Innovation of Payment Infrastructure and Potential of Digital Currencies in Japan

Study Group on Digital Currency Settlement Infrastructure

November 2020

(The original full report is in Japanese. This document is the summary of the original report in English made by the staff.)

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Executive Summary

Today, amidst the innovation of information technologies and data revolution, digital innovation of payment infrastructure is taking off globally.

Due to the rapid popularization of mobile phones and smartphones, billions of people have become able to access to mobile payments and other basic financial services in many countries, including emerging and developing economies. Moreover, the digitization of payments is fostering the developments of new economic activities such as e-commerce, sharing economies and “as a Service” (XaaS), through use of data associated with payments. The payment innovation is playing a critical role in the digital transformation (DX) of the economy.

Crypto-assets (virtual currencies) using blockchain and distributed ledger technology (DLT) have rarely been used as payment measures due to their large volatility in value. However, a new concept of “stable coin” such as “Libra” has emerged recently. Libra aims at stabilizing its value through backing it fully with safe assets. Although there are a variety of views, including cautious ones, on Libra, it implies the potential of blockchain and DLT as promising technologies to be applied to payment infrastructures.

Many countries have recently accelerated researches and/or experiments on central bank digital currencies (CBDCs). Sveriges Riksbank is deliberating whether to issue its own central bank digital currency called “e-krona”. In April 2020, People’s Bank of China started the experimental issuance of its CBDC called “Digital Currency/Electronic Payments (DC/EP)”. In October 2020, European Central Bank (ECB) and the Bank of Japan announced their plans to conduct researches and experiments on general-purpose CBDCs.

Japan’s payment infrastructure still faces challenges. Japan remains one of the most “cash-oriented” countries, where cash is heavily used for transactions and storage of value. Accordingly, Japan bears substantial costs associated with handling, storing, and transporting banknotes and coins. Moreover, reliance on

cash makes it difficult to utilize data attached to payments and settlements. Although there are many platforms of digital payments available in Japan, they are rarely inter-operable and users need to choose from many payment options, including cash, in each transaction.

Many of business applications of blockchain and DLT are still on the agenda for the future in Japan and many other countries. Moreover, the experiences of COVID-19 have reminded us of the importance of further digitalizing the economy to maintain economic and social activities while taking appropriate measures against epidemics. In this respect, DX of the economy and options of contact-less payments are becoming strongly needed.

In light of these issues, the “Study Group on Digital Currency Settlement Infrastructure” was established with the participation of three mega-banks, leading companies and experts. Relevant ministries, Financial Services Agency and the Bank of Japan also participated as observers. The Study Group has made intensive studies on relevant issues, with a view of innovating payment infrastructures through private sector initiatives and promoting the DX of Japan’s economy. Through these studies, the Study Group also hopes Japan to be a leading country in terms of the innovation of financial infrastructures. The Study Group reviewed possible designs and feasibility of digital currencies so as that they could contribute to innovating payment infrastructure.

Among a variety of options, the Group agreed that digital currency issued by private entities and denominated in JPY should be one of the most promising options, and to examine its potential and applicability to various use cases.

（Study Group on Digital Currency Settlement Infrastructure）

Chair: Mr. Hiromi Yamaoka, Director, Future Corporation (former head of the Payment and Settlement Systems Department, Bank of Japan)

Secretariat: DeCurret Inc.

Period: June to September 2020 (once or twice a month)

Main discussion topics:

- Case studies of digital settlements and digital currencies in Japan and overseas
- Application of new digital technologies such as blockchain and distributed ledger technology in transactions and settlement infrastructure; potential usage areas of digital currency settlements and their impact; vision and future potentials
- Issues to be addressed for the realization of digital currency settlements including the scope of service provision, consideration for its usage value, roles of providers and concerned parties, and standardization

Final deliverable: Publication of a report summarizing discussions at the study group, among other things

■Participants

〇Participating companies

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

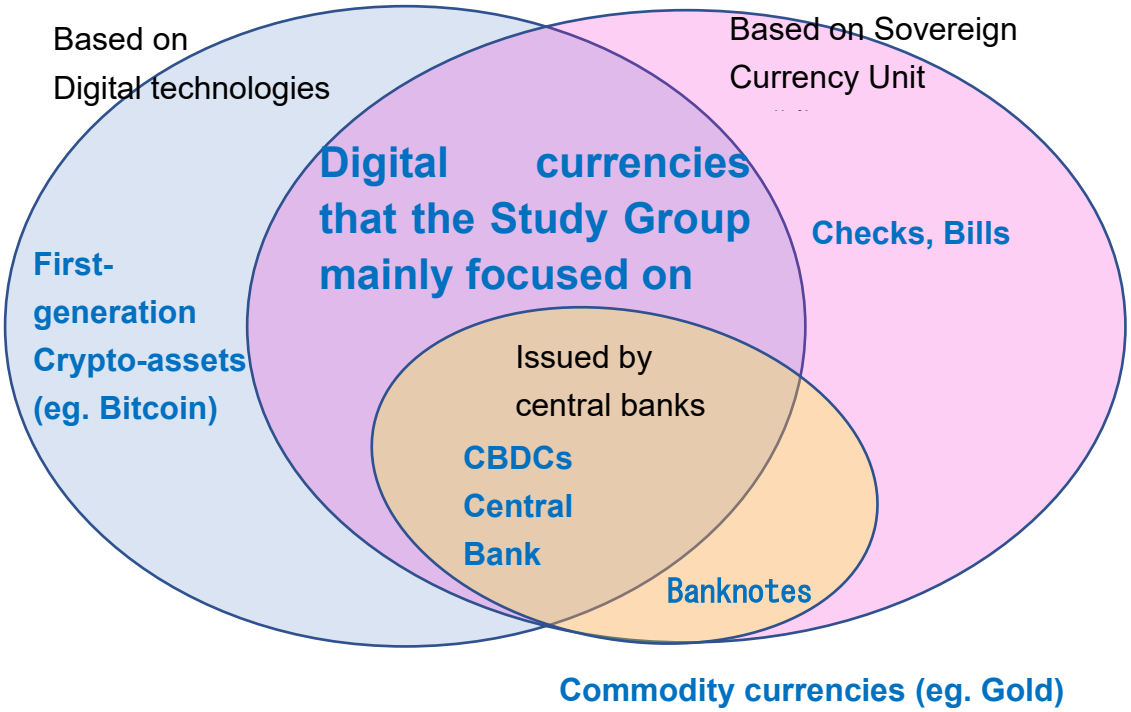
〇Cooperating companies

Accenture Japan Ltd.	SIGMAXYZ Inc.

〇Observers

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

（Digital currencies that the Study Group mainly focused on）

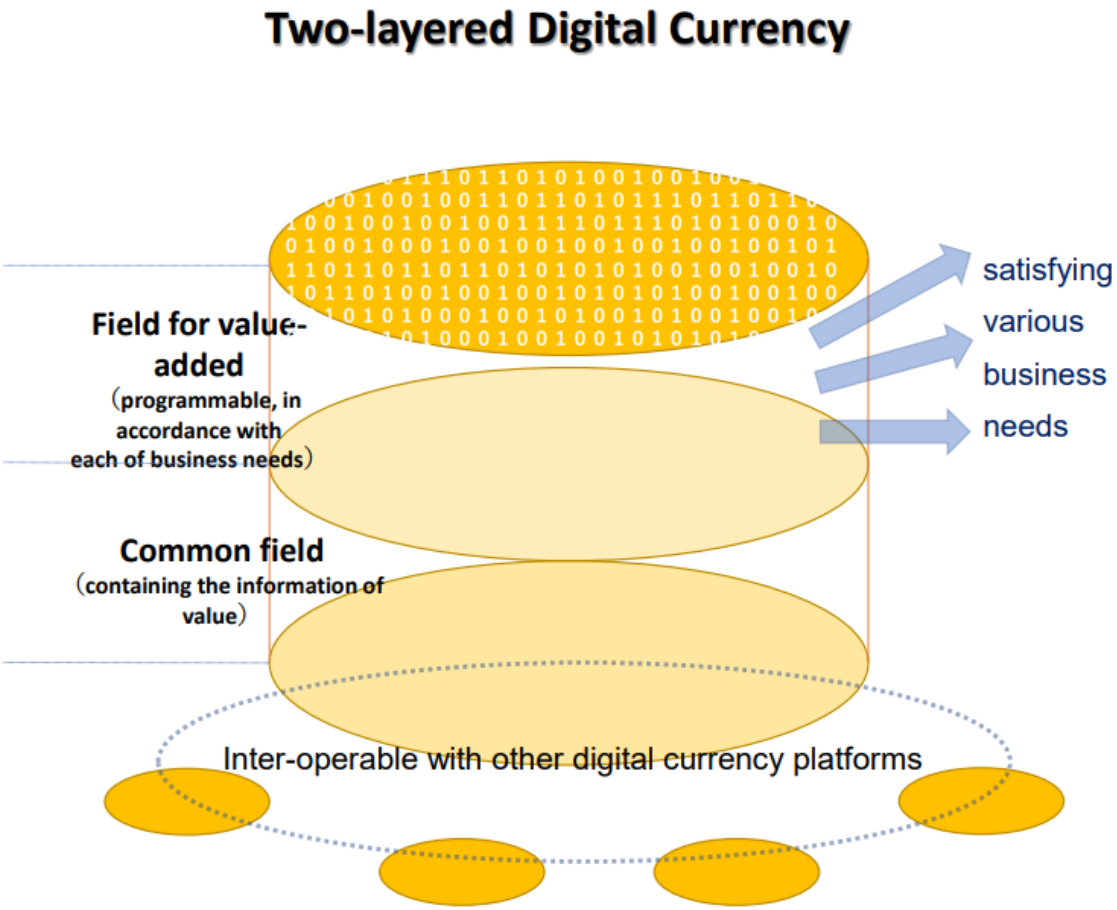


For digital currencies to contribute to the economic development, their infrastructure should be stable, highly secure, resilient, and reliable. it should also be available for a wide range of users and for long hours, and inter-operable with each other. Moreover, it should continuously evolve through adopting new technologies flexibly and innovate themselves. These attributes will be necessary for digital currencies to promote innovation and economic developments through facilitating fair competition while supporting cooperation among relevant entities.

In view of these requirements that digital currencies are expected to satisfy, the Study Group agreed that digital currency with a “two-layered” structure is a promising option, and that private entities such as banks can be its issuer.

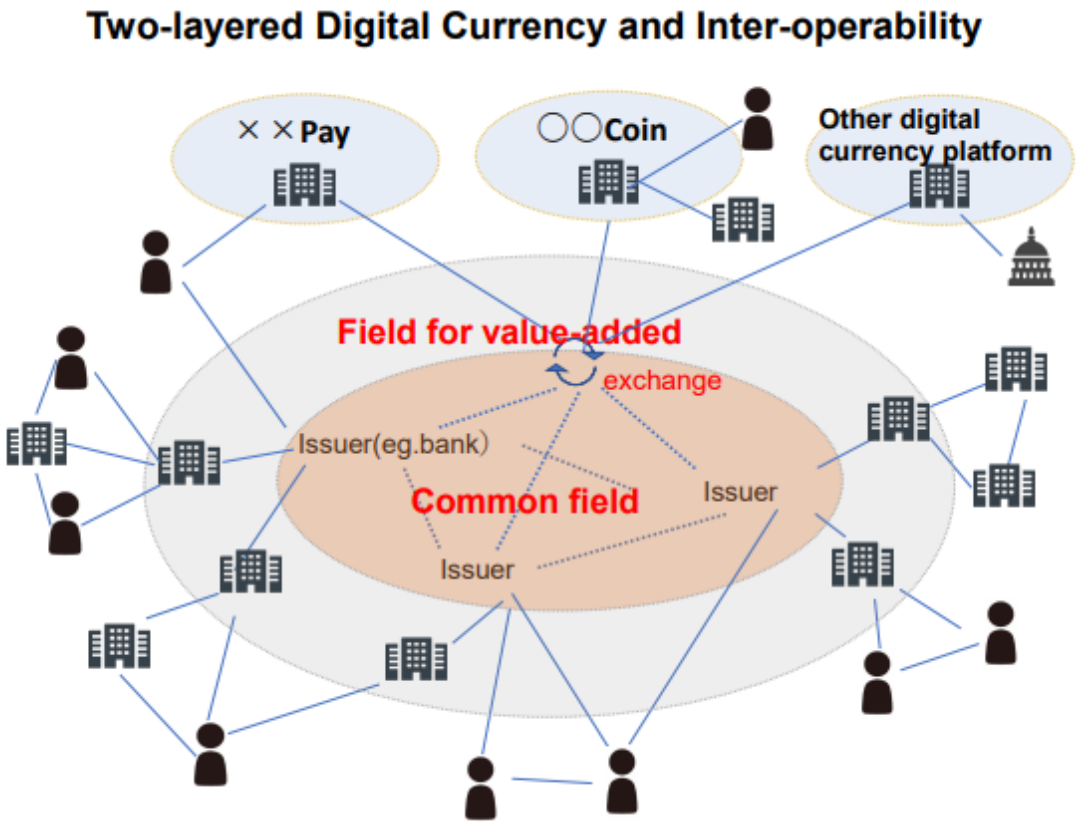
This “two-layered” digital currency consists of its “lower” layer (the

"common" field) and its "upper" layer (the "programmable" field for value-added). The upper layer will be equipped with customized programs to meet various business needs, so as that the digital currency could contribute to enhancing the efficiency of payments and to facilitating high-speed and sophisticated transactions. Business needs may vary, including coordination and synchronization of logistics, commercial distribution and finance, supply-chain management, delivery versus payment (DvP) of securities and funds, and streamlining of back-office operations. The lower layer, which includes the information on value, will make the digital currency inter-changeable with each other.



This "two-layered" digital currency will not conflict with existing digital payment instruments (e.g., electronic money, credit, and debit cards), centralized payment infrastructure (e.g., the Zengin system), or studies on CBDCs. Rather,

the two-layered digital currency will be able to enhance inter-operability of these payment platforms through "bridging" them.



Payment innovation adopting new technologies and led by private-sector initiatives will enhance the efficiency and convenience of wide-ranging transactions and contribute to DX of the economy and the "Society 5.0". The digital innovation of payment infrastructure will also enhance the resiliency of the economic society against epidemics.

The Study Group is scheduled to be developed into the "Digital Currency Forum". This Forum will embark on and conduct the Proof of Concept (PoC) of the digital currency in various use cases. The Forum will consist of leading banks, companies, and experts, including both the original members of the Study Group and new participants. The Forum will facilitate the cooperation of various entities across Japan, promote the innovation of payment infrastructure and establish efficient eco-system. Through these initiatives, the Forum will leverage new technologies and private-sector initiatives, and contribute to enhancing the efficiency and convenience of Japan' s financial infrastructure, and to the DX of Japan's economy.

(Possible use cases of digital currency)

① **Supply-chain of manufacturers**
② **Supply-chain of retailers**
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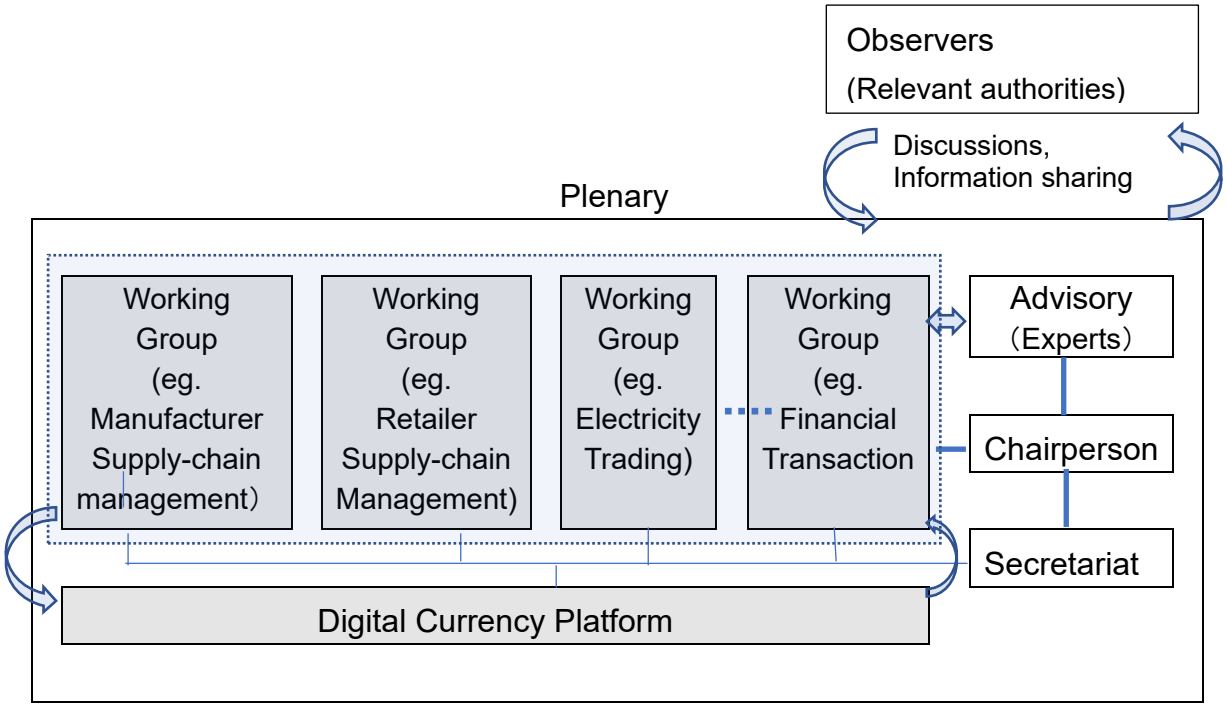
(Conclusion)

In order to make full use of the innovation of payment infrastructure for the DX of Japan's economy and its development, it will be beneficial to go beyond the application of digital technology to payments and to review comprehensively the way in which economic activities such as business practices are carried out. In other words, to promote the DX of the economy, it will be strongly needed to build an ecosystem that integrates digital payment infrastructure as one of its core parts.

The Study Group has selected various cases in which digital currencies, in particular, "two-layered digital currency", can be effective in enhancing efficiency and overcoming business obstacles. It is needed, as the next step, to develop the ideas and concepts into actions and initiatives, so as that digital currencies could support the DX of Japan's economy and its development,

In view of these tasks, the Study Group is going to expand itself into the "Digital Currency Forum", which will include both the members of the Study Group and new participants. The Forum, which consists of its plenary and working groups for each of use cases, will develop the research products of the Study Group into a variety of actions and initiatives.

（Digital Currency Forum）



・Working groups will be established on an ad-hoc basis. They will not entirely cover the use cases presented in the Study Group, and they could pick up the cases that were not covered in this report.

Members of the Digital Currency Forum

- as of November 19, 2020 -

Members of the Study Group on Digital Currency Settlement Infrastructure	New Members
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.	AEON Co., Ltd. ANA Group The Kansai Electric Power Company, Incorporated KYOCERA Corporation Kesennuma city JCB Co., Ltd SUMITOMO LIFE INSURANCE COMPANY SECOM CO., LTD. SOHGO SECURITY SERVICES CO.,LTD.(ALSOK) Sony Bank Incorporated Sompo Holdings, Inc. DAIDO LIFE INSURANCE COMPANY Daiwa Securities Group Inc. Chubu Electric Power Co.,Inc. TIS Inc. DENTSU INC. Tokio Marine & Nichido Fire Insurance

	Co., Ltd. Tokyo Financial Exchange Inc. Toppan Printing CO., LTD. Nomura Holdings, Inc. Hitachi,Ltd. FamilyMart Co.,Ltd Mitsui Sumitomo Insurance Co., Ltd. Sumitomo Mitsui Trust Bank, Limited Mitsubishi UFJ Research and Consulting Co., Ltd JAPAN POST BANK Co.,Ltd. Lawson, Inc.
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	

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

The Forum will conduct various actions and initiatives, such as “proof of concept” (PoC) applying digital currency to use cases and the review on related issues such as desirable form of business practices. The forum will also facilitate the sharing of information and lively discussions among a variety of stakeholders. Through these activities, the forum will contribute to innovating Japan’s payment infrastructure in an “open” and “agile” manner.

The Study Group believes that open and agile payment innovation will enhance the efficiency and utility of financial infrastructure, and thereby promote the DX of Japan’s economy and its development. Moreover, the open and agile payment innovation will support the developments of the economy in post COVID-19 era while enhancing its resiliency against epidemics.