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ARGENTINA

**SOCIAL, CIVIC, AND ECONOMIC INCLUSION OF INHABITANTS OF
VULNERABLE NEIGHBORHOODS IN BUENOS AIRES
USING BLOCKCHAIN MODELS**

(AR-T1190)

DONORS MEMORANDUM

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CONTENTS

PROJECT SUMMARY EXECUTIVE SUMMARY

I.	THE PROBLEM.....	1
II.	THE SOLUTION	3
III.	ALIGNMENT WITH THE IDB GROUP, SCALABILITY, AND RISKS	9
IV.	INSTRUMENT AND PROPOSED BUDGET	11
V.	EXECUTING AGENCY AND IMPLEMENTATION STRUCTURE.....	11
VI.	COMPLIANCE WITH MILESTONES AND SPECIAL FIDUCIARY ARRANGEMENTS	13
VII.	ACCESS TO INFORMATION AND INTELLECTUAL PROPERTY.....	13

PROJECT SUMMARY

SOCIAL, CIVIC, AND ECONOMIC INCLUSION OF INHABITANTS OF VULNERABLE NEIGHBORHOODS IN BUENOS AIRES USING BLOCKCHAIN MODELS (AR-T1190)

According to figures from the Government of the City of Buenos Aires (GCBA), 16.2% of the city's inhabitants are living in poverty, while 3.7% are indigent.¹ As in other large Latin American and Caribbean cities, urban social inequalities are evident in the lack of access to public and private services. This situation has a profound impact on the quality of life of people residing in vulnerable neighborhoods, known as “*villas de emergencia*” in Argentina.²

The high levels of vulnerability of these residents are associated with, *inter alia*, the poverty penalty concept, which refers to the relatively higher cost shouldered by the poor to access certain goods and services. Although there are several causative factors underlying the poverty penalty, one of the main ones is the existence of imperfect information. Consequently, absent information regarding the identity and behavior of the most vulnerable, the market either cannot include them or includes them at a much higher cost than for the average population.³

Proactively taking advantage of the opportunities offered by the digital revolution for facilitating social, civic, and economic inclusion is critical to turning this situation around. In this context, blockchain digital technology has the potential to reduce the poverty penalty. Blockchain makes it possible to provide vulnerable populations with a digital identity, generating trustworthy, secure information on their behavior at a low cost. Using cryptography and mathematics, blockchain technology makes it possible to develop a decentralized, transparent, and tamper-proof database to securely record information and transfers of value (e.g. money, documents, goods, properties, and votes). This is accomplished by creating a ledger, the authenticity of which can be verified by all parties without the need for an intermediary. Another key benefit of blockchain technology is that it allows individuals to take ownership of their digital identity and, thus, control their personal information and the value it can generate.

The objective of this project is to pilot the development of a blockchain-based digital identity model for residents of vulnerable neighborhoods in the Buenos Aires metropolitan area, with the aim of facilitating their access to quality goods and services and promoting their financial inclusion. This digital identity will receive information inputs generated by a digital wallet for unbanked individuals, allowing them to access financial services such as storing digital money, and making payments, transfers, and remittances. In addition to offering an efficient, secure solution for utilizing digital money, the blockchain-based wallet will allow users to build a transaction history and, subsequently, foster their inclusion in the financial system. The project will also explore how blockchain technology can be used to record the assets of people residing in vulnerable neighborhoods and settlements. The financial, property ownership, or other information generated—e.g. training course certificates—will

¹ GCBA Statistics and Censuses: Distribution of households and persons by income level (%). City of Buenos Aires. First quarter of 2016/second quarter of 2017.

² This document will use the terms vulnerable neighborhoods and marginal neighborhoods interchangeably.

³ Mendoza, R.U. (2008), *Why do the Poor Pay More? Exploring the Poverty Penalty Concept*, Journal of International Development, Volume 23, pages 1-28.

become part of the users' digital identity. Lastly, the project will seek to foster coordination with different public and private agencies that collect identity information on individuals (e.g. GCBA, telephone companies, banks, microfinance institutions, and supermarkets), with a view to incorporating more information into the digital identities. By consolidating these trustworthy, accessible, and relevant digital identities, the project ultimately aims to reduce the poverty penalty borne by the residents of vulnerable neighborhoods, thus allowing them to improve their opportunities for socioeconomic inclusion in the fourth industrial revolution.

This project is part of the IDB Group's multisector support for Villa 31, designed and structured through the Urban Integration and Social and Educational Inclusion Program in the Autonomous City of Buenos Aires (operation AR-L1260), led by the Housing and Urban Development Division (CSD/HUD), the Competitiveness, Technology and Innovation Division (IFD/CTI), the Connectivity, Markets and Finance Division (IFD/CMF), and IDB Invest will jointly monitor the various development phases of the digital identity app, to ensure alignment with the Bank's priorities from the start. Accordingly, they will propose and validate hypotheses relevant to their respective portfolios. The project aims to strengthen IDB Group knowledge of blockchain technology across divisions, with the objective of exploring other possible applications of the technology. Likewise, it will work together with the GCBA, a key strategic partner that has demonstrated a strong interest in this initiative.

Within the IDB Group, the project will also coordinate with the Information Technology Department (ITE), the Operations Financial Management and Procurement Services Office (FMP), the General Counsel and Legal Services Department (GCL), and the Office of the Executive Auditor (AUG) to design and validate this first blockchain-based project management pilot to be implemented by a development institution. The objective of this pilot project will be to monitor the project's fiduciary aspects using a blockchain-based management system, with a view to identifying the model's potential advantages and efficiencies. Considering the model's enormous potential for scale-up, the project will work closely with the specialists from the aforementioned areas to make improvements and adjustments. Accenture, the key project management partner, will provide support for monitoring and fulfilling the established targets.

ANNEXES

Annex I	Results Matrix
Annex II	Summary Budget

APPENDICES

Proposed resolution

INFORMATION AVAILABLE IN THE TECHNICAL DOCUMENTS SECTION OF THE MIF PROJECT INFORMATION SYSTEM

Annex III	Itemized Budget
Annex IV	Diagnostic Needs Assessment of the Executing Agency (includes due diligence and integrity analysis)
Annex V	Project Status Reports, Compliance with Milestones, and Fiduciary Agreements
Annex VI	Procurement Plan
Annex VII	Operating Regulations for the Innovation

ABBREVIATIONS

AUG	Office of the Executive Auditor
CABA	Autonomous City of Buenos Aires
CAR	IDB Country Office in Argentina
CSD/HUD	Housing and Urban Development Division
DECODES	Asociación Civil para el Desarrollo de Ecosistemas Descentralizados
FMM	Fiscal and Municipal Management Division
FMP	Operations Financial Management and Procurement Services Office
GCBA	Government of the City of Buenos Aires
ICTs	Information and communications technologies
IFD/CMF	Connectivity, Markets, and Financial Division
IFD/CTI	Competitiveness, Technology, and Innovation Division
ITE	Information Technology Department
MVP	Minimum viable product
SECISyU	Social and Urban Integration Department

EXECUTIVE SUMMARY

SOCIAL, CIVIC, AND ECONOMIC INCLUSION OF INHABITANTS OF VULNERABLE NEIGHBORHOODS IN BUENOS AIRES USING BLOCKCHAIN MODELS (AR-T1190)

Country and geographic location:	Argentina. The project will be executed in the Buenos Aires metropolitan area and work with three vulnerable neighborhoods, including Villa 31.		
Executing agency:	Asociación Civil para el Desarrollo de Ecosistemas Descentralizados (DECODES)		
Focus area:	Inclusive Cities		
Coordination with other donors/Bank operations:	The project has been designed jointly by the Housing and Urban Development Division (CSD/HUD); the Competitiveness, Technology and Innovation Division (IFD/CTI); the Connectivity, Markets and Financial Division (IFD/CMF); the Operations Financial Management and Procurement Services Office (FMP); the Office of the Executive Auditor (AUG); and the Information Technology Department (ITE). The collaboration of these different areas has increased the strategic relevance of the project, positioning it as an opportunity for the sharing of technology knowledge, ensuring its alignment with the IDB Group, and facilitating its scalability going forward.		
Project beneficiaries:	The beneficiaries are 1,500 inhabitants of vulnerable neighborhoods in the Buenos Aires metropolitan area, as well as entrepreneurs of the blockchain ecosystem.		
Financing:	Technical Cooperation:	US\$1,180,000	46%
	Investment:		
	Loan:		
	Other (explain):		
	Total MIF contribution:	US\$1,180,000	
	Counterpart:	US\$1,395,000	54%
	Cofinancing:		
	Total project budget:	US\$2,575,000	100%
Execution and disbursement period:	42 months for execution and 48 months for disbursements		
Special contractual conditions:	The following will be conditions precedent to the first disbursement: (i) hiring of the project coordinator; and		

(ii) identification of the commercial bank that will serve as custodian of the digital peso to be used with the digital wallet.

**Environmental and
social impact review:**

This operation was screened and classified in accordance with the IDB's Environment and Safeguards Compliance Policy (Operational Policy OP-703) on 27 October 2017. Since the related impacts and risks are limited, this project is proposed as a category "C" operation.

**Unit responsible for
disbursements:**

MIF/CAR

I. THE PROBLEM

A. Description of the problem

- 1.1 According to the most recent figures from the General Bureau of Statistics and Censuses of the Government of the City of Buenos Aires (GCBA),⁴ approximately 3,059,000 people live in the Autonomous City of Buenos Aires (CABA), and the poverty and indigence rates there are 16.2% and 3.7%, respectively. According to the National Population and Housing Census, 163,000 persons lived in vulnerable neighborhoods (*villas de emergencia*) in the CABA in 2010. Upon comparing these data with the findings of the 2014 study by the GCBA's Habitat and Inclusion Department—which indicate that 275,000 people live in this type of vulnerable neighborhood, we see that in four years' time the size of this population increased by 68.7%. Likewise, in 2016, the Argentine State, in conjunction with various organizations, conducted a study that counted 4,100 vulnerable neighborhoods in the country, with an estimated 1,340,272 residents, of which 38% are children or young people up to 20 years of age.
- 1.2 Villa 31 is the oldest and largest of these CABA neighborhoods. It covers 32 hectares and has a population of 43,000 inhabitants (approximately half of which are under 25 years of age). Villa 31's high population density has resulted in significant overcrowding, exacerbating socioenvironmental problems. The GCBA estimates that 67% of households in Villa 31 are below the poverty line, with monthly incomes insufficient to cover the basic shopping basket.⁵ Likewise, 22% of its households are overcrowded, compared with 1.8% in the rest of the CABA. Twenty-five percent of children ages 3 to 5 do not attend school, and 64% of young people ages 18 to 25 have not completed secondary education.⁶
- 1.3 **Poverty penalty.** The high levels of poverty and vulnerability among residents of marginal neighborhoods are associated with, *inter alia*, the concept of the poverty penalty. While the literature⁷ presents various underlying causes for the poverty penalty, including market failures (e.g. logistical costs), it underscores imperfect information as a key factor. In many situations, the market, lacking information on the identity and behavior of the most vulnerable persons, cannot include them, or does so at a much higher cost than for the average population.
- 1.4 The lack of information associated with the poverty penalty includes: (i) financial information: the residents of vulnerable neighborhoods do not typically have updated, trustworthy documentation reflecting their income level or financial transaction histories,⁸ meaning they cannot be evaluated by the traditional financial sector and therefore have no access financial services, or do so only in the informal sector, paying very high interest rates. Furthermore, this lack of access to financial services hampers their productive activities, which in turn limits their potential for

⁴ GCBA Statistics and Censuses: Distribution of households and persons by income level (%). City of Buenos Aires. 1st quarter of 2016/2nd quarter of 2017.

⁵ August 2016 report of the Social and Urban Integration Department (SECISyU).

⁶ SECISyU social, housing, and demographic report (2016), GCBA.

⁷ *Why do the Poor Pay More? Exploring the Poverty Penalty Concept* (2008) Ronald Mendoza.

⁸ Much of the population of vulnerable neighborhoods is made up of immigrants, many of whom do not have official documents.

earning higher incomes.⁹ Lastly, this lack of financial information also leads to higher transaction fees on remittances and payments, which is of particular concern to migrant families residing in marginalized neighborhoods; (ii) asset information: without property deeds, the residents of marginalized neighborhoods cannot use their dwellings (or, in many cases, physical assets located in their neighborhoods) as collateral to access financial services. This in turn makes it harder for them to access public and private goods and services tied to having a certified physical address; and (iii) education and work information: residents of vulnerable neighborhoods generally have very limited records of their education (academic titles, training certificates, etc.) and work experience. This fact hinders their access to the formal labor market, as they are unable to provide proof of their work experience.

- 1.5 In the broader context of inequality in access conditions, it is important to underscore the potential risk that the digital economy and fourth industrial revolution may further widen social gaps. Technological changes are taking place at an increasingly fast pace and people with less access to the digital world may be deprived of the new opportunities if specific interventions are not carried out to foster their digital inclusion. The development of a digital identity is one of the critical elements that can facilitate their social and economic inclusion in the fourth industrial revolution, in order to turn this situation around.
- 1.6 **Emerging blockchain ecosystem in Argentina.** In this context, the project executing agency, Asociación Civil para el Desarrollo de Ecosistemas (DECODES), has been a pioneer in supporting the development of the blockchain ecosystem in Latin America and the Caribbean. Since 2013, it has been raising awareness of blockchain and harnessing its technological potential, as well as advising government agencies, banks, and private companies on the use of this technology. DECODES also organizes the annual Latin American Bitcoin and Blockchain Conference (BIT Conf).¹⁰ This is Latin America's most important blockchain conference, bringing together the leading companies and experts in the international blockchain ecosystem sector. Lastly, DECODES actively promotes the use of blockchain technology for solutions with social and economic impacts through a program known as Systema D, which offers training activities to foster the adoption of blockchain-based solutions in vulnerable Buenos Aires neighborhoods, including Villa 31.
- 1.7 Despite DECODES' work, the blockchain ecosystem in Argentina remains small, fledgling, and unorganized. For blockchain technology to truly have a social and economic impact on vulnerable populations, the ecosystem must be strengthened, through the training and coordination of key stakeholders in the opportunities blockchain technology offers for social, civic, and economic inclusion. At the same time, the country's public and private entities require training to build the necessary capacity to forge blockchain-based partnerships to expand service coverage in the neighborhoods and reduce the poverty penalty.

⁹ Diagnostic assessment and guidelines for the financial inclusion strategy in Argentina (2007). Document prepared under IDB coordination in the context of operation RG-T2305.

¹⁰ <https://2017.labitconf.com/>.

- 1.8 Currently, a number of agencies at the international level are testing the blockchain technology to promote social inclusion. To cite a few examples, the BanQu model connects unbanked persons to the global economy through the creation of a secure and portable digital identity that records their transaction history on blockchain.¹¹ Along these lines, Accenture and Microsoft have launched a joint initiative to design a blockchain-based digital identity network for refugees (e.g. the recent Syrian refugee crisis in the European Union), to foster social inclusion. In turn, various governments, including Australia, Brazil, Estonia, Georgia, Japan, Singapore, Sweden, and the United Kingdom, have launched initiatives to validate the relevance of blockchain technology in the delivery of public services and the promotion of social inclusion in such areas as registration of property, health records, and academic degrees. However, despite the diversity of examples of first-stage initiatives currently under way, to date very few assessments have measured the impact of the technology and its combined use to improve the lives of marginalized populations.

B. Project beneficiaries

- 1.9 The project's direct beneficiaries will be the residents of three vulnerable neighborhoods in the Buenos Aires metropolitan area—including Villa 31, where the system will be set up first. An estimated 1,500 residents¹² of the three vulnerable neighborhoods will benefit from the project, accessing a variety of benefits derived from the creation of a blockchain-based digital identity, including: (i) opportunities for financial inclusion (e.g. lower lending rates and access to savings products); (ii) increased security and lower costs associated with managing cash; (iii) opportunities for accessing insurance; (iv) opportunities for registering the ownership of assets; and (v) access to a better private-sector offering of goods and services (e.g. customized telephone plans).
- 1.10 The project will also benefit the blockchain entrepreneurship ecosystem in Argentina—and more broadly, in Latin America and the Caribbean—by supporting knowledge creation and specialized events (through Blockchain Academy¹³). Through coordination with the public sector (GCBA and other stakeholders) and the private sector (via Accenture, Telefónica, and others), the project will likewise help disseminate the opportunities that blockchain offers for the delivery of public services and improved business competitiveness.

II. THE SOLUTION

A. Project description

- 2.1 The project objective is to develop a blockchain-based digital identity for residents of vulnerable neighborhoods in the Buenos Aires metropolitan area, to facilitate their access to quality goods and services and promote their financial inclusion.
- 2.2 **Blockchain technology.** The project will use blockchain technology due to its unique attributes of immutability, transparency, and portability. Blockchain¹⁴ is a

¹¹ <http://www.banQuapp.com/our-solutions/pilots/>.

¹² According to the design team, this amount could increase significantly, reaching more than 20,000 residents if there is massive adoption of the wallet and digital identity app.

¹³ Blockchain Academy is a DECODES initiative to promote the dissemination of technology in the region.

¹⁴ <https://assets.kpmg.com/content/dam/kpmg/pdf/2016/06/kpmg-blockchain-consensus-mechanism.pdf>.

database that is updated through a decentralized and distributed network of computers. With no central administrator or third-party middlemen, it has cryptography-enhanced levels of security, and each network user holds an identical copy of the ledger. Anyone can request that any transaction be added to the blockchain, but transactions are only accepted if all users agree that they are legitimate, e.g. that the request comes from the authorized person, that the house seller is the owner, and that the buyer really has the money to buy it. This verification is done automatically on behalf of each user. Each new transaction to be recorded is bundled together with other transactions in a block, which in turn attaches to a previously formed chain of blocks. Adding a new block to the chain requires updating the ledger that is held by all users.¹⁵ This mechanism results in a tamper-proof, transparent, and portable ledger. The recorded information is encrypted and can only be deciphered by the individuals participating in the transaction, who have a private access key to see and use it to create value.¹⁶ Another advantage of the decentralized transaction ledger is that it significantly reduces intermediation costs. Blockchain technology also makes it possible to create smart contracts that can automate the flow of digital assets and/or money in response to previously agreed upon conditions being met, without human intervention, in a transparent and auditable way.

- 2.3 **Blockchain-based digital identity.** Blockchain technology allows people to take ownership of their digital identity, and thus, control their personal information. Accordingly, it makes it possible to record, at a greatly reduced cost, the digital identity of people residing in marginalized neighborhoods, generating trustworthy and secure information on their behavior while safeguarding their privacy. Blockchain therefore has the potential to reduce the poverty penalty by improving conditions for this population to access goods and services.
- 2.4 The project will first develop a digital identity for the neighborhood's residents using information generated by a digital wallet for unbanked individuals. This will allow them to access financial services, such as storing digital money, and making payments, transfers, and remittances. In addition to offering an efficient, secure solution for utilizing digital money, the blockchain-based wallet will allow users to build a transaction history and, subsequently, foster their inclusion in the financial system. To that end, the project will first identify and map the needs of the app's various users, and will then design a minimum viable product that will in turn be tested to validate the proposed technological solution. Depending on the results, any necessary adjustments will be made, and the digital identity prototype app will be developed. App marketing and adoption campaigns will be held to implement the prototype in the vulnerable neighborhoods. In these campaigns, promoters will provide support to the population on using the app. The promoters will also be responsible for assessing the experiences, receiving any user complaints, and identifying potential adjustments and improvements to the app. Furthermore, and with the aim of narrowing the digital divide and promoting financial education, training sessions on digital literacy, financial education, and entrepreneurship will be held in the selected neighborhoods, in partnership with other public and private actors.

¹⁵ How Blockchain Technology Could Change Our Lives – European Parliament. 2016.

¹⁶ At no time will the project use cryptocurrencies, such as Bitcoin or others. Project execution will establish blockchain as the most appropriate technology.

- 2.5 The project will also explore how blockchain can be used to register property ownership of neighborhood residents. Accordingly, it will explore, together with the relevant public agencies, the possibility of granting housing certificates via blockchain. Lastly, the project will seek to foster coordination and agreements with the various public and private agencies that collect identity information on individuals (e.g. GCBA, telephone companies, banks, the public sector, microfinance institutions, supermarkets, and schools), with a view to incorporating more information into the digital identities. It is important to clarify that, owing to blockchain technology, any information shared with the app will be owned by the individual, who will be the only person who can access all of his/her information through a private password. Accordingly, the goal is that individuals living in vulnerable neighborhoods will be able to control their identity information and use it to access goods and services on equal footing with the rest of the population.
- 2.6 With respect to the aforementioned interventions, the project will work in a crosscutting way, taking advantage of DECODES' experience and positioning to strengthen and expand the blockchain ecosystem in Argentina, in particular focusing on identifying blockchain-based opportunities for inclusion and strengthening the capacities of public and private actors to use the technology.
- 2.7 To ensure alignment with the Bank's priorities from the onset, CSD/HUD, IFD/CTI, IFD/CMF, and IDB Invest specialists will jointly monitor the various development phases of the digital identity app. Accordingly, they will propose and validate hypotheses relevant to their respective portfolios. The project aims to strengthen IDB Group knowledge on blockchain technology across divisions, with a view to exploring other possible applications of the technology. The project will provide for specific actions in the neighborhoods to promote the blockchain ecosystem and analyze the outcomes of the pilot interventions, so as to begin generating evidence of the app's use geared towards interventions with a social impact and to facilitate future replication of the experience.
- 2.8 Lastly, the project includes the first blockchain-based project management pilot to be implemented by a development agency, designed to analyze the potential advantages and efficiencies of this new technology. Through the executing agency, the MIF, jointly with ITE, FMP, GCL, and AUG, will coordinate the design and validation of the proposed blockchain-based project management system. ITE has granted nonreimbursable financing to conduct a proof of concept study for the aforementioned system, which, if approved, it will be more broadly developed under this project. Given the considerable potential for scaling up the management model within the IDB, the project will work closely with the specialists from the aforementioned areas, who, together with the MIF team, will formulate and validate the hypotheses relevant to the system's future scalability.
- 2.9 **Innovation.** The project is based on the use of blockchain technology, which is positioned globally as a trustworthy, efficient tool for all types of recording and value-transfer processes. Blockchain technology emerged in 2009 with the very first cryptocurrencies; the blockchain is the underlying ledger that makes it possible to globally, instantaneously, and 100% reliably know the balances and originators of each transfer. In 2014, other applications for blockchain—no longer just financial or

necessarily associated with cryptocurrencies—began to be explored,¹⁷ namely, its use as a tamper-proof, decentralized, and efficient data registry. Today, several governments around the world—e.g. Brazil, China, Dubai, Japan, the United Kingdom, and the United States—are performing pilot tests, primarily in the financial, governmental, and insurance spheres, using blockchain to manage all types of processes and ledgers.

- 2.10 Internationally, several blockchain initiatives have shown promise for facilitating the social, civic, and economic inclusion of marginalized populations, owing to the security and operational efficiency the technology provides in low-cost money transfers, online payments, and access to savings, among other operations, and as reputation collateral in property and identity registries, guaranteeing the transparency and immutability of transactions. In Latin America and the Caribbean, this proposal will be the first practical application of blockchain technology to digital identity and financial-, civic-, and social-inclusion processes for residents of vulnerable neighborhoods.

**Component I: Blockchain ecosystem coordination and development
(MIF US\$189,000; local contribution US\$214,600)**

- 2.11 The objective of this component is to support the development of a blockchain ecosystem focused on identifying opportunities for socioeconomic inclusion in vulnerable neighborhoods. Accordingly, the component will first map the relevant ecosystem stakeholders for managing the digital identity application, including governmental, financial, commercial, academic, and social actors. This mapping will serve as the project's required foundation for the work of managing stakeholders, facilitating the necessary partnerships and connections that will ensure successful implementation. Furthermore, based on this mapping, the component will seek to create new blockchain entrepreneurs and help them grow. Specifically, it will foster and support entrepreneurs working in the areas of financial, social, and civic inclusion. To that end, the component will organize: (i) hackathons to identify new blockchain-based solutions that promote inclusion; (ii) conferences to promote blockchain technology and the project; (iii) meetings of the ecosystem stakeholders to define good practices in the sector and coordinate with governmental actors; (iv) training activities for the various ecosystem actors; and (v) publication of documents on blockchain technology that identify opportunities for inclusion and their legal implications, among others.
- 2.12 This component is also expected to include training for ecosystem actors in blockchain-related technical competencies, in an effort to satisfy the global demand for blockchain developers; by 2020, there are expected to be 300,000 unfilled programming jobs. The component will support the implementation of Blockchain Academy, a program of courses and training sessions on various aspects of blockchain technology for programmers, entrepreneurs, and public- and private-sector representatives.

¹⁷ Pani Baruri. *Blockchain Powered Financial Inclusion*. World Bank, 2016.

Component II: Development and preparation of technological solutions (MIF US\$366,950; local contribution US\$536,130)

- 2.13 The objective of this component is to establish the conditions for implementing technological solutions. Accordingly, a diagnostic assessment of the target population in the vulnerable neighborhoods will be performed using the design-thinking methodology. The aim of this assessment is to gain a better understanding of the neighborhood residents' daily needs and problems, and to identify their digital literacy levels and training requirements. Based on the results, the digital identity app's minimum viable product (MVP) will be developed. It will include a digital wallet for unbanked individuals that enables them to store digital money,¹⁸ as well as make payments, transfers, remittances, and other actions. Efforts will be made to include the possibility of recording asset ownership as well as educational and work history information on the app. Once finalized, the MVP will be tested with the beneficiaries, to validate it and then make any necessary adjustments.
- 2.14 To ensure that the solution has value for users, strategic partnerships with public and private actors will be coordinated where necessary. These will provide more information for users' digital identities and will potentially scale up the solutions. The project will seek to coordinate with banks, telephone companies, supermarkets, payment networks, financial services companies, etc. Lastly, training in digital literacy, financial education, and entrepreneurship will be held for the project beneficiaries, in an effort to narrow the digital divide. DECODES will actively ensure that the digital identity system and all its functions comply with Argentine legislation.
- 2.15 The activities planned for this component include: (i) in-depth interviews and workshops to identify and validate the needs of the communities and the drivers of adoption; (ii) design of the interface and prototypes of the technological solutions (e.g. digital identity, mobile wallet, and property certificate); (iii) testing of the prototypes; (iv) development of the technological solutions and potential integration with specific publicly available programming interfaces (APIs); (v) development of the strategy for engaging the target population; (vi) digital literacy, financial education, and entrepreneurship training; and (vii) periodic meetings with public agencies (e.g. GCBA, the Financial Information Unit, and the Central Bank) to report on the system's operation and to ensure the timely identification of any regulatory elements to which the system may need to adapt.

Component III: Implementation of technological solutions (MIF US\$223,300; local contribution US\$246,900)

- 2.16 The objective of this component is to test the effectiveness of the technological solutions developed in the previous component and to support users in implementing it. Pilot projects will be conducted in Villa 31 and at least two more vulnerable neighborhoods of the Buenos Aires metropolitan area, sequentially by zone within the same neighborhood, with the aim of collecting information on the use of the solution and making adjustments as its scope is expanded. One of the main challenges with mobile apps is ensuring their adoption. Therefore, for this solution, educational campaigns will be held with the user population to explain its advantages, and support will be provided to users in implementing it and to ensure that they adopt it. Lastly, and as a critical element for adoption and scale-up,

¹⁸ The project does not provide for the use of cryptocurrencies, such as Bitcoin, Ethereum, or others.

partnerships with public and private actors will be consolidated on the foundation of the technological solution, with the aim of increasing the benefits the residents of vulnerable neighborhoods receive from using it.

- 2.17 The activities to be carried out in this component include: (i) outreach and awareness-raising activities in the neighborhoods; (ii) sequential implementation of the solutions in the neighborhoods; (iii) support for beneficiaries and businesses with regard to implementation, resolving questions or problems, and compiling experiences; (iv) adjustment of the technological solutions and the strategy for approaching potential users based on the implementation experience; and (v) support for the development of third party digital identity services that increase the benefits for the target population.

**Component IV: Knowledge management and communication
(MIF US\$177,600; local contribution US\$271,649)**

- 2.18 The objective of this component is to compile evidence on the effectiveness of blockchain technology as a tool for facilitating the financial, social, and civic inclusion of vulnerable populations. Since this is an innovative project for public policy, special attention will be paid to the knowledge generated and its dissemination. The intervention model and knowledge generated during the project will be systematized, specific case studies on the impact of the digital identity solution will be performed (which should take into consideration the opinion of the final users), and project outcomes will be publicized. A document summarizing the basic elements of blockchain technology will be prepared and a study will be conducted of the advantages of using this technology and of potential alternative applications thereof for financial, civic, and social inclusion. Further, assessments (using blockchain system data) will be performed on a recurring basis over the course of the project, with the goal of continually adjusting and improving the technological solution and the comprehensive strategy for approaching potential users. The component is expected to contribute to the public agenda through dissemination of results to key audiences, including the public sector, private sector, nonprofit organizations, banks, and microfinance institutions.
- 2.19 As part of this component, the project will develop a pilot blockchain-based system for project management. The objective of this pilot will be to identify the potential advantages and efficiencies generated from managing project fiduciary and administrative aspects via blockchain. The research questions this project intends to address through this blockchain-based management pilot are: (i) Does the system fulfill the security, traceability, and trustworthiness requirements called for in the Bank's policies and best practices for executing agencies? and (ii) Does the system appear to be more efficient, inexpensive, and transparent and have more functionalities than the systems currently in use? A group of specialists from FMP, ITE, AUG, and GCL has been formed to manage the pilot. They have been working together since the design stage and will jointly coordinate the blockchain-based fiduciary management system pilot. A case study will be performed of the pilot application of this blockchain-based project management system, making it possible to understand its findings and potential replicability in other initiatives.
- 2.20 The activities planned for this component include: (i) implementation of recurrent evaluations of the project; (ii) development of an ABC manual on blockchain technology and its applications for social, civic, and economic inclusion; (iii) case

studies on the impact of the blockchain-based digital identity; (iv) participation in national and international events to publicize the project and its outcomes; (v) design, prototyping, and development of a pilot blockchain-based project management system; (vi) systems audit of the management system; and (vii) a case study of the management system.

B. Project results, measurement, monitoring, and evaluation

- 2.21 The main project indicator is the number of neighborhood residents whose quality of life improves as a result of access to new goods or services attributable to their blockchain-based digital identities. This indicator is aligned with the inclusive cities unit's aspirational indicator "number of households with an improved quality of life." It is also closely aligned with the action proposals set out in the Bank's strategy with Argentina (2016-2020), which include: (i) support for financial inclusion, focusing on vulnerable groups; and (ii) support for the development of business services and public goods needed to foster innovation, including information and communications technologies (ICTs).
- 2.22 A system for continual monitoring, evaluation, and innovation will be established early in the execution period, based on the data in the blockchain ledger, to be complemented, where applicable, with other indicators and relevant data. This system will make it possible to: (i) monitor the management, results, and impact indicators, as well as provide feedback and adjust the technological solution and project implementation on a routine basis; and (ii) document and share lessons learned to further the development of the blockchain ecosystem in Argentina and the region.¹⁹ There are two main project evaluation questions: (i) Is it feasible to generate a blockchain-based digital identity for residents of vulnerable neighborhoods? and (ii) Does this digital identity help reduce the poverty penalty shouldered by the residents of those vulnerable neighborhoods?
- 2.23 The project executing agency, DECODES, will be responsible for delivering project status reports within the thirty (30) days following the end of each six-month period, or more often as established by the MIF, which will notify DECODES a minimum of sixty (60) days before the reports are due. These project status reports will contain information on the progress of execution, compliance with milestones, and achievement of the objectives established in the results matrix and other operational planning tools. Within the ninety (90) days following the end of the execution period, the executing agency will present a final project status report to the MIF. This report will highlight the outcomes achieved, the project's sustainability, and the lessons learned.

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

A. Alignment with the IDB Group

- 3.1 This project is part of the IDB Group's multisector support for Villa 31, designed and structured through the Urban Integration and Social and Educational Inclusion

¹⁹ Accenture will support the execution unit in designing the aforementioned monitoring system, proposing tools and arrangements for monitoring the project, at the financial (monitoring of budgetary execution, management of procurements, etc.) and technical (monitoring of indicators and setting of targets) levels. The development of a project dashboard is also planned, to facilitate monitoring of the established targets.

- Program in the Autonomous City of Buenos Aires (AR-L1260), led by CSD/HUD. The project is closely aligned with the Bank's strategy with Argentina 2016-2020, which, among its action proposals, includes interventions that: (i) support financial inclusion, focusing on vulnerable groups; and (ii) support the development of business services and public goods needed to foster innovation, including ICTs. It is also aligned with the IDB Group's Institutional Strategy 2016-2019, which establishes poverty and inequality reduction as one of its two overarching objectives and includes multi-sectorality and innovation among its operational principles. Lastly, the project is aligned with IDB Invest's Priority Business Areas 3 and 4, which set out to: (i) support innovation and technological development; and (ii) enhance income generating opportunities and social mobility for vulnerable populations.
- 3.2 Taking into account the existing will to analyze development challenges from an interdisciplinary perspective with the aim of identifying innovative, comprehensive solutions to complex problems, the project team includes specialists from several of IDB Group units, namely: IFD/CTI, IFD/CMF, IFD/FMM, CSD/HUD, and IDB Invest. These specialists will participate in monitoring the various phases of the development of the digital identity app, to ensure they align with the Bank's priorities from the onset, by formulating and testing hypotheses relevant to their respective portfolios. Likewise, ITE, FMP, GCL, and AUG form part of the project team, specifically supporting the design and testing of the blockchain-based project management model. IDB Invest will take part in project implementation, firstly by analyzing the financial-inclusion opportunities offered by the technology, and secondly by identifying potential opportunities to scale up blockchain models requiring investment.
- B. Scalability**
- 3.3 Although the project is initially designed to be implemented in Villa 31, where the IDB is supporting the urbanization process initiated by the GCBA, as well as in two other neighborhoods in the Buenos Aires metropolitan area, it is highly probable that its outcomes can be replicated in neighborhoods and cities throughout the country or region. Specifically, if the plan to register government-granted housing certificates is successful, the GCBA could scale it up to all of the city's vulnerable neighborhoods and settlements.
- 3.4 Several IDB Group departments and divisions (IFD/CTI, ITE, FMP, IFD/CMF, and CSD/HUD) worked together closely on the project's design, which will be the first actors for scale-up of the initiatives. The Argentine public sector is also expected to participate in the project to a significant degree (the GCBA has shown interest, in partnership with CSD/HUD), and certain companies from the financial sector as well as other sectors may become partners for scale-up (several public and private banks have expressed interest). Lastly, the enterprises supported by the project are expected to be able to take advantage of the business models tested as part of this intervention to scale up and significantly expand the scope of their actions.
- C. Project and institutional risks**
- 3.5 The first risk associated with the project has to do with the fact that the project entails implementing an extremely innovative proposal using cutting-edge technology in a very complex context of high vulnerability, namely, the vulnerable neighborhoods. To mitigate this risk, the project will form partnerships and work closely with social

organizations that work in these neighborhoods, as well as coordinate efforts with GCBA authorities and government entities with a presence in the area, so as to engender trust among the neighborhood residents and have them actively participate in project activities.

- 3.6 The second related risk is the possibility that there will be very little demand from the shantytown inhabitants for the blockchain-based solution, or that few of them will adopt it, whether because they do not perceive its value, do not trust it, or are unable to operate the technology. To mitigate the risk of weak demand, the project will include a solution-design phase based on the design-thinking methodology, during which the target population's motivations for using the app will be analyzed in depth. Awareness-raising campaigns will also be held and promoters in the field will be responsible for publicizing the solution among users and supporting them in using it. Lastly, digital literacy training sessions will be held in an effort to overcome the barrier of lack of trust in the technology.

IV. INSTRUMENT AND PROPOSED BUDGET

- 4.1 The total cost of the project is US\$2,575,000, of which US\$1,180,000 (46%) will be contributed by the MIF as technical-cooperation funding and US\$1,395,000 (54%) as the counterpart contribution.
- 4.2 **Retroactive recognition of counterpart funds.** Up to US\$50,000 of the costs incurred by DECODES since 1 October 2017 for project-related feasibility studies, the design of solutions, and involvement of project actors, will be recognized retroactively against the counterpart funds.

	MIF (US\$)	Counterpart (US\$)	Total (US\$)
Project components			
Component I: Blockchain ecosystem coordination and development	189,000	214,600	403,600
Component II: Development and preparation of technological solutions	336,950	536,130	903,080
Component III: Implementation of the technological solutions	223,300	246,900	470,200
Component IV: Knowledge management and communication	177,600	130,721	311,321
Project administration	180,600	121,721	302,321
Evaluations, audits, and contingencies	22,000		22,000
Grand total	1,180,000	1,395,000	2,575,000
% of financing	46%	54%	100%

V. EXECUTING AGENCY AND IMPLEMENTATION STRUCTURE

A. Description of the executing agency

- 5.1 DECODES will be the executing agency for this project and will sign the agreement with the Bank. DECODES is a nonprofit organization that has been involved in blockchain training, outreach, and promotion activities in Argentina and Latin America for more than three years. It has held international conferences in Argentina, Brazil, and Mexico, providing advisory services to government agencies,

banks, and private companies. DECODES actively promotes the use of blockchain technologies for solutions with social and economic impacts through a program known as Systema D,²⁰ which offers training activities to foster the adoption of blockchain-based solutions in vulnerable sectors.

- 5.2 Accenture Argentina will be a project partner and will support the execution unit in project monitoring and in meeting the established targets. Accenture is one of the world's leading business services companies. It provides consulting and outsourcing services through different business areas, including strategy, digital technology, and operations. Accenture and DECODES will sign an agreement, under which Accenture will appoint a project management office. This office will propose tools and schedules for financial and technical monitoring, and will provide support for crafting a dashboard to monitor the established targets. It will also assist the execution unit in managing project partners and interested parties, and will provide technological advisory services in specific cases. Accenture will also be responsible for conducting a diagnostic survey of the target population, using the design-thinking methodology, to improve understanding of their day-to-day problems and needs, and for shepherding the development of the technological solution.²¹ Other private entities, such as Telefónica Argentina, have shown interest in collaborating on this initiative.
- 5.3 The project will work in coordination with the GCBA, and in particular with the Social and Urban Integration Department, to coordinate efforts in Villa 31. It will also continue to coordinate with other actors of the public sector (e.g. Ministry of Social Development, Ministry of Modernization, and public banks) and private sector (e.g. telephone companies, supermarkets, and private banks) who have expressed interest in participating.

B. Implementation structure and mechanism

- 5.4 DECODES will establish an execution unit and the necessary structure for efficiently and effectively executing project activities and managing project resources. The execution unit will be located at the DECODES offices in Buenos Aires. It will comprise the institution's executive director, who will work on the project part time; a project coordinator; technical coordinator; social coordinator; and financial accounting/administrative specialist. The project coordinator will monitor the project's activities and administrative requirements, and will be responsible for preparing reports and for project management in line with MIF requirements. Additionally, the coordinator's responsibilities will include: (i) preparing and updating semiannual planning; (ii) supervising and coordinating activities to ensure any necessary changes are made; and (iii) oversight and management of the activities associated with the fiduciary processes required by the MIF.
- 5.5 A consultative committee will be formed to ensure appropriate project governance. It will consist of a DECODES representative, an IDB specialist, a MIF specialist, and an Accenture representative. The objectives of this committee will be to make strategic decisions regarding project implementation and to analyze, on a semiannual basis, progress made on the operation and the action plan for the

²⁰ <https://www.systemad.org/en/>.

²¹ Accenture's support will also strengthen the execution unit's capacities, making up for its limited experience in executing projects with external financing.

following six months, determining the changes deemed necessary in order to fulfill the objectives set forth therein. The operational aspects of the consultative committee will be agreed upon among the parties and set out in a specific document, spelling out its functions and responsibilities. The consultative committee will be able to approve the incorporation of new committee members that are technically or financially relevant to the project's aims. An advisory committee will be formed at the consultative committee's discretion. Its opinion will not be binding, but will serve to guide the execution unit and advisory committee's decisions on matters related to execution, specific technical aspects, planned studies, etc. This advisory committee will include representatives of academia and the blockchain ecosystem, representatives of public agencies that are involved in the project, representatives of the private sector, and any other relevant invitees.

VI. COMPLIANCE WITH MILESTONES AND SPECIAL FIDUCIARY ARRANGEMENTS

- 6.1 **Disbursement by results and fiduciary arrangements.** The executing agency agrees to adhere to the standard MIF disbursement by results arrangements, Appendix 4 of the Policies for the Procurement of Goods and Works Financed by the IDB (document GN-2349-9), the Policies for the Selection and Contracting of Consultants Financed by the IDB (GN-2350-9),²² Annex 1 of the Operating Guidelines on Procurement for Nonreimbursable Technical Cooperation Operations (document OP-639), and the Financial Management Guidelines for IDB-financed Projects²³ specified in Annex V and VI.

VII. ACCESS TO INFORMATION AND INTELLECTUAL PROPERTY

- 7.1 **Access to information.** The information contained herein is classified as public, in accordance with the Bank's Access to Information Policy²⁴ (document GN-1831-33).

²² [Policies for the Procurement of Goods and Works Financed by the IDB](#) and the [Policies for the Selection and Contracting of Consultants Financed by the IDB](#).

²³ [Financial Management Guidelines for IDB-Financed Projects](#).

²⁴ [Access to Information Policy](#).