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REGIONAL

DIGITAL WALLETS FOR INCLUSION AND SUSTAINABILITY

(RG-T4204, RG-T4205)

DONORS MEMORANDUM

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PROJECT SUMMARY

DIGITAL WALLET FOR INCLUSION AND SUSTAINABILITY (RG-T4204/ RG-T4205)

The problem this project seeks to address is the limited access of vulnerable segments of the population to traditional asset management models due to high transaction costs in the “last mile.” Many diagnostic assessments by multilateral organizations of the challenge of social, economic, and financial inclusion in the region point to the depleted expansion capacity of traditional asset management models, characterized by increasing marginal transaction costs as efforts are made to expand the covered population, and those costs have not been successfully reduced.

The proposed intervention builds on the success achieved in the LACChain project, the global alliance for the development of the blockchain ecosystem in Latin America and the Caribbean. Based on this experience, the project seeks to develop enabling ecosystems in the region’s countries to expand the use of digital wallets to improve the management of economic and/or environmental asset portfolios. By recognizing the value of environmental assets and the monetization derived from their improved management, the project seeks to promote the services provided by environmental assets, including contributions to a net reduction of greenhouse gas (GHG) emissions and conservation of natural resources.

The project’s innovation is based on enabling the world’s first single interoperable protocol for the use of digital wallets, specifically aimed at inclusion and sustainability. In practical terms, the protocol made available by this project will allow each citizen to manage his or her own tangible and intangible assets through a cell phone application, including identity documents, property deeds, environmental certificates, vaccination credentials, academic diplomas, credit history, professional certificates, and much more. The project also puts vulnerable women and men in the driver’s seat of their destiny through the opportunities offered by data ownership under a fully decentralized, technology-enabled model.

Given its focus on market development, the expected outcomes of this project are numerous, including: (i) 2 million beneficiaries managing their economic and environmental assets by actively using digital wallets (1.1 million women); (ii) a single interoperable protocol, core infrastructure, and technology stack in operation and recognized by international standardization bodies; (iii) five Latin American and Caribbean countries with an enabling ecosystem for digital wallets; and (iv) 30 digital wallet solutions enabled for economically, socially, or environmentally vulnerable populations. Alignment with the IDB Group is achieved through the participation of 20 organizational units established by LACChain as active partners in the project. Digital wallets will allow citizens to value and monetize environmental assets, with 19.1% of the budget contributing to institutional climate change commitments.

ABBREVIATIONS

BNDES	Banco Nacional de Desenvolvimento Econômico e Social do Brasil [Brazilian National Bank for Economic and Social Development]
GHG	Greenhouse gases
ISO	International Organization for Standardization
ITE	Information Technology Department
ITU	International Telecommunication Union
LACChain	Global Alliance for the Development of the Blockchain Ecosystem in Latin America and the Caribbean established under regional project RG-T3370
SDG	Sustainable Development Goal
SEP	Social Entrepreneurship Program

PROJECT INFORMATION
DIGITAL WALLET FOR INCLUSION AND SUSTAINABILITY

Country and geographic location:	Regional ¹ Peru ² + 9 other countries in Latin America and the Caribbean
Executing agency:	Fundación Julio Ricaldoni
Focus area:	Knowledge Economy
Coordination with other donors/Bank operations:	(1) LACChain, under which this project originated, is a regional program and global alliance that involves leading blockchain players in Latin America and the Caribbean; (2) The 20 organizational units of the Inter-American Development Bank that are working on technology development and use within the framework of the global alliance for the development of the blockchain ecosystem in Latin America and the Caribbean (LACChain) established by regional project RG-T3370; (3) The following Bank operations are examples of collaboration with LACChain on the use of digital wallet protocols and will be implemented in conjunction with this project: Agros – Digital Identity for Small Nondigital Rural Producers (PE-G1011); Ejidos in Mexico (in the design phase); Ni1+ Gamechanger Against Gender Violence (CO-T1594); Blockchain-based Academic Passport for the Caribbean (RG-T3321); Social, Civic, and Economic Inclusion of Inhabitants of Vulnerable Neighborhoods in Buenos Aires Using Blockchain Models (AR-T1190), Innovation and Tourism Expansion and Diversification (RG-T3338), ³ and others to follow.
Project beneficiaries:	The end beneficiaries of the program will be 2 million users living in vulnerable situations ⁴ who will be better able to manage their economic and environmental asset portfolios through the expanded use of digital wallets in Latin American and Caribbean countries. The project will also have a positive impact on the environment, since the valuation of environmental assets and the monetization derived from the management of natural assets through digital wallets should have positive

¹ On 21 October 2022, the Peruvian Ministry of Foreign Affairs issued a letter of no objection to the project.

² Peru was selected based on LACChain's previous experience, given the current level of development of the blockchain ecosystem and the identification of and previous work with public and private stakeholders. It is the country with the largest number of digital wallet projects. The project also has synergies and will coordinate with the recently approved IDB Lab Portfolio project "Digital Identity for Small Nondigital Rural Producers" PE-T1518 and PE-G1011, which will be executed by the startup AGROS.

³ Considering the objectives of this project and the expected coverage of beneficiaries, consideration will be given to integrating or aligning activities with operation RG-T3338, a Compete Caribbean project that has a specific component related to the penetration of digital wallets in the tourism sector in Barbados, Guyana, Jamaica, and Belize. This digital transformation project in The Bahamas will allow citizens to manage digital assets and enable interoperability between government agencies and citizens.

⁴ Income vulnerability will be calculated according to World Bank criteria (income of less than \$4 a day for poverty and \$4 to \$10 a day for vulnerability at purchasing power parity). In LACChain's experience, objective conditions of vulnerability are understood as, for example: permanent or semipermanent unemployment, environmental vulnerability, vulnerability to natural disasters, prevalence of unmet basic needs, epidemiological vulnerability, etc.

	<p>results in terms of both the conservation of natural capital and the reduction of greenhouse gas (GHG) emissions.</p> <p>Specifically, 18 startups will be direct beneficiaries, of which eight will be startups and/or small and medium-sized technology-based companies providing digital wallet services in the marketplace developed by the project and 10 will be startups providing complementary services to digital wallets in the marketplace and offering solutions for the end beneficiaries.</p>		
Financing:	IDB Lab nonreimbursable technical-cooperation funding (RG-T4204)	US\$500,000	13%
	Core: ⁵	US\$970,000	24%
	SEP technical cooperation funding: ⁶	US\$370,000	9%
	Cofinancing and counterpart:	US\$2,160,000	54%
	Total project budget:	US\$4,000,000	100%
Execution and disbursement period:	48 months for execution and 52 months for disbursement		
Special contractual conditions:	Not applicable		
Environmental and social impact review:	On 17 October 2022, this operation was screened and classified under the Bank's Environmental and Social Policy Framework (document GN-2965-21). Given that the impacts and risks are minimal, the project has been classified as a category C operation.		
Unit responsible for disbursements:	IDB Lab		

⁵ Core funds are third-party funds administered by the IDB Group and earmarked for this project.

⁶ SEP technical cooperation resources are technical cooperation funds from the Social Entrepreneurship Program (SEP), administered by IDB Lab and earmarked for this project.

I. PROBLEM

A. Description of the problem

- 1.1 Latin America and the Caribbean continue to be marked by acute socioeconomic inequalities linked to differential access and inefficiencies in the management of both economic and environmental assets, especially by the most vulnerable populations.⁷ According to data from the Economic Commission for Latin America and the Caribbean (ECLAC), the region continues to be the most unequal in the world, with an average Gini coefficient for personal income of 0.46, reflecting high income inequality.⁸ One way socioeconomic inequality manifests itself in vulnerable populations is in the lack of access to and poor management of their own financial or nonfinancial assets. With respect to financial assets, for instance, despite the progress made toward financial inclusion, in most countries in Latin America and the Caribbean a large share of the population remains unbanked (45%) and 80% of people do not have a credit card (year: 2020).⁹ Regarding nonfinancial assets, there is a persistent coverage deficit in the region's quality education services, which is around 50%, and there are well-known restrictions on access to efficient minimum income systems.¹⁰
- 1.2 **This unequal access and barriers to asset management faced by vulnerable populations limit their opportunities to improve their living conditions.** Traditional financial and nonfinancial markets continue to be characterized by a high price elasticity of supply; if the cost of reaching certain segments of the population is high, the quantity supplied has tended to be disproportionately low. These access differentials are even greater in relation to the female population. For example, according to data from the Global Findex Database 2021, the gender gap in bank account ownership remains unfavorable to women by more than six percentage points.¹¹ This gap in access is an obstacle to the achievement of program and policy results, particularly in view of women's comparatively greater capacity for monetization in the management of their assets, as has been consistently noted in the specialized literature on the subject.¹²

⁷ By "economic and environmental assets" we mean the sum of goods, rights, and other resources held by individuals, which have a recognized value or can generate income for families, thus becoming key elements for reducing vulnerability within the framework of the new economy. Given the characteristics of this proposal, built from the connections of public-private networks or LACChain communities, we understand economic and environmental assets as those that favor the inclusion of vulnerable segments of the population, whether they come from public or private sources. Some examples of economic and environmental assets include digital academic credentials, FinTech services to improve payment processes, digital identity for access to goods and services in vulnerable neighborhoods, the production and self-management of legally valid evidence of violent acts, government-issued digital subsidies for building a circular economy, etc.

⁸ Social Panorama of Latin America 2021, Economic Commission for Latin America and the Caribbean (ECLAC).

⁹ Accelerating Digital Payments in Latin America and the Caribbean. Whitepaper. May 2022. IDB Lab and World Economic Fund. [Accelerating Digital Payments in Latin America and the Caribbean. IDB and WEF \(pdf\)](#).

¹⁰ Commission for Quality Education for All, Inter-American Dialogue 2018.

¹¹ The Global Findex Database 2021. World Bank Group 2022.

¹² Financial Inclusion, Gender Dimension, and Economic Impact on Poor Households. Vighneswara Swamy, World Development, 2014.

- 1.3 **The problem this project seeks to address is the limited access of vulnerable segments of the population to traditional asset management models due to high transaction costs in the “last mile.”**¹³ Overall, the diagnostic assessments by multilateral organizations of the challenge of social, economic, and financial inclusion in the region point to the depleted expansion capacity of traditional asset management models, characterized by increasing marginal transaction costs as efforts are made to expand the covered population, and those costs have not been successfully reduced beyond that limit.¹⁴ In the context of the new “green economy,” environmental assets such as forest land with carbon sequestration capacity, environmental certificates, and green bonds, warrant special mention. These kinds of assets present especially acute limitations on access to management models, to the detriment of their market valuation and the generation of income to encourage the accumulation of such assets by individuals.¹⁵
- 1.4 **The root causes of this problem are clearly identified and are inherent in traditional asset management models.** These transaction costs remain high due to several well-identified root causes, namely: (i) inefficiencies in the identity and history verification process for the enrollment of new clients and the recognition of their assets; (ii) high costs of access to services with limitations of proximity and product adequacy; and (iii) failure to recognize the value of the assets and lack of portfolio management, especially for vulnerable populations.
- 1.5 **The project beneficiaries will be 2 million users living in vulnerable situations who improve the management of their economic and environmental asset portfolios through the widespread use of digital wallets in Latin American and Caribbean countries.** The definition of the vulnerable population for this project is based on two elements: (i) income (income of less than \$4 per day for poverty and \$4 to \$10 for vulnerability at purchasing power parity); (ii) objective conditions of social or environmental vulnerability (permanent or semipermanent unemployment, environmental vulnerability, vulnerability to natural disasters, prevalence of unmet basic needs, epidemiological vulnerability, etc.). The Results Matrix disaggregates the expected indicators and targets according to these categories. With this project, these beneficiaries will improve their situation of vulnerability by using digital wallets that will allow them to better manage their portfolios of economic and environmental assets, thus recognizing the value of these assets and improving their income and that of their families. The project also has a positive impact on the environment, as the valuation of environmental assets and the monetization derived from the management of natural assets through

¹³ “Last mile” refers to the final part of the process of delivering a service to the end customer population that remains uncovered. (*Inclusión en la última milla: ¿Qué se necesita para llegar a más mujeres rurales?* FinDev 2017).

¹⁴ Ibid., Inter-American Dialogue 2018.

¹⁵ The Case for a Green Economy, Harvard University, 2021. An interesting precedent in the valuation of environmental assets is IDB Lab’s project with Intrinsic Value Exchange (IVE), which has led to considerable progress in the market valuation and recognition of natural assets in the region. This project has the potential to expand the model to small savers and asset managers using digital wallets.

digital wallets is expected to yield positive results in terms of both conserving natural capital and reducing GHG emissions.¹⁶

- 1.6 In turn, the project is expected to benefit governments, private companies, and local entrepreneurs in each of the respective countries due to the efficiency and fiscal savings obtained from the use of digital wallets for inclusion and sustainability. Specifically, 18 startups will be direct beneficiaries, of which eight will be startups and/or small and medium-sized technology-based companies providing digital wallet services in the marketplace developed by the project and 10 will be startups providing complementary services to digital wallets in the marketplace and offering solutions to the end beneficiaries. The project will support the development of the digital wallet ecosystem in the Latin American and Caribbean region, promoting and raising awareness about its usefulness, educating citizens on the use of technology to build solutions with social impact, and driving conversations about the regulations, policies, and protocols needed for its adoption.

II. THE INNOVATION PROPOSAL

A. Description of the project

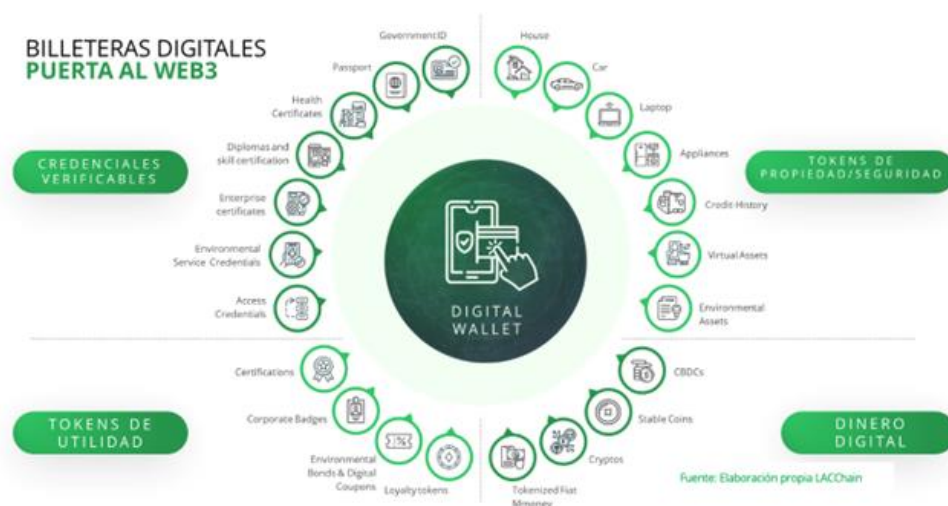
- 2.1 **Development objective.** This project seeks to develop a single interoperable digital wallet protocol in the Latin American and Caribbean region, expanding the use of digital wallets to improve the management of economic and/or environmental asset portfolios.
- 2.2 This will be possible through the recognition of the value of environmental assets and the monetization derived from the improved management of these assets. The project aims to promote the conservation and enhancement of the services provided by environmental assets, including by contributing to a net reduction of GHG emissions and the preservation of natural resources.¹⁷
- 2.3 **The product or service innovation of this project lies in enabling the first single interoperable blockchain-based protocol for the use of digital wallets on a global scale.** The economy is heading toward a new digital era, a new model called Web3. In this new model for a fully digitalized economy, each individual will have a digital wallet where they will store all their credentials, certificates, and utility and asset tokens. In practical terms, the protocol made available through this project will allow every citizen, through a mobile application, to access an integrated asset management model from which to manage their own tangible and intangible assets at a fraction of the cost of the “business as usual” models, including their identity documents, property titles, environmental certificates, vaccination credentials, academic diplomas, credit history, professional

¹⁶ LACChain and its near-zero carbon footprint: It is anticipated that this project will use the core technology developed by LACChain. LACChain's blockchain networks use the IBFT2.0 consensus protocol for transaction validation and the generation of new blocks. This is a proof of authority protocol that eliminates the high carbon emissions and energy consumptions involved in other popular consensus protocols such as proof of work, so LACChain's annual greenhouse gas emissions are equivalent to the emissions of four typical households. <https://lacnet.lacchain.net/consensus-protocol/>.

¹⁷ The effectiveness of payments for environmental services, World Development, 2017. Impact evaluation of the payment for environmental services program in Mexico, World Bank Group, 2017.

certificates, and much more. Functionally, these mobile wallets that interact with the blockchain not only receive and store credentials but also allow us to present them through a QR code for transactional purposes to whomever we choose, anywhere in the world, both in person and virtually, and—regardless of language or regulatory differences—they can be verified in real time. These mobile wallets ensure the protection of personal data by generating zero-knowledge proof, which allows us to present the minimum necessary information (for example, we can prove that we have been vaccinated without the need to show all the personal and medical data contained in the complete vaccination card). The single interoperable protocol is the linchpin of the project—first, so that wallets can talk to each other, thereby enhancing asset management benefits, but also to achieve a broader critical mass of digital wallet and complementary service providers, expanding the market, broadening competition, and consequently reducing prices for credential verification.

Table 1: Digital wallets on Web3



- 2.4 **The project is also innovative in that it puts vulnerable women and men in the driver's seat of their own destiny through new opportunities offered by technology.** While some progress has been made in programs and policies for vulnerable populations that meet client-centered criteria, we often encounter concepts such as beneficiaries, recipients, or clients, which unintentionally reflect an eminently passive view of this population. This project reflects a profoundly different vision enabled by technology. People who own digital portfolios make their own asset portfolio management decisions, whether it is valuing, for example, their financial assets as collateral for a loan, their professional history to obtain employment, their behavioral data for social research, or their environmental assets to obtain green credits for offsetting emissions. Data ownership under a fully decentralized, technology-enabled model opens up a new development paradigm in which people control their own destiny; it offers direct access to

markets allowing them to monetize these assets and obtain previously inaccessible income.¹⁸

- 2.5 **The innovation has a proactive gender approach, building on the progress achieved by the LACChain project in this area.** The project seeks in particular to empower women who are excluded from the ability to manage their own assets and who are expected to derive greater benefits from their responsible management. Specifically, the project will build on the experience of developing a digital wallet scaled up from the project Ni1+ Gamechanger Against Gender Violence (CO-T1594)¹⁹ as part of the regional LACChain project, to offer an integrated solution of empowerment and self-management of assets to women victims of violence when scaling up the initiative. The project also envisages skills development and hackathons to find solutions to problems specific to women, as well as the development of wallets exclusively for women.
- 2.6 **The LACChain global alliance as a model of functional innovation.** As a key precursor to this project, in 2019 IDB Lab launched the regional project called “LAC-Chain for a Seven-digit Impact: Socioeconomic Inclusion of the Poor and Vulnerable through Blockchain Technology.” The global alliance that has resulted from the project comprises over 60 partners²⁰ to date—entities that are global leaders in blockchain, such as ConsenSys, NTT Data, RSK, Ethereum Enterprise Alliance, Ethereum Foundation, Hyperledger, Linux Foundation, MIT-Media Lab, WEF, Accenture, and IBM. LACChain was created to accelerate the development of the social impact blockchain ecosystem in the Latin American and Caribbean region. To this end, this global alliance offers a solution based on the establishment of open and inclusive consortia and interoperable blockchain networks that are energizing blockchain ecosystems in the region. LACChain has made it possible to offer the region’s public and private stakeholders the first enterprise-grade, multipurpose, in-production, interoperable public-permissioned network²¹ with the highest globally recognized industry and regulatory compliance standards.
- 2.7 **LACChain and its near-zero carbon footprint:** It is anticipated that this project will use the core technology developed by LACChain. LACChain’s blockchain networks use the IBFT2.0²² consensus protocol for transaction validation and the generation of new blocks. This is a proof of authority protocol that eliminates the high carbon emissions and energy consumption involved in other popular consensus protocols, such as proof of work, so LACChain’s annual greenhouse gas emissions are equivalent to the emissions of four typical households.
- 2.8 This proposal builds on the success achieved in the LACChain project, the global alliance for the development of the blockchain ecosystem for Latin America and the Caribbean, which to date has produced the following outcomes:

¹⁸ Gartner. (2020). Guidance for decentralized identity and verifiable claims: eight weaknesses of traditional digital identity models. Retrieved from:

<https://www.gartner.com/en/documents/3979940/guidance-for-decentralized-identity-and-verifiable-claim>.

¹⁹ The lack of a single interoperable protocol is precisely the reason this type of project has not been able to be scaled, which is the main rationale for this project’s approach.

²⁰ LACChain Alliance: <https://www.lacchain.net/alliance>.

²¹ LACChain blockchain network differentiators: <https://lacnet.lacchain.net/lacnet-eng/>.

²² LACChain’s blockchain networks consensus protocol: <https://lacnet.lacchain.net/consensus-protocol/>.

- 60+ blockchain-based solutions in 16 countries enabled by the LACChain blockchain network.
- 2.4 million (X2 at midterm) vulnerable people with access to services thanks to these solutions, the registration of which can be seen in real time on the portfolio results dashboard.
- 60 co-sponsoring partners from the public and private sector and consolidated LACChain communities in 11 countries, with over 700 entities that are part of the ecosystem.
- Launch of an established spin-off ensuring enterprise-grade services for production solutions.
- Recognition as part of the global blockchain standards, including by the International Telecommunication Union (ITU), International Organization for Standardization (ISO), European Telecommunications Standards Institute and International Association for Trusted Blockchain Applications. Model of reference for the World Bank, International Monetary Fund, African Development Bank, Asian Development Bank, European Investment Bank, International Fund for Agricultural Development, and the Brazilian National Bank for Economic and Social Development (BNDES); and as a major instrument for joint strategies with the Bank, including the participation of 20 IDB Group organizational units.
- Production of specialized academic material with the aim of building capacities in the region. LACChain has released nine publications to date.

2.9 The LACChain project has been thoroughly analyzed and evaluated during its implementation as an example of IDB Lab's work, having been included in the *Evaluation of Operations and Summary of Findings, Annex V-Summary Assessment of Platforms Supported by IDB Lab* by the Bank's Office of Evaluation and Oversight (OVE), and the Future Sustainability of IDB Lab document (MIF/GN-252-6), presented to the Donors Committee. A series of lessons learned have been drawn from these reflections, which have served as a starting point for the design of this project, as follows:

- a. the work to make blockchain-based inclusion solutions available. Specifically, the initial prototypes of digital wallets offer enormous potential for broadening impact and deepening the reach of public services to vulnerable populations;
- b. the focus on "connections" and the facilitation of an open and competitive market, as well as the development of a community around the project, is key to achieving a multiplier effect beyond the project's capacities;
- c. the provision of an infrastructure that is useful to all stakeholders and reduces the costs of implementing blockchain solutions is the linchpin that helps bring together as many actors in the ecosystem as possible to work together to make the program feasible and deliver outcomes at scale; and
- d. the four "pillars" of the program (1. Public-private stakeholder partnership; 2. Technology infrastructure and single interoperable protocol; 3. Development of an open and competitive application market; and 4. Analysis, data use, and dissemination to bring in more public-private stakeholders) trigger a virtuous

cumulative process that favors an accelerated development of the technology ecosystem.

Social impact of Web3, blockchain, and digital wallets.²³ Web3 refers to a decentralized online ecosystem based on blockchain that enables people to use the internet for managing the ownership and transfer of digital assets.²⁴ Web3 is now emerging as a result of the evolution of decentralized, user-centric tools that have been developed within the LACChain framework. In addition, given its ability to make markets for the provision of goods and services more efficient, the guarantee of transparency and immutability in the recording of transactions, and the empowerment of users, blockchain has earned consideration as one of the technologies expected to spur the greatest market transformation and social impact, precisely by making financial and nonfinancial services more directly accessible in the last mile. The blockchain usage space that this project focuses on is one which enables applications of this technology in the real economy, not those based on the issuance or offering of cryptocurrencies (ICOs).

- 2.10 **The experience of working with digital wallets points to a viable technology, in a still incipient ecosystem.** LACChain's work on digital wallets²⁵ over the past three years has laid the technological groundwork for making Web3 a reality, and positions IDB Lab to be a key player in the development of this market, in full compliance with Worldwide Web Consortium standards.²⁶ From a strictly technological viewpoint, the application of blockchain technology has reached a sufficiently advanced level of maturity to offer a significant reduction in transaction costs for good asset management for individuals in the region. In Latin America and the Caribbean, thanks to the LACChain project, the technological feasibility has been demonstrated, demand has risen, and protocols have been developed for the implementation of single-purpose digital wallets in the hands of citizens.²⁷ In particular, the use of digital wallets drastically reduces four aspects of that cost function: (i) verification of credentials for enrollment, (ii) verification of credentials for eligibility, (iii) verification of credentials for the recognition of value and (iv) verification of credentials for performing asset exchanges.

²³ The project will enable a single interoperable protocol for digital wallets, which operate "on top" of Web3. It is essential to distinguish between two "technology layers." The bottom layer is Web3 and is outside the scope of this project, which builds "on top," at the application layer—in this case the digital wallet protocol. We are referring to the protocol for blockchain-based digital wallets when we assert that there are no other examples of a single interoperable protocol at the international level.

²⁴ Gavin Wood 2014, Polkadot founder and Ethereum co-founder: Edelman, Gilad. ["What Is Web3, Anyway?"](#). Wired. [ISSN 1059-1028](#). [Archived](#) from the original on 10 February 2022.

²⁵ The technical-legal framework of LACChain ID has been referenced by the ISO in its guidelines on the use of blockchain technology for digital identity management.

²⁶ The Worldwide Web Consortium (W3C), the developer of global internet standards, adopted in 2019 the Verifiable Credentials standard that lays the groundwork for a new generation of digital credentials suitable for the purpose we have been describing.

²⁷ Within the framework of the regional LACChain program, nine projects have been prototyped using this standard in various fields, generally for a single type of credential verification. Thus, specific use cases have been developed for digital identity, academic credentials, vaccination, job skills, property ownership, and asset transfer, to name a few. More recent initiatives, such as the digital citizens "folder" (*carpeta ciudadana*) in Colombia, are exploring the possibilities of multifunctional digital wallets. These experiences firmly establish the organizational and technological groundwork for accelerating the implementation of the technology proposed by this project.

2.11 For the design of this project, based on the experience of the LACChain project, we have been involved in the revision of the first generation of mobile digital wallets that aim to be universal, allowing users to manage tokens (fungible and non-fungible digital assets), as well as all kinds of credentials that are verifiable against blockchain networks. This is the case with RemID,²⁸ TanTan,²⁹ KayTrust,³⁰ Soberana,³¹ Aid:Tech,³² and Gataca,³³ among others. The European Union has been adapting the European framework on identification, authentication, and trust services (eIDAS³⁴) to become the first region to offer a government-provided wallet, the EUID wallet.³⁵ The technology is therefore ready for isolated purpose-specific cases (education, vaccines, property registration, workplace access); but other pieces needed for the development of a digital wallet market that fills the efficiency and coverage gaps of traditional asset management models, favors interoperability, and takes advantage of the opportunities of this emerging market are not quite ready. The maturation process that the use of digital wallets with verifiable credentials in health (vaccination certificates) and education (university diplomas) has been undergoing in the last 12 months and the adaptation of legal frameworks on digital identity, digital trust providers, and electronic signatures—such as the one under debate in the European Parliament (eIDAS-2 Regulation)—will play a decisive role in the use of these tools for Know Your Customer/Anti-Money Laundering and authentication processes that are more secure and simplified for use in the management of economic and environmental assets.

2.12 **An emerging Web3 ecosystem, which will change the way we interact, offers an enabling environment for the development of digital wallets.** Web3 will usher in a new way of interacting electronically as citizens and economic actors. Soon, having a digital wallet (i.e., a mobile wallet) to store dozens of digital credentials and records (health, education, identity, etc.) and tokens (e.g., the digital representation of ownership of various physical assets such as our car, our house, our furniture, as well as tokens representing digital value such as digital clothing – “cryptoclothes”) will lead to different ways for people to authenticate each other electronically and exchange value peer to peer. It will lead to delivery versus payment arrangements that exchange tokenized value for tokenized money on blockchain networks using smart contracts.

The vision of Web3 that establishes an enabling environment for the development of digital wallets is based on four pillars consistent with this project’s vision of inclusion and development:

²⁸ RemID Digital Wallet: https://play.google.com/store/apps/details?id=com.wdtwalleton.rem&hl=en_PA&gl=US&pli=1.

²⁹ TanTan Digital Wallet: <https://tantan.solutions/>.

³⁰ KayTrust Digital Wallet: <https://www.kaytrust.id/>.

³¹ Soberana Digital Wallet: <https://www.os.city/>.

³² Aid:Tech Digital Wallet: <https://www.aid.technology>.

³³ Gataca Digital Wallet: <https://gataca.io/>.

³⁴ eIDAS is the acronym for electronic IDentification, Authentication, and trust Services, a European Union Regulation on a set of rules for electronic identification and trust services for electronic transactions in the European Single Market: https://www.europarl.europa.eu/doceo/document/ITRE-PR-732707_EN.pdf.

³⁵ EUDI is a unique European identifier promoted by the European Union Digital Identity Wallet Consortium: <https://eudiwalletconsortium.org/>.

- (i) *Empowering people:* When given control over their digital credentials and tokens, people need not rely on others to exchange value with each other. And with the right regulatory policies, people will be better covered and more protected than they are now.
- (ii) *Promoting access:* The internet's reach is growing fast, and emerging solutions continue to be implemented, even for rural communities. This will make it much easier to provide a digital version of an ID card, a skills certification, or title to a piece of land than it is now, where the limitations of traveling to major cities for tedious administrative processes prevent these people from being identified and banked. Digital payment arrangements will also enable communities to generate credit histories and gain access to loans, while also being able to exchange value with visitors and foreigners.
- (iii) *Ensuring data privacy:* The amount of information about individuals that will now not be disclosed, used, or traded is enormous, as individuals need not rely on third parties to authenticate them. Not having to store dozens of passwords or use the same passwords for dozens of sites will also considerably increase our security. The ability to perform zero-knowledge proofs and to know with whom you have shared what in order to invoke the right to be forgotten will also change the rules of the game.
- (iv) *Enabling interoperability:* Different governments and private sector companies will be able to maintain common repositories of information, such as public key directories, in decentralized registries without having to rely on the governance of one of them or a trusted third party. Banks will achieve instant finality in cross-border payments by using smart contracts for clearing and settlement processes. The universality of blockchain networks will also make it possible to verify credentials and transfer tokens across borders, so it is essential that trust frameworks and regulations are sufficiently advanced to provide legal safeguards.

2.13 **The project will cover at least ten countries in the region that have digital wallet solutions enabled by the project, selected with open, transparent, and known eligibility criteria.** The project will respond to the demand for the best e-wallet implementation initiatives from countries in the region. All countries in the Latin America and the Caribbean region are eligible under this project. The project's activities in the area of stakeholder connection will benefit all the countries that request it. In all, the project plans to support up to ten countries in the region with different support modalities, which will be selected before the end of its second year of implementation according to the following eligibility criteria: (i) evaluation of the diagnostic assessments and proposed roadmaps for ecosystem development in each country; (ii) demonstrated interest and cofinancing commitments from the relevant public and private stakeholders; (iii) alignment with the digital transformation and development strategy in the countries; (iv) balance of countries according to the following paragraph. As a maximum level of intervention per country, the project also envisages the establishment of public-private partnerships, under the standards defined by the project, in at least three national ecosystems. These three national ecosystems will be identified by adding the following two eligibility criteria to those mentioned above: (a) entering into

public-private agreements to form national associations; and (b) providing the resources for the co-investments required for the establishment of digital wallets.

- 2.14 In selecting the countries to be served, a balance will be sought between Group A and B countries in relation to Group C and D countries. This balance is important from the technical viewpoint since the heterogeneity of the ecosystems supported as pilots depends critically on the project's capacity to have the desired demonstration effects for the region as a whole. Specific activities will also be carried out to strengthen the support of countries with nascent ecosystems and to develop conditions for the achievement of project objectives. The project may increase the number of countries supported, depending on additional contributions that may be incorporated in the future.
- 2.15 To meet the objective defined in paragraph 2.1, and based on LACChain's experience, this project proposes to support the four essential components of the Web3 era digital wallet ecosystems in the region: (i) public-private stakeholder partnership; (ii) technology infrastructure and single interoperable protocol; (iii) development of an open and competitive application market; and (iv) analysis, data use, and dissemination.
- 2.16 **Component I: Public-private stakeholder partnership (Total US\$930,000: IDB Lab: US\$120,000; Core: US\$130,000; Cofinancing: US\$680,000)**

The objective of this component is to facilitate the formation of public-private partnerships for the implementation of digital wallets, including the organization of technological functions, such as issuance, verification, and trust registries, with a focus on enabling technology use with an impact on inclusion. 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 inclusion impacts at scale through digital wallets.

The main outcome of this component is for five countries in the Latin American and Caribbean region to have, through public-private partnerships, an enabling ecosystem for the development of digital wallets to improve the management of economic and/or environmental asset portfolios.

To achieve this expected outcome, efforts will focus on these specific outputs: (i) facilitation, promotion, coordination, and formalization of at least five alliances or consortiums of public-private partnerships established to enable digital wallets, through the signing of MOUs, agreements, or other legal instruments; (ii) delivery of 12 capacity-building workshops and/or training activities on digital wallets with IDB Group stakeholders (including *virtual* or *hybrid* events to have greater coverage and reach in the region) and in at least five countries, of which: (iii) at least two workshops and/or training activities aimed at the development and/or use of digital wallets for gender inclusion will be held; (iv) at least two workshops and/or training activities aimed at the development and/or use of wallets for climate change assets will be carried out; (v) six diagnostic assessments will be carried

out at the country level through strategic advisory support that will include identifying or mapping existing wallet solutions and regulatory considerations for implementation, adoption, and scaling, as well as identifying the main public and private sector entities with the potential to help mainstream these solutions.

2.17 Component II: Technology infrastructure and single interoperable protocol (Total US\$945,000: IDB Lab: US\$155,000; Core: US\$200,000; Cofinancing: US\$590,000)

The objective of this component is to accelerate digital wallet initiatives and to develop a single protocol, technology infrastructure, and interoperability standards for the verification of digital credentials for use with an impact on inclusion. To this end, the project will support the adoption of standards for developing digital wallets under current regulations, based on the protocols, policies, and technical specifications required for universal use. There are also plans to use LACChain's blockchain network infrastructure, which has enterprise-grade, multipurpose, interoperable testing and production environments with globally recognized industry standards.

The main outcomes of this component include: (i) establishing a single interoperable protocol, core infrastructure, and technology stack recognized by international standardization bodies or regulatory agencies; and (ii) obtaining six recognitions and/or references to the protocol or technology stack in the technical specifications of international standardization bodies or regulatory agencies, in relation to the single interoperable protocol.

To achieve the expected outcomes, work will be done on the following specific outputs: (i) participation in working groups and/or events organized by standardization bodies or regulatory agencies for the identification and adoption of international interoperability standards; (ii) development and maintenance of two blockchain infrastructures for the delivery of digital wallet solutions for managing economic and environmental assets (including lowering barriers to access for populations that are vulnerable or not fully digitalized); and (iii) generation of knowledge products through three technical publications related to the single interoperable protocol, core infrastructure, and/or technology stack developed. The knowledge products derived from this component will be translated into other languages, as needed.

2.18 Component III: Development of open and competitive application marketplace (Total US\$1,555,000: IDB Lab: US\$135,000; Core: US\$550,000; SEP: US\$370,000; and Cofinancing: US\$500,000)

The objective of this component is the development of a platform to facilitate the operation of an open and competitive marketplace, and to support the development of current solutions based on digital wallets, with access opportunities for new developments of applications with inclusion impact. From the demand side, the project will support the commercial space enabled by the participating startups, companies, and governments for the proliferation of applications. In terms of supply, the project will support the acceleration of the entrepreneurial ecosystem with training instruments, networking, public calls for proposals, technical assistance, and mentoring.

The main outcomes of this component include: (i) at least 10 countries in the Latin American and Caribbean region with digital wallet solutions enabled by the project (with a focus on specific activities to strengthen support for countries with nascent ecosystems and develop conditions for enabling digital wallets); (ii) 30 digital wallet solutions enabled by the project targeting economically, environmentally, or socially vulnerable populations, of which: three digital wallet solutions will specifically target women/gender inclusion and three digital wallet solutions will have an environmental/climate change focus; (iii) development of a marketplace with the participation of eight technology-based startups providing digital wallet services in the marketplace developed by the project and 10 startups providing complementary services to digital wallet users.

To achieve the expected outcomes, efforts will focus on the following specific outputs: (i) market intelligence for the preparation of four supply and demand studies on the use of digital wallets; (ii) coordination, facilitation, and/or delivery of training activities in collaboration with experts or through partnerships with academic institutions on the use and development of digital wallets in the Web3 era to build the capacity of at least 3,000 people in the region (including the participation of English-speaking Caribbean countries and the translation of material); (iii) organization of six open calls for proposals in collaboration with experts (for example: by establishing formal partnerships with local entities, including universities), with incentives for the development of digital wallet solutions. Of these: (iv) two will be open calls for proposals for digital wallet solutions with a focus on women/gender inclusion, which are expected to have a greater relative impact on income generation or reduction of social and environmental vulnerability, including, for example, the conditional cash transfer project in Colombia with 87% female beneficiaries or the expansion of services to women as part of the scaling up of the Ni1+ Gamechanger Against Gender Violence project (CO-T1594), which successfully enabled a controlled testing environment for the empowerment of women victims of domestic violence through digital media; and (v) two will be open calls for proposals for digital wallet solutions with an environmental/climate change focus; (vi) support and technical assistance for digital wallet solutions through 10 technology consulting packages for the acceleration of digital wallets, of which: (vii) two technology advisory support packages will be for the acceleration of digital wallets with a focus on women/gender inclusion; (viii) two technology advisory support packages will be for the acceleration of digital wallets with an environmental/climate change focus; and (ix) development of a catalog of cases of usage, projects, or digital wallet solutions. The knowledge products derived from this component will be translated into other languages, as needed.

2.19 **Component IV. Analysis, data use, and dissemination (Total US\$400,000: IDB Lab: US\$40,000; Core: US\$60,000; Cofinancing: US\$300,000)**

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 investors in its scale-up. For this, transaction data from projects deployed on the blockchain network will be used to highlight the results obtained by the set of digital wallet applications in Latin America and the Caribbean and gauge global progress.

The main outcome of this component consists in the participation and/or collaboration of 40 public and private entities that join the Alliance established for the development of the digital wallet enabling ecosystem.

To achieve this expected outcome, efforts will focus on the following specific outputs: (i) creation of a network of experts for the definition of an appropriate data analysis methodology; (ii) development of a real-time dashboard of information on the impact of digital wallet solutions that will build on the capacities established by LACChain; (iii) execution at least four actions needed to achieve the expected impacts at scale, to communicate and promote the lessons learned from the data analysis with a view to optimizing the implementation of digital wallets and encouraging stakeholder participation; (iv) development of knowledge products through six publications on emblematic cases of digital wallets, of which: (v) one publication will be about an emblematic case of climate change involving digital wallets; and (vi) one publication will be on an emblematic case of gender inclusion through the use of digital wallets; (vii) conduct one impact assessment of the project.

B. Project outcomes, measurement, monitoring, and evaluation

2.20 **Because this project is geared toward market development and the enabling of market solutions, its outcomes and impacts are considerable and will more than proportionally favor the female population by promoting specific actions for this target population.** The expected impacts and outcomes one year after the end of the project's activities are:

Expected impacts:

- Two million beneficiaries will be managing their economic and environmental assets by actively using digital wallets. Of these:
 - 1.1 million will be women beneficiaries managing their economic or environmental assets, using digital wallets. Of these:
 - 440,000 will be income-vulnerable women;
 - 660,000 will be women living in socially and/or environmentally vulnerable situations;
 - 360,000 will be income-vulnerable men.
 - 540,000 will be men living in socially and/or environmentally vulnerable situations.

Expected outcomes:

- Five countries in Latin America and the Caribbean with an enabling ecosystem will have established multisector agreements for the development of digital wallets;
- A single interoperable protocol, core infrastructure, and technology stack will have been established and recognized by international standardization bodies or regulatory agencies;

- Six recognitions or technical specifications will have been issued by international standardization bodies or regulatory agencies, in relation to the single interoperable protocol;
- Ten countries in the region will have digital wallet solutions enabled by the project;
- Thirty digital wallet solutions will have been enabled by the project for economically, environmentally, or socially vulnerable populations. Of these:
 - Three digital wallet solutions will specifically target women/gender inclusion
 - Three digital wallet solutions will have an environmental and/or climate change focus
- Eight technology-based startups providing digital wallet services will be participating in the marketplace developed by the project;
- Ten startups offering complementary services for digital wallet users will be participating in the marketplace developed by the project;
- Forty public and private entities that join the Alliance will have been established for the development of the digital wallet enabling ecosystem.

2.21 **The project will base its results monitoring and evaluation system on the capabilities and technological developments for real-time results monitoring developed by the LACChain program.** LACChain has developed a results dashboard that uses transactions recorded on blockchain to capture real-time data about applications and beneficiaries. 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 allow for the real-time capture of first-time access and asset management records by unique user. These data make it possible to identify improvements in terms of objective conditions and vulnerability; for example, a vaccination certificate is proof of decreased immunological vulnerability, or a reliable certificate of job skills may favor the employability of the unemployed population.

2.22 **The project provides for an impact evaluation plan.** The project envisages an in-depth evaluation plan in collaboration with leading universities in the field, which has been defined and includes the following elements:

- The research design will focus on market-level effects (price, price elasticity, access, and spillover effects);
- Fully digitalized real-time identity and multiprocessing data (combining specific, universal, and optional services) lay the groundwork for natural experimentation-based evaluations; and
- Variation in treatment exposure and treatment saturation can be used for traditional experimental designs and non-experimental designs.

2.23 **To capture income impact data, these data will be cross-referenced with income data from public programs whose targeting criteria are determined**

- by income.** This is the case of some public sector projects targeting the population living in economic poverty, such as the conditional transfers in Panama, or those that include income data by including an income tax payment module, like the digital citizens “folder” (*carpeta ciudadana*) in Colombia.³⁶ In these cases, the project will perform, in collaboration with local entities, a treatment effect analysis based on household surveys of the beneficiaries, dashboard data, and meta-evaluations carried out in programs supporting poor and vulnerable populations that have baseline income information as an eligibility criterion and as a main ex post evaluation indicator. Data collection and updating will be based on administrative data captured by e-wallets regarding digital services received per user.
- 2.24 **The decision-making system based on monitoring and evaluation will be established at the start of the project.** This monitoring and evaluation system will be established at the beginning of the execution period, and will be complemented with other relevant indicators and data, which will make it possible to: (i) monitor the management, outcome, and impact indicators, as well as provide feedback and adjust solutions and project implementation on a daily basis; and (ii) document and share lessons learned in order to continue adding stakeholders both at the local level and in the different countries of action, thus contributing to the project’s main objective.

III. ALIGNMENT WITH THE IDB GROUP, SCALABILITY, AND RISKS

A. Alignment with the IDB Group

- 3.1 **The participation of IDB Lab is essential to ensure alignment with the mandates of focus on inclusion and the development of competitive and open-source technology markets, with special emphasis on the participation of startups in the region.** IDB Lab’s participation in this project—for which it is well-positioned based on previous work on the LACChain project—global positioning, and industry recognition are essential to its feasibility. Although IDB Lab will contribute a minority share of the resources in any scenario, they will allow it to maintain a technical and decision-making presence to exercise the necessary leadership in the development of an emerging industry in need of the coordination, neutrality, and alignment with the mandate for which IDB Lab has a unique comparative advantage.
- 3.2 **The alignment of the IDB Group and its participation in the project is considered essential and is a reality within the framework of LACChain.** The proposed solution integrates technological elements, public-private partnerships, entrepreneurial development, and regulatory compliance, actively involving all

³⁶ We are proposing to measure and monitor income vulnerability completely “off-chain” with data from the monitoring of some of our planned projects that use digital wallets and have systems already in place for capturing administrative income data. For illustrative purposes, data from conditional transfer programs in Colombia (targeting a total of 2,638,000 income-vulnerable people, of which 2,316,000 are women and 322,000 are men) and Panama (targeting a total of 363,000 income-vulnerable people, of which 239,000 are women and 124,000 are men) have been taken into account. These figures are consistent with the target indicators of the results matrix, assuming an average digital wallet adoption rate of 15%-30% of beneficiaries in the first 3 years, depending on the scenario, which is consistent with experience in similar projects.

interested departments of the IDB Group. The IDB Group as a whole is therefore an active partner that will support this project in this phase of developing and testing a single interoperable protocol and in its subsequent scaling. The project builds on the experience of collaborating with 20 organizational units of the IDB Group,³⁷ and on the extraordinary strategic collaboration with the Information Technology Department's (ITE) TechLab, both consolidated within the framework of the LACChain project. This partnership also draws particularly on initiatives in digital identity, the modernization of public administration, the development of International Classification for Standards norms and standards, and vaccination credentials with SCL.

- 3.3 Digital wallets, for which this project will develop interoperable protocols, will allow citizens to value and monetize environmental assets in accordance with institutional climate change commitments.** In line with the joint methodology of the multilateral development banks, 19.1% of the operation's resources are invested in climate change mitigation and/or adaptation activities. These resources contribute to the Bank's climate finance target (30% of the annual volume of approvals). The digital wallet protocols developed by this project include environmental assets in their entirety, laying the groundwork for expanding the reach of the natural capital, carbon offset, and climate service valuation markets to women and men who take the challenge of reversing climate change into their

³⁷ For illustrative purposes, related operations involving more than 20 IDB organizational units are shared below:

CO-T1594: Ni1+ Gamechanger against gender violence
DR-T1228: COVID-19 Safe Islands: Decentralized Pass Travelers
BL-T1135 with IDB Invest: Belize Smart Sugar Cane Cluster
RG-T2070 with INT/TIN: CADENA
RG-T3813 with IFD/CTI: CREAD Parametric Insurance
RG-T3356 with INE: Land Registry
ATN/OC-17221-HO with VPC/Honduras: Public Bids Honduras – SIPAC
RG-T3806 with INE: Microfinance for water and sanitation pilot
AR-T1190 with IDB Argentina: DIDI Project - Digital Identity/Wallets
RG-T3813 with IFD: University of West Indies Academic Diplomas
PE-G1011: Agros- Digital Identity for Small Nondigital Rural Producers
RG-T332: Blockchain-based Academic Passport for the Caribbean
fAIrlac: fAIrLAC Certificates
Regional Public Good: LACPASS - Vaccination Certificates
FIN: BME Digital Bond
IDB Lab Honduras: CoffeeChain Honduras
FIN, IDB Lab & IFD: Crossborder Payments
FIN: Davivienda e-Bond
TSP, ITE, FMP, OI: Glass: Traceability of public works processes
ITE: Post-quantum cryptography
IDB Peru: Traceability of alpaca fiber.

- own hands. For example,³⁸ the digital wallet to be developed in the *ejido* [communal land] owners' pipeline project in the Yucatán Peninsula will allow them to obtain green certificates and issue climate bonds.
- 3.4 The project is in line with IDB Lab's vision, and is consistent with the efforts led by IDB Lab to promote the development of technology that reduces costs, enhances quality, and gives lower-income people better access to the market.
- 3.5 This project is aligned with the second **Update to the Institutional Strategy** (document GN-2933-5), which identifies the reduction of poverty and inequality as one of its two overarching objectives and includes multisectorality and innovation among its operational guiding principles. The project is also aligned with the crosscutting theme of gender equality and diversity to the extent that it includes specific activities, outcomes, and targets specifically aimed at women. The project is also consistent with the Social Protection and Poverty Sector Framework Document which highlights the importance of developing electronic payment systems in the countries of the region and with the Innovation, Science, and Technology Sector Framework Document, mainly with Line of Action 3, which seeks to foster an enabling environment for private investment in innovation and connectivity.
- 3.6 The project is also aligned with IDB Invest's priority business areas 3 and 4, which propose to: (i) support innovation and technological development; and (ii) enhance income generating opportunities and social mobility for vulnerable populations.
- 3.7 Moreover, the project is aligned with the following **Sustainable Development Goals** (SDGs) set out by the General Assembly of the United Nations:
- **SDG 1** – End poverty (Target 1.4), given that the project expects to benefit 800,000 income-vulnerable people.
 - **SDG 8** – Decent work and economic growth (Target 8.10), because the project seeks to expand the use of digital wallets to improve the management of economic and/or environmental asset portfolios.
 - **SDG 5** – Gender equality (Target 5.a), since there are plans for the project to develop three digital wallet solutions specifically for women, and the number of women is expected to be proportionally higher than the number of men benefited by the project.
 - **SDG 13** – Climate action (Target 13.a), as 19.1% of the operation's resources are invested in climate change mitigation and/or adaptation activities.
 - **SDG 17** – Partnerships for the goals (Target 17.3), because the project includes core mobilization.

³⁸ The conditional cash transfer projects in Colombia and Panama, the Ejidos Mexico: national land use planning strategy project, and the Ni1+ scaled up project are illustrative examples, some of which are used as references and support for the project indicators and other potential projects in which successful implementation is expected.

B. Scalability

- 3.8 The project will demonstrate key lessons learned for use in other countries in the Latin American and Caribbean region and globally.** The evidence provided by digital wallet solutions in terms of improved outcomes and the efficient management of financial and environmental assets for monetization in digitalized markets will be a driver for the accelerated adoption of these solutions by citizens in the region. The scaling up of the LACChain project based on market development processes, replication by other stakeholders with an impact mandate, and demonstration through the establishment of industry-recognized standards, provides a frame of reference for scaling this project.³⁹
- 3.9 This project is expected to deliver impact at scale via expansion through the acceleration, development, and facilitation of a competitive market for digital wallet solutions in the region.** An interoperable protocol managed by the executing agency within the framework of LACChain is the linchpin for developing this market with maximum breadth on the supply side, with multiple technology providers, and on the demand side, with a large and growing number of interested customers. The breadth of this market is essential for its proliferation and scaling at the lowest possible prices and will enable considerable progress toward the new model of a fully digitalized economy where each individual will have a digital wallet in which to store all their credentials, certificates, and both utility and asset tokens. This impact at scale is expected to be achieved through market forces, enabling a reduction in unit prices per credential verification from the current US\$5-US\$8 to the projected US\$0.20-US\$0.40.⁴⁰
- 3.10 The project envisages a scaling plan consistent with the disruptive potential of an interoperable digital wallet system that, if successful, is projected to be universal.** The scale-up plan, based on LACChain's experience, includes the following elements: (i) the participation and dialogue from the outset of an alliance of scale-up partners, including public entities such as those belonging to the Electronic Government Network of Latin America and the Caribbean (Red GEALC), private entities such as Banco Davivienda, the Caribbean Examination Council (CXC), Sigma Technologies, or Citibank, or investment funds such as Valor Capital or Hashed Ventures, to name a few; (ii) the continuous search in the marketplace for new scale-up partners from the demand side (examples: governments, service companies, financial intermediaries) and from the supply side (examples: startups and small and medium-sized technology development

³⁹ Project RG-T3370 "LAC-Chain for a Seven-Digit Impact: Socioeconomic Inclusion of the Poor and Vulnerable Through Blockchain Technology" has shown reliable evidence of results at scale during its implementation. First, it has allowed for an acceleration of the market for blockchain-based solutions in the region by providing a core infrastructure that enables, allows for scale, and mitigates regulatory risks of any blockchain solution with a focus on inclusion. It has also enabled the development of protocols that have served as examples for major third party entities, such as Brazil's National Development Bank (BNDES) or the European Blockchain Services Infrastructure (EBSI). Lastly, it has served as a guide for the industry through the establishment of references by international standardization bodies such as the ITU, ISO, and the European Telecommunications Standards Institute (ETSI).

⁴⁰ Source: LACChain, prepared by the authors based on observations of nine specific-purpose digital wallets in the region. Based on a homogeneous use assumption of 10 transactions per credential verification per digital wallet beneficiary, the estimated price per beneficiary will drop from a range of US\$50-US\$80 per beneficiary to a scenario ranging from US\$2—in the most optimistic scenario of full wallet interoperability—to US\$5 in an intermediate scenario of partial wallet interoperability.

companies) of digital wallet solutions; (iii) the potential for universalization of the use of an interoperable digital wallet protocol that replaces traditional models at a fraction of the price, with the potential for universal application to all citizens in several countries (potential impact of hundreds of millions of users in five countries in the region); (iv) the project scale-up partners' commitment to sustainable financing and investment for scaling up if the expected price reductions are achieved in comparison to the currently available technologies; and (v) demonstrated technical capacity and adequate resource allocation for the generation of knowledge products, including impact evaluations aimed at increasing the number of scale-up partners interested in the project. In an initial scaling phase during project implementation, substantial traction should be gained in the digital wallet ecosystem and digital wallet use should increase, thanks to the enabling environment associated with the Web3.

- 3.11 **Like LACChain, this project encourages the development of open-source protocols and will actively support replication in the countries by promoting public-private consortia.** The approach of creating a single interoperable protocol for digital wallets in the region is consistent with an open-source approach in which the more replication processes occur, the greater the results at scale. 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 use of digital wallets 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 digital wallets for women and men in situations of poverty or vulnerability.
- 3.12 **The establishment of industry-recognized standards for digital wallets 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 standardization bodies such as the ITU, ISO, the W3G (World Wide Web Consortium), or the Linux Foundation's OpenWallet initiative. In addition, the lines of code developed by the project will be open source, favoring replication by new players and the inclusion of wallet developers in the market. The direct influence on the establishment of global technology standards, combined with the practice of open-source development and programming, is a driving force that can help bring the solution to scale in Latin American and Caribbean countries and globally.

C. Project and institutional risks

- 3.13 As with any project promoted by IDB Lab, this operation is not without risk. This section covers some of the risks and mitigation measures taken into account during project design:

- 3.14 **Coordination risks:** This project is based on broad stakeholder participation and relies heavily on the provision of digital services by e-wallet developers; the adoption of global interoperability standards; and the achievement of sufficient critical mass for issuance, verification, and users. To mitigate this risk, the project will make use of best practices implemented in the LACChain project for protocol use, consensus-building, governance, and partnerships to facilitate coordination and enable the ecosystem needed for the project to succeed.
- 3.15 **Technology risks:** Digital wallets in the Web3 framework are a cutting-edge solution that brings value and innovation to current business models, but could generate some resistance at the implementation stage. To mitigate this risk, a dedicated team of expert consultants will be hired and will maintain an ongoing dialogue with the high-level Advisory Board composed of relevant stakeholders in the ecosystem.
- 3.16 **Regulatory risks:** Developing digital wallets in the region entails regulatory adaptation with varying degrees of progress in relation to the technology and its scope of application. To mitigate this risk, the project will harmonize and facilitate dialogue and collaboration hand in hand with IDB Lab Country Offices who will serve as the nexus for the mitigation of this risk during project implementation.

IV. INSTRUMENT AND BUDGET PROPOSAL

- 4.1 This project has a total budget of US\$4 million, of which US\$500,000 (13%) will be provided by IDB Lab as nonreimbursable technical-cooperation funding; US\$970,000 (Core, 24%) will be contributed by third-party entities administered by the Bank; as well as US\$370,000 (in SEP technical cooperation funding, 9%) and US\$2,160,000 (in counterpart cofinancing, 54%).

Instruments: The instrument to be used is technical cooperation funding, since this is a project with the characteristics of a public good for which there is no possibility of direct capture of returns.

Summary Budget

Project components	IDB Lab		Counterpart		Total
	RG-T4204	RG-T4205			
	Nonreimbursable technical-cooperation funding	Core ⁴¹	SEP ⁴²	Cofinancing	
Component 1: Public-private stakeholder partnership	120,000	130,000	0	680,000	930,000
Component 2: Technology infrastructure and single interoperable protocol	155,000	200,000	0	590,000	945,000
Component 3: Development of open and competitive application marketplace	135,000	550,000	370,000	500,000	1,555,000
Component 4: Analysis, data use, and dissemination	40,000	60,000	0	300,000	400,000
Evaluation, audits, and contingencies	50,000	30,000	0	90,000	170,000
Total	500,000	970,000	370,000	2,160,000	4,000,000
% of financing	13%	24%	9%	54%	100%

V. EXECUTING AGENCY AND IMPLEMENTATION STRUCTURE

A. Description of the executing agency

- 5.1 The executing agency that will sign the agreement with the Bank for this project is Fundación Julio Ricaldoni. This entity has extensive experience as a strategic partner in projects with the IDB Group. It is distinguished by its transparency, ethics, university principles, agility, flexibility in operational and administrative processes, and its capacity for dialogue and understanding, always seeking innovation and development approaches in the opportunities in which it is involved. It was the main executing agency for the regional LACChain project (RG-T3370), as well as for several Bank technical cooperation and regional public goods development projects. Fundación Julio Ricaldoni has extensive experience and is an example of the successful execution of IDB regional programs. Under the institutional framework established with Fundación Julio Ricaldoni, the regional LACChain project also allowed for the establishment, institutional consolidation, and sustainability of the LACChain team. This team specializes in the development of technology infrastructure and blockchain-based solutions and has the institutional capacity and aptitude to operate at the regional level for the successful development of this project. This project also builds on the strength of the LACChain Alliance community.¹⁰

⁴¹ Core funds are third-party funds administered by the IDB Group and earmarked for this project.

⁴² SEP technical cooperation resources are technical cooperation funds from the Social Entrepreneurship Program (SEP), administered by IDB Lab and earmarked for this project.

- 5.2 Fundación Julio Ricaldoni is an organization created by and strategically linked to the [School of Engineering of Universidad de la República](#). It is a university foundation supported by the largest, oldest, and most prestigious academic institution in Uruguay, with a team of regionally and internationally renowned researchers and technicians in different branches of engineering. It is a nonprofit organization recognized for its agile, professional, and transparent work in the following strategic lines of activity: (i) promoting linkages between the capacities of the School of Engineering and the productive sector; (ii) supporting the scientific and technological development of organizations and the country; and (iii) supporting the creation of new science and technology-based enterprises. It also has a mandate to explore and identify opportunities in its environment, striving to understand the needs of the agents with whom it interacts, while supporting the development of technological capabilities in various organizations.

B. Implementation structure and mechanism

- 5.3 Fundación Julio Ricaldoni will be responsible for executing project activities and managing project resources effectively and efficiently. Fundación Julio Ricaldoni will also be responsible for providing status reports on project implementation. Details on the structure of the execution unit and status report requirements can be found in Annex V and in the project's technical files.
- 5.4 To ensure appropriate governance of the project, a Steering Committee will be formed, made up of the contributors to this project. This Steering Committee, chaired by IDB Lab, will be in charge of decisions about strategic planning, execution, specific technical considerations, the definition of standards, and general project coordination. The Steering Committee may propose the inclusion of new entities that are technically or financially relevant to the project's objectives.
- 5.5 Fundación Julio Ricaldoni will 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.

VI. FULFILLMENT OF MILESTONES AND SPECIAL FIDUCIARY ARRANGEMENTS

- 6.1 **Results-based disbursements and fiduciary arrangements.** The executing agency will adhere to IDB Lab's standard agreements on results-based disbursements, as well as to the Bank's procurement policies⁴³ and financial management arrangements⁴⁴ as specified in Annexes V and VI.

⁴³ See [Policies for the Procurement of Goods and Works financed by the Inter-American Development Bank](#).

⁴⁴ See <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?DOCNUM=39856172>.

VII. ACCESS TO INFORMATION AND INTELLECTUAL PROPERTY

- 7.1 **Access to information.** The information in this document is classified as “public” under the Bank’s Access to Information Policy.
- 7.2 **Intellectual property.** The intellectual property rights to all work and results of the project belong to the Bank. The Bank grants a nonexclusive, free, noncommercial license to the executing agency to use, copy, distribute, reproduce, display, and publicly perform any work or result of the project within the project’s country of execution.

The executing agency agrees to ensure that all contracts it enters into with consultants under the project provide for the assignment to the Bank of the respective intellectual property rights, including copyrights.

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.

Intellectual property matters will be governed by Bank policies. This program promotes the development of open-source, public-interest, and universal-use technology platforms and standards, so no specific arrangements regarding intellectual property are anticipated.