

CBDC: Interoperability and Technical Standards

Presentation for CEMLA II Meeting of Heads of Financial Market Infrastructures

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Disclaimer: The views expressed are those of the presenter and do not necessarily reflect those of Bank of Japan.

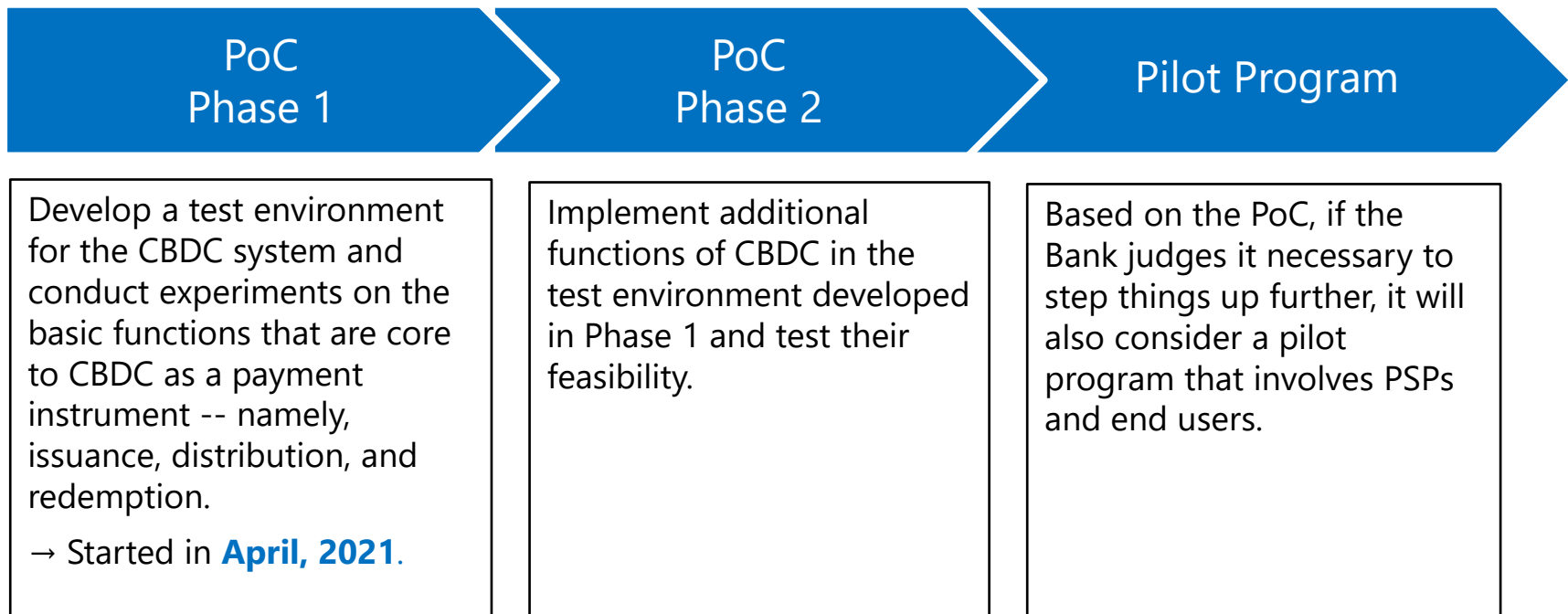


Bank of Japan's basic standpoint

- Digitalization has advanced in various areas at home and abroad on the back of rapid development of information communication technology. There is a possibility of a surge in public demand for central bank digital currency (CBDC) going forward, considering the rapid development of technological innovation.
- While Bank of Japan currently has no plan to issue CBDC, from the viewpoint of ensuring the stability and efficiency of the overall payment and settlement systems, the Bank considers it important to prepare thoroughly to respond to changes in circumstances in an appropriate manner.
- Therefore, the Bank will carry out experiments and deepen its exploration of institutional arrangements, coordinating with stakeholders at home and abroad.
- The future payment and settlement systems suitable for a digital society need to be discussed with various stakeholders. In this regard, CBDC could have more of a function than merely as a substitution for cash. It could serve as the basis for innovation of private payment service providers (PSPs; e.g., banks and non-bank PSPs) to offer various new payment services.
- As long as there is public demand for cash, the Bank will stay committed to supplying it.

Experiments on CBDC

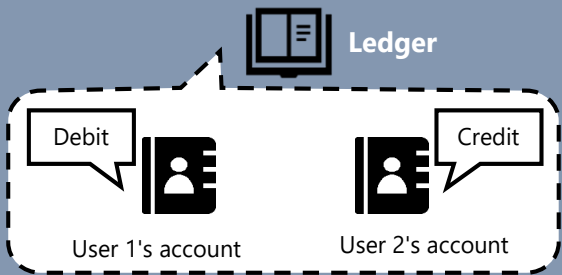
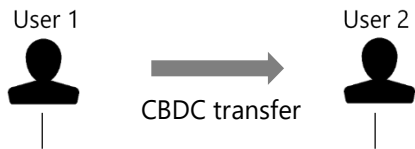
- The Bank carries out **experiments in a phased and planned manner** to explore **general purpose CBDC** in a more concrete and practical way.
- Once the purpose of the 'PoC Phase 1' is achieved, the Bank will step forward to '**PoC Phase 2**'.
- Based on the PoC, if the Bank judges it necessary to step things up further, it will also consider a '**Pilot Program**'.



Ledger management/underlying data structures

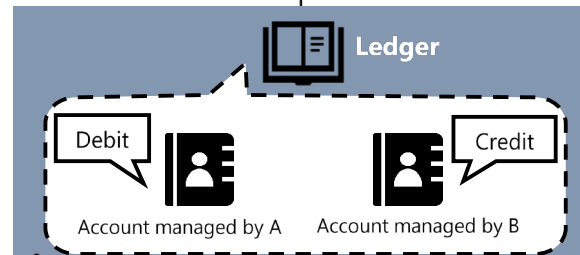
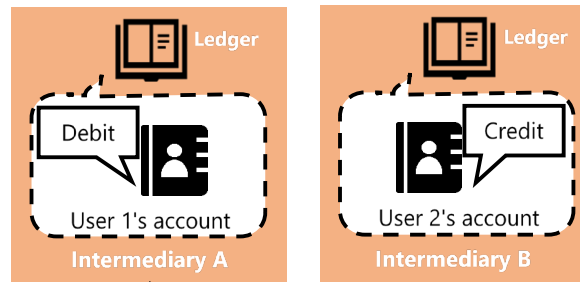
	Model 1	Model 2	Model 3
Ledger management entity	Central bank	Central bank and Intermediaries	Central bank
Unique ID assigned to monetary data	No (account-based)	No (account-based)	Yes (token-based)

Design model 1



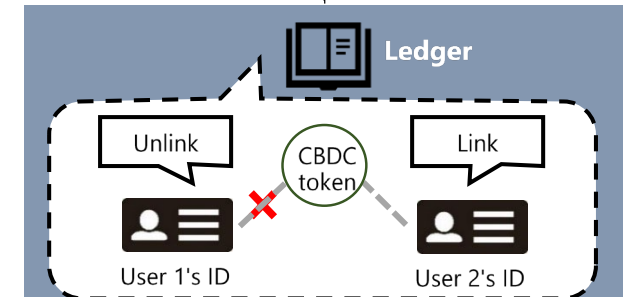
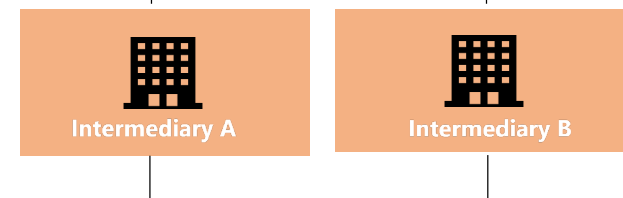
Central bank

Design model 2



Central bank

Design model 3



Central bank

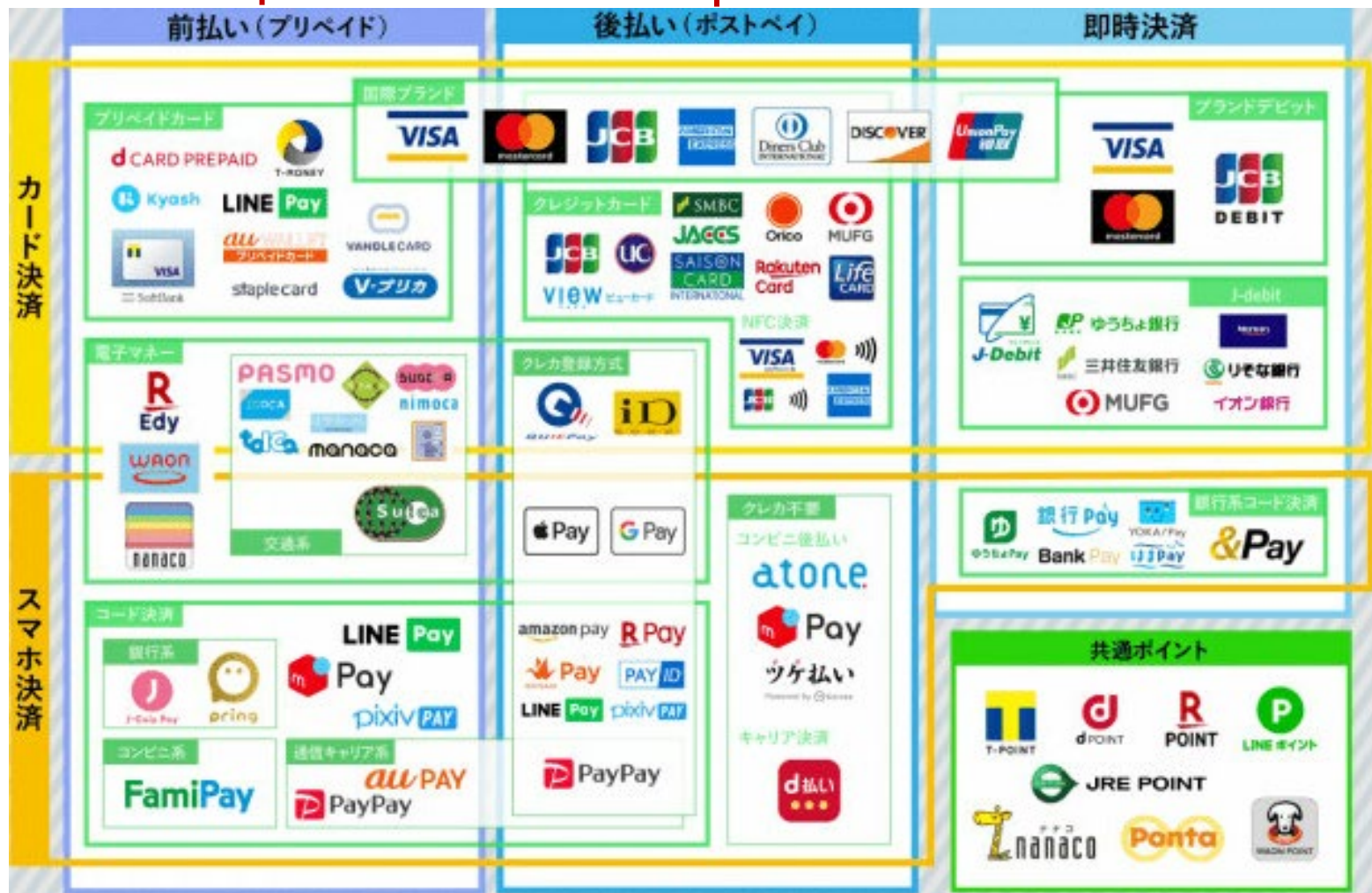
Fragmentation within small market

Prepaid

Post-paid

Debit

IC card
Smart phone
(IC or Code)



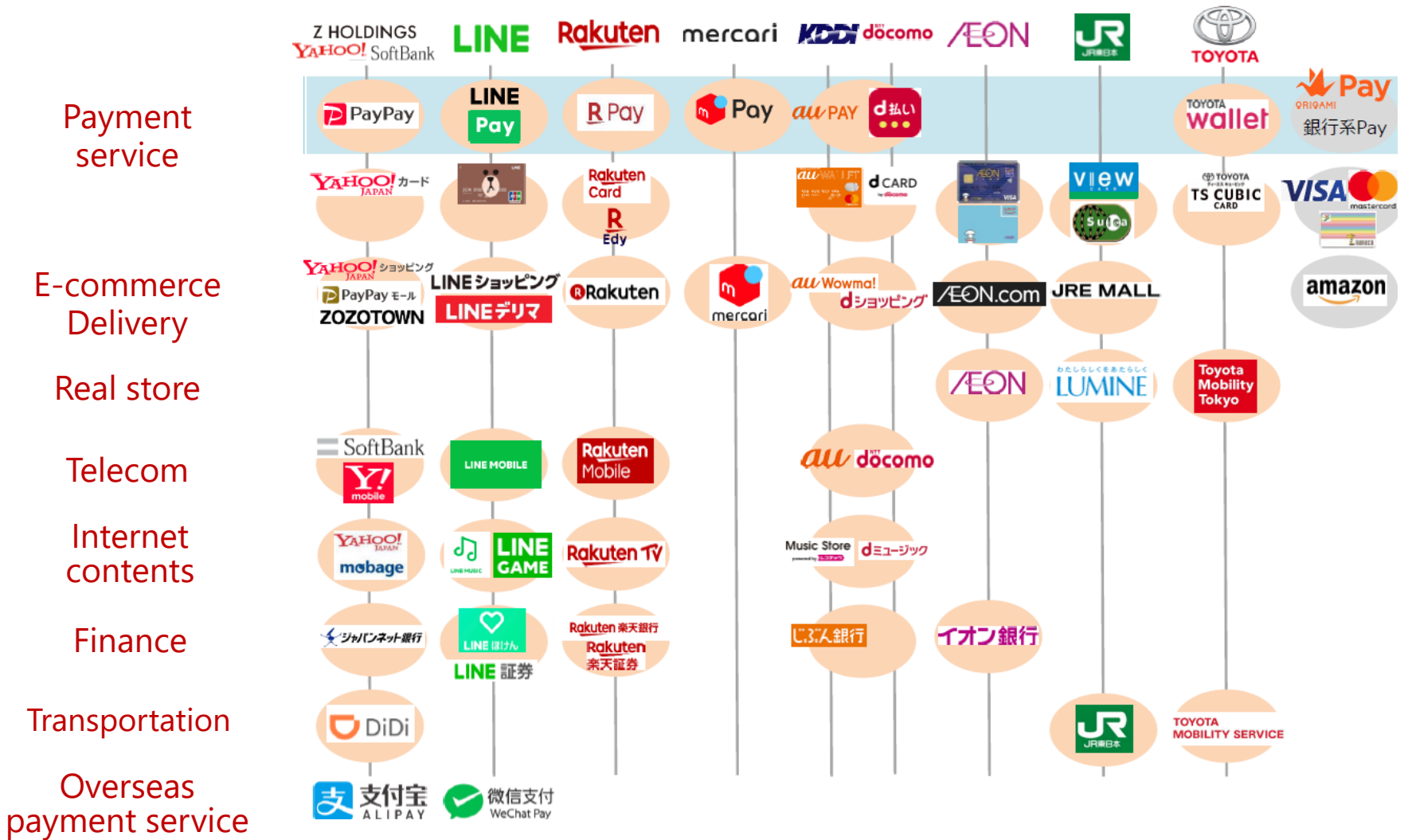
Two-sided market

- Platformer targets two markets of users and service providers.
- Externality b/w two markets via [indirect network effect](#)
- That effects pricing in each market with different [price elasticity](#).

Platform	Seller/ Service provider	Buyer/User
Computer OS	Software developer	Consumer
Computer game	Game developer	Consumer
Newspaper/Web media	Ad provider	Reader
Shopping mall/EC	Tenant retail store	Consumer
Goods search site	EC retailer	Visitor
Payment business	Merchant	Consumer

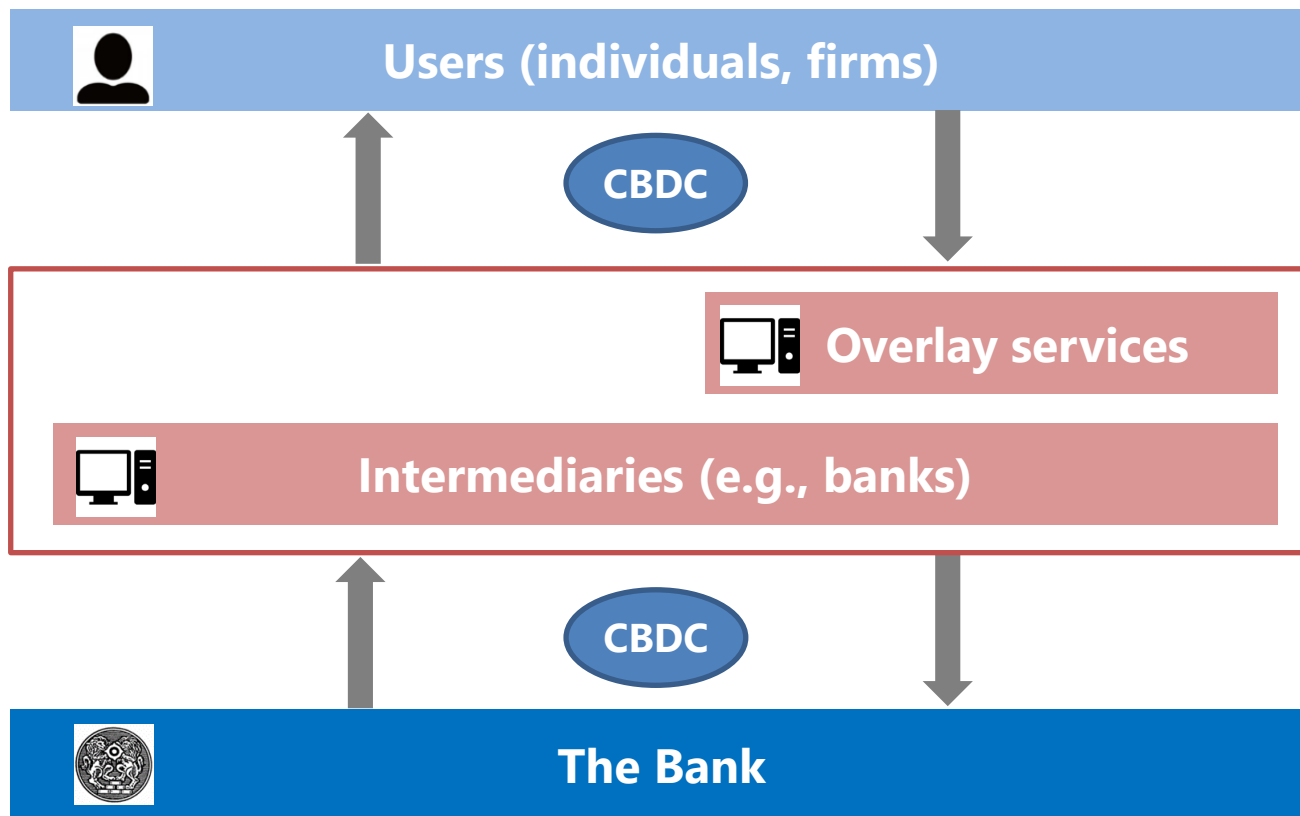
Cross business strategy aiming at ecosystem

Japanese Corporation by Group



Issuance model of CBDC

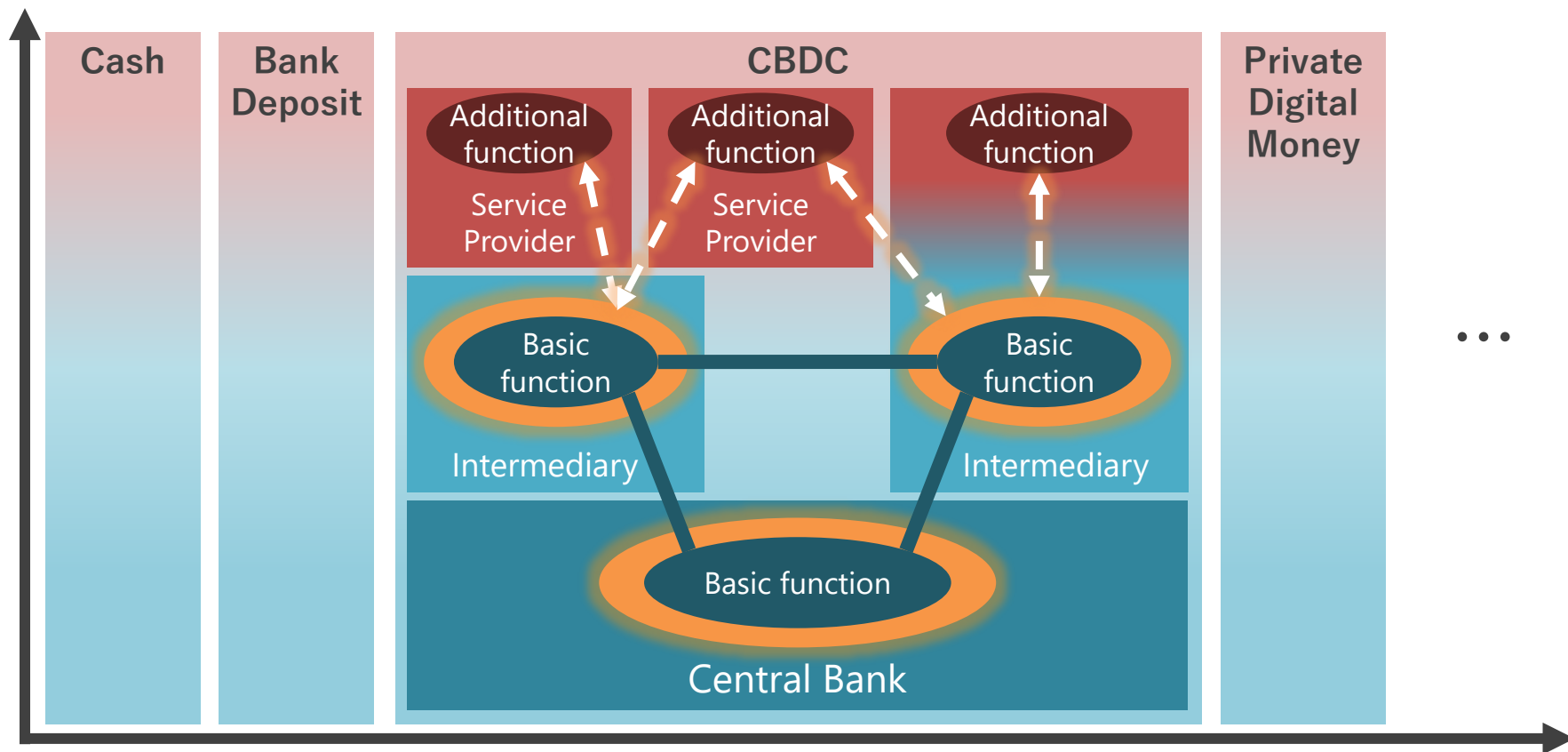
- Even if the Bank were to issue general purpose CBDC, it would still be **appropriate to maintain a two-tiered payment and settlement system** of a central bank and the private sector.
- Intermediaries and other private enterprises provide services **in accordance with user needs** through their knowledge and technological innovation. The Bank designs and provides a **CBDC that would serve as the basis or ingredient** of such services.



Coexistence: Horizontal and Vertical

Both “horizontal coexistence” (coexistence of various means of payment) and “vertical coexistence” (development of an ecosystem through involvement of various entities) should be taken into account.

Ecosystems develop
as various entities become involved.



Various means of payment coexist.

Bank of Japan's communication on CBDC

Governor Kuroda

“As for the Bank, amid significant changes that are occurring with the advent of the digital society, we will take this opportunity to carefully consider the way in which we should provide central bank money, or, using expressions from today's theme, 'Central Banking as a Service'”

—— *“Integrating Information and Financial Systems: Beyond As-a-Service”
speech at the FIN/SUM 2021, March 16, 2021*

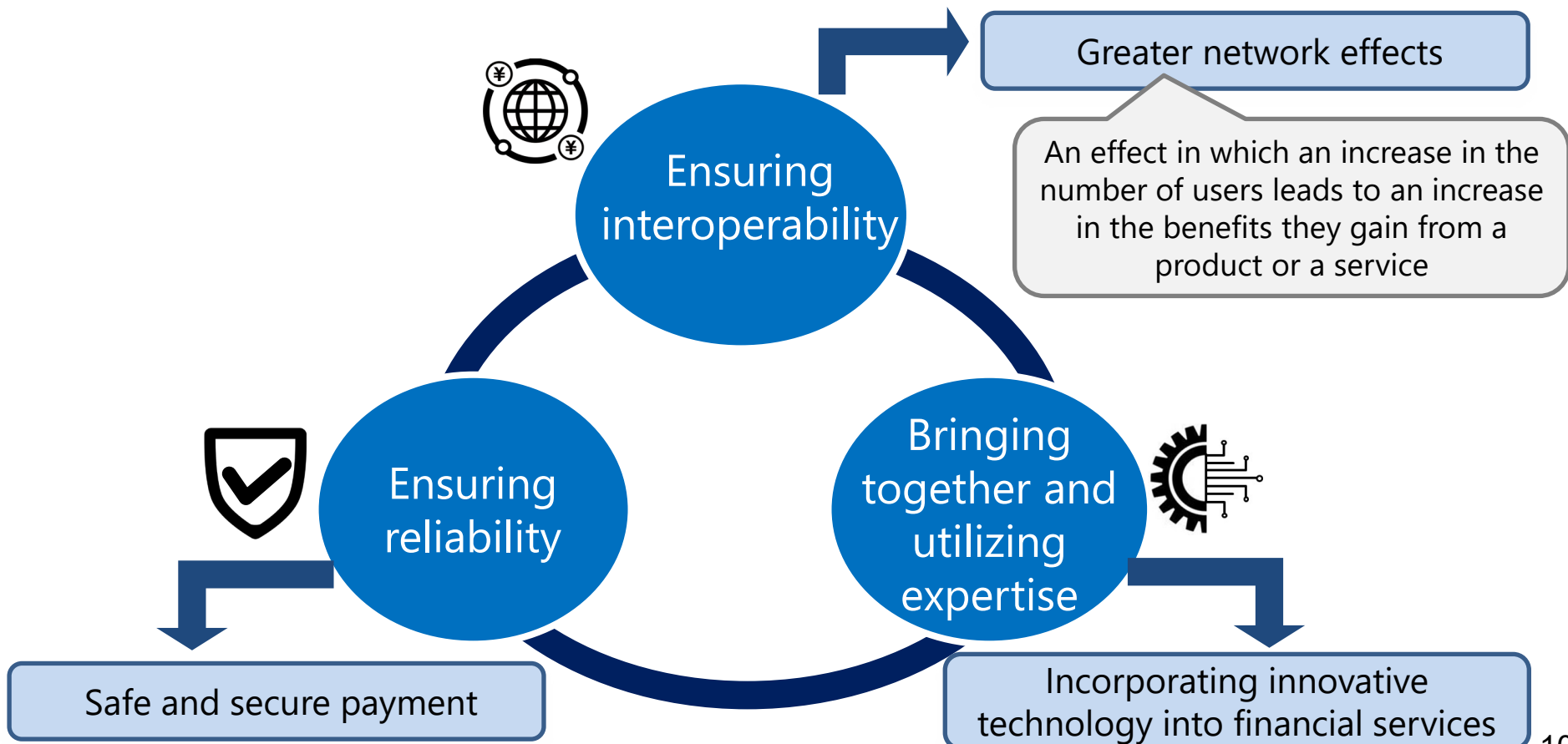
Executive Director Uchida

“The future payment and settlement systems as a whole would certainly need to be safer and more convenient, but this does not mean that the CBDC would need to have all the convenient features by itself. Cash, in fact, is somewhat inconvenient physically in that it could pile up and be stolen. However, this allows cash to coexist with bank deposits and other payment services in an appropriate way to balance the overall safety and convenience of the payment and settlement systems. These role-sharing arrangements will still be necessary even in a world with CBDC. I believe that it is the private sector, such as yourselves, that should be the chefs who serve up the dishes, or convenient payment services, by using CBDC—provided as a public good—as an ingredient”

—— *Opening remarks at the First Meeting of the Liaison and Coordination Committee on Central Bank Digital Currency, March 26, 2021*

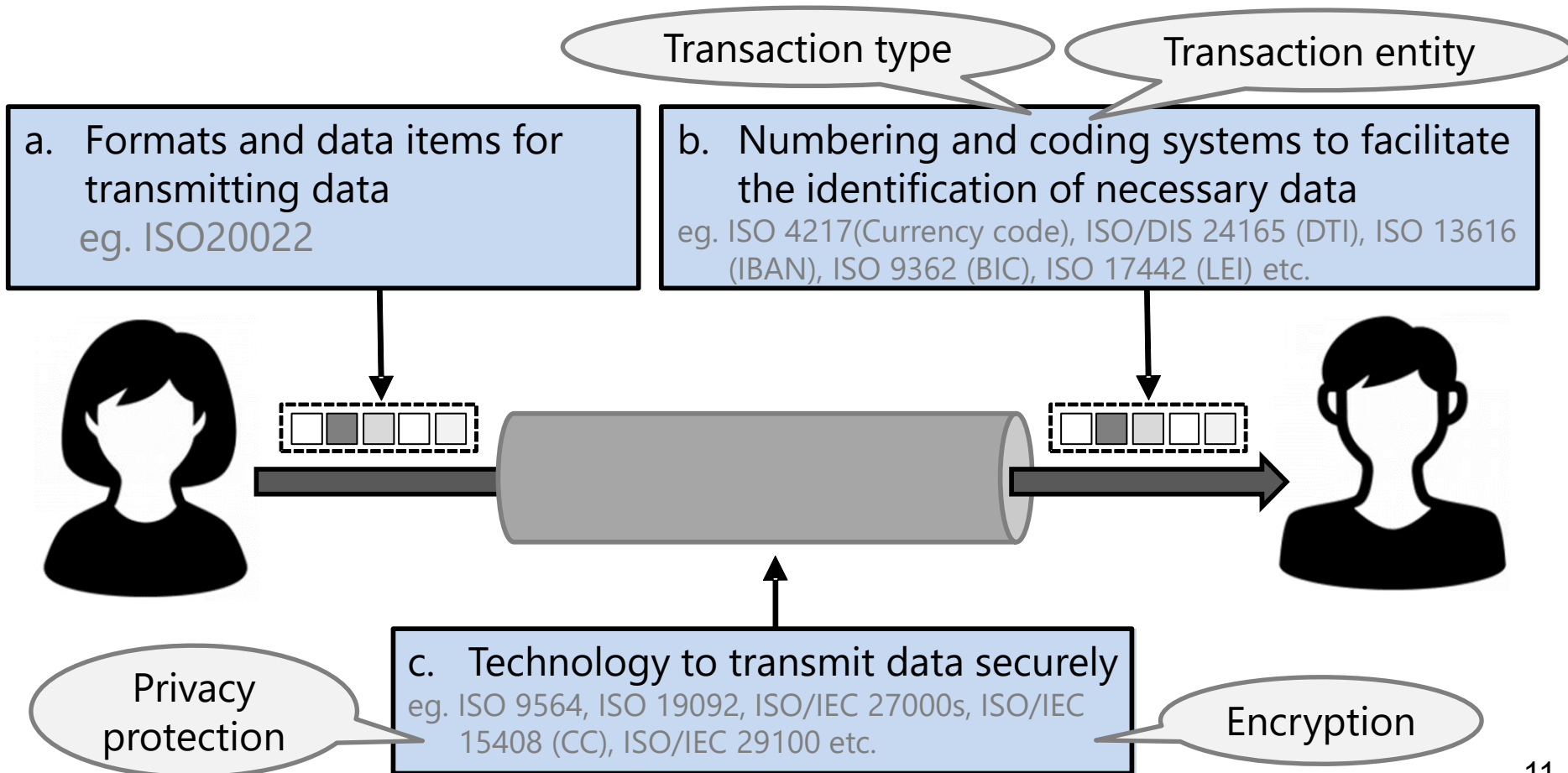
Benefits of standardization for digital currencies

- “Ensuring interoperability” among systems that process financial transactions
- “Ensuring reliability” of the systems that process financial transactions
- “Bringing together and utilizing expertise” of highly advanced technologies from for a wide range of experts



Areas of standardization in digital currency

- Three areas of standardization in digital currency that contribute to ensuring interoperability and reliability:
 - a. Formats and data items for transmitting data
 - b. Numbering and coding systems to facilitate the identification of necessary data
 - c. Technology to transmit data securely



- Assuming CBDCs will be used for **cross-border payments** (e.g., mutual exchange of CBDCs issued by multiple countries), **ensuring interoperability and reliability through standardization** is very important.
- Even for **domestic uses**, it is essential for a CBDC, as a payment platform in a digital society, to ensure **interoperability with other payment systems**.
- Bank of Japan will continue to actively participate in the work of **ISO/TC 68** (the technical committee responsible for creating global standards for the financial services industry) and to be attentive to the efforts by other central banks related to standardization.
- It is expected that stakeholders involved in research and development of digital currencies **actively participate in the international standard-setting efforts**.