

TRANSPORT AND TRADE FACILITATION

Series No. 21



Roadmap for
Building a Trade
Single Window



**United
Nations**

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FOREWORD

In our increasingly interconnected world, trade flows are transcending borders and continents, becoming a driver for economic growth and prosperity, thus assisting in achieving the United Nations Sustainable Development Goals (SDGs). Yet, the complexities of international trade are often synonymous with red tape, cumbersome paperwork, redundant processes, and administrative bottlenecks that hinder the efficient movement of goods across borders. In response to these challenges, the electronic Single Window for trade, which is part of the commitments of the World Trade Organization's Trade Facilitation Agreement, provides the basis for simplifying global trade and transforming it into a more streamlined, transparent, and efficient process.

I am pleased to introduce this publication, which outlines the concept of an electronic Single Window for trade and step-by-step explains the processes of implementing a Single Window based on the ASYCUDA approach.

The ASYCUDA system, developed by UNCTAD, has been at the forefront of customs automation for decades. ASYCUDA is a pioneer in providing so-called TradeTech solutions for governments that connect to the trading community. Its evolution through various versions of the system to the latest version of ASYCUDAWorld is a testament to its adaptability and continued relevance in an increasingly digital world. This publication explores the synergy between ASYCUDA and the electronic Single Window for trade providing valuable insights into how this integration is reshaping the landscape of international trade.

Through a comprehensive examination of lessons learned and case studies this publication provides an understanding of how electronic Single Windows for trade solutions based on ASYCUDA can be planned, implemented and operated by governments to facilitate trade. The advantages are manifold: reduced administrative burdens, enhanced data accuracy, faster clearance processes for goods, increased transparency and good governance. This publication is intended to inspire and guide policymakers and other relevant stakeholders along the process of implementing an electronic Single Window for trade and to answer some of the frequently asked questions in this respect.

As you embark on reading this publication, I invite you to envision the benefits of implementing an electronic Single Window for trade in your countries based on the ASYCUDA approach, where trade barriers are replaced by seamless digital solutions, where governments and businesses work jointly to ensure the efficient flow of goods, and where global trade becomes more accessible to all.

I extend my heartfelt appreciation to the authors, researchers, and practitioners who have contributed their knowledge and expertise to this publication. Together, we explore the vast potential of electronic Single Window solutions based on the ASYCUDA approach and aim to inspire governments, businesses, and trade stakeholders worldwide to embrace these solutions as catalysts for economic growth, prosperity, and sustainable global trade.

Shamika N. Sirimanne

Director

Division on Technology and Logistics, UNCTAD

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Under the overall guidance of Shamika N. Sirimanne, Director of the Division on Technology and Logistics (DTL), UNCTAD, the Roadmap for Building a Trade Single Window was prepared by Tom Butterly, with substantive contributions from Renaud Massenet and Poul Hansen of DTL. The roadmap is largely based on examples and lessons learned from implementation of electronic Single Window for trade projects carried out by UNCTAD's ASYCUDA Programme. Valuable contributions and comments were provided by the ASYCUDA team; Marianne Dumont, Jaime Mendoza, Miguel Fernando Siles-Bustos, and Richard Warren; and Jan Hoffmann, Trade Logistics Branch of DTL. Overall layout and graphic design were undertaken by Pablo Cortizo.

LIST OF ACRONYMS

AEO	Authorized Economic Operators
ASYCUDA	UNCTAD Automated System for Customs Data
ASYSPS	ASYCUDA Sanitary and Phytosanitary Module
ASYSW	UNCTAD Automated System for Single Window
AW	ASYCUDAWorld
BeSWIFT	Barbados Electronic Single Window for Trade
BPA	Business Processes Analysis
BPR	Business Process Review
DCSA	Digital Container Shipping Association (DCSA)
eSW	Electronic Single Window
ISO	International Organization for Standardization
JSWIFT	Jamaica Electronic Single Window for International Trade
LPCO	Licences, Permits, Certificates, and Other Documents
NPT	National Project Team
NTFC	National Trade Facilitation Committee
PGA	Partner Government Agency
ReSW	Rwanda Electronic Single Window
SC	Steering Committee
SFTP	Secure File Transfer Protocol
SOP	Standard Operating Procedures
TFA	Trade Facilitation Agreement
TileSW	Timor-Leste Electronic Single Window
TMEA	TradeMark East Africa (predecessor to TradeMark Africa)
TWG	Technical Working Groups
UeSW	Uganda Electronic Single Window
UNECE	United Nations Economic Commission for Europe
UNNExT	UN Network of Experts on Trade Facilitation
UNTDDED	United Nations Trade Data Elements Directory
VeSW	Vanuatu Electronic Single Window
WCO	World Customs Organization
WCO DM	WCO Data Model
WTO	World Trade Organization

INTRODUCTION

The implementation of a national electronic Single Window¹ for international trade is considered one of the most effective measures to enhance trade facilitation in a country – a view recognised by its inclusion as an obligation under the WTO Trade Facilitation Agreement². A core element of any national electronic Single Window for international trade is an automated customs system³. Any country operating a standards-based automated custom system, such as ASYCUDA, enabling the submission of electronic customs declarations, is well placed to start the process of developing an electronic Single Window (eSW) for trade.

The purpose of this roadmap is to help countries that already use ASYCUDA software, or other standards-based automated custom systems, to design, build and implement a tailor made eSW system based on existing capacities. This approach helps countries to leverage their existing investment, and reduce both the time and cost of establishing an eSW.

Chapter 1 of the road map provides an overview and background on the evolution of the eSW concept, the key international recommendations underpinning it and the overall rationale for using one. Chapter 2 describes the core principles for successfully implementing an eSW, based on over 20 years of usage around the world. Chapter 3 details the experience of the ASYCUDA Programme in eSW implementation and provides details of both the technical and managerial approaches used. An overview of the first 11 single window implementations facilitated by the ASYCUDA Programme is provided in chapter 4, and concluding comments are provided in chapter 5.

In addition to the above, annex I – III details three ASYSW (UNCTAD Automated System for Single Window) implementations – specifically Jamaica, Rwanda and Timor-Leste. These case studies provide deeper insight into how each of the above countries approached eSW implementation by leveraging their existing ASYCUDA system. They detail how the ASYSW implementation principles and steps were undertaken; how the project was set up and managed; what technical approach was adopted in each case; and the key successes, challenges and lessons learned. It is hoped that these case stories will provide practical guidance to eSW project implementors in other countries.

Annex IV details how countries may approach ASYCUDA for technical assistance.

1 Single Window Definition https://unece.org/sites/default/files/2020-12/ECE-TRADE-352_Rev.1E_Rec33_2020Edition.pdf Page 3

2 WTO TFA Article 10.4 “Members shall endeavour to establish or maintain a single window, enabling traders to submit documentation and/or data requirements for importation, exportation, or transit of goods through a single entry point to the participating authorities or agencies.”

3 Automated Customs Systems: https://unctad.org/system/files/official-document/TN03_CustomsAutomationSystems.pdf

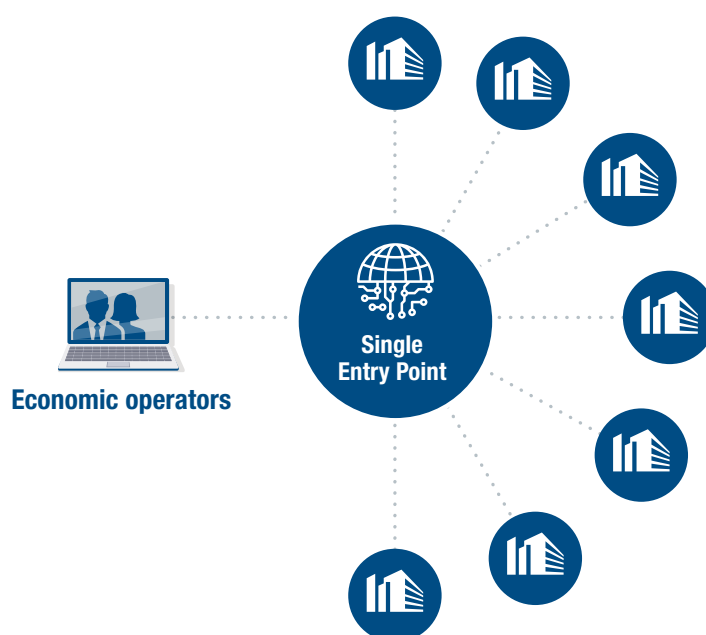
1. SINGLE WINDOW OVERVIEW AND BACKGROUND

1.1. What is an Electronic Single Window for Trade?

A Single Window for Trade is a facilitation instrument designed to substantially simplify, standardise, integrate, coordinate, and automate the exchange of regulatory information and documentation between traders and the multitude of Partner Government Agencies (PGAs) involved in controlling the movement of goods across international borders. It also facilitates the exchange and processing of such information between the agencies themselves, with the key objective of reducing both the time and cost.

The internationally accepted definition of an eSW is contained in UNECE Recommendation 33. This states that a Single Window is “a facility providing trade facilitation that allows parties involved in trade and transport to lodge standardized information and documents with a single-entry point to fulfil all import, export, and transit-related regulatory requirements. Individual data elements should only be submitted once electronically.” The recommendation continues that “the Single Window aims to expedite and simplify information flows between the private sector and the public sector and bring meaningful gains to all parties involved in cross-border trade.”⁴

Figure 1. Basic model of a Trade Single Window as defined in Recommendation 33



Source: UNECE Recommendation 33 – 2020 edition

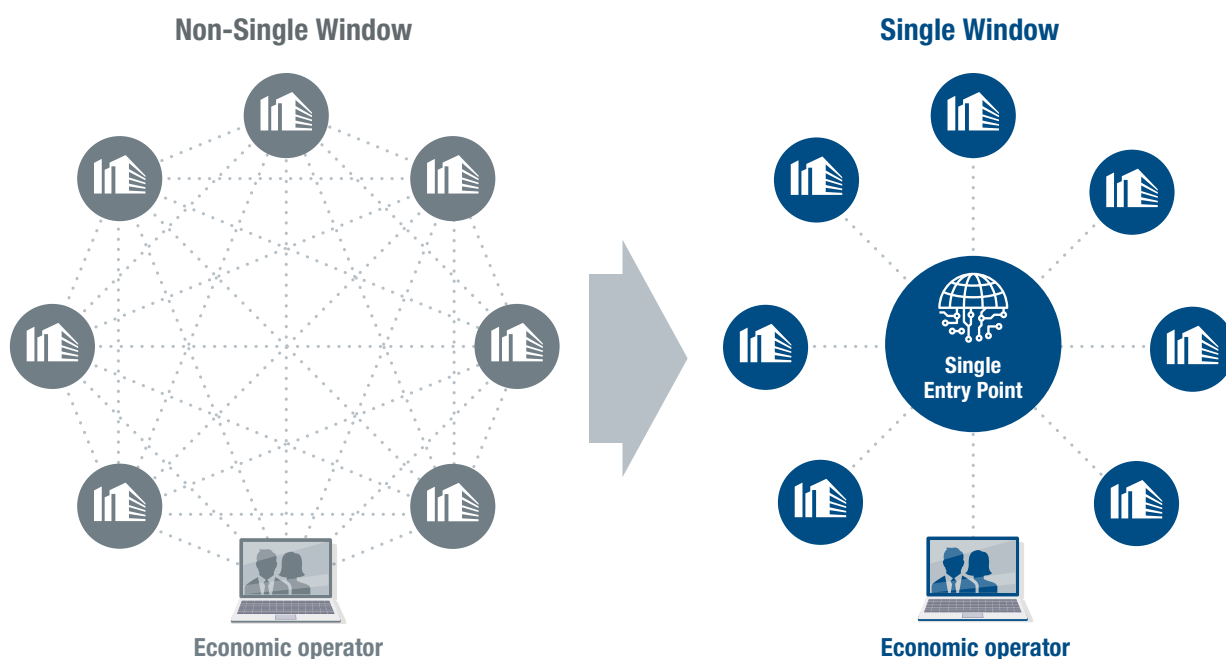
4 https://unece.org/sites/default/files/2020-12/ECE-TRADE-352_Rev.1E_Rec33_2020Edition.pdf

Several key elements of the above definition are worth noting:

- The Single Window is primarily focused on trade facilitation, i.e., making international trade easier
- The Single Window is a facility. It is not an IT system as such, although it is implemented through extensive IT services
- A Single Window focuses on the electronic exchange and processing of data and documents – the submission of paper documents should be discontinued
- Standardised information and documentation. The use of international standards for data is required
- Single entry point. To the greatest extent possible, all information/data should be submitted through a single central point
- Data elements should only be submitted once. Multiple agencies should not require the resubmission of information
- To fulfil all regulatory requirements. It ensures that regulations managed by different government departments are met

This new model can involve a major change in countries where the current regime is one of separate PGAs, mostly paper based and operating in isolation from one another, to the more integrated and automated scenario as depicted in the figure 2 below.

Figure 2. Non-Single Window vs Single Window



The WCO has also developed several publications and guidelines on Single Window implementation, such as the WCO Single Window Compendium⁵. While accepting the UNECE Recommendation 33

5 <https://www.wcoomd.org/-/media/wco/public/global/pdf/topics/facilitation/instruments-and-tools/tools/single-window/compendium/swcompendiumvol1all-parts.pdf>

as a foundational document, the WCO has emphasised the somewhat broader concept of the “Single Window Environment”⁶. This concept recognises that for developed economies, many cross-border PGAs have already established automated systems and process and the function of the Single Window is to integrate these existing services rather than establish a new Single Window facility. Within this concept, the WCO believes that “the Single Window can also be viewed as a network of cooperating facilities that are bound by trust and a set of agreed interface specifications, in which trade has seamless access to regulatory services delivered through electronic means.”⁷

Further, the WCO has articulated the concept of an intelligent Single Window, where the Single Window facility provides “shared services (that) include the computation of duties/taxes, fees and charges administered by agencies at the border, co-ordinated risk management, shared operational controls and orchestration of interagency business processes and workflows.”⁸

There is an abundance of general guidelines available to assist in Single Window implementation. For example, UNECE Recommendation 33 itself has a separate section, Part II, “Guidelines for Establishing a Single Window”. In addition, case studies detailing Single Window implementation from around the world are available on the UNECE website⁹. The WCO also has the aforementioned Single Window Compendium as well as a publication comprising Single Window examples¹⁰. In addition, a detailed technical guide to Single Window Implementation is available from the joint UN Network of Experts on Trade Facilitation (UNNExT) providing guidelines for managers and policymakers tasked with managing Single Window development projects.¹¹

This roadmap aims to bring together the key points from the above material and can be used by any country with an existing standards-based automated customs data system that wishes to leverage its capabilities to implement an electronic Single Window. It will be especially useful for countries that already have the UNCTAD Automated System for Customs Data (ASYCUDA) in place and seek to further accelerate custom clearance times and cost efficiencies through a sustainable Single Window solution. It is important to point out that countries with ASYCUDA customs management software, and indeed any standards based automated customs system, already have a good foundation and starting point for Single Window implementation. This roadmap will help such countries to build on that foundation.

6 WCO Definition: “Single Window Environment” (SWE) as a cross-border, intelligent, facility that allows parties involved in trade and transport to lodge standardized information, mainly electronic, with a single entry point to fulfil all import, export, and transit-related regulatory requirements – <https://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/national-single-window/single-window.aspx>

7 <https://www.wcoomd.org/-/media/wco/public/global/pdf/topics/facilitation/instruments-and-tools/tools/single-window/compendium/swcompendiumvol1all-parts.pdf> Page 19

8 World Customs Organization (WCO) Single Window Compendium Part 1 Page 20 <https://www.wcoomd.org/-/media/wco/public/global/pdf/topics/facilitation/instruments-and-tools/tools/single-window/compendium/swcompendiumvol1parti.pdf>

9 https://unece.org/fileadmin/DAM/cefact/single_Window/draft_160905.pdf

10 <https://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/national-single-window/single-window.aspx>

11 <https://www.unescap.org/resources/single-window-planning-and-implementation-guide>

1.2. Why Implement a Single Window for Trade?

The Single Window concept is widely recognised by the UN, WCO, and International Financial Institutions as a highly effective trade facilitation instrument. This is primarily due to the very significant benefits that have resulted from Single Window implementations worldwide. These benefits include:

For Trade

- Reduction in the time and cost of complying with cross border regulatory processes
- Simplification of regulatory procedures
- Reduction in (or elimination of) paperwork and the need to travel to the various PGAs
- Increased predictability and transparency
- Automation of regulatory processes in line with other business processes
- Electronic payment facilities
- Online, real-time monitoring of consignment status

For government

- Reduction in cost
- Enhanced efficiency of regulatory processes
- Elimination of duplicated processes between agencies
- Higher compliance levels with government regulations
- Enhanced traceability and statistics
- More accurate and often increased revenue yield for customs
- Improved government services (and the perception thereof)
- Greater economic competitiveness
- Increased transparency
- Improvement in world rankings for business competitiveness and efficiency (e.g., World Bank Trading Across Borders and Logistics Performance Index)
- Compliance with WTO TFA commitments

Some specific examples of positive impact are:

Rwanda: The Single Window, ReSW, saved Rwanda's economy \$15 – 20 million as of 2015; and achieved a reduction in average time-release from 264 hours (11 days) in 2012 to 34 hours (1.5 days) in 2014.

Jamaica: Trade Board Ltd (TBL) used to take about 3 days to approve an import permit. With the Single Window, JSWIFT, permits are now approved within 24hrs after applications are submitted and fees paid. The digitized processing of licenses, permits, certificates and other documents now plays a pivotal role in expediting the overall release of goods and helps curb storage and demurrage expenses.

Timor-Leste: As a result of the implementation of the Single Window, TileSW, the time required to obtain an import/export permit was reduced from 1 to 2 weeks to 1 or 2 days; and the amount of paper used for printed documents was reduced by around 80%.

It is also worth noting that Single Windows proved to be highly effective in mitigating the negative impact of the recent COVID-19 pandemic on the day-to-day operations of international trade. For countries with a Single Window in place, companies did not have to physically go to the various PGAs to submit documents, make payments or collect certificates, which was highly beneficial in a time of reduced mobility and restricted access to government offices. Given the potential for such health scenarios to emerge again, Single Windows can also be seen as a risk mitigating initiative to maintain international trade and economic functioning.

1.3. Single Window and the WTO Trade Facilitation Agreement

Implementing an eSW satisfies governments' commitments under Article 10.4 of the WTO TFA. This Article states that WTO members "shall endeavour" to establish or maintain a Single Window for international trade. Endeavour in this context means that member States are expected to ("shall") make best efforts to realise this particular objective.

Inclusion of the Single Window concept in the WTO agreement is positive from the perspective of government agencies as it provides the necessary policy environment to reinforce the political will and partnership needed to implement a Single Window. Further, as the Single Window concept is a category "C" article within the WTO TFA, developing and least developed countries can request financial and technical assistance from developed countries in implementing their Single Window. The full text of the relevant article in the WTO TFA is detailed in the box below.

Box 1. WTO Trade Facilitation Agreement, Article 10.4

- 10.4.1** Members shall endeavour to establish or maintain a Single Window, enabling traders to submit documentation and/or data requirements for importation, exportation or transit of goods through a single entry point to the participating authorities or agencies. After the examination by the participating authorities or agencies of the documentation and/or data, the results shall be notified to the applicants through the Single Window in a timely manner.
- 10.4.2** In cases where documentation and/or data requirements have already been received through the Single Window, the same documentation and/or data requirements shall not be requested by participating authorities or agencies except in urgent circumstances and other limited exceptions which are made public.
- 10.4.3** Members shall notify to the Committee the details of operation of the Single Window.
- 10.4.4** Members shall, to the extent possible and practical, use information technology to support the Single Window.

2. CORE PRINCIPLES FOR SUCCESSFUL SINGLE WINDOW IMPLEMENTATION

Considerable experience has been gained in many countries over the past 20 years regarding the best approach to implementing a Single Window, including key success factors and lessons learned. Much of this experience is recorded in publications on the topic from UNECE¹², UNESCAP¹³ and the WCO¹⁴, among others.

One outcome of this knowledge sharing is a set of core principles which are applied in most Single Window projects. For example, these principles are applied by the ASYCUDA Programme and form the foundation for the technical assistance provided by ASYCUDA in all Single Window implementations.

Each of these core principles is summarized below.

2.1. Project Planning

As with any major project, the starting point is careful analysis of the current situation, identification of the issues to be addressed, engagement of stakeholders, development of implementation options, and securing the necessary political will and resources to undertake the project.

There are many useful guides to project planning in the Single Window and trade facilitation context, including:

- UNECE UNESCAP Single Window Planning and Implementation Guide¹⁵
- WCO Single Window Compendium
- UNECE Guide to Drafting a National Trade Facilitation Roadmap¹⁶
- UNDP Handbook on Planning, Monitoring and Evaluating for Development Results¹⁷

The reader is referred to these and related publications for further guidance.

12 UNECE Case Studies on Implementing a Single Window https://unece.org/fileadmin/DAM/cefact/single_window/draft_160905.pdf

13 ESCAP Cross-Border Single Window Interoperability: A Managerial Guide <https://www.unescap.org/resources/cross-border-single-window-interoperability-managerial-guide>

14 WCO Single Window Compendium <https://www.wcoomd.org/-/media/wco/public/global/pdf/topics/facilitation/instruments-and-tools/tools/single-window/sw-compendium-supplement-edition.pdf?la=en>

15 https://unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-404_SingleWindow.pdf

16 <https://unece.org/DAM/trade/Publications/ECE-TRADE-420E.pdf>

17 <http://web.undp.org/evaluation/handbook/documents/english/pme-handbook.pdf>

2.2. Political Will

Implementing a Single Window is a complex process that usually involves major changes in the way information is submitted by traders to regulatory agencies, and how, in turn, this information is processed and exchanged between agencies. In some countries there are over 40 such agencies involved in various processes of trade, and in many cases, these agencies have to a large extent, operated in silos since their initial establishment.

The challenge, and potential benefit, of a Single Window is to find the best way to interconnect the processes and procedures of these agencies, particularly from a data submission and exchange perspective. As this process can challenge the existing order, it requires extensive consultations, and detailed and patient explanations on the part of the implementor, in order to assure the respective agencies that they will not lose control or status in the evolution to the new Single Window environment. A key task of the Single Window project team, therefore, is to demonstrate that the Single Window can actually strengthen and enhance both the service and status of all Partner Government Agencies (PGAs).

In order to kick-start this process, strong political will and support at the highest level is often required. Preferably, the project should be endorsed and driven by senior levels of government such as the office of the Prime Minister or President, in order to ensure the full commitment and engagement of all partner agencies.

The senior political level would not necessarily be involved in the day-to-day management of the project but rather provide high-level goal and timeframe setting, as well as overseeing the necessary review mechanism to ensure that deadlines are achieved. The senior political level office can also provide a mechanism or forum for the resolution of any issues that may emerge between agencies.

The engagement of a senior level of government creates a strong incentive for Ministers of PGAs to ensure that their organization delivers on their commitments within the project and to work collectively to ensure its success for the benefit of the country rather than the benefit of any individual agency or group.

2.3. Stakeholder Engagement

Engagement of all key stakeholders in a Single Window project is also a prerequisite for success. While customs play a central role in international trade data exchange, stakeholders include all key trade regulatory agencies; traders and business associations; and service providers such as banks, brokers, agents etc. It is essential that all key parties are engaged from the outset of the project rather than consulted after the project has begun implementation. This helps establish a foundation of ownership, trust and engagement in the frame of a common partnership between the trade community and government for the benefit of the country. In the ASYCUDA Programme's experience, this is key to ensuring project deliverables and sustainability.

The selection of key stakeholders will, of course, depend on the scope and phasing of the project, as discussed in chapter 2.7 below. It is usual to include stakeholder representatives in the single window project steering committee (see chapter 2.4) to ensure their ongoing engagement with and support for the project.

A non-exhaustive list of potential Single Window stakeholders is presented below.

Table 1. Public and Private Stakeholders

Government Stakeholders	Private Sector Stakeholders
• Customs authorities • Tax authorities • Licensing authorities (non-tariff regulation) • National statistics authorities • State authorities carrying out transport control • State authorities carrying out veterinary control • State authorities carrying out phytosanitary control • State authorities carrying out sanitary and quarantine control • Control (supervision) over compliance of technical regulations • Export, radiation, foreign exchange and other forms of state control • Governmental port authorities • Organizations authorized to issue permits, including chambers of commerce, certification bodies and testing laboratories (centres) performing the work in the field of assessment (confirmation) and compliance with technical regulations • Other PGAs	• Exporters, importers, exporting companies, central purchasing companies and their representative associations • Carriers, Non-Vessel Operating Common Carriers (NVOCC), ship agents, Global Service and Sales Agent (GSSA), express carriers, handling agents, stevedores, and their respective representative associations • Logistics companies, freight forwarders, forwarding agents and their representative associations • Customs brokers, customs carriers, owners of temporary storage warehouses, owners of customs warehouses, owners of free warehouses, owners of duty-free shops and their representative associations • Certification companies, Chambers of Commerce and Industry • Banks, second-tier banks (branches), non-banking credit and finance institutions, insurance companies, patent organizations (patent attorneys), postal operators and other organizations • Single Submission Portal operators

Source: UNECE (2020a)

2.4. Strong Leadership and Project Management

Successful Single Window implementations around the world highlight the need for a strong management structure and team. Such management structures usually include the following:

- **Lead Agency:** As with any project, clear and strong leadership is essential. This is particularly the case for Single Window implementations which require the engagement, cooperation and commitment of all key stakeholders including, of course, multiple partner government agencies. The question as to which government agency should take the lead role in the Single Window project usually emerges at an early stage of planning and can be a contentious issue.

UNECE Recommendation 33 does not specify who should take the lead agency role. However, the accompanying guidelines to the Recommendation suggest that customs may be an appropriate choice due to their pivotal role in goods clearance and border control. Customs also typically have more extensive experience in process automation and ICT than most PGAs. It is clear, however, that customs need not necessarily lead the entire project, and an alternate option could be to appoint a different government agency as the Single Window project management and operational lead while assigning the technical lead to customs.

Irrespective of which agency is appointed to take the lead, it is essential that they adopt an open and consultative approach, ensuring that the needs of all stakeholders are fully considered. It is preferable that the lead agency is formally appointed by the key political office overseeing the project.

- **Project Steering Committee:** At the very start, a project steering committee should be formed, comprising representatives from all key stakeholders. The committee should be involved in establishing the project scope, the selection of PGAs to be considered and the phasing of project implementation. The committee should report to the senior level of government, mentioned in chapter 2.2, and should meet at least quarterly and possibly more frequently in the early stages
- **Project Manager:** A senior official should be appointed on a full-time basis to run and manage the project. The project manager's role will be to implement the agreed project plan, keep all stakeholders informed and engaged, resolve implementation issues as they arise, and to report back to the steering committee on a regular basis
- **National Implementation Team:** The role of the national implementation team is to manage and execute the project. The team will comprise key experts from all agencies, associations and groups involved in the project. It is important that each team member's roles and responsibilities are clearly defined in the project implementation plan and that they are allocated sufficient time to undertake their responsibilities
- **Technical Team:** The technical team may comprise of either external technical consultants and advisors; local experts from the lead agency and other associated agencies; a combination of both. It is essential that the technical team have full competence and experience in areas such as business process analysis, data harmonization, international data standards, best practises in trade facilitation, and other relevant areas
- **End User Team:** As the project develops, it is useful to establish an end-user group whose role is to pilot test project modules and interfaces as they become available. This provides feedback at an earlier stage of development, avoiding potential problems at final roll-out

2.5. Relationship to the NTFC

In many countries, Single Window implementation is a core element of the national trade facilitation strategy. In such cases, it is essential that the National Trade Facilitation Committee (NTFC) is fully engaged with the Single Window project from the outset. It is, however, essential to have clarity

regarding the exact role of the Single Window steering committee and the NTFC in the Single Window project implementation, as any ambiguity pertaining to responsibilities can lead to significant delays and increased costs in project implementation. In many countries, the arrangement is for the Single Window project steering committee to keep the NTFC fully informed of the project implementation progress, and the NTFC in turn keeps the Single Window steering committee fully informed of any other projects being considered or undertaken by the NTFC that may impact the Single Window project itself. Some countries establish the Single Window Steering Committees as sub-committees to the NTFC. Essentially, all such projects, committees, and structures should work together in the national interest.

2.6. Communications

Regular stakeholder communication should form an integral part of the project implementation plan. Such communications may consist of newsletters, occasional briefing notes, news articles, radio and television spots, and periodic meetings with all stakeholders to update them on project progress and developments. It is recommended that a formal communication strategy be adopted, with an individual appointed to lead the communication strategy.

2.7. Phased Approach

There can be as many as 40 PGAs involved in the processing of goods crossing international borders. Clearly, automating and integrating all agencies into a Single Window at one time would be unmanageable and overwhelm the resources of any project or government. Thus, Single Window projects generally proceed in phases, starting with the most critical agencies from a trade facilitation perspective as a pilot, and then building incrementally from there.

For example, each phase of an ASYCUDA project typically proceeds in three steps, namely: developing an initial prototype; piloting the prototype; and roll-out of the prototype in selected offices.

The careful selection of agencies for the initial phase is especially important, as this is where the project builds confidence and experience in the whole process of Single Window implementation. To achieve this, it is recommended that no more than four or five agencies are selected for the initial phase, with additional agencies being brought on board as the project grows and experience gained.

The success and experience of the first phase of the project should be well communicated to all stakeholders, so that they understand the process and potential benefits, and can anticipate how it might unfold within their own agency in due course.

2.8. Change Management

Single Window implementation is, by nature, a disruptive process. The existing ways of managing regulatory requirements are often replaced by new and automated processes that are significantly

different and more efficient. The standard operating procedures (SOPs) for officers in the various border agencies may likely change, as well as the job descriptions and specific tasks assigned. This can be quite challenging for the officers and operators involved, both in the public and private sector. Unless properly managed, the anticipation of such changes can generate a lot of anxiety and eventual resistance to the project. Consequently, a proactive change management programme, along with appropriate support and training, is essential for any Single Window implementation.

A well-executed change management programme can provide clarity to officers and help assure them that their jobs are secure as appropriate training will be provided to enable them to undertake the newly defined tasks with confidence. In the longer term, employee job satisfaction will likely increase as their skill sets are enhanced and the effectiveness of their roles significantly improved. The change management strategy should be a core element of the implementation plan from the outset.

An excellent guide on implementing a change management strategy in the context of a Single Window is provided in the WCO Single Window Compendium volume one, part one, Section 5¹⁸.

2.9. Training

Training is a core element of every Single Window project and related change management strategy. A fully detailed training plan should be developed and adequately resourced at the earliest stages of the project. This training plan should be well communicated to all stakeholders, particularly to allay any fears that they may not have the necessary skills required to undertake their new roles. The preparation of practical user guides and handbooks is also especially useful.

For ASYCUDA Single Window projects, the first training activity involves the national project teams (NPT), and these in turn train all relevant stakeholders. ASYCUDA experts accompany and assist the NPT throughout the project implementation to provide the required specialized support, as needed.

As in other areas, a training manager should be appointed to oversee the training programme.

2.10. Business Process Analysis and Reengineering

Business processes in customs and partner government agencies tend to have evolved over time. Procedures usually start out as paper-based and reflect the facilities available at the time of their inception (i.e., before the Internet, eBanking, mobile phones, etc.). It is unlikely, therefore, that automating existing processes in their current format would be efficient. Rather, efficiency and effectiveness are best achieved with a thorough assessment and review of existing practices and processes, followed by a business process re-engineering to capitalize upon modern technologies; the latest international standards and best practice; and the trade facilitation principles of process simplification, standardization and harmonization. This exercise is generally undertaken using the

18 <https://www.wcoomd.org/-/media/wco/public/global/pdf/topics/facilitation/instruments-and-tools/tools/single-window/compendium/swcompendiumvol1all-parts.pdf>

international standard methodology of business processes analysis (BPA) and reengineering. The UN provides guidance in this area in the form of a BPA Guide¹⁹. A series of BPA case stories are also available from the UNESCAP website..²⁰ Single Window implementers are encouraged to build capacity in this area and to maximize the use of BPA techniques, as it is through this process where most of the benefits from Single Window implementation may be obtained.

2.11. Data Simplification and Standardization

The electronic exchange of data between various regulatory agencies involved in international trade, and between trade and government, must be standardized and harmonized so that it can be interpreted correctly. This is a technical process that is explained in UNECE Recommendation 34²¹, which provides comprehensive guidance on the process and techniques involved. A detailed description of the ASYCUDA technical approach to Single Window implementation is presented in chapter 3.

2.12. Legal Framework

The exchange of information and documentation between traders and government, and within government agencies related to the regulation of international trade, is usually determined under national law and international conventions. Consequently, any change to the existing process and procedures, as is normally the case in a Single Window implementation, requires a legal review and assessment of the impact of such changes.

Guidance on how to approach the legal aspects of Single Window implementation is contained in UNECE Recommendation 35²². It provides comprehensive guidance on how to establish a legal framework for an International Trade Single Window. It includes a checklist of the common legal issues encountered and draws upon the experience of various Single Window development efforts around the world.

Single Window implementers are encouraged to commence the legal review at the earliest possible stage in the Single Window project, as enacting any required legislative changes is often a time-consuming process.

2.13. Business Model and Sustainable Financing

As with any government service, a Single Window requires a long term sustainable financial strategy to cover operational and future development costs. The concept of sustainable financing is critically

19 <https://www.unescap.org/resources/business-process-analysis-guide-simplify-trade-procedures>

20 <https://unnex.unescap.org/content/business-process-analysis-simplify-trade-procedures-case-studies>

21 https://unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-400E_Rec34.pdf

22 https://unece.org/DAM/trade/Publications/ECE-TRADE-401E_Rec35.pdf

important to ensure the success of a Single Window in the longer term, as the ongoing operational and maintenance costs of the system cannot be avoided.

In some countries, and especially in more developed economies, the Single Window is seen as a necessary infrastructure component for a modern trade environment and the service is fully funded from general government finances. In other countries, the Single Window operates on a fee for service basis, and this is especially the case if the operation of the Single Window is contracted out to a private company.

A variety of Single Window business models are described in the Single Window case studies contained in UNECE²³ and UNESCAP²⁴ publications on Single Window implementation. These describe the main approaches to revenue collection for Single Window services, which are:

- **Transaction fees:** This is the most common revenue mechanism for self-financed Single Windows. A transaction fee is charged for each submission of data, such as a customs declaration or the submission of a particular PGA control document; or message sent, processed or received through the Single Window. The fee is charged to the client upon use of the service (e.g., when a document is submitted to the Single Window), via an electronic payment mechanism. Transaction fee approaches typically require the pre-registration of all users in the system. The fee per transaction is generally quite small, usually equivalent to a few US dollars. However, the number of transactions per year can be quite large so the total revenue generation may be significant
- **Registration fee:** Some Single Windows charge a one-off registration and setup fee. This is paid by the user prior to the first use of the system and may include setup support and basic training
- **Subscription fee:** Under this model, users pay an annual subscription fee which may cover a range of Single Window services over the period

A combination of the above approaches is also possible (i.e., some Single Windows charge a registration fee, an annual subscription, and a transaction fee).

When charging user fees, it is important to consider the potential deterrent effect (i.e. potential Single Window users being discouraged from using the service). Consequently, some Single Windows initially offer services for free and then introduce charges gradually thereafter (it is noted that in some countries, use of the Single Window is compulsory). Another important consideration is to ensure that all revenues generated through Single Window user fees go directly to the operation and further development of the Single Window, rather than into general government coffers (see 2.14 below). It is also important to adhere to the WTO rules to ensure that any fees for service do not exceed the cost-of-service provision (including future development costs). In other words, they may not generate surplus profit.

23 https://unece.org/fileadmin/DAM/cefact/single_window/draft_160905.pdf

24 <https://repository.unescap.org/bitstream/handle/20.500.12870/825/ESCAP-2018-PB-Single-window-trade-facilitation-regional-best-practices-future-development.pdf?sequence=1&isAllowed=y>

There is no right or wrong way to ensure sustainable financing for a Single Window operation and ongoing development. Each government must choose how best to support the facilitation of international trade while also ensuring that Single Window operations are properly maintained and developed over the longer term.

It is noted that most business-driven Single Windows, such as port community systems, are generally financed directly by the users, either on a subscription or transaction basis (or a combination of both).

2.14. Collection and Distribution of Agency Fees

Another important aspect of sustainable financial arrangements for a Single Window is the collection and payment of agency fees for services rendered. Prior to the implementation of a Single Window, many agencies may have independently collected fees for services directly from the users. When such agencies join the Single Window environment, the collection of such fees may be automated and may be collected at the point of entry within the Single Window.

Single Window automation mechanism can greatly facilitate the collection of such payments electronically and can easily accommodate the accounting and reimbursement of such fees to the relevant agency. However, such payment processes need to be transparently managed by the Single Window operator to ensure that each agency's fees are fully recorded and remunerated directly to the agency concerned, and there should be clear accounting and reporting on how this is managed.

When establishing the Single Window operating structures and procedures, therefore, a clear procedural, financial, and legal agreement should be established to safeguard such payments. Otherwise, the affected agencies may resist joining the Single Window. This issue needs to be addressed up front and openly discussed and communicated with all stakeholders at the start of the Single Window project to allay any fears and ensure confidence that the revenue streams of the affected agencies would be protected and secured.

2.15. Continuous Review

Single Windows generally evolve over many years, with the regular addition of new features and agencies over time. Continuous evaluation and assessment of the successes and challenges of the Single Window is essential. Such reviews should be communicated to all stakeholders and form the basis or planning for future phases or enhancements of the project. Exposure to experiences in other countries is also a very valuable tool in considering how best the Single Window may evolve in the future. Participation in international Single Window conferences organised by the UN, WCO, WTO, etc can be extremely useful in this regard. Implementing countries are encouraged to share their experiences in such events.

Box 2. What not to do when developing an eSW

Although there are many references in the above sections regarding issues to avoid or to be particularly diligent around in establishing a Single Window, some key points are worth emphasizing. These are:

- Don't try to do too much in the initial phase of the project – otherwise you may get bogged down in technical and procedural difficulties and lose support or political will in the process. Rather, start small and deliver on what you promise (“under promise and over deliver” is a useful rule to keep in the back of your mind at all times)
- Don't proceed with the project until you have secured the necessary political support. Otherwise you may get bogged down in endless levels of passive and or direct resistance to the project
- Don't automate existing paper-based processes. These are likely built around inefficient processes and automation will not produce much benefit. Rather, undertake a full business process analysis from the outset and build the new system and procedures around these
- Don't wait until the system is developed before consulting (all) the stakeholders. You may miss valuable advice and have to go back to redo the design, costing additional time and money
- Don't, in particular, forget about the business community! Traders are the end users of the Single Window and its ultimate purpose is to facilitate their trade process. Engage them from the outset in every aspect of planning and design
- Don't presume that everyone knows about the project, its goals and objectives. Clear, precise and frequent communication (including newsletters, press releases, etc) is essential, as without this, people's views on the project will likely be based on misinformation and rumour, and this can have a very negative impact
- Don't presume that everyone will be as keen and as excited about the project as the project team itself is. People generally fear change and uncertainty. Engage the stakeholders every step of the journey and make them co-creators and co-owners wherever possible
- Don't presume that the legal framework can be quickly aligned to the new Single Window environment. Legal changes can take considerable time and should be initiated as early as possible in the project
- Don't overestimate the technical skill level and technical infrastructure capacity of the partner government agencies that will be involved in the project. The phased design and implementation of the Single Window will critically depend on the speed at which the project can match these capacities to requirements. In some cases, the same is true for the business community

3. ASYCUDA PROGRAMME APPROACH TO SUPPORTING SINGLE WINDOW IMPLEMENTATION

The ASYCUDA Programme has over 40 years' experience in supporting administrations around the world with establishing customs management systems that boost international trade by automating declaration processing; risk management; scheduling of inspections; automated calculation of taxes and fees; electronic payment; and statistical reporting. ASYCUDA software is installed in over 100 countries²⁵ and has evolved over time to use the latest information technologies. UNCTAD's largest technical cooperation programme, ASYCUDA provides end-to-end technology transfer that includes tech adaptation and capacity building.

The ASYCUDA system utilises international codes and standards developed by the International Organization for Standardisation (ISO), World Customs Organization (WCO), World Trade Organization (WTO) and the United Nations. The software is developed by the ASYCUDA Programme and is provided free of charge to interested countries as part of technical assistance and training projects of UNCTAD.

In response to member States' demands, ASYCUDA extended the support it provides beyond the automation of customs clearance procedures to building eSWs and other stand-alone systems that bring together key trade actors from the public and private sector in a common technological framework for facilitating the cross-border clearance of goods. To date, ASYCUDA has assisted eleven countries in implementing the eSW concept, with several additional countries considering the Programme as a partner in such work. These systems integrate the processes between customs and other government bodies, allowing traders to electronically submit import and export paperwork through a single interface.

The technical approach used by the ASYCUDA Programme in implementing Single Window systems is described in section 3.1. This is followed by an overview of the Programme's project management approach. A summary of the 11 current ASYCUDA Single Window implementations is provided in chapter 4, with case studies for three of these provided in annexes I–III.

It is hoped that this detailed overview of the ASYCUDA approach to supporting countries in implementing the Single Window concept will provide the necessary guidance to countries that wish to leverage their existing ASYCUDA platforms within a Single Window. It is noted that the Programme's approach to Single Window implementation can work with any standards-based automated customs system, and ASYCUDA will consider requests for Single Window implementation assistance from any country.

25 <https://asycuda.org/en/user-countries/>

3.1. ASYCUDA Programme's Technical Approach

This chapter describes the ASYCUDA Programme's technical approach for the implementation of the eSW concept. It explains the ASYCUDA Single Entry Point methodology and describes how data is exchanged between PGAs and customs within the Single Window system. It shows how the data exchange is used to facilitate customs clearance based on approval of key control and supporting documents from PGAs and also provides an overview of the technical standards and tools used.

When called to assist with a Single Window concept implementation, ASYCUDA carries out a feasibility study to assess jointly with the requesting party the specific requirements in the country before developing a project proposal. This proposal reflects and mobilises the relevant and specific systems/tools mix that addresses the requirements of the country's trade community, and the services that will enable this mix to work seamlessly over time.

This approach results in a carefully crafted proposal, developed and finalised jointly with the requesting country, and built around their specific requirements and the prevailing international standards and best business practices.

3.1.1. Common Data Set (WCO DM) and Agreed Syntax

Within the ASYCUDA Programme's demand driven approach to Single Windows, each installation is tailored to the specific needs and requirements of the requesting country. This is made possible by the granular nature of the Programme's offer with its flagship customs automation system (ASYCUDAWorld), and the several specific ASYCUDA automation modules, which all share the same two critical elements – a common set of data and an agreed syntax. More specifically, all the tools developed by ASYCUDA rely on a common data set, which is the WCO data model, and an agreed set of rules represented by best business practices in trade and international standards that are established by other trade-related organizations, such as the ISO; UNECE UN/CEFACT; and the WTO and its TFA.

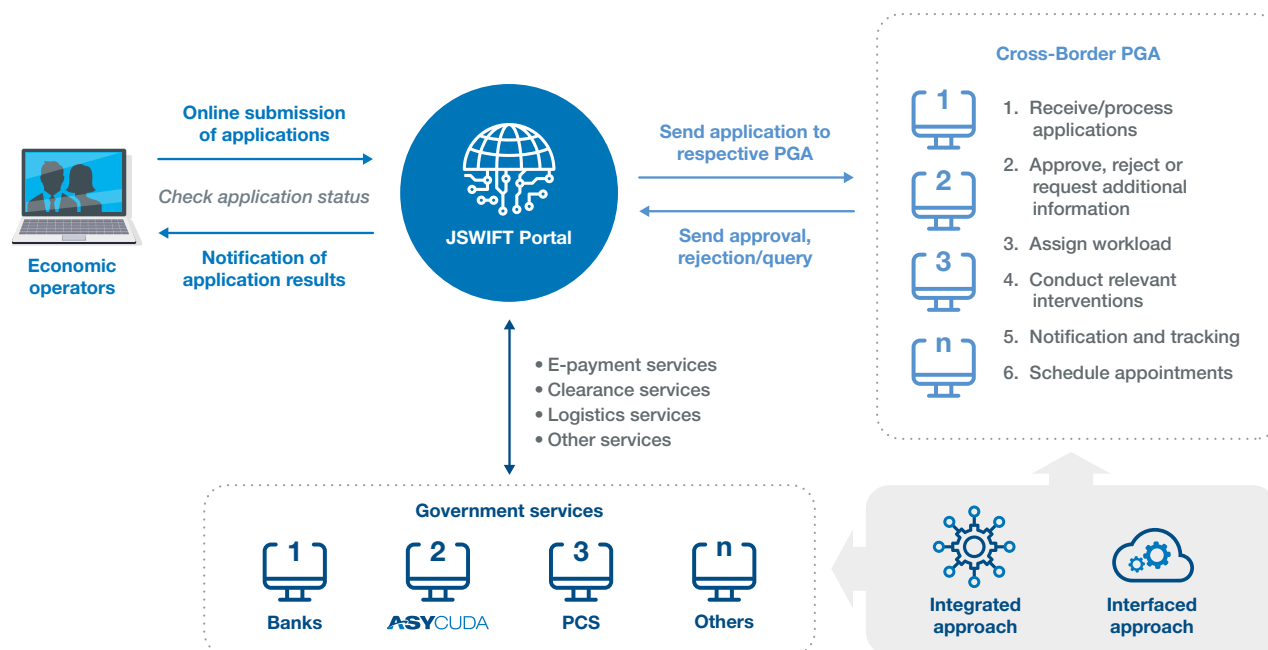
The WCO data model and other compliant data models, e.g. the Digital Container Shipping Association (DCSA) Data Model, are built-in to all software developed by the ASYCUDA Programme. Accepting this standards-based approach is a pre-condition for ASYCUDA assistance. This makes the data mapping and transformation process straightforward, even though it may be time consuming. In addition to the WCO Data Model, other technical standards that may be used are discussed and agreed on a case-by-case basis, but always follow established industry standards. Currently these may include web services, Secure File Transfer Protocol (SFTP), Common DB, etc.

3.1.2. Single Entry Point

The ASYCUDA Single Entry Point approach is integrated at the technology level to facilitate systems integration and inter-systems exchange, and interfaced at the business level to provide each PGA

with its own independent automated working environment. The integrated nature of the technology platform underlying all systems developed by the Programme facilitates the “submitted once, re-use as required” approach. This is fundamental to the Single Window concept. The ASYCUDA single sign-on, single transaction portal, and Single Window database are examples that can be deployed to minimise redundancy of data and transactions.

Figure 3. Jamaica Single Window (JSWIFT) single transaction portal approach



The JSWIFT portal offers traders a unified access point where they can seamlessly request licences, permits, certificates, and other documents (LPCOs for short) required for importing and exporting goods in Jamaica. This singular entry point remains consistent, regardless of the specific agency or agencies involved in the process. A single application form was introduced to apply for and process such documents. This application form, known as the LPCO, has a standardized data set allowing the collection of critical information through all digital services. The LPCO form in JSWIFT gives enough flexibility to include special data segments that certain services and/or commodities may require. See annex for more details.

3.1.3. Data Exchange and Processing Between Customs and PGAs

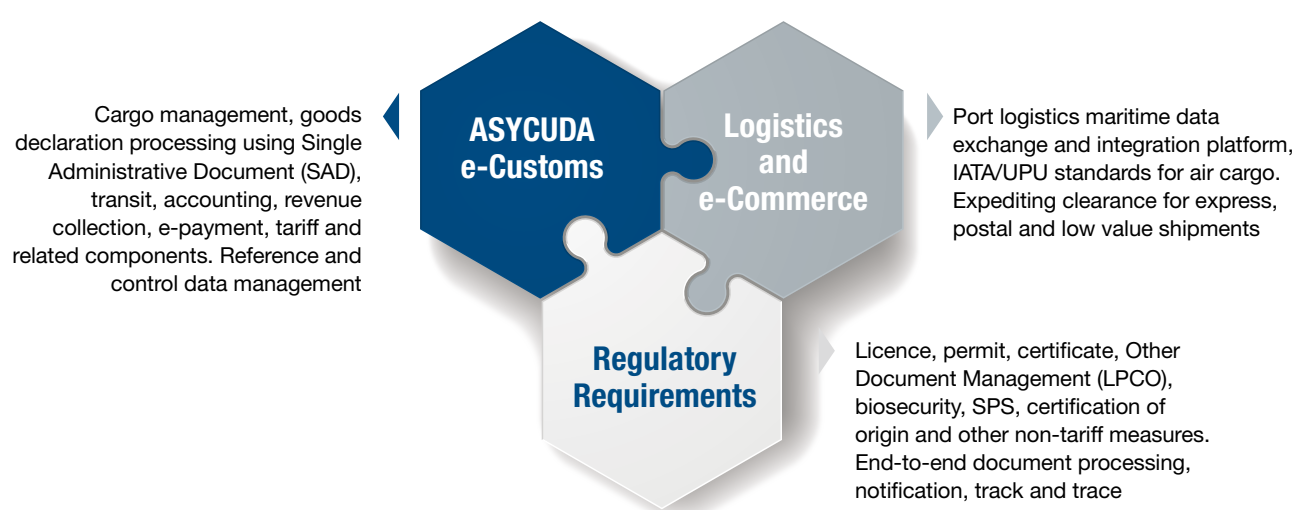
The common technology platform underlying all modules and systems developed and maintained by ASYCUDA provides for secure communication between different modules and systems. Data exchange with third party systems is implemented in consultation with government and relevant third-party systems providers. Communication between PGAs in any Single Window is done according to national requirements and in consideration of the most appropriate exchange mechanism for the country based on existing networks as well as local IT capacity and experience.

The processing, approval and notification regarding LCPOs is done either through dedicated functions embedded in ASYCUDA systems; or through specific modules developed at the request of member States and in partnership with the relevant subject matter organizations. For example, eCITES was developed in cooperation with the CITES Secretariat. Data validation and processing is done against reference tables compliant with international standards, such as WCO's data model and HS Tariff, and according to a set of configurable settings to reflect prevailing regional and national requirements.

3.1.4. Interfacing Partner Government Agencies with the National Single Window

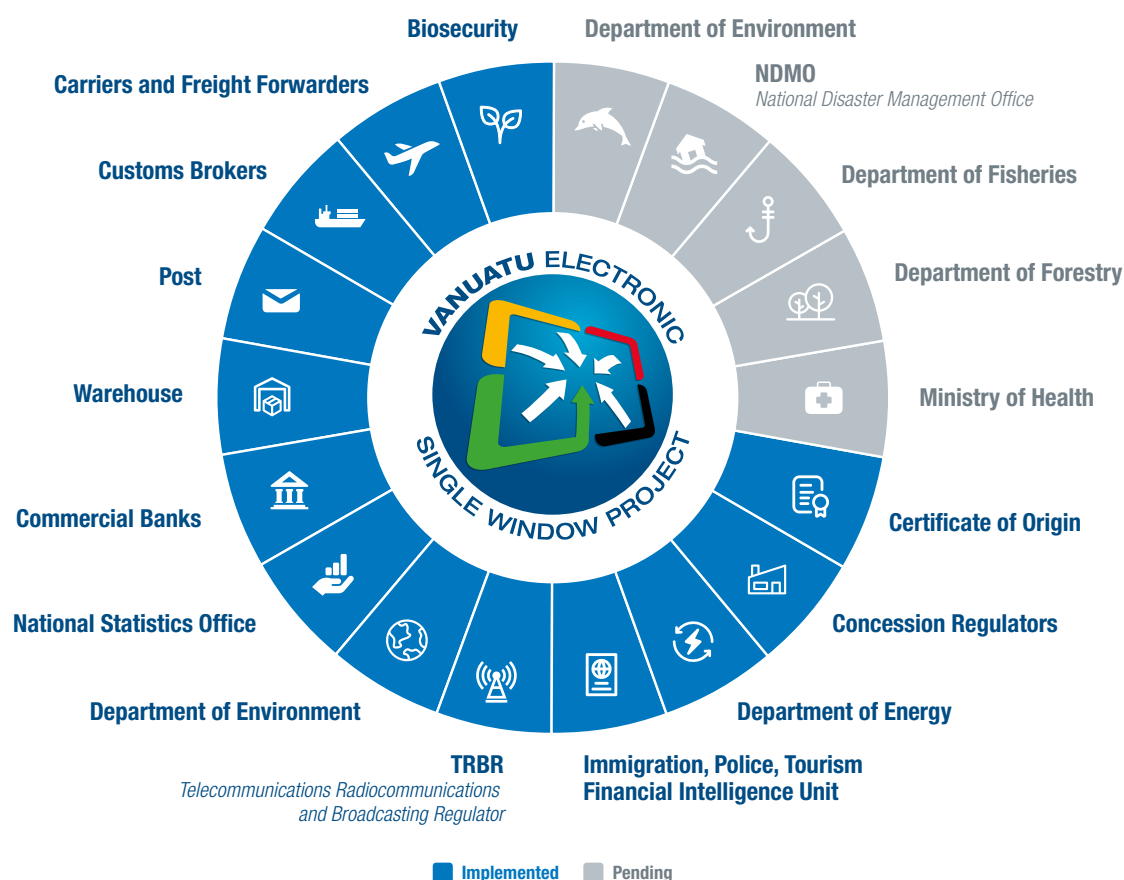
One of the primary objectives of a Single Window is to simplify, standardize and harmonize the exchange of trade related data between business and government. Another is to facilitate data exchange and interoperability among government agencies in the processing and issuance of trade related licenses, permits, certificates and customs declarations.

Figure 4. Data Exchange and Interoperability Among Government Agencies



In ASYSW implementations, interfacing the relevant Partner Government Agencies (PGAs) and logistics or eCommerce agencies with the system is always undertaken in a phased, step-by-step manner, driven by the needs and priorities established by the implementing country. Typically, a small number of PGAs (3 to 5) critical to the national economic and trade performance are selected for the first phase of the project, and this list of interfaced PGAs is expanded over time. The example of Vanuatu is illustrated below, where the agencies already connected are highlighted in blue, and the agencies awaiting integration highlighted in grey.

Figure 5. Vanuatu Customs and PGAs



The ASYCUDA Programme approach to interfacing the IT systems of the selected PGAs into the Single Window is primarily determined by the level of ICT sophistication and development of these agencies. There are three main approaches adopted by ASYCUDA to interface PGAs and logistics or eCommerce agencies. These are:

- **Building from scratch:** If the selected PGA does not already have an IT system to exchange and process the regulatory documents for which they are responsible, ASYCUDA can develop an appropriate system for the agency, based on international data standards, to facilitate data exchange with customs and the other PGAs. This requires the undertaking of a full business process analysis of the existing paper-based approach and a reengineering of these processes to capitalise upon the benefits of automation. This was the approach used for many of the PGAs interfaced into the Rwanda Single Window
- **Interfacing existing system:** If the selected PGA already has an adequately functional automated system to exchange and process the regulatory documents for which they are responsible, the Programme will build an interface between this system and the ASYSW implementation. The ease with which this may be done depends on the data definitions and syntax used in the existing system
- **Provide a Web Services Portal to the PGA:** In cases where the selected PGA does not have an existing automated system and where there are not sufficient resources to develop

one, the ASYCUDA can develop a Web Services Portal where the particular agency can exchange data with the Single Window, online, using a personal computer

Examples of all the above approaches are presented in the three case studies found in the annex, where the Programme can be seen to use the same standards driven approach, employing a common data set and syntax.

3.1.5. Security

Security is obviously a critical factor in all ASYCUDA projects. Consideration is thus given to physical security such as highly restricted server rooms and data centres, with limited and monitored access and remote disaster recovery capabilities. Options are also reviewed for virtual security such as the use of firewalls; in-built operating systems and database security; encryption mechanisms; the use of private and public keys; one-time passwords; username and password logins; digital signatures; multi-factor authentication, for example. Deployment of the above often depends on the prevailing security frameworks in each country.

3.1.6. Statistical Reporting

Statistics gathering, analysis and reporting within the Single Window are provided through several standard reporting templates, although most countries have specific, and at times legally binding, reporting frameworks. Where applicable these are accommodated as part of the technical assistance provided by the Programme and may require specific development.

3.1.7. ASYCUDA Modules Available for Single Window Concept Implementation

Given its demand-driven approach, the ASYCUDA Programme does not have a one-size-fits-all approach to implementation of the eSW concept. Rather, ASYCUDA has developed a collection of methods, principles and ICT systems discussed in this paper which are put together in such a way that they address member States' specific needs and requirements for their respective national implementations of the Single Window concept. The case studies in the annex illustrate how this tailored approach is implemented in practice. A short description of the main ASYSW modules currently available is provided below and the reader is referred to the ASYCUDA website²⁶ for more details. It is noted that this set of modules is under constant development and expansion based on the experience of the Programme in its various ASYSW concept implementations.

- **ASYSWS** – An automated application and processing system for animal and plant certificates, including electronic write-off of quantities and values allowed by certificates against corresponding import and/or export declarations. Used by PGAs issuing certificates, customs, etc

26 <https://asycuda.org/en/>

- **eCITES**²⁷ – This system was developed jointly with, and at the request of, UNEP's CITES Secretariat. It provides a fully integrated CITES permitting system for management authorities to meet the signatory parties' obligations under the CITES Convention. Used by CITES Secretariat, customs, management and scientific authorities of parties to the CITES Convention, etc
- **ASYREC**²⁸ – A system developed for the automated coordination of humanitarian response to disasters and facilitated movements of relief consignments. It facilitates the close collaboration and coordination between national disaster management offices (NDMOs) and other actors and systems responding to an emergency. Used by customs, Department of Health, NDMO, non-governmental organizations, the United Nations Office for the Coordination of Humanitarian Affairs, police, airport authorities, port authorities, etc
- **ASYPX** – The frontline passengers processing system was designed to assist customs administrations in discharging immigration functions that are often devolved to them at port/airport. Used by immigration, customs, etc
- **ASYPM** – A Performance Measurement system developed jointly with the WCO that enables the development and measurement of country-specific performance indicators, in addition to the 29 standard WCO performance indicators. Used by customs, certificates issuing authorities, etc
- **MOSES** – This system facilitates the management of the mineral value chain, from mineral extraction all the way to export of the final product. Used by Ministry of Agriculture, Ministry of Industry, customs, etc
- **ASYHUB**²⁹ – This platform was initially intended for the pre-departure and pre-arrival processing (PdP/PaP) of maritime consignments and is expected to become the universal system for exchange and processing of information between ASYCUDA-developed systems and other third-party systems. Used by customs, port authorities, shipping lines, freight forwarders, etc
- **ASYPCD** – This is an earlier version of ASYHUB Postal that was developed as a proof of concept in partnership with UPU (covering declarations CN22 and CN23). It is currently in place in three countries. Used by customs, national postal services, UPU, etc

3.2. ASYCUDA Project Management Approach

All ASYSW projects are implemented using a detailed project plan following extensive consultations and agreement with the implementing country. Putting this plan into action requires thorough planning, management, training and consultation with all key stakeholders. It also requires strong political support from the highest level of government. Based on over 40 years of experience in customs and PGA automation, the ASYCUDA Programme has distilled the following key steps for project implementation, and all ASYSW implementations follow these to a large degree.

27 <https://www.ecites.org/>

28 <https://www.asyrec.asycuda.org/>

29 <https://www.asyhub.org/>

Figure 6. ASYSW Implementation – Key Steps



4. ASYCUDA SUPPORTED SINGLE WINDOW IMPLEMENTATIONS

Recognising the potential of standards-based automated custom systems to act as a foundational element of eSWs, UNCTAD's ASYCUDA programme has assisted eleven countries with building their Single Window systems around ASYCUDA technology. These include Barbados, Burundi, Comoros, Jamaica, Kazakhstan, Rwanda, Timor-Leste, Turkmenistan, Uganda, Vanuatu, and Zimbabwe.

Each of these ASYSW implementations is tailored to the needs of the individual country under a specific UNCTAD project developed with the country, often supported by donor funds. ASYCUDA takes a capacity development approach to Single Window support to ensure national ownership and sustainability of the project after implementation. Further, every ASYSW project is implemented using a set of core principles, international standards and best practice.

It is recognised that there are multiple automated custom systems and Single Window implementation approaches available to governments. However, ASYCUDA has been a pioneer in the simplification of customs and trade related procedures in many developing countries and has significantly contributed to the facilitation of international trade. Further, ASYCUDA and UNCTAD are fundamentally focused on trade facilitation, and the core objective is to assist countries in trade development, economic growth and achieving sustainable development. This is the UNCTAD and ASYCUDA Programme's unique value-add, especially in relation to Single Window implementations.

It is also noted that countries wishing to build upon ASYCUDA systems as a foundational element in their Single Window can do so based on their own approach and resources – they do not necessarily require the support of UNCTAD or the ASYCUDA Programme in this process. However, the Programme has gained extensive experience in this area (as the case studies in this document demonstrate) and is ready to offer this experience and support to all countries that seek to build a Single Window strategy based on their existing ASYCUDA systems.

The experience of the eleven countries indicated above that are already implementing ASYCUDA-supported eSWs has been extremely positive, with significant simplification of regulatory procedures, reduction in clearance times, and major cost savings to both government and trade. The experience of these countries is summarised below and detailed descriptions of three ASYCUDA-supported Single Window implementations (Jamaica, Rwanda and Timor-Leste) are provided in Annex A.

4.1. Jamaica

The Jamaica Single Window for International Trade (JSWIFT) is a one-stop-shop electronic system built around ASYCUDAWorld that allows traders to submit information at a single-entry point to fulfil all import and export regulatory requirements. Development work commenced in 2017 and there are currently ten Partner Government Agencies connected to JSWIFT, including Trade Board Ltd

(TBL) which is responsible for issuing import/export licences and permits. Going forward, JSWIFT is expected to connect at least 20 PGAs, reducing clearance times and lowering associated costs by 20%.

Developed by the ASYCUDA Programme, the JSWIFT Portal offers traders a unified access point where they can seamlessly request licenses, permits, certificates, and other documents (LPCOs) required for importing and exporting goods in Jamaica. This singular entry point remains consistent, regardless of the specific agency or agencies involved in the process. A single application form was introduced to apply for and process such documents. This application form has a standardized data set allowing the collection of critical information throughout all digital services.

JSWIFT implementation has brought significant improvements by way of:

- Streamlined and standardized operating procedures, increasing transparency and accountability while promoting compliance
- Eliminated duplication of information and minimized redundancies and overlapping
- Predictable and consistent service delivery greatly reducing application processing times to an average of 28 hours and overall clearance times to an average of 32 hours, with considerable savings in associated costs

Development and implementation of JSWIFT was undertaken by ASYCUDA and is fully funded by the Government of Jamaica. A more comprehensive description of the JSWIFT is available in annex I.

4.2. Rwanda

The Government of Rwanda embarked on the implementation of the Rwanda electronic Single Window (ReSW) in 2012. The project was funded by TradeMark East Africa (TMEA) and ASYCUDA undertook the ReSW development. ReSW was a critical reform exercise to facilitate, simplify, and streamline procedures for the clearance of goods (import, export, and transit). The aim was to achieve efficient coordination of the different key players involved in international trade at all levels, through sharing of real-time information.

ReSW is built on ASYCUDAWorld. A phased approach to implementation was adopted, starting with four key regulatory agencies – Rwanda Revenue Authority (RRA), Rwanda Development Board (RDB), Rwanda Standards Board (RSB) and Ministry of Health (MOH). A major challenge was that the operations of most of the selected agencies were fully paper-based. Consequently, a hybrid approach was adopted whereby agencies using an existing IT system were interfaced to the ReSW, and agencies yet to be digitalized were provided with direct access to the ReSW using an integrated approach.

A single transaction portal was developed outside the ASYCUDAWorld system. The portal allows all parties to log in and submit their documents within the Single Window, with the information being disseminated to all respective users for processing.

An independent evaluation of the ReSW commissioned by TMEA in 2015 identified the following benefits:

- Reduction in average time-release from 264 hours (11 days) in 2012 to 34 hours (1.5 days)
- Reduction in export clearance times from 67 hours (3 days) to 34 hours (1.5 days)
- Reduction in inspection rate of cargo in customs from 42% to 15%
- Increase in the number of declarations subject to immediate release from 40% to 60%
- Significant improvement in Rwanda's rating on the World Bank's "Ease of Doing Business Index"
- As of 2015, ReSW had saved Rwanda's economy \$15 – 20 million
- ReSW contributed to an increase in customs revenue collection
- Before the Single Window, application and commission fees charged by clearing agent were \$55 per application to manually fill forms and follow up the approval of ministries. With the Single Window, these expensive services are no longer needed

A more comprehensive review of the ReSW is presented in annex II.

4.3. Timor-Leste

Implementation of the Timor-Leste Single Window (TileSW) project commenced in 2020. The project aims to support the Government of Timor-Leste with improving the:

- Clearance process effectiveness and efficiency
- Coordination between stakeholders involved into regulating and clearing cargo
- Collection of duties and taxes
- Risk of fraud
- Support provided to the trading community with faster clearance and reduced cost of doing business

A phased approach to TileSW implementation was adopted. Within 6 months of the project launch, 2 PGAs joined the Single Window system, namely the State Secretariat of Environment's National Directorate of Climate Change for the Management and Monitoring of Ozone Depleting Substance (ODS); and the new Tibar Port. Three more PGAs, namely Autoridade Nacional do Petróleo e Minerais (ANPM), Policia Nacional de Timor-Leste (PNTL), and Banco Central de Timor-Leste (BCTL) will also join the TileSW.

The project owner of TileSW is the Ministry of Finance (MoF), while the Customs Administration (CA) is the implementing agency. The MoF is designated to act as the project champion.

The system is now hosting functionalities like facilitation for investors of import tax exemptions; control and management of Ozone Depleting Substances; facilitated clearance of medicines and medical equipment; application and processing of import and export permits for animals, plants and their

products; exchange of data between Port Authority systems and customs systems; joint inspection between three government agencies; application submission and approval of certificate of origin; exporter registration and customs passenger declaration; and the exchange of data between Inland Revenue and customs systems.

There is extensive use of international data standards and integration approaches. A single entry point has not yet been established in TileSW. Traders and customs still log into ASYCUDAWorld to process customs clearance applications. Traders, PGAs (using new technology) login to TileSW for PGA-related tasks. However, the implementation of a single entry point is envisaged in the future.

Thus far, TileSW has:

- Reduced physical trips by investors between customs and TradeInvest by 90%
- Reduced paper usage by around 80%
- Minimized delays and costs, cutting demurrage costs and facilitating clearance as soon as goods arrive in Timor-Leste
- Saved time. The application and processing of import and export permits for animals and plants and their products has reduced from 1 to 2 weeks to 1 or 2 days to obtain a permit

A more comprehensive review of the Timor-Leste Single Window is available in annex III.

4.4. Barbados

In October 2021, the Government of Barbados and UNCTAD agreed a 30-month project to implement an eSW, aimed at further enhancing the Barbados business climate by leveraging cutting edge technologies to facilitate cross-border trade. The Ministry of Energy and Business was the designated lead implementation agency for the BeSWIFT project and ASYCUDA is the executing agency responsible for providing technical assistance and coordination.

BeSWIFT will provide simplified and harmonized digital services while promoting a paperless processing environment to satisfy cross-border trade regulatory requirements. The system will provide a single access point where the trading community will transact business with approximately 28 government agencies responsible for issuing licenses, permits, certificates and other documents (LPCOs), for regulated and controlled goods. The BeSWIFT will also provide a reliable platform that interfaces with existing systems such as ASYCUDAWorld and other government systems, to ensure seamless exchange of standardized data.

The project will engage both private and public sector partners during project execution activities that include:

- Development of an enabling legislative framework
- Business process reengineering and realignment towards improved efficiency

- Capacity building and implementation of the change management and communications strategy
- Development of a national and agency level risk management policy

4.5. Burundi

Requesting authorization to import medical products was a complex and manual procedure. Firstly, importers had to submit a paper request to the National Medicines Regulatory Authority (ABREMA), who would need approval, involving physical signatures, from the Ministry of Public Health. In total, this took between two weeks and one month to process.

In July 2021, the ASYCUDA Programme, at the request of the Revenue Authority, ABREMA and Ministry of Health, developed and deployed a module within the ASYCUDA-based Single Window that digitalizes the procedure for approving the import of medicines. Between July 2021 and May 2022, the module facilitated the:

- Contact between traders and ABREMA personnel, reducing trade costs
- Processing of 71% of requests in less than 24 hours
- Generation of trade data on the import of medicines, available 24/7 in real-time
- 39% customs revenue increase in 2019-2021 despite COVID-19 (from 204 to 283 million USD)

Implementation of the module eliminated the time spent by traders going back and forth to the PGA, and simplified the process for both declarants and customs officers.

4.6. Comoros

The ASYCUDA-based eSW project in Comoros started in 2018 and was financed by COMESA. As of 2020, it allowed the automation of procedures and the digitization of four PGAs, namely: INRAPE (Agriculture), ANAMEV (Medicines), Direction des Mines (Vehicles), and ANPI (Investments).

Results so far include: INRAPE Director General expresses his appreciation to Comoros Customs and UNCTAD for the automation of its authorization procedure in the Single Window that allowed the control of 70% of foods items imported in 2020, compared to 30% in 2019.

- The National Research Institute on Agriculture, Fisheries and Environment (INRAPE) delivers, manages and controls import/export authorizations of animals, plants and agricultural products. 1,053 requests were authorized and 728 written-off from March to October 2020.
- The Directorate of Mining grants and manages registration certificates. 604 registrations were processed from April to October 2020

4.7. Kazakhstan

Since March 1, 2017, an e-government payment gateway connecting 27 banks has been operational in Kazakhstan. This resulted in 90% of customs payments being received in 15 minutes (previously this procedure was up to 2-3 days). Then in 2018, Kazakhstan launched the “ASTANA-1 e-declaration system”, based on ASYCUDAWorld.

The Kazakhstan and ASYCUDA collaboration grew again in 2019 when the country’s eSW went live. It currently serves 3,778 registered users, eliminating the need for repeated submission of supporting documents and information and has integrated 14 third-party system with an additional three under development.

4.8. Turkmenistan

Turkmenistan’s State Customs Service (SCS) and the ASYCUDA Programme have been working on a technical cooperation project to improve the operational capacity of customs; facilitate trade; and strengthen the country’s capacity for transit and ensure economic growth, through the roll-out of ASYCUDAWorld and the implementation of an eSW. The objective of the project was to modernize customs procedures; facilitate the electronic declaration of goods; introduce a fully integrated customs tariff; improve monitoring and control of transit operations; implement a modern risk management system in accordance with international standards and best practices; and integrate PGAs involved in the trade processes through an eSW framework.

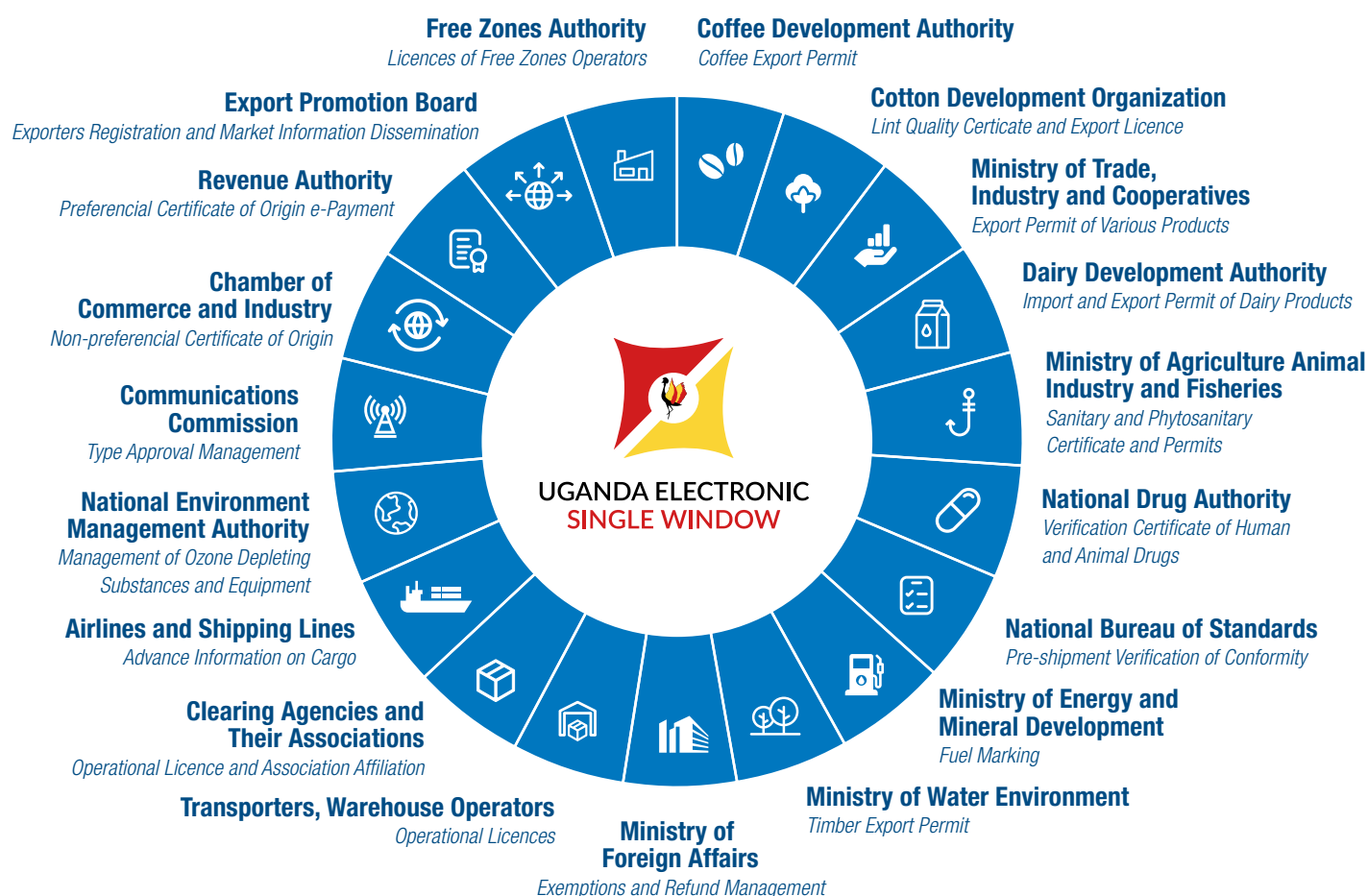
In January 2021, work started on implementing an ASYSW system in Turkmenistan. The first project task involved the establishment of an inter-agency commission comprising the relevant ministries and institutions related to the eSW. In conjunction with ASYCUDA, the commission conducted a preliminary analysis of the legislation, procedures, documents and inter-agency business-processes covering export and import. An awareness raising session of the project and its activities was also held for the SCS and PGAs.

The project launched at the end of 2023, with 22 PGAs integrated into the ASYSW, including the State Plant Quarantine Service, Veterinary Service, State Service of Seed Production and Variety Testing, Environmental Protection Service, State Sanitary and Epidemiological Service, Centre for Registration of Medicinal Products and State Quality Control, Ministry of Finance and Economy of Turkmenistan, State Customs Service, Chamber of Commerce and Industry, and Central Bank, among others.

4.9. Uganda

22 PGAs are connected to the Uganda electronic Single Window (UeSW) and customs are implementing 33 ASYCUDA-based Single Window modules. 23 of these modules are in operation, 8 modules are under User Acceptance Testing and 2 are still at the system development phase. More than 500,000 permits have been processed through UeSW System since its launch in 2016.

Figure 7. UeSW single transactions portal



In 2022, an independent evaluation of UeSW was undertaken and identified the following benefits:

- Reduced cost of doing business due to faster clearing times and paperless transactions. Equated to a cost saving of \$26.4 million by traders in 2021
- Average trade clearance time of selected government ministries, departments and agencies reduced from 9 days in 2014 to 2 days in 2022, that is a 79% reduction
- Average trade document transaction related cost reduced from \$68 to \$37 in 2022, that is a 45% reduction

4.10. Vanuatu

The Vanuatu electronic Single Window (VeSW) project automates and integrates the processes of PGAs within an ASYCUDA-based Single Window environment. A particular success of the VeSW National Project Team's collaboration with ASYCUDA was the development and implementation of a bespoke ASYCUDA Sanitary and Phytosanitary Module (ASYSPS) to automate the processes of applying, approving and paying for SPS certificates. A risk management mechanism between

customs and the government department for biosecurity was also integrated using ASYCUDAWorld selectivity. The ASYSPS module went live in Port Vila in March 2020 and in Santo in May 2020. The following results have been achieved:

- Average application processing time went from days to as little as 10 minutes
- 65% reduction in paper for customs clearance
- Reduced from 7 to 1 document(s) for SPS processing, equating to a 99% reduction in paper usage when combined with risk management
- Elimination of the need for physical trips to customs and Biosecurity offices
- Customs and Biosecurity are cooperating in undertaking joint interventions in the Single Window environment

There are currently 5 PGAs connected to the VeSW, including the Biosecurity; Energy Ministry; Environment Ministry; Industry Ministry and Immigration; Telecommunications Radiocommunications and Broadcasting Regulator. A pharmaceutical module to facilitate the import of medicines and drugs, as administered by the Department of Health, will be developed and added under Phase III of the project.

4.11. Zimbabwe

In June 2022, the Zimbabwe Revenue Authority (ZIMRA) launched an eSW project using ASYCUDA technology. The first modules of the Zimbabwe Single Window deals with the inspection of certificates of origin, vaccination certificates, imported foodstuffs and chemicals in cooperation with Port Health, a department within the Ministry of Health.

During the project launch in June 2022, ZIMRA Acting Commissioner General, Ms. Regina Chinamasa, said “With the launch of the Zimbabwe electronic Single Window, we are hoping that as users put their documents online and we process them, there is minimum human intervention in terms of face-to-face interactions. We are looking at this from a perspective that it will enhance our process efficiencies, once you have process efficiencies, you then notice that corruption tends to go down”.

Table 2. ASYCUDA Single Window Countries Status Table – as of September 2023

Country	Single Window Name	Status	Number of PGAs connected	Lead Agency	Website
Barbados	Barbados electronic Single Window for Trade (BeSWIFT)	Pilot Phase October 2023	28 PGAs	Ministry of Energy and Business	https://beswift.asycuda.org
Burundi	No specific name	Launched in October 2022	3 PGAs	Customs (OBR)	No Website
Comoros	No specific name	Launched from 2020 to June 2021	4 PGAs	Customs	No Website

Roadmap for Building a Trade Single Window

Country	Single Window Name	Status	Number of PGAs connected	Lead Agency	Website
Jamaica	Jamaica Single Window for Trade (JSWIFT)	Launched June 2020 & under further enhancement	10 PGAs / 60+ e-services	Jamaica Customs Agency	https://www.jswift.gov.jm/
Kazakhstan	Single Window of Kazakhstan	10 PGAs / 60+ e-services	12 PGAs	State Revenue Committee of the Ministry of Finance	www.eokno.gov.kz
Rwanda	Rwanda electronic Single Window (ReSW)	ReSW launched in 2012 – undergoing continuous development	28	Rwanda Revenue Authority	https://www.sw.gov.rw/
Timor-Leste	Timor-Leste electronic Single Window (TileSW)	Launched February 2021 & under further enhancement	13 implemented, 2 in process	The Project Steering Committee is Chaired by the Ministry of Finance, while the Customs Administration is the Technical lead	https://customs.gov.tl/doing-business/national-single-windows/
Turkmenistan	Single Window for Export-Import Operation	Deployment phase	22 PGAs	Customs	No Website
Uganda	Uganda electronic Single Window (UeSW)	UeSW Launched in 2016 & under further enhancement	22	Ministry of Trade, Industry and Cooperatives	https://singlewindow.go.ug/
Vanuatu	Vanuatu electronic Single Window System	Launched in 2020. 6 modules launched under Phase 2 as of January 2023	13 implemented, 5 in process	Vanuatu Aid-for-Trade Management Unit (VAMU)	https://singlewindow.gov.vu/
Zimbabwe	Zimbabwe Electronic Single Window System (ZESW)	First module with Port Health Agency to be launched end of September 2023	0	Zimbabwe Revenue Authority (ZIMRA)	https://esw.gov.zw

5. CONCLUSION

It is hoped that the principles, references, descriptions and examples presented in this roadmap will assist countries currently using a standards-based automated customs system with progressing towards implementing an eSW for Trade. It is particularly hoped that the guide will be helpful to countries that have already implemented ASYCUDA software and want to leverage this investment by implementing an eSW. The ASYCUDA Programme stands ready to help all such countries in these endeavours. Electronic Trade Single Windows can offer enormous economic benefits for a country and all countries need to seriously consider embarking on such a project.

ANNEX I. JAMAICA SINGLE WINDOW FOR TRADE (JSWIFT) CASE STUDY

Initial Assessment and Planning

In 2016, following the establishment of the Jamaica Trade Facilitation Task Force Committee (TF2), a decision was made to create a trade facilitation roadmap and project plan to improve Jamaica's international trading environment. A joint mission between ITC, UNCTAD and the World Bank led to the development of an implementation plan focused on achieving sustainable growth in the Jamaican economy. The plan was designed to:

- Reduce the time and cost of cross-border operations through improved governance of PGAs
- Enhance transparency and efficiency of cross-border formalities
- Strengthen businesses' capacity for compliance with international trade procedure requirements
- Enable the country to be compliant with the obligations under the World Trade Organization (WTO) Trade Facilitation Agreement (TFA)

The implementation of ASYCUDAWorld in Jamaica (launched 2014) yielded remarkable improvements, particularly in reducing costs and clearance times, increasing revenue collection, and providing accurate and timely international trade statistics. These positive outcomes led to the TF2 exploring extending the use of ASYCUDA systems to other cross-border agencies through the implementation of a Single Window environment. It was recognised that by increasing the use of the system already in place to other PGAs, these departments would be able to streamline their respective trade authorization processes, further enhancing efficiency and international trade operations.

Project Objectives

The overall aims of the Jamaica Single Window for Trade (JSWIFT) were to enhance:

- Efficiency through streamlined processes and procedures, costs savings and better use of resources
- Transparency through the availability of accurate, reliable, and timely information on-line
- Competitiveness through improved conditions of doing business, capacity building and use of technology

Project Governance Structure

The Ministry of Industry, Investment & Commerce (MIIC) is primarily responsible to the Cabinet for the successful implementation of the Trade Facilitation Reform Programme (TFRP). The Ministry of Finance and the Public Services (MOFPS) is a key collaborator and provides support to the MIIC through joint reporting and submissions to the Cabinet.

The Government of Jamaica designated the Jamaica Customs Agency (JCA) as the lead agency for project implementation. The JCA hosted the project management office including the core team of ASYCUDA experts developing and implementing the Single Window. As the lead agency, the JCA was also given the mandate to operate the Single Window.

The project steering committee is co-chaired by the JCA and TF2. Composition of the steering committee was determined through consultation and agreement among MIIC, MOFPS, TF2 and JCA. Participating ministries, departments and agencies are represented in the steering committee, as well as relevant trade-related private sector associations such as customs brokers, shipping association, the Chamber of Commerce, etc. The steering committee was established to provide policy coordination and general guidance throughout the development and implementation of the electronic Single Window.

The project management office houses the Single Window project implementation team and ASYCUDA Programme experts. The national project manager has overall responsibility for the management and control of the project implementation team made up of both JCA's counterpart staff and local consultants.

The multi-disciplinary project management office is divided into groups:

- Business analyst team: responsible for business process review and preparing software requirements specifications
- ICT team: responsible for core ICT infrastructure, software development and quality assurance
- Training team: responsible for all knowledge transfer activities
- Support team: responsible for go-live and providing direct support to end-users

All of the above are supported by the managerial and administrative core group.

There are Technical Working Groups (TWG) established to collaborate with the project implementation team during the developmental and implementation stages. Such groups are comprised of the participating ministries, government agencies, and trade-related stakeholders associations. Subject matter experts from each entity are selected and appointed to participate in the deliberations and work of the TWG.

The ASYCUDA Programme was the JSWIFT software architect and engineer responsible for the software development of most JSWIFT components and applications. It provided guidance to the project implementation team in conducting the business process review and user-interface application development. It largely contributed with the introduction of trade facilitation measures and policy reform.

Political Will

The government developed its National Development Plan (NDP) entitled "Vision 2030: Jamaica", which sought to address several shortcomings regarding Jamaica's economic underperformance. The NDP pursues achieving a developed country status and the specific outcome of making Jamaica

an international shipping centre and logistics hub, which led to developing the TFRP. In keeping with the NDP's aims, Jamaica's TFRP included as one of its outputs the establishment of an eSW. The TFRP was approved by Cabinet as part of the Public Sector Transformation and Modernization Programme.

Stakeholder Engagement

Stakeholders were selected to participate in the Single Window project by using the following approach:

- Identify government agencies involved in trade and customs procedures for both import and export. Assess agencies importance in the trade process, ICT readiness to adopt digital technologies, and relevance of their regulatory requirements
- Eight cross-border agencies were subsequently selected to participate in phase one. 12 others were identified as potential candidates to be included in phase two of the project, totalling 20 agencies as potential Single Window users
- Target beneficiaries (private sector stakeholders from associations such as customs brokers, manufacturing sector, exporters, etc.) were invited from the onset to provide their inputs and support

The figure 8 illustrates the list of PGAs currently operating within the JSWIFT platform (blue), along with those awaiting integration (grey). The PGAs awaiting onboarding will progressively be brought into the system.

The array of digital services accessible via JSWIFT comprehensively address most regulatory prerequisites associated with the import and export of goods.

Figure 8. JSWIFT PGAs, current and pending



Communications

Terms of reference for a communication strategy and action plan were prepared by ASYCUDA. Procurement of services was secured by the lead agency, the JCA, and the Jamaica Information Service (JIS) was appointed to conduct and execute the JSWIFT communication's plan.

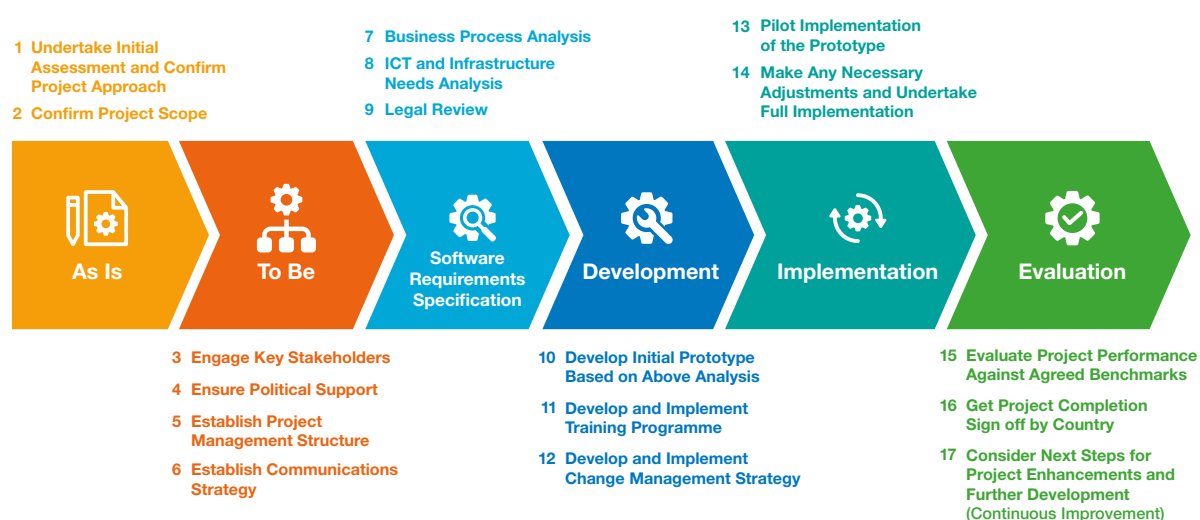
The JCA also called upon their Public Relations Department to support with communications related to the release of services through JSWIFT. A collaborative approach involving representatives of the participating PGAs was also used to promote updates to clients in the cross-border trade environment.

Business Process Analysis

A full Business Process Review (BPR) was conducted by ASYCUDA on the trade related process and information flows of each Partner Government Agency (PGA) that was part of the JSWIFT. Since most BRAs applied procedures that were partially documented, a detailed process mapping was necessary to summarize in the form of flow charts, diagrams and narrative depicting the existing situation. Information related to procedures; organizational aspects; human resources; fee structure; etc., were collected through interviews, brainstorming sessions and questionnaires. Additionally, the BPR team gathered information and documents via email, and also published information on

their websites. Following the gathering of information, business process mapping and eliciting of requirements, a gap analysis exercise was performed to compare the current procedures with recommended best practices. Business analysis reports were prepared by ASYCUDA highlighting the areas where change is required. The BPR team used the reports along with other baseline information to develop recommended process improvements, which were presented to the PGA owning the digital services to request sign-off. This was followed by the development of technical requirements specifications that are the main input for development work for building and customizing digital services. The following diagram provides a detailed end-to-end path of the most relevant activities the project needs to complete for deploying PGA's services.

Figure 9. Project Activities to Complete Prior to PGA Roll-Out



Legal Framework

A legal gap analysis of existing or potential barriers to data sharing and exchange; digital signatures; and data privacy, among others, was the first step in enabling a legally sound environment for JSWIFT. The trade-related legislative framework was assessed through a thorough review, which identified gaps and impediments that may have potentially impacted the digital services being deployed for legitimate use by clients. Additionally, a series of stakeholder engagement sessions were conducted in relation to the suite of model legislation and other legislative support documents that are subject to the ratification stages. The stakeholder sessions included a very engaged participation from the PGAs, private sector and JSWIFT Technical Working Group – Legislation (TWG-L) membership. The latter was created to assist in the review and updating of national laws relating to electronic processing of transactions and trade facilitation measures; and to assist in the drafting of a revised regulatory framework for Jamaica's international trade. This TWG-L is dependent on the Technical Committee for Legislative Review (TCLR) established by the government to support the implementation of trade reform measures.

Outcomes

The legislative framework review culminated in the constitution of enabling e-commerce and e-transactions legislation, in addition to provisions specific to the operations of JSWIFT. The draft Model Act and attendant framework documentation essentially catered to the various needs of the paperless trade environment in general and therefore included rules on data privacy and the use of electronic signatures. The legislative provisions of general application were based on best practices and internationally accepted standards and principles.

Specifically, the following documentation were successfully drafted and submitted to the appropriate authorities for necessary action:

- Legal gap analysis for the various PGAs
- Proposed clauses for the JSWIFT draft – Model Act
- Drafting Instructions for the proposed JSWIFT Model Act
- JSWIFT Model Act explanatory notes
- A cooperation agreement between the implementing agency and Single Window operator and a PGA on the implementation and operation of the JSWIFT
- JSWIFT draft terms and conditions of use

Main obstacles encountered

- Delays in the receipt of necessary feedback on draft documentation from key stakeholders
- A heavily regulated trading environment necessitated a carefully crafted and implemented framework of gap analysis and stakeholder consultations
- The slow pace of the legislative enactment process

Technical Development Approach and Implementation (Including Prototype, Pilot and Full Implementation)

JSWIFT is a highly tailored version of the overall ASYCUDA approach to implementation of the Single Window concept, which incorporates the use and reuse of data; data harmonization and standardization; and the use of the WCO Data Model and other international standards. The project adopted an agile software development methodology which aimed at incremental deliveries through an iterative development approach where requirements evolve through collaboration between cross functional teams (business analyst, developers, subject matter experts). The development work has been managed by ASYCUDA's software engineer which had overall responsibility for JSWIFT's technical architectural design, working in close collaboration with other ASYCUDA experts who participated in the development of key components. Although e-Gov Jamaica had previously developed computer applications for dealing with some import licenses and permits for 3 PGAs (Trade Board Ltd., Plant Quarantine, Veterinary Services), the functional features and technical capabilities offered were not at par with the expected JSWIFT's user-experience, process flow and

data requirements. Thus, those legacy applications were gradually discontinued as new JSWIFT services were deployed.

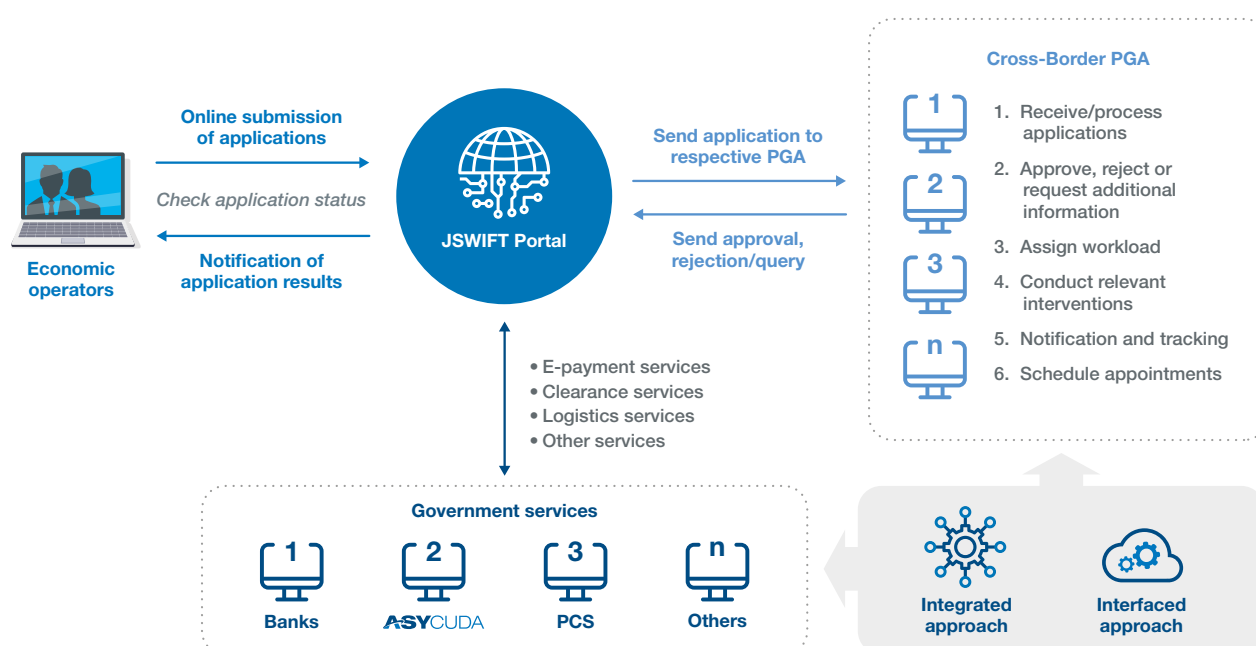
The major principles and concepts behind JSWIFT's design were: i) service orientation; ii) standardized forms; iii) streamlined processing; and iv) information hub. The first concept allows the project to concentrate on incrementally building and delivering services to satisfy the regulatory requirements of PGAs. Secondly, by employing standardized forms, JSWIFT can apply harmonized business rules across all services, share information among PGAs and construct a robust data dictionary whilst promoting the required uniformity and predictability in trader's interactions with the system.

Single Entry Point

JSWIFT offers traders a unified access point where they can seamlessly request licenses, permits, certificates, and other documents (LPCOs) required for importing and exporting goods in Jamaica. This singular entry point remains consistent, regardless of the specific agency or agencies involved in the process. A single application form was introduced to apply for and process such documents. This application form, known as the LPCO, has a standardized data set allowing the collection of critical information throughout all digital services. The LPCO form in JSWIFT gives enough flexibility to include special data segments when certain services and/or commodities may require.

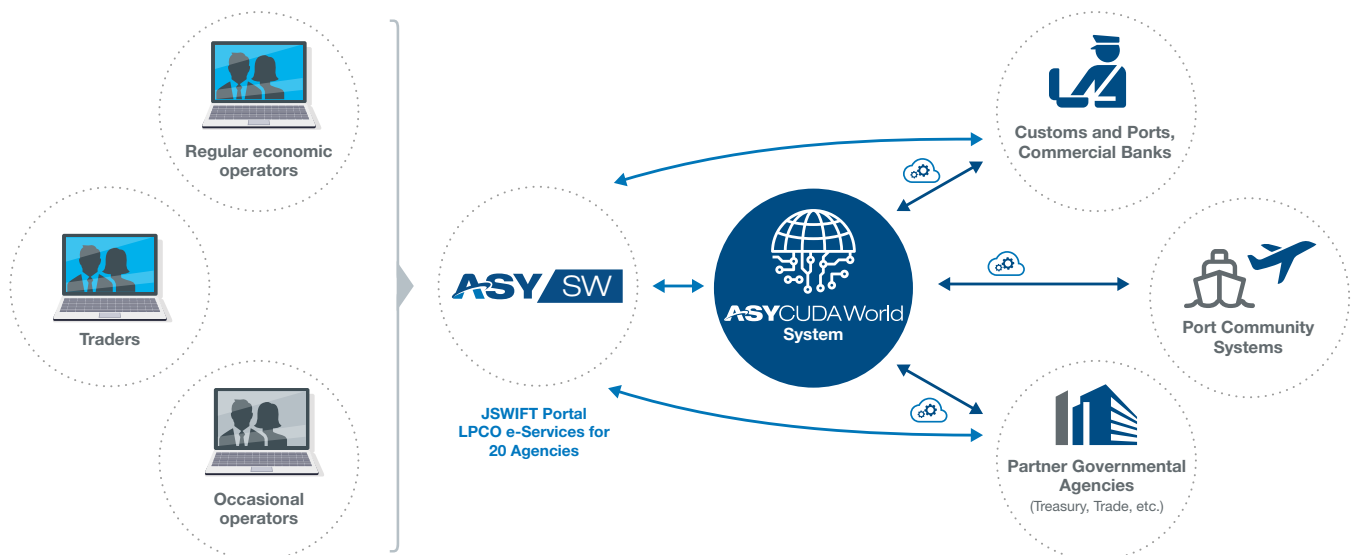
Despite the streamlining of processes resulting from the business reengineering, JSWIFT's digital services allow asynchronous processing. The services are independent even when an interoperability extends to other PGAs or uses existing services, giving greater flexibility to cope when regulatory mandate shifts from one agency to another. Through configuration and parameters setting, the system can identify the PGAs that should be involved in a particular service.

Figure 10. Single Transaction Portal Concept



When there is need for two or more PGAs to participate in the approval of an LPCO, this is accommodated either in a sequential, parallel or a hybrid processing manner. Sequential processing means one PGA granting approval after another. On the other hand, a parallel processing means that PGAs could do their processing at the same time without a predecessor's action. While the hybrid means there would be a combination of both sequential and parallel. Lastly, the final concept concentrates on creating a centralized and searchable repository to help quickly and easily find and configure the data elements needed, eliminating silos, and promoting analytics and metrics. This aspect continues to be enhanced as new services are deployed and feedback is received from the end-users.

Figure 11. JSWIFT Interconnections



Interoperability with external systems, as shown in the figure 11, was another critical area where the project devoted time in developing JSWIFT. Coming out of the business reengineering and experience with the implementation of ASYCUDAWorld, services for the electronic data exchange with Companies Office of Jamaica, Tax Administration, and e-Gov Jamaica were developed providing a secure interface mainly for data verification purposes. Also, the integration between JSWIFT and ASYCUDAWorld brought together all pieces for an end-to-end view of trade transactions. The interface allows traders to easily create a customs declaration using the data from an LPCO. Since it has a two-way data interchange mechanism, JSWIFT provides the information details related to the LPCO and receives real-time updates from ASYCUDAWorld when a customs declaration writes-off the LPCO. This allows JSWIFT to send notifications and update records to reflect the most recent information and status of transactions.

The implementation of JSWIFT started with the first PGA following a phased approach piloting the services to be deployed in the production environment with a select end-user group, which after verifying their stable performance services were open to all traders. In a gradual manner as more digital services were available, they have been deployed following a similar approach.

A help desk dedicated to JSWIFT was established to provide support to external users who experience issues or challenges with the system.

Training

As part of the implementation stage, the project team organised awareness and training sessions for the onboarding of digital services on JSWIFT's environment. The awareness sessions targeted the end-users of cross-border trade services. Members of the customs brokers, manufacturing and export sectors were engaged through their associations and also as participants of focus group sessions. Special training arrangements were made to ensure that PGA staff were updated throughout the development and implementation through varying levels of engagements based on their designated roles.

To complement the implementation of JSWIFT and build users' capacities, an e-Learning platform was developed to support the stakeholder community involved in cross-border trade. The platform serves to supplement face-to-face training along with facilitating the training audience with convenient access to learning content. The JSWIFT e-Learning courses are structured to provide flexible and versatile knowledge transfer that enables individual trainees and organizations alike, to modify how they access training to better fit with their specific circumstances. The e-Learning offerings that are coupled with instructor-led training, bring additional dimensions that serve to enhance the overall learning process.

Change Management

The JSWIFT Change Management Framework incorporated a collaborative stakeholder engagement towards the development and implementation of a practical change management strategy. The main goal of developing the strategy was to provide an appropriate framework that facilitates a continual renewal of the PGA's direction, structures, and capabilities within the Single Window environment. The strategy highlighted the key elements involved in the change such as people, culture, systems, technology, documentation, positions, roles, processes, and skills. A series of workshops and various other stakeholder activities were executed to develop the strategy and its associated communications plan.

The change management strategy assists the PGAs in being fully aware of the requirements for effectively managing change by strategically charting out a plan towards the attainment of more stable and successful mission and vision outcomes, through the JSWIFT.

Using a business impact plan, the strategy identified the needs of the key stakeholders in terms of change management considering the style of communication required. The stakeholders' likely responses to the change were analysed taking into consideration their main concerns and fears.

Prior to closing any stage in the implementation of the strategy, it was necessary for the change management team to execute a comprehensive evaluation of the its implementation to ensure an effective measurement of the real impact of the change on the PGA's ability to dispense an adequate quality of service and productivity to its various stakeholders and to generally assess the effectiveness of the change strategies which were implemented.

Review and Enhancement for Continuous Improvement

During the initial implementation stage, progress was reported on a weekly basis to ensure the team remained focused. Subsequently, similar meetings were held on a monthly basis.

Measuring Performance

JSWIFT provides reporting tools to analyse the handling times throughout the processing path of an LPCO application, from its initial submission to its approval being granted by the PGA. Furthermore, the system links the LPCO with the customs declaration which allows calculating the clearance times as it takes place in ASYCUDAWorld. At the onset of the project, baseline information from each PGA was collected with respect to their services. However, the limited level of detail and reliability prevented the project from running simple statistical analysis or comparisons with the current data metrics available in JSWIFT.

On a regular basis, the project presented indicators describing the PGAs and traders' performance with respect to the processing of LPCOs and clearance times.

Customer Satisfaction Surveys

The evaluation of the JSWIFT implementation involves garnering feedback from the end-users of the system. Client satisfaction surveys are conducted at various intervals and have either been tailored to target specific user groups or are general in nature. Dating back to the year 2020, client satisfaction surveys were administered to users from the agencies onboarded and this evaluation approach continues as services are added for specific PGAs. Over the period from 2020 through to 2022, five such PGAs shared user satisfaction surveys targeting feedback from the staff administering the services under JSWIFT. These PGAs were the Trade Board Limited (TBL), Plant Quarantine and Produce Inspection Branch (PQPIB), Jamaica Agricultural Commodities Regulatory Authority (JACRA), Pesticides Control Authority (PCA), and the Jamaica Customs Agency (JCA).

More general surveys are used to target all user categories. Starting in 2021, the most recent general survey is from 30 June 2023. The feedback is kept anonymous and promotes the evaluation of service delivery to facilitate improvements where required.

Benefits Obtained

The implementation of JSWIFT gradually transformed the way in which PGAs deliver their services to the trade community. JSWIFT now serves as the one-stop transactional platform which facilitates streamlined and transparent digital services.

Notwithstanding the magnitude of the COVID-19 pandemic disruptions, the JSWIFT project was profoundly successful in delivering a robust platform and several digital services for the trading community and participating government agencies. The JCA and, by extension, the ease of doing business in Jamaica has benefitted tremendously from the many technical, trade enhancing and revenue strengthening capacities provided by the JSWIFT initiative.

JSWIFT provides clients with an ecosystem to complete cross-border trade regulatory requirements with greater ease. The digital services under JSWIFT allow for information and supporting documents to be submitted only once, therefore satisfying the requirements of multiple agencies that may be involved in the review and issuance of an LPCO, through a single application. Services also include electronic payment and real-time notifications, which further enhance the user experience. The primary benefits obtained with the implementation of JSWIFT are as follows:

- **Reduction of movements / in-person visits:** The processing of LPCO applications is conducted electronically, significantly reducing the need for individuals to physically visit PGA offices. Further, electronic submission of supporting documents and online payments have also reduced in-person visits to PGAs
- **Reduction of time:** Traders invest minimal time in preparing LPCO applications. The streamlined functionalities of JSWIFT empower traders to efficiently finalize, submit, and make payments for LPCOs within a matter of minutes. Moreover, PGAs' officers are automatically assigned and have immediate access to all necessary documents for conducting thorough documentary assessments and granting approvals. For example, the Trade Board Ltd (TBL) used to take about 3 days to approve an import permit. With JSWIFT, LPCOs are now approved within 24hrs after applications are submitted and paid. Similarly, over 85% of certificates of origin are processed on the same day. TBL accounts for more than 80% of the total LPCOs processed within JSWIFT
- **Reduction of paper use:** Every LPCO is available to traders in an electronic (PDF) format, substantially reducing the demand for physical printouts. Nevertheless, certificates of origin and phytosanitary certificates, which are required at the destination country, are also supplied in hard-copy format
- **Reduction of delays and associated costs:** The digitized processing of LPCOs plays a pivotal role in expediting the overall release of goods and concurrently curbing storage and demurrage expenses. The introduction of simplified requisites and streamlined procedures has fostered a notable surge in voluntary compliance

Key Success Factors

Below is a summary of the most significant factors that led to the successful roll-out of the JSWIFT system.

Political will and commitment

The government demonstrated a clear understanding that the establishment of an eSW represented a multifaceted and intricate political reform endeavour. Such an undertaking necessitated unwavering political will and strong sponsorship from the highest level to secure the buy-in of crucial stakeholders and attainment of reform objectives. In this regard, the government, through its TFRP, has consistently supported the project, elevating JSWIFT as a national priority.

Stakeholder buy-in

Trading community partners have embraced the use of the electronic Single Window and such support has been coupled with the PGAs participation, who have made great efforts in collaborating and supporting the JSWIFT implementation. The delivery of training exercises and public awareness efforts, together with ongoing client support activities have further served to solidify the foundation that continues to be extended for the remaining PGAs and services being deployed in JSWIFT.

Single Window architecture and digital services ecosystem

JSWIFT's architecture and digital services design wholeheartedly embrace the principles of single submission, synchronous processing, and single point of clearance, resulting in a seamlessly smooth and highly responsive end-user experience. The system takes full advantage of its adaptive and flexible platform, allowing it to evolve, grow, and adjust in response to dynamic changes in trade policies and regulations over time.

Major obstacles faced

Significant overlaps exist in relation to commodities being regulated for cross-border trade, with multiple agencies being required to authorize LPCOs. Despite JSWIFT providing the system functionality to route the applications for process by the designated agencies after the single submission, greater reform towards reducing the number of agencies regulating specific commodities would result in greater efficiency and predictability with respect to processing times.

- As part of the business process review, PGA subject matter experts are required to collaborate with the project team at various stages. The unavailability and delays encountered when interactions and feedback is required from these experts often result in undue delays in completing, handing over and assessing the technical specifications required to deliver the services under the Single Window

- The pace at which JSWIFT services are deployed is dependent on the flow of work produced by the business analysis team. The project implementation team managed many changes, resulting in significant delays to the product delivery workflow that impacted the overall pace and productivity in developing, training and commissioning the digital services
- Delays in implementing various stages of the legislative framework required to support JSWIFT, negatively impacted the policy reform and procedural adjustments required to complement the digitalization efforts

Lessons learned

The implementation approach requires that at some stages there are activities running parallel to services being operationalized. The phased onboarding of the services requires that there be adequate provisions made for the resources required to provide end-user client support as the implementation progresses. Not having direct resources available and deployed to manage the day-to-day needs of clients using the services may result in project team resources being stretched by additional roles and diminish their ability to advance with work related to core project activities.

- Counterpart resources attached to projects should be evaluated and compensated for based on the outputs generated. It is not recommended to adopt an operational structure and recruit staff to work 40-hour weekdays when the demands of a project implementation require more results-based management and team structure. Further, staffing resources should be kept motivated and remunerated based on the level of experience and expertise required to deliver quality services
- The lead implementing agency must find ways to retain the human capital participating in the project, especially those on the software development team so to guarantee sustainability post-implementation, from an operational standpoint

Source of funding

The Government of Jamaica provided the necessary funding to cover ASYCUDA's technical assistance, ICT infrastructure, project implementation team and all recurrent expenses.

Business Model

The lead agency and operator of the Single Window guarantees the continuous operation and maintenance required for the JSWIFT platform through its regular budget. There were no additional processing fees introduced as part of the implementation of JSWIFT.

The JCA has in place a customs administrative fee imposed on or in connection with importation or exportation and is an approximate cost of the services rendered.

ANNEX II. RWANDA ELECTRONIC SINGLE WINDOW (RESW) CASE STUDY

Initial Assessment and Planning

An assessment undertaken by the World Bank Group's International Finance Corporation identified various bottlenecks in Rwanda's customs clearance processes, including a lack of coordination and complex requirements to clear consignments. This was followed in 2007 by a feasibility study to explore implementation of the eSW system. Based on this study, and with financial support from TradeMark East Africa (TMEA), the Government of Rwanda decided in 2012 to embark on the implementation of the Rwanda electronic Single Window (ReSW). After extensive evaluation of the options, ASYCUDA was selected to support implementation of the project.

Project Objectives

Implementation of the Rwanda electronic Single Window (ReSW) was a critical reform exercise to facilitate, simplify, and streamline procedures for the clearance of goods (import, export, and transit). The aim was to achieve efficient coordination of the different key players involved in international trade at all levels, through sharing of real-time information. Specific objectives included:

- Reduction in the time, cost, and complexity of submitting information and documents to government agencies to fulfil import, export and transit related regulatory requirements
- Enhanced collaboration between trade related government agencies
- Enhanced relationships between government and business
- The extensive use of information and communications technology

Project Management Structure

The government, through the Ministry of Finance and Economic Planning, appointed the Rwanda Revenue Authority (RRA) to take the lead role in implementing the ReSW system. The management structure included:

- Project steering committee, established and chaired by the Ministry of Trade, consisted of key stakeholders from government, private sector and ASYCUDA. Engaging government and business stakeholders from the start ensured that the system requirements specifications addressed their operational needs and gave them a sense of ownership and custodianship for the facility. The steering committee was responsible for directing and approving all activities related to the development and implementation of the Single Window

- Project implementation team – headed by the national project manager who is appointed by customs. It is made up of both local staff and ASYCUDA experts
- Extended project implementation team: Comprises the project implementation team, OGA representatives and the private sector. It is responsible for advising on all aspects of analysis, design and technical development of the system as well as reporting system challenges to the project implementation team itself

ASYCUDA provided technical assistance to implement the project. The national project manager worked with ASYCUDA staff to deliver the project.

ASYCUDA participated in the steering committee and reported on project progress, challenges, proposals, etc. ASYCUDA was also part of the application development team and the project implementation team.

Political Will

The success of the Rwanda electronic Single Window (ReSW) implementation was founded on the strong level of political will and commitment to the project. National policies, infrastructure, resources, and mobilization of players and stakeholders greatly supported the implementation of ReSW.

The Government of Rwanda launched the National Information and Communication Infrastructure (NICI) policy, and plan for 2006-2010 (NICI-2010) to provide general guidance in adopting and exploiting modern information and communications technologies. The policy aimed to simplify dissemination of information required for import and export operations, and to establish a single transactional point for all services required for foreign trade transactions such as customs, chambers of commerce, freight forwarders, transport companies, banks, insurance firms, etc. The strategy addressed several other issues such as putting in place laws relating to electronic messages, electronic signatures, and electronic transactions as well as improving the ICT infrastructure. Key government agencies were instructed, through the Ministry of Finance and Economic Planning, to join the ReSW.

Stakeholder engagement

Three categories of stakeholders were fully engaged with the development of the ReSW, namely:

- a. Those responsible for trade facilitation initiatives, including the Ministry of Trade and Ministry of Finance
- b. Implementing agencies (initially the Rwanda Development Board, Rwanda Standard Board, Ministry of Health and MAGERWA – Warehouse Operator)
- c. System users (trading community and clearing agencies)

Communications

A communications strategy was developed by a private company hired by TMEA, but it was executed by the project implementation team. The ReSW was promoted through different media outlets in Rwanda using RRA newsletters, publication reports, and communications materials with ReSW messaging (banners, notebooks, t-shirts, cards and key holders, were distributed amongst stakeholders and taxpayers). Many promotional activities were carried out by clearing agents, who are the key users of the system. Stakeholder forums were also used to promote the facility. Communications were targeted at key stakeholders and the general public.

Business Process Analysis

The business process analysis was carried out as follows:

Preliminary Activities

- a. Initial assessment to identify the role of each PGA, process and all stakeholders involved with a view to identify the required process reengineering, the scope of automation (required modules and interfaces to be developed)
- b. Readiness assessment – especially the legal framework and required infrastructure
- c. Drawing the project roadmap and project document
- d. Development and implementation
- e. Gathering detailed information for each identified process (current situation)
- f. Discussion and validation of the business process reengineering by management
- g. A detailed user requirements (system requirement specification document is drafted (Including proposed future process and solution)
- h. Lessons learned
- i. The level of complexity and delays mainly depends on the extent to which the procedures are clear. Most government agencies do not have clearly documented procedures and contradicting information may be provided
- j. In some instances, the operational practice, documented procedures and the regulations are not always reconciled. This can create delays for management to clarify what processes to consider
- k. Changes in procedures, regulations, and management had resulted in changes to the user requirements

Legal framework

The ReSW implementation was enabled by a legal framework (Law N° 18/2010 of 12/05/2010) relating to electronic messages, electronic signatures, and electronic transactions. This law puts

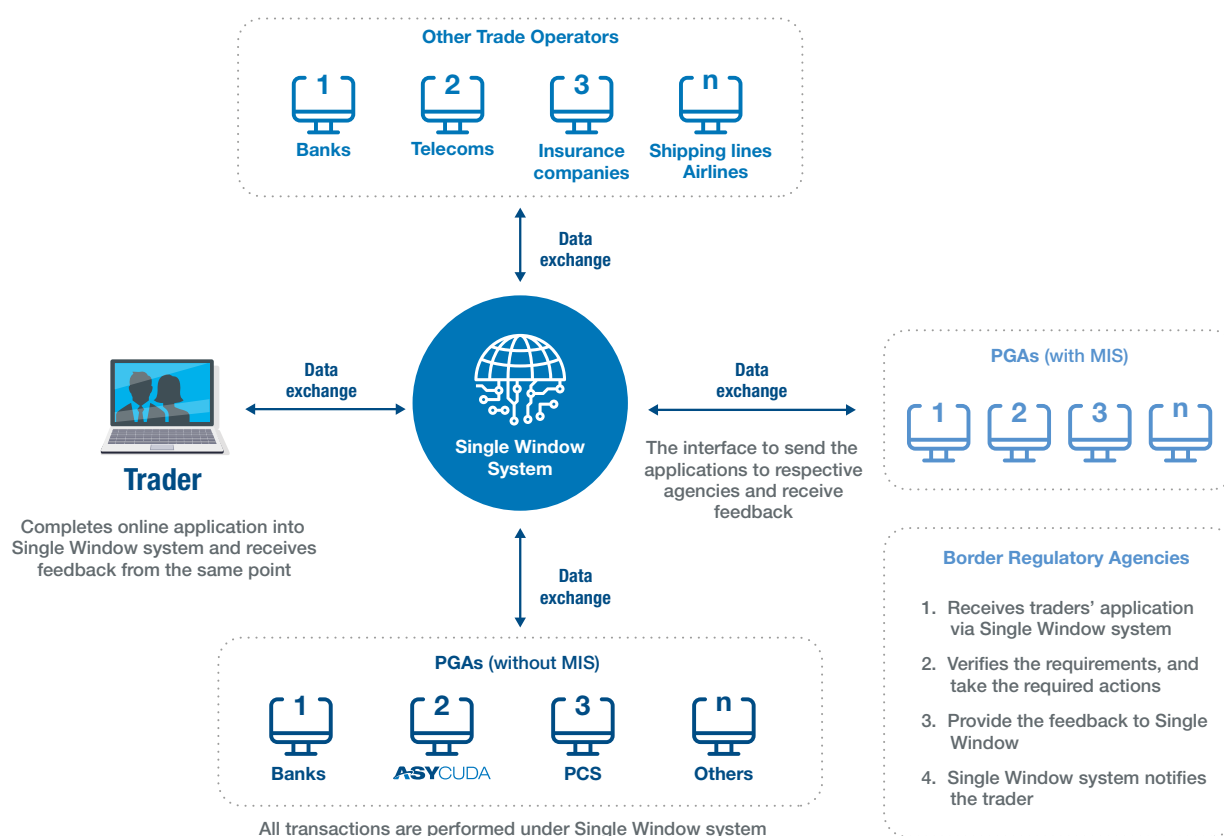
into consideration UNECE Recommendation No. 35: Establishing a legal framework for international trade Single Window.

The legal review was initiated in a broader perspective, that is, not specifically for eSW purposes but also for other sectors such as banking, utilities and telecommunications. When the ReSW project started, the law was already in place, saving the time needed to get the legal framework ready.

Technical Development and Implementation (Including Prototype, Pilot and Full Implementation)

The first version of ReSW was built into ASYCUDAWorld. The pre-requisite to implement the ReSW, therefore, was first of all to migrate from ASYCUDA++ to ASYCUDAWorld. A phased approach to ReSW implementation was adopted, starting with four key regulatory agencies. However, a major challenge was that the operations of most of the selected PGAs were fully paper based. Consequently, a hybrid approach was adopted, whereby agencies that already had their own computerised system were interfaced to the ReSW, and agencies that did not have an existing computerised system were provided with direct access to the ReSW using an integrated approach. The latter were upgraded to an interfaced approach once they acquired adequate back-end computerised systems. This is illustrated in Figure 12.

Figure 12. Hybrid Approach for Automated and Manual Processes



TMEA supported the relevant PGAs with acquiring and implementing the necessary back-end systems and procedures to automate licensing or issuance of permits as well as mandatory import or export inspections. The development and integration of these systems began in 2014. Under the organization structure, the local IT team led the implementation of ReSW and ASYCUDA technical experts took the lead in terms of software development and capacity building.

Phase 2 of the ReSW project focused on the adoption of new technologies to spearhead customs reform and modernization. It was marked by various upgrades which were completed in June 2022. Upgrading of ReSW under Phase 2 included:

1. Upgrade of ASYCUDAWorld
2. Digitalization of the management and administration of the Authorized Economic Operators (AEO) scheme
3. Implementation of the single transaction portal and single sign on features in the ReSW

The single transaction portal was developed by ASYCUDA, outside the ASYCUDAWorld system. The portal allows all parties to log in and submit their documents within the Single Window and the information is disseminated to all respective users for processing. For example, the electronic certificate of origin is automatically generated from an export declaration, after optionally selecting the preferential market and adding required data. Furthermore, upon SAD registration, the certificate of origin is automatically submitted to the “Rules of Origin” section for further action. Likewise, for home consumption imports needing exemption or investment tax incentives, applications are automatically generated from the SAD. ReSW also provides data exchange features to avoid data recapturing. Once processing is completed, the clearing agent receives a notification alert of the release order.

The main clients of the ReSW are clearing and forwarding agencies, customs, and PGAs. Specifically, these comprise of 181 clearing firms, 34 PGAs, and all of Rwanda’s 31 customs offices. Regional organizations such as COMESA, East African Community (EAC), and international agencies are also considered clients of ReSW. This is illustrated in figure 13.

Furthermore, the ReSW has 12 types of transaction processes, which have been implemented by 28 agencies and 520 clearing firms operating in Rwanda and the EAC in general. The use of the facility is mandatory for everyone who wants to clear goods in customs and is available 24/7 with real-time responses in English and French. System users now total 2,369.

Figure 13. ReSW Agencies and Modules



Technical Standards

ReSW uses the ASYCUDAWorld platform with Oracle as the database management system. The ReSW is based on international standards and tools that have been developed by UNECE, UNCTAD, WCO Data Model, and United Nations Trade Data Elements Directory (UNTD). These provide guidance on Single Window implementation and data set technicalities – the information needed by cross border agencies to facilitate clearance and release of cargo at the border.

The following modules and interfaces were developed in ReSW, using ASYCUDA technology:

- Investment incentives management
- Licensing of bonded warehouse operators
- Licensing of clearing agencies
- e-Payment
- e-Exemptions
- Quality inspection management
- Crops
- import and export per motor vehicle clearance
- Motor vehicle registration

- Transit guarantee management
- Ministry of Health
- e-Certificate of origin
- Mining export certificate
- Type approval management

Training

Various trainings with different objectives and target audience were organized:

1. ASYCUDA experts trained key stakeholders on the eSW concept, WCO Data Model and business process re-engineering
2. ASYCUDA IT experts trained the local IT team on the technology to be used
3. ASYCUDA business experts, jointly with the local team, organized documentation and training for each module, first to the PGA then to the specific category of traders to use the system
4. RRA and ASYCUDA experts conducted change management seminars targeting different audiences, specifically:
 - a. RRA (Customs and Internal Revenue)
 - b. PGAs involved in ReSW
 - c. Customs agents
 - d. Trade community
5. A communication strategy also included TV and radio programs in English and Kinyarwanda languages

Part of the project implementation team was dedicated to client support to provide timely assistance to system users. Also, clients could access project implementation team phone numbers and call for guidance.

Change Management

There was considerable resistance to change at the beginning of the project. Additionally, some PGAs took time to start using the system. To address this problem, a change management plan was developed. This included training, communications, sensitization events and awareness campaigns. The ReSW was promoted on national TV and radio stations. Project progress was communicated by the project implementation team through the steering committee on a monthly and quarterly basis. There were also meetings with targeted institutions. An extensive training plan was also put in place to ensure that all stakeholders and users were fully competent and comfortable in using the system.

Review and Enhancement for Continuous Improvement

ReSW project monitoring and evaluation is done through periodic (weekly, monthly, and quarterly) reviews and reporting on achievements in relation to the success indicators contained to the ReSW action plan, which was approved by the steering committee at the start of the project. These indicators include:

1. Targeted transaction/clearance cost reduction
2. Number of procedures to be automated within a given timeline
3. Number of PGAs to be interfaced with the ReSW system within a specified time period
4. Time-release reduction targets in comparison to the baseline

Benchmarking against international standards is also used to provide guidance and a clear picture of the ReSW system. These results are reported to the steering committee on a periodic basis.

The ReSW underwent a systemic evaluation in early 2015 as to its relevancy, efficiency, effectiveness and sustainability (see results below).

Benefits Obtained

Implementation of the ReSW has resulted in significant benefits to the Rwanda economy.

An independent evaluation of the ReSW commissioned by TMEA in 2015 identified the following benefits:

- Reduction in average time-release from 264 (11 days) in 2012 to 34 hours (1.5 days) in 2014
- Reduction in export clearance times from 67 hours (3 days) to 34 hours (about 1.5 days)
- Reduction in inspection rate of cargo in customs from 42% to 15%, due to effective risk management in the Single Window system
- Increase in the number of declarations subject to immediate release from 40% to 60%
- Rwanda has consistently improved its ranking in the World Bank's Ease of Doing Business Index. In the latest report (2022), Rwanda was ranked 38th out of 190 economies worldwide, making it the second-best performer in Africa

More generally, introduction of the ReSW has:

- Enabled the lodgement of trade related regulatory documents within a Single Window, such that all agencies are able to access and process the information at the same time without delays, and reduced the need for traders to deal with multiple agencies
- Increased accountability, since the system can identify agencies that cause delays
- Reduced face-to-face interaction that may increase risks of corruption
- Reduced turnaround time due to simplified processes and procedures

- Provided real-time access to information since the system is web-based
- Improved communication between the PGAs and the private sector
- Increased transparency and integrity

Estimated dollar value of the benefits:

- As of 2015, Rwanda's economy had saved between \$15 – 20 million as a result of the Single Window implementation
- Transporters are making efficient use of their vehicles, due to faster clearance times, resulting in a cost saving estimated to be \$6 million per annum
- Automation of some of customs procedures, such as exemptions, has led to transaction cost savings averaging \$1 million per annum
- ReSW has contributed to an increase in customs revenue collection due to automation, simplification, and harmonization of procedures

Key Success Factors

- Strong government support
- ASYCUDA Programme technical support
- TMEA financial support
- Committed and dedicated implementation team
- Simplification of processes and procedures
- Engagement of private sector from the outset

Major Obstacles Faced

The main obstacle encountered was resistance to change at the beginning of the project. A change management plan was developed and implemented, as outlined above.

Lessons Learned

Single Window system development requires a structured approach with a holistic solution to address the needs of all stakeholders and to pursue a common goal for the good of the country rather than individual needs and priorities.

- The ReSW system is a stakeholder driven solution supported by strong technology – not the other way around
- ReSW is a going concern and not a project with a limited shelf-life. It requires ongoing enhancement and development based on stakeholder feedback, engagement and aspirations

Business Model

To ensure sustainability, RRA developed a plan to use the current chargeable amounts (processing fees) to eventually support the ReSW upgrade and the development of new modules to meet future trade facilitation requirements.

A processing fee is payable per ordinary declaration and per simplified declaration. Even though this was introduced in 2004 – that is, before the introduction of the Single Window – the fee amount has not increased. The processing fees are only used for system maintenance.

ReSW system has a high internal rate of return (IRR) and return on investment (ROI), with every dollar invested yielding three-fold.

ANNEX III. TIMOR-LESTE SINGLE WINDOW (TILESW) CASE STUDY

Initial Assessment and Planning

The Government of Timor-Leste passed resolution number 24/2017, dated 17 May 2017 that established ASYCUDAWorld as the platform to develop the eSW system in Timor-Leste (TileSW). Deployment of ASYCUDAWorld in Timor-Leste was successfully concluded in 2020, with the customs clearance processes fully automated in customs offices at Dili Seaport, Dili Airport, Batugade, Salele, Suai Airport, Maliana and Bayu Undan (offshore site).

Implementation of the TileSW project, which is currently ongoing, is being undertaken in two distinct phases over a four-year period:

Phase 1

- Connect TileSW with 8 PGAs
- Link TileSW with Indonesia, which is part of the Association of South-East Asian Nations (ASEAN) region

Phase 2

- Link TileSW with Brazil, which is part of the Community of Portuguese Language Countries (CPLP) countries
- Link TileSW with CPLP member states' eSWs
- Provide a gateway between the ASEAN and CPLP regional Single Windows

Within the six first months of project implementation in 2020, two PGAs joined TileSW – namely the State Secretariat of Environment's National Directorate of Climate Change for the management and monitoring of Ozone Depleting Substance (ODS); and the new Tibar Port.

Three more PGAs, namely Autoridade Nacional do Petróleo e Minerais (ANPM), Policia Nacional de Timor-Leste (PNTL), and Banco Central de Timor-Leste (BCTL) will shortly join the TileSW for the better management and monitoring of petroleum and petroleum products; vehicles crossing the borders; and the deployment of e-payment facility respectively.

Project Objectives

Implementation of the TileSW, which is funded by the Government of Timor-Leste, aims to support the government of Timor-Leste with:

- More effective and efficient customs clearance process

- Better coordination between stakeholders involved into regulating and clearing cargo
- More efficient collection of duties and taxes
- Minimising the risk of fraud
- Supporting the trading community with faster clearance and reduced cost of doing business

These objectives were fully aligned with the fiscal reform programme initiated in 2015 by the government and national parliament to mobilize domestic revenues, facilitate trade, support economic diversification and enhance connectivity regionally and inter-regionally.

The PGAs identified to be included in TileSW are those with the most significant impact on customs clearance operations, and whom once connected, should eliminate the majority of bottlenecks currently faced in trade. These included Quarantine, Ministry of Health, Transport Ministry, Ministry of Commerce and Industry, TradeInvest, Tax Department, Port Authority and Ministry of Immigration.

Project Management Structure

The project owner is the Ministry of Finance with the customs administration (CA) being the implementing agency.

The Ministry of Finance is designated to act as the project champion, government agent of change and responsible for liaisons with CPLP and ASEAN member countries and regional structures, and reports to the Inter-Ministerial Council for Fiscal Reform on the implementation progress, challenges and opportunities.

A project steering committee was established and chaired by the Ministry of Finance. It consists of the head of CA, heads of the selected PGAs, trade representatives, and as required, the TileSW project manager, UNCTAD representative(s), representatives from key government ministries, and specific interest groups. Other stakeholders (e.g. the Central Bank, Port Authority) may be invited to steering committee meetings when project issues relevant to their respective areas are to be discussed.

The steering committee is an essential and integral component for the successful implementation of TileSW. It is a high-level committee that provides continuing oversight, policy guidance, coordination and conflict resolution on behalf of the government during the project implementation phases, aiming to ensure the successful implementation of the National Single Window in Timor-Leste. Its mandate includes:

- Provision of overall oversight, leadership and direction
- Making of strategic business decisions
- Championing the implementation of best business practices
- Communicating project purpose and value to stakeholders
- Removal of barriers to enable the project team to successfully execute the project

- Provision of financial authority and oversight, including the activation of contingency funds as required
- Monitoring of project progress at regular checkpoints
- Validation of the project detailed work plan
- Ensuring the coordination and interests of all involved parties are satisfied
- Validation of each project phase following submission of end of phase report
- Validation of end of the project following submission of the final end of project report
- Endorsement of system enhancements and/or changes required

A customs and PGAs reform and modernization committee was established, is chaired by CA Director General, and includes the TileSW project manager and senior representatives from the selected PGAs.

The committee is an essential and integral component for the success, sustainability, and future improvement of TileSW. Its mandate includes

- Commitment of each organization
- Coordination of business and operations, technical and legal aspects of the project in the interests of all involved parties
- Monitoring and evaluation of the TileSW project throughout the phases of its development
- Making resource allocation decisions

An implementation team was established, headed by a national project manager, and made up of both local and ASYCUDA experts.

Political Will

The success of the TileSW project to-date is mainly founded on the strong level of political will and commitment to the project.

Stakeholder engagement

Three categories of stakeholders are fully engaged with the development of the TileSW, namely:

1. Initially identified PGA participants
2. PGAs that were not part of the initial scope but who recognize TileSW benefits and have expressed an interest in using the system
3. System end-users

Communications

There is no specific communications strategy in place.

For every TileSW-related event, invitations are sent to ministries, UN representatives, donors, brokers association, end-users, etc, during which notebooks with TileSW messaging are distributed to event participants. Some events are reported in local print and broadcast media.

A TileSW newsletter is produced occasionally and is widely distributed within the country. Events are shared on ASYCUDA's social media channels.

TileSW was also referred to in:

- UNESCAP in the “Asia-Pacific Trade and Investment Report 2021: Accelerating Climate-Smart Trade and Investment for Sustainable Development”
- ASYCUDA Programme compendium and newsletters:
 - a. ASYCUDA Newsletter 2022 ³⁰
 - b. TileSW newsletter ³¹
 - c. ASYCUDA Compendium 2022 ³²

Some promotional activities are carried out at the Timor-Leste level (e.g. booth during National Day).

Business Process Analysis

The business process analysis was undertaken in the following steps:

Preliminary activities

Due to COVID, the initial assessment was mainly done online with:

- Questionnaire to stakeholders to collect basic information needed to develop the TileSW concept
- Virtual interview of the different stakeholders including customs and seven PGAs
- Feedback on the questionnaire received
- This initial assessment was designed to collect basic information from different stakeholders regarding the procedures, requirements, level of intervention in clearance process, as well as their level of computerization and readiness to join the TileSW project.

30 https://unctad.org/system/files/official-document/dtlasycudainf2022d2_en.pdf

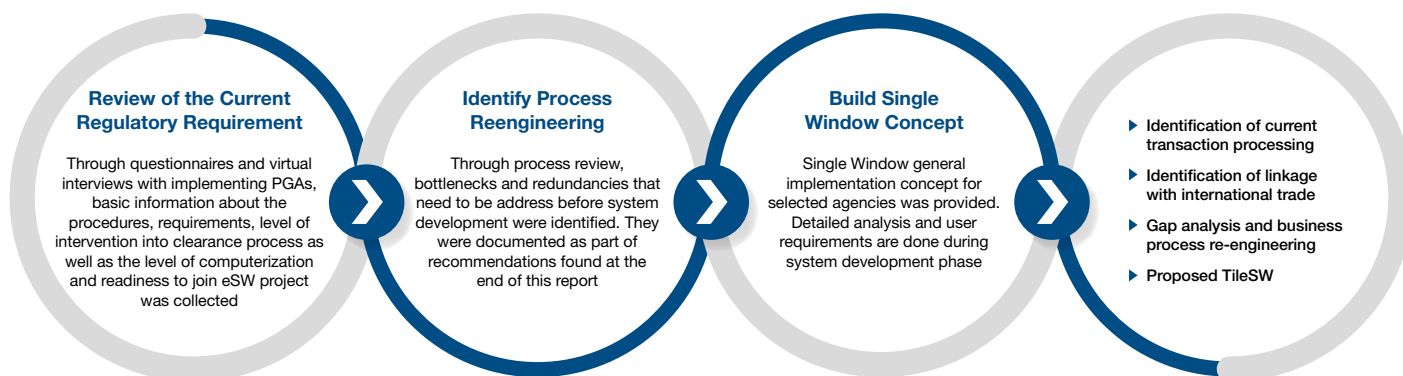
31 http://tilesw.asycuda.org/sites/default/files/2023-05/TileSW_Newsletter_December_2022_v3_1_1.pdf

32 <https://asycuda.org/wp-content/uploads/ASYCUDA-Compendium-2022-Timor-Leste.pdf>

Development and implementation involved

- Gathering detailed information for each identified process (current situation)
- Identifying process reengineering requirements – through the process review, bottlenecks and redundancy that need to be addressed before system development were identified
- Discussion and validation of the business process reengineering by management
- Drafting a detailed user requirements (system requirement specification) document – including future process and proposed solution
- Drawing the project roadmap and project document

Figure 14. Development and Implementation Process



Lessons Learned

- The level of complexity and delays mainly depends on the extent to which the procedures are clear. Most government agencies do not have clearly documented procedures and contradictory guidance may be provided
- In some instances, the operational practice, documented procedures, and the regulations are not always reconciled. This can create delays for management to clarify what to consider
- When the information exchanged amongst different systems is not harmonized and standardized, the data can be interpreted in different ways, and data migration/integration into respective systems may fail
- Given the diversity of staff involved in the TileSW project and the wide range of activities undertaken within it, trainings need to be both multi-faceted and coherent. It needs to take into account regulatory aspects, business functions, data exchange (technical and functional communication), IT technology and system management

Legal Framework

Article 81 to 86 and 155 (2) and (3) of Law 14/2017 regarding customs code of Timor-Leste refers to submission of documents, signature requirements, legal value, automated decisions and provisions of information, access to customs information system, technical requirements and electronic customs declaration transmission.

The TileSW implementation was enabled by a legal framework and associated resolution number 24/2017, passed by the Government of Timor-Leste and dated 17 May 2017, which defines ASYCUDAWorld as the platform to develop the eSW system in Timor-Leste.

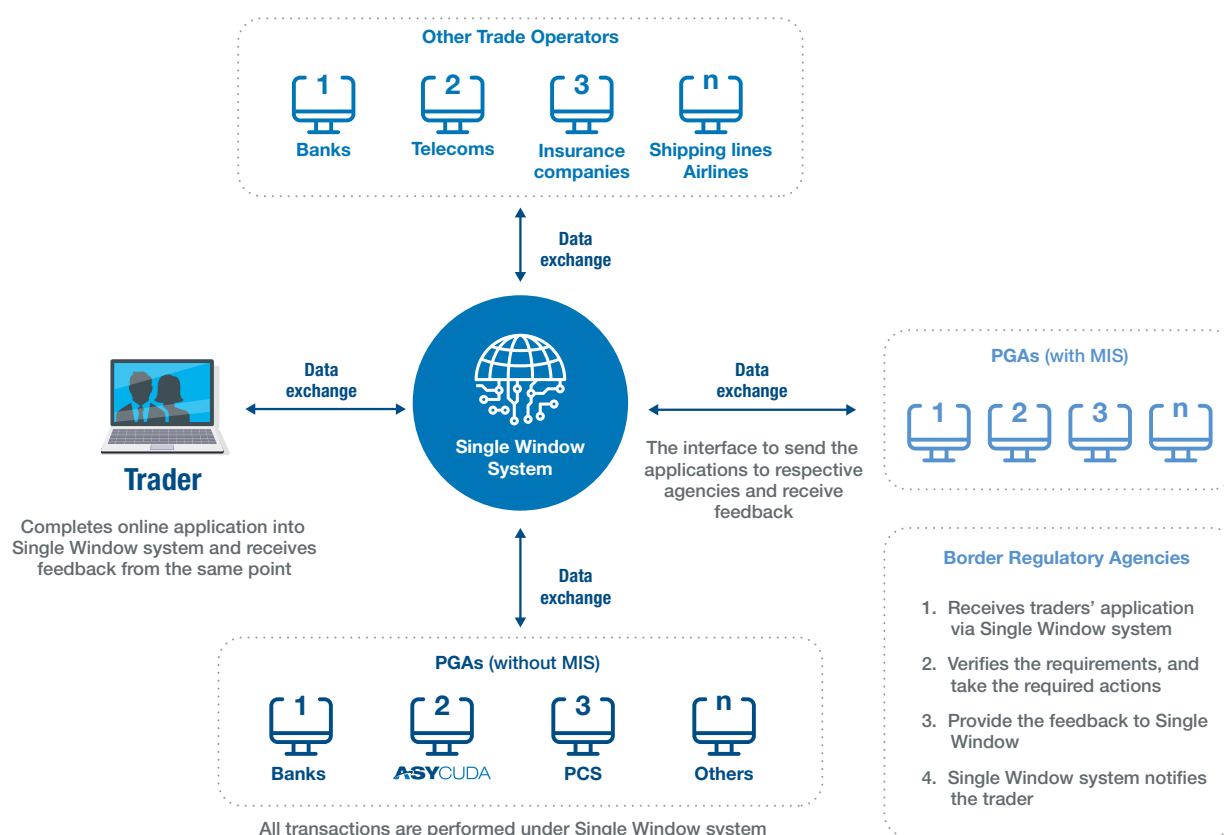
Technical Development and Implementation (Including Prototype, Pilot and Full Implementation)

A phased approach to TileSW implementation was adopted, starting with PGAs showing commitment and readiness, and for which the impact on trade facilitation could be immediate (e.g. TradeInvest).

A number of PGAs which were not part of the initial project document recognized TileSW benefits and expressed an interest in using the system (e.g. State Secretariat of Environment's National Directorate of Climate Change).

All except two of the selected PGAs were fully paper based. Therefore, a hybrid approach was adopted, whereby agencies, including "foreign" agencies (e.g. Indonesian PGAs) that already had their own computerised system were interfaced to the TileSW, and PGAs that did not have an existing computerised system were provided direct access to the TileSW.

Figure 15. Hybrid Approach for Automated and Manual Processes



Other challenges faced were a low level of computer literacy, limited availability of IT basic equipment (PC, printer), and lack of relevant Internet facility. The Government of Timor-Leste, through its Ministry of Finance, supported PGAs with the provision of PCs.

The national implementation team led the delivery of TileSW. UNCTAD's technical expert took the lead in software development while locally recruited staff took the lead in terms of capacity building.

With difficulties experienced in Internet connectivity, in 2023, TileSW moved to new technologies in ASYCUDAWorld for onboarding PGAs. This offers lighter and responsive application (i.e. can be used on different devices of any size) for end-users, provides for a wide range of users at any level, and included self-service capabilities like user registration, password change, dashboard, for example. It currently covers the:

- National Directorate for Land Transport (DNLT) & National Directorate of Foreign Trade (DNCEE) joint inspection
- Certificate of Origin
- The Licensing and Registration Cabinet of Health Activities and the National Directorate of Pharmacy and Medicine
- Traveller Self Declaration (Goods & Cash)³³

The migration of previously onboarded PGAs within ASYCUDAWorld to new technologies should soon be initiated and will then cover:

- TradeInvest
- National Ozone Unit
- Quarantine

Data exchange to avoid data recapturing (Tax Authority) and faster clearance process (Tibar Port) is already in place.

In addition, upgrades to the latest Oracle version were undertaken in order to use the latest technology and have an online backup mechanism.

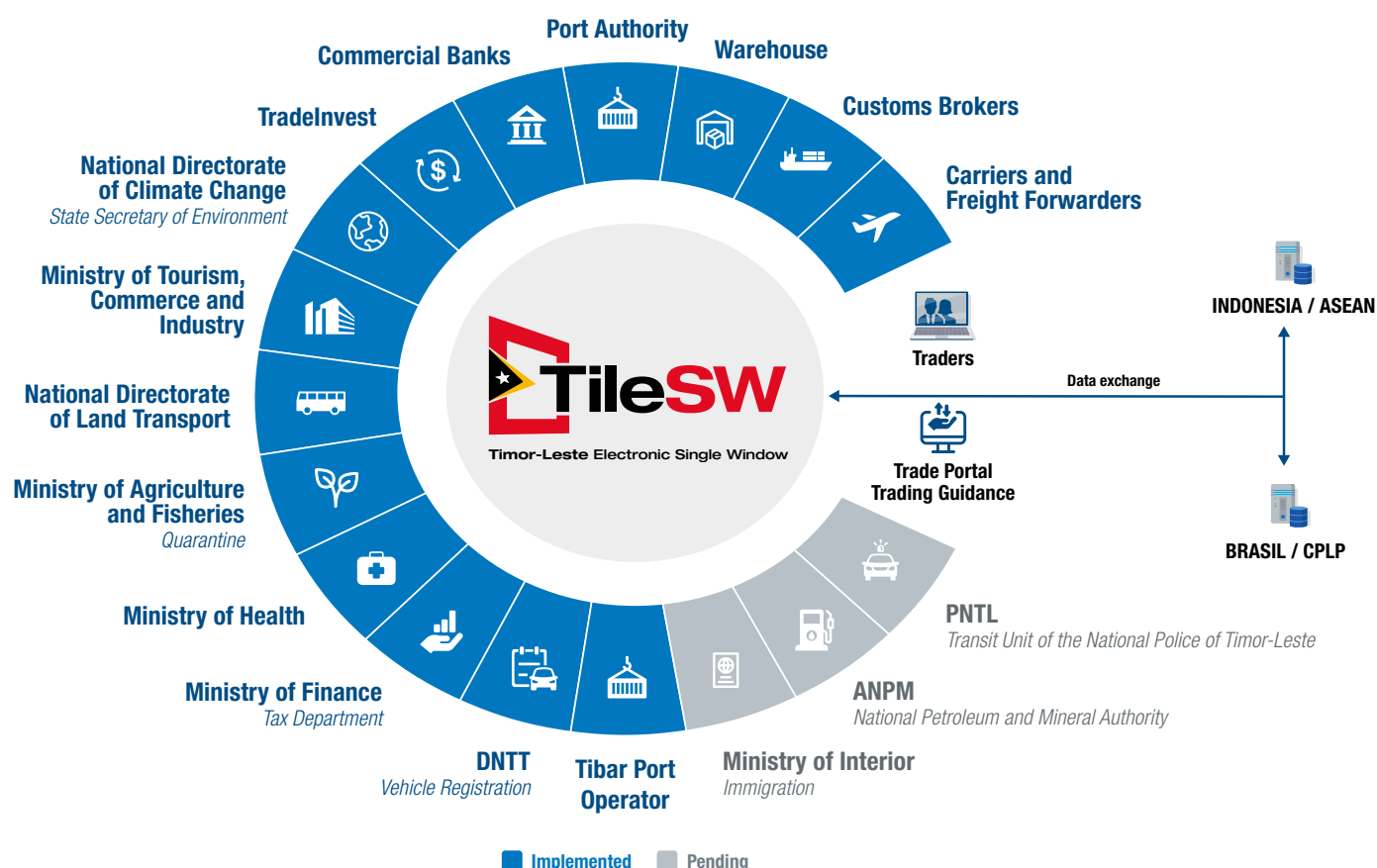
The system is now hosting functionalities that enable the facilitation for investors for tax exemptions on import of goods; control and management of Ozone Depleting Substances; facilitated clearance of medicines and medical equipment; application and processing of import and export permits for animals and plants and their products; exchange of data between Port Authority systems and customs system; joint inspection between three PGAs; application submission and approval of certificate of origin; exporter registration and customs passenger declaration; exchange of data between Inland Revenue and customs systems.

Additional PGAs, indicated in grey below (Autoridade Nacional do Petróleo e Minerais (ANPM), Policia Nacional de Timor-Leste (PNTL) and Banco Central de Timor-Leste (BCTL)), should soon be onboarded into TileSW.

The scope for exchanging data electronically with Indonesia is under discussion with the Government of Indonesia, and the existing MoU between Timor-Leste Customs Authority and Indonesia Customs is under review.

33 <https://tilesw.customs.gov.tl/#/eservice/traveller/declaration>

Figure 16. Main TileSW Clients and Users



Initial steps have been taken to facilitate connection with Brazil's systems. It is expected to move forward at the time of the next Directors General (DGs) of Customs CPLP meeting, in Dili early December 2023.

With paper-based processes, the commodities to be imported/exported were indicating using a commercial description while the customs declaration was using the internationally recognised HS code, thus reconciliation was complicated. With the use of the HS code on TradelInvest's master list, Certificate of Origin (CoO), etc, data is considered accurate; submitted once; a reconciliation/write-off is possible; the appropriate revenue is collected; and data can be exchanged with other countries. Thus, data submitted from one entity could be re-used/understood by any other entity.

Using the ASEAN Trade in Goods Agreement (ATIGA) format for issuing Certificate of Origin (CoO) information will allow Timor-Leste to exchange with Indonesia with no conversion or mapping of data necessary. The same would also apply at the time of exchanging customs declarations, and more specifically with the data set agreed among ASEAN members, having embedded in ASYCUDAWorld the WCO data model.

There is extensive use of international data standards and integration approaches. For example, TileSW uses international standards such as country codes, currency codes, places of loading and unloading, packaging codes, for example. It also uses national standards such as a taxpayer identification number to uniquely identify traders, facilitate system-to-system data exchanges and

improve interfacing and/or integration. For example, manifests from ASYCUDAWorld are easily integrated with the OSCAR system used by the operator of the Tibar Port. Another example is the data exchanged between SIGTAS, the finance system of the Government of Timor-Leste and ASYCUDAWorld.

Data harmonization enables entities to consistently exchange information, to better control the commodities traded, as well as to facilitate and accelerate the customs clearance process.

A single-entry point has not yet been established in TileSW. Traders and customs still log into ASYCUDAWorld for the customs clearance. Traders, PGAs (using new technology) log into TileSW for PGA-related tasks. However, it is envisaged to implement a single entry point in future.

Technical Standards: TileSW uses UNCTAD's ASYCUDAWorld platform with Oracle as the database management system and is based on international standards and tools that have been developed by UNECE, UNCTAD and WCO Data Model.

Training

Trainings with different target audiences were organized, based on the implementation timeframe to ensure that all stakeholders and users were fully competent and comfortable in using the system. These included:

- Locally recruited staff, jointly with the ASYCUDA business expert, undertook user acceptance testing and prepared the documentation and user-guide
- Locally recruited staff conducted user training in the national language, for each PGA, different category of traders, and customs officers
- Locally recruited staff conducted refresher courses whenever necessary

The implementation team is also providing timely assistance to system users.

Change Management

Most of the PGAs accepted the need for and requested change. However, some agencies took time to agree on the business re-engineering specifics. To address this problem, regular meetings were conducted with targeted institutions where solutions and options were presented.

Regular meetings and refresher courses were conducted when officers were deemed to be reverting to old practices.

Review and Enhancement for Continuous Improvement

Project progress is communicated by the project implementation team to the ASYCUDA Programme regional coordinator on a monthly basis (online meeting), and to the steering committee on a quarterly basis.

The scope of the project evolves according to new requests from PGAs which recognize TileSW benefits and express an interest in using the system.

Benefits Obtained

TileSW implementation started in 2020. The benefits were immediate and made the country more attractive for investment:

- **Reduction of Time** – In the past, once imported goods arrived in country, traders under the investment schema had to go to TradeInvest to get an exemption letter, and then travel to customs to get an additional exemption letter, before they could go ahead with the clearance of goods. With the implementation of TileSW, one Master List of products and quantities authorised to be imported under the investment schema was agreed between TradeInvest and traders. This master list is referenced on the customs declaration and the products are now written off against the list at the time of import. This has resulted in:
- **Reduction of movements / Reduction of CO2 emission** – Around 90% reduction in physical trips by investors between customs and TradeInvest
- **Reduction of paper use** – Around 80% reduction in printed documents
- **Reduction of delay and cost** – Reduction of demurrage cost with clearance as soon as goods arrive in Timor-Leste.

When the State Secretariat of Environment's National Directorate of Climate Change for the Management and Monitoring of Ozone Depleting Substance (ODS) came onboard the TileSW, other benefits were realised:

- Improved control of imported goods dangerous for the environment versus authorized quota
- Environmental protections
- Compliance with UNEP regulations

System-to-system interface with the Tax Authority and with Tibar Port systems provides accurate data and thus better statistics, limits the human intervention to its minimum and thus reduces cost and time while improving efficiency.

The application and processing of import and export permits for animals, plants and their products has led to:

- **Reduction of clearance time** – From 1 to 2 weeks to 1 or 2 days to obtain permit
- **Reduction of movements / reduction of CO2 emission** – Only one trip to quarantine to collect the granted permit

Key Success Factors

- Strong government support

- Committed and dedicated implementation team
- Simplification of processes and procedures

Major Obstacles Faced

The main obstacle encountered were:

- Lack of reliable Internet
- Limited availability of basic IT equipment
- Low level of computer literacy
- Interfacing PGAs with an existing IT system relies on the availability of external/private companies which delivered the system and brings additional cost and delay
- Change in the legislation had an impact on the development and usage of features already in place
- Difficulties with recruitment
- Difficulties in getting customs officers involved
- One of the agencies from the original scope of the project is not yet on board

Lessons Learned

A Single Window system requires a:

- Detailed study of PGA processes at the initial stage for better re-engineering
- Full engagement of all parties involved
- Ongoing enhancement and development based on country's needs and requirement for further automation and digitalization
- Frequent traders' sensitization for adoption of changes
- Full involvement of the lead / implementing agency for systems support continuity
- Customs readiness for full digitalization
- System-thinking approach with a holistic solution to address the needs of all stakeholders and to pursue a common goal for the good of the country rather than individual needs and priorities

Business Model

There is no documented business model yet.

ASYCUDA was requested to prepare and present a proposal to support TileSW (including scope, infrastructure, human resources, and financial resources).

Donors have been approached for the further extension of TileSW.

ANNEX IV. ASSISTANCE AVAILABLE FROM UNCTAD AND THE ASYCUDA PROGRAMME

For ASYCUDA and single window assistance

ASYCUDA Programme

Division on Technology and Logistics, UNCTAD

Palais des Nations, 1211 Geneva, Switzerland

Email: asycuda@unctad.org

For trade facilitation, trade portals, etc.

Trade Facilitation Section

Division on Technology and Logistics, UNCTAD

Palais des Nations, 1211 Geneva, Switzerland

Email: tfs@unctad.org

