

## **TERMS OF REFERENCE CONSULTANCY FOR COORDINATION AND MONITORING**

### **1. Background**

- 1.1 Trade institutions, border authorities and the private sector worldwide are undergoing major structural transformations. New technologies are driving forces for new processes for the production, trading, logistics, marketing, control and even consumption of goods and services. As Industry 4.0 progresses, new technologies are at the core of innovative tools that have the potential to revolutionize trade and logistics.
- 1.2 E-commerce is thriving alongside increased access to the Internet, to electronic devices, and to technologically enabled transport logistics. This new type of trade is full of opportunities for trade and for regional and global value chains and market integration, as it is also for businesses and consumers. However, it also poses challenges for governments, especially for regulatory entities, such as customs and border agencies.
- 1.3 These challenges are related to their limited capacity to cope efficiently with increasing volumes of cross border e-commerce. Furthermore, some of the small shipments and parcels may be used to smuggle illicit goods or to contravene the laws and not pay the duties and taxes due. Government authorities find it difficult to fulfill effectively their mandates to protect revenue collection and the security of their citizens while facilitating the legitimate flow of goods generated by e-commerce. This affects particularly developing countries, as is the case in Latin America and the Caribbean (LAC) where business to consumers (B2C) e-commerce is projected to grow at an annual rate of 19%, with the cross-border share expanding at a rate of 44%. Thus, the region's share in cross-border B2C e-commerce worldwide looks set to double, from 2.6% (about US\$ 6 billion) in 2014 to 5.3% (around US\$ 53 billion) in 2020.
- 1.4 Efficient and effective risk management systems and automated traceability capabilities are essential tools for customs and border authorities to mitigate the risks associated with e-commerce. At the heart of a sound risk management system, data is the holy grail for successfully profiling the identified risks. The vast amount of structured and unstructured data (including images) available in trade operations is a perfect ground for new technologies such as Machine Learning (ML) and AI to strengthen the potential of risk management systems.
- 1.5 Traceability of the tsunami of shipments that arrive at the borders of LAC countries is another challenge for authorities, as it affects the quantity and quality of the data necessary for implementing risk controls. Blockchain technology has already demonstrated its potential for establishing provenance and sharing data among multiple stakeholders.
- 1.6 Therefore, emerging technologies when applied to customs management of e-commerce could contribute to unlocking the potential benefits of this type of trade for the LAC region. ML and AI can support and enhance customs and border agencies' own risk management systems by helping process and analyze the large amounts of data produced and created by e-commerce with the aim of pinpointing the risks associated with it. In doing so, ML and AI can help reduce the percentages

of manual and physical interventions of packages and parcels while improving trade facilitation rates for e-commerce. E-commerce could also benefit from blockchain technology to help customs and border authorities collaborate with carriers to share data to bring visibility and fluidity to the supply chain.

- 1.7 Aware of the increasing dynamism of e-commerce, the World Customs Organization in 2018 in collaboration with the private sector developed a series of standards on cross border e-commerce, which includes the adoption of new technologies for a more effective and efficient control and facilitation of this type of emerging commerce.

## **Objective**

The main objective of the consultancy will be to support the development and coordination of the pilot projects by providing methodological and operational support to the beneficiaries and the IDB for the final adoption of the solution

### **What you'll do:**

The selected candidate must:

- Solution improvements. Propose and coordinate the proposals of the countries for improvements to the solution for their implementation.
  - Scalability.
  - Promote the use and support in the scalability of the solution among the member countries of the region.
  - Identify new functionalities that can be incorporated into the application to be developed.
  - Promote the inclusion of new government entities and the private sector to enhance the use of the solution
- Integration. Support the integration processes with the customs management systems of each country.
- Governance. Support the process of establishing the optimal governance model of the solution aligned with the LaCChain initiative.
- Measure the impact of the solution through indicators.
- Prepare informative documents summarizing the solution adoption process that show that lessons learned, how successes have been achieved and how challenges have been faced.
- Prepare presentations and technical notes for the dissemination of the solution.
- Ensure the availability of support and follow-up to consultations by customs of participating countries and actively participate in virtual or face-to-face meetings to facilitate and optimize the understanding of participants.
- Explore other Blockchain and ML and Artificial Intelligence projects that could be linked to the solution.

## Deliverables

- Document with work plan that includes improvements, indicators and the strategy for scalability of the solution to other countries.
- Document with proposal of new functionalities to be incorporated that are useful for Customs, other government entities and for the private sector.
- Document of lessons learned on the implementation of the pilot project.
- Document that includes a mapping of Blockchain, ML and Artificial Intelligence projects related to customs and border management at a global level.

## Skills needed

- **Education:** Bachelor in international business or related.
- **Experience:** A minimum of 4 years of relevant professional experience in the customs and foreign trade disciplines.
- **Languages:** Spanish required. English proficiency required.
- **General and technical skills:** Have knowledge about blockchain technology, ML and Artificial Intelligence and its application to customs management.

## Opportunity Summary

- **Type of contract and modality:** External Products and Services Consultant
- **Contract period:**
- **Start date:**
- **Location:**
- **Responsible Person:** Sandra Corcuera Santamaria (INT / TIN)
- **Requirements:** You must be a citizen of one of the 48 IDB member countries and have no family members currently working in 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.

## **TERMS OF REFERENCE**

Knowledge paper to expand and facilitate trade, FDI, value-added production, and supply chain development in the LAC region through the use of emerging technologies. A closer look to Ecommerce through the use of Blockchain and AI/ML

### **1. Background and Justification**

- 1.1. Disruptive technologies such as cloud computing, 3D printing, blockchain, robotics, ecommerce, and AI are transforming the patterns, players and possibilities of trade, production, and supply chains, including in Latin America and the Caribbean (LAC). Trade institutions, border authorities and the private sector are undergoing major structural transformations. New technologies are driving forces for new processes for the production, trading, logistics, marketing, control and even consumption of goods and services. As the Industry 4.0 progresses, new technologies are at the core of innovative trade tools that have the potential to revolutionize trade and logistics.

### **2. Objective**

- 2.1. To develop a paper on the opportunities and challenges to apply new technologies to trade and border management. This report will set the stage to present the potential impact of using ML, AI, blockchain, the internet of things, 3D printing, and others in trade in LAC.

### **3. Scope of the Services**

- 3.1. The consultant will write a paper and roadmap (i) for LAC governments to accelerate the adoption of technologies conducive to trade, value-added production, and supply chain development in their economies; (ii) for LAC government trade agencies to apply new technologies in their own operations;

### **4. Key Activities**

- 4.1. Review the following aspects:

- the role of emerging technologies in enhance LAC region's trade, production, and supply chains;
- To what extent and how LAC firms are already using disruptive technologies for their trade, production, and supply chains, and what are the impacts and challenges;
- How LAC trade and border agencies should re-gear their work, policies and programs to accelerate the adoption and diffusion of technologies conducive to trade in their economies – and how they are doing so already;
- How LAC trade agencies are already expanding access to technologies that enable trade, supply chains, and regional integration;
- How LAC trade and border agencies can use technologies to enhance their own operations and processes – and how are they doing so already;
- How new technologies impact FDI and how technology can be used to promote Investment Promotion Agencies and to facilitate the creation and strengthening Investment Single Windows.

- The report will consider macroeconomic elements of the technology (productivity improvement, economic growth), and integration factors such as the impact in Global Value Chains and Trade Agreements.
- The report will tackle efficiencies in trade (investment opportunities, services) and in customs administrations by enhancing their controls and improving the levels of trade facilitation and improving business opportunities and reducing costs.
- Finally, it should also include challenges related to the regulatory aspects around the availability and privacy of data when applying new technologies.
- A closer look to ML, AI and blockchain applied to e-commerce will be considered.

- 4.2. Review of relevant literature including empirical evidence and case studies about how technologies can promote and interlace policies and programs (for instance, to integrate all the initiatives of trade facilitation within countries and between countries, connect trade initiatives for facilitation, for export and import promotion.
- 4.3. Conduct a systematic survey about what other extra regional countries are doing to adopt new technologies to articulate policies and programs of trade and investment (e.g AI for RM, SW to promote exports -model of Singapur).
- 4.4. Draw a policy roadmap: how LAC governments should enable the use of technologies to expand and facilitate trade, supply chains, and integration;

## **5. Results and Deliverables**

It is expected to receive a report which contains the following elements together with a roadmap (i) for LAC governments to accelerate the adoption of technologies conducive to trade, value-added production, and supply chain development in their economies; (ii) for LAC government trade agencies to apply new technologies in their own operations;

## **6. Chronogramme**

- 6.1. Work Plan two (2) weeks after the signature of the contract
- 6.2. Interim report with initial findings and structure of the document (6) weeks after the signature of the contract.
- 6.3. First draft document (10) weeks after the signature of the contract.
- 6.4. Second draft document, a 10-page summary and 15-slide PPT (12) weeks after the signature of the contract
- 6.5. Final deliverable will be (16) weeks after the signature of the contract

## **7. Requirements of the reports**

- 7.1. The paper will include a 3-page executive summary and a 15 – 20 summary version and a 15-slide PPT. There will be engaging graphs, matrices, infographics and other visualizations in the document. The consultant will work with the IDB to format and iterate the paper. This paper should include case studies call-outs (i.e. graphic box that presents a case study/overview).

## **8. Criterios de aceptación**

**8.1.** The paper will require the acceptance by the Bank. The consultant will iterate with INT/TIN to include comments and observations in the final paper

## **9. Payments**

- 1st payment 20% upon the signature of the contract
- 2nd payment 30% upon delivery and approval by the Bank of the first draft document
- 3rd payment 30% upon delivery and approval by the Bank of the second draft document, the 10-page summary and the 15-slide PPT.
- 4th payment 20% upon delivery and approval by the Bank of the final version of document

## **10. Supervision**

**10.1.** The work Will be supervised by Sandra Corcuera (INT/TIN)

## TERMS OF REFERENCE - STATEMENT OF WORK

### 1. Introduction

The purpose of this document is to provide prospective providers with the information needed to present an implementation and support proposal for a Pilot Project to support customs risk management for ecommerce using blockchain technology.

*Note: This TOR will be updated with the inputs received during the regional workshops*

### 2. Background and Justification

- 2.2 Trade institutions, border authorities and the private sector worldwide are undergoing major structural transformations. New technologies are driving forces for new processes for the production, trading, logistics, marketing, control and even consumption of goods and services. As Industry 4.0 progresses, new technologies are at the core of innovative tools that have the potential to revolutionize trade and logistics. E-commerce is thriving alongside increased access to the Internet, to electronic devices, and to technologically-enabled transport logistics.<sup>1</sup> This new type of trade is full of opportunities for trade and for regional and global value chains and market integration, as it is also for businesses and consumers. However, it also poses challenges for governments, especially for regulatory entities, such as customs and border agencies.
- 2.3 These challenges are related to their limited capacity to cope efficiently with increasing volumes of cross border e-commerce.<sup>2</sup> Furthermore, some of the small shipments and parcels may be used to smuggle illicit goods or to contravene the laws and not pay the duties and taxes due. Government authorities find it difficult to fulfill effectively their mandates to protect revenue collection and the security of their citizens while facilitating the legitimate flow of goods generated by e-commerce. This affects particularly developing countries, as is the case in Latin America and the Caribbean (LAC) where business to consumers (B2C) e-commerce is projected to grow at an annual rate of 19%, with the cross-border share expanding at a rate of 44%. Thus, the region's share in cross-border B2C e-commerce worldwide looks set to double, from 2.6% (about US\$ 6 billion) in 2014 to 5.3% (around US\$ 53 billion)<sup>3</sup> in 2020.

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<sup>1</sup> Worldwide Business to Consumers (B2C) e-commerce grew on average by 31% between 2014 and 2017, and is foreseen to maintain this pace until 2021, according to the "eMarketer" consultancy. Global B2C e-commerce is likely to increase in total from US\$ 1.3 billion to US\$ 4.9 billion.

<sup>2</sup> Global Cross-border e-commerce is likely to grow its share of total e-commerce from about 15% in 2014 to nearly 30% in 2020, as projected by the consultants AliResearch and Accenture (2016).

<sup>3</sup> *International Trade Outlook for Latin America and the Caribbean, 2018*. Economic Commission for Latin America and the Caribbean (ECLAC). [https://repositorio.cepal.org/bitstream/handle/11362/44197/5/S1801069\\_en.pdf](https://repositorio.cepal.org/bitstream/handle/11362/44197/5/S1801069_en.pdf).



- 2.4 Efficient and effective risk management systems and automated traceability capabilities are essential tools for customs and border authorities to mitigate the risks associated with e-commerce<sup>4</sup>. At the heart of a sound risk management system, data is the holy grail for successfully profiling the identified risks. The vast amount of structured and unstructured data (including images) available in trade operations is a perfect ground for new technologies such as Machine Learning (ML) and AI to strengthen the potential of risk management systems.
- 2.5 Traceability of the tsunami of shipments that arrive at the borders of LAC countries is another challenge for authorities, as it affects the quantity and quality of the data necessary for implementing risk controls. Blockchain technology has already demonstrated its potential for establishing provenance and sharing data among multiple stakeholders.
- 2.6 Therefore, emerging technologies when applied to customs management of e-commerce could contribute to unlocking the potential benefits of this type of trade for the LAC region. ML and AI can support and enhance customs and border agencies' own risk management systems by helping process and analyze the large amounts of data produced and created by e-commerce with the aim of pinpointing the risks associated with it. In doing so, ML and AI can help reduce the percentages of manual and physical interventions of packages and parcels while improving trade facilitation rates for e-commerce. E-commerce could also benefit from blockchain technology to help customs and border authorities collaborate with carriers to share data to bring visibility and fluidity to the supply chain.<sup>5</sup>
- 2.7 Aware of the increasing dynamism of e-commerce, the World Customs Organization in 2018 in collaboration with the private sector developed a series of standards on cross border e-commerce,<sup>6</sup> which includes the adoption of new technologies for a more effective and efficient control and facilitation of this type of emerging commerce.

The application will be developed to face all those challenges in the light of a new initiative promoted by the IDB called LACChain.

LACChain is a multisector initiative called LACChain Global Alliance promoted by the IDB Lab to develop the blockchain ecosystem in the region. For that purpose, one of the main focus will be on the development and maintenance of public-permissioned blockchain networks that are interoperable, scalable, highly-decentralized and with no transaction fees. Along with it, the program aims to develop standards a regulation aligned with the efforts of international communities. At present, LACChain offers public access to a free public-permission test-net that is evolving into a main-net. This network enables to run any use case, provided that it does not

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<sup>4</sup> Most customs modernization projects funded by the IDB include improvements in risk management systems for cargo, such as in PE-L1239, AR-L1282, Nicaragua NI-L1083, CR-L066, BH-L1016 and also in regional initiatives in Central America. This TC will focus on risk management for ecommerce.

<sup>5</sup> Korea Customs is currently working on pilot projects for this topic applying blockchain and ML/AI <https://mag.wcoomd.org/magazine/wco-news-88/korea-pilots-blockchain-technology-as-it-prepares-for-the-future/>

<sup>6</sup> Cross Border E-commerce Framework of Standards. [http://www.wcoomd.org/-/media/wco/public/global/pdf/topics/facilitation/activities-and-programmes/e-commerce/wco-framework-of-standards-on-crossborder-e-commerce\\_en.pdf?la=en](http://www.wcoomd.org/-/media/wco/public/global/pdf/topics/facilitation/activities-and-programmes/e-commerce/wco-framework-of-standards-on-crossborder-e-commerce_en.pdf?la=en)

incur illegal practices. Some examples of the diverse applications that can be supported are found in areas as commerce, to energy, logistics, education and health, among others. The Global Alliance is composed at this moment by the IDB, Everis, Alastria, Consensys, NTT Data, RSK, ioBuilders and LegalBlock, among other agencies that are allies and co-investors of the initiative.

### 3. Scope of Services

The objective of this consultancy is to develop the capabilities needed to design and build an application on the LACChain Ecosystem. The application will be a standardized but customizable solution that will allow the use of blockchain technology for the exchange of the data associated to ecommerce operations between the customs administrations and private operators. The solution to be proposed and developed should comply with the following criteria:

- ✓ All the data should be exchanged in a secure way and be available in real-time
- ✓ Have a secure, reliable, and traceable mechanism for the exchange of the data that allows maintaining all the shared records (a historical record) in an unaltered manner.
- ✓ Automate the data exchange through the digitalization of the records of the operations.
- ✓ Guarantee the data integrity and control the access to the data.
- ✓ Allow the permanent availability of the information loaded and exchanged.
- ✓ Promote the transparency in the exchange of the data and in the data presented to each of the customs administrations and firms.
- ✓ Reduce times and costs for trade operators
- ✓ Strengthen the security of supply chains by ensuring that the data is registered in real time so that the customs administrations can improve their risk management analysis.
- ✓ Have a visualization mechanism for transactions

This document describes the requirements of the application. The solution proposal should consider scalability as other countries could eventually use the solution, as one of the main characteristics.

## Requirements

### A. Blockchain Components

1. **Participants:** Participants are all the actors that will have a role in the solution. As far as the pilot is concerned the following table specifies the actors that have been identified, including their roles, permissions, and access to the blockchain.

Participants	Roles	Role description	Permissions on the Certificates	Access to the blockchain
<b>Country Customs User Administrator</b>	Country Administrator	Manage access for Customs User Administrator, Customs User Approver, Customs Guest and Company User	Read & Write	Yes

<b>Customs User Administrator</b>	Administrator	Manage the registry	Read & Write	Yes
<b>Customs User Approver</b>	Approver	Manage status of registry	Read & Write	Yes
<b>Customs Guest</b>	Guest	Access for informational purposes	Read	No
<b>Company User</b>	User	Read Only access to information	Read	No

- 2. Assets:** Assets are the digital representations of real items that need to be created in the blockchain and can be owned, issued, transferred and stored by the different users. For the specific case of this project the asset identified is a digital certificate containing the data associated that should include several fields (data sets), such as
- Full name of the company (up to 100 alphanumeric characters)
  - Identification Issuing Country (according existing international standards e.g. ISO-2 country code)
  - Role (incorporate a multiple selection catalog or combo, with the following figures: importer, exporter, importer/exporter, customs brokers, highway carrier, bonded warehouse, strategic bonded warehouse, port operator, airport operator, freight forwarders, rail carrier, courier, other carrier)
  - Tax identification Number (up to 35 alphanumeric characters)
  - Street and number of the company (up to 200 alphanumeric characters, not mandatory field)
  - Postal Code (up to 20 alphanumeric characters, not mandatory field)
  - City name (up to 20 alphanumeric characters, not mandatory field)
  - State name (up to 100 characters, not mandatory field)
  - Country name (up to 100 characters)
  - Business Type (incorporate a multiple selection combo according to the *International Standard Industrial Classification of All Economic Activities*<sup>7</sup>, that should be administered by each country. Not mandatory field)<sup>8</sup>
  - The system shall have an option to include additional addresses and incorporate a multiple selection combo, with the following list: "Main address", "additional address" (not mandatory field).
- All the assets must be subject to edition but recovering the previous information registered.
  - The system shall allow to visualize a small description of each field when passing over the mouse pointer to each label of the field.
  - The system shall allow to hide optional fields on demand.
  - The system shall have an option of sort through specific fields.
  - The system shall allow you to locate a record through predictive search.

<sup>7</sup> The International Standard Industrial Classification of All Economic Activities (ISIC) is a United Nations industry classification system, ISIC is the international reference classification of productive activities. Its main purpose is to provide a set of activity categories that can be utilized for the collection and reporting of statistics according to such activities.

**3. Transactions:** Transactions are defined as the operations through which participants create, exchange, and modify assets or register any information in the blockchain. It is important to include the validation process as part of the rules. The following are the transactions that should be included as part of the project.

- Validation mechanism must be provided in the creation and update of certificates.
- The system shall assure integrity offering concurrency control over the transactions.
- The system shall allow you to locate a record through predictive search.

## **B. User Interface Functionality**

This section should contain the requirements for the user interface (UI) specific to the scope of application

The requirements will be divided into the main profiles based on the roles defined

## **C. Solution Architecture**

The blockchain network chosen for the implementation of this pilot project is the LACChain test-net introduced in Section 2. As the network is already running, there will not be necessary to develop a new blockchain infrastructure. However, it is required to develop all the necessary components to guarantee that (i) all the functionalities listed in this TORs are accomplished using the LACChain network (ii) all the information exchanged between pairs of customs is kept private for the rest of the network, including the other customs, (iii) the customs understand and are capable of managing the components they own after the implementation ends and (iv) all the developments are open-source and easily adaptable to incorporate new customs, in order to make the solution scalable.

This document will not specify a very detailed architecture, as we want the offerors to have the freedom to submit different proposals. However, the proposed architecture should comply with the following considerations:

Application:

- a. Develop a generic application responding to the functionalities described in Section B of the Requirements.
- b. The application should be capable to include minimal customizations for the different customs at the interface level by configuration
- c. The development of the application should be independent of the hosting. Use of Dockers containers is recommended.
- d. The application must include the roles and permissions described in Section A.1 of the Requirements.
- e. The application should connect with the nodes via API.
- f. Web application and Mobile ready authentication mechanism should be provided at the application level and synchronized at the node level
- g. The application must be developed using standard programming languages. Open source and with no license requirements.
- h. All the code must be open source and easily deployable by new customs that want

to use it in the future.

- i. The security of the authentication at the app level is a fundamental requisite. The identities at the application level should be matched with identities created at the blockchain level, so the transactions are signed by the persons logged via application.
- j. The solution should include a monitoring tool for customs administrators. It is recommended the integration with an open source tool available:
  - 1. To monitor infrastructure components
  - 2. To monitor daily operation transactions
- k. Web application and mobile ready.

#### **Blockchain infrastructure:**

- a. The solution proposed must include, at least, one node for each custom that can generate the transactions listed in the Requirements. The custom will decide where to deploy the node and the vendor will assist them in doing so.
- b. The solution must include the development of all the necessary smart contracts in the LACChain network needed to enable the logic of participants, assets and transactions described in Section A of the requirements.
- c. The solution should propose a mechanism to identify users at a blockchain level, matching their identities with those at the application level, so they can sign the transactions with their public keys.

#### **API Development**

- a. It is required to develop an API to create and update transactions at the node level.
  - i. It is required to developed incoming and outgoing API to facilitate the integration with legacy systems.
- b. It is expected the use of standard frameworks as API REST and Open API.
- c. API Authentication is required. It is recommended the use of Auth 2.0 with JWT.

#### **D. Deliverables**

To make this project successful, the proposed solution needs to comply with the following requirements:

- 1. Expected Outcome and Deliverables
  - 1.1. Project plan
  - 1.2. Solution Design document – Including proposed architecture
  - 1.3. Prototype and validation plan
  - 1.4. Technical Design document
  - 1.5. Test plan
  - 1.6. Training Plan – in-site training should be provided (country to be confirmed)
  - 1.7. User Manual
  - 1.8. Admin Manual

- 1.9. Source Code (Application, Smart Contracts, APIs)
2. Project Schedule and Milestones
  - 2.1. Kick-off meeting
  - 2.2. Solution design proposal / Approval
    - 2.2.1. Front-end Mock-up (Prototype validation)
    - 2.2.2. Back-end Diagram (Architecture Approval)
  - 2.3. Solution Development
  - 2.4. Solution Testing
  - 2.5. Solution Deployment
  - 2.6. Solution Validation
  - 2.7. Presentation and S presentation meeting. Location to be determined.
3. Acceptance Criteria
  - 3.1. The solution implementation should start on
  - 3.2. Provide a corrective maintenance and support period of 6 months from the acceptance date
4. Payment Considerations

Include implementation, licenses and infrastructure costs as part of the proposal. The proposal should also include expenses for one travel.
5. Supervision

The project will be managed by a project team including by Sandra Corcuera from INT/TIN.