

USAID Trade Project

Single Window Implementation Guide (*Pakistan-Centric*)

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Table of Contents

List of Acronyms and Initialisms	1
Foreword.....	3
Executive Summary	3
Introduction to SW – Defining SW and Four Related Concepts.....	5
Building a Case for Creating a SW in Pakistan – Pakistan’s Trade Across Borders Status	6
Pakistan’s Status on Trade Logistics	7
The Trade Facilitation Agreement and SW	7
How to Build SW in Pakistan - Building SW: The UNESCAP Model SWIF	8
Key Components of SW.....	8
The Roadmap: Evolution of SW	9
A SW Roadmap Based on Five Evolutionary Stages	9
A Gap Analysis of Pakistan NSW - Customs’ Initiative and SW UNESCAP Implementation Model as it Relates to the Above Five (5) Levels.....	10
The salient features of WeBOC	12
WeBOC Modules	12
Important Challenges Faced by Pakistan in Order to Progress their NSW.....	14
Single Window Implementation Framework (SWIF).....	14
Key Components of SW.....	14
A Methodology to Develop the Components of the SW	22
SW Action Plan Gantt Chart.....	31
Glossary.....	33
Appendix I: Importance of Linking Agencies through an Electronic SW.....	37
Appendix II: The Four (4) Concepts.....	39
Appendix III: International Logistics Performance Index (LPI) Preamble Background Intro.....	40
Appendix IV: Component 4 – Business Process Analysis and Simplification	41
Appendix V: Component 5 – Data Harmonization and Documents Simplification.....	72
Appendix VI: Component 8 – Legal Issues for the SW	90
Appendix VII: Components 6, 7, and 10	100
Appendix VIII: Broad Vision for the Financing Model.....	108

List of Tables and Figures

Table 1: World Bank's Doing Business Index 2014	6
Figure 1 – Ten Critical Components for SW Development from the UN/ESCAP SW Planning & Implementation Guide 2012	9
Figure 2 - A SW Roadmap in five evolutionary stages	10
Figure 2.1 – SWIF SW Development Methodology	23
Table 2 - Single Window Development Components, Key Activities and Deliverables	23
Figure 3: Importance of Linking Agencies through an Electronic SW	37
Figure 4: Economies and trade facilitation practices	37
Table 3: International Logistics Performance Index (LPI)	40
Figure 4.1: SW Business Process Analysis: WCO's 5 Dimensions	60
Figure 4.2: SW Business Process Reference Model: Regulatory Review	61
Figure 4.3: Data Simplification and Harmonization	63
Figure 4.4: SW Registration/Regulatory Authorization Process	65
Figure 4.5: SW Advance Reporting	68
Figure 4.6: SW Registration Advance Reporting	68
Table 4: Advance Information Processes	69
Table 5: Goods Declaration/Cargo Report/Conveyance Report	69
Figure 4.7: Import and Post Import Processes	71
Figure 5: A New Trust Scheme	80
Table 6: Additional Document Class: Information in the WCO Data Model Version 3.0 on Supporting Documents	80
Figure 6: Regulatory Data Harmonization	82
Figure 7: Secure repository	85
Figure 8: Import customs has access to e-doc and integrity/authenticity controls	88
Figure 9: Ability of SOA components to be orchestrated into	105
Figure 10: One example of a revenue fee model for a NSW	110

List of Acronyms and Initialisms

APEC	Asia-Pacific Economic Cooperation
B2B	Business-to-Business
B2G	Business-to-Government
B/L	Bill of Lading
BPA	Business Process Analysis
CBRA	Cross-Border Regulatory Agency
CEPT	Common Effective Preferential Tariff
CMAA	Customs Mutual Assistance Agreements
ebXML	Electronic Business Extensible Markup Language
EDI	Electronic Data Interchange
G2B	Government-to-Business
G2G	Government-to-Government
GD	Goods Declaration
ICT	information and communication technology
IMO	International Maritime Organization
IT	information technology
ISO	International Organization for Standardization
NSW	National Single Window
OASIS	Organization for the Advancement of Structured Information Standards
OC	One Customs
OECD	Organization for Economic Co-operation and Development
OGA	Other Government Agency
PaCS	Pakistan Automated Customs
PCS	Port Community System
PMBOK	Project Management Body of Knowledge
PNSW	Pakistan National Single Window
ROI	Return On Investment
RSW	Regional Single Window
SOA	Service-oriented architecture
SRO	Statutory Regulatory Order
SW	Single Window
SWE	Single Window Environment
SWIF	Single Window Implementation Framework
UN	United Nations

UNCITRAL	United Nations Commission on International Trade Law
UNCTAD	United Nations Conference on Trade and Development
UNECE	United Nations Economic Commission for Europe
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UN/CEFACT	United Nations Centre for Trade Facilitation and Electronic Business
UNTDDED	United Nations Trade Data Elements Directory
USD	United States dollars
VAN	Value added network
WeBOC	Web Based One Customs
WCO	World Customs Organization
XML	Extensible Mark-up Language

Foreword

For many governments, the Single Window (SW) system has become a core instrument to facilitate trade, simplify procedures, and implement electronic business. At the time of this report, 49 countries have reported the implementation of SW systems of varying complexities.

When implementing a SW, all governments face similar challenges in terms of technical, organizational, inter-organizational, managerial, financial, political, legal, national, and international settings. Policymakers in charge of conceptualizing, planning, implementing, and overseeing SW projects need to effectively manage various aspects involved in the success of the project. This requires advanced managerial competencies to create an enabling environment for implementation in different domains such as trade policies, business process analysis, management, electronic business and Information Technology (IT) management and standards, legal issues, and SW architectures.

This SW Implementation report is developed by the USAID Trade Project. The report incorporates aspects from reputed SW implementation guides and specifically includes Pakistan's current progress, suggests recommendations, and offers in-depth information. The guide is expected to provide SW technicians and other interested parties with a deeper understanding of the various issues pertaining to SW implementation.

The overall aim of the report is to assist Pakistan's government agencies and private sector stakeholders with a swift implementation of a SW system leading to improved regional and global integration of economies in the region.

Executive Summary

The objective of this report is to provide policy planners and decision-makers in the Government of Pakistan (GoP) and other relevant stakeholders with the opportunities available to improve regional trade and connectivity in Pakistan. Enhanced trade and transport procedures, documentation handling, and development of a supportive environment have the potential to increase Pakistan's trade participation and competitiveness in the globalized world. Policy managers have the responsibility of providing their superiors and government counterparts with evidence-based quantitative analyses to support trade facilitation initiatives and highlight the associated benefits and threats.

Today, companies and administrations that participate in international trade have developed automated systems to manage internal information required for their business processes. Many countries have now started to move a step further and have developed a SW system that links Customs, traders, and the regulatory authorities involved in international trade for exchanging information and simplified business processes.

This report provides an overview of the National Single Window (NSW) system and the importance and potential benefits of implementing NSW in a country. The report also highlights Pakistan's existing cross border status according to the World Bank's Logistics Performance Index (LPI) and the necessity of implementing SW in Pakistan in the context of the World Trade Organization (WTO) Trade Facilitation Agreement. Furthermore, the report discusses the UNESCAP model of SW implementation in detail. The UNESCAP model was then used to carry out a gap analysis to study how NSW implementation has progressed in Pakistan. The results of the gap analysis have been used to furnish a roadmap, detailing recommendations and guidelines to facilitate Pakistan Customs in the implementation of a NSW.

Following is a summary of fourteen (14) recommendations required to immediately move forward with the SW concept in Pakistan:

Subject	Total	Reference Numbers
Government of Pakistan	6	7, 8 & 11-14
Pakistan Customs & Automation	6	1-5, 9
Business Process Analysis	1	10
Personnel	1	6

Following is a summary of key recommendations that need to be addressed in order to ensure that NSW in Pakistan is implemented in a structured and timely manner:

Action Items for the Government of Pakistan:

- i. Formally nominate and empower Customs as the lead agency for SW implementation (Recommendation 7)
- ii. Establish a NSW Steering Committee that oversees the implementation (Recommendation 8)
- iii. Direct all government agencies who are stakeholders in the SW to liaise with Customs before any design, development, or purchase of IT hardware and software is undertaken (Recommendations 11 and 12)
- iv. Draft and approve new Customs and allied legislation to meet the requirements of a SW (Recommendation 13)
- v. Conduct an infrastructure and maintenance needs analysis and prepare a budget request for expenditure approval for the SW implementation (Recommendation 14)

Action Items for Pakistan Customs with regards to Automation and Personnel:

- vi. Customs complete the transition to a 100% Web Based One Customs (WeBOC), its automated Customs Clearance system as soon as possible, and move to Level 2 of the SW roadmap (Recommendations 1 and 3)
- vii. Customs expedite plans to transfer data to a robust data warehouse in anticipation of implementing a more advanced version of WeBOC. (Recommendation 2)
- viii. Customs approach the “Single Window Implementation Framework (SWIF)” in a much more accountable manner with documented plans, progress reporting, and milestone completion reports to the NSW Steering Committee (Recommendations 4 and 5)
- ix. Customs to ensure that an appropriate “Project Manager” with the strength and influence to complete the SW implementation is appointed for the duration of the project and remains in situ, unless poor performance dictates otherwise (Recommendation 6)
- x. Ensure greater stakeholder consultation, system testing, and security audits are undertaken prior to any “live” rollout of WeBOC version 2 (Recommendation 9)

Business Process Analysis:

- xi. Business Process Analysis should be conducted thoroughly within all stakeholder agencies and the trading community by the SW Project Implementation team under the direction of the NSW Steering Committee, as soon as possible (Recommendation 10)

Introduction to SW – Defining SW and Four Related Concepts

SW is principally an outcome of the collaboration between Customs and its partner government agencies, and between the government and businesses. The SW concept has emerged out of growing IT developments and their contribution towards improvements in the delivery of services, business and governance philosophies, and architecture. These developments have inspired many cross-border regulatory regimes to adopt automated systems and re-fashion their regulatory environments to improve trade facilitation measures and achieve proficiency in their objectives such as revenue collection, social protection, and provision of business intelligence to the government.

Under the SW approach, citizens and businesses receive government services through a single interface. The concept examines regulatory controls *through the eyes of the trader* and views all interactions between the trading community and regulatory agencies without regard for the internal divisions within the government. This approach brings out all the procedural redundancies, duplications in the filing of information, and wastefulness involved in fulfilling cross-border regulations. From this analytical approach arise a set of solutions that simplify the government-trade interface significantly by reorienting procedures and reorganizing regulatory data requirements. The approach simply unifies the interface between the government and the trading community.

Collaboration between Cross-Border Regulatory Agencies (CBRAs) is the basic theme of NSW. This collaboration can also occur between national governments with a view to further simplifying trade procedures and international data flows. Data on a cross-border transaction originates in the country of export, and as goods move through the country of transit and reach the country of destination, it is brought under the controls applied by different national governments. The process highlights the need for increased collaboration among stakeholders in order to enhance the monitoring capabilities of all parties involved. Customs administrations around the world already collaborate with each other in order to share sensitive information pertaining to enforcement through the World Customs Organization's (WCO) Customs Mutual Assistance Agreements (CMAAs) (WCO, 2004).

While the CMAAs largely deal with transnational crime including smuggling, such collaboration is also being witnessed in the area of international transit of goods. Customs offices at the point of departure obtain confirmation about the successful transit of goods from Customs offices at the point of destination and help in updating their respective records. There are a number of other areas that require cooperation between governments where licenses, certificates, and permits that are produced in one country have to be used in another country. These possibilities are sometimes referred to as the international or regional dimension of the SW.

Transformation from "as-is" systems to a well-integrated NSW is an iterative process involving a number of initiatives including: i) the examination of costs and efficiency of organizational arrangements created to offer current services to citizens and businesses, ii) how these services relate to different areas of government, and iii) the extent of integration that would be required between government departments or agencies in fulfilling these services.

From trade facilitation's perspective, the NSW simplifies the interface to CBRAs in which the entire government apparatus that deals with the movement of goods across borders is re-engineered to meet the specific and exacting service needs of business.

It is well known that there is no single way to build a SW Environment (SWE). The WCO Survey reveals that different solutions exist and so it is important to understand the differences and similarities between these solutions, what works, what doesn't, and why. At the same time, it is necessary to understand alternative views of the SW system. The report highlights four such concepts and derives actionable insights (Appendix II).

The definition of SW, as provided in the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) Recommendation 33, is as follows:

“A Single Window is defined as a facility 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 requirements. If information is electronic, then individual data elements should only be submitted once.”

Building a Case for Creating a SW in Pakistan – Pakistan’s Trade Across Borders Status

The World Bank’s Doing Business Index, 2014 ranks Pakistan 91 out of 189 countries in the “trading across borders” indicator. The indicator measures the time, cost, documentation and procedures required to clear a typical Twenty-foot Equivalent Unit (TEU) container for import and export consignments. Table 1 presents Pakistan’s standing relative to its neighbors, four of the five Central Asian Republics (CARs), best performing countries (i.e., Singapore, Hong Kong, and Republic of Korea), as well as South Asia and high income Organization for Economic Cooperation and Development (OECD) countries.

Relative to high income OECD countries, Pakistan performs better in terms of cost to export/import (USD per container); however, major improvements are required to reduce the number of mandatory documents and time taken to export/import consignments. In Pakistan, traders have to file in double the number of documents as compared to high income OECD countries, and more than double in comparison with Singapore, Hong Kong, and Korea Republic (8, 4 and 3 respectively). For the completion of every export related official procedure, it takes 10 additional days in Pakistan (21 days in total) when compared to OECD countries, and 15 extra days compared to Singapore and Hong Kong. Import related official procedures in Pakistan take an additional 8 days in comparison to high income OECD countries while, 14 and 13 more days in comparison with Singapore and Hong Kong, respectively. Pakistan is relatively well placed among its neighboring countries, India and Afghanistan, and among the CARs.

Table 1: World Bank’s Doing Business Index 2014

Economy Name	Rank	Documents to export (number)	Time to export (days)	Cost to export (USD per container)	Documents to import (number)	Time to import (days)	Cost to import (USD per container)
OECD high income	..	4	11	1,070	4	10	1,090
South Asia	..	8	33	1,787	10	34	1,968
Singapore	1	3	6	460	3	4	440
Hong Kong	2	3	6	590	3	5	595
Korea	3	3	8	670	3	7	695
Pakistan	91	8	21	660	8	18	725
Afghanistan	184	10	81	4,645	10	85	5,180
Azerbaijan	168	9	28	3,540	11	25	3,560
China	74	8	21	620	5	24	615
India	132	9	16	1,170	11	20	1,250
Kazakhstan	186	10	81	4,885	12	69	4,865
Kyrgyz Republic	182	9	63	4,360	11	75	5,150
Mongolia	181	11	49	2,745	13	50	2,950
Tajikistan	188	12	71	8,650	12	72	10,250
Uzbekistan	189	12	79	4,785	14	95	5,235

Pakistan's Status on Trade Logistics

The third edition of the report, “Connecting to Compete: Trade Logistics in the Global Economy”, developed by the World Bank in 2012, is based on a worldwide survey of global freight forwarders and express carriers to measure the trade and logistics “friendliness” of the countries in which they operate and those with which they trade. The indicator compares the performance of Pakistan with 155 countries to measure the efficiency of clearance processes across the following six components:

- The efficiency of the clearance process (speed, simplicity, and predictability of formalities) by border control agencies including customs
- The quality of trade- and transport-related infrastructure (ports, railroads, roads, information technology etc.)
- The ease of arranging competitively priced shipments
- The competence and quality of logistics services (transport operators, customs brokers etc.)
- The ability to track and trace consignments
- The frequency with which shipments reach the consignee within the scheduled or expected delivery time

As per the international Logistic Performance Index¹ (LPI) scores, Pakistan ranks 71 among 155 countries in logistics supply chain performance, an improvement from a position of 110 in 2010. Although placed 25 ranks below neighboring India and 45 ranks below China, Pakistan is positioned above Kazakhstan, Uzbekistan, Afghanistan and Tajikistan, and remains among the top ten performing lower middle-income countries along with India, Morocco, Philippines, and Vietnam etc. The country is relatively well placed in comparison to 2010.

The Trade Facilitation Agreement and SW

The Agreement on Trade Facilitation was adopted at the WTO's 9th Ministerial Conference in Bali, Indonesia, in December 2013. It is the first major agreement reached since the conclusion of the Uruguay Round, 20 years ago. The Agreement makes it mandatory for participating countries to adopt NSW, providing a single interface between traders and all CBRAs.

Article 10.4 of the Agreement:

- *“Members shall endeavor 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 of the documentation and/or data, the results shall be notified to applicants through the single window in a timely manner*
- *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*
- *Members shall notify to the committee the details of operation of the Single Window*
- *Members shall, to the extent possible and practical, use information technology to support the Single Window”*

Member countries are allowed to categorize this reform implementation into three categories, namely A, B, and C. Category A includes reforms which are carried out immediately, category B includes short to medium term reform commitments, while category C contains long term (5 to 10 years) commitments. Pakistan, signatory to the agreement, is also obliged to implement SW reform. Prima-facie, NSW in Pakistan will take around five to ten years to implement and therefore is likely to be categorized in list C.

¹ For reference and further background please refer to Appendix III in regards the International Logistics Performance Index (LPI) and preamble background intro that compares Pakistan to nine (9) other countries

How to Build SW in Pakistan - Building SW: The UNESCAP Model SWIF

Building a SWE is complex and requires a well-structured approach. Having a well-structured approach can help identify inefficiencies in the current business processes and information flows and then propose and implement a simplified and intelligent automated future trading environment.

This report recommends and provides an effective and intuitive approach through SWIF to handle such a situation as it systematically breaks down the larger complex problems into smaller components. SWIF includes certain instruments for analyses of these problems and provides support to policy managers and stakeholders in their planning and decision making related to SW.

Key Components of SW

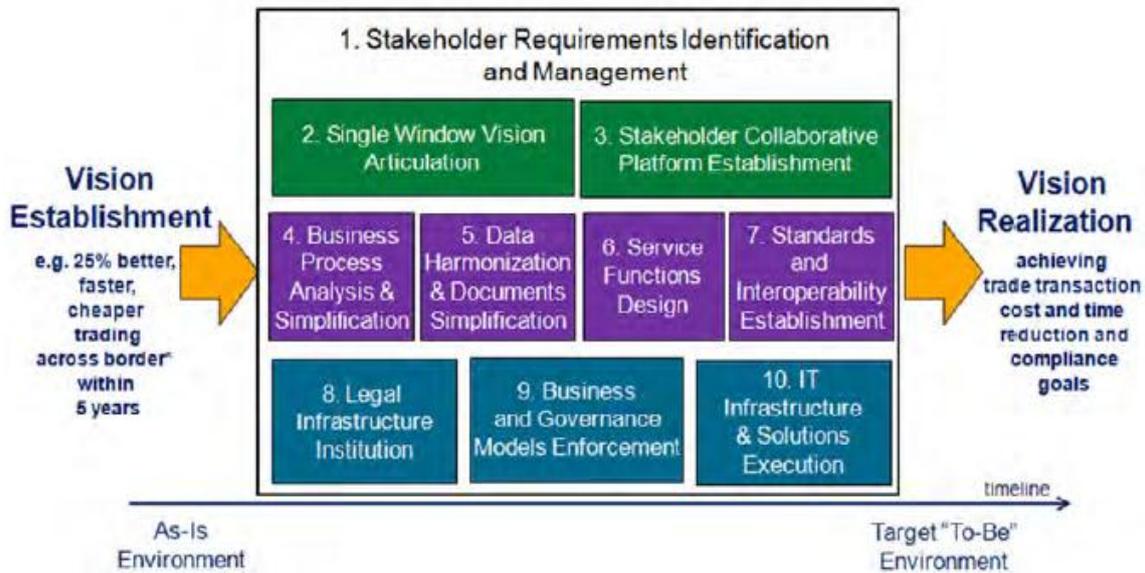
The SWIF development methodology divides SW implementation challenges into 10 major components where each component deals with a set of related issues relevant to different viewpoints. To manage and implement the SW vision for better, faster, and cheaper trading across borders, it is important to understand the current conditions of these components.

The 10 Components

- i. Stakeholder Requirements Identification and Management
- ii. Stakeholder Collaborative Platform Establishment
- iii. SW Vision Articulation
- iv. Business Process Analysis and Simplification
- v. Data Harmonization and Documents Simplification
- vi. Service Functions Design (or Application Architecture Design)
- vii. Technical Architecture Establishment including Standards and Interoperability
- viii. Legal Infrastructure Institution
- ix. Business and Governance Models Enforcement including Finance, Implementation and Operation Governance
- x. IT Infrastructure and Solutions execution

For a clearer understanding of where and how the 10 critical components, mentioned above, are encompassed (and in a proposed order), the following figure is provided:

Figure 1 – Ten Critical Components for SW Development from the UN/ESCAP SW Planning & Implementation Guide 2012



Source: WCO Compendium on how to build a SW Environment, 2011

<http://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/single-window/single-window-guidelines.aspx>

The Roadmap: Evolution of SW

The objective of this section is to present an evolutionary model of how the Pakistani SW can develop to serve as a roadmap for long-term development of a NSW. Due to the complexity of these projects and the required changes in business processes and trading practices, most economies choose incremental implementation of their NSW.

The roadmap divides the development of a NSW into five different maturity levels. It should be used as a reference model. Policymakers can determine the current state of Pakistan’s SW and can then define objectives, and prioritize and suggest the next stage they want to achieve.

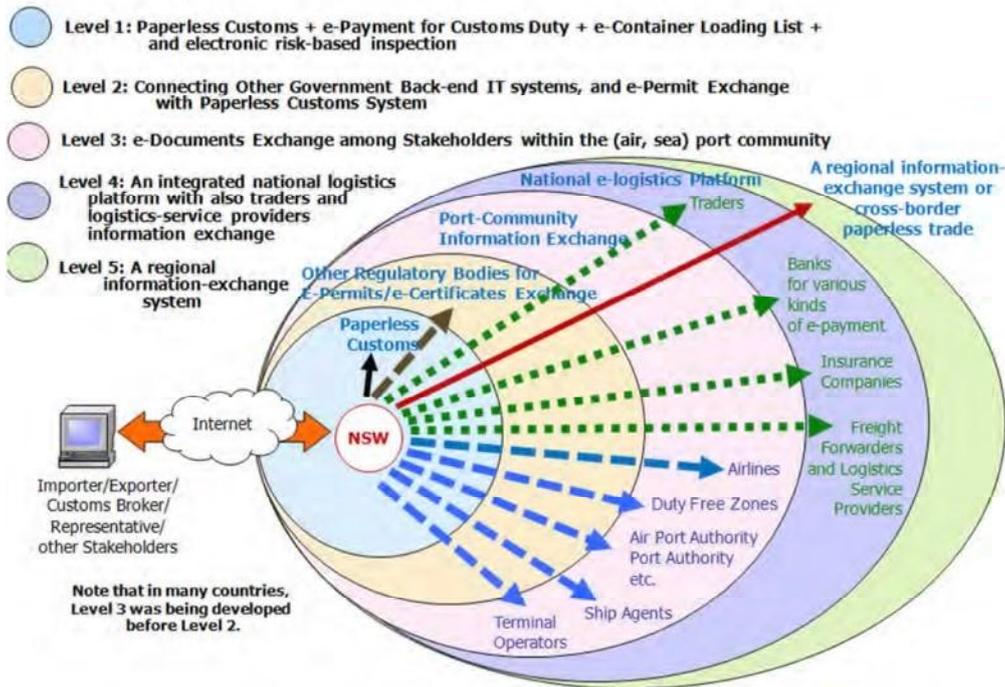
This section also describes the roles of a Regional Single Window (RSW) and a NSW in contributing to regional trade integration and trade competitiveness.

A SW Roadmap Based on Five Evolutionary Stages

Simplification and automation of documents and procedures in a SW takes place in incremental stages. In 2005, a United Nations Economic Commission for Europe (UNECE) forum on “Paperless Trade in International Supply Chains: Enhancing Efficiency and Security” collected lessons learned from many economies around the world and have already presented a recommended roadmap for developing SW, taking into account the evolutionary nature of these projects. The evolutionary concept of SW was confirmed and further detailed in the background paper² of the Global UN Trade Facilitation Conference, “Ten Years of Single Window Implementation: Lessons Learned for the Future,” held in 2011 in Geneva, taking into account the global experiences made in the last 10 years.

² Referring to “Ten Years of Single Window Implementation: Lessons Learned for the Future,” a discussion paper by Jonathan Koh Tat Tsen, during the 2011 Global Trade Facilitation Conference, http://www.unece.org/fileadmin/DAM/trade/Trade_Facilitation_Forum/BkgrdDocs/TenYearsSingleWindow.pdf.

Figure 2 - A SW Roadmap in Five Evolutionary Stages³



The evolution of the UNESCAP model SW implementation can be described in five incremental development levels, as shown in the diagram above. The SWIF methodology is applied at every stage transition and considers the relevant stakeholders at every stage.

- **Level 1: Paperless Customs:** Development of a paperless customs declaration system
- **Level 2: Regulatory SW:** Integration of a paperless customs with other regulatory bodies issuing trade/import/export/transit-related permits and certificates, and other related documents
- **Level 3: Port SW or Business-to-Business (B2B) Port Community System:** Extension of the SW to serve entire trade and logistics communities within the airports, seaports, and/or dry ports
- **Level 4: Fully Integrated SW:** Creation of an integrated national logistics platform interlinking the administrations, companies, and the service sectors to better manage the entire chain of import-export operations
- **Level 5: Cross-border SW Exchange Platform:** Interconnection and integration of NSWs into a bi-lateral or regional cross-border e-information exchange platform

A Gap Analysis of Pakistan NSW - Customs' Initiative and SW UNESCAP Implementation Model as it Relates to the Above Five (5) Levels

Correspondence between the Trade Project and Pakistan Customs suggests that the Federal Board of Revenue (FBR) has embarked upon an ambitious plan to implement SW in Pakistan. The plan resembles the UNESCAP model discussed above. The proposal emphasized the need for establishing project management offices on at least three major levels: **a)** Political (Prime Minister/ Finance Minister), **b)** Strategic (FBR - Customs Wing) - and **c)** Operational (Coordination team).

In a plan developed by Pakistan Customs it was recommended that a summary may be moved to the Prime Minister in the first phase for the constitution of a committee comprising 8 major ministries

³ The graphics were presented also during the 2011 UN Global Trade Facilitation Conference in Geneva, <http://www.unece.org/swglobalconference2011>.

including Finance, Commerce, Industry, Communication, Science and Technology, Agriculture and Livestock, and Interior and Foreign Affairs, and be led by FBR/Customs for implementation of the NSW project. At the time of this report, however, there was no evidence indicating such a committee has been formed or a summary sent to the PM.

The plan included the 10 project components that must be adopted in the electronic SW project. These components are the same SWIF components as per the UNESCAP model. The plan acknowledges that the development of components is unlikely to be fully completed and commonly agreed at once. This is mainly because the establishment of electronic SWE is a complex project and involves many different stakeholders leading to the need for several rounds of consultation, discussion, and refinement.

A stage wise project management process with **five phases** has been outlined by Pakistan Customs' proposal to assist the policy managers in conducting the policy formulation, planning, and overseeing of the project. These phases are the same evolutionary stages outlined in the UNESCAP model; however, the order of implementation of the phases is different as Pakistan's SW implementation strategy moves from "paperless customs" to "port community exchange information," and skips the second evolutionary stage i.e., the regulatory SW stage which ensures integration of paperless customs with other regulatory bodies issuing trade/import/export/transit-related permits and certificates, and other related documents.

An overview and gap analysis of the Pakistan Customs' project management phases, mirroring UNESCAP evolutionary stages, is as follows:

Level 1: Paperless Customs

Development of paperless customs declaration system and "as is" in Pakistan to-date

The UNESCAP model prescribes the development of paperless customs declaration system in the first evolutionary stage (i.e., e-payment of import duty/taxes, e-documents exchange with terminal operators/port authorities, and Paperless Customs environments that only use electronic customs documents through secure Value Added Networks (VANs) without requiring physical visit and without submitting physical papers at a later stage). Pakistan Customs claims to have achieved this stage through the implementation of WeBOC. Pakistan Customs began the automation of its regulatory processes in 2003 through its One Customs (OC) system leading to adoption of WCO compliant Goods Declaration (GD) format in 2006. Compared to international best practices, the OC system was neither Web-based nor well-structured, as it required entries in paper form leading to a lack of control and selectivity. In 2005 "Micro-clear" - based Pakistan Automated Customs (PaCS) system was introduced for the clearance of containerized imports and exports. The OC system continued to work in parallel to PaCS and dealt with exceptions left out by PaCS. This was followed by the efforts to develop an indigenous software system (WeBOC) which was then launched in December, 2011 and incorporated specialized business processes for consignments other than containerized cargo.

NOTE: Since its introduction, WeBOC has managed over 60% of trade coverage across Pakistan, covering all of customs controls and has been targeted to cover 90% by the end of 2014. The system currently covers 76% of imports, 96% of exports, and 80% of all air freight in Pakistan. The other fields of customs operations are still covered by the OC system. The WeBOC system does not require hard copies of the GD document to be submitted. The expansion of WeBOC continues as the system is rolled out across the country, with Sialkot border customs station expected to switch to WeBOC by May 2014. The WeBOC department (Reform and Automation, Karachi) aims to cover 100% of trade in Pakistan by the end of 2015.⁴ Currently, Pakistan Customs is trying to transfer customs data to a data warehouse so that operations can be switched from WeBOC to an ever better system which may provide solid basis for implementation of NSW.

⁴ Meeting minutes, Director of Reforms and Automation (Karachi) April 17, 2014.

The salient features of WeBOC

- Cargo information is received before vessel arrives
- Online manifest filing by shipping lines
- Communication with terminal operators through EDI messaging
- Online GD filing, online interaction and payment of duty and taxes at banks
- Risk Management System
- All routine Customs processes are performed online by Customs without involvement of trader or agent. These include Assessment and Examination/Inspection
- Online loading and gate out information
- Manifest clearance

WeBOC Modules

Implementation of the WeBOC system has included development of a number of modules i.e., User Management Security and Authentication, Carrier Declaration, Goods Declaration, Assessment Management, Risk Management System, Examination Management, Duty Tax Charges Computation Engine, Tariff and Trade Policy Maintenance, Exemption Regime Management, Adjudication, Security Management, Payments Management and Reconciliation, Clearance Management, Rebates, Recoveries, Refunds, Quota Management, Duty Taxes Remission for Exporters Management, Agents License Management, and Electronic Data Interchange.

Recommendation 1:

Customs must ensure a 100% WeBOC automated Customs Clearance system as soon as possible (i.e., a complete paperless Customs at the earliest).

Recommendation 2:

Customs expedite its plans to transfer data to a robust data warehouse in anticipation of implementing a more advanced version of WeBOC.

Level 2: Regulatory SW

Integration of Paperless Customs with other regulatory bodies issuing trade/import/export/transit-related permits and certificates, and other related documents

After linking traders and customs electronically, countries can develop a SW e-document exchange system linking several or all government agencies dealing with the regulation of imports and exports. This system allows application for and issuance of electronic import/export-related permits and certificates and their exchange between government agencies.

The more challenging feature is a regulatory SW with single submission where traders submit their export or import data only once. Such a regulatory SW entry facility is able to communicate with several authorities to obtain any necessary permits and certificates. An example of this type of SW is "TradeNet" of Singapore; traders submit electronic data in a SW to obtain all necessary import/export-related permit/certificate and customs declarations.

According to UNESCAP's model, this stage proposes integration of Paperless Customs with other regulatory bodies issuing trade/import/export/transit-related permits and certificates, and other related documents.

To date, Pakistan Customs has provided access to the Engineering Development Board for issuance of certification online. Currently, the department is developing interface software for the Trade Development Authority of Pakistan and the National Tariff Commission. Interface spade work to connect Animal Quarantine and Plant Protection departments has also been completed; however, due to lack of Information and Communication Technology (ICT) equipment in the Animal Quarantine and Plant Protection Departments, the link has not been established as yet. Other CBRAs such as Defence, Anti-Narcotics Force, Food and Drug Safety, and sanitary and phyto-sanitary have

legislative powers for respective regulations. Persuasion of other regulatory agencies to submit certificates/information electronically has been the most difficult because Customs does not have the political or legal mandate to act as the lead agency for SW implementation, and therefore, the authority to formally guide the process and insist on compliance by Other Government Agencies (OGAs).

Recommendation 3:

Move as soon as possible to Level 2 of the SW Roadmap i.e., Pakistan Customs to formally identify the CBRAs (stakeholders).

Recommendation 4:

Customs to commence an accountable and programmed method of working towards the following:
(i) Stakeholder requirement management, (ii) Joint SW vision articulation, (ii) Soliciting political will, (iii) Obtain formal nomination as lead agency, (iv) Cater for finances, (v) Address the legal aspects, (vi) Map business processes, and (vii) ICT enablement.

Level 3: Port SW or B2B Port Community System

Extension of the Single Window to serve entire trade and logistics communities within the airports, seaports, and/or dry ports

The next stage in developing a SW is to integrate the private-sector stakeholders and intermediaries at major airports, seaports, or borders. The systems are sometimes referred to as Port Community Systems (PCS) or Port SWs. There is no clear distinction between the two terms. In this stage the UNESCAP model describes the extension of the SW to serve entire trade and logistics communities within the airports, seaports, and/or dry ports.

In Pakistan, however, limited progress has been made in this respect. Additional WeBOC modules have been rolled out through 2011 and 2012 at PICT (Pakistan International Container Terminal), QICT (Qasim International Container Terminal), and KICT (Karachi International Container Terminal). Currently, WeBOC is fully operational at all Karachi and Qasim port terminals and deals with imports, exports, and transit. The transit module has been added to the system since January 2014. Complete achievement of this level seems a long way off due to lack of airport and dry port WeBOC coverage in Pakistan.

Level 4: Fully Integrated SW

Creation of an integrated national logistics platform interlinking the administrations, companies and the service sectors to better manage the entire chain of import-export operations

In this stage, UNESCAP model purports creation of an integrated national logistics platform interlinking the administrations, companies, and the service sectors to better manage the entire chain of import-export operations.

The GoP has made no progress at this stage and requires a thorough implementation of SWIF strategy to achieve this stage.

Level 5: Cross-border SW Exchange Platform

Interconnection and integration of NSWs into a bi-lateral or regional cross-border e-information exchange platform

Electronic cross-border information exchange is an important instrument for regional integration and increased security, trust, and collaboration between trading countries. At this stage the model illustrates interconnection and integration of NSWs into a bi-lateral or regional cross-border e-information exchange platform.

At present, the GoP has launched a pilot Electronic Data Interchange (EDI) connectivity project between Pakistan and Afghan Customs. The GoP aims to take EDI connectivity further as the government is also looking to establish EDI connectivity with China as part of the Free Trade Agreement signed between the two countries. In order to reach the bench mark stage, the GoP needs to embark upon a long term plan (5 to 10 years).

Recommendation 5:

The SWIF framework application will be required to be implemented at each level gradually in order to reach the final stage of a cross-border SW Exchange Platform. The progress should be reported to, and under the auspices of a powerfully led NSW Steering Committee.

Report Card on Pakistan's current status regarding its SW Implementation

Pakistan Customs have claimed to achieve the first two levels of their tailor made model. However, if compared against a UNESCAP benchmark model it appears that not a single level has been completely achieved. Most progress has been made at the first level, however, as mentioned above, Pakistan Customs is still not 100% paperless. At levels 2, 3, and 5 very limited progress has been made. With regards to level 4 there is hardly any visible development. Pakistan Customs had been vociferously suggesting that the model does not need to be started from scratch and that WeBOC has all the fundamental elements which can allow to add further layers onto the system and emerge into a National and RSW. With the recent change in the management it appears that the government has shifted their stance. Having realized that the current system is not robust enough to support NSW and RSW, they are now considering starting the system from the beginning in order to have stronger foundations.

Source: Minutes of meetings with Director Reform and Automation (Karachi) on March 6, 2014 and April 17, 2014, and the team's analysis

Important Challenges Faced by Pakistan in Order to Progress their NSW

According to sources interviewed, the most important challenges faced by Pakistan in implementing SW include:

- i. Political Support
- ii. Long term commitment from top management
- iii. Reliable institutional platform for interagency collaboration
- iv. Effective management of stakeholders' expectations and perceptions
- v. Workable business procedure
- vi. Architectural models
- vii. Data and business interoperability
- viii. Law and regulations
- ix. Financial Issues.

The next section introduces a framework for SW implementation, providing a systematic approach to the management of the project. A proposed framework to assist in and ease the tasks of planning and overseeing a complicated and large-scale SW project is explained in the next section.

Single Window Implementation Framework (SWIF)

The objective of this section is to show the SWIF as a recommended approach for systematically structuring the implementation challenges into several smaller and easier manageable components.

Key Components of SW

The SWIF advises dividing the SW implementation challenges into 10 major components where each component deals with a set of related issues relevant to different viewpoints. To manage and implement the SW vision for better, faster, and cheaper trading across borders, an understanding of the current conditions of these components is necessary.

The 10 Components

- 1) Stakeholder Requirements Identification and Management
- 2) Stakeholder Collaborative Platform Establishment
- 3) SW Articulation
- 4) Business Process Analysis and Simplification
- 5) Data Harmonization and Documents Simplification
- 6) Service Functions Design (or called Application Architecture Design)
- 7) Technical Architecture Establishment including Standards and interoperability
- 8) Legal Infrastructure Institution
- 9) Business and Governance Models Enforcement including Finance, Implementation and Operation Governance
- 10) IT Infrastructure and Solutions Execution

The above components will now be briefly discussed to assist the reader to fully understand their importance as they relate to any SW implementation.

Most component topics have a corresponding appendix containing deeper analyses, background, considerations, and discussions that are relevant to the referred component, and will assist SW implementers/project managers to ensure they are fully aware of all considerations necessary to meet component requirements.

Component numbers 6, 7, and 10 cover the many levels and considerations of IT Architecture and Infrastructural aspects that are involved in a SW project. Analyses, considerations, relevant background, and discussions on these three components were amalgamated into Appendix VII.

Component No. 1

Stakeholder Requirements Identification and Management: Needs and requirements of stakeholders must be identified and managed effectively.

Stakeholders include policymakers, government administrations, private-sector participants, and citizens that have stakes in cross-border trade. Typically, not all can be included in the first phase of SW development. Project managers will have to prioritize the different government agencies and private sectors for inclusion in a specific project phase. For example, if the scope of envisioned SW is to interconnect electronic customs clearance systems with other government agencies responsible for issuing different kinds of export/import-related permits and certificates, the requirements and objectives of these agencies needs to be analyzed and their management must be involved in the project planning and steering. In the course of establishing the SW environment, all stakeholders' needs and requirements must be explicitly identified, negotiated, agreed, and fed into all development phases of the SW.

Recommendation 6:

Ensure an empowered⁵ manager is in place to drive "stakeholder requirements identification and management project" - and to ensure strict compliance to an agreed end-date.

Component No. 2

SW Vision Articulation: Vision and value proposition, political will and the strategy must be well articulated, validated for its substantive value, and then securely mandated by the right authorities and sponsors.

⁵ 'Empowered' in this context refers to political capabilities and ability to ensure sufficient resources to complete projects on time.

The SW vision must be proposed, agreed, and articulated by high-level policy managers. The continuity of strong political will of the government and the business community to implement a SW is one of the most critical factors for the success of the project.

The availability and adequacy of resources to establish a SW is often directly related to the level of political will and commitment to the project. Therefore, sustained support from high-level policymakers is extremely important for a long-term project such as a SW. Establishing the necessary political will is the foundation stone on which all the other success factors rest. Obtaining this political will requires dissemination of clear information on vision, objectives, and value propositions including implications, benefits, and possible obstacles.

Using the architecture concept we need to understand the current policy direction, analyze its gaps and weaknesses, and propose a better direction. For example, if no vision related to trade facilitation and SW initiative has been formulated and approved by high-level policy decision-makers, the policy managers must develop and propose such a vision.

To date, while there has been much discussion and general acceptance that Customs should be the expected lead agency in a SW implementation (as is the usual practice globally, given Customs is often seen as the best placed final ‘gate-keeper’ of imports and exports due to its expertise in this area) there is yet to be any formalized agreement seen from the GoP. As described above, political will and clear information on objectives and value propositions including implications, benefits, and possible obstacles have to be managed (cohesively with all stakeholders) and who better than by representatives of a formally endorsed lead agency?

In addition to identifying a lead agency, it is important to establish a NSW Steering Committee, comprising of public and private sector stakeholder representatives with whom the lead agency can consult with as the SW implementation progresses. The Committee must encourage feedback from stakeholders, develop satisfactory communication processes so any change or amendments in processes made by OGAs can be reflected in the SW application(s), and later discuss and agree on SW fees (i.e., their transactional base, how revenue is to be appropriated between, for example, the costs of OGA’s doing business issuing their Certificates Licenses Permits (CLPs) and Customs processing import and export entries and like costs). All the above issues are an inexhaustible list of discussion points that need to be considered by the proposed NSW Steering Committee. Such Committees are usually chaired by a formally endorsed lead agency or a representative of the government. Either way, there needs to be a prime agency to track and field questions regarding the day-to-day progress of the SW implementation.

Feedback gathered from the trading community is indicative of unanimous support for Pakistan Customs to serve as a lead agency for SW implementation. Since Pakistan Customs possesses both adequate experience and the infrastructure capability required to undertake such an initiative, it is proposed that legal mandate be provided to the authority as soon as possible in order to add momentum to the ongoing efforts.

Recommendation 7:

Customs to urgently and immediately seek formal recognition from the GoP as the “lead agency” in SW implementation

Recommendation 8:

As soon as Recommendation 7 is achieved, a NSW Steering Committee needs to be established.

Component No. 3

Stakeholder Collaborative Platform Establishment: Establishment of a lead agency, inclusive membership and participation, and effective interagency collaborative platform and participation of the business community.

Apart from the need for political will, the project will need a strong, resourceful, and empowered lead organization to launch and see through its various phases. This organization must have the appropriate political support, legal authority, human and financial resources, and links with other relevant government agencies and the business communities. In addition, it is essential to have a strong individual within the organization who will be the project “champion.”

A SW is a practical model for cooperation between agencies within the government and between the government and businesses. It presents a good opportunity for a public-private partnership in setting up and operating the system. Consequently, representatives from all relevant public- and private-sector agencies should be invited to participate in developing the system from the outset. This should include participation in all levels of the project; from developing the objectives, situational analysis, and project design, right through to implementation. The ultimate success of the SW will depend critically on the involvement, commitment, and readiness of these parties to ensure that the system becomes a regular feature of their business process.

The most powerful stakeholders must be identified early so that their input can be used to shape the future direction of the SW. Support from the powerful stakeholders will help the engagement win more resources thus making the implementation more likely to succeed.

Frequent and timely communication with other stakeholders is very important. A more formal collaborative platform (e.g., a SW steering committee including supportive working groups with representatives from concerned regulatory agencies and related business associations) should be established to create an environment for effective interagency coordination and collaboration.⁶

To date, Pakistan Customs has the OC program running concurrently with WeBoc (V.1) and already plans to create WeBOC (V.2), the anticipated foundation for the NSW and later RNSW. It is recommended that WeBOC (V2) is a product based on full consultation with stakeholders and should only go “live” after much testing. Evidence consistently indicates that concurrently running programs without sufficient testing before release of the replacing system causes a multitude of technical problems as well as low confidence levels in users who rely on such systems.

It has been observed that, to date, there has been little or no consultation with all stakeholders in WeBOC (V.1) or any consultations planned for WeBoc (V2).

Recommendation 9:

Ensure greater sufficient stakeholder consultation, system testing and security audits be undertaken prior to any “live” roll-out of WeBOC (V2).

Component No. 4

(Considerably more detail and reference material on this component can be located in Appendix IV)

⁶ For more information about inter-agency collaboration, please refer to “Harnessing Interagency Collaboration in Inter-organizational Systems Development: Lessons Learned from an E-government Project for Trade and Transport Facilitation,” authored by Thayanan Phuaphanthong, Tung Bui, and Somnuk Keretho, the International Journal of Electronic Government Research (IJEGR), Vol. 6, No. 3, July-September 2010.

Business Process Analysis and Simplification: Current business process are analyzed, and target business process for easier and more compliance trading across borders are proposed, agreed upon and implemented.

Business Process Analysis (BPA) is the **first step** towards automating processes and documents.⁷ It includes the systematic analysis of the procedures and information flows in cross-border trade, an analysis of their weak points and delays, recommendations for improvement, and a description of the business processes and information flows after the improvement.

The proposed future procedures are well documented, simplified, faster, and more secure. This is a precondition for the introduction of electronic-based transactions with electronic documents submission, automatic information exchange, and information management through the SW.

According to the Trade Project's observation, BPA is always more difficult if electronic processes are not already in place. This is because the step-by-step processes (in Pakistan) have to be distilled from less educated, lower level, and older⁸ "processing" staff who generally do not have a sound understanding of the task at hand and have difficulty comprehending why BP analysts ask so many questions relating to identifying each consecutive process step. The processors undertake to receive, consider, authorize, and issue their CLPs that relate to trade. It is expected that there will be delays in their approval of the formally presented "as-is" processes as recorded by the BPA staff. Hence it is expected that a BPA process with all stakeholders (especially OGAs) is expected to be a difficult, complex and longer than normally anticipated process.⁹

Recommendation 10:

BPA be conducted thoroughly within all stakeholder agencies and the trade by the SW Project Implementation Team under direction of the NSW Steering Committee, as soon as possible.

Component No. 5

(Considerably more detail and reference material on this component can be located in Appendix V)

Document Simplification and Data Harmonization: Analysis, simplification, and standardization of trade documents and trade data, development of data models, and electronic documents and messages

Simplifying and harmonizing trade documents and data can significantly reduce time and costs of international transactions. Simplification of the trade documents includes an analysis of whether a document is really needed to perform a given business process and whether several distinct trade documents with a similar function can be combined into one single document.

Document alignment is the standardization of the information in the trade documents to international terms and descriptions, the use of international code lists such as country and currency codes for the information, and the alignment of the layout of the trade document to international standards.

Data harmonization is the analysis of information in a set of trade documents to identify those information objects which are shared between government agencies. It leads to the use of common definitions (semantic) for the information objects which are recorded in a data dictionary. The

⁷ "Business Process Analysis to Simplify Trade Procedures", UNNExT-UNESCAP/UNECE publication, 2010.

⁸ 'Older' and less educated staff being the norm at lower processing levels due to the (often stated by interviewees) non-recruitment of civil servants in various government agencies for decades

⁹ This observation largely based on the SW consultant's first-hand experience in undertaking BPA in other developing economies

definitions are from the viewpoint of business domain managers. The data model presents a holistic view that is processed by the different agencies and private sector companies that participate in the SW.

The definition and structures used in a data model are based on the data dictionary, but are on a much more detailed and precise level. They represent the viewpoint of IT solution providers and software engineers. The data model is then used to develop the data structures for the electronic trade documents and messages that are exchanged through the SW and for the connectivity of the in-house IT systems in the government agencies with the SW.

The outputs of the document simplification and data harmonization component provide a stable platform for developing IT solutions. They are also a precondition for creating common understanding on the exact type of information that needs to be exchanged between the different private sector parties and government agencies that participate in the cross border trade. It is therefore also an important tool to enhance collaboration between the stakeholders.

Component 4's task needs to be accomplished before this component's task can be commenced.

Component No. 6

(As with IT related Components 6, 7 & 10, reference to Appendix VII is recommended should the reader require more information on this component's challenges)

Service functions designs (or Application Architecture Design): Design, agree and develop services and functions provided by software applications of the SW Service functions design is often also referred to as application architecture.¹⁰

It provides a blueprint for describing services and functions of the SW software systems. This blueprint includes the different sub-systems and components of the software solution, their interactions, and their relationships to the core business processes of the government agencies and business users.

This blueprint, shown preferably with diagrams and associated descriptions, can be used for easier discussion, refinement, and agreement among key stakeholders and target users. Then the master plan for implementation and deployment can be further developed with reference to this baseline. The more detailed design of the system needs to be attuned to the real ICT capacities of the traders and the government agencies. Maximum number of users should be able to access the SW from the moment it is launched. In many cases, this may dictate the use of a semi paper-based and electronic system or a dual paper/on-line approach.

Accessibility and user-friendliness are also key factors for the success of the project. Comprehensive operating instructions and guidelines should be created for users. Help desk and user support services including training should also be created, especially in the early implementation phase of the project. The help desk can be a useful means for collecting feedback on areas of difficulty and bottlenecks.

The need for and value of practical training courses for users cannot be over-emphasized, especially in the early stage of deployment. In some economies, the issue of multilingual requirements might need to be addressed. The development of a SW does not presuppose the existence of or requirements for a sophisticated computerized information system for receiving, storing, and sharing

¹⁰ A very high-level application architecture example is shown in Figure A.1.

information. Clearly, IT can have a huge positive impact on the potential for sharing information in a SW context, usually the more common approach in SWs.

When considering the technical requirements for a SW, the value of and investment in existing legacy systems should be respected. Although it may sometimes be necessary to replace such systems, a practical approach for sharing and exchanging information between agencies may well be to create a central portal or gateway.

Pakistan has somewhat of an advantage, at least on a national scale, as anecdotal evidence suggests most OGAs have little or no IT infrastructure; Pakistan has an opportunity at reasonable cost to ensure most or all OGAs use complementary systems which will enable the government's SW system to easily share and exchange information between agencies.

Recommendation 11:

Ensure the GoP formally directs all government agencies (stakeholders in the SW) and liaises with a formally endorsed lead agency for SW before there is any designing, agreement, and development of services and functions to be provided by software applications of the SW service.

Component No. 7

(As with IT related Components 6, 7 & 10, reference to Appendix VII is recommended should the reader require more information on this component's challenges)

Technical Architecture Establishment Including Standards and Interoperability: Open and internationally recognized technical standards, interoperability and communication protocols must be adopted.

The success of a SW greatly depends on the ability of its components to exchange information with each other electronically. Document simplification and data harmonization already provide an important standardization component. Common standards, data protocols, and approaches are required to ensure data and procedural interoperability between the different IT platforms connected to the SW. This requires agreements on standards for communication protocols, security, authentication and electronic information structures such as semantic standards, data models, and message structures.

As with Component 6, given most of Pakistan's government agencies that will ultimately be part of the NSW have little or no IT platforms, it remains an ideal opportunity for relevant Pakistani government agencies to liaise with the lead agency for SW (a such time as such agency is formally endorsed) to ensure they operate on the same IT platform. This will save cost and many hours on developing common standards, data protocols and approaches required to ensure data and procedural interoperability.

Recommendation 12:

Ensure the GoP formally directs whichever government agencies are ultimately designated as SW stakeholders to liaise with the lead agency for SW (at such time as such agency is formally endorsed) before an IT platform for SW is purchased.

Component No. 8

(Considerably more detail and reference material on this component can be located in Appendix VI)

Legal Infrastructure Institution: Enabling electronic transaction laws and related regulations to ensure the legitimacy, trust and confidence in electronic transactions must be institutionalized.

Establishing the necessary legal environment is a prerequisite for SW implementation. Related laws and legal restrictions must be identified and carefully analysed. For example, changes in legislation can sometimes be required in order to facilitate electronic data submission/exchange and/or an electronic signature system. Restrictions concerning the sharing of information among authorities and agencies and organizational arrangements for the operation of a SW may need to be resolved. Also, the legal issues involved in delegating power and authority to a lead agency need some analysis and appropriate resolution.

The legalization of electronic documents and data exchange needs to be established. Many economies with SW facilities have enacted several related laws and regulations, e.g., Electronic Transaction Law, Digital Signature Law, Computer Crime Law, and Data Privacy Law.

The Electronic Transaction Law should be enacted within an economy to promote the use of electronic transactions as another legal method of transaction and to recognize the legitimacy of the electronic documents as well as other processes including the endorsement of the methods of sending and receiving electronic documents, the use of electronic signature, and the admissibility of evidence in the form of electronic documents.

The legal concepts of the Electronic Transaction Law can be based on the United Nations Commission on International Trade Law (UNCITRAL) Model Law on Electronic Commerce and the UNITRAL Modal Law on Electronic Signature.¹¹ The compelling reasons for enactment were to get rid of legal obstacles to the use of modern means of transactions and to lay down legal principles for computer-based communications.

Pakistan's current Customs Act was last updated in 1969. The Act reveals considerable inadequacies on many fronts, and the ensuing Statutory Regulatory Orders (SROs) have often added to its poor interpretation of issues.¹² The Customs Act needs to be revised to ensure a workable and accountable SW.

Recommendation 13:

The GoP urgently needs to re-write its Customs Act, especially to ensure the act satisfactorily meets its Component 8 obligations for a SW.

Component No. 9

(Considerably more detail and reference material on this component can be located in Appendix VIII)

Business and Governance Models Enforcement: Financial and business model decisions involving cost-benefit analysis, investment and operation cost, and the sustainability of SW, including governance mechanism for monitoring, ensuring and enforcing the implementation and operation of SW systems must be analyzed, designed, and implemented.

The financial and business model must support sustained operation of the SW at the required service level. Relevant issues include proper mode of investment, analysis of appropriate funding models and investors (e.g., options of investment by public sector only, private sector only, or joint public and private partnership¹³, or international organizations), fees for services, decision on the agencies

¹¹ The UNCITRAL Guide to Enactment of the Model Law on Electronic Commerce 1986 and the UNCITRAL Guide to Enactment to the Model Law on Electronic Signatures 2001.

¹² One of the authors has discovered this through his assessment of the act merely from a Customs Agent's Licensing point of view.

¹³ *At time of writing it is understood the GoP would only entertain public ownership of its NSW or development funds from an international donor to establish it*

providing the services and their managerial and institutional structure, estimation of budget, and overall benefits to be arising from investment on the national and regional levels.

A mechanism must be created for monitoring the implementation, deployment, and operation of the SW and its subcomponents to ensure the successful establishment and conformance with the agreed requirements, policies, and plans.

Discussions attended by the Trade Project in relation to this report suggest that the GoP has yet to decide how it will pay for the proposed NSW. It is imperative that the government calculate the overall project's estimated costs, establish donor willingness to participate as well as projected costs of maintenance, support, and enhancement of the proposed SW.

Recommendation 14:

As a matter of urgency the GoP needs to establish what the probable cost of its SW will be in terms of infrastructure and maintenance needs analysis, and prepare a budget request for expenditure approval for the SW Implementation.

Component 10

(As with IT-related Components 6, 7 & 10, reference to Appendix VII is recommended if the reader require more information on this component's challenges)

Information Technology Infrastructure and Solutions Execution: Technology infrastructure, system and hardware development, software development, deployment and security are designed, implemented, and executed.

Technology architecture describes the software and hardware development and deployment for the systems described in the Application Architecture. The technology architecture includes a detailed and technical description of business processes, electronic data and documents, and application services of the future SW platform.

Policy managers and policy decision makers may not deal in many details with the complex issues of designing and implementing the IT infrastructure and software systems. Usually this task is left to highly specialized IT solution providers.

However, policy managers need to identify and monitor key issues in the IT infrastructure development. Important technical tasks in developing a SW system are, for example, reviewing existing technical systems in government agencies and PCS for receiving, storing and exchanging the relevant information, determining overall technical requirements, development of interfaces to existing legacy systems for SW connectivity, determining if the existing systems will be able to handle increased in the data volume, and examining issues related to the storage, verification and authentication of data.

This section has discussed all the critical components to develop a SW and some of the challenges linked to them. In the next section, we present an approach how to implement these components.

A Methodology to Develop the Components of the SW

This SWIF recommends implementing the project by establishing a development cycle, concentrating around the 10 components described in the previous section. SWIF explains how these 10 components can be developed. This cycle is graphically shown in Figure 3.1.¹⁴ It consists of the same

¹⁴ This figure shows the same 10 components as described in section 3.2, but Component 0 – the Preliminary component is added for the obvious reason.

10 components as discussed in section 3.2, and an additional preliminary component that describes the start of the SW project idea.

Figure 2.1 – SWIF SW Development Methodology

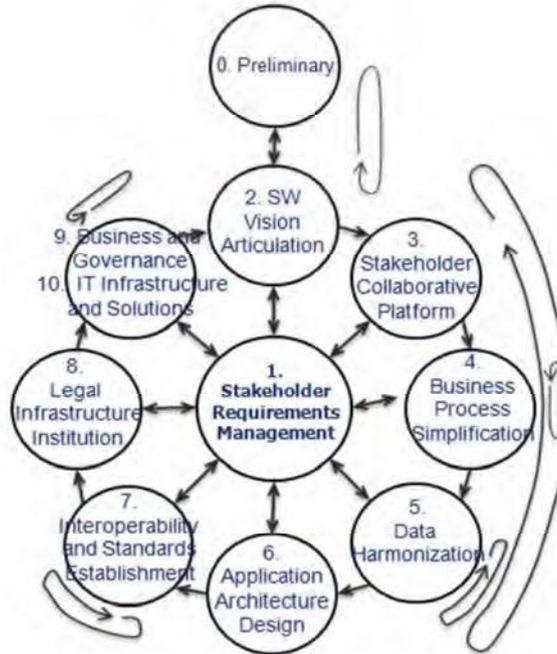


Table 3.2 below lists the different objectives, activities, and outputs for each SWIF component.

Objectives, Activities and expected Deliverables

Table 3.2 summarizes **key objectives, activities and deliverables/expected outputs in the development of each component**. All of those objectives and outputs are not necessarily implemented by policy managers but by specialists in different areas. It is however, the policy managers’ responsibility to commission each of these activities to experts with the relevant skills and to monitor progress and ensure compliance with relevant policy directives, the SW Master Plan, and recommendations.

The managers need to understand the activities and outputs and why they are important. They will not necessarily know about the “how-to” which normally can be led by specialists. It is worth mentioning that United Nations Economic Commission for Europe (UNECE) and UNESCAP can also provide specialized training and advisory services to governments for selected components of the SWIF.

Table 2 - Single Window Development Components, Key Activities and Deliverables

Component	Objectives	Activities	Deliverables/Expected Result
0 Preliminary	<ul style="list-style-type: none"> Undertake the preparation and initiation activities, set up the initial task force, and conduct a preliminary study on the existing environment and exploring possible SW environment and its initial value propositions 	<ul style="list-style-type: none"> Designate an initial task force to conduct a preliminary study on the existing environment and exploring possible SW environment and expecting benefits, e.g. those enabling by transforming some concerned paper-based transactions 	<ul style="list-style-type: none"> A concept paper with the purpose to facilitate initial discussion on the topic and obtain approval to go forward for a more in depth study into the need for, approach to and feasibility of a SW. Identification of key benefits of the SW Top level performance indicators for SW

Component	Objectives	Activities	Deliverables/Expected Result
		<ul style="list-style-type: none"> into e-documents and information-exchange platform Make use of existing facts and figures on benefits of trade and transport facilitation and SW Draw on relevant policy directives and recommendations of international and regional forums Obtain initial political will for SW Engagement 	<ul style="list-style-type: none"> Lead agency appointed to develop a more detailed feasibility study including the SW Vision, and other key components
1 Stakeholder Requirements Identification and Management	<ul style="list-style-type: none"> Identify and manage the requirements of stakeholders such that every stage of the SW development project is based on and validated against its requirements and target objectives 	<ul style="list-style-type: none"> Identify stakeholders' requirements Manage stakeholders' and other requirements change requests and assess their impact Determine whether to implement change or defer it to the later SW development cycle Ensure consistencies of related work products, developed architectures and components with the requirements and objectives of the SW 	<ul style="list-style-type: none"> List of stakeholders' requirements Consistency and validation of stakeholders' requirements with actual SW implementation is achieved.

Component	Objectives	Activities	Deliverables/Expected Results
2 SW Vision Articulation	<ul style="list-style-type: none"> Create and articulate joint vision, goals and scope of SW Secure the political will and necessary resources 	<ul style="list-style-type: none"> Elaborate and refine broad vision, strategy, objectives, and goals of the SW Define the scope of SW Implementation and constraints in terms of resources and competence availability Define value proposition of the SW and demonstrate its relations to stakeholders priorities Identify a set of key performance 	<ul style="list-style-type: none"> A high-level project management group with key stakeholders established An initial high level master plan that defines project components, activities and deliverables Key performance indicators

Component	Objectives	Activities	Deliverables/Expected Results
		<p>indicators that will serve as target quantitative goals to measure the success of the SW implementation</p> <ul style="list-style-type: none"> • Develop a high level master plan that describes overarching strategies for the overall project execution and a series of sub-projects that will gradually enable the full-scale operation of SW • Obtain the political will and commitment from the Government authority and key business representatives for SW Implementation • Secure formal approval and initial funding for project implementation 	<p>that measure project performance established</p> <ul style="list-style-type: none"> • A high-level master plan approved • Top level mandate to develop a SW, for example, by a formal decision of Prime Minister, President or the Cabinet • Initial finding for funding project components secured

Component	Objectives	Activities	Deliverables/Expected Results
3 Stakeholder Collaborative Platform Establishment	<ul style="list-style-type: none"> • Establish necessary environment for stakeholders' coordination and collaboration throughout the SW project lifecycle • Ensure that major stakeholders are committed to make the project a success 	<ul style="list-style-type: none"> • Identify stakeholders of the supply chain • Define roles and responsibilities of stakeholders as well as their individual objectives, requirements, and concerns • Create the environment for interagency coordination and collaboration in the later phases of SW implementation • Assess stakeholders' readiness for Single Window implementation • Conduct a review on stakeholder IT systems that are of relevance to the project 	<ul style="list-style-type: none"> • An effective stakeholder/interagency collaborative platform is established, e.g. SW steering committee, and working groups with representatives from key Government and business stakeholders.

Component	Objectives	Activities	Deliverables/Expected Results
4 Business Process Analysis and Simplification	<ul style="list-style-type: none"> Analyse existing business processes Identify bottlenecks Redesign, simplify, propose and seek approval of the relevant business processes 	<ul style="list-style-type: none"> Elicit, document, and analyse the existing export, import, and transit business processes as well as corresponding information flows and the trade documents used Develop business case scenarios and analyse potential benefits to convey to stakeholders Develop, propose, and seek approval for efficient business processes and a list of actions required to be carried out prior to adopting them Start initial activities to establish an enabling legal infrastructure for SW 	<ul style="list-style-type: none"> Analysis of Business Processes and documents used by the Government agencies and private sector Agreements on simplification of processes and related documents Agreements on the business processes and data to be automated

Component	Objectives	Activities	Deliverables/Expected Results
5 Data Harmonization and Document Simplification	<ul style="list-style-type: none"> Simplify, harmonize and standardize data and documents used in the business processes Develop the structures for electronic Messages 	<ul style="list-style-type: none"> Identify relevant standards for harmonization and standardization of data Identify data elements used in the business processes that are supported by the SW Describe each data element in terms of their definition, source, type, representation format, and constraint using relevant international standards Simplify and align data requirements used in different but related documents Analyse data elements across various documents/ messages and 	<ul style="list-style-type: none"> Agreements on standards, tools and techniques to develop, publish and maintain data elements and document templates. Simplified and aligned documents Published national data model and message structures for electronic data interchange with the SW

Component	Objectives	Activities	Deliverables/Expected Results
		organize them in a comparable manner <ul style="list-style-type: none"> Map data elements to a reference data model (e.g. WCO data model as appropriated) 	

Components	Objectives	Activities	Deliverables/Expected Results
6. Service Functions Design (Application Architecture Design)	<ul style="list-style-type: none"> Design and agree on the major functions of the proposed application architecture that should be provided by the application software necessary to process the data and support business processes 	<ul style="list-style-type: none"> Provide a detailed analysis of the main existing (if any) in-house application systems including their relevant functions, and capabilities that will be linked to the SW Identify main services to be provided by the SW for the connected agencies Design a high level Application Architecture (or the overall SW subsystems and their interconnection) that will deliver the SW services Formulate a basis for estimating resources needed for implementing, deploying, and operating the SW 	<ul style="list-style-type: none"> Documentation of the existing application architecture Agreed Descriptions with Diagrams (so called blueprints) of the target "to-be" SW Applications Architecture, at least at the high level, then to be further developed in details at the technical solution architecture execution.

Components	Objectives	Activities	Deliverables/Expected Results
7 Standards and Interoperability Establishment	<ul style="list-style-type: none"> Establish common technical standards, e.g. communication protocols, security and authenticity mechanism, and data schemas, to ensure the interoperability and electronic information exchange among systems with 	<ul style="list-style-type: none"> Identify technical interoperability requirements Select open and international standards to enable technical interoperability among different involved ICT platforms Agree and mandate the usage of these 	<ul style="list-style-type: none"> Commonly-agreed technical interoperability protocols and standards

Components	Objectives	Activities	Deliverables/Expected Results
	different IT platforms.	interoperability and security standards and technical protocols for the implementation of any SW subsystems	

Components	Objectives	Activities	Deliverables/Expected Results
8 Legal Infrastructure Institution	<ul style="list-style-type: none"> Create and institutionalize the required legal environment for the operation of a SW 	<ul style="list-style-type: none"> Assess existing legal environment and identify gaps Initiate changes in the legal environment Develop and enact any necessary legal laws and regulations for the SW, e.g. e-Transaction Law, Digital Signature Law, Data Privacy and Security, and Cyber Crime Law. 	<ul style="list-style-type: none"> Necessary laws and regulations, e.g. electronic transaction laws and computer crimes laws and regulations are enacted along with necessary cyber-law-related practical guides, if needed.

Components	Objectives	Activities	Deliverables/Expected Results
9 Business and Governance Models Enforcement	<ul style="list-style-type: none"> Conduct business model analysis including finance, cost-benefit analysis, risk analysis, and governance mechanism. Develop the high level implementation plan Secure the necessary budget and drive the implementation of the plan Provide oversight for the SW implementation and operation. 	<ul style="list-style-type: none"> Analyse cost benefits, risks, financial and operational models for the establishment and sustainability of the SW Develop the high level implementation plan Secure the necessary budget for implementation Oversee the project management groups who manage the allocation of budget and administer the implementation of the SW subsystems Formulate policies and recommendations (i.e. those related to procurement, contractual agreement, service quality, and charges) to govern the implementation, deployment, and 	<ul style="list-style-type: none"> Cost benefit study analysis including business models, investment cost, operational cost, cost-benefit analysis, and governing mechanisms for SW implementation and operation, and then the final decision on the appropriate model should be reached and mandated by the right authorities. High-level master plan developed and agreed. Governing mechanisms to manage and oversee the SW implementation and operations

Components	Objectives	Activities	Deliverables/Expected Results
		operation of SW <ul style="list-style-type: none"> Perform governance functions while SW sub-systems are being developed and deployed 	

Components	Objectives	Activities	Deliverables/Expected Results
10 IT Infrastructure and Solutions Execution	<ul style="list-style-type: none"> To oversee and monitor the design of the hardware and software solutions of the SW which will be the basis for implementation Commission and/or oversee the procurement, development and operation of the IT systems and software solutions 	<ul style="list-style-type: none"> Oversee the analysis and design of logical software, hardware, as well as IT and network infrastructure required to support the implementation, deployment, and operation of Single Window 	<ul style="list-style-type: none"> Blueprint of the future SW applications and technology architecture to be implemented The SW plan is implemented and monitored.

In conclusion, this section describes SWIF, an architecture concept that addresses the challenge of decomposing a SW implementation into 10 key components. SWIF also provides a development methodology along with objectives, activities, and deliverables to plan and oversee the implementation of the SW.

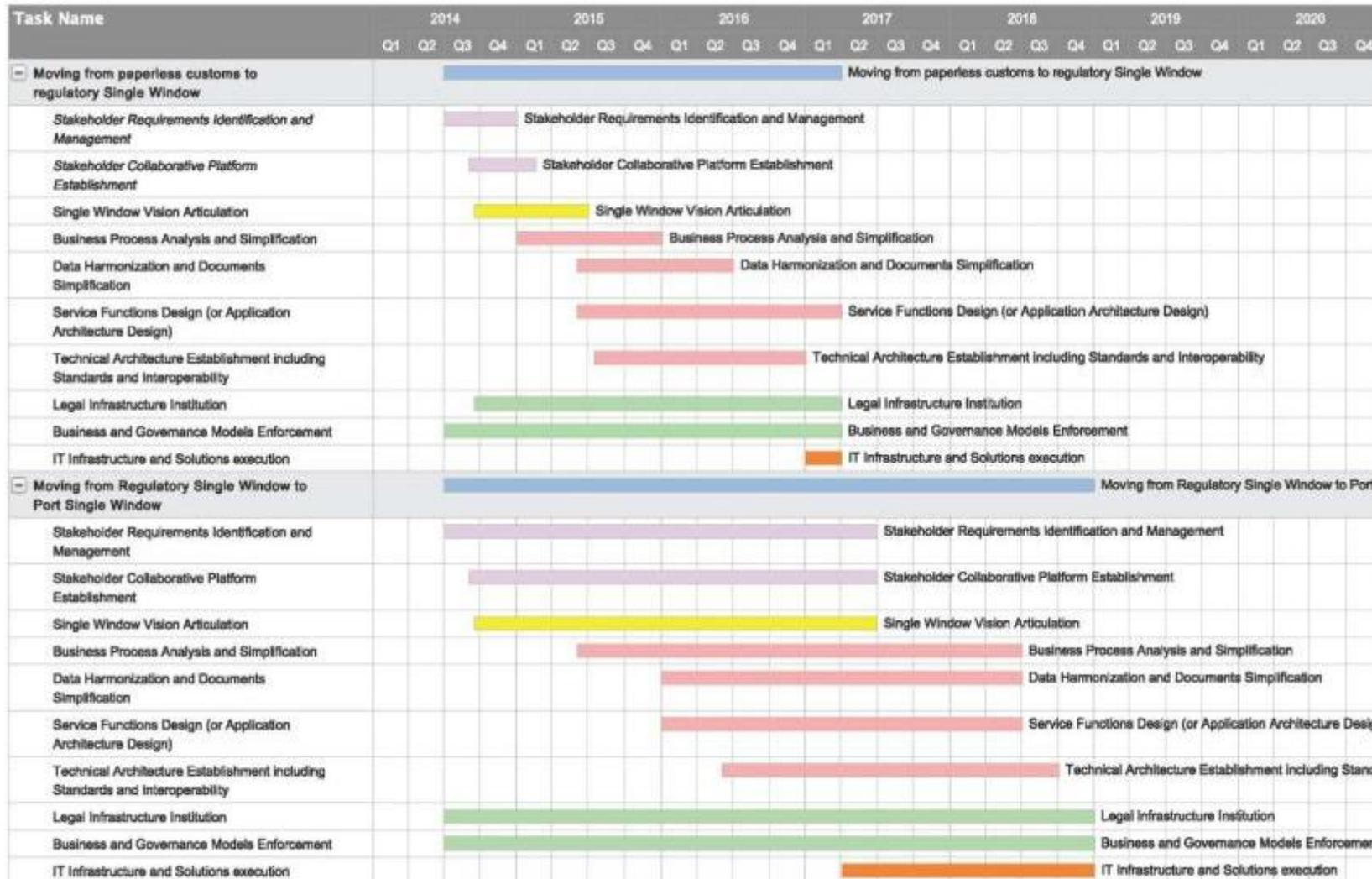
In reality, the development of the SW components is not smooth and straight according to plan and sequence. Deliverables or the expected results of each component are unlikely to be completed and commonly agreed in just one attempt or just one workout. Due to the size and complexity of the project, the particular interests of the many stakeholders, the resource constraints and policy dependencies, it is likely that there will be parallel activities and iterations in the development of SW components and outputs. The development cycle or loop, intentionally as shown in Figure 3.1, is iterative in nature, over the whole cycle, between two components, and within each component.

This iterative development provides an additional challenge that the managers of the SW project need to address in their approach.

Conclusion: The following two pages propose a Gantt chart displaying what a project management approach to SW development may look like (at least at its commencement stage, keeping in mind the above observations). The chart utilises the above 10 components to show how a country can move from (i) Paperless Customs to a Regulatory SW (ii) from a Regulatory SW to a Port SW (iii) from a Port SW to a Fully Integrated SW (iv) from a Fully Integrated SW to a Cross-border SW.

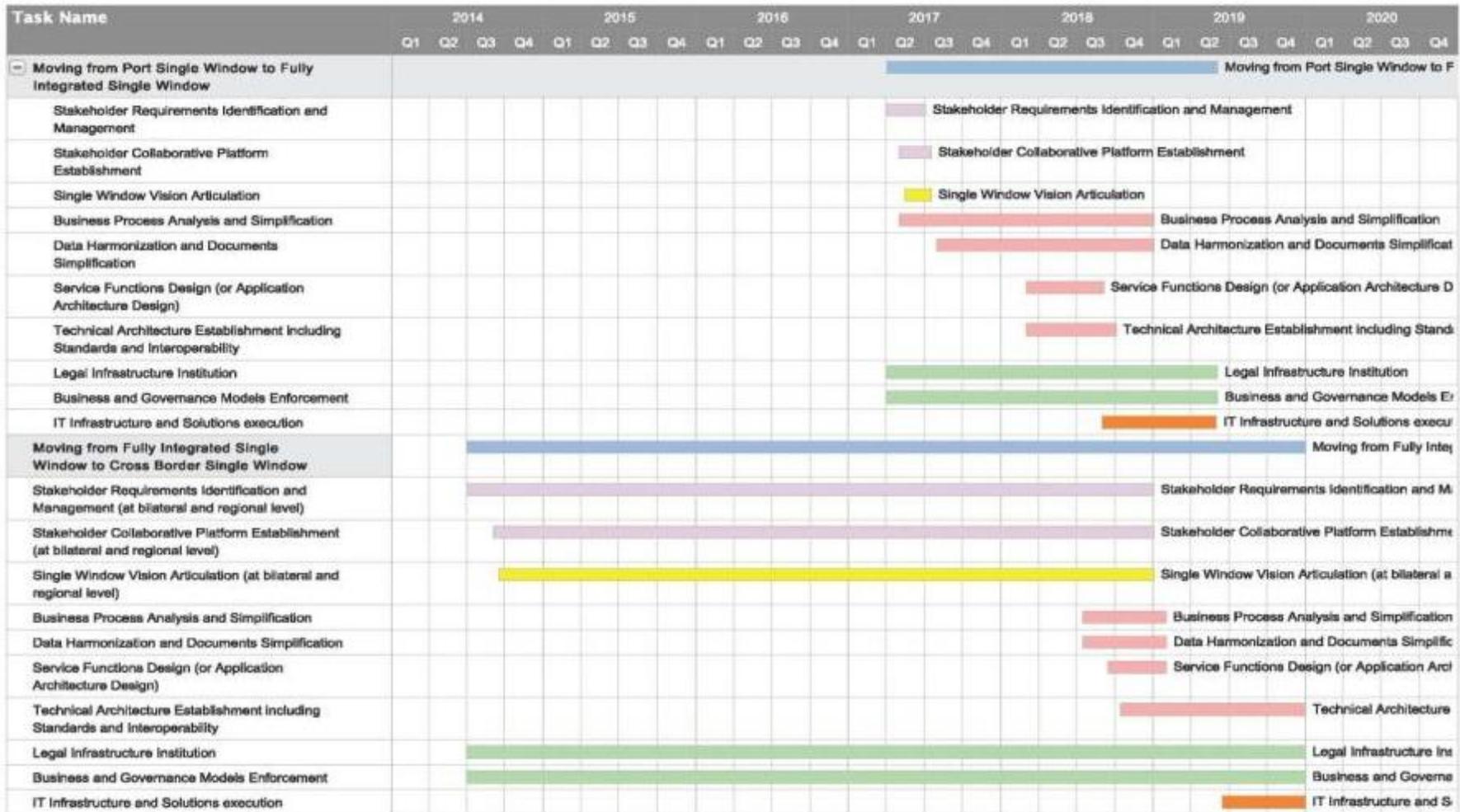
The charts are for the reader's visualisation, edification and guidance in regards to developing some expectations regarding lead times. It is not designed to lock-in any stages or time frames.

SW Action Plan Gantt Chart



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Page 1 of 2



Glossary

Activity:

A set of tasks to be undertaken to achieve meaningful results.

Application:

A deployed and operational IT system that supports business functions and services. [TOGAF]

Application architecture:

A description of the major logical grouping of capabilities that manage the data objects necessary to process the data and support the business. [TOGAF]

Architecture:

The structure of components, their inter-relationships, and the principles and guidelines governing their design and evolution over time.

The term "architecture" is defined in accordance with ISO / IEC 42010:2007 Systems and software engineering - recommended practice for architectural description of software-intensive systems, as "the fundamental organization of a system, embodied in its components, their relationships to each other and the environment, and the principles governing its design and evolution".

Architecture Vision:

- 1) A high-level, aspirational view of the target architecture.
- 2) A phase in the SWIF methodology, which delivers understanding and definition of the Architecture Vision.
- 3) A specific deliverable describing the Architecture Vision. [TOGAF]

Business Architecture:

The business strategy, governance, organization, and key business processes, as well as the interaction between these concepts. [TOGAF]

Data:

A re-interpretable representation of information in a formalized manner suitable for communication, interpretation or processing by humans or automatic means. [ISO 2382-1]

Data Architecture:

The structure of an organization's logical and physical data assets and data management resources. [TOGAF]

Component:

A constituent part, element, or piece of a complex whole. [Project Management Body of Knowledge (PMBOK)]

Enterprise:

The highest level (typically) of description of an organization and typically covers all missions and functions. An enterprise will often span multiple organizations. An "enterprise" can mean any collection of organizations that has a common set of goals. For example, an enterprise could be a regional economic forum of member economies, a national collaboration of several agencies and possibly collaborating with certain business sectors, a government agency, a federation of business entities, a whole corporation, a division of a corporation, or a single department. [TOGAF]

Enterprise architecture:

A conceptual blueprint that defines the structure and operation of an organization.
[SearchCIO.com]

Information Systems Architecture:

The combination of the Data Architecture and the Application Architecture.

Iteration:

A complete development loop resulting in a release of an executable component, a subset of the system under development, which grows incrementally from iteration to iteration to become the final system.

Interoperability:

- 1) The ability to share information and services.
- 2) The ability of two or more systems or components to exchange and use information.
- 3) The ability of systems to provide and receive services from other systems and to use the services so interchanged to enable them to operate effectively together. [TOGAF]

Legal framework:

A set of measures that may need to be taken to address legal issues related to national and cross-border exchange of trade data required for SW operations. [UN/CEFACT]

Master Plan:

A document that defines how the overall programme and a series of projects under its domain are executed, monitored, and controlled.

Organization:

A collection of persons organized for some purpose or to perform some type of work within an enterprise. [PMBOK]

Programme:

A group of related projects managed in a centralized and coordinated way. [PMBOK]

Programme management office:

An organizational body responsible for managing a programme or a group of related projects under its domain in a centralized and coordinated way to obtain benefits from the control and sharing of resources, methodologies, tools, and techniques that are not available from managing each project individually. [PMBOK]

Project:

A temporary undertaking to create a unique product, service, or result. [PMBOK]

RSW:

A SW that is established between two or more economies.

Requirements:

A quantitative or qualitative statement of a business need that must be met by artifacts.

Requirements Management:

A process of managing requirements throughout the overall development phases of SW Implementation, including the ability to deal with changes in requirements.

SW:

A facility that allows parties involved in the international supply chain to lodge data in a standardized format at a single entry point to fulfil all import, export and transit related regulatory requirements. If the data are electronic, they should be submitted only once. [UN/CEFACT]

SWIF:

A framework that guides policy managers in the process of initiating, setting up, and managing the implementation of a SW.

SW Steering Committee:

A group established to oversee the SW implementation and consider an urgent issue or to set the directives for the execution of the SW.

Programme and projects under its domain in a relatively short span of time. [OECD]

Stakeholder:

Person or organization actively involved in the SW programme, who may exert influence over the Programme, or whose interests may be positively or negatively affected by its execution or completion. [PMBOK]

Strategic architecture:

A summary formal description of the enterprise, providing an organizing framework for operational and change activity, and an executive-level, long-term view for direction setting. [TOGAF]

Sub-project:

A smaller portion of the project created when the project is subdivided so that the scope is more manageable. [PMBOK]

Sub-system:

A set of components which serves as a part of a system. [Wikipedia]

System:

- 1) An integrated set of regularly interacting or interdependent components created to accomplish a defined objective, with defined and maintained relationships among its components, and the whole producing or operating better than the simple sum of its components. [PMBOK]
- 2) An integrated set of interdependent sub-systems or components created to accomplish a set of pre-defined functions. [PMBOK, TOGAF]

Technology Architecture:

The logical software and hardware capabilities required to support deployment of business, data, and application services. This includes IT infrastructure, middleware, networks, communications, processing, and standards. [TOGAF]

View:

The representation of a related set of concerns. A view is what is seen from a viewpoint. An architecture view may be represented by a model to demonstrate to stakeholders their areas of interest in the architecture. A view does not have to be visual or graphical in nature. [TOGAF]

Viewpoint:

A definition of the perspective from which a view is taken. It is a specification of the conventions for constructing and using a view (often by means of an appropriate schema or template). A view is what

you see; a viewpoint is where you are looking from — the vantage point or perspective that determines what you see.

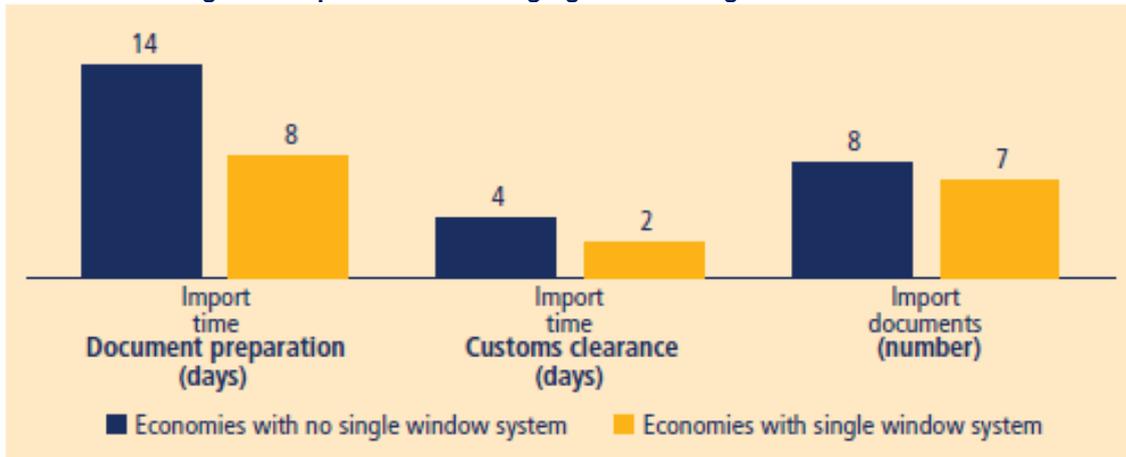
Appendices Table

Lists the subject topics of the Appendices following.

Appendix No.	Subject Title
I	Importance of linking agencies through an electronic SW
II	The Four (4) concepts of SW
III	International Logistics Performance Index (LPI) – Preamble Background Information
IV	Component 4 - Business Process Analysis & Simplification – supporting information and documentary ‘tools’ to assist with SW implementation
V	Component 5 - Data Harmonization and Documents Simplification - Supporting information
VI	Component 8 – Legal Infrastructure Institution - SW Legal Issue discussions
VII	Components 6,7 & 10 – IT Architecture and Solutions execution – Discussions
VIII	Financing Model

Appendix I: Importance of Linking Agencies through an Electronic SW

Figure 3: Importance of Linking Agencies through an Electronic SW



Increasingly, economies are going a step further by virtually linking not only traders and customs but all agencies involved in trade and transport through an electronic single-window system. In the best case, such a system allows traders to file standard information and documents through a single entry point to fulfil all import, export, and transit-related regulatory requirements—then shares relevant information with all parties involved in trade, including private participants such as banks and insurance companies as well as public agencies such as immigration and vehicle registration authorities (figure above).

Figure 4: Economies and trade facilitation practices

Practice	Economies ^a	Examples
Allowing electronic submission and processing	151 ^a	Greece; Lao PDR; South Africa; Uruguay
Using risk-based inspections ^f	134	Botswana; Georgia; Mauritania; United States
Providing a single window ^f	73 ^a	Azerbaijan; Colombia; Mexico; Mozambique

According to World Bank's Doing Business report, today, 73 economies around the world have implemented single-window systems of varying complexity (Figure 4: Economies and trade facilitation practices). Developing economies are increasingly interested in such systems. Colombia and Senegal have both implemented single-window systems, though achieving complete functionality is an ongoing process. El Salvador set up a SW linking customs, government ministries and tax and social security authorities. This cut the number of documents traders need to submit by 2.

Several economies have reported positive results from the implementation of single-window systems. The Korea Customs Service estimates that the introduction of its single-window system brought some USD18 million in benefits in 2010, part of the overall economic benefits that year of up to USD 3.47 billion from the agency's trade facilitation efforts. Indeed for Korean-based companies such as Samsung and LG, global leaders in the electronics industry, achieving rapid and predictable turnaround times is an important part of their competitiveness strategies.

In Singapore, the implementation of a SW led to big gains in government productivity. The government established the world's first NSW for trade (Trade Net) in 1989, bringing together more than 35 border agencies. Thanks to such initiatives, today Trade Net handles more than 30,000 declarations a day, processes 99% of permits in 10 minutes, and receives all collections through interbank deductions.

The benefits of trading are well documented. Limited access to international markets can prevent the growth of businesses and economies of scale. Local markets are often small, particularly in

developing economies, and trade provides potential for greater output at lower cost. Trade also allows developing economies to become part of global supply chains. Having access to imported raw materials and other inputs is often crucial for businesses, and delays or shortages can affect production. Trade can also lead to favourable externalities such as the transfer of know-how.

But a firm's ability to trade overseas can be hampered by a range of factors—inadequate infrastructure, inefficient port operations, excessive documentation requirements, burdensome and time-consuming customs procedures, heavy-handed inspections, and audits by different government agencies. The World Bank's Logistics Performance Index shows that a trade supply chain is only as strong as its weakest link; poor performance in just 1 or 2 areas can have serious repercussions for overall competitiveness. By removing unnecessary obstacles governments can contribute to an environment that encourages entrepreneurs to look beyond their own borders for business opportunities. A study focusing on Asia-Pacific Economic Cooperation (APEC) economies estimates that cutting the days needed to clear exports by half could enable a small to medium-size enterprise to increase its share of exports in total sales from 1.6% to 4.5%¹⁵. On the other hand, extra delays can adversely affect trade. A study by the OECD and the WTO shows that an extra day in the trading process can reduce exports by at least 1.6%.

Facilitating trade is therefore a natural concern for policy makers. Researchers find that the complexity or ease of customs and administrative procedures has an impact on trade flows. A study in Sub-Saharan Africa estimates that reducing export costs by 10%, through improvements in the efficiency of the trade process, increases exports by 4.7%. Globally, reducing trade costs by 50% could increase trade in manufacturing by up to USD 377 billion a year and triple the benefits for consumers from tariff reductions.

Improving infrastructure plays an important part in enhancing trade, but so do policies and regulations that promote efficient border crossings and the emergence of reliable logistics services, particularly for landlocked economies. Another study in Sub-Saharan Africa shows that a 1-day reduction in inland travel times leads to a 7% increase in exports.

Governments can also benefit directly from trade facilitation via SW, for example, by supporting easier ways to enforce tariff and duty payments, and by making informal "facilitation payments" to certain customs officers more difficult. According to a case study titled "Customs Modernization Initiatives" reported by the World Bank in 2004, Ghana saw customs revenue grow by 49% in the first 18 months after implementing GCNet, its electronic data interchange system for customs procedures.

In Uganda, reforms to improve customs administration and reduce corruption helped increase customs revenue by 24% between 2007 and 2008.

¹⁵ Li, Yue, and John S Wilson. 2009. "Time as a determinant of comparative advantage". *World Bank Policy Research Working Paper WPS5128*, November. Washington, DC: World Bank

Appendix II: The Four (4) Concepts

(Refer paragraph A: Introduction to SW, its importance and benefits)

UN/CEFACT Recommendation 33 approach:

In a nutshell UN/CEFACT Recommendation 33 purports a facility for lodging standardized information and documents with a single entry point, submitted only once. The recommendation envisages three types of architectural SW models including Single Authority, Single Automated System (Integrated, Interfaced or Hybrid), and Automated Information Transaction Systems. This concept highlights following actionable insights:

- Standardizing information and documentation is the key to trade facilitation.
- Unifying government's interface to trade
- Harmonizing data across cross-border regulatory agencies
- Creating combined cross-departmental forms & software applications to enable single submission of data
- Understanding architectural types, classifying existing SWs and charting migration paths

Cross Border Management approach:

According to CBM approach, SW is part of a wider program of inter-agency collaboration and demands a high degree of inter-agency collaboration, so it requires:

- Linking the SW strategically with the overall performance on border management
- Focus on functional integration and collaboratively performed activities (integrated risk assessment, coordinated examination, unified cargo control, combined trader account management etc.)
- Identifying and managing tasks of inter-agency co-ordination that support SW Services

The Virtual Enterprise Approach:

The main themes derived from the Virtual Enterprise Approach include (i) Formulation of a legal entity with an effective virtual presence, (ii) Web-portals capable of simplifying and unifying diverse regulatory requirements and (iii) SW as an orchestrated network of collaborating facilities and organizations. These themes provide us with following actionable insights:

- SW Operator to be established formally as a legal person with legally established relationships, rights, obligations & liabilities.
- SW legal mandate can set forth the basis for accomplishing specific goals without participating organizations otherwise losing their functional autonomy
- SWs can begin and grow like cross-enterprise web-portals; follow the *information, transaction, integration and transformation*.
- Systems within community systems collaborate through legal agreements and will gradually flourish through relationships of trust.
- Danger of the SWE following the standards of the Dominant Enterprise' ignoring international standards for interoperability

The Collection of Services Approach:

According to this concept, SW services can be organized into distinct, non-overlapping categories and hierarchies. It also highlights the importance of service interactions to achieve user satisfaction. These themes provide the following useful practical insights:

- Identification of gaps in the IT supported services in cross-border trade, transport and regulatory domains
- A framework to analyze and determine SW scope
- Pathways from business services to SW services under Service Oriented Architecture.
- Attention to interaction design and service experience
- Following the established disciplines of service catalogue development and service operation management.

Appendix III: International Logistics Performance Index (LPI) Preamble Background Intro

The LPI provides qualitative evaluations of a country in six areas by its trading partners and logistics professionals working outside the country. Responses have been weighted and quantified to develop a score for each country's quality of logistics from 1 (worst) to 5 (best) and its ranking among the 155 countries surveyed (1 being the best and 155 being the worst).

Table 3: International Logistics Performance Index (LPI)

Country	Customs		Infrastructure		International Shipments		Logistics Quality & Competence		Tracking & Tracing		Timeliness	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Singapore	1	4.10	1	4.15	2	3.99	6	4.07	6	4.07	1	4.39
Finland	2	3.98	6	4.12	4	3.85	1	4.14	1	4.14	15	4.10
Germany	6	3.87	1	4.26	11	3.67	4	4.09	7	4.05	2	4.32
China	30	3.25	26	3.61	23	3.46	28	3.47	31	3.52	30	3.80
India	52	2.77	56	2.87	54	2.98	38	3.14	54	3.09	44	3.58
Pakistan	46	2.85	71	2.69	68	2.86	72	2.77	90	2.61	83	3.14
Kazakhstan	73	2.58	79	2.60	92	2.67	74	2.75	70	2.83	132	2.73
Uzbekistan	118	2.25	120	2.25	127	2.38	117	2.39	105	2.53	101	2.96
Afghanistan	99	2.33	141	2.00	134	2.33	139	2.16	146	2.10	119	2.80
Tajikistan	85	2.43	138	2.03	135	2.33	130	2.22	143	2.13	146	2.51

Pakistan ranks 46th in efficiency of clearance processes by border control agencies including customs. This shows that in terms of the speed, simplicity, and predictability of formalities, Pakistan is considered more efficient than Kazakhstan, Uzbekistan, Afghanistan and Tajikistan, although it falls 6 places behind India, 16 places behind China, and is significantly worse than Singapore, Finland and Germany. A comparison of the quality of trade and transport-related infrastructure (ports, railroads, roads, information technology), the ease of arranging competitively priced shipments, the competence and quality of logistics services (transport operators, customs brokers etc.), and the frequency with which shipments reach the consignee within the scheduled or expected delivery time reveal similar results.

Pakistan ranks 90th out of 155 countries in its ability to track and trace consignments. Necessary improvements are required to increase trade competitiveness in the region and match the standards of other countries like Kazakhstan (70th), India (54th), China (31st), Singapore (6th), Germany (7th), and Finland (1st).

Appendix IV: Component 4 – Business Process Analysis and Simplification

(Further information and documentary ‘tools’ to use during a SW implementation process)

Assessment Guide:

WCO has developed an Assessment Guide/Questionnaire (refer below) to assist WCO Members in eliciting documents to analyse the existing export, import and transit business processes and related trade documents.

The questionnaire is given in annex 1 the contents of the questionnaire have been briefly given in annex 2.

The purpose of this Assessment Guide is to help compile the functional needs of the relevant CBRA.

The contents of this questionnaire are specifically designed to allow for identification of CBRA’s current functions related to cross-border transactions as a pre-cursor to the detailed initial process assessment. Information gathered during this assessment can be used as source material by the CBRA for internal use and for Customs administrations for a variety of purposes including the assessment of “as-is” requirement, to compile and model current data requirements and to assess conformance with the international trade data standards.

Contents of the Questionnaire:

The contents of the questionnaire/assessment have been briefly outlined in the following table:

Sr. No.	Assessment Areas	Modalities
1	Demographic information	CBRA name, Division, office, Contact and Point of Contact for each division or offices with CBRA etc.
2	Accounts	<ul style="list-style-type: none"> Activities and functions involved in the establishment and maintenance of trade accounts, issuing and maintaining their guarantee and establishing communication with them. Point during the import and/or export process the CBRA communicates with the trade. Methods used to achieve this communication Demographic or contact information does the CBRA currently collects from trade participants Unique identifiers or numbers recorded w.r.t. Trade participants the name, format and use of this identifier Guarantee requirement imposed by the CBRA Commodities or conveyances is a guarantee required Guarantees and monitoring mechanism internal or external. Special programs (e.g. filing options, special treatment) that the CBRA offers the Trade, their requirements and benefits.
3	Release (Import) Processes	<ul style="list-style-type: none"> Processing and releasing of Cargo/Goods, Conveyances, Individuals (crew) Associated Equipment (CCIE) for import; tracking and monitoring The processing of authorized movements such as in-bond Warehouse, Free trade zone, Special import declarations, Pre-arrival and arrival processes etc. Forms related to import that the CBRA currently collect from the Trade The primary method Trade uses to submit the information (electronic vs. paper) and whether this information is submitted directly to the CBRA or collected by another official body on behalf of the CBRA Time at which Trade is required to submit the form. Import data validation, editing and transmission for import processes and its timing.

Sr. No.	Assessment Areas	Modalities
		<ul style="list-style-type: none"> • Notifications received from/sent to Customs, their reason, timing and mode of communication. • Notifications sent to trade, their reason, timing and mode of communication. • The decisions that the CBRA issues regarding cargo/goods/conveyance/conveyance crew release along with their type and timing. • Data that the CBRA requires Trade to submit regarding the authorized movement of cargo/goods and/or conveyances that enter "in-bond," into or out of a free trade zone, into or out of a warehouse, etc. • The type and mode of collecting the information related to authorised movement (free trade zone, in-bond, etc.) • Notifications related to authorized movement received by the CBRA
4.	Post Release	<ul style="list-style-type: none"> • The processing of summary declarations • Declaration summaries • Goods declarations • The completion of the clearance process in relation to the import process • CBRA's role within clearance process. Any holds placed by the CBRA • Monitoring commodities for anti-dumping or counter-vailing duty violations and from whom this information is received.
5	Export	<ul style="list-style-type: none"> • Export process, that is, the processing of manifest, conveyance and export declaration data received from Trade. • The validation of licenses • Permits and certificates associated with the commodities being presented for export • The editing of the data associated with the process • Copy each of the Forms collected by the CBRA from Trade. • Method and timing of the form submission • Liaison with other CBRA for data collection • Data validation, editing, data details, timing of validation and transmission of validation to the CBRA • Type of notifications that the CBRA receives from/sends to Customs during the export process • Notifications that the CBRA sends directly to Trade during the export process • The decisions that the CBRA issues regarding cargo/goods/conveyance release (e.g., hold, release, inspect, etc.) • The decisions the CBRA issues regarding crew (of conveyances) crossing the border. Specify the type of decisions and the timing of the decision (i.e. when is the decision made).
6	CBRA Licenses, Permits, Certificates and Others (LPCO)	<ul style="list-style-type: none"> • Licenses, permits and/or certificates regarding commodities and/or their conveyances that the CBRA issues, independent of Customs and their effects on imports, exports or both • Any other functions regarding licenses, permits and/or certificates (LPCO) that the CBRA performs on behalf of another CBRA or Foreign Government (e.g. monitor, approve for another CBRA, check for a foreign government) • Licenses, permits, certificates and/or "others" (LPCO) regarding commodities and/or their conveyances that the CBRA validates and their effect on imports, exports or both.
7	Enforcement	<ul style="list-style-type: none"> • The relative risk of cargo, conveyances and their associated individuals being presented for import or export. • Verification and enforcement activities that are the successors to the execution of the selectivity process. • The verification and enforcement activities. • Types of transactions does the CBRA rely on another Official body to perform selectivity and/or targeting assessments

Sr. No.	Assessment Areas	Modalities
		<ul style="list-style-type: none"> • Analysis and communication by CBRA • The points during the import and/or export process do the CBRA, independent of Customs; conduct selectivity and/or targeting assessments (e.g. pre-arrival, arrival, pre-departure, departure, post-release, etc.). • Information collected, use or generated by the CBRA for government wide selectivity and targeting activities. • Security/safety role in respect to the import/export of weapons, explosives, chemicals, radiological devices, small arms, food products, medicinal products, etc. that the CBRA performs • Submission of criteria by the CBRA for inclusion in other CBRA system. • Mandates, special programs, initiatives, rules, regulation or does the CBRA co-ordinate its selectivity/targeting assessment with other Official bodies. • Maintenance of watch list, black list or similar list that restricts imports and exports. • Verification, validation, inspection and/or interdiction of commodities being imported or exported activities performed by the CBRA. Location where the results of these activities are maintained. • Verification, validation, inspection and/or interdiction of commodities being imported or exported activities does the CBRA delegate to another Official body (Customs)
8	Business Intelligence	<ul style="list-style-type: none"> • Statistics or reports, their types and time frame (related to the import, export, or trade promotion processes) based on public data provided by a (Central) Statistics Bureau. • Statistics or reports generated by the CBRA • Different sources of Data used by the CBRA • Commodities subject to quota or approval restrictions which are monitored by the CBRA and the source of such sort of information • CBRA's current role in the monitoring or validation of Intellectual Property Rights (IPR) directly related to Import or Export of goods. • Reference material (schedules, code tables, etc.) regarding the import and export processes controlled by the CBRA. • Online availability of data to other official bodies (Customs) • Internal reference material (e.g. standard operating procedures, internal policies, etc.) maintained online
9	Legal and Policy	<ul style="list-style-type: none"> • Activities having impact on statutory, regulatory and policy requirements • Issuance of rulings, compliance programs, responding to mandates and judicial reviews. • Laws, regulations etc. granting the CBRA the legal or regulatory authority to collect trade or transportation (import/export) information from public and trade. • Recent legislative mandates requiring establishment of new electronic systems. • Reference material (e.g. rulings, regulations etc.) maintained by CBRA online.
10	Finance	<ul style="list-style-type: none"> • Data, activities and functions associated with managing and collecting revenue generated from trade compliance and fund accounting. • For what Licenses, permits, certificates, commodities or conveyances does the CBRA, at import/export collect, impose (refund for exports), taxes, levies or fees? • Whether the duties, taxes, levies or fees collected related to issuance or use of license, permit, certificate or the import/export of a commodity or conveyance? • Mechanism of collection
11	CBRA system information (As-is)	<ul style="list-style-type: none"> • Systems used by CBRAs to provide import and export data (e.g. trade, transportation, messages, etc.) to Customs through an electronic interface

Sr. No.	Assessment Areas	Modalities
		<p>(e.g. the CBRA inputs data into Customs Import, Export or other systems)</p> <ul style="list-style-type: none"> • The type of data exchanged (e.g. manifest, goods, conveyance, etc.) the frequency this data is exchanged and the Customs" system with which the CBRA interfaces. • The systems currently used by CBRAs to receive import and export data (e.g. trade, transportation, messages, etc.) directly from Trade through an electronic interface. • Type of data exchanged (e.g. manifest, goods, conveyance, etc.), • The frequency of data exchange • The CBRA system with which the trade interfaces. • Manner in which the CBRA provides/receive data to/from Customs (Real time trade, transportation or decision data, summarized data in a periodic declaration according to a simplified procedure, transaction level Trade, Transportation or decision data, etc.) • System through which the CBRA currently receive import and export data from Customs (e.g. electronically, tape, CD Rom or other media). The type of data exchanged, the medium by which this data is transmitted (on-line, tape, CD-Rom , etc.) and the frequency of this data exchange • The systems currently used by CBRA to perform data validation and editing functions (not risk assessment, selectivity or targeting). • Availability of a system that performs Selectivity and Targeting or risk assessment functions. • Linkage of system other bodies' (Customs) selectivity systems. • System used for verification findings by the CBRA.

Introduction

The below Assessment/Questionnaire Guide has been developed to assist WCO Member Customs administrations in conducting a functional assessment on data required by Cross-border Regulatory Agencies (CBRA) for the development of a SW Environment. The outcome of the assessment will specify the kind of data required by CBRAs for different business processes and how such data may be used in a SW Environment in the process of the release and clearance of import, export or transit procedures.

The purpose of this Assessment/Questionnaire Guide is to help compile the functional needs of the relevant CBRA. The content of this questionnaire is designed to allow Customs to identify CBRA's current functions related to cross border transactions as a pre-cursor to the detailed initial process assessment Information gathered during this assessment can be used as source material by the CBRA for internal use and for Customs administrations for a variety of purposes including the assessment of "as-is" requirement, to compile and model current data requirements and to assess conformance with the international trade data standards. This functional assessment/questionnaire guide is not a substitute for the detailed business process analysis but is a useful tool for the high-level scoping within a SW Project.

1. Instructions for Completion:

Only one questionnaire/assessment should be completed per CBRA. Thus, if responses are different per office or division, please identify and include responses for all divisions or offices represented by the CBRA and indicate to which office or division (import, export, licenses, guarantees, audit, etc.) the answer applies.

This questionnaire is designed to help Customs administrations to identify CBRA"s functions in relation to the WCO SW Business Process Analysis documentation and the WCO Data Model Version 3 and its "as-is" operations.

Although some of the functions and capabilities described below could be manual (e.g. inspections and other verification activities), it is important for the Business Process Modellers to know about them in detail in order to model appropriately. Equally important for the Modellers is to know whether the data requirement would be at the transaction (header level) or on item (goods) level.

The questionnaire is designed to be filled in electronically. Please note that tables have been added to some questions to allow the same format for the answers. The use of the tables is not limited to the amount of lines displayed.

2. Demographic Information

Please provide the main point of contact (POC) of the CBRA and contacts for each division or office within the CBRA. Please note, tables have been added to some questions to facilitate responses; respondents are not limited to the amount of lines displayed in the table.

3. CBRA Functions and Capabilities

This section is intended to allow the CBRA to describe its "as-is" operations. Although some of the functions and capabilities described below are manual (e.g. inspections and other verification activities), it is important for the Business Process Modellers to know in order to model appropriately.

Please note, tables have been added to some questions to facilitate responses, respondents are not limited to the amount of lines displayed in the table.

Also please note, questions may be applicable to one or more sections. For example, the question regarding forms applies to all forms, not just those within the "pre-arrival/pre-departure" time frame. In those instances, please answer the question in full, regardless of the time element.

3.1 Manage Accounts

Account Management is defined as the activities and functions involved in the establishment and maintenance of trade accounts, issuing and maintaining their guarantee and establishing communication with them.

1. At what points during the import and/or export process does the CBRA communicate (e.g. request more information, clarifications, etc.) from Trade? Please describe the types of communication. What methods are used to achieve this communication?

Import	Export	At what Point(s)	Type of communication	Methods

2. What demographic or contact information does the CBRA currently collect from Trade participants?

Contact particulars:

3. What (if any) **unique identifiers** or numbers does the **CBRA issue** or record with respect to a Trade participant? Please provide the name, format and use of this identifier. Note: Only respond with CBRA generated unique identifiers, not identifiers generated by other Agencies.

ID Name	Format	Use

4. What (if any) guarantee requirements does the CBRA impose upon Trade? For what commodities or conveyances is a guarantee required? Is a guarantee required for import, export, transit? Does the CBRA monitor guarantees, or rely on another official body to validate?

Guarantee Type	Commodity/ Conveyance	Import/ Export/ Transit	CBRA Validates?	Other body validates?

5. Please identify any special programs (e.g. filing options, special treatment) that the CBRA offers the Trade. Please identify the requirements of these programs, the focus (carriers, brokers, etc) and the benefits to the Trade for each of these programs.

3.2 Manage Release (Import) Processes

Manage release encompasses processing and releasing of Cargo/Goods, Conveyances, Individuals (crew) and associated Equipment (CCIE) for import; tracking and monitoring. CCIE involves the import process; and culminates in the decision to release goods. It can also contain the processing of authorized movements such as in-bond, warehouse, free trade zone and special import declarations. Processes within this area could be divided into two distinct segments: pre-arrival and arrival.

Pre-Arrival is regarded as the period of time before cargo/goods/conveyances are presented for import. Functions during this time period may include, but are not limited to, the receipt of commodity, manifest and transportation data, the validation of licenses, permits and certificates presented for certain commodities, and the editing and validation of data. While selectivity and targeting functions may be executed during this time frame, questions dealing with that topic are in Section 2.6

Arrival is regarded as the point in time at which cargo/goods is physically presented for import or an authorized movement transaction such as in-bond, warehouse, free trade zone.

Functions during this time period may include (but are not limited to) the receipt of commodity, manifest and transportation data, the granting of release for import, and the processing of free trade zone, warehouse and in-bond transactions. While selectivity and targeting functions may be executed during this time frame, questions dealing with that topic are in Section 2.6.

1. What forms related to import does the CBRA currently collect from the Trade? Please attach a copy of the form, if possible, and identify the name and number of the form. Provide details below on the primary method Trade uses to submit the information (electronic vs. paper) and whether this information is submitted directly to the CBRA or collected by another official body on behalf of the CBRA? By what time is Trade required to submit the form?

Form Number/ Name	Time Requirement	Primary Submission Method	CBRA Collects?	Other CBRA Collects (Specify CBRA)

2. For what import data does the CBRA rely on another official body system to perform data validation and editing (not risk assessment or selectivity)? Please specify the data, the other official body that performs the validation, the point during the import process this validation is performed, and how the results of this validation are transmitted to the CBRA.

Data Validated	Other Federal CBRA	Point in Process	Transmission Method Results

3. On what import data does the CBRA perform its own data validation and editing (not risk assessment) and transmit these results to Customs for use in the import process? Please specify the data and the time during the import processes this validation is performed.

Data Validated	Point in process (time)

4. Please list the type of notifications that the **CBRA receives from Customs during the import process**. Please specify the reason for the notifications (e.g. cargo/goods released), the timing of the notifications, and how they are received (e.g. electronically, phone call, etc.).

Notification	Reason	Timing	Receipt Method

5. Please list the type of notifications that the **CBRA sends to Customs during the import process**. Please specify the reason for the notifications (e.g. cargo/goods released), the timing of the notifications, and how they are sent (e.g. electronically (system), e-mail, phone call, etc.).

Notification	Reason	Timing	Method to send

6. Please list the type of notifications that the **CBRA sends directly to Trade during the import process**. Please specify the reason for the notifications (e.g. cargo/goods released), the timing of the notifications, and how they are sent (e.g. electronically (system), e-mail, phone call, etc.).

Notification	Reason	Timing	Method to send

7. Please describe the decisions that the CBRA issues regarding cargo/goods/conveyance release (e.g., hold, release, inspect, etc.). Specify the type of decisions and the timing of the decision (i.e. when is the decision made).

Decision	Timing

8. Please describe the decisions the CBRA issues regarding crew (of conveyances) crossing the border. Specify the type of decisions and the timing of the decision (i.e. when is the decision made).

Decision	Timing

9. What data does the **CBRA require Trade to submit** regarding the authorized movement of cargo/goods and/or conveyances that enter "in-bond," into or out of a free trade zone, into or out of a warehouse, etc.? Please specify the type of authorized movement (free trade zone, in-bond, etc.) and whether the CBRA collects this information directly from Trade or Customs.

Data	Point in Process	Authorized Movement Type	CBRA Collects?	Customs

10. What data or notifications regarding the authorized movement of cargo/goods and/or conveyances that enter "in-bond," into or out of a free trade zone, or into or out of a warehouse, etc. does the CBRA **currently receive from Customs**?

Data	Point in process	Authorized Movement Type	CBP system

3.3 Manage Post - Release

Manage Post-Release encompasses the processing of summary declarations, declaration summaries, goods declarations and the completion of the clearance process in relation to the import process. It also contains the processing of drawback declarations and appeals that are lodged by Trade during the liquidation process.

1. Please identify the CBRA's role within clearance process. Does the CBRA currently place "holds" on transactions during the clearance process?

Yes	No

2. Does the CBRA currently monitor commodities for anti-dumping or counter-veiling duty violations? If so, from whom does the CBRA receive this information and by what method?

Yes	No	From	Method

3. Please identify the CBRA's role (if any) in the drawback process. From whom does the CBRA receive this information and by what method?

Yes	No	From	Method

3.4 Manage Export

Manage Export encompasses the export process, that is, the processing of manifest, conveyance and export declaration data received from Trade, the validation of licenses, permits and certificates associated with the commodities being presented for export and the editing of the data associated with the process. This process culminates in the decision to allow goods to be exported.

Pre-departure is regarded as the period of time before cargo/goods/conveyances are presented for export. Functions during this time period may include (but are not limited to) the receipt of the export declaration, manifest and transportation data, the validation of export licenses, permits and certificates presented for certain commodities, the editing and validation of data, etc. When all pre-departure data has been presented by Trade and has been processed, Customs grants the carrier "free to go" status if all is in order before or at the moment that cargo/goods/conveyances are presented to Customs. Departure may then be confirmed when the carrier transmits a departure message to Customs. While selectivity and targeting functions may be executed during this time frame, questions dealing with that topic are in Section 2.6.

Post-Departure is regarded as the period of time after which cargo/goods/conveyances have been granted permission to be exported/leave the Customs territory and confirmation has been received that the cargo/goods/conveyances have departed. In the case of a Simplified Procedure data may be submitted at this stage. While selectivity and targeting functions may be executed during this time frame, questions dealing with that topic are in Section 2.6.

1. What forms does the CBRA currently collect from Trade during the export process? Please attach a copy of the form, if possible, and identify the name and number of the form. Provide details below on the primary method Trade uses to submit the information (electronic vs. paper) and whether this information is submitted directly to the CBRA or collected by another official body on behalf of the CBRA? By what time is Trade required to submit the form?

Form Number/ Name	Training Requirement	Primary Submission Method	CBRA Collects?	Other CBRA Collects? (specify CBRA)

2. For what export data does the CBRA rely on another Official body (Customs?) to perform data validation and editing during the export process (not risk assessment or selectivity)? Please specify the data, the other Official body performs the validation, the point during export processes this validation is performed, and how the results of this validation are transmitted to the CBRA.

Data validated	Other Federal CBRA	Point in process	Results transmission method

3. On what export data does the CBRA perform its own data validation and editing during the export process (not risk assessment) and transmit these results to Customs for use in the export process? Please specify the data and the time(s) during the export processes this validation is performed.

Data validated	Point in process

4. Please list the type of notifications that the **CBRA receives from Customs during the export process**. Please specify the reason for the notification (e.g. cargo/goods/conveyances released), the timing of the notifications, and how they are received (e.g. electronically, phone call, etc.).

Notification	Reason	Timing	Receipt method

5. Please list the type of notifications that the CBRA sends to Customs during the export process. Please specify the reason for the notification (e.g. cargo/goods/conveyances released), the timing of the notifications, and how they are sent (e.g. electronically, e-mail, phone call, etc.).

Notification	Reason	Timing	Method to send

6. Please list the type of notifications that the CBRA sends directly to Trade during the export process. Please specify the reason for the notification (e.g. cargo released), the timing of the notifications, and how they are sent (e.g. electronically, e-mail, phone call, etc.).

Notification	Reason	Timing	Method to send

7. Please describe the decisions that the CBRA issues regarding cargo/goods/conveyance release (e.g., hold, release, inspect, etc.). Specify the type of decisions and the timing of the decision (i.e. when is the decision made).

Decision	Timing

8. Please describe the decisions the CBRA issues regarding crew (of conveyances) crossing the border. Specify the type of decisions and the timing of the decision (i.e. when is the decision made).

Decision	Timing

3.5 CBRA Licenses, Permits, Certificates, Others (LPCO)

CBRA licenses, permits and certificates in this respect are documents issued by the CBRA that regulate or monitor commodities and/or conveyances associated with the import and export processes. Example 1, the Kimberly certificate for diamond imports is required and must be verified upon arrival, example 2; a International Health certificate for meat, meat products, plants, plant products etc must be verified upon arrival

1. Please identify any licenses, permits and/or certificates regarding commodities and/or their conveyances that the CBRA issues, independent of Customs? Please identify whether these affect imports, exports or both

LPCO Name	Commodity/Conveyance regulated	Import/Export

- Please identify any other functions regarding licenses, permits and/or certificates (LPCO) that the CBRA performs on behalf of another CBRA or Foreign Government (e.g. monitor, approve for another CBRA, check for a foreign government). Please specify and identify whether these affect imports, exports or both.

LPCO Name	Commodity/ Conveyance regulated	Import/Export	Other CBRA or Foreign Government

- Please identify any licenses, permits, certificates and/or „others“ (LPCO) regarding commodities and/or their conveyances that the CBRA validates. Please identify whether these affect imports, exports or both, and whether the CBRA performs the validation or relies on another CBRA to perform the validation.

LPCO Name	Commodity/ Conveyance regulated	Import/ Export	CBRA validates	Other CBRA validates

3.6 Manage Enforcement

Selectivity and Targeting (risk assessment) is the process associated with determining the relative risk of cargo, conveyances and their associated individuals being presented for import or export. It also encompasses the verification and enforcement activities that are the successors to the execution of the selectivity process.

Verification activities are those such as document review and inspections, etc., whose purpose is to verify that cargo/goods/conveyances and the associated crew that is presented for import or export are in compliance with the relevant laws, rules and regulations. Verification actions may be performed as the result of a selectivity recommendation or upon the knowledge and judgment of the CBRA representative at the border. Remedial actions (e.g., treatments, etc.) that are able to make cargo/goods/conveyances fit for import or export may be required as the result of verification activities.

Enforcement refers to the activities and functions involved in the verification and enforcement of the laws, policies, and regulations governing the import and export of cargo/goods, conveyances and their associated individuals (crew and/or passengers) into and out of the Customs territory.

- For what types of transactions does the CBRA rely on another Official body to perform selectivity and/or targeting assessments? Please identify the other Official body (ies) that performs the analysis on behalf of the CBRA and how the results are transmitted to the CBRA.

Transaction type	Other official body	How transmitted

2. At what points during the import and/or export process does the CBRA, independent of Customs; conduct selectivity and/or targeting assessments (e.g. pre-arrival, arrival, pre-departure, departure, post-release, etc.).

Import/export	At what point

3. What information does the CBRA collect, use or generate that would contribute to government-wide selectivity and targeting activities (risk assessment)?

What Information:

4. Please describe the security/safety role in respect to the import of weapons, explosives, chemicals, radiological devices, small arms, food products, medicinal products, etc. that the CBRA performs.

Area/ Commodity	Security/safety role

5. Please describe the security/safety role with respect to the export of weapons, explosives, chemicals, radiological devices, small arms, food products, medicinal products, etc. that the CBRA performs.

Area/ Commodity	Security/ Safety Role

6. How does the CBRA currently submit its criteria for inclusion in other CBRA systems? If the processes are different per CBRA, please provide an answer for each.

Other CBRA systems	Criteria

7. For what mandates, special programs, initiatives, rules, regulation or does the CBRA co- ordinate its selectivity/targeting assessment with other Official bodies? Please identify the Official body with which you co-ordinate and whether these efforts are expected to continue in the foreseeable future.

“Type” of legislation	Other official body	To be continued?

8. Does the CBRA maintain a “watch list”, “denied party list”, “black list” or similar list that restricts imports and exports? If so, with which other Official body does the CBRA share this information?

List yes/no	Official Body

9. What kinds of verification, validation, inspection and/or interdiction of commodities being imported or exported activities does the CBRA perform? Where are the results of these activities recorded? Please specify.

Activity	Import/ Export	Results recorded

10. What kinds of verification, validation, inspection and/or interdiction of commodities being imported or exported activities does the CBRA delegate to another Official body (Customs?) to perform? Where are the results of these activities recorded and how are they transmitted to the CBRA? Please specify.

Activity	Import/ Export	Other Federal CBRA	Results Recorded	Transmission Method

3. 7 Manage Business Intelligence

Manage Business Intelligence encompasses the activities and functions involved in the processing and maintenance of reference information (such as quotas, approvals, Harmonized System) and business rules needed in order to complete import and export transactions. This area also includes the generation of reports and statistics related to the import and export processes.

1. Does the CBRA generate statistics or reports (related to the import, export, or trade promotion processes) based on public data provided by a (Central) Statistics Bureau? Please specify the type of statistics or reports the CBRA generates, and the time frame (e.g. monthly, quarterly, etc.) that they are generated.

Import/ Export	Type of Report	Timeframe

2. Does the CBRA generate statistics or reports (related to the import, export or trade promotion processes) based on other **Official Body (ies)** (not the Statistics Bureau) public data? Please specify the type of statistics or reports the CBRA generates, and the time frame (e.g. monthly, quarterly, etc) that they are generated.

Import/export	Type of report	Timeframe

3. Does the CBRA generate statistics or reports (related to the import, export or trade promotion processes) based on public data **whose source is different from the ones referred to in para1 and 2**? Please specify the type of statistics or reports the CBRA generates, and the time frame (e.g. monthly, quarterly, etc.) that they are generated

Import/export	Type of report	Timeframe

4. Are there any commodities currently subject to quota or approval restrictions that the CBRA monitors? From whom (what other Official body) does the CBRA receive this information and by what method.

Import/export	Commodity	Official body	Method

5. Please describe the CBRA’s current role in the monitoring or validation of Intellectual Property Rights (IPR) directly related to Import or Export of goods.

Role:

6. What reference material (schedules, code tables, etc.) regarding the import and export processes does the CBRA control? How often are these updated? Are these materials available “on-line” to either Trade or other Official bodies (Customs?).

Import/Export	Reference material	Up-date frequency in days	Available “online”	For Trade	For official body

7. What internal reference material (e.g. standard operating procedures, internal policies, etc) does the CBRA maintain online?

What Reference material?

3.8 Manage Legal and Policy

Legal and policy encompasses activities that have an impact on statutory, regulatory, and policy requirements. This area governs the processes that are legal in nature, including the issuance of rulings, compliance programs and responding to mandates and judicial reviews.

1. Which laws, regulations, etc. grant the CBRA the legal or regulatory authority to collect trade or transportation (import, export) information from the public and/or Trade? Please cite the regulation(s). Note: Only provide the citation; do not provide the actual text of the regulations.

Name/ Title	Cite	Authority granted

2. Is the CBRA subject to recent legislative mandates requiring the establishment of new electronic filing? Please specify, including the type of information subject to these new mandates. Please indicate deadlines for implementing any such legislative mandates.

Mandate	Process/Information affected	Deadline

3. What reference material (e.g. rulings, regulations, etc.) does the CBRA maintain online? Are these accessible to Trade?

Reference material	Accessible to trade

3.9 Manage Finance

Manage Finance encompasses the data, activities and functions associated with managing and collecting revenue generated from trade compliance and fund accounting.

1. For what licenses, permits, certificates, commodities or conveyances does the CBRA, at import, collect or impose duties, taxes, levies or fees? Are these related to the issuance or use of a license, permit, certificate, or the import of a commodity or conveyance? Does the CBRA collect these revenues itself or rely on another Official body (Customs?) to collect on their behalf? Please specify.

Type of revenue	Commodity/conveyance	CBRA Collects?	Other CBRA Collects?

2. For what licenses, permits, certificates, commodities or conveyances does the CBRA at export, collect, impose or refund duties, taxes, levies or fees? Are these related to the issuance or use of a license, permit, certificate, or the export of a commodity or conveyance?

Does the CBRA collect or refund these revenues itself or rely on another Official body (Customs?) to collect or refund on their behalf? Please specify

Type of revenue	Commodity/conveyance	CBRA Collects?	Other CBRA Collects?

3. What violation types trigger a fine or penalty to be levied by the CBRA when suspected violations are verified? Does the CBRA collect these revenues itself or rely on another Official body (Customs?) to collect on their behalf? Please specify.

Violation type	Fine or penalty	CBRA Collects?	Other CBRA Collects?

4. CBRA SYSTEM INFORMATION ("AS-IS")

1. What systems does the CBRA currently use to provide import and export data (e.g. trade, transportation, messages, etc.) **to Customs** through an electronic interface (e.g. the CBRA inputs data into Customs Import, Export or other systems)? Please specify the type of data exchanged (e.g. manifest, goods, conveyance, etc.), the frequency this data is exchanged and the Customs" system with which the CBRA interfaces.

Data submitted	CBRA system	Customs system	Frequency of exchange

2. Which systems does the CBRA currently use to receive import and export data (e.g. trade, transportation, messages, etc.) directly from Trade through an electronic interface? Please specify the type of data exchanged (e.g. manifest, goods, conveyance, etc.), the frequency this data is exchanged and the CBRA system with which the trade interfaces.

Data submitted	CBRA system	Frequency of exchange

3. In what manner does the CBRA provide data to Customs? *(Please check all that apply)*

- "Real-Time" Trade, Transportation or Decision Data
- Summarized Data in a Periodic Declaration according to a Simplified Procedure
- "Transaction Level" Trade, Transportation or Decision Data
- Not Applicable
- Unsure

3. How does the CBRA currently receive import and export data from Customs (e.g. electronically, tape, CD Rom or other media)? Please specify the type of data exchanged, the medium by which this data is transmitted (on-line, tape, CD-Rom, etc.) and the frequency of this data exchange.

Data received	Data transmission media	CBP system (if electronic)	Frequency of exchange

5. In what manner does the CBRA receive data from Customs? *(Please check all that apply)*

- "Real-Time" Trade, Transportation or Decision Data
- Summarized Data in a Periodic Declaration according to a Simplified Procedure
- "Transaction Level" Trade, Transportation or Decision Data
- Not Applicable
- Unsure

6. What system(s) does the CBRA currently use to perform data validation and editing functions (not risk assessment, selectivity or targeting)? Please specify the name of the system(s).

System:

7. Does the CBRA currently have a system that performs Selectivity and Targeting or risk assessment functions? Is that system linked to any other Official body's (Customs?) selectivity systems? Please list the other Official body that this system is linked to.

System:

8. In which system(s) does the CBRA record verification findings? Please specify the name of the system(s).

System:

Developing Business Case Scenario:

To further deepen the analysis this section recommends steps to be taken to develop business processes which allow formation of business case scenarios. The purpose of SW Business Process scenarios and business case scenarios formation is to explain how a Government can organize business processes for providing regulatory services that govern cross-border trade. It attempts to describe the optimal ways of ensuring that trade submits information only once instead of several times to different government agencies. The high-level business processes are envisaged in international instruments such as the revised Kyoto Convention and the SAFE Framework of Standards.

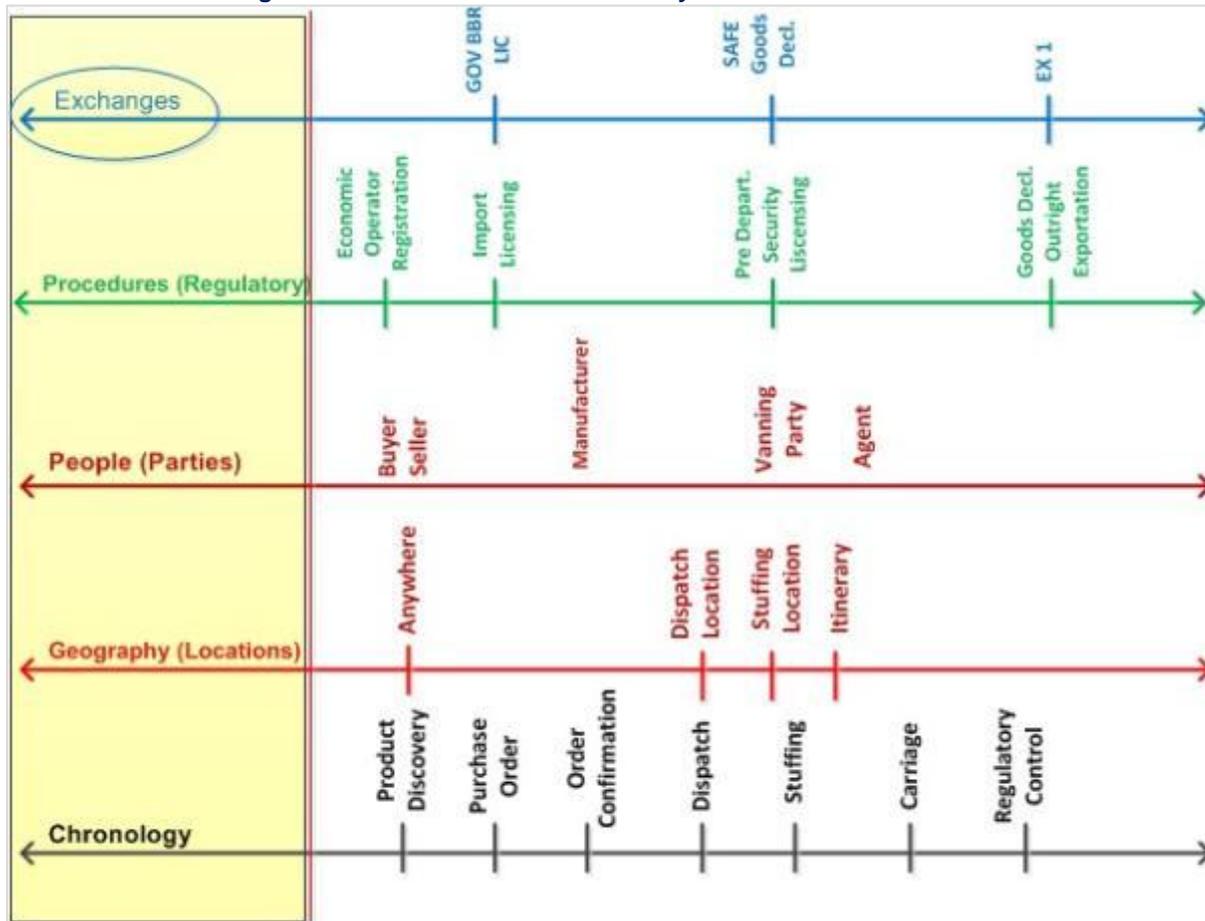
The outcome of a SW in which trade is allowed to submit standard electronic data for import, export and transit only once, can be achieved by examining the individual activities and processes and how they are logically connected with each other. Experts have recommended a step-by-step approach to SW development beginning with business process analysis. (UNESCAP, 2010). Business processes are driven by information obtained from the attached questionnaire and the SW is premised on ensuring that the inputting of information is carefully arranged to eliminate redundant inflows.

There are several ways of analysing and developing business processes, each with their own notations and conventions. Unified Modelling Language (UML) is a standardized general-purpose modelling language and is the *lingua franca* of modelling. Although UML has many applications in the software industry, it is also commonly used by business experts to logically describe and specify business requirements. UML helps to visualize business process models and specify information requirements. UML uses several types of diagrams. This approach is consistent with way of describing business processes under the WCO Data Model project.

Business process models cover the processes of individual CBRAs, their interactions with the trade and among themselves. The WCO guidelines recommend five Dimensions (Chronology, Geography (Locations), Parties (People), Procedures (Regulatory), and Exchanges) for SW business process analysis in terms of one time submission, regulatory view of the supply chain and SW business process. These elements are discussed below. These models do not cover the question of "how" the CBRA carries out those processes. For example, when an activity diagram mentions "CBRA conducts risk analysis" or "importer submits declaration", the models do not get into the question of how the risk analysis is done or how the importer's declaration is validated and processed.

SW Business Process has five (5) dimensions which provide the framework for the end-to-end description of business processes.

Figure 4.1: SW Business Process Analysis: WCO's 5 Dimensions



a) Chronology – This dimension projects the events in international trade that take place in a chronological order. Events are discrete points in time that signify a moment in the course of an activity. There are different views on the same events leading to different data concepts of the date and time of the event.

b) Geography (Locations) – These events take place at locations. The occurrence of an event is always linked to location. Location has implications for legal jurisdiction.

c) Parties (People) – Players that take part in the events. Parties are entities that have rights and obligations under laws and regulations. These parties are actors in use cases. Actors can be generalized into abstract actors based on their roles. For example, the Authority Actor is a generalization from Customs Authority and Agriculture Authority.

d) Procedures (Regulatory) – Regulatory procedures give the character to a process as they bind the actors to certain defined patterns of behaviour, thus giving some order and character to the business processes that take place in the course of cross-border transactions.

e) Exchanges – Exchanges signify movement of information between parties in the course of international trade. In the diagram below, exchanges of Business to Government (B2G), Government to Government – or CBRA to CBRA (G2G), Government to Business (G2B) and B2B have been depicted. These information exchanges are defined in laws and regulations or are governed by mutual agreements.

The Regulatory View of the Supply Chain

Diagram below provides the high-level picture of the Regulatory view.

It captures the actions of the key players in a SW in pursuance of regulatory compliance. This is elaborated in greater detail in subsequent Figures 4.4 to 4.7. These diagrams will serve as the reference diagrams for further elaboration of business processes in a SW Environment.

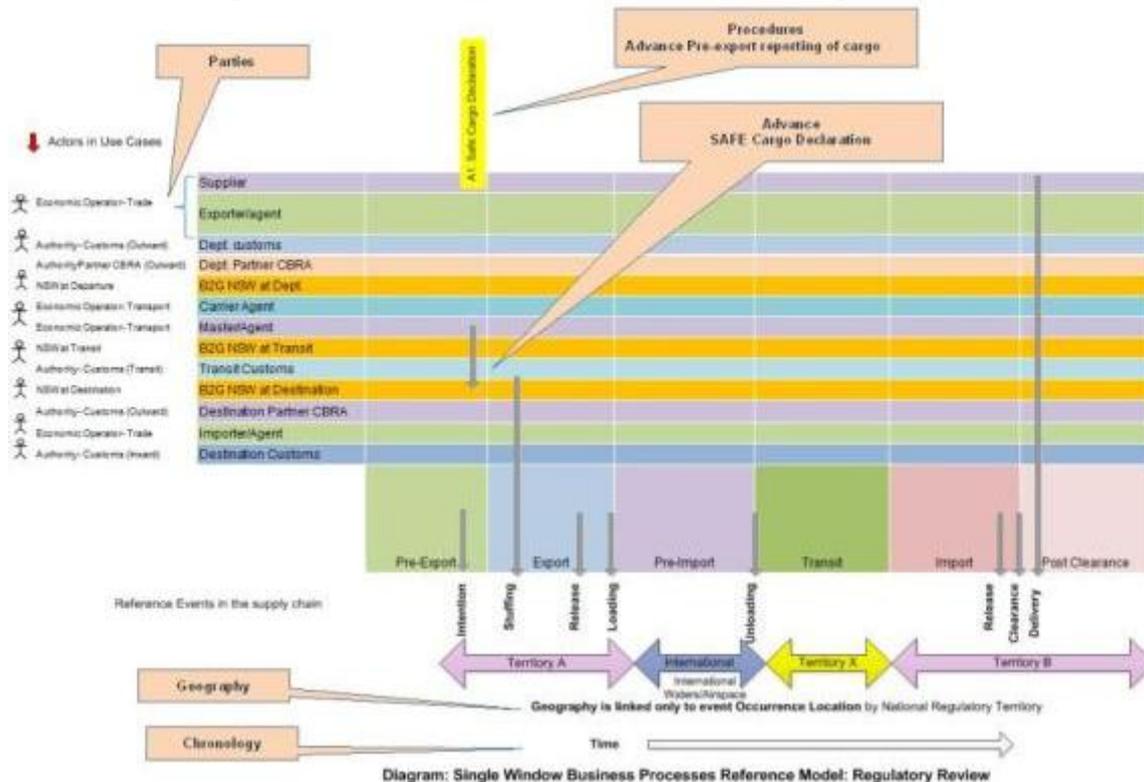
The “Regulatory” view is shown as comprising Pre-export, Export, International Transport, International Transit, Import and Post Clearance phases. Business processes that occur in the Pre-import phase are not separately marked in the diagram but could be taken as processes preceding Import Processes.

These phases follow the logical flow of goods through a supply chain in which goods leave regulatory territory of export using the means of international transport in order to reach the regulatory territory of destination via (in some instances, one or more) regulatory territories of transit. These phases provide the basis for projecting flows of regulatory information between the relevant actors in a sequential manner. Tracking the business processes underlying these flows is the object of this section.

At the bottom of the diagram, the different regulatory territories are described. The events in the supply chain take place in these regulatory territories. To enable the analysis of the legal issues, the distinction between chronology, geography and procedures has to be maintained.

On the left hand side of below Figure 2, the names of the relevant actors have been provided. These actors are generic actors. For a detailed overview of all the actors defined in the WCO Data Model and the generalization relationship, please refer to the relevant sections in the WCO Data Model covering all Business Process Diagrams. Exchanges take place between these generic actors depicted in the Figures 4.4 to 4.7. These actors participate in regulatory procedures in their respective roles in different phases starting from the pre-export phase and ending with the post clearance phase, although not every actor will have a role in every one of the phases. Across the top of the diagram are the identified processes.

Figure 4.2: SW Business Process Reference Model: Regulatory Review



The Regulatory View of SW Business Processes

In Figures 4.4 to 4.7 the end-to-end view of regulatory processes are shown. These processes are described in a general chronological order of their occurrence –while the order of processes broadly holds, there could be certain alternative or exceptional scenarios with certain differences in sequence. The Figure 4 depicts the initial set of procedures that establish the CBRAs that offer registration services. Registering an entity may also involve regulatory approvals. For example, in the case of a hypothetical country X, a trader will not be registered for import and export operations without having a VAT number. In most countries, customs brokers may be required to furnish minimum financial guarantees and provide proof that they have passed the qualifying criteria. Customs locations and customs areas are required to satisfy regulatory criteria for approval.

The procedures of registration involve submission of key data into the SW about parties (economic operators) involved in a supply chain process, regulated products, means of transport, regulatory locations, CBRAs and their services and means of transport etc. In addition to key business data, registration processes also establish technical information about SW users and SW services. Figure 4.3 provides the details of these processes (R1 to R9).

Registration processes establish the identifiers for the registered entities. A set of attributes for these registered entities may have been subject to regulatory verification as described in the preceding paragraphs. In the transactional reporting to customs, the trader in his goods declaration for import and export merely mentions the identifiers and not their underlying attributes, thereby reducing duplicate data flows. These identifiers serve as the linking pins of information in the Cross-border Regulatory Processes described in Figures 5 to 7.

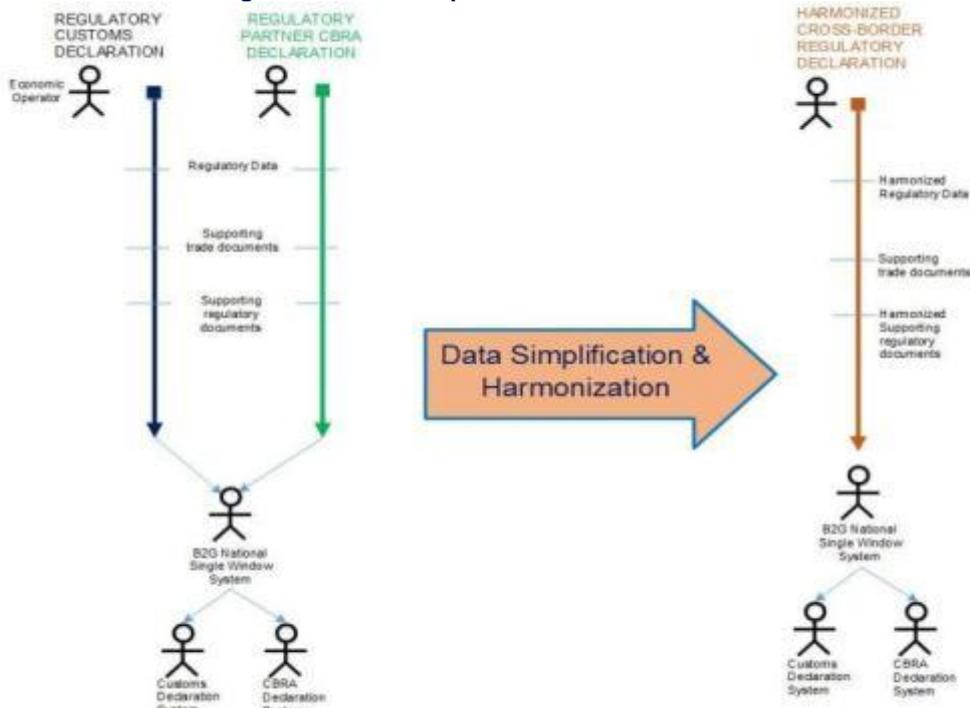
The green lines pertain to partner CBRA's procedures such as application and issue of licenses, Certificates and Permits and declarations made to partner CBRAs for the clearance of cargo at import, export and transit. (Please see Figure 3). The processes covering goods declarations, cargo reports, conveyance report and post clearance audit exchanges shown in Figures 4.5 to 4.7 subsume the transactional verification and post verification processes carried out by all CBRAs including customs.

The vertical lines in Figures 4.4 to 4.7 with arrows representing information flows are called “declarations”. A declaration is a statement or action, in any form prescribed or accepted by the CBRA, giving information or particulars required by the CBRA. The CBRA response to these declarations represents the reverse flow of information. It is assumed that every declaration is matched with one or more responses from the regulatory agencies.

Data Simplification and Harmonization – The Regulatory Declaration

Generally, in the absence of data harmonization, separate procedures are followed by customs and partner CBRAs leading to multiple declarations. For instance, if there is a customs goods declaration at import, there would as well be a regulatory declaration for a partner CBRA at import. After the harmonization of regulatory data, and standardization of data requirements, it is possible to combine these into a single cross-border regulatory declaration, as shown in Figure 4.3 below.

Figure 4.3: Data Simplification and Harmonization



Regulatory Data Harmonization: Data simplification and harmonization makes it possible to create a harmonized regulatory declaration which may help collect data for different regulatory agencies

Grouping Business Processes:

SW implies “one-time” submission of data, and it is therefore necessary to keep track of the original source of data within the supply chain. Identification of the original source of data helps establish the business process involved in the “first submission”, obtain information first hand and maintain quality. These business processes are often **rooted in laws and regulation, supported by administrative instructions**. Therefore, along with the listing of groups of business processes, this section also points to the regulatory basis for source for those business processes.

For convenience, business processes in a SW have been divided into the following groups:

Group of Business process	Source Material/ legal basis	
I	Registration/ Regulatory Authorization	SAFE Framework of Standards[AEO Concept], National legislation regulations/ business practices
II	Application/issue of Licenses, Permits, Certificates, Others (LPCO)	Several international Instruments/ National Regulation
III	Advance information	[SAFE Framework of Standards].
IV	Goods declaration /Cargo report/ conveyance report	[RKC Business Processes], International Maritime Organization (IMO) FAL Convention, TIR Convention etc.
V	Post release compliance verification	[WCO PCA Guidelines]
*Business processes for post release compliance verification listed at V above have not been covered in the current analysis		

Group I Processes - Registration/ Regulatory Authorization

The typical “Customs Act” begins with a section on the definitions for entities that will have legal obligations in international trade where, how and by whom should goods be entered for import, export and transit. There are similar enactments supporting partner CBRAs defining entities that have

obligations with regard to traded goods etc. These laws and regulations also cover means of transport and crew.

Starting with the first grouping, Registration/ Regulatory Authorization processes are at the foundation of the SW, as data about parties, locations, transport means etc. are first recognized by the national SW operator. The registered entities have a legal existence in the respective legislations of the CBRAs. These registration processes may also be viewed in conjunction with regulatory pre-verification processes under which, the respective regulatory authorities get the opportunity to conduct verification of information provided by users as part of the registration process. These pre-verification processes may be determined by a combination of regulatory and administrative imperatives.

Before access is granted to any of the SW services, certain administrative requirements of the NSW operator need to be fulfilled. These requirements are described by the registration processes, under which the NSW Operator **establishes a legal relationship** for the various actors that use the SW services. Typically, these would be legal agreements to be entered into by the responsible official from the NSW operator with the responsible official on behalf of the registering entity. There could also multiparty agreements, for instance between the trade or transport actor as subscribing parties, Customs/ Partner CBRA parties (with authority to issue regulatory approvals) as relying parties, and the NSW Operator as the service provider. These parties with whom customs interacts are called actors. These actors are broadly divided into the following groups:

a. NSW Operator:

It is assumed that a “SW Operator” will be established as a legal entity, with the mandate to provide SW Services.

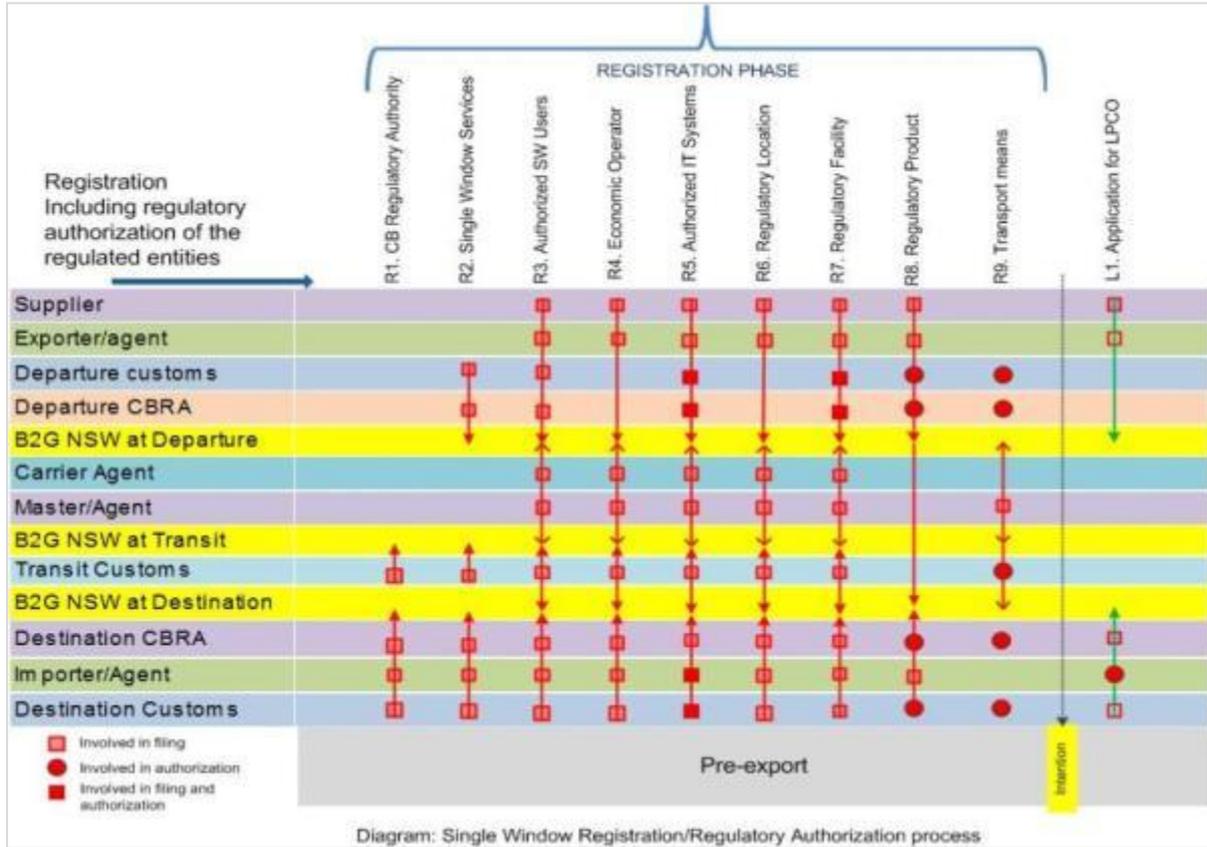
b. Economic Operators:

Economic operators are parties from Trade and Transport that play a role in a SW environment.

Economic operators are often facilitated by intermediaries called Agents, who play certain roles on behalf of economic operators. These agency roles are defined in laws and regulations in cross-border legislation. Any compliance-related activity that is supposed to be performed by an economic operator can also be performed by an agent. The following diagram depicts the general relationship between actors in a SW. For a detailed overview of actors, please refer to Use Case – Register Economic Operator (R4).

The Group I business processes, shown in the above table are described in figure provided below and the legal issues involved, are listed in the table below this figure:

Figure 4.4: SW Registration/Regulatory Authorization Process



Registration/ Regulatory Authorization (Group I Processes)

REF	Business Process	Brief Description
R1	Register Cross-Border Regulatory Agency(CBRA)	<p>The SW Operator captures the necessary information and performs certain actions to register a Cross-Border Regulatory Agency. [This use case describes how a CBRA is brought on board a SW Environment].</p> <p>Legal Issues:</p> <ul style="list-style-type: none"> Regulation defining the facility provided by the SW Operator Regulation that the facility is a legally valid means to fulfil regulatory obligations Regulation defining the right of the operator to host SW Services and the operator's roles and responsibilities therefore.
R2	Register SW Service	<p>The SW Operator makes arrangements to provisions a service on behalf of a CBRA.</p> <p>Legal Issues:</p> <ul style="list-style-type: none"> Obligations of the SW Operator and the CBRA in relation to the hosted services. Legal agreement between the CBRA and the SW Operator on security, privacy, data management lifecycle, standards of service etc.
R3	Register Authorized SW users	<p>The SW Operator makes arrangements to provisions on the SW information system, a user belonging to a CBRA or a user belonging to an economic operator that is the recipient of a service defined in R2. As user is an individual belonging either to an</p>

REF	Business Process	Brief Description
		<p>economic operator or CBRA that is an entity distinct from the Economic Operator for governance within a SW.</p> <p>Legal Issues:</p> <ul style="list-style-type: none"> • Regulation covering on-boarding procedures. • Granting rights to the users (individuals from the trade and CBRAs) for accessing the information resources (e.g. web/EDI applications) offered by the SW Operator. • Regulatory definition of what constitutes user identification and authentication, use of digital signatures etc. • User's conditions of participation in relation to each of the services.
R4	Register Economic Operator	<p>The SW Operator in relation to a cross-border regulation captures all relevant particulars of an economic operator and registers the Operator for the requested services. The economic operator registration leads to the creation of a "Trader Account" which needs to be managed by the SW for the life-time of its existence.</p> <p>Legal issues:</p> <ul style="list-style-type: none"> • Harmonizing legal definitions for business entities that deal with CBRA. • Regulatory verifications concerning economic operators, identity management processes. • Managing identities for different CBRAs • Managing identities between NSWs and Community Systems. • Managing identities globally between NSWs implemented in different regulatory territories. (ISW and GNC scenarios)
R5	Register Authorized IT System	<p>The SW Operator makes the necessary arrangements to register the IT systems linked with the operation of SW services</p> <p>Legal Issues:</p> <ul style="list-style-type: none"> • Regulation granting rights to the IT applications and IT devices (belonging to Economic operators and CBRAs) for accessing the information resources (e.g. web/EDI applications) offered by the SW Operator. • Regulation specifying the conditions of participation for each of the services.
R6	Register Regulatory Location	<p>The SW Operator in relation to a cross-border regulation captures all relevant particulars of a regulatory location.</p> <p>Legal Issues:</p> <ul style="list-style-type: none"> • Legally defined locations where goods (and transport means) are approved for crossing the border, for storage, warehousing, examination, testing or are dealt with otherwise in the course of international trade. Different CBRA legislation defines these locations differently in their respective legislations.
R7	Register Regulatory Facility	<p>The SW Operator in relation to a cross-border regulation captures all relevant particulars of a regulatory facility.</p> <p>Legal issues: Same as those mentioned in R6</p>

REF	Business Process	Brief Description
R8	Register Regulatory Product	<p>The SW Operator in relation to a cross-border regulation captures all relevant particulars of a regulatory product.</p> <p>Legal Issues:</p> <ul style="list-style-type: none"> Regulatory processes that register products recognize the product identities, attributes, regulatory classification, regulatory restrictions, conditions for import and export etc. Each CBRA may have different ways of identifying and classifying tradable goods/products.
R9	Register Regulatory Transport Means	<p>The SW Operator in relation to a cross-border regulation captures all relevant particulars of a regulatory transport means.</p> <p>Legal Issues:</p> <ul style="list-style-type: none"> Laws dealing with regulatory certification of transport means that are used to carry goods in and out of a regulatory territory. These are subject to global regulations.

Group II Process – Application for Licenses, Certificates, Permits and others

All movement of goods and means of transport across border are subject to tariff and non-tariff regulatory regimes. With the liberalization of trade, most traded goods in the world are not subject to quantitative restrictions. However, there still are a variety of non-tariff restrictions imposed by national laws and international conventions. These restrictions impose conditions that must be met before regulatory authorities permit imports, exports and transit.

These conditions are often documented and expressed in terms of licenses, permits, certificates and other documents that suggest that the transactions meet these conditions. In spite of the variety of goods that are subject to such restrictions, use cases are very similar.

The process include:

- i. Application for licenses/ permit / certificate/ others;
- ii. Pre-issue verifications;
- iii. Transactional verifications checks at the import or export;
- iv. Post issue verifications.

The broad process of application and issuance of a license, permit or certificate remains the same despite differences in regulation. These processes vary for different commodities but with the same underlying patterns.

L1	Application of License, Permit, Certificate or Others	<p>The economic operator applies to a Cross-border regulatory agency for a License Permit or a Certificate and receives a response. There are pre-issue verifications, post-issue verifications and transactional verifications processes during which, the LPCO validity, applicability, quantities, amounts, etc. are verified.</p> <p>Legal Issues:</p> <ul style="list-style-type: none"> Recognition of certificates and licenses issued in another country. Delegation of authority for regulatory verification (where such delegation is envisaged).
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Group III Processes - Advance information

Figure 4.5: SW Advance Reporting

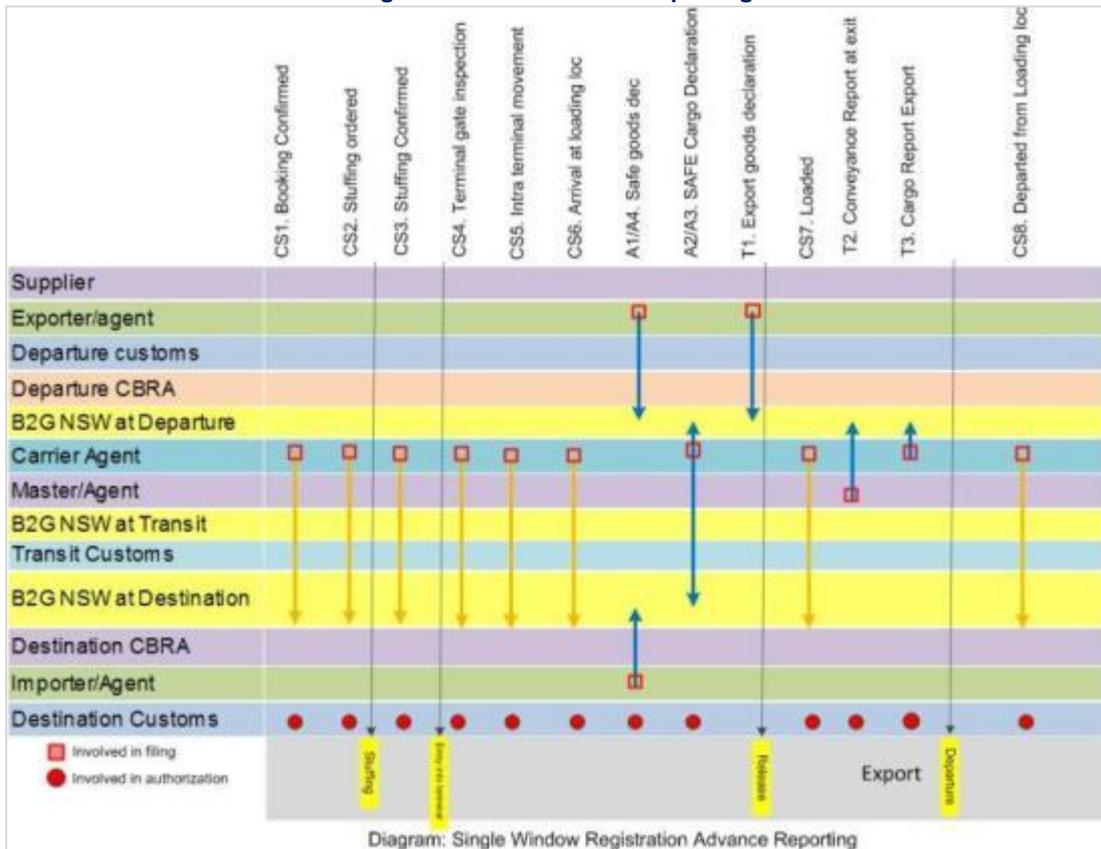
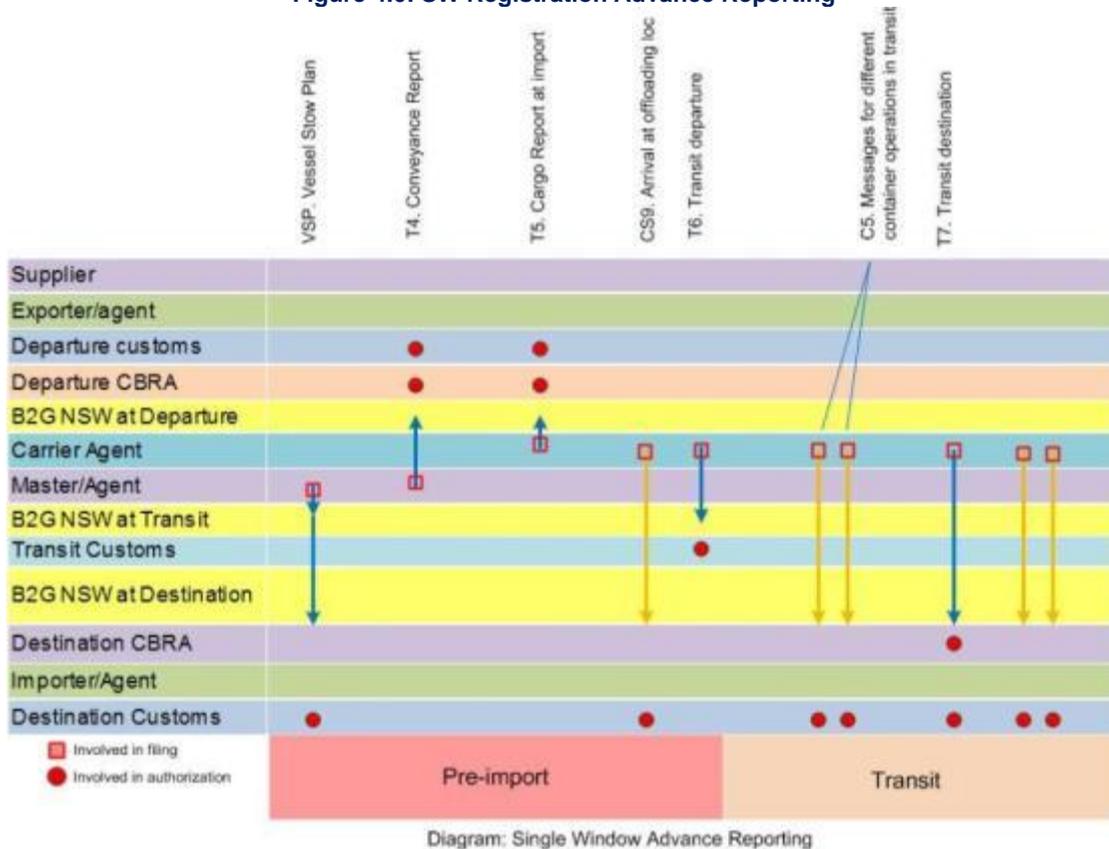


Figure 4.6: SW Registration Advance Reporting



The mandate laid down for Customs under the SAFE Framework of Standards requires the collection of information on international supply chains in advance of the transaction. This framework requires advance information to be supplied to regulatory agencies at export and import respectively in the form of pre-departure and pre-arrival goods and cargo declaration. Information on the containers loaded on board the vessel in the form of a Vessel Stow Plan (VSP) and the Container Status (CS) messages give information about the status of a container. Table 2 below provides details of the processes for Advance Information.

Table 4: Advance Information Processes

A1	SAFE Goods Declaration – Pre-departure advance export declaration	The economic operator (exporter) submits a pre-departure export data (SAFE goods declaration) for security risk assessment.
A2 & A3	SAFE Cargo Declaration at export & import	The economic operator (carrier) submits a pre-departure and pre-arrival cargo data (SAFE cargo declaration) for security risk assessment at departure and destination respectively
A4	SAFE pre-arrival advance import declaration	The economic operator (importer) submits a pre-departure data (SAFE goods declaration) for security risk assessment.
CS#	Container Status Message	The economic operator (Carrier) files status messages of the container for all container events starting with the booking of the container.
VSP	Vessel Stow Plan	The economic operator (Master/ Ship's Agent) files the container stow plan to the authorities at destination for security risk assessment

Legal Issues: common to all processes in Advance Information

- Enabling legislation for advance reporting.
- Legislation often authorizes 3rd parties to submit this information on behalf of the carrier. Liability of such a 3rd party needs to be legally defined.
- What is the legal arrangement for Advance Information that is submitted to the NSW at departure to be transmitted for onward use by the NSWs at transit and destination? (Considering the questions of feasibility and desirability, such transmissions would be addressed separately.)

Group IV Processes - Goods Declaration /Cargo report/Conveyance report

The processes T1 to T8 in the below Table 4 are based largely on the revised Kyoto Convention In addition to the above models; there is the response package model which depicts the business processes associated with a CBRA's response to a declaration.

It is assumed that in SW environment, there will be regulatory data harmonization and the data exchange points between the economic operator and Customs will coincide with the relevant exchanges with a partner CBRA. This would imply that the standard regulatory reporting events for customs also be used as the reporting events for the Partner CBRAs. This is a logical conclusion from the principle that one time submission requires harmonized data and documentation.

Table 5: Goods Declaration/Cargo Report/Conveyance Report

T1	Export Goods Declaration	The necessary arrangements are made to meet with the requirements of the Authority to an Exportation Goods declaration.
T2	Conveyance Report at Exit	The necessary arrangements are made to meet the Authority's requirements to take the means of transport for commercial use and its crew, cargo, stores and passengers out of the Customs territory.
T3	Export manifest (Cargo Report at Export)	The necessary arrangements are made to enable goods and the means of transport for commercial use to leave the Customs territory

T4	Conveyance Report at entry	The necessary arrangements are made to meet the Authority's requirements to bring the means of transport for commercial use and its crew, cargo, stores and passengers into the Customs territory.
T5	Import manifest (Cargo Report at Import)	The necessary arrangements are made to meet with the Authority's requirements to bring goods and the means of transport for commercial use into the Customs territory.
T6	Transit Departure	The necessary arrangements are made to enable goods to be placed under the Customs Transit Procedure.
T7	Transit Destination	The necessary arrangements are made to terminate the Customs Transit Operation.
T8	Import Goods Declaration	The necessary arrangements are made and a declaration will be lodged with Customs to bring goods under the Customs procedure; Clearance for home use.

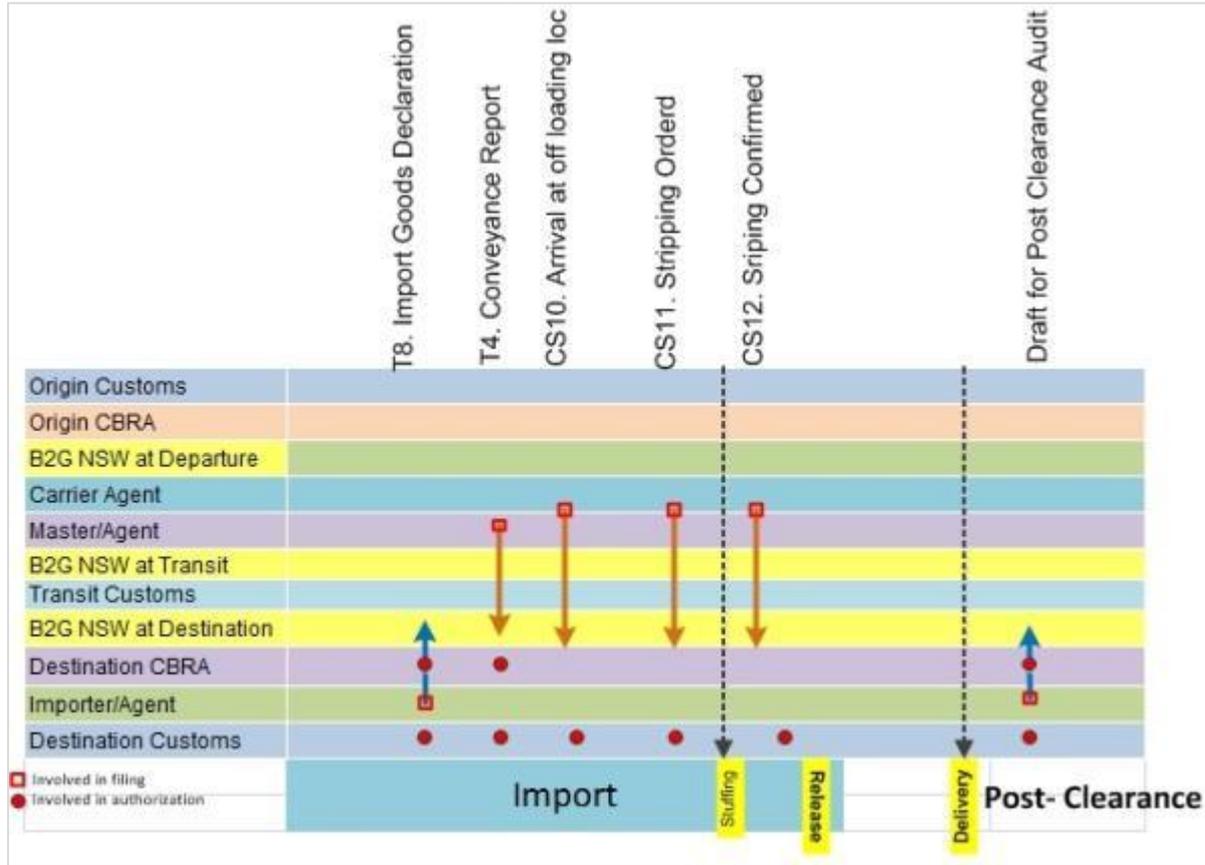
Figures 4.5 to 4.7 provide the pictorial view of some of the processes pertaining to Advance Information, Regulatory Goods Declaration, Cargo Report and Conveyance Report.

Legal Issues: common to all processes in Goods Declaration/ Cargo Report and Conveyance Report

- Enabling legislation governing these declarations – not just for customs but also for partner CBRAs [legislation covering obligation to declare – definition of the taxable events, liability of duties taxes and fee, the manner and measure of the various levies etc.].
- CBRA specific legislation that enables the receipt of this data digitally, including logical and security controls specifically defined in the legislation/ regulation. Mandate of general e-governance legislation to move to digital or paperless processes.
- Regulatory Procedures defining the place and timing of declaration to be harmonized between customs and partner CBRAs.
- Authority to access data, use data and process data received are processes covered by CBR Agency-specific legislation. CBR Agency authority to view and make determinations based on data received in the “pool” formed in the SW Environment needs to be addressed specifically. All these processes have to be tempered by:
 - Inter-agency data exchange procedure and legal liabilities and obligations of agencies handling the data.
 - Treatment of data received as part of declarations and reports which are subject to legislation of dealing with rival concerns of data privacy and information transparency.
 - Action of checking of declaration, confirmation of verification and legally valid notification of regulatory determinations arrived at by authority.
 - Legislation often authorizes a 3rd party to submit this information on behalf of the carrier or importer. Liability of such a 3rd party needs to be legally defined. Ability to use data and exchange data with Community Systems that act as legally authorized 3rd party suppliers of regulatory declarations and reports.
 - Legal provisions in a multi-party agreement between the concerned parties to enable filing of declarations through or by a 3rd party is a pertinent legal issue.
 - What is the legal arrangement for the declaration / reports data that is submitted to NSW at departure be transmitted for onward use by the NSWs at transit and destination?

(Considering that the question of feasibility and desirability such transmissions would be addressed separately.)

Figure 4.7: Import and Post Import Processes



Following the guideline and the list of activities given above we can develop business case scenarios and analyse potential benefits to convey the stakeholders. Further these activities will help to develop, propose, and seek approval for efficient business processes and a list of actions required to be carried out prior to adopting them. These activities also provide starting point for establishment of an enabling legal infrastructure for SW.

Appendix V: Component 5 – Data Harmonization and Documents Simplification

(Guidelines on processes and supporting documents)

1: Benefits

A SW environment would provide a solution to the problem of the different electronic messages, and improve the accuracy of the use of data if internationally agreed standards such as the WCO Data Model are being used. Some of the benefits of data harmonization are outlined as follows:

- The use of non-standard, country-specific, and / or agency-specific data is highly inefficient in terms of cost and accuracy for both government and trade. Governments are required to maintain or develop agency-specific systems and Trade must develop and maintain interfaces for these redundant and duplicative reporting requirements. This is also evident in non-automated, paper-based systems where Trade is required to provide highly redundant forms.
- The situation is especially critical for large global traders who must interact with many Customs Administrations and many other government agencies. The cost and complexity of meeting these requirements is staggering. Not only large global traders but also SMEs¹⁶ will benefit as well.
- The use of international standards in data and messaging for export, transit transactions and import, where the same data and messages can be submitted to all government agencies including Customs will be the core foundation of a SW environment. The use of the WCO Data Model will ensure compatibility among government agencies reporting requirements and will enable the exchange and information sharing among relevant government agencies including Customs, resulting in greater facilitation towards Trade.
- As governments begin the development of a standardized, multi-agency data set there might be a concern about the number of data elements. To keep the number of data requirements as small as possible, the intent is to include in the standardized data set only that information which the agencies are currently allowed to collect, the "need-to-have-list" of information requirements.
- The discovery of redundancy of data that would be revealed during the data harmonization process and the ensuing standardization, often results in reduction of data requirements.
- Another benefit is the stability, a standardized set of data requirements provides. The outcome of the data harmonization must be a maximum set of data requirements for the export, transport and import of goods when crossing borders. Governments should not require any information outside of the standard data set. It is important to note that most of the data requirements of the WCO Data Model are Conditional. National Governments will use the WCO Data Model with its maximum data set to derive its National all-of-government border crossing data model.

2: WCO Guideline on Data Harmonization Management:

WCO's Building SW Guide recommends that governments considering the building of a SWE should initiate the data harmonization and standardization process. It is also recommended that countries that have a SW in place and not executed a data harmonization would also conduct such a harmonization. These guidelines set forth the steps governments should implement in the harmonization process as follows:

1. **Identify the lead agency** and dedicating staff to conduct the harmonization,
2. Inventory current trade agency data and information requirements from automated systems and forms,
3. Nationally harmonize data and information inventory
4. Identify redundancies by comparing data definitions

¹⁶ *Small and Medium Enterprises*

5. Harmonize the information and data requirements inventory to the international WCO Data Model standards.

3: Guidelines on SW Data Harmonisation Process:

These guidelines are based on best practices and SWE implementations and may be used in conjunction with UN/CEFACT Recommendation 33 which has been thoroughly analysed earlier in this report.

It is best to have a project team executing the data harmonization process. The project team members must have extensive knowledge of international trade procedures specifically the area of regulatory information requirements. The harmonization project team should also include data architects¹⁷ and Business Process modellers. It is also helpful to dedicate a person to serve as a liaison to the participating agencies. This liaison serves as a conduit for information to and from the lead agency. Also, the participating agencies must identify a primary contact for organizing the agency's data inventory and harmonization.

Communication of the harmonization policy, procedures, and steps is critical. After organizing the harmonization project team, the next step is to hold a series of meeting and briefings for all participating agencies to clearly define the roles and responsibilities of the harmonization project team. After this "kick-off" briefing the agency participants should understand the overall process by which data harmonization will be accomplished, the purpose of one-on-one meetings with the data architects and Business Process Modellers. They should also identify the work sessions the agency should participate in and the approach planned for these work sessions. Needless to say that the participants are well aware of agency's responsibilities

4: Data Harmonisation Process Steps:

Data harmonisation is an iterative process of capturing, defining, analysing, and reconciling regulatory information requirements. It is highly unlikely that any government will be able to achieve harmonization of all agencies at one time. Governments should consider prioritizing agencies and agencies' requirements based on the SW evolution stage. The prioritization of requirements could be based on volume, revenue, supply chain security, etc. For example, every international trade transaction requires information for Customs, transportation, and statistics and may be considered as the first tier of agencies.

The data harmonization steps are as follows:

Data Capturing

Data Capturing means making an inventory of identified regulatory agencies' requirements. This can be accomplished in a number of ways such as the reviewing of agencies' forms, automated systems data requirements, regulations, etc. This includes the data element name, data element definition, representation (format or code), when the information is required (declaration, release, clearance) and citation of the relevant authority to collect, validate and view the information. This information can be aggregated in an Excel spreadsheet or work sheets from any other software tool.

Defining

Defining the information requirement is critical. While information is identified by name, the data element definition -what information is conveyed by using that data element- is more important.

¹⁷ A data architect in this scenario is a person responsible for making sure a Government's strategic goal is created or optimized through the use of WCO Data Model standards.

Analysing

The process of analysing the information consists of gathering similar data element names and having a full understanding of the definition and the information required.

Reconciling

This is the final step in which there is agreement to use one data element name, a common definition, common code, and standard messaging reconciled with the WCO Data Model standard. An illustration of the data harmonization process follows:

Specific Illustrations of the Data Harmonization Process Steps:**Capturing**

In order to capture data elements and other information requirements developers of a SW environment can begin by reviewing forms. If the country has an automated trade processing system, data elements can be found by using the systems' logical data model. Initially, data can be arranged on a worksheet. The worksheet should contain the following information: data element name, data element description (definition), domain the data element belongs to, representation (alpha, numeric, or alpha-numeric, number of positions, delimiter), domain (code list), mode of transport (marine, air, rail, road), process (export, transit, import), whether it is used for conveyance, crew, cargo or goods (more specific than cargo) or equipment and the data source (exporter, carrier, importer, customs broker, driver, agent, bank, insurance company, psi company etc.).

Another important element is the legal authority to collect the data. It needs to be filed whether the agency is authorized to collect and/or view the data, the source of the legal authority (law, regulation, executive order, etc.) and the expiry date of such authority.

Recommended worksheet columns are as follows:

- Agency data element number - A reference number for the data element.
- Data element name - The name of the data element being defined. The naming of the data element should reflect the common business terminology used by the agency, not a computer related name
- Data element description - A description of the data element with as much detail as possible.
- Representation - The data type can be either N (Numeric), A(Alpha) or AN Alphanumeric and the number of positions as well as whether a delimiter –floating or non-floating- is needed).
- Data domain - If the data element has a discrete list of values or a range of values, provide the list, range or a reference to the list or range. For example, the data element *country* could be restricted to the values in the ISO country code table.
- Mode of transport - Indicate the mode of transport (road, air, marine, rail, pipeline, cable) for which the element is used.
- Process - Indicate if required for export, transit processes or import.
- Category of use - Indicate if required for conveyance, crew, cargo, goods, or equipment.
- Legal permission to collect or view - This information identifies whether the agency is legally permitted to collect or view this element. If authority allows collections, enter the word COLLECT, otherwise please enter VIEW
- Source of legal authority - Cite the source of authority to collect or to view. The authority may be derived from a specific form, a regulation, legislative mandate, MOU¹⁸ or other. Please cite all legal authorities that apply if there are multiple sources. Do not provide the text of the citation.
- Expiration date of legal authority - Provide the date on which the legal permission to view or

¹⁸ Memorandum Of Understanding

collect the data expires for the agency. Specify N/A ¹⁹ if this authority doesn't expire.

- **Data source** - Indicate if the information is provided by Trade, Government, or derived from other sources. <Trade> indicates the data is filed by Trade, <Government> indicates the data is created by a regulatory agency. An example of the latter would be the findings from an investigation. If unsure, enter a letter <U> here for unknown. <Derived> data is calculated by or extracted from a reference file, e.g. the rate of duty could be extracted from a Harmonized Tariff file or derived by the computer system from a combination of one or more other data elements.
- **Trade Source** - Indicate the trading partner who is the usual source or provides the data. If the data source attribute is <Trade> please identify which party in the transaction is responsible for filing the data element. Suggested values are <T> (importer, exporter, broker, forwarder, etc.). <C> (carrier) or <TC>. If unsure, enter a letter <U> here for unknown
- **Timing, when data is required and provided** - Identify the point of the transaction's lifecycle at which the agency expects have access to the data element. Suggested values are: <PRE-ARRIVAL>, <ARRIVAL>, <RELEASE>, <CLEARANCE> <POST RELEASE> or <DATAWAREHOUSE> etc.). If unsure, enter a letter <U> here for unknown.
- **Agency flow source** - If the "Data Source" is <Government>, identify the agency that creates this element.
- **Remarks/Comments** - Free form text that can be used to annotate the data element in any way

Upon receipt of the worksheet survey from the agencies, the data harmonization project team must aggregate or merge the agency responses into a comprehensive worksheet. The following is an abbreviated representative sample of this aggregation.

NAME	DESCRIPTION	TYPE	SOURCE	MODE
Port of Unloading	Location where goods are removed from the ship	4 digit proprietary code	Carrier	Ship
Port of unlading	Airport where consignment is taken off the airplane	4 digit proprietary code	Carrier	Air
Domestic Port of Unloading	Domestic port where merchandise is removed mode of transport	4 digit proprietary code UNLOCODE	Carrier Broker Importer	Air, Rail, Ship, Truck
Domestic Port of Unlading	Domestic airport where consignment is taken off the airplane	UNLOCODE	Carrier	Air
Foreign Port of Unloading	Foreign port where merchandise is unloaded from the conveyance	5 digit proprietary code	Carrier Exporter	Air, Rail, Ship, Truck
Foreign Port of Unlading	Foreign airport where consignment is taken off the airplane	5 digit proprietary code UNLOCODE	Carrier	Air, Ship

Illustration 1 - Sample aggregation of results of agency survey

¹⁹ Not Applicable

Defining and Analysing

This is the responsibility of the data harmonization project team to conduct the analysis of these elements. The analysis of these six elements revealed a similarity of names (unlading or unloading) were minor variations in the definitions, With regard to "domestic" or "foreign"; the essence of the definition is the location where the goods are removed from the conveyance. It was determined that the terms "unlading" and "unloading" were synonyms. It was determined that the terms "foreign" and "domestic" could be defined by the type of transaction. An export would show a foreign location and an import would show a domestic location.

The analysis also revealed that there were three different coded representations of the element, a four-digit code, a five-digit code, and the UNLOCODE.²⁰

Reconciling

The first step is to reconcile and to arrive at one name. Given the result of the analysis that unloading and unlading are synonyms, it was determined to use the term "unlading." Since foreign or domestic can be determined by function (export or import transaction) these words could be eliminated. The reconciled name is "port of unlading." After agreeing to the term "port of unlading," this was checked against the international standard of the UNTDED. Port of unlading is not a United Nations Trade Data Elements Directory (UNTDED) term. The UNTDED term is "place of discharge." The issue of coded representation was resolved by agreement to adopt the international standard of the UNLOCODE.

The following illustration portrays the harmonization and standardization detailed above.

The lead agency data harmonization team can undertake much of this work taking the WCO data Model as the foundation, but these decisions must be verified and agreed on by the stakeholder participating agencies. Should there be a requirement not available in the WCO Data Model, the WCO Data Model can be amended.

Given the broad range of data requirements it is more efficient to focus these meetings on specific ranges of data element. One such way to establish these focus groups is using the data element categories of the UNTDED. The use of this categorization can also be included in the spreadsheet to sort the elements.

- Group 1: Documentation references (0001-1699)
- Group 2: Dates, times, periods of time (2000-2799)
- Group 3: Parties, addresses, places, countries (3000-3799)
- Group 4: Clauses, conditions, terms, instructions (4000-4799)
- Group 5: Amounts, charges, percentages (5000-5799)
- Group 6: Measures, identifiers, quantities (other than monetary) (6000-6799)
- Group 7: Goods and articles: descriptions and identifiers (7000-7799)
- Group 8: Transport modes and means, containers (8000-8799)
- Group 9: Other data elements (Customs, etc.) (9000-9799)

Continuing with the example of "place of discharge" a meeting of the agencies interested in Group 3 data elements: Parties, addresses, places, countries (3000-3799) took place. The agencies agreed that the term "place of discharge" and the UN/LOCODE coded representation as expressed in the WCO Data Model would meet their requirements. Accordingly, these six data elements were replaced by one, and two coded representations were replaced by one.

²⁰ *United Nations Location Code*

5: The size of the standard data set

As governments and their trade communities begin to develop a SW environment, there is an understandable concern about the size of the data set. While the data set may be large, the intention is that it will be the maximum set of data that Trade may have to provide. The important message to deliver to Trade is that the entire data set may never be required for any one transaction. This WCO Data Model standard data set covers all transaction (export, national transit, and import), all modes (air, maritime, road and rail), and all requirements of cross-border activities related agencies. It is logically and logistically impossible to require all data for any one transaction.

6: Impact on Legacy Systems

One problem that SW developers may encounter is the effect of the use of the international WCO Data Model standards on legacy systems. For example, if a country uses proprietary coding for locations, legacy systems (screening, targeting, accounting, etc.) are based on the proprietary codings. Until there is overall conversion to the new data element names and codes, countries and traders may have to implement translation capabilities. This translation must convert the new, international WCO Data Model standards and translate these to the WCO Data Model data element names familiar to users and into those codes used in legacy systems.

List of proposed activities for Data Harmonization with respect to SW implementation in Pakistan:

Sr. No.	Activities	Comments
1	Identify the lead agency and dedicating staff to conduct the harmonization,	<ul style="list-style-type: none"> a. According to WCO survey in 70 percent cases Customs is the lead agency for SW implementation and execution. However in Pakistan it is important for Customs to get this nomination officially (by sending a summary to the PM) and prepare a roadmap for this purpose. A strong lead agency is critical to a successful outcome of the harmonization process. b. Setting up a team a project team for execution of the data harmonization process. The project team members must have extensive knowledge of international trade procedures specifically the area of regulatory information requirements. c. The team should include data architects and Business Process modelers. d. Nominating a person to serve as a liaison to the participating agencies. This liaison serves as a conduit for information to and from the lead agency. e. The participating agencies must identify a primary contact to for organizing the agency's data inventory and harmonization. f. Communication of the harmonization policy, procedures, and steps is critical. g. After organizing the harmonization project team, the next step is to hold a series of meeting and briefings/stakeholders' conference for all participating agencies to clearly define the roles and responsibilities of the harmonization project team. h. After this "kick-off" briefing the agency participants should understand the overall process by which data harmonization will be accomplished, the purpose of one-on-one meetings with the data architects and business process Modellers. i. They should also identify the work sessions the agency should participate in and the approach planned for these work sessions. Needless to say that the participants are well aware of agency's responsibilities

2	Inventory current trade agency data and information requirements from automated systems and forms.	This step involves the step of Data Capturing as explained above.
3	Nationally harmonize data and information inventory	This will involve Data capturing, defining, analyzing and reconciling. These steps have been explained above.
4	Identify redundancies by comparing data definitions	This step requires detailed analysis and reconciling of the data.
5	Harmonize the information and data requirements inventory to the international WCO Data Model standards.	Defining, analyzing and Reconciliation of Data standards are required.

Data Simplification and Dematerialization of Supporting Documents

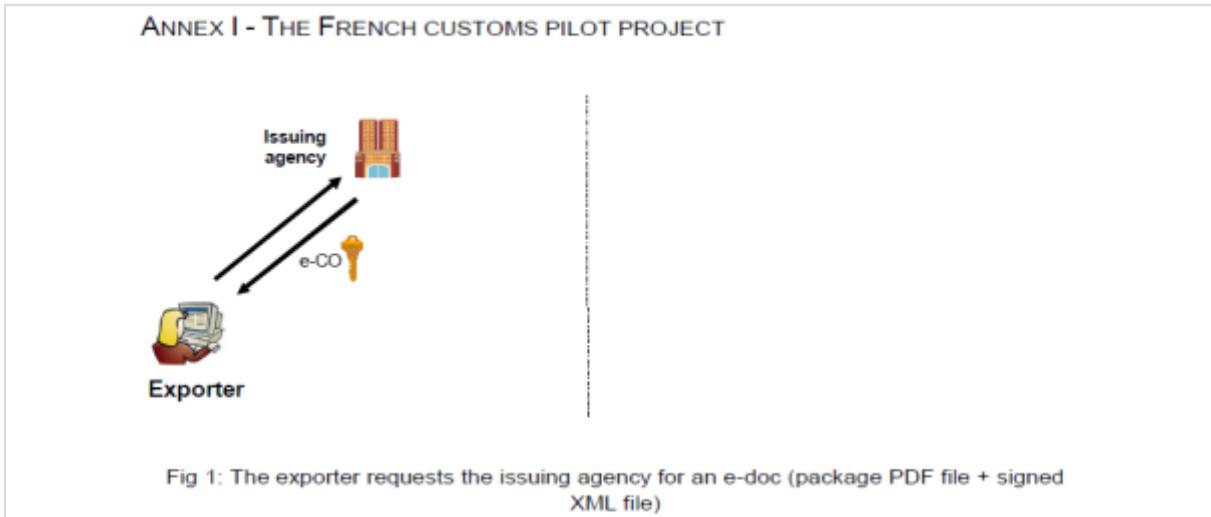
Supporting documents are a requirement of most cross-border regulatory authorities and are one of the main causes of process delays. The SW Environment must provide a comprehensive solution to the question of handling supporting documents through digital means.

Supporting Documents

Supporting documents are documents required to be submitted in addition to the regulatory declarations. These documents are referred to and relied upon during the release and clearance of goods, means of transport and transport equipment. Supporting documents can be broadly divided into two categories:

- i. Key business documents that form trade and transport exchanges such as the Invoice, Packing List, Purchase Order, Delivery note, Bill of Lading, Consignment Note etc.
- ii. Regulatory documents such as Licenses, Certificates, Permits and Others – referred to in the WCO Data Model as LPCO.

Further explanation of supporting documents and distinction between documents or data is provided as below:



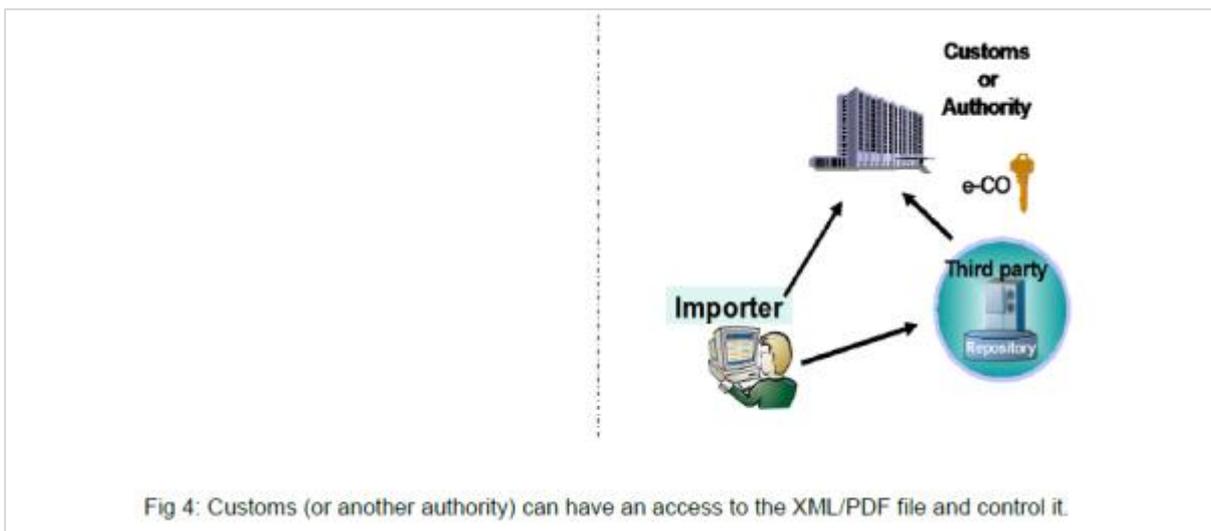
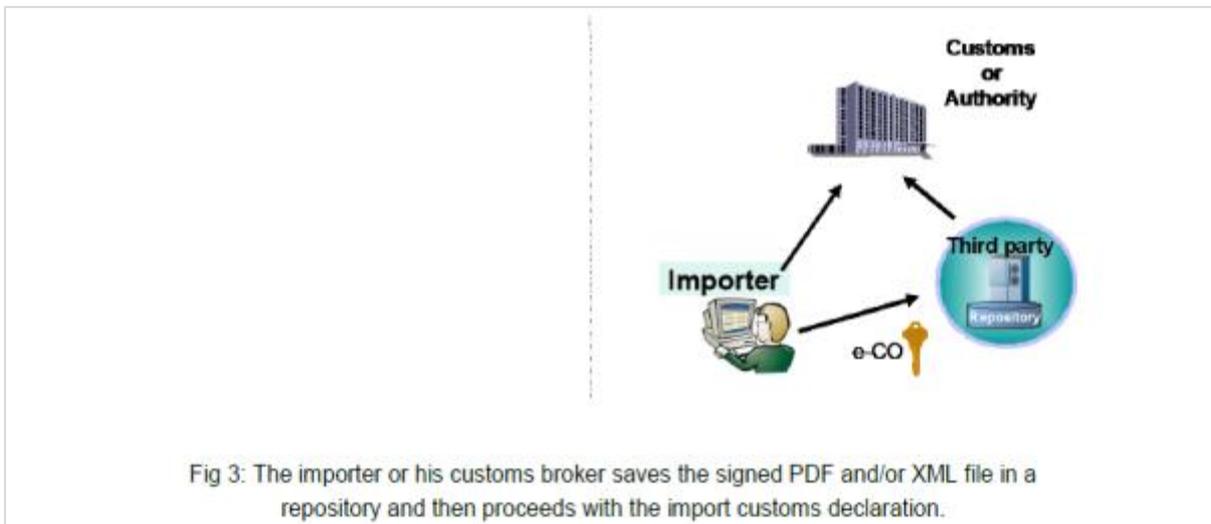
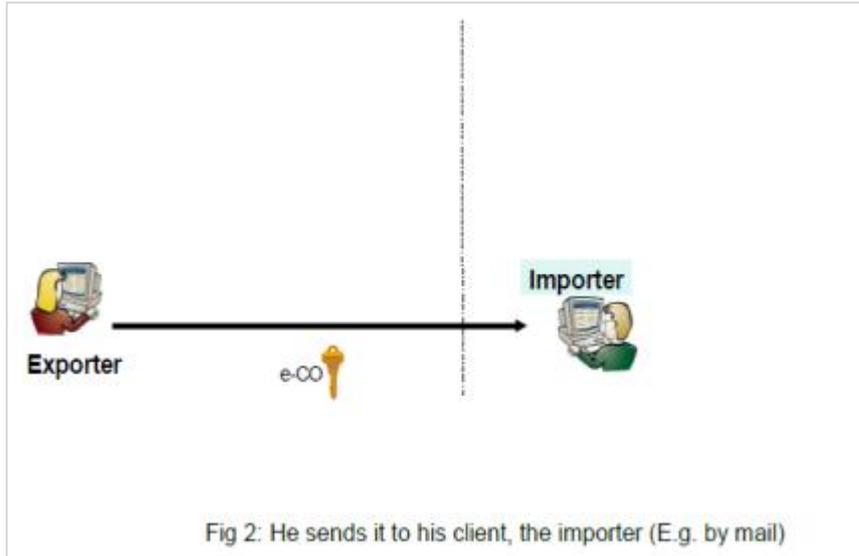
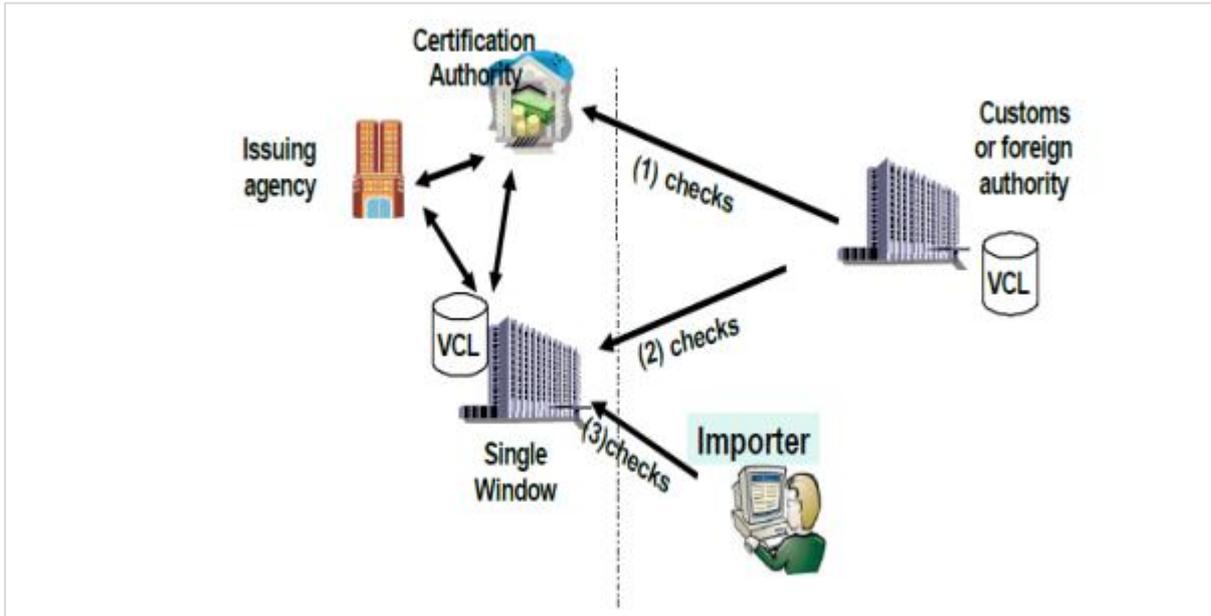


Figure 5: A New Trust Scheme



- 1) Either the import authority checks the authenticity and integrity of the Portable Document Format (PDF)/Extensible Mark-up Language (XML) file on the basis of a valid certificates list (VCL - list of authorized agencies) and the e-signature properties (the recognition of the export CA is mandatory)
- 2) Or the authority requests the export SW to confirm the authenticity and integrity of the file
- 3) The importer can check the PDF file by a request on the export SW web site

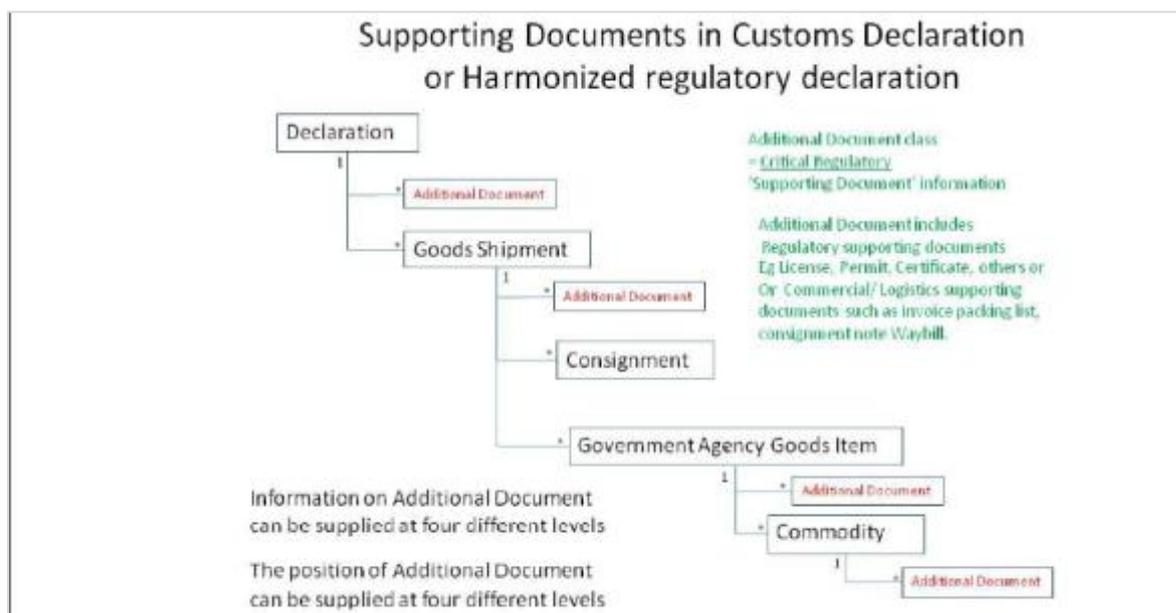
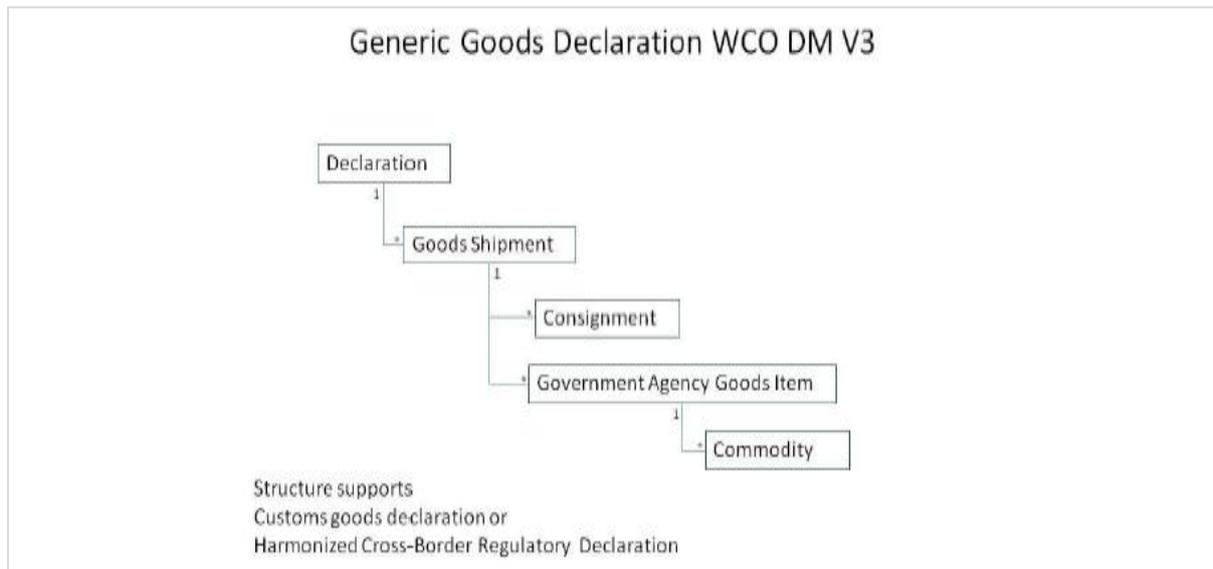
WCO Data Model and the Metadata for Supporting Documents

Table 6: Additional Document Class: Information in the WCO Data Model Version 3.0 on Supporting Documents

WCO ID	Code/ Name	Definition
185	Additional document name	Free text name of an additional document.
263	Additional document amount	The amount covered by the additional document.
275	LPCO expiration (expiry) date	The expiry date of the license, visa, permit, certificate, or other document.
276	LPCO effective date	The effective date of the license, visa, permit, certificate.
313	Additional document quantity	Quantity specified on the additional document
360	LPCO exemption code	Type of exemption from a license, permit, certificate, or other document (LPCO) or indication that no LPCO is required.
389	Additional document issuer	Name [and address] of the party having issued the document.
D001	Additional document issuer, coded	Identifier of the party having issued the document.
D002	Additional document issuing date	Date at which an additional document was issued and when appropriate, signed or otherwise authenticated.
D003	Additional document issuing place	Name of a location where a document was issued.
D004	Additional document issuing place, coded	Place at which an additional document was issued and when appropriate, signed or otherwise authenticated.
D005	Additional document reference number	Identifier of a document providing additional information.

WCO ID	Code/ Name	Definition
D006	Additional document type, coded	Code specifying the name of an additional document.
D028	Additional document name	Free text name of an additional document
DXXX	Additional Document Image	Binary image of the additional document
DXXY	Document location	Online location of the document in a URI / URL
<p>Parties associated with Additional Documents</p> <p>Authenticator Insurance Company Submitter LPCO Authorized Party</p>		

The WCO Data Model provides the ability to report supporting documents at different levels. The diagrams below illustrate this:



Declaration of particulars relating to customs Valuation Method 1
ATR certificate
Excises document
Authorization to use a customs procedure with economic impact end-use
Textile documentary Proof of origin
Production file
Quality control certificate
Universal certificate of origin
Freight note
Common Veterinary Entry Document (CVED)
Imported personal belongings list
Airworthiness certificate
Declaration of non-preferential origin on an invoice or other commercial document
Road consignment note
CMR note
Internal Community transit declaration T2
Registration number
Export license AGREX
House moving certificate
T2L Certificate of customs status
TIR Carnet
Phytosanitary import certificate
Movement certificate EUR.1 (Switzerland)
Phytosanitary certificate
CE compliance note
Information document
T5 control copy
Transit T document
Champagne Cert
Main bill of lading
Military goods export authorization
Export note
CAP Import license AGRIM
Acquit-a-caution
Declaration of preferential origin on an invoice or other commercial document (Switzerland)
CITES certificate
Dual use export authorization

Documents or Data

Business processes in an automated environment relate both to data and documents. The WCO Data Model represents both structured data that can be instantiated not only as meaningful units of data but also as documents. Documents are instances of structured data that carry meaning with reference to a business process. It is well understood that business data in transactional documents have to move between documents. For instance, invoices and bills of lading contain information that 'moves' into regulatory documents like Customs goods declaration.

WCO Data Model identifies 'Declaration' and 'Response' as the main the elements of Cross-border Regulatory transactions. The electronic declarations made to the SW Environment contain enough information for the regulatory authorities to take regulatory decisions concerning import, export and transit of goods. The information, however, is normally based on a number of other supporting documents, whose references are provided in the Declaration.

These references provide means for the regulatory authorities to verify the declared information and help validate them by referring to external sources. Supporting documents provide solidity and certainty with regard to the information provided in the Declaration. It would of course be preferable if the regulatory authorities and businesses can get rid of references to other documents in their regulatory transactions. That however is far from being the practice as governments continue to insist on having access to supporting documents.

In a SW, routines of verification on supporting documents can be achieved by accessing the systems that host them. Such access to electronic documents is in fact access to the structured data held in automated systems. Experts therefore suggest that it is not useful to press with the distinction between business data and documents.

1. Strategy

In order to achieve dematerialization of supporting documents, it would be prudent to follow the steps listed below:

- identify all supporting documentation required at a national level for regulatory declaration separating trade / transport and public sector
- establish an inter agencies task force with a mutually defined lead agency
- simplify business processes between agencies
- address legislative / regulation issues
- undertake the simplification/dematerialization process including access requirements for private sector supporting document data

2. Collecting Basic Data on Supporting Documents

A comprehensive list of supporting documents used in international trade may be prepared nationally. Customs authorities should collect the following data in regard to these documents.

- Name of the Document
- Issuing Authority / Agency
- Location of the issuing authority/agency
- What is the primary legislation and regulation governing the supporting document?
- Does the regulation prescribe the format of the paper form and/or electronic form? Are there data standards that govern the electronic form? Can the issuing authority be expected to conform to the standard electronic form?
- At what point in the business process is the supporting document issued?
- At what point in the business process is the document relied upon?
- Whether the supporting document holds deductible amounts or quantities?
- What is the frequency of use of the document?

3. Simplification/Dematerialization Process

The availability of the supporting documents in real-time at an address in the web to Regulatory authorities is an important consideration in the project for simplification and dematerialization. Instantaneous access with a mouse-click will greatly facilitate control and cross-checking. To achieve this, the following is suggested:

Referencing supporting documents in a regulatory declaration

Customs declarations such as goods declarations and cargo reports that are filed by actors in the transport and business levels would include references to the supporting documents. The WCO Data Model contains a grouping of data on supporting documents called ‘Additional Document’.

In the WCO Data Model, information on supporting documents could be provided at different levels e.g. at the level of the declaration, at the means of transport level, at the level of the shipment, as part of the regulatory goods item and at the level of the product.

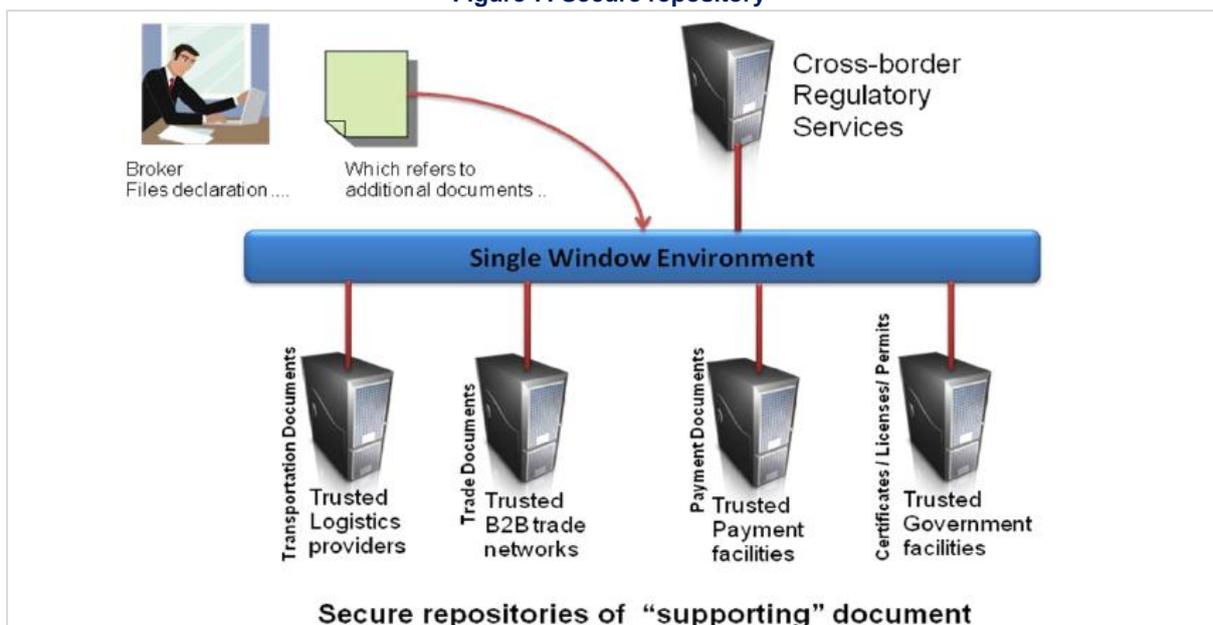
Secure electronic repository of supporting documents

These electronic documents are required to be stored securely in a trusted facility. Such a facility should meet the accessibility, security and reliability needs of the parties involved. To formalize the arrangement of secure storage, the issuer or submitter of the supporting document may enter into a legal agreement with the subscribing party or the relying party to the document. The validity of secure access must be co-terminus with the validity of the original declaration to the regulatory authority. For instance, the repository service provided by the exporters/importers/customs brokers or their trusted service providers must keep the document accessible in repositories for all regulatory entities including the customs authorities and their designated IT systems as long as the goods declaration is legally valid.

This repository service can be provided by a public (e.g. Agriculture, defence, culture, etc.) or a private sector body (e.g. Banks, freight forwarders, brokers, individual companies, commercial secure storage companies). The access to private repositories could be aligned to trusted trader preferences.

When considering ports or airports Cargo Community Systems, documents or data relative to transport will be made available to authorities. A global repository service can also be maintained by the NSW in charge of gathering all documents going with goods. The interface between the cross-border regulatory services IT systems and these storage providers should be defined (e.g. secured protocols).

Figure 7: Secure repository



Content of the supporting documents

This guide does not include the electronic formats for supporting documents. There exist several internationally accepted electronic formats to represent supporting documents. The documents can be stored in the standard format. The metadata about the document layout will provide the means for the subscriber parties to access data items in the document. If necessary, the entire content of the document can be downloaded into the regulatory authorities system. Where electronic documents are not present, as an expedient measure, some parties may need scanned images of the supporting documents. In such cases, the content of the supporting document cannot be processed by a machine as they are not dematerialized.

Today, the control of authenticity and integrity of many paper documents is based on rubber-stamp (with ink) or dry stamp. The visa is stamped by the relevant authority on the export side.

When considering dematerializing these kind of documents the stamp needs to be replaced by something equivalent in terms of value. Every paper based document issued by an authority (or delegated to an authority) on the export side and presented to another authority on the import side can be identified. For example, preferential and non-preferential certificates of origin (CO), certificates of conformity, textile import license

Accessing the supporting documents

The supporting documents stored in the secure repository can be accessed through a secure URL link mapped to the new data element "Document Location".

Digital signature of supporting documents

This document recommends that supporting documents that are dematerialized should be signed using a digital signature certificate. If not digitally signed, the regulatory authorities should keep a time and date stamped fingerprint of the document to protect its integrity during its time life. An incorrect fingerprint indicates that the document has been modified / corrupted since it was fingerprinted.

Electronic signature should comply with XMLDSIG (or XADES) and be included in the e-doc (enveloped signature, time and date of signature are included and are both signed, certificate of the signer is included but is not signed).

Regulatory Documents

Customs and other Government Agencies need to access to regulatory documents which may be systematically controlled in order to clear the goods: mostly these are documents issued by an authority (Other Government Agencies - OGA) working in partnership with customs, for example CITES (Washington convention on international trade in endangered species) / sanitary / phytosanitary certificates authorities.

It would be beneficial if the IT systems belonging to the main OGAs are connected and can exchange data with customs in order to release the goods. This scheme is based on the circular flow of trust between Customs and international authorities like CITES.

For example, a CITES certificate is issued by the export CITES authority. This information is sent to the import side CITES authority. The export customs needs to access to the dematerialized CITES mentioned in the export declaration. It is the same for the import customs. The customs can also update the CITES database modifying the real ex/imported quantity.

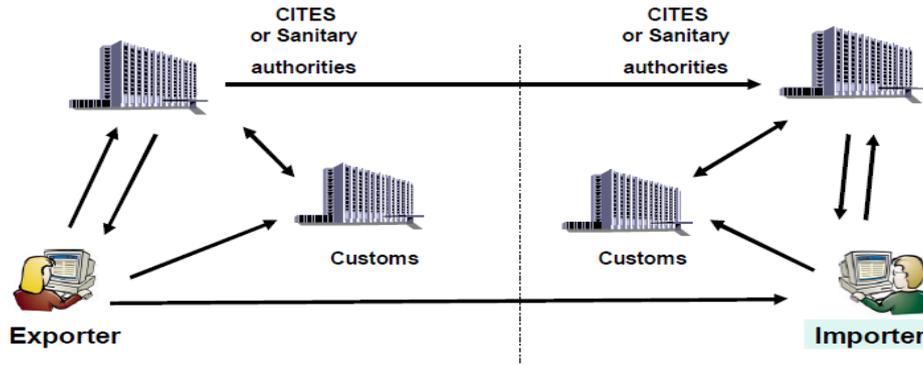


Fig. 4: Customs has an access to OGAs data

Other Documents

Customs do not request on a general basis certain commonly used supporting documents – i.e. invoices, transport documents. Instead, the customs regulations usually lay down that the importer / exporter – or other entity responsible for paying the customs debt, must avail these documents on request from customs and keep them x years (depending on regulation), giving the customs officers the possibility to scrutinize at an audit or post-control.

There will invariably be initial situations where paper cannot be dropped from the business process as the existing laws and procedures require official seals and signatures. A policy on dematerialization must address the question of a transitional arrangement to use scanned paper documents and to persuade the document issuing authority to move towards an e-Document.

Managing a New Chain of Trust for an End-To-End Dematerialization

The project of dematerialization will only have limited effect if undertaken solely at a national level. To be more successful, the management of chain of trust should be addressed at a more global level.

For example, in the case of dematerialization of CITES, sanitary certificates, certificates of origin etc., until the connection between export and import authorities is available (e.g. CITES), the import authority may have to formalize an understanding with the export authority to guarantee the authenticity of an electronically signed document circulating between export and import.

An e-doc is trusted if its digital signature is valid – i.e.:

- the e-doc has not been altered (integrity)
- the issuer of the e-doc is safely authenticated

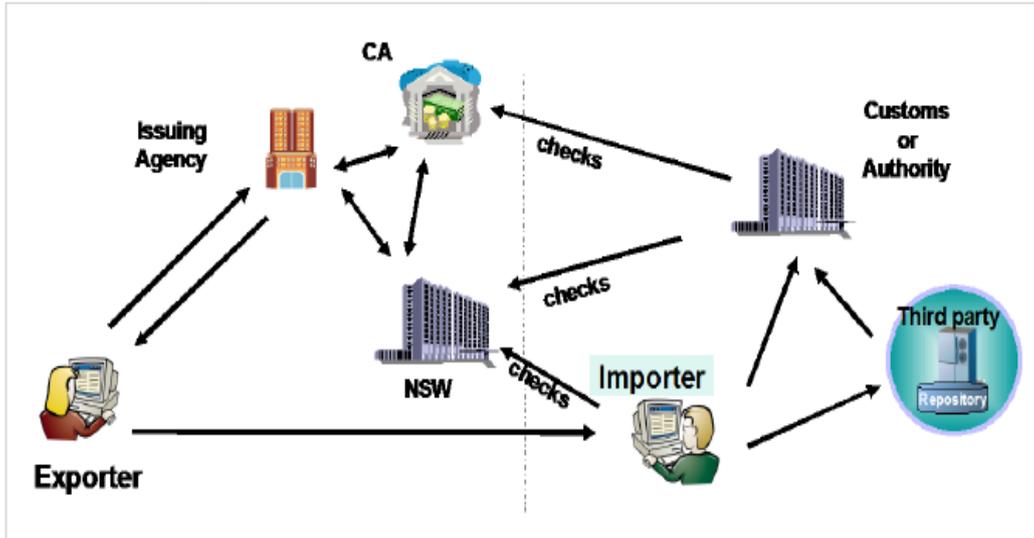
It's easy to check the integrity of the e-doc, but a trust scheme is needed to authenticate the signer. As a mutual recognition of CA signature is still far away, an e-document by e-document / issuer by issuer approach using a Valid Certificate List (VCL) is proposed to answer the question: "who is allowed to sign what?"

Computerized checks, which would lead to reconsideration of time-costly (and often not carried out) controls of paper document:

- the signature is cryptographically correct
- the certificate used for the signature belongs to the VCL
- none of the certificates of the certification path are revoked (CRL)

This VCL - storing all the approved e-certificates - can be implemented on the export or the import side and used to certify the authenticity of the signatory.

Figure 8: Import customs has access to e-doc and integrity/authenticity controls



Ground Rules

The following ground rules should be kept in mind:

- E-documents will be referenced in customs declarations;
- These references will identify the permanent location of the e-document;
- Digital signatures are a means for maintaining authenticity and integrity of the data;
- The relying parties (origin and destination countries) agree on the limited question of accepting the national Certifying Authority’s (CA) certificates issued to the e-document issuing authority;
- The signatures and the archived information are long-living and will be valid beyond the life-cycle of the certificate or the Certifying Authority;
- Customs can download e-doc information as and when it needs.

List of proposed activities for Data Simplification/Dematerialization with respect to SW implementation in Pakistan:

Sr. No.	Activities	Comments
1	Reference supporting documentation in a regulatory declaration	<ul style="list-style-type: none"> • References of supporting documentation to be included in consignment declarations filed by the trade and transport sector parties • Grouping of information will need to be undertaken, following the WCO “Additional Documentation” Model for detailed data classification • Levels of information available will then have to be disaggregated further and bracketed at levels of goods declaration, transport, shipment or product, among others.
2	Developing a secure repository of supporting documents	<ul style="list-style-type: none"> • The accessibility, security and reliability needs of each of the concerning parties should be identified • Meeting the above mentioned standards of protection, a trusted electronic facility should be developed to store the supporting documents. A Legal agreement between the issuer/submitter and the subscriber may be put into place to formalize the understanding/obligations with regards to the documents • The next step would involve the synchronization of the validity of the secure access with the validity of the original document to the regulatory authority meaning that the repository service provide by the importers/ exporters/

Sr. No.	Activities	Comments
		<p>brokers etc. must be made accessible in repositories for the regulatory entities including the Customs and designated IT systems. This can be further enlarged to form a global repository, maintained by the NSW and containing all consignment documents</p> <ul style="list-style-type: none"> • The repository service provided by private sector bodies such as banks, freight forwarders etc. should be aligned according to trusted trader preferences • Documents and data relevant to transport and cargo community systems should be made available to all concerned authorities • Defining the interface between CBRA service IT systems and storage providers such as secured protocols
3	Define the content of the supporting documents providing access and accommodating signatures	<ul style="list-style-type: none"> • One, out of several internationally accepted formats, should be identified, selected and uniformly adopted as a standard format. Additional functions may allow for a metadata layout, data downloads, scanned images of documents etc. This would require dematerialization of content prior to the aforementioned actions • For the process of dematerialization, stamps on paper based documents should be replaced by a value equivalent item • A Secure URL link should be mapped to the new data element for the supporting documents “Document Location” • The process for digital signature certificates is detailed above
4	Regulatory and other documents	<ul style="list-style-type: none"> • IT systems belonging to the OGAs (Other Government Agencies) should be connected with the Customs to enable the exchange of regulatory documents and issued certificates and subsequent release of goods • A circular flow of trust should be established between the OGAs and Customs for an efficient and effective exchange of information between parties • The arrangements for other documents are detailed above.
5	Manage end-to-end dematerialization	<ul style="list-style-type: none"> • Managing the trust chain is more effective when tackled at a global level than a national one. This would entail the establishment of trust between parties, to cover formalities such as electronic documents, recognition of the issuer etc.

Appendix VI: Component 8 – Legal Issues for the SW

SW Legal Issues

This report presents following three alternative solutions to overcome legal issue in respect to SW implementation in the light of WCO guidelines.

- a) Key legal characteristics
- b) SW in Life cycle perspective
- c) Legal issues grouped Business processes

a) Key legal Characteristics:

Establishing SW environment requires a formal and legally sound regime. The legal regime shall be distinguished from traditional CBRA it systems as it generally has additional characteristics. Those characteristics are discussed below.

Defined Legal Authority:

Automated information systems and their public manifestation, e.g. web portals, interface specifications, access channels etc. must have a legally defined existence. Without such legal definitions, such systems cannot participate in the fulfilment of government's regulatory obligations. Such facilities operate in a national jurisdiction and are governed by national legislation prescribing all legal requirements and limits for its operation.

Traditional standalone systems have roots in the authority vested in national legislation that brings the regulatory services into existence, Customs law and its subordinate regulatory structures would provide for the existence of the IT system that operates customs clearance services. For example, Section 126D of the Australian *Customs Act, 1901*, by mandating the CEO to establish and maintain such information systems as are necessary to enable persons to communicate electronically with Customs, gives it legal sanctity. There is further expression of this mandate through legal provisions specifying the technical interface to these information systems.

Each organization that participates in international trade has a distinct service to provide. But the possibility of collaboration with other agencies opens doors for participation in a SW Environment, which emerges as a concept when different government agencies join forces to provide a complex service. Such operations could not have been handled efficiently if each agency on its own were to provide the service in a disjointed fashion. Information & communication Technology functions as the engine that moves these connected entities, big or small.

Legally Enabled Entity:

The SW concept involves collaboration between several participating facilities that are information systems running services operated by individual CBRAs or trade, each with its own legal existence. Therefore a SW has to be fully established in law. A WCO recommended approach is, the creation of an entity that is distinct and removed from other entities (CBRAs). Governments, however, have a choice as to the type of entity that needs to be established:

- A government department defined in law or regulations with specified executive and agency powers and responsibilities.
- An autonomous entity authorized by legislation or by executive order.
- An entity established by company law, whether private or public.
- Any other voluntary association of entities covered by other national legislation.
- Joint Venture with commercial entities.

Current trends, however, point to the predominance of government department and government control organizations as the entities that run the SWE.

The SW Operator needs to maintain neutrality or arms-length between regulatory agencies and their automated systems that may have their own distinct legal personality. If third parties in trade and transport transact with a SW as if it were a CBRA, then that would have to be formalized as a relationship between the SW Operator and the participating CBRAs and that relationship should be based on sound legal principles. By specifying the SW Operator as the sole carrier of data into and out of the CBRA, government is giving a unique legal status to it. Observance of procedures by the regulated entities would depend on the sound performance by the SW Operator of the statutorily assigned functions.

The SW may be identified by its visible manifestation such as its web portal but it is the organization that it represents that matters from a legal standpoint. The SW Operator or orchestrator will not only represent the participating organizations but also function as their enabler. This operator assumes liabilities both on behalf of the CBRA user. But if the Operator is government-owned, it would enjoy sovereign immunities.

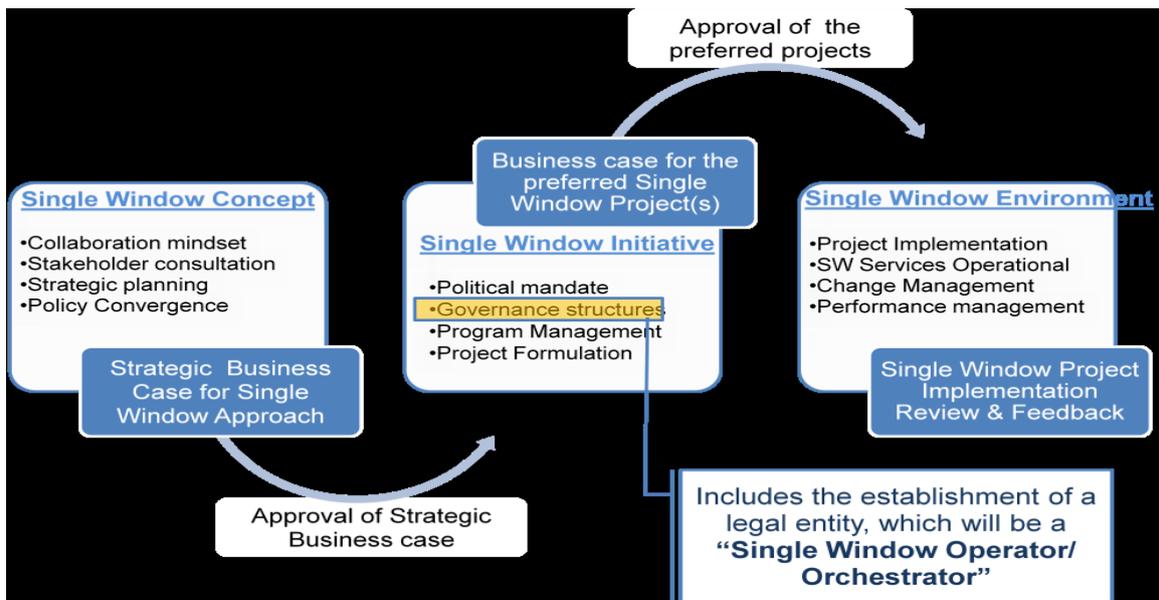
The SW has to have a legal personality and a real identity. In the absence of these attributes, it cannot be held liable.

In the normal course, the SW Operator needs to be an entity that is able to conclude a contract. For instance the SW Operator through its web interface should by itself be able to conclude contracts for user enrolment on behalf of the CBRAs. Rules of operation of the SW may require separate statements of responsibility for each participating CBRA. Alternatively, all participating CBRA could be held jointly and severally liable for SW operations.

It is not envisaged that there the SW Operator would be liable for any damages caused to the trade. Normal cross-border regulation exempts bona fide actions of authorities. The same principle would apply to SW Operator who acts in good faith on behalf of the CBRA. However, in order to bind the SW Operator with responsibility and to hold him to consequences for his actions or omission, there need to be two kinds of agreements.

- The master-service agreement between the SW Operator (SWO) (or Orchestrator) and a CBRA, which would include performance obligations, representations and warranties often supported by Service Level Agreements, Inter-connect Security Agreements (ISAs) etc.
- The client relationship between the SWO/ Orchestrator and the trade user, which will be end-user/ terms of use agreements, IPR /licensing agreements and subscribing party agreements, that define service levels, performance guarantees, user fee, if any and administrative fines, penalties, remissions and refund policies.

The diagram below helps locate the stage at which the SWO is appointed



Web technologies make it possible for the SW to maintain a virtual presence but it is still necessary to endow it with a legal personality and it should be a possibility to identify the members responsible for the SW.

Where the SWO is an extension of the government, its existence is fairly straightforward. However, if the SWO is an entity that has Private Sector holdings, it has to have a legally defined structure e.g. with a registered office, executive agents that have a legal personality for the third party entities in trade and transport to perceive the SW as being an going concern with which they can do business.

Interchange agreements/MOUs:

The relation between CBRAs within a SW can be described as the set of rules, liabilities and duties that exist between them. These relationships can be based on MOUs. In the private sector context, these would roughly be the interchange agreements. Government departments are not given to being parties to legal agreements as they prefer to have administrative oversight as opposed to jurisdiction of courts. Therefore, they enter into Memoranda of Understanding (MoUs) between themselves and those documents are treated as binding on the signatories. On the other hand, agreements involving private enterprises have to be at arms-length. In the event of a dispute, the court that is seized of an issue will have to determine whether it has jurisdiction to hear the case. Therefore, the interchange agreements have to specify the express choice of applicable law and exclusive jurisdiction clauses. For the sake of discussion, MoUs and Interchange Agreements will be referred to in general as interchange agreements.

There are legal issues involved in negotiating interchange agreements between CBRAs. These agreements would establish 1) the set of rules governing the intra-agency relations between the CBRAs on the one hand and 2) the SWO and CBRAS on the other. These agreements/ MoUs could include **Service Level Agreements (SLAs)** and **Inter-connect Security Agreements (ISAs)**.

If interchange is envisaged with entities abroad then such interchange will also **involve international agreements**. The Interchange Agreement should include data & messaging standards, service ontology & metadata registries. These aspects are often defined contracts and are referred to as interchange agreements. In the international exchange scenarios, these agreements could be

concluded as independent bilateral agreements or as separate Protocols for Amendment to existing Customs Mutual Assistance Agreements.

- Interchange Methods (Protocols, syntax):
- Electronic Data Interchange - data file transfer
- Flat files, Proprietary formats, EDI files, XML files
- Shared databases (CBRAs and businesses providing database views to each other)
- Remote procedure calls
- Agent based technologies for transfers

UN/CEFACT Recommendation 26 has already included most of the anticipated legal issues that involved parties could encounter and could be used as a starting point in this area. Recommendation 26 is primarily —commercial rather than a government-oriented model. It does not recognize the differences between administrative bodies for EDI and were principally used by Value Added Network service providers. It might however be useful in identifying the key areas that require consideration in Interchange Agreements or MOUs.

Authority, Privacy and Data Protection

Generally, all government information systems have to meet certain norms of privacy and data protection. In a SW, this is especially important as CBRAs interconnect with each other through the SW. **Interchange agreements imply** sharing of data and the eventual disclosure of private, confidential and protected information. The main points are covered in the list below:

- *Identification of databases* – through a name and a title of the database in a way that clearly defines its boundaries.
- *Ownership of databases*: All interacting databases in a SWE must have name titles and ownership. That includes the specific databases of the SWO. The legally identifiable personality that acts as the administrator of each database in a SWE and its registered office.
- *Creation of databases*: The legal basis for establishment of the databases- from where does the administrator draw authority to establish and maintain the database.
- *Classification of information* –
- *Classification by confidentiality*: (Confidential, restricted, unclassified, un-restricted) based on information government information classification scheme.
- *Classification for privacy categories*: Nominal and non-nominal data.
- *Authorization and access controls*
- Purpose of collection, processing and usage of data and legal basis therefore Long-term usage especially of nominal data.
- Manner of collection of data and legal basis therefor – interface specifications.
- Data management lifecycle policy, period of preservation restrictions, if any, on trans-national movement of data.
- Insurance coverage against exposure.

Identification, authentication & authorization

The online services that are accessible to the users on the web portal of a SW are the proverbial tip of the iceberg. To provide access to disparate applications and business processes of the participating CBRAs, and to give the users of the SW a feeling of seamless access, the SW solution **must adopt a secure and legally sound solution**. UN/CEFACT Recommendation 35 suggests the adoption of **an identity management solution**. The SW solution needs to provide "rule-based and role based access" to heterogeneous systems and identity management solutions, that are based on open standards, can promote interoperability by federating and managing identities of users across different organizations and to isolate and decouple the access control mechanisms from the underlying application and database resources which may be hosted on disparate platform.

There is hardly any legislation which **explicitly** addresses Identity Management Systems (European Commission (TURBINE Project 2009). However, privacy and data protection legislation squarely applies to data held in identity management systems. A number of other regions have also pursued paths to international standards in this area. The most notable being the APEC cross-border Data Privacy — Pathfinder program. Be that as it may, the SWO will have to meet national legislation on privacy and commercial confidentiality has to be adhered to.

There is a concern regarding the ability of Identity Management Systems to enable digital available personal data in disparate systems to be linked-up and to observe actions of individuals even as the individual does not have the ability revoke his or her identity. **Data Protection Authorities therefore lay stress on the *un-linkability* of the information contained in an identity management system, *un-observability* of actions and *revocability* of identity as legal principles that should govern identity management systems and federated identities.**

These concerns need to be reconciled with the broader purposes of using Identity Management Systems in a SWE. Automated systems operated by authorities would in some applications legitimately seek to link-up information about economic operators for risk profiling purposes and therefore deliberately seek link-ability. Further, they would also like to maintain observability and auditability of actions by individuals who would not be at liberty to revoke their engagement with the Identity Management Systems operated on the SW and in any case should not be able to repudiate his/her actions.

In the contracts that bring users on board a SW System, these opposing concerns of individual privacy and legitimate business interests need to be reconciled. Having accepted the terms of participation in a SWE, the economic operators waive their rights to privacy and commercial confidentiality to the extent that the information is for the legitimate use by CBRAs.

Identifiers issued to the individual user should be somehow linked to his or her *civil identity* that is duly issued by the State. This is analogous to Economic Operators being identified based on their legally assigned identifiers (e.g. their Business registration number or EORI number). CBRAs need to properly identify regulated entities in the event they would have to proceed against him in pursuit of cross-border trade regulations. Besides, it is a legal person that needs to be held to account for his or her observed actions on the automated systems.

Authentication and authorization are mechanisms performed by the automated system. The former is the mechanism under which the system is securely able to identify the user and to ascertain whether the user is the person he or she is claiming to be. Authorization is about the level of access of a user and concerns itself with the question of whether a user is allowed to perform an operation (say a database update operation over resource, say particular database table). Consistent application of identification, authentication and authorization procedures are vital for ensuring that the information system is secure and is delivering consistent, auditable service. SW services grow with trust of its users that get accumulated through years of secure and operations. The legal validity of actions performed by users will be challenged in the absence of a legally sound mechanism of identification, authentication and authorization.

The conditions under which electronic records, electronic documents and contracts will have probative value, is determined according to national legislation. Determinations in relation to digital evidence will be made in courts where experts will have to assist Judges in deciding on the evidentiary value of access logs – for instance whether such logs were authentic, reliable and intact. In the case of electronic records or documents valid digital signatures will have high evidentiary value.

Digital Evidence is an important legal issue. In some countries, digital signatures may not be given more probative value than other types of electronic signature. Further, there are costs and reliability issues associated with digital signatures that come into play in many national environments. Thus, while stating the digital signatures are technologically sound and figure in the WCO SAFE Framework of Standards, as a means for securing data, there are other means of securing data and the measures taken to protect data must be commensurate with the risks associated with breach.

(b) SW Life Cycle perspective:

From a legal point of view, the main phases are:

Exploration phase:

In this phase, the purposes and motivations are explored. This is the time to identify candidate services that will be covered by the SW and will coincide with the strategic planning, policy modelling and preparation of the Strategic business case.

Formation Phase:

This phase begins with the approval of the Strategic Business case and the delivery of the political mandate. A law or decree establishing the SW Initiative could be pronounced. Alternatively, a master agreement between the participants of the SWE is entered into. Whichever way a SW Initiative formally comes being, the entity becomes a legal person, which can begin to assume internal and external legally ordained responsibilities.

Regulation Phase:

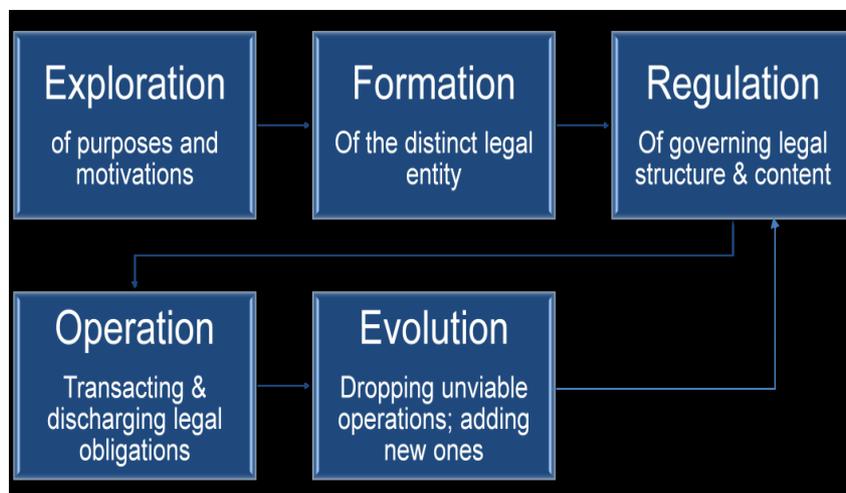
SWO or Orchestrator formally establishes its body corporate and its legally appointed executive officers enter into agreements on behalf of the SWO. The legal basis for establishing the SWO/Orchestrator and the collection of agreements (primarily, interchange agreements) with internal and external stakeholders constitutes the regulatory framework of the SWE. [This is separate from the substantive laws governing cross-border movement of goods, movements].

Operations Phase:

In this phase, the legal arrangements that were firmed-up in the formation and regulation phase operate and are therefore put to test. If it is found necessary, these legal provisions are modified from time to time. In a changing environment, it is however important to provide predictability and ex ante certainty to the traders.

Evolution Phase:

The agreement will show parties how to disengage from the SW and what are the anticipated steps.



Internal and external relationships of the SW Operator

The distinction between internal and external legal relationship in a SWE is useful in classifying the legal issues. Internal agreements are those that entered between CBRAs and between SWOs and CBRAs and would typically include interchange agreements, service level agreements, intellectual property rights, representations & warranties, Identity management, liability and Insurance, legitimate use of data, data protection and data life-cycle arrangements. Between Government Departments, **MOUs are preferred over legal agreements** as explained in previously. On the other hand, in the legal arrangements with external users of the SW, a similar set of issues will dominate. These are privacy issues, data protection, service levels, identity management, liability and insurance.

Establishing the SW Operator

Organizational Structure for the establishment and operation of a SW Facility will include SWO/ Orchestrator as a legal entity will have to come into existence. Each country has to decide on the character of this legal entity will have to be decided. It could be a private or a public sector organization incorporated under national legislation as a joint stock company, a registered society, a not-for-profit organization, a trust or a partnership. It could even be a body that is independently established by law. This has implications for SW operations.

(c) Legal issues grouped by business process:

In this section the legal issues are examined from a business process perspective. Business processes in a SW are grouped into the following categories and the corresponding legal issues are listed out:

Registration/ Regulatory Authorization

The typical Customs Act begins with a section on the definitions for entities that will have legal obligations in international trade where, how and by whom should goods be entered for import, export and transit. There are similar enactments supporting partner CBRAs defining entities that have obligations in regard to traded goods etc. These laws and regulations also cover means of transport and crew.

Starting with the first grouping, Registration/ Regulatory Authorization processes are at the foundation of the SW, as data about parties, locations, transport means etc. are first recognized by the national SWO. The registered entities have a legal existence in the respective legislations of the CBRAs. These registration processes may also be viewed in conjunction with regulatory pre-verification processes under which, the respective regulatory authorities get the opportunity to conduct verification of information provided by users as part of the registration process. These pre-verification processes may be determined by a combination of regulatory and administrative imperatives.

Before access is granted to any of the SW services, certain administrative requirements of the SW operator need to be fulfilled. These requirements are described come under the registration processes, under which the SWO establishes a legal relationship the various actors that use the SW services. Typically, these would be legal agreements to be entered into by the responsible official from the SWO with the responsible official on behalf of the registering entity.

There could also multiparty agreements, for instance between the trade or transport actor as subscribing parties, Customs/ Partner CBRA parties (with authority to issue regulatory approvals) as relying parties, and the NSW as the service provider. These parties with whom customs interacts are called actors. These actors are broadly divided into the following groups:

NSW Operator:

It is assumed that a SW Operator will be established as a legally enabled entity, with the mandate to provide SW Services. In describing the SW business processes, it is perhaps necessary to mention

the existence of NSWs in different jurisdictions. There may be a NSW in existence at the country of origin (NSW at Departure), in the transit country (NSW at Transit) and in the destination country (NSW at Destination). The interaction between NSW operators provides the G2G dimension in a SW.

Economic Operators:

Economic operators are parties from Trade and Transport that play a role in a SW environment. Economic operators are often facilitated by intermediaries called Agents, who play certain roles on behalf of the economic operators. These agency roles are defined in laws and regulations in cross-border legislation. Any compliance-related activity that is supposed to be performed by an economic operator can also be performed by its agent.

Application for Licenses, Certificates, Permits/other:

All movement of goods and means of transport across border are subject to tariff and non-tariff regulatory regimes. With the liberalization of trade, most traded goods in the world are not subject to quantitative restrictions. However, there still are a variety of non-tariff restrictions imposed by national laws and international conventions. These restrictions impose conditions that must be met before regulatory authorities permit imports, exports and transit. These conditions are often documented and expressed in terms of licenses, permits Certificates and other documents that suggest that the transactions meet these conditions.

In spite of the variety of goods that are subject to such restrictions, use cases are very similar. The process includes (i) Application for licenses/ permit / Certificate/ Others (ii) pre-issuance verifications (iii) transactional compliance checks at the import or export and; (iv) post transactional compliance/ analysis.

The broad process of application and issuance of license, permit or certificate remains the same despite differences in regulation. These processes vary for different commodities but with the same underlying patterns.

Advance Information:

The mandate laid down by for customs under the SAFE Framework of Standards requires the collection of information on international supply chains in advance of the transaction. This framework requires advance information to be supplied to regulatory agencies at export and import respectively in the form of pre-departure and pre-arrival goods and cargo declaration. Information on the containers loaded on board the vessel in the form of a Vessel Stow Plan (VSP) and the Container Status (CS) messages giving information about the status of a container.

The below provides details of the processes for Advance Information Legal Issues: common to all processes in Advance Information

- Enabling legislation for advance reporting.
- Where legislation authorizes 3rd parties to submit this information on behalf of the carrier, the liability of such a 3rd party needs to be legally defined.
- What is the legal arrangement for Advance Information that is submitted to the NSW at departure to be transmitted for onward use by the NSWs at transit and destination? (Considering that the question of feasibility and desirability such transmissions would be addressed separately.)

Goods Declaration /Cargo report/ Conveyance report

The processes are based largely on the revised Kyoto Convention with the assumption that the trade but with the possibility for SW type interaction. In addition to the above models, there is the response package model which depicts the business processes associated with a CBRA's response to a declaration. It is assumed that in SW environment, there will be regulatory data harmonization and the

data exchange points between the economic operator and Customs will coincide with the relevant exchanges with a partner CBRA.

This would imply that the standard regulatory reporting events for customs also be used as the reporting events for the Partner CBRAs. This is a logical conclusion from the principle that one time submission requires harmonized data and documentation.

- Legal Issues: common to all processes in Goods Declaration/ Cargo Report and Conveyance Report
- Enabling legislation governing these declarations – not just for customs but also for partner CBRAs [legislation covering obligation to declare – definition of the taxable events, liability of duties taxes and fee, the manner and measure of the various levies etc.].
- CBRA specific legislation that enables the receipt of this data digitally, including logical and security controls specifically defined in the legislation/ regulation. Mandate of general e-governance legislation to move to digital or paperless processes.
- Regulatory Procedures defining the place and timing of declaration to be harmonized between customs and partner CBRAs.
- Authority to access data, use data and process data received are processes covered by CBR Agency-specific legislation. CBR Agency authority to view and make determinations based on data received in the 'pool' formed in the SWE needs to be addressed specifically. All these processes have to be tempered by
- Inter-agency data exchange procedure and legal liabilities and obligations of agencies handling the data.
- Treatment of data received as part of declarations and reports which are subject to legislation of dealing with rival concerns of data privacy and information transparency.
- Action of checking of declaration, confirmation of verification and legally valid notification of regulatory determinations arrived at by authority.
- Legislation often authorizes a 3rd party to submit this information on behalf of the carrier or importer. Liability of such a 3rd party needs to be legally defined. Ability to use data and exchange data with Community Systems that act as legally authorized 3rd party suppliers of regulatory declarations and reports.
- Legal provisions in a multi-party agreement between the concerned parties to enable filing of declarations through or by a 3rd party is a pertinent legal issue.
- What is the legal arrangement for the declaration / reports data that is submitted to NSW at departure be transmitted for onward use by the NSWs at transit and destination? (Considering that the question of feasibility and desirability such transmissions would be addressed separately.)

Conclusion

Five distinct legal characteristics of a SW solution were discussed. For SW to exist, it has to have a defined and explicit legal authority, which is expressed through legislation. Then, it has to become a distinct legal entity that has to have the capacity to assume liability and powers to conclude contracts, chief among which will be interchange agreements. These interchange agreements would legally define and govern the acts of information exchange. Interchange agreements may contain data & messaging standards and service ontology which may have to be harmonized across multiple agencies. Such an exercise involves going back into the original legislation of the participating CBRAs. Additionally, these agreements would have the relevant normative interface specifications.

As it handles data from traders, the SW should have the legal authority to collect, possess, process and share the data for legitimate purposes. The privacy of the information would have to be safeguarded and sharing should be prohibited except as expressly permitted or provided for in the statute.

In order that the transactions on the SW have the same legal validity as manual transactions, the principles of identification, authentication & authorization need to be adopted. Supporting legislation on digital documents, electronic signatures and electronic contracts based on model codes from UNCITRAL are helpful. In particular, Identity Management Systems lay at the foundation since all other SW services depend upon the identification and authentication.

The section discussed the common legal challenges faced in employing identity management systems, which can be overcome either through enabling legislation or through agreed terms and conditions that provide the necessary waiver from certain obligations. Multi-party interchange agreements should incorporate appropriate enabling provisions in order that identity management systems operate harmoniously with the restrictions imposed by privacy legislation. The executive management should identify and appoint qualified legal experts to help establish the enabling legal framework for the SWE.

Appendix VII: Components 6, 7, and 10

Component 6 - Service Functions Design (or Application Architecture Design),
Component 7 - Technical Architecture Establishment including Standards and Interoperability and
Component 10 – IT Infrastructure and Solutions Execution

Architecture & the SW Environment:

The SW introduction explains that the SW could be viewed as a collection of services in which regulatory agencies and traders are organized to deliver cross-border regulatory services, using technology. The organization that operates the SW environment should consider itself primarily as provider of services. Through its services, the SW operator manages value streams for the stakeholders by using its technology and organizational resources. However, it is the architecture that drives the overall planning, design and development of a SW. Some experts call architecture the “master plan” as an essential ingredient in SW development. It is also well-understood that architecture is established early in the course of a program development.

Why architecture?

Building larger systems, however, requires teamwork. No sooner we start building larger and more complex systems, we would begin to realize that such systems require:

- 1) Models that act as artifacts for communication within the team
- 2) Process to build the system from start to finish
- 3) Skilled resources following proven processes
- 4) Planning the work breakdown structures
- 5) Powerful tools to increase productivity

The SW Environment comprises systems of enormous scale and complexity. The SW Environment is also a “software intensive” system. It is easy for the project managers to start the development of the SW with simple services. However, as the scale and scope of a system increases, the tasks becomes ever more complex. Project risks in regard to costs, quality and time increase. Processes become ever more important in order to meet schedules. Stakeholder engagement and co-ordination amongst specialists in technology become vital tasks.

Essentially, architecture defines major system components. It helps provide a shared sense of understanding of the whole enterprise. For example, the structural blueprint of a building is the major component defined by architecture. The rest of the architectural description is produced by defining the interaction between various components.

In a SW Environment, the *stakeholders* may operate large systems. The **concerns of the stakeholders** in a SW lie at the root of the architecture. These concerns help identify *architectural descriptions*. Rigorous descriptions of services can be **developed through user stories or user cases**. These **descriptions are expressions of the stakeholder concern containing both functional and non-functional requirements**. Functional requirements being reflections of the business logic minimally impact architecture. What impacts architecture **more profoundly are the non-functional requirements** usually represented by words that end with “ity” such as **reliability, maintainability, security, availability, accessibility, usability, quality, navigability and so on**. These “ities” translate directly **into architectural constructs**.

Systems don’t exist in vacuum, they inhabit in an *environment*. The S W Environment comprises systems from Customs, Agriculture, Quarantine Services, Veterinary & Animal Health Services, and Food Safety & Inspection Services etc. These systems may have over the years invested in information technology projects, business processes and human resources. These investments would have been made in pursuit of organizational goals or *missions* of the respective organizations. Each stakeholder has his *viewpoint*. For example, return on investment (ROI) is a view point.

Each CBRA would have made investment that was justified based on the projected returns and the timeframe to recover value. Other stakeholders' *viewpoint* could be ease of integration between systems. Further, **a viewpoint establishes** the method for creating *models*. To serve the viewpoint of information flows, one could create the **domain information models**.

To summarize the description of architecture in the preceding paragraphs, **architecture is documented using architectural descriptions, which comprise different views that are developed and aggregated through models**. Multiple views of the same organization would not be useful unless they are strung together in a framework. The practice of "Enterprise Architecture" and architectural frameworks integrates disparate views.

Enterprise Architecture has been defined variously by different authors but this report uses the following definition: "**Enterprise Architecture is the organizing logic for business processes and IT infrastructure reflecting the integration and standardization requirements of the firm's operating model.**" (Source: Massachusetts Institute of Technology (MIT): Centre for Information System Research)

In a practical example of the application of Enterprise Architecture, David Siah (Siah, 2008) explains the phases involved in the adaptation of Enterprise Architecture for a SW solution. It is argued that Enterprise Architecture processes **drive** the alignment between **business strategy and program management defining the scope of individual projects and maintaining traceability between project goals and strategic business drivers**. This makes Enterprise Architecture processes **essential** for e-government solutions. The logical flow for deriving the different architectural components starting with the business drivers from various participating border agencies has been explained.

Business architecture focuses on business capability, its resource structure and how it uses them to produce business value. Business architecture results in the **elaboration** of workflows and the **collaboration between organizational units to produce** end-user services. It also provides the **defining features** of the engagement between service providers and service consumers.

The *application architecture* provides 1) arrangement of the supporting software application components that make-up the solution. 2) It includes the IT systems, IT services and functional use cases. 3) The application architecture is supported by the *information architecture* such as data objects, electronic messaging artifacts and rules and controls over information. 4) The entire set of applications also needs to be supported by technology. 5) Information architecture provides a holistic picture of the intra and inter-organizational flows of information and would include the enterprise data dictionary and the conceptual data model.

WCO Data Model - The Data Blueprint and interoperability in a SW Environment (SWE):

SWE brings together a number of information systems that interact with each other. In order that these information systems work together and interchange data efficiently, **there is a need to produce the common information architecture**. This architecture is essential in order that **the conflicts between data are eliminated** and each of the participating systems in a SW **is conformant**.

SW participants are often found to be operating IT systems **based on different technology platforms, business processes and data definitions**, making it **difficult** to produce **interoperable** systems. It is commonplace to have conflicts occurring between information models of participating agencies.

In addition to conflicts in definition, there could also be conflicts in the way the definitions are represented in different ways (example: the coded representation of exporter is a maximum of 13

characters in one system and a maximum of 15 characters in another). Structural conflicts could occur when information used in one system is structurally different from those that are used in another system. Experts (Glushko & McGrath, 2008) have **documented different types of conflicts that can occur and come in the way of interoperability**. Content conflict could occur when two parties use different sets of values for the same component – different code sets being used to describe a coded data element or where the same set of values are used for different set of components (e.g. when codes used for units of measure and unit of quantity interchangeably). Encoding conflicts occur when different types of syntax are used. Even when the same syntax is used, if there are structural differences (for example, the structure of an address), it is not possible to share information.

These conflicts can be resolved **only when a common information model** is used by all participants. To guide players within a SW into using standard data architecture, the WCO Data Model has defined the generic content of information for cross-border regulatory agencies. By aligning with the WCO Data Model, Cross-border regulatory agencies can produce and **use common content, semantics, syntax and structures for the SW Environment**. This report has already made note of techniques of SW Data Harmonization, which is the methodical approach to collecting, defining, analyzing and reconciling information for a SWE.

Technology Architecture and Execution

The **arrangement of technology components** is described in the *technology architecture* – 1) interface components, 2) security components, 3) messaging, workflow and 4) database management components are part of the workflow architecture. All these elements **are supported by infrastructure components such as hardware, software platform (operating systems) and networking (infrastructure architecture)**.

Using the analogy of architecture in real-estate once again, it is nearly impossible to effectively build or maintain a large building (say, a high rise) without being in possession of accurate architectural documents – the blueprints for structural, plumbing, electrical wiring, heating, cooling and a variety of other systems and sub-systems. In exactly the same way, a S W E cannot be effectively built in a multi-agency setting without knowledge of their architecture. Most managers understand the structural components of their organization through their organization charts where it is easy to locate functional units (such as operations, enforcement, audit, statistics, policy etc.) and the reporting relationships and hierarchies. This is a simplistic view of the organization's architecture. **It is possible to draw multiple architectural views of the organization with each view providing distinct value to the process of building and maintaining systems. Enterprise Architecture is the discipline that examines these views.**

In the event of a breakdown, the building manager keeps the relevant blueprints handy for **the repair activity**. These blueprints are even more vital for major renovation or refurbishing activity. Likewise, to support the strategic management process of the 'enterprise', it is necessary to produce and maintain the relevant organizational blueprints. One of the main reasons for investing in enterprise architecture is to ensure that Information Technology assets are responsive to the strategic activities for Customs. Enterprise architecture provides the strategic context for the deployment of IT systems. It is one of the ways to ensure that the Customs executive management understands the value of Information Technology and its indispensable role in achieving the strategic goals for Customs.

Investment into a SW without having the enterprise architectural view is very risky. For example, as the SW solution grows, IT systems need to be in line with the organization's Information Security architecture. New and need to fit with the already existing systems and procedures.

Together, these capabilities and resources define entrenched ways of doing business by both individual government agencies and the private sector organizations. SW moves away from this intra-

organizational 'command and control' operation to one of collaborative exchanges between all stakeholders government agencies. To that extent, a SW project has disruptive influence on the status quo.

To understand how the shift to a "SW mode" of operating can be achieved, it is essential to produce a *rigorous description* of the structure and functioning of each of the participating Cross-Border Regulatory Agency, its components and their inter-relationship. Such a description should include the following:

- Organizational structure, roles and goals – in relation to meeting the objectives of cross-border regulation.
- Business processes, business information flows and information systems that participate in service delivery.
- The logical organization of the functions, resources and capabilities of the organizations at the level of businesses. This will include the role that information systems play in the service delivery process.

The specialist task of producing such a description is that of an enterprise architect. Enterprise architecture is a discipline that specializes in providing an architectural solution, which **helps produce the IT strategy based on business strategy and providing the background for the organization to improve its effectiveness. The essence** of "Enterprise Architecture" is about "**finding direct links between the business imperatives of the enterprise and the deployment of technology in order to achieve some kind of alignment between the two.**" Such an alignment enhances the possibility for an optimum use of available resources and getting rid of redundant resources. Enterprise Architects **help streamline** the organization's use of Information and Communication Technology (ICT) in order to ensure high ROI and low Total Cost of Ownership (TCO).

Architectural development also has a capacity building angle. In general, reforms in Trade Facilitation depend on political will. Ideas and initiatives such as the SW Concept need strong political support over sustained periods of time. **Ideas of architecture can help rally divergent forces towards forging a consensus on the common needs.** A country's internal motivations for reform can find a voice in documents of architecture. Architectural blueprints help countries identify with something concrete on the agreed future and course of action.

Service Oriented Architecture:

In the introduction of this report, it was mentioned that the SWE may be understood as a collection of services that support the core regulatory functions of import export & transit and trade facilitation. These services are predominantly enabled by the information and communications technologies. The appointed SW operators (or orchestrators) provides (or supports) the enablement of these services on behalf of CBRAs through a common platform. Broadly, these services result in the regulatory clearance of goods, means of transport and crew.

The "services" paradigm places at our disposal a number of useful technical and managerial tools that can help answer many questions that we may face in the process of building a SWE. The **taxonomic analysis of SW Service allows the breaking-up of larger services (business-oriented description of services) into more elemental business services.** These business services are supported by IT application services and infrastructural services. To illustrate, the service to process import and export goods declaration is dependent on a service that fulfils cargo examination. For Cargo-examination to occur, the services of scheduling and calendars services of the inspecting staff may have to be invoked. **While services describe the fulfillment of a business need, business processes provide the steps involved in fulfilling a business service.** One can rearrange business processes to fulfill the same service. All these services have underlying IT and infrastructural components.

Developing a SWE depends on the ability to identify and establish the basic services that run across government departments and converting them utility-grade services which are:

- Widely used valued within the SW user community.
- Highly standardized and cannot be customized easily
- Highly available and fail-proof
- Simple to access using known and openly available interface
- Supported with commonplace skills.

Examples of these type of basic services are identify management, authentication management, electronic messaging, transaction routing, document workflow, document repository services, regulatory information services for products, product identification, visibility services for cargo, containers, and means of transport etc. would qualify in this category. In order to support these “utility grade” services, SOA provides the architectural paradigm.

Implications of Service Architecture:

Traditionally, these services were established by the respective government departments and logistics service providers as disjointed, discrete services, **with little thought given to the inter linkages**. At the core of the electronic SW is the notion of “joined-up” services in which the focus is on service outcomes for the client. The taxonomy of services **helps in charting the process of joining-up and provides** a framework to scope SW-related projects. **Experts have suggested** that a typology and a hierarchy of services is a useful methodology for analysis (Cohen, 2007). A **reasonable classification** that brings out the dependencies is critical **for describing the currently provided services and their inter-relationships**. It **provides a common language to business analysts and technology architects enabling the platform for effective decision** making. This description can be exploited in developing the business and technology architecture for the SW Environment.

The **most important part of designing the SW solution is to describe** the “to-be” state of the trader’s (or brokers/ transporters) ”experience” of a transaction. A statement of description of this”to-be” would serve as the binding link for all stakeholders as **they engage in a series of activities of architecture and design**.

Each Government Agency can provide a separate view of its services. However, the SW concept requires that these should be imagined from a whole of Government and regulatory agencies perspective. Whichever way it is conceived, **Service Oriented Architecture provides a clear way forward in delivering a scalable and maintainable SW Environment**.

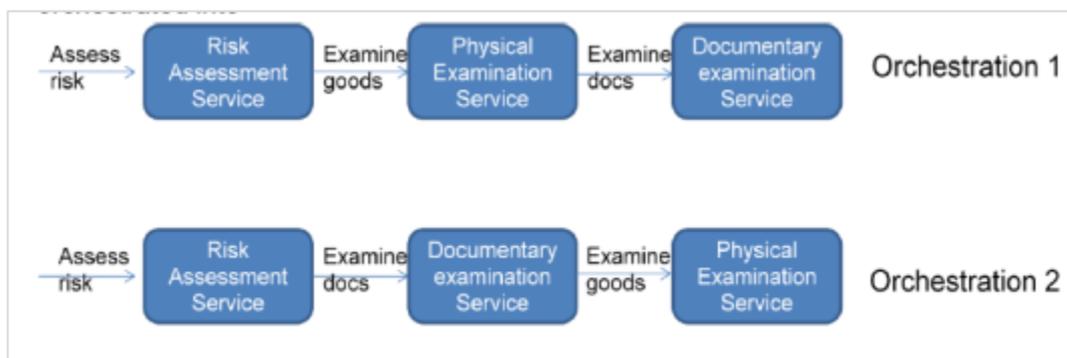
Service-Oriented Architecture (SOA) begins **with a strong focus on the business services**. It does not focus on the technical infrastructure (servers, storage etc.) and its associated technical services. **SOA is an architectural approach and is technology neutral**. This architectural approach is **strongly rooted in business services** and therefore it is a reasonable choice for architecting the SW Environment. Service Oriented Architecture **can facilitate the implementation of change in information systems**. **Traditional IT systems** were pieced together by rigidly integrating hardware, software and networking making it difficult to implement. **Service Oriented Architecture advises** the building of software applications **using components that are easy to assemble and build**. These building blocks are not pieces of software but are business services that are performed in order to fulfil business needs. Commonly used services can be re-assembled to create new services. **Organization for the Advancement of Structured Information Standards (OASIS) developed a standard Reference Model for Service Oriented Architecture (OASIS Technical Committee on SOA, 2006)**.

In the SW environment, the **concept of re-usable** service components is extremely useful. **In spite of differences in areas of regulation, most cross-border regulatory agencies require common business services.** These relate to **inspection of cargo, crew and means of transport, documentary examination, recording of test results, drawing of samples, computation of duties and taxes, risk assessment framework etc.** These service components are **re-usable firstly in the sense of business operations and then in the sense of the underlying software service components.** While the subject of inspection **may vary between** government agencies, the **stages of process** are the same, while the parameters for calculation of duties, taxes and fee **may vary**, they are all linked to the process of levy and collection. Payment services can be abstracted into utilities that can service all payments arising in the course of cargo clearance.

The Information Technology (IT) components that underpin the reusable services are building blocks that are loosely coupled. This enables re-use of the component. Such loose coupling minimizes the impact of change. Service Oriented Architecture relies upon common parlance use of terms where the service consumer (being a software component) requests for a service from a service provider (another software component). The exchange service request and service response is driven by messages and the quality of service is governed by service contracts between the interacting service components.

These characteristics require “service” to be a self-contained unit whose performance does not depend on the state of other services. It is a logical encapsulation of self-contained business functionality. This autonomous nature of a service component allows software developers to remove it, make changes and plug it back without impacting other components. Services can be orchestrated. This implies that services can be rearranged or re-ordered to suit business purpose. This is of considerable value in handling business processes in a SW environment. The figure below shows the ability of SOA components to be orchestrated into

Figure 9: Ability of SOA components to be orchestrated into



A service communicates with another service using messages. For services to be work together, **messages should be interoperable and should work across platforms.** These messages should be able to **describe and discover services.** These should be **reliable and secure** and based on industry standards.

Implications of SOA for SW Environment

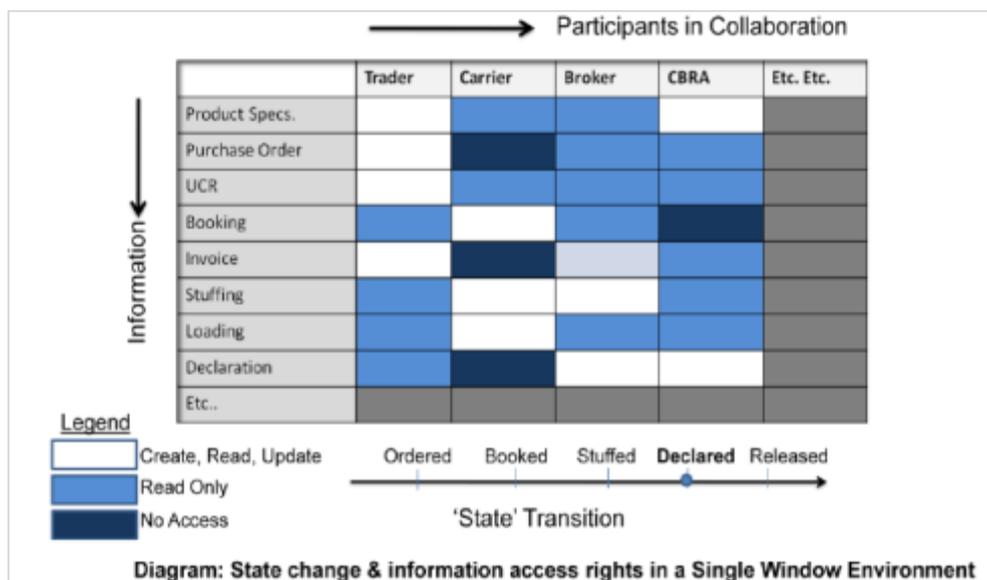
SW Environment involves exchange of electronic documents (or information units) using standard communication interfaces between the trader’s systems and CBRA systems and between CBRA systems. Standard **communication interfaces** need to be developed for communications to take place between different service components. Web services are based on international standards.

It is useful to visualize SW as a collection of IT driven business services, which form into non-overlapping categories and hierarchical structures. This helps understand the composition of services in terms of IT components. The application architecture under SOA favours loose coupling (modules are easy to detach and re-attach) as against tight coupling where software components are tightly integrated, resulting in compact but inflexible solutions.

Loose coupling of components help identify and lower cost of services, since software components contribute to specific services. This also helps derive the return on technology and application investments. Historically IT investments were made based on the tight integration between hardware software and networking. The trend on “SOA enablement” started several years ago under which existing (or legacy components) were converted into SOA components by wrapping software interface around them and making them re-usable. While this was expensive, it became an imperative for organizations since the current market environment required the organizations to be lean and agile.

To summarize, Service Oriented Architecture (SOA) is recommended for building the SW Environment for the following reasons:

- a) SOA is built based on the notion of services. SW being Collection of Services makes SOA an attractive conceptual basis.
- b) Management understands the attributes of service operations- service availability, service quality, and cost of services. SOA clearly identifies with these concepts and brings them to life.
- c) SW Environment involves integration of multiple systems investments made by a number of agencies. SOA facilitates integration requires SW be made on the perspective of IT architecture – SOA as the imperative – description of SOA and how SOA can drive interagency integration. Why SOA is the right approach in the current environment.
- d) Each event in the supply chain would result in incremental flow of data. Depending upon the state of the transaction, different players can access different sets of data to enable them to progress in a SW Environment.



- e) SOA development is aligned with the software support life cycle, it enables integration and assembly of disparate software components helping in leveraging existing applications and infrastructure.
- f) Under SOA, services are not seen to belong to particular systems or network. Therefore, SOA enables usage of services provided software application services within the SW Environment, regardless of the location of the system. It however does not mean that participant can access all services. Appropriate authentication and authorization can be supported at various levels to ensure every level to ensure dynamic connectivity and organization between services.
- g) SW, by nature involves composite services. SOA provides the ability to build composite applications based on requirements of different CBRAs.
- h) The discipline of SOA helps build a common taxonomy of services and information models.
- i) SOA is against building proprietary, built to custom applications. It helps deliver better business value than those delivered by proprietary applications.

Appendix VIII: Broad Vision for the Financing Model

It is understood that the Government of Pakistan (GoP) does not accept the strategy of private sector ownership of the Pakistan National Single Window System (PNSW); nor does the GoP wish to enter into agreement with private sector such as through Build-Own-Operate (BOO), Build-Operate-Transfer (BOT), Joint Venture (JV) or Public-Private Partnership (PPP) arrangements.

However, it is expected that a technically 'Private Sector' body (in the form of PRAL – an entity that became an incorporated company owned by Pakistan's FBR) will be expected to be engaged in providing technological support and technical expertise for the development, implementation, operation, maintenance and enhancement of the PNSW.

There are two distinct phases to be considered within the context of financing:

- 1) Implementation (i.e. for acquisition / build and roll-out) and;
- 2) Sustainable ongoing operation, maintenance and enhancement.

For implementation phase: GoP is assumed (for this report's purpose) that it may require support of development partners for project financing and implementation i.e. GoP may welcome assistance through a development partner such as through multi-lateral organizations or a bi-lateral partner.

For ongoing operations, the GoP strategy is yet to be formalized however practice in other countries has shown that governments, often in the First Phase of their NSW implementation, ensure there are no user fees, and consequently operations would be underpinned by Government, again perhaps with the support of a development partner. Subsequently, user fees would be collected to offset operation and maintenance and enhancement costs.

The fee needs to be fully consistent with GATT Article VIII concerning the level of fees that may be charged - in summary: **'no more than cost recovery for services provided however, also including provisions for support and maintenance.'**

Considerations that influence the **fee** and revenue model include:

1. Reasonableness, from the Trader's perspective, of the quantum of PNSW usage fee(s);
2. Fees and charges regulations of FBR/Customs and OGA's;
3. The proposition that the OGA service fees (as distinct from the PNSW usage fee for obtaining a CLP) should be separate from the PNSW accounting²¹;
4. Options for **fees**, including:
 - a. Registration and / or membership fee based;
 - b. Flat fee based per 'transaction' with 'transaction' defined as GD-based, CLP-based, line-item based, or a combination of these for a multi-layer fee structure;²²
 - c. A graduated fee per 'transaction' e.g. based on the number of line-items on a GD;
 - d. Possibly these and others in combination
5. The points in the transaction cycle where payments could be made, e.g.
 - a) Per 'transaction', per SAD, per CLP, etc.
 - b) On monthly account basis
 - i. A combination of these for selected Traders (e.g. Authorized Economic Operators)
 - ii. The estimated cost for the sustainable operation of PNSW²³

²¹ For reasons such as the OGA fee, e.g. a MoC fee for an Import or Export Permit may never be actually acted upon in a declaration.

²² The definition of 'transaction' is somewhat arbitrary but very significant to determining the quantum of the PNSW usage fee(s) and also the simplicity of operation for the Trader

²³ The fee level would be determined by a formula such as
$$PNSW \text{ usage fee} = \frac{\text{estimated cost of sustainable operation}}{\text{no. of PNSW usage fee events}}$$

- iii. Potentially, 'rolled up' fees that might comprise the PNSW usage fee, some OGA service fees, or even duties and taxes and revenue sharing agreements with an aim to review and revise / simplify fees and payments.

The PNSW service would need to automate the financial accounts of PNSW and its registered traders and OGAs. Worthwhile to note that 'taxes' are seen as a barrier to trade but; 'fees for service' are seen as obtaining something for a cost and therefore not a barrier. The definitions of 'Tax' and 'Fees' are listed below so their differences are better appreciated and understood.

Definitions/Differences between 'Taxes' and 'Fees'

Government

In government, the difference between a fee and a tax is that a fee is paid for specific goods or services rendered by the government, while a tax has no connection to the benefits received for an individual.

Definition of 'Fee Structure'

A chart or list showing the dollar amounts that a business charges for various services or activities. A fee structure lets customers or clients know what to expect when working with a particular business. Potential customers should always examine a company's fee structure to make sure they find it satisfactory before deciding to do business with them.

Revenue Fee Model

Following table is only one example as to how to manage the revenue from fees collected.

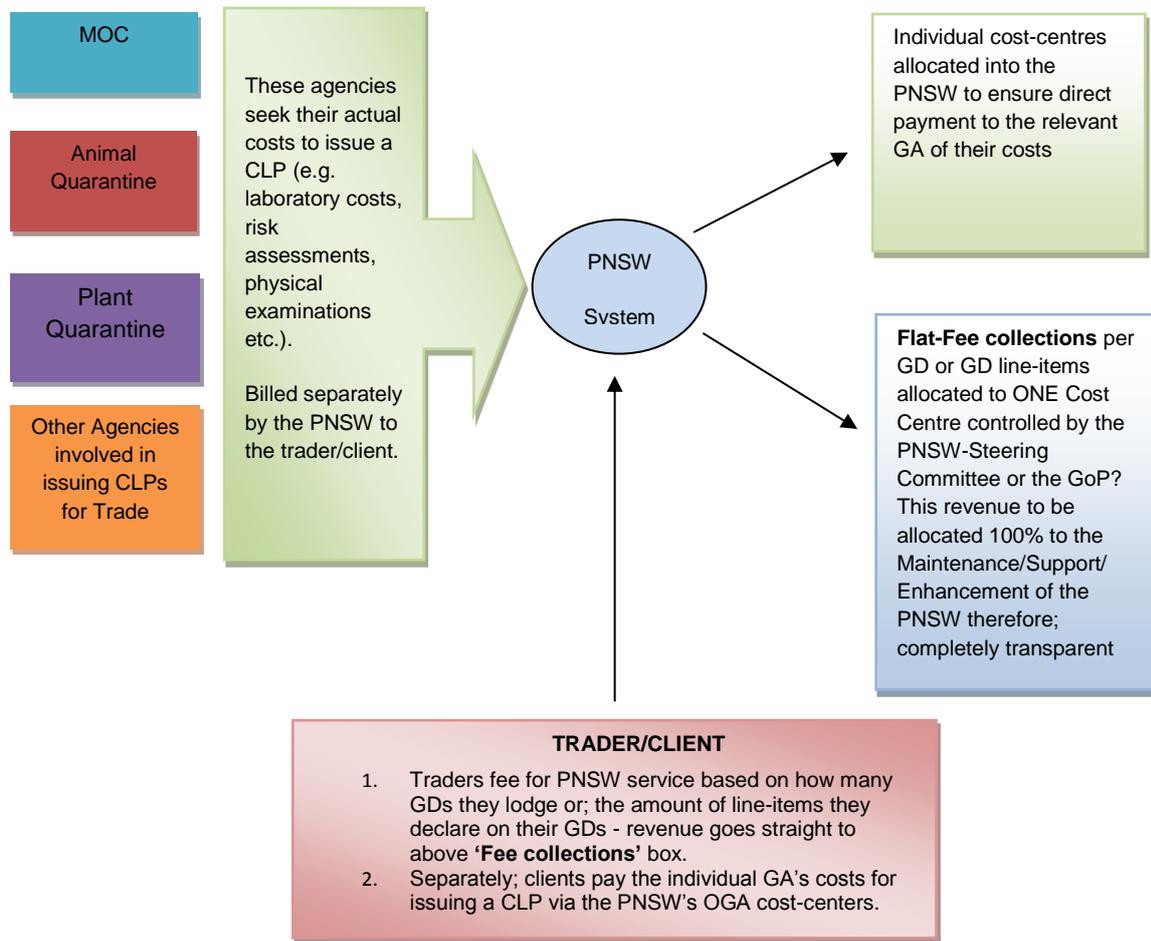
Note: in this example only two fee collection systems are suggested i.e. fee per GD lodged or; fee per line item listed on each GD lodged (there are other options but these are the most popular worldwide). Either suggestion are based on 'user pays'. The calculated fee would include current EDI costs for lodging GDs electronically as well as, the maintenance, support and enhancement of the PNSW.

Electronic payment is envisaged to be an element of the PNSW (eventually) so registered users of the PNSW for e.g. Customs Agents/Traders can 'communicate' direct with OGAs to lodge their CLP applications and pay for the costs in processing them direct on line (and any other costs OGAs charge for the issuance of them) to the OGA's bank accounts.

Notably, for the PNSW usage fee model, a reasonably reliable estimated projection of the number of 'transactions' per annum is clearly crucial.

One Example of a Revenue Fee Model for a NSW

Figure 10: One example of a revenue fee model for a NSW



RESULTS OF ABOVE REVENUE FLOW

1. Flat fee only attributable to the maintenance/support/enhancement of the PNSW is collected into one cost-center.
2. Fees based on 'User pays' i.e. more you use the more you pay.
3. Agency specific costs imposed on GAs due to processing CLPs goes directly back to the relevant GA via their designated cost-center
4. PNSW-Steering Committee only has to discuss, with advice from the eventual PNSW operator, (probably PRAL?) how to allocate the flat fee revenue against the three items making up the PNSW fee i.e. maintenance, support & enhancement; ensure service levels are met and; when and how to adjust the flat fee to maintain a PNSW 'cost neutral' environment.
5. Actually no cost for just issuing a CLP just the 'agency specific' costs of processing it.
6. No suspicion between OGAs that one is being treated more favorably than another.
7. FBR/Customs(?) being the lead agency will be the prime contract liaison point both with the operator and the other GAs.
8. No annual CLP registration fees.

Suggested Preparation and Inception of a proposed Revenue/Fee Model:

The program of Revenue Model and Fee Structure as part of the overall PNSW process has important (suggested) milestones to meet during its implementation to ensure it and the traders, brokers, bankers and agencies involved are at the same rate of progress towards meeting the recommended new payment practices of services provided by OGAs and the PNSW system itself. Stakeholder identification is particularly important as we are dealing with revenue and all or some representatives from these stakeholders will have to be engaged early, to ensure they are able to work with and in the new PNSW system, when it goes live at a pilot site.

An assumption has been made from a Revenue and Fee perspective that there will probably need to be a Phase I and Phase II implementation. It is anticipated that Phase I's early payments of revenue may have to be completed either manually (but direct to a nominated bank rather than at the OGAs as is the case today) or, electronically - but not through the PNSW system, only via the payer's own present electronic connections to their bank.

It would be expected however that even in Phase I traders would be able to scan their received bank receipt and send through the PNSW system to prove proof of payment of the service(s) they have had and need to pay for before clearance.

With Phase II it would be anticipated that all transactions can be facilitated via electronic payments through the PNSW system which would automatically separate such payments into the appropriate cost centres electronically, thereby providing automated proof, payment has been received for outstanding services as well as, generate electronic receipts.

The following implementation plan is limited to the activities required to implement the revenue model and fee structure model and it should will be incorporated in any overall PNSW Implementation Plan which will include a number of activities upon which activities within this plan are dependent (e.g. acquisition and installation of hardware and telecommunications equipment, software, etc.)

A draft implementation plan for Phase I & II could look like the following:

Preparation	
Identify stakeholders	Suggested: National Bank of Pakistan (and other banks? ²⁴) GA HR/Workforce staff/management, traders, individual brokers, broking companies, freight forwarders (who employ brokers), government CLPIA representatives (including their cashier, accountant and financial management roles), Treasury representatives and perhaps CNSW-SC reps.
Consultation with trade	<p>Information seminars to sensitize trade as to expectations of phased progress required to move forward, from start to final destination re revenue payments as well as present fee model to be used to explain why it was chosen (i.e. fairness, transparency) and to provide CNSW service fees for a speedier and more transparent system.</p> <p>Discuss practicalities and identify stoppers.</p> <p>There would be an advantage in bank representatives attending given receipts of revenue would be paid direct to them during Phase I and electronically and direct through the PNSW system's Phase II. Also during</p> <p>Phase I they may need to consider offering a faster service for business clients seeking a manual receipt from them (if not already in place for commercial clients).</p> <p>Depending how the Fee Model is promulgated within the trading community, we may need to consider in this box, a formal presentation of the Fee Model method selected, its overall advantages to various stakeholders and why it is needed.</p>
Consultation topics with all agencies	Obtain broad cross-agency agreement about revenue model and fee structure findings as they relate to the strategic project direction; discuss required adaptations to mind-sets re the changes in, and moving to, automated processes of receipts of revenue and what Phase I & II may look

²⁴ For the sake of access we need not assume only the National Bank of Pakistan will be the sole bank accepting automated payments.

	<p>like and the level of impact these changes may have on their agencies business processes and staff.</p> <p>Seek out Senior HR managers and staff and have them anticipate re-training needs, either for modernised revenue collection and monitoring roles or; define different tasks altogether, as present staff involved in revenue collection and receipt may see their tasks (and themselves) become obsolete. All about managing fears and anxieties before they become an issue.</p> <p>Commitment to re-engineering of revenue and fee processes, project timetable, etc.</p>
<p>Governance</p>	<p>Have the suggested PNSW-Steering Committee (SC) meet to discuss anticipated changes in their agencies re revenue collection and receipt. Would be opportune to have them meet and discuss the issues they can see or are appearing in their whole business processes around revenue collection, receipting and monitoring of accounts changes.</p> <p>May be beneficial if agencies (through the PNSW-SC forum) agree to work together to come up with a template as to how they will identify personnel and automation issues and how they might collectively decide to manage the monitoring and reporting of the PNSW revenue collection and distribution system. Advantageous for them to have a uniform system to perform these functions so all relevant stakeholders are on the same page with the same processes, when an issue is brought up to the PNSW-SC.</p> <p>Perhaps an invitation to FBR/Treasury officials would assist all as well? FBR/Treasury, so they have a better idea as to how revenue collection and receipting for CLPs (and later duty and taxes) will work within the PNSW (through both proposed Phases) and for the GAs, as Treasury would no doubt want to impose common reporting and monitoring methods on the PNSW system relating to each revenue stream, relating to each relevant GA.</p> <p>The goal is to seek uniformity in managing the change both within GAs and the FBR/Treasury and take pre-emptive action against later misunderstandings.</p>
<p>Confirm Strategy</p>	<p>Strategic objectives for Rev/Fee changes are reflected in the overall Strategic Plan for PNSW</p>
<p>Inception</p>	
<p>Define Change Programme</p>	<p>Train Government Agency representatives (who usually handle payments like Cashiers, Accountants etc.) in the new expectations around how itemised accounts will be produced, how the accounts will be paid and what new form of (automated) checking that they may need to be trained in to verify monies collected.</p> <p>Redefinition of roles, responsibilities, job descriptions that relate to present collection of revenue (cash) and issuance of receipts.</p> <p>Define present and proposed (Phase I and II) revenue collection and receipt processes within each agency i.e. seek uniformity in this topic for all GAs.</p> <p>Draft Change Management Plan in order to meet the required changes and keep to timelines to ensure all agencies are at the same place when Phase I & Phase II commences</p> <p>Design Information pamphlets/brochures describing the new acceptable ways to make revenue payments (both in the 'soon to be current' Phase I and the later Phase II). Generic brochures should discuss expectations of both private</p>

	<p>and public sector for transparency and mutual expectations as to what is expected of each stakeholder type.</p>
<p>Draft Implementation Plan</p>	<p>Detailed plan for expectations of 'Day 1' of Phase I and Phase II. Include what steps are needed to be in place to ensure electronic banking is in place.</p> <p>Ensure someone is nominated to set up, monitor and manage the new OGAs specific cost centres. Would suggest the PNSW-SC and/or FBR/Treasury representatives be involved (as transparency is the key in overcoming foreseeable problems and issues where revenue is concerned)</p> <p>Will required standard computer systems required by the private sector be addressed in other Task Clusters or should this also be the forum to discuss with the private sector, the IT equipment they will need to communicate with the PNSW and Banks (given anecdotal evidence that not all stakeholders in the trading sector are IT literate). If any party is 'left out' of the advantages of the automated PNSW system it is expected they will feel less than happy about paying a PNSW service fee.</p>
<p>Draft internal regulations (SOP) for CLPIAs</p>	<p>Internal regulations about the new mode of revenue collection and receipting will need to be drafted and issued as Standard Operating Procedure (SOP) revised for the modernization enabled by PNSW. Will these new regulations give rise to legislative changes to make them legal?</p> <p>Legislative gap analysis to be instigated?</p> <p>NOTE: The new automated mode of receiving revenue and issuing electronic receipts may make current and proposed SOPs obsolete or at least badly lacking in being able to be enforced, if the law is lacking in detail to support these changes.</p> <p>Depending on forecast impacts of the automated environment perhaps OGA Senior HR staff should be consulted and their thoughts sought as to how much of an impact the new automated environment will have on their current money-handling staff. This may lead to better definition of training required and SOPs or; it may give HR timely warning that they may need to retrain affected staff in other tasks.</p>