

Phase I (Take-Off): A Regional Solution for Accelerating the Deployment of Central Bank Digital Currencies (CBDC's) for Inclusion in Latin America and the Caribbean

I. Basic Information for TC¹

▪ Country/Region:	Regional/ Brazil, Colombia, Peru, and Costa Rica may be eligible. The final list of two countries for testing to be selected for this TC will be determined after a demand-driven approach. Country eligibility will be based on factors such: a. commitment of human and monetary resources to the project; b. highest priority in central bank's strategy; c. expressed interest to scale up CBDCs issuances; and d. identified interoperability needs with other central banks.
▪ TC Name:	A regional prototype for accelerating the deployment of Central Bank Digital Currencies (CBDC's) for inclusion in Latin America and the Caribbean.
▪ TC Number:	RG-T4567
▪ Team Leader/Members:	Alejandro Pardo, LAB/DIS, Carol Friedman, (GCL/LAB), Patricia Guevara, (LAB/DIS), Laura Urena(LAB/FIA), Yuri Soares (LAB/STI), Valeria Lopez (LAB/STI), Christian Diaz Ordoñez (GLC/FML), (ORP/GCM) Damaris Leon and Delfina Müller (DSP/DVF), Daphne Morrison (OII/OII), Lara Simonin Scantamburlo (OII/OII).
▪ Taxonomy:	Technical Cooperation
▪ Operation Supported by the TC:	
▪ Beneficiary:	Central Banks, Banks, and other Financial Institutions.
▪ Executing Agency and contact name:	L-Net (LACNet) and IDB Lab
▪ Donors providing funding:	Korea Private Sector Development and Innovation Fund (KPS).
▪ IDB Funding Requested:	US\$ 750,000
▪ Local counterpart funding, if any:	N/A
▪ Disbursement period (which includes Execution period):	24 months disbursement
▪ Required start date:	December 15th, 2024
▪ Types of consultants:	Individual consultants and Firms
▪ Prepared by Unit:	IDB Lab
▪ Unit of Disbursement Responsibility:	IDB Lab
▪ TC Included in Country Strategy (y/n):	N/A
▪ TC included in CPD (y/n):	N/A
▪ Alignment to the Update to the Institutional Strategy 2020-2023:	

¹ This proposal focuses on the first (take-off) phase of this initiative, which primarily centers on LAC CBDC ecosystem preparation activities and product development. A second phase (scale-up) will be planned, focusing on deployment with central banks and leading financial institutions in a minimum of 5 countries.

II. Objectives and Justification of the TC

- 2.1. **Objective.** This technical cooperation (TC) is aimed to enable a Latin America and the Caribbean regional test-network enabling issuance of CBDCs and tokenization of financial assets focusing on cross-region interoperability among central banks and financial institutions. The test-network (testnet) will build upon the technological capabilities and infrastructure of IDB Lab's initiative LACChain² and LACNet³ the Alliance for the Development of the Blockchain Ecosystem in Latin America and the Caribbean, and capitalize on the Korean experience on the topic including Korean entities from the public, private and academic sectors such as the Bank of Korea (BOK), Korea Exchange (KRX), KAIST Network Security and Privacy Lab and Sungkyunkwan University (SKKU).
- 2.2. **Background.** Central Bank Digital Currency (CBDC) is a form of digital currency that is issued and backed by a central bank and aims to improve the efficiency of the processing of payments and financial transactions, facilitating financial inclusion by reducing transactional costs in the last mile. These digital currencies are different from cryptocurrencies in that they are issued and regulated by a central authority and are in all cases backed by an existing national currency or other type of fiduciary asset.

Box 1: Web3 for the real world and CBDCs

The vision of "Web3 for the real world" is based on allowing impact application of the technology, under the strongest government-grade standards, and fully compliant with beneficiary countries' current regulatory frameworks. As such, it's guided by three main aspects:

Decentralization. Web3 is enabled by enterprise decentralized ledger technologies (DLT), which completes Web standard protocols by allowing certification of ownership of any kind of digital assets with the highest reliability and at an ultra-efficient close-to-zero cost, with verification in real time.

Digital wallets. The gateway to Web3 for trillions of final users are digital wallets based on blockchain, enabling real-time verification of identity and property credentials, ownership of data by final users, and peer to peer transfer of digital assets.

Tokenization and CBDCs. Web3 is based on blockchain-enabled digital representation of real assets, including the tokenization of strictly fiat digital currencies and CBCs. Blockchain technology plays a crucial role in ensuring transparent and secure control and ownership of digital assets.

² [LACChain](#) is a global alliance for the development of the blockchain ecosystem in LAC by [IDB Lab](#). LACChain's smashed expectations in four years, the regional program octuplicated the [final expected result](#) achieving a cost per beneficiary ratio of cents on the dollar and it is one of the most successful high-impact technological application experiences in the history of the IDB Group. Through 120 solutions on the network, it has already impacted over nine million vulnerable people in 23 countries in Latin America and the Caribbean. Over the past four years, the program has received [various recognitions](#), awards, and accreditations from leading international standardization bodies such as [ITU](#), [ISO](#), [ETSI](#), as well as several awards, including most recently for the Most Exciting Project in Social Innovation at the [INATBA 2023 Awards Gala](#) and the [Inclusion Award](#) at the ID Forum 2022.

³ [LACNet](#) is the third-party organization that orchestrates LACChain Networks. LACChain Networks are blockchain networks developed by the LACChain Alliance and orchestrated by LACNet. These networks are classified as permissioned public blockchain networks, as defined in the standard ISO TC307 WG5 TS23635 and have been designed with a special focus on Latin America and the Caribbean.

Figure 1. Box 1: Web3 for the real world and CBDCs, internal LACChain team definition by Alejandro Pardo, leader of the initiative and Principal Specialist at IDB Lab

- 2.3. Over the last few years IDB has been globally recognized for fostering innovation including emerging technologies such as blockchain technology. Within the framework of LACChain, IDB Lab's flagship initiative has impacted millions of vulnerable people's lives⁴ by making Web3 a reality for real life from Latin America and the Caribbean.
- 2.4. The LACChain program, launched by IDB Lab in 2019, has built the largest permissioned public blockchain for enterprise purposes in the world⁵. With more than 120 projects in the network, the blockchain infrastructure has been a reference as part of international standardization groups, and other multilaterals across the globe. To address this, the LACChain Alliance is focused on two big pillars: community and infrastructure. In terms of community engagement, the LACChain Alliance actively supports national ecosystems and governments across the LAC region, establishes regional and industry-specific working groups, facilitates the organization of hackathons and challenges, and contributes to standardization efforts, among various other initiatives. In terms of infrastructure, the LACChain Alliance has built the largest permissioned public blockchain infrastructure in the world, which is LACNet, with more than 135 entities from Latin America, the Caribbean, the United States, and Europe sharing a common network for their blockchain-based projects. LACNet is the neutral and non-profit vehicle that has allowed LACChain Networks to move into production and has the technological expertise in blockchain technology implementation.

LACChain has been working for four years on the deployment of digital fiat tokenization solutions. Some of the most salient examples of work in this area include: (i) The historic collaboration agreement between IDB and BIS to Promote Financial Inclusion with Innovative Technology is the first project that will make available to central banks of Latin America and the Caribbean an open source technology for faster and more inclusive payment systems⁶; (ii) the first issuance of a bond in the Latin America and Caribbean region on the LACChain blockchain network with the IDB Group and Banco Davivienda-Banco de la República de Colombia⁷ (BRC); (iii) the first global experience of a bond listed in Spain, compliant with regulation and registered on blockchain within the framework of LACChain, the IDB, Grupo BME through Iberclear and its technology partner

⁴ The LACChain initiative has impacted 9,3 M vulnerable people since the beginning of the project in 2019. This information is available in the project status report and the results dashboard. The expected initial results were that 1 million vulnerable people benefited.

⁵ Confirmed by LF Decentralized Trust (former [Hyperledger Foundation](#)) as the world's largest permissioned public blockchain.

⁶ The first project under the agreement (2023) is the Fully Scalable Settlement Engine, or FuSSE, which is already under development. It offers central banks open-source technology that will [facilitate and enhance payment systems, as well as respond to the banks' needs](#) in various markets, such as securities clearing and settlement.

⁷ The IDB Group (2022). — composed of the Inter-American Development Bank, IDB Invest and IDB Lab — and Colombia's Davivienda Bank [successfully issued the first blockchain bonds in Latin America and the Caribbean, as a pilot project within Colombia's regulatory innovation sandbox](#). This pilot is the first of its kind in the region.

- ioBuilders and BBVA⁸; and (iv) cross-border payments of tokenized fiat currency on blockchain were successfully conducted between the IDB headquarters in the U.S. and the Dominican Republic, in collaboration with the Department of Finance (FIN) and Citi. This marked the first transfer of funds from an organization using this innovative technology.⁹
- 2.5. These experiences have demonstrated significant efficiency gains, particularly in terms of reduced transaction costs and delivery times. In sum, this work has allowed the development of technological protocols and governance frameworks that allow the use of LACChain networks orchestrated by LACNet¹⁰ with full technical guarantees and regulatory compliance.
- 2.6. This work has also led to the development of technological protocols and governance frameworks that enable the use of LACChain networks orchestrated by LACNet with full technical and regulatory compliance guarantees. Such as other sectors, LACChain has also gathered a wide community of stakeholders, including central banks, financial institutions, technology developers, and others interested in the development of a central bank digital currency (CBDC) ecosystem due to its expected impact on making payment systems more efficient. In the context of the G20, there are plans to make a public announcement about this collaboration led by Korea, further enhancing the strategic relevance of the project for financial inclusion and monetary policy. This will involve bringing new allies on board.
- 2.7. In this context, with several central banks in the region looking to explore and better understand the benefits and challenges of implementing CBDCs, the LACChain and IDB Lab teams had been in conversations with entities looking for strategic advice in the new era of tokenized assets considering LACChain's expertise and leading role in the use of blockchain technology. The more direct contacts include: (i) The Central Bank of Brazil has chosen the same blockchain underlying protocol used within LACChain infrastructure, asked for technical expertise to support their team build the network, and has expressed their interest in having someone like IDB leading at a regional level a similar effort to what they are doing at a national level with the Drex (Brazilian CBDC) pilot, in order to allow other central banks in LAC (Latin America and the Caribbean) to test local CBDCs and cross border settlements with a common standard. (ii) Following a connection facilitated by the Central Bank of Brazil, the Centro de Estudios Monetarios Latinoamericanos (CEMLA) has established a working group with representatives from various LAC central banks to discuss and test Central Bank Digital Currencies (CBDCs). They are currently seeking a partner to help establish a Testnet environment for these central banks. This testing environment will allow them to experiment with key aspects such as CBDC issuance, cross-border payments, real-time settlement, and more. The value of this Testnet lies in its ability to provide a unique

⁸ BME, BBVA, IDB and ioBuilders (2022) [have been building this pioneering blockchain platform that can be used to register bonds issued on a regulated market, trade them on the secondary market and manage their life cycle](#). The operation used smart contracts to distribute, buy and sell, and settle bonds, as well as for corporate events, with electronic money tokenized by BBVA for managing cash over the life of the bonds. The project count with the legal advice of Garrigues.

⁹ The Inter-American Development Bank and Citi Innovation Labs (2021) [conclude a successful proof of concept to make cross-border payments from the United States to countries in Latin America and the Caribbean, using blockchain and tokenized money](#), that provides full traceability of the transactions, exchange rates, and fees.

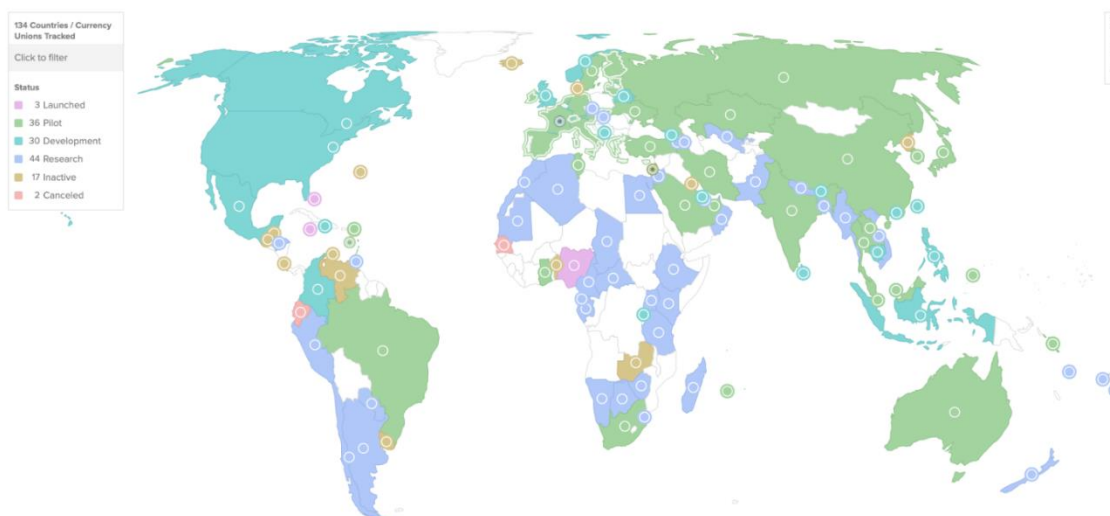
¹⁰ Through a groundbreaking agreement between RedCLARA and LACNIC, in collaboration with IDB Lab under the Global Alliance LACChain, an exciting initiative called LACNet has emerged. LACNet is an international non-profit association (foundation) with a primary objective of orchestrating a robust, production-ready blockchain infrastructure for Latin America and the Caribbean, ensuring neutrality and inclusivity for all stakeholders involved.

- interoperable protocol, ensuring compatibility and collaboration among participating countries.; (iii) The Monetary Authority of Singapore (MAS) has expressed their interest in working together with a LACChain regional Testnet to enable cross-region interoperability with the work they are doing in Asia with other financial institutions.
- 2.8. **Justification.** After surveying 81 central banks, the Bank for International Settlements (BIS) concluded that “9 out of 10 central banks worldwide are exploring CBDCs, while more than 67% consider that they are likely to or might possibly issue a retail CBDC in either the short or medium term. Some key pain points this would alleviate include the limited operating hours of the current payment systems and the length of the current transaction chains. Additional benefits include efficiency and safety (in both domestic and international payments) and financial stability, according to the same study by the BIS. By the end of 2021, 26% of central banks already had the authority to issue CBDCs according to their regulations, while an additional 10% of jurisdictions were in the process of enabling it”.
- 2.9. In Latin America and the Caribbean, unlike other regions with a common currency (e.g., Europe), the opportunity for a better multi-currency cross border payment system is very appealing and could have substantial impact in improving retail payments, including remittances. According to the BIS, the interest of LAC central banks in CBDCs as in other central banks around the global economy are increasing and looking to promote greater financial inclusion, efficiency, and safety of the payments system¹¹. There have been significant efforts in research, piloting, and launching in production CBDCs.
- 2.10. CBDC’s potential in LAC allows it to close the circle in different monetary and payments systems in the region. First, CBDC’s potential to spur competition and reduce costs in the payment system, which are especially high in many LAC economies. Furthermore, CBDCs could also diminish the threat to monetary sovereignty from private digital currencies, promote financial inclusion and reduce informality. Considering that it is necessary to count with common standards to make interoperable CBDC’s functions possible between Central Banks as real time settlements, cross-border payments, among others.
- 2.11. In the Caribbean, the Central Bank of the Bahamas was the first country to issue a retail CBDC in 2019, the "Sand Dollar"¹², a digital version of the Bahamian dollar, which aims to improve financial access, reduce cash usage, and enhance the resilience of the country's payment system. Pegged to the USD, the Bahamian Sand Dollar is based on digital ledger technology (DLT) with a hybrid wireless network to connect mobile devices. The Bahamas prioritized this advancement because 18% of its population is unbanked and cash distribution is hindered by frequent bouts of severe weather.

¹¹ Central bank digital currencies (CBDCs) in Latin America and the Caribbean (2022) [Bank for International Settlements](#).

¹² In October 2020, the [Sand Dollar](#) became the first CBDC in the world to go beyond the pilot stage and achieve an official launch. The digital currency became available for use by all Bahamian citizens upon release, while integration with the commercial banking system has been subject to a gradual rollout.

- 2.12. In April 2021, the Eastern Caribbean Central Bank (ECCB) launched DCash, the first digital currency used in a monetary union, with 8 out of 9 member states participating in the scheme. The CBDC had no transaction fees and was intended to facilitate digital money transfers made to consumers and merchants. The ECCB intends to introduce an e-commerce function which will enable businesses to accept DCash via websites and engaged a local marketing agency over the year 2023 to promote DCash and encourage education about the technology. The research conducted by the ECCB focuses on testing the technical feasibility, security, and scalability of a CBDC in a small island economy.
- 2.13. The Central Bank of Brazil has been studying the potential benefits and risks of a digital version of the Brazilian real. Research in Brazil has emphasized the importance of promoting financial inclusion by leveraging CBDC technology to reach unbanked populations and reduce the costs associated with traditional payment systems. On March 2023, they announced the formal start of the CBDC pilot with a final rollout expected by the end of 2024. Designed using a blockchain operated by the central bank, it is intended to serve for settling wholesale interbank transactions, but retail access will also be enabled through tokenized bank deposits. The Central Bank is also interested in the issuance of tokenized government bonds.



Graphic 1. The [Atlantic Council's interactive map](#) allows to track the situation of 120 central banks, of which 11 have already launched CBDCs and 18 are piloting.

- 2.14. The application of emerging technologies, particularly blockchain, in the development and utilization of Central Bank Digital Currencies (CBDCs) through the LACChain networks, holds the potential to significantly enhance and foster Korea and Latin America and the Caribbean region relationship. Korea is a significant partner for LAC and has a significant role in economy: "Bilateral trade grew at an impressive annual rate of 11.5% reaching a record high in 2021. The trade boom was followed by US\$ 26 billion in investments by Korean firms in the region since 2000."¹³ The constructive collaboration between Korea's advanced technological expertise and Latin American countries' growing interest in digital currencies provides an ideal platform for collaboration. By leveraging LACChain's

¹³ Latin America and Korea: Partners for Sustainable Trade and Investment (2022) IDB

through its blockchain infrastructure, LACNet, these regions can establish a common ground for exploring innovative solutions and exchange knowledge. Such collaboration can lead to the creation of interoperable CBDC systems that transcend geographical boundaries, thereby promoting trade, investment, and economic cooperation between countries in both regions. Central banks, at the forefront of monetary policies, can benefit from shared expertise to enhance the security, efficiency, and adoption of CBDCs, fostering a stronger and more interconnected global financial landscape.

- 2.15. This project emphasizes the collaboration between Korea and Latin America and the Caribbean through blockchain technology and enhancing opportunities for growth and development by the sharing of learned lessons, experiences, and resources. Since 2021 Korea successfully implemented CBDC mock tests, based on the collaboration between financial institutions and IT service companies. in Korea. This project provides Korean entities with opportunities to validate their technology and policy framework on a global scale and share their experiences and knowledge to develop a Latin America and the Caribbean Testnet, while building upon the Korean expertise. Furthermore, active participation in the CBDC project from the beginning stage offers Korean blockchain-related and IT companies a platform to expand their business presence in Latin America and the Caribbean, as the deployment of an interoperable CBDC platform is expected to bring extraordinary business opportunities, especially in payment services and asset tokenization sectors.

III. The Solution - Impact of the project

- 3.1. Within the framework of LACChain, IDB Lab's flagship initiative that has made a significant impact on millions of vulnerable people across Latin America and the Caribbean by bringing Web3 into practical use, a collaborative effort is being established with Korea as a global partner and co-investor in the development of Central Bank Digital Currencies (CBDCs). This joint initiative leverages LACChain's and LACNet's proven expertise in utilizing tokenized fiat money and CBDCs as powerful tools to enhance the efficiency of payment systems, particularly by overcoming persistent challenges related to financial interoperability, common standards, and neutral orchestration¹⁴. IDB Lab will contribute LACChain's digital, intellectual, and capacity assets to this joint project. The value of contribution calculated at price of acquisition (not market value) exceeds US \$12 million.
- 3.2. Additionally, CBDC transactions can be faster and less costly than traditional transactions, thus benefiting individuals by reducing fees and enhancing payment efficiency¹⁵. CBDCs also offer greater security and trust, as they are backed by central banks, and can reduce the informal economy through more transparent transactions. The market potential for Central Bank Digital Currencies (CBDCs) is substantial. The annual value of transactions with CBDCs is projected to reach \$213 billion by 2030, marking a remarkable growth of 260,000 percent in just seven

¹⁴ Alonso, V, Kaim, S &, Zampiolli, F (2022) Central bank digital currencies (CBDCs) in Latin America and the Caribbean. [Bank of International Settlements](#).

¹⁵ Kamin, S (2022) Do Central Bank Digital Currencies Make Sense for Emerging Market Economies?. Penn University

- years¹⁶. For example, the European Central Bank (ECB) is in a new phase of preparation for the digital Euro. Over the past two years, the ECB has been investigating design and distribution models for a CBDC¹⁷.
- 3.3. **Problem statement.** The problem that this project seeks to solve is the limitations of central banks to catch-up and adopt current technological capabilities for the issuance of CBDCs and to develop common standards and access to CBDC's financial opportunities in the Web3 era.
 - 3.4. The TC aims to enable a regional test network with CBDCs and tokenization of financial assets to enable cross-region interoperability among central banks, and financial institutions. The proposal consists of designing and deploying a complete functional architecture to model and experiment with CBDCs, executed in several phases and in a collaborative manner having the expertise of LACNet and IDB Lab as the executing agency of this project. The project's objective is to accelerate CBDC's initiatives and to develop a single protocol, technology infrastructure, and interoperability standards for verifying CBDC's for use with an impact on inclusion.
 - 3.5. This Technical Cooperation (TC) will focus on four key components to achieve its objectives:
 - (i) Launch of the LAC CBDC Ecosystem project, starting with the participation of at least two different countries and their central banks;
 - (ii) A fully operational regional TestNet for interoperable CBDCs tested in at least two countries in terms of CBDC issuance and interoperability;
 - (iii) Facilitating the development of user-applications based on CBDCs in the two countries;
 - (iv) Analysis, Project Results, Evaluation and Audit, focusing on informing the project next phase of expansion to five different countries.
 - 3.6. In component 1, the project team will identify and engage key stakeholders from the public and private sectors to enhance CBDC adoption. Based on the identification and mapping of the stakeholders, the project team will undertake a comprehensive assessment to evaluate the current financial infrastructure and assess CBDC integration readiness in Latin America and the Caribbean countries. The assessment will include: a framework for stakeholder engagement, integration of best practices and case studies, the development of the regulatory map, critical regulatory considerations, and resilient risk mitigation strategies. Simultaneously, the project team will support the seamless transfer of knowledge from Korean entities to central banks and financial institutions participating of this project, to foster CBDCs ecosystem development.
 - 3.7. The participating central banks in this project will focus on developing knowledge for monetary control, policy implementation, and financial inclusion. Additionally, they will leverage CBDCs to facilitate more efficient cross-border transactions through the Testnet, following the knowledge transfer provided within the project.

¹⁶ Walker,P, Joia,E, & Aragao, J (2024) [Central bank digital currencies: Accelerating a digital economy with advanced technology. Microsoft Industry](#)

¹⁷ [Atlantic Council \(2023\) Central bank digital currency evolution in 2023: From investigation to preparation](#)

- 3.8. Countries to be selected for this TC are going to be determined according to their demand. The Central Bank of Brazil and others will be defined via a demand-driven approach as part of a regional eligibility dialogue relying on factors such as: (a) Commitment of human and monetary resources to the project; (b) High priority within the central bank's strategy; (c) Expressed interest to scale-up CBDCs issuances; and (d) Identified interoperability needs with other central banks.
- 3.9. In component 2, the project team will enable the deployment, configuration, testing, and validation of the regional blockchain Testnet for CBDC solution, by incorporating a pre-built technology stack that guarantees compliance with the most stringent international standards. Additionally, during this phase, the project team will engage an expert firm to adapt and deploy a CBDC prototype based on blockchain for testing with business operating partners.
- 3.10. In component 3, the project team will drive the growth of the CBDC ecosystem and encourage its widespread adoption by other countries in LAC by replicating this pilot and its activities. The project team will expand the development of end-user solutions based on CBDCs through education, capacity building, external dissemination and fostering awareness via knowledge exchange.
- 3.11. In component 4, the project team will conduct the analysis, evaluation, and management of the project results to inform the project's scale-up phase. For streamlined evaluation and reporting, the project team will co-design and develop a real-time impact dashboard for the project. This component also includes administrative support, evaluation, and audit processes to ensure effective project management.
- 3.12. This operation and its expected impact seek to contribute to the following SDGs (Sustainable Development Goals): 8 "Decent Work and Economic Growth" (8.10 Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all); 9 "Industry, Innovation and Infrastructure" (9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all).

IV. Korea's visibility and strategic collaboration

- 4.1. Korea has been a world pioneer in exploring CBDCs issuance and their practical use. Starting in 2021, the Bank of Korea (BOK) embarked on a CBDC project in two distinct phases. The project involved simulated research from August 2021 to June 2022 and practical experiments conducted in collaboration with financial institutions and the private sector from July 2022 to December 2022. During the simulated research phase, the BOK validated the technical feasibility of a CBDC system based on distributed ledger technology. Basic functions essential for CBDC circulation — including wallet creation, exchange, transfers, and payments— were successfully implemented. In the second stage experiment, more advanced functionalities cross-border transfers, law enforcement, currency policy, regulatory compliance, and others— were developed and tested. For instance, cross-border transfers utilized smart contracts to ensure the execution of agreements between

- intermediaries, even when different countries had distinct distributed ledger environments, thus guaranteeing the seamless completion of cross-border transactions. In 2024, the BOK announced to develop the CBDC system in two tracks of retail and wholesale and expand its infrastructure to the carbon credit trading system.
- 4.2. The second stage experiment also explored the possibility of 'offline CBDC'. For CBDC to replace physical cash, it should be possible to transact even in offline conditions, without an internet connection. Korean entities had participated in the experiment to develop offline CBDC technology that enables device-to-device transfers and payments through near-field communication (NFC) even when both the sender and receiver's transaction devices are not connected to the internet.
 - 4.3. During the CBDC project, a total of six Korean private companies (Krust, KakaoBank, KakaoPay, KakaoEnterprise, NGL, KPMG) participated as business operating partners. Especially, Krust, a Kakao's affiliate company specialized in Blockchain technology, had participated in the project as a core business operator and led the experiment to verify whether the CBDC system could be properly established based on Klaytn blockchain platform, the global open-source public blockchain developed by the Kakao group. KakaoBank developed the banking application system and Konai participated to circulate the CBDC in the physical card form. Additionally, fifteen Korean financial institutions including major banks in Korea and Korea Financial Telecommunication and Clearing Institute (KFTC) had voluntarily participated in the project to test the CBDC system.
 - 4.4. Since October 2023, the BOK has planned to implement the 'CBDC utilization test' to examine various uses cases for digital currency based on institutional CBDC jointly with the Financial Services Commission and the Financial Supervisory Service. In addition, the test will be collaborated with the Bank for International Settlements (BIS) to suggest an institutional CBDC-centric design model. This model will encompass various payment methods, including tokenized deposits and tokenized e-money, providing a new framework for digital currency. Moreover, the BOK has signed a MoU with Korea Exchange (KRX) to develop a carbon credit transaction system utilizing the developed Central bank Digital Currency system.
 - 4.5. Within the 'Establishing the LAC CBDC ecosystem' component, the project aims to collaborate with Korean entities by establishing the Korea-LAC CBDC Network. This network will be structured in three parts:
 - (A) Policy Research: Cultivating connections with Korean academic and research institutions, including Sungkyunkwan University, to provide insights and knowledge products regarding the policy implications of adopting the CBDC system and its potential effects on the national economy.
 - (B) Technology Research: In the technological realm, Korean academic institutions, such as Korea Advanced Institute of Science and Technology (KAIST), will provide advisory services to develop a stable CBDC blockchain security infrastructure.
 - (C) CBDC Knowledge Sharing: Leveraging the extensive knowledge gained from implementing the national CBDC project, the BOK and KRX can share their expertise through knowledge exchange programs. Additionally, the KFTC, having participated in the Korea CBDC mock test, can offer insights from a regulatory perspective.

- 4.6. Within the 'A fully operational regional TestNet for CBDCs' component, the project team might explore collaboration with potential partners to adapt digital wallet to interact with CBDC test-net and their offline CBDC system depending on the advancement towards retail operations. This system is crucial for establishing a stable service that can function without internet connectivity, especially in emergency situations like natural disasters. Additionally, Korean companies, such as the Kakao group, can share valuable insights and experiences in developing digital solutions for CBDCs, including smart contract implementation and solution support.
- 4.7. Within the 'Facilitating Application Market Development and Adoption Promotion' component, the above-mentioned institutions and companies in Korea can participate as partners to expand LAC CBDC network. By facilitating testing end-user solutions based on CBDCs in LAC, the component will offer extraordinary market expansion and business opportunities for Korean firms. Also, the entities can collaborate in providing related knowledge, training, and networking to create further business opportunities collaborating with LAC companies. The event will focus on holistic exchange and dissemination of knowledge, encompassing a wide range of technical expertise sharing and collaborative learning.
- 4.8. Within the 'Analysis, Project Results, Evaluation and Audit' component the project team will develop an impact dashboard to measure the business and impact results of the CBDC solutions tested, which will provide market-signaling effects for Korean entities to explore potential business and collaboration opportunities. The dashboard will include a review of the Testnet project, evaluations, and testing to ensure a smooth scale-up transition.

V. Description of activities/components and budget

To achieve the objectives of this TCs, this TC will address 4 key components:

5.1. Component 1. Establishing the Ecosystem:

The objective is to build a comprehensive understanding of the unique characteristics of the country's ecosystem for CBDCs, ensuring that the subsequent steps are grounded in a solid foundation of knowledge and insight. The project team's objective is to build a comprehensive understanding of the unique characteristics of the country's ecosystem for CBDCs, ensuring that the subsequent steps are grounded in a solid foundation of knowledge and insight. This component's objective is to facilitate the formation of public-private partnerships for the implementation of CBDC's.

The project will promote actions to facilitate collaboration in the ecosystem based on the experience of the LACChain project for awareness raising and matchmaking of high-level technical advisory services and technological and market information for the development of these types of applications in the Web3 era. As in the LACChain project, the various departments of the IDB Group participating in this project will provide advice and best practices in key areas such as the regulatory framework, standardization, and the alignment of technological, financial and market standards, to enable central banks to adopt CBDC's.

The key activities for accomplishing this result are:

- (A) Recognize and engage with key stakeholders from both the public and private sectors. Identify entities that can contribute significantly to the widespread adoption and use of CBDCs.
- (B) Identification and Mapping: Create a detailed roadmap for CBDC solutions by mapping out the regulatory and business landscape. Identify the key considerations that must be addressed for successful implementation, adoption, and scalability of CBDCs.
- (C) Diagnosis: Analysis of the country's financial landscape to pinpoint opportunities and challenges. This involves an in-depth evaluation of existing financial systems and an assessment of the readiness for Central Bank Digital Currency (CBDC) integration.
- (D) Enabling the exchange of knowledge from Korean entities to nurture ecosystem development.

5.2. Component 2. Development of A Fully Operational Regional TestNet for CBDCs:

The objective is to establish a robust testing environment, equipped with a pre-built technology stack to facilitate thorough testing, validation, and enhancement of CBDC features and functionalities, while ensuring alignment with stringent international standards and seamless compliance with national regulatory frameworks. Implementation of Technical Support & Business Exchange.

This component's objective is to accelerate CBDC's initiatives and to develop a single protocol, technology infrastructure, and interoperability standards for verifying CBDC's for use with an impact on inclusion. Main activities within this component are:

- (A) TestNet Deployment: This activity includes configuration, testing, validation, and support. This all-encompassing activity ensures the blockchain infrastructure full functionality and readiness for use, while concurrently conducting thorough testing and validation of CBDC issuance within a Testnet environment.
- (B) Digital solution for CBDCs: smart contract implementation and solution support including Asset Token Contracts, Backend and Frontend tokenization tools for central banks or issuers; and Access tools for commercial banks or participants with CBDC accounts. Please see Annex I for the proposed functional architecture.

5.3. Component 3. Facilitating Application Market Development and Adoption Promotion:

The objective is to actively promote the expansion of the CBDC application market by encouraging the widespread adoption of CBDC's in other LAC countries through education, capacity building, external dissemination, and awareness through knowledge exchange.

- (A) Education and Capacity Building. Facilitate workshops aimed at addressing critical aspects for CBDC's adoption, including: (a) functional aspects of digital ledgers, (b) primary applications and benefits of CBDCs within the Financial Industry. (c) mechanisms for ensuring interoperability and (d) key architectural and technological components.
 - o For this purpose, the activities included would design an appropriate workshop plan and learning modules for CBDC's early adopters.

- Furthermore, it is essential to create educational materials to create shared knowledge.
- (B) External dissemination and awareness. To inform, educate, and engage key stakeholders, such as the public, financial institutions, businesses, government bodies, and international partners, about CBDCs. This activity focuses on building understanding and support for the CBDC initiative, addressing any concerns, and ensuring a smooth and successful rollout.
- To foster Korean economic exchange, an essential activity is to plan and execute "a strategic event" tailored to our Korean partners, with a primary focus on engaging Korean stakeholders effectively.
 - Additionally, it is necessary to have an activity focused on arranging workshops, webinars, and seminars as needed to cater to diverse stakeholder groups.
- (C) **Holistic exchange and dissemination of valuable knowledge, encompassing a wide spectrum of technical expertise sharing and collaborative learning.** In this specific activity knowledge material would be developed, including knowledge reports or publications containing a diverse range of resources, best practices, and expertise-sharing mechanisms within CBDC's ecosystem.

5.4. Component 4. Analysis, Project Results, Evaluation and Audit:

The project will rely on LACChain's technological capabilities and developments for real-time monitoring and evaluation of results. LACChain has developed a results dashboard (Annex II) that uses transactions recorded on the blockchain to capture real-time data on applications and beneficiaries. The objective of this component is to measure and evaluate the project's impact and outcomes in a manner aligned with the information demands of public and private partners in its scale-up. For this, transaction data from the project deployed on the blockchain network will be used to highlight the results obtained by the set of CBDC's transactions in the regional project progress.

To evaluate results, this project will use mathematical methods based on granular administrative microdata provided by the dashboard to analyze changes in user behavior and establish forecasting models. The dashboard data allows for the real-time capture of first-time access and asset management records by a unique user.

VI. Scalability

- 6.1. The project will demonstrate key lessons learned for use in other countries in the Latin American and Caribbean region and globally. Considering this is a first phase for CBDC's use for central banks and financial institutions, the evidence provided in this phase by CBDC's experimentation and solutions in terms of improved outcomes and the efficient management of financial assets in digitalized markets will be a driver for the accelerated adoption of these solutions by central banks in the region.
- 6.2. If successful, the project is expected to originate a scale-up phase, enabling the deployment of a CBDCs main-net in two countries and the subsequent expansion to the remaining three of the five pre-identified countries across the LAC region, the multiplication of end-user applications and business opportunities on top,

- following the scale-up course of the LACChain project. To develop this prototype, initial testing with relevant stakeholders is required only on a small scale. As this project aims to test the functionality of a Central Bank Digital Currencies (CBDC) Testnet, where the currency is issued by each country's central authority and the goal is to have two countries in the region participating in this testing environment created by the project to observe its performance this indicates that the testing is going to work only with the monetary authority and few relevant stakeholders. The small-scale approach is necessary for conducting an initial assessment of the countries and their financial entities. Only two financial institutions will participate in this testing environment to evaluate the interaction between CBDCs, central banks, and financial institutions.
- 6.3. The relevance of this prototype project lies in the potential impacts of more advanced projects utilizing CBDCs, where it can achieve financial inclusion and the access for digital payments of vulnerable people in countries such as Brazil Colombia, Peru, and Costa Rica. In countries like Colombia and Costa Rica¹⁸ the access of digital payments for rural areas still a challenge¹⁹. And in Peru only 29% of adults have a bank deposit account²⁰.
- 6.4. The scaling up of the LACChain project has been based on market development processes, replication by other stakeholders with an impact mandate, and demonstration through the establishment of industry-recognized standards, providing a frame of reference for scaling this project. Like LACChain, this project encourages the development of open-source protocols and will actively support expansion in the countries by promoting public-private consortia. Expansion begins with two countries and then expands to five in subsequent phases to effectively issue CBDCs in them thanks to LACChain. The approach of creating an interoperable protocol for CBDCs in the region is consistent with an open-source approach in which the more replication processes occur, the greater the results at scale. This phased expansion allows for initial testing and validation before broader implementation, ensuring robust and scalable solutions. The development of a single protocol is, by definition, the simplest and most direct way to enhance replication by third-party digital wallet developers and being interoperable creates added interest and accelerates rapid transfer and adoption. As part of these activities, public-private partnerships will be formed to consolidate the enabling ecosystem for the widespread experimentation and development of CBDC's in the beneficiary countries of the Latin American and Caribbean region, while training activities will be carried out to strengthen capacities in the region through workshops, courses, publications, and participation in key international events to promote and amplify the benefits and transformative potential of implementing CBDC's within financial systems.
- 6.5. The establishment of industry-recognized standards for CBDC's will also be a driving force for scaling up the project at the global level. As a globally unique proposal, and considering market demand and needs, this project also has the potential for its protocols and standards to be globally influential at scale. As with the LACChain project, the interoperable protocols developed through this project are expected to be validated and become a benchmark for international

¹⁸ [OCDE \(2020\) BOOSTING ACCESS TO CREDIT AND ENSURING FINANCIAL INCLUSION FOR ALL IN COSTA RICA](#)

¹⁹ [BBVA \(2024\) Colombia | Large improvements in financial inclusion but wide gaps persist](#)

²⁰ [Catholic University of Avila \(2024\) What Factors Are Limiting Financial Inclusion and Development in Peru? Empirical Evidence](#)

standardization bodies such as the ITU, ISO, and the W3C (World Wide Web Consortium).

VII. Major Risks

- 7.1. Regulatory and policy risks arise from the nascent and rapidly evolving landscape surrounding CBDCs. As these digital currencies represent a relatively new concept, the regulatory frameworks governing them are still being developed and often vary across different jurisdictions. To mitigate this risk, the project will implement regulation and policy studies in collaboration with academic institutions. Furthermore, the collaborating entities (i) Bank of Korea (BOK), (ii) Korea Exchange (KRX), (iii) the KAIST Network Security and Privacy Lab, (iv) and Sungkyunkwan University (SKKU), (v) LACNet , with the support of OII, are conducting an integrity due diligence (IDD) for avoiding any indicators of integrity or related reputational risks for IDB Lab.
- 7.2. Operational risks in CBDC implementation stem from the complexity of managing a project that requires coordination among diverse stakeholders, including governments, central banks, and private sector entities. To mitigate this risk, the project will fully utilize the expertise of LACCahin team and IDB's network, which have extensive experience managing innovative projects across both private and public sectors.
- 7.3. Technical risks are a critical consideration in the implementation of CBDC project, as CBDCs are built on digital infrastructures. According to the US Federal Reserve report²¹, consumer privacy, prevention of financial crimes, operational resilience and cybersecurity are listed among primary risks associated with a central bank sponsored or backed digital currency. Ensuring interoperability between the CBDC and existing financial systems, both domestically and across borders, adds another layer of complexity. To mitigate this risk, the Testnet development team will engage with the project from the outset, to understand the needs of the central bank and complexity of the project. Also, the project includes technical advisory support from the private sector.
- 7.4. From the ESG perspective, the project is considered aligned with the Paris Agreement. It employs blockchain technology via the LACChain networks, which use permissioned networks and a proof-of-authority consensus model. This approach reduces energy consumption, aligning with low-carbon standards. Moreover, since the infrastructure adopted by LACChain Networks (Google Cloud) does not involve high-carbon activities and aims to streamline transactions, the project aligns with BB1 (mitigation component) by minimizing the digital infrastructure's carbon footprint. According to Google, they are committed to operating sustainably and in line with aggressive environmental goals. Since 2017, they have matched 100% of their data center and office electricity consumption with renewable energy purchases and are now working to run on carbon-free energy 24/7 by 2030. In their 2023 environmental report, Google highlighted sourcing approximately 64% continuous carbon-free energy across all their data centers and offices. Furthermore, the project is considered aligned with BB2

²¹ [US Federal Reserve \(2022\) Money and Payments: The U.S. Dollar in the Age of Digital Transformation](#)

(adaptation and resilience component). Finally, by improving cross-border payment systems and reducing transactional costs, the project can support financial inclusion, enabling vulnerable populations to access stable financial resources.

VIII. Results and measurement

8.1. The expertise generated through this Technical Cooperation will lead to new opportunities for developing CBDC's ecosystem and common standards in Latin America and the Caribbean. These opportunities are associated with the results of this project and due to its market development approach, are significant:

- (i) A regional Testnet is in operation and available for the issuance of CBDC's: blockchain infrastructure with full functionality and readiness for use.
- (ii) Prototype of a digital solution for CBDCs: smart contract implementation.
- (iii) At least 2 countries have tested the issuance of CBDCs on top of the blockchain Testnet infrastructure.

IX. Indicative Budget²²

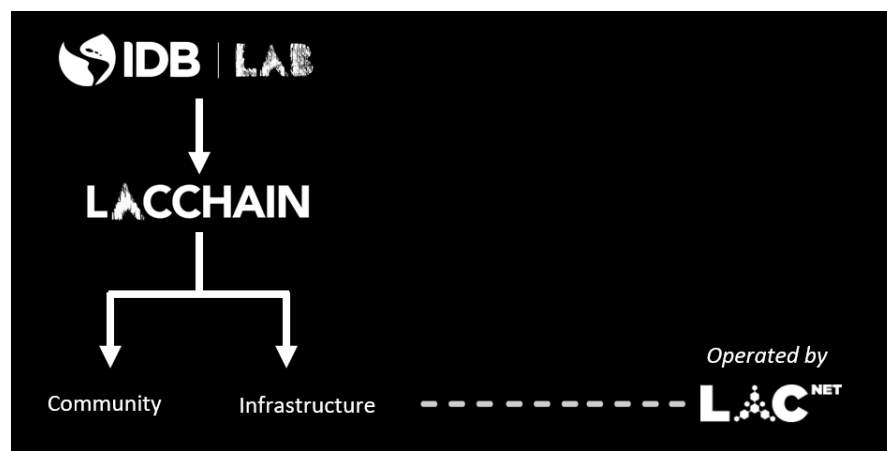
9.1. For this project, the Korea's Trust Fund funding will be in the amount of US\$ 750,000.

Phase 1: Take off-phase				
Duration: 24 months				
No.	Description/Component	Korea Private Sector Development and Innovation Fund (KPS)		Total
		Executing Agency (L-Net)	To be executed by IDB Lab	
C1	Component 1: Establishing the Ecosystem: The objective is to build a comprehensive understanding of the unique characteristics of the country's ecosystem for CBDCs, ensuring that the subsequent steps are grounded in a solid foundation of knowledge and insight.	US\$ 102,000	US\$ 0	US\$ 102,000
C2	Component 2: A Fully Operational Regional TestNet for CBDCs: The objective is to establish a robust testing environment, equipped with a pre-built technology stack to facilitate thorough testing, validation, and enhancement of CBDC features and functionalities, while ensuring alignment with stringent international standards and seamless compliance with national regulatory frameworks.	US\$ 300,000	US\$ 0	US\$ 300,000
C3	Component 3: Facilitating Application Market Development and Adoption Promotion: The objective is to actively promote the expansion of the CBDC application market and encourage widespread adoption.	US\$ 210,000	US\$ 40,000	US\$ 250,000
C4	Component 4: Analysis, Project Results, Evaluation and Audit.	US\$ 98,000	US\$ 0	US\$ 98,000
TOTAL		US\$ 710,000	US\$ 40,000	US\$ 750,000

²² The detailed budget allocation is provided in Annex IV

X. Executing agency and execution structure

- 10.1. **Organizational set-up:** To ensure effective governance and an organizational set-up for the project, a Steering Committee will be established and presided by IDB Lab consisting of contributors to the project. Chaired by IDB Lab and KPS Fund, this committee will oversee strategic planning, execution, technical considerations, definition of standards, and overall project coordination. The Steering Committee may propose the inclusion of new entities that are technically or financially relevant to the project's objectives.
- 10.2. Regarding entities involved in the organizational set-up (please see graphic 3.) IDB Lab will be the leader of the Steering Committee, and its flagship initiative LACChain is the leader of the project orchestration working to develop blockchain community and LACNet to develop blockchain infrastructure.



Graphic 3. Project Organizational Set-Up

- 10.3. L-Net (commercially known as [LACNet](#)) is an international non-profit association and neutral blockchain infrastructure orchestrator for Latin America and the Caribbean. It was founded by [RedCLARA](#) and [LACNIC](#) in collaboration with IDB Lab. Established with the primary purpose of orchestrating the LACChain Blockchain Networks, LACNet ensures both neutrality and sustainability of blockchain projects. Recognized as a strategic partner and based on the origin and governance of the Internet, LACNet stands out for its decentralized nature, commitment to neutrality, assurance, and dedication to innovation. Internationally acknowledged for its technical specifications and protocols in the blockchain sector, LACNet brings extensive experience as a pioneer in the global landscape, particularly in the domains of blockchain, Web3, and digital wallets.
- 10.4. [IDB Lab](#), has built an extensive network with participants in the Korean startup ecosystem and venture capital firms. Through the project "Support to Catalyze LAC Deep Tech Solutions Exchange in Response to COVID-19 (RG-T3720)," IDB Lab successfully provided partnership financing for prototyping solutions to five pairs of deep tech startups, involving LAC companies and Korean startups, aimed at creating joint innovation pilots in the form of joint ventures or other types of partnerships.

- 10.5. **Description of the executing agency.** The executing agency that will sign the agreement with the Bank for this project is LACNet. Under the framework of LACChain, LACNet plays a pivotal role in not only facilitating the institutional consolidation and sustainability of the LACChain operations, but also in harnessing the collective strength of the LACChain Alliance community. Moreover, the project strategically utilizes the expertise and capabilities of LACNet to ensure adherence to reliable and regulatory-compliant blockchain principles. LACNet assumes a critical role in guaranteeing reliability, accountability, and transparency and – as described under chapter 3.3. – in anchoring sustainability. Through seamless collaboration, the project draws upon the extensive experience and knowledge embedded within LACNet and the broader LACChain ecosystem, thereby propelling its success within the global landscape.
- 10.6. **Implementation structure and mechanism.** LACNet will be responsible for executing project activities and managing project resources effectively and efficiently. LACNet will also be responsible for providing status reports on project implementation. To ensure appropriate governance of the project, a Steering Committee will be formed as explained in numeral 10.1 and 10.2.
- 10.7. LACNet will also be responsible for the day-to-day coordination of project activities. For project supervision, the IDB Lab team at Headquarters and the in-country specialists who will play a crucial decision-making role will work together to ensure optimal use of the knowledge of the country ecosystem in combination with the knowledge generated by the regional practice community. To ensure the coordination of actions within the IDB Group, quarterly meetings will be held between the IDB Lab project team leader, IDB Lab specialists in the countries, our participating business partners from ITE's TechLab, all the Bank's departments, and IDB Invest. These meetings will allow coordination with IDB Lab and IDB Group specialists in the Country Offices to ensure good strategic planning and the continuous monitoring of national projects.
- 10.8. A consultant will be hired by IDB Lab for six months to promote and ensure the project's long-term viability and growth, and to establish a blockchain ecosystem network between Latin America and Caribbean region and Korea. The consultant will be responsible for planning and executing strategic events tailored to engage Korean partners. This will primarily involve effectively connecting with key Korean stakeholders, organizing workshops and seminars as needed to cater to diverse stakeholder groups. Additionally, the consultant will support the development of knowledge reports or publications, incorporating a wide range of resources, best practices, and expertise-sharing mechanisms.

XI. ACCESS TO INFORMATION AND INTELLECTUAL PROPERTY

- 11.1. **Access to Information.** The information in this document is classified as public according to the Bank's Information Access Policy.
- 11.2. **Intellectual Property.** The intellectual property of all works and results from the Project belongs to the Bank. Through an Agreement, the Bank will grant a non-exclusive, free, and non-commercial license to the Executing Agency to use, copy,

- distribute, reproduce, display, and publicly perform any work or result of the Project within the region.
- 11.3. The Executing Agency is required to include in all contracts made with consultants under the Project the assignment of the respective intellectual property rights, including copyright, to the Bank.
 - 11.4. The Bank may disclose, reproduce, and publish any information related to the Project and include in such information the name and logo of the Executing Agency.
 - 11.5. Intellectual property matters will be governed by the Bank's policies. This project includes additional and limited Intellectual Property, funded by third parties, through central resource mobilization, including high and low-level code for adapting the project's protocols and standards to specialized use cases, as agreed with those third-party funders, which will be co-owned by the Bank and the respective third-party funders.

Annex I: CBDC Functional Architecture

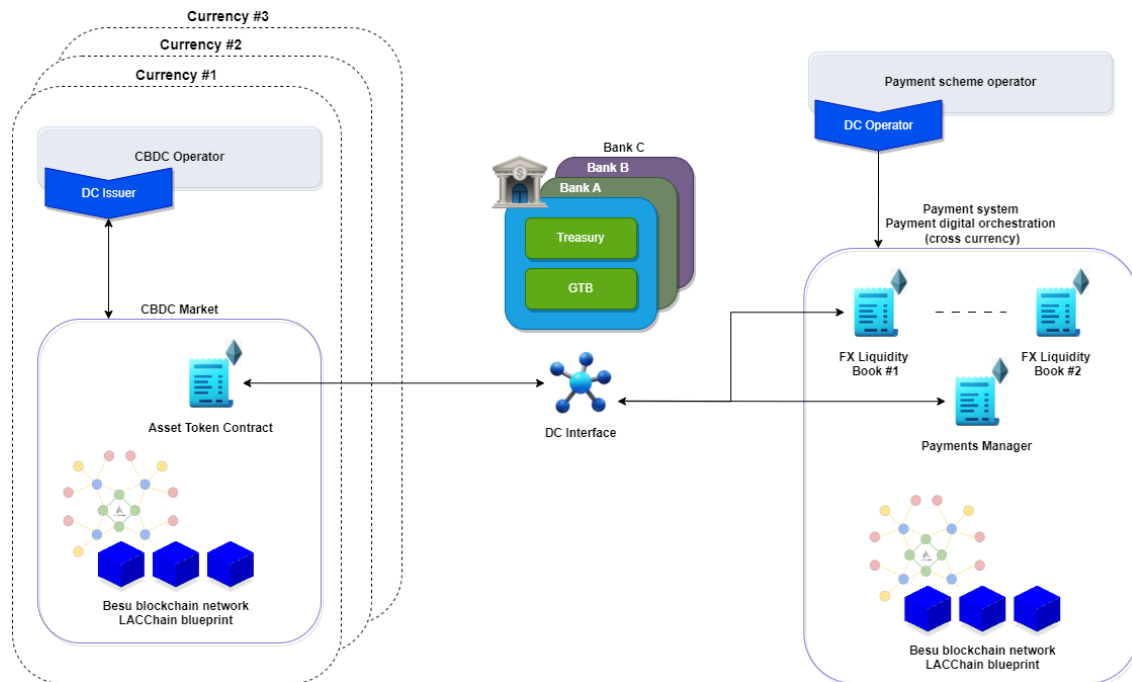


Figure 2. CBDC functional architecture

The proposed functional architecture would contain the following elements:

- (A) A blockchain network or a set of blockchain networks based on Hyperledger Besu²³ deployed according to the LACChain network blueprint²⁴, consisting of permissioned networks using a proof of authority consensus protocol, with a network usage resource (GAS) mechanism that allocates a defined amount per block and per participant.
- (B) A trust registry for the on-chain participants, with activity monitoring dashboards and a quantum proof security layer. This infrastructure would include the required monitoring and administration tools to manage the deployed blockchain networks.
- (C) Asset Token smart contracts that implement the CBDCs deployed on the blockchain networks.
- (D) Tokenization tools for central banks or financial institutions that act as CBDC issuers:
 - DC Issuer comprised of a backend to implement tokenization and detokenization processes, and a configuration and administration frontend for issuer entities.
 - Permissioning tool to configure and administrate the on-chain participants.
 - Network and transaction activity monitoring tools.
- (E) Access tools for Commercial banks or participating Entities, users, and beneficiaries of CBDC accounts:

²³ <https://www.hyperledger.org/projects/besu>

²⁴ <https://lacnet.com/overview/>

- DC Interface that enables participating entities to connect to different CBDC networks in order to visualize balances, perform transactions (e.g., tokenization and detokenization operations, transfers to other entities, holds, etc.) and generate activity reports.
- The DC Interface includes an advanced gateway capable of abstracting the complexities of connecting to different blockchain networks and exposing an API for a simplified integration of banks and financial institutions for interbank payments, including connecting via SWIFT messaging MT/ISO 20022 type.

In a phased approach, the functional architecture may deploy an additional blockchain network that implements the first CBDC modelled application, that acts as an orchestration layer that facilitates domestic/regional payments as unique digital objects that make use of CBDCs as an interbank settlement mechanism. In this case, two additional components will be added:

- Payment's manager contract and FX Liquidity Book(s) contracts deployed on the LACChain networks, which will orchestrate the domestic/regional payments digitally. This component will be tightly coupled with the CBDC networks and use them as an interbank settlement mechanism, evicting settlement risks and enabling instant payments available in regular banking off-hours (if considered convenient).
- DC Operator, an administrative tool for the payment scheme/system operator to permission the different participants (e.g., commercial banks that send and receive payments from corporate customers or retail entities toward/from their current bank accounts).