

FOSTERING TRANSFORMATION THROUGH TECHNOLOGICAL INNOVATION

RG-T3153

CERTIFICATION

I hereby certify that this operation was approved for financing under the **Ordinary Capital Strategic Development Program for Social Development (SOC)** through a communication dated April 9, 2018 and signed by Mariana Mendoza (ORP/GCM). Also, I certify that resources from said fund are available for up to **US\$339,000** in order to finance the activities described and budgeted in this document. This certification reserves resource for the referenced project for a period of four (4) calendar months counted from the date of eligibility from the funding source. If the project is not approved by the IDB within that period, the reserve of resources will be cancelled, except in the case a new certification is granted. The commitment and disbursement of these resources shall be made only by the Bank in US dollars. The same currency shall be used to stipulate the remuneration and payments to consultants, except in the case of local consultants working in their own borrowing member country who shall have their remuneration defined and paid in the currency of such country. No resources of the Fund shall be made available to cover amounts greater than the amount certified herein above for the implementation of this operation. Amounts greater than the certified amount may arise from commitments on contracts denominated in a currency other than the Fund currency, resulting in currency exchange rate differences, represent a risk that will not be absorbed by the Fund.

CERTIFIED BY:	<u>Firma Original</u>	<u>05/10/2018</u>
	Sonia M. Rivera	Date
	Chief	
	Grants and Co-Financing Management Unit	
	ORP/GCM	

APPROVED BY:	<u>Firma Original</u>	<u>05/14/2018</u>
	Ferdinando Regalia	Date
	Division Chief	
	Social Protection and Health Division	
	SCL/SPH	

TC DOCUMENT

I. Basic Information for TC

▪ Country/Region:	Regional
▪ TC Name:	Fostering transformation through technological innovation
▪ TC Number:	RG-T3153
▪ Team Leader/Members:	Luis Tejerina, Team Leader (SCL/SPH); Jennifer Nelson, Alternate Team Leader (SCL/SPH) Isabel Delfs (SCL/SPH) and Monica Centeno Lappas, Project Attorney (LEG/SGO).
▪ Taxonomy:	Client Support
▪ Date of TC Abstract authorization:	April 06 2018
▪ Beneficiary:	All member countries of the Bank in LAC and the Caribbean.
▪ Executing Agency:	Inter-American Development Bank
▪ Donors providing funding:	Ordinal Capital Strategic Development Program for Social Development (SOC)
▪ IDB Funding Requested:	US\$339,000
▪ Local counterpart funding, if any:	N/A
▪ Disbursement period:	24 months (from June 2018 to May 2020)
▪ Required start date:	June 01 2018
▪ Types of consultants:	Individuals; Firms
▪ Prepared by Unit:	Social Protection & Health Division (SCL/SPH)
▪ Unit of Disbursement Responsibility:	SCL/SPH
▪ TC included in Country Strategy (y/n):	No
▪ TC included in CPD (y/n):	No
▪ Alignment to the Update to the Institutional Strategy 2010-2020:	The TC is consistent with the Institutional Strategy Update 2010-2020 (AB-3008) and is aligned with the development challenge of Social Inclusion and Equality.

II. Objectives and Justification of the TC

- 2.1 The objective of this operation is to explore ways to leverage digital technology to create personalized social protection and health services for the people of Latin America and the Caribbean (LAC) and create tools for wiser decision making to improve health outcomes and social spending efficiency. To accomplish this, the Technical Cooperation (TC) will promote the generation and creation of high quality longitudinal information on patients by supporting the implementation of Electronic Health Records (EHR) in LAC. This will be achieved by developing operational tools for countries for planning and implementation, including examples of good governance, guidance for the creation of a blueprint for a system, guidance on standards and interoperability, best practices and tools to measure the maturity of health information systems. The TC will also support the generation of information at the macro level to support policy decisions by implementing machine learning methods to map social determinants of health such as poverty in one country. While EHRs digitize granular clinical data, allowing for in depth quality data about individuals, social maps use geographic data to provide a bird's eye view to analyze inequality and social

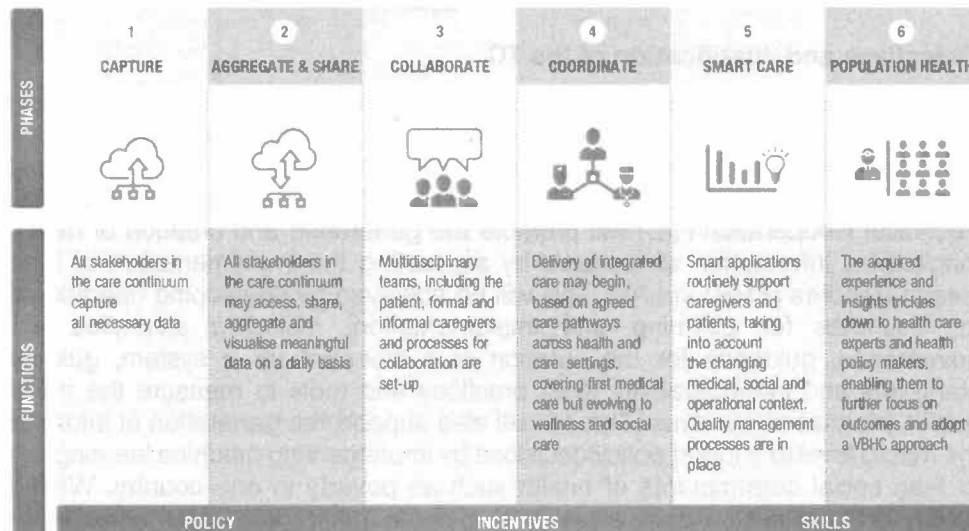
determinants of health at the population level. Linking EHR systems with Geographic Information Systems (GIS) holds great promise for addressing inequities in social determinants of health. When meaningfully integrated, these data systems enable clinicians, researchers, and public health professionals to actively address the social causes of health disparities. (Frederickson Comer, Grannis, Dixon, Bodenhamer, & Wiehe, 2011). Precision public health, or the use of data to guide interventions that will benefit populations more efficiently and increase equity in outcomes, can improve with more precise geospatial information (Graetz et al., 2018, Wesolowski et. al 2012 and Kankoe et. al. 2017).

2.2 Products developed under this TC will be shared with countries in the region as tools to facilitate the development and implementation of strategies to make better use of technology towards making social and health spending more efficient. Both types of data are complementary and critical for evidence-based policy making and management.

2.3 **Building foundations:** The digital transformation of health information systems currently offers an opportunity to improve quality, efficiency and safety in the region. The World Health Organization (WHO) stated that the proper collection, management and use of information within healthcare systems "will determine the system's effectiveness in detecting health problems, defining priorities, identifying innovative solutions and allocating resources to improve health outcomes" (Stansfield, 2005).

2.4 A critical element of the health information ecosystem is the EHR. The Pan-American Health Organization (PAHO) has stated that a "sound EHR system is essential to achieving universal health coverage; it provides support for diagnosing and treating patients by offering fast, thorough, and specific information on patients at the point of care" (PAHO, 2016). As seen in the Digital Blueprint in Figure 1, accurately capturing data in digital form is critical to getting started along the path to digital transformation in health (European Coordination Committee of the Radiological, Electromedical and healthcare IT Industry (COCIR), 2017).

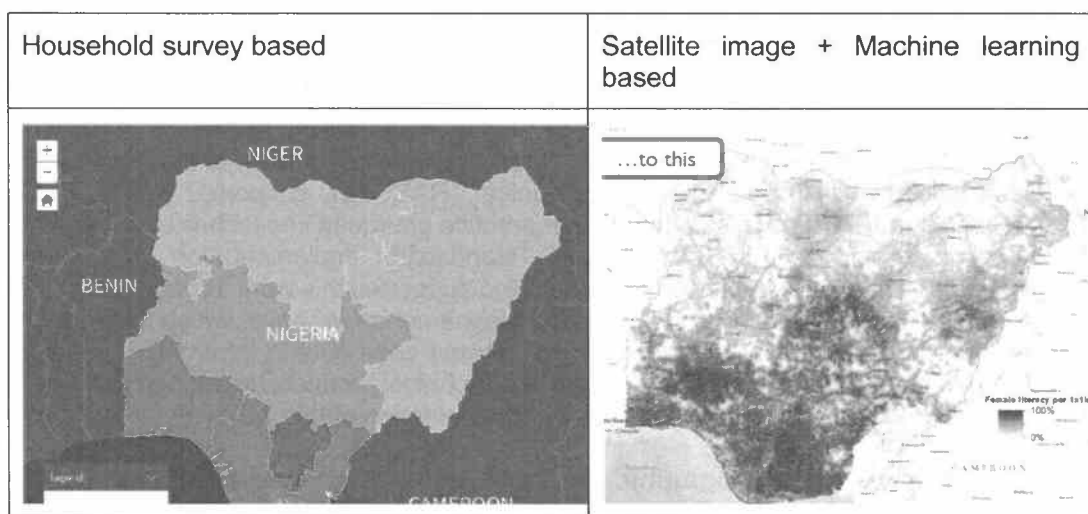
Figure 1 Digital Blueprint Roadmap for Health, COCIR 2017



- 2.5 Although promising, EHRs have only been adopted at scale by a limited number of countries in LAC. Key barriers include funding, lack of an adequate roadmap and 'how to' guidelines, and lack of required infrastructure and standards. Although EHRs can bring numerous benefits to Latin America and the Caribbean, robust, comparable data regarding their level of adoption and usage is not available. Of countries included in a 2016 study by PAHO, only 52.6% have a national EHR system, and only 26.3% have legislation that supports the use of their national EHR system. However, definitions and terms vary between countries; in Argentina they are known as Electronic Health Record (Historia Clínica Electrónica) and in Colombia as Electronic Clinical Record (Registro Clínico Electrónico), while some other countries may give them the name of Digital Clinical Record (Registro Clínico Digital) or Electronic File (Ficha Electrónica). The level of maturity, adherence to standards of current systems, and detailed definition of what constitutes an EHR in this context is not clear. The sustainable, scalable, and interoperable development of EHR-centered programs and initiatives requires a patient-oriented national online health strategy framework, built upon a system for unique identification, which also varies between countries (PAHO, 2016). Countries also require tools for assessing the readiness of their health information system for the introduction of EHRs and determining what types of products are the best fit for their needs. Given that many countries are facing similar issues, regional economies of scale exist and lessons from countries already implementing EHRs can be systematized.
- 2.6 From 2014-2018, the IDB supported this work through the creation of the "Red para el Desarrollo de la Historia Clínica Electrónica" (RASCEL), supported by RG-T2422 (ATN/OC-14357-RG). This community of practice produced key technical documents, including guidance on architecture, standards, implementation challenges, terminology and legal framework. IDB has also supported this work through RG-T2171 (ATN/KK-13328-RG) as part of the *Salud Mesoamerica Initiative*, which included the creation of a community of practice which shares open-source information solutions between countries. The lessons learned, and technical products developed from these two TCs will be used for the design and implementation of this TC.
- 2.7 **Improving use of geographic systems to detect inequality and social determinants of health:** Socioeconomic health inequalities are evident in specific causes of disease, disability and premature death (Solar O, 2010). There is evidence that the association of socioeconomic position and health occurs at every level of the social hierarchy; not only do those in poverty have poorer health than those in more favored circumstances, but those at the highest level enjoy better health than do those just below (M. G. Marmot, Shipley, & Rose, 1984). The Commission on Social Determinants of Health recommends three lines of action: improve the conditions of daily life; tackle the inequitable distribution of resources; and measure the problem and use data to take action (M. Marmot, Friel, Bell, Houweling, & Taylor, 2008)
- 2.8 **Use of machine learning algorithms and non-structured data to develop social maps:** GIS have been used in public health for disease surveillance, risk analysis, health access and planning, and community health profiling (Nykiforuk & Flaman, 2011). For example, in Costa Rica, a GIS platform allowed for pinpointing communities with inadequate access to health care, where interventions to improve access would have the greatest impact (Rosero-Bixby, 2004). One of the main strategic tools for the design of social policy are social maps that allow the prioritization of geographic areas for investments in social protection, health, and education.

However, to develop these maps, countries usually need to wait for the implementation of a census, which is costly and time consuming; in some cases, this information is updated every ten years or longer. The use of machine learning algorithms combined with non-structured data is being widely used in the private sector by companies such as Google, Amazon and Netflix to improve internal processes, however we have seen few examples of its use in public policy. Recent efforts however have taken advantage of the use of non-structured data such as satellite images to predict gaps in social indicators geographically (see [Bharti et al 2016](#) or [Bosco et al 2017](#) for examples). Maps of this type have been developed to find areas in a country with the highest rates of poverty, illiteracy, teenage pregnancy (see <http://www.flowminder.org/practice-areas/socioeconomic-analysis> for various examples). However, existing studies have mostly been developed as academic studies and not implemented as tools for public policy. Validating the use of these maps to inform social policy would allow countries to have precise and timely information for monitoring social indicators and making decisions on investments in social and health programs.

Figure 2 Female literacy rate – traditional methods vs machine learning & satellite image methodologies



2.9 Institutional alignment: The TC is consistent with the Update to the Institutional Strategy 2010-2020 (AB-3008) and is aligned with the development challenge of Social Inclusion and Equality, by promoting improvements in the quality of healthcare especially in public health systems, which provide services to the poorest segments of the population. The TC is also aligned with the objectives of the Ordinary Capital Strategic Development Programs (GN-2819-1) related to strengthening efforts by public institutions to become more effective and efficient in their social programs.

III. Description of Activities/Components and Budget

3.1 The TC will be divided into three components: Component 1 will fund studies to prepare IDB and country clients for EHR implementation, including a market study for EHRs in LAC, best practices for implementing EHRs, and maturity model and software vetting tool for EHRs. Additionally, it will include contracting an expert in EHRs to

provide direct technical assistance. Component 2 will fund the implementation of poverty maps using non-structured data and machine learning algorithms to inform social and health policy in the region. Component 3 will fund the design of the website for the marketplace of digital solutions.

3.2 Component I: Assessing country readiness for EHR Implementation: This component will fund three studies required for the implementation of EHRs and will support direct technical assistance through contracting an expert individual consultant to assist implementation (50% cost sharing with KNL cutting edge funds). The studies will be executed by a firm selected through a competitive bidding process and include the following products: (i) Market study of EHR providers and solutions; (ii) Tools for country readiness and firm vetting for the implementation of EHR designed and validated; and (iii) State of EHR implementation in LAC. The consultant to be hired will prepare guidelines for implementation of EHR, for example: (i) Guidelines for quick diagnostic of the IT status of a country (top questions to ask); (ii) Guidelines for negotiating with vendors (top questions to ask); (iii) Guidelines for IT contracts (common mistakes and what to check for) and (iv) Guidelines for technical specifications for health IT procurement. The tools will be designed so they can be applied to all countries in the region and can be used for diagnostics, design and execution whenever the bank funds the development of EHR and other digital products. All intellectual products from the consultancies will be intellectual property of the Bank.

3.3 Component II: Mapping determinants of health. This component will test the ability of using local data from satellite images, household surveys, and other georeferenced information systems to train models to build poverty and health maps the component will only be executed in El Salvador. Studies will be implemented using open source algorithms and prioritizing publicly available data to facilitate replication by countries. Scripts during the development of the exercise will be shared with technical personnel from the Dirección General de Estadística y Censos (DIGESTYC) through the Rpubs platform to develop technical capacity in the institution. Information will be obtained from public repositories of geospatial information such as WorldPop global database and Landsat imagery. Classification and predictive models will be built based on the predictive power of available data on the desired indicators where household survey data is available (based on sampling units). The models then extrapolate to the rest of the country where geospatial information is available, but household survey data are not. A preliminary proof of concept was developed using data from El Salvador showing promising results for the development of these tools. El Salvador was also chosen because the Bank has had experience in the development of geospatial information systems for the Ministry of health that could be complementary to this effort (see <https://geo.salud.gob.sv/>). The expected results of this component are the use of the updated maps to guide policy decisions such as investments in primary healthcare services.¹

3.4 Component III: Marketplace for digital solutions. The goal of the marketplace is to provide governments with a one-stop-shop to research, share, and implement technology solutions. The marketplace aims at providing digital solutions that go beyond EHR. However, EHR will be the starting point due to their importance as building blocks of health ecosystems. The marketplace will be a webpage in the Bank's

¹ The 2005 poverty map was used to determine the distribution of primary care services in use today.

website populated with materials developed under this CT and other IDB efforts such as the Red Americana de Cooperación sobre Salud Electrónica (RACSEL) network described earlier and open source solutions for which the Bank will provide a comparative assessment to be used by implementers. The marketplace will be maintained and updated by IDB staff and through the material developed as part of the design of health operations. The expected result of this component is the use of the information available by the Bank Specialists and by the countries for the design and improvement of their health information systems.

3.5 The total cost of this TC will be US\$339,000, which will be financed by the Ordinal Capital Strategic Development Program for Social Development (SOC).

Indicative Budget

Activity/Component	Description	Total Funding
Assessing country readiness for EHR Implementation	Three studies and 4 guidelines.	US\$264,000
Machine learning algorithms and non-structured data to develop social maps	One poverty and health map.	US\$50,000
Marketplace (webpage) for digital solutions	One marketplace to research, share, and implement technology solution	US\$25,000
Total		US\$339,000

3.6 Supervision activities will be the responsibility of Luis Tejerina from the Social protection and Health Division. Activities in El Salvador will be coordinated in coordination with Maria Deni Sanchez, Social Protection and health Specialist in El Salvador. There are no expected additional supervision costs for COF since the coordination in the country work was done through an earlier exercise.

3.7 The TC will be executed by the IDB which will report the progress in the delivery of intermediate and final products through the convergence site and continually upload the products in the system. Products will also be uploaded in the marketplace and the Bank's website once available. The development of EHRs is an area of increasing demand for the IDB and products under this TC are expected to be sustained by the SPH division as inputs for the development of its projects. The products to be developed under Component 2 are being developed in close contact with the Government of El Salvador and using open source code and freely available satellite and geospatial data, adding to its future sustainability.

IV. Executing Agency and Execution Structure

4.1 In accordance with Bank policies, the Bank will be the executing unit for the TC since there are no other institutions with the technical and legal capacity to execute it since the final product will be embedded as part of Bank technical work for future projects

and the bank's webpage. Also, for the implementation of the social maps, the Government of El Salvador specifically requested that the funds be executed by the IDB, who will act as a technical counterpart with the implementing Firm and coordinate with the Government technical team. The activities to be executed are included in the Procurement Plan (Annex) and will be contracted in accordance with current Bank procurement policies and procedures. Specifically, Section AM-650 of the Administrative Manual "Complementary Workforce" will be applied in the case of individual consultants, the Policy for the Selection and Contracting of Consulting Firms for Bank-executed Operational Work (GN-2765-1) and its Operational Guidelines (OP-1155-4) for hiring consulting services of intellectual nature and the Corporate Procurement Policy (GN-2303-20) for logistics and other related services.. For the social maps in El Salvador the firm Flowminder will be hired through Single Source Selection due to their exceptional experience in this area and for continuity of services since they developed the first part of the work for the maps. .

- 4.2 Some activities of this TC will take place in El Salvador, and that in case activities included in this TC take place in another beneficiary country, prior to begin with activities in such country, a non-objection letter from such country will be required.

V. Major Issues

- 5.1 This is a TC that aims at providing innovative solutions that in some cases have not been implemented for long enough or at scale for benefits to be guaranteed. For Component 1 there is a risk of not finding experienced consultants for the development of the studies with the necessary level of quality. To mitigate this risk, we will conduct additional outreach efforts to be able to reach a large pool of consultants from which to choose. For Component 2 there is a risk of not achieving enough country ownership of the solutions being proposed to make the efforts scalable and sustainable. To mitigate this risk, the team will maintain a direct line communication with the countries and technical counterparts from the relevant institutions to keep them informed and to consider their inputs for the final products.

VI. Exceptions to Bank Policy

- 6.1 There are no exceptions to Bank Policy.

VII. Environmental and Social Strategy

- 7.1 The ESG classification for this operation is C since no negative environmental or socioeconomic impacts are expected. See filters SPF and SSF

Required Annexes:

- Annex I: Request from the client
- Annex II: Results Matrix
- Annex III: Terms of Reference
- Annex IV: Procurement Plan



San Salvador, 21 de marzo 2018
SETEPLAN/USI-013/18

Señora
Carmina Moreno
Representante
Banco Interamericano de Desarrollo
Presente.

Ref.: RG-T3153. Mejorar la efectividad de proyectos a través de la tecnología. No Objeción al Gobierno de El Salvador.

Estimada Señora Moreno:

Tengo el agrado de dirigirme a usted, en ocasión de hacer referencia a su carta de fecha 19 de marzo del presente año, por medio de la cual solicita no objeción a una Cooperación Técnica Regional para elaborar una propuesta de desarrollo de mapas sociales con información de imágenes satelitales con el propósito de informar sobre políticas públicas.

Al respecto, esta Secretaría otorga su no objeción a la preparación de la Cooperación Técnica "Mejorar la efectividad de proyectos a través de la tecnología (RG-T3153)", para un periodo de 24 meses, para realizar actividades relacionadas con el componente 2 de Desarrollo de algoritmos de aprendizaje automático y mapas sociales; quisiéramos solicitar que la misma sea ejecutada por el Banco Interamericano de Desarrollo (BID) entendiendo su carácter regional y que las actividades de los componentes restantes se relacionan directamente con el trabajo otras redes financiadas por el Banco relacionadas con trabajo colaborativo en el área de salud.

Sin otro particular, aprovecho la ocasión para agradecer su atención y reiterarle mi consideración y alta estima.

Atentamente,

Francisco Roberto Lorenzana
Secretario Técnico y de Planificación de la Presidencia
Presidencia de la República

C.c. Luis Tejerina, Especialista Líder Sectorial.



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CES-314/2018

19 de marzo de 2018

Licenciado
Francisco Lorenzana Durán
Secretario
Secretaría Técnica y de Planificación de la Presidencia
Presente.

Ref: **RG-T3153**. Mejorar la efectividad de proyectos a través de la tecnología. Solicitud de No Objeción al Gobierno de El Salvador.

Estimado Licenciado Lorenzana:

Tengo el agrado de dirigirme a usted con relación a la Cooperación Técnica Regional No Reembolsable "*Mejorar la efectividad de proyectos a través de la tecnología*" (RG-T3153).

El objetivo del proyecto es elaborar una propuesta de desarrollo de mapas sociales con información de imágenes satelitales con el propósito de informar la política pública; esto incluye el desarrollo de capacitación de personal técnico de Gobierno; la porción de la Cooperación Técnica No Reembolsable destinada para este fin será por una suma de US\$75,000 dólares; anexo a la presente encontrará el abstracto del proyecto para mayores detalles.

Según el Convenio Constitutivo del BID dispone en su Artículo III, Sección 7(b) que el BID no concederá financiamiento en el territorio de un miembro si éste objeta dicho financiamiento.

Por medio de la presente, le solicitamos la No objeción de El Gobierno de El Salvador a la Cooperación Técnica detallada, así como a que la misma sea ejecutada por el Banco, dado su carácter regional.

Atentamente,



Carmiña Moreno
Representante

Anexo: Abstracto del proyecto

Results Matrix

Outcomes

Outcome: 1 Regional knowledge for implementing EHRs widened and improved							
Indicators	Flags*	Unit of Measure	Baseline	Baseline Year	Means of verification	EOP	
1.1 Number of tools/DB studies validated and uploaded into marketplace		tools/studies	0.00	2018	Link to document in Bank's webpage	P	9.00
						P(a)	9.00
						A	0.00
1.2 Number of projects using marketplace tools to improve program design and implementation		Projects	0.00	2018	Marketplace map of Bank projects	P	5.00
						P(a)	5.00
						A	0.00
Outcome: 2 Program design and targeting improved through use of social maps							
Indicators	Flags*	Unit of Measure	Baseline	Baseline Year	Means of verification	EOP	
2.1 Poverty map created, validated and applied by at least one project in El Salvador		Number of projects	0.00	2019	EZ share link to poverty map. Loan proposal referring to poverty map	P	1.00
						P(a)	1.00
						A	0.00

CRF Indicator

Outputs: Annual Physical and Financial Progress

1 Platform for technology solutions						Physical Progress			Financial Progress			Theme	Fund	Flags			
Outputs	Output Description	Unit of Measure	Baseline	Baseline Year	Means of verification	2018	2019	EOP	2018	2019	EOP						
1.1 Virtual platforms designed	online market solutions available online	Platforms (#)	0	2018	link to webpage	P	1	0	1	P	25000	0	25000	Social Development	SOC		
						P(a)	1	0	0	P(a)	25000	0	0				
						A	0	0	0	A	0	0	0				
2 Mapping determinants of health						Physical Progress			Financial Progress			Theme	Fund	Flags			
Outputs	Output Description	Unit of Measure	Baseline	Baseline Year	Means of verification	2018	2019	EOP	2018	2019	EOP						
2.1 Tools designed/strengthened	Guidelines for the implementation of EHR created and validated	Tools (#)	0	2018	map document	P	0	0	0	P	50000	0	50000	Social Development	SOC		
						P(a)	1	0	0	P(a)	50000	0	0				
						A	0	0	0	A	0	0	0				
3 Assessing country readiness for EHR implementation						Physical Progress			Financial Progress			Theme	Fund	Flags			
Outputs	Output Description	Unit of Measure	Baseline	Baseline Year	Means of verification	2018	2019	EOP	2018	2019	EOP						
3.1 Operational manuals developed	Guidelines for the implementation of EHR in Bank projects	Manuals (#)	0	2018	Assessments in market	P	2	1	3	P	100000	99000	199000	Social Development	SOC		
						P(a)	2	1	1	P(a)	100000	99000	99000				
						A	0	0	0	A	0	0	0				
3.2 Tools designed/strengthened	Online marketplace	Tools (#)	0	2018	Documents in marketplace	P	2	2	4	P	0	65000	65000	Social Development	SOC		
						P(a)	2	2	2	P(a)	0	65000	65000				
						A	0	0	0	A	0	0	0				

Other Cost

Total Cost

	2018	2019	Total Cost
P	\$175,000.00	\$164,000.00	\$339,000.00
P(a)	\$175,000.00	\$164,000.00	\$164,000.00
A			

CRF Indicator

Standard Output Indicator

TERMS OF REFERENCE

Technical support for the Health Information Technology Marketplace for the Latin America and Caribbean Region.

Country: Regional

Project Number: RG-T3153

Operation Name: Fostering transformation through technological innovation

1. Background and Justification

- 1.1. Established in 1959, the Inter-American Development Bank ("IDB" or "Bank") is the main source of financing for economic, social and institutional development in Latin America and the Caribbean. It provides loans, grants, guarantees, policy advice and technical assistance to the public and private sectors of its borrowing countries. The Social Protection and Health Division provides direct assistance to the Ministries of Health within the region to promote better health conditions, reduce the risk of poverty associated with health problems, and achieve sustainability of health services for the entire population. Based on international evidence, SPH provides support to strengthen their health systems.
- 1.2. The digital transformation of health information systems currently offers an opportunity to improve quality, efficiency and safety in the region. The World Health Organization (WHO) stated that the proper collection, management and use of information within healthcare systems "will determine the system's effectiveness in detecting health problems, defining priorities, identifying innovative solutions and allocating resources to improve health outcomes" (Stansfield, 2005). However, health information systems (HIS) face many challenges. HIS should include various data sources, allowing for the analysis of health determinants, inputs to the health system (policy and organization, health infrastructure, etc.), performance, quality, outcomes, and inequities. Understanding how these different parts interact (system architecture) and international standards is critical, in addition to understanding needs for using data within the system (who, what, when, where, how), is critical for health system performance. A system that has aligned science, informatics, incentives and culture for continuous improvement and innovation has been coined a learning healthcare system by the Institute of Medicine (IoM, 2015). These systems are complex and require stewardship, investments and planning, to ensure their ultimate goal of harnessing the digital transformation to improve outcomes, quality and equity and reduce costs and waste within the health system.
- 1.3. Quality and timely data is a critical element of any learning healthcare system. In the US healthcare system, the term meaningful use refers to the use of technology to achieve health and efficiency goals, for example through improved five learning domains: 1) improve quality, safety, efficiency; 2) engage patients and families; 3) improve care coordination; 4) improve public and population health; and 5) ensure privacy and security for personal health information (healthit.gov, 2018). Achieving meaningful use requires changes in systems, processes and people, not only software and hardware. Advances in digital technology have improved tools the availability and capture of reliable data, the tools to analyze the data, and feedback of knowledge

to the system. These range from tools for point of decision support, improved care coordination and ultimately towards fostering a learning environment for reflection and use of data. This tools also add elements of complexity, which require stewardship regarding security, privacy, interoperability standards and data exchange. Countries interested in creating or improving their existing systems need to ensure they have a blue print in place.

- 1.4. A critical element of the HIS ecosystem are electronic health records (EHRs). An EHR can be defined as “an electronic record of health-related information of an individual that conforms to nationally recognized interoperability standards and that can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization” (Nelson & Staggers, 2014). Key features of an EHR system are: a) its longitudinal form – they allow to record health-related individual information over time; b) their interoperability standards recognized at the national (or regional) level; c) the possibility of exchanging information between health care organizations and across different levels of care. Therefore, developing an EHR system goes beyond developing electronic medical records (EMR), which are the electronic version of the traditional records internally used by healthcare organizations.
- 1.5. PAHO has stated that a “sound electronic health records (EHR) system is essential to achieving universal health coverage; it provides support for diagnosing and treating patients by offering fast, thorough, and specific information on patients at the point of care” (PAHO, 2016). Electronic health records (EHR) are patient-centered real-time files that provide immediate and secure information to authorized users. Information systems, along with information sharing, have the potential to improve clinical practice by reducing staff errors or incidents, improving automated harm detection, monitoring infections more effectively, and enhancing the continuity of care during physician handoffs. (Reis et al., 2017). With the aid of clinical decision support (CDS) and Computerized Provider Order Entry (CPOE), EHRs can help to reduce errors, creating potential savings, efficiencies and improved patient outcomes.
- 1.6. Although promising, EHRs have only been adopted at scale by a limited number of countries in Latin America. Key barriers that have been identified include funding, lack of evidence documenting effectiveness, and lack of required infrastructure and standards. Of countries included in a 2016 study, only 52.6% have a national EHR system, and only 26.3% have legislation the supports the use of their national EHR system. Current policy recommendations include promoting the sustainable, scalable, and interoperable development of EHR-centered programs and initiatives requires a patient-oriented national online health strategy framework, built upon a system for unique identification (PAHO, 2016).
- 1.7. Many countries in Latin America have developed their health information systems in-house using open-source software tools. Currently, these tools have not been validated or benchmarked against technical requirements for EHRs based on international best practices. Additionally, many countries may be reinventing solutions that have been previously created due to lack of documentation and knowledge sharing between countries in the region. African and Asian regions have begun to use shared frameworks and communities to build tools that can be adapted to other settings.
- 1.8. To design and implement EHRs, countries require a one-stop-shop that can provide tools along the continuum of assessment, planning, tool selection, implementation, meaningful use, and

continuous learning and improvement. To improve efficiencies, they also require documentation, ranking, and systematization of existing solutions to facilitate selection. To meet this need, IDB plans to launch the Health Information Technology Marketplace. Various tools and literature exist to assist governments in the process of assessing their health information systems, however, few have been validated in LAC for EHRs specifically. Others are fragmented towards one aspect of the system, such as mHealth or telehealth. Existing tools do not match potential solutions based on readiness levels of the countries that may use them, consider advances in the digital identity space, or include interoperability with entities outside of the health sector in their evaluations, priority topics for IDB. There is also a gap in the focus of existing tools on operational aspects of the implementation of systems such as guidelines for the different steps in assessing your current situation, preparing technical specifications, negotiating a contract with a vendor and dealing with modifications of an existing system.

2. Objectives

- 2.1. The objective of the consultancy is to provide technical support and create key products for the implementation of Health Information Technology Marketplace for the Social Protection and Health Division at IDB.

3. Scope of Services

- 3.1. The scope of services for this consultancy include creating the following products: a) Market Mapping and Landscape Analysis of EHRs in LAC; b) Maturity Model & Solution Blueprint Toolkit for EHRs in a Digital Ecosystem; Dashboard/Scorecard for EHR Readiness; Technical requirements for EHRs in LAC and tool/process for assessing both country specific and vendor created tools for inclusion in the marketplace. For each product, the firm will be required to create a proposal and methodology for prior approval of IDB. Each product has specific formats, languages and requirements, as outlined in Section 4. Products must be reviewed through consultation process by country and regional experts prior to final approval.

4. Key Activities

The contractor will produce the following results:

4.1. Market Mapping and Landscape Analysis of EHRs in LAC.

- (1) The objective of this product is to conduct a market mapping and landscape analysis to identify key players (providers and buyers) in the field of EHRs and related products (both open source and proprietary) in LAC and classify them by relevant characteristics (function, type/size of organization, type of products and services offered, language, geography, etc.). To classify products, a list of requirements for EHRs must be previously established based on international best practices. The final product will include 1) full written report available in Spanish, English and Portuguese; 2) graphical summary of main findings in both report and presentation form; and 3) video¹ highlighting main findings. To produce these products, the contractor should:

¹ All videos should be presented in a didactic format that is ready for external audiences.

- (a) Define methodology and workplan for IDB approval.
- (b) Create draft report for revision.
- (c) Create final products for approval and dissemination.

4.2. Maturity Model & Solution Blueprint Toolkit for EHRs in a Digital Ecosystem.

- (1) The objective of this product is to create a one-stop-shop toolkit for use of IDB, countries and partners to create a maturity model and assessment tool and create a solution blueprint based on maturity level for EHR implementation. It is critical that the contractor identify and review existing tools and methodologies to not reinvent the wheel, but to instead consolidate relevant tools and create content for added value in the areas of interest. Examples include but are not limited to work previously done by PAHO, Measure Evaluation, HIMSS, RACSEL, RELACSYS, European Union and HealthIT.Gov. The tool should also include a domain relating to the broader digital ecosystem, (e.g. digital identity, data governance, cybersecurity regulation) in addition to sharing information across sectors (for example, referrals to social services in other sectors). At a minimum, the toolkit should include 1) maturity model definition, including domains and definitions; 2) assessment tool and methodology for assessing readiness for EHRs across health information system domains (the readiness assessment should include critical EHR characteristics, such as architecture, interoperability of data, levels of care involved in the EHR system, functions, security and confidentiality measures, in addition to ecosystem context like governance, human resources, technology, infrastructure, legal environment and potential legal limitations²); 3) Solution blueprint based on level of readiness (i.e.: if assessed at level 2, steps and potential solutions to move from level 2 to 3, 3 to 4, etc.); and 4) set of guidelines for critical processes (one didactic guideline document for each step) such as EHR selection (open source, in house development, proprietary solutions), contracting, and implementation (for example important clauses to pay attention to and questions to ask of vendors to avoid long term negative consequences). The contractor will also be responsible to validate the tools developed and carry out assessments in 4 priority countries. Countries will be selected to have a diverse view of the region (e.g. one in the Caribbean, Central America, Andean and southern cone regions). Final products include: 1) Final toolkit and templates for IDB Health Information Technology Marketplace Website in Spanish, English and Portuguese (downloads and web content); 2) validation report; 3) Country reports and recommendations post assessment; and 4) video highlighting main findings. To produce these products, the contractor should:
- (a) Define methodology for toolkit creation and workplan for IDB approval.
 - (b) Create draft report for revision.
 - (c) Define methodology for toolkit validation and workplan for IDB approval.
 - (d) Carry out validation.
 - (e) Create final products for approval and dissemination.

4.3. Dashboard/Scorecard for EHR Readiness.

- (1) Based on product 4.2., the contractor should develop an EHR readiness Dashboard/scorecard which will be included in the HIT Marketplace and include results

² See for example https://ec.europa.eu/health/ehealth/projects/nationallaws_electronichealthrecords_en

from the four countries included in the assessment. The contractor will not be responsible for web development, but should create a prototype (domains, criteria, etc.) which will be used to design the interactive online version. To produce this product, the contractor should:

- (a) Create a prototype of the Dashboard/Scorecard based on the maturity matrix assessment tool.
- (b) Provide data for the four countries assessed in product 4.2.

4.4 Technical requirements for EHRs in LAC and tool/process for assessing both country specific and vendor created tools for inclusion in the marketplace.

- (1) The objective of this product is to use the set of technical requirements defined in product 1 and develop a process for assessing both country created and vendor specific tools prior to their inclusion in the IDB Health Information Technology Marketplace (e.g. functionality, code documentation, installation and user guides). The contractor must review existing international and national requirements of an EHR to develop the set of requirements for LAC/HIT Marketplace. The contractor will also be responsible to validate the tools by evaluating 3-5 EHR tools selected for inclusion in the Marketplace. Finally, based on this experience, the firm will develop a process for IDB to use in the future to include new tools (guideline for future software development in marketplace; TORs to hire auditor and tool to assess software, etc.). Final products include: 1) Assessment tool and methodology for including tools in HIT Marketplace (general requirements and EHR specific); 2) Assessment of 3-5 tools in HIT Marketplace web format; 3) systematization of the tool (photos, description, links, demo) and 3) video describing requirements and evaluation process for HIT Marketplace website. All products should be available in Spanish, English and Portuguese. To produce these products, the contractor should:
 - (a) Define methodology for requirement gathering and methodology and workplan for IDB approval.
 - (b) Create draft report for revision.
 - (c) Define methodology for validation and workplan for IDB approval.
 - (d) Carry out validation.
 - (e) Create final products for approval and dissemination.

5. Expected Outcome and Deliverables

5.1. The contractor will be responsible to deliver the products listed in Table 1 to the IDB. All travel by contractor, translation, and design services will be provided directly by the contractor. IDB will cover costs for workshops within country.

- Overall workplan
- Methodology for deliverables 4.1, 4.2 & 4.3 approved
- Draft of product 4.1 approved
- Draft of product 4.2 & 4.3 approved
- Draft of product 4.4 approved
- Final product 4.1 approved
- Final product 4.2 & 4.3 approved
- Final product 4.4 approved

6. Project Schedule and Milestones

Deliverable	Estimated # of Months from Signing
Overall workplan	1
Methodology for deliverables 4.1, 4.2 & 4.3 approved	3
Draft of product 4.1 approved	6
Draft of product 4.2 & 4.3 approved	9
Draft of product 4.4 approved	12
Final product 4.1 approved	15
Final product 4.2 & 4.3 approved	18
Final product 4.4 approved	18

7. Reporting Requirements

The reports must be received according to the work plan presented in the proposal of the contracted firm and must come in Spanish, English and Portuguese.

8. Acceptance Criteria

The consulting products will be accepted as long as they are in accordance with the requirements of the terms of reference and with the work proposal. The persons authorized to approve the consulting products are Luis Tejerina and Jennifer Nelson.

9. Other Requirements

- IDB Will have sole ownership of intellectual property rights of all the products prepared and delivered under this consultancy.
- Level and years of professional experience:** Experts with least 7 years of relevant experience in health informatics and at least 5 years of experience in more than one country in the design, implementation and management of Electronic Medical Records, or Electronic Health Records in developing countries, preferably LAC.
- Areas of expertise and required skills:** Market and Landscape analysis; readiness assessment in areas of health information system domains; definition of software requirements; assessment of both proprietary and open-source solutions; technical writing; facilitation, graphical design; project management.
- Qualifications:** Over than 7 years in related areas, be analytical, proactive, and problem solver, willing to learn, have strong communication skills and have a teamwork orientation, Experience in public health or epidemiology or systems or related; Have strong communication skills and have a teamwork orientation. Coach and mentor profile.
- The team must have specialized experience in analyzing and developing Market and Landscape analysis; readiness assessment in areas of health information system domains; definition of software requirement; assessment of both proprietary and open-source solutions
- Languages of work:** the firm must count with personnel with Fluency in Spanish, English, and Portuguese

10. Supervision and Reporting

The firm will report to Luis Tejerina and Jennifer Nelson from the Social Protection and health Division and will hold meetings with the Bank team every two weeks to discuss progress in the preparation of the products.

11. Schedule of Payments

- 11.1. The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

Payment Schedule	
Deliverable	%
Overall workplan	20%
Methodology for deliverables 4.1, 4.2 & 4.3 approved	20%
Draft of product 4.1 approved	10%
Draft of product 4.2 & 4.3 approved	10%
Draft of product 4.4 approved	10%
Final product 4.1 approved	10%
Final product 4.2 & 4.3 approved	10%
Final product 4.4 approved	10%
TOTAL	100%

TERMS OF REFERENCE

Social Protection and Health Digital Solutions Website.

Country: Regional

Project Number: RG-T3153

Operation Name: Fostering transformation through technological innovation

1. Background and Justification

- 1.1. Established in 1959, the Inter-American Development Bank ("IDB" or "Bank") is the main source of financing for economic, social and institutional development in Latin America and the Caribbean. It provides loans, grants, guarantees, policy advice and technical assistance to the public and private sectors of its borrowing countries. The Social Protection and Health Division provides direct assistance to the Ministries of Health within the region to promote better health conditions, reduce the risk of poverty associated with health problems, and achieve sustainability of health services for the entire population. Based on international evidence, SPH provides support to strengthen their health systems.
- 1.2. The digital transformation of health information systems currently offers an opportunity to improve quality, efficiency and safety in the region. The World Health Organization (WHO) stated that the proper collection, management and use of information within healthcare systems "will determine the system's effectiveness in detecting health problems, defining priorities, identifying innovative solutions and allocating resources to improve health outcomes" (Stansfield, 2005). However, health information systems (HIS) face many challenges. HIS should include various data sources, allowing for the analysis of health determinants, inputs to the health system (policy and organization, health infrastructure, etc.), performance, quality, outcomes, and inequities. Understanding how these different parts interact (system architecture) and international standards is critical, in addition to understanding needs for using data within the system (who, what, when, where, how), is critical for health system performance. A system that has aligned science, informatics, incentives and culture for continuous improvement and innovation has been coined a learning healthcare system by the Institute of Medicine (IoM, 2015). These systems are complex and require stewardship, investments and planning, to ensure their ultimate goal of harnessing the digital transformation to improve outcomes, quality and equity and reduce costs and waste within the health system.
- 1.3. A critical element of the HIS ecosystem are electronic health records (EHRs). An EHR can be defined as "an electronic record of health-related information of an individual that conforms to nationally recognized interoperability standards and that can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization"

(Nelson & Staggers, 2014). Key features of an EHR system are: a) its longitudinal form – they allow to record health-related individual information over time; b) their interoperability standards recognized at the national (or regional) level; c) the possibility of exchanging information between health care organizations and across different levels of care. Therefore, developing an EHR system goes beyond developing electronic medical records (EMR), which are the electronic version of the traditional records internally used by healthcare organizations.

1.4. To design and implement EHRs, countries require a one-stop-shop that can provide tools along the continuum of assessment, planning, tool selection, implementation, meaningful use, and continuous learning and improvement. To improve efficiencies, they also require documentation, ranking, and systematization of existing solutions to facilitate selection. To meet this need, SPH will launch the Digital Solutions Marketplace. Various tools and literature exist to assist governments in the process of assessing their health information systems, however, few have been validated in LAC or EHRs specifically. Others are fragmented towards one aspect of the system, such as mHealth or telehealth. Existing tools do not match potential solutions based on readiness levels, consider advances in the digital identity space, or include interoperability with entities outside of the health sector in their evaluations, priority topics for IDB.

2. Objectives

2.1. The objective of the consultancy is to design the SPH Marketplace Website to position the products for use by countries and showcase digital solutions for replication within the region.

3. Scope of Services

3.1. The scope of services for this consultancy are:

- 3.1.1. Design of SPH website within IDB system, according to EXR guidelines, within the Drupal 8 system in English, Spanish and Portuguese
- 3.1.2. Administrative users must be able to manage content within site
- 3.1.3. Website will contain the sections listed in section 4 (Key Activities).

3.2. IDB Will have sole ownership of intellectual property rights of all the products prepared and delivered under this consultancy.

4. Key Activities

The contractor will produce the following results:

- Look and feel of website
 - Firm will create look and feel of website aligned with IDB requirements and client needs. Please see mock-up site here: <https://jennifer-nelson-jz2n.squarespace.com/>
- Website with the following sections/features
 - **Home (content below)**

- Welcome page
- About us / added value
- Partners
- Solutions
- Resources
- Blogs
- Search
- **Solutions:** This section includes the creation of the Solutions homepage with a picture/brief description (explore solutions). Then each solution will have their own detailed page. We would require a template for the Solutions that we could add to dynamically over time. We have identified 5 solutions for 2018.
 - Explore Solutions (searchable by country, type, keyword, dynamic taxonomy etc.)
 - Solution page
 - Description
 - Photos/Videos
 - Credits/Creators
 - Links to External sites (code, documentation, etc.)
 - Comparison results using official regional guidelines to Standard: SPH will create a framework to “evaluate/audit” electronic health record software. Software solutions created with IDB support/country created and compare it to the standard (does it comply with International standards? Which? Does it have clinical design making aids? Usability?) This could be an image, downloadable file, or table.
 - Technical Specifications of the tool and description
 - User comments/ratings – open to public, but approval required prior to publishing
 - Contact: developers’ information
- **Resources**
 - Toolkits (see Annex 1): Toolkits are a cross between a publication and a MOOC, and are a smart and user-friendly bundle of technical tools organized in a structured, logical way
 - Structure: Home>>Toolkit>>module & tools>> sub-module & tools
 - Courses / videos / webinars
 - Links to other sites / networks
 - Best Practices / stories from the field
 - Submit a resource (Form to submit a resource to the network)
- **Services**
 - List of services/projects SPH has completed
 - Contact IDB
- **Peer eLearning Community:** link to BID Connect
- **Dashboard**
 - Benchmarking visualization with results from country assessment: This will be a page with a Tableau visualization or something similar that will be updated over time. Services are not required to create the visualization.
- **Playground**

- area of the website to assess/download demos of the software

5. Expected Outcome and Deliverables

5.1. The contractor will be responsible to deliver the products listed in Table 1 to the IDB.

- Workplan
- Website proposal and Wireframes
- Backend for uploading content according to site design
- Functional website in English, Spanish and Portuguese
- Manuals for updating website

6. Project Schedule and Milestones

Deliverable	Estimated # of weeks from Signing
Workplan (Spanish or English)	2
Website proposal and Wireframes (Spanish or English)	4
Backend for uploading content according to site design (Spanish and English)	8
Functional website in English, Spanish and Portuguese	10
Manuals for updating website (Spanish or English)	12

7. Reporting Requirements

7.1. Firm will submit products included in Section 6 in the designated language

8. Acceptance Criteria

8.1. IDB will notify firm in writing when products are accepted. The final website will fulfill requirements included in the website proposal. Products will be approved by Luis Tejerina (SCL/SPH) and Jennifer Nelson (SCL/SPH)

9. Other Requirements

9.1. Website might be created according to IDB/EXR guidelines and regulations

10. Supervision and Reporting

10.1. The consulting firm will report to by Luis Tejerina (SCL/SPH) and Jennifer Nelson

(SCL/SPH). All products must be submitted electronically. Meetings will be held virtually to review and provide feedback to products. It shall be Firm's responsibility for ensuring that such meetings are conducted, and such products are submitted to the Bank.

11. Schedule of Payments

- 11.1. The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

Payment Schedule	
Deliverable	%
Workplan (Spanish or English)	20%
Website proposal and Wireframes (Spanish or English)	20%
Backend for uploading content according to site design (Spanish and English)	20%
Functional website in English, Spanish and Portuguese	20%
Manuals for updating website (Spanish or English)	20%
TOTAL	100%

TERMS OF REFERENCE

Socioeconomic Maps Using Non-Structured Data for Policy Design.

Country: Regional

Project Number: RG-T3153

Operation Name: Fostering transformation through technological innovation

1. Background and Justification

- 1.1 Established in 1959, the Inter-American Development Bank ("IDB" or "Bank") is the main source of financing for economic, social and institutional development in Latin America and the Caribbean. It provides loans, grants, guarantees, policy advice and technical assistance to the public and private sectors of its borrowing countries. The Social Protection and Health Division provides direct assistance to the Ministries of Health within the region to promote better health conditions, reduce the risk of poverty associated with health problems, and achieve sustainability of health services for the entire population. Based on international evidence, SPH provides support to strengthen their health systems.
- 1.2 Socioeconomic indicators in developing countries are essential for the development of social policy. A program designed to help the poor cannot do a good job if there is no information about where the poor are. A program designed to invest in primary health needs to know where the population at risk is likely to be found (pregnant women, the elderly).
- 1.3 To be useful for prioritizing geographical areas information also needs to be disaggregated into small geographic areas. It is not very useful to prioritize a large area (department) for a poverty program if there is too much heterogeneity within. If for example, we prioritize the poorest department in El Salvador for social investment we will exclude all the poor municipalities in richer departments and include rich municipalities that happen to be part of the poorest one. Household surveys are implemented frequently and can help with large areas, but they cannot estimate indicators in small areas.
- 1.4 The most reliable information for this type of maps in the past has been the national census. However, census data is only collected every ten years in the best cases, sometimes it can take much longer. To have an income-based poverty map one also needs to process information from the census which requires access to data and time. For example, in the case of Honduras the latest income-based poverty map was built using the 2001 census (16 years ago), since then the population has grown by 27%. While the new poverty map based on the 2013 census is about to be published many decisions have been taken with very outdated information.
- 1.5 In the health sector the situation is similar. However, there is an unlocked potential in the health sector regarding data availability. Many countries in the region (Panama and El Salvador for example) maintain information systems that detail the types of services provided but not much analysis is done with existing data to inform policy.

- 1.6 In recent years, there has been an increasing trend in the use of Machine learning algorithms for the development of socioeconomic maps with high level of accuracy. However, the region has been lagging in the use of this technology and social policy has consequently failed to take advantage of it. We expect that the ability to map and visualize data will be a regional jump in terms of the use of technology for the design of public policy.
- 1.7 The objective of the project is to hire specialists in Machine learning and the use of non-structured data to build socioeconomic maps and visualizations to inform public policy. The first step in implementing this type of work will be to prepare a proof of concept work in order to demonstrate the type of maps that can be calculated using satellite images and other non-structured data.

2. Objectives

- 2.1 The objective of the project is to hire specialists in Machine learning and the use of non-structured data to build socioeconomic maps and visualizations to inform public policy. The primary purpose of the proposed activity is to complete high-resolution mapping of indices of population welfare in one Central American country.

3. Scope of Services

- 3.1 The scope of services for this consultancy are:
 - 3.1.1 Calibration of a poverty map for El Salvador using satellite images and other information that may be useful.
 - 3.1.2 Training of Government personnel for the understanding off the process and capacity to replicate the exercise with new data.
 - 3.1.3 Preparation of the report including the sections described in Product 3.

4. Key activities

- 4.1 Discussion with the Government of El Salvador on most important indicators for the final maps.
- 4.2 Preparation of final version of poverty maps using non-structured data and including databases available from the Government such as the education infrastructure census, the geospatial information systems from the Health Ministry and any other information that may be useful to the exercise.
- 4.3 Delivery of final version of maps and presentation to the country.

5. Expected Outcome and Deliverables

- 5.1 **Product 1.** Workplan including all necessary inputs for the delivery of the final version of the maps
- 5.2 **Product 2.** Draft version of poverty maps.
- 5.3 **Product 3.** Final report, maps and code used for the analysis. The final report should include the presentation to the Government and the following sections:

Introduction: Aims and limitations of the analyses, key contributors and roles in the scoping process (WP/FM and IDB).

Data: Description of the survey data, as well as existing public and proprietary databases that could be leveraged to conduct the preliminary modelling.

Analytic Approach: Statistical modelling approaches applied in the analyses, including covariate processing, model validation and prediction stages.

Results: Comparative analysis between poverty maps using non-structured data and traditional small area estimation and final poverty map.

Discussion: Strengths and limitations of the approach and list of potential for further analysis.

6. Project Schedule and Milestones

Deliverable	Estimated # of Months from Signing
Product 1	1
Product 2	3
Product 3	6

7. Reporting Requirements

The reports must be received according to the work plan presented in the proposal of the contracted firm and must come in English.

8. Acceptance Criteria

The consulting products will be accepted as long as they are in accordance with the requirements of the terms of reference and with the work proposal. The persons authorized to approve the consulting products are Luis Tejerina (SCL/SPH) and Jose Antonio Mejia (IFD/ICS).

9. Other Requirements

- IDB Will have sole ownership of intellectual property rights of all the products prepared and delivered under this consultancy.
- **Level and years of professional experience:** Consulting firm with extensive experience (at least 5 years) in the elaboration of socioeconomic maps with non-structured data. The collective experience of the firm should include work with international organizations and governments in developing countries. The firm should have proven experience in at least five countries.
- **Areas of expertise and required skills:** Machine learning algorithms for geospatial mapping of social indicators.
- **Qualifications:** Strong quantitative skills and capacity to propose original technical work in order to adapt strategies to a country's strengths in terms of data availability and quality.
- **Languages of work:** the firm must count with personnel with Fluency in English.

10. Supervision and Reporting

The firm will report to Luis Tejerina (SCL/SPH) and Jose Antonio Mejia (IFD/ICS) and will hold meetings

with the Bank team every two weeks to discuss progress in the preparation of the products.

11. Schedule of Payments

11.1 The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

Payment Schedule	
Deliverable	%
Upon signature of the contract and completion of product 1	20%
Upon completion of product 2	40%
Upon completion of product 3	40%
TOTAL	100%

Consultoría de apoyo técnico y analítico para el sector salud

Contexto: SPH está en proceso de fortalecer su conocimiento y herramientas para el desarrollo de la tecnología de la información en salud. La división se beneficiará del trabajo de sistematización de conocimiento existente acerca de la historia clínica electrónica en la literatura internacional. La consultoría tiene por objetivo contribuir al trabajo técnico, analítico y operacional de la división SPH a nivel regional. El candidato apoyará en temas relacionados con el fortalecimiento de los sistemas de salud en ALC, tales como redes integradas de servicios de salud con un enfoque de eficiencia, innovación tecnológica con un enfoque en registros electrónicos de salud (EHR), y servicios de cuidado de larga duración.

El equipo: La división de Protección Social y Salud (SPH) se adscribe al departamento del Sector Social dependiente de la Vicepresidencia de Sectores y Conocimiento (VPS). El BID a través de SPH está apoyando a los países de ALC a aumentar el acceso a una red integrada de servicios de salud, fortalecer la organización y el desempeño de los sistemas de salud y mejorar la calidad y la eficiencia de los servicios de salud.

SPH está buscando un consultor que pueda brindar apoyo técnico y analítico a nivel regional en áreas del sector salud prioritarias para la región, tales como el desarrollo de redes integradas de servicios de salud, el fortalecimiento de servicios de cuidado de larga duración y la promoción de una agenda de transformación digital de los sistemas de información.

Lo que harás: El candidato seleccionado deberá:

- Apoyar en actividades de recolección de datos y análisis de literatura para distintos administradores de tareas.
- Apoyar en la sistematización de metodologías para la preparación de planes maestros de inversión con enfoque de red y para la centralización de bancos de sangre y laboratorios.
- Contribuir al desarrollo de un modelo sobre dependencia y cuidado de larga duración para adultos mayores en México y a su análisis empírico, utilizando STATA u otro software de análisis estadístico.
- Contribuir a la conceptualización, preparación y publicación de una nota técnica sobre dependencia y cuidado de larga duración para adultos mayores en México.
- Contribuir a la conceptualización, preparación y publicación de una nota técnica sobre EHR en ALC.
- Apoyar en la preparación de insumos analíticos utilizados para informar la preparación de operaciones crediticias de SPH y el diálogo político con autoridades de Gobiernos.
- Apoyar en la revisión técnica de productos de consultorías y documentos operacionales y no operacionales de SPH.

Entregables:

- Durante la duración del contrato, el consultor apoyará la preparación de varios entregables tales como: informes de sistematización, estudios parte de ESW y cooperaciones técnicas, insumos para la preparación de documentos operacionales y no operacionales, entre otros.

Habilidades que necesitarás:

- Educación: Maestría o equivalente. Se prefiere Ph.D. en economía, políticas públicas, políticas de salud, gestión de la salud, o equivalente. Por lo menos 3 años de experiencia relevante profesional y académica en políticas de salud.
- Idiomas: inglés y español
- Áreas de Especialización: Comprensión de cuestiones técnicas y analíticas de políticas de salud tanto en países desarrollados como en desarrollo y antecedentes en economía aplicada.
- Habilidades:
 - Sólidos antecedentes cuantitativos y analíticos, y capacidad para trabajar con STATA u otro software de análisis estadístico.
 - Demostrada capacidad de contribuir a equipos de proyecto multidisciplinarios y multiculturales.
 - Capacidad de construir y mantener relaciones positivas dentro y fuera del Banco.
 - Capacidad de actuar de manera independiente e ingeniosa para responder a las demandas del trabajo, ajustarse a las múltiples demandas y cambiar las prioridades;
 - Demostrada capacidad para escribir documentos analíticos claros y efectivo y adaptar estilos de comunicación a diferentes audiencias.

Competencias Generales y Técnicas:

Resumen de la oportunidad:

- Tipo de contrato y modalidad: Consultor.
- Duración del contrato: 8 meses.
- Fecha de inicio:
- Ubicación: Washington D.C., Estados Unidos de
- Persona responsable: Luis Tejerina, Especialista Líder en Protección Social y Salud
- Requisitos: Debes ser ciudadano/a de uno de los [48 países miembros del BID](#) y no tener familiares que trabajen actualmente en el Grupo BID.

Nuestra cultura: Trabajando con nosotros, estarás rodeada por un grupo diverso de expertos en todo tipo de campos de desarrollo, incluyendo transporte, salud, género y diversidad, comunicaciones y más.

Sobre nosotros: En el Banco Interamericano de Desarrollo, estamos dedicados a mejorar vidas. Desde 1959, hemos sido una fuente importante de financiamiento a largo plazo para el desarrollo económico, social e institucional en América Latina y el Caribe. Sin embargo, hacemos más que prestar. Nos asociamos con nuestros 48 países miembros para proporcionar a América Latina y el Caribe investigaciones de vanguardia sobre temas de desarrollo relevantes, asesoramiento de políticas para informar sus decisiones y asistencia técnica para mejorar la planificación y ejecución de proyectos. Para ello, necesitamos personas que no sólo tengan las habilidades adecuadas, sino que también sean apasionadas por mejorar vidas.

Pago y Condiciones: La compensación será determinada de acuerdo a las políticas y procedimientos del Banco. El Banco, en conformidad con las políticas aplicables, podrá contribuir a los gastos de viaje y mudanza. Adicionalmente, los candidatos deberán ser ciudadanos de uno de los países miembros del BID.

Visa y permiso de trabajo: El Banco, en conformidad con las políticas aplicables, podrá presentar la solicitud de visa a las autoridades migratorias pertinentes; sin embargo, la concesión de la visa estará a la discreción de las autoridades migratorias. No obstante, es responsabilidad del candidato obtener la visa o permiso de trabajo necesario y requerido por las autoridades del país(es) en donde serán prestados los servicios al Banco. Si un candidato no puede obtener la visa o permiso de trabajo para prestar servicios al Banco, la oferta contractual será rescindida.

Consanguinidad: De conformidad con la política del Banco aplicable, los candidatos con parientes (incluyendo cuarto grado de consanguinidad y segundo grado de afinidad, incluyendo conyugue) que trabajan para el BID, BID Invest, o FOMIN como funcionario o contractual de la fuerza contractual complementaria, no serán elegibles para proveer servicios al Banco.

Diversidad: El Banco está comprometido con la diversidad e inclusión y la igualdad de oportunidades para todos los candidatos. Acogemos la diversidad sobre la base de género, edad, educación, origen nacional, origen étnico, raza, discapacidad, orientación sexual, y religión. Alentamos a aplicar a mujeres, afrodescendientes y a personas de origen indígena.

Technical support in the implementation of Electronic Health Records and analysis of market conditions and best practices in the Latin America and Caribbean Region.

Background: SPH is in the process of strengthening its knowledge and tools for the development of information technology in health. The consultant will develop guidelines and technical documents that will help the division be a knowledgeable partner in the implementation of HER in the region. The objective of the consultancy is to provide technical support for the implementation of electronic health records in Bank Projects and internally to the Social Protection and Health Division.

The team: The digital transformation of health information systems currently offers an opportunity to improve quality, efficiency and safety in the region. The World Health Organization (WHO) stated that the proper collection, management and use of information within healthcare systems "will determine the system's effectiveness in detecting health problems, defining priorities, identifying innovative solutions and allocating resources to improve health outcomes" (Stansfield, 2005). However, health information systems (HIS) face many challenges. HIS should include various data sources, allowing for the analysis of health determinants, inputs to the health system (policy and organization, health infrastructure, etc.), performance, quality, outcomes, and inequities. Understanding how these different parts interact (system architecture) and international standards is critical, in addition to understanding needs for using data within the system (who, what, when, where, how), is critical for health system performance. These systems are complex and require large investments and planning.

A critical element of the HIS ecosystem is the electronic health record. PAHO has stated that a "sound electronic health records (EHR) system is essential to achieving universal health coverage; it provides support for diagnosing and treating patients by offering fast, thorough, and specific information on patients at the point of care" (PAHO, 2016). Electronic health records (EHR) are patient-centered real-time files that provide immediate and secure information to authorized users. Information systems, along with information sharing, have the potential to improve clinical practice by reducing staff errors or incidents, improving automated harm detection, monitoring infections more effectively, and enhancing the continuity of care during physician handoffs. (Reis et al., 2017). With the aid of clinical decision support (CDS) and Computerized Provider Order Entry (CPOE), EHRs can help to reduce errors, creating potential savings, efficiencies and improved patient outcomes.

Although promising, EHRs have only been adopted at scale by a limited number of countries in Latin America. Key barriers that have been identified include funding, lack of evidence documenting effectiveness, and lack of required infrastructure and standards. Of countries included in a 2016 study, only 52.6% have a national EHR system, and only 26.3% have legislation that supports the use of their national EHR system. Current policy recommendations include promoting the sustainable, scalable, and interoperable development of EHR-centered programs and initiatives requires a patient-oriented national online health strategy framework, built upon a system for unique identification (PAHO, 2016).

What you'll do: The consultant will provide direct technical support in health informatics for the design and implementation of bank projects (60% of time), including:

- Review of terms of reference, project description, and technical specification documents for public procurement processes, ensuring that technical specifications are conducive to optimal solutions for the challenges of the project and the countries involved.
- Review of country strategies, norms, standards, and other relevant documents, to ensure solutions are aligned and identify gaps, if applicable.
- Meetings with government counterparts to discuss technical strengths and weaknesses of proposed technical solutions in health informatics.
- The areas of support will focus on HER but will also include support with other digital technologies where the SPH team may need support.

The consultant will also provide technical support to the Social Protection and Health Division regarding health informatic strategy (40%), illustrative products include:

- A case study of best practices in the implementation and use of EHR and related systems from inside and outside the region with recommendations for Bank member countries for the implementation of such mechanisms. The study is a desk review, including telephone interviews with people involved in the experiences identified as best practices. The document should include:
 - Review of experiences in the implementation of EHR and related systems in developed and developing country settings.
 - Identification of cases that are more relevant for the region because (i) they were implemented in a similar context, (ii) they were successfully implemented (iii) scale of the experience and (iv) enough information is available for a qualitative analysis of the experience.
 - Analysis of cases identified as best practices including (i) basic characteristics of the system (ii) why is it considered to be successful, (iii) factors that contributed to the success, (iv) weaknesses identified in the experience.
- Contributing to the SPH Internal Health Information Technology (HIT) toolkit and resources, by translating the support given to the division into the following products:
 - Guidelines for quick diagnostic of the IT status of a country (top questions to ask)
 - Guidelines for negotiating with vendors (top questions to ask)
 - Guidelines for IT contracts (common mistakes and what to check for)
 - Guidelines for technical specifications for health IT procurement
 - Sample TOR for the implementation of country diagnostics in HIT
 - Inputs for a technical note on the business case for HER in the region.

Skills you'll need:

- Education: Advanced degree (masters or PhD) in Health Informatics or equivalent.
- Experience: At least 10 years of experience in the area of health informatics and at least 5 years of experience in more than one country in the design, implementation and management of Electronic Medical Records, or Electronic Health Records in developing countries. Publications in the area of health informatics.
- Languages: Ability to read, write and speak Spanish and English.

Core and Technical Competencies:

Opportunity Summary:

Type of contract: Consultant.

Length of contract: 18 months.

Starting date:

Location: Washington D.C.; up to 25% travel.

Responsible person: Ferdinando Regalia, SPH Division Chief.

Requirements: You must be a citizen of one of the [IDB's 48 member countries](#) and have no family members currently working at the IDB Group.

Our culture: Working with us you will be surrounded by a diverse group of people who have years of experience in all types of development fields, including transportation, health, gender and diversity, communications and much more.

About us: At the Inter-American Development Bank, we're devoted to improving lives. Since 1959, we've been a leading source of long-term financing for economic, social, and institutional development in Latin America and the Caribbean. We do more than lending though. We partner with our 48 member countries to provide Latin America and the Caribbean with cutting-edge research about relevant development issues, policy advice to inform their decisions, and technical assistance to improve on the planning and execution of projects. For this, we need people who not only have the right skills, but also are passionate about improving lives.

Payment and Conditions: Compensation will be determined in accordance with Bank's policies and procedures. The Bank, pursuant to applicable policies, may contribute toward travel and moving expenses. In addition, candidates must be citizens of an IDB member country.

Visa and Work Permit: The Bank, pursuant to applicable policies, may submit a visa request to the applicable immigration authorities; however, the granting of the visa is at the discretion of the immigration authorities. Notwithstanding, it is the responsibility of the candidate to obtain the necessary visa or work permits required by the authorities of the country(ies) in which the services will be rendered to the Bank. If a candidate cannot obtain a visa or work permit to render services to the Bank the contractual offer will be rescinded.

Consanguinity: Pursuant to applicable Bank policy, candidates with relatives (including the fourth degree of consanguinity and the second degree of affinity, including spouse) working for the IDB, IDB Invest, or MIF as staff members or Complementary Workforce contractuels, will not be eligible to provide services for the Bank.

Diversity: The Bank is committed to diversity and inclusion and to providing equal opportunities to all candidates. We embrace diversity on the basis of gender, age, education, national origin, ethnic origin, race, disability, sexual orientation, and religion. We encourage women, Afro-descendants and persons of indigenous origins to apply.

