



**Inter-American
Development Bank**

Integration and Trade
Sector

TECHNICAL NOTES

No. IDB-TN-296

Electronic Single Window

**Coordinated Border
Management - Best Practices
Studies**

External Author

December 2010

Electronic Single Window

Coordinated Border Management - Best Practices Studies

External Author



Inter-American Development Bank

2010

© Inter-American Development Bank, 2010
www.iadb.org

The Inter-American Development Bank Technical Notes encompass a wide range of best practices, project evaluations, lessons learned, case studies, methodological notes, and other documents of a technical nature. The information and opinions presented in these publications are entirely those of the author(s), and no endorsement by the Inter-American Development Bank, its Board of Executive Directors, or the countries they represent is expressed or implied.

This paper may be freely reproduced provided credit is given to the Inter-American Development Bank.

Table of Contents

List of Acronyms	ii
Abstract	1
I. An Introduction to Electronic Single Window	2
II. Review of Electronic Single Window in IDB Member Countries	3
III. Pre-requisites to Adoption of an Electronic Single Window	9
IV. Models, Tiers of Capacity and Types of Electronic Single Window	16
V. Examples of Technologies to Implement Electronic Single Window	20
VI. Steps for Implementing Electronic Single Window	38
VII. Conclusion	43
References	45
Appendix A. Questionnaire	50
Appendix B. Draft Timeline	52

List of Acronyms

ACE	Automated Commercial Environment
AGEXPRONT	Guatemala Non Traditional Products Exporters Association
ASYCUDA	Automated System for Customs Data
CAMP	Jordan's Customs Administration Modernization Program
CBM	Coordinated Border Management
CBP	US Customs and Border Protection
DDA	Doha Development Agenda
DOHA	DDA, the current trade-negotiation round of the WTO
DGA	El Salvador Customs Agency (Dirección General de la Renta de Aduanas)
ECLAC	Economic Commission for Latin America and the Caribbean
FACET	Future Automated Commercial Environment Team
FDI	Foreign Direct Investment
GATT	General Agreement on Tariff and Trade
IDB	Inter-American Development Bank
IBM	Integrated Border Management
ICT	Information and Communication Technology
ITDS	International Trade Data System
LAC	Latin America and the Caribbean
OECD	Organization for Economic Cooperation and Development
PGA	Participating Government Agency
SW	Single Window
TF	Trade Facilitation
UN/CEFACT	United Nations Centre for Trade Facilitation and Electronic Business
UNCTAD	United Nations Conference on Trade and Development
UNECE	United Nations Economic Commission for Europe
UNECLAC	United Nations Economic Commission for Latin America and the Caribbean
WB	World Bank
WCO	World Customs Organization
WTO	World Trade Organization

Abstract¹

This report provides a brief review of status of Electronic Single Window (ESW) in the Latin American and Caribbean region. While not exhaustive it does illustrate the diversity of integrated border management and the opportunities for building greater capacity. It is intended to be a primer on the steps necessary to adopt and implement an ESW for each member country. The report contains an analysis of government steps necessary for adoption of an ESW, a description of the different tiers of existing capacity and how the two types of electronic portals apply to those tiers, and a section identifying the types of technologies available for the implementation of the ESW. The key section of the report outlines the steps to be taken to assess, develop, and implement an ESW.

JEL Classification: O14, O19, O24, O29, O32, O38, F10, F12, F13, F15

Keywords: International Trade, Integrated Border Management, Customs Modernization, e-Government, Trade Facilitation, Electronic Single Window.

¹ We would like to thank the Customs and Trade Facilitation team from the Integration and Trade Sector at the Inter-American Development Bank (IDB) for their help and support throughout the development of this document. Specifically, we want to thank Aurelio Garcia Navarrete, Maria Ortiz and Manuel Marquez from the Integration and Trade Sector, for their support, insight, and collaboration to ensure the quality of this report. The views and opinions expressed in this publication are those of the authors and do not necessarily reflect the official position of the Inter-American Development Bank (IDB), its executive directors or its member countries.

I. An Introduction to Electronic Single Window

The United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT)² defines an International Single Window as:

A facility that allows parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfill all import, export, and transit-related regulatory requirements. If information is electronic, then individual data elements should only be submitted once. In practical terms, the single window aims to expedite and simplify information flows between trade and government and bring meaningful gains to all parties involved in cross-border trade. The single window is generally managed centrally by a lead agency, enabling the appropriate governmental authorities and agencies to receive or have access to the information relevant for their purpose. In addition, participating authorities and agencies should co-ordinate their controls. In some cases, the single window may provide facilities for payment of relevant duties, taxes and fees.

A single window does not *necessarily* imply the implementation and use of high-tech information and communication technology (ICT), although facilitation can often be greatly enhanced if Governments identify and adopt *relevant* ICT technologies for a single window.

This study addresses the enhanced single window through the use of information and communication technologies (ICT). An electronic single window (ESW) maximizes the benefits from the harmonization of data and speed of electronic filing of documentation required by all stakeholders to the international border transaction. The benefits from ESW correlate directly to the degree of control over the product being imported. For those goods which are most likely to be the subject of border intervention and inspection, "...it is widely believed that non-Customs checks now make up between 70 and 80 percent of all official checks on imports that take place within the port environment."³ ESW participants will benefit from:

- Disseminating and/or providing access to the relevant information to participating governmental authorities or authorized agencies in a timelier manner;

² UN/CEFACT *RECOMMENDATION No. 33 ESTABLISHING A SINGLE WINDOW*

³ The Importation of Goods Subject to Animal or Plant Health Regimes – SITPRO/LACoRS June 2003.

- Providing more accurate trade-related government information and receiving payment of duties and other charges;
- Ensuring that the sharing of all information with respect to international trade transactions is supported by a legal framework that provides privacy, confidentiality, and security in the exchange of information;
- Coordinating the controls of the various governmental authorities;
- Reducing the cost of the international transaction for both government and private stakeholders as a result of the reduction in the time to clear goods;
- Increasing the security for all stakeholders and the public through the better use of risk assessment based upon advanced data provided to the ESW;
- Increasing the confidence of civil society that the government is efficiently using its resources and engaged in good governance.

II. Review of Electronic Single Window in IDB Member Countries

Efforts to facilitate trade have been high on the agenda for the IDB and its member countries for more than a decade. Optimizing and modernizing customs processes have always been the key to achieving facilitation. Present technology allows for the use of an Electronic Single Window (ESW).⁴ IDB members currently reflect the general world situation where the range of trade facilitation options run from manual legacy processes to highly automated systems for the collection, dissemination, and use of data. This study includes a review of the current use of ESW among several IDB member countries. Data was obtained by analyses of relevant texts, questionnaires (see Appendix A), and interviews.

While not an exhaustive list, the following are some of the various efforts underway in the region to modernize customs processes and/or implement ESW.

Chile: Single Window for Imports and Exports

The objective is to integrate the eight public services with the highest volume of foreign trade operations. Those public services move 96 percent of the operations volume. Participants are National Custom Service, Metropolitan Health Service, Treasurer Office of the Republic,

⁴ “A facility that allows parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfill all import, export, and transit-related regulatory requirements. If information is electronic, then individual data elements should only be submitted once.” (UNCEFACT and WCO).

Phytosanitary and Livestock Service, Registry and Identification Office Service, Public Health Institute, National Fishing Service, and Transportation Sub-secretariat.

Guatemala: ESW for Exports

The CBM program was originally under the control of Government Customs General Administration and the Ministry of Economy but since 1998 it has been under the administration of Guatemala Non Traditional Products Exporters Association (AGEXPRONT), a private entity. Implementation was in two steps: (1) Unification of documents, review of export processes and physical location of entities in a SW facility; and (2) Implementation of an electronic system to facilitate export processes and to replace manual processes. This is a limited program being run by the private sector.

El Salvador: ESW for Imports and Exports

The *Dirección General de la Renta de Aduanas* (DGA), the customs agency of El Salvador, is working on implementation of an Electronic Import/Export Trade Facilitation Single Window (*Proyecto Ventanilla Única de Comercio Exterior*, or VUCEX) to electronically integrate all government offices that participate in the import/export process. When completed, it will allow the user to conduct trade through a single web-based information portal that is cost-effective, time-efficient, and secure. This SW should reduce the time to export by seven days and the time to import by eight from the current times of fourteen and ten days respectively.

Single Window for Quick Processing for Opening Business

The process for inscription and legalization of foreign and local investment has been simplified with the creation of the National Investment Office, which has a “single window” where all operations related with the opening of businesses are carried out.

Peru: ESW for Imports

Foreign Trade Single Window (VUCE), the Peruvian SW has been defined as: “The integrated system that allows parties involved in international trade to lodge documents and information for fulfilling import, transit, and export-related regulatory requirements, by electronic means.” The project is currently in the initial phases of implementation starting only with restricted goods. The authorizing legislation provides ultimately for a comprehensive system including electronic payment of duties and taxes and the potential for coordinated border management with other countries.

Jamaica: ESW for Imports and Exports

Tradepoint is the SW system portal which is coordinated by [Jamaica](#) Promotions Corporation (JAMPRO) and powered by Fiscal Services Limited that allows importers and exporters to carry out a number of trade-related transactions online. These include exporter registration, processing of e-manifests, creation of commercial invoices, submission of the single entry export and import C87 form through Customs, and applications for import and export licenses through the Trade Board. This trade facilitation portal aims to seamlessly coordinate the online applications of trade agencies and ministries, providing the Jamaican business community for the first time with the integrated, rationalized, comprehensive system required to advance the quest of truly facilitating the business of trade in Jamaica.

Trinidad and Tobago: ESW for Imports and Exports

Trinidad and Tobago recently introduced an ESW for imports and exports. It is an IT-based trade facilitation tool that allows parties involved in trade and transport to lodge standardized information and documents at a single entry point in order to fulfill all import, export, and transit-related regulatory requirements. This mechanism is designed as a “one-stop-shop” where private stakeholders and approving government agencies can collaborate to process necessary permits and approvals online in a seamless and efficient manner. Based on Singapore’s Trade Net system, this project will complement the ASYCUDA system at the Customs and Excise Division and incorporates significant cooperation among a range of ministries and agencies responsible for trade facilitation. Because of its interactive nature, the system will require major business process reengineering on the part of some operators. It should be fully operational by 2020.

Canada: Customs Modernization for Imports

The Accelerated Commercial Release Operations Support System (ACROSS) uses advanced electronic technology to streamline the way goods are imported into Canada. With ACROSS, importers and brokers exchange information electronically with the CBSA, thereby eliminating the requirement to present paper release packages subject to certain limitations. By reducing the workload involved in the clearance of low-risk shipments, ACROSS enables goods to be released more efficiently and quickly. Importers spend less time dealing with the CBSA, which gives them more time to focus on their businesses. Further enhancements to ACROSS now give

electronic data interchange (EDI) clients the option of transmitting release information that has other government department (OGD) requirement.

Uruguay: Trade Single Window

Uruguay is currently in the initial phase of developing a SW for trade. Details about the project are not available at this stage. However, it was noted from the response to the questionnaire that IDB assistance could help facilitate the procurement of support and ICT.

Paraguay: SW for Exports

Paraguay has a SW for exports, which simplifies the bureaucratic procedures for the exporter, allowing the exporter to complete all steps by going to only one public office. From the diagnosis made by the World Bank *Doing Business in Paraguay 2006* on the process of formalization of companies, the Unified System of Opening of Companies (SUAE) was implemented. The purpose of this system is to simplify the requirements and processes for the registry of companies. The system operates like a SW for entry of requests and exits of state authorizations; it establishes clear processes with the purpose of providing more efficient services.

Colombia: ESW for Imports and Exports

Columbia has established an electronic single window that includes the electronic management of import and export transactions and the filing of the Unique Form of External Trade. Using the Internet, 18 entities are integrated, resulting in more than 50 digital transactions and 90 Workflows in a Single Window Environment. Entities that are integrated into VUCE include:

- Minister of Trade, Industry, and Tourism;
- Minister of Mining and Energy;
- Minister of Environment, Housing, and Territorial Development;
- Minister of Transport;
- Minister of Social Protection;
- Minister of Foreign;
- Minister of Agriculture;
- Minister of Defense;
- Minister of Culture;
- Nine other government entities.

VUCE was established by the Colombian Government, through Law 4149, for the purpose of simplifying trade procedures for the public and private sectors. The ESW has already resulted in increased revenues for government and decreased transaction times for trade. Currently, about 80 percent of trade transactions are executed using VUCE.⁵

Costa Rica TICA

Costa Rica's management of imports has changed radically with the advent of TICA, an import-monitoring system now being used in all Costa Rican ports of entry. The TICA customs system is much more than a new computer program. It represents a new way of managing customs and all participants in import and export activity (e.g., shippers, importers, customs agents, customs officials, banks) have felt the difference. The rollout of this new way of doing things has been very deliberate, starting with the relatively small Pacific port operation of Caldera in June of 2005, then followed in late 2005 and all of 2006 by the Central Customs Office, Juan Santamaría Airport, and the border stations with Panama and Nicaragua.

Finally, Atlantic port operations of Limon and Moin, through which about 80 percent of imports are shipped, began using TICA in May of 2007. The steady progression in implementation proved to be a key factor in the successful launch of TICA in Limon and Moin. Those sister ports represent such a high percentage of import and export volume that TICA could not possibly be considered to be implemented without them, yet by the time TICA was about to be implemented in Limon even skeptics acknowledged that implementation of the system was a *fait accompli*. Given the traditional difficulty of instituting anything new and innovative in Limon, the manner in which TICA was introduced provides a valuable lesson in successful innovation.

"I would summarize the recent history of Customs in three stages," says Juan L. Zuñiga, a former official who now works as trade and customs consultant. "Before the 1990s, we had a completely obsolete system with nothing automatic. Then in the 1990s we migrated to an automated system in which the pass-through of goods in which many shipments were not inspected was privileged, more than what you'd expect from automation, which is generally felt to imply that people get fired!" Nevertheless, Roberto Acuña, the customs official responsible for TICA, notes that "we've actually added personnel."

⁵ Information based on a case study by the Ministry of Trade, Industry, and Tourism of the Republic of Colombia.

He explains that “together with TICA, which is a technological tool, there has been a parallel structural reform of the customs and administrative processes. We have created a new department called “Customs Risk Assessment.” This is one of the best practices encouraged by the World Customs Organization in order to facilitate commerce and concentrate controls on what actually represents a risk. Since the law gives us four years to review [the accuracy of the import declaration], TICA has all the information.” Acuña explains that Customs uses various techniques in analyzing such information and determining when to investigate further. Some investigations after the fact might take place just days or months later. “After that, we analyze trends among different groups, corporations, and importers.”

In reference to such analysis, Desiderio Soto comes back to the fact that “Customs has changed from verification of merchandise (before TICA) to verification of processes and data (under TICA).” He explains that “the behavior of one company is contrasted against a similar company or with a competitor. The competitor says “these items are classified as X,” and when we investigate, we find that one of them is tending to classify correctly and pay duties while the other isn’t. We find these tendencies through [analysis of] processes and information. Not through [inspection of] merchandise.” Soto explains that “our legislation permits [companies to] change their declarations at any time. Any importer can change declarations from four years back whenever he wants.

This has one of two consequences. If the customs administration has not started an investigation of the company, then the company is forgiven 75 percent of the possible fines. If the customs administration has started an investigation, then the company pays all the fines. Soto expresses a preference for letting a company know that Customs may be interested in reviewing the company’s import records, thus giving the company a chance to conduct an internal review and make corrections if they are needed. Likewise, companies are given the option of making “anticipated declarations” of imported merchandise in order to hear Customs’ opinion regarding the classification of merchandise or the value of that merchandise. Soto notes that “we see fines as a way to ensure proper behavior, not as a rule in most cases.”

Collections

Monetary benefits of TICA to the Customs Administration fall into two categories. The relatively easy savings to quantify are those generated by the change in payment procedures. Prior to TICA, banks charged a percentage of the taxes collected as commission. Under TICA,

taxes are paid directly from importers' accounts to the Customs Administration, with a much lower per-transaction fee levied by the bank. The results are quantifiable and considerable. The accompanying chart shows that through June 30 the Customs Administration has realized a savings of C1,681 million colons (roughly US\$3.2 million) in bank commissions through TICA.

The other category of savings might derive from better import controls under TICA, but such savings are more difficult to quantify. The Customs Administration has attempted to illustrate the magnitude of such savings by drawing a straight percentage comparison of the income under TICA versus the income for the most recent same-month period under the previous system.

"TICA was the death word,' says Jeff Ducheneau, General Manager of AeroCasillas, "before it was launched. We thought customers were going to panic, they weren't going to buy anything anymore because they weren't going to want to pay taxes on every single item." AeroCasillas is one of several companies that provide P.O. boxes in Miami, and like its competitors has found itself importing increased volumes of Internet purchases for its customers through the Juan Santamaria airport. "Well, you know what? TICA is probably the best thing that has happened in our business," Ducheneau goes on to say. "I really do mean that honestly. We operate in 30 countries. So whenever I travel outside of Costa Rica I'm reminded that I forget how bureaucratic Costa Rican Customs used to be. You used to have to fill out a form or piece of paper for every single item."

In this sense, Juan Zuñiga calls TICA "the essence of (Costa Rica's) obligations under CAFTA." By which he means that any free trade agreement is meant to guarantee the legal and institutional conditions necessary to facilitate free trade, and TICA provides the technical framework necessary to ensure those conditions. For those citizens and residents wondering if the Costa Rican government is capable of any major reform, TICA provides a heartening illustration of what can go right. Despite doubts and complaints from shippers and importers, the system's implementation has been strategically calculated, remarkably smooth, and demonstrably cost saving.

III. Pre-requisites to Adoption of an Electronic Single Window

Various templates and implementation steps for achieving border interoperability have been published by international governmental organizations. In addition, private sector ICT companies

have seized upon the need for these efficiencies by developing and marketing various proprietary “systems” and “solutions” for government ESW. In reviewing those templates there is consensus about those prerequisites needed that will lead to adoption of a successful ESW. They include:

1. Obtain political and management support;
2. Review and adopt a comprehensive legal framework;
3. Identify core participating government agencies (PGAs);
4. Demonstrate value to key stakeholders;
5. Determine appropriate-to-country operating model and public-private partnership;
6. Ensure capacity to implement and manage;
 - a) Availability of supporting technology;
 - i) Telecoms/Internet infrastructure;
 - ii) System ownership and location.
 - b) Training for effective program management;
7. Harmonize process;
 - a) Data elements using WCO Data Model and/or UN/CEFACT;
 - b) Develop operating protocols;
8. Determine and obtain resource stream;
 - a) Grant funding from IDB for development of the system;
 - b) Self-funding operation;
 - c) Fee-based operation;
 - d) Public-private partnership options;
 - i) Company managed for a fee;
 - ii) Build, operate, and turn over;
 - iii) Variations of the above;
9. Most important, deploy an evolutionary prototyping or pilot program at a particular port before building and introducing an all-encompassing system.

Border agency coordination through an ESW is not “a system” or “a solution” to be purchased out of a box. It is the basic concept of good government that more can be accomplished in achieving the mission-critical goals of each agency by working together cooperatively rather than independently. The common theme of ESW is that agencies must work together for the good of the country. Furthermore, whatever blueprint or strategic plan is set forth

to address this need for agency coordination must be developed within the target country and by the relevant stakeholders in order to optimize cooperation.

The better approach to adopting ESW, and one more likely to be successful, is to provide a “menu” of options with sufficient variations that allow flexibility to optimize what may already be in place. Diverse models of ESW are available. They include compulsory and voluntary systems; ones which may be financed by the state, the private sector, donor agencies, or a combination of the three. The menu approach can provide a wide range of services—from very comprehensive, highly automated, interactive systems to systems as simple as the common collection and sharing of data between government agencies. The key is to determine the country need, the capacity to meet that need, and the availability of public and private resources—including human resources—to build that capacity.

Establishing priorities for the implementation steps for ESW will be driven by each country’s particular legal authority, level of development of agency interoperability, and existing infrastructure, including ICT, equipment, and employee capacity. Accepted best practices indicate that at a minimum the basic component priorities of successful ESW are:

1. High-level commitment: to begin planning for ESW and agency interoperability the appropriate high-level officials in the government should be fully supportive of the initiative. Without this commitment, very little will be accomplished;
2. Legal authority: each agency must have the legal authority to share data and coordinate with other agencies for ESW to be implemented. Techniques exist that can be used on an interim timeline, such as pilot programs or test processes, that often do not require full legal authority. By using this interim approach, experience can be gained that will assist legislators in understanding why a change in legal authority is necessary and desirable;
3. Identification of core agencies: while it may be ideal to include all agencies with border responsibilities in the planning and development of ESW, it is more effective to keep the initial group of agencies limited to those with core responsibilities. Based on the results of a review of ESW programs in place and similar agency interoperability, those agencies should include customs, immigration, agriculture, health, commerce/trade, central bank, and border police;
4. Creation of an interagency working group/steering committee: after obtaining high-level commitment, legal authority, and a list of candidate agencies, the next step is to create the

steering committee or working group that will be tasked with developing the strategic plan, including the identification of the value to the stakeholders. That plan should include:

- appropriate operating model;
- stakeholders;
- gap analysis of operating infrastructure such as availability of broadband services to the Internet;
- inventory of existing PGA technologies;
- ownership of the process;
- infrastructure necessary to support model;
- define key objectives for all parties, including outcomes, data usage, and required speed, certainty, and total cost;
- define data collection, processing, analyses, retention, and dissemination;
- agree on joint business processes and value chains including the optimum degree of simplification and standardization;
- define security and integrity requirements;
- define facilities and infrastructure required by all participants;
- define structure and how to collect master data;
- recommend options for funding resources;
- recommend training program to ensure capacity to operate;
- determine options for growth (scalability); and,
- undertake evolutionary prototyping or pilot program at a particular port before building and introducing an all-encompassing system.

5. Based upon recommendations from working group's strategic plan, conduct dialogue with all stakeholders to demonstrate value and benefit of the ESW to them and to the country;

6. Obtain consensus on required data elements. How and in what form the information is collected is fundamental to the ability of agencies to coordinate with each other:

- primary element of an ESW strategic plan is the need for an agreed approach to collection of data elements;

- harmonize as much as possible on international standards such as WCO Data Model or UN/CEFACT data elements;
7. Obtain consensus on operating protocols between PGAs and private stakeholders. Defining and implementing the protocols through which messages are to be exchanged is what allows the data elements to be shared by the stakeholders. The acceptance of an ESW will exponentially increase when the ESW adopts and implements as many of the schemas and protocols commonly used by the involved parties instead of mandating a totally new set of standards. Some of the common issues are:

Interoperability of Data Exchange between Stakeholders. Over the past 25 years, Electronic Data Interchange (EDI) has given companies and government agencies the prospect of eliminating paper documents, reducing costs, and improving efficiency by exchanging business information in electronic form. However, this vision has not been completely realized, with only larger companies and governments being able to afford to implement it.

With XML becoming a W3C standard in 1998, there has been a rapid adoption of XML being used to define new message format. Besides the definition of message format, other aspects of the e-business framework require standardization. This includes the messaging layer, process management, partner profile agreement, and the registry and repository. The ebXML framework, which is based completely on XML, addresses these issues:

- Is the message format sent by the sending party recognized by the receiving party?
- Is both the sending and receiving party using the same messaging protocol?
- Will the digital signature of the sending party be recognized by the receiving party?
- Has both the sending and receiving party agree on the public business process?
- In the event that the sending party fails to send the message to the recipient party, how many times must the sending party retry?
- What is the duration that is permissible for the retry?
- Must the receiving party send an acknowledgement back to the sending party?

- For each instance of a business transaction, what is the duration of the overall business process?
- When will the transaction be deemed as success or failure?

To ensure that interoperability issues of data exchange between stakeholders are completely addressed before live implementation, a test specification containing a comprehensive set of test cases should be developed.

Technologies Used in Data Exchange between Stakeholders. Conducting data exchange between customs administrations requires a common IT infrastructure to support the secure and reliable transmission of import and export declarations. The IT infrastructure must provide a high level of security, one that ensures authentication, integrity, non-repudiation and confidentiality. In addition, cross-recognition of certificates must also be supported.

To support the need for a secure IT infrastructure, PKI (Public Key Infrastructure) is being adopted. It enables users of a basically unsecured public network such as the Internet to securely and privately exchange messages through the use of a public and a private cryptography key pair that is obtained and shared through a trusted authority. The public key infrastructure provides for a digital certificate that can identify an individual or an organization and directory services that can store and when necessary, revoke the certificates. To support cross recognition of digital certificate, a mutual recognition framework needs to be setup.

1. Determine existing human resource capacity and identify gaps. Unless there is sufficient existing capacity, a critical pre-requisite is a plan to develop the human resource capacity to manage an ESW, including training of existing personnel. Some of the factors to consider based upon the World Bank's *Customs Modernization Handbook*⁶ in making that determination are:
 - a) *Skill mix*. Obtain information on the skills and qualifications of staff and compare this with the skill mix required to enable the implementation of the near- and medium-term modernization program.

⁶ Customs modernization handbook / edited by Luc de Wulf, José B. Sokol.p. cm.—(Trade and development series)
Includes bibliographic references and index. ISBN-0-8213-5751-4 (pbk.)

- b) *Human Resources Department.* Does the HR Department have a strategic vision? How is it staffed? What are its activities in the fields of recruitment, training, and career planning?
- c) *Recruitment.* What is the present recruitment process? Are the agencies or a Civil Service Ministry in charge? Do the agencies have a forward-looking recruitment program so it can adjust its skill mix over time, and do the present recruitment practices enable it to implement this program?
- d) *Training.* What is the training program at customs and the other agencies? Is there a dedicated training institute? Are the staff and curriculum attuned to the modernization process? Is training provided for staff on board or only for new recruits?
- e) *Compensation.* Is compensation guided by the same rules that apply to the rest of the civil service?
- f) *Level of compensation.* How does compensation compare with compensation in the rest of the civil service, and with the private sector? Does entry-level compensation provide a living wage?
- g) *Bonus and salary supplements.* Is there a system of bonuses and premiums that supplements basic wages? Are these additional compensation packages distributed equally to all staff or do they provide an incentive for good performance? Is the system of bonuses SMART (specific, measurable, achievable, relevant, and timed)?
- h) *Additional employment benefits.* Does staff have access to housing, health care, or pension benefits?
- i) *Career management.* Is advancement based on seniority or performance? What rules exist for mobility (geographic and across services)? Are the rules transparent?
- j) *Enforcement of discipline.* Is there a clear code of conduct and a stipulated system for sanctions? What are the internal disciplinary processes and do they function in a transparent and timely manner? For example, the Jordanian Customs Service developed the following as a set of values to achieve discipline and accountability of employees.
 - i) **Integrity:** Define good and evil, dos and don'ts, and act appropriately;
 - ii) **Professionalism:** Work with competence, accuracy, and full efficiency;

- iii) **Control and responsibility:** Each employee appraises his/her work and actions taking full responsibility therefore;
- iv) **Creativity and learning:** The ability to innovate new ideas to do our job and disseminate such ideas among employees;
- v) **Justice:** It connotes civilized and just action towards all so that our decisions will be balanced, logical and non-biased;
- vi) **Focus on results and clients:** Results are the motivation for our work;
- vii) **Good service:** Let's do our duties professionally and in a sophisticated way within an honest discussion;
- viii) **Pride:** We believe in our mission, we are proud of our long experience, and we are ready to put in extra effort to maintain it;
- ix) **Culture of excellence:** we shall always try to embed a culture of excellence in our performance;
- x) **Learning organization:** We will make the Customs Department a learning institution, applying successful strategies for knowledge management;
- xi) *Staff satisfaction survey.* Is there a periodic survey to assess staff satisfaction? What was management's reaction to the survey if such a survey was performed?

One of the major impediments to the successful deployment of an ESW is the lack of human capacity to manage and maintain the process. An erroneous assumption is often made by those responsible for the financial aspects of developing and implanting new electronic processes that by automating the process there will be less need for staff. While automation does increase the capacity of the staff to achieve their objectives and manage their responsibilities, that can only be achieved if the personnel fully understand and have the capacity to manage the processes. ESW will reduce many of the inter-agency redundancies but it will not reduce the mission responsibilities of those accountable to ensuring compliance with the laws and regulations.

IV. Models, Tiers of Capacity and Types of Electronic Single Window

For this study the authors have organized ESW systems into models, types, and capacity categories to better illustrate the various functions and how they can be applied to the unique

requirements of each country. Through this approach the steering committee or working party established to consider adoption of ESW can organize their deliberations into each of the elements to be addressed. In brief, those categories are:

- Two major ESW models
 - The regulatory convergence model, generally driven by Customs. It focuses on harmonizing procedures, electronic messages and data for submission, and sharing by Customs and other government agencies. Under this model there are usually two levels of service: passive and interactive:
 - Passive is an ESW that is a single portal for the collection of all data in a harmonized format. Participating agencies and other stakeholders query the portal to obtain the relevant data. No analysis or risk assessment is performed by the portal hub;
 - Interactive has a collection portal resident in a government agency, usually Customs, that receives, analyzes, catalogues, and disseminates that data to the participating stakeholders.
 - The trade-logistics model, which tends to be driven by trade and business interests. Although it may include some Customs processes, it essentially revolves around the process, procedures, and data related to operating ports, transport, and similar facilities. This model requires the interactive level of ESW.
- Five Types of ESW using electronic messaging:
 - Business to Business (B2B);
 - Business to Government (B2G);
 - Government to Business (G2B);
 - Government to Government - Domestic (G2G-D);
 - Government to Government - International (G2G-I).
- Three levels of capacity were reviewed by the authors for consideration of which models and types to adopt based upon that capacity. Those levels reviewed are:
 - Basic
 - Lower volume of trade;
 - Limited human and financial resources;
 - No ICT for border transactions;

- No data harmonization.
- Medium
 - Some ICT functionality for border formalities;
 - Limited inter-agency communication and coordination;
 - No data harmonization between agencies;
 - Human and financial resources are available.
- High
 - Current ESW in some form;
 - May or may not have data harmonization between participating agencies;
 - Incomplete functionality (not all stakeholders participating);
 - Resources available.

Models

The regulatory convergence service model is becoming the most prevalent ESW among those countries adopting border integration. The cost to the government in managing its border mission is increasing faster than the volume of trade because of the increased concern for revenue, product safety, health and welfare, and security. Government revenues are not increasing, and the demands for more services and increased speed of goods clearance have converged to virtually require some type of automated system.

Since the customs service is most often the first line of border regulation and is now the subject of building capacity to facilitate trade, the logical model for coordinating that border management falls on customs as the central agency to house an electronic portal for the benefit of all stakeholders. As described above, that facilitation effort can be divided into two levels of service, the passive or pull system and the interactive or push system. In the passive system, customs establishes an electronic portal for the collection of all import data required for clearance of goods. Each participating government agency (PGA) then “pulls” from that portal the data it needs to complete its border entry assessment of the goods. It then advises either customs or the importer that it is okay to clear the goods similar to providing a written authorization that previously accompanied the goods when presented to customs for entry.

In the interactive service system, a separate joint entity is created within customs to provide the electronic portal for all of the participating agencies and maintain an interactive database and communication systems. That joint entity acts as a “clearing house” for the data

by collecting, analyzing, processing and “pushing” that data out to the PGAs. This system of service retains a risk management approach using data collected from all the PGAs to establish targeting criteria for both goods and traders. It will also allow interaction with the private stakeholders so that they can access the system to determine the status of their transaction, revenues due and other import requirements.

The trade-logistics service model builds upon existing business networks that provide services for purchase, finance, transportation, and tracking of the goods. Such systems can be adapted and configured with sufficient security that a private ICT provider can manage the system for the benefit of the PGAs including customs. There are a number of such systems working in the world today. These are usually adopted to minimize cost to the government since all of the development and transaction costs are borne by the private stakeholders.

Types

Information and documentation are key elements in the control of international cross-border trade. In today’s interconnected electronic environment, exchange of data electronically is the key to trade facilitation and an efficient trade environment. Such exchange of data can be between B2B (business-to-business), B2G (business-to-government, including customs and other competent authorities involved in the import and export of goods) and G2G (government-to-government).

It is estimated that an average international trade transaction involves 27-30 different parties (seller, buyer, carrier, freight forwarder, customs, customs brokers, banks, etc), some 40 documents (purchase order, bill-of-lading, invoice, packing list, trade declaration, etc.) with 200 data elements. Among the data elements, about 30 of them are repeated and 60-70 percent is re-keyed into the computer system at least once. Hence, the electronic exchange of trade-related documents over a secured and safe environment is essential to efficient international trade and logistics.

The decision as to the type of service is dependent on the scope of the control and service the government plans to provide. For example, inclusion of the financial sector will improve revenue collection through electronic funds transfer. Capturing carrier and port data can significantly relieve congestion and accelerate movement of cargo through the ports or across land borders. The selection of the initial stakeholders for the system is important but the ability to expand the scope of participants at a later time is even more important.

Levels of Capacity

Level one is the initial electronic system adopted by a government that provides basic data collection and distribution through an electronic portal. It provides service for lower volumes of trade for inter-agency and stakeholder coordination for those governments with limited human and financial resources. The candidate for this level has no current ICT for border transactions nor is there data harmonization between government agencies. The steps for adopting this level of ESW remain the same for all levels. The difference is in the scope of coverage, functionality, and mission objectives (e.g., physical security, financial transactions, national health and safety).

Level two includes those governments with some current ICT capacity for entry and control of imports and exports. In our review, this level of capacity usually included some customs functionality for border formalities. There is neither electronic inter-agency communication nor data harmonization. Human and financial resources available to a limited degree but moving to the next level of a robust ESW have been met with various challenges, many of which are addressed in this study.

Level three are those countries with some system of electronic collection of import and export data that is shared electronically with other stakeholders, public and private. There may or may not be data harmonization and most often there is incomplete functionality (not all stakeholders participating). The initial prerequisites are in place and a system has been deployed. In most cases moving to the next level is constrained by those challenges outlined in this study (e.g., lack of support or “buy in” from other government agencies, limited financial and/or human resources, and limitations of the current ICT systems (e.g., broadband infrastructure, proprietary systems, and old technology).

This study does not address each level of capacity individually. Based upon the review of existing systems in place in the region, the examples, prerequisites, and implementation steps apply to every level of capacity. The pre-requisites and steps can be adjusted and addressed based upon the specific needs of the government agencies.

V. Examples of Technologies to Implement Electronic Single Window

There are many technologies and technology vendors offering their goods and services to automate the international supply chain. Most represent that their technology solutions provide B2G and G2G connectivity as well as automating the commercial international transaction. In

addition, virtually any large technology company has the capacity to build an ESW system tailored to the specific needs of the government agencies participating. Finding a technology provider is not difficult. The major decisions will be related to the functions that technology is expected to perform and at what cost. This study focused on those on the market that are targeted directly to the single trade window and include in their systems commercial off-the-shelf technologies (COTS). These systems are less costly and scalable for the growth of both the volume of trade and the number of participating government agencies. The following is a representative list of the many systems on the market. These descriptions are taken from the Internet web sites of the respective companies.

MicroClear® by ICS

The ICS Group assists governments in enhancing their trade revenues while maintaining controls and facilitating trade. The Group provides solutions through the deployment of its flagship product, MicroClear®. Using Microsoft technologies, the basic solution offering includes MicroClear Customs, MicroClear Tax, MicroClear Trade, and a host of optional e-services such as processing of VAT and taxation, passport, driving license, personal ID card, tourist help, business intelligence and others. MicroClear Customs is the flagship product of ICS and includes, but is not limited to, the following functionality: Manifest & Declaration, Risk Management & Post-Clearance Audit (PCA), Inspections (Quantity and Quality) & Document Review, Valuation & Duty Assessment, Integrated Tariff (Single Window), Credit and Collection of Fees & Penalties, Decision Support (Reporting) and Customs Quality Control (CQC - Internal Audit for Customs Staff performance and efficiency).

For importers who do not have a broker/agent and lack access to the Internet or computer equipment, ICS will provide, upon agreement with the customs administration, Customs Data Capture assistance by placing a few of its own staff in each customs location. Importers will bring their commercial documents and the ICS staff will help them with data entry into the MicroClear Price Research System. Since this system also allows the uploading of scanned documents, the ICS staff will also help importers with the scanning of their commercial documents.

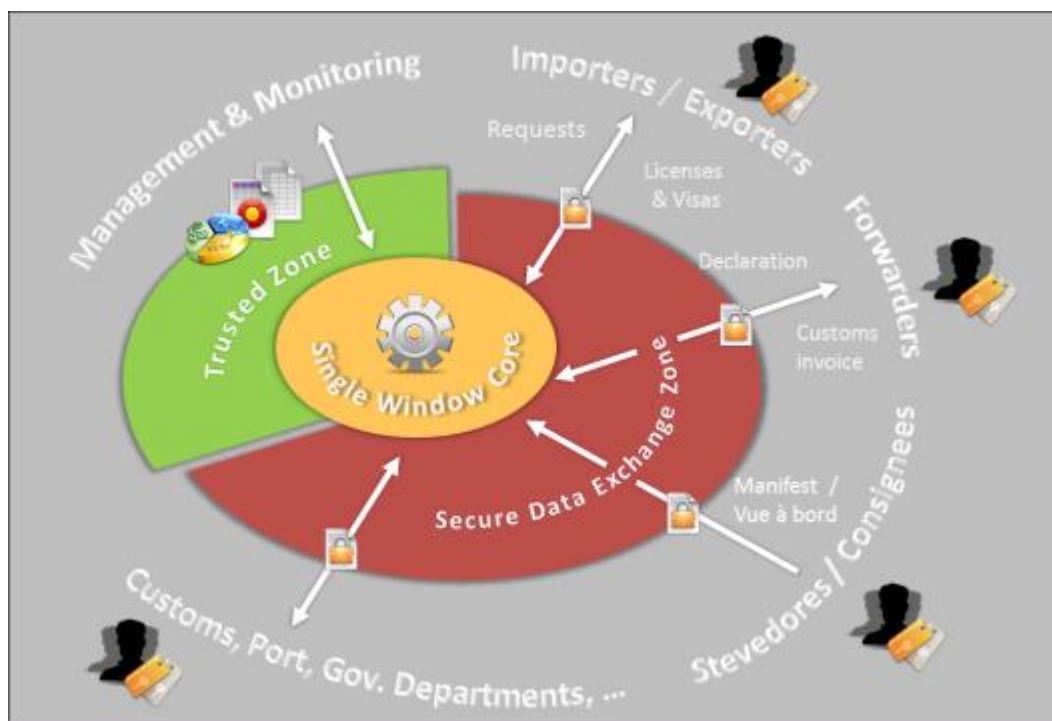
Bureau International Maritime

BIM offers tailor-made solutions to the public and private sectors in the areas of training, certification, security, cargo tracking, and single window using new technologies.

Using Microsoft technologies BIM creates single window solutions for all parties involved in trade and transport to lodge standardized information and documents with a single

entry point to fulfill all import, export, and transit-related regulatory requirements. BIM has developed a Single Window Application for the Republic of Congo called GUMAR.

Figure 1: BIM Single Window Application



TradeNet®, Singapore Customs

Since its inception in 1989, CrimsonLogic, owned by the Singapore government, is the developer and operator of TradeNet®—the trade network that brings together the functions and requirements of controlling agencies. TradeNet® allows businesses to apply for and receive trade permits within 10 seconds via the Internet. Ninety-five percent of all trade permits are processed within one minute while 97 percent of permits without customs declaration are processed within seconds. Studies have shown that TradeNet® generates an estimated savings of US\$1billion for Singapore’s trading community.

GET Group

ADVANCE (a.k.a. Automated Documentation and Valuation for Customs Entries) reflects the evolution in Customs and Trade Operations Automation. As the flagship in GET’s IT Solutions, it is a modular Customs Management System built on the latest Microsoft technology platforms preserving the scalability of any further upgrades. *ADVANCE* is an international Customs

Management System compliant with the international standards governed by WCO, WTO, and the United Nations in addition to other regional standards. *ADVANCE*:

- Encompasses different modules which serve to capture customs and trade transactions and liaise between the various stakeholders involved in the customs clearance and trade cycles;
- Admits a single window platform which allows all stakeholders from shippers, carriers, consolidators, clearing agents, self-declarants, banks, government bodies and others, to lodge their transactions and documents in a unified collaborative workspace. This can be done with a single point of contact allowing the customs processes to be adapted and fulfilled quickly, so that it would be cost effective on the investments of traders and a revenue generator for the customs authorities;
- Offers a unified workspace by allowing the integration of disparate legacy systems and fetching the required data into its unified database. For instance, the shipping agency would lodge its manifest data to the national customs authority electronically with a seamless compliance with the Electronic Data Interchange Standards and Policies, while maintaining the shippers' existing legacy systems.

Microsoft

Microsoft applies cloud computing principles to electronic single window. The term “cloud computing” refers to several different computing paradigms, not all of which are completely new. For example, as the U. S. National Institute of Standards and Technology (NIST) has explained, cloud computing has three service models:

1. *Software as a Service*, through which applications are provided in the cloud;
2. *Platform as a Service*, through which a cloud provider permits users to create or run applications using languages and tools supported by the provider while the provider delivers the underlying infrastructure such as servers, operating systems, or storage; and,
3. *Infrastructure as a Service*, through which a customer can deploy a computing infrastructure similar to a virtualized environment.

The essential characteristics of all three models include self-service (a customer can access new capabilities), shared resources, and rapid elasticity (i.e., as a business grows, it can rapidly add additional processing power and storage).

Additionally, cloud computing provides IT resources, as a service, in a dynamic and scalable manner over a network. It has five essential characteristics:

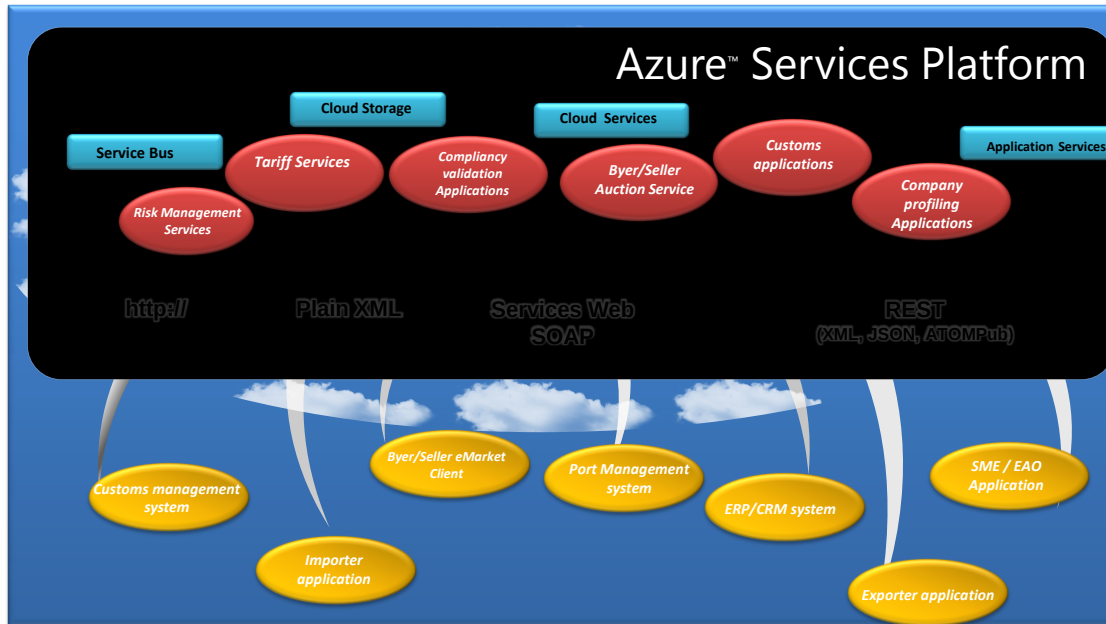
- On-demand self-service;
- Broad network access;
- Resource pooling;
- Rapid elasticity;
- Measured service.

Cloud computing can reduce cost, simplify management, improve services, provide transparency, and allow citizen interaction flexibly, as governments transform how they serve their citizens. Government organizations can improve transparency while addressing administration goals of scalable, interactive citizen portals, collaborate more easily across organizations, and deliver volumes of data to citizens in useful ways.

Microsoft also knows that highly secure data storage and access control are crucial for government and education. It designs cloud computing services to meet and exceed internationally recognized access control standards. Twenty million businesses and over a billion people use Microsoft cloud services. The company and its partners are committed to delivering a broad set of enterprise-ready products and business solutions that build on what the user already knows. For eCustoms and eTrade proposed solutions, Microsoft uses, depending on the scenario: Software as a Service, or SaaS, and/or Platform as a Service, or PaaS.

Figure 2: Cloud Computing for ESW

Customs, Trade facilitation and Cloud Computing
inclusion of the SME's



<http://www.microsoft.com/en-us/cloud/cloudpowersolutions>

ASYCUDA

Founded and owned by the UN Conference for Trade and Development (UNCTAD) in the early 1980s to automate the operations of Customs Administrations, the UNCTAD ASYCUDA Programme has become the leading medium of Customs modernization worldwide. The ASYCUDA software is today the core component of comprehensive, Integrated Customs Information Systems in more than 80 countries.

The main objective of the program is to assist countries to achieve a global aim—facilitation of trade—by strengthening the customs administrations' operational capacity to carry out their fiscal and control missions through the implementation of modern and reliable systems. The ASYCUDA business strategy follows the founders' strategic objectives:

- ASYCUDA should assist customs administrations' modernization and reforms, by supporting both facilitation of legitimate trade and efficiency of customs clearance controls;

- ASYCUDA must implement harmonized codes, international standards, simplified procedures etc. The expected basic outputs are a uniform application of the customs law and regulations, a better command on the collection of duties and taxes, and the availability of timely and accurate statistics;
- ASYCUDA should fit the requirements of all customs operations worldwide: A unique, parameterized system, which brings a vast economy of scale, allowing UNCTAD to propose very cost-effective solutions. Country-specific requirements must be fulfilled provided they are not incompatible with objective 2. In addition, any specific enhancement of ASYCUDA must maintain the functional and technical coherence of the system;
- ASYCUDA is provided by UNCTAD at no cost. The implementation of the system is carried out through UNCTAD Technical Assistance projects, comprising general support activities, training, documentation, and/or specific product developments on a cost-recovery [non-profit] basis;
- ASYCUDA products should match highest quality standards of the industry. In order to do so, the ASYCUDA software will make use of latest reliable technologies available on the market.

The implementation of these strategic concepts has led to the development of three major versions of the software product, ASYCUDA Ver. 1, ASYCUDA Ver. 2 and ASYCUDA Ver. 3 (ASYCUDA++), and the current development of ASYCUDAWorld.

Axway

The Axway solution suite includes the following:

- *Synchrony Integrator*. A core component of the B2B solution, Synchrony Integrator is responsible for document validation, translation, and automation of trade processes. It supports any-to-any document formats such as EDIFACT, ANSI ASC X.12, CARGOIN, XML, Excel, ASCII, etc. In addition, it also defines routing rules such as who is to receive what documents, when, and how. The entire process is automated to achieve straight-through processing. Synchrony Integrator also supports Unicode character sets for non-English documents.
- *Synchrony Gateway*. This component handles the external communications with trading partners by providing secure and reliable delivery through a wide range of supported B2B

protocols and standards such as EDI, FTP/s, HTTP/s, SMTP, AS1, AS2, and ebXML. It also provides high-quality service in terms of availability and reliability, thus enabling DTTNCo to propose and meet high levels of service with their partners and customers.

- *Synchrony Passport.* This component has two modules: the Trading Partner Management (TPM) and Public Key Infrastructure (PKI) Server. TPM provides functionalities to help DTTN manage partner profiles. In addition to managing partner information, the PKI infrastructure delivers keys and certificates to all Synchrony components engaged in B2B transactions. Playing the role of a certificate authority, it enables the capability to guarantee such security features as data confidentiality, integrity, and non-repudiation.
- *Synchrony Sentinel.* A comprehensive Business Activity Monitoring (BAM) solution, Sentinel provides the capability to manage events and non-events, filters and correlate events, parse documents, build key performance indicators (KPI), display business dashboards, and create alerts. In a B2B context, it gives both end-to-end visibility and detailed audit trail over all business transactions for the purposes of SLA fulfillment and compliance proof. Based on predefined rules, Sentinel can alert HP BTO to send out a warning if an error or non-event occurs.

Tradelink Electronic Commerce Limited (Tradelink)

Tradelink, a company partly owned by the Hong Kong government, is engaged in the provision of front-end government electronic trading services (GETS) for processing certain official trade-related documents. Using the Axway software, the company offers services, such as government services, including import and export trade declarations, dutiable commodities permit, certificate of origin, electronic cargo manifest, production notification and textiles trader registration scheme; commercial services, including electronic shipping order service, automated manifest service, Hong Kong-China cargo manifest interface and traders documentation service, and ebiz services, including online transaction services, customer services and Tradelink eBiz. It offers four groups of software solutions: LogiNet Deluxe, ValuNet Deluxe, Trade Declaration Webform and TradeConsole.

To implement the single window platform, DTTNCo turned to a joint solution from Axway and HP (U.S. private companies). Axway supplied the B2B solution suite and HP designed and deployed the underlying server, storage, and network infrastructure for the DTTN platform and acted as the prime contractor and program manager.

HP services spanned initial requirements, system analysis and design, security, system development and integration, testing and deployment of the DTTN network and server infrastructure. HP also managed a smooth hand-over of the production-ready platform. HP Business Technology Optimization (BTO) software provides a single, centralized point of visibility and control for monitoring and managing system and network operations, security, performance and capacity, and data backup and restore.

DTTN now serves an extensive community of buyers, sellers, freight forwarders, carriers, terminals, banks, insurance institutions, inspection companies, and the government. The platform benefits the Hong Kong business, including small and medium enterprises, in reducing administrative costs, improving supply chain efficiencies and providing global visibility, as well as track and trace services.

Accenture

Accenture has extensive experience partnering with government organizations in the field of revenue, customs and border management, with over 2,100 professionals having successfully worked with more than 80 agencies and departments worldwide. They have experience in strategy definition, business process definition, and system development. Accenture has developed strategies and delivered innovative solutions to fit the needs of Customs clients looking to improve service today and in the future. Their relationship with the world's leading technology companies means tailored solutions that take advantage of existing resources whenever possible. They can also ensure that the chosen technology will scale to grow with the administration as needed.

Inner Circle Logistics

Optimizing business processes using Internet technologies is crucial to twenty-first century success. Adhering to the global standards sought by UN Recommendation 33, WB, WTO and WCO, ICLogistics' solutions integrate AIDC/GPS/Rfid technologies with the added flexibility of combining data elements with electronic trade documents that can be entered and distributed in multiple languages. Leveraging the revolutionary way that the Internet has changed business functioning, ICLogistics provides services to help firms or agencies create a state-of-the-art data and document exchange system that is scalable across partners, links to existing ERP systems, and secure across users types. This capability delivers significant cost savings, international reach, and an unprecedented level of access to critical supply chain information.

Unisys

Customs and Excises departments in all European Union member states are undergoing a fundamental transformation. Globalization of trade and the increased importance of security since September 11, 2001, make it necessary for customs and other government agencies to change their approach to border management. Agencies need to react faster, and a single agency should engage in the role of coordinator. Fast and reliable data gathering and analysis are core elements in this new role.

Unisys is developing an application for a paperless service, involving more than transferring paper declarations and documents into a computer. It recently embarked on a major upgrade of its computer-based operations system, the ASYCUDA World (e-Customs) Project. Under this project, Unisys will integrate five major systems, i.e., BOC Portal, Import and Assessment System, Export Processing System, Operations Support System, and Enterprise Resource Planning/Customer Relationship Management System. This multimillion dollar project aims to provide BOC the requisite ICT-based tools to enhance its core and support systems, including hardware and network infrastructure, in seaports and airports nationwide. These enhancements will support and strengthen BOC's core functions of trade facilitation, revenue collection, and law enforcement.

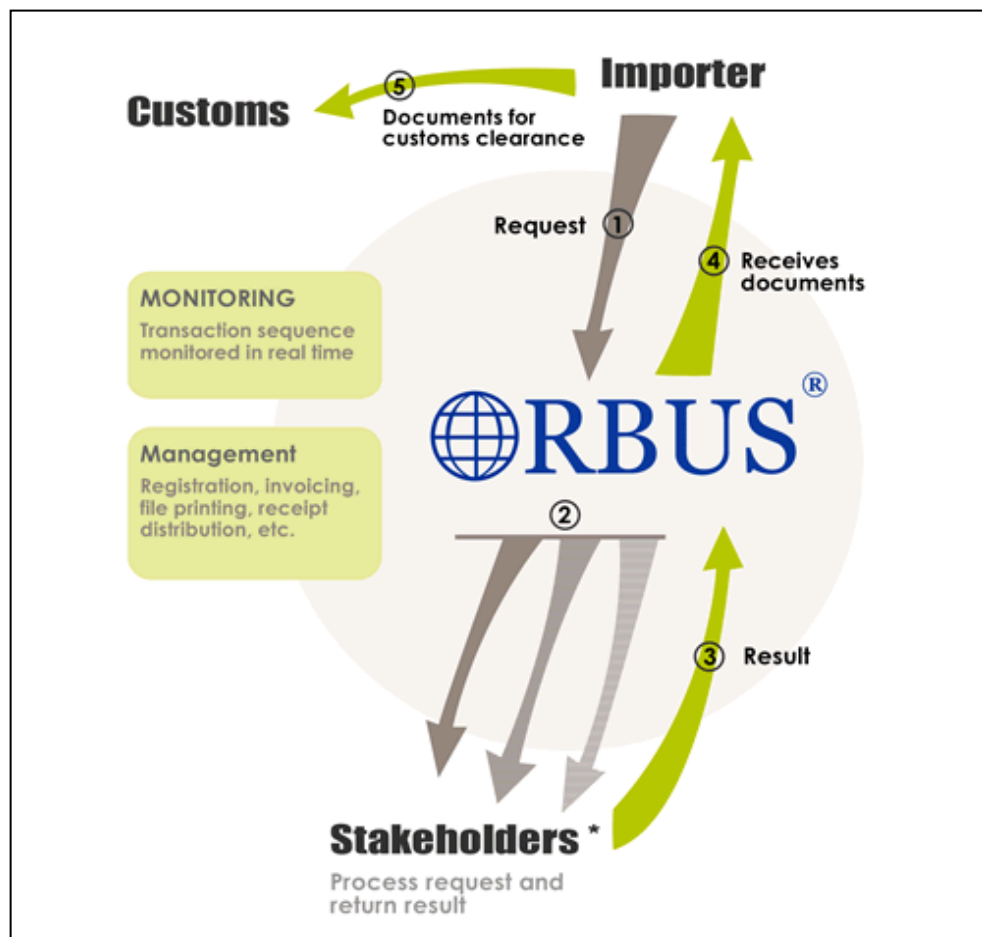
The BOC, an agency attached to the Department of Finance, is mandated to assess and collect for the government the correct amount of duties and taxes on imports, facilitate the release of imported cargoes to the manufacturers/traders, and protect society and the environment from prohibited and harmful substances. In support of these functions, BOC intends to be more responsive to its clients' needs and more supportive of the government's goals.

Also included in the solution is the modernization and rehabilitation of chosen offices in BOC such as the Port of Manila Formal Entry and Cash Divisions, the Information and Communications Technology Center (ICT Center) and the Management Information Systems and Technology Group (MISTG) offices in the Metro Manila ports. Unisys will also provide technical, implementation, and operations support services in the initial efforts towards a sustainable Customer Relationship Management System and ISO Certification Plan, change management, comprehensive training programs, and system maintenance.

Senegalese GAINDE 2000

GAINDE 2000, created by the government of Senegal, worked with technical partners both at the national and international levels to create and maintain the ORBUS electronic single window. ORBUS is a tool facilitating the electronic collection of pre-clearance documents. The platform interconnects all the administrative bodies involved in the processing of import/export formalities and enables stakeholders to lodge their requests through a single electronic form. All the processes are automated and the results are available in soft format, with the possibility of printing hard copies. The solution is flexible and modular, and is very likely to comply with the different technical, organizational, and geographic constraints.

Figure 3: ORBUS Flow Chart



<http://www.gainde2000.sn>

An organization willing to modernize its information system seeks to scale up its performance and secure a return on its investments. GAINDE 2000 follows this logic and adopts a follow-up policy in the implementation of its solutions, involving the end client and future users in each

step of the project. As part of South-South cooperation and a memorandum of agreement signed in November 2004, GAINDE 2000 has, since then been assisting the Kenya Revenue Authority (K.R.A.) in the implementation of its customs automation systems. The single window is in the heart of international recommendations concerning trade facilitation. Thus, GAINDE 2000 and K.R.A. have agreed to set up a joint venture assigned the mission to run the single window in KENYA.

Figure 4: GAINDE Functions



<http://www.gainde2000.s>

IBM Customs, Borders and Revenue Management (CBRM)

As a market-leading customs solutions architect, integrator, and service provider, IBM and its business partners have the capabilities not only to help implement solutions but also to provide services necessary to transform current systems and architecture. This approach is incremental, introducing solutions that can be integrated seamlessly with existing systems. To facilitate the transition to e-customs, IBM has developed a solution framework to be a guide for integrating components on a standard platform. The vision behind the framework, which is shown in Figure 1, is to allow multiple independent providers of solutions to supply content that can be integrated seamlessly into an existing platform. Integration is based on the open principles of a service-oriented architecture (SOA) in which the components offer well-defined services that can be reused across solutions.

- A solution map that identifies components and their relationships;
- An industry model that captures the industry commonality in a set of standard processes, services, and data across the components;
- A technical reference architecture that standardizes the platform on which components run.

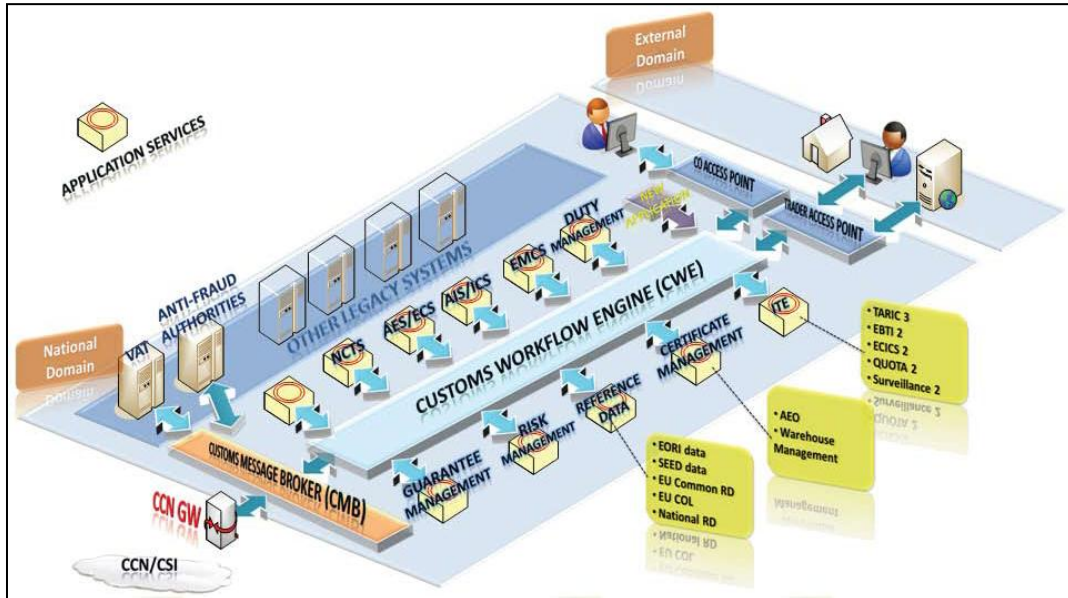
The advantages of the SOA-based integration of solutions are extended by customization options that range from simply adapting business rules, to implementing standard models, to full control of the components from a standard development environment. This approach supports

incremental transformation through a step-by-step introduction of platform and components that can come from various sources.

IBM partners with INTRASOFT International, S.A., which has demonstrated expertise in the customs sector through the building, integration, deployment and operational management of specific customs information systems across Europe. The company's offerings cover all facets of customs requirements, including the provision of technical expertise, computerization of customs processes to reflect local and European Union legal requirements, and management consulting for streamlining customs processes. INTRASOFT International's competitive advantages include:

- In-depth knowledge of all business and technical details;
- Recognition by all member states' customs authorities as a reliable and reputable contractor;
- Efficient operations with DG TAXUD and with the majority of member state administrations in the context of consulting activities and training;
- The execution of projects for the development of other national systems (e.g., transit systems and export control systems).

Figure 5: IBM System Flow Chart



<http://www-01.ibm.com/software/solutions>

The Webb Fontaine Group

Headquartered in Dubai, UAE, and with offices throughout the world, Webb Fontaine specializes in improving government services through e-government systems, business process reengineering, and leading-edge information technology. Webb Fontaine provides a comprehensive suite of e-government software products, management consulting from domain experts, and information technology, telecommunications, and infrastructure services. Transactional and analytical e-Trade through single-window models:

- Capacity building and customs modernization;
- Executive information systems and business intelligence analytics;
- Valuation and risk management services;
- Provision and implementation of IT, telecom, and infrastructure solutions;
- Implementation of end-to-end e-trade systems (E2G, G2G, B2G) using single window model.

Webb Fontaine has extensive experience in the field of capacity building and customs modernization. We have leading experts in this field, with many years of international experience. Alongside our real-time monitoring and business intelligence system, Government Executive Vision, we provide the real-world experience and background in revenue, trade

facilitation, and security, with specific expertise in such fields as classification, valuation, and risk management. This unique combination of services offers governments a new vision to protect their national market and to create an enabling trade environment.

Webb Fontaine have extensive experience building comprehensive infrastructure to support high-performance technology systems, from the ground up, in environments that previously did not have the capacity. It can provide procurement and configuration of specialized equipment, as well as design and implementation of telecommunications infrastructure to support high-technology operations. From radio and satellite communications, to virtual private networks, to even design and construction of office facilities, it can create the supporting infrastructure to modernize ICT environments. It has experienced project managers and development teams that can implement end-to-end e-Trade systems (E2G, G2G, B2G) using the single window model with the latest technology to implement the software solutions that best fit the client's needs.

Arctic Group

For nearly 20 years, Arctic Group has developed intelligent customs solutions for customs administrations, mainly in Europe, but Arctic Group also has experience working with customs administrations on three other continents. By collaborating with Arctic Group, an administration can achieve huge savings and provide better services to their stakeholders.

CGI

CGI is a German systems integrator that provides single window government (SWG) solutions. The CGI SWG vision is to enable consolidated service delivery across multiple channels and platforms to provide excellent customer service, regardless of the channel chosen. Through the experiences of the long-time partnership with Service New Brunswick, we have developed a center of expertise that encompasses the methodologies, best practices, architectural framework, and software tools to support any SWG initiative. These repeatable frameworks lead to rapid deployment, increased customer satisfaction, measurable process improvements and cost savings. CGI is a world-class leader in IT and business process services. Through our focused industry expertise in financial services, government, healthcare, telecommunications, utilities, manufacturing and retail and distribution, we offer end-to-end services including systems integration, strategic consulting, business solutions, and the full management of IT and business functions. CGI has extensive experience in working across public and private sector organizations to develop online environments that have high adoption rates and deliver high value.

Booz Allen Hamilton

Booz Allen Hamilton assists governments in fostering prosperous economies and resilient, stable democracies. It works with government-sponsored agencies, development banks, not-for-profit organizations, multilateral institutions, and foreign governments to improve the lives of citizens globally through local empowerment and development. For nearly half a century, Booz Allen has addressed the world's most complex development challenges. It helps clients resolve systemic global development needs with tailored strategies across the areas of trade, micro-enterprise, competitiveness, democracy and governance, judicial reform, economic integration, fiscal and monetary policy agenda setting, tax reform, public health, privatization, infrastructure, and technology-based transformation.

Booz Allen provides thought leadership and apply management consulting know-how to the international development context, using integrated, transformational, and holistic methodologies. The U.S. Agency for International Development (USAID), U.S. Department of State, Millennium Challenge Corporation, World Bank, and international governments have recognized its engagements. It worked with USAID to help modernize the customs system in El Salvador aimed at lifting barriers to trade and boosting domestic and foreign direct investments.

Crown Agents

Crown Agents' customs and trade facilitation team works in partnership with clients to improve the ability of their trade and customs authorities to support economic growth and development, by fostering inward investment and international trade.

The key to its success is the ability to evaluate the impact which regulatory authorities have on commerce and provide relevant solutions. Our expertise spans a country's international trading environment: from improving trader compliance, increasing revenue collection, and improving risk management and security, to building transparency and integrity and strengthening organizational capacity. Team members come from a wide range of backgrounds, ensuring a strong knowledge base in all relevant areas.

Crown Agents supports governments to meet international and regional obligations and standards for trade, and keep a close eye on global and regional trends in areas such as coordinated border management, single window, one-stop border posts and trade corridors, so as to assist our clients to select the most appropriate solutions for their needs.

Crown Agents' approach to consultancy and project management focuses on understanding that each client is unique, and adapting to address individual requirements. Crown Agents believes that combining international expertise and local knowledge with the client's practical experience achieves the best results. Through close collaboration and intensive support

throughout the life of the project, it transfers knowledge and skills to build organizational capacity and achieve integrated and sustainable results.

TATIS International (Pty) Ltd.

Customs and tax authorities worldwide are typically driven by the following often contradictory goals: trade facilitation, revenue collection, and risk management. These organizations are required to act as gatekeepers, to protect the country from a wide range of threats, while at the same time facilitating trade and collecting revenue. The goal of facilitating trade implies a quick and efficient clearance service, while protecting the country against risk and the accurate collection of revenue from customs duties could mean the exact opposite. Customs organizations are thus faced with performing a fine balancing act between these opposing goals.

The concept of Integrated Revenue Management Services, where customs and tax authorities are effectively integrated, is becoming common practice. These inter-authority and agency collaborations are often incorporated within a single window concept. Taxpayer profiles could provide valuable trader information for customs authorities in ascertaining risk decisions.

Customs modernization is also extending its collaboration toward other government agencies where information sharing is becoming a major benefactor in trade facilitation and retaining regulatory compliance. This collaboration could include agriculture, farming, health, standards and immigration authorities. In the process of moving towards a paperless environment, through e-customs services, compliance must be maintained. TATIScms complies with World Customs Organization (WCO) guidelines, such as the revised Kyoto Convention and EU regulations. Customs authorities in EU countries are in the process of implementing the Multi-Annual Strategy Plan (MASP). TATIS is involved in implementing the MASP program for Luxembourg.

TATIS Solutions and Services

TATIScms is a system built on sound principles, using the latest technological architecture, that conforms to international best practices that can form the core of a customs modernization program. Integration with legacy and other government systems also means that TATIScms can be used as part of a single window solution enabling Traders to access all import- and export related services through interaction with a single system.

The open standards architecture provides integration to other revenue collections systems enabling the future for Integrated Revenue Management Systems (IRMS). As a technology

provider, TATIS is well aware that technology in itself is not the proverbial silver bullet required to meet all the demanding, multi-faceted, functional, and operational needs required by customs operations.

Technology is but one dimension. Policy, people, processes, and information are the other dimensions making up an implementation framework within which the solution needs to be designed and delivered. TATIS' software architecture and engineers have shown that they can compete with the world's best.

TATIS's current involvement in the European Union and South African Revenue Services attests to its ability to provide innovative, flexible, and robust solutions on any technology platform. TATIS provides customs and tax authorities with a platform to build their future customs modernization strategy.

The TATIS approach is based on global standards and best practices, as exemplified by the conventions and agreements promulgated by the WCO. It focuses on the human control behind the trade transaction, and supports customs organizations and their management in the deployment of resources to meet the challenges of international trade described above. Its solutions embody the latest business practices developed in the WCO and build on the best practices of leading administrations around the world. For example, it is progressively incorporating all the necessary functionalities to enable EU customs bodies to meet the challenge of integrating information and computer systems as the 21st century customs union takes shape in the heart of the European continent. A typical customs administration has a responsibility to facilitate legitimate trade through maximum transparency and procedural efficiency. At the same time, it must protect national security at its borders, and enforce a range of health, safety, and economic regulations.

The TATIScms (Customs Management Solution) automates the risk analysis process while improving efficiency, accountability, and transparency and simultaneously facilitating trade development. This enables customs to respond to the conflicting demands of a challenging and increasingly complex operating environment. Furthermore, TATIScms is designed to integrate seamlessly with a range of back-office systems and to operate on various technological platforms. Far from constraining client administrations to work in a particular way, it starts from their technological and business practices and weaves solutions into the fabric of their organization. TATIS is continuously monitoring the recommendations, best practices, and

regulatory decisions of global regulatory bodies. This ensures, for example, that its customs valuation solutions are compliant with the current WTO Agreement on Customs Valuation (ACV) as well as best practices adopted by the WCO under the Revised Kyoto Convention. Its modules that process import and export information are fully compatible with the security-related control requirements reflected in the WCO's SAFE framework and the related programs implemented by such standard-setting administrations as the U.S. Customs and Border Protection and the European Commission. By working within established practices, TATIScms achieves accurate and timely reporting of goods, which assures customs administrations of the availability of all the necessary information that forms the basis of customs targeting capabilities and ensures maximum facilitation for legitimate trade.

VI. Steps for Implementing Electronic Single Window

These steps are adapted in part from UN/CEFACT *RECOMMENDATIONS NO. 33, 34 and 35*⁷ and from the USAID publication, *Single Window Business Process Improvement Guidelines and Implementation Guide Jordan Customs Administration Modernization Program*, December 2008.

There is no one way to approach the task of developing and deploying an ESW. As stated above, the authors of this study reviewed many different approaches and methodologies. The results of that review are a simplification of what is a difficult and complicated process. Key to successful implementation of ESW for border integration is the creation of a strategic plan that addresses the many issues outlined in this and other similar studies about coordinated border management. The following are the basic steps to develop and deploy an ESW:

- Establish a project team tasked to develop a project management plan, which must be formally agreed by all parties. That plan should contain:
 - a set of clearly defined interrelated tasks;
 - event milestones to assist in the planning execution, monitoring and evaluation, and adjustments to project implementation.
- Develop implementation options:
 - specifying proposed operational models;
 - relevant governmental authorities and agencies that would be involved;

⁷ Ibid, 1

- suggested lead governmental authority or agency or private organization;
- services to be provided;
- potential costs and benefits;
- potential sources for funding;
- time frames for implementation.
- Project deployment:
 - Step One: ***Focus on the Business Process, Not on the Function***. It is critical to identify border functions essential to carrying out agencies' responsibilities. Once this has been done, the focus must shift to the processes required to perform those functions, because they are the means by which the organizations interact with other agencies and organizations;
 - Step Two: ***Develop a Process Profile***. Most processes in an organization are not fully documented, making it very difficult to accurately identify improvement opportunities. To the extent possible, utilize accepted business process improvement practices.⁸ In documenting processes, agencies need to follow the 80/20 rule. The application of this rule is obvious when applied to improvement initiatives because:
 - 20 percent of the processes use 80 percent of the resources;
 - 80 percent of the results are generated by 20 percent of the activities, and
 - 20 percent of the problems represent 80 percent of the improvement opportunities.

The Project Team should quickly identify a few resource-consuming processes as priorities for documentation.
 - Step Three: ***Process Mapping***. Have the processes been designed or have they evolved? In most agency administrations, the business processes were designed years ago. Most officials perform processes in the way they were taught. Over time, no one has ever gone back to review what is being done or why. Whatever was originally documented has since changed. As a result, most employees have

⁸ *Business Process Management: Practical Guidelines to Successful Implementations*. John Jeston and Johan Nellis; Butterworth-Heinemann; 2nd edition (March 24, 2008) **ISBN-10:** 0750669217.

never seen a visual representation of their work and do not know what is done before or after their own work. They don't know how they fit into the big picture.

A process map is a visual image of the way work is performed, showing:

- Who performs what activities;
 - How inputs to a process become outputs;
 - How work flows and how rework loops back again and again;
 - When decisions need to be made;
 - What information is needed to support the process.
- Step Four: ***Measure the Processes***. Process measurements allow agencies to determine current performance levels and establish quantifiable improvement targets. There are at least seven quantitative measures that can be used to determine the effectiveness of most business processes:
1. Cost: The total cost of each activity in a process;
 2. Unit cost of process outputs: The cross-functional cost of producing tangible outputs;
 3. First pass yield: The percentage of transactions that make it through the process without being reworked, revised or rejected;
 4. Cost of rework: The cost of fixing the revised, reworked or rejected result;
 5. Process Cycle Time: The time required to generate a deliverable, such as minutes, days, weeks or months;
 6. Actual Cycle time: The time spent generating an output with no waiting or rework;
 7. Handoffs: The number of hands an item goes through and the activity at each hand (e.g. the number of signatures required on each document).
- Step Five: ***Studying other Administrations' Processes***. Ideas or proven processes in other agency administrations can provide invaluable information and save time, and possibly prevent mistakes. Examine case studies and best practices.
- Step Six: ***Process Redesign***. Using the information gathered from the previous five steps, the Project Team can now map out the new processes, eliminating redundancies and duplicating work activities.

- Step Seven: ***Balance Processes and Technology.*** In most organizations, information systems are very closely tied to the way work is performed, but technology should be seen as a tool and not, in itself, a driving mechanism for change. *Automating a manual process will not necessarily make an inter-agency administration more productive, and automating an ineffective process will simply get poor results faster.* The Project Team should ensure that in improving processes and exploiting technology, the process review should come first so that technology recommendations can be based on its findings.
- Step Eight: ***Manage Process Change.*** The Project Team should manage change through prior identification and assessment of associated risks. There are many possible effects from change, and the Project Team should concentrate on those that are:
 1. Highly desirable but unlikely without specific actions, and
 2. Highly undesirable, but very likely without sufficient attention.
- Step Nine: ***Prepare People (Staff and Clients) for Change.*** Most staff resist change out of fear of what the future will bring, rather than from any positive attachment to the current process. The role of those who lead change is difficult and thankless; little training is available and there are few available role models for guidance and advice. Ideally, a formal Change Management Program should be provided for employees, which should follow a three-stage process to bring about acceptance of a change initiative:
 1. People need to intellectually understand the need to change. As much participation as possible will aid understanding. Organize structured training to:
 - a. Update staff with any future changes;
 - b. Provide refresher training where required;
 - c. Train employees when job roles change;
 - d. Conduct periodic quality audits.
 2. People need to become emotionally engaged in change because they see the improvement possibilities and benefits.

3. People need to take personal action as participants and not be simply observers.
- Step Ten: ***Continuous Process Improvement***. Business process re-engineering is time-consuming, costly, and strenuous. Although change is sometimes mandatory, a culture of continuous process improvement will ensure that small improvements happen all the time and big changes happen infrequently. The job tasks of every employee should include:
 1. Continuous assessment of the situation and measurement of the change process;
 2. Identification of improvement opportunities, concentrating on high-leverage improvements yielding the greatest return;
 3. Prompt action when improvement opportunities are identified and offer quick and tangible results; and,
 4. Measurement of results, translating change initiatives into quantifiable results.
 - Step Eleven: ***Identify Funding Options***. There are multiple models for funding an ESW. Those models are described in the previous JBC study on *Coordinated Border Management*⁹ and include self-funding, grants, and loans from development banks (e.g. IDB), fee for service, and combinations of each.
 - Step Twelve: ***Identify Technology Specifications***.
 1. Project Team create detailed specifications;
 2. Determine resources available;
 3. Scope of coverage.
 - Step Twelve: ***Interview And/or Engage Technology Providers***. Vendors are quite willing to discuss their systems and products in some detail. Take advantage of that service and request two or three vendors to conduct a brief needs assessment based upon specifications provided.
 1. See list of potential vendors
 - Step Thirteen: ***Procure Technology***.

⁹ Interoperability at the Border; Coordinated Border Management; Best Practices & Case Studies; IDB Report, February 2010; JBC International, Washington D.C.

1. Clearly state specifications
 2. Carefully consider timetables for delivery
 3. Resist desire for more functionality than needed to meet new business processes
- Step Fourteen: ***Develop an Implementation Timeline and Deploy in One Port as a Pilot***
 1. Working with the technology provider, develop a timeline¹⁰ for the development and implementation of ultimate system.
 - As part of the timeline determine milestones and incremental deployment goals;
 - Identify single Port to test initial functions in short time frames, e.g. 3 to 6 months to demonstrate certain key applications.
 2. Have Team including technology provider meet with port management stakeholders (e.g., port operators, OGAs, carriers, traders) to include them in plans for pilot deployment
 3. Deploy
 - Step Fifteen: ***Deploy to Other Border Stations in Stages As Participating Government Agencies and Stakeholders Develop Capacity***

VII. Conclusion

This Report provides a brief explanation of integrated border management, the functions and applications to achieve that integration, and some of the benefits from adoption of the internationally accepted best practice of automating the collection of import and export data through a single electronic data portal. The section on existing systems in the region provides a snapshot of the progress being achieved by countries along with some of the challenges they face. For some the task seems impossible at most and formidable at best. This report addresses these challenges by parsing the process into manageable components. The old adage of how to eat an elephant is relevant here: “eat it one bite at a time.”

Planning is key. Many workshops and seminars outline the benefits and requirements for adopting an ESW, including the prerequisites to a successful system. This report provides a

¹⁰ Sample timeline is attached as Appendix A based upon level one of capacity.

more general list of those prerequisites but with the understanding that every country is different. One size does not fit all. That first step needs to be the plan that establishes the goals, followed by the process of achieving those goals. There really are no short cuts to this step.

The resources necessary to develop and deploy an ESW are available for the initial study and planning. They may also be available for procurement of equipment and training of personnel. Again, the key is to have a business plan that demonstrates the type of system needed and the long terms implications of its deployment. That plan should include all stakeholders, since many of them will benefit from its implementation and may ultimately being paying for its maintenance. Some of the sources of funding available for ESW include IDB, USAID, the World Bank, and other international financial institutions.

To assist this process, the report provides examples of the technology available and their vendors. Selecting technology is manageable; obtaining consensus to adopt ESW and changing process is much more difficult. Electronic single window implementation is all about business and NOT technology. Electronic single window is not about implementing a solution. It is about implementing *changes* for the benefit of all parties to increase national competitiveness.

References

Contributing sources of information for this study include a survey of selected customs and trade officials in IDB member countries, interviews with officials from the United Nations and national governments of countries currently implementing ESW systems, and interviews with ESW technology providers. The following documents and sources were also used:

Accenture, official website. *Single Window: Streamlining International Trade*. Retrieved 16 December 2010.

http://www.accenture.com/Global/Services/By_Industry/Government_and_Public_Service/Customs/Requirements/SingleRequirements.htm

Albarelo, S. 2004. *Guatemala Case Study: The Establishment and Operation of the Export Electronic Single Window*. United Nations Center for Technology and Development. Stockholm, Sweden.

Alburo, F. 2008. *Policy Coherence for Trade Facilitation: Integrated Border Management, Single-Windows and other Options for Developing Countries*. Asia-Pacific Research and Training Network on Trade (ARTNet) Working Paper Series, no. 57.

Annenberg, D. *Poupatempo Program: The Citizen Service Center and its Innovations*. Retrieved 10 November 2009 .

http://siteresources.worldbank.org/EXT/DEVELOPMENT/Resources/070918_Daniel.ppt?t=resourceurlname=070918_Daniel.ppt.

Arctic Group. *CPR (Customs Process Reengineering) methodology* . Retrieved 16 December 2010. <http://www.arcticgroup.se/english/customs/>

ARD, Inc. official website. *Introducing New Technology to Jordan Customs*. Retrieved 23 October 2009. <http://www.ardinc.com/projects/project.php?area=Regions&tid=844>.
Single Window Business Process Improvement Guidelines and Implementation Guide
Jordan Customs Administration Modernization Program; December 2008

Axway, official website. *Axway, A Single Window for Trade Facilitation*. Retrieved 17 December 2010. <http://www.axway.com/products-solutions/ps-overview/axway-synchrony>

Booz Allen Hamilton, official website. *Booz Allen Hamilton Development Consulting*. Retrieved 16 December 2010. <http://www.boozallen.com/consulting>

- Bruford, A. et al. 2009. "Special Report: Coordinated Border Management." *WCO News* 59 (June): 9-29.
- Bureau International Maritime, official website. *BIM Single-Window Application for the Republic of Congo*. **Retrieved 15 December 2010.**
<http://www.bimv.com/en/SingleWindow/>
- CGI, official website. *Single-Window Government*. Retrieved 16 December 2010.
http://www.cgi.com/files/white-papers/cgi_whpr_62_new_gen_egov_e.pdf
- CIA official website. 2009. *The World Fact Book*. <https://www.cia.gov/library/publications/the-world-factbook/>.
- Crown Agents. *Customs and Trade Facilitation*. **Retrieved 16 December 2010.**
<http://www.crownagents.com/customs.aspx>
- Doyle, T. 2009. *A Future Perspective of Border Management*. Presentation at the International Transport Forum, World Bank, and UNECE. Seminar on *Overcoming Border Crossing Obstacles*. Paris. 5-6 March.
- ECLAC and UNCTAD. 2006. *Modernization of Customs and Implementation of Single Window for Foreign Trade: Results of an International Seminar-Workshop*. ECLAC Bulletin: Facilitation of Trade and Transportation in Latin America and the Caribbean, no. 234 (February). <http://www.eclac.org/Transporte/noticias/bolfall/8/24378/FAL234.htm>.
- GAINDE 2000, official website. *Senegalese GAINDE 2000*. Retrieved 16 December 2010.
<http://www.gainde2000.sn/>
- GET Group, official website. *ADVANCE; Automated Documentation and Valuation for Customs Entries*. **Retrieved 17 December 2010.**
<http://www.getgroup.com/IT%20Solutions/Pages/CustomsManagementSystem.aspx>
- Global Facilitation Partnership for Transportation and Trade (GFP). 2005. *Integrated Border Management*. <http://www.gfptt.org> (June).
- IBM, official website. *Customs, Borders and Revenue Management (CBRM)*. Retrieved 16 December 2010. <http://www-01.ibm.com/software/solutions/soa/offerings.html>
- ICS Inspection & Control Services, Ltd official website. *Micro-Clear e-Government*. **Retrieved 15 December 2010.**
http://www.icsinspections.com/English/Products_ics.html
- Inner Circle Logistics, official website. *ICLogistics Services*. Retrieved 16 December 2010.

- <http://www.iclogistics.com/company.html>
- International Monetary Fund. 2005. *The IMF's Approach to Promoting Good Governance and Combating Corruption—A Guide*. Washington, DC: International Monetary Fund. 20 June. <http://www.imf.org/external/np/gov/guide/eng/index.htm>.
- International Bank for Reconstruction and Development. 2005. *Doing Business in Paraguay* 2006. Washington, DC. www.doingbusiness.org.
- International Bank for Reconstruction and Development. 2009. *Doing Business 2010: Organization for Economic Cooperation and Development (OECD)*. Washington, DC. www.doingbusiness.org.
- International Transport Forum, World Bank, and UNECE. 2009. Seminar on *Overcoming Border Crossing Obstacles*. Paris. 5-6 March 2009. <http://www.internationaltransportforum.org/Proceedings/Border2009/index.html>.
- ITDS. 2009. *Report to Congress on the International Trade Data System*. Washington, DC. September.
- Lallana, E. C. 2008. *e-Government Interoperability*. Bangkok Thailand: United Nations Development Programme (UNDP).
- Lane, M. 1998. *Customs Modernization and the International Trade Superhighway*. Westport, CT: Quorum Books.
- Lewis, G. 2009. *CAREC Seminar on Integrated Border Management and Joint Customs Controls*. Guangzhou, 17-19 February. <http://www.adb.org/Documents/Events/2009/CAREC-Joint-Customs-Control/JCC-Seminar-Gareth-Lewis-WCO-Presentation-en.pdf>.
- MetaMetrics, Inc. official website. *Jordan Customs and Administration Modernization Program (CAMP): Performance Monitoring and Evaluation Plan*. Retrieved 23 October 2009. <http://web.mac.com/rsurla/MetaMetrics.com/Jordan.html>.
- Microsoft, official website. *Cloud Power Tools & Resources*. **Retrieved 16 December 2010.** <http://www.microsoft.com/en-us/cloud/tools-resources.aspx>
- Millennium Challenge Corporation and USAID. 2009. *MCC Customs Administration Modernization Program—Summary of Results and Recommendations*. MCC and USAID. 15 January. http://jordan.usaid.gov/aboutus_docs.cfm.

Ministry of Information and Communication Technology; National Economic and Social Development Board; and Institute for IT Innovation, Kasetsart University Thailand. 2008. *Single Window Data Harmonization in Thailand*. Presentation at the AFACT 2008 Conference *Integrating Asia into one with Trade Facilitation & Electronic Business*. Seoul, South Korea. 16 October 2008.

http://www.thailandnsw.org/News/7_SW_Data_Harmonization_Thailand_Pitchaya_v1.0.ppt

OECD. 1997. *Freight and the Environment: Effects of Trade Liberalisation and Transport Sector Reforms*. Paris: Organisation for Economic Co-operation and Development. [http://www.oilis.oecd.org/oilis/1997doc.nsf/LinkTo/NT00000F42/\\$FILE/12E77628.PDF](http://www.oilis.oecd.org/oilis/1997doc.nsf/LinkTo/NT00000F42/$FILE/12E77628.PDF).

Program Components and Activities. Jordan Customs Administration Modernization Program. Retrieved 23 October 2009. <http://www.camp-jordan.org/components.shtm>.

Rinne, J. 2001. *Sao Paulo's Time Saver Centers*. World Bank. 23 August. <http://go.worldbank.org/IECJHCV720>.

1.1 TATIS International (Pty) Ltd, official website. *Customs Management Application (TATIScms)*. Retrieved 16 December 2010. <http://www.tatis.com/about-us>

Thoreau, H. D. 1849. *Resistance to Civil Government*. Boston.

TradeExchange®, Singapore Customs, official website. *TradeNet® System, a nation-wide Electronic Data Interchange (EDI) System*. Retrieved 17 December 2010.

<http://www.tradexchange.gov.sg/tradexchange/>

Mauritius Network Services official website. TradeNet. Retrieved 20 October 2009. <http://mns.intnet.mu/tradenet-trade-facilitation.php>.

Tradelink Electronic Commerce Limited (Tradelink), official website. *Tradelink Services: Government Electronic Trading Services (GETS)*. Retrieved 17 December 2010.

http://www.tradelink.com.hk/eng/government_svc.html

UNCTAD. 2005. *Trade Facilitation as an Engine for Development*. New York and Geneva: United Nations. http://www.unctad.org/en/docs/c3em24d2_en.pdf.

Modernizing Customs: the ASYCUDA programme. Retrieved 17 December 2010.

<http://www.asycuda.org/>

UNECE and UN/CEFACT. 2006. *Case Studies on Implementing a Single Window*. New York and Geneva: United Nations.

- UNECE and UN/CEFACT. 2005. Recommendations and Guidelines on Establishing a Single Window, Recommendation No. 33. New York and Geneva: United Nations.
- UNECE and UN/CEFACT. 2006. Recommendation No. 34. New York and Geneva: United Nations.
- UNECE and UN/CEFACT. 2009. Establishing a Legal Framework for International Trade Single Window, Recommendation No. 35. New York and Geneva: United Nations.
- UNECE and UN/CEFACT. 2006. *Single Window Common Standards and Interoperability Contribution to the Stakeholder Perspectives*. New York and Geneva: United Nations.
- UNECE and UN/CEFACT. 2002. *United Nations Layout Key for Trade Documents: Guidelines for Applications*. New York and Geneva: United Nations.
- UNECE official website. *Single Window PowerPoint Presentations*. UNECE and UN/CEFACT. Retrieved 13 October 2009 .
http://www.unece.org/cefact/single_window/sw_presentations.htm.
- Unisys: A Worldwide Information Technology Co, official website. *ASYCUDA World (e-Customs) Project*. **Retrieved 16 December 2010.** <http://www.unisys.com/unisys/>
- The Webb Fontaine Group, official website. **GOVERNMENT EXECUTIVE VISION™ (GEV)**. **Retrieved 16 December 2010.** <http://www.webbfontaine.com/products.php>
- World Customs Organization. 2000. *The Revised Kyoto Convention*. WCO: Brussels, Belgium.
- World Customs Organization. 2005. *Framework of Standards to Secure and Facilitate Global Trade*. WCO: Brussels, Belgium.
- World Customs Organization. 2006. Fact Sheet: *WCO Data Model—Version 2.0*. WCO: Brussels, Belgium.

Appendix A. Questionnaire
Electronic Single Window: Coordinated Border Management
Best Practices Studies

Question 1

Are you currently using any electronic border import and/or export systems to clear goods?

Yes___No___

Question 2

A. If yes to question 1, please briefly describe the technology/software used.

B. If yes to question 1, please briefly describe the functions performed by the system (e.g., customs clearance, export controls, cargo tracking, security, etc.).

a. Are any functions shared by other agencies?

Yes___No___

b. Does the technology support all users as a data center?

Yes___No___

c. Does the technology support all users as a risk management system?

Yes___No___

d. Does the technology support all users as a communication hub?

Yes___No___

e. Does the technology support all users as a clearance and control system?

Yes___No___

f. Briefly describe any other functions performed for other agencies.

C. If yes to question 1, are you satisfied with the functions performed? What other functions would you like to have in place?

D. If yes to question 1, briefly describe your plans for continuing to expand the system.

Question 3

- A. If no to question 1, please briefly explain why not (e.g., lack of funding, insufficient training, lack of support from stakeholders, etc.).
- B. If no to question 1, are there plans for developing and implementing an electronic single window (ESW)?

Yes____No_____

- a. Briefly explain.

Question 4

To acquire and implement an ESW, what would be most helpful by way of technical support information that can be provided in this report?

- a. [list topics]

Appendix B. Draft Timeline

