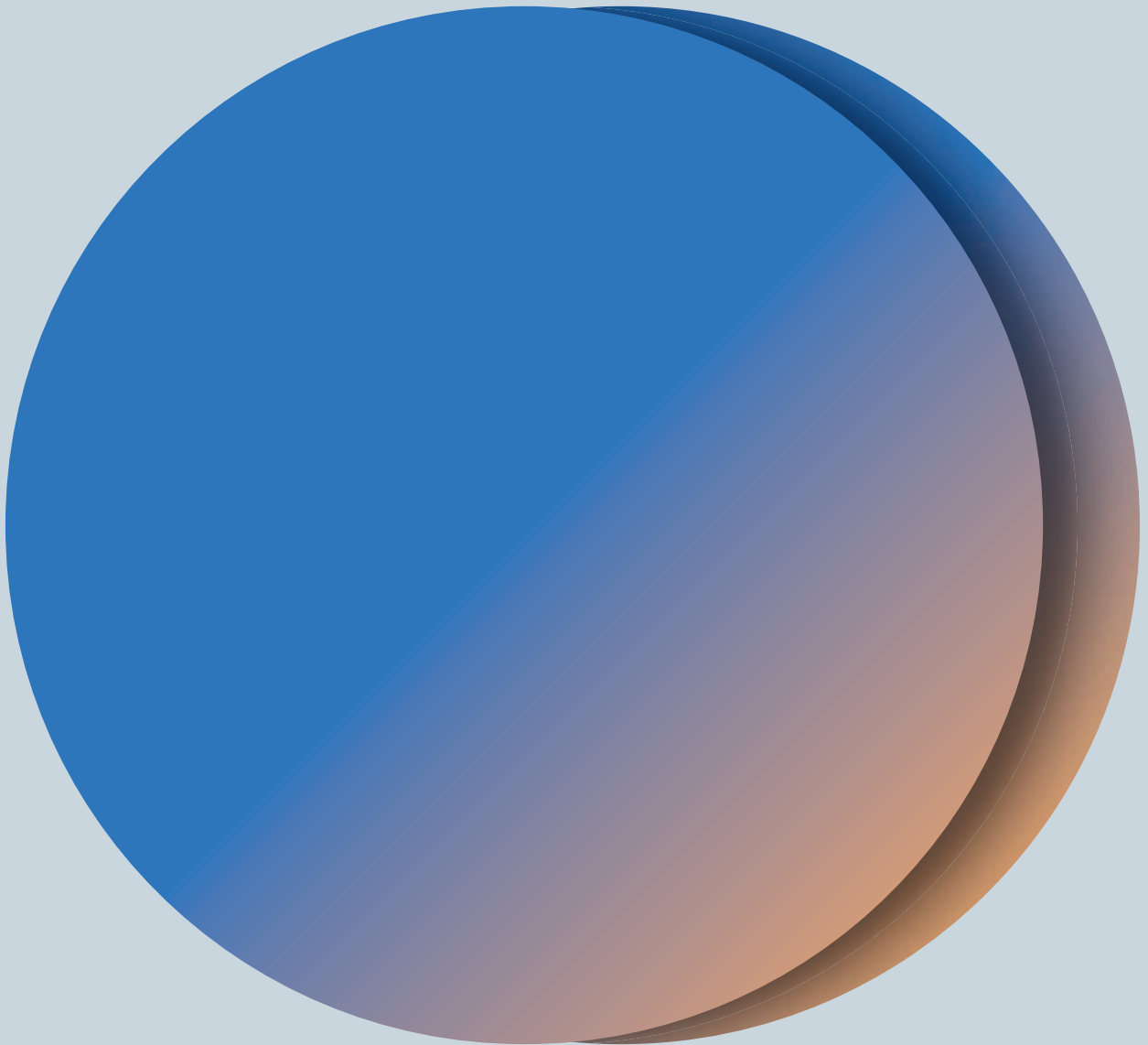




Progress Report of the Digital Currency Forum

November 2021



Digital Currency Forum



Table of Contents

3	Introduction
5	1. Past activities of the Digital Currency Forum
10	2. Development of the Two-tiered Digital Currency Platform
11	3. Concrete steps toward the realization of digital currency
11	[1] Purchase of Clean Energy
17	[2] Use of Digital Currency in Security Tokens
19	[3] Linkage between digital currency and e-money
19	[4] Use of digital currency as regional coin
21	[5] Using Digital Currency in the Supply Chain
22	[6] Linkage between entertainment segments and digital currency
23	[7] The concept of security in the Digital Currency Platform
25	[8] Settlement in Industrial Distribution Subcommittee
26	4. Toward practical application in FY2022
27	Conclusion
29	Appendix
29	The Digital Currency Forum Members



About the name of the Digital Currency

The digital currency being developed by the Digital Currency Forum is tentatively called as "DCJPY". The Forum will continue considering how its digital currency should be entitled.



Introduction

The digital revolution is drastically changing the global economic landscape.

Against the backdrop of the popularization of digital devices, the dramatic increase in the volume of data and the decline in data processing costs, new networks and economies of scope are being created among various economic entities, industries, goods and services. Moreover, as economic activity in the virtual space develops, new linkages and crossovers are emerging between economic activities in real world and in virtual universe. E-commerce, the sharing economy, “as a Service” “XaaS” , Non-Fungible Token “NFT” and decentralized finance (“DeFi”) can be seen as visible materialization of such movement.

As digital revolution proceeds, digital money is attracting a great deal of attention. The entry of giant tech companies (big tech) into digital payments, the emergence of “stable coins”, and the growing interest in central bank digital currencies are symbolic developments. Digital money is expected to improve the efficiency of transactions and settlements. Furthermore, digital money is gathering attention from the perspective of collecting and utilizing information/data, as well as networking a wide range of economic activities.

Due to the close relationship between money and information/data, the digital revolution inevitably intensify the attention to the issues of money.

Money is undoubtedly one of the greatest inventions of mankind. Money has made it possible to quantify the value of various goods and services in terms of a fixed unit. Such function of money stems from “abstraction”, which is one of the attributions of human intelligence. Accordingly, money, a revolutionary tool that human beings had created, has dramatically improved the efficiency of information processing, facilitated the exchange of various goods and services across time and space, and enabled humans to build an economic society.

Given this inextricable relationship between money and information processing, the digital revolution inevitably enhances expectations that money will and should incorporate new digital technologies and become even able to facilitate more sophisticated transactions.

In this context, the Digital Currency Study Group, launched in June 2020, has been studying the ideal infrastructure for digital money, which satisfies the needs stemming from the digital revolution, from scratch. In the course of the study, a number of issues were raised, such as: How can we satisfy both broad interoperability and high programmability to meet individual needs? How can we balance credibility and security of digital payment instrument with efficient intermediation of funds led by private initiatives? What should be the ideal payment infrastructure to support the private sector’s utilization of data?

The Digital Currency Study Group had sought for the ideal style of digital money that would be feasible in the current technological environment and be desirable for the economic society. After intensive studies on many complicated issues mentioned above, the Digital Currency Study Group has come up with a vision of digital money: digital currencies denominated in Japanese yen, issued by the private entities, with a two-tiered structure.



Through these discussions, the Digital Currency Study Group developed into the Digital Currency Forum with welcoming many new members in November 2020. The Forum is conducting a multifaceted study to ensure that the above-mentioned digital currencies will contribute to overcome various challenges facing the current economic society. The forum is scheduled to work toward the practical application of the above-mentioned digital currencies through PoC (“Proof of Concept”) and other initiatives.

The activities of the Digital Currency Forum are not in conflict with the current discussions regarding stable coins and central bank digital currencies (“CBDC”). Rather, they are complementary to each other.

Money has been the driving force of the market economy. At the same time, the trustworthiness of money has been supported by a nation’s framework in a broad sense. Money has always been based on a balance between the market and the nation, between private and public forces. In this respect, many stable coins try to stabilize their value through partially utilizing confidence to the public sector. Many central banks have expressed their intention that if central bank digital currencies “CBDC” are issued, they will not be issued directly to firms and individuals, but to financial institutions through an “indirect issuance scheme”.

Such schemes are considered to satisfy various needs for payment instruments, such as stabilizing their value as a means of payment while promoting innovation led by private initiatives. The Digital Currency Forum also tries to achieve these goals. I sincerely hope that initiatives of the Forum and those of various entities, including central banks, will positively interact and contribute to improving monetary and financial infrastructure.

Today, the world is facing a variety of challenges. There are strong needs to promote sound developments of digital economy and innovative markets including those of digital assets. Moreover, the world is required to achieve carbon-neutrality, to promote the development of regional economy, and to take effective measures against cyber-attacks. Now, more than 70 leading companies, financial institutions and experts in Japan have gathered at the Digital Currency Forum to work on solving a wide range of issues through applying digital technology to monetary infrastructure. I believe that such initiatives are very meaningful and encouraging, reflecting strong intentions of the industries in Japan to promote digital transformation (“DX”).

The Digital Currency Forum will continue to make every effort to overcome various challenges and contribute to the economy through utilizing digital technology for monetary infrastructure.



Hiromi Yamaoka
Chairperson,
Digital Currency Forum



Part 1

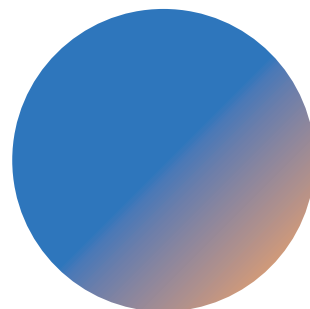
Past activities of the Digital Currency Forum

The Digital Currency Forum, which was launched in November 2020 to take over the Digital Currency Study Group established in June 2020, now consists of more than 70 companies and experts representing Japan's leading banks and various industries. In addition, relevant Ministries, and Agencies as well as the Bank of Japan have joined the Forum as observers.

The Digital Currency Study Group has shown that the key to advancing the digital transformation ("DX") of the Japanese economy is to build an ecosystem that can incorporate digital payment infrastructure comprehensively, and that there are many cases in which "Two-tiered Digital Currency Platform" could be effective for this purpose. Based on such concept, the Digital Currency Study Group has developed into the Digital Currency Forum, which is scheduled to conduct Proof of Concept ("PoC") for the various use cases raised in the study group.

The digital currency designed by the Digital Currency Study Group consists of two tiers: The core functions of digital currency have been discussed in the Common Area Subcommittee, and the usage of Business Process Areas to implement business logic and smart contracts has been discussed by 10 subcommittees.

So far, we have created a draft scenario for Delivery versus Payment ("DvP") settlement that straddles the Common Area and the Business Process Area and possible goals and objectives the digital currency is expected to achieve. In the field of technology, we are actively promoting verification from various perspectives toward the realization of digital currency issued by private entities, including the exchange of opinions among engineers in various fields and the mutual use of the Sandbox environment for digital currency platforms.



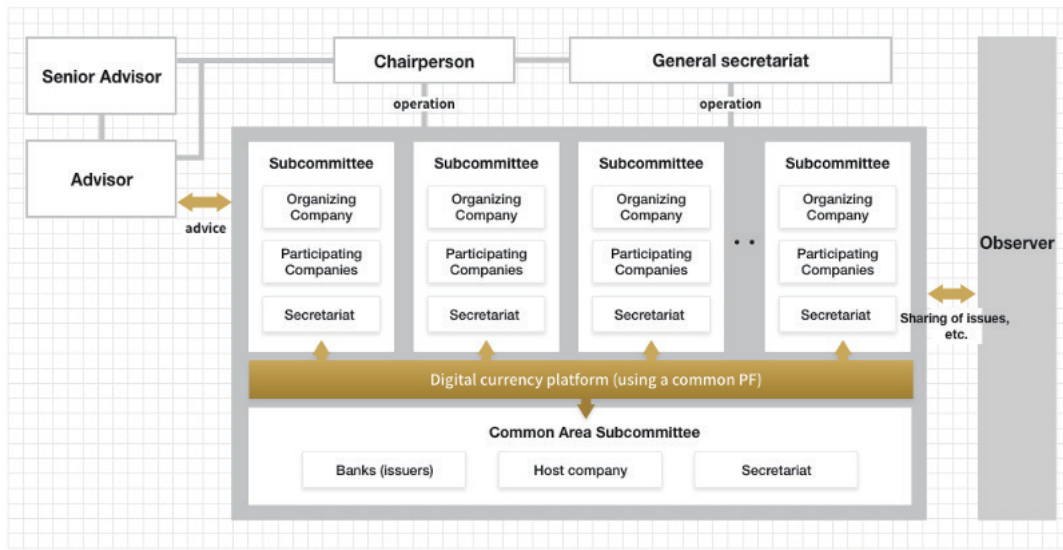


Figure 1: Organization of the Digital Currency Forum

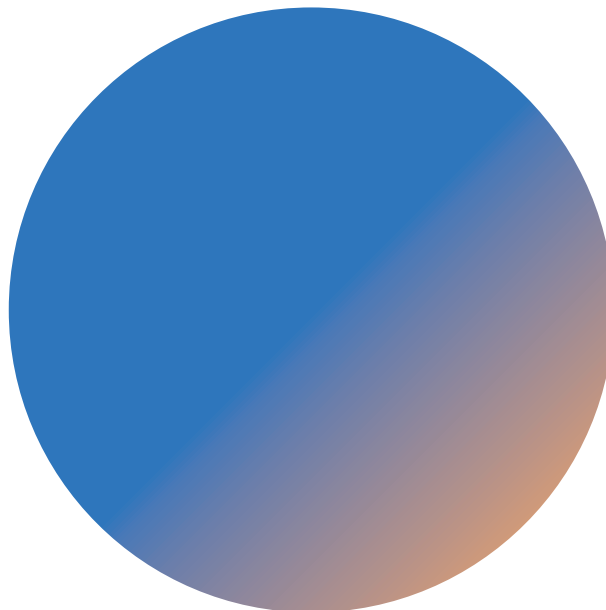
Subcommittee	Study details
Electric Power Transaction Subcommittee	<p>Participating Companies Organizer : The Kansai Electric Power Company, Incorporated Others : 9 companies</p> <hr style="border-top: 1px dashed #ccc;"/> <p>Based on the concept of improving environmental, social, economic, and customer value, this subcommittee is considering two use cases that combine (1) "commercial and service use of digital currency" and (2) "Green Finance," in addition to the use of digital currency in payments for electricity and environmental value transactions.</p>
Retail and Distribution Subcommittee	<p>Participating Companies Organizer : Seven Bank, Ltd. (Seven & i Holdings Co., Ltd.) Others : 15 companies</p> <hr style="border-top: 1px dashed #ccc;"/> <p>Examining the use of digital currency in the retail and distribution industry.</p>
Regional Coin Subcommittee	<p>Participating Companies Organizer : Mitsubishi UFJ Research and Consulting Co., Ltd , TIS Inc. Others : 28 companies</p> <hr style="border-top: 1px dashed #ccc;"/> <p>To create a new regional coin that takes advantage of the characteristics of digital currency, both companies that provide solutions and regional governments that face local issues are pooling their knowledge and considering the possibility of creating a new regional currency. The subcommittee defined the following three functions of regional coin.</p> <ol style="list-style-type: none"> i. Promote behavioral change among residents and self-help and mutual-help among residents ii. Acquire currency from outside the region by building and strengthening the relevant population iii. Stimulate consumption within the region by reducing economic outflow to outside the region <p>From these three functions, we will select use cases in line with the issues that each region is facing and the direction they are aiming to take and aim to verify them in a PoC for the implementation of a digital regional coin.</p>



Subcommittee	Study details
Wallet Security Subcommittee	<p>Participating Companies Organizer : SECOM CO., LTD. Others : Internet Initiative Japan Inc. and 9 other companies</p> <hr/> <p>The purpose of this project is to define the basic requirements for security to handle digital currency platforms safely. Examine security issues and counter-measures for private key management during use, systems to be connected, and programs and execution environments.</p>
Electronic Money Subcommittee	<p>Participating Companies Organizer : AEON Co., Ltd., Payments Japan Association, Incorporated Others : 18 companies</p> <hr/> <p>Focusing on "linkage between e-money and digital currency," Examining use cases where users of digital currency utilize the digital currency they have received for e-money as one of the outlets.</p>
Security Token Settlement Practice and System Study Subcommittee	<p>Participating Companies Organizer : Future Architect, Inc. Nomura Holdings, Inc. Others : 9 companies</p> <hr/> <p>Examine POC verification of the use of digital currency in security tokens based on securities business scenarios associated with specific financial products.</p>
Credit Card Company Member Store Settlement Subcommittee	<p>Participating Companies Organizer : JCB Co., Ltd. Others : 11 companies</p> <hr/> <p>Discussions on reducing the constraints of the current infrastructure by paying merchant reimbursements in digital currency, as well as increasing the frequency of payments and increasing the liquidity of funds while minimizing the increase in costs for businesses making transfers to multiple companies.</p>
NFT Subcommittee	<p>Participating Companies Organizer : Toppan Inc. Others : 5 companies</p> <hr/> <p>Exploring the possibility of NFT distribution in the entertainment fields through digital currency and examining use cases to verify business models with the aim of commercializing the service in the future.</p>



Subcommittee	Study details
Administrative Affairs Subcommittee	<p>Participating Companies Organizer : Mitsubishi UFJ Research and Consulting Co., Ltd TOPPAN FORMS CO., LTD. Others : 11 companies</p> <hr/> <p>Examine issues that can be solved and improve the efficiency of administrative procedures involving the flow of funds, such as tax payments and the delivery of various benefits and subsidies, using digital currency. In addition to the perspectives of related parties such as the national government, local governments, financial institutions, and citizens who receive administrative services, also identifying issues from the perspective of policy areas such as health and welfare, and studying use cases that take advantage of the unique characteristics of digital currency, such as programmability and traceability, as well as improving administrative efficiency through digitalization.</p>
Settlement in Industrial Distribution Subcommittee	<p>Participating Companies Mitsubishi Corporation, NIPPON TELEGRAPH AND TELEPHONE CORPORATION</p> <hr/> <p>To acquire a wide range of knowledge on digital currency and smart contracts using blockchain technology, planning to conduct a PoC to utilize digital currency for the settlement that occurs in the marine transportation of transactions conducted by Mitsubishi Corporation. Verification of general-purpose functions such as automated settlement will be promoted with a view to using the system in multiple industries in the future.</p>





The Digital Currency Forum is pleased to announce the results of two of the activities of this forum.

(1) Publication of the White Paper on the digital currency DCJPY (tentative name)

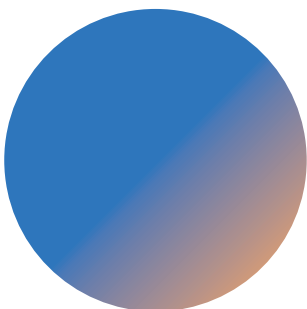
This presentation summarizes the basic scheme of the Digital Currency Platform, which is the core part of the digital currency issuance and management, and introduce the technical features, the image of UX, and the value created by the digital currency DCJPY, which has been studied mainly by the Common Area Subcommittee.

(2) Publication of the status of various PoC efforts in Business Process Areas

Various initiatives taken by the subcommittees toward practical application, such as PoC (“A Proof of Concept”) contents and plans for use cases utilizing digital currency in each industry, are illustrated.

The digital currency DCJPY designed by this forum can coexist with existing digital payment methods (e.g., e-money, credit cards, debit cards), centralized payment infrastructures (e.g., Zengin system), and central bank digital currencies if any. DCJPY is not exclusive at all but is destined to be inclusive. One of the goals of DCJPY is to achieve interoperability that can “bridge” these.

The Digital Currency Forum will continue to work on promoting innovation and establishing ecosystem and thereby contribute to the development of the Japanese economy. The Forum promotes open innovation and always welcomes firms and entities across industries. Through these efforts, the Forum hopes to contribute to improvement of the efficiency and convenience of Japan’s financial infrastructure and to promoting DX of the economy through leveraging new technologies and private sector initiatives. The Forum will update latest information on a regular basis.





Part 2

Development of the Two-tiered Digital Currency Platform

DeCurret.Inc., the facilitator of the Digital Currency Forum, has been working on the specification and development of the Digital Currency Platform designed by the Digital Currency Study Group.

As a prototype of the core functionality of the two-tiered digital currency platform, the Sandbox environment was developed and released in June 2021, and the new version of Sandbox is currently being released.

In the Sandbox environment, API is provided as an environment to test almost all services in the Common and the Business Process Area provided by the two-tiered digital currency platform. The subcommittees that are studying use cases in each economic sphere can simulate the use of programmable digital currency by linking various API with their business systems. Based on the feedback from each subcommittee, the Digital Currency Forum has been working on further specifications and technical studies.

The technical background and specific procedures to issue, transfer and burn the currency are described in detail in the White Paper.

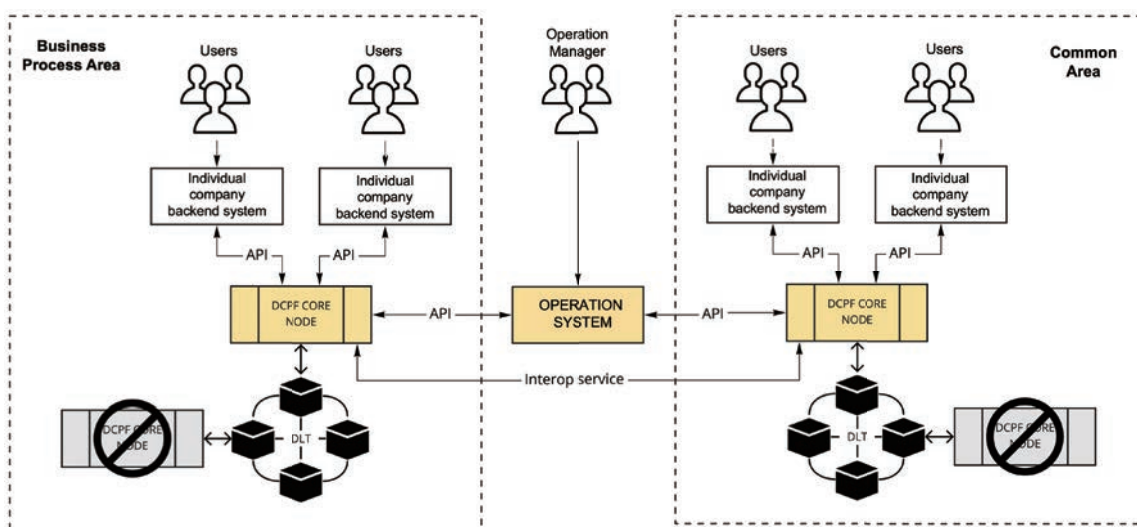


Figure 2: Sandbox environment conceptual diagram



Part 3

Concrete steps toward the realization of digital currency

The subcommittees of the Digital Currency Forum are currently discussing use cases for the PoC of the digital currency DCJPY. By the end of 2021, some of these subcommittees will be ready to implement PoCs and can look forward to moving into the transition of the execution phase.

Below are examples of major PoC considerations.

[1] Purchase of Clean Energy

The Electricity Trade Subcommittee of the Digital Currency Forum is considering the use of DCJPY, a digital currency, for settlements associated with the purchase and sale of electricity, automatically adding proof that clean electricity is being consumed, using DCJPY obtained through electricity trading to purchase goods and services at stores, and, in parallel, considering new services using renewable energy.

By applying blockchain and distributed ledger technology, it will be possible to track how electricity is produced and how it is valued. The Electricity Trade Subcommittee is studying the possibility of exchanging such energy for “electricity tokens” that are programmed to purchase only clean energy using the Business Process Area, thereby making the procurement of clean energy more efficiently.

This is expected to allow companies to choose and procure clean energy and to streamline the administrative work involved in such procurement. It will also be easier for them to prove that their corporate activities are consistent with carbon neutrality. These efforts will become even more important in the near future as countries, including Japan, work toward achieving carbon neutrality.

a. Specific use case: Use of digital currency in a peer to peer “P2P” electricity trading

Since November 2019, the end of feed-in-tariffs (“post-FIT”) and lower prices for solar power have accelerated discussions on electricity trading and environmental value trading.

In this context, there is a growing interest in Peer to Peer (“P2P”) platforms that match power generators (hereafter, “prosumers”) with consumers (hereafter, “consumers”), and in the creation of new businesses through the use of electricity data.

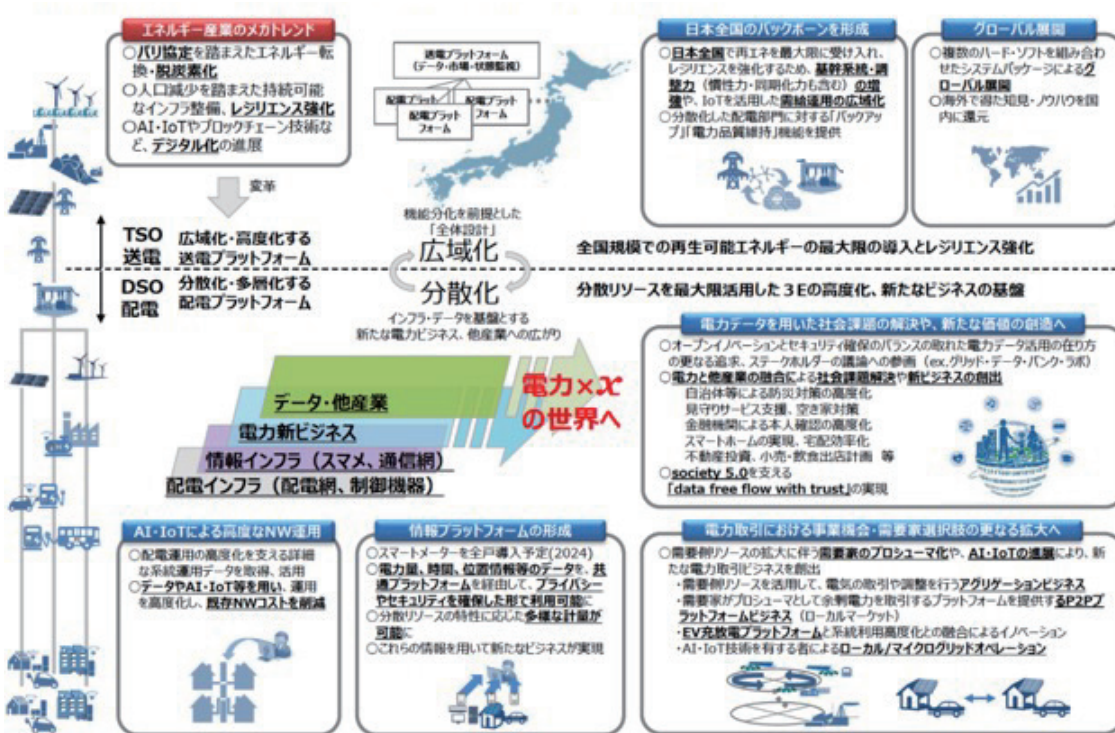


Figure 3: Future vision of electric power platform using next-generation technologies.

Source: Ministry of Economy, Trade and Industry, "8th Study Group on New Electric Power Platform Using Next-Generation Technologies". (Japanese version only)

In the use of P2P platforms, the key is to have an efficient mechanism for settling the price associated with the purchase and sale of electricity.

In this respect, the use of DCJPY, a programmable digital currency, is expected to make it possible to "purchase electricity that meets certain requirements and settle it automatically," thereby increasing the efficiency of trading operations.

Even before the establishment of the Digital Currency Forum in 2020, the Kansai Electric Power Company, Inc. has conducted a PoC to settle electricity transactions using the Digital Currency Platform built by DeCurret.Inc.

The Electricity Trading Subcommittee is further developing this effort and designing a mechanism to automatically exchange the digital currency DCJPY for electricity trading on the electricity P2P trading platform.

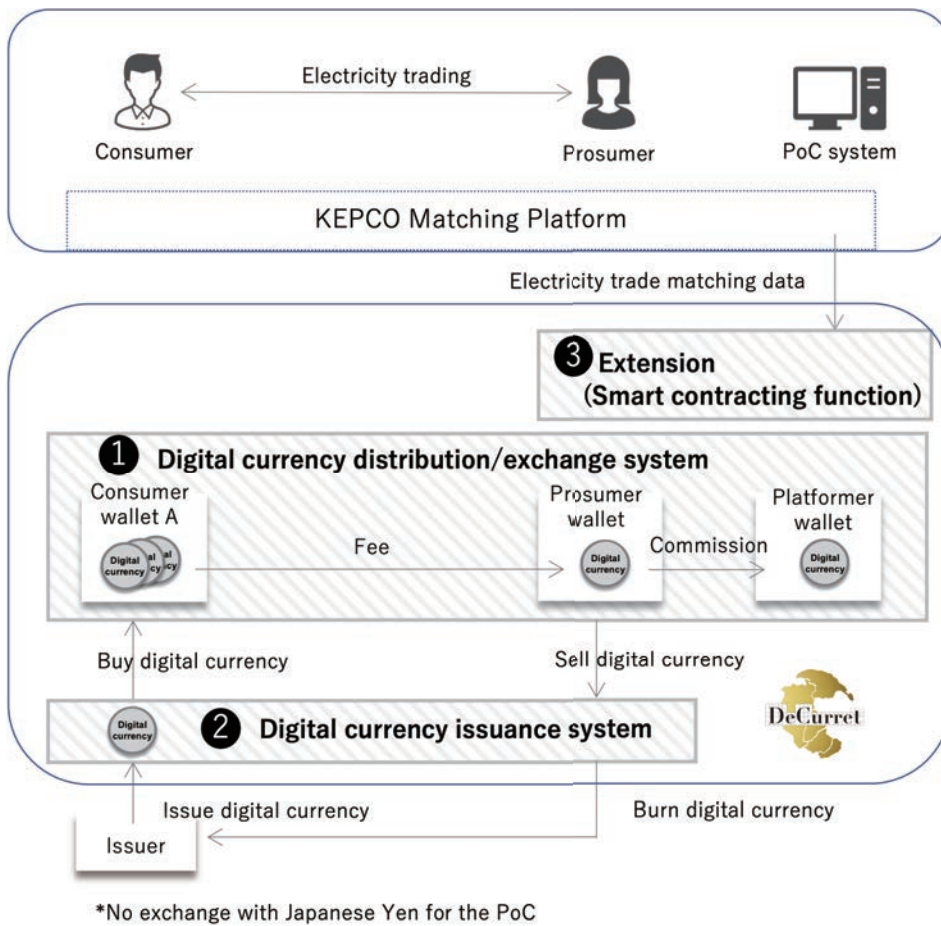


Figure 4: Diagram of the PoC

In fiscal 2020, as part of a similar initiative, ENERES Co., Ltd., au Financial Holdings Corporation, au Payment Corporation, and DeCurret.Inc. jointly conducted a demonstration of use cases, including the transfer of post-FIT electric power, the payment of compensation related to the issuance and transfer of environmental value associated with this transfer, and the provision of economic benefits to consumers who procure clean energy by converting environmental value into benefit points.

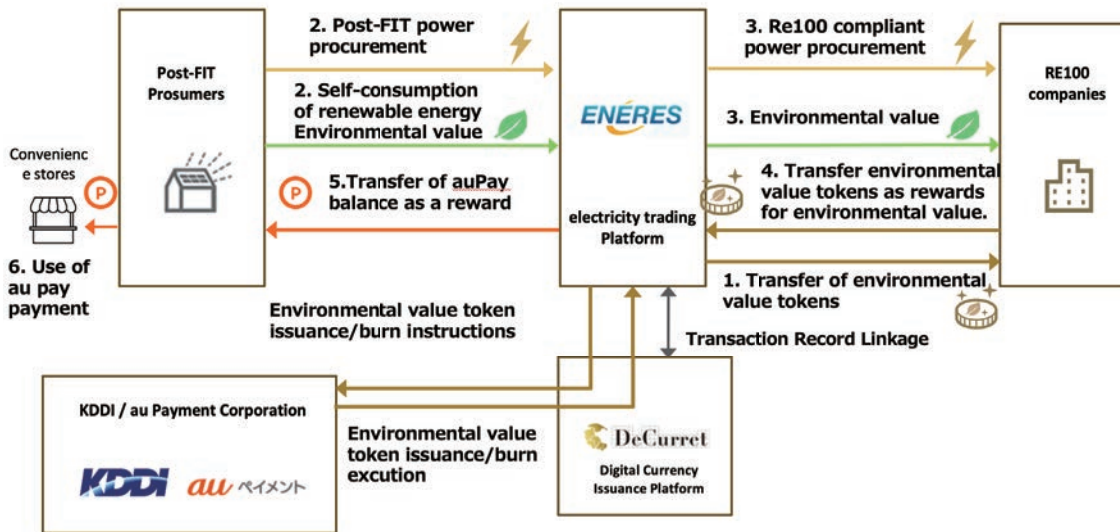


Figure 5: Proof-of-Concept scheme for using digital currency for electricity trading

Thus, if the digital currency DCJPY is put into practical use, it is expected that various programs unique to electricity trading can be incorporated in its Business Process Area, enabling the selection and procurement of clean energy, and lowering transaction costs. Consequently, it will be possible to certify the carbon neutrality efforts of the procurer and to award points based on environmental value.

In addition, when an electricity prosumer supplies clean electricity to a specific store, the store can give the supplier preferential points for using the store, or the prosumer can receive a discount when using the “electricity token” linked to the digital currency DCJPY that the prosumer received as compensation for the clean electricity at the store. The project may also contribute to the establishment of new cooperative relationships.

The Electric Power Subcommittee of the Digital Currency Forum, led by The Kansai Electric Power Company, INC. and ENERES Co.,Ltd. as well as several banks and retail companies, is examining the use case of using DCJPY for settlement when buying and selling electric power, and using the DCJPY obtained through this process when electric power prosumers purchase goods at stores. In addition, we are studying use cases in which data on renewable energy and environmental values acquired by consumers of electricity are used for the business and financing of the companies concerned.



For example, it will be possible to create a “coin for procuring renewable energy” in the Business Process Area by linking it to the digital currency DCJPY, and by attaching a transaction history to it, it will be possible to “visualize” the extent to which companies and individuals are contributing to decarbonization.

In addition, the data accumulated through the Business Process Area of digital currency along with electricity transactions could be used for financial aspects such as fundraising.

For example, banks could use such data to evaluate the decarbonization efforts of the companies they lend to and reflect this outcome in the terms of their loans. It is also possible to evaluate decarbonization efforts in the value chain, such as the contribution to decarbonization of the products procured by the lending company and the companies with which the lending company does business. These data are also expected to provide useful information to consumers in their evaluation of a company’s products and services.

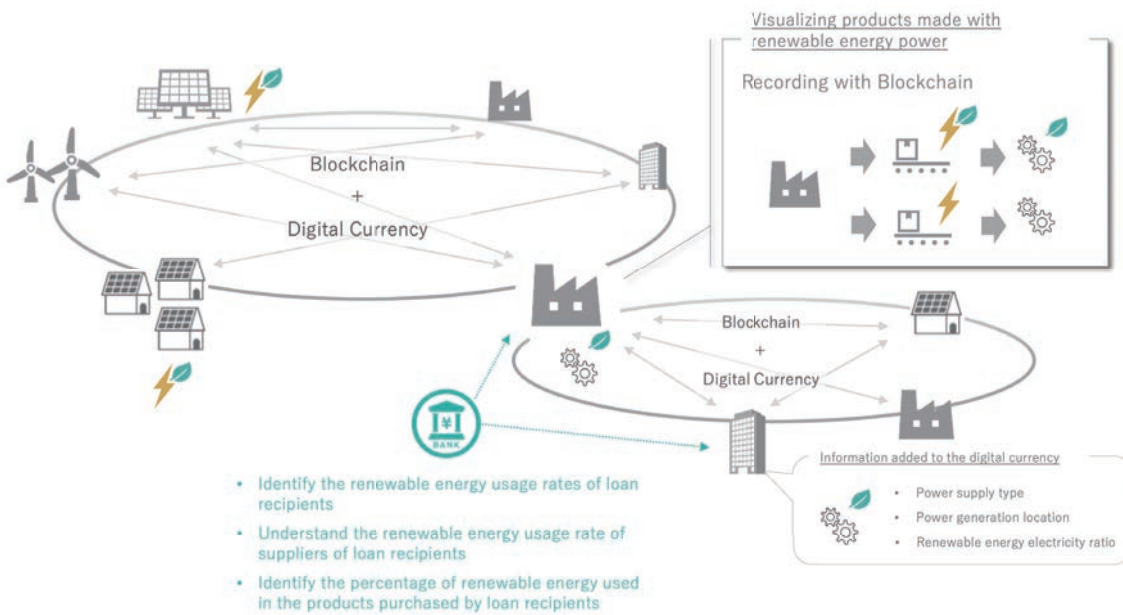


Figure 6: Proof-of-Concept scheme to apply electricity trading records to financial business



The subcommittee will continue to study business models using the digital currency DCJPY, as well as the possibility of visualizing corporate contributions to decarbonization and utilizing them in Green Finance.

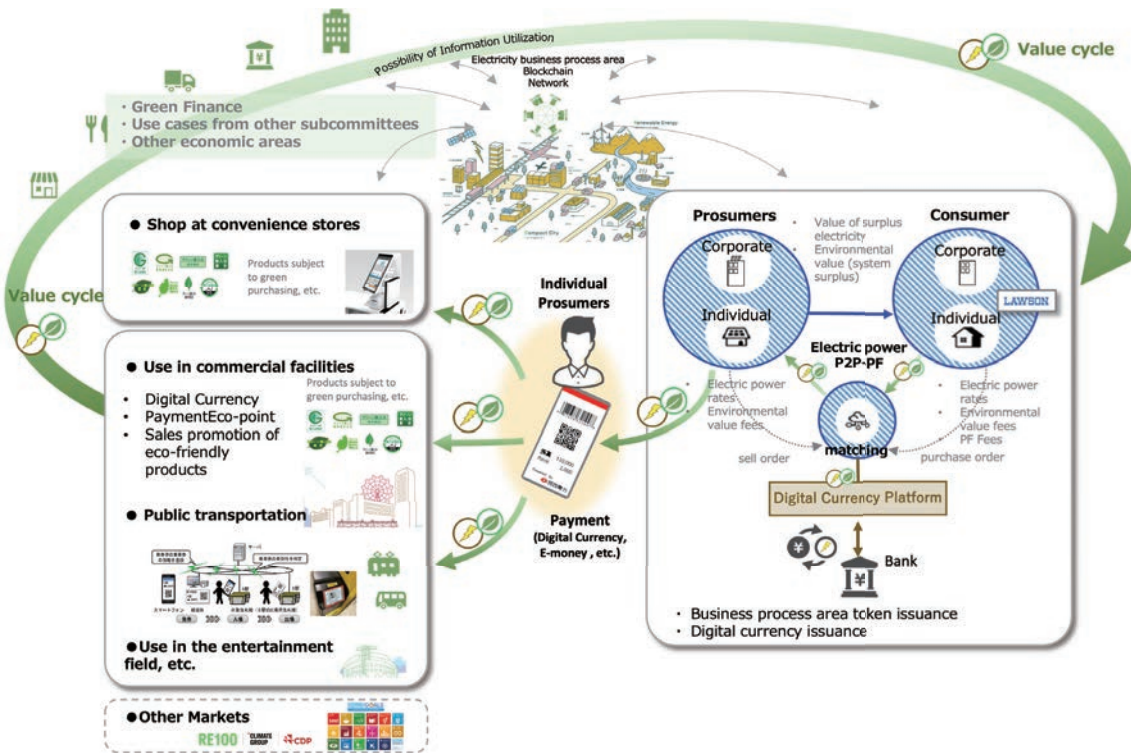
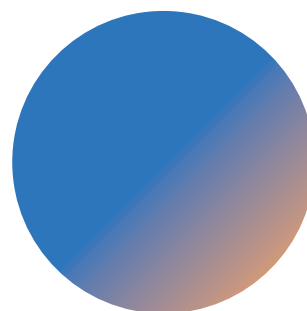


Figure 7: World view of the Electric Power Subcommittee





[2] Use of Digital Currency in Security Tokens

Security tokens are already being offered as financial instruments, and rights transfer is realized through distributed ledger technology. On the other hand, the settlement of funds for transactions remains in the traditional framework. To promote the use of security tokens and to foster the development of the market, the realization of simultaneous delivery and settlement of security tokens and digital currencies will be an important factor. The Security Token Settlement Practice and System Study Subcommittee is trying to resolve various issues for the realization of DvP.

a. Study status

The digital currency DCJPY, a two-tiered digital currency, will be issued by private banks and legally positioned as a “deposit”. This subcommittee is conducting various studies based on the premise of this specification.

The specific study assumes DvP using security tokens and digital currency, and is proceeding from the perspective of technical feasibility, related laws and regulations, and the impact on actual operations of each company. Using corporate bonds as an example of security tokens, this subcommittee is drawing up a scenario from issuance to redemption and organizing the issues of the entire process.

The main issues to be discussed include the following items.

a-1. Functions that a digital currency should have

The benefits of implementing digital currency in securities trading and capital markets need to be clarified. For example, it is necessary to consider the convenience and usefulness of each of the following, and to design the functions of digital currency that will contribute to them: the efficiency of business operations at banks and securities companies, the management of holder information for issuers, and new customer experiences for investors.

a-2. Digital currency as a settlement currency for security tokens

When securities companies use digital currency in securities transactions such as stocks and bonds, it is necessary to clarify the difference from existing deposits. For example, securities companies are required to have a management system equivalent to that for deposits, in which funds deposited by customers are held in a segregated trust and kept separate from their own accounts. It is also expected to be a requirement to clearly distinguish and describe between legal tender and digital currency in legal ledgers. Under these conditions, this subcommittee is considering a method in which securities companies use digital currency as a settlement currency for security tokens without depositing it as an asset.

In addition, when settling security tokens in exchange for DCJPY, a digital currency with a two-tiered structure, the following issues need to be sorted out and examined: what regulatory impact will happen within financial instruments business operators subject to current legal system, what scope of business will be possible, and what will be the scope of responsibility among the parties involved investors, issuers, banks, securities companies, and infrastructure operators.



a-3. Handling of security tokens under the Financial Instruments and Exchange Act

Security tokens are securities under the Financial Instruments and Exchange Act, and the distributed ledger technology (“DLT”) infrastructure used to manage security tokens is required to comply with the Financial Instruments and Exchange Act. This subcommittee is examining whether appropriate management and operation is possible when the second tier (the Business Process Area) of the two-tiered digital currency is used as the area that shows the rights of security tokens, and at the same time, we are examining the case where security tokens built on a different DLT infrastructure are connected to the second layer. It is necessary to discuss both the mechanism that enables appropriate management and operation and the technical backing that can make this possible.

a-4. Handling of digital currency and security tokens in the two-tiered digital currency platform

To manage investors’ security tokens without brokerage firms holding investors’ funds, it is important to implement DvP settlement to eliminate the temporary custody roles of digital currency during security token transfer. This settlement method, in which the brokerage firm does not hold the investor’s funds, allows the customer to manage the digital currency themselves in their own bank account. Therefore, the management of the balance of the digital currency will be based on the deposit contract between the bank and the customer, and while the securities company will manage the security token, the division of labor regarding the transfer of rights to the digital currency will be carried out by an infrastructure operator entrusted by the bank.

Thus, when the functions of both security tokens and digital currency are implemented on a single chain, the roles and responsibilities of each party involved need to be organized.



[3] Linkage between digital currency and e-money

The e-money subcommittee of the Digital Currency Forum has been studying “charging from digital currency to e-money” based on the premise that e-money is a digital payment instrument that can be charged using a prepaid payment method. In Japan, where the ratio of cash payments is high, e-money has been a driving force to promote the cashless society. In particular, e-money enables quick contactless payments through Near Field Communication (“NFC”) technology, and this advantage has become even more important in the experience of the spread of the Covid-19 infections.

Therefore, in terms of promoting the spread of digital currency through the mediation of the existing e-money infrastructure to improve the efficiency of Japan’s payment and settlement infrastructure, a simple method of charging digital currency to e-money is an available option.

In addition, in the early stages of the spread of digital currency, it is assumed that the places whereby the availability of digital currency is expected to be limited. As a method of using digital currency obtained from various activities, it is considered effective to use e-money, which has been already used widespread.

The Electronic Money Subcommittee is working on writing a report. This report describes the possibilities and challenges of using digital currency from various perspectives, including those of consumers, merchants, and e-money service providers. In future, as digital currency is put to practical use, the Electronic Money Subcommittee plans to further study the linkage between digital currency and e-money.

[4] Use of digital currency as regional coin

Both local governments, which are facing regional issues, and companies that provide IT solutions are sharing their knowledge and ideas to create use cases that take advantage of the features of the digital currency DCJPY, which is bank-issued and programmable.

The regional currency subcommittee defined the following three functions of digital local currency.

- i. Promote behavioral change and self-help and mutual aid among residents
- ii. To promote the inflow of currency from outside the region
- iii. Suppressing economic outflow to other regions and stimulating consumption within the region

The Regional Currency Subcommittee will select use cases that match the potential solutions to the issues of the participating local governments and the direction they are aiming to take, and then verify the results in a Proof of Concept.



Kesennuma City in Miyagi Prefecture, which aims to create a sustainable society, is considering the use of digital regional coin as a means of providing incentives to those who are involved in environmentally friendly activities such as decarbonization, health promotion, and volunteer activities. By offering incentives in the form of digital currency, Kesennuma City believes that it will be able to provide opportunities for the younger generation and housewives who have not been interested in volunteer activities to become interested in such activities.

In addition, the city aims to realize a convenient and low-cost local payment infrastructure, such as digitizing coupons and tickets for local purchases, which were previously provided on paper, to make them easier to use with smartphones and to make the purchasing process easier to trace.

Aizu Wakamatsu City in Fukushima Prefecture, which is working on being designated as a Super City: National Strategic Special Zone. By adopting digital currency, Aizu Wakamatsu City aims to promote a cashless society and to automatically link various business processes, which will make the lifestyle of local residents more convenient. As a Proof of Concept for the application of the digital currency DCJPY to regional coin, the Regional Currency Subcommittee is working on the materialization of the following three use cases:

- (1) Incentive programs for health promotion and volunteer activities
- (2) Automation of operations in regional purchasing
- (3) Inflow of currency into the region through charging at ATM machines

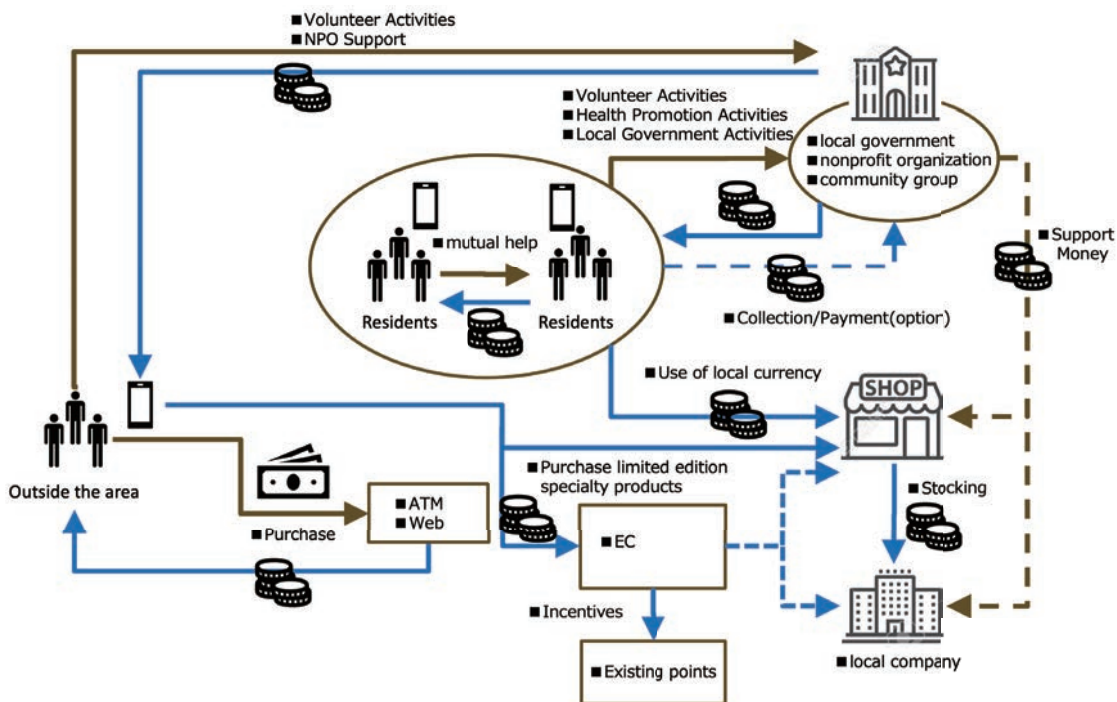


Figure 8: Overview of the digital local currency to be discussed in this subcommittee



[5] Using Digital Currency in the Supply Chain

The Retail and Distribution Subcommittee, led by Seven Bank, Ltd. (Seven & i Holdings Co., Ltd.), is examining use cases in which digital currency is used for settlement operations associated with transactions among retail companies and their partner companies (manufacturers and wholesalers).

The retail distribution industry is required more than ever to respond to the digitalization of business transactions. Specifically, the Japanese government's budget request for FY2022 cited the need to build an integrated infrastructure for Electronic Data Interchange ("EDI") data and payment data related to retail distribution transactions, as well as the need to respond to the "Invoice System (qualified invoice storage method)" that will be introduced in October 2023. These changes in the external environment may promote the digitalization of commercial transactions through EDI and other means, and by linking the movement of money to the exchange of data in commercial transactions, it can create a positive change in the traditional way of doing business.

The Retailing and Distribution Subcommittee of the Digital Currency Forum is preparing to conduct a PoC to see if it is possible to automate payment processing and to improve the efficiency of payment operations by executing payments in digital currency, triggered by the linkage of information on the receipt and placement of orders and the completion of product delivery and inspection between retailers and business partners. This Subcommittee is now preparing for the PoC. In the PoC, this Subcommittee confirm whether blockchain technology and money with programmable functions are effective solutions for commercial transactions, including payments, and identify issues for social implementation.

This Subcommittee is also working to identify issues for social implementation.



[6] Linkage between entertainment segments and digital currency

The NFT Subcommittee is exploring the possibility of NFT distribution in the entertainment segments through digital currency and examining use cases to verify business models with the aim of commercializing the service. This Subcommittee will build the NFT marketplace for digital currencies and plan to release the first beta test version by 2022. There is a lot of room for digital currency to increase user convenience in content distribution, and while the subcommittee build the NFT marketplace that specializes in the entertainment segment, the NFT Subcommittee is also considering collaboration with companies that are building their own NFT marketplaces in the future.

Currently, the NFT Subcommittee is working on finalizing the business model and refining verification items for PoC implementation.

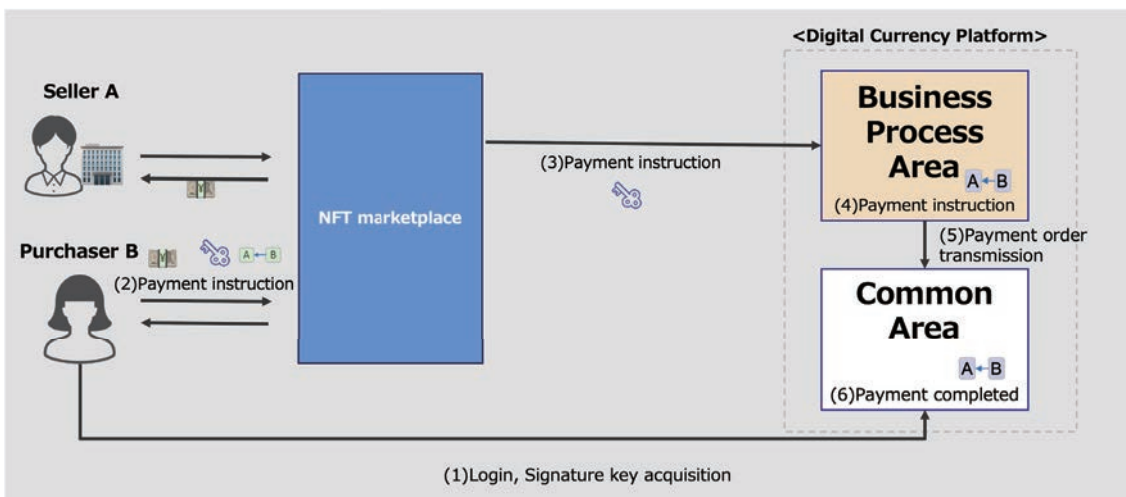


Figure 9: Linking to the NFT Marketplace



[7] The concept of security in the Digital Currency Platform

a. Background and purpose of the Wallet Security Subcommittee

The Digital Currency Platform consists of a set of software called core packages and a private key for digital signatures to use them. The core package is executed in the environment of each company or organization participating in the Digital Currency Platform, and the overall functionality of the Digital Currency Platform is realized through the coordinated operation of these functions. Since the Digital Currency Platforms have a decentralized structure, it is unlikely that a partial failure will immediately lead to a shutdown of the entire platform. However, if a security problem occurs in an individual company or organization, it may cause damage to the information assets and users under their control, and in some cases, to a loss of trust in the digital currency platform as a whole. To realize a safe and secure Digital Currency Platform, each company or organization is required to properly handle the platform's software and private keys.

Unlike traditional payment systems, the Digital Currency Platform is expected to involve a wide variety of companies, including those in the financial industry. However, without a defined security high standard, there may be variations among companies in the level of secure management of software and private keys. In particular, the management of cryptographic keys has different requirements from those of general software and requires specialized knowledge. For this reason, the Wallet Security Subcommittee is working with the goal of formulating basic security standard requirements for the management of private keys, software that provides peripheral functions for private keys, and users related to private keys in the Business Process Area of the Digital Currency Platforms so that participating companies and organizations can handle them safely and securely. The scope also assumes the following components included in the services built and operated by the participating organizations using the Digital Currency Platform.

1. Private key required to use the Digital Currency Platform
2. Systems and programs (including smart contracts) related to above 1 and their execution environments
3. Users of the Digital Currency Platforms related to above 1



b. System Modeling of the Digital Currency Platform

In the past activities of this subcommittee, we have mainly been working on organizing information on the basic issues of the Digital Currency Platform. The usage pattern of the Digital Currency Platform can be diverse for each use case, and the internal structure of the system in the Business Process Area can be completely different for each use case. Therefore, to specifically discuss security-related threats and risks, we have prepared a system configuration plan and several scenarios that will serve as the basis for consideration in this subcommittee. (Figure 10)

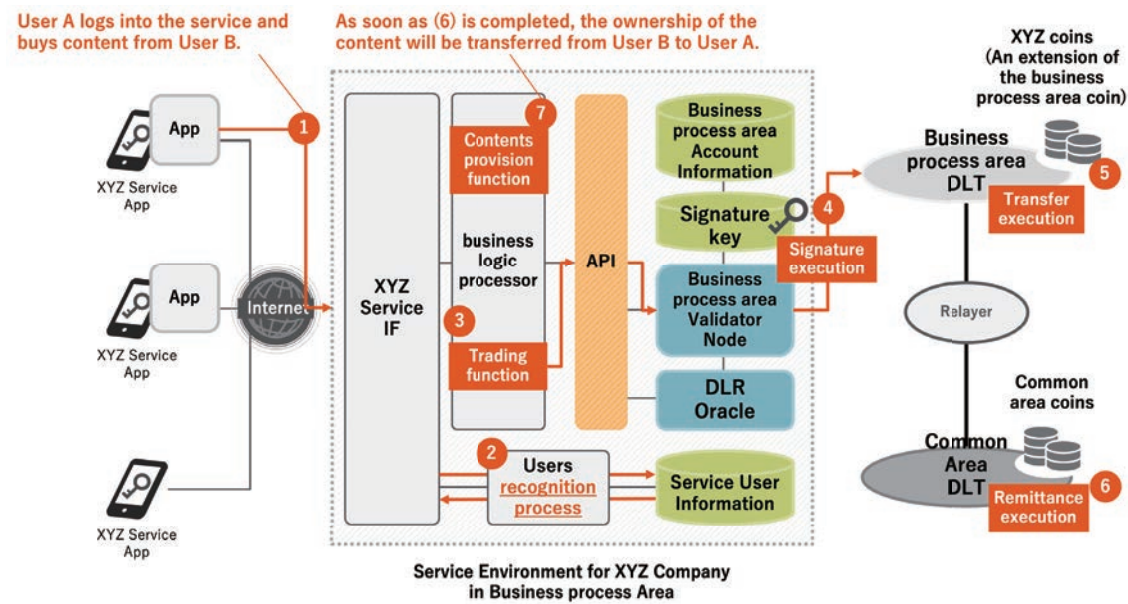


Figure 10: Example of a scenario for content trading using a digital currency platform

b-1. Contents of the fictional scenario

The fictional XYZ company will implement a digital currency platform to build a digital content trading service. Users will use this service to buy and sell digital content such as videos and images owned by other users with XYZ coins (Business Process Area Coins).



c. Consideration of the security risk factors of the Digital Currency Platform

Since the main focus of this subcommittee will be on the risk of systems in the Business Process Area, we will consider the model diagram in Figure 10 and a scenario that assumes a system in which a digital currency platform is introduced and operated. In the process, we plan to identify potential risk points from the two perspectives of KYC/user authentication and key management, then sort out the issues and study countermeasure plans. For example, the following perspectives can be cited.

c-1. KYC/User Authentication

- A. Risk of user impersonation when dealing with the Business Process Area coins
- B. Risk associated with ID linkage between users of the Business Process Area services and accounts for the Business Process Area Coins

c-2. In view of key management

- A. Risk of misuse of signing keys
- B. Risk of signing keys being compromised/stolen
- C. Risk of losing your signing key
- D. Risk of being attacked via the Internet
- E. Risk of internal systems being infected by malware

In the future, the subcommittee will also consider how to deal with further risk.

[8] Settlement in Industrial Distribution Subcommittee

This subcommittee, led by Mitsubishi Corporation, is planning and promoting a demonstration experiment to acquire a wide range of knowledge on digital currency and smart contracts using blockchain. Currently, the subcommittee is developing a mock-up to experiment with the automatic execution of contracts using digital currency in the settlement of maritime transportation for transactions conducted by Mitsubishi Corporation.

In the development process stage, the subcommittee plans to utilize the knowledge of Industry One, Inc., a joint venture with NIPPON TELEGRAPH AND TELEPHONE CORPORATION as well as the demonstration test environment provided by DeCurret. Inc. The subcommittee is planning to complete the mock-up by the end of this year and conduct the experiment in January 2022.

With a view to using the system in multiple industries in the future, the subcommittee will not only conduct demonstration tests for general-purpose functions such as automatic payment, but also conduct feasibility studies and business evaluation in parallel with a view to horizontal deployment.



Part 4

Toward practical application in FY2022

Currently, the subcommittees of the Digital Currency Forum are discussing PoCs that will lead to economic revitalization and improved convenience for people in light of their respective use cases. Based on the results of the PoC, the subcommittees will continue our efforts to commercialize the digital currency DCJPY and the platform that supports its operation by the end of FY2022.

Currently, various entities are working on digitalization and DX in the economy and finance. These include initiatives linked to value realization, such as decarbonization, carbon neutrality, and local economic revitalization, as well as addressing Stable Coins and conducting research on central bank digital currencies. The Digital Currency Forum's efforts to establish and to utilize the Two-tiered Digital Currency, DCJPY, is consistent with these efforts. As described above, innovations in payment and settlement infrastructures using digital currencies can contribute to the realization of various values mentioned above. In the study on central bank digital currencies ("CBDC"), each country assumed that if the CBDC were to be issued, it will and should be issued in an indirect manner utilizing a two-tiered structure, and also expressed the policy that the CBDC should coexist with existing and private-based payment infrastructure and encourage innovation led by private sector initiatives. The efforts of the Digital Currency Forum, together with these initiatives, are expected to create positive synergies, and to contribute to the overall DX of the economy and the realization of various values. The Forum believes that this is what should happen.

The fact that many of Japan's leading companies and banks have gathered at the Digital Currency Forum, which aims to innovate payment and settlement infrastructures using digital technology, evidences that the industries in Japan now share a strong will to promote DX of the overall Japanese economy.

The Digital Currency Forum will continue to lead discussions and initiatives in Japan as a forum for cross-business and cross-industry sharing and exchanges of views and information on DX for the entire economy, which are not limited to payment and settlement areas. The Forum will also promote cutting-edge initiatives involving a wide range of actors. Furthermore, the Forum intends to contribute to DX of the overall Japanese economy, as well as to enhance economic growth and people's welfare, through conducting various researches, experiments, and taking steps toward practical uses of digital currency and related technologies.

November 2021
The Digital Currency Forum



Conclusion

Last year, I retired from public administration service after serving as the Commissioner of the Financial Services Agency, but there are two things that I have been thinking while engaged in financial administration service for a long time.

The first is the rapid development of technological innovation over the past 40 years during my career, and the humongous transformation of business and industry due to the innovation. The spread of the Internet and smartphones has changed the landscape of our social life. The financial business is also undergoing a major transformation with the rise of FinTech venture companies. Internet has revolutionized the flow of “information” so far. The next stage is to implement blockchain technology to ensure the flow of “value” on the Internet.

The second is the weakening of Japanese economy and industry in the eyes of the world. There are several leading companies in Japan in each industry, including in the financial industry, and they are always exposed to fierce competition. Some people see this as a desirable form of a liberal economy, but the market quickly becomes severely competitive, and new businesses tend not to emerge. From the perspective of how to increase the size of the economic pie for Japan as a whole, we need more cooperation among companies and more open-minded innovation. Companies will cooperate more transparently to build social infrastructure in areas that can serve as the basis for businesses. Based on this infrastructure, each company will compete with own creativity and ingenuity. I believe that such corporate behavior will be required even more in the future.

The main reason why I joined the Digital Currency Forum is because, based on the above thoughts, I wanted to support the development of digital currency backed up by blockchain as a socio-economic infrastructure and the development of businesses related to digital technologies based on the infrastructure. As you read this report, you will vividly understand how many leading-edge companies are collaborating and discussing earnestly to create new innovations.

Recently, there was an announcement that Facebook will change its name to Meta. They seem to be aiming to fully implement Metaverse, where avatars, the alter egos of real people, will be active. I felt as if the world of Mamoru Hosoda’s movies “Summer Wars” and “The Dragon and the Freckled Princess” were finally coming to life. The virtual space extends the real economic sphere into the digital space. The means of value exchange in such a digital space will be digital currency. The new businesses being discussed in the forum subcommittees will be further extended to the digital world.

The future starts here. Let’s use this report as a springboard to deepen the discussion with everyone who has read it and invite more companies to join us to create a new society supported by digital currency.

Toshihide Endo
Senior Advisor
Digital Currency Forum



Appendix

The Digital Currency Forum Members

Companies and entities participating from the Digital Currency Study Group

Chairperson

Hiromi Yamaoka, Director, Future Corporation
(Former Head of the Payment and Settlement Systems Department, Bank of Japan)

- MUFG Bank, Ltd.
- Sumitomo Mitsui Banking Corporation
- Mizuho Bank, Ltd.
- Seven Bank, Ltd. (Seven & i Holdings Co., Ltd.)
- NTT Group
- East Japan Railway Company
- KDDI Corporation
- Internet Initiative Japan Inc.
- Mori Hamada & Matsumoto
- Accenture Japan Ltd.
- SIGMAXYZ Inc.

Observers

- Financial Services Agency, Japan
- Ministry of Internal Affairs and Communications, Japan
- Ministry of Finance, Japan
- Ministry of Economy, Trade and Industry, Japan
- Bank of Japan

Participating from the Digital Currency Forum

- Aioi Nissay Dowa Insurance Co., Ltd.
- Aizuwakamatsu City*
- Asukoe Patners Inc.*
- AEON Co., Ltd.,
- Industry One, Inc.*
- Intelligent Wave Inc.
- ANA Group (ACD Inc.)
- SBI Holdings, Inc.
- ENERES Co., Ltd.
- au Kabucom Securities Co., Ltd.
- au Jibun Bank Corporation*
- au Financial Holdings Corporation
- KATAOKA & KOBAYASHI LPC.
- The Kansai Electric Power Company, Incorporated
- Payments Japan Association, Incorporated
- KYOCERA Corporation
- xID Inc.
- Kesenuma city
- JCB Co., Ltd.
- SUMITOMO CORPORATION
- SUMITOMO LIFE INSURANCE COMPANY
- Securitize Japan K.K.
- SECOM CO., LTD.
- SOHGO SECURITY SERVICES CO.,LTD.(ALSOK)
- Sony Bank Incorporated
- Sony Payment Services Inc.*
- Sompo Holdings, Inc.
- DAIDO LIFE INSURANCE COMPANY
- Dai Nippon Printing Co., Ltd.
- Daiwa Securities Group Inc.
- Daiwa Institute of Research Ltd.*
- Chubu Electric Power Co., Inc.
- TSURUHA HOLDINGS INC.*
- TIS Inc.
- DENTSU INC.
- Tokio Marine & Nichido Fire Insurance Co., Ltd.
- Tokyo Financial Exchange Inc.
- Toppan Inc.
- TOPPAN FORMS CO., LTD.
- NS Solutions Corporation
- The Mortgage Corporation of Japan, Limited
- Nihon Unisys, Ltd.
- Nomura Research Institute, Ltd.
- Nomura Holdings, Inc.
- HashPort Inc.
- Hankyu Hanshin Holdings, Inc.
- PwC Consulting LLC*
- Hitachi, Ltd.
- FamilyMart Co., Ltd
- BOOSTRY Co., Ltd.
- Future Architect, Inc.
- Payroll Inc.*
- Mitsui Sumitomo Insurance Co., Ltd.
- Sumitomo Mitsui Trust Bank, Limited
- Mitsubishi Corporation
- Mitsubishi UFJ NICOS Co., Ltd.
- Mitsubishi UFJ Research and Consulting Co., Ltd
- Meiji Yasuda Life Insurance Company
- YAMATO HOLDINGS CO., LTD.*
- JAPAN POST BANK Co.,Ltd.
- Rakuten Edy, Inc.
- Resona Holdings, Inc.*
- Lawson, Inc.

Total 74 companies
(Includes group affiliated companies, Aizuwakamatsu city and Kesenuma city local government sectors)

* Newly joined the forum since June 16th, 2021 announcement.

Advisors

- Masakazu Masujima Partner, Mori Hamada & Matsumoto
- Tetsuya Inoue Chief Researcher, Nomura Research Institute, Ltd.
- Shunji Kobayakawa Professor, School of Political Science and Economics Meiji University
- Kenji Saito Professor, Graduate School of Business and Finance Waseda University
- Chikako Suzuki Certified public accountant