophy of the organization can hold a governance token with functionalities such participation in decision-making (i.e., an investment) and organizational management. The alignment of ownership and management provides a shared incentive for business success.
- Organizational management that was previously unavailable becomes possible, from programmatic automation of decision-making rules such as voting and dividends to greater transparency by disclosing transaction records in ownership structure and financial conditions.

Traditional corporate structure (corporation)



DAO (Decentralized Autonomous Organization)



	Joint-stock company	DAO
Organizational structure	Hierarchical and centralized, closed	Open and flat, decentralized
Ownership and compensation	Separation of ownership and management. Shareholders receive dividends and employees receive salaries under employment agreements.	Alignment of principles between ownership and management (⇒ Alignment of incentives). Incentive design can be based on the degree of contribution.
Decision process	Shareholder assembly, board of directors, and internal management.	Token holder governance, among others
Rules of organizational operation	Articles of incorporation and internal rules	Smart contracts (automatic execution of contracts)
Disclosure of Financial Positions	Annual Securities Report, Quarterly Reports, etc.	Trading records on blockchain

Open to verification

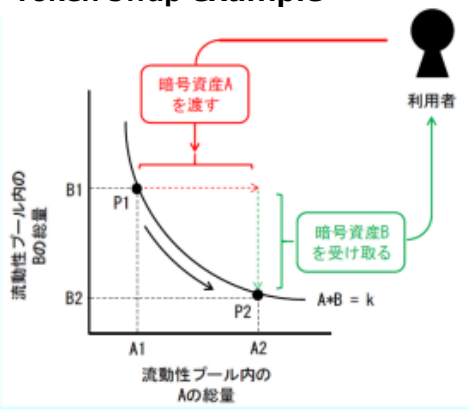
Use Case: DeFi

- DeFi is a financial application that aims to build a non-centralized financial system. Various initiatives have appeared such as DEXes (decentralized exchanges) that do not require conventional transaction intermediaries to exchange tokens, decentralized lending, derivatives, insurance and more.

Uniswap: Decentralized Exchange

- Decentralizd Exchange Platform that enabls the transaction of crypto assets between users in an automated fashion on a smart contract without trusted third parties.
- Unlike a centralized exchange, there is no preapproval of tokens, so digital assets with user demand can be traded without limitation.
- Interest can be received for depositing funds in Uniswap and providing liquidity into LPs (liquidity pools) (called liquidity mining).

Token swap example



・Pre-Swap:
TokenA1=10
TokenB1=500
k=10＊500=5,000

・Post-Swap:
Exchange 1 A1 Token for B1
TX Fee
=1:0.3%=0.003
TokenA2
=10+1-0.003=10.997
TokenB2
=5,000÷10.997=454.67
k=10.997＊454.67=5,000

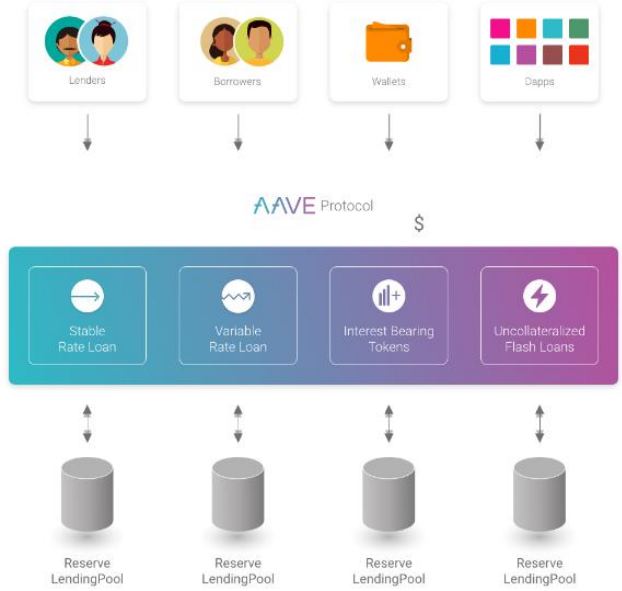
・Post-Swap: B1 received
500-454.67=45.33

・Post-Swap:
Tx Fees distributed to liquidity providers

Source: Financial Services Agency, Research Report on Technology Risks in Trust Chains of Distributed Financial Systems

Aave: Decentralized Loans

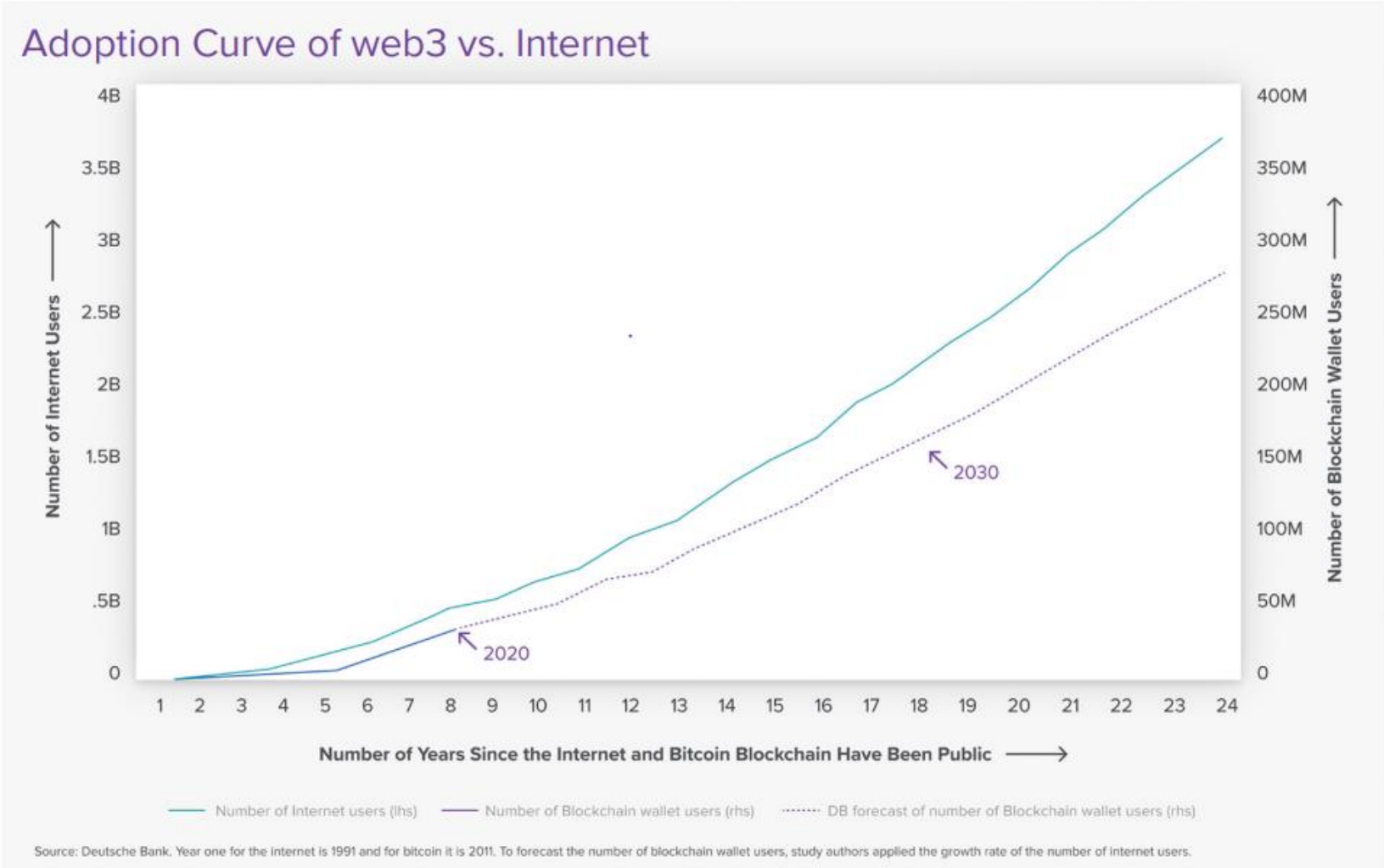
- Distributed loan platform. It operates on a smart contract that connects borrowers and lenders directly and lends digital assets by locking collateral instead of granting credit via screening.
- Lenders earn interest and borrowers can borrow if they secure collateral (crypto assets).



Source: https://app.aave.com/markets/

Future use cases

- When comparing the current stage of Web3.0 to adoption of the Internet, it is equivalent to around year 2000. The technology is still in its infancy, and there is a high probability that a prominent use case will be born in the future.



Source: https://a16z.com/wp-content/uploads/2021/10/How-to-Win-the-Future-1.pdf

(Reference) The token

- A token is a certificate of ownership engraved on a blockchain. Tokens include FTs (Fungible Token) and NFTs (Non-Fungible Token) among others.

	Legal Positioning	Technical Layer	Chain applications	Governance
FT	**Crypto Currency** **1.Used for payment with unspecified persons** **2.Able to purchase and sell with unspecified persons** **3.Not denominated in a legal currency** 4.Electronically recorded and transferable	**Native token** Core tokens for each blockchain. (BTC for bitcoin, ETH for Ethereum, etc.)	**Payment token** Token used only for remittance and payment. BTC, XRP, USDT, USDC, etc.	**Governance Tokens** A token that has been granted the right to vote on project decisions. ※Legal rights not guaranteed
	Electronic settlement method **1. Used for payment with an unspecified persons** **2. Denominated in legal currency** 3. Electronically recorded and transferable i.e. stable coins	**Protocol token** A token issued on a blockchain by an entity that provides services running on the blockchain. For example, GST/GMT on STEPN.	**Utility token** Tokens associated with a particular project. Used for commissions when using services and for granting access rights through ownership. In-game currency, etc.	**No Governance function** Tokens for which the above rights have not been granted.
	Electronically Recorded Transferable Rights **1.Securities under the FIEA** (Stock certificates, bonds, trust beneficiary rights, etc.) 2.Electronically recorded and transferable i.e. security tokens		**No function** The token itself has no functionality or application on the blockchain. Meme coins, fan tokens, etc.	
	No legal positioning Tokens with no particular legal positioning.			
NFT	**None** ※Possibility of becoming an Electronically Recorded Transferable right if dividend availability increases ※ Possibility of falling under digital assets when many of the same are issued	**None**	**NFT with utility** Use for particular projects. Game characters, etc. **No function** Same as above	**Governance NFT** NFTs that have been granted the right to vote on a project decisions. **No Governance function** Same as above

※Depending on the mechanism both FTs and NFTs may fall under the category of prepaid payment instruments or FX transactions.

(Reference) Diversification and complexity of tokens

- Originally conceived as a payment method (bitcoin), tokens have taken on various characteristics after the advent of Ethereum. NFTs granting non-fungibility to digital data, utility tokens that give access to certain services, and governance tokens that give voting rights to projects have become more complex and diverse, supplementing the function of tokens with new roles and capabilities.

Token type	Technical Layer	Application	Governance	Specific examples
① Crypto currency	Native token	Payment Token	No Governance	bitcoin, ripple
		Utility Token		ETH, BNB
② Utility Token	Protocol token	Utility Token	Governance Token ※Some without governance	AAVE, GMT
③ Governance Token	Protocol token	No function	Governance Token	UNI, CAKE
④ Stablecoin	Protocol token	Payment Token	No Governance	USDT, USDC
⑤ Security Token	Protocol token	No function	Right to governance under financial regulation	TESLA, LAND SHARE
⑥ Meme Coin/ Fan token	Protocol token	No function	No Governance	Paris St. Germain, FC Barcelona
⑦ NFT	Protocol token	No function ※Some NFTs with utility	No Governance ※Some governance-based NFTs	NBA TOP SHOT, BAYC
⑧ Soulbound token	Protocol token	No function	No Governance ※Some with governance	Binance Account Bound

※This is a convenient classification focusing on what is considered to be the main use of tokens. It does not take into account whether they fall under digital assets under the Payment Act or securities tokens under the FIEA.

Contact Us:

Ministry of Economy, Trade and Industry, JAPAN
Web3.0 Policy Office

exl-web3@meti.go.jp