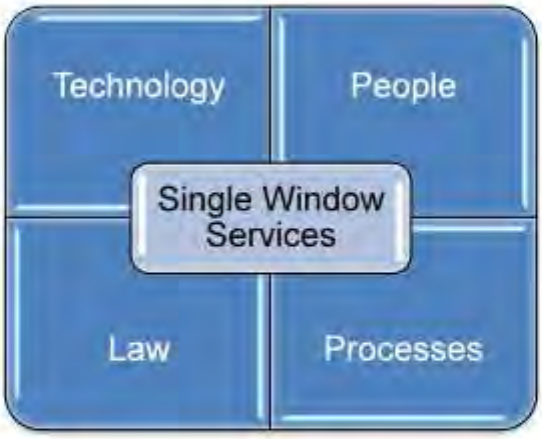
WCO COMPENDIUM

HOW TO BUILD A SINGLE WINDOW ENVIRONMENT



VOLUME 2 : THE PROFESSIONAL PRACTICE GUIDE

LIST OF ABBREVIATIONS

AEO	Authorized Economic Operator
APEC	Asia-Pacific Economic Cooperation
EBXML	Electronic Business using eXtensible Markup Language
EDI	Electronic Data Interchange
ICT	Information and Communication Technology
IEC	International Electrotechnical Commission
IMSC	Information Management Sub-Committee
ISO	International Organization for Standardization
MQ	IBM"s Message Oriented Middleware offering
OFTP	*Odette File Transfer Protocol*
PIN	Personal Identification Number
PKI	Public Key Infrastructure
SCCP	Sub-Committee on Customs Procedures
SSL	Secure Sockets Layer
UBL	Universal Business Library
UCR	Unique Consignment Reference
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNTDED	United Nations Trade Data Elements Directory
UN/CEFACT	United Nations Center for Trade Facilitation and Electronic Business

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CHAPTER 1: GLOBAL TRENDS IN SINGLE WINDOW IMPLEMENTATION

1. OVERVIEW

1.1 Introduction

In seeking to reduce regulatory inefficiencies, Customs and other border agencies have long deliberated on a concept called Single Window that would mean economic operators would only have to submit border regulatory information once rather than to several agencies. In essence, Single Window is about improving Coordinated Border Management (CBM). The World Customs Organization (WCO) has long touted the benefits of introducing Single Window systems and many WCO Members have worked to establish Single Window systems in their countries. At the 2010 Asia-Pacific Economic Cooperation (APEC) Sub-Committee on Customs Procedures (SCCP), APEC economies decided to conduct a survey to study Single Window implementation in the Asia-Pacific region. Following the release of the APEC survey findings, the WCO Secretariat undertook a survey which expanded the scope of coverage to a global level.

The purpose of this survey is to assist WCO Members in their development of Single Window systems by providing a snapshot of Single Window implementation. This study contains some features which are different from those of other previous Single Window studies. First, this survey is the first study of Single Window implementation backed by empirical data, along with the APEC survey. During the survey analysis, the WCO Secretariat approached Members to ensure data integrity, cohesion, and active participation. Second, this survey outcome affords a global perspective of Single Window as all six WCO regions took part in the survey. Third, this study examines varying aspects of Single Window with its comprehensive set of questions, including those of a general aspect related to Customs clearance systems, interoperability issues, security governance, and information exchange between government agencies.

This study constitutes part of the WCO Single Window Compendium on "*How to build a Single Window Environment*", which will be submitted to the 2011 June Council Sessions.

1.2 Structure and analysis

The format and questions in this study were originally conceived by the APEC. The WCO Secretariat used the same survey to streamline the analysis workload as well as to avoid duplicate responses from the APEC economies. The survey has a total of 27 questions which are grouped into four sub sections:

- Overview of current Customs clearance systems
- Single Window planning and development
- International interoperability; and
- Single Window governance.

Under the auspices of the APEC SCCP, the WCO Secretariat obtained individual APEC economies‟ survey responses and incorporated them into this study. In the course of analysis, WCO members were contacted by the WCO Secretariat to ensure consistency and clarification of their responses.

1.3 Participating member countries

A total of 56 WCO member countries - 20 from APEC and 36 from non-APEC members - participated. All six WCO regions have participated in this study.

Table 1: List of participating members

WCO region	Name of country	
East and Southern Africa	Angola, Ethiopia, Mauritius, Rwanda, South Africa, Uganda	6
Europe	Albania, Azerbaijan, Belgium, Bulgaria, Denmark, Finland, France, Germany, Latvia, Lithuania, Macedonia, Malta, Netherlands, Poland, the Russian Federation*, Slovakia, Slovenia, Sweden, Switzerland, Turkey, United Kingdom	21
Asia-Pacific region	Australia*, Brunei-Darussalam*, China*, Hong Kong China*, India, Indonesia*, Japan*, Korea*, Malaysia*, Mongolia, Myanmar, New Zealand*, Papua New Guinea*, the Philippines*, Singapore*, Thailand*, Vietnam*	17
North of Africa, Near and Middle East	Jordan, Morocco	2
Americas	Argentina, Canada*, Chile*, Dominican Republic, Mexico*, Paraguay, Peru*, United States*	8
West and Central Africa	Benin, Burkina Faso	2

*** Please note:** Asterisk denotes APEC economies.

2. SURVEY ANALYSIS

2.1 Overview of Current Customs Clearance

This section provides an overview of Customs clearance systems as well as the relationship between Customs administration and other border agencies.

Key findings are:

1. A strong indication was observed that Customs administrations generally operate a computer-based (automated) cargo clearance system.
   - All survey participating Customs administrations have adopted a computer based cargo clearance system.
2. The vast majority of Customs goods declarations appear to be reported electronically.
   - In this survey - Import (92%); export (91%); and transit (95%).
3. Only a small number of government agencies have electronic links with Customs clearance system.
   - An average of three other government agencies has electronic links with Customs clearance system.
   - 15 government agencies, on average, are directly involved in the cross border transaction; these agencies are engaged in activities including:

     Trade & industry; transportation & communication; patent registration; export control; import licensing; immigration; environmental protection; phytosanitary; quarantine; food safety; tax administration; and statistics.
4. Key factors that hinder the establishment of an electronic linkage by other government agencies with Customs clearance system are:
   - Lack of information and communication technology (ICT);
   - Budget and human resource constraints;
   - Inadequate legal framework, and;
   - Difficulties in inter-agency co-ordination.

2.1.1 Adoption of a computer-based cargo clearance system

All 57 Customs administrations (100%) responding to the survey indicated that their countries have adopted a computer based (automated) cargo clearance system.

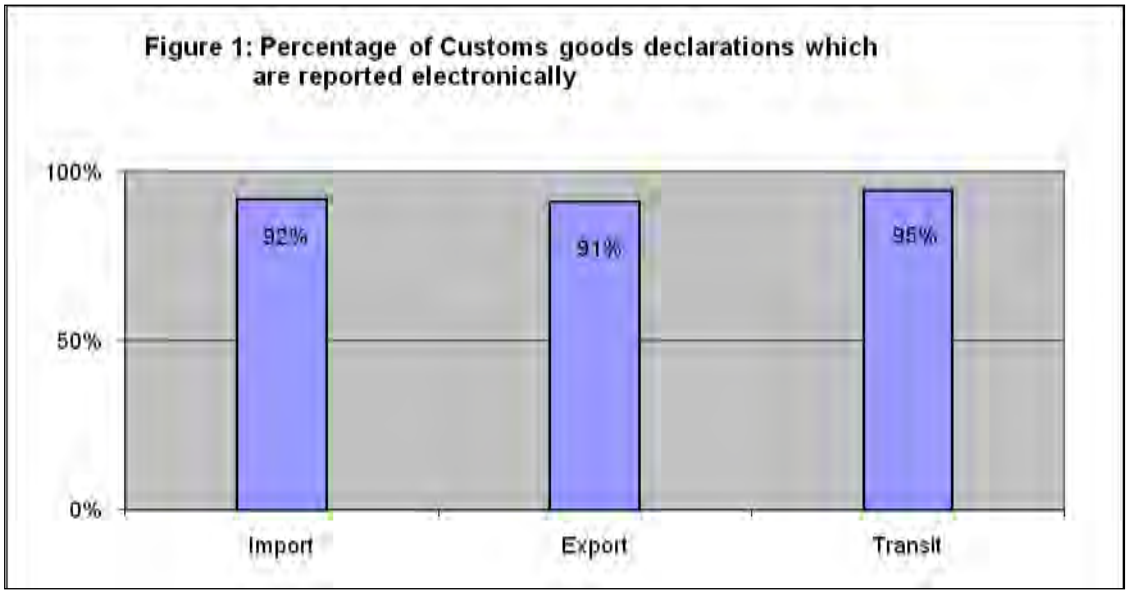
2.1.2 Electronically reported Customs declarations

The vast majority of Customs goods declarations are reported electronically to Customs administrations. Out of Customs administrations that responded:

- An average (mean) of 92% of Customs declarations for import was reported electronically;
- An average (mean) of 91% of Customs declarations for export was reported electronically;
- An average (mean) of 95% of Customs declarations for transit was reported electronically.

* **Please note**: The percentage outcome refers to the sum of percentage provided by Customs administrations divided by number of Customs administrations that responded to this question.

Figure 1



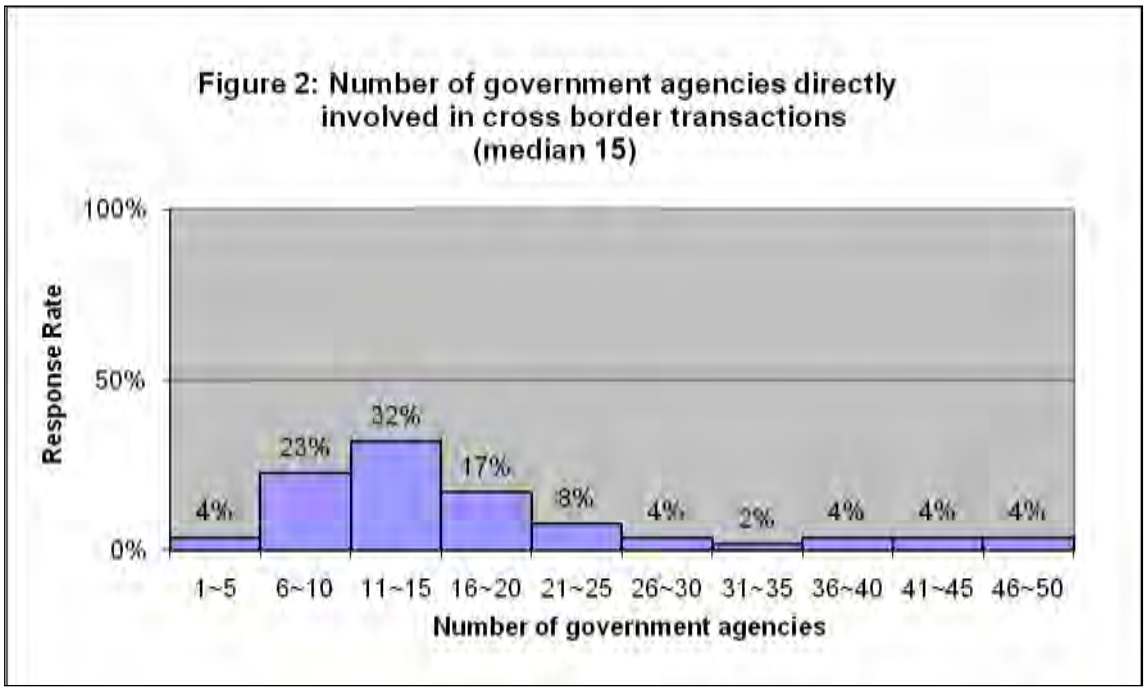
2.1.3 Government agencies involved in cross border transaction

With respect to the number of government agencies which have a direct regulatory involvement (or require information) in the cross border movement of goods, conveyances, crews and transport equipment, the median (the number in the middle in value order) was 15.

Out of Customs administrations that responded:

- 31 (58%) indicated less than 16 government agencies are involved;
- 15 (28%) indicated 16 to 30 government agencies are involved;
- Seven (13%) indicated more than 30 government agencies are involved.

Figure 2



These government agencies are engaged in a range of activities including*:

- Trade & industry; transportation & communication; patent & registration; export control; import licensing; immigration; environmental protection; phytosanitary; quarantine; food safety; tax administration; and statistics.

* **Please note**: This point was not part of the survey questionnaire. Some responding Customs administrations provided names of their government agencies.

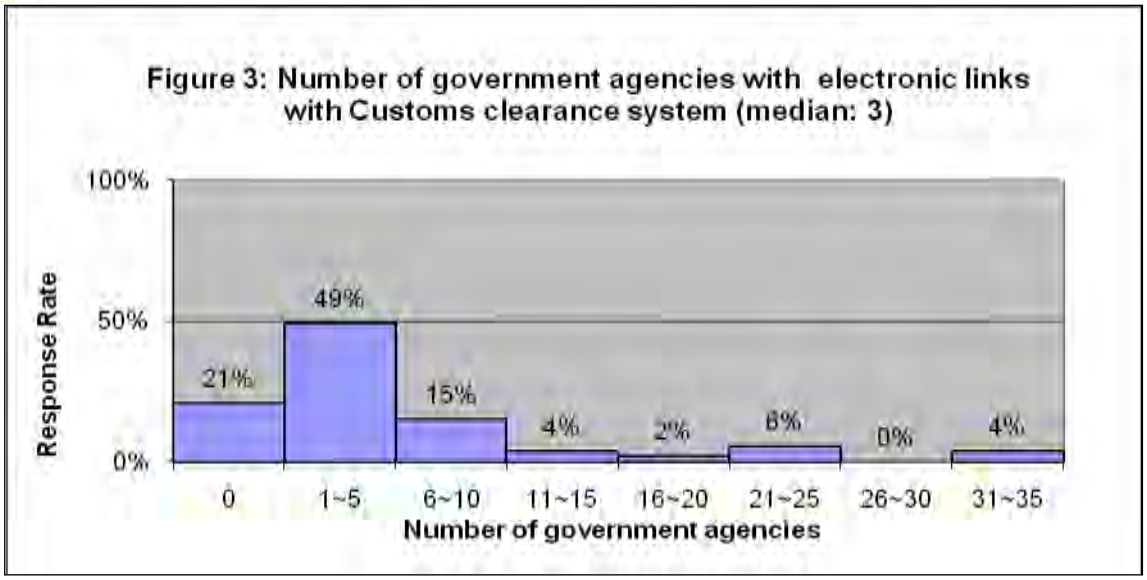
2.1.4 Government agencies having electronic links with Customs clearance system

Regarding the question of how many government agencies have electronic links with Customs clearance system, the median (the number in the middle in value order) was three.

Among Customs administrations that responded:

- 11 (21%) indicated no government agencies;
- 26 (49%) indicated one to five government agencies;
- Eight (16%) indicated six to ten government agencies;
- Eight (16%) indicated over 11 government agencies.

Figure 3



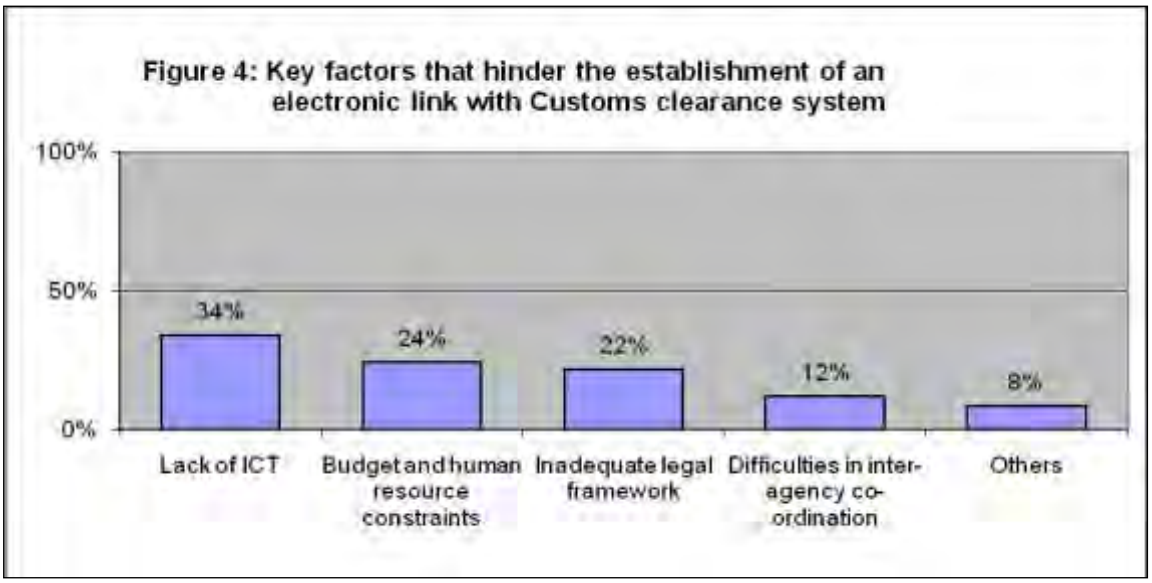
2.1.5 Key factors hindering the establishment of an electronic linkage among border agencies

As to key factors that hinder the establishment of an electronic linkage by other government agencies with Customs clearance system, Customs administrations that responded indicated:

- Lack of information and communication technology (ICT), 28 (34%);
- Budget and human resource constraints, 20 (24%);
- Inadequate legal framework, 18 (22%);
- Difficulties in inter-agency co-ordination, 10 (12%);
- Others, seven (8%).

* **Please note**: This is an open ended question with no multiple choices given. The WCO Secretariat categorized Customs administrations‟ qualitative responses into five areas. Others refer to no identified (or pressing) needs, lack of strategy, and lack of political decision.

Figure 4



2.2 Single Window Planning and Development

This section examines Single Window planning and development, including Single Window models, functions, service providers, maintenance and operations, and challenges of developing a Single Window.

Key findings are:

5. Among the surveyed countries, more have non Single Window type than a Single Window model among current cargo clearance systems.
   - Among Single Window models, the Integrated Model – the most advanced one - was not generally preferred by Customs administrations. Instead, the Hybrid Model was adopted most frequently.
   - Most Customs administrations without Single Window system are generally in the process of developing a Single Window system.
6. The majority of current Single Window systems became operational after 2000, while several started in the 1990s. The number of Single Window systems has been steadily on rise, in parallel with the recent advancement of information technology including Internet.
   - It was noted that current Single Window systems have been developed on a phased approach, and thus are still in the process of further development as the coverage of system and relevant information technology continue to

expand.

7. Customs administrations appear to be a dominant Single Window service provider either alone or in collaboration with other government agencies.
8. Government finance seems to be the major source of funding for maintenance and operation of Single Window, while other types of funding such as user fees and public-private partnerships are also found.
9. It was observed that Customs administrations have incorporated a wide range of business processes, functionalities and services into their cargo clearance systems (or Single Window systems).

2.2.1 Types of cargo clearance system in operation

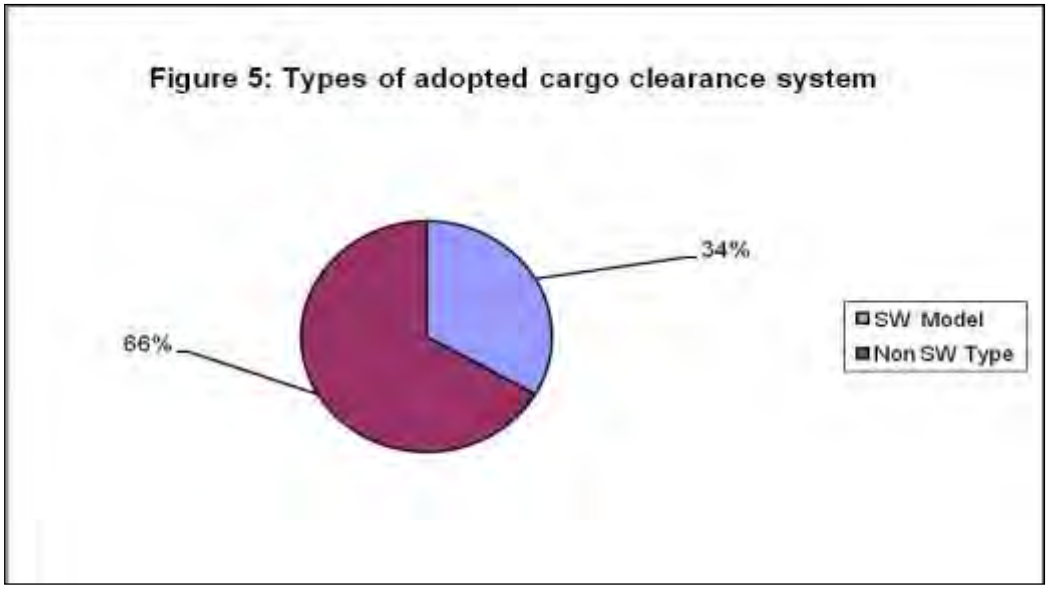
For this survey purpose, five categories were conceived as to the classification of Customs cargo clearance system. The first three are Single Window Model and the last two are non Single Window.

- **Single Window: Integrated Model** - Individual data elements are submitted once to a single entry point (integrated automated system) to fulfill all import, export and transit-related regulatory requirements (i.e., enables multiple procedures to be performed from a single submission).
- **Single Window: Interfaced Model** - Individual data elements are submitted once to a single entry point (e.g., gateway server or Internet/„Value Added Network" service provider) to fulfill all import, export and transit-related regulatory requirements (i.e., enables multiple procedures to be performed from a single submission). Under the Interfaced Model, each regulatory agency will maintain its own automated system but will connect with other systems through specially developed electronic interfaces.
- **Single Window: Hybrid Model** - A combination of the Integrated Model and the Interfaced Model.
- **One-Stop Service** - A single Website or terminal links to the computer systems of Customs and trade-related government agencies, providing a one-stop service to stakeholders. However, stakeholders are required to undertake each procedure/declaration separately.
- **Stand-alone system for Customs clearance**

Among the surveyed Customs administrations, more have a non Single Window type than a Single Window model among current cargo clearance systems. Among Customs administrations which have adopted a computerized cargo clearance system:

- 18 (34%) indicated they operate a Single Window model system;
- 36 (66%) indicated they operate a non Single Window type system.

Figure 5



* **Please note:** One Member country indicated it operates two Single Window models simultaneously and three Member countries did not answer to this question.

As for Single Window system, the Integrated Model, which is deemed to be the most advanced Single Window model, was not generally preferred by Customs administrations. Instead, the Hybrid Model was most frequently adopted among Single Window models.

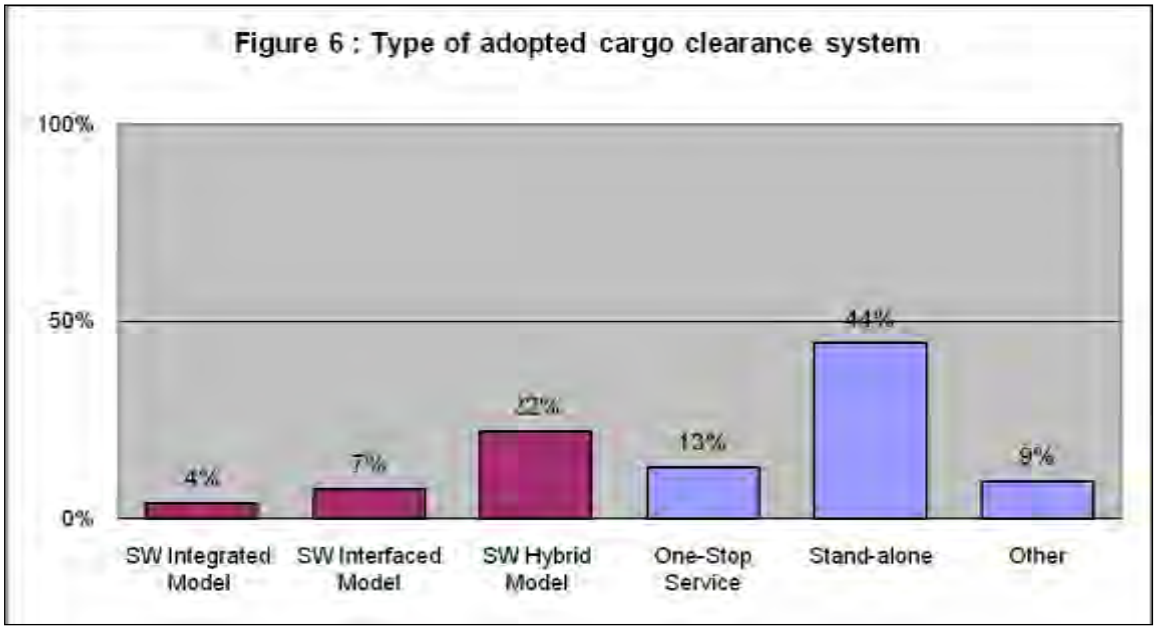
As for non Single Window type, Stand-alone system was most frequently adopted.

Among those Customs administrations that responded:

- Two (4%) operate Single Window - Integrated Model;
- Four (7%) operate Single Window - Interfaced Model;
- 12 (22%) operate Single Window - Hybrid Model;
- Seven (13%) operate One-stop Service;
- 24 (44%) operate Stand-alone system;
- Five (9%) operate other systems*.

* **Please note:** Other types of cargo clearance system include: (1) a Stand-Alone system with interface to statistical office, foreign trade surveillance office and agricultural surveillance office, (2) a multifunctional stand alone system with integrated Single Window functionalities linking with some other authorities and EU common domain, (3) a system in which all customs data submitted electronically for imports with limited electronic data for a few other government agencies, (4) all customs data submitted electronically for imports with limited electronic data for a few other government agencies, and (5) very similar to Hybrid model, but the system accepts the declarations which are shared with other important stakeholders.

Figure 6



2.2.1 Single Window development stage

Most Customs administrations with non Single Window type are generally in the process of developing a Single Window system. Among Customs administrations which adopted non Single Window type cargo clearance system such as one-stop service or stand alone system, all (100%) indicated that a Single Window system is under development.

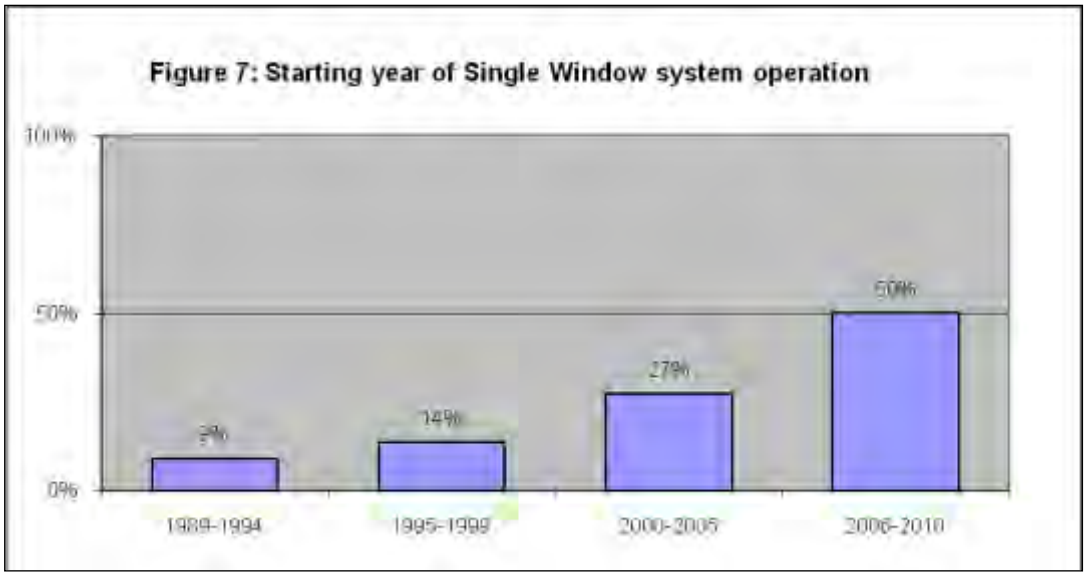
2.2.3 Starting year of Single Window systems

It was observed that the majority of current Single Window systems (77%) became operational after year 2000, while some other systems had started in the 1990s.

Among Customs administrations that responded;

- Two (9%) started their Single Window systems between 1989-1994;
- Three (14%) started their Single Window systems between 1995-1999;
- Six (27%) started their Single Window systems between 2000-2005;
- 11 (50%) started their Single Window systems between 2006 -2010.

Figure 7



The number of Customs administrations which launched Single Window system has been steadily on rise, which is in parallel with the recent advancement of information technology including Internet.

Some Customs administrations denoted that their Single Window systems have been developed on a phased approach and thus are still in the process of development as the coverage of functionalities and information technology continue to expand*.

* **Please note**: This point was not part of the survey questionnaire. Some Customs administrations provided further explanations.

2.2.3 Single Window service provider

Customs administrations appear to be a dominant Single Window service provider either alone or in collaboration with other government agencies.

The majority of Customs administrations responded to this question indicated Customs (22, 63%) as a Single Window service provider, followed by other government agency(six, 17%), private sector (four, 11%), semi-government agency (two, 6%) and other (one, 3%).

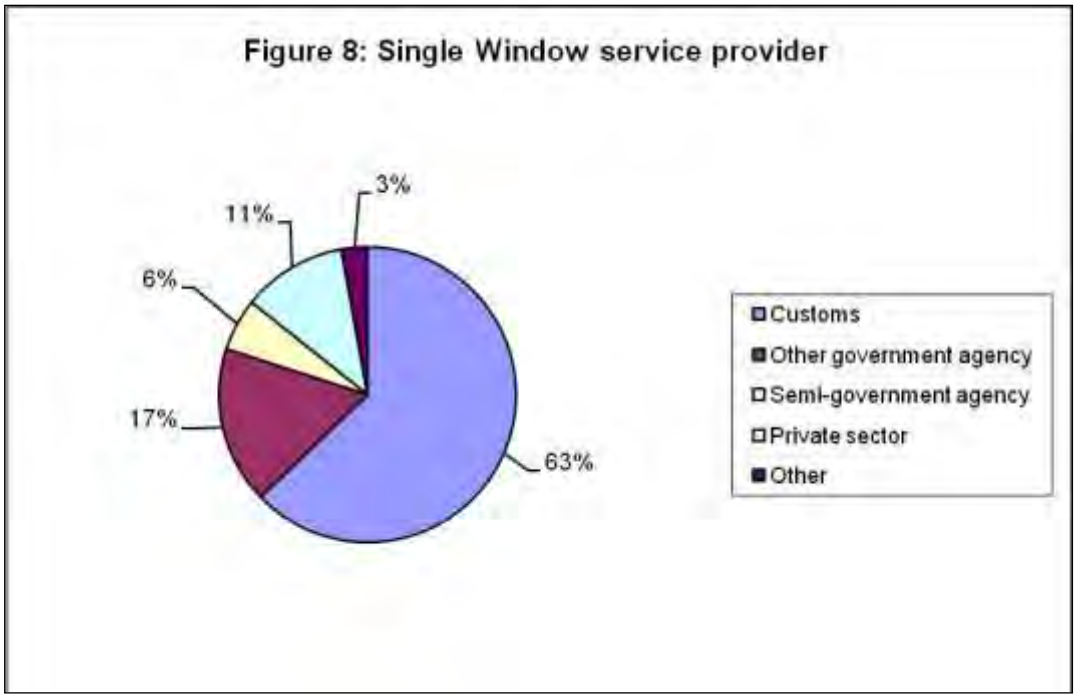
Six Customs administrations indicated that they provide Single Window service, jointly with other government agencies (including quasi-government agency) which represent;

* **Please note**: Customs administrations were allowed to select multiple choices.

- Port Authority; Ministry of Foreign Trade and Tourism; Business Advice and Support Service; Department of Environment, Food and Rural Affairs; and Department for Business Innovation and Skills.

No case was found that either other government agency or semi government agency “alone” provided Single Window service except for one Customs administration. In addition, another Customs administration indicated that it provides Single Window service by way of a public-private partnership.

Figure 8

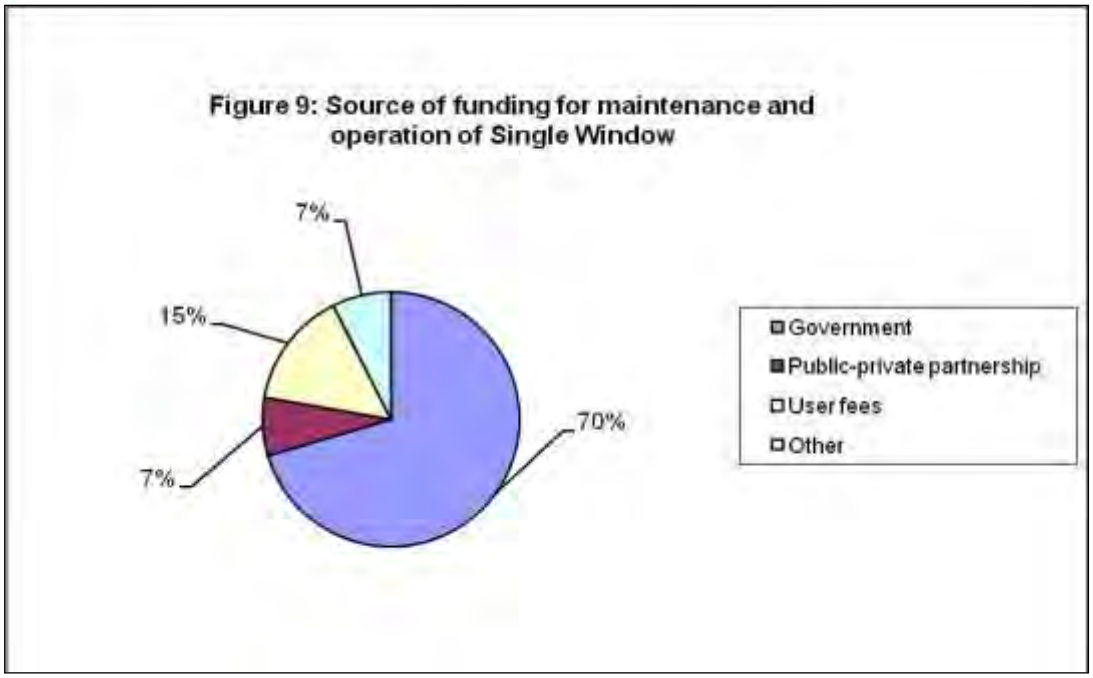


2.3.4 Source of funding for maintenance and operation of Single Window

Government finance seems to be the major source of funding for maintenance and operation of Single Window, while other types of funding such as user fees and public-private partnerships are also found.

The majority of Customs administrations responded to this question indicated government, 19 (70%) as a source of funding in the maintenance and operation of Single Window, followed by user fees, four (15%), public-private partnership, two (7%) and other, two (7%).

Figure 9



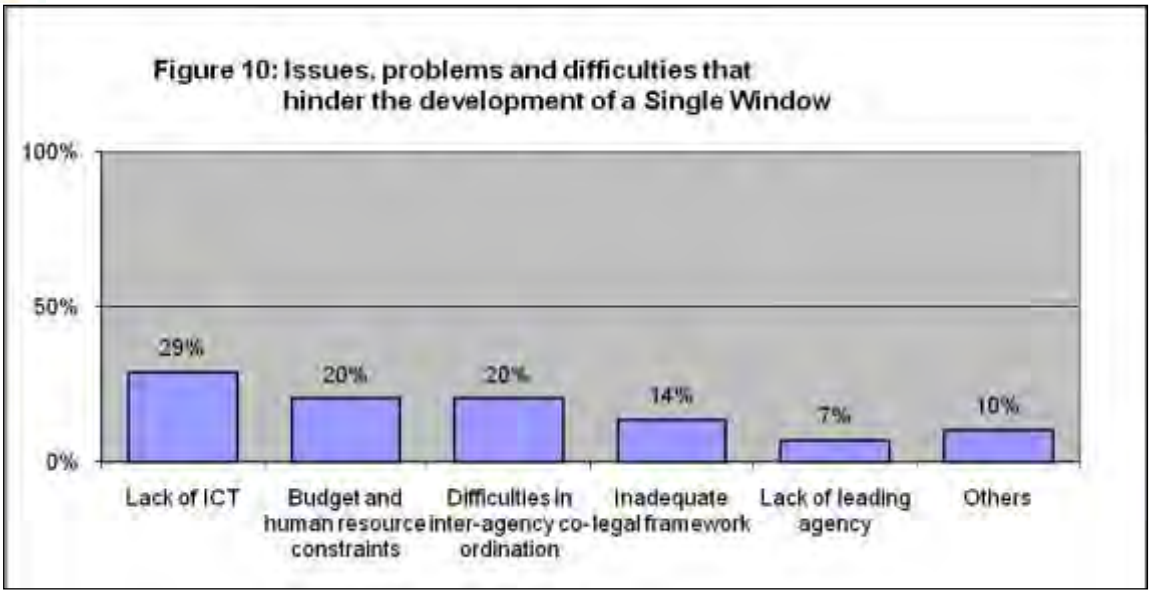
* **Please note**: Customs administrations were allowed to select multiple choices.

2.3.5 Problems and difficulties hindering the development of Single Window

With respect to problems and difficulties that hinder the development of a Single Window, Customs administrations that responded indicated:

- Lack of information and communication technology (ICT), 17 (29%);
- Budget and human resource constraints, 12 (20%);
- Difficulties in inter-agency co-ordination, 12 (20%);
- Inadequate legal framework, eight (14%);
- Lack of leading agency, four (7%);
- Others, six (10%).

Figure 10



* **Please note**: This is an open ended question with no multiple choices given. The WCO Secretariat categorized Customs administrations" qualitative responses into six areas. Others include bureaucracy, absence of diagnosis, change management, reluctant to modernize existing processes, and cultural management problems.

2.3.6 Coverage of cargo clearance system

It was observed that Customs administrations have incorporated a wide range of business processes, functionalities and services into their cargo clearance system (or Single Window system).

Among Customs administrations that responded to this question:

- More than 60% indicated that their cargo clearance systems (or Single Window systems) included functions, which cover many of the traditional Customs functions, these are:

  Cargo clearance procedures for import and export; bonded transit approval/permission; online information on tariff, restrictions and prohibitions for commodities/products; computation of duties, taxes and fees; duty and tax payment/refunds; warehouse cargo control; submission of cargo manifest; filing of inspection/examination results; automated profiling/risk assessment of cargo; and statistical reporting.

- Between 30% and 60% of administrations indicated that their cargo clearance systems (or Single Window system) included functions, most of which are designed to facilitate procedures of cross border transactions including those of other government agencies, these are:

Common business entity registration service; reporting and processing of vessel entrance/departure notice; application and permission for import/export license; time release survey capability; and Tracking information on goods and consignments.

Table 2: Single Window system"s business process, functionalities and service

Business Process/Functionality/Service	Number of Responses
Common Business entity registration service	21(41%)
Common Directory of locations and facilities	14(27%)
Single user registration service (relevant only for the integrated model)	13(25%)
Shared services for Digital Signature certificates	14(27%)
Shared user authentication	13(25%)
Import cargo clearance procedures	48(94%)
Export cargo clearance procedures	45(88%)
Bonded transit approval/permission	33(65%)
Online information on tariff, restrictions and prohibitions for commodities/products	40(78%)
Computation of duties, taxes and fees (as a shared service across departments and services)	35(69%)
Duty and tax payment	44(86%)
Duty and tax refund and other similar procedures	34(67%)
Warehouse cargo control	32(63%)
Submission of cargo manifest	34(67%)
Reporting and processing of vessel entrance/departure notice or report to Customs administration (e.g. ship, aircraft)	22(43%)
Submission and processing of crew/passenger list	12(24%)
Inspection/examination, includes automated scheduling of equipment and human resources	13(25%)
Filing of inspection/ examination results	33(65%)
Quarantine application and approval/permission	14(27%)
Food sanitation application and approval/permission	15(29%)
Import/Export license application and approval/permission	20(39%)
Immigration procedures	1(2%)
Airport authority"s procedures, e.g. aircraft arrival/departure permission	6(12%)
Port authority"s procedures, e.g. ship arrival/departure permission	10(20%)
Reporting of dangerous goods	15(29%)
Application for and issuing of certificate of origin	13(25%)
Application for and issuing of other licenses and permits not specified above	11(22%)
Application for and issuing of advance ruling, e.g. classification, valuation	15(29%)
Automated profiling/risk assessment of cargo (selectivity)	34(67%)
Statistical reporting capability	42(82%)
Time Release Survey capability	20(39%)

Tracking information on goods and consignments*	17(59%)
Other	3(6%)

* **Please note**: Percentage refers to the ratio of response number / total responding Customs administrations to this question (51) except for tracking information on goods and consignments (17/29 = 59%).

2.3. International Interoperability

The third section delves into the subject of "how" and "to what extent" Customs administrations pursue the notion of interoperability between Customs administrations and other stakeholders. In particular, this section looks into data harmonization standards, interface and messaging standards, the WCO UCR, the exchanging of trade related data with other stakeholders, and mutual authentication mechanism.

Key findings are:

10. Among the surveyed countries, the majority of Customs administrations harmonize Single Window data with internationally recognized standards.

11. While the WCO Data Model is most widely adopted among Customs administrations for the harmonization of Single Window data, traditional methods of UNTDED and UN/EDIFACT are also substantially used by Customs administrations.

12. Among surveyed countries, customs administrations have incorporated or are planning to incorporate XML, Webservices and EDI into their Single Window design as an interfacing and messaging standards.

    - The former two standards seem to gain ground as more and more Single Window data exchange takes place via Internet based platforms.

13. Significant efforts need to be made for the promotion of the WCO Unique Consignment Reference (UCR) as only a small number of Customs administrations incorporated it in their Single Window systems.

14. Out of the surveyed countries, while some Customs administrations have started to exchange trade data/information with other trade partners via Single Window systems, the majority of Customs administrations have not yet started.

    - Only a small number of Customs administrations have started or planned to exchange trade/information with other Customs administrations.

    - Where information exchange takes place, various types of data/information were shared between Customs administrations and trade partners via Single Window.

15. It was indicated that XML was the most frequently used method in the exchange of data/information through Single Window system. The widespread use of XML seemed to be in part attributed to the booming of the Internet.

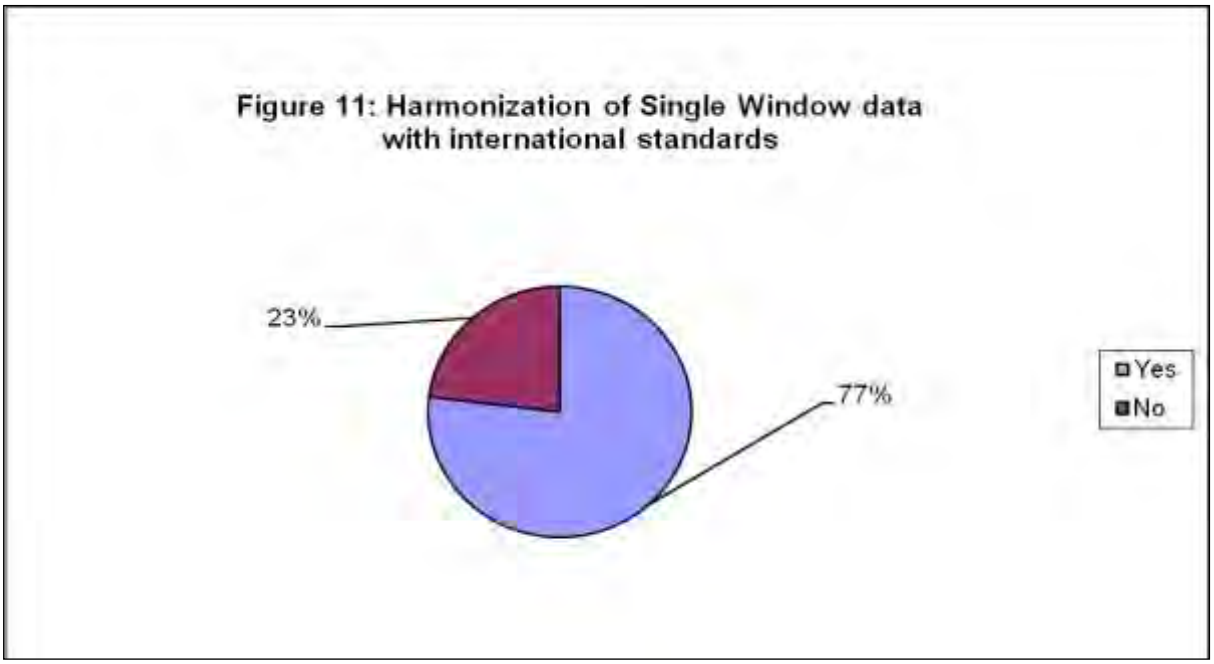
2.3.1 Harmonization of Single Window data with international standards

The majority of Customs administrations appear to harmonize Single Window data with internationally recognized standards.

Among Customs administrations which responded:

- 40 (77%) of Customs administrations indicated they harmonize Single Window data with internationally recognized standards;
- 12 (23%) of Customs administrations indicated they do not harmonize Single Window data with internationally recognized standards.

Figure 11



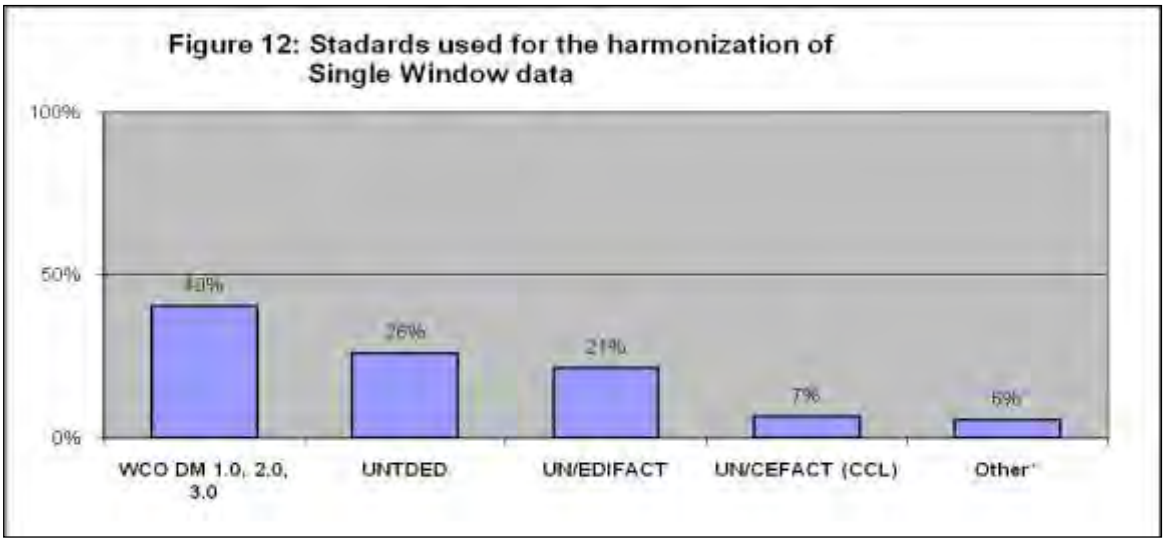
2.3.2 Standards for the harmonization of Single Window data

It was observed that while the WCO Data Model is widely adopted among Customs administrations for the harmonization of Single Window data, traditional methods of UNTDED and UN/EDIFACT which were recommended by the WCO Council, are also substantially used in many Customs administrations.

Out of Customs administrations which have harmonized Single Window data with internationally recognized standard,

- 36 (40%) indicated they use WCO Data Model version;
- 23 (26%) indicated they use UNTDED (United Nations Trade Data Elements Directory);
- 19 (21%) indicated they use UN/EDIFACT;
- Six (7%) indicated they use UN/CEFACT Core Component Library;
- Five (6%) indicated they use other.

Figure 12



* **Please note**: Customs administrations were allowed to select multiple choices. Other includes Universal Business Library, EBXML, and other national and EC standards.

2.3.3 Interface and messaging standards in Single Window design

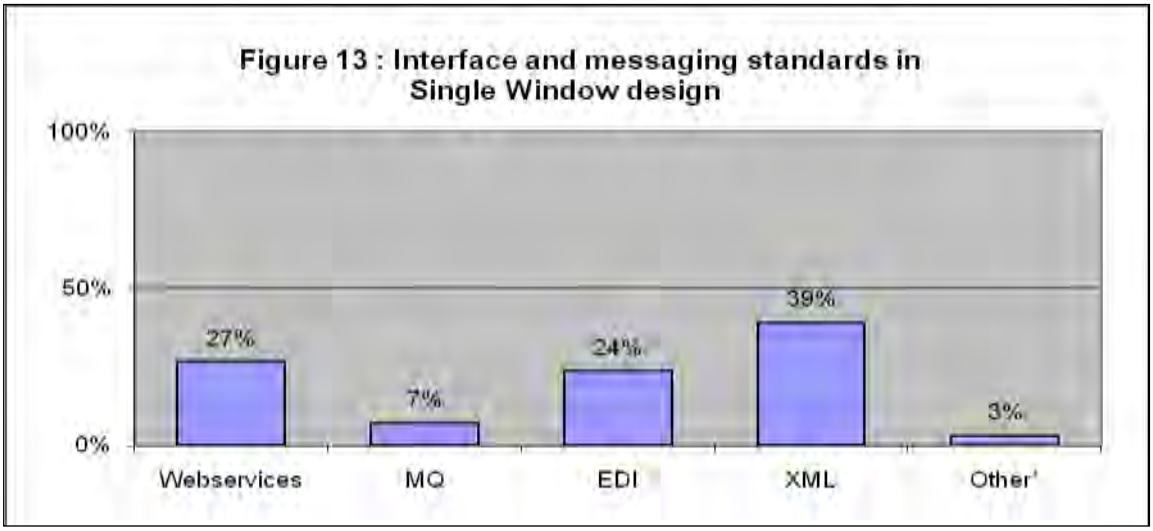
It appears that Customs administrations have incorporated or are planning to incorporate XML, Webservices and EDI into their Single Window design as an interfacing and messaging standards. Among Customs administrations that responded:

- 38 (39%) indicated they adopted XML in the Single Window design;
- 23 (27%) indicated they adopted Webservices;
- 26 (24%) indicated they adopted EDI including UN/EDIFACT;
- Seven (7%) indicated they adopted MQ;

- Three (3%) indicated they adopted other.

The former two standards seem to gain ground as more and more Single Window data exchange takes place via Internet based platforms.

Figure 13



* **Please note**: Customs administrations were allowed to select multiple choices. Other includes OFTP via X.25, and EBXML.

WCO Unique Consignment Reference (UCR) in Single Window

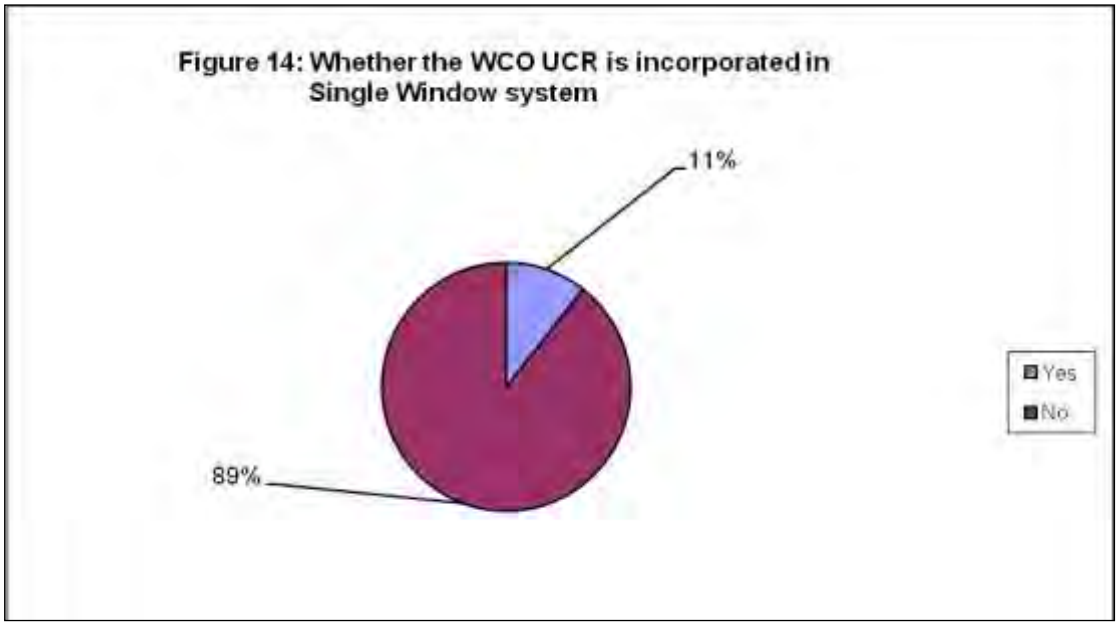
It was strongly indicated that significant efforts need to be made for the promotion of the WCO Unique Consignment Reference (UCR) as only a small number of Customs administrations incorporated it in their Single Window system.

Out of Customs administrations that responded,

- Five (11%) indicated that they incorporated the WCO UCR in their Single Window system;

- 42 (89%) indicated that they did not incorporated the WCO UCR in their Single Window system.

Figure 14



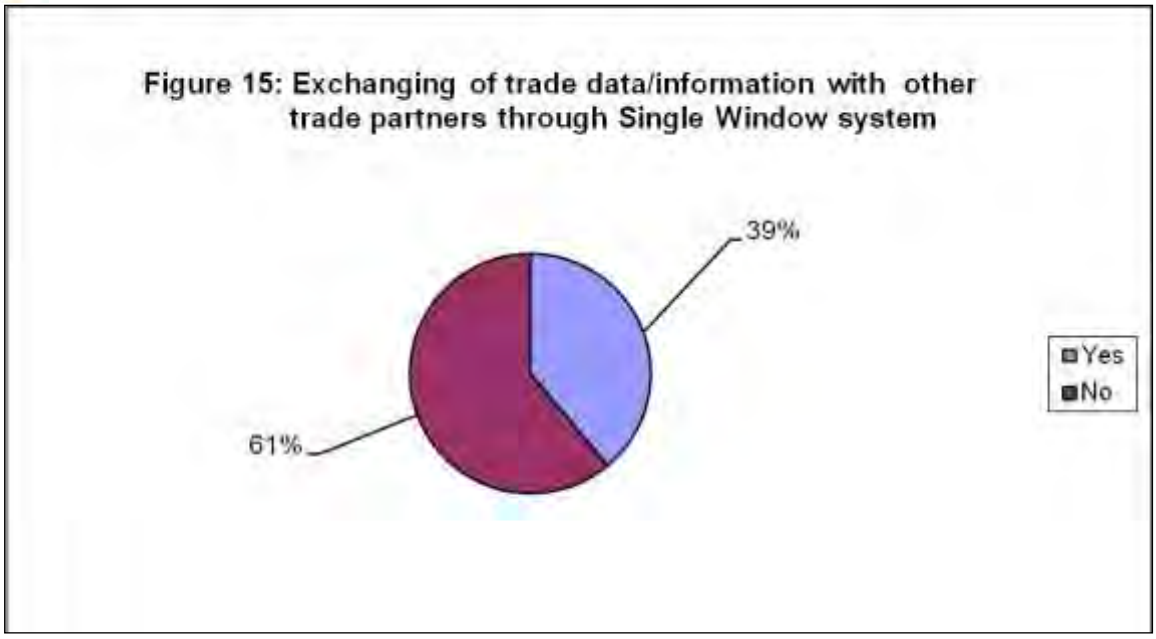
2.3.4 Information exchange with trade partners

It was observed that some Customs administrations have started to exchange trade data/information with other trade partners via Single Window systems. However, the majority of Customs administrations have not yet started.

Out of Customs administrations that responded:

- 21 (39%) indicated that they have started exchanging trade data/information;
- 33 (61%) indicated that they have not started exchanging trade data/information.

Figure 15



Some Custom administrations provided names of trade partners which engage in the exchanging of trade data/information with Customs administrations through Single Window. Trade partners seemed to be government agencies except for commercial banks. Activities of trade partners include:

- Trade & industry; foreign affairs and international trade; export, transportation (railways, port); agriculture; natural resource; environmental protection; food inspection; statistics; and commercial banking.

It was also noted that a small number of Customs administrations have started or planned to exchange trade/information with other Customs administrations.

Where information exchange takes place, a wide range of data/information was exchanged between Customs administrations and trade partners via Single Window. These include:

- Import permits; export permits; cargo clearance; advance cargo information; sea/air/land cargo manifest; railway manifest; external trade statistics; export details; foreign trade licenses; customs declarations; AEO related information; certificate of solid waste and toxic chemical; certificate of pesticide; certificate of origin; agriculture licenses; phytosanitary sanitary certificates; payment confirmation; and payment data of duties and taxes.

With respect to the question of what kind of mutual authentication or Bridge Certification Authority PKI mechanism are used to trust bilateral identification in the exchange of Single Window data, some Customs administrations provided details:

- Password system; a direct link between the institutions; user authorization level 3; PKI cross certification authority; capsuled MQ between two defined database servers; identification and authentication through user name and password over a dedicated line service; electronic signature; SSL secured connectivity; and Korea-VeriSign.

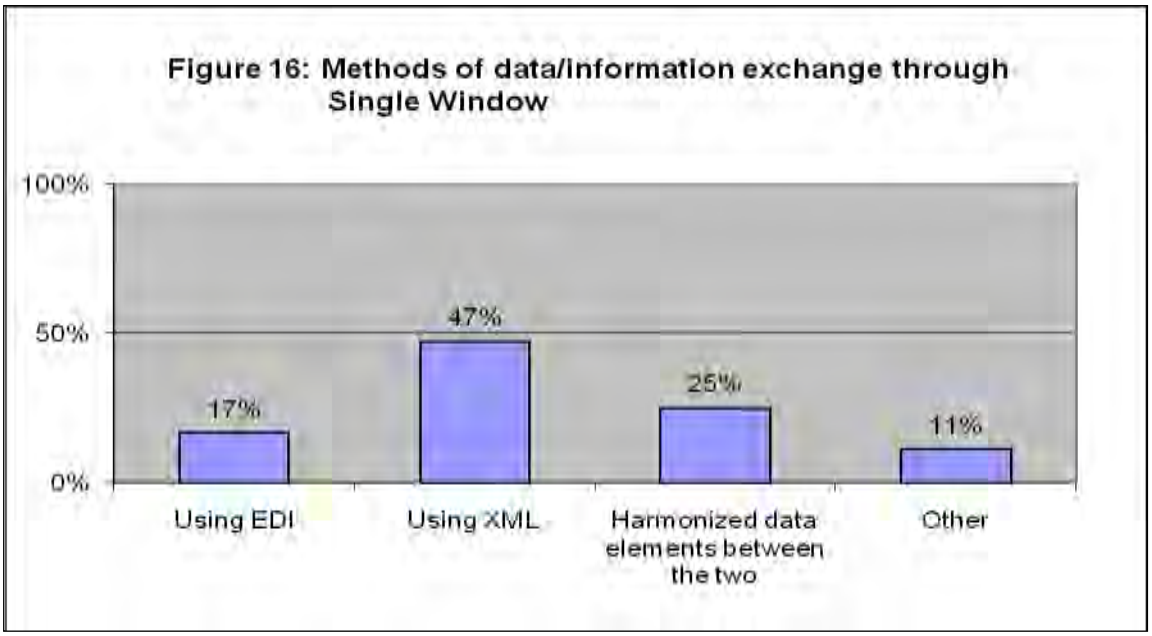
2.3.5 Methods of data/information exchange

It was indicated that XML was the most frequently used method in the exchange of data/information by two computer systems (of Customs administration and other government agencies) through Single Window. The widespread use of XML seemed to be in part attributed to the booming of Internet.

Out of Customs administrations that started exchanging data/information through the Single Window:

- Six (17%) indicated using EDI (including UN/EDIFACT);
- 17 (47%) indicated using XML;
- Nine (25%) indicated harmonized data elements between the two;
- Four (11%) indicated other.

Figure 16



* **Please note**: Customs administrations were allowed to select multiple choices. Other includes agreed message formats via MQ and two different PKIs.

2.4 Single Window Security Governance

The last section of the survey is designed to explore how Customs administrations cope with challenges in protecting Single Window systems from unlawful or unauthorized access as well as in managing common identity and authorization process.

Key findings are:

16. Substantial efforts need to be made for the implementation of security standard such as ISO 28000 or BS 7799 in Single Window system.
    - Among surveyed countries, most Customs administrations have not adopted a security standard implementation framework.
17. Out of surveyed countries, both PIN (and/or password system) and Public Key Infrastructure (PKI) are the most frequently adopted type of authentication tool for accessing Single Window system.
    - Non-PKI digital certification, authentication token, biometrics, smartcard are also in use.
18. It appeared in the survey that almost half of Customs administrations have adopted common identity management system for partnering agencies access to Single Window system.
19. Among surveyed countries, about half of Customs administrations implemented “Single Sign-on” which assists partnering agencies in their authentication and access to different applications on a Single Window system.
20. While information exchange takes place between Customs administrations and other related entities, Customs administrations generally do not allow other agencies‟ access to all raw data in their Single Window systems.

2.4.1 Security Standards Implementation Framework

Substantial efforts need to be made for the implementation of security standards such as ISO 28000 or BS 7799 in Single Window system.

Out of Customs administrations which responded to this question:

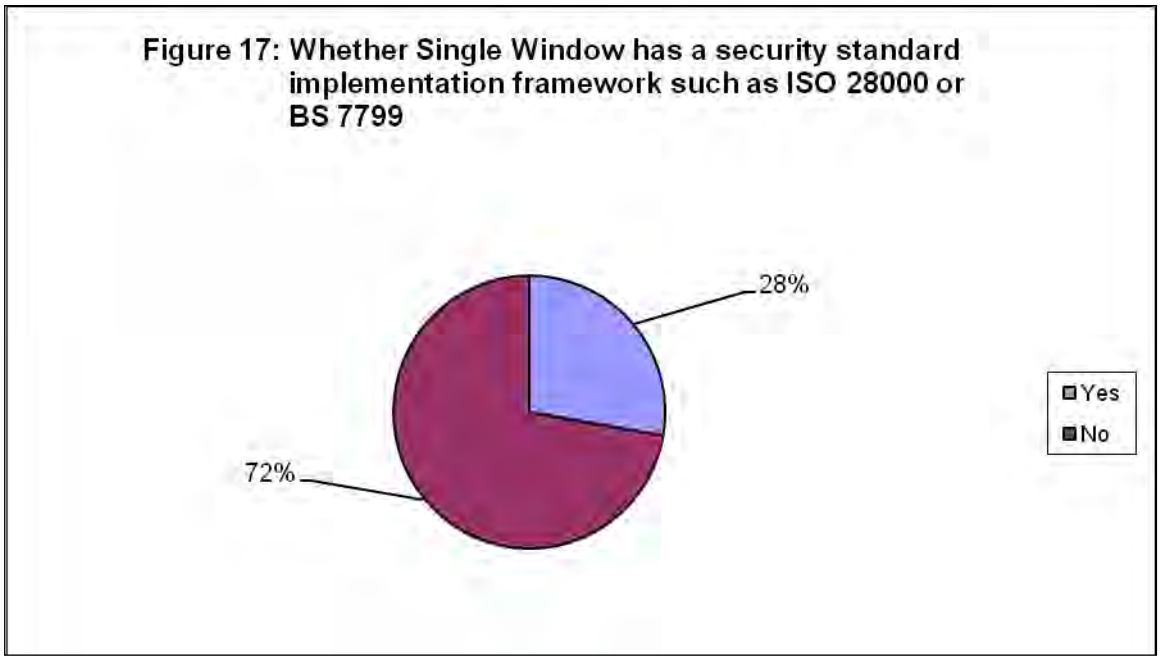
- 10 (28%) indicated that they have a security standard implementation framework;

- 26(72%) indicated that they did not have a security standard implementation framework.

Types of a security standard implementation framework include:

- AFIP standard security framework; BS7799, Information Security Manual and Gatekeeper; ISO 27001; and ISO/IEC17799:2000.

Figure 17



2.4.2 Authentication tools for accessing Single Window

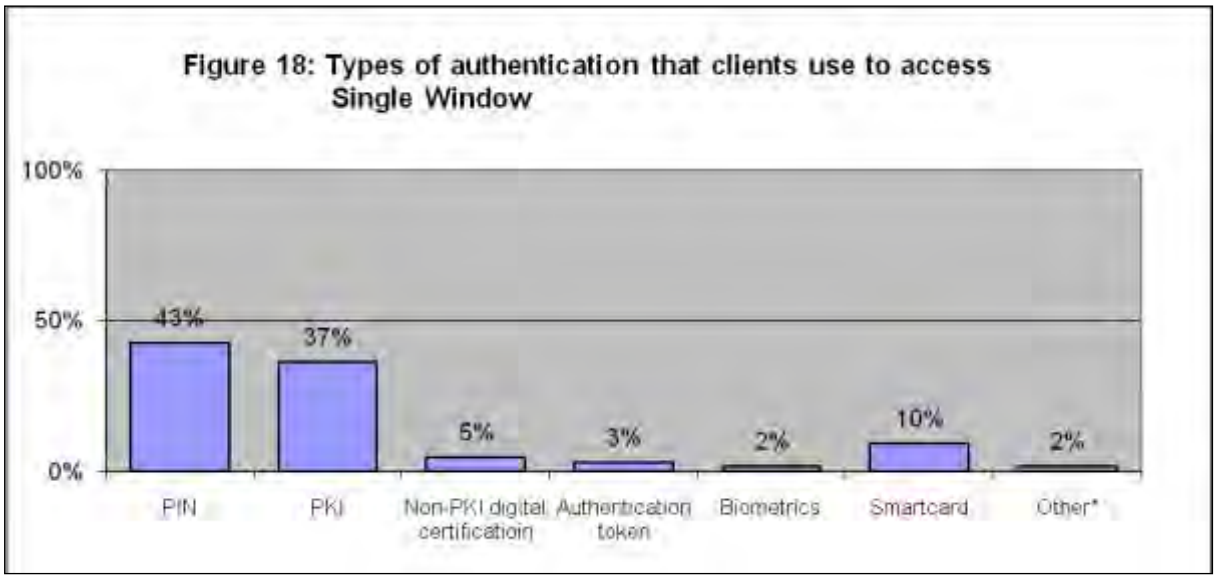
Both PIN (and/or password system) and Public Key Infrastructure (PKI) were the most frequently adopted type of authentication tool for accessing Single Window system.

Among Customs administrations that responded to this question, the following types of authentication tools which clients use in order to access Single Window were noted:

- PIN and/or Password system, 27 (43%);
- Public Key Infrastructure (PKI), 23 (37%);

- Non-PKI digital certification three (5%);
- Authentication tokens two (3%);
- Biometrics, one (2%); and
- Smartcard, six (10%);

Figure 18



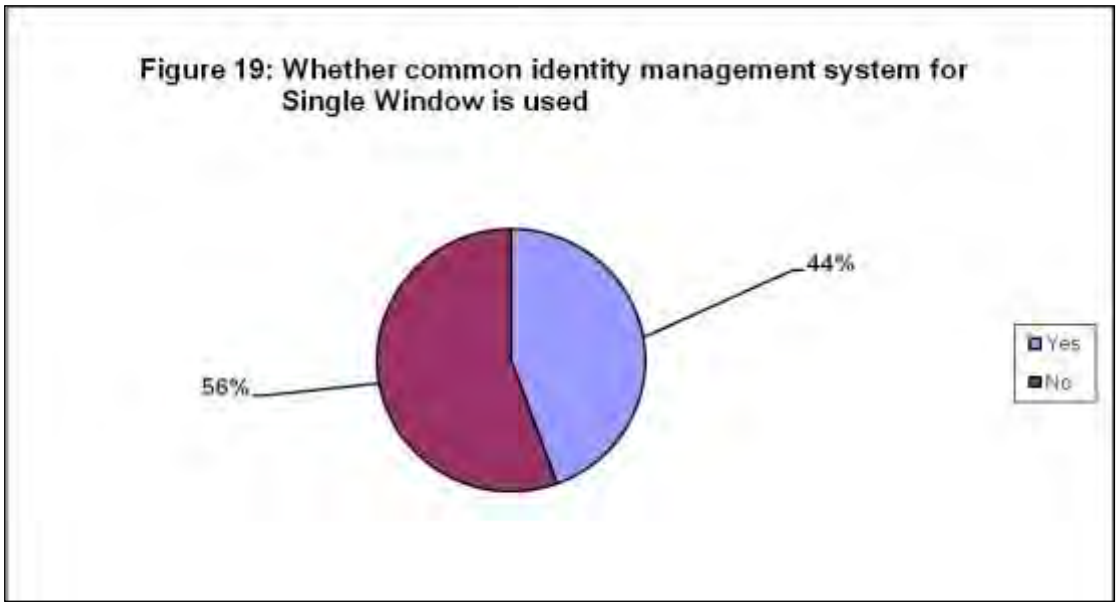
* **Please note**: Customs administrations were allowed to select multiple choices. Other refers to a new PKI based concept with authentications token.

2.4.3 Common identity management system

It appears that less than half of Customs administrations have adopted common identity management system for partnering government agencies access to Single Window system.

- 16 Customs administrations (44%) indicated they use common identity management system;
- 20 Customs administrations (56%) indicated they do not use common identity management system.

Figure 19



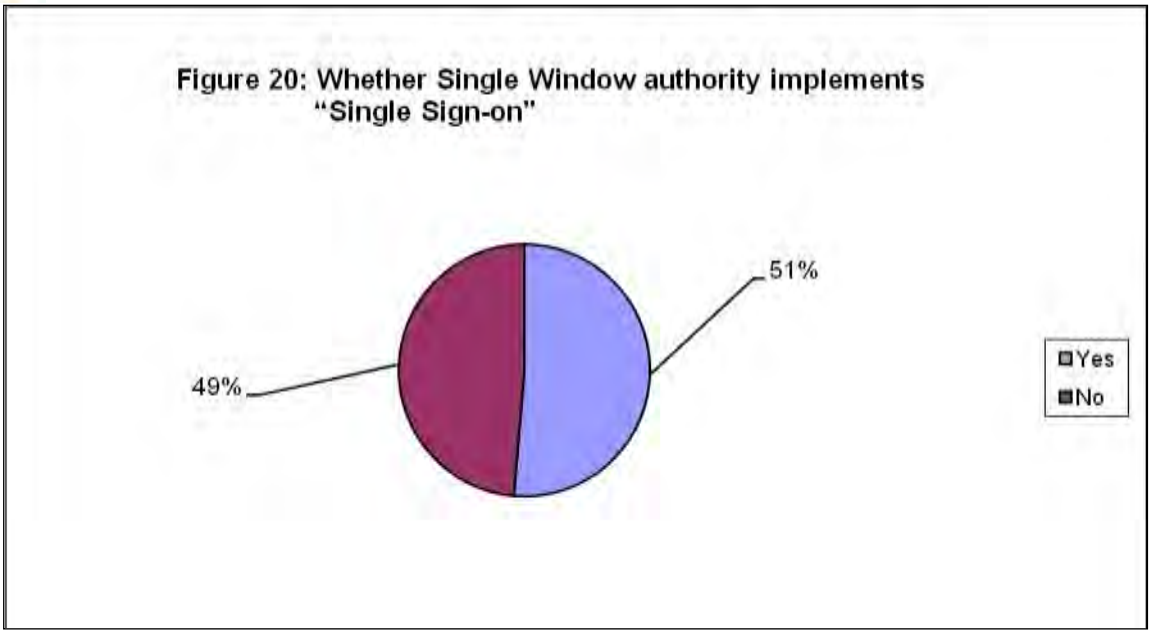
2.4.4 Implementation of Single Sign-on

It was noted that almost half of Customs administrations adopted to implement “Single Sign-on” which assists partnering agencies in their authentication and access to different applications on a Single Window system.

Out of Customs administrations that responded to this question:

- 19 (51%) indicated that they implemented “Single Sign-on”;
- 18 (49%) indicated that they did not implement “Single Sign-on”.

Figure 20



2.4.5 Other agency's access to data in Single Window

There was a strong indication that Customs administrations generally do not allow other agencies to access all raw data in their Single Window system.

Out of Customs administrations that responded to this question:

- 35 (95%) indicated that they do not allow other agencies" access;
- two (5%) indicated that they allow other agencies" access.

It needs to be noted that this result does not mean that no information exchange takes place between Customs administrations and other related entities. As was observed with Figure 17, a wide range of data/information is being exchanged between the Customs administrations and trade partners via Single Window.

Figure 21

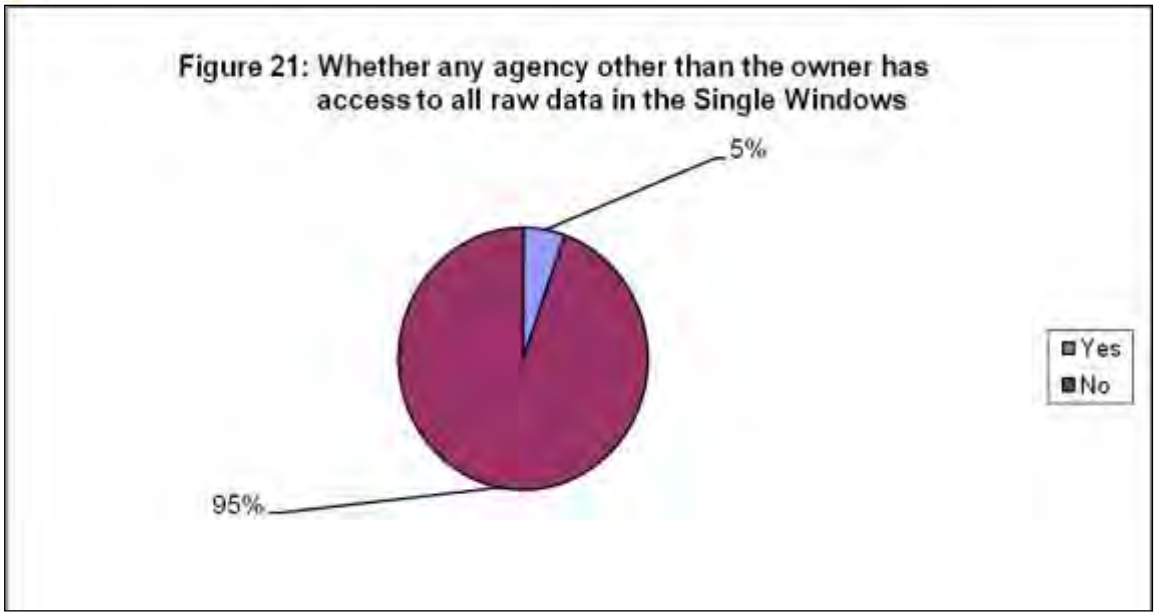


Figure 21: Whether any agency other than the owner has access to all raw data in the Single Windows
5%
95%
Yes
No

3. CONCLUSION

In an effort to promote implementation of Single Window, the WCO, for the first time, conducted an aggregated study of how Members worldwide engage in planning and implementing Single Window systems in dealing with cross border transactions. With the active participation from all six WCO regions as well as co-operation from the APEC, this survey provides a global snapshot.

This survey imparts a range of interesting observations. One of the core findings is that Customs administrations worldwide generally operate automated cargo clearance systems which enable electronic processing and lodgment of Customs declarations. The survey also gives a clear signal that the number of Single Window systems continues to increase as most Customs administrations are in the process of either planning or upgrading their Single Window systems. In addition, the survey identified a trend that Customs administrations, among cross border regulatory agencies, played a key role in providing Single Window service by way of public finance.

The unprecedented advancement of information and communication technology is certainly a driving force behind this trend. The emerging of Single Windows is in parallel with the booming of IT industry as the majority of Single Window systems came into operation in the 2000s. In particular, widespread use of the Internet is presumed to have prompted the adoption of Internet platform tools (such as XML and Webservices) in the construction of a Single Window system.

The survey shed light on some challenges and obstacles. It was noted that more efforts are needed in the information exchange between border agencies. The majority of Customs administrations do not share trade related data with other border agencies as there is a lack of electronic links. The major barriers identified to the establishment of a Single Window as well as laying electronic links between border agencies are: lack of information and communication infrastructure; budget and human resource constraints; inadequate legal framework; and difficulties in inter-agency co-ordination.

Information exchange between border agencies is premised on sound security governance as well as data interoperability. While some security enhancing tools (such as PIN, PKI) are currently employed in the Customs systems, Customs administrations generally do not adopt a security standard implementation framework like ISO 28000 and BS 7799. With respect to interoperability, the survey found that many Customs administrations are currently harmonizing Single Window data with internationally recognized standards. Among them, the WCO Data Model has gained ground, along with UNTDED, UN/EDIFACT, whereas the WCO UCR does not obtain much attention.

CHAPTER 2: FUNCTIONAL ASSESSMENT FOR THE SINGLE WINDOW ENVIRONMENT

1. INTRODUCTION

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

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

1.1 Instructions for completion:

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

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

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

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

Date: _____

2. Demographic Information

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

CBRA Name:		
CBRA Central POC:	Phone nr:	
POC Email address(es):	Fax nr:	
Div/Office Name:		
Div/Office Primary POC:	Phone nr:	
Email(s):	Fax nr :	
Div/Office Mission:		
Do you have a border presence?	Yes:	No:
Div/Office border and staff function(s):		
Div/Office Name:		
Div/Office Primary POC:	Phone nr:	
Email(s):	Fax nr.	
Div/Office Mission:		
Do you have a border presence?	Yes:	No:
Div/Office border and staff function(s):		

Div/Office Name:	Div/Office Size:	
Div/Office Primary POC:	Phone nr:	
Email(s):	Fax nr:	
Div/Office Mission:		
Do you have a border presence?	Yes:	No:
Div/Office border and staff function(s):		

3. CBRA Functions and Capabilities

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

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

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

3.1 Manage Accounts

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

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

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

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

Contact particulars:

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

ID Name	Format	Use

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

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

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

3.2 Manage Release (Import) Processes

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

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

Arrival is regarded as the point in time at which cargo/goods is physically presented for import or an authorised movement transaction such as in-bond, warehouse, free trade zone. Functions during this time period may include (but are not limited to) the receipt of commodity, manifest and transportation data, the granting of release for import, and the processing of free

trade zone, warehouse and in-bond transactions. While selectivity and targeting functions may be executed during this time frame, questions dealing with that topic are in Section 2.6.

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

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

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

Data Validated	Other Federal CBRA	Point in Process	Transmission Method Results

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

Data Validated	Point in Process (time)

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

Notification	Reason	Timing	Receipt Method

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

Notification	Reason	Timing	Method to Send

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

Notification	**Reason**	**Timing**	**Method to Send**

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

Decision	**Timing**

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

Decision	**Timing**

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

Data	Point in Process	Authorised Movement Type	CBRA Collects?	Customs

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

Data	Point in Process	Authorized Movement Type	CBP System

3.3 Manage Post-Release

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

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

Yes No

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

Yes No From method

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

Yes No From method

3.4 Manage Export

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

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

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

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

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

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

Data Validated	Other Federal CBRA	Point in Process	Results Transmission Method

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

Data Validated	Point in Process

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

Notification	Reason	Timing	Receipt Method

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

Notification	Reason	Timing	Method to Send

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

Notification	Reason	Timing	Method to Send

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

Decision	Timing

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

Decision	Timing

Decision	Timing

3.5 CBRA Licences, Permits, Certificates & Others (LPCO)

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

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

LPCO Name	Commodity/Conveyance Regulated	Import/Export

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

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

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

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

LPCO Name	Commodity/ Conveyance Regulated	Import/ Export	CBRA Validates	Other CBRA Validates

3.6 Manage Enforcement

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

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

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

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

Transaction type	**Other Official body**	**How transmitted**

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

Import/export	**At what point**

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

What information:

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

Area/Commodity	**Security/safety role**

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

Area/Commodity **Security/safety role**

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

Other CBRA systems **Criteria**

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

"type" of legislation **Other Official body** **To be continued?**

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

List Yes/No **Official body**

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

Activity	**Import/Export**	**Results Recorded**

10. What kinds of verification, validation, inspection and/or interdiction of commodities being imported or exported activities does the CBRA delegate to another Official body (Customs?)

to perform? Where are the results of these activities recorded and how are they transmitted to the CBRA? Please specify.

Activity	Import/ Export	Other Federal CBRA	Results Recorded	Transmission Method

3.7 Manage Business Intelligence

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

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

Import/ Export **Type of report** **Time frame**

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

Import/ Export **Type of report** **Time frame**

3. Does the CBRA generate statistics or reports (related to the import, export or trade promotion processes) based on public data **whose source is different from the ones referred to in**

Para 1 and 2? Please specify the type of statistics or reports the CBRA generates, and the time frame (e.g. monthly, quarterly, etc) that they are generated.

Import/ Export	Type of report	Time frame

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

Import/ Export	Commodity	Official body	Method

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

Role

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

Import/ Export	Reference material	Up-date frequency in days	Available "on-line'	For Trade	For Official body

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

What reference material:

3.8 Manage Legal and Policy

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

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

Name/Title	Cite	Authority Granted

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

Mandate	Process/Information Affected	Deadline

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

Reference material	Accessible to Trade

3.9 Manage Finance

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

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

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

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

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

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

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

Violation Type	Fine or Penalty	CBRA Collects?	Other CBRA Collects?

4. CBRA System Information ("As-is")

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

Data Submitted	CBRA System	Customs System	Frequency of Exchange

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

Data Submitted	**CBRA System**	**Frequency of Exchange**

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

☐ "Real-Time" Trade, Transportation or Decision Data
☐ Summarised Data in a Periodic Declaration according to a Simplified Procedure

☐ "Transaction Level" Trade, Transportation or Decision Data
☐ Not Applicable

☐ Unsure

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

Data Received	**Data Transmission Media**	**CBP System (if electronic)**	**Frequency of Exchange**

Data Received	Data Transmission Media	CBP System (if electronic)	Frequency of Exchange

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

   ☐ "Real-Time" Trade, Transportation or Decision Data
   ☐ Summarized Data in a Periodic Report

   ☐ "Transaction Level" Trade, Transportation or Decision Data
   ☐ Not Applicable

   ☐ Unsure

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

System

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

System

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

CHAPTER 3: SINGLE WINDOW BUSINESS PROCESSES

Document History

Version	Remarks	By	Date
Version 0.8	Preliminary version issued for peer review	SP Sahu	11-07-2010
Version 0.85	Peer review	Belle Vanderhoof / DMPT Focus group	24-09-2010
Version 0.88	Incorporating DMPT remarks and corrections	SP Sahu	09-11-2010
Version 0.90	Incorporating errors reported/Feedback in Conference call on 09-11-2010	SP Sahu	15-11-2010
Version 0.91	Further Edits / remarks	Susan Dysel	27-12-2010

PURPOSE

1. The purpose of this document is to explain how governments can organize business processes for providing regulatory services that govern cross-border trade. It attempts to describe the optimal ways of ensuring that trade submits information only once instead of several times to different government agencies. Policy managers, business architects, specialists on international trade law and regulations, and program managers of Single Window projects would benefit from this work. Those with background in government regulation of cross-border trade and electronic modes of service delivery would also find this document a useful reference.

2. The high-level business processes are envisaged in international instruments such as the revised Kyoto Convention and the SAFE Framework of Standards. These process models published as part of the WCO Data Model Project provide a high-level view of business processes are not meant to be use as a specification for developing software applications.

STATUS OF THIS DOCUMENT

3. The draft document is issued for information, comment and potential use by:
    a) The WCO Data Model Project Team (DMPT)
    b) The WCO Information Management Sub-Committee (IMSC)
    c) The WCO UNCITRAL Joint Legal Task Force
    d) Experts in the *Ad hoc* Group on Globally Networked Customs (GNC) in relation to international information flows
    e) Specialists belonging to WCO Member Administrations

    Distribution of this document is limited to the above teams. The Information Management Sub Committee will finalize this document for adoption by the WCO Permanent Technical Committee.

HOW THIS DOCUMENT IS ORGANIZED

4. **Section 1** provides an introduction to the concept of Single Window, its definition and the implications for business process modelling. **Section 2** describes the approach followed in identifying the business processes in a Single Window and the source material for this documentation. **Section 3** deals with the context within which Single Window business processes occur, the dimensions of business process analysis, the data harmonization and submission of harmonized information. Lastly, **Section 4** goes into a detailed overview of the actors and processes found in a Single Window Environment.

SECTION 1: DEFINITION OF SINGLE WINDOW: IMPLICATIONS FOR BUSINESS PROCESS MODELLING

5. „Single Window" is an approach to service delivery under which, the service provider offers a bundle of related services "under one roof" to make it convenient for the consumers to access and utilize these services. By organizing the location of service outlets, information for accessing services and interactions with regulatory agencies from the user's point of view, the Single Window approach helps reduce the costs and effort of both the provider and the consumer leading to favourable outcomes for both parties.

6. Considerable research has been carried out on the operational concept of the Single Window in the context of cross-border trade in which regulatory agencies provide services to the actors engaged in international trade and transport transactions. (The World Bank Group, 2010). The WCO views the Single Window concept as part of „Coordinated Border Management", which is the term it uses to describe global efforts at streamlining and simplifying border management systems and procedures. Coordinated Border Management includes the following approaches:
   a) **Co-location and sharing of regulatory facilities:** This provides the scope for unification of service outlets, fosters inter-agency co-operation, improves communication, and enables unified operational controls by sharing of operational information.
   b) **Empowered frontline officials:** Administrative authority is delegated to officials handling the government-trade interface either through notifications of delegation of authority within an agency or through cross-designation between agencies. Empowered frontline officials speed up decision making, leading to faster service fulfilment and greater velocity of business.
   c) **One Stop Border Posts (OSBPs):** Countries sharing a land borders enter into international agreements that enable close cooperation between agencies on either side of the border to ensure that regulatory formalities associated with import, export or transit are not duplicated
   d) **Single Window Environment:** Information and Communication Technology **(**ICT) enabled systems allow traders to submit all import, export and transit information required by regulatory agencies electronically only once instead of making multiple submissions to different government entities at different points in time.

7. Globally, implementations of the Single Window concept have adopted a mix of the above-mentioned approaches. The ICT enabled solution for one time electronic submission is only a part of the answer. UN/CEFACT Recommendation 33 (Economic & Social Council, the United Nations, 2005) provides a formal definition of the Single Window taking a strict and view of the concept by describing Single Window in terms of information flows between parties involved in trade and transport on the one hand and regulatory agencies on the other. This aspect is highlighted in Paragraph (d) above.

Approaches described at (a) through (c) are generally understood to be the organizational consequences of implementing a Single Window solution but are concepts that are equally significant in terms of legal and business process implications.

8. WCO prefers the term „Single Window Environment", which was also the term used in the concept brochure produced as a prelude to Recommendation 33. This is because Single Window implementations are usually constructed as a union of interdependent facilities joined by mutually defined interfaces and collectively agreed business processes. Accordingly, this document will use WCO's unofficial definition of *„Single Window Environment' as a cross border, 'intelligent', facility that allows parties involved in trade and transport to lodge standardized information, mainly electronic, with a single entry point to fulfil all import, export and transit related regulatory requirements.*

9. The term „intelligent" is significant because Single Window is not merely a data switch or a gateway to a set of facilities or a unified access point to a web portal. It is also a vehicle for providing shared services to the users. Computation of duties/ taxes, co-ordinated risk management and operational controls and orchestrating inter-agency business processes and workflows are some of the examples of shared services. This intelligence also makes it possible to provide the trader with an integrated view of his transaction. Without intelligence, the Single Window is just a „single portal" or a Value Added Network (VAN) service that connects the trader with various government agencies.

10. Intelligence notwithstanding, the defining feature of a Single Window remains „one time submission" to government agencies that seek information from trader and transport actors to enable the application of regulatory measures on cross-border movement of goods, people and all means of transport. Cross-border movements include import, export and transit.

11. „One time submission" implies avoiding repetitive submission of the same piece of information to government agencies. „One time submission" does not imply the delivery of the bulk of information in a single transmission data. Information may be submitted in multiple transmissions, allowing economic operators to submit data incrementally according to the logic of business processes covering cross-border regulatory clearance in its entirety.

12. „One time submission" cannot be achieved without standardizing information and documentation. The word „submission" in „one time submission" means providing of information to a Cross-border Regulatory Agency (CBRA) in a manner prescribed in law with view to receiving a decision or a determination from the CBRA. The movement of information between trade and government agencies and amongst government agencies is not merely an act of issuance of information by a party but is a significant action prescribed in the relevant legislation. The submitted information is generally

termed as a “declaration” or a “report”. The submitter, who provides the information to CBRAs, holds himself legally accountable for his “submission”.

13. Single Window business processes are a collection of related and structured activities designed to achieve one-time submission by trade and transport actors. These processes also include reverse flows of information from government agencies to businesses but the concept implies the issuance of a harmonized and co-ordinated response by CBRAs back to the submitter of the regulatory declaration. Avoiding redundant flows of information from CBRAs to businesses and vice-versa would help realize the true potential of a Single Window Environment.

14. One-time submission to a Single Window is based on following principles, all of which signify the „intelligence“ aspect of a Single Window Environment.

    a) **Incremental submission of data:** Trade and transport actors submit data to CBRAs at different points in time in the course of a transaction in international trade. A Single Window may require submission of only the incremental data to reflect a change or progression in the transaction. The Single Window should avoid re-submission of data to the extent that such data was part of an earlier submission. The ability to link-up individual submissions of data by a trader is part of the “intelligence” of a Single Window Environment.
    b) **Harmonized regulatory declarations:** Different CBRAs prescribe data requirements, which are often overlapping. Under a Single Window, a harmonized set of data requirements may be prescribed so that for a trade transaction or a transport movement the concerned actors are not obligated to submit the same data repeatedly to different agencies.
    c) **Sharing of information amongst CBRAs:** This is a logical consequence of harmonized regulatory declarations. This sharing enables the shared or separated application of controls by the respective CBRAs.
    d) Harmonized CBRA response: The response to a declaration/ report by a trade or transport actor is an important part of the business process. A CBRA response indicating release of goods signifies the fulfilment of a regulatory service. Each CBRA may process its responses independently but the single window must provide a unique harmonized response to the trader.

SECTION 2: APPROACH TO BUSINESS PROCESS MODELLING

15. The outcome of a Single Window in which trade is allowed to submit standard electronic data for import, export and transit only once, can be achieved by examining the individual activities and processes and how they are logically connected with each other. Experts have recommended a step-by-step approach to Single Window development beginning with business process analysis. (UNESCAP, 2010). Business processes are

driven by information and the Single Window is premised on ensuring that the inputting of information is carefully arranged to eliminate redundant inflows.

UML & BPMN : The different approaches

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

Use Case diagram;

The purpose of a Use Case diagram is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies (such as inclusions or extension relationships) between those use cases. The stick figures represent actors that can have a role. The ovals represent actions/steps in the process and the lines indicate a relation between the actor and the process step

Use Case description;

It is a table describing Actors, Preconditions, Post-conditions and the scenario. In the row „Actors" are those parties that can play the role in that process. In the row „Scenario", the process is described step by step (at a fairly high level).

A number of countries agree with the need for an effective Business Process Modelling as part of the preparatory phase for the establishment of a Single Window along with functional messages. While the Unified Modelling Language (UML) is associated with a Software development perspective, there are other internationally recognized modelling

standards that needed more recognition. Vusiness process modelling for a Single Window, especially for a business audience needed simpler notations.

Business Process Model and Notation (BPMN) Version 2.0 has been used as the methodology for modelling in several organizations. BPMN is a standard developed and maintained by the 'Object Management Group (OMG).

In order to model the implementing provisions of the EU Modernized Customs Code, experts from the EU have chosen BPMN. There is a choice available to WCO Members to use other open standards for Business Process Modelling. UML was chosen by the WCO as an open standards based on an earlier decision of the IMSC to follow international standards such as the UN/CEFACT Modelling Methodology, which was based on UML. There is no reason why the modelling methodology should be restricted to UMM, especially when there was uptake for other open international standards such as BPMN.

Five Dimensions of Analysis

17. Models are abstractions that help visualize the real world of the business. The abstractions simplify the real world to help analysts examine the only aspects relevant to the subject of analysis. For this documentation, the five dimensions of Chronology, Geography, People, Procedures and Exchanges are examined.

18. Business process models cover the „what" processes of individual CBRAs, their interactions with the trade and among themselves. These models do not cover the question of „how" the CBRA carries out those processes. For example, when an activity diagram mentions “CBRA conducts risk analysis” or “importer submits declaration,” the models do not get into the question of how the risk analysis is done or how the importer"s declaration is validated and processed.

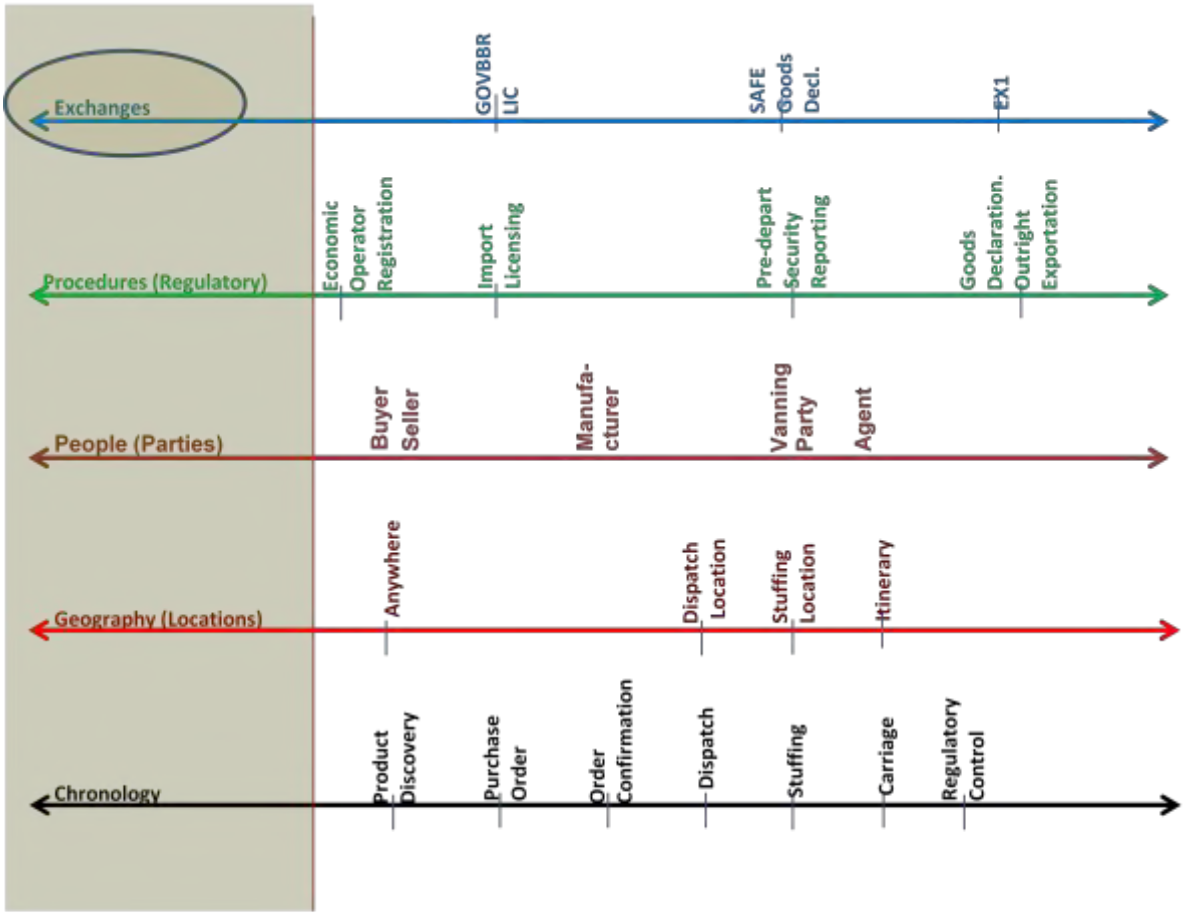


Diagram 1: SW Business Processes Analysis: WCO's Five Dimensions

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

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

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

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

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

19. The diagram below depicts the B2G, G2B, G2G and B2B exchanges that take place between business and regulatory agencies both nationally and internationally. There are several acronym used in the diagram following diagram. These are
    a. NSW stands for the **National Single Window** and covers bidirectional information flows between business and governments (CBRAs) and between CBRAs of one country/regulatory territory.
    b. ISW stands for the **International Single Window** which handles exchanges between National Single Windows and CBRAs located in different national jurisdictions/ regulatory territories. The exchanges referred to in the ISW are linked to the WCO concept of Globally Networked Customs. It is also the subject of the UN/CEFACT project on Single Window Interoperability to produce a UN Recommendation number 36. This project is in its initial stages.
    c. **Community Systems:** Systems that facilitate information exchange that occurs between Businesses both nationally and internationally are referred to as community systems. These systems are built generally as infrastructure to enable digital commerce to cater to a community of interest. The port community systems or cargo community systems are examples of Community Systems. These systems play a key part of the Single Window process as they often facilitate the processes of information integration and business process choreography. The processes that are covered by Community Systems are established based on partnership amongst businesses. Sometimes CBRAs also partner with Community Systems to facilitate the flow of regulator information. These Community Systems act as third party intermediaries that submit data on behalf of the businesses and provide key work-flows and controls to manage the progression of the international trade or transportation processes. Each system has a portfolio of services. The portfolio of services can be classified according to a scheme or taxonomy. Using the taxonomy, it is possible to list out services

that belong to non-overlapping categories. Each category can be decomposed to form hierarchies. Service taxonomies help in separating the scope between community systems and Single Window solutions.

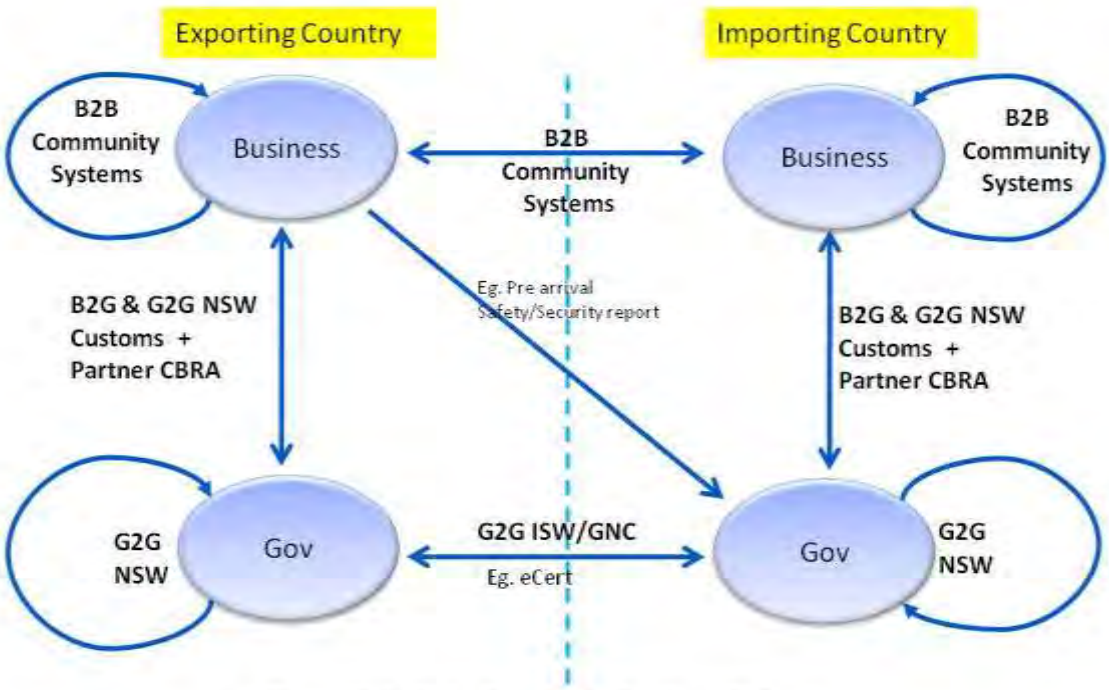


Diagram 2: Analyzing Cross-Border Regulatory Exchanges

20. The 5 dimensions of analysis mentioned in paragraph 18 will provide the framework for the end-to-end description of business processes. The framework is described in Section 3 of this document and Section 4 contains the flows but not the individual UML diagrams.

Business Processes in a Single Window: Sources of Information

21. As part of the development of Version 3.0, the Data Model Project Team had examined data requirements from a Single Window perspective. It had produced an analytical tool for documenting the functional requirements for a Single Window the "*WCO Single Window Initial Functional Assessment Guide*". The DMPT also produced the "*WCO Single Window Data Harmonization Guidelines"* as a tool that helps collect, analyze,

reconcile and harmonize the data requirements in a Single Window. To identify Single Window business processes, the following source material have been used:

a) WCO Data Model version 3.0 included documentation based on the business processes described in the revised Kyoto Convention, the IMO FAL convention, the TIR convention and other international conventions. This documentation already assumes that there will be flows between national Cross-Border Regulatory Agencies in a Single Window environment.

b) APEC produced surveys on Single Window in 2007 and 2010, documenting the roles and functions of different Government Agencies involved in international trade. WCO concluded a similar survey in 2011. These surveys yielded detailed information on different types of government agencies involved in the regulation of international trade and transport, their functional responsibilities. These surveys also included business processes covered by their respective national single windows of individual governments/ economies.

c) Cross-border regulatory procedures are governed by national legislation. Such legislation is usually based on international conventions, standards and practice, which are established in order to simplify and harmonize trade procedures. This document relies on these international instruments as the basis for standardized representations of these business processes.

SECTION 3: THE CONTEXT OF BUSINESS PROCESSES IN A SINGLE WINDOW

UN/CEFACT BUY-SHIP-PAY Model

22. UN/CEFACT describes the International Supply Chain in its BUY-SHIP-PAY Model described in UN Recommendation 18. (UNCEFACT, 2001). In this document there is a simple, high-level reference model consisting of the three groups of business processes, BUY, SHIP & PAY and the main generic actors are Customer, Supplier, Intermediary and Authority.

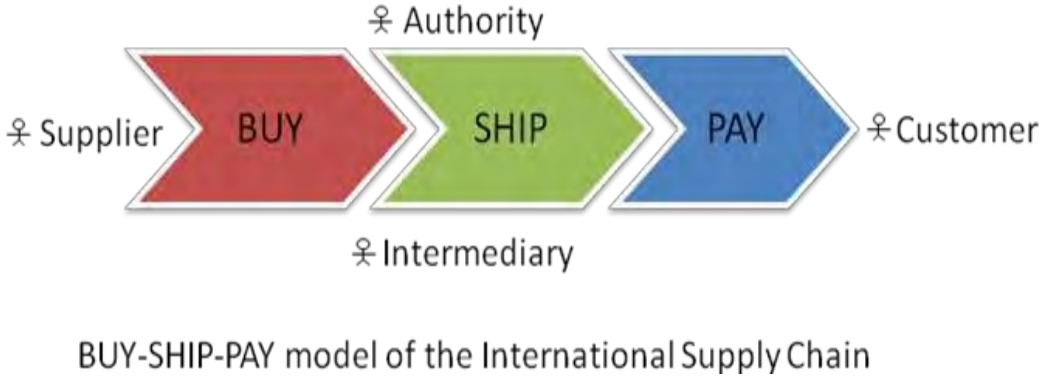


Diagram 3: The Simple BUY-SHIP-PAY process [Source: UN/CEFACT]

23. There are a number of ways of viewing business processes in the international supply chain. Each view serves a particular community of interest, which has its own definition of transaction in the international supply chain. For the regulatory agencies, the transaction may end with the release and clearance of goods. For the traders (buyers and sellers) it will not end until goods are delivered and accounts receivables are settled. The transporters likewise will square-up their records on the transaction when all payments and claims in respect of a transport contract are settled and this may involve the carriage of multiple consignments. To manage these differing views, experts have produced different process and information models to describe apparently similar processes in the Supply Chain. These differing views may be grouped them into „Trade" „Transport" and „Regulatory".

24. According to the BUY-SHIP-PAY model, the BUY processes cover all commercial activities related to the ordering of goods, SHIP processes cover all of the activities involved in the physical transfer of the goods including official controls, and PAY processes cover all of the activities involved in the payment for the goods. The UN/CEFACT Buy-Ship-Pay model was expanded and described in the „Reference Model of the International Supply Chain with special reference to Trade Facilitation and Trade Security" (UN/CEFACT, 2007). Each of the BUY, SHIP and PAY areas has been divided further into Business Areas and Process Areas, which serve as the basis for the elaboration of the models broken down to the relevant details. UN/CEFACT BUY-SHIP-PAY modelling guidelines have broadly assigned the business areas for different business processes.

25. Official controls, covering all processes involving Cross-Border Regulatory Agencies have been grouped together under SHIP processes. This is only for convenience since activities related to official control extend beyond the physical transfer of goods and sometimes extend into the BUY business areas (international orders for purchase

depend on licensing or certification goods, manufacturers, premises). Regulatory processes also extend into PAY Business Areas, since paying for the goods include payment of duties, taxes and fee and details of payable or paid amounts for goods determine customs valuation.

26. The full elaboration of BUY-SHIP-PAY processes models are still work-in-progress and does not provide complete guidance on Single Window business processes. The modelling work done under the WCO Data Model project and the additional models produced by the WCO Data Model project team will help provide the necessary high-level models.

27. In the literature on Single Window, there is mention about International Trade Single Windows, Logistics Single Window and Maritime Single Windows. To the extent that such “Single Windows” provide services to actors in the international supply chain for the fulfilment of regulatory requirements, they are within the scope modelling to be carried out as part of this document. Services to business that are not covered by cross-border regulation are out of the scope.

WCO Data Model: Simple Business Process Diagram

28. To overcome limitations posed by different view of the BUY-SHIP-PAY supply chain, the data model project team developed the „Simple Business Process Model“. Please see the diagram 4 below. The term “reports / declares / produces” refers to the Revised Kyoto Convention meaning of the term: to report the Cargo Declaration, to declare a Goods Declaration and to produce the Goods or a declaration of departure or arrival to Customs. The processes and data-flows through and within the box titled Cross-Border Regulatory Agency will be the main area of interest.

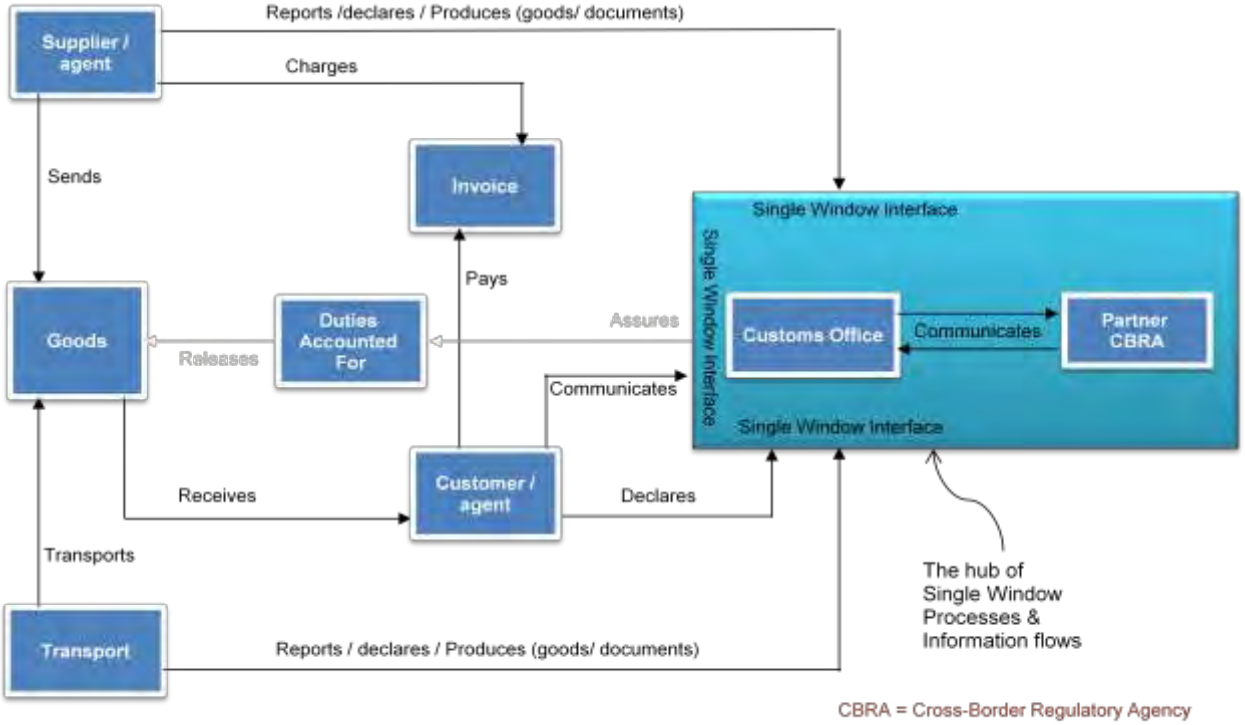


Diagram 4: WCO Data Model: Simple Business Process Diagram

Trade, Transport & Regulatory Views of the Supply Chain

29. International trade procedures are very complex and involve multiple parties situated in different countries. It is useful to divide these procedures into Trade, Transport and Regulatory processes. Diagram 5 illustrates these three distinct views of Trade, Transport and Regulatory processes that take place simultaneously. Each of these views represents a related collection of business processes. This type of diagramming may include chronology, geography, parties, procedures and exchanges - the 5 dimensions of analysis listed in the preceding section – in the same frame. Diagram 5 also lists the different types of IT systems that are used to conduct business processes in order to further highlight the complexities involved in executing Single Window business processes.

30. The *Trade* view will involve discovery of products by potential buyers, identification of business partners, the establishment of agreement for purchase of goods and the activities dealing with the fulfilment of the Purchase Order. Supply chain events such as Order Confirmation, Despatch, and Delivery are relevant to this view. The Trade view reflects the services sought by the trade actors such as the buyers, seller and the manufacturers of goods.

31. The same set of events will be viewed by the transport actors in terms of supply chain logistics events. The *Transport* view includes processes linked to the physical carriage of goods on a means of transport. These processes are linked to booking of space, stuffing of transport equipment, loading and unloading of goods and the delivery of goods to the ultimate consignee.

32. The *Regulatory* view concerns itself with regulatory reporting to authorities along the entire supply chain. In this view, actors are entities that fulfil regulatory formalities with authorities at import, export and transit. The regulatory view maintains focus on the exchanges between regulatory authorities and business entities. This view helps understand supply-chain events in terms of events involving regulatory controls.

33. It may be of interest to note that certain physical events on the ground such as stuffing of cargo into transport equipment or transport means, loading and unloading of transport means and delivery of goods to the ultimate consignee have identical meaning in all the three view, making it possible to correlate information from these three different views. Such correlation may be necessary because data supplied by actors in the fulfilment of Cross Border regulation has its origin in processes of trade and transport.

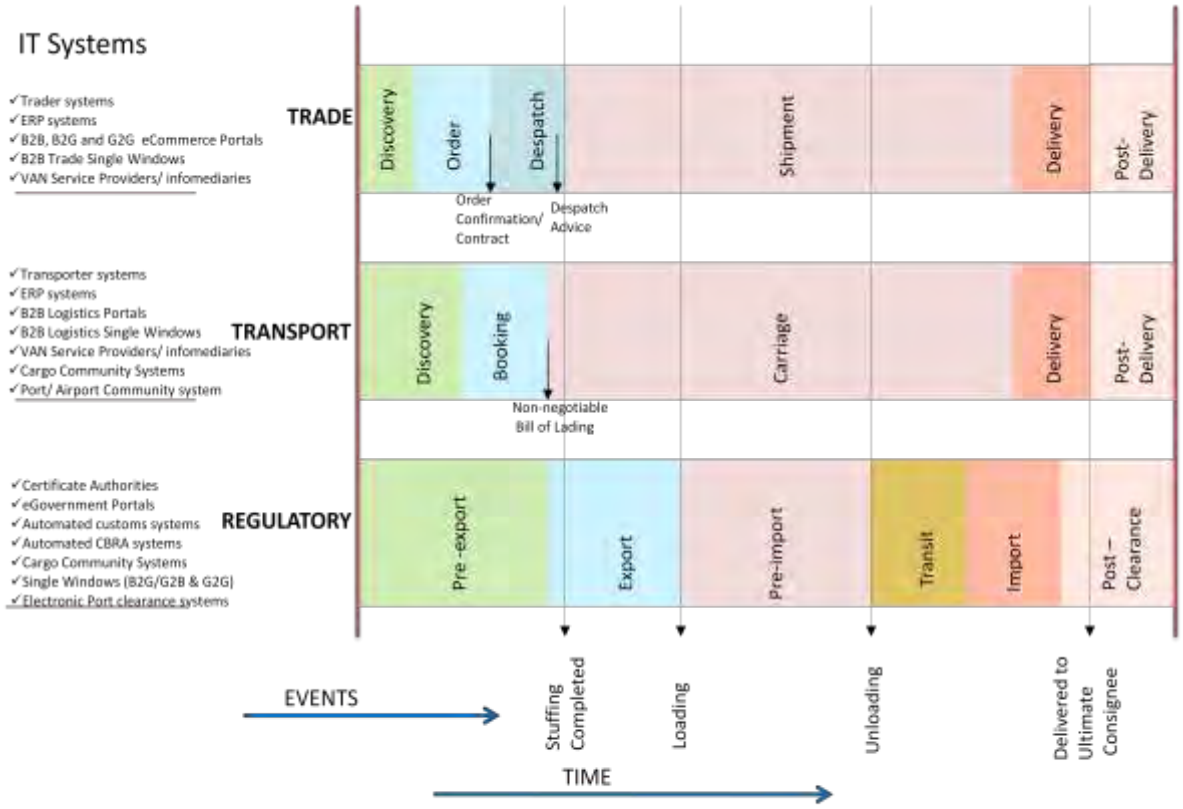


Diagram 5: Overview of Trade Transport & Regulatory Processes

The Regulatory View of the Supply Chain

34. Diagram 6 provides the high-level picture of the Regulatory view. It captures the actions of the key players in a Single Window in pursuance of regulatory compliance. This is elaborated in greater detail in subsequent Diagrams 8 to 11. These diagrams will serve as the reference diagrams for further elaboration of business processes in a Single Window Environment.

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

36. These phases follow the logical flow of goods through a supply chain in which goods leave regulatory territory of export using the means of international transport in order to reach the regulatory territory of destination via (in some instances, one or more) regulatory territories of transit. These phases provide the basis for projecting flows of

regulatory information between the relevant actors in a sequential manner. Tracking the business processes underlying these flows is the object of this document.

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

38. On the left hand side of Diagram 6, the names of the relevant actors have been provided. These actors are generic actors. For a detailed overview of all the actors defined in the WCO Data Model and the generalization relationship, please refer to the relevant sections in the WCO Data Model covering all Business Process Diagrams diagrams. Exchanges take place between these generic actors depicted in the diagrams 8 to 11. These actors participate in regulatory procedures in their respective roles in different phases starting from the pre-export phase and ending with the post clearance phase, although not every actor will have a role in everyone of the phase. Across the top of the diagram are the identified processes.

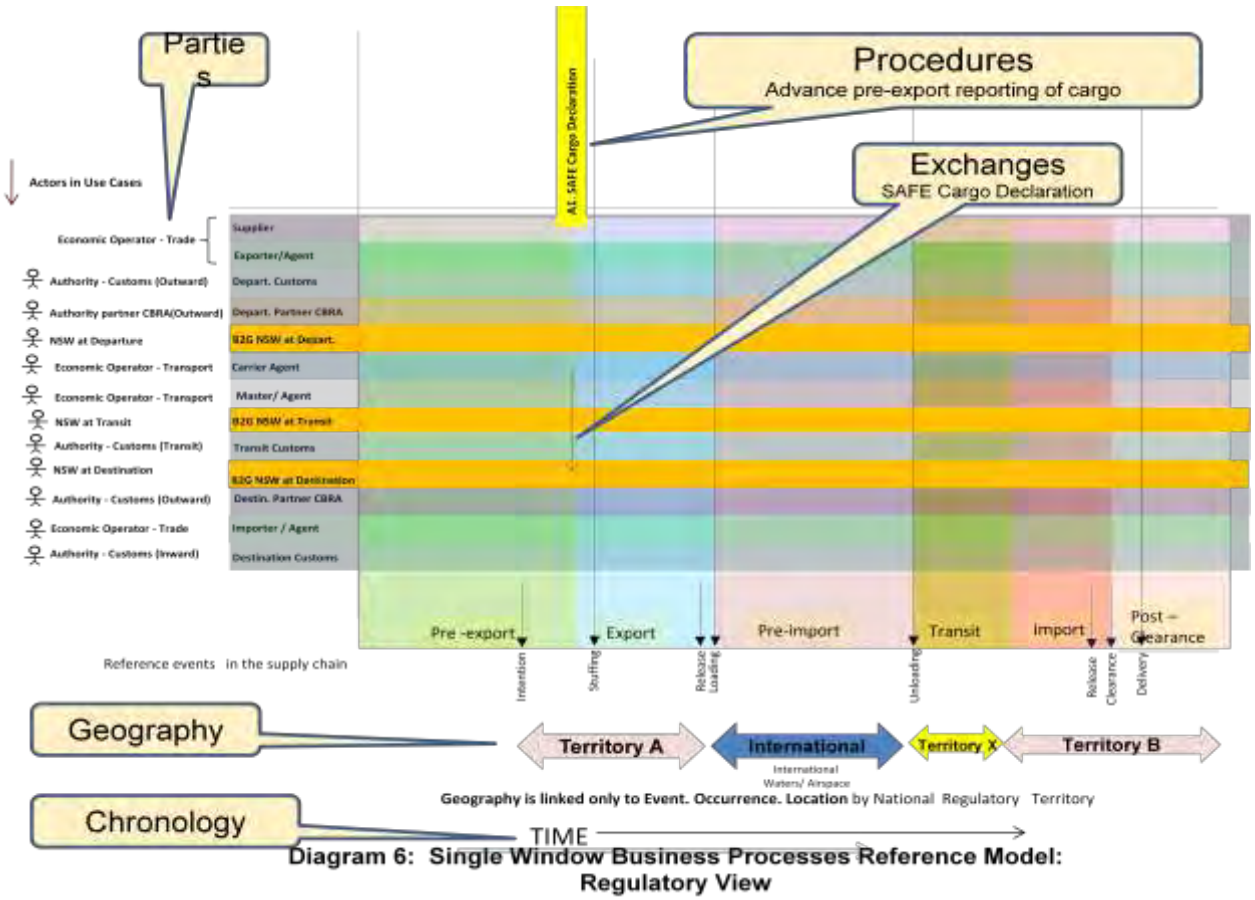


Diagram 6: Single Window Business Processes Reference Model: Regulatory View

The Regulatory View of Single Window Business Processes

39. In Diagrams 8 to11 show the end-to-end view of regulatory processes. These processes are described in a general chronological order of their occurrence –while the order of processes broadly holds, there could be certain alternative or exceptional scenarios with certain differences in sequence. The Diagram 8 depicts the initial set of procedures that establish the CBRAs that offer registration services. Registering an entity may also involve regulatory approvals. For example, in the case of a hypothetical country X, a trader will not be registered for import and export operations without having a VAT number. In most countries, customs brokers may be required to furnish minimum financial guarantees and provide proof that they have passed the qualifying criteria. Customs locations and customs areas are required to satisfy regulatory criteria for approval.

40. The procedures of registration involve submission of key data into the Single Window about parties (economic operators) involved in a supply chain process, regulated products, means of transport, regulatory locations, CBRAs and their services and means of transport etc. In addition to key business data, registration processes also establish technical information about Single Window users and Single Window services. Diagram 7 provides the details of these processes (R1 to R9).

41. Registration processes establish the identifiers for the registered entities. A set of attributes for these registered entities may have been subject to regulatory verification as described in the preceding paragraphs. In the transactional reporting to customs, the trader in his goods declaration for import and export merely mentions the identifiers and not their underlying attributes, thereby reducing duplicate data flows. These identifiers serve as the linking pins of information in the Cross-border Regulatory Processes described in Diagrams 9 to 11.

42. The green lines pertain to partner CBRA"s procedures such as application and issue of licenses, Certificates and Permits and declarations made to partner CBRAs for the clearance of cargo at import, export and transit. (Please see Diagram 7). The processes covering goods declarations, cargo reports, conveyance report and post clearance audit exchanges shown in Diagrams 9 to 11 subsume the transactional verification and post verification processes carried out by all CBRAs including customs.

43. The vertical lines in Diagrams 8 to 11 with arrows representing information flows are called “declarations”. A declaration is a statement or action, in any form prescribed or accepted by the CBRA, giving information or particulars required by the CBRA. The CBRA response to these declarations represents the reverse flow of information. It is

assumed that every declaration is matched with one or more responses from the regulatory agencies.

Data Simplification and Harmonization – The Regulatory Declaration

44. Generally, in the absence of data harmonization, separate procedures are followed by customs and partner CBRAs leading to multiple declarations. For instance, if there is a customs goods declaration at import, there would as well be a regulatory declaration for a partner CBRA at import. After the harmonization of regulatory data, a*n*d standardization of data requirements, it is possible to combine these into a single cross-border regulatory declaration, as shown in Diagram 7 below.

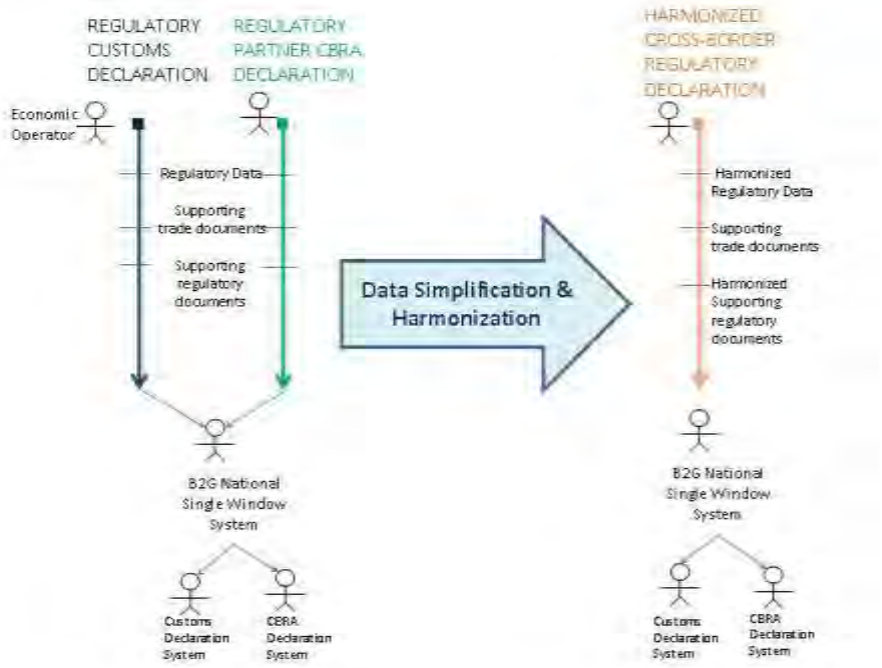


Diagram 7: Regulatory Data Harmonization: Data simplification and harmonization makes it possible to create a harmonized regulatory declaration which may help collect data for different regulatory agencies .

SECTION 4: BUSINESS PROCESSES IN A SINGLE WINDOW ENVIRONMENT

Grouping Business Processes

45. Single Window implies „one-time" submission of data, and it is therefore necessary to keep track the original source of data within the supply chain. Identification of the original source of data helps establish the business process involved in the „first submission", obtain information first hand and maintain quality. These business

processes are often rooted in laws and regulation, supported by administrative instructions. Therefore, along with the listing of groups of business processes, this section also points to the regulatory basis for source for those business processes.

46. For convenience, business processes in a Single Window have been divided into the following groups:

	Group of Business process	**Source Material/ legal basis**
I	Registration/ Regulatory Authorization	SAFE Framework of Standards[AEO Concept], National legislation regulations/ business practices
II	Application/issue of Licenses, Permits, Certificates, Others (LPCO)	Several international Instruments/ National Regulation
III	Advance information	[SAFE Framework of Standards].
IV	Goods declaration /Cargo report/ conveyance report	[RKC Business Processes], IMO FAL Convention, TIR Convention etc
V	Post release compliance verification	[WCO PCA Guidelines]

Business processes for post release compliance verification listed at V above have not been covered in this documentation.

Group I Processes - Registration/ Regulatory Authorization

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

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

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

    a. **National Single Window Operator:** It is assumed that a „Single Window Operator" will be established as a legal entity, with the mandate to provide Single Window Services. In describing the single window business processes, it is perhaps necessary to mention the existence of National Single Windows in different jurisdictions. There may be a national single window in existence at the country of origin (NSW at Departure), in the transit country (NSW at Transit) and in the destination country (NSW at Destination). The interaction between national single window operators provides the G2G dimension in a Single Window.
    b. **Economic Operators:** Economic operators are parties from Trade and Transport that play a role in a single window environment. Economic operators are often facilitated by intermediaries called Agents, who play certain roles on behalf of the economic operators. These agency roles are defined in laws and regulations in cross-border legislation. Any compliance-related activity that is supposed to be performed by an economic operator can also be performed by its agent. The following diagram depicts the general relationship between actors in a single window. For a detailed overview of actors, please refer to Use Case - Register Economic Operator (R4).

50. The Group I business processes, shown in Diagram 8, and the legal issues involved, are listed in the Table 1 below:

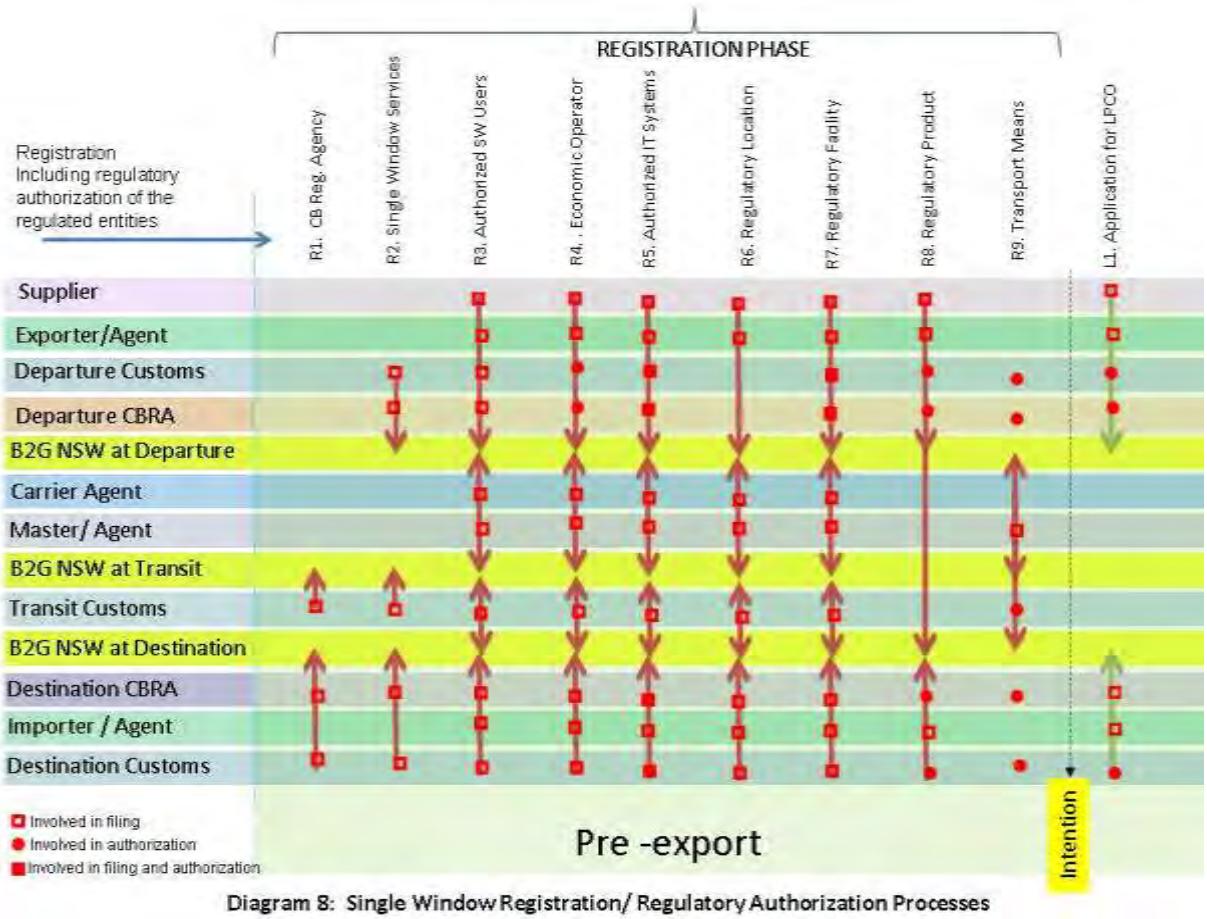


Diagram 8: Single Window Registration/ Regulatory Authorization Processes

Table 1: Registration/ Regulatory Authorization (Group I Processes)

REF	Business Process	Brief Description
R1	Register Cross-Border Regulatory Agency(CBRA)	The Single Window Operator captures the necessary information and performs certain actions to register a Cross-Border Regulatory Agency. [This use case describes how a CBRA is brought on board a Single Window Environment]. Legal Issues: →Regulation defining the facility provided by the Single Window Operator

		→Regulation that the facility is a legally valid means to fulfill regulatory obligations →Regulation defining the right of the operator to host Single Window Services and the operator‟s roles and responsibilities therefore.
R2	Register Single Window Service	The Single Window Operator makes arrangements to provisions a service on behalf of a CBRA. Legal Issues: →Obligations of the Single Window Operator and the CBRA in relation to the hosted services. →Legal agreement between the CBRA and the Single Window Operator on security, privacy, data management lifecycle, standards of service etc.
R3	Register Authorized Single Window users	The Single Window Operator makes arrangements to provisions on the Single Window information system, a user belonging to a CBRA or a user belonging to an economic operator that is the recipient of a service defined in R2. As user is an individual belonging either to an economic operator or CBRA that is an entity distinct from the Economic Operator for governance within a Single Window. Legal Issues: →Regulation covering on-boarding procedures. →Granting rights to the users (individuals from the trade

		and CBRAs) for accessing the information resources (e.g. web/EDI applications) offered by the Single Window Operator. →Regulatory definition of what constitutes user identification and authentication, use of digital signatures etc. →User"s conditions of participation in relation to each of the services.
R4	Register Economic Operator	The Single Window Operator in relation to a cross-border regulation captures all relevant particulars of an economic operator and registers the Operator for the requested services. The economic operator registration leads to the creation of a "Trader Account" which needs to be managed by the Single Window for the life-time of its existence. Legal issues: → Harmonizing legal definitions for business entities that deal with CBRA. → Regulatory verifications concerning economic operators, identity management processes. → Managing identities for different CBRAs →Managing identities between NSWs and Community Systems. →Managing identities globally between National Single

		Windows implemented in different regulatory territories. (ISW and GNC scenarios)
R5	Register Authorized IT System	The Single Window Operator makes the necessary arrangements to register the IT systems linked with the operation of Single window services Legal Issues: → Regulation granting rights to the IT applications and IT devices (belonging to Economic operators and CBRAs) for accessing the information resources (e.g. web/EDI applications) offered by the Single Window Operator. →Regulation specifying the conditions of participation for each of the services.
R6	Register Regulatory Location	The Single Window Operator in relation to a cross-border regulation captures all relevant particulars of a regulatory location. Legal Issues: →Legally defined locations where goods (and transport means) are approved for crossing the border, for storage, warehousing, examination, testing or are dealt with otherwise in the course of international trade. Different CBRA legislation defines these locations differently in their respective legislations.

R7	Register Regulatory Facility	The Single Window Operator in relation to a cross-border regulation captures all relevant particulars of a regulatory facility. Legal issues: Same as those mentioned in R6
R8	Register Regulatory Product	The Single Window Operator in relation to a cross-border regulation captures all relevant particulars of a regulatory product. Legal Issues: →Regulatory processes that register products recognize the product identities, attributes, regulatory classification, regulatory restrictions, conditions for import and export etc. → Each CBRA may have different ways of identifying and classifying tradable goods/products.
R9	Register Regulatory Transport Means	The Single Window Operator in relation to a cross-border regulation captures all relevant particulars of a regulatory transport means. Legal Issues: →Laws dealing with regulatory certification of transport means that are used to carry goods in and out of a regulatory territory. These are subject to global regulations.

Group II Processes - Application for Licenses, Certificates, Permits and others

51. All movement of goods and means of transport across border are subject to tariff and non-tariff regulatory regimes. With the liberalization of trade, most traded goods in the world are not subject to quantitative restrictions. However, there still are a variety of non-tariff restrictions imposed by national laws and international conventions. These restrictions impose conditions that must be met before regulatory authorities permit imports, exports and transit. These conditions are often documented and expressed in terms of licenses, permits, certificates and other documents that suggest that the transactions meet these conditions. In spite of the variety of goods that are subject to such restrictions, use cases are very similar. The process include: (i) Application for licenses/ permit / certificate/ others; (ii) Pre-issuance verifications; (iii) Transactional compliance checks at the import or export; (iv) Post transactional compliance/analysis.

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

L1	Application of License, Permit, Certificate or Others	The economic operator applies to a Cross-border regulatory agency for a License Permit or a Certificate and receives a response. There are pre-issue verification, post-issue verification and transactional verification processes during which, the LPCO validity, applicability, quantities, amounts, etc are verified. Legal Issues: → Recognition of certificates and licenses issued in another country. →Delegation of authority for regulatory verification (where such delegation is envisaged).

Group III Processes - Advance information

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

Table 2: Advance Information Processes

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

Legal Issues: common to all processes in Advance Information

→Enabling legislation for advance reporting.

→Legislation often authorizes 3rd parties to submit this information on behalf of the carrier. Liability of such a 3rd party needs to be legally defined.

→What is the legal arrangement for Advance Information that is submitted to the NSW at departure to be transmitted for onward use by the NSWs at transit and destination? (Considering that the question of feasibility and desirability such transmissions would be addressed separately.)

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

54. The processes T1 to T8 in Table 3 are based largely on the revised Kyoto Convention In addition to the above models, there is the response package model which depicts the business processes associated with a CBRA"s response to a declaration.

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

Table: Goods Declaration/ Cargo Report/ Conveyance Report

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

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

Diagrams 9 to 11 below provide the pictorial view of some of the processes pertaining to Advance Information, Regulatory Goods Declaration, Cargo Report and Conveyance Report. .

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

→Enabling legislation governing these declarations – not just for customs but also for partner CBRAs [legislation covering obligation to declare – definition of the taxable events, liability of duties taxes and fee, the manner and measure of the various levies etc].

→ CBRA specific legislation that enables the receipt of this data digitally, including logical and security controls specifically defined in the legislation/ regulation. Mandate of general e-governance legislation to move to digital or paperless processes.

→ Regulatory Procedures defining the place and timing of declaration to be harmonized between customs and partner CBRAs.

→ Authority to access data, use data and process data received are processes covered by CBR Agency-specific legislation. CBR Agency authority to view and make determinations based on data received in the „pool" formed in the Single Window Environment needs to be addressed specifically. All these processes have to be tempered by:

- Inter-agency data exchange procedure and legal liabilities and obligations of agencies handling the data.

- Treatment of data received as part of declarations and reports which are subject to legislation of dealing with rival concerns of data privacy and information transparency.

- Action of checking of declaration, confirmation of verification and legally valid notification of regulatory determinations arrived at by authority.

- Legislation often authorizes a 3rd party to submit this information on behalf of the carrier or importer. Liability of such a 3rd party needs to be legally defined. Ability to use data and exchange data with Community Systems that act as legally authorized 3rd party suppliers of regulatory declarations and reports.

- Legal provisions in a multi-party agreement between the concerned parties to enable filing of declarations through or by a 3rd party is a pertinent legal issue.

- What is the legal arrangement for the declaration / reports data that is submitted to NSW at departure be transmitted for onward use by the NSWs at transit and destination? (Considering that the question of feasibility and desirability such transmissions would be addressed separately.)

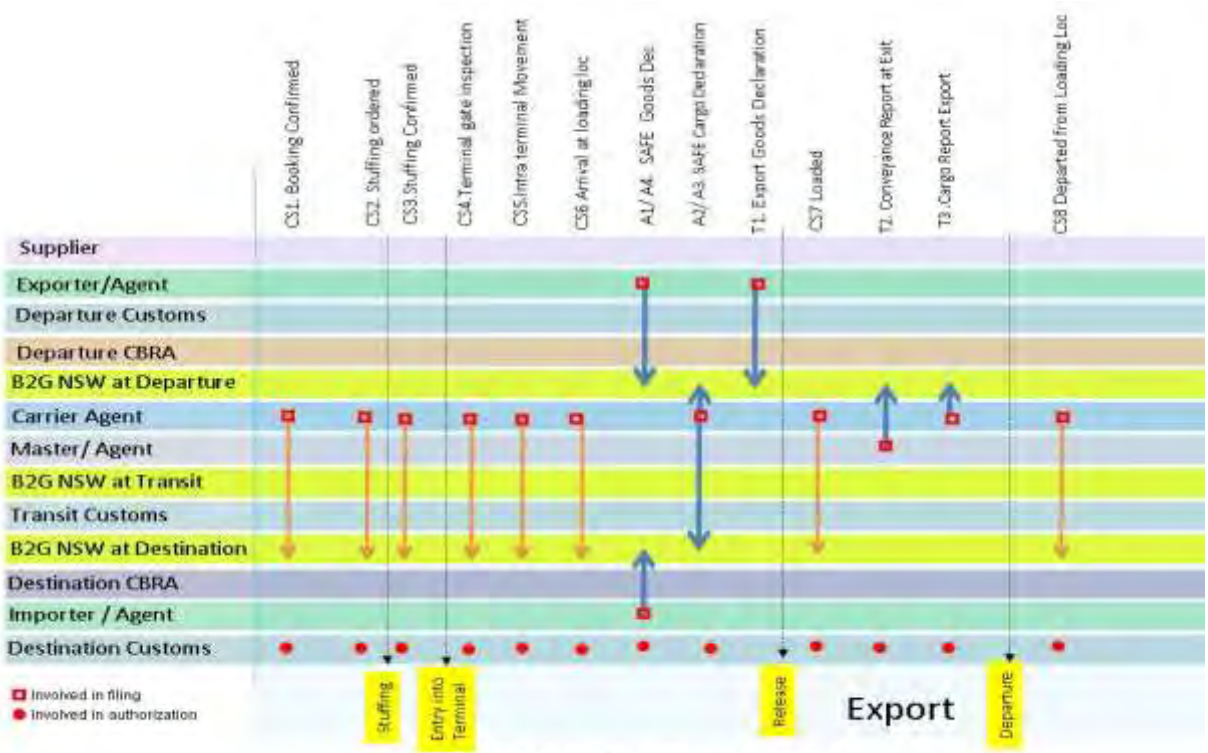


Diagram 9: Single Window Advance Reporting

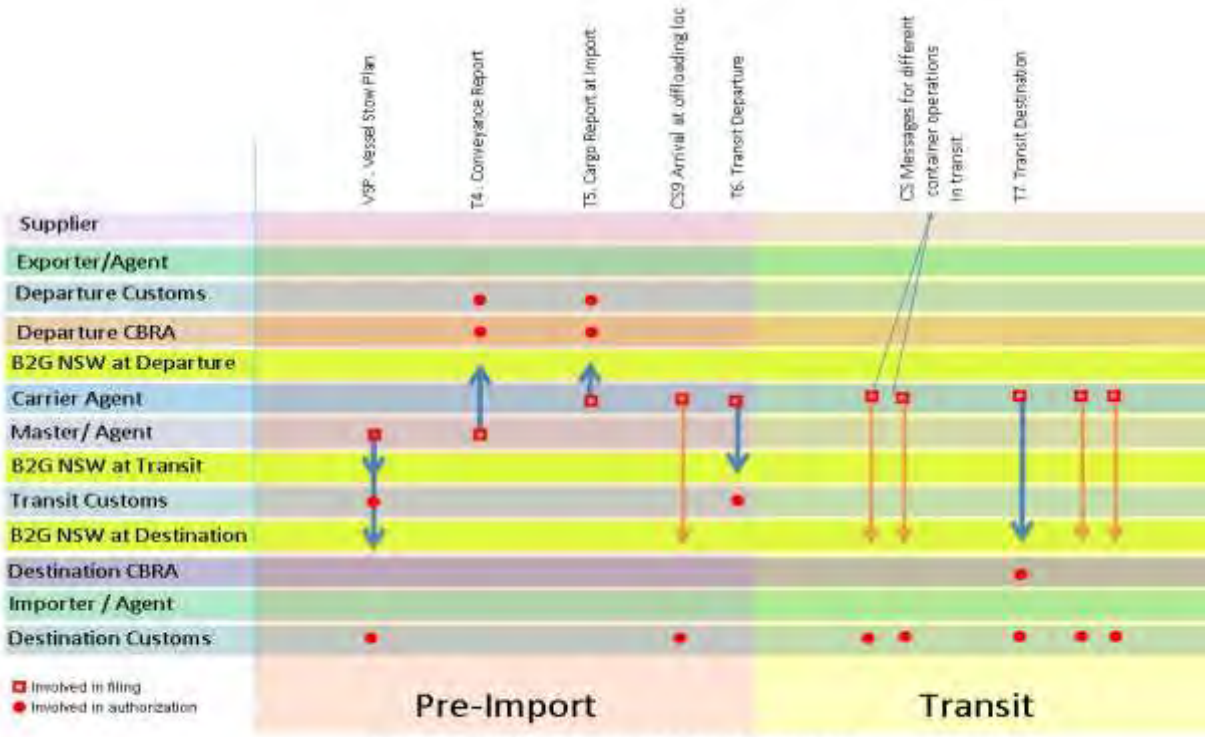


Diagram 10: Single Window Advance Reporting

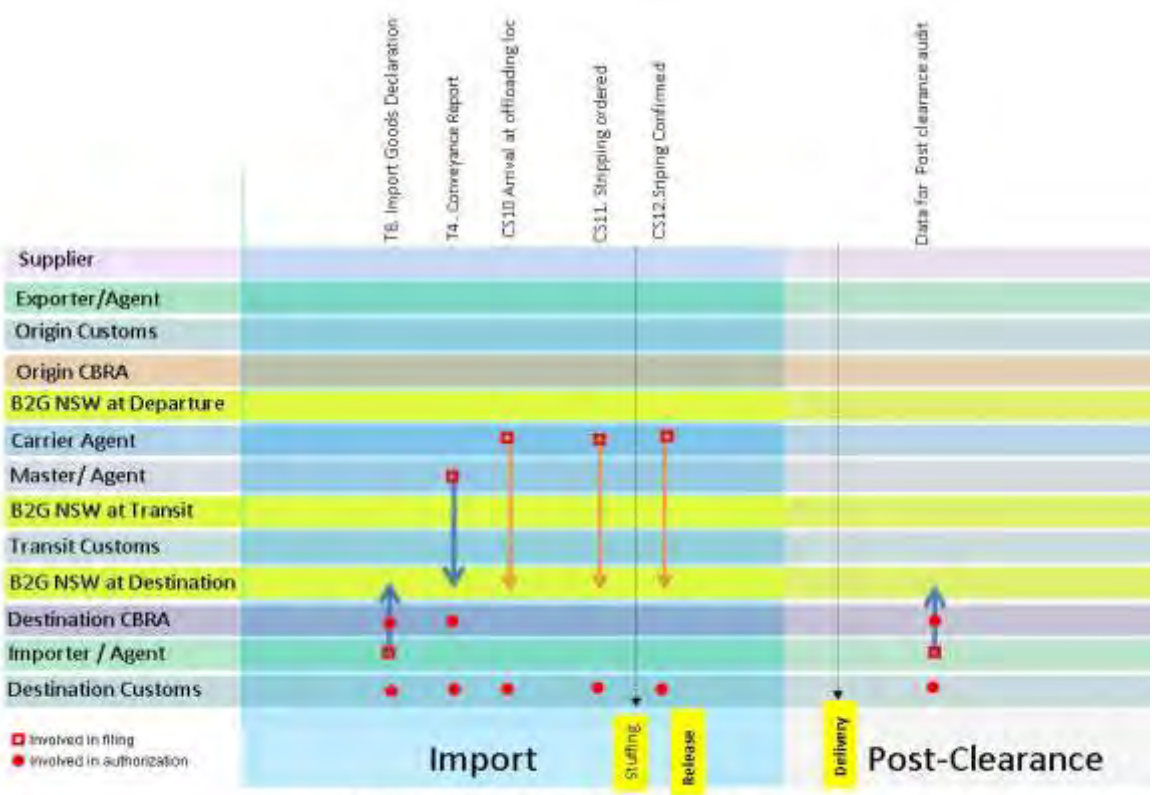


Diagram 11: Import and post import processes

CHAPTER 4

CHAPTER 4: SINGLE WINDOW DATA HARMONISATION

1. INTRODUCTION

In many countries the design and development of automated systems and the establishment of information and data requirements are often done with little co-ordination among regulatory agencies and with little co-ordination and consultation of other government agencies. As a result Trade[1] must comply with a variety of electronic messages and forms resulting in increased costs and in many cases inaccurate data.

A Single Window environment would provide a solution to the problem of the different electronic messages and would improve the accuracy of the use of data if internationally agreed standards are being used such as the WCO Data Model.

1.1 Scope

The scope of these Guidelines is to provide

- Single Window environment developers with tools that can be used in order to achieve data harmonisation. Internationally standardised, in the context of these Guidelines, are the data element names, definitions, the UNTDED[2] tag and the format[3].
- Single Window users with tools based on best practices that have been successfully employed by countries where Single Window systems are being developed or have been implemented.

2. BENEFITS

The use of non-standard, country-specific, and / or agency-specific data is highly inefficient in terms of cost and accuracy for both government and trade. Governments are required to maintain or develop agency-specific systems and Trade must develop and maintain interfaces for these redundant and duplicative reporting requirements. This is also evident in non-automated, paper-based systems where Trade is required to provide highly redundant forms.

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[1] Traders include importers, exporters, carriers, brokers, freight forwarders, etc .

[2] United Nations Trade Data Element Directory 2005/ ISO 7372:2005

[3] Elements from the UNTDED have been used according the WCO Data Model standards as much as possible

The situation is especially critical for large global traders who must interact with many Customs Administrations and many other government agencies. The cost and complexity of meeting these requirements is staggering. Not only large global traders but also SMEs[4] will benefit as well.

The use of international standards in data and messaging for export, transit transactions and import, where the same data and messages can be submitted to all government agencies including Customs will be the core foundation of a Single Window environment. The use of the WCO Data Model will ensure compatibility among government agencies‟ reporting requirements and will enable the exchange and information sharing among relevant government agencies including Customs, resulting in greater facilitation towards Trade.

As governments begin the development of a standardised, multi-agency data set there might be a concern about the number of data elements. To keep the number of data requirements as small as possible, the intent is to include in the standardised data set only that information which the agencies are currently allowed to collect, the "need-to-have-list" of information requirements.

The discovery of redundancy of data that would be revealed during the data harmonisation process and the ensuing standardisation, often results in reduction of data requirements.

Another benefit is the stability a standardised set of data requirements provides. The outcome of the data harmonisation must be a maximum set of data requirements for the export, transport and import of goods when crossing borders. Governments should not require any information outside of the standard data set. It is important to note that most of the data requirements of the WCO Data Model are Conditional. National Governments will use the WCO Data Model with its maximum data set to derive its National all-of-government border crossing data model.

3. RECOMMENDATION

It is recommended that governments considering the development or developing a Single Window environment should initiate the data harmonisation and standardisation process. It is also recommended that countries that have a Single Window in place and not executed a data harmonisation would also conduct such a harmonisation. These guidelines sets forth the steps governments should implement in the harmonisation process as follows:

1. Identify the lead agency and dedicating staff to conduct the harmonisation,

[4] Small and Medium Enterprises.

2. Inventory current trade agency data and information requirements from automated systems and forms,
3. Nationally harmonise data and information inventory
4. Identify redundancies by comparing data definitions
5. Harmonise the information and data requirements inventory to the international WCO Data Model standards.

4. Guidelines on Single Window Data Harmonisation

4.1 Introduction

These guidelines are designed to assist Governments and Trade in harmonising and standardising government international trade information and data requirements in order to develop and implement a Single Window environment. These guidelines are based upon best practices and Single Window environment implementations and may be used in conjunction with UN/CEFACT Recommendation 33.

These guidelines will provide details on policy and organisation matters necessary to achieve the aimed harmonisation. They also provide tools that governments can employ to facilitate the harmonisation process, details on domestic harmonisation, and the eventual harmonisation of domestic requirements to the WCO Data Model

4.2 Objective

The objective of data harmonisation in comparison with the WCO Data Model is to eliminate redundancies in required data and duplication in the submission of trade data to Government authorities such as Customs and other regulatory agencies. The ultimate outcome should be one set of standardised data requirements and standardised messages that fully comply with the WCO Data Model. Within cross border transactions Trade will provide the required WCO Data Model data elements by submitting standardised messages to meet government requirements for, export, transit and import. This will facilitate trade, reduce costs and make it feasible to provide more timely and accurate information.

5. Harmonisation Policy, Organisation, and Communication

5.1 Harmonisation Policy

UN/ECFACT Recommendation 33 lists key factors in establishing a successful Single Window environment. All of these factors are critical for the development of a Single Window environment. A strong lead agency is critical to a successful outcome of the harmonisation process. It is the lead agency that will be responsible for drafting the planning and committing the resources necessary.

5.2 Organisation

It is best to have a project team executing the data harmonisation process. The project team members must have extensive knowledge of international trade procedures specifically the area of regulatory information requirements. The harmonisation project team should also include data architects[5] and Business Process modellers. It is also helpful to dedicate a person to serve as a liaison to the participating agencies. This liaison serves as a conduit for information to and from the lead agency. Also, the participating agencies must identify a primary contact to for organising the agency"s data inventory and harmonisation.

5.3 Communication

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

5.4 Data Harmonisation process steps

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

The selection of an agency could be based on its willingness and desire to participate in the Single Window.

The important point is that after completing the first tier of agencies, the Data Harmonisation process steps have to be repeated as additional agencies participate and as additional requirements are identified.

6. THE DATA HARMONISATION PROCESS STEPS ARE DEFINED AS FOLLOWS:

6.1 Data Capturing

Data Capturing means making an inventory of identified regulatory agencies' requirements. This can be accomplished in a number of ways such as the reviewing of

[5] A data architect in tis scenario is a person responsible for making sure a Goverment's strategic goal is created or optimised through the use of WCO Data Model standards.

agencies' forms, automated systems data requirements, regulations, etc. This includes the data element name, data element definition, representation (format or code), when the information is required (declaration, release, clearance) and citation of the relevant authority to collect, validate and view the information. This information can be aggregated in an Excel spreadsheet or work sheets from any other software tool.

6.2 Defining

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

6.2 Analysing

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

6.4 Reconciling

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

7. SPECIFIC ILLUSTRATIONS OF THE DATA HARMONISATION PROCESS STEPS:

7.1 Capturing

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

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

Recommended worksheet columns are as follows:

- Agency data element number - A reference number for the data element.
- Data element name - The name of the data element being defined. The naming of the data element should reflect the common business terminology used by the agency, not a computer related name

- Data element description - A description of the data element with as much detail as possible.
- Representation - The data type can be either N (Numeric), A(Alpha) or AN Alphanumeric and the number of positions as well as whether a delimiter –floating or non-floating- is needed).
- Data domain - If the data element has a discrete list of values or a range of values, provide the list, range or a reference to the list or range. For example, the data element *country* could be restricted to the values in the ISO country code table.
- Mode of transport - Indicate the mode of transport (road, air, marine, rail, pipeline, cable) for which the element is used.
- Process - Indicate if required for export, transit processes or import.
- Category of use - Indicate if required for conveyance, crew, cargo, goods, or equipment.
- Legal permission to collect or view - This information identifies whether the agency is legally permitted to collect or view this element. If authority allows collections, enter the word COLLECT, otherwise please enter VIEW
- Source of legal authority - Cite the source of authority to collect or to view. The authority may be derived from a specific form, a regulation, legislative mandate, MOU[6] or other. Please cite all legal authorities that apply if there are multiple sources. Do not provide the text of the citation.
- Expiration date of legal authority - Provide the date on which the legal permission to view or collect the data expires for the agency. Specify N/A[7] if this authority doesn't expire.
- Data source - Indicate if the information is provided by Trade, Government, or derived from other sources. <Trade> indicates the data is filed by Trade, <Government> indicates the data is created by a regulatory agency. An example of the latter would be the findings from an investigation. If unsure, enter a letter <U> here for unknown. <Derived> data is calculated by or extracted from a reference file, e.g. the rate of duty could be extracted from a Harmonised Tariff file or derived by the computer system from a combination of one or more other data elements.
- Trade Source - Indicate the trading partner who is the usual source or provides the data. If the data source attribute is <Trade> please identify which party in the transaction is responsible for filing the data element. Suggested values are <T> (importer, exporter,

[6] Memorandum Of Understanding

[7] Not Applicable

broker, forwarder, etc.). <C> (carrier) or <TC>. If unsure, enter a letter <U> here for unknown

- Timing, when data is required and provided - Identify the point of the transaction's lifecycle at which the agency expects have access to the data element. Suggested values are: <PRE-ARRIVAL>, <ARRIVAL>, <RELEASE>, <CLEARANCE> <POST RELEASE> or <DATAWAREHOUSE> etc.). If unsure, enter a letter <U> here for unknown.
- Agency flow source - If the "Data Source" is <Gopvernment>, identify the agency that creates this element.
- Remarks/Comments - Free form text that can be used to annotate the data element in any way

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

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

	taken off the airplane			
Foreign Port of Unloading	Foreign port where merchandise is unloaded from the conveyance	5 digit proprietary code	Carrier Exporter	Air, Rail, Ship, Truck
Foreign Port of Unlading	Foreign airport where consignment is taken off the airplane	5 digit proprietary code UNLOCODE	Carrier	Air, Ship

Illustration 1 - Sample aggregation of results of agency survey

7.2 Defining and Analysing

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

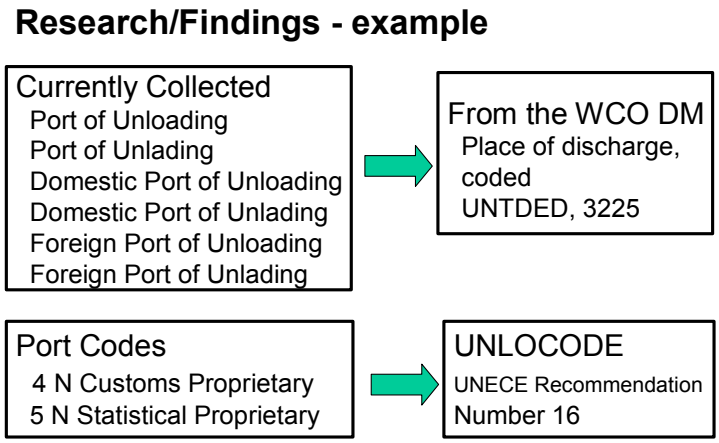
The analysis also revealed that there were three different coded representations of the element, a four-digit code, a five-digit code, and the UNLOCODE[8].

7.3 Reconciling

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

[8] United Nations Location Code

The following illustration portrays the harmonisation and standardisation detailed



above.

The lea f this work taking the WCO data Model as the foundation, but these decisions must be verified and agreed on by the stakeholder participating agencies. Should there be a requirement not available in the WCO Data Model, the WCO Data Model can be amended.

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

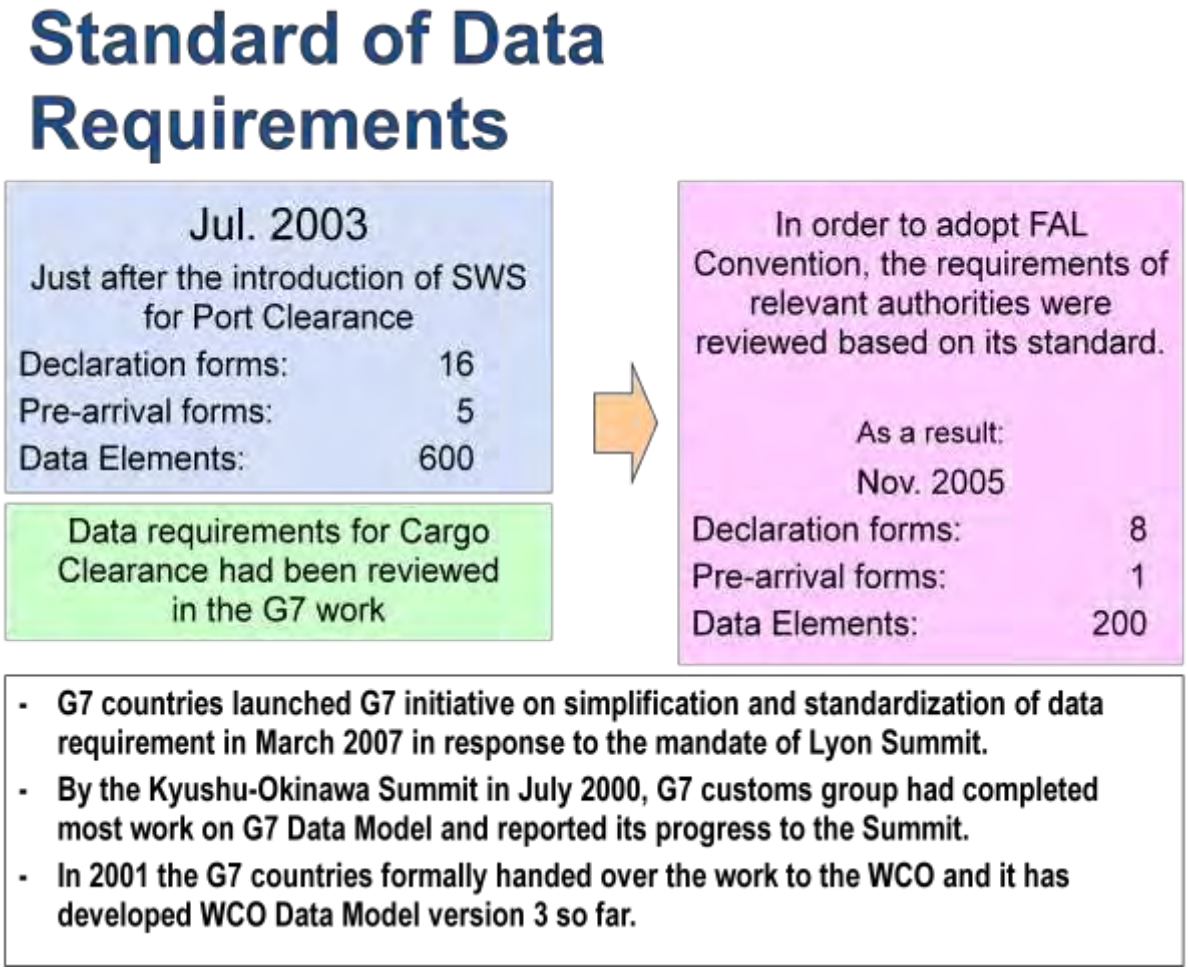
- Group 1: Documentation references (0001-1699)
- Group 2: Dates, times, periods of time (2000-2799)
- Group 3: Parties, addresses, places, countries (3000-3799)
- Group 4: Clauses, conditions, terms, instructions (4000-4799)
- Group 5: Amounts, charges, percentages (5000-5799)
- Group 6: Measures, identifiers,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

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

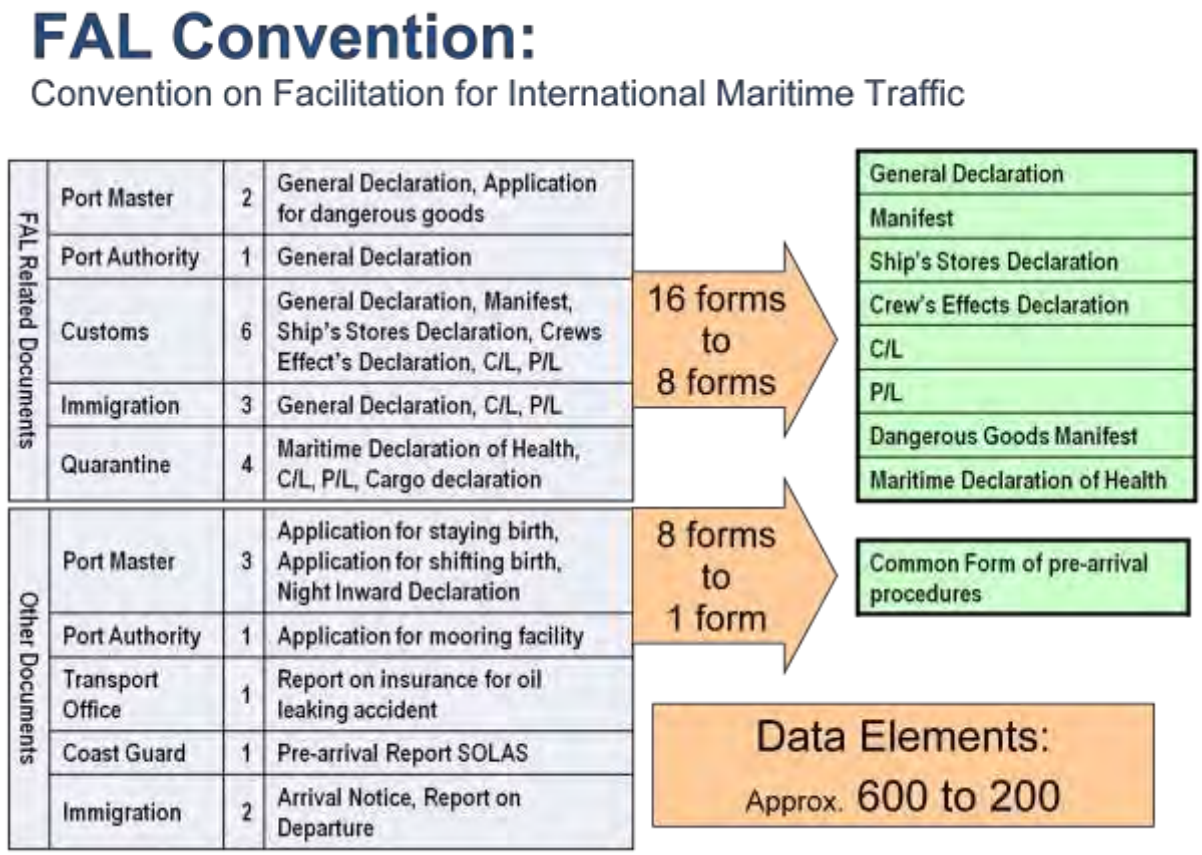
their requirements. Accordingly, these six data elements were replaced by one, and two coded representations were replaced by one.

8. THE SIZE OF THE STANDARD DATA SET

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



The above figure shows how the Japanese data standardization exercise progressed over a period of time. In the maritime domain, the progress achieved by data harmonization was signification.



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The simplification of data requirements in the above example of IMO FAL is very significant. The reduction in data elements as a result of data harmonization is 3:1.

As noted in the example of "place of discharge" as given in these guidelines, the elimination of redundancy and duplication actually resulted in a net reduction. Six elements were reduced to one and three coding schemes were reduced to one.

9. Impact on Legacy Systems

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

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CHAPTER 5: DEMATERIALIZATION OF SUPPORTING DOCUMENTS IN A SINGLE WINDOW ENVIRONMENT

1. EXECUTIVE SUMMARY

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

In order to facilitate cross-border clearance procedures, their dematerialization should be addressed to enable electronic submission and verification.
To achieve this process it would be prudent to follow the steps listed below:

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

To provide the access (system or human) to the information a repository service can be provided by a public (eg. Agriculture, defense, culture, etc.) or a private sector body (eg. Banks, freight forwarders, brokers, individual companies, commercial secure storage companies).

The following ground rules should be kept in mind:

- E-documents will be referenced in customs declarations;
- These references will identify the permanent location of the e-document;
- Digital signatures are a means for maintaining authenticity and integrity of the data;
- The signatures and the archived information are long-living and will be valid beyond the life-cycle of the certificate or the Certifying Authority;
- Customs can download e-doc information as and when it needs.

The purpose of this document is to provide a comprehensive guideline on supporting documents dematerialization.

2. INTRODUCTION

2.1 What are supporting documents?

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

(i) Key business documents that form trade and transport exchanges such as the Invoice, Packing List, Purchase Order, Delivery note, Bill of Lading, Consignment Note etc

(ii) Regulatory documents such as Licenses, Certificates, Permits and Others – referred to in the WCO Data Model as LPCO.

A list of supporting documents is enclosed as Annex - IV

2.2 Documents or Data?

A commonly question raised by business manager in respect of supporting documents is that in a Single Window environment, the aim is to simplify the „paperwork", how is are supporting documents relevant? Would all documents not be converted into data? Most people don't consider small pieces of information as documents and make a distinction between highly structured and unstructured information associate only the former with documents. Structured data is useful for transactional purposes while unstructured data is used for narratives.

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

WCO Data Model identifies „Declaration" and „Response" as the main the elements of Cross-border Regulatory transactions. The electronic declarations made to the Single Window Environment contain enough information for the regulatory authorities to take regulatory decisions concerning import, export and transit of goods. The information, however, is normally based on a number of other supporting documents, whose references are provided in the Declaration. These references provide means for the regulatory authorities to verify the declared information and help validate them by referring to external sources. Supporting documents provide solidity and certainty with regard to the information provided in the Declaration. It would of course be preferable if the regulatory authorities and businesses can get rid of references to other documents in their regulatory transactions. That however is far

from being the practice as governments continue to insist on having access to supporting documents.

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

2.3 Purpose of this document

This document aims at providing guidelines on supporting documents in international trade.

These guidelines will highlight the role that supporting documents in different business processes play and how they are produced and managed.

The end-to-end process will be described as well as the lifecycle management of supporting documents.

3. SUPPLY CHAIN AND SUPPORTING DOCUMENTS

The international trade supply chain is a highly complex network of business relationships and business processes. Experts have produced analytical models to depict the supply chain for different purposes.

The diagram below describes the Buy Ship Pay supply chain. This diagram shows that, all along the supply chain, supporting documents are exchanged. They go with the goods and the means of transport from origin to destination, from the seller to the buyer, from the place of export to the place of import.

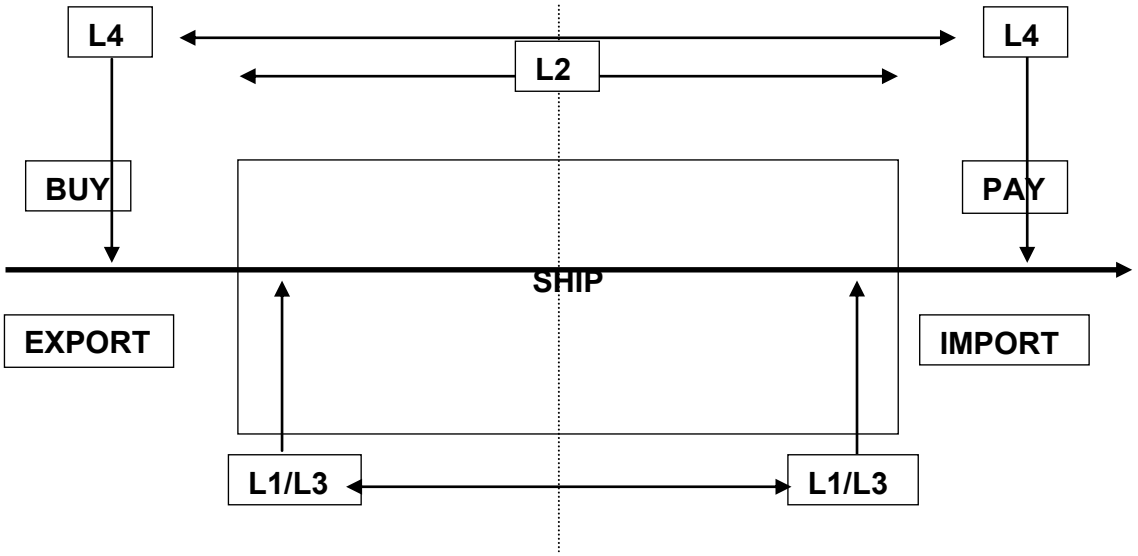


Fig. 1: Supply Chain and supporting documents

From export to import, four levels can be seen:

- The first one (L1) is the customs level at the borders: declarations today are mostly electronically lodged by exporters/importers or their customs brokers;

- The transport level (L2) may include the multiple means of transportation from the factory or the works where the goods were produced and shipped to the delivery destination as required by the buyer. The transport level (L2) includes the stops for controls at the borders where authorities apply controls using automated systems operated by port or airport border management authorities for a cargo control, logistics or traffic purposes. In several countries, these are often the ports and airports Cargo Community Systems. A Cargo Community System is a local federation of actors implementing a computerized workflow from the arrival to the departure of the goods including the customs clearance;

- L3 is the single window that facilitates simplified cross-border regulatory agencies procedures which use dematerialized documents and data. All official requirements including certificate requests (origin, licenses, quality, sanitary...) are collected. The 'One-stop shop' concept can result in the reduction of the number of physical controls. Limited exchange is envisaged between Customs administrations i.e. between L3s.

- The commercial level (L4) - sellers, buyers, banks, insurance companies are exchanging many supporting documents that customs may require for the clearance of the goods or more generally after the clearance.

Supporting documents „support" cross-border exchanges in international trade. There are several types of cross-border exchanges that take place in the course of international trade. The diagram below depicts the B2B, B2G and G2G exchanges.

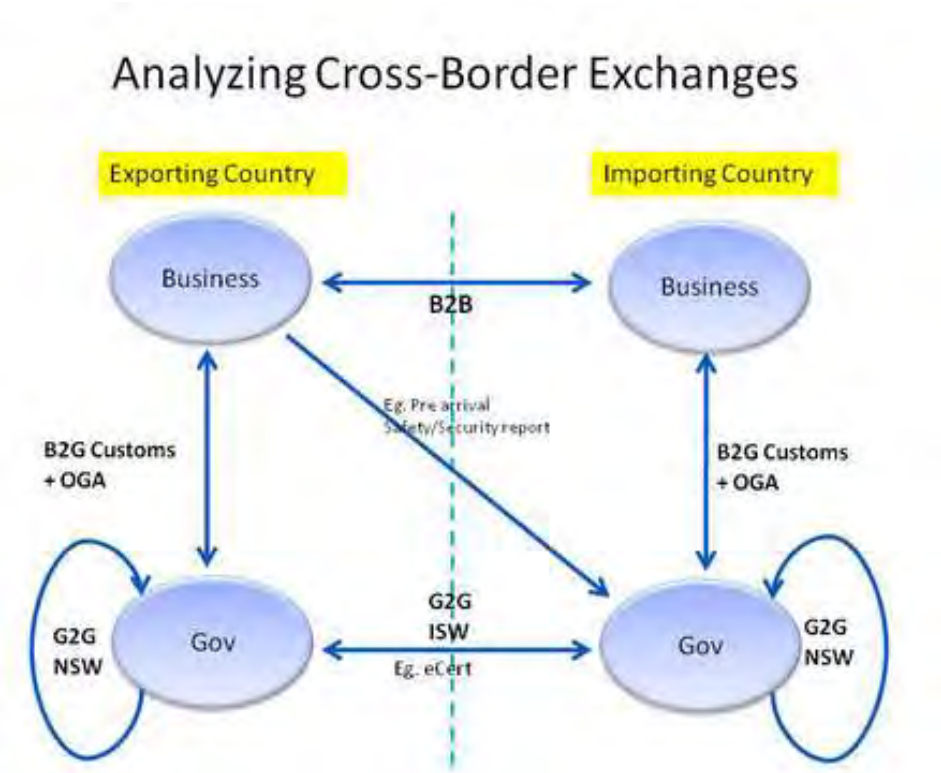


Fig. 2: Cross-border exchanges

In these cross-border exchanges, cross-border jurisdiction is an important issue. While domestic exchanges are governed by national legislation, international exchanges are regulated by international commercial law and international agreements. In the flow of data across frontiers, legal issues concerning the legality and validity of exchanges must be settled.

4. STRATEGY

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

- identify all supporting documentation required at a national level for regulatory declaration separating trade / transport and public sector
- establish an inter agencies task force with a mutually defined lead agency
- simplify business processes between agencies
- address legislative / regulation issues

- undertake dematerialization process including access requirements for private sector supporting document data

5. COLLECTING BASIC DATA ON SUPPORTING DOCUMENTS

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

(iii) Name of the Document

(iv) Issuing Authority / Agency

(v) Location of the issuing authority/agency

(vi) What is the primary legislation and regulation governing the supporting document?

(vii) Does the regulation prescribe the format of the paper form and/or electronic form? Are there data standards that govern the electronic form? Can the issuing authority be expected to conform with the standard electronic form?

(viii) At what point in the business process is the supporting document issued?

(ix) At what point in the business process is the document relied upon?

(x) Whether the supporting document holds deductible amounts or quantities?

(xi) What is the frequency of use of the document?

6. DEMATERIALIZATION PROCESS

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

6.1 Referencing supporting documents in a regulatory declaration

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

„Additional Document". In the WCO Data Model, information on supporting documents could be provided at different levels eg at the level of the declaration, at the means of transport level, at the level of the shipment, as part of the regulatory goods item and at the level of the product. The Table I of Annex II provides information regarding the data elements that capture information concerning supporting documents could be included in any cross-border regulatory declaration.

6.2 Secure electronic repository of supporting documents

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

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

When considering ports or airports Cargo Community Systems, documents or data relative to transport will be made available to authorities.

A global repository service can also be maintained by the National Single Window in charge of gathering all documents going with goods.

The interface between the cross-border regulatory services IT systems and these storage providers should be defined (eg. secured protocols).

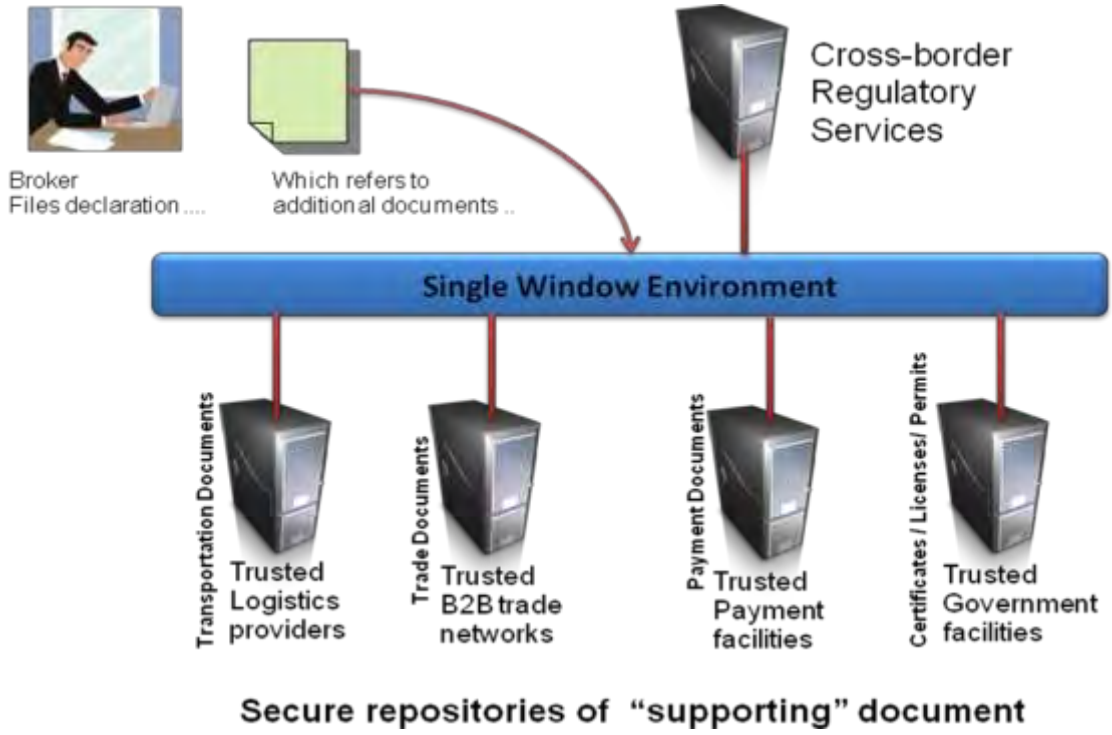


Fig. 3: Secure repository

6.3 Content of the supporting documents

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

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

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

6.4 Accessing the supporting documents

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

6.5 Digital signature of supporting documents

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

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

7. REGULATORY DOCUMENTS

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

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

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

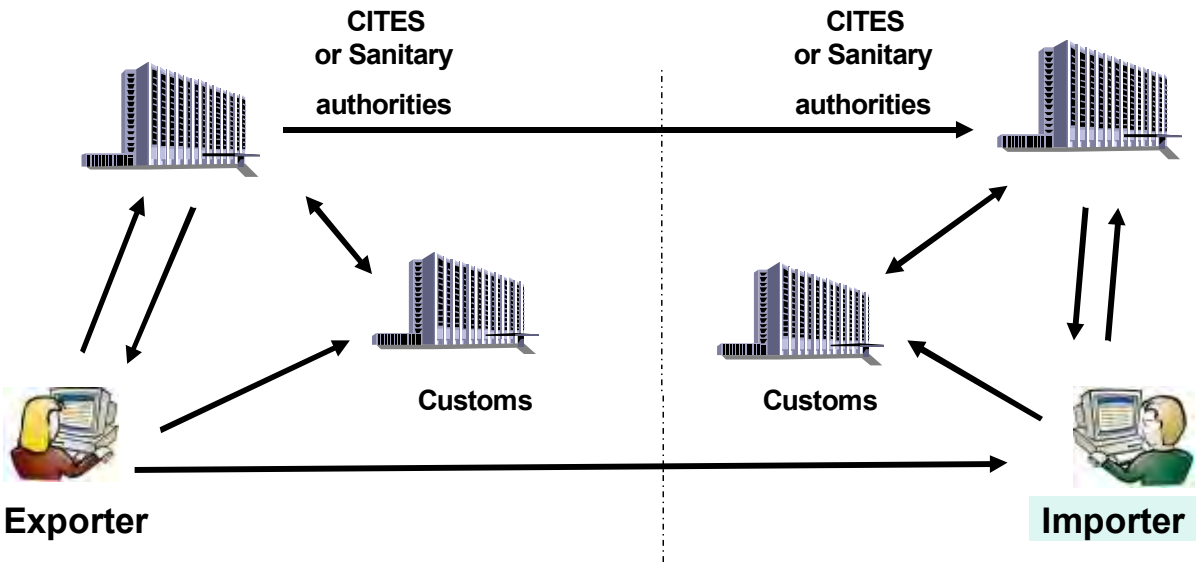


Fig. 4: Customs has an access to OGAs data

A pilot is under way between the Swiss and UK authorities with the objective of using dematerialized CITES certificates. Customs could engage with such initiatives in order to analyze and find a new reprocessing solution.

The question of document content was discussed in 3.3 above. There exists a standard developed for CITES and is maintained by the United Nations Environment Program (UNEP). The eCert standard developed by UN/CEFACT may be kept in view.

8. OTHER DOCUMENTS

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

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

9. MANAGING A NEW CHAIN OF TRUST FOR AN END-TO-END DEMATERIALIZATION

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

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

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

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

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

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

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

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

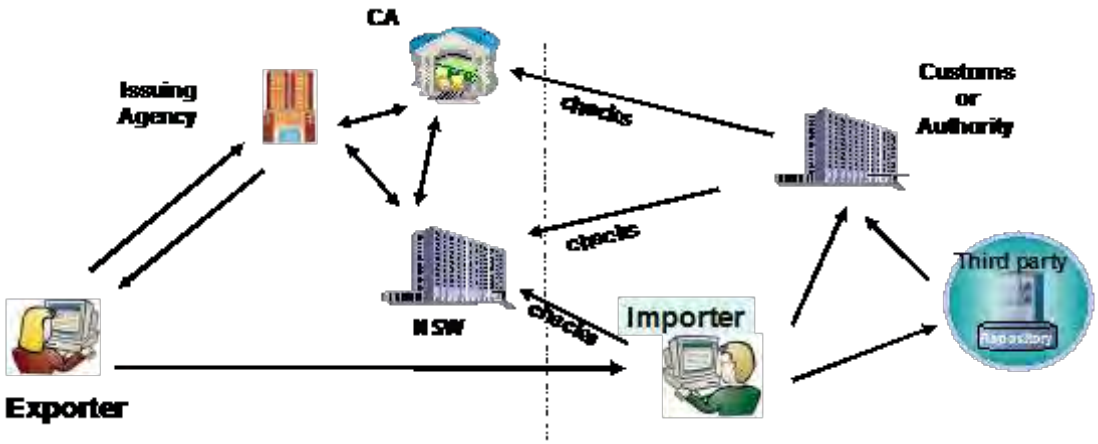


Fig. 5: Import customs has access to e-doc and integrity/authenticity controls

10. GROUND RULES

The following ground rules should be kept in mind:

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

ANNEX I - THE FRENCH CUSTOMS PILOT PROJECT

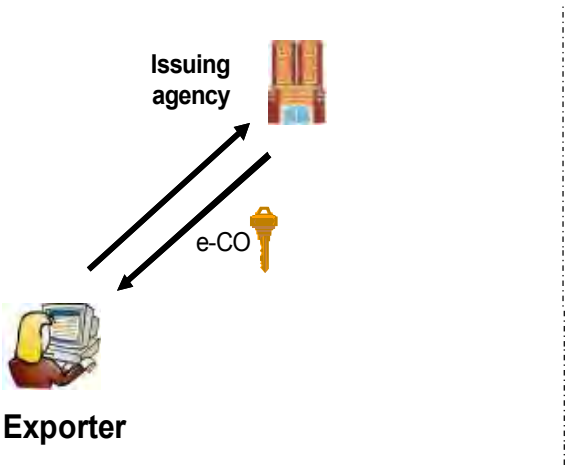


Fig 1: The exporter requests the issuing agency for an e-doc (package PDF file + signed XML file)

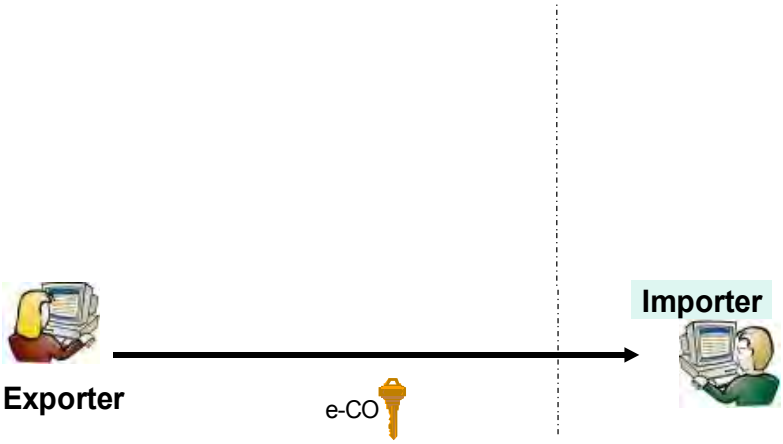


Fig 2: He sends it to his client, the importer (E.g. by mail)

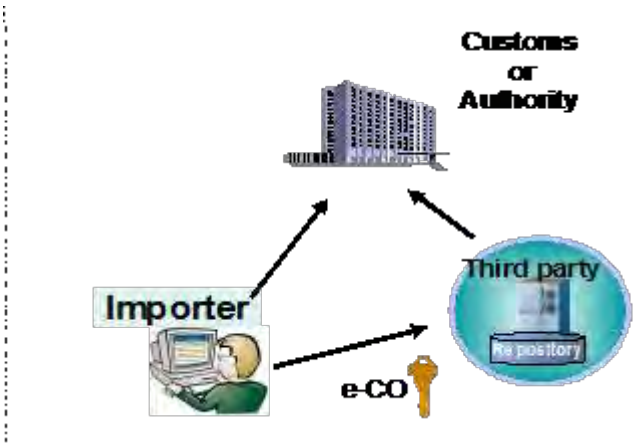


Fig 3: The importer or his customs broker saves the signed PDF and/or XML file in a repository and then proceeds with the import customs declaration.

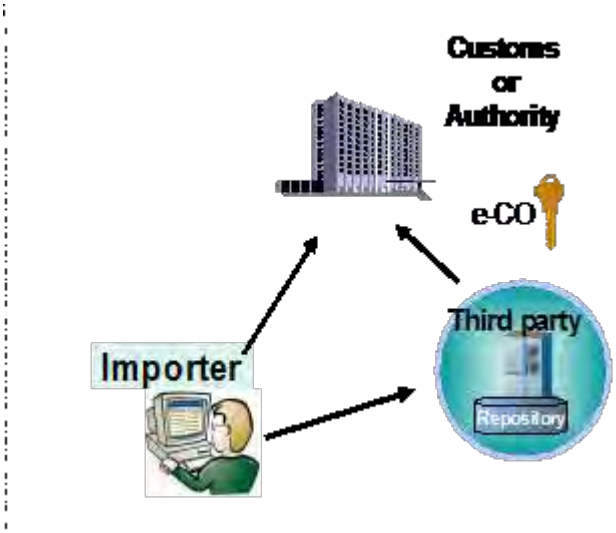


Fig 4: Customs (or another authority) can have an access to the XML/PDF file and control it.

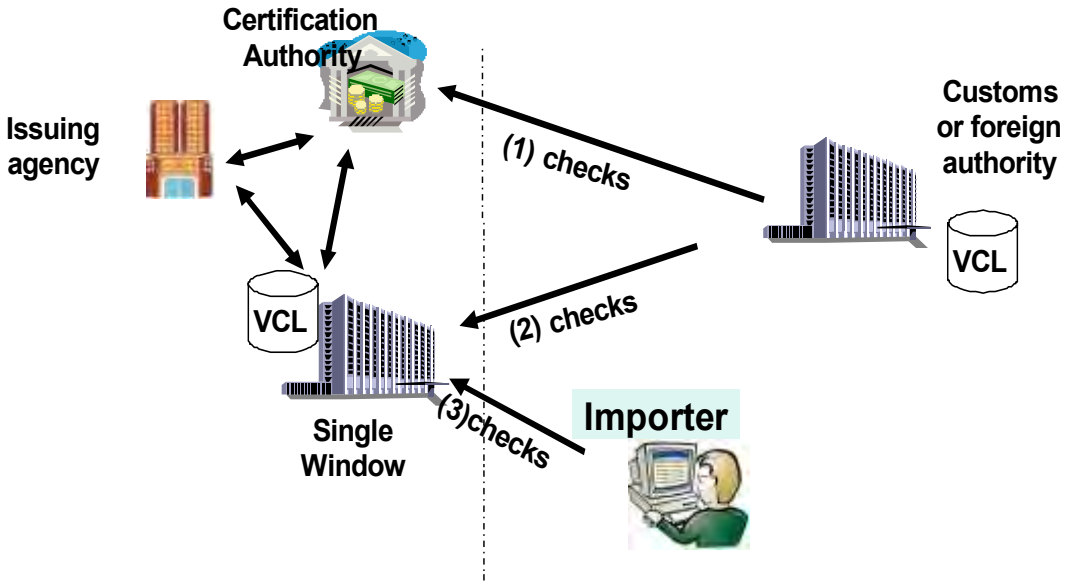


Fig 5: A new trust scheme:
(1): Either the import authority checks the authenticity and integrity of the PDF / XML file on the basis of a valid certificates list (VCL - list of authorized agencies) and the e-signature properties (the recognition of the export CA is mandatory)
(2): Or the authority requests the export single window to confirm the authenticity and integrity of the file

(3): The importer can check the PDF file by a request on the export single window web site

ANNEX II - WCO DATA MODEL & AND THE METADATA FOR SUPPORTING DOCUMENTS

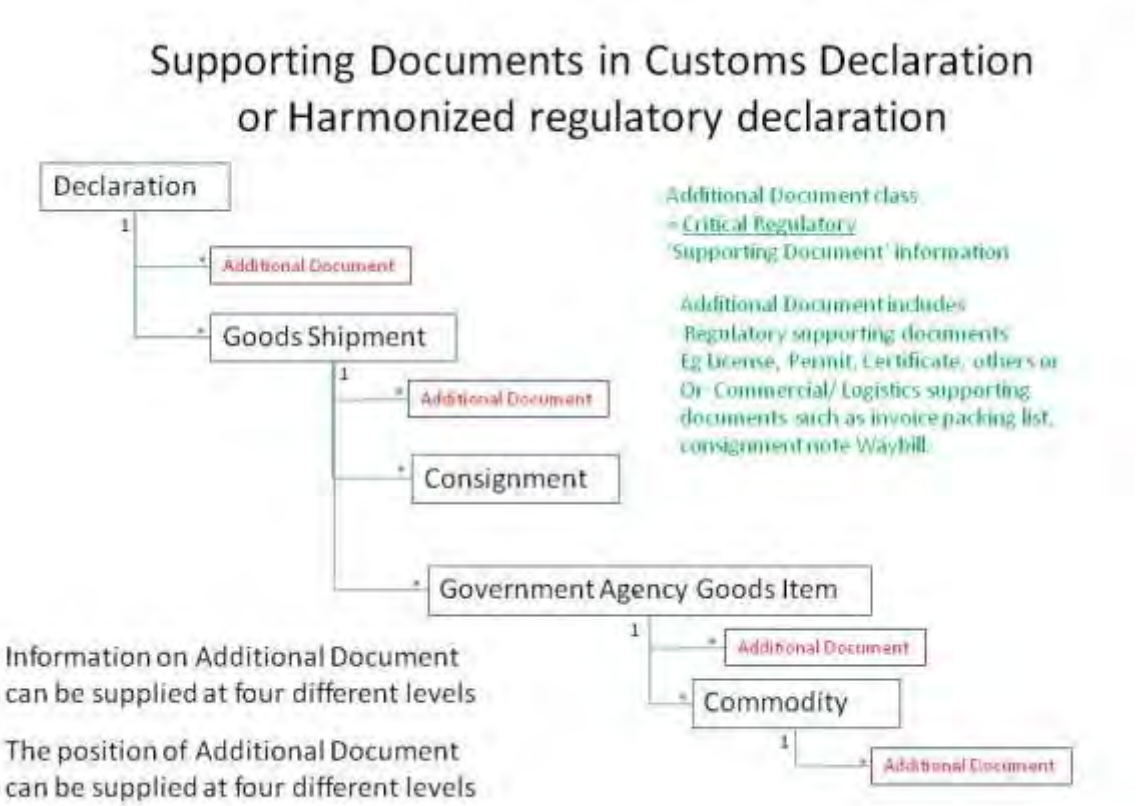
Table I Additional Document Class: Information in the WCO Data Model Version 3.0 on Supporting Documents

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

D004	Additional document issuing place, coded	Place at which an additional document was issued and when appropriate, signed or otherwise authenticated.
D005	Additional document reference number	Identifier of a document providing additional information.
D006	Additional document type, coded	Code specifying the name of an additional document.
D028	Additional document name	Free text name of an additional document
DXXX	Additional Document Image	Binary image of the additional document
DXXY	Document location	Online location of the document in a URI / URL
	Parties associated with Additional Documents	
	Authenticator	
	Insurance Company	
	Submitter	
	LPCO Authorized Party	

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


Generic Goods Declaration WCO DM V3
Declaration
Goods Shipment
Consignment
Government Agency Goods Item
Commodity
Structure supports
Customs goods declaration or
Harmonized Cross-Border Regulatory Declaration


Supporting Documents in Customs Declaration
or Harmonized regulatory declaration
Declaration
Additional Document
Goods Shipment
Additional Document
Consignment
Government Agency Goods Item
Additional Document
Commodity
Additional Document
Additional Document class
- Critical Regulatory
'Supporting Document' information
Additional Document includes
Regulatory supporting documents
Eg License, Permit, Certificate, others or
Or Commercial/ Logistics supporting
documents such as invoice packing list,
consignment note Waybill
Information on Additional Document
can be supplied at four different levels
The position of Additional Document
can be supplied at four different levels

Data Structure of Additional Document Class

I. Additional Document class
= Critical Regulatory
'Supporting Document' information

II. Additional Document Class ≠
Electronic 'Supporting Document'

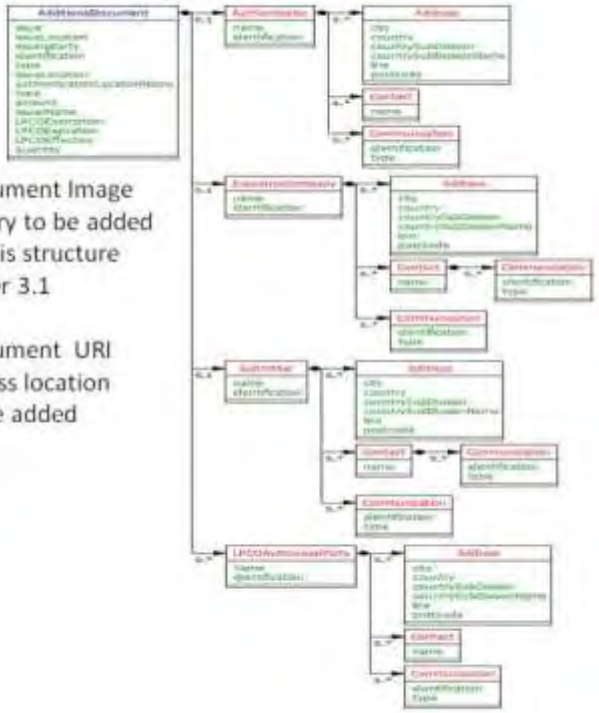
III. Additional Document Class can support

Binary images or the

URI location of the electronic 'Supporting Document'

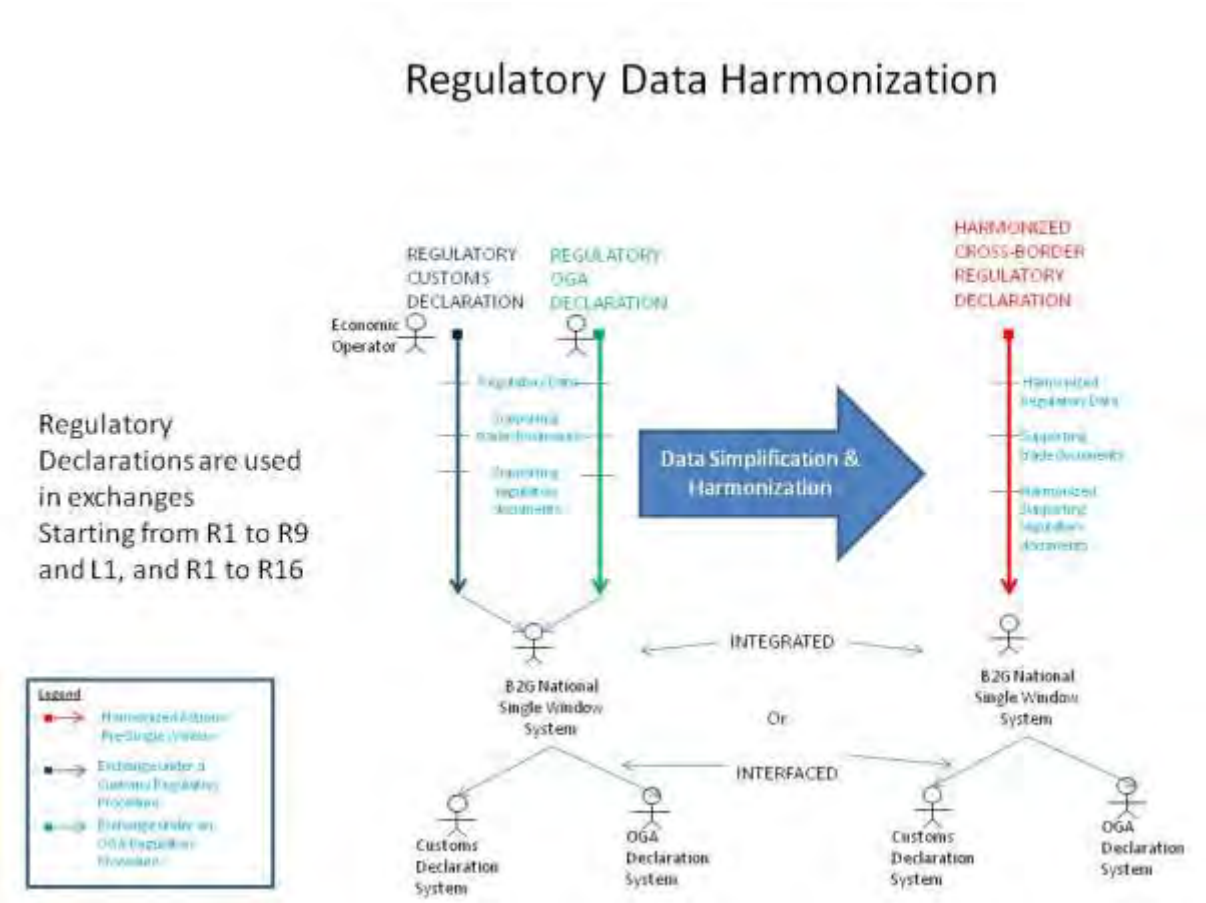
Document Image
Binary to be added
to this structure
In Ver 3.1

Document URI
access location
to be added



ANNEX III - REGULATORY DATA HARMONIZATION:

Regulatory data harmonization involves combining the data requirements of different Regulatory agencies into a single declaration. The process is described below. Harmonization of data ensures the elimination of redundant submission of data, but it still requires the trader so submit supporting documents.



ANNEX IV - TOP SUPPORTING DOCUMENTS (FRANCE)

Commercial invoice
Movement certificate of origin EUR.1
Master Air Way Bill
T2LF Certificate of customs status
Pro forma invoice
Packing List
External Community transit declaration / common transit, T1
Bill Of Lading
Certificate of origin Form A
Declaration of preferential origin on an invoice or other commercial document
Air Way Bill
Declaration of particulars relating to customs Valuation Method 1
ATR certificate
Excises document
Authorization to use a customs procedure with economic impact end-use
Textile documentary Proof of origin
Production file
Quality control certificate
Universal certificate of origin
Freight note
Common Veterinary Entry Document (CVED)
Imported personal belongings list
Airworthiness certificate
Declaration of non preferential origin on an invoice or other commercial

document
Road consignment note
CMR note
Internal Community transit declaration T2
Registration number
Export license AGREX
House moving certificate
T2L Certificate of customs status
TIR Carnet
Phytosanitary import certificate
Movement certificate EUR.1 (Switzerland)
Phytosanitary certificate
CE compliance note
Information document
T5 control copy
Transit T document
Champagne Cert
Main bill of lading
Military goods export authorization
Export note
CAP Import license AGRIM
Acquit-a-caution
Declaration of preferential origin on an invoice or other commercial document (Switzerland)
CITES certificate

Dual use export authorization

CHAPTER 6: ARCHITECTURE FOR THE SINGLE WINDOW ENVIRONMENT

PURPOSE

1. The purpose of this Chapter is to explain the architectural contexts of the Single Window Environment. The Chapter provides information on Single Window architecture to strategic planners, technology specialists and program managers. Those with a background in executing large Information and Communication Technology (ICT) projects can also benefit from this material while preparing strategic plans for building a Single Window Environment.

RELATIONSHIP WITH OTHER WORK

2. The draft document is primarily intended to be part of the WCO Compendium on „How to Build a Single Window Environment". The document builds on concepts of architecture described in the WCO Capacity Building Compendium 2010 and applies them to the Single Window Environment. It refers to with the practice of architecture in the field of information management and relates this practice with the challenges posed by the Single Window approach. The Information Management Sub Committee will finalize this draft document for adoption by the WCO Permanent Technical Committee.

1. ARCHITECTURAL & THE SINGLE WINDOW ENVIRONMENT

3. Chapter 1 of Volume I explains that Single Window could be viewed as a collection of services in which regulatory agencies and traders are organised to deliver cross-border regulatory services, using technology. The organization that operates the Single Window environment should consider itself primarily as provider of services. Through its services, the Single window operator manages value streams for the stakeholders by using its technology and organizational resources. Chapter 6 of volume 1 further explained the main considerations for the design of Single Window Services. However, it is the architecture that drives the overall planning, design and development of a Single Window. Some experts call architecture the „master plan" as an essential ingredient in Single Window development. It is also well-understood that architecture is established early in the course of a program development.

1.1 Why architecture?

4. A simple system such as an „Employee Payroll Package" can be built by a few individuals, requiring minimal efforts, using fairly simple structures and with simple tools. Such a package would be operated and maintained by an Accountant. The package would use few set of spreadsheet and database tables – and provide appropriate payroll services to employees. Such systems are relatively simple to build and maintain by a few individuals using simple tools.

5. Building larger systems, however, requires teamwork. No sooner we start building larger and more complex systems, we would begin to begin to realize that such systems require:
    a. Models that act as artifacts for communication within the team
    b. Process to build the system from start to finish
    c. Skilled resources following proven processes
    d. Planning the work breakdown structures
    e. Powerful tools to increase productivity

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

7. Architecture is commonly understood in terms of buildings in the real estate. The architect of a building produces several architectural artifacts. The building façade, structural blueprint, plumbing networks, electrical wiring and data cabling, staircase and elevators, safety sensors and building management systems. Each of these artifacts represents architecture but none of them *alone* is the architecture.

8. All large systems comprise several major components, and the manner in which these components are related to each other defines the structure of the system. These components interact in a complex ways. Architecture defines these interactions. Architecture is not expressed through a single structure It is not possible to produce one single structure and call it the architecture of the system. Essentially, architecture defines major system components. It helps provide a shared sense of understanding of the whole enterprise. For example, the structural blueprint of a building is the major component defined by architecture. The rest of the architectural description is produced by defining the interaction between various components.

9. Architecture is not easy to define. Problems in producing a self-contained definition led some experts to say that “architecture is what architects produce.” In fact architects produce **architectural descriptions,** which are collection of documents loosely referred to as the architecture. IEEE 1471-2000 (ISO/IEC 42010:2007) provides a systematic approach to describing the architecture process, giving us the understanding of the issues involved. The following description uses the key words from this approach applied to the Single Window Context, which are highlighted in *italics*.

10. In a Single Window Environment, the *stakeholders* may operate large systems. The *concerns* of the *stakeholders* in a Single Window lie at the root of the architecture. These concerns help identify *architectural descriptions.* Chapter 6 of volume 1 explains how rigorous descriptions of services can be developed through user stories or use cases. These descriptions are expressions of the stakeholder concern containing both functional and non-functional requirements. Functional requirements being reflections of the business logic minimally impact architecture. What impacts architecture more profoundly are the non-functional requirements usually represented by words that end with „ity“ such as reliability, maintainability, security, availability, accessibility, usability, quality, navigability and so on. These „ities“ translate directly into architectural constructs.

11. *Systems* don‘t exist in vacuum, they inhabit in an *environment*. The Single Window Environment comprises systems from Customs, Agriculture, Quarantine Services, Veterinary & Animal Health Services, and Food Safety & Inspection Services etc. These systems may have over the years invested in information technology projects, business processes and human resources. These investments would have been made in pursuit of organizational goals or *missions* of the respective organizations. Each stakeholder has his *viewpoint*. For example, return on investment is a view point.

12. Each CBRA would have made investment that was justified based on the projected returns and the timeframe to recover value. Other stakeholders *viewpoint* could be could ease of integration between systems. Further, a *viewpoint* establishes the

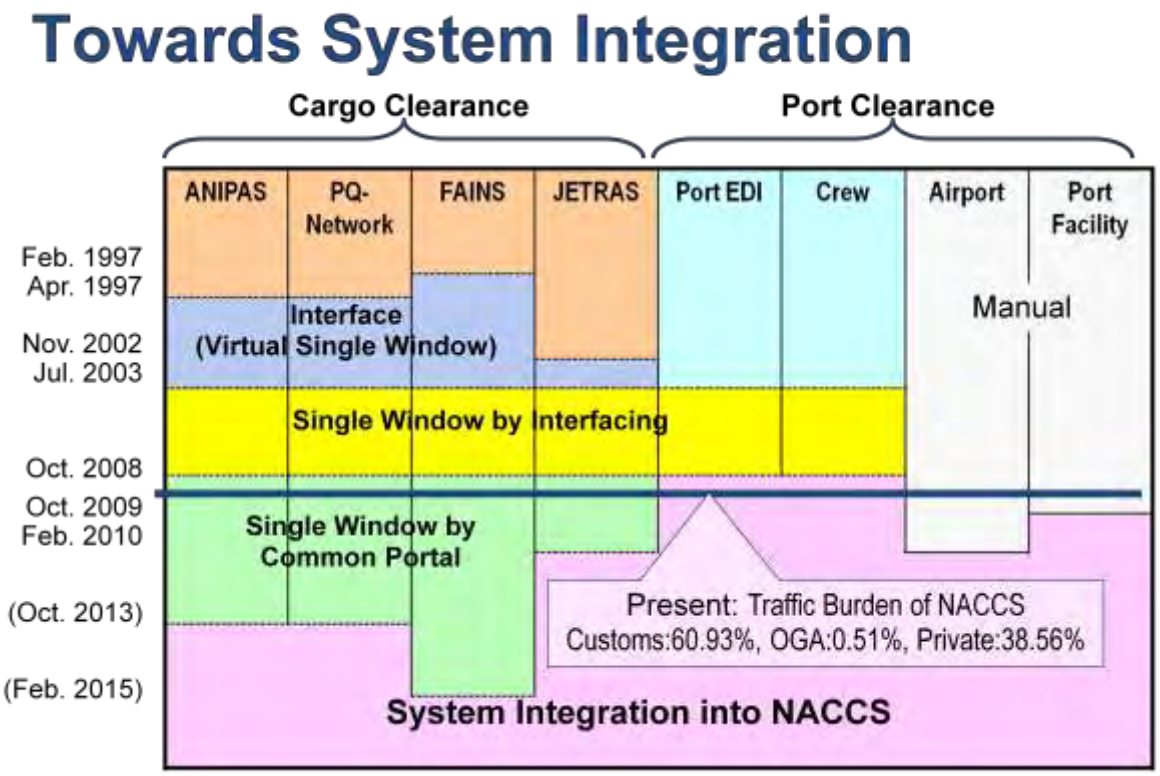
method for creating *models*. To serve the viewpoint of information flows, one could create the domain information models.

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

    a. Experts have developed different methodologies to develop these views. For example IBM"s Rational Unified Process (called RUP 4+1) describes the software process as comprising **the logical**, **process**, **development** and **physical** views to describe different **scenarios**.
    b. The US Department of Defense Architectural model (called DODAF) uses three views – these are (i) the **operations view** that identifies the activities that have to be performed and who performs them. (ii) The **systems view** defines the systems that fulfill the operational needs focusing also on information exchanges (iii) the **technical standards view** defines the applicable technical standards, notations and conventions. These three views are interdependent.
    c. A more elaborate architecture framework is described in the Zachman Framework (www.eacoe.org) for describing the enterprise. It includes the Scope view, Owner"s view, Designer"s view Builder"s view, out of context (or Detailed View) and operational view. Each view is elaborated through a model, which is integral framework.

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

15. These streams of developments culminated in the widely know framework of TOGAF (TOGAF stands for The Open Group Architecture Framework.) Under this framework, Enterprise Architecture is divided into three different architecture domains namely Business Architecture, Information Systems Architecture and Technology Architecture. The authors of the Single Window Implementation Framework (SWIF) (Hofman, Keretho, Phuaphanthong, Pikart, Tan, & van Stijn, 2010) adapted TOGAF for the planning and implementation of a Single Window. By applying the TOGAF enterprise architecture methodology the Single Window Implementation Framework helps produce the strategic architecture and master plan.



Above figure shows how the Japanese system integration is being planned based on an architectural vision of port clearance and cargo clearance. The progression of the architectural vision is shown in a time horizon in which the yearly progression of systems into a Single Window service is achieved progressively. Without architectural vision, it would be difficult to converge the various OGA systems into a Single Window solution.

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

17. It is not uncommon to produce high-level business architecture in lay terms. For example, the Canadian Government published document titled Single Window Framework describing the business vision of the Canadian Single Window (Canada Border Services Agency, 2008), providing the a high level description of the concept of the initiative and its benefits. Other experts have developed templates for the

producing master plans for the implementation of a Single Window. It is also observed that Single Window implementation requires collaboration with agencies involved in providing services in national e-Governance programmes. (Apostolov, 2008).

18. Architectural descriptions however have to be systematically developed and rigorously presented. At the same time, these descriptions have to serve as effective tools of communication. The fine balance between readability and technical rigour can to be met by following any of the well-known frameworks. Most enterprise architectural frameworks contain layered approaches to architectural description.

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

20. The *application architecture* provides arrangement of the supporting software application components that make-up the solution. It includes the IT systems, IT services and functional use cases. The application architecture is supported by the *information architecture* such as data objects, electronic messaging artifacts and rules and controls over information. The entire set of applications also need t be supported by technology. Information architecture provides a holistic picture of the intra and inter-organizational flows of information and would include the enterprise data dictionary and the conceptual data model. For example the WCO Data Model which has been described as the data blueprint for the Customs and cross border regulatory agencies could be part of the data architecture. This is explained briefly in the following paragraphs.

1.2 WCO Data Model - The Data Blueprint in a Single Window Environment

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

22. Single Window participants are often found to be operating IT systems based on different technology platforms, business processes and data definitions, making it difficult to produce interoperable systems. It is commonplace to have conflicts occurring between information models of participating agencies. For example, in the Australian standard data set (SDS), it was reported that there were more than a dozen different definitions of the term „exporter" in different governmental systems.

23. In addition to conflicts in definition, there could also be conflicts in the way the definitions are represented in different ways (example: the coded representation of exporter is a maximum of 13 characters in one system and a maximum of 15 characters in another. Structural conflicts could occur when information used in one system is structurally different from those that are used in another system. Experts (Glushko & McGrath, 2008) have documented different types of conflicts that can occur and come in the way of interoperability. Content conflict could occur when two parties use different sets of values for the same component – different code sets being used to describe a coded data element or where the same set of values are used for different set of components (eg. when codes used for units of measure and unit of quantity interchangeably). Encoding conflicts occur when different types of syntax are used. Even when the same syntax is used, if there are structural differences (for example, the structure of an address), it is not possible to share information.

24. These conflicts can be resolved only when a common information model is used by all participants. To guide players within a Single Window into using standard data architecture, the WCO Data Model has defined the generic content of information for cross-border regulatory agencies. By aligning with the WCO Data Model, Cross-border regulatory agencies can produce and use common content, semantics, syntax and structures for the Single Window Environment. Chapter 4 of Volume II describes techniques of Single Window Data Harmonization, which is the methodical approach to collecting, defining, analyzing and reconciling information for a Single Window Environment.

1.3 Technology Architecture

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

26. As a collection of front offices and back offices located in different buildings around the country, in which some officers perform service-oriented tasks and others handle back-office responsibilities. In terms of the organization"s core business processes (such as cargo reporting and goods declarations, risk management, post-event activities, pre-arrival and preventive activities, trader account management and policy support). As a collection of information generating and information consuming units and as centres for value generation or value preservation or a collection of roles and goals that support risk management.

27. Using the analogy of architecture in real-estate once again, it is nearly impossible to effectively build or maintain a large building (say, a high rise) without being in possession of accurate architectural documents – the blueprints for structural, plumbing, electrical wiring, heating, cooling and a variety of other systems and sub-

systems. In exactly the same way, a Single Window Environment cannot be effectively built in a multi-agency setting without knowledge of their architecture. Most managers understand the structural components of their organization through their organization charts where it is easy to locate functional units (such as operations, enforcement, audit, statistics, policy etc) and the reporting relationships and hierarchies. This is a simplistic view of the organization‟s architecture. It is possible to draw multiple architectural views of the organization with each view providing distinct value to the process of build and maintaining systems. Enterprise Architecture is the discipline that examines these views.

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

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

30. Together, these capabilities and resources define entrenched ways of doing business by both individual government agencies and the private sector organizations. Single Window moves away from this intra-organizational „command and control‟ operation to one of collaborative exchanges between all stakeholders government agencies. To that extent, a Single Window project has disruptive influence on the status quo.

31. To understand how the shift to a „Single Window mode‟ of operating can be achieved, it is essential to produce a *rigorous description* of the structure and functioning of each of the participating Cross-Border Regulatory Agency, its components and their inter-relationship. Such a description should include the following:
    - Organizational structure, roles and goals – in relation to meeting the objectives of cross-border regulation.
    - Business processes, business information flows and information systems that participate in service delivery.

- The logical organization of the functions, resources and capabilities of the organizations at the level of businesses. This will include the role that information systems play in the service delivery process.

32. The specialist task of producing such a description is that of an enterprise architect. Enterprise architecture is a discipline that specializes in providing a architectural solution, which helps produce the IT strategy based on business strategy and providing the background for the organization to improve its effectiveness. Section 8 of the WCO Capacity Building Compendium 2010 provides a detailed overview on the practice of Enterprise Architecture. The essence of „Enterprise Architecture" is about "finding direct links between the business imperatives of the enterprise and the deployment of technology in order to achieve some kind of alignment between the two." Such an alignment enhances the possibility for an optimum use of available resources and getting rid of redundant resources. Enterprise Architects help streamline the organization"s use of Information and Communication Technology (ICT) in order to ensure high Return on Investment (ROI) and low Total Cost of Ownership (TCO).

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

2.0 SERVICE ORIENTED ARCHITECTURE

34. In Chapter 1 of Volume 1, it was mentioned that the Single Window Environment may be understood as a collection of services that support the core regulatory functions of import export & transit and trade facilitation. These services are predominantly enabled by the information and communications technologies. The appointed Single Window operators (or orchestrators) provides (or supports) the enablement of these services on behalf of CBRAs through a common platform. Broadly, these services result in the regulatory clearance of goods, means of transport and crew.

35. The „services" paradigm places at our disposal a number of useful technical and managerial tools that can help answer many questions that we may face in the process of building a Single Window Environment. The taxonomic analysis of Single Window Service allows the breaking-up of larger services (business-oriented description of services) into more elemental business services. These business services are supported by IT application services and infrastructural services. To illustrate, the service to process import and export goods declaration is dependent on a service that fulfils cargo examination. For Cargo-examination to occur, the services

of scheduling and calendars services of the inspecting staff may have to be invoked. While services describe the fulfillment of a business need, business processes provide the steps involved in fulfilling a business service. One can rearrange business processes to fulfill the same service. All these services have underlying IT and infrastructural components.

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

37. The most important part of designing the Single Window solution is to describe the „to-be" state of the trader"s (or brokers/ transporter"s) „experience" of a transaction. A statement of description of this „to-be" would serve as the binding link for all stakeholders as they engage in a series of activities of architecture and design.

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

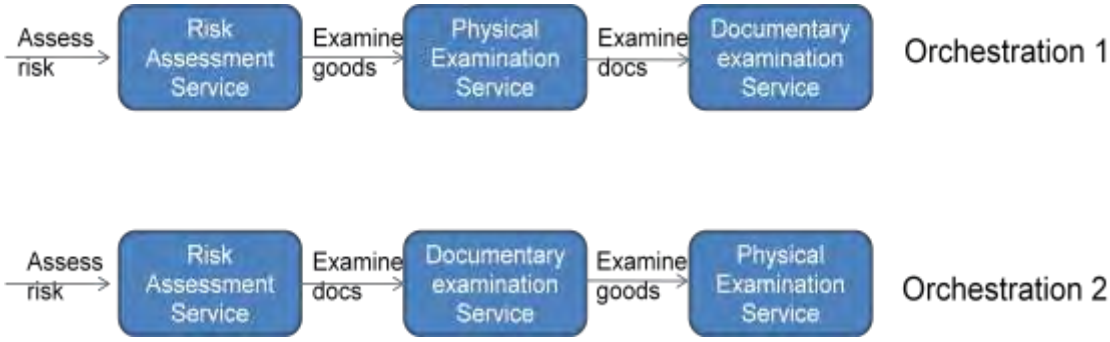
39. Service-Oriented Architecture (SOA) begins with a strong focus on the business services. It is does not focus on the technical infrastructure (servers, storage etc) and its associated technical services. SOA is an architectural approach and is technology neutral. This architectural approach is strongly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

(OASIS) developed a standard Reference Model for Service Oriented Architecture (OASIS Technical Committee on SOA, 2006).

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

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

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



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

2.1 Implications of SOA for Single Window Environment

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

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

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

47. To summarize, Service Oriented Architecture (SOA) is recommended for building the Single Window Environment for the following reasons:

    a. SOA is built based on the notion of services. Single Window being Collection of Services makes SOA an attractive conceptual basis.
    b. Management understands the attributes of service operations- service availability, service quality, and cost of services. SOA clearly identifies with these concepts and brings them to life.
    c. Single Window Environment involves integration of multiple systems investments made by a number of agencies. SOA facilitates integration requires Single Window be made on the perspective of IT architecture – SOA as the imperative – description of SOA and how SOA can drive interagency integration. Why SOA is the right approach in the current environment.
    d. SOA can be designed to be event driven In Chapter 6 of Volume 1, we had proposed that workflow of business processes should be event driven. Each

event in the supply chain would result in incremental flow of data. Depending upon the state of the transaction, different players can access different sets of data to enable them to progress in a Single Window Environment.

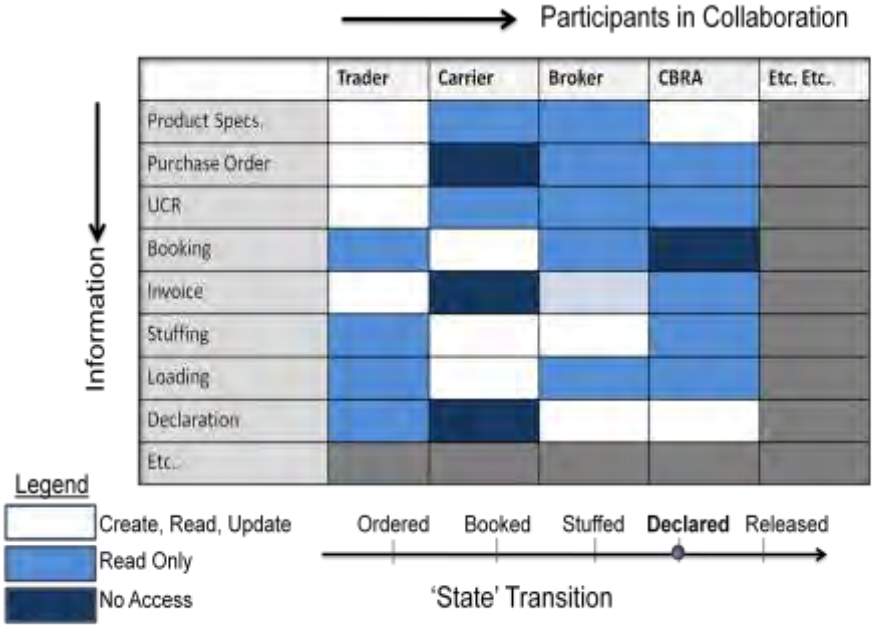


Diagram: State change & information access rights in a Single Window Environment

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

48. In the WCO Survey on Single Window Developments (please refer to Section 1 of this volume, the commonly used business processes and services in a Single Window Environment were described. One of the emerging themes from our study is that success in developing a Single Window environment depends on the ability to

identify and establish the basic services that run across government departments and converting them utility-grade services which are:

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

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

50. The technology components that support SOA are commonly understood and explained by various authors. Specific technologies that enable SOA will not be described in this document. However, the standards for SOA Reference Architecture exist. The draft standard produced by the Open Group (The Open Group, 2009) describes SOA architecture as comprising 9 layers. The industry provides solutions of different description to fulfill the functionality of these layers, which are described variously by different technology vendors.

3.0 CONCLUSION

51. This Chapter introduces the concept the architecture in an organization and the role of enterprise architects as developers of master plans for the Single Window Environment. It describes the different architectural views that can be prepared in order to support the high-level planning of a Single Window solution. In order to support the strategic management process of the „enterprise", it is necessary to produce and maintain the relevant organizational blueprints.

52. One of the main reasons for investing in Enterprise Architecture is to ensure that Information Technology assets are responsive to the strategic activities of the organization by providing the strategic context for the deployment of IT systems. It is one of the ways to ensure that the executive management understands the value of Information Technology and its indispensable role in achieving the strategic goals for the organization. IT investment without having the enterprise architectural view is very risky.

53. The enterprise architectural view includes *business architecture* that describes the functions of the organizations and how it performs them. Information architecture provides a complete picture of the intra and inter-enterprise flow of information. It includes the conceptual data model. The inventory of software applications that that

serve the organization‟s business objectives and missions would form a part of the *application architecture*. This architectural view also describes how the applications fit-in with each other as well as with the overall business purpose of the organization. The software platform that mediates between applications – called middleware provides the software environment for the execution of applications. *Technology architecture* deals with these issues and drives other architectures such as security and software architectures.

54. Subsequently, this chapter dealt specifically with Service Oriented Architecture as the basic paradigm for building large-scale solutions based on information and communications technology. Defining ICT projects in terms business services can help deliver results transparently to project stakeholders. Drawing upon the concept of Single Window as a collection of services which can be deployed using information and communication technologies, Service Oriented Architecture is proposed as the bedrock of design and deployment of software applications. Service Oriented Architecture or SOA as the name implies, is architecture.

55. Service Oriented Architecture is a philosophy of using IT that has replaced the practice of monolithic architecture that was prevalent for over three decades. It is a fundamentally new way of thinking about IT solutions including software development that has the business side of the enterprise at its heart and can serve as the focus of efforts to integrate different IT applications.

56. The WCO Data Model which has been described as the data blueprint for the Customs and cross border regulatory agencies could be part of the data architecture. The chapter explains that WCO Data Model supports the manner in which data gets created in the business processes of international trade. It helps us in arriving at a simple functional model for Single Window. The resolution of internal conflicts in data structures and content between different government agencies ensures meaningful communication of information and the analysis of information and documentation is the bridgehead to effective requirements analysis for the Single Window environment. Data architecture is a critical aspect because finding architectural patterns simplifies the identification of the rest of the requirements.

57. Finally, the central idea of this chapter is that architecture can help rally divergent forces towards forging a consensus on the common needs. A country‟s internal motivations for reform of international trade can find a voice in documents of architecture. Architectural blueprints help project participants identify with something concrete on the agreed future and course of action. Visualizing Single Window as a collection of IT driven business services and helps understand service composition in terms of IT. Technology platforms for SOA produced by different vendors may vary but all have the underlying philosophy that favours loose coupling over tight coupling. Since this has implication for costs of IT platform and operations and consequently the „cost of services‟ which is a determinant of the Return on Investments.

CHAPTER 7: WRITING A BUSINESS CASE FOR SINGLE WINDOW

Document History

Version	Remarks	By	Date
Version 0.8	Writing an initial document for review	SP Sahu	11-07-2010

PURPOSE

1. The purpose of this Chapter is to explain the process involved in putting together the business case for a Single Window solution. In particular, this chapter explains how governments can organize information and documentation in order to provide strategic and financial reasoning for projects for implementing the Single Window approach to the regulatory processes in international trade. Executives from Customs and other Cross-border Regulatory Agencies responsible for strategic management, program management, information technology projects and collaborative inter-agency initiatives would benefit from information provided in this Chapter. Financial controllers and project evaluation and review teams would also be able to use templates and other guidance on the output that is expected at each stage of business case development.

2. The draft document is issued for information, comment and potential use by reviewers within the WCO Information Management Sub Committee (IMSC) and from expert contributors. Upon finalization by the IMSC, this document will be proposed for inclusion as part of the WCO Compendium on How to Build a Single Window Environment.

How this Chapter is organized?

3. **Section 1** introduces the concept of business case development and relates it to the task of project formulation for building a Single Window Environment. It explains how a business case differs from a project brief or a project plan. A business case answers the question of why a project should be done and the consequences of not doing the project. A business case is also about understanding and documenting the business benefits of the project. Questions on whether the same benefits can be obtained through alternative means will have to be answered thoroughly in the business case. Lastly, the business case addresses the issue of who is paying for the projects and why?

4. **Section 2** describes the *strategic business case* and its role in obtaining political commitment on the Single Window project. The object of the strategic business case is to produce the political mandate for the initiative. This mandate provides a number of high-level decisions concerning the governance model, the executive authority structure, and the broad scope. The mandate also provides clear support for the overall operational concept of business. Along with specification of the timeframe, the mandate also contains assurances regarding finances.

5. **Section 3** provides detailed information, including standard templates /framework, for preparing the detailed business case for the selected projects to establish Single Window services. The section includes information on documenting estimated business benefits, cost-benefit analysis and project selection.

6. **Section 4**, the final section, discusses implementation, monitoring and feedback. All projects are required to be reviewed against the final business case. Part of the review includes documenting the extent to which the project has been able to establish business benefits.

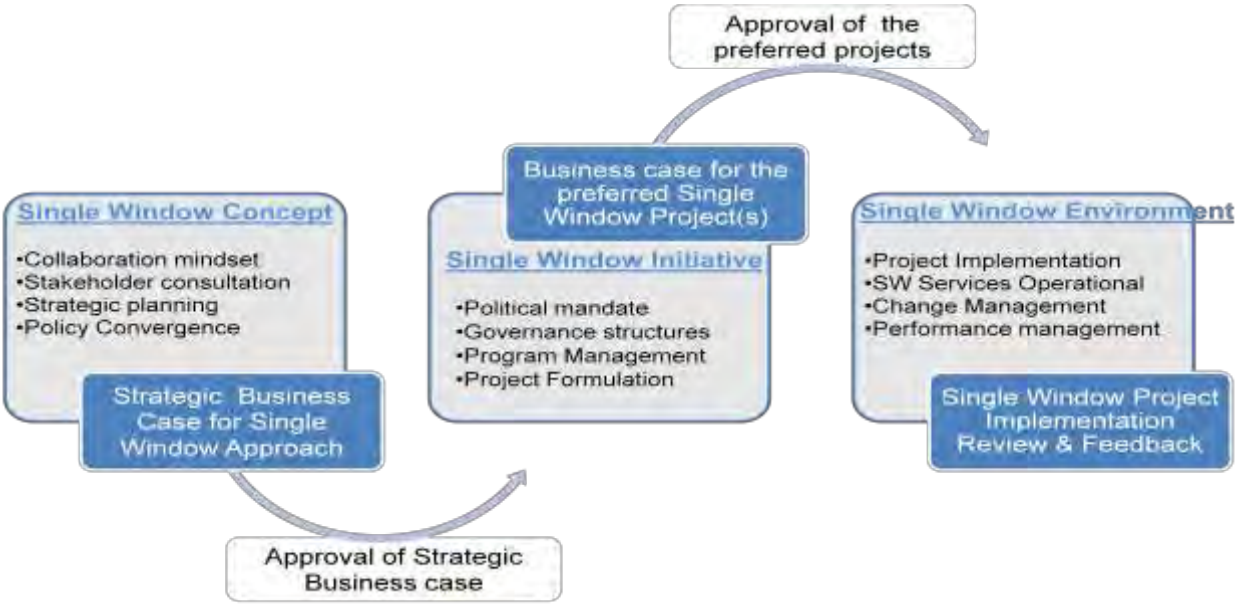
7. This Chapter is not intended to provide information on the basics of project management or procurement practices. Only the key aspects of business case development have been included in this Chapter. In preparing this document, the WCO Secretariat referred to the following documentation but primarily:

    a. The WCO Standard Business Case Template

    b. Business Case Guidance (Capacity Building Guidance, communities and local Government, HM government UK)

    c. A model/method for cost-benefit analysis within Customs administrations.(WCO Compendium on Capacity Building).

8. The diagram below provides a schematic on the recommended process in relation to the business case.



9. The proposal for a Single Window project would involve the long-term organizational commitment in terms not just of human and financial resources but also of leadership and executive support. To obtain such a commitment, there should a clear projection of the business needs, which are understood collectively by the community of stakeholders.

10. A business case looks at any financial investment through from the perspective of return on investment and derivation business benefits. Even a simple proposal for hardware procurement or software upgrade can be presented as a technical case for a much needed improvement in system performance. The same proposal can also be fashioned as a document which states that the investment would lead to better operational performance and improved service through lower processing time and/or reduced maintenance costs.

11. The manner in which a problem is presented determines how it will be ultimately addressed. For any proposed investment in assets and resource, when the appropriate strategic perspective is understood, the proposal has a better chance of being accepted.

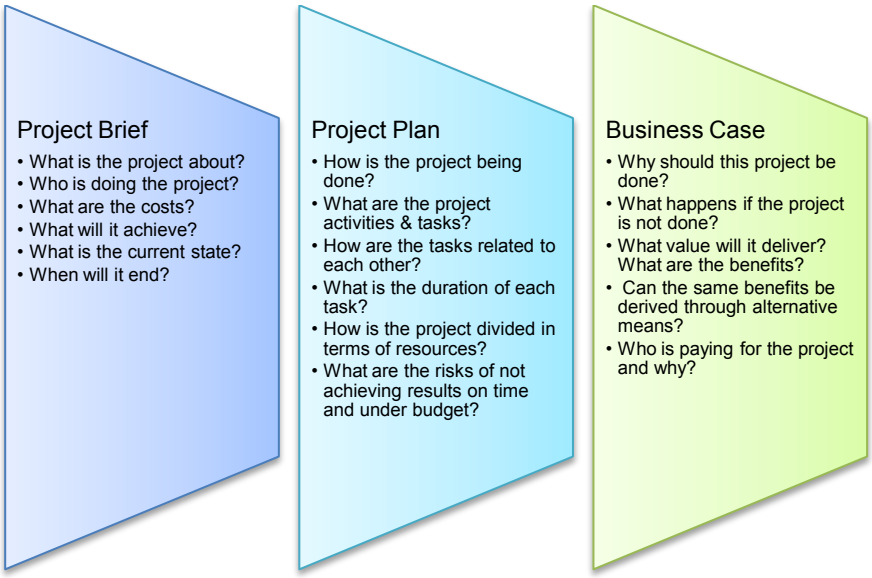
12. It is however not always easy to project all investments in terms of business benefits alone. Some of these benefits are quantifiable, such as improvements in performance and financial savings. Other benefits are qualitative and intangible, such as those linked to „customer" satisfaction. For a large-scale effort like the development of a Single Window, the process of capturing the business benefits and a clear justification for the project is a very challenging exercise.

What is a Business Case?

13. A business case is written document containing reasoned arguments presenting the case for initiating a project. It is often a formally structured document reflecting the organization"s needs for financial accountability. While a business case should include financial justification for a project, it is not its only purpose .The business case is indeed the document where all relevant facts of the project are formally arranged to present the complete picture. That picture includes the definition of the project, services to be covered in scope, costs and benefits, risks and returns, outlays and outcomes, schedules and timelines etc. The picture also includes information about the key project participants, their roles and responsibilities.

14. Projects to develop a Single Window Environment involve substantial outlays, long gestation and large gaps of time between financial outlays and business outcomes. It is therefore essential to view the business case as a management process. This *management process* lasts throughout the lifecycle of the project and broadly

includes activities such as initial development, refinement through consultation, executive approval for the project concept (and subsequently, the actual preferred project), the implementation of the project and project review. The diagram below explains the difference between the project brief, a project plan and a business case. Naturally, the business case has to be established before a project can come into being, making it most important strategic document in a Single Window initiative.



Business case for Single Window: Collaboration is vital

15. As mentioned above, the development of a business case is a management process, in which the executive management has the lead role. There are however a number of individual functions and roles that participate in this vitally important process. In addition to the strategic and policy making divisions, those organizational units that are normally responsible for formulating Information Technology (IT) initiatives would play an important part in these processes. The business case involves support from specialist individuals who are well-versed with tools and techniques to support the decision-making process– such as those for computing returns on investment, cash flow projections and cost-benefit analysis. Skills and competencies not just from customs but also from partner government agencies should to be engaged in a collaborative effort. This joint activity would help the business case achieve broad support and acceptance.

16. Each organization has its own way of governing projects and of holding people accountable for project outcomes. The recent WCO Survey (please see Chapter 1 of

Volume 2) suggests that 70% of all Single Window projects are funded by governments. If governments have to play the lead role in providing support to the Single Window, the investment process would be normally be driven by the written code dealing with public accountability of government expenditure. But how this written code translates into practice is largely driven by the norms and values of the participating organizational units. These norms and values will also determine the quality of the business case that is put together for the Single Window initiatives and projects.

17. Very often, IT projects in government are approved as a „leap of faith". E-governance initiatives carry a high level of general political support as these tend to be treated as the panacea for solving the problems of governance. The Single Window concept has an intuitive appeal and it would not take much convincing to the political leadership to agree with the overall principle. The 'Single Window' is a simple concept with a grand vision. That vision promises to lead Cross-border Regulatory Agencies (CBRAs) to transformative changes in the way business and Government interact in the course of international trade. The actual realization of this vision may be quite a challenge to overcome. While the project will involve substantial investments in technology, there will also significant „breakthrough" efforts required in delivering policy and service outcomes. The business case brings the touch of reality to these visions, by documenting activities, changes to business and investment schedules. Most importantly, the risks that the stakeholders would face in deriving benefits from initiative. The management process that governs the business case development plays this part.

SECTION 2: THE STRATEGIC BUSINESS CASE

18. The object of the Strategic Business Case is to produce a political mandate for the project providing a number of high level decisions concerning the governance model, the executive authority structure, and the broad scope. The mandate would also provide a clear support for the overall operational concept of business. Along with specification of the timeframe, the mandate would also contain assurances regarding finances.

19. The strategic business case must explain how the Single Window concept „fits" with the strategic program for customs modernization. For example, how does Single window support the key customs initiatives of intelligence based risk management, post audit-based control, client education, authorized economic operator, border management strategies, and automation of services? Similarly, the alignment of the single window approach with the strategic imperatives of modernization for other participating CBRAs also needs to be documented.

20. Likewise, for partner CBRAs, the strategic business case must explain how the Single Window links-up with government-wide programs on improving trade facilitation and de-clogging and accelerating transport logistics? How does it fit with

the national programs on electronic governance and public services reform?

21. In Volume I, Chapter 3 & 4, the question of strategic alignment between the issues concerning this is the first stage in preparing the business case, in which the task is to locate the issues to be covered by the Single Window project and place them in the broader political and strategic context.

22. The audience for the strategic business case is initially the senior management and ultimately the political executive. These levels of decision making require information on the case along with alternatives on the way forward. The strategic business case should include the economic rationale for pursuing the Single Window approach, addressing the overall gains to economy through growth in international trade, improving trade competitiveness by reducing transaction costs in trading, the government"s commitment to lowering total costs of trading – including transportation costs, logistics services costs, financing costs and regulatory costs.

Economic Rationale & Strategic Value

23. The audience for the strategic business case is high-level. It is interested in the broad issues and likes proposals that are presented along with alternatives on the way forward. There is a need to provide the economic rationale for pursuing the Single Window approach. The following list of sources can help in making a case for the Single Window approach:

    a. Literature on International Trade is replete with theoretical and empirical evidence that welfare benefits occur to the economy through growth in international trade. Factors hindering or limiting trade must receive priority attention of the political executive.

    b. Measures on Trade Facilitation have a lasting value in promoting international trade. In the longer term the benefits of these measures greatly exceed the perceived costs of implementation of these measures (Duval, 2006)

    c. Improving trade competitiveness by reducing transaction costs in trading (United Nations, 2006). Transaction costs can vary between 2 to 15 percent of the total value of transaction. Studies have tried to document and quantify the actual trade transaction costs (Walkenhorst & Yasui, 2004).

    d. Governments around the world have committed themselves to lowering total costs of trading – including transportation costs, logistics services costs, financing costs and regulatory costs. For example, the ASEAN nations have mandated national economies to implement Single Window in order to reduce transaction cost. (ASEAN Secretrariat, 2009).

    e. The WCO Single Window repository provides information in relation to numerous implementations of Single Window around the world. Global trends in Single Window implementation provide indirect evidence that it is useful.

f. The Strategic Business case should explain how the Single Window approach lowers all these costs. Intuitively, reduction costs are a function of the following factors:

    i. Single Window promotes ease of submitting information to government.

    ii. Cost of one time submission multiple submissions.

    iii. Lower document preparation costs

    iv. Reduced interaction with different government agencies – combined response on release, co-ordinated inspection, etc.

    v. Overall reduction in time leading to reduced costs in carrying inventory.

g. Demonstrable impact on human resources; inspectors can focus on substantive aspects regulation while efficiencies induced through Single Window reduce compliance verification effort linked to crosschecking routine documentation.

24. The Strategic Business Case should also clearly explain how the Single Window approach lowers all these costs. The Single Window project can demonstrably lead to obvious simplification in the interface between trade and government. For example inspectors can focus on substantive aspects regulation while efficiencies induced through Single Window reduce compliance verification efforts linked to the crosschecking of routine documentation. Besides practical, information, it should also include precise empirical information based on research such as:

    a. General research describing the positive impact of measures of trade facilitation on growth in trade

    b. „Firm-level" (or micro-economic) evidence confirming improved competitiveness of domestic industry due to effectiveness in handling trade information and documentation.

    c. Impact of Single Window implementations documented around the world in case stories.

25. The strategic value of the project can be established by projecting different scenarios including risks associated with alternative courses of action *including that decision which involves taking no action.* Potential risks of continuing with the status quo should be fairly presented along with risks associated with alternative courses of action.

Outcome from the Strategic Business Case

26. A substantial part of the Strategic Business Case should include a clear statement of

the outcome being sought from it. This outcome is the political mandate to develop a Single Window Environment. Chapter 5 of Volume 1 provides the contents of the political mandate in brief. Broadly, the mandate must contain the following aspects:

Box: High Level Structure of the Political Mandate

The details contained in the high-level political mandate in relation to a Single Window project may vary from country to country. The following main points may however be considered:

- ✓ Statement of object & purposes
- ✓ Definition of terms used
- ✓ Activities/services covered by the Single Window concept
- ✓ Establishment of the Lead Agency organization and the identification of partner organizations/ CBRAs:
- ✓ Legal definition of the Lead Agency entity
- ✓ Financial dispensation for the Lead Agency& operating philosophy
- ✓ Lead Agency organization & consultative structures
- ✓ Powers vested to each of identified organization, including the Lead Agency to:
  - Approve projects
  - Recommend changes to legislation
  - Set service standards
  - Adopt changes to business processes
  - Adopt interoperability standards
  - Evaluate and review project implementation
  - Handle disputes.
- ✓ Date of applicability
- ✓ Schedules for the implementation of the Single Window Initiative:

SECTION 3: THE DETAILED BUSINESS CASE FOR CHOSEN PROJECTS

27. The Strategic Business Case would have established the strategic intent of the government. The political mandate that resulted from the approval of the strategic business case would have established the importance of the initiative. In general, the outcome of political mandate would kick start the several activities leading to the „establishment phase". Upon the conclusion of this short spur of activities, the country should be able to assert in the affirmative on the following tick-list:

a. Objectives, scope and coverage of services of Single Window broadly defined? [Yes/ No]

b. Overall strategy for Service delivery defined and high-level strategy defined? [Yes/ No]

c. Lead Agency nominated and formally notified? [Yes/ No]

d. Organization structure with leadership positions, roles/ responsibilities created? [Yes/ No]

e. Financial dispensation – indicative budgetary allocation notified? [Yes/ No]

f. Consultative Structures with notified and membership of groups nominated? [Yes/ No]

g. Decision making authority defined and commonly understood by all participants? [Yes/ No].

28. When the initiative reaches this stage, full agreement on the above details would have already been reached. Specifically, the organizational structure, the financing strategy, the operating model (including arrangements for Public Private Partnership) the service delivery strategy and priorities, the consultative structures would be known. This opens the way for the relevant organizations to come to life and to begin consultations on the preferred project(s) including discussion on the detailed business case.

29. The detailed business case for the chosen projects covers project objectives, project components, procurement plan, project organization, investment schedules and costs/ benefits analysis. Baseline information on current processing costs incurred and time taken for cargo release and border processing should be established in order to help define benefits in concrete terms. The WCO documentation referred to in this section provides information that can help carry-out these tasks including techniques of the appraisal of options.

30. This is all the more necessary because projects in computerization often meet skepticism from the senior executives. E-governance projects have a long history of failures, and of over-promise and under-delivery. Carrying out a do-ability study for Single Window projects is therefore also part of this stage. The development of a detailed business case for the chose project would involve the following essential steps:

Locating the Right Templates & Frameworks

31. Governments have their own templates and formats for writing detailed business cases. These templates are often prescribed in order to maintain financial accountability and investment governance. The reader is advised to obtain national templates as advised by the concerned government.

Establishing the Stakeholder Perspective Business on Value

32. The business case should include a summary of these documented studies touched upon in preceding paragraphs. These studies presumably carried out in other

contexts should however be supplemented with information at a more practical level. Particularly, a statement of benefits endorsed by the national stakeholders would be of immense value in bolstering the business case. This statement of benefits could be prepared by:

a. Launching a joint industry-government mission or taskforce to carryout analytical studies on the bottlenecks of cargo processing and the various regulatory touch- points along the supply chain. Such a group could come out with recommendations on the features of a Single Window solution that bestows maximum benefit to the Trade and to regulatory authorities.

b. Alternatively, an industry survey may be carried out in order to ascertain the industry rating of perceived benefits. Such surveys could also be supplemented with longitudinal field studies that describe the typical as-is story involved in cargo clearance and the difference that a Single Window approach could make. The following box provides an example of a typical inquiry on benefits

33. For each of the points mentioned below, the respondents are requested to suggest whether the perceived benefit is rated **significant, moderate, insignificant or non-existent**:

a. Combined declaration to different agencies [eg. Customs, agriculture, and food and drug administration] :

i. Helps reduce the burden of procedures and paperwork

ii. Single declaration implies one time entry of data

iii. Single form implies co-ordinated changes to interface specifications by government agencies. This reduces the cost of re-orienting the trader"s software applications for creating entries. If governments carry out un-coordinated changes to the interface specifications, there would be extensive customization costs.

iv. Redesigned applications enable submission of minimum data.

v. Redesigned advance data allows logistics operators to carry out logistics planning of

1. on-arrival operations in the case of imports and

2. pre-loading operations in case of exports

b. Trade data sets that are standardized for government-wide use would support more accurate and more detailed trade statistics for trade policy across different business sectors

c. Trade data sets that are standardized for government-wide use would provides better supply chain process and performance statistics. This leads to more optimized performance by logistics players.

d. Standardized government-wide response messages could help recipients in the supply chain in better planning of cargo clearance, with clear savings in cost and time. (e.g. Terminal operators, warehouse operators and road hauliers do not have to process multiple messFages from different government agencies).

e. The system will enable different permit issuing agencies to receive electronic permit application in a standardized format and would enable electronic approval of permits via the Single window.

f. A mention of the approval reference in the common declaration at the time of the lodgement of the entry would suffice.

g. Improves market access through internationally acceptable ePermitting.

h. The system permits payment of fees for all border services and the consignment clearance fee is consolidated along with all duties, taxes and terminal fees and reports are available online as to the composition of and justification for the charges.

i. Combined response on processing status in relation to an application for license or permit or a transaction clearance status

j. The Single Window Environment will enable digitization of supporting documents such as certificates and permits.

k. Helps traders to manage their respective registration details including agency authorization for different government agencies.

l. Co-ordination of inspections between agencies helps reduce spending by traders leading to better compliance outcome.

m. Coordination in the scheduling of inspection arrangement makes physical attendance by trader agent easier.

n. Shared infrastructure with jointly operated IT systems along with re-developed border management model lower costs to both government and trade.

o. Improves targeting and risk assessment by providing more data and quality data that is pooled from different agencies.

p. Will improve the provision of information and guidance to Customs and MAF officers, supporting quality and consistency of decision making and advice to clients.

Benefits profiling

34. The projected business value and the benefits profile are part of the Strategic Business Case but at that level, the business case has to remain in general economic terms for a high-level audience. The business case for the chosen project is required to take the benefits profile to a more practical level.

35. Typically, IT projects in government tend not to define project benefits rigorously and realistically. The typical business case provides a simple listing of benefits. What is often not done is a mapping of benefits with the realization of project deliverable. Such mapping should include a matrix describing **a**ssumptions, **d**ependencies, **r**isks and **c**onstraints against each benefit (also called the ADRC matrix). A clear sequential structure of benefit realization needs to be developed. Responsibilities have to be assigned within the project structure for the realization of agreed benefits from projects.

36. The UK Government has established a methodology for profiling and managing benefits. A key aspect of preparing and projecting project benefits is the creation of a benefits profile. The benefits profile should contain the list of benefits, detailed description, the ADRC matrix, and schedule for realization of benefit, indicators or measures of the benefit along with baseline measures. Business case development and realization of benefits go hand in hand. Non-realization of benefits could prompt a review of the business case even as the latter is driven by projections and executive assurances on the former.

Cost benefits analysis & project appraisal

37. Cost benefit analysis is a crucial aspect of business case development. WCO has developed a specific tool in this respect. Titled "**A model/method for cost-benefit analysis within Customs administrations"** it provides a structured approach to costs benefit analysis. Specifically, the template allows a way of determining „Customs benefits".

38. Chapter 6 of volume 1 defines of business value concerning a Single Window environment in terms of preservation of value of goods through reduction in transaction costs and time. The agreed understanding within the project or program management team on the procedure for the measurement of baseline business benefits is important.

Box: Examples of measurable items for drawing the baseline on benefits

1. Baseline results of Time Release Study (based on the WCO TRS methodology). Each component of time is a measurable element indicating baseline performance.
2. Baseline results of UN/ESCAP Time Cost & Distance method.
3. Number of documents required for completing the average transaction.
4. Average person-hours of data input for an import, export and transit transaction.
5. Number of independent systems interfaces involved in a single transaction.

6. Number of data elements required to be re-keyed – for import, export and transit declarations.
7. Average brokerage and agency charges per transaction (costs other than those for transportation, storage and handling services.

39. Cost benefit analysis can be carried out using a variety of methods. Option appraisals would normally lead to the most appropriate solution which can be sent for executive approval. At the stage of executive approval, the following aspects are important: (i) submission of business case in the appropriate template (often mandated by government) (ii) all supporting documents (iii) a clear statement resource implications.

Concluding the Detailed Business Case

40. The detailed business case for the chosen project proposal should *include all supporting documents*. Clarifications as sought by the participants of the decision making body may be provided as appropriate. It is recommended that separate notes may be provided:

    a. Outlining the role of each agency in the decision-making process

    b. Indicating the implications of the project/decisions for each impacted stakeholder should be circulated.

    c. Outlining consequential actions and/or decisions as a result of the approval. In particular, the implications on:

        i. Financial resources [budget allocations, delegation of financial authority, physical assets].

        ii. Human resources- especially concerning re-structuring, re-deployment, re-designation of regulatory authority.

41. The specific resource implications for these two areas should be understood and agreed to by the decision making authorities. This implies that the composition of the body making decisions on the business case should have the necessary authority or authorization to make these decisions.

42. Lastly, the decisions should be communicated including the relevant detail to all participants and Stakeholders.

SECTION 4: IMPLEMENTATION, MONITORING & FEEDBACK

43. Work on business case does not end with the receipt of financial approvals. The documents of the business case remain relevant for the subsequent stages of project implementation, such as resourcing, procurement, scheduling, roll-out etc. More

importantly, the business case is useful for identifying and tracking **costs**, **risks** and **benefits** that are so vital during project implementation.

Firming-up the Project Plan

44. Activities being undertaken by the project team will follow the overall project implementation plan. An important component of this stage is the procurement strategy. Government policies on public procurement will significantly impact activities of the Single window project. These policies could be qualified and more sharply defined during the earlier phases of business case development. For instance, the special dispensation may be available with the empowered structures for making procurement decisions in relation to Single Window projects.

45. The procurement strategies would vary from country to country. It will also depend on the agreed structural arrangements and operating financial models. The involvement of private sector in the management structures makes their role in procurement clearer. Some operating models, involving collection of user fees provides built-in financial benefits into the operations.

46. Contract management, procurement management and vendor performance management are vital for the business case. There is a case for an independent unit dealing with contract issues, being most complex and challenging of all project issues. Risks arising out of contract provisions pose serious threat to the achievement of benefits described in the business case. Vendors spend substantial amounts as part of the costing towards legal services relating to contractual issues. Single Window projects involve long gestation, extensive inter-agency integration and complex and evolving requirements. Among the key decisions to be taken at this stage relate to procurement decision concerns the strategy for software development.

47. The following box provides information concerning major basis for software project procurement.

Box: Software Procurement Strategies

Fixed Price Model: Procurement involves payment of a fixed price on achieving agreed milestones and deliverables. This model is suitable:

- For small and medium sized projects
- Definite in project scope
- Clear and detailed requirement specification.
- Little or defined minimal scope for scope modification.
- Do-ability & results are clearly anticipated/ foreseen.

Time & Material Model or T&M Model for short: In this model, payment is based on consumed project resources. This model is suitable for:

- Large scale projects
- Long gestation projects

a

48. At the project implementation stage, when the detailed project plan would have to be formally put into operation the project performance can be held as a mirror to the detailed business case. At the outset, the detailed project plan needs to be signed off with all participants especially the vendors leading to a „final version" of the business case. Since the project plan would contain the complete work breakdown structure, detailed roles and responsibilities, project milestones, project risks and resources, it comes in handy to compare actual „points in time" results with initial projections. Specialized, computer-based project management tools can also help the project team with the capture and management of the entire project information into a coherent document.

Tracking Project Risks

49. Inadequate attention to project risks is the biggest danger to achieving benefits described in the final business case. Typically, the high-level decisions taken at the time of the approval of the strategic business case in relation to (i) lead agency responsibilities (ii) placement of tasks between agencies (iii) restructuring of regulatory organizations and (iv) high-level decisions on business process. These decisions have a far reaching impact on the realization of business benefits. In general, the higher management (of the lead agency) needs to pay attention to action taken to monitor project risks and mitigation efforts. Such efforts should be in line

with the projected schedules. Likewise, solution design assurance process, project procurement, project monitoring and reporting must also receive due attention.

Accounting of Costs & Benefits

50. Upon reaching different milestones for the delivery of the project, the time comes for *the accounting of benefits* based on agreed measures. These measurements could be used for comparison with the baseline measurements and agreed projections.

51. The review should take into account qualitative and quantitative measures of the output. Review reports should also be widely published for comments. The review exercise should also help establish how the documented risks have actually impacted the project. During project implementation, there could be changes to budgeted projections in time quality and costs. The projected benefits may only be partially reached and recorded risks may have actually impacted project goals and projected business benefits. The review process provides the opportunity to record these changes and to document them against initial projections.

52. A statement of outcome containing how the project has performed and impacted service outcomes is relevant during review. The statement should use the performance measures and indicators that impact Single Window service delivery including efficiency gains for trade and government. Of special significance would be progress made in relation to organizational outcomes, such as inter-agency collaboration and collaborating practices.

53. The *final business case* is a complete document providing the entire case story on the project incorporating the lessons learned into later business cases.

CONCLUSION

54. In the course of the development of a Single Window Environment, managing the business case is the most important responsibility of the executive management. The responsibility begins when a decision is reached on adopting the Single Window solution. It continues through the development of the strategic business case, the business cases for the chose projects and the process of monitoring implementation and the derivation of business benefits.

55. Business case development is a management process involving specialized competencies and skills, organizational roles and established procedures. To run a business case successfully, there should be an appropriate organization, an effective communication system and a well-defined process.

56. Senior management in Customs and Cross-border regulatory agencies need to persist with the business case until the final documentation of the benefits received and lessons learnt are documented and communicated to stakeholders.

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