

September 11, 2026

Bank of Japan

Sixth General Meeting of the CBDC Forum

The CBDC Forum held its sixth general meeting on June 3, 2026. The Bank of Japan explained the findings of the performance evaluation of the high-load testing and desktop analysis conducted under the pilot program. The Bank then introduced one of the supplements to the 2026 issue of the progress report, summarizing the discussions and deliberations in each working group into five issues according to the functions of CBDC (see attached slides).

Sixth General Meeting of the CBDC Forum

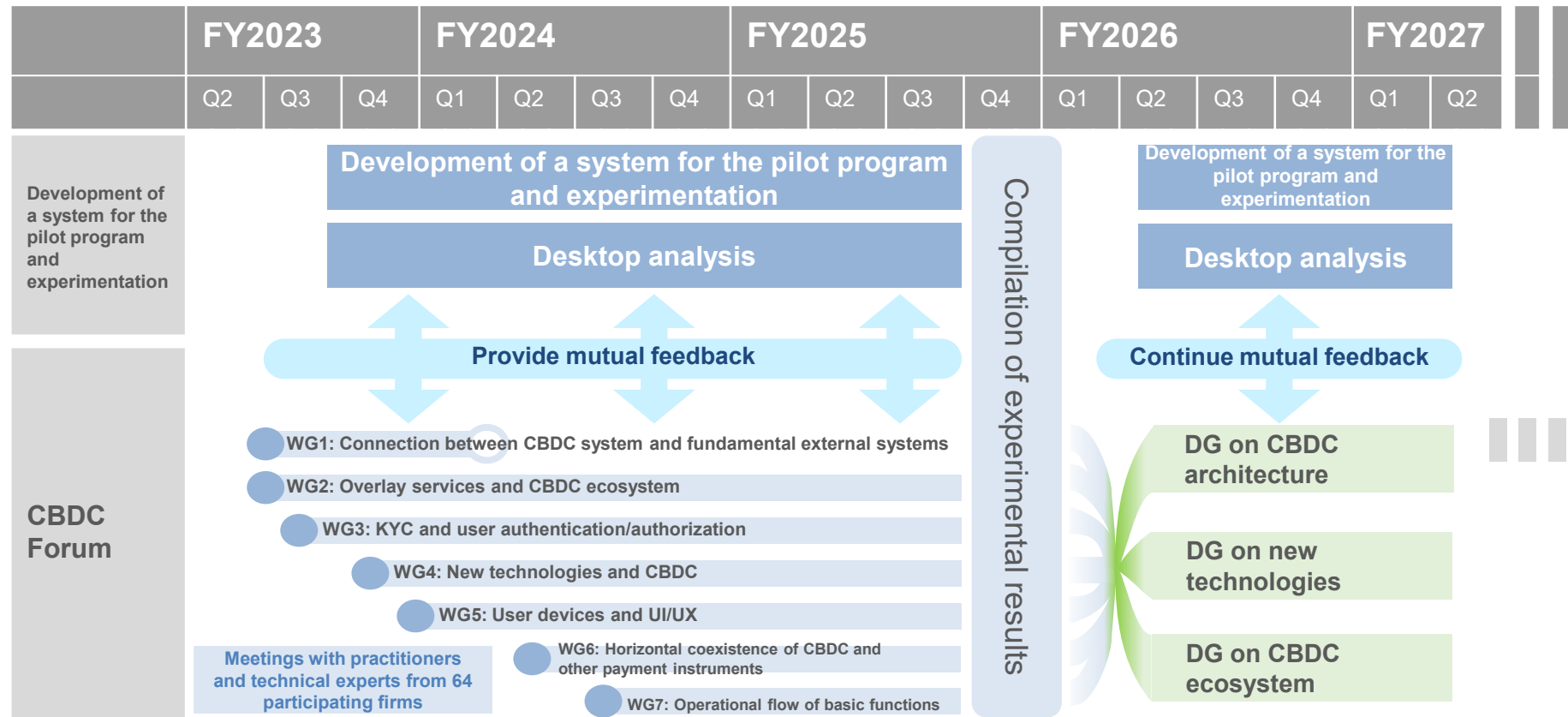
June 2026
Bank of Japan



Overview of the pilot program

- Regarding the development of a system for the pilot program and experimentation, as well as the CBDC Forum, a progress report compiling the experimental results and discussion outcomes to date will be published.

▽Overall timeline of the pilot program



I . Development of a System for the Pilot Program and Experimentation

1. Development of a system for the pilot program and experimentation: Overview

- In technical reviews conducted to date on the use of online payments, including performance evaluations and desktop analysis, no knockout factors (critical and irresolvable factors) have been identified from a technical perspective at this stage.

Performance evaluation

Performance test results

- ✓ Achieved **high-load processing in a single account** even when transactions are concentrated on that account
- ✓ Achieved **50,000 transactions per second** (10,000 updates + 40,000 balance inquiries), which represents approximately one-tenth of the transaction volume assumed for social implementation

Consideration based on the results

Performance design implications for social implementation

(Examples)

- ✓ Measures are required, such as **controlling the volume of incoming request messages** to reduce spikes
- ✓ **Record splitting** may be useful for performance improvement. However, excessively increasing the number of splits reduces processing performance.

Desktop analysis

(i) Process flow for credit transfers

- ✓ Clarify process flows for non-face-to-face transactions, etc. (e.g. e-commerce)
- ✓ Clarify **process flows capable of handling any errors that occur during processing**

(ii) Endpoint devices

- ✓ Clarify **universal access** and **endpoint device security**

(iii) Interoperability

- ✓ Clarify approaches for **achieving interoperability between CBDC and private money**, for P2P transfers and in-store payments

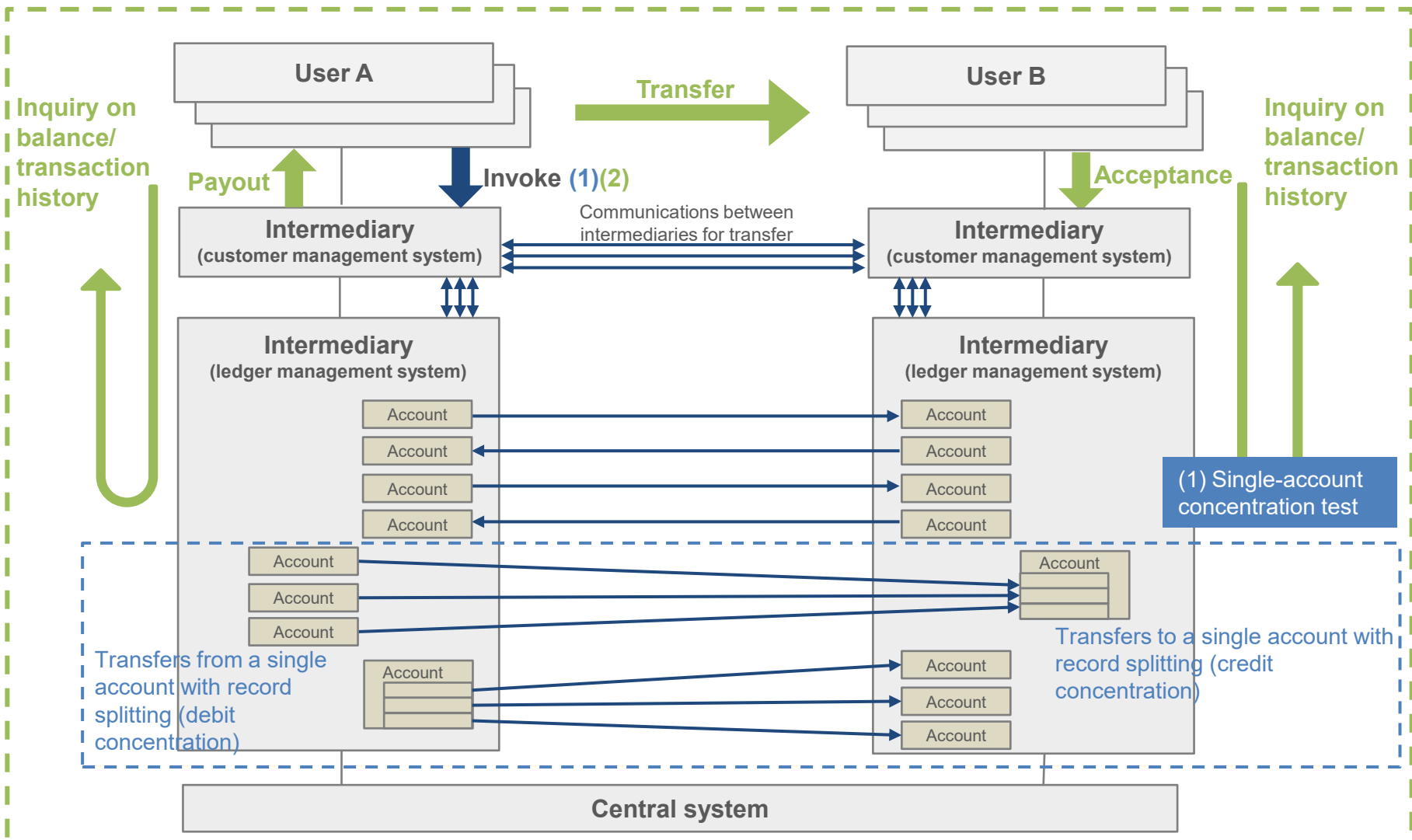
(iv) Security

- ✓ Clarify **security measures that require particular attention for CBDC**, over and above general security measures

(v) Availability

- ✓ Clarify measures including those to **minimize planned and failure-related downtime** as mechanisms to ensure availability

1. Performance evaluation: Test details



(2) Mixed workload test (scenario combining different types of transactions assuming social implementation)

50,000 transactions per second (10,000 updates + 40,000 balance inquiries)

1. Performance evaluation: Test results

● (1) Single-account concentration test

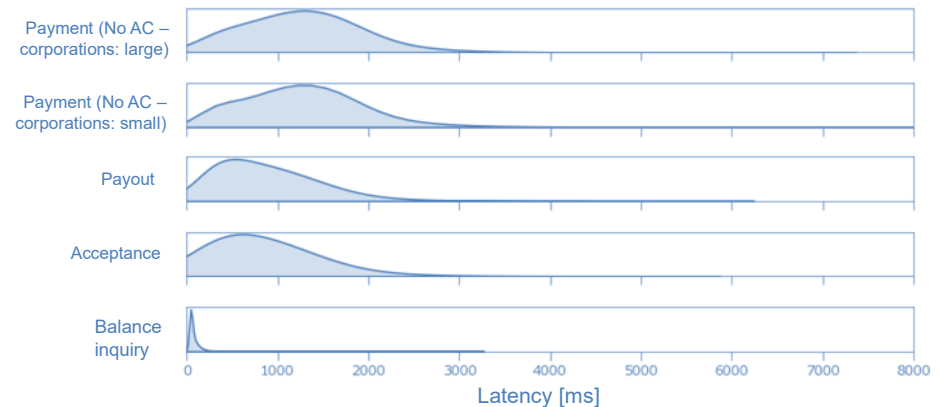
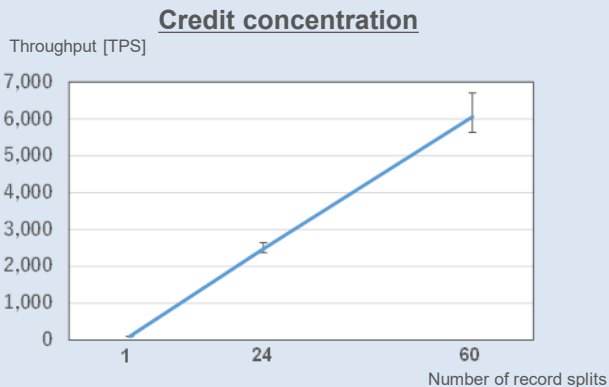
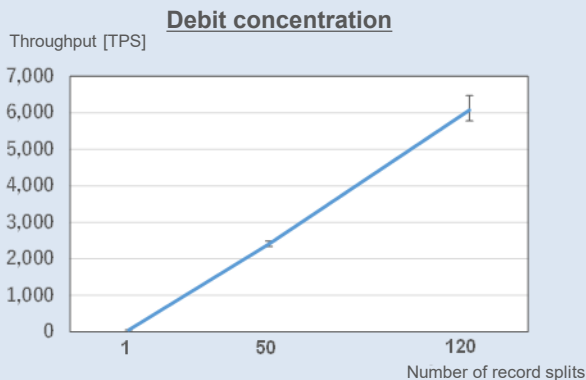
- ✓ Confirmed within the scope of the experiment that increasing the number of record splits also increases the throughput and verified that 6,000 transactions per second (TPS) can be processed on a single account.

● (2) Mixed workload test

- ✓ Confirmed the capability to process 50,000 TPS (10,000 updates + 40,000 balance inquiries), which is 1/10 of the transaction volume assumed for social implementation. Also confirmed that processing was completed within approximately 3 seconds.

(1) Single-account concentration test

(2) Mixed workload test

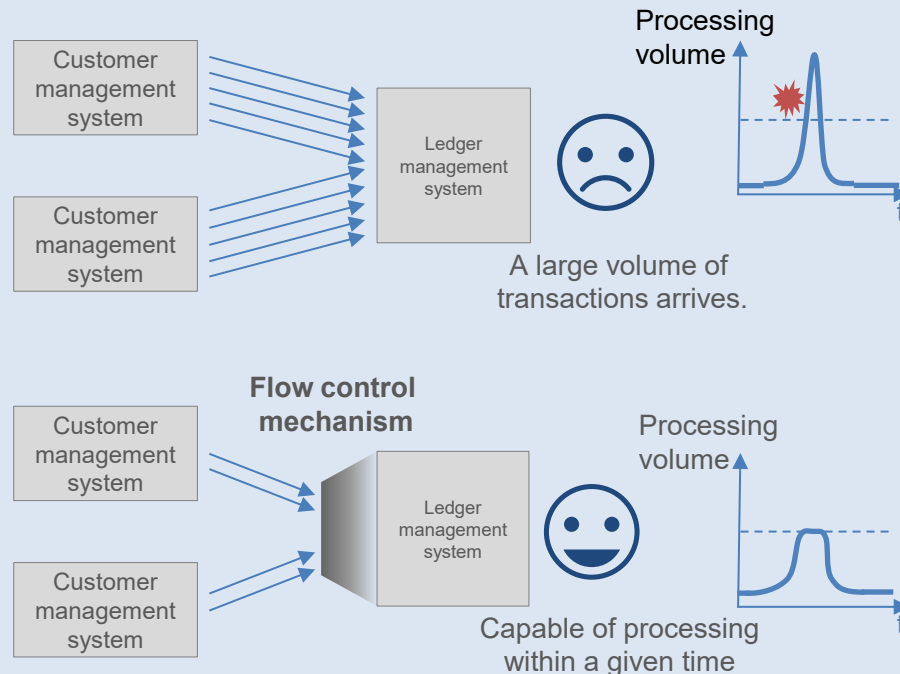


Task type	Throughput [TPS]	
	Target	Average
Payment (No auto charge – corporations: large)	1,000	1,103
Payment (No auto charge – corporations: small)	4,982	5,491
Payout	854	940
Acceptance	86	91
⋮	⋮	⋮
Balance inquiry	40,000	43,344
Total	50,000	54,344

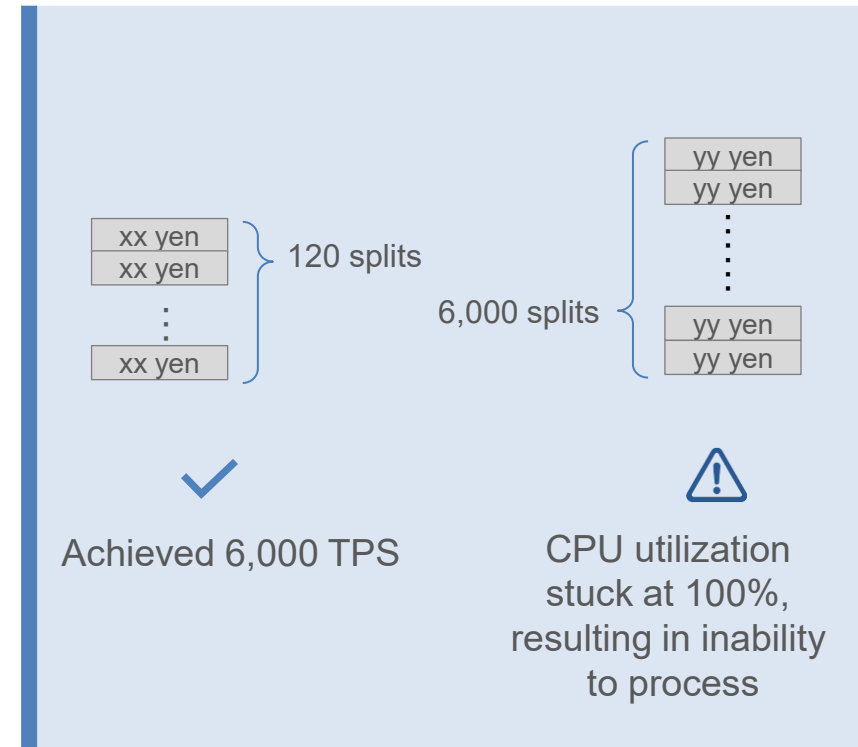
1. Performance evaluation: Examples of performance design implications

- During high-load testing, an event occurred where processing momentarily halted, followed by a surge of execution as a rebound (a spike). Measures such as message flow control to mitigate spikes are therefore important.
- While record splitting is useful for performance improvement, excessively increasing the number of record splits lowers the processing performance.

Spike mitigation measures and effects



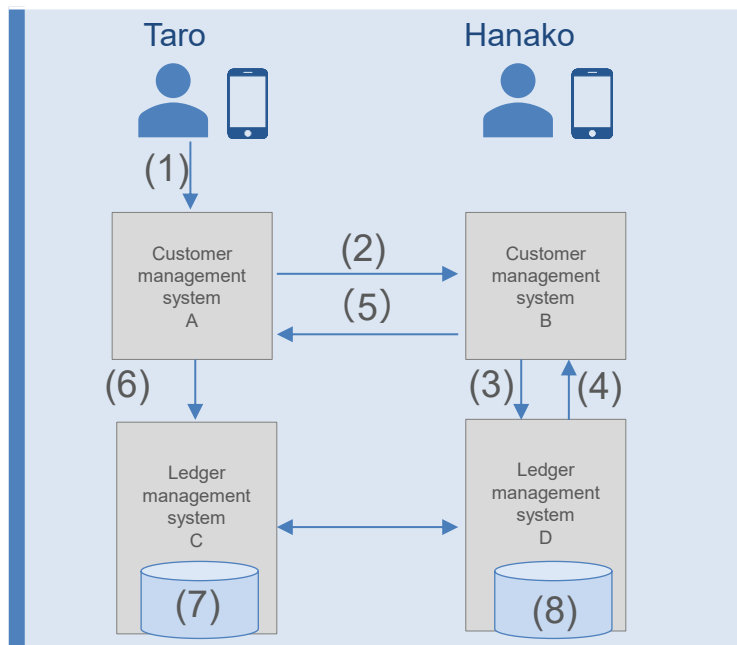
Performance improvement with record splitting



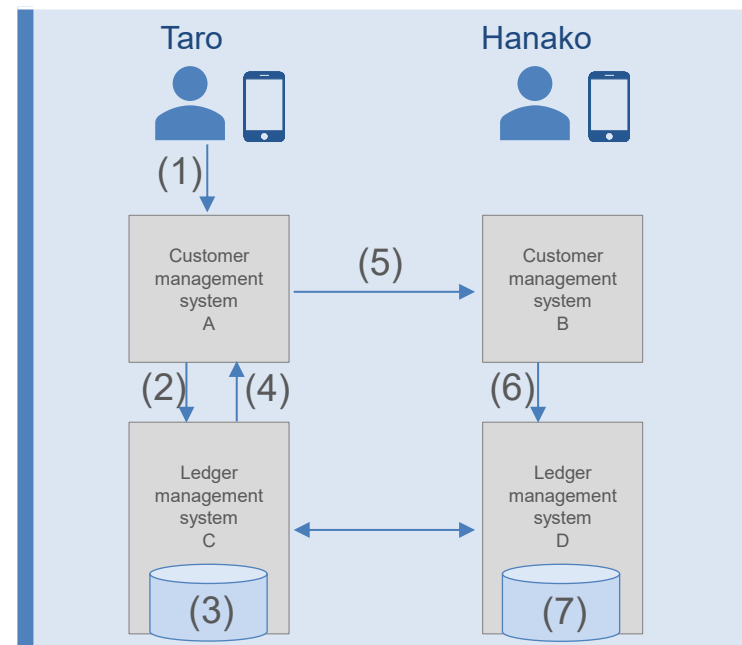
2. Desktop analysis: (i) Process flow for credit transfers

- Clarified the process flow for non-face-to-face e-commerce payments
 - ✓ It is important not to design a system such that shopping on an e-commerce site can be completed using only an account ID, but rather, to introduce mechanisms for transaction authentication and/or additional user authentication.
- Reviewed the process flow for credit transfers
 - ✓ Considering the timeout management function and hold function, which are required for error handling, we examined an alternative process flow for credit transfers to discover whether the process flow of the system for the pilot program could be made more efficient.
 - ✓ While the alternative flow, which prioritizes prior verification of funds, was relatively efficient due to a lower number of communication rounds, the processing after debit entry to place funds in a hold status became more complex.

Process flow of the system for the pilot program



Alternative process flow for credit transfer



2. Desktop analysis: (ii) Endpoint devices

- Identified the elements required for endpoint devices from the perspectives of universal access (available for everyone) and security (secure to use).

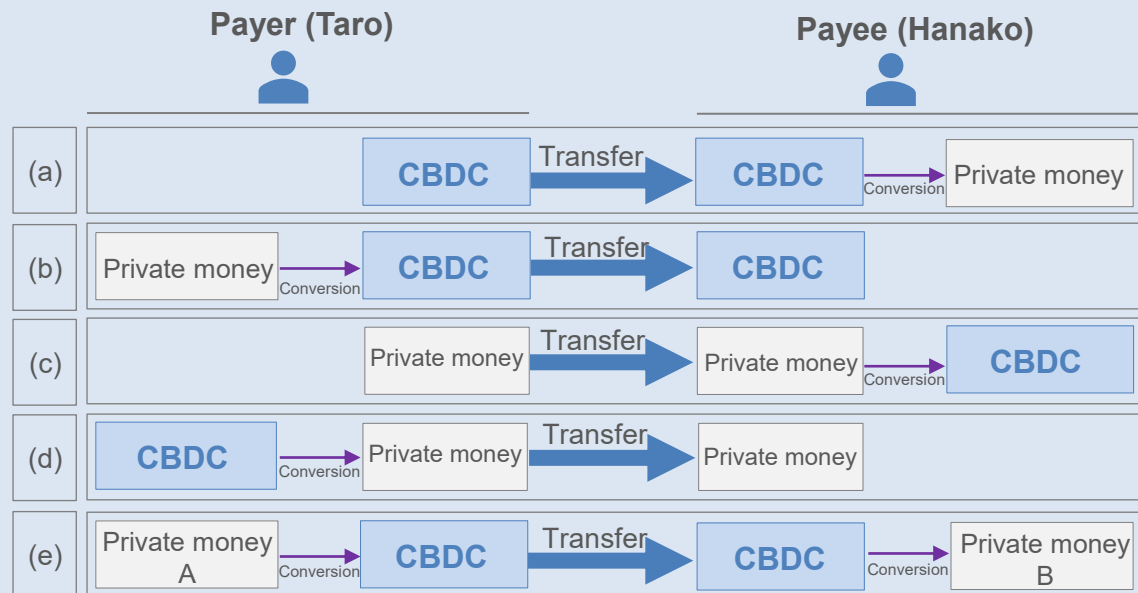
Summary of evaluation on endpoint devices

		 Smartphones	 Card-type devices
Universal access		Finding an option for non-smartphone users is an issue. 	Could be an option from the perspective of accommodating non-smartphone owners 
		Support multiple payment methods (various types of code payment methods and IC payments)- 	Fewer available payment methods compared with those for smartphones- 
		Easy to accommodate individual user circumstances; screens and display methods can be customized to a certain extent through wallet app enhancements. 	Difficult to accommodate individual circumstances of users 
		Support static MPM method with 2D codes, which makes introduction easy even for small-scale stores without in-store payment terminals. However, the risk of 2D code replacement should be noted. 	Require in-store payment terminals- 
Security		User/transaction authentication can be performed on the smartphone side. 	Require in-store payment terminals to be equipped with functions such as PIN entry, verification, biometric data input, and transaction amount display, if any authentication is performed- 

2. Desktop analysis: (iii) Interoperability

- For interoperability between CBDC and private money, primarily assuming code payments via fund transfer operators, various patterns can be envisioned. Based on these patterns, various discussion points on how to achieve interoperability are identified.

Various patterns of interoperability



Examples of discussion points regarding interoperability

Functionality of the customer management system

- ✓ Additional mechanisms may need to be introduced by the customer management intermediaries to enable the coordination of various types of information with private money.

Standardization of interfaces

- ✓ Connecting entities need to standardize connection interface specifications and to agree on non-functional and operational requirements.

Horizontal coexistence

- ✓ The barriers between different payment instruments could be lowered, which may affect the nature of competition based on prevailing “merchant acquiring model.” Need to be examined while paying attention to the perspective of horizontal coexistence.

2. Desktop analysis: (iv) Security

- To ensure security, it is important to act in accordance with the general concepts of cybersecurity measures. Furthermore, consideration should be given to the risks regarding CBDC that require particular attention.

Examples of general security measures

Security by design:

Implement consistent security measures, from planning through operation



Examples of measures: authentication/authorization mechanisms, firewalls, intrusion detection systems, malware countermeasures, [encryption](#), vulnerability mitigation measures, and monitoring

Encryption:

In anticipation of the realization of large-scale and practical quantum computers in the future, it is necessary to consider the use of or migration to Post-Quantum Cryptography (PQC).

Examples of security measures that require particular attention in CBDC

Risk	Unauthorized access/fraudulent transactions due to user impersonation, etc.
Counter-measure	Appropriate authentication/authorization according to the level of risk Regarding authentication, it is important to appropriately combine authentication technologies based on various factors, such as user authentication, transaction authentication, and device authentication, depending on the level of risk. Utilizing risk-based authentication as a complementary measure to these authentication measures is also effective.
Risk	Fraudulent alteration of CBDC balances in ledger management systems
Counter-measure	An example of preventive measures: general security measures An example of reactive measures: detection of inconsistencies by collecting the transaction histories of each ledger management system, as well as other measures

2. Desktop analysis: (v) Availability

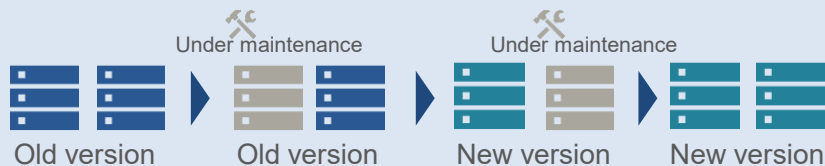
- We identified measures for minimizing the planned downtime of services due to system maintenance and unplanned outages of main site functions due to large-scale system failures (failure-related downtime), as well as measures to enhance resilience.

Example of measures to minimize planned downtime

Rolling updates

Part of the system is [gradually updated to a new version](#) while continuing to provide services.

For operations that affect a wide range of equipment and components that comprise the system, such as large-scale system updates, the [utilization of a backup site](#) is also an option.

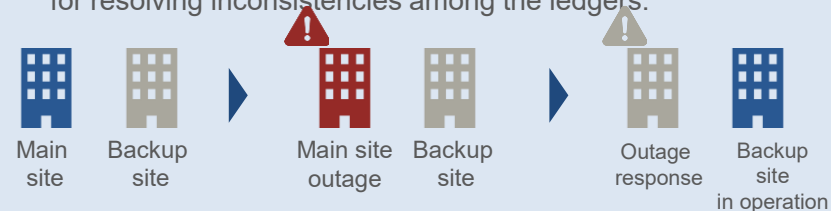


Example of measures to minimize failure-related downtime

Utilization of a backup site (as a countermeasure to site outages)

[Switch to the backup site](#) in the event of a site outage. Another approach is to construct a backup site using a different technology from the main site (a non-similar facility).

In addition to measures for planned downtime, there is also the issue of [the loss of data during processing](#). An example of countermeasures is to create a mechanism for resolving inconsistencies among the ledgers.



Resilience

Resilience

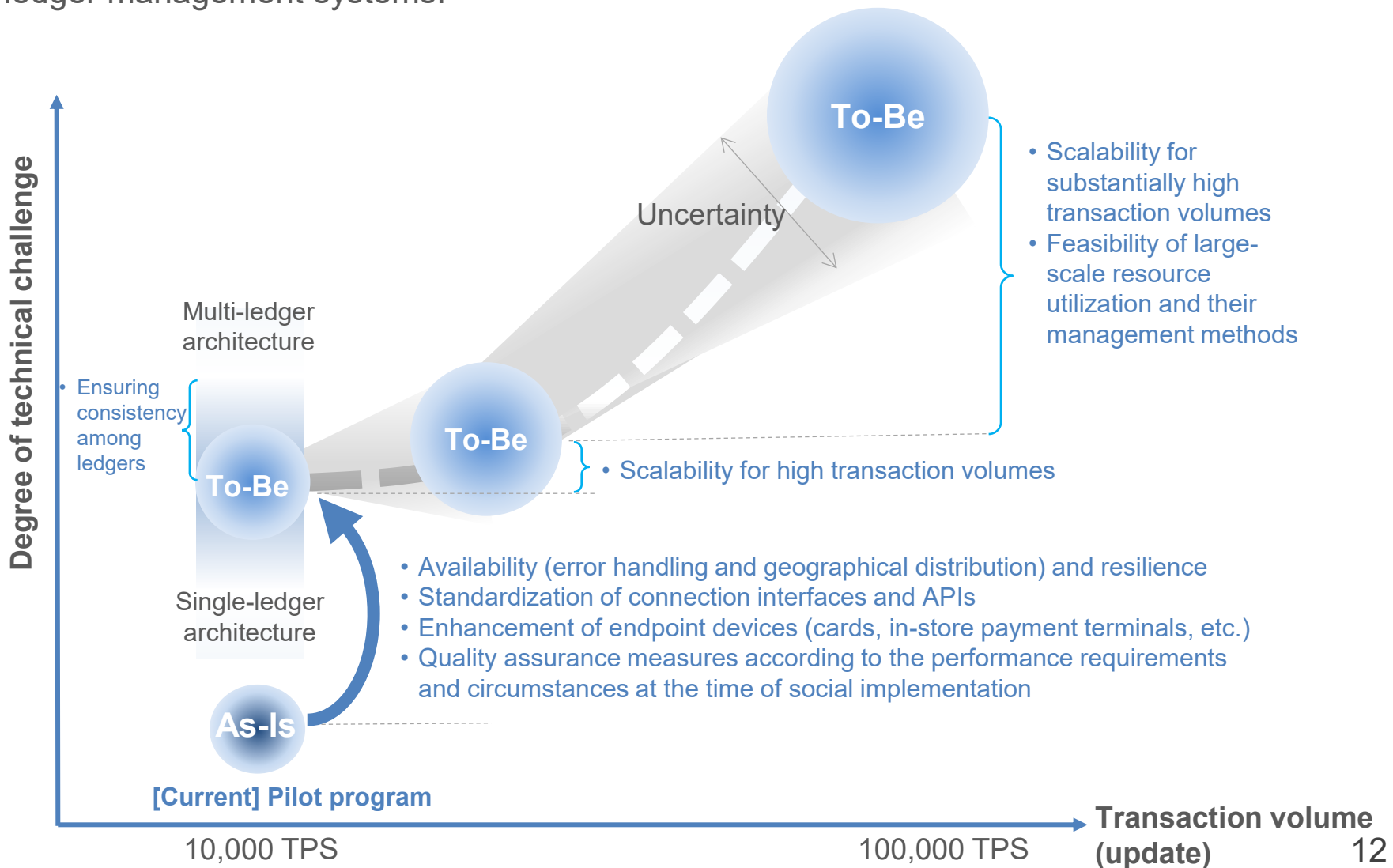
"The capability to continue performing critical tasks" at the minimum required level, regardless of the reason for the system failure



Not only are initiatives for the early recovery from system failures important, measures such as [securing alternative means](#) and [ensuring immediate communication](#) (prompt notification to users) are also essential.

3. Development of a system for the pilot program and experimentation: Future initiatives

- While it is necessary to take into account the aforementioned matters for the social implementation of CBDC, we believe there is room for further examination of error handling and efficient process flows for credit transfer, which are technical considerations related to ledger management systems.



II . CBDC Forum

Activities of the CBDC Forum

- Since the first meeting in 2023, the CBDC Forum has held 5 general meetings and 79 working group (WG) meetings (84 meetings in total). A total of 163 firms gave presentations.
- In cooperation with the forum participants, we have engaged in intensive discussions and deliberations on a wide range of CBDC-related topics.

▽Meetings held to date

		2023						2024												2025												26	Total
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	
	General meetings	●						●									●							●								●	5
	WG1			●	●	●	●	●	●	●	●	●																				11	
	WG2			●	●	●	●	●	●	●		●			●		●		●				●	●	●							15	
	WG3				●	●	●	●	●	●		●			●		●			●	●		●									14	
	WG4							●		●	●	●		●		●		●		●		●					●		●		12		
	WG5									●				●		●			●		●		●	●		●	●					11	
	WG6												●		●		●		●		●			●			●			●		8	
	WG7															●		●		●		●		●			●		●	●		8	
No. of meetings (monthly total)		1		2	3	4	3	5	3	5	4	4	2	4		6	1	5	1	4	2	4	2	5	3	1		3	2	1	3	1	84
No. of presenting firms (monthly total)					5	10	7	8	9	10	9	8	4	7		9		10	3	10	5	7	4	14	5	2		4	5	1	7		163

Note 1: "No. of presenting firms" is the number of firms, including affiliated firms, that performed roles such as presenters, moderators and panelists.

Note 2: For joint meetings, only principal WG meetings were counted for both the number of meetings and presenting firms.

Summary of discussions in the CBDC Forum

- Discussions to date in the WGs will be published in a supplement to the progress report and will be titled "Summary of discussions in the CBDC Forum."
- Discussions and deliberations in each WG are summarized into five issues according to the functions of CBDC, and the findings have been compiled accordingly.

▽The supplement "Summary of discussions in the CBDC Forum" to the progress report

1	Architecture of CBDC system	CBDC's basic functions, performance, and system configuration, as well as endpoint devices and universal access
2	Systems supporting CBDC users	KYC, AML/CFT, and authentication/authorization
3	Ideal shape of CBDC ecosystem	Standardization of specifications, system sharing, overlay services and APIs, and programmability
4	Interoperability and horizontal coexistence	Horizontal coexistence with cash, deposits, and private digital money, the allocation of costs arising from issuance and circulation, and the utilization of existing networks
5	New technologies and CBDC	Utilization of digital identity, offline payments, blockchain-related technologies, and next-generation technologies

Overview of Chapter 1 "Architecture of CBDC system" (1)

- Chapter 1 organizes issues regarding the architecture of the CBDC system, such as its basic functions, performance, and system configurations that meet these requirements, as well as endpoint devices that serve as touchpoints with users.

Configuration of the CBDC ledger and a customer management system	✓ Centralized: Efficient but raises issues regarding fault tolerance and resilience. ✓ Decentralized: Advantageous in avoiding single points of failure, but ensuring consistency across ledgers remains an issue.
Load on systems	✓ Need to consider auto charge and auto sweep processing volumes ✓ Need for flow control (load reducing measures) in CBDC systems and core banking systems
Setup of intermediaries' network systems	✓ Possibility of reducing the development burden on intermediaries when building and implementing various functions on a new network ✓ Countermeasures in the event of a complete network outage
Resilience	✓ Importance of live monitoring of systems ✓ Countermeasures in the event of an outage of a CBDC system or core banking system
Instant payment capabilities	✓ Need for instant payment capabilities in CBDC ✓ Potential cash flow improvements for merchants because of the characteristics of instant payments

Overview of Chapter 1 "Architecture of CBDC system" (2)

Operational flow	✓ Operational flow for payout/acceptance, credit transfers, and other operations ✓ Ensuring consistency across systems and countermeasures in the event of an error and failure
Data model Database technologies	✓ Potential use of UTXO models (high concurrency performance and ease of privacy protection implementation) ✓ Potential use of distributed databases and blockchains
Device type	✓ Need for card-type devices in addition to smartphones ✓ Exploring a back-end layer that is capable of flexibly supporting the expansion of front-end channels, anticipating future device diversification
UI/UX	✓ Guideline development for unifying the CBDC image and supporting vendor development environments ✓ Need to strike a balance with convenience, such as setting security levels tailored to devices and transaction limits dependent on whether user authentication exists
Synchronization	✓ Effectiveness of timeout setting as a recovery measure for inconsistencies in processing between systems ✓ Need to build a mechanism that enables private businesses to operate flexibly, even in the event of inconsistencies

Summary of Chapter 1 "Architecture of CBDC system"

- Through discussions in each WG, we have gained insights into the architecture of the CBDC system, such as ensuring consistency among ledgers, system load, resilience, operational flows that take into account exception handling, devices, and UI/UX. In addition, we have further explored the potential use of new technologies, including UTXO models, NoSQL/NewSQL, and blockchains.
- Some of these insights are also utilized for the development of a system for the pilot program and experimentation work.
- However, we need to further refine our understanding of several aspects: system load levels and measures to reduce them, failure responses during system outages, how to ensure consistency between systems and handle errors, and terminals and methods for in-store payments.
- In the discussion group (DG) following the reorganization of the forum, the secretariat will, to the extent possible, present preconditions, and we would like to continue discussions with forum participants while focusing on these issues.

Overview of Chapter 2 "Systems supporting CBDC users"

- While assuming user actions for CBDC, Chapter 2 organizes issues regarding systems supporting CBDC users with reference to existing payment services, focusing on considerations and challenges related to KYC, AML/CFT, authentication and authorization, and other matters.

KYC and AML/CFT

- ✓ Identity proofing: The importance of balancing fraud countermeasures and security with convenience; the need for more efficient procedures by utilizing digital technologies
- ✓ Customer due diligence: Cost and resource allocation issues; exploring and introducing efficient management methods leveraging customer touchpoints, such as ATMs and apps
- ✓ Detection of fraud: Fraud prevention utilizing digital technologies; establishment of a mechanism that enables the sharing of information on suspicious transactions among stakeholders
- ✓ Levels of KYC and AML/CFT for CBDC; clarification of challenges toward their joint operations

Authentication/ Authorization

- ✓ Standardization: The usefulness of standards and guidelines established in Japan and abroad
- ✓ Risk responses: The necessity for agreement among operators on important matters, such as the location of risks, responsibility demarcation points, and cost allocation; the necessity of risk assessment and appropriate security measures for each use case

Summary of of Chapter 2 "Systems supporting CBDC users"

- Focusing primarily on KYC and authentication/authorization, which are the foundations for using payment services safely and securely, each WG has (1) discussed considerations and challenges for identity proofing, customer due diligence, fraud prevention and detection, and joint operations, envisioning non-face-to-face and face-to-face use cases of individuals and corporations, and (2) engaged in in-depth discussions on the importance of the appropriate development and implementation of standards and guidelines for user authentication/authorization and other matters.
- In the DG following the reorganization of the forum, we would like to discuss the feasibility of operations related to account opening and closure for CBDC, etc. and continue exploring with forum participants issues such as KYC, AML/CFT, and authentication/authorization.

Overview of Chapter 3 "Ideal shape of CBDC ecosystem"

- With regard to the shape of a CBDC ecosystem including overlay services to enhance convenience of CBDC, Chapter 3 organizes issues such as the standardization of specifications, system sharing, overlay services/APIs, and programmability.

Standardization of specifications	✓ Importance of maintaining technical and security standards of intermediaries and overlay service providers at a certain level or higher ✓ Necessity of establishing specifications and guidelines, and points to note ✓ Need for a neutral organization to lead the standardization of specifications
System sharing	✓ Developing a mechanism that facilitates entry for many operators ✓ Importance and difficulty of sharing the infrastructure layer and operational processes that have a high degree of commonality and do not create competitive advantages
Overlay services and APIs	✓ Quality assurance of overlay services to ensure reliability of the entire ecosystem
Programmability	✓ Challenges in implementation and utilization of escrow functionality (temporary fund holding), programmable payments (conditional payments), and purpose bound money (such as usage restrictions) through the API sandbox project

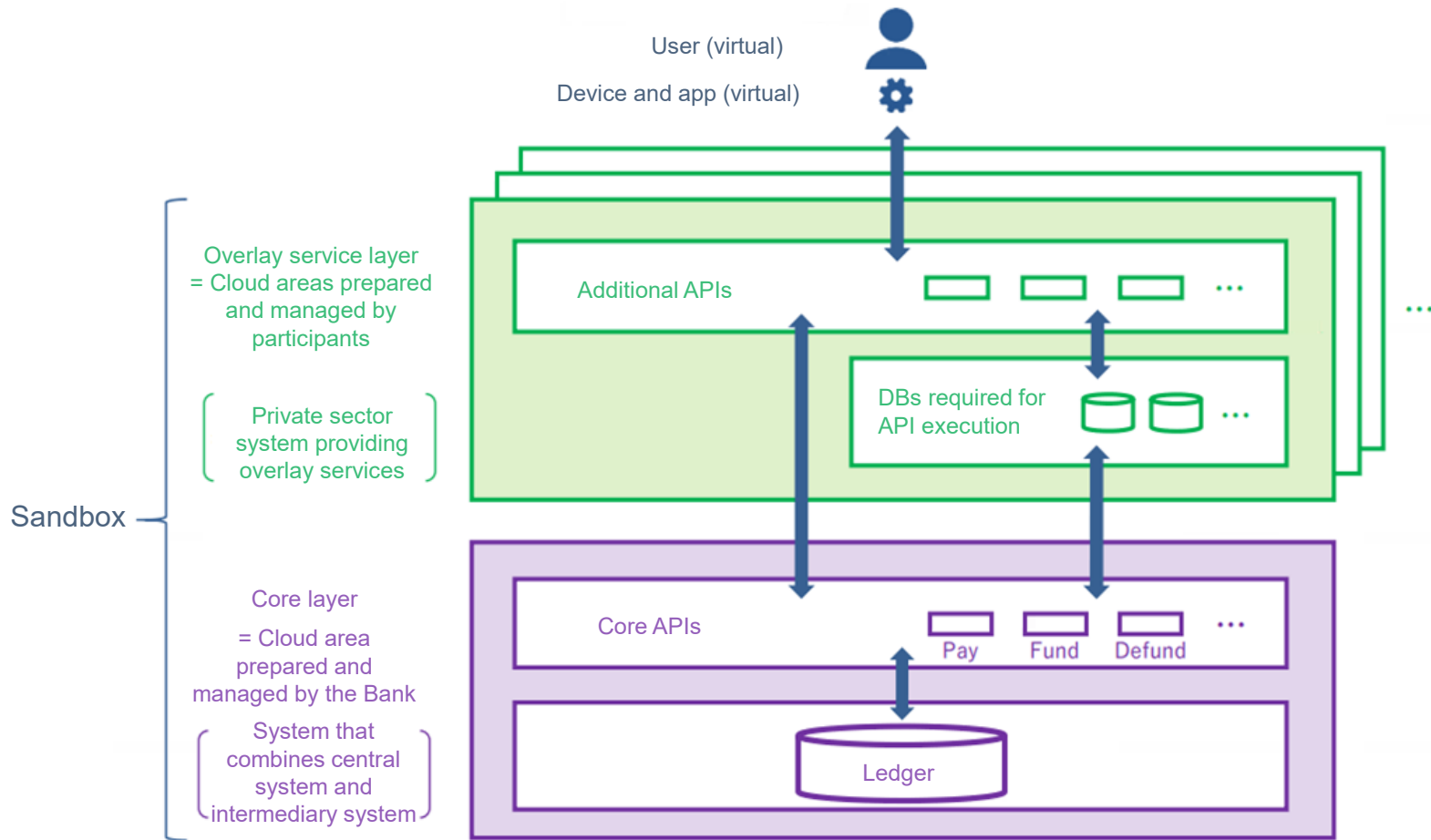
Summary of Chapter 3 "Ideal shape of CBDC ecosystem"

- Through discussions in each WG, we have highlighted the importance and necessity of standardization of specifications to maintain the technical and security level of intermediaries and overlay service providers at a certain level or higher, as well as those of system sharing.
- In addition, we have explored a tangible vision of overlay services and programmability through implementation and experimentation in the API sandbox project.
- Going forward, continued discussions on the challenges in anticipation of social implementation are required from a wider viewpoint based on the need to build a highly reliable and efficient CBDC ecosystem.
- In the DG following the reorganization of the forum, we would like to continue discussions and examinations with forum participants on matters including issues and tasks anticipated toward the social implementation of CBDC, and approaches to collaborative and competitive areas.

(Reference) API sandbox project

- A project to explore the functional scalability of CBDC and overlay services by connecting basic APIs on the cloud-based core layer with additional APIs and DLT platforms that volunteer firms have developed through their own efforts.

API sandbox project



(Reference) Overlay services proposed in the API sandbox PJ

- In the API sandbox project, volunteer companies have explored the implementation of overlay services and use cases, as shown below, while connecting the Bank of Japan's core layer with their own layer in the cloud.

▽ Examples of overlay services presented in the API sandbox project

Overlay services	Specific situations
Utilization of information	• Automatic aggregation of data on donations • Automation of withholding tax operations related to interest on bondholder income • Opening a CBDC account for bank account holders
Conditional payment services	• Payment upon delivery of goods purchased via online shopping (e-commerce websites), C2C transactions, and other means • Payment for train fares based on the section traveled • Payment for gasoline based on the amount of fuel purchased • DVP payment for issuance of retail corporate bonds • Temporary hold on cancellation fees upon restaurant bookings • Pre-set upper limits for pay-as-you-go pricing • Purpose-bound money (such as usage limited to specific regions)
Interoperable services	• Interoperation with tokenized government bonds and stablecoins
Diversified user authentication methods and digital financial inclusion	• Payment using Individual Number Cards ("My Number Card") • Payment using facial recognition

Overview of Chapter 4 "Interoperability and horizontal coexistence"

- Chapter 4 organizes issues regarding the interoperability and horizontal coexistence between CBDC and cash, bank deposits, and private digital money, as well as the allocation of costs arising from CBDC issuance and circulation and the utilization of existing networks.

Relationship with cash	✓ Conversion needs between CBDC and cash ✓ Conversion methods between CBDC and cash and implementation costs
Relationship with bank deposits	✓ Payout and acceptance of CBDC using existing core banking systems ✓ Issues based on the assumption of 24/7 support ✓ Payout and acceptance of CBDC using deposit accounts at organizations other than intermediaries where the users have CBDC accounts
Relationship with private digital money	✓ Expected role of CBDC ✓ Impact on private payment businesses ✓ Issues in cases where payment service providers assume the role of intermediaries
Allocation of costs arising from CBDC issuance and circulation, as well as the utilization of existing networks	✓ Allocation of infrastructure costs arising from CBDC issuance and circulation ✓ Utilization of existing communication network infrastructure, etc.

Summary of Chapter 4 "Interoperability and horizontal coexistence"

- Through discussions in each WG, we have gained insights into the interoperability between CBDC and other payment instruments, such as conversion between CBDC and cash, the payout and acceptance of CBDC via bank deposits, and the potential of CBDC serving as a funding source or a payment bridge for private digital money.
- Furthermore, we have engaged in discussions with private payment service providers on horizontal coexistence, including the expected role of CBDC, the usage patterns for in-store payments, and the allocation of costs arising from CBDC issuance and circulation.
- However, going forward, we need to refine our understanding of issues, such as the impact of CBDC payout and acceptance on existing core banking systems.
- Following the reorganization of the forum, we would like to continue discussing these issues with forum participants in the DG.

Overview of Chapter 5 "New technologies and CBDC"

- Chapter 5 organizes issues regarding the applicability of new technologies, such as digital identity, offline payments, blockchain-related technologies, and next-generation technologies, to CBDC systems and the related technical challenges.

Digital identity	✓ Utilization of public personal authentication ✓ Availability of Verifiable Credential (VC) as a new identity and the attribute verification method
Offline payments	✓ Potential of CBDC to serve as a useful payment method in the event of a natural disaster ✓ Building a mechanism that enables technically secure value transfers ✓ Feasibility of introducing deferred offline payments
Asset tokenization	✓ While diverse asset tokenization, such as security tokens and tokenization of MMF and collateral, is progressing, tokenization of money as a means of payment remains insufficient ✓ Taking into account the potential of diverse types of tokenized money, as well as the risks and costs
Interoperability	✓ In relation to cross-system coordination methods to eliminate silos, the necessity of considering trust and scalability, etc. according to use cases ✓ Advancement of a set of technologies that serve as a bridge between TradFi and DeFi
Utilization of next-generation technologies	✓ Importance of neutral technical assessment from a medium- to long-term perspective ✓ Necessity of examining practical challenges in light of the anticipated evolution of high-speed, high-volume micropayments driven by technological developments such as AI

Summary of Chapter 5 "New technologies and CBDC"

- Through discussions in each WG, we have gained insights into the approaches for utilizing digital identity, the feasibility of introducing offline payments, and the practical and technical challenges of adopting blockchain-related technologies.
- These insights have also been applied to desktop analysis on a system for the pilot program. Moving forward, we need to continue deepening our understanding of the feasibility of applying new technologies, such as blockchains and AI, to CBDC systems amid ongoing technological progress.
- In particular, while asset tokenization has been advancing both in Japan and globally, the tokenization of money as a payment instrument remains insufficient. We therefore need to explore potential use cases and address practical challenges regarding various forms of tokenized money, including the tokenization of central bank money.
- Following the reorganization of the forum, we would like to continue discussing and exploring such issues with forum participants in the DG.