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URUGUAY

E-GOVERNMENT MANAGEMENT PROJECT IN THE HEALTH SECTOR II

(UR-L1143)

SECOND INDIVIDUAL LOAN UNDER THE CONDITIONAL CREDIT LINE FOR INVESTMENT PROJECTS (CCLIP) FOR THE E-GOVERNMENT MANAGEMENT PROGRAM IN THE HEALTH SECTOR

(UR-X1009)

LOAN PROPOSAL

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ABBREVIATIONS

AGESIC	Agencia para el Desarrollo del Gobierno de Gestión Electrónica y la Sociedad de la Información y del Conocimiento [Agency for the Development of e-Government and the Information and Knowledge Society]
ASSE	Administración de Servicios de Salud del Estado [Government Health Services Administration]
CAT	Computerized axial tomography
CCLIP	Conditional Credit Line for Investment Projects
CGN	Office of the Comptroller General
COBIT	Control Objectives for Information and Related Technologies
EHR	Electronic health record
FONASA	Fondo Nacional de Salud [National Health Fund]
HCEN	National Electronic Health Record System
ICB	International competitive bidding
ICTs	Information and communication technologies
IEC	International Electrotechnical Commission
INTOSAI	International Organization of Supreme Audit Institutions
ISO	International Organization for Standardization
JUNASA	Junta Nacional de Salud [National Health Council]
LIBOR	London Interbank Offered Rate
MEF	Ministry of Economy and Finance
MEP	Monitoring and evaluation plan
MSP	Ministry of Public Health
NCB	National competitive bidding
PCU	Project coordination unit
PEP	Project execution plan
SIIF	Sistema Integrado de Información Financiera [Integrated Financial Information System
SNIS	Sistema Nacional Integrado de Salud [National Integrated Health System]
TCR	Tribunal de Cuentas de la República [Office of the Auditor General]
UDELAR	Universidad de la República

PROJECT SUMMARY

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<table>
<tr><th colspan="7">Financial Terms and Conditions</th></tr>
<tr><td colspan="4" rowspan="2">Borrower: Eastern Republic of Uruguay</td><td colspan="3">Flexible Financing Facility[a]</td></tr>
<tr><td colspan="2">Amortization period:</td><td>25 years</td></tr>
<tr><td colspan="4" rowspan="4">Executing agency: The borrower, through the Agency for the Development of e-Government and the Information and Knowledge Society (AGESIC)</td><td colspan="2">Disbursement period:</td><td>3 years</td></tr>
<tr><td colspan="2">Grace period:</td><td>5 years[b]</td></tr>
<tr><td colspan="2">Interest rate:</td><td>LIBOR-based</td></tr>
<tr><td colspan="2">Credit fee:</td><td>[c]</td></tr>
<tr><td>Source</td><td>Amount (US$ million)</td><td>%</td><td>CCLIP amount (US$ million)</td><td colspan="2">Inspection and supervision fee:</td><td>[c]</td></tr>
<tr><td>IDB (Ordinary Capital):</td><td>6</td><td>85</td><td>18</td><td colspan="2">Original weighted average life:</td><td>15 years[d]</td></tr>
<tr><td>Local:</td><td>1</td><td>15</td><td>3</td><td colspan="2" rowspan="2">Currency of approval:</td><td rowspan="2">U.S. dollars from the Ordinary Capital</td></tr>
<tr><td>Total:</td><td>7</td><td>100</td><td>21</td></tr>
<tr><th colspan="7">Project at a Glance</th></tr>
<tr><td colspan="7">Objective of the CCLIP:
The objective of the CCLIP is to help improve the quality and efficiency of the healthcare system by enhancing health services monitoring and management capacity and to move towards a prevention-based healthcare model.
Objective of the second operation:
The objective of the second operation is to improve the quality of health service delivery by enhancing efficiency in accessing medical records by the various health system actors, through (i) consolidating the National Electronic Health Records (HCEN) platform, and (ii) facilitating greater production and sharing of medical data in digital format by healthcare providers.</td></tr>
<tr><td colspan="7">Special contractual conditions precedent to the first disbursement of the loan proceeds: None</td></tr>
<tr><td colspan="7">Exceptions to Bank policies: None</td></tr>
<tr><th colspan="7">Strategic Alignment</th></tr>
<tr><td colspan="2">Challenges:[e]</td><td colspan="2">SI ☐</td><td colspan="2">PI ☐</td><td>EI ☐</td></tr>
<tr><td colspan="2">Crosscutting themes:[f]</td><td colspan="2">GD ☐</td><td colspan="2">CC ☐</td><td>IC ☑</td></tr>
</table>

[a] Under the terms of the Flexible Financing Facility (document FN-655-1), the borrower has the option of requesting changes in the amortization schedule as well as currency and interest rate conversions. The Bank will take operational and risk management considerations into account when reviewing such requests.

[b] Under the flexible repayment options of the Flexible Financing Facility, changes to the grace period are permitted provided that they do not entail any extension of the original weighted average life of the loan or the last payment date as documented in the loan contract.

[c] The credit fee and the inspection and supervision fee will be established periodically by the Board of Executive Directors as part of its review of the Bank's lending charges, in accordance with relevant policies.

[d] The original weighted average life of the loan could be shorter, depending on the date on which the loan contract is signed.

[e] SI (Social Inclusion and Equality); PI (Productivity and Innovation); and EI (Economic Integration).).

[f] GD (Gender Equality and Diversity); CC (Climate Change and Environmental Sustainability); and IC (Institutional Capacity and Rule of Law).

I. PROJECT DESCRIPTION AND RESULTS MONITORING

A. Background, problem addressed, and rationale

1.1 **Background**. In 2007, Uruguay implemented a reform of its health sector with the goal of achieving universal coverage of comprehensive health care, and thereby promoting social cohesion with equity, quality, sustainability, and distributive justice. The reform (Law 18211) created the National Integrated Health System (SNIS), and split the health policy, regulation, and management functions of the sector as a whole—for which the Ministry of Public Health (MPS) continues to be responsible—from the delivery of healthcare services, which falls to a mix of public and private providers. The reform introduced strategic changes in three areas: (i) the care model, emphasizing prevention and the continuity of care for users, based on the bond with the local primary healthcare team; (ii) the funding model, with the creation of the National Health Fund (FONASA) which is financed by contributions from workers, retirees, and government; and (iii) the management model, under the leadership of the MSP, within which the National Health Council (JUNASA) is responsible for regulating and overseeing the healthcare providers. The reform has succeeded in increasing the coverage of and equitable access to health services.[1] Nevertheless, some pending challenges remain with regard to the continuity of medical care and the rational use of human, physical, and technological resources.

1.2 Uruguay faces challenges of an advanced epidemiological and demographic transition. The epidemiological situation has changed considerably in recent years, from the predominance of infectious diseases in the early 20th century to the increasing prevalence of chronic, non-communicable diseases.[2] The country has also experienced a rapid demographic shift: population growth is low (average annual growth rate of 0.34% between 2010 and 2017, according to United Nations figures), life expectancy has risen to its current level of 77 years, and the percentage of the population age 65 and older has increased from 7.6% in 1963 to 14.1% in 2016.

1.3 Public spending on health doubled between 2000 and 2014, amounting to 6.1% of gross domestic product in the latter year, while the public health expenditure per capita rose from US$186 to US$1027 over the same period—a trend similar to that observed in other countries of the region. In Latin America and the Caribbean, the public health expenditure as a percentage of total public expenditure rose by 41% between 2000 and 2012.[3] This upward trend in expenditure will continue to be driven by the aging of the population, the increase in chronic illnesses, the demand for

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1 The percentage of the population without health coverage decreased from 4.2% in 2004 to 1.5% in 2016 (source: MSP). In terms of equitable access, between 2006 and 2011 a fivefold increase was observed in the number of persons in the first and second deciles who received healthcare services as part of their employment benefits, and a fourfold increase in the number of persons in the third decile with healthcare included in their employment benefits. Source: Victoria Arbulo et al (2012), "Análisis de la cobertura poblacional del SNIS y de la incorporación de colectivos al Seguro Nacional de Salud", MSP, Uruguay, and National Statistics Yearbook of Uruguay's National Statistics Institute (INE).

2 According to the National Survey of Risk Factors for Chronic, Non-communicable Diseases (MSP, 2013), 29.9% of the population between the ages of 15 and 64 suffers from hypertension and 6% from diabetes. With an average national hospitalization rate of 11.07% of total enrollees, these users account for 75,416 hospital admissions per year.

3 de la Maisonneuve, C. and J Oliveira Martins (2013). "Public Spending on Health and Long-term Care: A New Set of Projections," OECD Economic Policy Papers, No. 6, OECD Publishing, Paris.

expanded coverage of benefits, as well as the adoption of technological advances and more costly medications.[4]

1.4 Against this backdrop, there is a need to improve the quality of the supply-side aspects of healthcare spending by: (i) encouraging prevention; (ii) achieving greater efficiency in the delivery of services; and (iii) introducing mechanisms to foster competition among service providers. Among the instruments promoted by the health reform are: (i) agreements for the complementarity of services, whereby public and private providers agree to share information on the use of services in order to guarantee comprehensive health care for the population and promote quality and efficiency through the rational use of health resources;[5] and (ii) incentives to meet healthcare targets, consisting of a supplemental performance bonus that FONSA pays healthcare providers for meeting the priority healthcare targets set by the MSP. On the demand side, the SNIS prioritizes considerations such as: (i) transparency in service provider performance and the ability of users to freely choose their healthcare service providers;[6] (ii) the users' right to make an informed decision about their health situation; and (iii) participation of users and health workers in decision-making and in overseeing the functioning of the health system.

1.5 In 2013, the Bank's Board of Executive Directors approved a CCLIP for the e-Government Management Program in the Health Sector (UR-X1009, hereinafter "the program"). The program's overall objective is to help improve the quality and efficiency of the healthcare system by enhancing health services monitoring and management capacity and moving towards a prevention-based health care model. The first individual loan under the CCLIP[7] identified as the main problem areas: (i) inadequate information on the health status of the population and the healthcare services delivered, and (ii) mismatches between health service supply and demand at the local level, which adversely impact quality and efficiency.

1.6 **Main achievements under the first operation of the program**. As can be appreciated from the attached table, Achievement of outcomes from the first individual operation under the CCLIP (3007/OC-UR), the five outcome indicators for the program have been achieved or exceeded.

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4 Inter-American Development Bank, 2015. Health and Nutrition Sector Framework. Washington, D.C.

5 Complementarity of services among providers is one of the central objectives of the SNIS, the aim of which is to rationalize the use of human and technological resources. The intent is to ensure the optimal use of installed capacity by providing services to patients in facilities that have the greatest care capacity, thereby avoiding the under- or overuse of resources.

6 In order to promote healthy competition among service providers in attracting users.

7 Project 3007/OC-UR, e-Government Management in the Health Sector, approved by Resolution DE-124/13, was the first individual loan under CCLIP UR-X1009. The last contractual disbursement for that project is slated for November 2017, and it has been 100% disbursed by the Bank. The Bank granted a 12-month extension of the disbursement period for the last disbursement under that loan (originally 36 months), to allow additional time to negotiate and coordinate with the many institutional actors in the health sector.

1.7 A preliminary step to evaluating this first operation, "Impact on the organization and information technologies of health service providers,"[8] shows that the outputs achieved resulted in the incorporation and use of information technologies by health service providers, which has had a positive impact on both service quality and efficiency.

1.8 The foregoing demonstrates that the program has encouraged health service providers to adopt and use electronic health record (EHR) systems.

1.9 For this second individual operation under the CCLIP, the main problem identified is the limited quality of health services[9] owing to the fact that providers do not share patient clinical information.[10] The first operation designed, developed, and tested a private network, Red Salud, to interconnect the institutions of the health sector as well as a technological platform for the National Electronic Health Record System (HCEN), making it possible to share clinical data among care providers and store key data on care-related events. Nevertheless, for the reasons explained below, this network is not yet in operation, and there is still no effective sharing of clinical data on users among the various service providers.

1.10 Owing to the lack of clinical data sharing among providers, very few medical diagnoses make use of clinical information from other health service providers.[11] According to various international studies, this problem has an impact on the time

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[8] This analysis by the firm Equipos MORI, commissioned by the Agency for the Development of e-Government and the Information and Knowledge Society (AGESIC), is one of the three studies included the monitoring and evaluation plan (MEP), which was prepared and approved during preparation of the first individual loan operation under the program. The methodologies employed in these studies can be consulted in the MEP.

[9] According to Ross et al. (2000) in *La calidad y la reforma del sector de la salud en América Latina y el Caribe*, published in the Pan American Journal of Public Health (Vol. 8, No. 1-2, July/August 2000, page 1), in the area of health systems and services, it is commonly accepted that quality is made up of two broad dimensions that are related yet different: technical quality, which from the providers' perspective seeks to guarantee the safety, effectiveness, and usefulness of health promotion activities, as well as timely, effective, and safe use of healthcare services for users; and the quality as perceived by the users themselves, which takes into account the material, psychological, administrative, and ethical conditions in which those services are provided.

[10] Today, the population receives no benefit from the sharing of clinical information among healthcare service providers. Source: interviews with managers of comprehensive healthcare institutions and AGESIC representatives.

[11] Healthcare services in Uruguay are provided by comprehensive and partial service providers. Comprehensive providers are the key piece in the system: more than 98% of the population is affiliated with a comprehensive provider, which is responsible for providing the necessary health services to all its members, whether directly or through other providers. Of the country's 44 comprehensive providers, three are public sector institutions that serve roughly 40% of the population; the remaining 41 belong to the private sector and serve 58% of the population. Partial service providers include a variety of institutions, such as those providing emergency medical care, radiology, computerized axial tomography (CAT) scans and other diagnostic services, and specialized medical clinics.

needed to arrive at a diagnosis, as well as on its accuracy.[12] These shortcomings lead to repeat examinations which increase the costs of care and can expose the patient to unnecessary adverse effects, e.g. radiation.[13] Consequently, the failure of service providers to share clinical data on patients has an adverse impact on the quality of health services. The main factors underlying this problem are the following:

1.11 **Insufficient coverage of the national platform for sharing clinical data.**[14] The first version of the HCEN platform, developed under the first loan, is still not in being effectively used. It was implemented on a trial basis in 2016 with the participation of several healthcare providers.[15] Because the information sharing component is not operational, there are still no patients with clinical data in the HCEN platform. This fact exacerbates the main problem, since because no clinical data are stored in the HCEN, health service providers are still unable to share patient clinical data.[16] A number of elements are at play here: (i) the lack of a regulatory framework to regulate the relationship and mandatory exchange of clinical information between providers and the MSP through the HCEN platform, and to define the system's model of governance;[17] (ii) inadequate coverage of the minimum data sets to be included in medical records by service providers: the first operation defined minimum data sets for clinical records on emergency medical consultations, whether or not conducted in hospitals; non-emergency medical visits, whether conducted in a health center or in the home; on hospital admissions; and on dental visits (in the context of a comprehensive provider). However, there are still no standardized reporting forms for imaging (e.g. mammography, ultrasound, conventional radiology, CAT scans, and nuclear magnetic resonance), smear test and pathological anatomy records, laboratory reports, and radiation and chemotherapy treatment records; (iii) the HCEN platform's lack of capacity to handle high volumes of clinical data from multiple providers: the current version of the platform has storage capacity for 50 million documents. Uruguay's health system produces roughly 45 million healthcare service and medical test records per year (i.e. 21 million consultations with physicians; 24 million lab and conventional radiology, ultrasound, Doppler

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12 According to Chaudhry B., J. Wang, and S. Wu in *"Systematic Review: Impact of Health Information Technology on Quality, Efficiency and Costs of Medical Care"* (Annals of Internal Medicine. 2006; 144: E12-22), a systematic review of 257 studies shows that EHRs improve the quality of health service primarily through the role they play in boosting adherence to practices based on clinical guidelines. That same article noted a decrease in adverse reactions to medications and in serious undetected medication errors. According to the 2011 Electronic Medical Records Manual of Mexico's Health Ministry, the medical team should have all patient information (e.g. laboratory analysis, treatments, allergies, and diagnoses) at hand to facilitate decision-making and determine the appropriate treatment.

13 Source: information provided by managers of comprehensive healthcare institutions in interviews with the IDB project team.

14 The HCEN platform currently has no clinical data on the national population.

15 In the experiment known as "*Conectatón*", the service providers' technical teams demonstrated the feasibility of exchanging clinical data with other providers from their own institutional systems, through the HCEN platform.

16 Alternative means for sharing medical records among providers, such as the sharing of conventional hardcopy medical records, have not worked either. Bureaucratic and administrative obstacles are cited by healthcare providers as the main causes of this situation.

17 The country has no legislation in place to safeguard and regulate the exchange of patient medical records among service providers. Under the first operation, a survey of existing legislation governing health services and clinical data was conducted, which served as a starting point for the regulatory upgrade to be implemented with support from the second operation.

imaging, CAT scan, magnetic resonance imaging, and endoscopy tests; and 420,000 records of hospital admissions). Once the system enters production, its capacity will therefore have to be expanded or it is likely to collapse within a year of operation; and (iv) the need to mitigate the risk of cyber threats that could compromise the security of data, with the consequent impact on people's trust and on the reputation of the public agencies involved.[18]

1.12 **Insufficient production and storage of digital medical records**[19] **by health providers.** The fact that healthcare providers still make limited use of digital media to store and manage clinical information on their users[20] limits their capacity to share patient data via the HCEN platform and, ultimately, with other providers.[21] Consequently, this hinders the exchange of clinical information among service providers. There are several factors underlying this problem: (i) very few service providers have health record management systems that facilitate the sharing of information with other providers, as they have not yet adopted all the standards;[22, 23] (ii) there are considerable development gaps among the various providers with respect to incorporating information and communication technologies (ICTs) in support of health management;[24] (iii) there are no information and management systems (e.g. invoicing of services, prescribing medications, or indications for laboratory tests, X-rays, or CAT scans) that would support the complementarity of

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18 Specific problems (iii) and (iv) above fall within the purview of the executing agency, while problem (i) is outside its scope, as it is a presidential responsibility, and problem (ii) falls to the MSP as the governing body of the health system.

19 This scarcity is reflected in the fact that only 17,198 women have received digital mammograms. This represents 7.2% of women in 40-74 years age group affiliated with the comprehensive public provider, and 2.5% of all women.

20 According to a survey conducted for an impact study on health service provider organization and information technologies, more than 40% of the 44 comprehensive service providers had digital medical data for only a minority of their users. In 2016, 57% of providers said they had clinical records in digital format for all—or nearly all—users. This indicator reveals the potential for further progress in replacing manual records with electronic ones, with the resulting efficiency gains due to reduced spending on paper and personnel costs for handling manual clinical records.

21 Currently, no physicians are uploading data or conducting consultations using the HCEN database.

22 At present, only two comprehensive service providers—ASSE and Asociación Española—out a total of 41 have fully adopted the standards. The adoption rate of HCEN standards for hospitalization services and surgical procedures is 50% and 43%, respectively. However, it was determined that the implementation of an electronic medical records management system in the oncology specialty area, as part of the first operation under the CCLIP, helped encourage many health centers to adopt HCEN standards (source: AGESIC).

23 Since implementation of the system for transmitting imaging test results, under the individual project of the CCLIP, 2,130 imaging results were analyzed by health centers other than the one that performed the tests. This involved various health centers of the ASSE network, a public health care provider with a nationwide presence that provides services to around 35% of the population; consequently, this represents data sharing among different offices of the same provider, rather than the exchange of data among different providers.

24 According to a 2016 assessment by the firm Equipos, commissioned by AGESIC, 48% of health sector institutions were at level zero (7%) or level 1 (41%) of the model for measuring health institutions' development in the area of ICTs. The zero level means that computer applications are not used in the health area, while level 1 indicates a basic degree of development, with applications exclusively for laboratory and pharmacy purposes, and basic patient data.

health services among different providers;[25] and (iv) the existing information on the prescription and delivery of medications is deficient and does not allow for effective control.[26, 27]

1.13 **The Bank's experience and lessons learned.** Since 2008, the Bank has been providing technical cooperation to support the implementation of an EHR-based system for managing emergency services in Uruguay's public and private hospitals.[28] That project helped to build a culture of electronic management among physicians and to enhance the service provider efficiency in emergency management. However, the projects did not address the sharing of clinical data among different health service providers. Lessons learned from implementation of the first individual operation under the CCLIP (UR-X1009) in Uruguay include the following: (i) service providers and other health sector entities sector showed interest in participating voluntarily in the project's consultation forums and collaborated on the design of products and activities; and (ii) service providers placed a high value on receiving technical guidance for their information technology investments. In addition, the Bank has supported the Dominican Republic in implementing a health services management system, including a subsystem of referrals and counter-referrals (project 2623/OC-DR). The Bank has also provided El Salvador support for developing tools for managing health services, through the Integrated Health Program II (3608/OC-ES), which addressed electronic medical records systems, the management of medical appointments and medications, clinical follow-up, laboratory tests, and imaging. As well, the Bank supported the creation in Costa Rica of an information system on adolescents (grants GRT/HE-13629-CR and GRT/HE-15420-CR) which shares data with other information systems of state agencies in the areas of education, social protection, and social security.

1.14 **Project strategy.** In order to overcome these limitations, the strategy will focus on consolidating the implementation of the HCEN, with a view to enhancing the health system's quality and efficiency. The main beneficiaries will be the entire population, which will enjoy healthcare that is safer, timelier, and more effective. Since the

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[25] By decision of the MSP, a pioneering service complementarity experiment was launched in 2017 in the city of Florida, whereby emergency pediatric services would henceforth be provided in a single health center, while children would continue to receive non-emergency care from their habitual health provider. In this way, there would be complementarity between the centralized provider of emergency services and other providers. However, the challenge of sharing medical records between the physicians of the two institutions persists. At present, the complementarity module is still under development and there have been no consultations of clinical data on these pediatric patients using the HCEN. Consequently, there are still no healthcare consultations for pediatric patients affiliated with the government health services using the emergency services of the complementary provider in the city of Florida.

[26] According to a 2013 study of pharmacies focusing on access, rational use, and dispensing of medications ("Estado de Situación Farmacéutica: Acceso, Uso racional y Dispensación de Medicamentos en Uruguay: Informe") commissioned by the Pan American Health Organization, the MSP, and the Universidad de la República (UDELAR), 25% of the drugs dispensed by community pharmacies were not backed by a medical prescription, a fact that demonstrates the insecurity and lack of control over the dispensing of medications.

[27] Specific problem (iv) falls within the purview of the executing agency, while decision-making for the remaining three problems lies with the public and private entities of the health sector. It should be noted that the MSP is a member of the program's steering committee.

[28] These are Productivity and Management Improvements in the Healthcare System in Uruguay (ATN/ME-10681-UR), financed by the MIF, and Electronic Health Record in Public Hospitals in Uruguay (ATN/JF-13956-UR), financed by the Japan Special Fund.

proposed measures entail changes in the way health services are provided, action will be taken to neutralize any potential resistance to their use, flowing from lack of knowledge about how to incorporate these tools into the day-to-day delivery of healthcare services.[29] For this reason, the project will include measures to foster the adoption and use of project outputs and services.

1.15 **The operation's eligibility under the CCLIP.** The Bank has verified compliance with the eligibility conditions for granting a new individual operation under the Conditional Credit Line Agreement (UR-X1009) of 11 December 2013, namely: (i) the project relates to the sectors and components defined under the CCLIP; (ii) the project objectives are consistent with the Bank's strategy with the country, and are included in the country program;[30] (iii) the executing agency, AGESIC, will be retained; (iv) the results obtained by AGESIC in the first individual operation are satisfactory and are in line with the indicators of outputs and outcomes reported in the Bank's progress monitoring reports as well as in the evaluation report mentioned in paragraph 1.7, and, accordingly, the project team and the national authorities can expect the proposed new project to perform satisfactorily; (v) as regards financial execution of the first individual operation (3007/OC-UR), the Bank has disbursed 100% of the funds under that loan, which in turn have been fully committed by the executing agency; (vi) the borrower and the executing agency have complied with the contractual conditions in the loan contract and with the Bank's policies governing disbursements and the procurement of goods and services, including audited financial statements; and (vii) the borrower has committed itself to a local contribution in excess of the 14% minimum stipulated in the CCLIP agreement.

1.16 **Strategic alignment of the project**. The program is consistent with the Update to the Institutional Strategy 2010-2020 (document AB-3008) and is strategically aligned with the crosscutting theme of strengthening institutional capacity and the rule of law, inasmuch as various project outputs address the implementation of management and information systems for government agencies that will help enhance the quality, timeliness and accessibility of services to the public. The strengthening of government agencies will be verified in terms of the benefits that flow to the MSP, the AGESIC, and public health care providers (Government Health Services Administration (ASSE), Hospital Policial, and Hospital Militar) by virtue of project outputs such as "hospitals that incorporate application of oncological EHR and imaging developed with the first loan" and "system in operation for prescription, administration and control of medications." This operation is aligned with the Country Strategy with Uruguay 2016-2020 (document GN-2836), in its strategic objectives "[of] improve[ing] the first level of health care" by making patients' health records available to all health centers in the country, and of "[of] strengthen[ing] public

[29] See lessons learned from programs supporting the country's e-government strategy, 1970/OC-UR and 2591/OC-UR, which point to the benefits of having competitive funding for projects that will facilitate the preparation of technological solutions.

[30] With respect to the requirement that the operation should be included in the country program (document GN-2246-9, Annex, paragraph 1.21(ii), it should be noted that, while this second individual operation was not included in the 2017 Operational Program Report or in its Country Program Document for Uruguay dated November 2016 (document GN-2884, Annex II), the Bank's programming is a dynamic exercise that is updated in line with the priorities set by the countries and the Bank in the context of the country strategy. In this respect, the Bank's program with Uruguay was updated in April 2017 to include the present operation, through the Aide-mémoire on the Results-based Portfolio Review Missions (conducted 28 March, 4 to 7 April, and 12 May 2017).

management systems" through the implementation of systems for sharing health data among public and private institutions. It is consistent with the Health and Nutrition Sector Framework Document (document GN-2735-7) in its dimension of success 2, "all have timely and continuous access to high-quality health services and nutrition" and its dimension of success 4, "sector governance calls for efficiency and leadership by the health authorities, and promotes intersectoral coordination for results." It is aligned with the Sector Strategy Institutions for Growth and Social Welfare (document GN-2587-2), which gives priority to strengthening: (i) public sector management for the delivery of services that will satisfy people's demands, and (ii) e-government to enhance competitiveness and social integration.

1.17 **Gender focus.** The project incorporates gender dimensions in the following areas: (i) through the models based on the minimum data set (Component 1), it will be possible to generate statistics that take into account the gender dimension, allowing gender-related health risks to be identified and more effective interventions to be developed; (ii) the service complementarity module (Component 1) will take into account the gender approach in the sharing of health records and images among participating institutions; and (iii) the capacity for early detection of breast cancer will be enhanced through cross-consultation and specialized advisory services for the analysis of mammograms, using the electronic tool for sharing images of this type (Component 2).

B. Objectives, components, and cost

1.18 In the context of the CCLIP (UR-X1009), the objective of this second individual operation is to improve the quality of health service delivery by enhancing efficiency in accessing medical records by the various health system actors, through (i) consolidating the HCEN platform, and (ii) facilitating greater production and sharing of medical data in digital format by healthcare providers.

1.19 **Component 1. Consolidating the HCEN (US$2.6 million).** This component will strengthen the technological tools and the regulatory and management framework for implementing the HCEN. It will also include measures to mitigate risks associated with healthcare workers' use of the HCEN.[31] To this end, the activities to be financed will include: (i) preparation of a model regulatory framework and governance mechanism for the HCEN; specifically, it will establish criteria for the medical records sent to the HCEN platform and make the submittal of clinical information to the platform mandatory; (ii) preparation of additional models of minimum sets of clinical data to be used by providers;[32] (iii) production of new versions of the HCEN technological platform, with the aim of expanding its data storage and handling capacity and incorporating new functionalities;[33] (iv) development of a cyber-security

[31] As recommended in paragraph 2.4.

[32] In "The Role of the Electronic Medical Record (EMR) in Care Delivery Development in Developing Countries: A Systematic View," F. Williams and S. Boren (2008) reviewed 23 articles analyzing the outcomes and impacts of electronic health record systems in developing countries. They conclude that in a number of the studies reviewed, the systems enabled faster checks on drug allergies, dosing, and medication suitability, thereby helping to avoid medical errors and reduce the costs associated with prescribing medications. The findings of various studies were aggregated qualitatively.

[33] The solutions to be implemented will combine outsourcing of products with customized development (hybrid approach).

strategy;[34] and (v) training for health services staff through courses, workshops and seminars, and a public communications strategy with a view to mitigating the risk that the data available in the HCEN will not be used.[35]

1.20 **Component 2. Tools for healthcare providers to use in managing digital medical records (US$2.9 million).** This component will address the key factors underlying the lack of production and sharing of digital medical records by health service providers. The activities to be financed will include: (i) implementation and use of the EHR-oncology management system and tools for storage and remote transmission of clinical images and the corresponding virtual diagnoses at public and private health centers;[36] (ii) development and implementation of clinical information projects among service providers and entities of the health sector: through a nonreimbursable competitive funding mechanism with a total allocation of up to US$500,000, service providers and other health sector institutions will be encouraged to pursue initiatives that incorporate information technology applications in support of health management. The applications to be developed with project funds will be shared at no cost with other entities of the health sector that are interested in implementing them. The executing agency will set objective criteria for eligibility and qualification in order to ensure equitable access to project resources; (iii) implementation of pilot projects for service complementarity, including a system for sharing clinical data on pediatric patients for the pilot project on complementarity of health services in the city of Florida,[37] and the development of instruments to

[34] The strategy will seek to align agencies and systems with best international practices, such as ISO/IEC 27000:2013 and COBIT 5, and will help those agencies to improve their capacities to identify the context and inherent risks, protect their processes and assets, detect security incidents promptly, respond with remedial actions to such incidents, and restore the processes and services affected.

[35] This is consistent with the information contained in the matrices for project risk identification, evaluation, and mitigation. It will include the preparation of a plan to help health sector personnel manage change; training and dissemination activities on the new tools; processes for storing and consulting health records, images, and other reports conducted remotely; working with new systems for managing medications; oncology clinical records; and service complementarity. There will also be a public communication strategy, to include a public portal for accessing health data.

[36] The study "The Socio-economic Impact of Diraya, the Regional EHR and ePrescribing System of Andalucía's Public Health Service" (European Commission, 2009), used an ex post cost/benefit analysis to measure the impact of the system installed starting in 2000. It found that that improvements in quality and efficiency are the salient benefits of implementing EHRs records and the e-prescribing system in Andalucía. Through 2010, 80% of the benefits achieved were efficiency gains, 17% were quality gains, and 1% were associated with increased access. The findings also confirmed the existence of benefits attributable to the reduction in prescriptions, fewer patients failing to show up for appointments with specialists, the application of uniform protocols and standards, more efficient use of professionals and facilities, and lower database support costs.

[37] This HCEN-based management system was developed under the first operation; the current operation will support its implementation and use. The selection of Florida reflects an emerging situation involving the delivery and coordination of pediatric health services in that city, where the MSP has requested the program assistance in supporting information systems to facilitate complementarity between two of the city's comprehensive healthcare providers.

facilitate the complementarity of emergency health services among providers;[38] and (iv) implementation of a system for prescribing, managing, and controlling medications.

1.21 **External and internal validation.** At the international level, electronic medical records have been shown to facilitate: (i) increased efficiency by optimizing time management and organization (e.g. reducing the number of consultations with specialists and the need for repeat prescriptions, and reducing the time needed to issue reports), and better use of resources (e.g. immediate availability of results; fewer errors; reduced paper consumption, handling, distribution, and storage; elimination of storage for radiology tests; and improved planning of medication stocks); (ii) improved quality of care, by optimizing processes and control over the use of protocols and standards, enhancing guarantees relating to safety (reduced medical errors), and the timeliness of care, as well as the population's access to services and physicians' access to timely information;[39] and (iii) the effective and efficient collection of data for disease management, medical research, and policy evaluation and decision-making. With specific respect to the treatment and management of chronic illnesses, in the context of a shift in the focus of the care model towards prevention, computerized patient monitoring, as well as scheduling and reminder systems, have been shown to have positive medical outcomes.[40] In terms of external validation, there are successful experiments with the adoption of EHR for comprehensive providers of health services. Moreover, the fact that various service providers have implemented the oncology EHR and digital storage of X-ray images developed with the first individual operation under the CCLIP (3007/OC-UR) shows that satisfactory preconditions do exist for the use of these new tools.[41]

C. Key results indicators

1.22 The project's impact will be measured by the number of persons benefiting from the exchange of clinical data among various health providers. The results will be measured according to the number of: (i) patients with medical records in the HCEN;

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[38] To that end, the country launched a pilot project in the Department of Cerro Largo in 2014 to provide telemedicine coverage to the inhabitants of 18 small rural communities (each with a population of roughly 1,000). Its benefits included remote consultations with specialists and leading physicians from outside these communities, and the ability to conduct imaging tests via teleconferencing. The success of this pilot encouraged the operator to expand to other communities. The advantages of this tool for institutions, health professionals, and users are many, ranging from the optimizing of healthcare resources to the monitoring of patients.

[39] A number of functions implemented in developing countries were identified as having positive impacts: (i) ability to monitor patients from the start of treatment, monitor continuity, and detect patients at risk of abandoning care; (ii) tools to reduce the time spent communicating information within and among institutions; (iii) tools to label or register samples and patients; (iv) ability to monitor patients electronically and remind them about the requirements of their treatment; (v) compilation of clinical or research data using tablet- or cellphone-based apps; and (vi) reduction in laboratory and medication errors. Source: "E-health Technologies Show Promise in Developing Countries" Blaya, J., H. Fraser, and B. Holt, 2010, based on a review of 45 studies, including 31 with quantitative analysis, 5 with qualitative analysis, and 9 with both types of analysis. Aggregation of conclusions is qualitative.

[40] *"E-Health technologies show promise in developing countries",* Blaya, J., H. Fraser, and B. Holt, 2010, and *"Improving chronic illness care: translating evidence into action"* (Wagner E., B. Austin, C. Davies, M. Hindmarsh, J. Schaefer, and A. Bonomi, *Health Affairs* 20, No. 6 (2001): pages 64-78).

[41] With support from project 3007/OC-UR, a system has been successfully implemented for capturing and storing radiology images in 16 health centers, as well as a system for oncology EHR management in eight health centers.

(ii) comprehensive healthcare providers that have clinical records in electronic format for all or most of their users; (iii) images analyzed in a health center other than the one that took them; (iv) consultations of clinical data on pediatric patients in the Department of Florida using the HCEN; (v) women benefiting from the storage of mammograms in digital format; and (vi) physicians consulting clinical data in the HCEN.

1.23 **Economic evaluation.** The project is expected to yield a high social return. Under a conservative scenario, the project's estimated internal rate of return would be 44%, with a net present value of US$4 million at a discount rate of 12%. The benefits are estimated in terms of: (i) time savings of staff tasked with maintaining paper medical records; (ii) savings in paper costs associated with diagnoses and prescriptions; and (iii) cost savings in acetate plates for image-based analyses. The sensitive variables identified are the rate of adoption of EHRs and the rate of adoption of digital images. A pessimistic scenario assumes EHR and digital image adoption rates that are substantially lower than those in the base scenario: in this case, net present value falls to US$1.9 million and the internal rate of return to 22%.

II. Financing Structure and Main Risks

A. Financing instruments

2.1 The total cost of the project is US$7 million, of which US$6 million will be financed with the Bank's Ordinary Capital resources, and US$1 million with the local contribution. The amount of the CCLIP is US$18 million in loans and US$3 million in local counterpart funding, while the first individual operation (3007/OC-UR) amounted to US$6 million, with a local contribution of US$1 million. The consolidated budget is presented in Table 1 and in the itemized budget. The expenditure categories to be covered by the project include the procurement of goods, services, and consulting fees, including taxes. The counterpart contribution will cover the finance charges and recurrent expenditures generated by the project.

Table 1. Project cost (in US$)

	IDB	Local	TOTAL	%
Component 1. Consolidating the HCEN	1,701,000	919,000	2,620,000	37.4
Component 2. Tools for healthcare providers to use in managing digital medical records	2,842,000	51,000	2,893,000	41.4
Administration and coordination	657,000	0	657,000	9.4
Midterm, final, and impact evaluations	310,000	0	310,000	4.4
Audits	0	30,000	30,000	0.4
Contingencies	490,000	0	490,000	7.0
PROYECT TOTAL	**6,000,000**	**1,000,000**	**7,000,000**	**100**

2.2 The execution and disbursement period is estimated at three years, which is consistent with the programming of the planned activities. That term is consistent with commitment 8 of the Agenda Uruguay Digital 2020, which aims to ensure that

100% of comprehensive healthcare providers have incorporated HCEN by 2020.[42] The annual disbursement schedule for the loan is as follows:[43]

Table 2. Annual flow of IDB disbursements (in US$)

2017	2018	2019	2020
1,000,000	2,200,000	1,600,000	1,200,000

B. Environmental and social risks

2.3 There are no environmental or social risks associated with the activities envisaged in this operation, as defined in the Bank's Environment and Safeguards Compliance Policy (Operational Policy OP-703). The project has therefore been classified as a category "C" operation. The project's design and implementation will specifically consider the privacy and integrity concerns of the citizens' personal data so as to safeguard their rights.

C. Fiduciary risks

2.4 The risk workshop, which was conducted by project-related staff, did not identify any significant fiduciary risks. The project will face challenges in terms of contracting technically complex services. This is a feature that the project has in common with the first operation under the CCLIP, in which the executing agency demonstrated adequate capacity to manage procurement-related aspects for this type of services.

D. Other project risks

2.5 A risk management workshop was conducted with participation by beneficiary entities, using the Bank's methodology.

2.6 Of the seven risks identified, three related to public management and governance and were rated "medium": (i) lack of agreement on the regulatory and governance structure of the HCEN among the authorities of the agencies responsible for carrying out the program (i.e. Office of the President of the Republic, MSP, JUNASA, Ministry of Economy and Finance (MEF), and AGESIC); (ii) health service providers and the public do not make use of the data available through the HCEN; and (iii) possible delays in approval of an updated legal framework that will require health care providers to share clinical data via the HCEN platform. To mitigate the first risk, AGESIC will convene regular coordination meetings with key stakeholders. To mitigate the second risk, AGESIC will conduct communication, training, and change management activities. Lastly, to mitigate the third risk, AGESIC will conduct an awareness-raising campaign and mobilize health sector stakeholders through its representatives on the advisory body mentioned in paragraph 3.5.[44]

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42 See Agenda Uruguay Digital 2020, page 12.

43 See attached program disbursement plan.

44 The legal framework will be adopted by the executive branch and does not require legislative action.

III. Implementation and Management Plan

A. Summary of implementation arrangements

3.1 **Borrower and executing agency.** The borrower will be the Eastern Republic of Uruguay and the executing agency will be the borrower, acting through AGESIC,[45] which will be able to rely on collaboration with other institutions pursuant to the "Agreement on Technical and Interagency Cooperation for Development of the Health Program" signed on 4 October 2012[46] between the MSP, the MEF, and AGESIC. That agreement, which will remain in effect and, if necessary, be updated, with prior approval from the Bank, makes it a long-term objective to improve the population's access to quality health services throughout the country, and accordingly, proposes as an interim result to generate conditions that would allow healthcare providers to offer their services in a comprehensive, complementary, and user-focused manner. To this end, it defines the following as critical areas that require a uniform vision: (i) medical records; (ii) imaging; and (iii) physical connectivity through the national health network. The Agreement also spells out the responsibilities and membership of the Steering Committee and the Advisory Council, as described below in paragraphs 3.4 and 3.6.

3.2 AGESIC will be responsible for execution, including: (i) serving as contact point with the Bank; (ii) submitting disbursement requests; (iii) handling contracting and procurement; (iv) reporting on the use of proceeds; (v) submitting annual work plans, disbursement forecasts, procurement plans, and progress reports; and (vi) preparing terms and conditions, authorizations, licenses, agreements, model contracts, and other instruments needed for connecting to and sharing information through the HCEN system, as well as for other products financed, as necessary.

3.3 AGESIC will reactivate the project coordinating unit (PCU) constituted for executing the first operation under the CCLIP. The PCU will be comprised of a project manager, two component coordinators, a liaison responsible for institutional coordination and communication; an individual responsible for change management, and an individual responsible for monitoring. The PCU is supported by: (i) AGESIC's Administrative Management Division for procurement management; and (ii) AGESIC' Strategic Management Division for planning and monitoring. AGESIC will seek the prior approval of the Bank before making any changes to the PCU's structure.

3.4 The Steering Committee created by the agreement referred to above (paragraph 3.1) will be reactivated. It will be comprised of a representative designated by each of the following institutions: Office of the President of the Republic, MSP, MEF, AGESIC, and JUNASA. The Steering Committee is the body responsible for key strategic decision-making regarding the project's implementation. An operations coordination committee, comprised of representatives of the MSP, MEF, AGESIC, and the project manager, will promote

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[45] The program is aligned with the existing legal mandate and administrative and operational structure of the AGESIC. The AGESIC was created by Law 17930 of 19 December 2005 (Articles 72 and 73). AGESIC is currently a decentralized agency of the Office of the President (Law 18046 of 17 October 2006 (Article 54). Its current name was established by Law 18172 of 31 August 2007. The rules and regulations governing AGESIC can be consulted here.

[46] See Agreement.

interagency coordination. Accordingly, it may: (i) issue operational definitions for implementing decisions or guidelines approved by the Steering Committee; (ii) provide guidance to the project manager in decisions that are not reserved for the Steering Committee; and (iii) prepare proposals for the Steering Committee, agreed in advance at the technical level among the various entities (MEF, MSP and AGESIC).

3.5 At the request of the Operations Coordination Committee, the Steering Committee, with the Bank's no objection, will approve the bases and proposals for financing the nonreimbursable competitive funding mechanism envisioned under Component 2. Health service providers and/or other health sector entities that have formulated proposals for the development and implementation of digital health solutions will be eligible to compete for this funding. The selection criteria will ensure the quality and technical feasibility of the proposals and the associated capacity of the proponents. The selection and fund allocation procedures will ensure competition, transparency, and equality of opportunities. Project disbursements for selected proposals will be eligible as of the date these are made by the executing agency.

3.6 Given the importance of the medical community in the adoption and use of new technologies, awareness-raising seminars and workshops will be held as well as training courses in the new tools. Users will be actively involved in the project owing to their involvement with the Advisory Council, through a representative of the users' associations. In addition, a public awareness campaign will be held and portal established to facilitate users' access to their medical records. To ensure broad participation and acceptance of public and private institutional actors, AGESIC will also rely on the Advisory Council (which has been in place since the first operation under the CCLIP) in seeking an adequate level of interagency and intersectoral coordination among the parties involved in the project.[47]

3.7 **Project execution plan (PEP).** Project activities will be programmed in accordance with the PEP, which will be updated annually in the annual work plan. The PEP will have to be updated each year to reflect the actual progress made on the project. The annual review of the PEP will be submitted to the Bank.

3.8 **Fiduciary agreements and requirements.** These are spelled out in Annex III and reflect the financial management and procurement guidelines that will be applied during project execution. They were developed on the basis of an analysis of the fiduciary context of the country and of the executing agency, the institutional analysis of the executing agency, the risk management workshop, and meetings with executing agency staff, the project team, and key personnel of the participating entities.

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[47] The Advisory Council meets once a month and is comprised of representatives of the ASSE; three associations of comprehensive healthcare providers; the Integrated Network of Public Healthcare Providers (RIEPS); the Social Security Bank; the National Resources Fund; the firms providing emergency medical transport services; the Hospital de Clínicas; the Schools of Medicine, Nursing, and Engineering of the UDELAR; the Uruguayan Medical Association; the Medical College of Uruguay (SMU); the *Plenario Intersindical de Trabajadores* (representing labor unions); the National Telecommunications Administration; and the Sociedad Uruguaya de Estándares de Intercambio, Integración de Datos e Información de Servicios de Salud [Uruguayan agency responsible for health data handling standards]. As a result of the lessons learned from the first operation, new collectives were formed to join the Advisory Council, including (i) the Plenario; (ii) the Medical College of Uruguay, (iii) and the School of Nursing.

3.9 **Procurement plan.** The procurement plan contains the procurement operations to be carried out under the project, which will comply with the Policies for the Procurement of Works and Goods Financed by IDB (document GN-2349-9) and the Policies for the Selection and Contracting of Consultants Financed by the IDB (document GN-2350-9). It spells out: (i) contracts for the required works, goods, and consulting services; (ii) procurement methods; and (iii) the procedures applied by the Bank to review procurement. The executing agency will update the procurement plan annually or as project needs dictate. Any proposed revision of the plan must be submitted to the Bank for approval.

3.10 **Special considerations for procurement.** The executing agency will resume using the direct contracting method authorized under the previous operation in order to maintain membership in the International Health Terminology Standards Development Organization, the exclusive source of the Systematized Nomenclature of Medicine – Clinical Terms (SNOMED-CT), so as to be able to continue using this medical vocabulary. The executing agency can also use the direct selection method provided under the Bank's policies on contracting consultants to sign an agreement with the Hospital Italiano de Buenos Aires, enabling it to maintain continuity and technical consistency in the assistance needed to implement an online clinical terminology support service. Similarly, due to the need to ensure continuity of the technical approach, the executing agency could use the same direct selection method to continue contracts with the individual consultants hired to perform the permanent functions associated with loan 3007/OC-UR, in accordance with document GN-2350-9; paragraph 3.10(a) and (d).

B. Summary of results monitoring arrangements

3.11 **Monitoring by the executing agency.** The executing agency will use the following documents for project monitoring: (i) the risk matrix; (ii) the project execution plan; (iii) the procurement plan; (iv) the monitoring and evaluation framework; (v) the itemized budget; (vi) the risk registry, risk assessment, and mitigation matrices; (vii) the project disbursement plan; and (viii) the progress monitoring report. AGESIC's projects office will prepare semiannual status reports for review by the Bank.

3.12 **Evaluation.** The executing agency will use the risk matrix and the monitoring and evaluation framework to evaluate the project.

3.13 As stated in the monitoring and evaluation framework, the proposed impact assessment is quasi-experimental in nature and covers impacts in the following areas: (i) healthcare providers' internal organization and information technology; (ii) management and treatment of chronic, non-communicable diseases; and (iii) imaging service management and quality. The baseline data for the internal organization dimension was prepared in 2014; the baseline for dimensions (ii) and (iii) will be prepared in 2018.

3.14 The executing agency undertakes to put in place and maintain a monitoring and evaluation system for all the project components, which it will use to prepare the reports to send to the Bank (see MEP).

Development Effectiveness Matrix		
Summary		
I. Corporate and Country Priorities		
1. IDB Development Objectives	Yes	
Development Challenges & Cross-cutting Themes	-Institutional Capacity and the Rule of Law	
Country Development Results Indicators		
2. Country Development Objectives	Yes	
Country Strategy Results Matrix	GN-2836	i) Improve the first level of health care and, ii) Strengthen public management systems.
Country Program Results Matrix		The intervention is not included in the 2017 Operational Program.
Relevance of this project to country development challenges (If not aligned to country strategy or country program)		
II. Development Outcomes - Evaluability	Evaluable	
3. Evidence-based Assessment & Solution	7.8	
3.1 Program Diagnosis	2.4	
3.2 Proposed Interventions or Solutions	2.4	
3.3 Results Matrix Quality	3.0	
4. Ex ante Economic Analysis	10.0	
4.1 The program has an ERR/NPV, a Cost-Effectiveness Analysis or a General Economic Analysis	4.0	
4.2 Identified and Quantified Benefits	1.5	
4.3 Identified and Quantified Costs	1.5	
4.4 Reasonable Assumptions	1.5	
4.5 Sensitivity Analysis	1.5	
5. Monitoring and Evaluation	8.3	
5.1 Monitoring Mechanisms	2.5	
5.2 Evaluation Plan	5.8	
III. Risks & Mitigation Monitoring Matrix		
Overall risks rate = magnitude of risks*likelihood	Low	
Identified risks have been rated for magnitude and likelihood	Yes	
Mitigation measures have been identified for major risks	Yes	
Mitigation measures have indicators for tracking their implementation	Yes	
Environmental & social risk classification	C	
IV. IDB´s Role - Additionality		
The project relies on the use of country systems		
Fiduciary (VPC/FMP Criteria)	Yes	Financial Management: Budget, Treasury, Accounting and Reporting. Procurement: Information System, Price Comparison.
Non-Fiduciary	Yes	Monitoring and Evaluation National System.
The IDB's involvement promotes additional improvements of the intended beneficiaries and/or public sector entity in the following dimensions:		
Gender Equality	Yes	The project will contribute to improving gender equity in access to quality health services. Women will especially benefit from remote diagnosis of breast cancer. A gender approach will be included in training of health personnel to adopt ICTs.
Labor		
Environment		
Additional (to project preparation) technical assistance was provided to the public sector entity prior to approval to increase the likelihood of success of the project		
The ex-post impact evaluation of the project will produce evidence to close knowledge gaps in the sector that were identified in the project document and/or in the evaluation plan	Yes	The evaluation will generate evidence on the impacts of the utilization of Information and Communication Technologies (ICT) on the management of organizations providing health services, and on the management and treatment of diabetic and hypertensive patients.

Note: (*) Indicates contribution to the corresponding CRF's Country Development Results Indicator.

The objective of the operation is to improve the quality of the delivery of health services by increasing the efficiency in the access to medical information by the different actors of the health system, through: (i) consolidating the National Electronic Clinical History (HCEN) platform; and (ii) facilitating greater production and exchange of clinical information in digital format by health providers.

The main problem that this program seeks to address is the limited quality of health services associated with the lack of exchanges of clinical information of users between different providers. Specific problems identified are (i) insufficient coverage of the HCEN platform, and (ii) the insufficient production and storage of digital clinical information. In general, these problems and their determinants are adequately specified and quantified.

The loan proposal clearly identifies the potential beneficiaries of the project. The project´s vertical logic is clear and well specified. The link between interventions and problems has been adequately established. However, the evidence of external or internal validity of the proposed solutions is not available.

The Result Matrix is adequately constructed and contains the required elements for monitoring project results. The proposed impact, outcomes and output indicators are SMART.

The documentation includes an ex-ante Economic Analysis where the economic benefits (savings of paper, human resources and acetates for X-rays and CT scans) have been clearly quantified and the costs reflect real resource costs to the economy. The estimated Net Present Value (NPV) is US$ 4.0 million and the Internal Rate of Return (IRR) 44%. The assumptions used are clearly presented and a sensitivity analysis has been performed undertaking variations in key assumptions.

The program includes an adequate monitoring and evaluation plan. The program proposes to carry out an evaluation that will generate evidence on the impacts of the utilization of Information and Communication Technologies (ICT) on the management of organizations providing health services, and on the management and treatment of diabetic and hypertensive patients. However, a power analysis was not performed.

The loan proposal includes a risk matrix. Three risks were classified as Medium. Mitigation measures were identified, and adequate monitoring indicators proposed.

RESULTS MATRIX

Project Objective:	**Objective of the CCLIP:** The objective of the CCLIP is to help improve the quality and efficiency of the healthcare system by enhancing health services monitoring and management capacity and to move towards a prevention-based healthcare model. **Objective of the second operation:** The objective of the second operation is to improve the quality of health service delivery by enhancing efficiency in accessing medical records by the various health system actors, through (i) consolidating the National Electronic Health Records (HCEN) platform, and (ii) facilitating greater production and sharing of medical data in digital format by healthcare providers.

EXPECTED IMPACT

Indicators	Unit of measure	Baseline		Targets		Source/means of verification	Observations
		Value	Year	Value	Year		
EXPECTED IMPACT: improved quality of healthcare delivery							
1. Number of patients benefiting from exchange of medical records among health service providers	Percentage of national population	0	2017	20%	2020	Database on health information sharing among AGESIC providers	Health information sharing occurs whenever a physician checks and obtains from the HCEN database information on healthcare events and other health data on a patient served in another healthcare center. The target was estimated on the basis of indicator 2.4, which refers to the number of physicians making active use of the HCEN to obtain medical records on their patients: the target for 2020 is 30% of physicians. Assuming that the number of those physicians' patients is equal to the national average, and as it is reasonable to expect that physicians will not require additional medical records from the HCEN for all of their patients, but only for two-thirds of them, the target for the number of patients covered by data in HCEN is two-thirds of the target for physicians (20%).
2. Number of patients with diabetes or hypertension discharged from hospital	Number of hospital discharges	75,416	2016	67,875	2020	Report of the MSP, National Information System	The baseline will be calculated by the MSP in the first half of 2018. It was initially estimated on the basis of data on the prevalence of diabetes and hypertension in Uruguay, according to the Second National Survey of Risk Factors for Chronic, Non-communicable Diseases (2013), and statistics on hospital discharges for the

EXPECTED IMPACT

Indicators	Unit of measure	Baseline		Targets		Source/means of verification	Observations
		Value	Year	Value	Year		
							system as a whole. The target was established as a 10% reduction in the number of hospital discharges, achieved through closer monitoring of patients with diabetes and hypertension, which is expected to reduce complications and hospitalizations.

EXPECTED OUTCOMES

Indicators	Unit of measure	Baseline		Interim measurements		Targets		Source/ means of verification	Observations
		Value	Year	Value	Year	Value	Year		
EXPECTED OUTCOME 1: Medical records and health events for patients are available in the HCEN database									
1.1. Patients with medical records in HCEN	Percentage of national population	0	2017			80%	2020	AGESIC report based on HCEN database	Clinical data in HCEN is understood as a record that includes: name of patient, date of care, type of care (e.g. consultation, emergency care, hospitalization, or x-ray), attending physician, and institution providing the healthcare. The target for the indicator was estimated assuming approval of the legal and regulatory framework by end-2017, and gradual adoption by institutions beginning in 2018.
1.2. Comprehensive healthcare providers that have medical records in electronic format for all or most of their clinical data	Percentage of all comprehensive providers	57%	2016	80%	2018	98%	2020	Survey of ICTs in the health sector (Study 1 of the impact evaluation: see MEP)	This study is slated for 2018 and 2020.
EXPECTED OUTCOME 2: Comprehensive service providers produce and share clinical information in digital format									
2.1 Images are analyzed in a health center other than the one that took them	Number of images	2,130	2017			10,000	2020	Report on the record of images taken. AGESIC	The indicator refers to the use, in telemedicine, of the system for electronic transmission of images. “Image analyzed” means the report derived from analysis of the image, containing an approximation of the

EXPECTED OUTCOMES

Indicators		Unit of measure	Baseline		Interim measurements		Targets		Source/ means of verification	Observations
			Value	Year	Value	Year	Value	Year		
										clinical diagnosis of the illness obtained from that image. The target value was estimated on the basis of total CAT scans conducted in ASSE (67,000 per year). As some of the hospitals and health centers have their own capacities for analyzing images, the potential market for this service is a subset of that universe, estimated at 20% of the total (13,600 images per year). Moreover, adoption is expected to be gradual, by voluntary agreement among entities, and accordingly it is expected that uptake in the early years (through year three) will represent 20% of the potential market (2,600 images per year).
2.2	Medical consultations for pediatric patients affiliated with the ASSE, handled in the emergency service of the complementary provider or in the Department of Florida	Consultations	0	2017	4,000	2018	13,200	2020	Report on pediatric medical consultations based on the AGESIC database	Calculation of the target value for the indicator considered the universe of annual emergency medical consultations for ASSE pediatric patients (5,400 consultations) and an annual coverage target of 80% of that universe.
2.3	Number of women between 40 and 74 years of age benefiting from storage of mammograms in digital format	Persons	17,198	2017	27,000	2018	35,000	2020	Integrated Imaging Network reports	The indicator refers to the number of women whose mammograms were digitally stored and can be accessed remotely by a physician. The indicator refers to the stock of persons. No person will be counted more than once. On the basis of installed capacity in the ASSE's various centers, it is reasonable to expect that the number of women included annually in this digital repository will be equal to 20% of

EXPECTED OUTCOMES

Indicators	Unit of measure	Baseline		Interim measurements		Targets		Source/ means of verification	Observations
		Value	Year	Value	Year	Value	Year		
									the 31,000 mammograms for the 40-74 years age group that are performed annually in ASSE.
2.4 Physicians consulting medical records in HCEN	Percentage of physicians working for comprehensive providers	0	2017			30%	2020	HCEN platform reports managed by AGESIC	Refers to the number of medical professionals seeking information on their patients registered by other service providers in the HCEN platform. Calculation of the target assumed annual enlistment of 10% of total physicians (13,000) nationwide, reaching 30% in three years. Given the lack of similar international experiences, a conservative assumption was adopted.

OUTPUTS

Outputs	Unit of measure	Baseline 2017	2018	2019	2020	Final target	Source/means of verification
Component 1: Consolidating the HCEN							
1.1. Model regulatory framework and governance mechanism for the HCEN developed and in implementation	Number of models	0			1	1	Steering Committee minutes Executing agency reports
1.2. Versions of models of minimum data sets for clinical records approved and in implementation	Number of versions	1	1	1	1	4	Each new version incorporates more clinical records and/or new specialties. Steering Committee minutes Executing agency reports
1.3. New versions of the HCEN platform in implementation	Number of versions	1	1		1	3	AGESIC reports. Each new version is identified with its own coding and has additional functionalities, such as greater data storage and handling capacity.

OUTPUTS

Outputs	Unit of measure	Baseline 2017	2018	2019	2020	Final target	Source/means of verification
Component 1: Consolidating the HCEN							
1.4. Cyber security strategy prepared and in implementation	Number of strategies	0	1			1	Steering Committee minutes Executing agency reports
1.5. Health sector personnel trained through courses, workshops and seminars[1]	Number of persons	0	800	1,000	1,200	3,000	Administrative records of events Executing agency reports
1.6. Outreach campaign designed and implemented	Number of campaigns			1		1	Report of the firm conducting the campaign
Component 2: Tools for healthcare providers to manage digital medical records							
2.1. Health centers using the HCEN application and imaging developed with the first loan	Number of health centers	21	10	10	4	45	Survey report on health centers, to be performed by an external firm or AGESIC
2.2. Projects for managing medical records in healthcare providers and institutions developed and implemented	Number of projects	0	2	2	1	5	Reports from the implementing firms Reports from the executing agency
2.3. Pilot projects for complementarity of health services developed and implemented	Number of projects	0	1	1		2	Covers projects for complementarity of healthcare services in Florida and emergency services nationwide. Reports from the implementing firms
2.4. System for prescribing, administrating, and controlling medications in operation	Number of systems	0			1	1	Visit to operating sites External survey report on ICTs in the health sector

[1] This training is designed to develop capacities for recording and processing medical data within the HCEN platform.

FIDUCIARY AGREEMENTS AND REQUIREMENTS

Country:	Uruguay
Project number:	UR-L1143
Name:	e-Government Management Project in the Health Sector II (UR-L1143), second individual loan under the Conditional Credit Line for Investment Projects (CCLIP) for the e-Government Management Program in the Health Sector (UR-X1009)
Executing agency:	The borrower, through the Agency for the Development of e-Government and the Information and Knowledge Society (AGESIC)
Prepared by:	Abel Cuba and David Salazar (FMP/CUR)

I. EXECUTIVE SUMMARY

1.1 This operation is the second investment loan under CCLIP UR-X1009. The project cost is US$7 million, of which US$6 million will be provided by the loan proceeds. The borrower is the Eastern Republic of Uruguay and the executing agency for the program will be the borrower, through AGESIC. This agency's organizational and administrative structure will be responsible for executing the resources of the operation, as well as arranging the timely financing of the local counterpart contributions.

1.2 The fiduciary agreements and requirements established for this program are based on AGESIC's track record as the executing agency of loan 1970/OC-UR, completed in 2012, and its continuation of the program (loans 2591/OC-UR, 3007/OC-UR, and 3625/OC-UR).

II. FIDUCIARY CONTEXT OF THE EXECUTING AGENCY

2.1. AGESIC is a model government agency. In the four previous projects executed by this executing agency, it satisfactorily demonstrated its execution capacity in all management areas. AGESIC has significant previous procurement and contracting experience in accordance with IDB rules and procedures. Moreover, its processes and general internal control environment are considered to be adequate overall.

2.2. With respect to country systems or their equivalents, the following will be used in this operation:

(i) Budget. The country budget system will be used. The resources for this operation are allocated in the new Five-year Budget Law 2015-2019. AGESIC has the same budgetary base as that obtained in 2016, which

is adequate for the program as a whole and provides resources for financing and the local counterpart contribution.

(ii) Cash management. A special account will be opened in the Central Bank of Uruguay to administer the program's funds. That account will be part of the Consolidated Treasury Account. It will be opened in the name of AGESIC and specify the name of the program.

(iii) Accounting and financial reports. The executing agency will use the International Project System (SPI)[1], in coordination with the Office of the Comptroller General (CGN), which administers the Integrated Financial Information System (SIIF).

(iv) Internal control. AGESIC has a system of internal controls to manage its operations, the effectiveness of which is evaluated by the Office of the Auditor General (TCR) in its audits of expenditures and payments, whereas their legality is audited by accountants appointed by the TCR.

(v) External Control. In recent years, the TCR has been responsible for the annual audits of Bank-financed programs. Its work in this regard has complied with the international standards of the International Organization of Supreme Audit Institutions (INTOSAI).

III. Fiduciary Risk Evaluation and Mitigation Actions

3.1. The risk workshop conducted with project personnel identified a low fiduciary risk, associated with potential delays in procurement contracts due to their technical complexity. This is a feature in common with the first clip operation, in which the executing agency demonstrated adequate capacity to manage the aspects of procurement for this type of services.

IV. Considerations for the Special Conditions of Contracts

4.1. **Exchange rate.** For dollar-based accounting, the same criterion will be used as in operation 3007/OC-UR, i.e. the exchange rate valid on the payment date will be used for conversions to dollars.

4.2. **Audited financial statements.** Within 120 days of the end of AGESIC's fiscal year, and throughout the disbursement period of the loan, audited financial statements for the program will be presented to the Bank, duly certified by an independent audit firm acceptable to the Bank. The final report will be presented within 120 days of the date stipulated for the last disbursement of the loan.

4.3. **Bank account.** A special bank account will be opened at the Central Bank of Uruguay for management of the operation, together with the necessary operating accounts at the Banco de la República Oriental del Uruguay.

[1] The development of the Integrated Financial Information System provides for the inclusion of SPI as one of its operating modules

V. AGREEMENTS AND REQUIREMENTS FOR PROCUREMENT EXECUTION

5.1. The procurement policies applicable to this loan are set forth in documents GN-2349-9 and GN-2350-9.

A. Procurement execution

5.2. Uruguay has adequate national regulations governing procedures for notifying bidding documents to bidders and giving them the opportunity to access documentation on offers. This practice is regulated in the Consolidated Code of Accounting and Financial Administration (TOCAF, Articles 65 and 67) as well as in Law 18381, and has been evaluated by the Bank in the operations in execution. Consequently, for this operation, AGESIC may make use of that code, adapting it as necessary to the bidding documents to be used, which will require the Bank's prior no objection.[2]

5.3. Before conducting any procurement process, the executing agency will present for the Bank's prior approval the procurement plan indicating: (i) the contracts for goods and services required to carry out the program; (ii) the methods proposed for the procurement of goods and the selection of consultants; and (iii) the procedures applied by the Bank for supervising procurement. The borrower will update the procurement plan at least every 12 months, or as program needs dictate. Any proposed revision to the procurement plan will be presented to the Bank for its approval.

5.4. **Procurement of works, goods, and non-consulting services.**[3] Any contracts generated that are subject to international competitive bidding (ICB) will be executed using the standard bidding documents issued by the Bank. Bidding processes subject to national competitive bidding (NCB) will use bidding documents satisfactory to the Bank.

5.5. **Procurement of information technology systems.** At present, no need for specific advisory services, whether internally or outside the Bank, is anticipated.

5.6. The executing agency may use the direct contracting method provided for in the Bank's procurement policies (document GN-2349-9) to acquire membership in the International Health Terminology Standards Development Organization, the sole supplier of the Systematized Nomenclature of Medicine – Clinical Terms (SNOMED-CT), so as to be able to continue using this medical vocabulary. It may also use this method to sign an agreement with the Hospital Italiano de Buenos Aires, enabling it to maintain continuity and technical consistency in the assistance needed to implement an online clinical terminology support service.

5.7. **Procurement and selection and contracting of consultants**

(i) Consulting firms: These will be selected and contracted in accordance with Bank policies. Calls for bids involving international publicity (for amounts above US$200,000) will be subject to ex ante review.

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[2] The procedure described is part of a national practice that favors transparency in procurement and does not contravene the application of Bank policies. To ensure that the procedure is actually implemented in accordance with Bank policies, the bidding documents must carry the Bank's no objection.

[3] Document GN-2349-9, paragraph 1.1. Non-consulting services will be treated in the same way as goods.

(ii) Selection of individual consultants. Given the need to ensure continuity of the technical approach during project execution, the procurement plan provides for rehiring individual consultants who were previously contracted for loan 3007/OC-UR and who will continue providing services for this operation. Procurement using the United Nations Office for Project Services (UNOPS) or United Nations Development Programme services, under the agreements AGESIC has in force, is also provided for.

5.8. **Advance procurement/retroactive financing**. No retroactive financing against the loan proceeds is envisaged.

Table 1. Threshold amounts applicable to Uruguay (US$ thousand)

Works			Goods[4]			Consulting services	
ICB	NCB	Shopping	ICB	NCB	Shopping	International advertising	100% national shortlist
≥ 3,000	250-3,000	≤ 250	≥ 250	50-250	≤ 50[5]	> 200	≤ 200

5.9. **Main procurement items.** See procurement plan.

5.10. **Procurement supervision.** The initial review method is ex post, subject to modification, which will be reflected in the procurement plan. ICB processes and consulting services for over US$200,000 will be reviewed ex ante. Physical inspection visits[6] are not envisaged for ex post review reports, given the executing agency's low risk and the nature of the activities.

VI. FINANCIAL MANAGEMENT

A. Programming and budget

6.1. AGESIC, which is attached to the Office of the President of the Republic, sends its budget proposal to the MEF, which considers it in the draft national consolidated budget and submits it to the Office of the President of the Republic. From there it is sent to the legislative branch for analysis and legal approval.

6.2. AGESIC will conduct budgetary programming and formulation on the basis of the agreed annual work plan, which is based on the program execution plan. The executing agency will present annual reports demonstrating that the local counterpart resources for the project have been allocated.

B. Accounting and information systems

6.3. The project will keep its accounts in the new SPI accounting module, which is linked to the SIIF. Budget appropriations are assigned and executed through the CGN's SIIF. Project-related commitments and payments will follow the procedures established by the CGN.

6.4. The project financial statements will be issued periodically, in accordance with generally accepted accounting standards, and will be audited by the TCR annually.

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4 Includes non-consulting services.

5 In the case of technically simple goods, shopping may be used up to the NCB limit.

6 Inspection will verify the existence of procurement, leaving verification of quality and compliance with specifications to the sector specialist.

The financial statements to be submitted are: (i) statement of cash received and disbursements made; (ii) statement of cumulative investments; and (iii) statement of assets and liabilities. These will be accompanied by the relevant explanatory notes.

C. Disbursements and cash flow

6.5. To execute project funds, a special account in the name of the project will be set up through the National Treasury at the Central Bank of Uruguay. Since this account cannot be used to make payments, an operational bank account will to be opened at the Banco de la República Oriental del Uruguay to mobilize project resources.

6.6. Disbursements will be made in the form of advances of funds, based on actual liquidity needs and supported by sound financial projections. These advances will preferably be made every six months, after an accounting has been rendered for at least 80% of the previous advance. The financial planning and fund reconciliation spreadsheets should be included with each disbursement request. The e-disbursement mechanism will be used to process all disbursements. The exchange rate to be used for converting payments in local or other currency to United States dollars will be the rate in effect on the day prior to the payment to the beneficiary.

D. Internal control and audit

6.7. In accordance TOCAF, the TCR will conduct a preventive control for all project-related expenditures. Moreover, under current laws and regulations, AGESIC is an agency subject to the supervision of the National Internal Audit Office.

E. External control and reports

6.8. External control is provided by the TCR (country system) as was the case in previous operations with AGESIC. The relationship between AGESIC and the TCR will be spelled out in a service agreement letter, to include the terms of reference agreed upon with the Bank.

6.9. Financial audit reports will be delivered annually by 30 April during the disbursement period and 120 days from the date of the last disbursement, in accordance with international audit standards.

F. Financial supervision plan

6.10. The financial supervision plan will address the following points:

(i) Participation in the launch workshop run by the project team, with a presentation on the main fiduciary considerations.

(ii) Review of the annual work plan and the initial financial plan prepared by the execution unit as support for the first advance of funds to be requested after project eligibility.

(iii) Based on an evaluation of portfolio risks, on-site financial visits may be conducted during project execution, at which the project’s main financial, control, and file management dimensions will be assessed. The disbursement review mechanism will be ex post.

G. Execution mechanism

6.11. The borrower for the project will be the Eastern Republic of Uruguay. The borrower, acting through AGESIC, will be the executing agency. As such, AGESIC will coordinate with other project actors and will also have overall responsibility for the project and for direct contact with the Bank.

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-___/17

Uruguay. Loan ____/OC-UR to the Eastern Republic of Uruguay. e-Government Management Project in the Health Sector II. Second Individual Operation under the Conditional Credit Line for Investment Projects (CCLIP) UR-X1009

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Eastern Republic of Uruguay, as Borrower, for the purpose of granting it a financing aimed at cooperating in the execution of the e-Government Management Project in the Health Sector II, which constitutes the second individual operation under the Conditional Credit Line for Investment Projects (CCLIP) UR-X1009 approved on 16 October 2013 by Resolution DE-123/13. Such financing will be in the amount of up to US$6,000,000, from the resources of the Bank's Ordinary Capital, and will be subject to the Financial Terms and Conditions and the Special Contractual Conditions of the Project Summary of the Loan Proposal.

(Adopted on ___ _____ 2017)

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