Panama Trade Logistics Integration Platform

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INTRODUCTION

Panama will become a trade logistics hub in the next few years, very likely well before the year 2030. The role of Information and Communications Technology (ICT) in the transformation of Panama from a maritime hub onto a logistics hub is explained herein.

The Panama 2030 National Logistics Strategy sets out to establish a world class logistics hub. With disruptive technologies driving the digital transformation of trade logistics, the Panama Trade Logistics Integration Platform is an essential piece of the strategy. It serves as a single point of access for all stakeholders involved in the trade logistics processes.

The digital platform offers a Web Portal for traders, shipping lines, airlines, railways, truckers, cargo agents, customs brokers, banking, insurance, and legal firms to conduct business with Panamanian government agencies. It integrates the transactional information systems of government agencies, to orchestrate the administrative processes related to the import, export and transit of goods, in order to streamline trade logistics operations, leading to performance levels comparable to the best in the world.

Efficient intermodal logistics is enabled through interoperability with the Panama Maritime Single Window (a joint service of the Panama Canal Authority and the Panama Maritime Authority), the Panama Civil Aviation Authority, the Panama airports company (Tocumen, S.A.), the national highways company (ENA), the Panama Customs Authority, the Ministry of Agriculture, the Ministry of Health, and other regulatory agencies.

The purpose of the digital platform is to expedite the handling of cargo by means of electronic data interchange for submission of trade documentation at the time of departure from the country of origin, to allow for risk analysis in advance of the arrival at the port of discharge. The adoption of these standards and technical specifications enables interoperability with customs authorities and other government agencies of all countries, and compliance with bilateral, regional, such as the Central America Economic Integration System (SIECA), and global trade agreements, such as the Trade Facilitation Agreement (TFA), established in December 2013, by the World Trade Organization (WTO) when members concluded negotiations. The TFA provisions to expedite the movement, release and clearance of goods, including goods in transit. In addition, it lays down measures for effective cooperation between the Customs authorities and other competent authorities in matters concerning the fulfilment of customs procedures and trade facilitation. Members of the WTO adopted on November 27, 2014 a Protocol of amendment to insert the new agreement in annex 1A of the WTO agreement. The Republic of Panama enacted Law No. 55, on September 2015, for the adoption of the TFA, which entered into force on February 22, 2017, when two thirds of the WTO members completed internal ratification process.

In line with the World Trade Organization´s guide for the implementation of the TFA, Panama has adopted the standards and technical specifications issued by the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) for message exchange, and the World Customs Organization WCO Data Model. The WCO Data Model has the following information:

• The context of information exchange: Business Process Models

• The content of information exchange: Data sets and Code lists

• The structures of information exchange: Information models

• The technical solutions for information exchange: UN/EDIFACT and XML message design.

1. RESEARCH QUESTIONS

In 2012, a research project was proposed to Universidad Technological de Panamá - Doctorate in Project Engineering Program. Two questions were to be resolved:

a. Is it feasible to set up and operate a digital platform that enables interoperability of all stakeholders involved in trade logistics operations in Panama?

    b. Which technological architecture would best fit the requirements of such a platform, to provide the services required by the stakeholders?

2. RESOURCES

Beginning 2015, the National Authority for Government Innovation (AIG) agreed to support the project. Further research of publications of the International Port Community Systems Association (IPCSA) http://ipcsa.international/ and the National Information Exchange Model of the USA https://www.niem.gov/ helped understand the options available to achieve desired interoperability.

The concept model was developed by the end of 2015, and validated through public query with private stakeholders of the Panama trade logistics community.
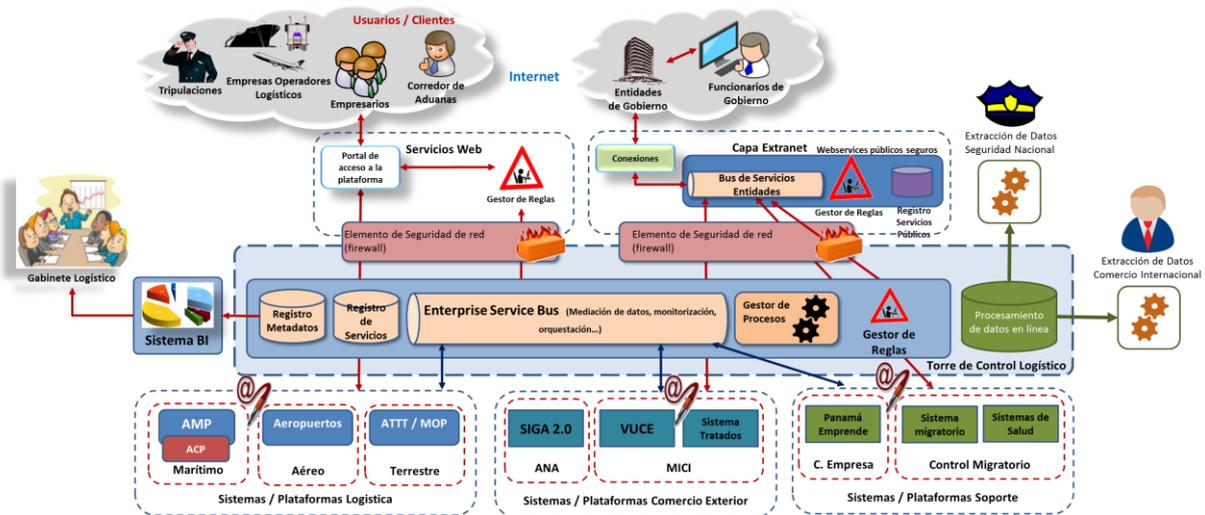

Figure 1: Concept Model of the Panama Trade Logistics Integration Platform

The project was included in the "Panama Online" Program PN-L1114 Loan Request to the Inter-American Development Bank (IADB), which was approved in May 2016, as IADB Loan 3683-OC/PN.

With assistance provided by the Embassy of the Netherlands in Panama, in November 2016, technical staff of the Panama Government Innovation Authority (AIG), the Panama Canal Authority (ACP), the Panama Maritime Authority (AMP), the Panama Customs Authority (ANA) and the Panama Logistics Cabinet (OCGL) visited PORTBASE https://www.portbase.com/ the Port Community System operator in the Netherlands, and Port of Antwerp Community System http://www.portofantwerp.com/apcs/en in Belgium.

Architectural design was further detailed and, based on the information collected, a decision was made to use the Integration Platform as a Service (iPaaS) model of contracting for the implementation and operation of the Panama Trade Logistics Integration Platform. This decision considered the limited availability of specialized IT staff required, as well as the mission criticality of such a technological solution.

Consultation with Gartner specialists, during several months, helped define the iPaaS model requirements in the Terms of Reference to be used for the Request for Bids. Gartner definition states that Integration Platform as a Service (iPaaS) is a suite of cloud services enabling development, execution and governance of integration flows connecting any combination of on premises and cloud-based processes, services, applications and data within individual or across multiple organizations. Following the IADB process named Quality and Cost Based Selection (QCBS), a short list of IT consulting firms that presented expressions of interest in bidding was determined, and Request for Bids was extended to the shortlisted firms.

The bidding process resulted in the contract being awarded to Swiss company Webb Fontaine Holdings, S.A. http://www.webbfontaine.com/ in September of 2017. The contract was confirmed by the Panama Office of the Comptroller General (CGR) in December 2017 and the project started a few days thereafter.

3.   SOLUTION DESIGN

Webb Fontaine´s iPaaS runs on Mulesoft ESB https://www.mulesoft.com/, ranked by Gartner as a leader in its Magic Quadrant for iPaaS https://www.gartner.com/it-glossary/information-platform-as-a-service-ipaas/, hosted in GOOGLE CLOUD PLATFORM (GCP) https://cloud.google.com/docs/?hl=es.

As required in the Terms of Reference, the solution has the following capabilities:

- Information Bus, consisting of an Enterprise Service Bus (ESB), with business rules engine and business process orchestration for job scheduling.
- Collaboration Portal in multiple languages (initially Spanish and English).
- Platform Management, capable of handling of data streams, data categories, solution bundling, pipelines, events, and application development with a built in Integration Development Environment (IDE), and testing tools.
- System Administration, capable of handling user and role based authentication, Web Services, file transmission utilities, credential providers, topology, instance clustering, messaging bus, data casting, document database, and search engine.
- Security Management for each layer of the platform, and applications running on it, with e-signature certificates provided by the National Directorate of Electronic Signature, a unit of the Public Registry of the Republic of Panama, which is based on standard X509 (https://www.firmaelectronica.gob.pa/).
- Interface Management, capable of handling application connectors, remote calls, database connections, user credentials, identity and access management certificates, XML documents and schemas, XSL transformations, templates, diverse data formats, file system connections, and endpoints.
- Data Management, that includes Master Data Management (MDM), systems single point of truth management, query management, Extraction Transformation and Loading (ETL), Data Warehousing, Online Analytics Processing (OLAP), and Business Intelligence (BI) scorecards and dashboards.

4.   IMPLEMENTATION METHODOLOGY

The digital platform implementation is carried out using the DevOps methodology, which focuses on operations, early in the development process, allowing developers to produce higher quality code. Therefore, the platform enables continuous integration and efficient deployment with capabilities that address the full API lifecycle.

5.   CONCLUSIONS

It must be concluded that it is feasible to set up and operate a digital platform that enables interoperability of all stakeholders involved in trade logistics operations in Panama; both in technological and operational terms. The technological architecture has been selected, and is being implemented, to provide the capabilities required to provide the services required by the stakeholders. The feat is to have public servants in the government agencies adopt the new ways of work, replacing the usual paper based processes with online automated processes. The organizational change management strategy is the key success factor. It is expected that the Panama Trade Logistics Integration Platform will be fully operational by the end of 2018; and stakeholders will perceive benefits in quantifiable terms by the end of 2019.

6.   REFERENCES

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