UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

Connecting International Trade:
Single Windows and Supply Chains in the Next Decade

UNITED NATIONS

United Nations Economic Commission for Europe

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Note

The United Nations Economic Commission for Europe (UNECE) serves as the focal point within the United Nations system for developing norms, standards, and policy recommendations for trade facilitation. The UNECE Secretariat, in collaboration with the Economic Commission for Africa, the Economic Commission for Latin America and the Caribbean, the Economic and Social Commission for Asia and Pacific and the Economic and Social Commission for Western Asia, organized the Global Trade Facilitation Conference "Connecting International Trade: Single Windows and Supply Chains in the Next Decade", which was held in December 2011 in Geneva, Switzerland.

This publication summarizes the information presented and the interactive discussions held during the Conference. Two background papers prepared for the Conference are included as annexes.

The conference was complemented by several side events, including a UNNexT Workshop on Single Window Project Planning and Implementation, a seminar on "How to develop a Port Community System" organized by the European Port Community System Association (EPCSA), and a Joint Forum by the Asia Europe Alliance for Paperless Trade (ASEAL) and the African Alliance for Electronic Commerce (AAEC) with the title "Towards a Global Alliance of Paperless Trade". More information on these events can be obtained from the Conference website www.unece.org/swglobalconference2011.

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Contents

Foreword

This publication provides an overview of the latest trends, challenges and opportunities for Single Window and information exchange in global trade and strategic priorities for more efficient and secure cross-border trade in the next decade. It draws on the papers and information presented, as well as the roundtable discussions during the Global Trade Facilitation Conference 2011 on Connecting International Trade: Single Windows and Supply Chains in the Next Decade, which was held in Geneva in December 2011.

The Conference was organized by the five regional commissions of the United Nations as part of a new interregional initiative, the Joint UN Regional Commissions' Approach to Trade Facilitation. Two hundred representatives from governments, the business community and international organizations attended. A total of 51 countries were represented from all five continents.

According to delegates attending the conference, Single Window implementation has been a real success story across the world and now makes an important contribution to facilitating international trade and increasing competitiveness. Single Window facilities in many countries are already providing the business community with a streamlined process for submitting their export and import information to Customs and other government agencies. As a result, clearance times and trade transaction costs have been drastically reduced.

Participants at the conference requested the United Nations regional commissions to prepare a roadmap for enhanced Single Windows and information exchange in global supply chains. This roadmap is being drafted in close consultation with all key stakeholders and will be presented at the next joint United Nations regional commission conference on trade facilitation in Bangkok in November 2013.

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Bram Klievink, Sietse Overbeek, Eveline van Stijn, Yao-Hua Tan, David Hesketh, Frank Heijmann, Jonathan Koh Tat Tsen, Markus Pikart and Tom Butterly prepared the two conference background papers that are included as annexes. Virginia Cram-Martos, Director of the Trade and Sustainable Land Management Division, reviewed and commented the text as part of her responsibility in guiding all of the work within the Division.

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List of Abbreviations

A2A	Administration-to-Administration
A2B	Administration-to-Business
AACE	African Alliance for e-Commerce
ABS	Access and Benefit Sharing
ACTO	Amazon Cooperation Treaty Organization
AEO	Authorized Economic Operator
AMS	Automated Manifest System
ASEAN	Association of South-East Asian Nations
ASYCUDA	Automated System for Customs Data
B2A	Business-to-Administration
B2B	Business-to-Business
BPA	Business Process Analysis
BPM	Business Process Models
C-21	Customs in the 21st Century
C2B	Customs-to-Business
C2C	Customs-to-Customs
CAF	Development Bank of Latin America
CALC	Summit of Latin America and the Caribbean on Integration and Development
CAN	Andean Community
CARICOM	Caribbean Community
CASSANDRA	Common Assessment and Analysis of Risk in Global Supply Chains
CB TIE	Cross-border trade information exchange
CBM	Coordinated Border Management
CCTV	Closed Circuit Television
CELAC	Community of Latin American and Caribbean States
CIS	Commonwealth of Independent States
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COMALEP	Conference of Customs General Directions in Latin America and Caribbean
CPG	Consumer Packaged Goods
DG	Directorate General
DMR	Data Maintenance Request
Doc	Document
EAC	East African Community
EC	European Commission
ECAC	European Civil Aviation Conference
E-Commerce	Electronic Commerce
eCPS	Electronic Declaration of Crew, Passengers and Stores
EDI	Electronic Data Interchange
EDIFACT	Electronic Data Interchange For Administration, Commerce and Transport
ENS	Entry Summary Declaration
EPCSA	European Port Community Systems Association
ESCAP	Economic and Social Commission for Asia and the Pacific
ESCWA	Economic and Social Commission for Western Asia
EU	European Union
FDA	United States Food and Drug Administration
FIATA	International Federation of Freight Forwarders Associations

FTSW	Foreign Trade Single Window
G2B	Government-to-Business
G2G	Government-to-Government
GACAG	Global Air Cargo Advisory Group
GAFTA	Greater Arab Free Trade Area
GCC	Gulf Cooperation Council
GDP	gross domestic product
GLAN	Global Location Number
GNC	Globally Networked Customs
GS1	Global Standards 1
GSF	Global Shippers Forum
GTIN	Global Trade Item Number
GTNexus	Cloud supply chain technology services provider
GUCE	"Guichet Unique des Opérations du Commerce Extérieur"
HS Code	Harmonized Systems Code
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICS	Import Control System
ICT	Information and Communication Technology
ID	Identification/Identifier
IDB	Inter-American Development Bank (IADB)
IEC	International Electrotechnical Commission
IISFMT	Integrated Information System for Foreign and Mutual Trade
IKM	Knowledge Management Initiative
IMO	International Maritime Organization
IMO FAL	International Maritime Organization Facilitation Committee
IPv6	Internet Protocol Version 6
IRU	International Road Transport Union
ISO	International Organization for Standardization
IT Co	International Tank Container Organisation
ITAIDE	Information Technology for Adoption of Intelligent Design for e-Government
ITU	International Telecommunication Union
JIT	just in time
KENTRADE	Kenya Trade Network Agency
LAC	Latin America and the Caribbean
MEA	Multilateral Environmental Agreements
MERCOSUR	Southern Cone Common Market (South America)
MOU	Memorandum of Understanding
N2N	Nation to Nation
NL	Netherlands
NTTFC	National Trade and Transport Facilitation Committees
NVOCC	Non Vessel Operating Common Carrier
OGA	Other Government Agencies
PAA	Pan Asia e-Commerce Alliance
PACCS	Pakistan Automated Commercial Community System
PCS	Port Community System
PDA	personal digital assistant
PEZA	Philippine Economic Zone Authority
PKI	Public Key Infrastructure

PO	Purchase Order
QIZ	Qualified Industrial Zone
Reg	Regulation
RFP	Request for Proposal
RIA	Rich Internet Application Interface
SAD	Single Administrative Document
SAFE	WCO SAFE Framework of Standards to Secure and Facilitate Global Trade
SCM	Supply Chain Management
SELA	Latina American Economic System
SICA	Central American Integration System
SICIS	Shared Intermodal Container Information System
SKU	Stock Keeping Unit
SMS	Short Message Service
SPS	Sanitary and Phytosanitary
SW	Single Window
SWIF	Single Window Implementation Framework
T1	Transit Document
TEDI	Trade and Settlement Electronic Data Interchange System
TEN-T	Trans-European Network for Transport
TEU	Twenty-foot Equivalent Unit
TIACA	The International Air Cargo Association
TIM	International Transit of Goods in Mesoamerica
TIR	Transports Internationaux Routiers (International Road Transport Convention developed in UNECE)
UAE	United Arab Emirates
UK	United Kingdom
UMOA	West African Economic and Monetary Union
UN/CEFACT	United Nations Centre for Trade Facilitation and Electronic Business
UN/EDIFACT	United Nations Electronic Data Interchange For Administration, Commerce and Transport
UNCITRAL	United Nations Commission on International Trade Law
UNCTAD	United Nations Conference on Trade and Development
UNECE	United Nations Economic Commission for Europe
UNNExT	United Nations Network of Experts for Paperless Trade
UNODC	United Nations Office on Drugs and Crime
UNTED	United Nations Trade Element Directory
US	United States
USDA	United States Department of Agriculture
VAN	Value Added Network
VAT	Value Added Tax
VMI	Vendor Managed Inventory
VUCE	Ventanilla Unica de Comercio Exterior (Foreign Trade Single Window)
WCO	World Customs Organization
WHO IHR	World Health Organization International Health Regulation
XML	Extensible Markup Language

Executive Summary

Connecting International Trade
Single Windows and Supply Chains in the Next Decade

At the heart of the Single Window concept is the automation of the information exchanges that control the flow of goods across national borders. The conditions under which this information is exchanged and shared, its accessibility, accuracy, the data formats and the technologies used, are crucial for global trade efficiency. Managing this information skilfully, leveraging its potential, and finding new ways to generate, manage, process and use it is vitally important for governments, the private sector and citizens. Intelligent data sharing will be central to the development of the next generation of Single Windows and innovative approaches to Supply Chain Management.

This report captures the presentations and discussions held at the Global Trade Facilitation Conference 2011 on *Connecting International Trade: Single Windows and Supply Chains in the Next Decade*, which took place in Geneva on 12 and 13 December 2011. The Conference was organized by the five regional commissions of the United Nations as part of a new interregional initiative, the *Joint UN Regional Commissions' Approach to Trade Facilitation* and attended by 200 representatives from governments, the business community and international organizations. A total of 51 countries were represented from all five continents.

The report provides an overview of the latest trends, challenges and opportunities for Single Window and information exchange in global trade. It reviews the past decade of Single Window development across the world, proving an overview of regional trends in Africa, Latin America and the Caribbean and Western Asia.

Azerbaijan, Benin, Jordan, Kenya and Senegal shared their experience with the implementation of Single Window systems, noting both the challenges encountered and benefits derived. Operators of Port Community Systems and Maritime Transport Single Window systems in countries of the European Union provide examples of other models of information exchange that are being developed. Enabling this development is the work by many countries and organizations on a legal framework for data sharing in international supply chains. The perspectives on this topic of the Pan-Asian eCommerce Alliance as well as of UNCITRAL were shared. A number of contributions were dedicated to the future of information sharing, ranging for a new concept of a data pipeline that could integrate data from all the different sources in the supply chain in a future "smart generation of Single Windows" to the idea of Globally Networked Customs advanced by the World Customs Organization, or the e-freight concept, which is moving the air cargo industry towards paperless procedures. The report closes with an overview of the key messages of the conference and the outlook for future developments.

One outcome of the Conference was the decision to create a roadmap for enhanced Single Windows and information exchange in global supply chains. It is being drawn up by the United Nations regional commissions in close consultation with all key stakeholders and will be presented at the next joint United nations regional commission conference on trade facilitation in Bangkok in November 2013.

Single Window and Supply Chains in International Trade

A Single Window is defined as:

"a facility that allows parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfill all import, export, and transit-related regulatory requirements".[1]

Single Window implementation

At the heart of the Single Window concept is the automation of the information exchanges that control the flow of goods across national borders. The conditions under which this information is exchanged and shared, its accessibility, accuracy, the data formats and the technologies used, are crucial for global trade efficiency. Managing this information skillfully, leveraging its potential, finding new ways to generate, manage, process and utilize this information is vitally important for governments, the private sector and citizens.

In developing countries and countries with economies in transition, the Single Window has been a success story. Many of these countries implement government Single Windows that provide users with access to both Customs and other government agencies to facilitate export and import procedures. Successful Single Window implementations generally focus more on facilitation and change management rather than technical solutions. National examples included in this publication are Azerbaijan, Benin, Kenya and Senegal(see Chapter 10 and Chapters 12 through 14).

The Single Window models vary greatly from one country to another, depending on a country's readiness and priorities. Models include paperless Customs, Port Community Systems and Single Window systems that link government agencies on the national and regional level (see Chapter 18).

Many advanced trading countries have not implemented a national Single Window. Instead, other forms of Single Window networks, in particular Port Community Systems (see Chapter 19) and Customs Single Windows (see Chapters 13, 15), are being successfully used to support a high-performing logistics sector.

The development of the Single Window is typically a major undertaking, involving the creation of inter-linkages and information sharing between Customs and other government agencies responsible for trade, as well as the trading community. It is therefore usually implemented in a phased approach (see Chapter 2).

Cross-border information exchange

Both in developed and developing countries, there is a need to link or network national Single Windows either regionally or globally, for cross-border data exchange (see Chapter 21).

[1] www.unece.org/fileadmin/DAM/cefact/recommendations/rec33/rec33_trd352e.pdf.

Single Window interconnectivity is especially important for landlocked and transit countries as it provides new opportunities for access to markets. Single Window project managers and operators should, therefore, collaborate on a regional level to analyse cross-border supply-chain issues and ensure technical interoperability when developing Single Windows (see Chapters 7, 11).

Groups of Single Window operators, such as the Pan Asia E-Commerce Alliance (see Chapter 7) and the African Alliance for e-Commerce (see Chapter 3) are working to establish a mechanism and framework for conducting secure cross-border document and data interchanges among the stakeholders in their regions.

However, many aspects of regional/global Single Window integration still have to be defined. Further international collaboration is required to develop and implement data harmonization, as well as common strategies, policies and standards to support inter-connectivity (see Chapters 2, 21, 24).

An enabling legal environment

Although the need for an enabling legislative environment for paperless international trade is well recognized, the legislation applicable to electronic transactions with governmental entities (e-government) is often specific to individual sectors and/or individual technologies. This creates barriers to the exchange of electronic communications among different public-sector entities, as well as between government and business. For business it also raises costs as different systems or system modifications are needed in order for any one company to meet the legal requirements of different government agencies and/or countries.

The widespread adoption of the United Nations Convention on the Use of Electronic Communications in International Contracts (2005) could be one element in the regulatory framework for national and international Single Window facilities (see Chapters 8, 9).

New approaches to information sharing in global trade supply chains for security, trust and efficiency

The conference discussed concepts for better managing international supply-chain processes through the advanced use of information and technology, such as information pipelines in which government agencies and private-sector companies share all the relevant information required for increased security and efficiency (see Chapter 20).

Information sharing in global supply chains can take advantage of different Single Window implementations in both the developed and developing countries (see Chapters 22, 23).

New areas for innovation were also presented, such as cloud computing and supply-chain traceability (see Chapters 15, 22). Related technologies provide additional opportunities for exploring new information-sharing concepts in global trade.

Outline of the publication

Single Window Development in the Past Decade

In Chapter 1, Jonathan Koh traces the evolution of the Single Window concept over time and provides an overview of the different forms of Single Window that have developed providing concrete examples. On the basis of 24 requests for proposals between 2005 and 2011, he analyses current trends and presents the lessons learned in the past ten years of experience with Single Window development. He closes with the recommendation that national governments, international organizations and the private sector community collaborate on key initiatives to support and guide the development of a globally networked Single Window in the future.

Regional Perspectives

A short piece by Jonathan Koh on Single Window trends in Africa, Asia, the Middle East and Latin America and the Caribbean (Chapter 2) is followed by an outline of Single Window developments in countries of the African Alliance for e-Commerce provided by Ibrahima Diagne (Chapter 3). Single Window developments in Latin America and the Caribbean are discussed from the perspectives of the Inter-American Development Bank (Maria Ortiz, Chapter 4) and the Permanent Secretariat of the Latin American and Caribbean Economic System (Saadia Sánchez-Vegas, Chapter 5). Fathia Abdel Fadil and Paul Kimberly present developments in Western Asia in Chapter 6.

Legal frameworks to enable data sharing in international supply chains

Legal frameworks enabling data sharing in international supply chains are the focus of the contributions by: Francis Norman Lopez who discusses the legal framework to facilitate cross-border information exchange drawing on the experience of the Pan-Asian eCommerce Alliance (Chapter 7); William Luddy (Chapter 8); and Luca Castellani, who provides an overview of UNCITRAL texts as a backbone to a uniform legislative framework for cross-border electronic transactions (Chapter 9).

National and regional examples

Ibrahima Diagne shares the experience of the Electronic Single Window in Senegal that was completed in 2011 (Chapter 10). Dina Akpanbayeva outlines the Integrated Information System for Foreign and Mutual Trade of the Customs Union for the Republic of Belarus, the Republic of Kazakhstan and the Russian Federation (Chapter 11). Jean-Michel Hervé Abimbola shares the example of the Port Single Window for Foreign Trade in Cotonou (Chapter 12). Igbal Babayev provides the example of the Single Window in the Customs Service of Azerbaijan (Chapter 13). Alex Kabuga describes the implementation process for the National Single Window System in Kenya (Chapter 14) and Khuloud Habaybeh the Customs Single Window in Jordan (Chapter 15).

Nicolae Popa provides an outline of the UNCTAD ASYCUDA Programme in Chapter 16. Juan Carlos Vásquez describes the activities of the CITES Electronic Permit Systems in Chapter 17.

Other models

Jukka Savo describes the Maritime Transport Single Window Services that are being developed in the European Union (Chapter 18) and Pascal Ollivier discusses the role of

Port Community Systems in the Implementation of National Single Windows (Chapter 19).

The Future of Information Sharing

Yao-Hua Tan presents the concept of a data pipeline that could integrate data from all the different sources in the supply chain in a future "smart generation of single windows" (Chapter 20). Gareth Lewis' contribution on Customs in the 21st Century describes the strategic roadmap of the World Customs Organization and outlines the WCO data model (Chapter 21). Carlos Grau Tanner provides the perspective of the Express Delivery Services Industry on supply chain management and business expectations towards Customs Single Windows (Chapter 22). Desmond Vertannes describes the Air Cargo industry's e-freight concept that moves the air freight supply chain towards paperless procedures (Chapter 23). Mats Wicktor reflects on future developments in international standards from the perspective of UN/CEFACT (Chapter 24).

Managing Single Window Implementation

Somnuk Keretho outlines the Single Window Implementation Framework (SWIF) that uses state of the art management concepts for Single Window planning and implementation (Chapter 25).

Key Messages and Outlook

Chapter 26 summarises the key messages voiced by participants during the presentations, roundtables and interactive discussions during the Global Trade Facilitation Conference. It takes stock of achievements and challenges in Single Window development and looks ahead to how cross-border information exchange and supply chain management in the future can address today's challenges and move trade facilitation forward.

Several proposals were made during the conference as to how regional commissions, in collaboration with UN/CEFACT and other relevant international organizations, can consolidate and support Single Window development across all regions. These are described in the outlook section (Chapter 27).

Part I

Single Window Development during the Past Decade

Chapter 1
Ten Years of Single Window Implementation[2]

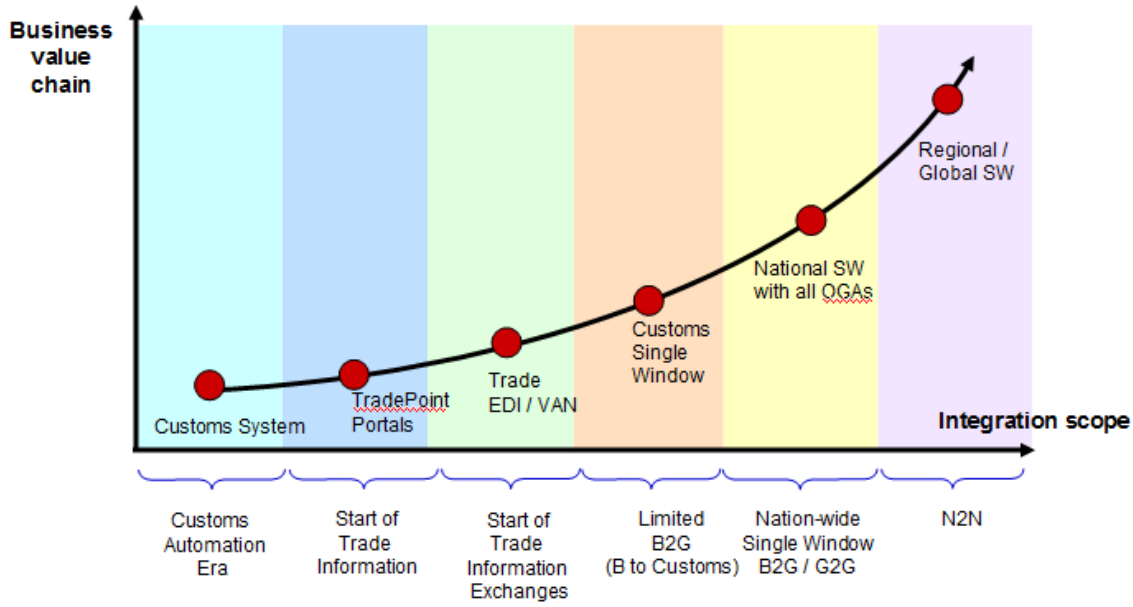
Jonathan Koh Tat Tsen

UN/CEFACT Recommendation No. 33 defined the Single Window as a "facility that allows parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfil all import, export, and transit-related regulatory requirements".

As shown in Figure 1.1, development of the Single Window concept has evolved over many years, starting with the simplification of trade procedures in the 1950s and continuing with the development of various forms of automated Customs and related systems. Some of the key developments are detailed below.

1. Different Forms of Single Window

Figure 1.1 – Stages of Single Window Development



Customs Automation Era - In the 1960s and 1970s, Customs authorities first began to automate their functions using systems such as ASYCUDA (Automated System of Customs Data) provided by UNCTAD.

Trade Point Portals - Following this was an era in which national Trade points were developed. They serve as a source for trade-related information, providing traders with data about business and market opportunities. They were originally designed to serve as gateways to global electronic networks with national Trade Points interconnected in a worldwide electronic network.

[2] This chapter is a summary of the discussion paper "Ten Years of Single Window Implementation: Lessons Learned for the Future" prepared by Jonathan Koh Tat Tsen. The full paper is included in the annexes.

EDI / Value Added Network - In the EDI/Value Added Network, EDI is used for trade exchanges, operated by a value added network (VAN) provider. Many countries have adopted the EDI approach for trade documentation. Examples include the Singapore TradeNet (1989), the EDI network for customs clearance in Taiwan, Province of China (1992), the Mauritius TradeNet (1994), Japan's Trade and Settlement EDI System (TEDI) (1998) and the SaudiEDI project in Saudia Arabia (2002).

According to the World Bank, 82 per cent of economies around the world allow traders to submit at least some of their export and import declarations, manifests and other trade related documents electronically. However, many of these systems are not linked to the Internet and others still require that hard copies of electronic submissions be provided.

Limited Single Windows - Customs, Port Single Windows and Port Community Systems are variations of limited Single Windows. They provide a single interface between the trading community and the Customs/Port Authority and usually don't fully cover the permits and licensing of the all of the other government agencies involved in border clearance. Mauritius' TradeNet system and the Australian Customs and Border Protection Service Integrated Cargo System are examples of Customs Single Windows. Examples of Port Single Windows include Finland's PortNet System (1993) and the e-Maritime Port Single Window in France. Port Community Systems are, for example, found in the United Kingdom (Felixstowe Port Community System established in 1984) and India (established in 2007).

Sub-national Single Window systems in which local trade community and regulatory agencies can be grouped together at city or provincial level in a trade community Single Window system are another type of limited single window system. An example is the Shanghai Easipass Platform in China.

National Single Window - National Single Windows are nation-wide facilities that provide for all parties (regulatory agencies and the trading community) to submit standardized information only once, at a single entry point, to fulfil all import, export and transit-related regulatory requirements. Extended variants of national Single Windows include business-to-business transactions.

According the World Bank's *Trading Across Borders 2012 Report*, 49 economies provide a Single Window. Out of these, 20 have Single Window systems in place that link all government agencies, 29 of them do not.

Regional/Global Single Window - ASEAN was one of the first organizations to develop the concept of a regional Single Window and then a Project. The ASEAN Single Window is planned for 2015, with some cross-border transactions expected to begin in 2013. In Africa, there is the Trans-Kalahari Single Window connecting Botswana, Namibia and South Africa. The European Community has two major Single Window initiatives. The Single Window initiative of the Directorate-General Taxation and Customs Union aims at a Community-level single window and the Maritime Single Window of the Directorate-General for Mobility and Transport aims to provide electronic exchange between the operators of maritime transport within the European Union.

The next stage in the Single Window evolution lies in connecting national Single Windows in global networks that will facilitate cross-border trade and the sharing of information in the supply chain.

2. Trends in Single Window development

A review of 24 requests for proposals for Single Windows across the world between 2005 and 2011 found common goals and objectives. Single Windows are expected to (a) provide convenient "one stop" integrated services through multiple channels, (b) electronically link government agencies that are involved in the trade process (c) provide tangible cost savings for business and government, (d) expedite cargo release and clearance by means of simplification of trade related processes and procedures among controlling agencies, (e) provide benefits and simplified treatment for the trading community through the elimination of duplicate processes, (f) enable world-class trade facilitation practices by providing a fully transparent and predictable border environment while ensuring safety and security through a high-performing risk management, (g) enhance transparency and impartial treatment in the fiscal and customs framework and (h) eliminate corruption by improving methods to counter dishonest practices and reducing discretion.

3. Lessons Learned

Different Forms of Single Windows - Depending on their readiness and priorities, countries have implemented very different forms of Single Windows ranging from integrated Customs solutions to sophisticated Port Community Systems and regional platforms. The Single Window concepts used do not strictly follow the definition of the Single Window facility as set out in UNECE Recommendation 33. The practical examples showed that Single Windows have generally been conceived as large, interagency, collaborative systems that facilitate and automate business processes and data exchange for international trade.

Evolutionary and Staged Development - To develop a Single Window is typically a massive undertaking involving interlinking and information-sharing by Customs and all government agencies responsible for trade as well as the trading community. It requires

new ways of processing trade and necessitates streamlined business processes. Due to the complex change management required for implementation, Single Window development typically follows a gradual evolutionary and staged pathway, usually starting from an advanced Customs solution, and progressing to encompass advanced national and regional trade-facilitation objectives.

Impact of Single Window in Different Forms - Particularly in developing countries and transition economies, the national Single Window has been a success story. Single Window projects have simplified and automated business procedures, introduced change and brought about collaboration between government agencies and the private sector. Many of these countries have shown marked improvements in their trade-facilitation indicators, as seen in various surveys including the World Bank's Doing Business - Trading Across Borders, as well as the Logistics Performance Index.

In many advanced trading economies, such as the EU, the US and China, the national Single Window concept has not been implemented. Instead, other forms of Single Windows, in particular Port Community Systems and Customs Single Windows are being successfully used to enhance a high-performing logistics sector. However, linking these different platforms into a national or regional network remains a challenge.

Cross-border information exchange - Both in developed and developing countries, it is now an imperative and pressing need to find improved ways to conduct cross-border trade transactions. This requires connecting national Single Windows. Networked Single Windows exchanging electronic information along the international supply chain is a natural progression in the increasingly globalised trade environment. Trade liberalization and regional integration are the main drivers for a regional Single Window framework that facilitates cross-border trade exchanges.

Many aspects of regional Single Window integration remain to be defined. This includes data harmonization, creating an effective legal framework for data exchange within a Single Window network, and a sustainable business model for the service providers.

A future where there is a global exchange of information supporting interregional supply chains is remote, because there's currently no framework for data exchange on a global level. There's no internationally accepted model for establishing an exchange of information along the entire international supply chain for containerized cargo. For example, the ports of Hamburg, Mumbai, Singapore and Shanghai all use different data sets as well as having different Single Window capabilities.

Need for increased regional and global cooperation in Single Window development
Over the last 10 years, Single Window projects have been implemented mainly at the national level. While these have been useful to governments for supporting the national economic agenda, they have increasingly also become a major platform for integrating the world economy. This trend will increase the complexity and demands on Single Window projects. There's a growing need for implementers of Single Windows to establish further international collaboration in order to develop common interconnectivity strategies, policies, data harmonization and standards.

Already, we see some forms of such collaboration, albeit by private sector players. The Pan Asia E-Commerce Alliance (PAA) and their African counterpart African Alliance for e-Commerce (AACE) are examples of collaborating Single Window operators, who establish a mechanism and framework for the conduct of secure cross border document and data interchanges amongst the stakeholders in their respective Asian and African regions. However, their efforts are only part of the picture and need to be complemented by corresponding government policies to truly effect cross border exchanges.

4. Recommendations

Single Window developments have come a long way from being just an idea to playing an effective role in trade facilitation. What started as a concept has now become a clarion call for improving trade facilitation, transforming the economic development of many countries and economies.

Taking into account the experiences from the last 10 years of Single Window development, it is suggested that national governments, regional and international organizations—as well as key stakeholders from the international private-sector community—collaborate on *key initiatives* to support and guide the future development of a globally networked Single Window.

The key initiatives should:

- Create a common, global framework for Single Window planning and development that encompasses and interconnects different Single Window models. The use of a standard evolutionary model for Single Window development will help policymakers and managers determine the state of their national Single Window and define objectives for the next step of implementation.

- Prioritize regional Single Window collaboration. Depending on the readiness of countries, this could include the exchange of best practice, the development of sustainable business models and pilot projects for data exchange among national Single Windows, the development of technical and legal frameworks for information exchange and supporting trade agreements and policies.

- Develop, at the global level, a vision for how to achieve electronic information exchange in global supply chains using the capabilities of national Single Window implementations. Such a vision must take into account the different Single Window models of developed and developing countries as well as emerging technologies and the requirements of international trade.

- Ensure that policymakers take into consideration the potential of Single Windows when developing bilateral or multilateral trade agreements. Those agreements should include provisions to enable information sharing in cross-border trade in order to support greater security, effectiveness and efficiency.

Part II

Regional Perspectives

Chapter 2
Regional Trends in the Development of Single Windows[3]

Jonathan Koh Tat Tsen

Trends in African Single Window projects

The African countries that have issued RFPs for Single Windows are widely spread across the continent:

- East Africa (Mozambique, Madagascar, Kenya, Tanzania, Rwanda);
- Central Africa (Congo Brazzaville);
- West Africa (Ivory Coast, Togo, Benin);
- North Africa (Libya, Morocco).

The African countries' requirements are dissimilar. The requirements of the Western African countries are mainly for a limited, usually port-centric Single Window, termed as "Guichet Unique des Opérations du Commerce Extérieur" (GUCE), or "Single Window for Foreign Trade Operations". Specifically, the requirements of the Ivory Coast, Togo, Benin and Congo Brazzaville have focused on port requirements and have not incorporated some key Single Window functionalities such as customs declarations and/or licensing/permit requirements from the other government agencies.

For the Eastern African countries, it is encouraging that the littoral countries - Kenya, Tanzania and Mozambique - are all enhancing their trade facilitation capacities. This augurs well for their neighbouring land-locked countries such as Rwanda, Uganda, Burundi, and Malawi. The requirements of the East African countries were essentially for a national Single Window creating electronic linkages with government agencies for permits and licensing processing.

Only one, Mozambique, called for a combined Single Window and Customs Management System implementation, while the Tanzanian authorities called for two separate tenders for their Single Window and Custom Management systems, issued at around the same time. The others chose to build a new Single Window that would integrate with their existing Customs Management systems.

Trends in Asia / Oceania Single Window projects

As many Asian countries are trade-oriented, it is no surprise that they're very progressive in trade facilitation. Several already have a Single Window in place.

The Asian requirements are also varied. The ASEAN Single Window initiative, which calls for the integration of the National Single Windows of the 10 ASEAN member economies, gives a great impetus to these countries to build national Single Windows if they do not already have one. Hence, in recent years, there has been a marked increase in Single Window development in the region. The four ASEAN countries that issued

[3] This chapter is extracted from the discussion paper "Ten years of Single Window Implementation: Lessons Learned for the Future" by Jonathan Koh Tat Tsen. The full paper is included in the annexes.

RFPs (Indonesia, Thailand, Brunei, and the Philippines) called essentially for a separate Single Window system to be integrated with their existing Customs systems.

Table 2.1 – Asian Single Window implementations

Asian countries with a Single Window System		
Singapore	Singapore TradeNet	Jan-89
Hong Kong, SAR	TradeLink	Jan-97
Japan	Nippon Automated Cargo and Port Consolidated System (NACCS)	Jul-03
Republic of Korea	u-Trade Platform	Dec-03
Indonesia	Indonesian National Single Window	Dec-07
Malaysia	Malaysian National Single Window	Nov-09

Although not seen in the ASEAN countries, there is an increasing trend for countries to include a centralized risk management in their Single Window projects. New Zealand's Trade Single Window is part of a broader Joint Border Management System that includes requirements for integrated intelligence and risk management that supports the Customs' as well as other agencies' risk management needs. Likewise, Pakistan's initiative, the Automated Commercial Community System (PACCS) has also included an integrated Risk Management System.

Trends in Middle East Single Window projects

The Middle Eastern countries and, in particular, the Gulf countries, have been making great efforts to enhance trade facilitation in recent years. Saudi Arabia was an early implementer of the Single Window, when they launched their SaudiEDI project way in 2004. Initiated by the Public Investment Fund of the Ministry of Finance, one of the goals of SaudiEDI was to smooth Government-to-Business and Business-to-Business interactions.

In recent years, three Gulf Cooperation Council countries—Qatar, Bahrain and Oman—had issued RFPs for Single Window systems. One common feature in their requirements is a call for the overhaul and replacement of their previous Customs management systems, paving the way for a single seamless "Single Window and Customs Management" system.

Trends in Latin American and Caribbean Single Window projects

While Latin America's trade has grown significantly since 2003, this growth has also exposed the region's deficiencies with regard to costs and efficiency in international trade. The cost of trade is reportedly higher than those reported in the countries of Asia and the Pacific.

In recent years, we have seen a marked interest in developing Single Window systems for foreign trade or "Ventanilla Única de Comercio Exterior" (VUCE) as it is called in Spanish. Colombia and Peru had an early start in establishing their VUCEs around 2006. Mexico and Chile issued their RFPs in 2010 and 2011 respectively.

A common feature of the initiatives in this region, unlike in other regions, is that the VUCEs have most Single Window features, except that some are missing risk management or Customs Management functionalities.

Chapter 3
The Situation in Africa

Ibrahima Diagne

Africa is today one of the most dynamic continents in terms of Single Window development. The African Alliance for e-Commerce unites 12 countries at various stages of Single Window development.

Existing National Single Windows in Africa

Ghana, Cameroun, Senegal, Côte d'Ivoire and Madagascar have functioning Single Window systems in place. Congo is running one in a pilot phase. Morocco and Libya are at a very advanced stage in establishing their Single Window systems. Togo, Kenya, Mali and Burkina Faso have started feasibility studies for the establishment of Single Window systems.

There are also other countries, such as Mauritius or Tunisia, that have Single Windows but are not yet members of the African Alliance for e-Commerce.

Why Single Window is a "need to have" and not a "nice to have"

Single Window systems contribute to creating a more friendly trade facilitation environment by managing:

- Border collaboration requirements
- Advanced information
- Transit facilitation
- New security challenges
- Exchange of information with other countries
- Increases in the competitiveness of local traders (by reducing their trade transaction costs and duration)

Challenges in moving forward

Is a legal framework a prerequisite for Single Window development?
Some countries are delaying Single Window development because they are waiting for a legal framework to be put in place. Other countries have established Single Windows without such a legal framework. Discussion and the sharing of experiences could help to remove this kind of constraint.

Should a Single Window be implemented on a gradual basis?
In general there is a gradual approach but one needs to avoid including a phase with a physical Single Window. A physical Single Window is very expensive to put in place and does not necessarily lead to the establishment of an Electronic Single Window.

Sustainability of Single Window systems

Implementers need to ensure that their Single Window system not only survives but evolves. The technology and user needs are in constant evolution.

In what way is the existing technology environment important?
In most developing countries, government agencies at the borders have no computer systems. If their concerns are not taken into account in the development and design of the Single Window, these agencies will not be able to integrate into the system and will be a delaying factor.

What are the conditions needed for the implementation of the Single Window?
Logistics and customs operations have developed differently across countries. The purpose of the Single Window is not only to manage operations inside one country but also to work toward international exchanges of information. That is what Africa wants to promote.

The African Alliance for e-Commerce is working on a regional Single Window project with West Africa. The project is supported by the secretariat of the West African Economic and Monetary Union (WAMU) in order to promote information exchanges within the African region. Increased exchanges between the African region and Asia and Europe are also being pursued.

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Chapter 4
Single Window Developments in Latin America and the Caribbean

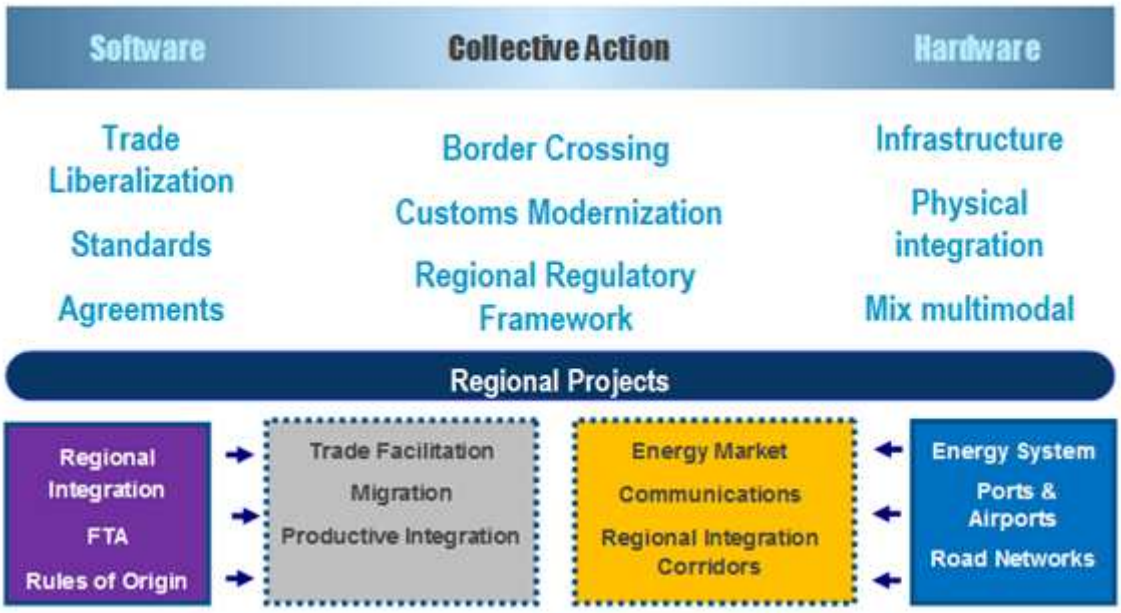
***Maria Ortiz*[4]**

The Inter-American Development Bank (IDB) is supporting its 26 member countries in Latin America and the Caribbean (LAC) in implementing trade facilitation, especially through Single Window programmes. Over the past ten years of fostering trade development in the LAC region important lessons have been learned. One of them is that competitiveness is increasingly determined by non-traditional aspects such as transport and logistical costs, standards for market access, the connectivity of networks and interoperability.

With this perspective, the IDB has adopted a new integration strategy for regional and global competitiveness. The central tenet of this strategy is acting simultaneously on the software – understanding software as policy and regulatory frameworks – and the hardware – physical integration and infrastructure – on the national, regional and global levels.

Connecting the investments made in software and hardware, and consolidating them into a third generation of collective action is the key to creating a seamless and competitive region. Figure 4.1 shows the combination of hardware and software investments and how these programmes are combined to maximize and add value to regional projects.

Figure 4.1 – Elements of the Continuum "Hardware – Software" in Regional Policy



[4] This summary is based on the presentation of Maria Ortiz in Session 2 of the Global Trade Facilitation Conference in Geneva on 12 December 2011. Maria L. Ortiz is a trade facilitation expert at the Inter-American Development Bank.

This holistic and strategic approach includes financial and non-financial products. Financial products include loans and guaranties. Non-financial products include initiatives such as strategic programmes, applied research, policy dialogue, capacity-building and regional programming.

In the category of financial support, the IDB has been assisting its country members with 75 different trade operations including investment loans, policy-based loans, national and regional technical cooperation for about 527 million dollars between 2000 and 2011.

In the category of non-financial products, the IDB has implemented strategic programs through partnerships with international technical organizations, bilateral institutions, and regional institutions, countries, donor members, customs agencies and the private sector in order to collaborate on: capacity-building initiatives; best practice studies; and co-financed events, workshops and joint initiatives in trade facilitation.

Despite the efforts of the LAC countries, the region is achieving only 50 per cent of its intra-hemispheric trade potential. This is due to high transaction costs and logistical issues. To address these challenges, the region focuses on four major areas: Border Management, Interoperability, International Standards and Security, having Risk Analysis at the centre of all four areas as a transversal aspect (Figure 4.2).

Figure 4.2 – Key Programmes

To support **Border Management**, the region has implemented the International Transit of Goods programme (TIM), which functions as a Single Window for the transit of goods by road. It is currently in operation from Puebla, Mexico, to Colón in Panama, integrating seven countries, customs agencies, quarantine services and police forces.

The TIM has achieved a reduction in border-crossing times from one hour to 8 minutes in the region. It is scheduled to be extended to other modes of transportation and to other countries.

As concerns **Interoperability**, Single Window programmes have a direct impact on streamlining logistics and expediting trade by reducing costs and procedures, as well as making them more transparent and efficient. The Single Window is more than an IT solution. It is also about agency coordination within countries.

Security is addressed through Border Security programmes, preventing illegalities, strengthening cross-border cooperation.

Single Window Developments in the Region

Single Window developments in the region aim to harmonize and simplify trade procedures in line with the strategy and programmes described above and ensure the timely exchange of reliable information, both at the national and regional level.

The following countries have Single Window development programmes: Barbados, Chile, Costa Rica, Honduras, Jamaica, Nicaragua, Panama, Peru and Uruguay. All of them are at different stages of design and implementation.

Some countries such as Chile, Colombia, Costa Rica, Honduras and Uruguay have developed have developed projects to explore interoperability possibilities between their respective systems, based on good practices and international standards. Important achievements in terms of regional interoperability include the International Transit of Goods in Mesoamerica (TIM) mentioned above, and the COMALEP Initiative. COMALEP is the Multilateral Agreement on Mutual Assistance for Customs Directors General of Latin America, the Caribbean, Spain and Portugal, where country members exchange electronic information and data on fraud prevention.

There are three new initiatives under the Latin America and Caribbean Agenda of the IDB:

1. The **Inter-American Network of Single Windows** was created in October 2011 in Washington DC and is facilitated by the IDB. The objective of this network is to promote dialogue between the country members and work together on technical Single Window initiatives.

2. **Single Window working groups** will initiate activities in February 2012. The aim is to exchange experiences and lessons learned among countries.

3. **The Exchange Programme** is a peer-to-peer collaboration programme, where countries share knowledge and lessons learned on SW developments

IDB is committed to investing 15 per cent of its resources to support integration and regional cooperation in Latin America and the Caribbean.

Chapter 5
Progress and Challenges in Latin American and the Caribbean: Foreign Trade Single Window Developments in the Context of Regional Integration and International Trade

Saadia Sánchez-Vegas[5]

The International and Regional Context for Trade

A number of Latin American countries have increased their trade volumes and have experienced sustained economic growth thanks to new trade relationships with emerging economies such as China. In recent years, the exchange of goods and services among Central American countries and among countries of the Caribbean Community (CARICOM) has also increased, although overall volume is still low.

In order to increase intra-regional trade among Latin American and Caribbean Countries (LAC) we need to reaffirm the importance of modernizing the physical infrastructure to facilitate and promote cross-border trade. We also need to improve international competitiveness, to enhance the effectiveness and efficiency of the LAC countries' export capacity, to deepen existing trade agreements and to reduce transaction costs and time in international trade. These are all powerful reasons that make the development of tools for trade facilitation imperative – both from a systemic and from an integrated perspective.

Governments in the region should take measures to enhance digital integration in the context of regional integration and to ensure a better position for the region in international markets. These measures include the:

- Automation of foreign trade procedures in accordance with international standards recommended by UNECE and the World Customs Organization
- Simplification and automation of customs procedures
- Effective usage of digital certificates of origin and digital signature
- Use of risk management throughout the supply chain
- Development of harmonized and interoperable electronic single windows
- Development of legal frameworks that: guarantee security for online transactions, eliminate unnecessary barriers to trade; and achieve administrative transparency
- Capacity-building,
- Reforms of state institutions to make these processes viable

Foreign Trade Single Windows in Latin America and the Caribbean.

Research conducted by SELA found that out of 33 countries in Latin America and the Caribbean, 13 have different levels of implementation of Foreign Trade Single Windows (FTSWs). These are Brazil, the Dominican Republic, Chile, Colombia, Costa

[5] This chapter is based on the presentation contributed by Saadia Sánchez-Vegas to Session 4 of the Global Trade Facilitation Conference. Saadia Sánchez-Vegas is Director of the Information and Knowledge Network Division of the Permanent Secretariat of the Latin American and Caribbean Economic System (SELA).

Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Peru, and Trinidad and Tobago. In addition, five countries, notably Argentina, Bolivia, Ecuador, Mexico and Uruguay, have projects related to the development of FTSWs that are in different stages. For the remaining 15 countries, no information was found, although there is some evidence that some progress is being made.

Colombia has the most complete experience with an integrated and wholistic FTSW that covers: imports and exports, a legislative framework, digital certification of origin and digital signature. In 2011, Chile, Costa Rica, Ecuador, El Salvador and Peru reported significant levels of implementation, including e-documents and the ability to interoperate with other FTSWs. However, the implementation of interconnections is still pending. Guatemala and Panama have a single physical window, and maintain physical points in different places to carry out the necessary paperwork. Foreign trade documents are not totally electronic, but Guatemala, in particular, is making important efforts in this regard. A good example is their digital phytosanitary certificates.

Interoperability

There is still a long way to go to reach interoperability, although most countries are making great efforts in this area, The Inter-American Development Bank is making a significant contribution in this area, providing technical and economic cooperation to make interoperability a reality in at least 13 Latin American countries. SELA and CAF, the Latin American Development Bank, are also contributing to these efforts with the development of a pilot project on Interoperability and Harmonization of FTSWs (Colombia-Panama).

Countries such as Chile, Mexico and Peru, which are part of APEC, are also making significant efforts in this regard. In relation to compliance with the UN/CEFACT Recommendations 33, 34 and 35, most countries are working on this. Nevertheless, standards and harmonization are still important ongoing challenges.

The benefits of developing FTSWs are acknowledged by the stakeholders and decision makers in most Latin American and Caribbean countries. There is a relevant and important political commitment in the region, aimed at encouraging the creation, development and consolidation of FTSWs.

Regional and Sub-regional Initiatives

A potential opportunity for greater regional integration has opened up. CAN, CARICOM, MERCOSUR and SICA have developed some initiatives regarding trade facilitation in the region. Presidents of the Member States of the Community of Latin American States (CELAC) (Declaration of Caracas on 3 December 2011) have emphasized the vital importance of increasing intra-regional trade and further development and integration of member countries' supply chains. The region still faces major challenges in terms of cross-border paperless trade. Facing these challenges requires concerted efforts at a national level within each country, as well as regional and international technical cooperation with a strategic direction and a regional vision.

Advances and challenges in the region

Most Latin American countries are trying to create or improve their legislation with the objective of promoting a "zero paper" environment for foreign trade procedures. However, this is an ongoing challenge.

The region is making significant efforts to identify, in each country, a single entity (public or private organization) to serve as a the entry point for fulfilling the procedures that belong to different public and private agencies involved in foreign trade processes and making these procedures accessible through a Single Window. Colombia, Costa Rica and Chile, to mention a few, have succeeded in this process. Mexico and Peru are working on it. This effort requires strong political will and the reform of State institutions.

There is an effort to implement UNECE Recommendations 33, 34 and 35 and to update national customs management systems to be aligned with international standards, nevertheless more efforts have to be made to integrate international standards in the development of Single Windows.

Advances have been made regarding interoperability – as mentioned, the IADB is making important contributions in this area – nevertheless, this is an important challenge that has to be faced. Further, regional harmonization and standardization processes with regard to terminology, data and procedures among FTSW need to be advanced to ensure their operation in an integrated and interrelated manner. Procedures need to be put in place to generate continuous improvements in the processes of foreign trade within and between LAC countries through information exchange and intra-regional capacity in the use of ICTs in this area must be built.

Proposals in the context of regional integration

It would be desirable to include in the action plans of the newly founded CELAC (Declaration of Caracas, 3 December 2011) the development of trade facilitation instruments such as local Single Windows in each Member State based upon interoperable architectures supported by a regional vision.

We need to progress in the establishment of a regional institutional framework, such as the Inter-American Network based on the initiative promoted by the Inter-American Development Bank (IADB), and supported by SELA, and other international organizations. This Network should work on critical issues related to the development of FTSW and on related matters including the legislative framework, digital certificates of origin, digital signature, interoperability, harmonization and capacity-building, among other issues.

We also need to designate a Latin American and Caribbean Regional Rapporteur for UN/CEFACT according with the established criteria.

Finally, we need to discuss the construction of a Single Regional Foreign Trade Single Window as an achievable long-term goal through sub-regional and regional coordination. This can be achieved in a global environment of horizontal cooperation

among countries of the region and with the assistance of international technical cooperation

Chapter 6
Experiences and Lessons Learned from Western Asian Countries[6]

Fathia Abdel Fadil and Paul Kimberley

1. Regional Characteristics

Western Asia is a diverse region in terms of the size of economies, the populations and economic structures. Growth patterns in the region depend heavily on oil exports. In Gulf Cooperation Council (GCC) countries, oil makes up over 70 per cent of exports. The region has weak macroeconomic policies, and weak trade and financial integration. At the same time, it is faced with a number of socio-economic challenges including high population growth, high unemployment rates, especially among women and youth, poverty and a low level of human development (education and health), limited fiscal space, underdeveloped institutions and limited use of information technology.

Institutions and Agreements in support of regional economic integration

Since the creation of the Arab League in 1945, a number of institutions and agreements have supported economic integration in the region.

- 1950 Treaty for Joint Defence and Economic Cooperation
- 1953 Agreement on Trade Facilitation and Regulating Transit Trade
- 1957 Arab Economic Unity Agreement
- 1964 Arab Common Market Agreement
- 1981 Agreement on Facilitation and Development of Trade
- 1981 Gulf Cooperation Council
- 1989 Arab Maghreb Union
- 1997 Greater Arab Free Trade Area
- 2003 Initiation of the Framework Agreement for Liberalizing Trade in Services
- 2005 Full entry into force of the Greater Arab Free Trade Area.

Despite the elimination of tariffs between Greater Arab Free Trade Area (GAFTA) and GCC countries, trade is still hampered by a number of non-tariff obstacles preventing it from reaching its full potential. Over the past two decades, the share of inter-Arab region trade within the region was only ten to eleven per cent of total trade.

Recently ESCWA member countries started a number of initiatives to help remove non-tariff barriers to trade and accelerate connectivity. One of them is a Single Window initiative.

2. Definition of a Trade Facilitation Single Window

A Trade Facilitation Single Window is a metaphor for best practice, ICT-enabled information exchange, sharing and processing in a re-engineered trade facilitation environment. Reengineering includes such design principles as pre-arrival clearances by

[6] Summary based on the presentation by Fathia Abdel Fadil (UNESCWA) and Paul Kimberley in Session 4.

inspection agencies and customs, and post-arrival inspection on the customer's own premises.

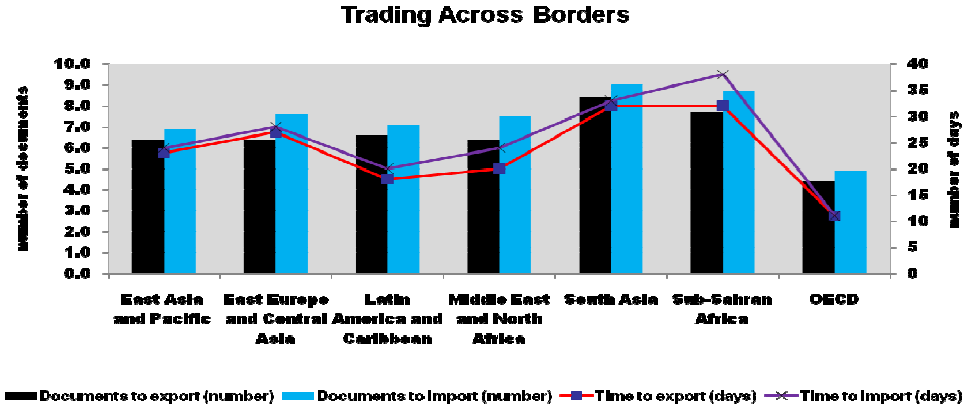
Single Window Information Management includes a single point of access, secure single sign-on, secure single entry of data, a single point of decision-making and a single point of payment.

3. Why Single Window for trade facilitation matters in the ESCWA region

Trade has been a key economic driver in the region, contributing to more than 70 per cent of GDP. In 2007, ESCWA carried out a study on non-tariff barriers in four countries and found substantial difficulties facing traders in terms of clearance, inspections and customs procedures.

ESCWA, as a United Nations regional commission has tried to improve the infrastructure in member countries and the efficiency of border clearance. Efforts are needed to reduce export/import time, costs and the number of required documents in order to promote trade growth and competitiveness in the region (Figure 6.1).

Figure 6.1 – Trading across Borders



The United Arab Emirates and Saudi Arabia are doing very well according to the World Bank ranking; the number of documents is between 5 and 6 and the time for export is 7 and 13 days. On the other hand, some countries have a reasonable number of documents, but the number of days is very high. In Sudan; for example, there are 6 documents, but over 30 days are required for export clearance. There is a real problem regarding the number of days, showing that there is a problem at the border. This is where a Single Window will help. Most countries in the region have already initiated or implemented electronic customs declarations.

Table 6.1 – Trading across Borders in ESCWA member countries, 2010

Trading across borders ranking	Country	Exporting			Importing		
		No of Docs	No of Days	Cost (USD)	No of Docs	No of Days	Cost (USD)
3	United Arab Emirates	4	7	521	5	7	542
18	Saudi Arabia	5	13	580	5	17	686
21	Egypt	6	12	613	6	12	698
33	Bahrain	5	11	955	6	15	955
46	Qatar	5	21	735	7	20	657
77	Jordan	7	14	825	7	18	1,335
88	Oman	9	14	766	9	17	890
95	Lebanon	5	26	1,000	7	35	1,200
111	West Bank and Gaza	6	23	1,310	6	40	1,225
113	Kuwait	8	17	1,060	10	19	1,217
120	Syrian Arab Republic	8	15	1,190	9	21	1,625
123	Yemen	6	27	1,129	9	25	1,475
143	Sudan	6	32	2,050	6	46	2,900
179	Iraq	10	80	3,550	10	83	3,650

Source: World Bank - Doing Business 2011

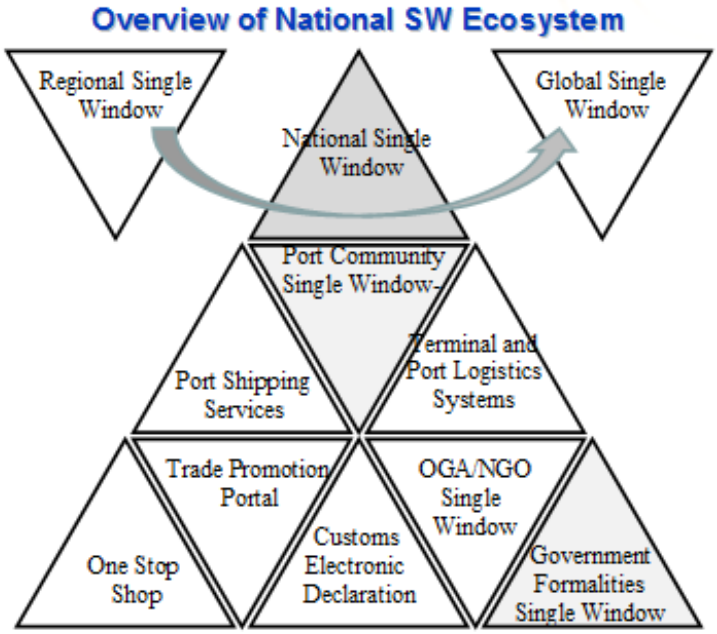
4. Trade Facilitation and Single Window Initiatives in ESCWA region

Nine out of 14 ESCWA member countries have established National Trade and Transport Facilitation Committees (NTTFCs) but gaps still exist in their implementation and sustainability. There are efforts in the region to implement Single Windows for Trade Facilitation.

In 2011 ESCWA carried out the first region-specific attempt at evaluating progress on Single Windows for trade facilitation in its member countries. The methodology used included desk research, the analysis of responses to questionnaires that were sent to countries and the analysis of the reports of selected countries on their Single Window status.

The evaluation strategy chosen was to identify major stages (Figure 6.2) in the operation of national Single Windows and to compare the status of each individual country.

Figure 6.2 – Major stages in setting up a Single Window



The scoring assessment that was used is detailed in Figure 6.3.

Figure 6.3 – Scoring Assessment

Symbol	*Stage of Development*	*Assessed %age*	*Points*
	No apparent progress	0	0
	Limited progress	25	25
	Some improvement	50	50
	Significant progress	75	75
	Transformation effectively completed	100	100

Single Window implementation status in ESCWA countries

The evaluation was divided into GCC countries and non-GCC countries.

Among GCC countries, only two countries, the United Arab Emirates (UAE) and Saudi Arabia, are doing very well, with some improvements in Bahrain. The other countries have made no apparent or limited progress in Single Window implementation (see Table 6.2 and Table 6.3).

Table 6.2 – GCC countries

		Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE
1	**One-stop shop**	No apparent progress	No apparent progress	No apparent progress	No apparent progress	Some improvement	No apparent progress
2	**Trade promotion portal**	No apparent progress	No apparent progress	Limited progress	No apparent progress	Limited progress	Limited progress
3	**Electronic customs declaration (EDI)**	Limited progress	Limited progress	No apparent progress	Limited progress	Some improvement	Some improvement
4	**OGA/NGO single window**	No apparent progress	Limited progress	No apparent progress	Limited progress	No apparent progress	Some improvement
5	**Integrated formalities single window**	No apparent progress	No apparent progress	No apparent progress	Limited progress	No apparent progress	Limited progress
6	**Port shipping services**	Some improvement	No apparent progress	Limited progress	Limited progress	Limited progress	Significant progress
7	**Port community portal/network**	Limited progress	No apparent progress	No apparent progress	Limited progress	Limited progress	Significant progress
8	**Port/logistics single window**	No apparent progress	No apparent progress	No apparent progress	No apparent progress	No apparent progress	Significant progress
9	**National single window**	No apparent progress	No apparent progress	No apparent progress	No apparent progress	No apparent progress	Limited progress

Lebanon and Egypt are the most advanced countries among non-GCC countries. For the others no apparent progress or limited progress has been found for Single Window implementation.

In the overall ranking in terms of Single Window implementation status, UAE comes first, followed by Lebanon and Saudi Arabia with equal scores and Egypt. Table 6.4 provides an overview of the total points scored and ranking order in the assessment.

Table 6.3 – Other countries (non-GCC countries

		Egypt	Iraq	Jordan	Lebanon	Palestine	Sudan
1	**One-stop shop**	No apparent progress	No apparent progress	No apparent progress	No apparent progress	No apparent progress	No apparent progress
2	**Trade promotion portal**	No apparent progress	Limited progress	Limited progress	Limited progress	No apparent progress	No apparent progress
3	**Electronic customs declaration (EDI)**	Some improvement	No apparent progress	Limited progress	Significant progress	Limited progress	Limited progress
4	**OGA/NGO single window**	No apparent progress	No apparent progress	No apparent progress	Limited progress	No apparent progress	No apparent progress
5	**Integrated formalities single window**	No apparent progress	No apparent progress	No apparent progress	No apparent progress	No apparent progress	No apparent progress
6	**Port shipping services**	Limited progress	No apparent progress	No apparent progress	Limited progress	No apparent progress	No apparent progress
7	**Port community portal/network**	Limited progress	No apparent progress	No apparent progress	Limited progress	No apparent progress	No apparent progress
8	**Port/logistics single window**	Some improvement	No apparent progress	No apparent progress	No apparent progress	No apparent progress	No apparent progress
9	**National single window**	No apparent progress	No apparent progress	No apparent progress	No apparent progress	No apparent progress	No apparent progress

Table 6.4 – UNESCWA Assessments

Nation/Economy	*Total Points*	*Ranking in Points Table*
UAE	400	1
Lebanon	175	=2
Saudi Arabia	175	=2
Egypt	150	4
Qatar	125	5
Bahrain	100	6
Jordan	50	=7
Kuwait	50	=7
Oman	50	=7
Iraq	25	=10
Palestine	25	=10
Sudan	25	=10
Syria	0	=13
Yemen	0	=13

5. The way forward

- Develop a roadmap for Single Window implementation in the ESCWA region and keep track of progress.
- Create a portfolio of strategic Single Window references, education and training materials, for both the public and private sectors, for ESCWA countries.
- Initiate an education and training programme for member countries - training of trainers.
- Liaise with UNECE and ESCAP in order to expand their Single Window standards and services for the benefit of ESCWA member countries.

Part III

Legal Frameworks to Enable Data Sharing in International Supply Chains

Chapter 7
Legal Framework to Facilitate Cross-Border Information Exchange

Francis Norman Lopez [7]

The objective of the legal framework discussed here is to facilitate information exchange and trade between countries and economies. The following will discuss how documents can be exchanged electronically in a secure and reliable environment, how this can be implemented in economies and countries and integrated with supply chain processes in some of the business models that are being used.

Cross-Border Transactions

Several parties are involved in cross-border transactions: the Government through Customs administrations, other government agencies (OGAs), Single Windows and private entities through trading partners, carriers, service providers and IT service providers.

In information exchange, governments tend to focus on: Certificates of Origin; SPS Certificates, and Advanced Trade Declarations (e.g. AMS, ENS). Private entities are collecting and exchanging this same information as part of their supply chain management through: Purchase Orders; PO Confirmations; Proforma Invoices; Advance Shipping Notices; Packing Lists; Commercial Invoices; Manifests; Air and Sea Way Bills; Bills of Lading; and Delivery Orders.

Legal Framework

National laws, regulations and procedures differ by country. Each country should have an E-Commerce Law or similar law that governs electronic transactions and the technical requirements for implementing this (data specifications, messaging format, certificates and digital signature).

In the Philippines, the Customs Brokers Act stipulates that only licensed brokers may lodge import declarations. Using the data coming from origin to clear goods may not be acceptable to Customs authorities (Court Rules on admissibility of electronic evidence). Consignees are accountable for import shipments. If the data is coming from the origin, the question is whether the consignee is aware of the content of such a data transaction.

Each economy/country may have a different **legal and policy framework** governing e-Commerce and the admissibility of electronic data. The Philippines adheres to that of UNCITRAL, other countries may not.

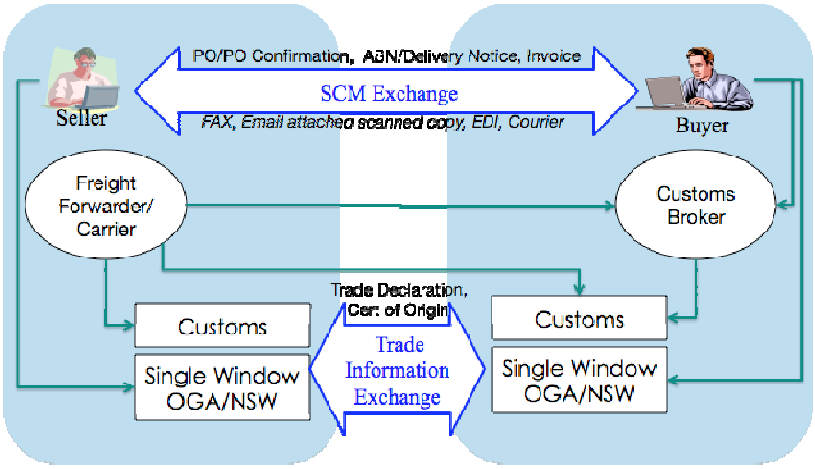
There are different **data standards and formats** depending on the trade regime and industry. The Electronics industry for example is using Rosettanet; the retail/CPG goods industry is using GS1 standards.

In terms of **Product Identifiers**, Customs rely on the HS Code for identifying products for tariff and clearance. The trading partners use specific item codes, part numbers and

[7] Francis Norman Lopez is President of InterCommerce Network Services in the Philippines.

SKUs; GS1 has adopted a Global Trade Identifier Number (GTIN) for products, which is more specific to a given product.

Figure 7.1 – Cross-Border Information Exchange Scenario

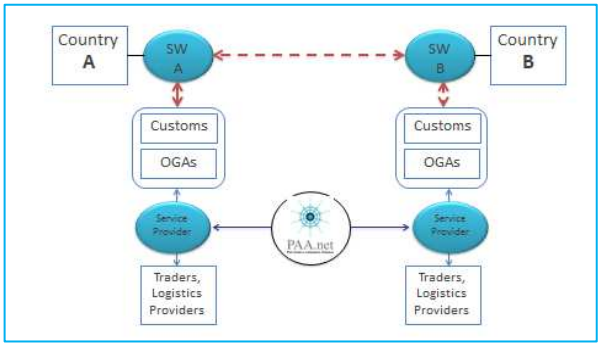


In the Cross-Border Information Exchange Scenario depicted in Figure 7.1, the seller and buyer will exchange commercial documents electronically, or may still use fax and email to exchange documents. The forwarders, Customs brokers, and logistic companies have to provide pre-alert manifests to Customs and government agencies. This is the area where government attempts to implement the Single Window. They exchange trade declarations, certificates of origin and other documents between national regulatory Single Windows.

Pan-Asian Information Exchange

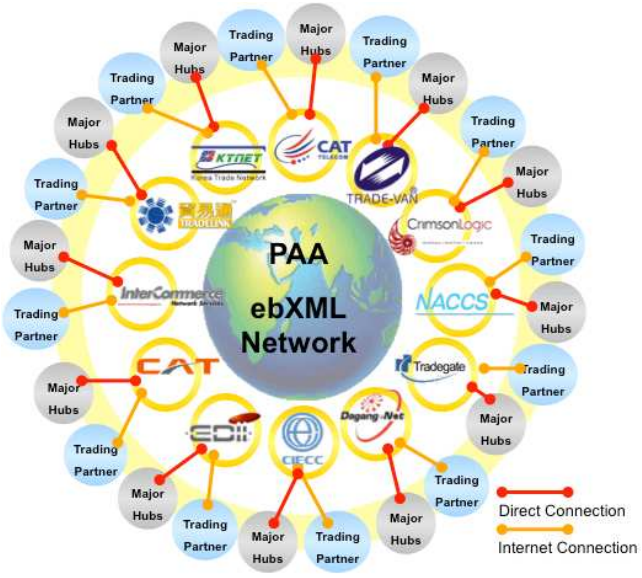
In countries that are members of the Pan-Asian E-Commerce Alliance, Customs are using service providers to transact electronically with the respective Customs authorities in other countries. In most cases, in these Asian countries, all parties rely on service providers to enable traders/forwarders/logistic providers to submit data to the government agencies.

Figure 7.2 – Electronic exchange of documents in the Pan-Asian Network



Since the Single Windows is not yet in place, there is an attempt to provide interim solutions where the service providers, through the Pan-Asian Network, are able to exchange documents electronically in a secure and reliable environment (Figure 7.2).

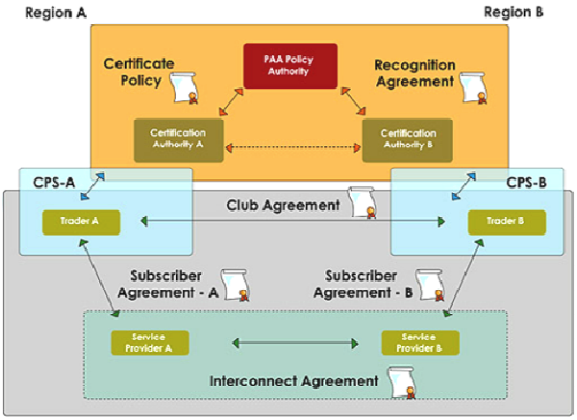
Figure 7.3 – Pan Asian eCommerce Alliance



Member Economies:

- Japan
- Republic of Korea
- China
- Chinese Taipei
- Hong Kong SAR
- Macau SAR
- Thailand
- Malaysia
- Singapore
- Indonesia
- Philippines.

Figure 7.4 – PAA Legal Framework for Cross Border Service



In the Pan-Asian Alliance (PAA) there are agreements and procedures in place to ensure that the data and documents exchanged are accepted in the different Customs regimes, and in compliance with the respective laws on trade transactions and on the admissibility of electronic evidence. Data and Messaging follow international standards and there is PKI Mutual Recognition between member countries in the Alliance. A Certificate Authority Service is in place, as well as an infrastructure ensuring connectivity between service providers, for secure and reliable cross-border transactions.

Legal Framework facilitates Cross-Border Information Exchange

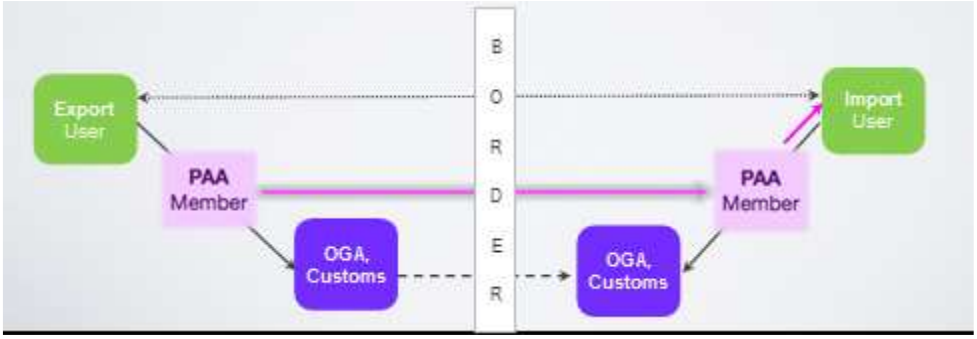
The absence of a legal framework is not a hindrance to B2B Information Exchange. Companies are able to exchange information on the basis of supply arrangements. Industry Standards such as GS1 and Rosettanet specify guidelines for identifying trading parties and products (GLAN, GTIN).

The need for a legal framework arises in B2G or G2G Information Exchange as governments would like to ensure compliance. Governments need the legal framework to enforce laws, regulations and procedures. This facilitates Cross-Border Information Exchange.

Philippines Cross-Border Trade Information Exchange Initiatives

Chinese Taipei is a member of the PAA. As it cannot sign trade agreements with the Philippines on a bilateral basis, export and import users asked the service providers there and the Philippines (TRADE-VAN and InterCommerce) to sign an agreement on information exchange. Initially they considered using purchase orders and commercial invoices but the idea was to be able to re-use information as a basis for processing import permits and declarations in the respective economies.

Figure 7.5 – Trade Information exchange between the Philippines and Taiwan, Province of China



The Export User in Chinese Taipei would submit information to Customs through TRADE-VAN and TRADE-VAN would furnish that same information to InterCommerce upon the approval of the Exporter. Information cannot be exchanged without the authorization of the owners. Once information is received by InterCommerce, it is provided to the Importer who can use it as a basis for filing a declaration electronically with the respective Customs and Port Authorities.

The benefits are enhanced data integrity, faster processing of trade documents, and lower costs. Challenges include government readiness to mandate cross-border trade information exchange (CB TIE) and enforce trading partner compliance. In the case of Customs in the Philippines, they cannot receive documents other than the declaration manifest. Invoice documents are not accepted by the ASYCUDA system in the Philippines.

Integrating Supply Chain Management (SCM) and Trade Processes

Cross Border vendor managed inventory (VMI) enables suppliers to reduce transport costs and maintain inventories of supplies, spare parts and direct materials in market economies. The Philippine Economic Zone Authority (PEZA) allows Third Party Logistics Providers to implement Cross-Border VMI, provided that goods are pre-cleared and inventories are properly monitored. Successful pilot implementation demonstrated the possibility of integrating SCM into Trade Processes, provided that compliance and legal requirements are addressed.

Chapter 8
Single Window and Paperless Trade Legal Issues: A Possible Mosaic

William Luddy[8]

What is the cost of "paper" in international trade transactions within the regulatory and business components of shipping transactions? It has recently been suggested that the costs of paper in both components represents anywhere between 15 to 25 per cent of the cost of shipping in a trade transaction. This implies substantial potential savings and benefits that could be achieved through paperless trade beyond those frequently talked about in a Single Window environment.

A number of countries have begun to think not only in terms of trade facilitation but also in terms of business facilitation. This implies combining Single Electronic Window applications so that they will accommodate not only the traditional trade facilitation aspects that cover Customs and other government requirements (i.e. G2B) but also the business facilitation (B2B) aspects that are related to cross-border trade. One important example of this at the international level is the work of the World Customs Organization over the past 10 years that has extended beyond the more traditional Customs environment to its new role in trade facilitation itself.

Finally, there are the key practical aspects of the intersection of law and technology in the Single Window and overall trade facilitation activities. It is critical that as advances are made on the technology side, the legal infrastructure to support those advances is developed in parallel.

Contexts for Single Window Legal Frameworks

National Single Window

Is there an enabling legal environment for the Single Window at the national level? In the development of Recommendation 35 on the legal aspects of the Single Window, one frequently asked question was how important it is - at least to the extent that we are talking about an electronic Single Window - that there be an underlying legal framework for electronic commerce or an ICT law infrastructure.

The Working Group on Recommendation 35 concluded that there needed to be both enabling law for the Single Window from a Customs / regulatory point of view and, also, underlying ICT Law Infrastructure, covering such legal areas as electronic transactions, electronic signatures, the acceptance of electronic evidence in judicial and administrative proceedings, etc.. Thus, there is a whole range of issues that need to be addressed from this point of view at the national level.

[8] Summary based on the presentation by Professor William J. Luddy, Jr. Special Legal Counsel, World Customs Organization. All views presented or discussed are personal and do not necessarily reflect the views or positions of any organization.

International Single Window – Cross-Border Data Exchanges

In International Single Window Cross-Border Data Exchanges, one has to look at the legal framework regulating Government-to-Government (G2G) exchanges and, in terms of private international law, Business-to-Business (B2B) exchanges.

Cross-border data exchanges are regulated through bilateral and multilateral agreements. Some countries have as many as 50 or 60 bilateral agreements for the exchange of electronic data related to G2G transactions for Customs, and there are emerging multilateral, regional legal frameworks under development, for example, in ASEAN. At the regulatory level, some countries have found the basis in national law for the exchange of customs data with other customs administrations in the provisions of the 1952 Customs Cooperation Convention (the founding international treaty for the WCO.)

On the private international law side, many countries have adopted national e-Commerce laws based on the UNCITRAL Model Laws on Electronic Commerce and the UN Electronic Communications Convention, which provide a broad enabling approach to cross-border e-Commerce B2B exchanges.

So, with all that background, where are we going? How do we really get to Paperless Trade?

Emerging Legal Developments

A number of organizations are developing an international legal framework in the field:

- UNCITRAL is working on the Electronic Transferability of Rights in Goods (covering, for example, negotiable electronic Bills of Lading), which some would argue will be a key element in achieving true Paperless Trade. Additionally, the UN General Assembly has recently approved the new Convention of Contracts for Carriage of Goods Wholly or Partly by Sea (the "Rotterdam Rules") that provides for electronic transport documents.
- WCO is developing Globally Networked Customs (GNC) and has completed several international texts and guidance documents for international Customs cooperation in the field.
- UN/CEFACT has recently revised Recommendation 12, promoting the electronic Sea Waybill for use where negotiability is not needed. Further it has developed Recommendation 35 on the legal framework for the Single Window and is preparing Draft Recommendation 36 on international interoperability of Single Windows.
- UNESCAP is strongly involved in Asia and the Pacific. Most recently has released a New Draft Guide: Addressing Legal Issues for SW Implementation and Interoperability.
- The ASEAN Single Window Legal Framework is an example of a regional effort and a number of other projects are under way around the world.

Legal Mosaic of Paperless Trade

In the near future we may see a broad legal mosaic that builds on the efforts of many organizations. These efforts have already led to different international conventions, frameworks and initiatives that will move us towards Paperless Trade.

UNCITRAL's work includes the UN Electronic Communications Convention, Model Laws on Electronic Commerce, a Guidance Text on the International Use of Authentication and Signature Methods, the UN Convention on International Contracts for the Carriage of Goods Wholly or Partly by Sea (The "Rotterdam Rules") and new work on the Electronic Transferability of Rights in Goods that is needed for Paperless Trade.

The World Customs Organization's work includes the Convention on Establishing a Customs Co-operation Council (1952), the Revised Kyoto Convention, the Nairobi Convention, the Customs in the 21st Century (C-21) strategy, the SAFE Framework, Single Windows in Coordinated Border Management, collaboration with UNCITRAL, and Globally Networked Customs (GNC).

Convergence versus Divergence?

Ultimately, the facilitation of electronic paperless trade requires international collaboration and coordination of activities for establishing international legal standards and instruments. Legal policies need to be developed at the national level that will support these international developments.

Without close collaboration and coordination, however, there is a high risk of divergence instead of convergence. Will we end up in the next ten years with a system that is going in so many different directions that it will not be harmonized? To the extent that this happens, the cost of trade for both the private and public sectors will increase rather than decrease and the significant promise of the Single Window and Paperless Trade may be lost. All of our hopes, of course, are that we shall move towards convergence.

Chapter 9
UNCITRAL Texts as the Backbone of a Uniform Legislative Framework for Cross-Border Electronic Transactions

Luca Castellani[9]

What is needed to implement a common B2G framework for cross-border trade?

Legislative reforms undertaken in conjunction with the implementation of an electronic single window facility have as their goal to set up an enabling legal environment for the paperless cross-border supply chain. The single window lies at the core of the paperless supply chain, which is a broader concept aimed at promoting cross-border trade, and, therefore, economic development and growth. For the successful implementation of a single window facility, successfully dealing with technical features, such as data harmonization, is not sufficient: an enabling legal environment also needs to be put in place.

Actors in electronic transactions

Electronic transactions can be made between three main actors: business (B), government (G), and consumers (C). Historically, business users have driven the expansion of the use of electronic communications on networks accessible to the public. This has been the case, for instance, of inter-bank networks. However, today, all three actors use electronic transactions extensively and therefore need an enabling legislative environment. In the cross-border supply chain, most electronic transactions take place between governmental offices and private businesses while consumers may be end users. The electronic single window may therefore be broadly classified as a B2G application and as a component of e-Government.

Current legal status

Current laws on electronic communications adopt two different approaches. In certain jurisdictions, often belonging to common law systems, general principles are provided for all transactions, irrespective of the actors exchanging them, while a limited set of special rules for government or consumers may be added to those general principles as needed.

On the other hand, in jurisdictions often belonging to the civil law tradition, B2B exchanges fall under a general, comprehensive legislation but different sets of rules are adopted for communications depending upon if data is exchanged with business, government or consumers. This approach multiplies the applicable legal regimes and may hinder seamless interaction among all actors. In the case of electronic single window facilities, if the use of rules different from those generally applicable to B2B transactions is required, this may lead to a lack of clarity in applicable legislation and to additional compliance costs. It is, therefore, not surprising that examples of successful implementations of electronic single windows have chosen the first approach. This was

[9] Luca Castellani is Secretary of Working Group IV (Electronic Commerce), UNCITRAL Secretariat. The views expressed herein are those of the author and do not necessarily reflect the views of the United Nations.

the case, for instance, of Singapore, where the status of electronic communications exchanged in the context of the electronic single window is primarily determined by the general legislation on the topic, i.e. the Electronic Transactions Act, as revised in 2010.

Need for same rules for B and G transactions

As electronic single windows require B2G integration, the need becomes clear for a uniform regime for electronic communications, regardless of the actor. The economic operation (e.g., a contract for sale of goods) at the core of the cross-border movement of goods should be associated with only one set of data to be used for all related electronic transactions, be these with business or government entities. As the information originates from the business sector, the legislative environment should be as accommodating as possible to the needs of that sector. It is, therefore, desirable to adopt general comprehensive legislation that can fully address the needs of commercial operators, and whose application is extended to the public sector. The same considerations apply when tackling the cross-border dimension, where the need for uniform laws in the various jurisdictions becomes evident.

Such an approach may also ensure better data accuracy, as only the original set of data is shared among all users. This could provide a number of important benefits, including cross-verification of data (for example, e-certificates of origin), early notification for integrated border management, and transparency and accountability in customs operations.

Current status of e-communications law

It has not yet been possible to prepare texts covering all topics relevant to the legal treatment of electronic communications. However, significant uniform legislation is already available. The United Nations Commission on International Trade Law (UNCITRAL) has taken a leading role in this field and has prepared reference texts such as the UNCITRAL Model Law on Electronic Commerce, 1996, the UNCITRAL Model Law on Electronic Signatures, 2001, and the United Nations Convention on the Use of Electronic Communications in International Contracts, 2005.

Legislation implementing provisions of the Model Law on Electronic Commerce has already been adopted in more than forty jurisdictions, and legislation based on the UNCITRAL Model Law on Electronic Signatures has been adopted in about twenty countries.

Principles of UNCITRAL texts on e-communications

UNCITRAL texts on electronic communications implement three fundamental principles: (1) non-discrimination in electronic transactions; (2) functional equivalence; and (3) technological neutrality. With regard to electronic signatures, the principle of geographic non-discrimination is also relevant.

Non-discrimination

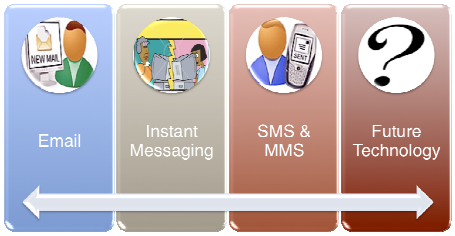
A communication shall not be denied validity on the sole ground that it is in electronic form.

Functional equivalence

The purposes and functions of paper-based documents may be satisfied with electronic communications, provided certain requirements are met. Electronic communications that meet those requirements should enjoy the same level of legal recognition as paper documents performing the same function.

Technological neutrality

Technological neutrality refers to the equal legislative treatment of different technologies (such as EDI, e-mail, Internet, instant messaging and fax.): laws should not favour the adoption of any specific technology. More detailed provisions on technological requirements may be set forth in secondary-level legislation that could be prepared, adopted and amended, if necessary, by an administrative body on the basis of delegated authority.



In other words, technological neutrality means that one should not depend on or presuppose the use of any particular type of technology for the communication and storage of all types of information. It is important that legislation remains capable of accommodating future developments and does not become obsolete too quickly.

Uniform implementation of model laws

While model laws and other uniform texts may provide an excellent starting point for establishing an enabling legal environment, their nature is such that variations in their implementation and interpretation may occur. Thus, for example, the Directive 1999/93/EC of the European Parliament and of the Council of 13 December 1999 on a Community framework for electronic signatures is currently under review because it was not implemented uniformly in the member States of the European Union as well as in the various business sectors. The establishment of electronic single windows, especially at the cross-border level, calls for a more cogent enabling legislative environment in order to ensure that cross-border transactions are legally valid and enforceable. The United Nations Convention on the Use of Electronic Communications in International Contracts (2005) is the international legal text that may provide a solution to this issue. The Convention contains core rules to ensure the legal validity of electronic communications both domestically and internationally. Its treaty nature ensures maximum uniformity in provisions and their application. Its flexible scope of application complements other international agreements, including customs treaties, and global or regional single window agreements.

Conclusions and recommendations

- Include compliance with the legal environment in the design of electronic single window facilities and perform a legal gap analysis to identify any legislative lacunae.
- Adopt a legislative approach based on a general comprehensive law designed to address needs of commercial operators and made applicable, to the fullest extent possible, to all actors (business, government and consumers).
- Use UNCITRAL texts on e-communications and other uniform texts when establishing an enabling legal environment for the cross-border supply chain.
- Promote the adoption of the UN Electronic Communications Convention in conjunction with other relevant treaties to effectively implement cross-border electronic single window facilities.

Part IV

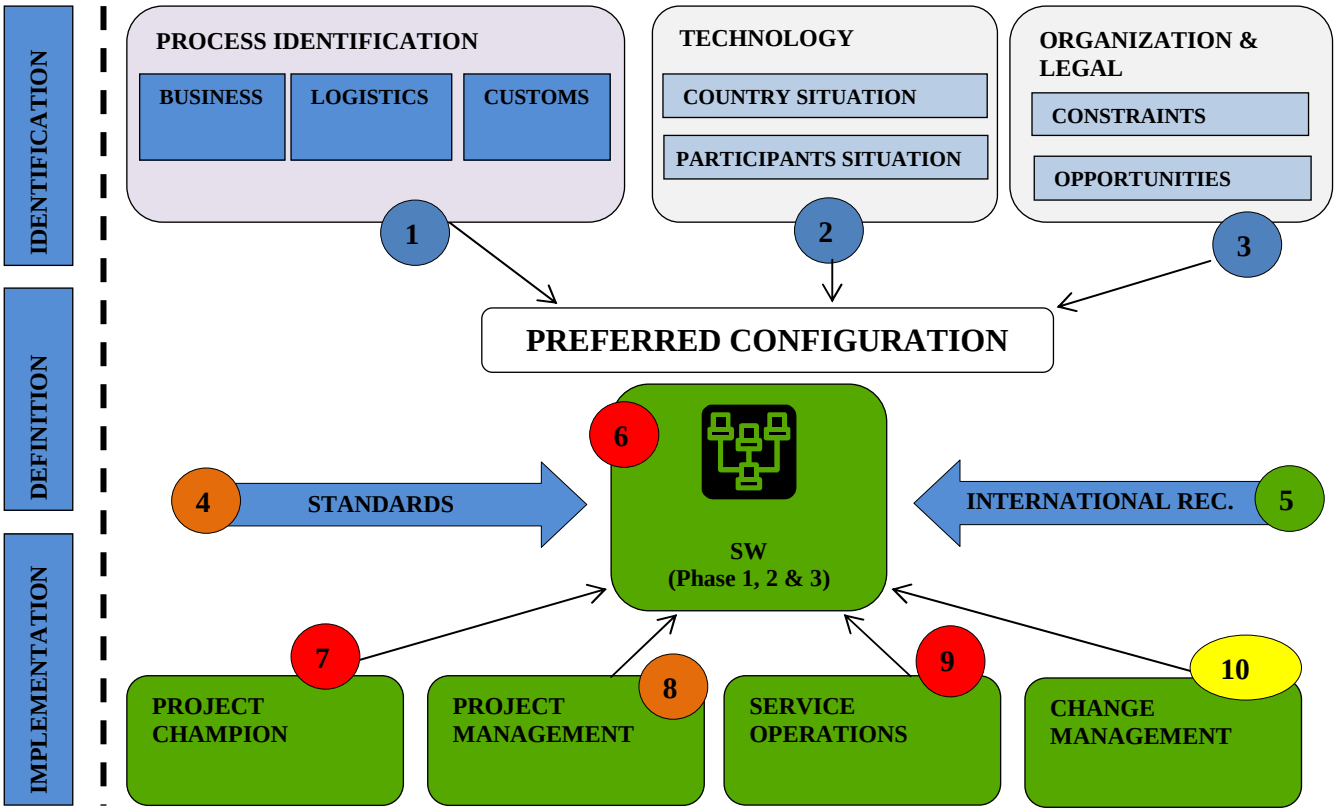
National and Regional Examples

Chapter 10
Electronic Single Window - the Case of Senegal

Ibrahima Diagne[10]

The vision for Senegal's Single Window dates back to 1996. The goal was to set up a national network for foreign trade formalities and to ensure that this network was inter-connected with the rest of the world.

Figure 10.1 – Single Window vision for Senegal



In this process (see Figure 10.1 above), it was important to identify the processes relating to business, logistics and customs (1) and to look at the technology situation in the country (2). In creating a network which had to integrate several agencies it was crucial to also look at the technological situation of all the participants. Furthermore, organizational and legal aspects needed to be considered (3) in order to define the preferred configuration of the Single Window in Senegal. International standards (4) and recommendations (5) that existed at the time were reviewed. A phased implementation approach was chosen (6). A project champion was needed (7) which was first the Trade Ministry, then Customs. GAINDE 2000 was chosen to manage the project (8) and operate the services (9). What we have learned from our experience is that the most important step in the process is change management (10).

[10] Ibrahima Diagne is General Manager at GAINDE 2000, UN/CEFACT Rapporteur for Africa and Chairman of the African Alliance for E-commerce.

Figure 10.2 – Change Management Challenges

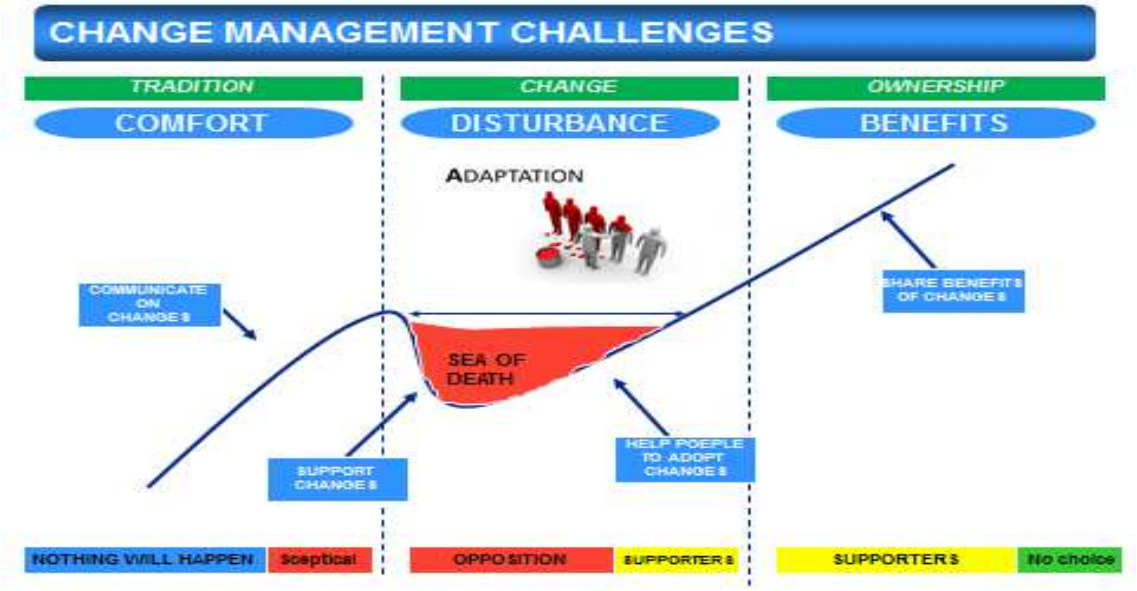


Figure 10.2 illustrates the process of change management. This approach is communicating about change, supporting change and avoiding the red zone, which is the most dangerous one. If this process is mismanaged the project is going to fail. It is important to help stakeholders to adopt changes and, in the end, particularly, to share the benefits from those changes.

The Single Window was considered to be applicable in three areas depicted in Figure 10.3: (1) Supply chain logistics, (2) Customs formalities and (3) B2B transactions. Each of these domains was to be covered gradually. The chosen legal framework for automation and paperless procedures was a Public-Private Partnership.

Figure 10.3 – Single Window areas

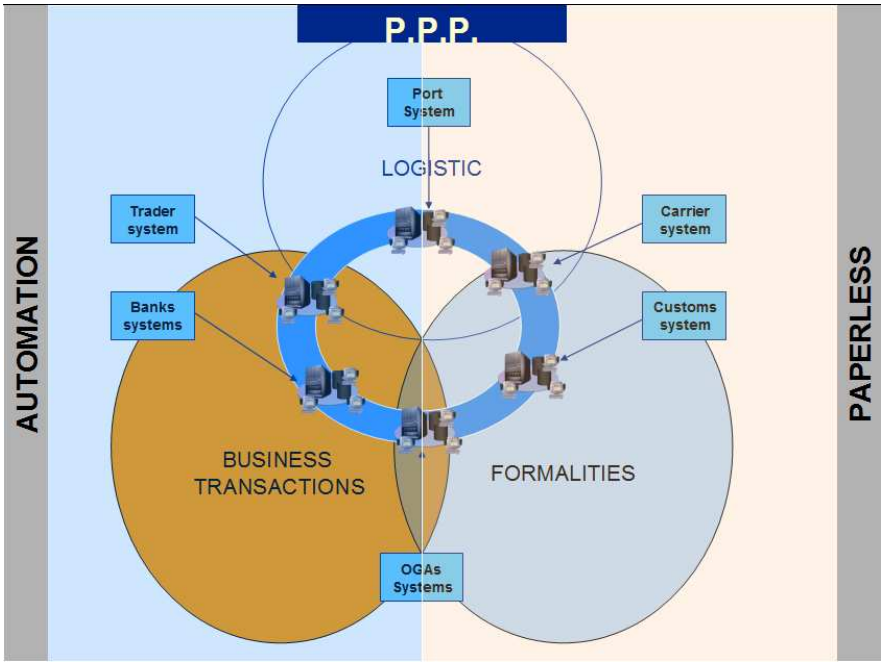
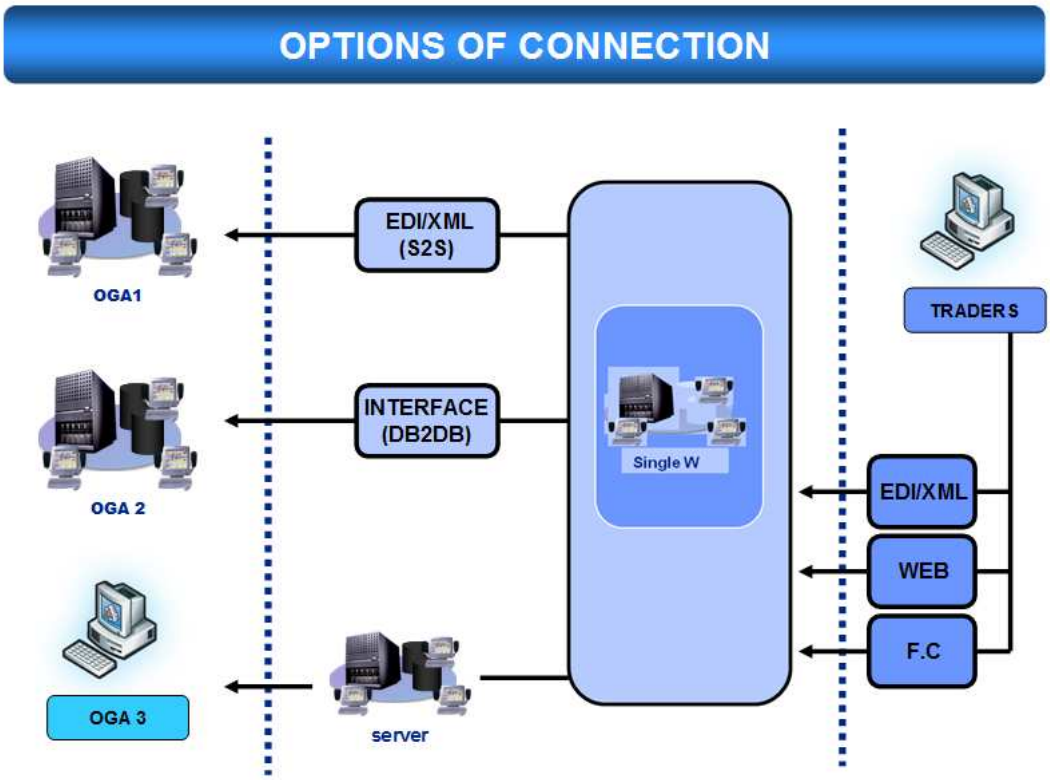


Figure 10.4 – Senegal's Paperless Implementation Strategy

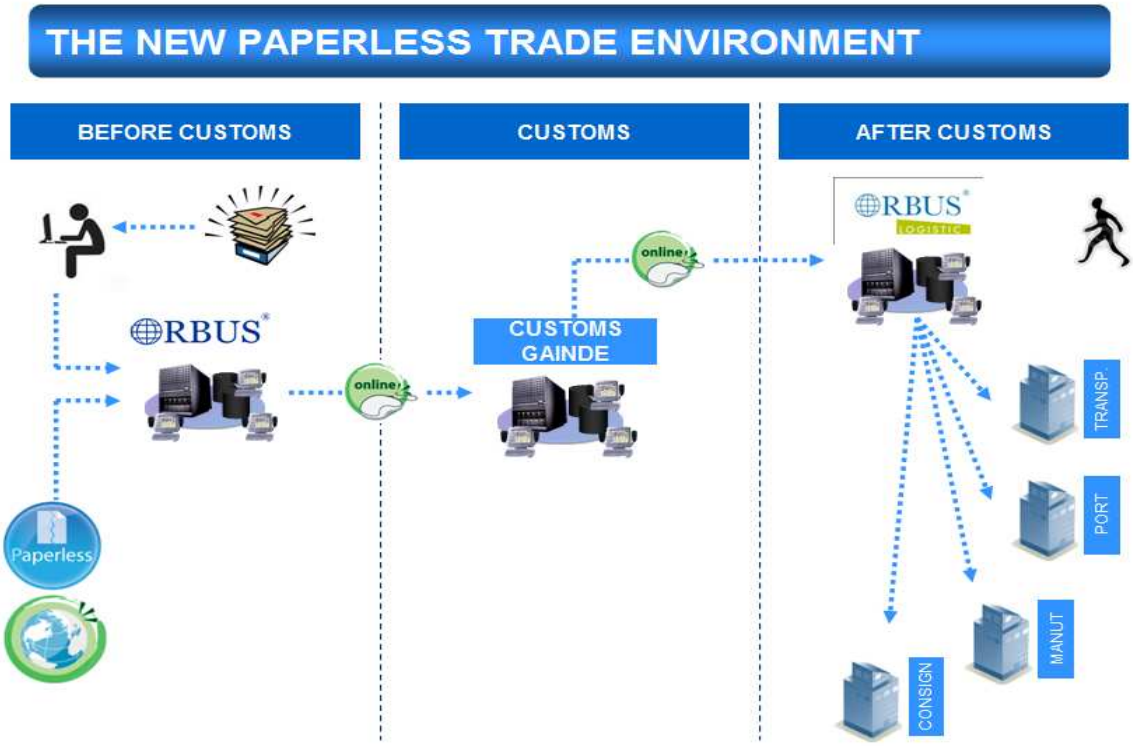
The process in Senegal's paperless implementation strategy was to simplify and to automate the procedures (Figure 10.4). The legal framework for the use of electronic signatures was put in place in 2008, allowing the implementation of paperless procedures. It is possible to have a functioning Single Window without the legal framework for electronic signatures in place. Interoperability and the use of appropriate standards and technologies are important to facilitate trade between different countries and regions in the world.

Figure 10.5 – Options of Connection



In a developing economy, not all stakeholders have the technological level which enables them to be connected with the platform. In Senegal, several modes of connection were considered (Figure 10.5). A service centre is provided as a physical space where operators with no means of connection can come and ask for the service. The same applies for government agencies that lack the technological set-up. An interface is provided for those with the technical equipment necessary, and a database/information system for those without. This created an environment enabling all the stakeholders to be involved in the system.

Figure 10.6 – The New Paperless Trade Environment



The administrative process today still starts with paper documents. It is envisaged to create the facility to receive documents from abroad in electronic format (Figure 10.6) but implementation will take time.

The Single Window in Senegal makes it possible to interconnect all the actors in the administrative part of international transactions. The Single Window is interconnected with the Customs, which is also computerized and deals with all Customs matters. Both systems are also interconnected with the logistical platform that deals with everything from the manifest to unloading. These three platforms make up the Single Window system for trade facilitation in Senegal. The last steps were completed in 2011.

Chapter 11
Improving the Mechanisms for Trans-Boundary Information Exchange in the Customs Union of Belarus, Kazakhstan and the Russian Federation

Dina Akpanbayeva[11]

In the recently created Customs Union of Belarus, Kazakhstan and the Russian Federation, it was decided to create an integrated information system.

Integrated Information System for Foreign and Mutual Trade of the Customs Union

The development of an Integrated Information System for Foreign and Mutual Trade (IISFMT) was guided by UN/CEFACT Recommendation No. 33. The project aimed to create a modern, international and integrated system that would provide real opportunities for inter-state, regional and inter-agency economic integration by using modern information and communication technologies. The aim was also to implement new approaches to the interaction between the business community and government agencies on the one hand, and between government agencies in different countries on the other.

Objectives

The objective of the IISFMT is to accelerate the economic integration processes among the member States of the Customs Union and to provide facilities for the activities of their economic entities. In this context, the implementation of effective regulation of foreign and mutual trade on the customs territory of the Customs Union is important. The IISFMT optimizes customs, tax, transport and other types of state control at the customs borders of the Customs Union and ensures qualitative work of the Interstate Council of Eurasian Economic Community (the High Authority of the Customs Union) and the Customs Union Committee. The Single Window is envisaged to serve not only government agencies but also the business community by facilitating mutual trade.

Priorities

The priority actions for establishing the IISFMT are information support for the overall processes of the Customs Union, design of new technologies of electronic interaction, unification of e-documents and paper documents and data harmonization.

Implementation

The creation of a legal framework and the development of basic concepts and policies was the first phase of the Customs Union Single Window Project. Its treaty basis is aligned with international standards set by the World Trade Organization, the World

[11] Dina Akpanbayeva is Director of the Department of the Trade Policy Secretariat of the Commission of the Customs Union of Belarus, Kazakhstan and the Russian Federation.

Customs Organization, UNECE and UN/CEFACT. Care was taken to make it transparent and understandable to all.

In creating an integrated information system, the challenge was first and foremost to put in place the technology required, ensuring that it would not substitute for the national systems already in place in the member countries but would integrate these.

At the national level, efforts in implementing the Single Window concept strongly depend on political will, effective inter-agency cooperation and the creation of information systems within agencies, working towards electronic governance. Efforts in this direction are being made by all member States of the Customs union. E-government projects are being implemented in the Russian Federation, Belarus, and Kazakhstan. In the Russian Federation data is already being collected for Vnukovo airport. A Single Window project is being carried out in Kazakhstan and a conference with UNECE on integrated information systems was organized in 2011. A similar conference on Single Window was also held in Almaty, Kazakhstan in 2012.

An important condition for successful cooperation between member States is that their Customs organizations have access to information. The process of information exchange to monitor imports and exports relies on receiving advance information from trading partners in the member States of the Customs Union.

Projects on advance trading information have been implemented across CIS countries, including member States of the Customs Union. It would, however, be more effective if this information was channelled through a National Single Window. Current projects cover G2G information exchange. G2B electronic information exchange is planned but has not yet been implemented.

Challenges

Key difficulties in implementing the IISFMT have been legal regulations, organizational alignment and technical problems. In addition to ensuring an enabling legal framework, the creation of new technologies for electronic cooperation and document harmonization is an important challenge.

For more information, visit the official website of the Eurasian Economic Commission: www.tsouz.ru/Pages/Default.aspx

Chapter 12
Port Single Window for Foreign Trade in Cotonou (Benin)

Jean-Michel Hervé Abimbola[12]

Before implementing the current Single Window, the Government of Benin had made several attempts over the past 15 to 20 years to implement a Port Single Window. Unfortunately, all past attempts had failed. This was due to a lack of preparation and experience, an underestimation of the importance of change management and an approach geared towards computer architecture without taking sufficiently into account the practicality of the format for the various actors in the port community. The importance of entrusting this project to experienced partners was underestimated, especially regarding the need to establish a system that was adapted to the specific needs of Benin.

Taking the specific needs of Benin into account, the development of the Port Single Window for Foreign Trade in Cotonou was intended to secure and increase revenue collection and to make Benin an efficient regional hub for transport and logistics. This called for compliance with international trade facilitation and security regulations, reduced congestion at the Port of Cotonou through shorter clearance times and simplified procedures, enhanced efficiency of the transit Corridor, and the creation of traceability for trade flows through centralised statistics.

Implementation of the Port Single Window: a Public-Private Partnership

It was decided to implement the Single Window through a concession in the form of a Public Private Partnership. This had the advantage of reduced risk and fast implementation of the project. It was considered the best way to modernize and to guarantee efficiency in processes.

The award criteria for the tender called for the proposal to include a comprehensive scheme for the Port Single Window and the implementation of a dedicated and secured website[13] that could be accessed by all authorised actors. Furthermore, operations should be simplified and paperless, and interoperability with ASYCUDA and main stakeholders should be ensured. Training of stakeholders of all categories and capacity building to manage change was also a central aspect. The ability to implement the project quickly, prior experience with the implementation of Single Windows in multicultural environments and experience with concessions formed the key selection criteria for the successful contractor.

Bureau Veritas and SOGET, two world leaders in this field, were chosen as partners on the basis of their extensive experience in Single Window implementation in Africa, Europe and Latin America, their experience with concessions and trade facilitation, as well as their strong change management methodology and permanent local presence.

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12 Mr. Jean-Michel Hervé Abimbola is Minister for Maritime Economy, Maritime Transport and Port Infrastructures, Benin.

13 www.segub.bj

Implementation agenda

The Concession for the Single Window was signed in November 2010. The Platform was operational in July 2011 and the Port Single Window was officially launched by the Head of State in October 2011.

Change management

The change management process was very important. The Government was very closely involved in the implementation of the project with weekly progress meetings between the ministry and the concessionaires and monthly meetings of the steering committee. Over 650 persons were trained early in the process, including freight forwarders, customs agents, and shipping agents. There were numerous visits of the President of the Republic accompanied by Heads of State of the subregion (Niger, Chad) to facilitate the coordination of transit corridors with these countries. Benin is a natural corridor to the landlocked countries and areas such as Niger, Mali, Burkina-Faso and West Nigeria.

Time and cost savings have been achieved for actors in the Port Community.

Conclusion

The reason for the successful implementation of the Port Single Window in Cotonou was close government involvement in project implementation and the selection of the right strategic partner with real competence and a serious track record in Port Single Window systems operating in numerous ports. The project enjoyed the full support of stakeholders. Implementation methodology and change management processes played an important role. The Port Single Window of Cotonou has become a major reference point for port reforms.

Outlook

The Single Window Project, which was started in October 2010, is growing stronger all the time. Already, more than 1000 Single Payment Slips are being processed every day. The Single Window started with the import aspect, and within that imports made with containers, and has recently extended to include roll-on-roll-off and soon will include bulk cargo and will be completed by including exports.

Chapter 13
Single Window in the Customs Service of Azerbaijan - Reality and Vision

Igbal Babayev[14]

Azerbaijan lies on the "Silk Route" and is an important part of the North-South transport corridor that borders the Russian Federation, Kazakhstan, Turkmenistan, the Islamic Republic of Iran, Armenia, Turkey and Georgia.

Azerbaijan recently modernized its Customs Service under the "*State Programme on the development of the Customs system of the Republic of Azerbaijan (2007-2011)*". The aims of the Programme are to improve customs legislation and regulations, automate customs procedures, strengthen action against smuggling and other legal violations in the field of customs, develop the customs infrastructure, train staff and widen international cooperation.

This chapter provides a short summary of the development of the Customs Single Window in Azerbaijan.

Development of the Customs Service

The legal backbone of the Customs development strategy encompasses four areas. The first area is **infrastructure development**, which includes improvements to the Customs offices and checkpoints, logistics, equipment and other facilities. The second area is **business process modernization**. This covers BPA, Re-engineering, International Best Practice and Change Management. The third area covers **innovation projects**, such as Single Window, paperless technologies, the e-Customs project, the "one stop" shop, gate management and target centres. The fourth area is **capacity-building**. It includes training-needs assessment and tailor-made courses, seminars and workshops, integrity programmes and structural changes.

Under the State Programme for the development of the Customs system, all border checkpoints have been newly constructed in line with international standards. At the same time, all technical provisions in the checkpoints have been updated.

The rest of this article reports on the third development area, innovation projects, and outlines the project implementation strategy for the Customs Single Window in Azerbaijan.

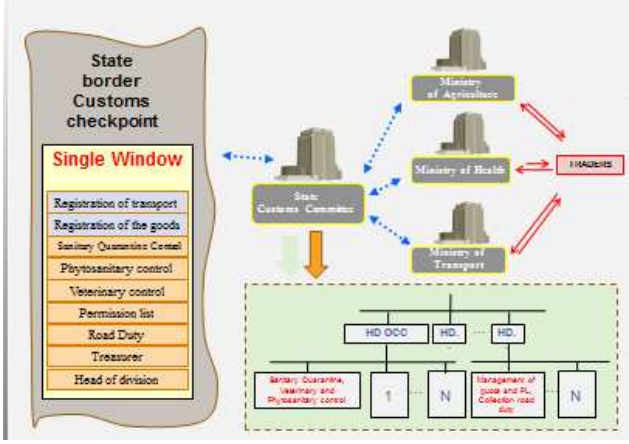
Single Window

There are three types of Single Windows

1. Single Window at the State border Customs checkpoint
2. Single Window for Customs Clearance
3. National Single Window

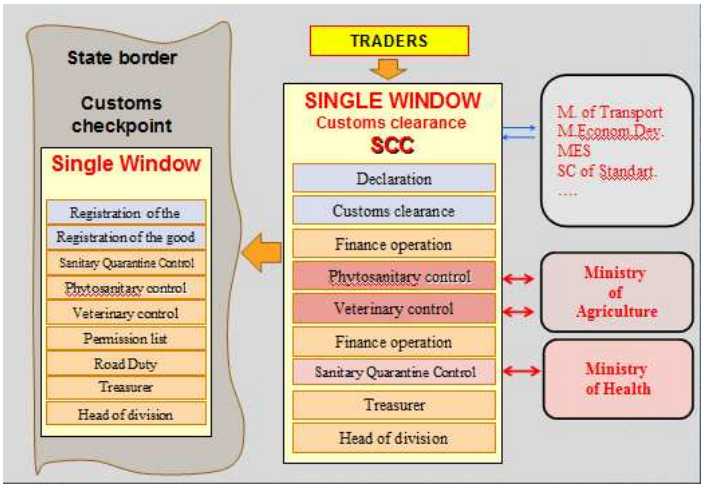
[14] Prof. Igbal Babayev is Chief of the Head Department for Statistics and Information Technologies, State Customs Committee of Azerbaijan.

Single Window on the State border customs checkpoint



In this type of project the SW is organized at the State border customs checkpoint for inspecting goods and vehicles that are passing the border. Traders go to all other, relevant, agencies to obtain necessary certificates and licences. These agencies then pass on all information about these "permission" documents to Customs. At the same time, relevant departments in Customs transmit all documents to the Single Window at the border Customs checkpoints where Customs department employees responsible for areas such as veterinary control, phytosanitary control, sanitary quarantine control and road control work together. In this case, traders apply to the SW at the border checkpoint where all controls are performed by Customs administrations. Customs is the main operator in the single window of this type. It can be established by presidential decree.

Single Window for customs clearance



This type of Single Window differs from the first in that traders submit all documents to the Single Window only once, where representatives of various agencies such as veterinary control, phytosanitary control, sanitary quarantine and road control work in the same office space. These agencies are totally independent from Customs and report to their respective administrations. At the same time, the Single Window office transmits all documents to Single Windows in the Border Customs Checkpoints where Customs is performing the main job. In comparison to the first type, the establishment of this type of Single Window requires ministerial decisions in addition to a presidential decree.

National Single Window

Various administrations at the national level correspond and are connected as one SW infrastructure, which ensures one point of entry for all.

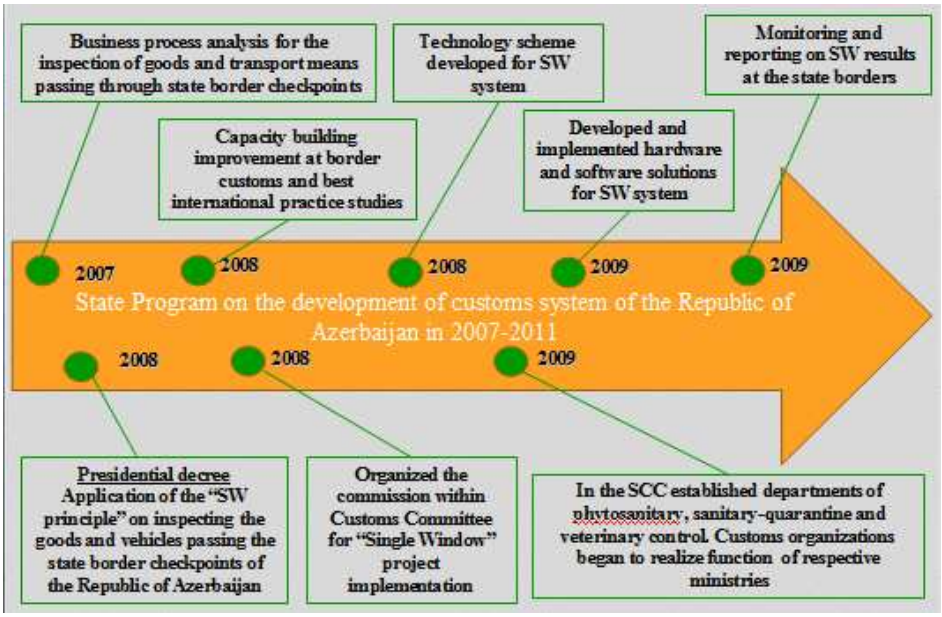
The development of this type of Single Window requires parliamentary decisions in addition to a presidential decree and ministry-level decisions.

Key elements of the development strategy

For all three types, political will is one of the most fundamental elements of Single Window development. The application of the Single Window principle in inspecting the goods and vehicles passing the state border checkpoints of the Republic of Azerbaijan (Type 1) was facilitated by Presidential Decree in November 2008.

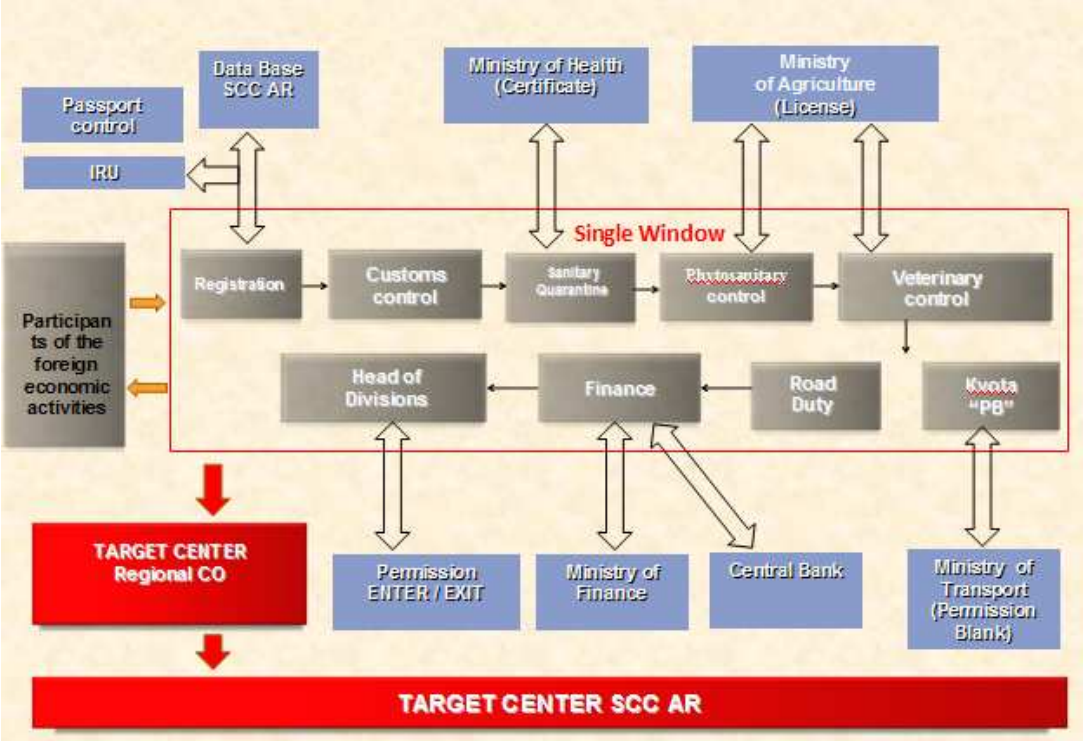
Study of the preliminary documentation

The figure below illustrates the time line of the State Programme on the development of customs systems of the Republic of Azerbaijan from 2007 to 2011.

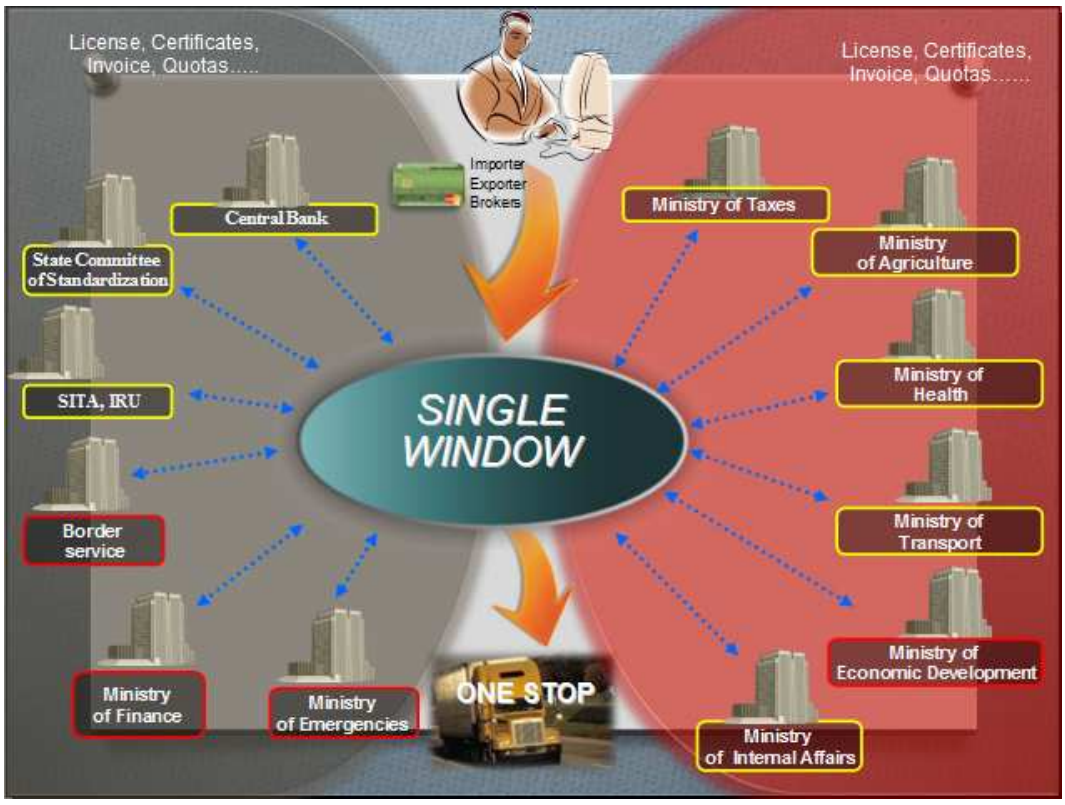


The role of the Single Window in Customs Modernization

In the model depicted below, traders submit documents to the Single Window, then registration is done and data is checked with IRU, Passport Control and against the database of the State Customs Committee. The documents then move to the next table to calculate the road charge and the determination of codes on the basis of the web-based transport ministry database. Then the documents move through sanitary quarantine, phytosanitary and veterinary control on the basis of the corresponding agencies' online databases. When traders have made the required payments the administrator gives permission for entrance to the country.



One of the main components of the Single Window is integration with other agencies to exchange data at the national level. The State Customs Committee is connected with the other government agencies as shown in the figure below. The yellow-frame boxes indicate what has already been implemented. The red-frame boxes are still in the process of development.



The legislative framework

The legal framework for Single Window implementation includes the Presidential Decree of the Republic of Azerbaijan, "*On some issues regarding licensing and permission system required for certain types of business activities*", that was signed on 26 October 2011.

Before this decree, traders were required to get many permission forms from various agencies to undertake business activities in the country. This, in turn, had a negative impact on business, employment and investments. To improve the situation it was necessary to simplify the licensing and permission system for trade facilitation. The Decree requires the Cabinet of Ministers to draft a "Licensing and permission system" within three months.

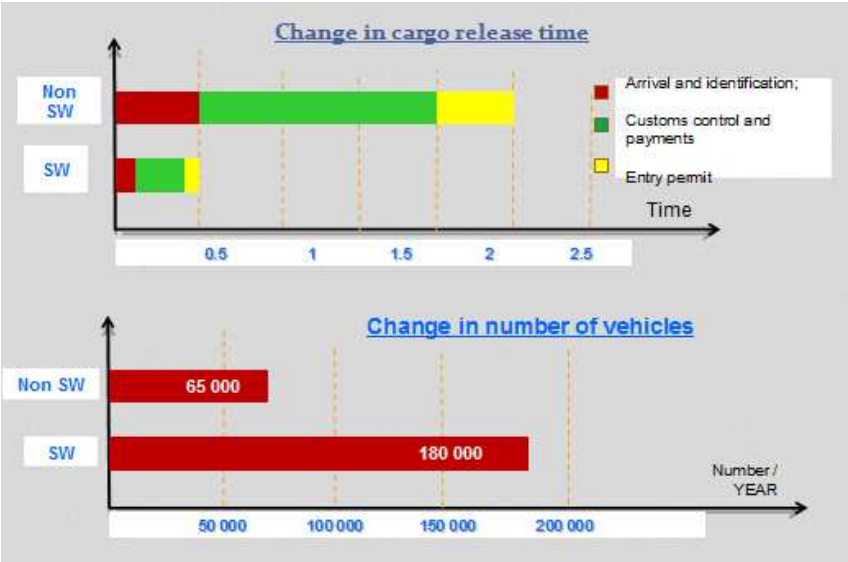
The Decree of the President of the Republic of Azerbaijan "*On the approval of customs code of the Republic of Azerbaijan*" (15 September 2011) is another example. The approval of the new Customs Code is based on stipulations in the Revised Kyoto Convention. It will ensure new customs procedures, new opportunities for the application of IT, a more flexible system for integration of international standards and legal reforms, a new environment for trade facilitation, and new phase for C2B, B2C, B2B and C2C partnerships.

Single Window implementation: results

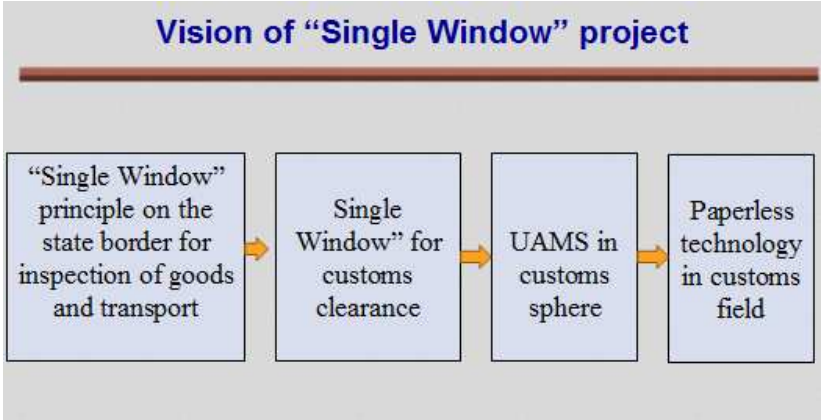
The results can be summarised as follows:

- Quicker border crossing processes
- Elimination of the need for multiple presentation of document
- Minimization of commercial fraud at the border
- Providing the use of risk analysis system
- Creation of an atmosphere of cooperation, mutual trust and necessary transparency

The Single Window has led to a reduction in border crossing time from 2-3 hours to 15-20 minutes. At the same time, the number of vehicles increased from 65,000 to 180,000.

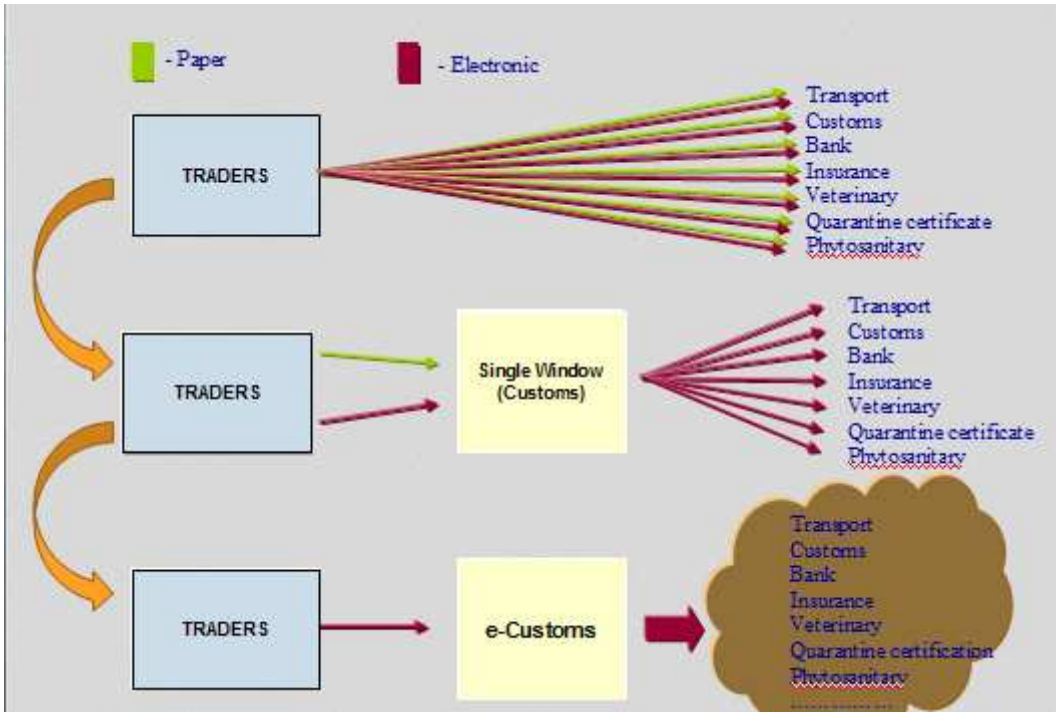


The Single Window is not only about border crossing and Customs procedures. It is also about new opportunities for developing other innovation projects and setting visions for Customs development.



Stages of transition to paperless technology

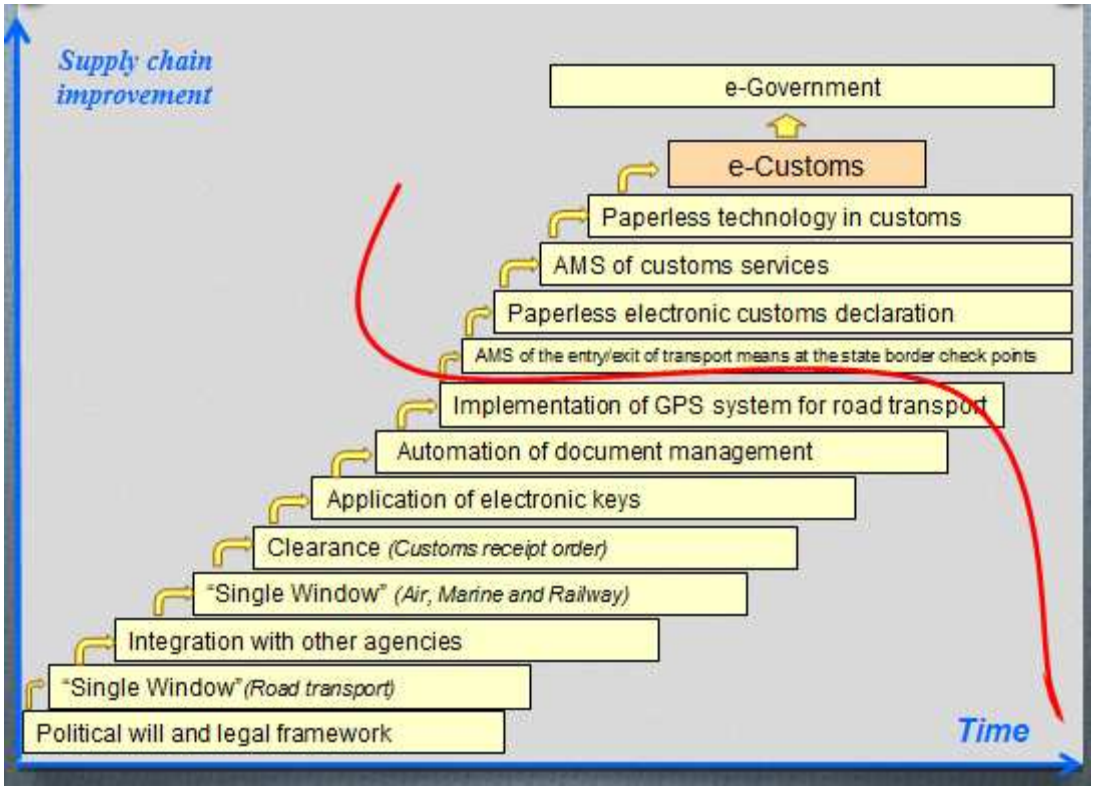
The figure below illustrates the three stages of moving from paper to electronic information exchange. In the first stage, both paper and electronic documents are used; in the second stage, communication between Customs and other agencies is fully electronic and in the third stage, all information exchange is paperless. The State Customs Committee of Azerbaijan is now at the second stage.



Roadmap of implemented projects, ongoing initiatives and vision

In Azerbaijan, everything started with political will and a legal framework. Subsequent steps towards e-Government are the implementation of a Single Window for road transport, integration with other agencies, a Single Window for Air, Marine and Railway, clearance, application of electronic keys, automation of document management, implementation of a navigation system for road transport, Automated Management System (AMS) of the entry/exit of transport means at the state border checkpoints, paperless electronic customs declaration, AMS of customs services, and paperless technology in customs. All this constitutes the base of e-Customs leading to e-Government.

The measures below the red line have already been implemented and those above it indicate the next steps towards the vision of e-Government.


Supply chain improvement
e-Government
e-Customs
Paperless technology in customs
AMS of customs services
Paperless electronic customs declaration
AMS of the entry/exit of transport means at the state border check points
Implementation of GPS system for road transport
Automation of document management
Application of electronic keys
Clearance (Customs receipt order)
"Single Window" (Air, Marine and Railway)
Integration with other agencies
"Single Window" (Road transport)
Political will and legal framework
Time

Chapter 14
Implementation of a National Single Window System - the Kenyan Experience

Alex Kabuga[15]

The development of the Kenyan National Single Window started with a port-centric project in the port of Mombasa in 2005. It was spearheaded by the Port Authority and Revenue Authority and was subsequently developed into a national Single Window in 2007. The Kenya Electronic Single Window System covers air, rail, road and maritime systems. The conceptual approach underlying it was to develop a cross-cutting national project, including all government regulatory agencies. The ministerial-level Steering Committee for this national project included the Treasury, the Ministry of Transport and the Ministry of Trade.

In 2011, the Kenya Trade Network Agency (KENTRADE) was set up by the Government to manage the Kenya Electronic Single Window System. Its key objective is "to facilitate international trade in Kenya by reducing delays and lowering the cost associated with clearance of goods at the Kenyan borders, while maintaining the requisite controls and collection of duties and taxes, where applicable, on goods imported or exported".

Objective – Reduction in Cargo Dwell Time

The objective of the Single Window system was to reduce cargo waiting time to three days at the port, one day at the airport and a maximum of one hour at the border. This can be achieved by eliminating existing inefficiencies, for instance the space utilization at ports, where waiting times lead to congestion. There are also inefficiencies in the cargo clearance process which involves manually handling paper documents between many stakeholders. These inefficiencies lead to delays in cargo clearance, high trade transaction costs and corruption; which together reduce Kenya's competitiveness.

Manual handling and processing of trade documentation

"We don't seem to trust our systems. We still want to see the physical documents. This is an issue which has to do with change management and we are dealing with it."

[15] Alex Kabuga is Chief Executive Officer of the Kenya Trade Network Agency, KENTRADE, which is the Single Window Implementing Agency in Kenya.

Importance of Trade in EAC Economies

An important factor in the development of the National Single Window system was to be able to show the importance of trade facilitation for Kenya. The share of trade in GDP in the economies of the East African Community is important, ranging from 36 per cent in Rwanda to 57 per cent in Kenya.

Table 14.1 – World Bank Doing Business Report Ranking 2012

Country	Ease of Doing Business	Trading Across Borders
Singapore	**1**	**1**
Mauritius	23	21
Tunisia	46	32
Rwanda	45	155
Ghana	63	90
Kenya	109	141
Uganda	123	158
Tanzania	127	92

Yet, according to World Bank rankings in 2012, East Africa is not well placed. Kenya is placed 109th on Ease of Doing Business Index and 141st on the Trading across Borders index (Table 14.1).

A survey was carried out to quantify the economic losses incurred through inefficient procedures and to highlight the potential savings through trade facilitation. Based on the present volume of goods imported and exported, the survey predicts saving to the economy from US$ 150 to US$250 million in the first 3 years and US$ 300 to US$ 450 million per annum thereafter. These savings are derived from reduced trade transaction costs, reduced delays, inefficiencies, corruption, paperwork and manual handling of documents, reduced cost of capital (JIT Concept) and demurrage as well as improved space utilization at ports.

Key Milestones in the Development of the National Single Window in Kenya

The development of a project charter, a master plan and business process re-engineering were important milestones in the Single Window development. The status quo situation was assessed and stakeholders consulted on their needs. Stakeholders were involved in all stages of the project and at all levels in over 216 meetings organized over a seven month period to ensure information exchange and joint project ownership. Software requirement specifications were produced and a project stakeholders' needs assessment conducted. This assessment covered all stakeholders who were to be integrated into the system, assessing their capacity and the stage of development of their existing systems. Agencies were assisted in establishing computer systems and in streamlining their business processes and developing requirements for their community-based systems.

Finally, the Government set up the operating agency, Kenya Trade Network Agency (KENTRADE). In keeping with UNECE Resolution No. 33 it was set up as an independent entity to run the Single Window process.

Lessons Learned

Enabling factors for the successful implementation of a National Single Window are:

- Political will and strong government support
- A strong supporter at the senior level to drive the implementation process
- A dedicated project implementation team
- Co-operation from the multiple government agencies involved
- Continuous sensitization and change management to ensure stakeholders' involvement
- Business Process Rationalization
- Regional cooperation
- And an adequate budget.

"Quick wins" are crucial in driving the implementation process. There is no need for a computer system to be in place to achieve successes; these can be achieved through administrative decisions having an effect on the ground.

Challenges

Challenges in the Single Window implementation process include capacity building and training, multiple stakeholders, the need for an enabling legal environment, and change management.

The future

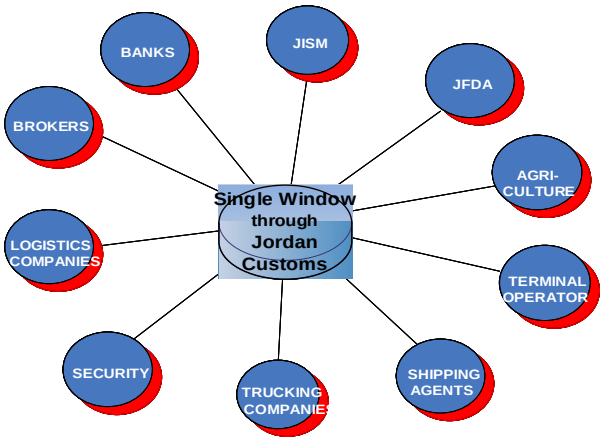
With the East African Community (EAC), East Africa has a community and customs union in place and is on the way to having common borders. National Single Windows exist in each of the five East African States. It is planned to sensitize all EAC Partner States to the Single Window concept and to set up technical working groups. These are intended to (a) spearhead initiatives in EAC Partner States, (b) advocate the establishment of National Electronic Single Window Systems in EAC Partner States, and (c) advocate the creation of a Regional Platform for EAC partners States for integrating their Single Window Systems.

Chapter 15
Steady and Smooth Progress in SW for Jordan's Customs Department

Khuloud Habaybeh[16]

Jordan has a clear trade strategy, elaborated within the framework of the national agenda, and focusing on better coordination, regularity and legislative improvements, the simplification of Customs procedures and market access through more free trade agreements.

Single Window



The Single Window in Jordan involves the Jordanian Customs Department, the Jordanian Standards and Metrology Organization, the Ministry of Agriculture, the Food and Drug Administration, the Telecommunications Regulatory Commission, the Nuclear Regulatory Commission, the Ministry of Environment, and brokers among others.

To comply with the requirements of international trade, import and export companies operating in Jordan have to prepare and submit a large volume of information and documents to government regulatory agencies. The information and documents are provided, either manually or electronically, to a number of different agencies; incurring additional costs which may constitute a significant burden on both the Government and the business community.

One method for addressing this problem is to utilize single window for processing through which information and/or documents related to imports and exports are submitted once, and disseminated to all concerned parties.

To strengthen the framework of the single window in Jordan, agencies have signed memoranda of understanding (MOUs) with Jordan Customs. The intent of the MOUs is to organize the cargo processing within the single window framework, specifically with regard to the management, operational coordination, and information exchange functions, in order to achieve a Single Window that is consistent with international standards and contributes to reducing the time and cost associated with import and export operations.

The exchange of information and data remains the main issue influencing the success of the Single Window. The successful management of information and data will lead to a reduction in the effort and the cost both for government agencies and the private sector.

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[16] Khuloud Habaybeh is Assistant to the Director General for Compliance and Facilitation, Jordanian Customs.

The next step was to develop a procedure and a mechanism for defining how the exchange of such data would be accomplished, what information could be exchanged, the timing of the exchange, and how to use the information, since the Jordanian Single Window would depend on the electronic exchange of information.

The Single Window was implemented in six customs houses: Aqaba Customs House, Zarqa Free Zone Customs House, King Abdullah II City Customs House (Sahab), Amman Customs House and Al Hassan Industrial City, with the participation of four government agencies: Jordan Customs, Ministry of Agriculture, Jordan Standards and Metrology Organization, and the Food and Drug Administration.

In 2010 the Jordan Single Window was expanded to include three more government departments which regulate the operations of international trade: the Telecommunications Regulatory Commission, the Nuclear Regulatory Commission and the Ministry of Environment.

The Single Window is now implemented in eleven customs houses (Table 15.1).

Table 15.1 – Customs Houses implementing the Single Window in Jordan

No.	Customs House	Date of application
1	Amman Customs House	12/2009
2	Aqaba Customs House	04/2009
3	Zarqa Free Zone Customs House	12/2009
4	Queen Alia International Airport / Cargo	11/2009
5	King Abdullah II Ben Al Hussein Customs House	02/2009
6	Al Hassan Industrial Zone/Irbed	09/2009
7	Aqaba Seaport Passenger Terminal/ Aqaba	11/2009
8	Jaber Customs House	07/2010
9	Jordan Valley Border Crossing	09/2010
10	Omari Customs House	03/2011
11	Public Warehouses	06/2011

The Memoranda of Understanding addressed the following key issues: first, that Jordan Customs shall assume the duty of administrative supervision of the activities of the parties participating in the single window at the border; second, an agreement to exchange data and information between the participating agencies and to develop a vision for that; and third, the adoption of the customs clearance system "ASYCUDA" for the purposes of the exchange of risk management data and information with each agency.

Exchange of Data and Information

The existing laws which are related to the government agencies that are currently participating in the Single Window allow the exchange of data and information between agencies and make provision for data protection.

Integrated risk management, electronic connection, electronic clearance, pre-clearance, and the implementation of the Single Window in most Customs houses contributed to the facilitation of trade across borders.

How ASYCUDA has facilitated paperless trade at the Jordan Customs

Since the launch of the ASYCUDA system in Jordan in 1999 the use of paper has been dramatically reduced.
During the Department's endeavour to utilize a computerized customs system, ASYCUDA was taken into account in the review and reform of procedures. One of the most important achievements of the ASYCUDA system was a significant reduction in paper use.

This was achieved by:

1) Simplifying and standardizing procedures through the introduction of a Single Administrative Document (SAD) for customs declaration:
    a. Reduction of procedures required to complete the customs declaration
    b. Establishment of specialized clearance units
    c. Granting clearance companies authority to register the customs declaration
2) Producing integrated tariff tables
3) Not requiring commercial and clearance companies to buy the paper tariff booklet
4) Adopting and integrating international codes in ASYCUDA
5) Using international codes that can be easily retrieved by the system
6) Using the Internet for currency or country codes
7) Introducing risk management procedures
8) Using green lanes to reduce physical inspection and time
9) Enacting relevant provisions for electronic data exchange (the legally required information transmitted through: Customs declarations, financial receipts, manifests, and transit documents are dealt with electronically)
10) Activating modules in ASYCUDA, including the E-Manifest using XML forms; Bonded and Ware houses; Transit Documents (T1 and TIR) and Release Orders
11) Establishing new systems in ASYCUDA (pledge; deposits of passengers; goods seizures, customs value of goods; the Sauq System (archiving customs declarations) and postal exceptions)
12) Establishing electronic connectivity with neighbouring countries: Syria, Saudi Arabia, Iraq, and Qatar.

Golden List of Jordan Customs (= Authorized Economic Operators)

Targeted sectors are supply chain companies that exist in Jordan, that are working in international trade, that meet the standards and conditions of the programme and that work in import, export, transport, brokers, Qualified Industrial Zone (QIZ) and warehouses.

Benefits for a company of being on the Golden List include:

- Expanded green-lane routed cargo
- Benefiting from pre-clearance service for all materials

- Immediate release of financially guaranteed cargo prior to declaration filing or processing
- Granting promotional privileges (recognition letters, honouring of the best three companies)
- Other facilitation provided by the Department's Directorates and Customs centres
- Permitting clearance companies to establish new branches
- Multiplying general guarantees for commercial firms
- Multiplying incorporated guarantees of clearance companies
- Direct clearance of truck cargo for import/export companies and QIZ
- Assigning priority to process declarations pertinent to import/export companies and QIZ
- Allowing release of goods after working hours, under agents' undertakings at clearance centres.
- Relieving cargo trucks from Customs escort except those carrying cigarettes and spirits.
- Exempting cargo consigned to import companies from physical inspection.
- Exempting cargo consigned to import companies from the requirement of submitting recommendations of official parties to allow equipment and supplies needed for installation and maintenance purposes.
- Coordinating with several governmental bodies to offer further facilitations to Golden List enlisted Companies.
- Cooperation with regional commercial partners to achieve mutual recognition of the Golden List programme.
- Designing special Customs declaration envelopes for Golden List enlisted Companies.
- Releasing of Golden List companies' cargo via undertaking once investment promotion status decision is made.

Private Cloud Computing

A private cloud is "a form of cloud computing where service access is limited or the customer has some control/ownership of the service implementation." Jordan Customs is ready to implement private cloud computing.

One of the important features is that a private cloud can allow both internal and external customers to access data in a secure local environment. Virtualization and distributed computing have allowed customs networking and data centre administrators to become service providers that meet the needs of customers within the Customs department. The ability to flexibly access data is a benefit of cloud computing. Some data such as financial records will stay in the internal cloud in the data centre, but other parts of the data might be stored elsewhere with the flexibility of moving wherever needed.

Virtualization transforms the face of the modern data centre. Virtualization is one of the key aspects of cloud computing, with the Operating System providing infrastructure and application services. The infrastructure services virtualize server, storage, network and application services that provide availability and security for the applications that are being utilized in the cloud environment.

Policies to maximize Single Window efficiency

Jordan Customs will take golden list enlisted companies into consideration in terms of appealing to all other relevant agencies to provide similar facilitations to them. It will develop other agencies' risk entities, and utilize the principles of risk in general (aligning targeting with risk level). Furthermore there are plans to expand the number of other agencies engaged in the Single Window at all customer centres. The endorsement of the digital signature would resolve setbacks resulting from assembling relevant agencies in one single location.

Chapter 16
Paperless Trade and ASYCUDA

Nicolae Popa[17]

The ASYCUDA Programme is part of the technical assistance pillar of UNCTAD, which is tailored to the specific requirements of the beneficiary countries, with special attention to the needs of the least developed and transition economy countries. The ASYCUDA Programme, very well known because of the ASYCUDA Integrated Customs Information System, provides the member states with technical assistance and training on Customs and ICT (Information and Communication Technologies) areas, implementation of international standards and best practice, as well as with a Single Window technological platform and training programme that facilitates timely design, development and implementation of Single Window components.

The ASYCUDA Programme has existed for more than 30 years and its products are being implemented in over 90 countries around the world. The Programme began work on Single Windows some years ago in cooperation with UNECE, in compliance with the WCO Data Model 3. The technological platform allows the countries to effectively work in a Single Window environment and is currently implemented in more than 40 countries.

Simplification, Integration, Data Harmonization and Standardization

ASYCUDA promotes the implementation of Single Window systems in a structural and professional manner. This includes starting the process of developing and implementing Single Window systems with the objective of simplification, harmonization, standardization and integration of data used by all parties involved.

Simplification refers to the process of eliminating all unnecessary elements and duplications in forms, formalities, processes and procedures. Harmonization is the alignment of national formalities, procedures, operations and documents with international conventions, standards and recommended best practices. Standardization in trade facilitation is the process of implementing internationally agreed formats for practices and procedures, documents and information thus allowing for multiform electronic exchange of data.

In this context, dematerialization of supporting documents in a Single Window environment enables electronic submission, processing and verification of supporting documents referenced in customs declarations and issued by OGAs. The business processes, functionalities and services include also document tracking and tracing, automatic notification by SMS and/or email, automatic processing by use of barcode readers, automatic processing by use of timers associated with specific tasks or events, simultaneous processing of related documents and electronic payment.

[17] Nicolae Popa is Regional Coordinator, DTL, for the UNCTAD Technical Assistance Programme.

Licences, Authorisations, Permits

Furthermore, the ASYCUDA Programme promotes the re-engineering of global businesses processes taking into account the benefits and capabilities of the Single Window concept. A relevant example in this respect is the UNCTAD Single Window solution for the management (issuance, control and monitoring) of licences, authorisations, certificates and permits, from (1) the creation of the e-application (request for licence); (2) the reception by the competent National Authority to the issuing of the licence, including evaluation of criteria to be met by the applicant through a specific risk-management process; (3) the management of the licence itself by the national Authority, with all possible operations (e.g. suspension, revocation, withdrawal of a licence suspension, annulment of a licence revocation etc.); (4) the use of a valid licence (validate Customs transactions vs. licences data; cross-validation between data supplied on SAD document against Licence-related data etc.), including automatic partial/total writing-off by SAD document(s) in Customs; and (5) monitoring by the national Authority of the use of the issued licences (statistical reports, etc.) and by the trader of the use of his/her licences.

Customs Single Window Portal (e-Licences, e-Authorisations, e-Certificates)

The objective is to reach the point of having a paperless environment. All processes - from the submission of the request through to monitoring of the use of approved requests for Certificates, Licences and Authorizations – should be done electronically. This applies in principle to all Single Window types developed by the ASYCUDA Programme.

For example, the management and processing of electronic licences outlined in the previous paragraph implements a paperless environment: A trader submits a request for a licence or certificate to the relevant Management Authority in electronic format → The Management Authority processes the request and through a risk-management process adapted to each agency decides if the request is approved. If it is not approved, the trader is informed in an electronic format about the reasons for rejecting the request. If the request is approved, the licence or certificate is placed at the disposal of the Customs Authority (in this case) in electronic format. → After that there is no need to send the document in paper format. The approved document/ licence authorisation is already available to the Customs system. In the customs system, processing is totally automatic. The licence is cross-checked against the declaration (import/export – as applicable) and is written off. → The information is available to the trader who can monitor how his licence authorisation or certificate is used, and to the Management Authority that can monitor how all licences, authorisations and certificates issued are used. → In specific cases related to the implementation of international conventions, the Management Authority can automatically send the required information to an international body for monitoring and statistics.

The principles outlined above were fully integrated into what is called the ASYCUDA Single Window technological platform. A relevant example of its successful implementation is Gibraltar, where a **single administrative form** was created for all certificates, authorizations and licences, through a process of simplification, harmonisation and standardisation. Another example is the **e-Phytosanitary Certificate** which was developed with the Ministry of Economic Affairs, Agriculture and

Innovation in the Netherlands and is currently being **piloted** in Ethiopia for the export of cut flowers. The **e-Exemptions Certificates** have been implemented in Afghanistan, as an ASYCUDA Exemptions Module for International Trade. They are operational in a pilot phase in the Customs Headquarters in Kabul and in the Kabul Customs House. Future roll-out is planned in the Kabul International Airport Customs Office, and the Customs Houses of Jalalabad, Herat, Kunduz and Zaranj/Nimroz.

Electronic Crew, Passenger and Stores Declaration (Gibraltar)

Another relevant example is the **electronic declaration of crew, passengers and stores (eCPS)** implemented in Gibraltar. The electronic declaration facilitates **creation** (*Web forms; Full Desktop* – Java enabled desktop, *RIA* – Rich Internet Application Interface, *Light Desktop* – PDA or Smartphone light interface) **reception** (XML or UN/EDIFACT messages), **processing**, **exchange** and **distribution** of information between all interested parties.

Standardised information is collected via the Single Window (web form, XML or UN/EDIFACT messages) to ensure compliance with national laws relating to Customs, Immigration, Health and Wildlife Protection. → The details are sent to relevant control agencies for screening against their enforcement databases. Port, Immigration and Customs clearance must be completed prior going ashore.

Access to the system is controlled in order to protect personal data. This is regulated by the law on the protection of individuals with regard to the processing of personal data.

The **eCPS Declaration** form was built on international standards, as a combination of data elements from the following international forms:

- **Crew list** - Declaration regarding crew members aboard the conveyance; equivalent to ***IMO FAL* Form 5**.
- **Crew's effects declaration** - Declaration regarding personal effects of crew members aboard the conveyance; equivalent to **IMO FAL Form 4**.
- **Passenger list** - Declaration regarding passengers aboard the conveyance; equivalent to **IMO FAL Form 6**.
- **Ship's stores declaration** - Declaration regarding contents of ship's stores, i.e. goods intended for consumption by passengers/crew on board vessels/aircraft/trains, whether or not sold or landed; goods necessary for operation/maintenance of conveyance, including fuel/ lubricants, excluding spare parts/equipment, equivalent to **IMO FAL Form 3**.
- **Maritime declaration of health** - Document certifying the health condition on board a vessel, valid to a specified date; equivalent to WHO International Health Regulations 2005, Annex 8 – **WHO IHR Annex 8**.

The new e-CPS form was introduced to harmonize the information required by all control agencies. Information is provided in a more structured manner, by grouping related information:

- Part A: Registration details
- Part B: Craft details
- Part C: Voyage details

- Part D: Health protection
- Part E: Crew and passengers details
- Part F: Effects ineligible for relief from customs duties and taxes/subject to prohibitions and restrictions

Implementation of Inter-agency Business Processes and Multi-agency Risk-management

Another relevant example of successful use of the ASYCUDA Single Window technological platform is the implementation of effective inter-agency business processes and multi-agency risk-management in the border-control environment (effective Integrated Border Management).

The first one allows each Management Authority to provide the border-control agencies with updated and detailed information about the types of controls that have to be undertaken and the procedures to be followed. The multi-agency risk management allows a consistent approach to risk management in all border-control agencies and the organizations of effective simultaneous joint controls by all relevant border-control agencies. It provides each agency with the facility to define and integrate specific risk management and selectivity criteria for transit/import/export declarations, in a secure environment (not to be accessible to other agencies).

This includes the identification of the events where exchange of information between the border-control agencies should take place to verify the existence/validity/availability of supporting documents and their applicability to given border controls.

Chapter 17
CITES Electronic Permitting Systems: Ensuring Sustainable, Legal and Traceable Wildlife Trade

Juan Carlos Vásquez[18]

CITES

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international treaty and stands at the intersection between trade, environment and development. CITES-regulated trade is a multi-billion dollar business with Parties now issuing over 850,000 permits per annum. These permits effectively certify that the trade is both legal and sustainable.

Commercial trade is only prohibited for 3 per cent of wildlife species, such as the tiger. For the other 97 per cent trade is regulated to be sure it is legal, sustainable and traceable.

Illegal trade in wildlife is estimated by some to be worth up to 10 billion dollars per year and it is pushing many species towards extinction. Illegal wildlife trade now involves organized crime – which is well recognized by INTERPOL, the United Nations Office on Drugs and Crime (UNODC) and the World Bank. The value of rhino horn on the black market now exceeds the price of gold.

CITES is one of the core biodiversity conventions with 175 (soon 176 and 177) Parties. It was the first environmental treaty to enter into force with over 35 years of operational experience. It is well regarded and well known.

CITES has the world's most extensive collection of primary data on the sustainable use of biodiversity with over 11 million recorded trades, that national authorities have assessed as being legally obtained and not being detrimental to the survival of the species in the wild. This collection of data is available through the CITES Trade Database. Users are able to visualize trade patterns using the CITES Trade Dashboards.

CITES regulates commercial and non-commercial international trade in live/dead animals and plants, as well as their parts and derivatives. The CITES regulatory permit and certificate system offers Parties the means to implement, enforce and meet the obligations under the Convention more effectively. Bold steps are being taken to make the CITES permitting system and its business processes fully electronic with partners such as the World Customs Organization (WCO) and UNECE. It is working with international organizations such as Amazon Cooperation Treaty Organization (ACTO) and States (such as Brazil, Switzerland, the United Kingdom) to help CITES Parties to develop and implement the CITES e-permitting systems.

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[18] Juan Carlos Vásquez is Communication and Outreach Officer at the CITES Secretariat in Geneva.

Current activities that will impact on CITES

There are currently attempts to standardize the systems with the WCO Data Model, taking into account the other standards by IATA and UN/CEFACT and integrate the concept of the Single Window. A **CITES e-permitting toolkit** has been developed that was mapped to the WCO data model and UN/CEFACT standards. The CITES Secretariat submitted a Data Maintenance Request (DMR) to the WCO for inclusion of standards found in the CITES e-permitting toolkit with the WCO Data Model. The WCO Data Modelling Project Team recommended approval of the DMR with some minor revisions.

CITES Electronic Permits

Current Situation: Many Parties are establishing CITES electronic permit systems. Some Parties have asked about using electronic signatures instead of "handwritten signatures" (Resolution 12.3 Rev. CoP15). Some Parties are ready to use "fully electronic" CITES permit systems (Brazil and Switzerland are pioneers in this process). Others continue to rely on paper documentation. Some Parties are developing Single Windows. However, there is an urgent need to better link CITES with trade and commerce departments.

Problem: Many disparate independent systems are using different protocols and standards. This situation creates difficulties for the exchange of data, and for the development of interoperable systems. There is a need for harmonization with other initiatives, especially with the WCO data model and UN/CEFACT standards.

Decision 15.56 taken at the 15th meeting of the Conference of the Parties directed the Secretariat to: (a) update the CITES electronic toolkit according to new electronic permitting standards and norms; and (b) work with relevant international organizations and initiatives related to electronic permitting systems to raise awareness of CITES business procedures and permitting requirements.

CITES and other trade-related initiatives

CITES co-chairs with UNEP the Multilateral Environmental Agreements (MEA) Information and Knowledge Management Initiative (IKM). The MEA IKM initiative includes 18 Multilateral Environmental Agreements from 13 Secretariats hosted by three UN organizations. This project is discussing the development of a Single Window for those Multilateral Environmental Agreements at the intersection of trade and environment (such as CITES, the Basel Convention, and the Nagoya Protocol on ABS).

Next steps

Ensure that the CITES e-permitting toolkit continues to be compliant with international standards and norms (WCO and UN/CEFACT) and collaborate with trade-related organizations to build capacity in developing countries to ensure that CITES trade in species is legal, sustainable and traceable.

Part V

Other Models

Chapter 18
Maritime Transport Single Window Services in the European Union

Jukka Savo[19]

Europe 2020 is the EU's growth strategy for the coming decade. Its three mutually reinforcing priorities are smart, sustainable and inclusive growth. The strategy sets targets of a 20 per cent reduction in greenhouse gases, a 20 per cent improvement in energy efficiency and a three per cent increase in the European Union's GDP invested in Research and Development by 2020.

European Policy Context: Smart and Sustainable Growth

The Digital Agenda is a flagship initiative by DG Information Society, comprising eight pillars and 100 actions to improve the use of ICT in the European Union. Pillars II, V and VII are particularly relevant for the Maritime Transport Single Window.

Pillar II: Interoperability and Standards

The internet is a great example of interoperability as numerous devices and applications are working together from anywhere in the world. Europe must ensure that new IT devices, applications, data repositories and services interact seamlessly anywhere – just like the internet. The Digital Agenda identifies improved standard-setting procedures and increased interoperability as the key to success.

Pillar V: Research and Innovation

Currently, EU investment in ICT research is less than half of that of the United States. Under Pillar V it is planned to fund the development of a new generation of web-based applications and services that will include multilingual content and services (Action 54).

Pillar VII: ICT for Social Challenges

Digital technologies have enormous potential to benefit our everyday lives and tackle social challenges. The Digital Agenda focuses on ICT capability for example to reduce energy consumption and to deliver better public services. Action 89 intends Member States to make eGovernment services fully interoperable - overcoming organisational, technical or semantic barriers and supporting IPv6. Action 94 proposes a directive for the deployment of e-Maritime services.

Sustainable Growth

Sustainable growth implies energy efficiency and a better use of available resources. There are two flagship initiatives relevant for eMaritime in this area:

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[19] Jukka Savo is Policy Officer at the Directorate General for Mobility and Transport, Maritime Transport and Logistics of the European Commission. http://ec.europa.eu/transport/maritime/index_en.htm.

Resource-efficient Europe

The flagship initiative for a resource-efficient Europe under the Europe 2020 strategy supports the shift towards a resource-efficient, low-carbon economy to achieve sustainable growth. Three strategic papers will address this in the area of transport: a White Paper on the Future of Transport, the Strategic Transport Technology Plan and the Trans-European Networks for Transport (TEN-T) revision.

An industrial policy for the globalisation era

The European Union needs an industrial policy that will support businesses – especially small businesses – as they respond to globalisation, to the economic crisis and to the shift to a low-carbon economy. The policy will support entrepreneurship to make European business fitter and more competitive and cover every part of the increasingly international value chain from access to raw materials to after-sales service.

The European transport, energy and communication infrastructure and services will be upgraded to serve industry more efficiently, taking better into account today's changing competitive environment.

Managing the increase in maritime traffic

The volume of containers handled in the main European ports is estimated to increase from 85 million in 2007 to around 145 million TEUs in 2025. The number of port calls will rise from 1.4 million in 2009 to roughly 1.9 million by 2025. Transport is expected to grow by 400-800 per cent by 2050.

An estimated 80 per cent of European trade is done through maritime transport. The main ports are already reaching their limits with the current infrastructure. There is therefore a need to ensure increased efficiency to cater for increased volume. Moreover, congestions and fuel cost are expected to grow significantly by 2030, which calls for optimisation for the cargo flows.

White Paper on the Future of Transport

The White Paper on the Future of Transport sets goals for competitive and resource efficient transport. One of its main goals is to optimise the performance of multimodal logistic chains, including making greater use of more energy-efficient transport modes.

It is planned that by 2030, 30 per cent of road freight over 300 km should shift to other modes of transport (over 50 per cent by 2050). A fully functional and EU-wide multimodal TEN-T 'core network' should be in place by 2030. By 2050, all core network airports should be connected to the rail network and all seaports to the rail freight and, where possible, to the inland waterway system.

How to do it?

The EU aims to create a genuine **Single European Transport Area** by eliminating all residual barriers between modes and national systems. This is promoted through the **eMaritime** initiative for paperless and intelligent shipping. Innovation is one of the

important areas of action. EU research needs to address the full cycle of research, innovation and deployment in an integrated way. Furthermore, the EU transport infrastructure policy needs a common vision and sufficient resources. The costs of transport should be reflected in its price in an undistorted way. Finally, opening up third country markets in transport services, products and investments continues to have high priority.

Around 30 billion Euros financed by the Cohesion fund and other funds will be invested in infrastructure developments in the framework of the Connecting Europe Facility. A lot of these investments will be directed to intelligent transport systems and ICT. The EU is pursuing a dual-layer approach for infrastructure: comprehensive (national-level links) and core networks (corridors across Europe). **The new Trans-European Transport Network (TEN-T) Guidelines 2014-2020** call for the "deployment of information technologies in order to simplify administrative procedures, provide for cargo tracking and tracing, and optimise schedules, traffic and cargo flows".

While the White Paper 2001 emphasised a *modal shift*, and the Mid-term Review 2006 *co-modality,* the **White Paper 2011** aims at *full modal integration*. It is no longer so important what transport means is used, but rather that there is a logistic chain that is fully accommodated. That is implemented through Single European Transport Area in which all residual barriers – between modes and between borders – are eliminated.

Meeting the challenge

In Maritime transport there are two problems: first, a **lack of interoperability** between various systems and lack of harmonisation between different systems; and second, there are **sometimes no ICT infrastructures in place**. Studies are showing that about 40 per cent of the 1,000 ports in Europe are still using fax and email as their exchange methods. Furthermore there is a need for other means, including legislation, to discuss and agree on how data should be shared and used. The EU addresses this challenge through the e-Maritime initiative.

The **e-Maritime initiative** is meant to support B2A, A2A, A2B and B2B information sharing. This will be done though:

(a) **Knowledge sharing.** An industry forum will be set up at which these issues will be discussed.

(b) **Standardisation.** The topics identified in the Forum as needing standardisation will be submitted to an industry committee which also established by the EU Commission together with the industry. The standardisation is then done through the standardisation bodies where needed.

(c) **ICT infrastructure funding.** Funding will be channelled through TEN-T and Regional funds to build the infrastructure where it is missing or to make it interoperable where it is in place.

(d) **Research** on intelligent use of data and traffic optimisation will also be funded.

The first step has already been taken. The **e-Maritime Reporting Formalities Directive (2010/65/EU)** adopted in 2010 obliges harmonized Single Window services for obligatory vessel reporting in the European Union in order to simplify and harmonize the administrative procedures.

By 1 June 2014 every EU Member State should have a Single Window in place for maritime vessel reporting. For this purpose, an expert group was established with representatives from different Member States as well as from industry (including the European Port Community System Association).

The EU eMaritime takes into consideration the EU eCustoms initiative whose aim is to harmonize the electronic customs procedures, and the EU eFreight initiative, which aims at improving the transport of goods through multimodal logistic chain by improving the exchange of cargo-related information.

The expected e-Maritime **benefits** are:

- a reduction in administrative burden for vessels
- availability of data for value added services
- economies in scale from standardisation
- improved efficiency in ports (estimate that port efficiency can be increased by 20-30 per cent if ports are adequately equipped)
- increased attractiveness on maritime transport through better predictability of cargo flow
- maritime pillar for multimodal transport chain
- integration of global logistic chains
- reporting formalities will be easier to manage with 23 harmonized systems.

Chapter 19
The Role of Port Community Systems in the Implementation of National Single Windows

Pascal Ollivier[20]

Definition

A European Port Community System (PCS) can be defined as a "neutral and open electronic platform enabling **intelligent** and **secure** exchange of information between public and private stakeholders in order to improve the competitive position of the sea and air ports' communities; it **optimizes, manages and automates** port and logistics efficient processes through a single submission of data and connecting transport and logistics chains."

The European Port Community Systems Association (EPCSA)

EPCSA was established in September 2010. Its mission is to "influence public policy in the European Union level in order to achieve e-logistics throughout all European ports, operating as a key element of the EU maritime, shipping and logistics industry."

Founding members

SOGET	– Le Havre, France
Portbase	– Rotterdam, Netherlands
dbh	– Bremen, Germany
MCP	– Felixstowe, United Kingdom
PORTIC	– Barcelona, Spain
DAKOSY	– Hamburg, Germany

Associates members

APCS	– Antwerp, Belgium
Hamburg Port Authority	– Hamburg, Germany
Bilbao Port Authority	– Bilbao, Spain
Venice Port Authority	– Venice, Italy

Core objectives

The first objective is to ensure that the importance of Port Community Systems Operators is recognised in the European Union and its Member States and that the sector is consulted substantively on any measure likely to affect it. At a time where the information management of supply chains is dramatically changing at the global level, any measure that the European Commission might take needs to be discussed.

Second, EPCSA wants to ensure that European Port Community Systems operators play their full part in delivering e-freight all over Europe.

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Third, EPCSA wants to promote the highest possible standards in European Port Community Systems. Finally, EPCSA wants to encourage all European ports communities to be proactive in Port Community System development.

Technical Groups

For that reason, a number of technical groups were created. These cover topics such as (1) standards and technologies (chaired by the Portbase/Netherlands), (2) business applications (managed by DAKOSY/Germany), (3) customs and other government organizations (managed by the MCP/UK), and (4) European Port Community Systems Development (Europe, International Affairs).

At the European level, interoperability is very important. Discussions with Asian, African and American Port Single Windows would be welcome.

In June 2011, EPCSA published a White Paper on the role of Port Community Systems in the Implementation of National Single Windows. The paper notes that Port Community Systems (PCS) are Port Single Windows.

Port Community Systems are acting as Port Single Windows

PCS are acknowledged as the most advanced method for exchanging of information within a single or national port community infrastructure. PCS have a commitment to facilitate single submission of data, and develop infrastructure and interconnectivity as well as activities in areas of legal frameworks, standardization and harmonization in international trade. PCS provide the Port Community Environment with a tightly integrated system that encompasses exports, imports, trans-shipments, consolidations, hazardous cargo and maritime statistics reporting.

Today PCS are Port Single Windows. The European story differs from the Asian story. In Europe, Port Single Windows have been in place for the past 30 years. Single Windows were not developed as Customs Single Windows but to manage ports and supply chains. Now it is time to integrate the Port Community Systems within the National Single Window.

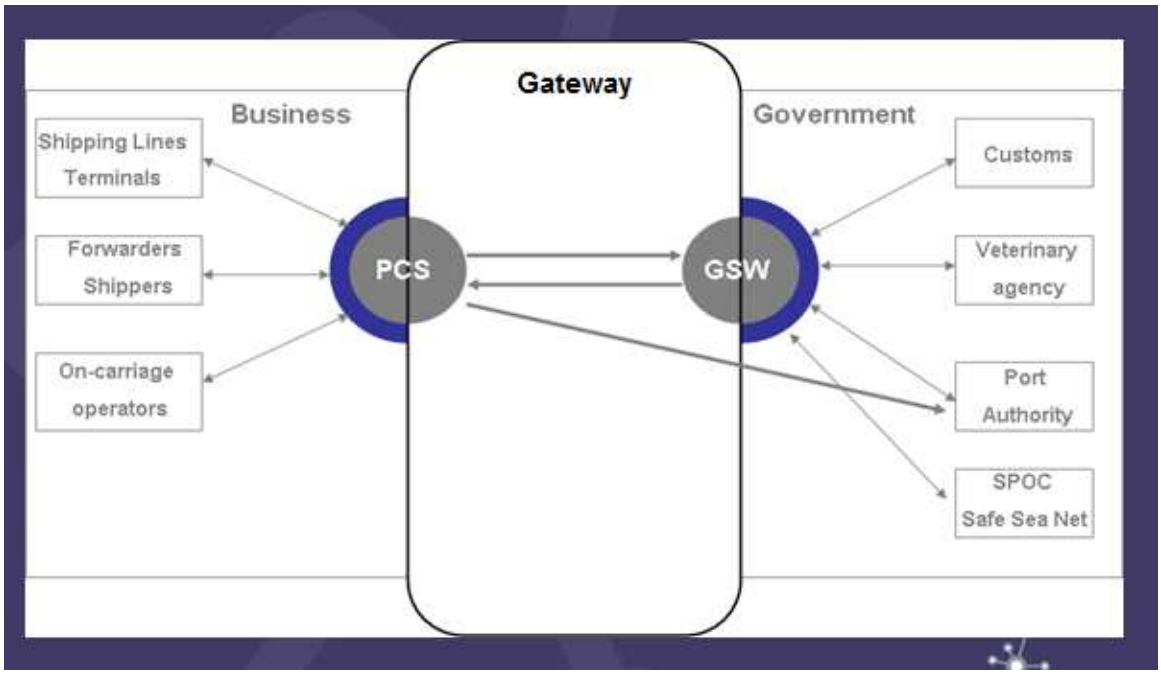
Port Community Systems are a Gateway to the National Single Window

Where no automated processes are in place, a PCS is ideally placed to form the foundation or backbone of the National Single Window. Integration can create optimal benefits for all stakeholders involved. The investment for governments would be minimal. The PCS can be extended to another air, sea or inland port, and customs declaration performed before exiting the gate.

In a Single Window you get B2G, G2B, and it is important not to forget that you need to have B2B. Government institutions cannot manage B2B processes and this would not be accepted by the private sector.

Therefore, as shown by the figure below, there is no full integration. The PCS is depicted as a Port Single Window in one end in inter-connection with the government Single Window managing the government-to-government business processes.

Figure 19.1 – PCS – a Gateway to National Single Window



Providing Data Integrity to Government and Business

EU Initiatives and Change in Information Management in the Supply Chain

Information management in the global supply chain has dramatically changed in the last two years. This has been due to the introduction of new directives by the European Commission. The **Import Control System (ICS)** by the European Commission is a safety advance cargo information declaration which now applies for all modes of cargo (ICS Phase 1/since 1 January 2011).

The implementation of ICS was very difficult. All ocean and air carriers have to change the way they manage information at the global level to provide information to countries in the European Union. EPCSA is now working with the European Commission and the industry on phase II. A problem associated with ICS is that although there are 29 data elements, the information on shipper and consignee needed for risk management is not available. EPCSA is working with the EC on new pilots to match data coming from the freight forwarders and the non vessel operating common carrier (NVOCC).

In the implementation of **2010/65 Directive on Vessel Reporting Formalities** by June 2015, the PCS can act as a foundation platform, clearing centre, and trusted third party to develop this Maritime Single Window for Europe. This would avoid double input/notifications by the economic sector and achieve additional process optimization in the ports.

In conclusion, the supply chain in Europe has been managed for decades. The next decade will be about inter-connecting the Government Single Window with the supply chain.

Part VI

The Future of Information Sharing

Chapter 20
The Data Pipeline Vision: Towards a Generation of Smart Single Windows

Yao-Hua Tan[21]

The vision of a 'data pipeline' is the vision of a virtual, seamless, and electronic data pipeline that links the buyer and the seller to assist them in their commercial transactions, their logistics operations and their regulatory responsibilities. The concept offers an innovative approach to the exchange of data throughout the international supply chain, as a prerequisite to further establishing secure and reliable supply networks for business and government.

The Single Window is a one-time provisioning of business data to all government agencies. In most countries there are ten to twelve inspection agencies cross-border in addition to Customs, including food and safety/security. The Single Window typically operates via an online portal provided by the national governments.

Many Single Window operators are considering the next steps in Single Window development, particularly with regard to the models through which information can be collected and exchanged between Single Windows. The data pipeline concept represents a unique opportunity for business and governments to rethink redefine and redesign the way in which data is exchanged throughout the entire international supply chain – both from an operational and a regulatory perspective.

Strategic Customs topics in trade facilitation

Three issues are of strategic concern in current thinking on trade facilitation, and are central to the data pipeline concept.

First, **System-Based Control,** which is on the agenda of both the World Customs Organization and the European Commission**.** It involves moving from transaction-based control - that is checking and collecting all the data of specific container shipments - to checking the underlying systems in the company, in particular its enterprise information systems, for instance by collecting business data about the shipment directly from the consigner that was sending the container.

Second, the concept of the **Authorized Economic Operator** (AEO) and the very similar "Trusted Trader" concept in Asia (China, Japan) demonstrate the status of a trustworthy and compliant business in the context of risk management and trade facilitation. The particular benefit of a Trusted Trader Certificate is '**Green Lane' treatment** through which physical inspection and checking at the border can be reduced. This is beneficial to all, not just to trade but also to the Government as it reduces the resources to do physical inspections.

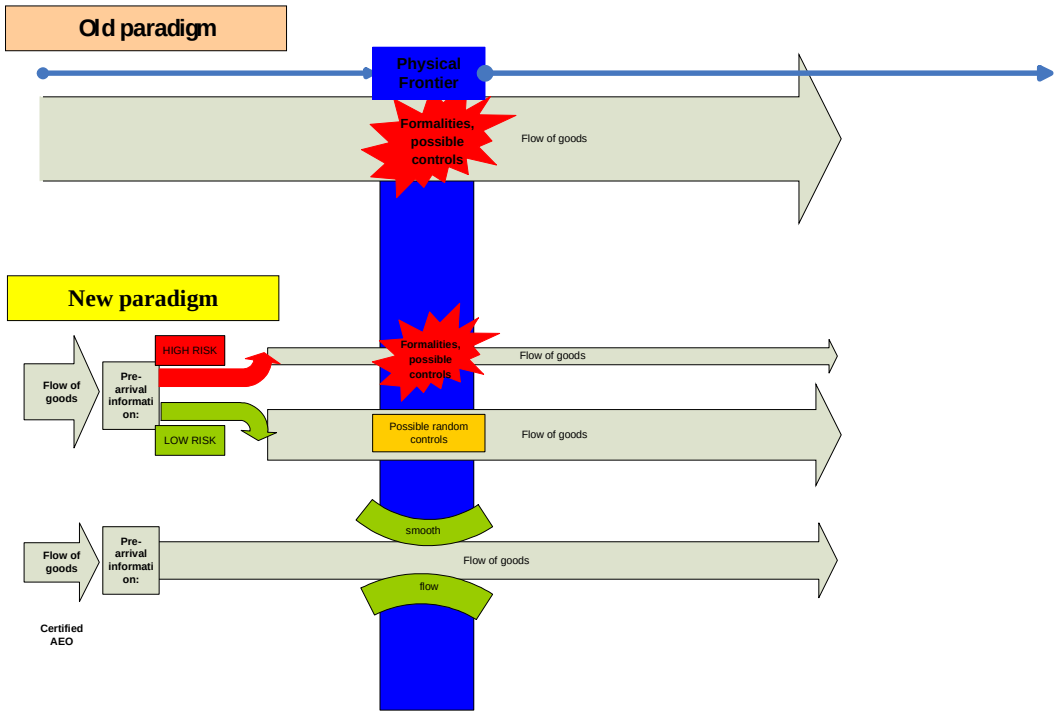
[21] Summary based on the presentation by Professor Yao-Hua Tan, Professor of Information and Communication Technology of the Delft University of Technology and the discussion paper "The Data Pipeline" prepared by Eveline Stijn, David Hesketh, Yao-Hua Tan, Bram Klievink, Sietse Overbeek, Frank Heijmann, Markus Pikart and Tom Butterly. The full paper is included in Annex 3.

Third is the issue of **Coordinated Border Management**. Customs controls need to be integrated with other inspection agencies, including security, food safety, and agricultural controls that need to be coordinated between the different agencies. Another issue needing coordination is indirect taxes, particularly in the EU, where indirect taxes such as VAT and Excise are treated separately from Customs duties.

Research found that almost 40 per cent of the delay time at large main ports is caused by uncoordinated inspections at the border. Goods may be cleared for Customs purposes but then the container is still held back for days or weeks because there are additional inspections (e.g. food and safety) which add much time if uncoordinated. Coordinating inspections is one of the most important issues.

The data pipeline proposes to push controls away from the border through green-lane treatment (illustrated in Figure 1).

Figure 20.1 – "Virtual" Border: Pushing controls away from the border



Slide: Walter Deffaa, Director-General, DG Tax and Customs, European Commission, 11th European Customs Conference, 17 November 2011, Lyon

In the "old paradigm" above, cargo approaches the border and is controlled by all inspection agencies which causes waiting times and delays at the border.

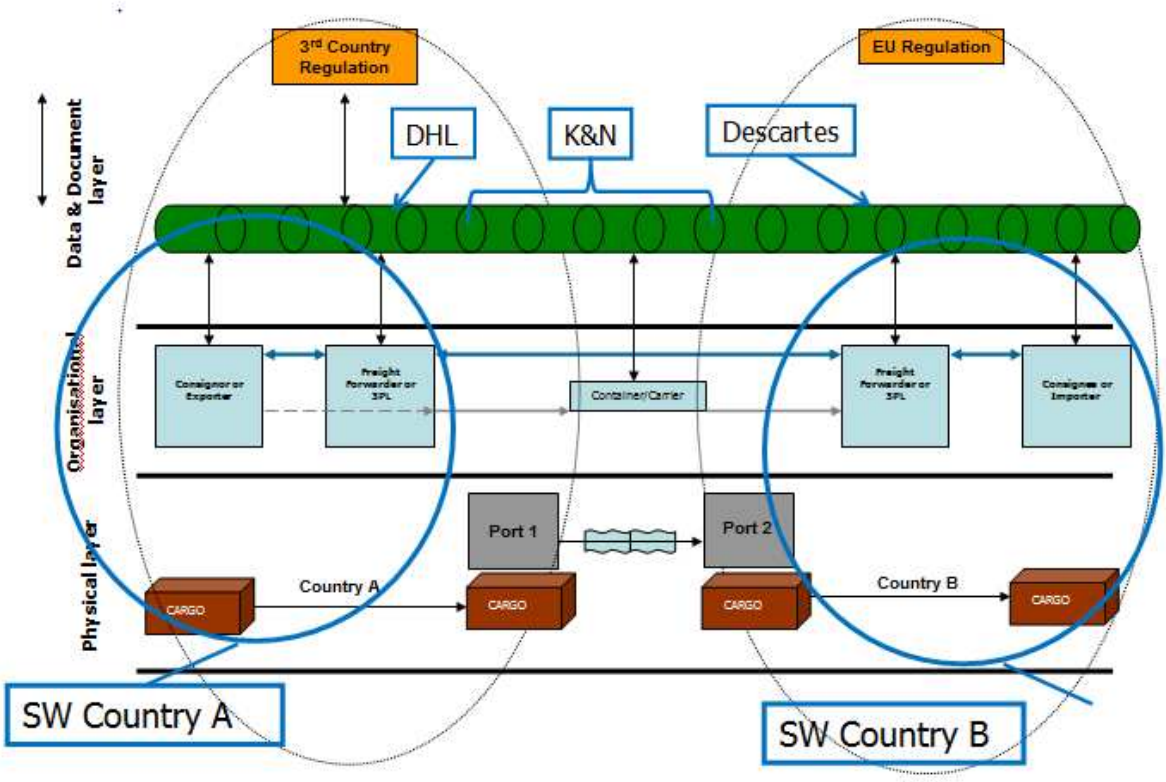
In the "new paradigm" a risk-based approach is pursued that differentiates between high and low-risk trade streams. This decision is made on the basis of pre-arrival or pre-loading information. The United States, for example, requires cargo manifests 24 hours in advance. This model differentiates between a green "low-risk" lane and a red lane where we still have many traditional inspections.

The third line is the full "green-lane" treatment that is being explored to push away controls from the borders. Inspections are not minimized but are either effected before goods are loaded (at which point a risk assessment on whether further inspections are necessary can be done) or after the border (post-clearance). Fiscal matters can be dealt with at the end, but safety and security need to be dealt with in the beginning.

Data Pipeline: Future Customs and International Trade Systems (David Hesketh, Customs-UK and Frank Heijmann, Customs-NL)

The basic idea for the Data Pipeline for Future Customs and International Trade Systems came from David Hesketh (Customs-UK) and Frank Heijmann (Customs-NL). It is currently being developed as an evolution of the Single Window in the Rotterdam-Shenzhen Living Lab.

Figure 20.2 – The Trade Data Pipeline



Underpinning principles of the data pipeline

Piggybacking

Two core principles underlie the concept of the integrated data pipeline. The first – the "piggybacking" principle - is that the original trade data (usually supplied by the consignor) is gathered and shared and can be used by (authorized) parties in the trade network to improve their operations. Available business data and data flows are re-used in the international supply chain for purposes different from those for which they were originally intended, including for control and (regulatory) compliance purposes.

The parties participating in a supply chain provide data that can be of relevance to other supply-chain parties in a shared information space. The management, access and security of information in such a space can be ensured using different technologies and approaches—for example, web services and cloud computing technology. It is evident that access to this information is regulated and based on dedicated access rights.

The piggybacking principle within the data pipeline concept involves a fundamental shift from a document perspective to a data perspective. Instead of sending (pushing) documents with filtered information from one party to another, the government parties will rather access (pull) the information required when they need it.

In the traditional document-focused process, data is "pushed" by business to a variety of government agencies through the obligatory documents and submitting data to the government information systems. Instead of this "data push" model, the radical change proposed here is the transformation towards increased "data pull" - where the government agencies requiring information can "pull" these from the existing information systems of companies.

The key advantage for government agencies would be that they would obtain "original" quality data from the source. They can obtain the data any time, in real-time, rather than only at the moment of border-crossing, thus improving compliance management and risk-based auditing.

Synchronization points

The second core principle in the integrated data pipeline concept is the notion of synchronization points that determine when shared information must be available to parties in international transactions. The supply-chain process includes two critical information points. The first is the sales agreement between the buyer and seller, where an accurate description of the goods and terms under which they are to be bought and shipped, is captured in the purchase order and contract of sale. The second is at the completion of the consignment, where the packing list, shipping note or dispatch note and the transport document show that the goods have started their journey along the supply chain, in accordance with the order and contract.

Trade Facilitation Innovation: ITAIDE and CASSANDRA[22]

The European Union has provided financial support for two large-scale projects in trade facilitation. ITAIDE (Information Technology for Adoption and Intelligent Design for e-Government) was partially funded by the 6th Framework Information Society Technology Programme to address the key challenges related to security, fraud and very high transaction costs in international trade. CASSANDRA (Common Assessment and analysis of risk in global supply chains) is partially funded by the European Commission's Seventh Framework programme for Security.

One pilot project under the ITAIDE project highlighted the potential for piggybacking. A pharmaceutical company exported the active ingredient for insulin from Ireland to the

[22] For more information on the CASSANDRA project, visit www.cassandra-project.eu; For more information on ITAIDE, visit www.itaide.org.

United States. Each package was worth 1 million USD. According to the rules of the FDA and the USDA, the company had to be able to show that during transport the temperature never went above 8 degrees Celsius. In order to do so, they had a complete tracking and tracing system in place that was constantly monitoring what was happening to the cargo. This kind of internal control procedure already developed by companies can be drawn upon for security checks.

The Cassandra Project started in 2011 and extends the concept of ITAIDE in new ways – in particular through the data pipeline. A system-based approach is again central. Businesses should be trustworthy and only qualify as trusted traders if they are "proven-in-control". This is implemented through internal controls and appropriate IT systems.

The piggyback principle is applied in that Customs can re-use high-quality data from businesses in the supply chain. Current data (Manifest, Bill-of-Lading etc.) is often produced by the logistic service provider and around 60 per cent of the data is not accurate enough for advanced risk analysis/business intelligence. It is better to get the data directly from the source (from the consignor) and to re-use business's own control data and business intelligence for Customs and tax-control purposes for instance by re-using purchase order and (electronic) invoices.

Once this is done, it makes sense to enable Customs authorities worldwide to access business data of companies. This would enable a better exchange of risk data between governments and businesses via a data pipeline. This includes the exchange of high-quality (source) data via an inter-connected network of public and private data processing organizations. Among the key players are Port Community Systems such as Portbase (Rotterdam), MCP (Felixstowe), Dakosy (Hamburg), DBH (Bremen), and Portic (Barcelona); Government Single Window initiatives such as e-Port (in China) or Digipoort (in the Netherlands), and Supply Chain Management software providers such as Descartes, and GT-Nexus.

The EU CASSANDRA Project is starting up a number of pilot projects with Customs administrations in the European Union, including the Netherlands, the United Kingdom, China and the United States. These pilot projects for Customs innovation have typically shown very strong partnership between customs and trade. Companies, especially multinationals, are actively participating in these pilots to become trusted traders and to obtain the AEO certificate. Due to earlier EU research projects such as ITAIDE there are also strong partnerships established between Customs, universities and (applied) research institutes. The European Commission is considering setting up an academic programme for Customs organizations in Europe in which this knowledge of ICT innovation will be an important element.

Drivers for Innovation

Among the key drivers for the development of a data pipeline innovation is management support. This kind of innovation is only possible with top management support, from trade as well as governments, in particular to have high-level innovation advisors in key positions in the government (such as David Hesketh and Frank Heijmann). Partnership between trade and Customs is important. Real committed support from the trade is needed and willingness to invest in this kind of innovation. Experience through ITAIDE and CASSANDRA has shown that most multinational

companies in the United Kingdom and the Netherlands are willing and able to participate in innovation pilots with Customs.

Benefits

It is estimated that 40 per cent of delay time at large main ports is caused by uncoordinated inspections at the border. An initial estimate is that the data pipeline can help reduce this to 4 per cent by pushing controls away from the border through system-based controls.

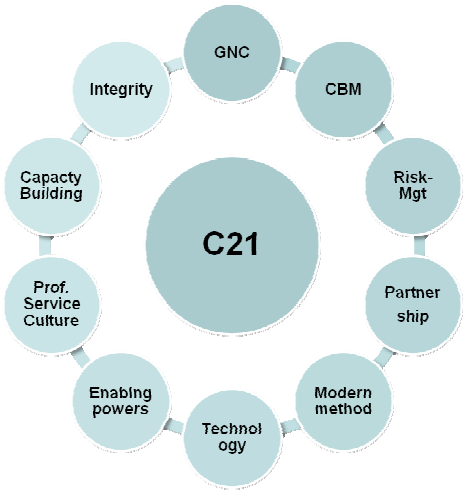
Key Challenges

- The data pipeline needs to be developed on the basis of international Data/Message standards such as the UN/CEFACT Core Components and the WCO Datamodel V.3.
- Interoperability of key software providers such as Descartes, GTNexus, SICIS, DHL, Kuehne and Nagel needs to be ensured in the development of the data pipeline.
- There needs to be a transformation from a "document perspective" to a "business data perspective". This means that data models should be based on business process models. An example is the 'Buy-Ship-Pay' model.
- The data pipeline should be collaboratively developed by all stakeholders through a public-private partnership between business, Customs, and IT providers. The Data Pipeline should be a business-driven innovation – 95 per cent built by business and 5 per cent by government. To make this happen is the real challenge and it is necessary to create the right incentives for business to move in.

Chapter 21
Customs in the 21st Century

Gareth Lewis[23]

Customs in the 21st Century is the strategic roadmap into the future of the World Customs Organization (WCO)[24]. In a nutshell, it comprises 10 interlinked and integrated building blocks.



This contribution focuses on the first and second building blocks of the whole strategy: Globally Networked Customs (GNC) and Coordinated Border Management (CBM). It will also cover intelligence-driven risk management, which underpins all WCO activities: including procurement, human relations, or any aspect of modern customs management (in particular at air and sea ports).

Globally Networked Customs

The idea of Globally Networked Customs (GNC) refers to "an inclusive, interconnected Customs-to-Customs information-sharing system to support and improve the functioning of the international trading system, national economic performance and the protection of society and fiscal management. A GNC will support the goals of the ten C21 building blocks, reduce the compliance burden for legitimate traders, and enhance enforcement through the sharing of information and intelligence".

Such a system could enable deeper Customs-to-Customs collaboration to facilitate trade and suppress transnational crime. It could facilitate deeper collaboration between Customs and trade to manage supply-chain logistics. It would facilitate legitimate trade and enhanced real-time communication between Customs administrations to share information and intelligence. This, in turn, would contribute to suppressing illicit activities.

The GNC is not an IT system *per se* but rather a systematic approach to the exchange of information that is based on protocols, standards and guidelines. It is consistent with the overall direction of the WCO and is already happening. An estimated 50 WCO members are already exchanging information for transit and other purposes. The objective is now to put some boundaries and standardization to that procedure.

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[23] Gareth Lewis is Senior Technical Officer in the Compliance and Facilitation Directorate at the World Customs Organization.

[24] The World Customs Organization (WCO) represents the 177 governments who agreed to the Convention known as the WCO and that are typically represented by the Customs organizations. WCO is based in Brussels. For more information, visit www.wcoomd.org.

Coordinated Border Management

Coordinated Border Management is the second key objective of the Customs of the 21st Century roadmap. There is no single definition. Coordinated Border Management has been defined differently depending on the interests and priorities. While many organizations and documents refer to the concept as "Integrated Border Management", the term "Coordinated Border Management" is used by WCO as it gives prominence to the principle of coordinating policies, programs and delivery outcomes whilst avoiding any perception of favouring a single solution.

In the WCO context, Coordinated Border Management refers to "an approach to manage borders involving public service agencies working across portfolio boundaries in a coordinated manner to achieve a shared goal thus providing a cohesive government response to the challenges of border management." Its objective is "to facilitate trade and clearance of travellers at the same time ensuring secure borders and enhanced compliance with all regulatory requirements." This involves coordination, cooperation and communication both at national and international levels.

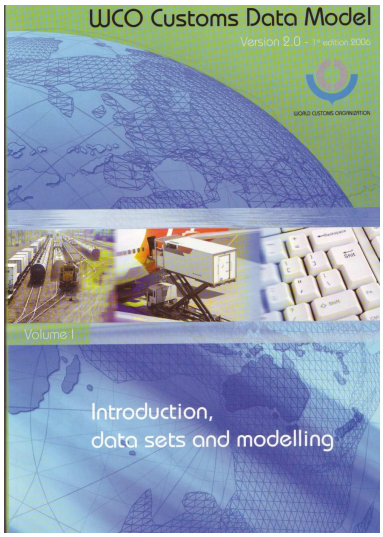
It has both tangible (real-world) and intangible (informational) aspects to it. The tangible side includes one-stop border posts and the degree of real-world coordination and cooperation that can happen at land borders or elsewhere amongst Customs but particularly between Customs and other border regulatory agencies. CBM is absolutely critical to more effective and efficient supply chains, transit, and import and exports as well.

Single Window

Arguably the Single Window belongs in the intangible, informational category. It is an example of coordination amongst the border agencies. Trade-related information is largely collected by Customs but also by a myriad of other agencies. The main distinction between the WCO and the UN/CEFACT Recommendation 33 is that we have decided that it is important to add the word "intelligent" to the general definition to distinguish the Single Window from a portal: a "Single Window is a cross border, 'intelligent', facility that allows parties involved in trade and transport to lodge standardised information, mainly electronic, with a single entry point to fulfil all import, export and transit related regulatory requirements".

The Single Window offers a single point of data submission, transmitted to appropriate authorities. The data is submitted once and can be re-used many times. It offers a single point of response, data standardization/harmonization, combined online transactional status and online report capability.

WCO Data Model Version 3



The WCO Data Model was developed in conjunction and alignment with UN/CEFACT. It is not only a Customs Data model. It reflects the requirements of many other border agencies from many countries. Therefore it is a standard from which data harmonisation and Single Windows can be developed.

One important and critical issue within the world of Customs relates to the use of advance information; for example in the case of air cargo. With the events in Yemen, in October 2010, there has been a lot of activity by a number of organisations in order to look at the information that Customs gathers. The advance electronic information can be used to better secure the supply chain. A data standard of this kind provides a language with which all the key stakeholders can exchange information.

The WCO Data Model is a product which consists of various components. The harmonized maximum data sets are the first component and are the basic building blocks which form the data model. There are around 450 individual elements such as vessel name, description of goods, dates, parties, locations, etc.

The Message Implementation Guidelines are rules for constructing EDI messages for computer to computer exchanges using these elements. These rules are similar to the grammar and syntax rules used in language, whereas the data elements are like words. The information can be exchanged in EDIFACT or XML messages.

The WCO Data Model supports the use of both information and business models as basic building blocks of the Data Model. The business process models are based on the procedures described in the Revised Kyoto Convention.

Finally, the WCO supports the use of coded data wherever possible, particularly international codes such as those supported by UN/CEFACT Recommendations No. 5, 7, 15, 16, 20, 21 and 28.

Chapter 22
Opportunities and Challenges in Express Supply Chains

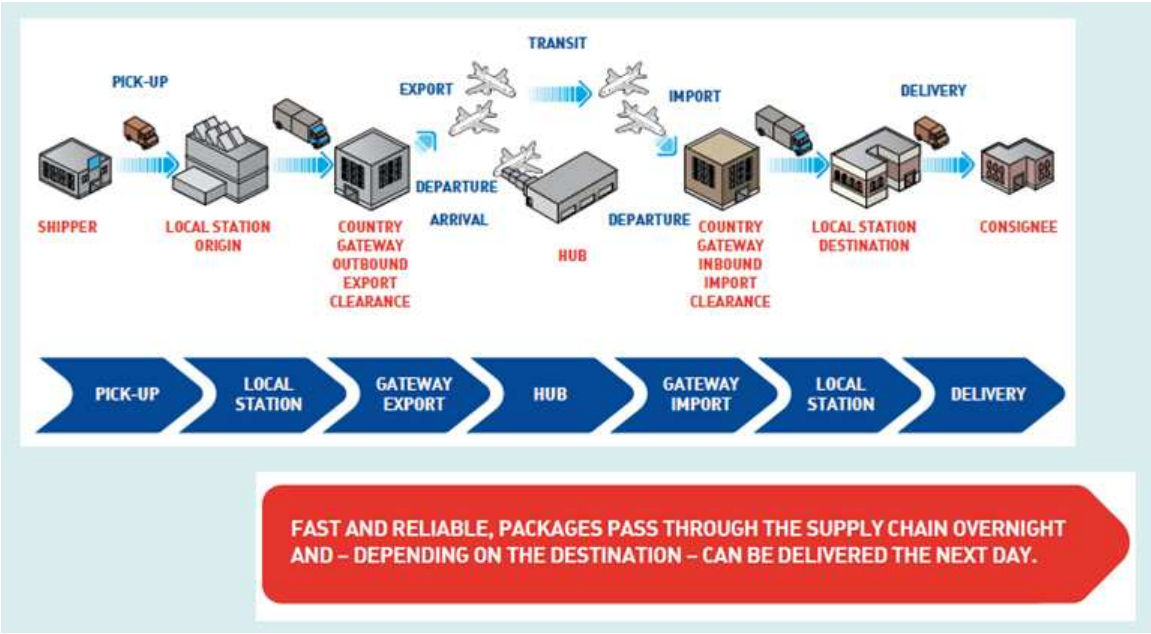
Carlos Grau Tanner[25]

Express Delivery Services are essential for international trade. They service industry globally, are embedded in global supply chains, and are an integral part of companies' business models. Their customers demand a global logistics solution that assures reliable delivery of time-critical consignments in a transparent and secure environment.

Express Delivery Services effect 30 million shipments daily in 220 countries and territories, involving 1,700 airplanes, 200,000 ground vehicles, and employing over one million direct employees globally.

The express industry utilizes sophisticated line haul networks to collapse the time and distance between places thereby globally connecting business. Express Delivery Services offer door-to-door services ***from*** anywhere, ***to*** anywhere, delivering between overnight and 48 to 72 hours. Delivery time depends on a variety of circumstances, particularly border crossing. This is where the Single Window becomes crucial for the business proposition as the time needed to cross the border is out of business control.

Secure supply chains



The graph above depicts a typical supply chain in the Express business model from pick up to delivery (door to door). The beauty of this business model is that it is in control of a single entity from start to end. It is a combination of physical transport and of information technology. This is best symbolized by the bar code that each individual shipment carries. The bar code is linked to an electronic record that contains all the information necessary for conveyance and border-crossing of that individual shipment. The integrity of shipment and the dataset are controlled by a single entity.

[25] Carlos Grau Tanner is Director General of the Global Express Association.

Security is in the DNA

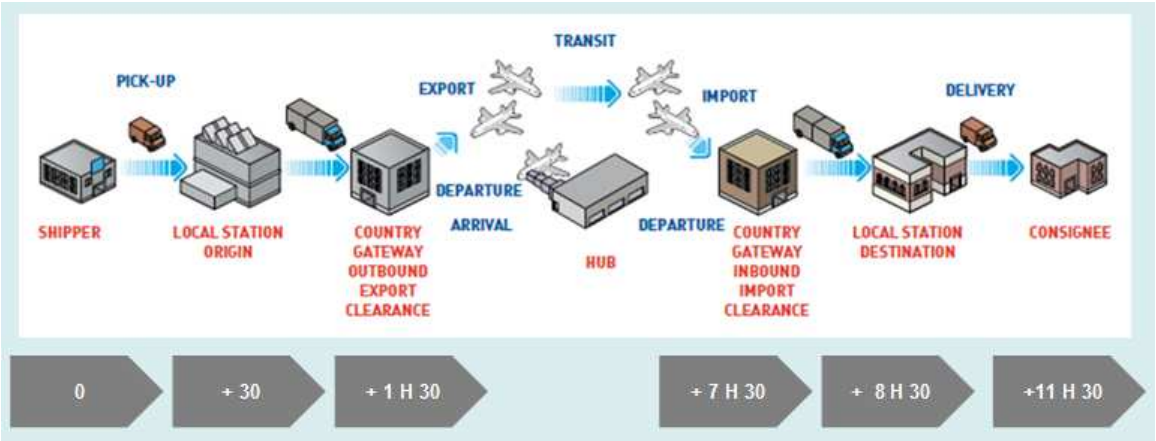
A key feature of security in the Express delivery chain is that the shipment is secure and safe from start to end, ensuring that there will be no "unlawful interference".

The Express industry has established enhanced processes and procedures that ensure a secure and compliant supply chain. This is achieved through compliance with international legislation (Annex 17 ICAO, Doc 30 ECAC, Reg 185/2010, and Decision 2010/774). Significant investments have been made in facility security and inspection systems that are supported through an internal audit programme. Global training programmes and procedures are in place.

Left: Memphis Hub: handling over a million shipments every night; above: DHL gateway in Hong Kong, SAR. Huge investments in perimeter and access control.

Threat-based risk-managed approach for high risk shippers

Security measures include physical inspections and, where possible, CCTV observation. Audited packages still undergo screening and are compared with accompanying invoices, examining description and value. ID information is retained where this is legally permissible.



The Speed of the Express Business is the result of highly integrated IT systems and data integrity from origin to destination.

Summing up, the Express Delivery business model relies on integration in the supply chain. It is a specialised business model as one single entity is in control of the entire supply chain.

Challenges

Single Window requires more than aligning government IT systems and access channels. It also requires aligning business processes such as Coordinated Intervention at the border.
The 2009 Time Release Study in Japan revealed an additional 1.6 days of dwell time for sea cargo when other agencies get involved. There is a need for risk management, formal and regular consultation with the industry, as well as release and pre-arrival processing.

The 2009 Time Release Study in Japan concluded that release time for air cargo is reduced by 1 day in a pre-arrival scenario. Moreover, *de minimis* values and the separation of release and clearance are important. Express carriers are integrators and can provide a single quality data input to single windows. But they expect a single and fast response in return.

For the Express Delivery Industry, it is not only speed but guaranteed time that matters. The worst answer to give to clients with respect of delivery dates is “we don’t know” or “it depends”. The Single Window is therefore very important for the business, as border crossing is the one factor that cannot be controlled in the process.

Electronic processing and pre-arrival processing are clear benefits that Single Windows bring to business and a country’s economy. But a Single Window is more than just a portal connecting government authorities. If the various authorities have not coordinated themselves beforehand, the Single Window will not work. A well-functioning Single Window on the other hand is a factor of success with benefits for all involved.

Chapter 23
Transforming the Air Cargo Supply Chain

Desmond Vertannes[26]

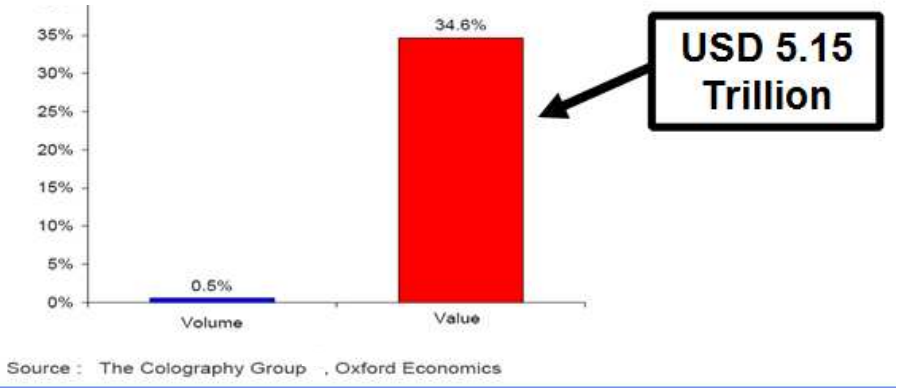
About IATA

The International Air Transport Association (IATA) is the industry's global trade association. Founded in 1945 with 230 members in 130 countries, it represents 84 per cent of global air traffic. Its mission is to represent, lead and serve the air transport industry. In Cargo, IATA takes a supply chain approach to all its initiatives, with an aim to benefit all parties (airlines, forwarders, governments, Customs and shippers). IATA delivers standards and solutions to ensure a safe and harmonized air transport system. IATA's vision for cargo is to foster a safe, secure, reliable, efficient and profitable air cargo supply chain.

The value of Air Cargo

Air Cargo generates 66 billion US$ in revenue for IATA members annually and is also a main catalyst that drives global trade. Reliability and predictability are key to maintaining such a vibrant industry. Air Cargo moves less than one per cent of volume of global trade but 35 per cent of its value.

Figure 23.1 – Proportion of global trade transported by air



The critical value of air transport becomes clear when it is not there, as for example in the case of the recent volcano eruption in Iceland when the air space was closed in Europe.

Shifting epicentre of air cargo

The emergence and expansion of Brazil, Russia, India, China and South Africa as major consumer markets will shift demand and lead to more balanced trade flows in the air cargo industry. We are already seeing this in China and to some extent in India. The

[26] Desmond Vertannes is Global Head of Cargo at the IATA. For more information, visit www.iata.org/cargo.

growing middle classes in emerging economies are discerning high end consumers who will continue to sustain air freight growth in the years to come.

Global middle class in 2009 and prediction for 2030

Asia Pacific stands out because growth in cities is matched by growth in incomes. Latin America is also promising but, if these forecasts are correct, will still generate only a fraction of the new traffic. Europe and North America will remain significant but with little growth opportunity.

Air cargo's modernization challenge

Today the air cargo industry still relies on paper and human interaction. Airfreight shipment generates up to 30 different paper documents. Behaviours have not changed. Bookings, track and trace still need human interaction.

A Single Window can start to accelerate things without the movement of paper and should therefore be encouraged and fostered. IATA has developed **the e-freight concept** trying to mirror the Single Window concept.

e-freight and Single Window

Common Objectives

The air freight supply chain faces increasing demands. Customers want more reliability, increased speed and lower costs. Regulators want more security, more information and in advance. The best way to meet these requirements is for traders, forwarders and carriers to enter data once and exchange electronically in one operating process and one harmonized standard and to lodge standardized electronic data with a single entry to fulfil import, export and transit regulatory requirements.

Similar Benefits

e-freight mirrors the benefits of the Single Window concept. It achieves cost savings in document processing and increased productivity. It also achieves reduced delivery times and increased reliability through reducing the inventory and thus ensuring more accurate data. Increased compliance leads to a reduction in Customs penalties. Efficiency gains can increase the market share and competitiveness relative to other modes of transport.

Different Mandate

The e-freight mandate is paper-free. e-freight is a process whereby the air freight supply chain does not transport any paper commercial documents. There may be a requirement (by exception) to produce paper in original, copy or printed e-document form.

In comparison, the Single Window environment provides one entrance for submitting standardized data to regulators, either in electronic format (data) or in physical format (paper document)

The industry is ready for "e"

UN/CEFACT, WCO, FIATA, ICAO, CITES, TIACA, IATA, and IT Co have worked to this vision and created a paper-free infrastructure. There are 20 multimodal standard electronic messages available, 43 locations and 100+ major airports, 42 live airlines and 400+ forwarders. A regulatory agency now needs to enforce it.

Partnerships at work[27]

The Air Cargo industry cannot work on its own. A year ago, it formed the **Global Air Cargo Advisory Group** consisting of IATA, FIATA, TIACA and GSF. The Alliance has the objective to establish vision, strategy and priorities for the air cargo supply chain. The priorities are security, e-commerce, trade facilitation and the sustainability of the air cargo industry. The Advisory Group promotes the industry's position to regulators and inter-governmental organizations such as the WCO and ICAO.

[27] For further information see: http://www.iata.org/events/wcs/Pages/index.aspx.

Chapter 24
Information Sharing Challenges: Going Forward with Standards

Mats Wicktor[28]

On the subject of information sharing, Alan D. Bersin, Commissioner, US Customs and Border Protection, said at the World Customs Forum in 2010 that:

"Information used to be power. It is no longer true… Information SHARING is power!"

We talk a lot about automation. Can we have an automated process that is not digitalised? The answer is yes. Customs Administrations around the world use this every day.

The question of information sharing and automation leads us to the question of Single Windows in the future. Instead of one Single Window, in the future there might be a lot of different windows to gather data for different purposes (commercial/regulatory) in order to achieve trade facilitation.

Cloud computing, for instance, might lead to a more fragmented information management process than we have today. This means that different stakeholders will submit snippets or bits of information with the highest quality possible at the optimal time in the process.

Is it then true that one message will serve one transaction? It might be that there will be several smaller messages to serve not only one but several transactions. What we know today about message development might have to be revised to ensure that we are going about it in the correct way.

Stakeholder development

This leads to the areas of stakeholder development where information holders will share what they know with the highest possible quality at the best possible time in the process. This will serve risk management purposes, release, clearance and other trade facilitation measures. And this could in turn lead to the development of new stakeholders, or providers of different information-related services that could come onto the stage, forcing the regulatory environment of the world to create new relationships with these stakeholders.

International standards and Interoperability

International standards need to be the foundation of improving information management, not least in view of achieving interoperability between the different systems. In this case, standards will be critical.

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[28] Mats Wicktor is Vice-Chair of UN/CEFACT TTF and REG, Swedish Customs Director Change Management, Chair of the WCO Information Management Sub-Committee and Chair WCO Data Model Project Team.

Teamwork

In the *Three Musketeers* there is the famous saying "*All for one, one for all*". From a UN/CEFACT point of view, teamwork is needed to develop the international standards that should create the basis for information management for the next decade.

But this still lies in the future, and many good initiatives are going on now, such as the e-freight project by IATA, the WCO's Globally Networked Customs and many others. It is important not only for international organizations but also for economies and the business community to continue with these initiatives.

UN/CEFACT

The best way to do that is to join UN/CEFACT. UN/CEFACT has five programme development areas. The new strategy focuses on the core products, notably the United Nations Trade Element Directory (UNTED) and the Core Component Library. UN/CEFACT also has a global remit to work on trade facilitation based on the common processes how we manage information.

Key points to conclude

In the future, we will see new needs for many to share information with many. The information chain will be more fragmented and diversified but it will be of higher quality and more adapted to when information is required. There will be new stakeholders, providing new services, creating a need for new relationships between regulatory agencies and these new stakeholders. International standards will evolve through cooperation fostering coherence and interoperability.

Part VII

Managing Single Window Implementation

Chapter 25
Single Window Implementation Framework (SWIF) - Using State-of-the-Art Management Concepts for SW Planning and Implementation

Somnuk Keretho[29]

Why is a systematic framework needed for the implementation of Single Windows?

In many cases the vision and potential benefits of Single Windows may be well recognized but how to formulate and transform these visions into reality is neither easy nor obvious. Many challenging issues need to be managed, both technically and politically. For this reason, a holistic framework needs to be developed.

What is SWIF?

SWIF[30] is an architecture-based framework for guiding Single Window planning and implementation. It adapts the concept of enterprise architecture[31] and development methodology to describe an approach on how to systematically derive the Single Window strategic architecture, formulate its master plan, and manage the Single Window projects.

Key Concepts and Guidelines within SWIF

1. Visions and Goals Alignment guides the formulation of Single Window visions and goals, where possible with quantitative indicators, in alignment with national and/or regional policy directions.

2. An Evolutionary Single Window Roadmap in five maturity levels is recommended as a long-term Single Window development roadmap and as a reference model for assessing the current or "as-is" condition of the country. Then priorities are set for the next target or "to-be" Single Window environment that the country may consider for the next phase of implementation.

3. Decomposition refers to the systematic decomposition and structure of Single Window implementation challenges into smaller and more manageable components (10 critical components are proposed within this framework).

4. Single Window Development Cycle explains how to analyse the "as-is" or current conditions of those 10 components and how the "to-be" or future architectures (again of those 10 components) can be proposed and agreed.

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29 Dr. Somnuk Keretho is Director of the Institute for IT Innovation, Kasetsart University, Bangkok and a member of the UNNExT Advisory Committee.

30 Authored by Eveline van Stijn, Thayanan Phuaphanthong, Somnuk Keretho, Markus Pikart, Wout Hofman, and Yao-Hua Tan, "Single Window Implementation Framework (SWIF)", Free University Amsterdam, Kasetsart University Bangkok, UNECE, and published as an EU-supported ITAIDE D5.0:4b deliverable.

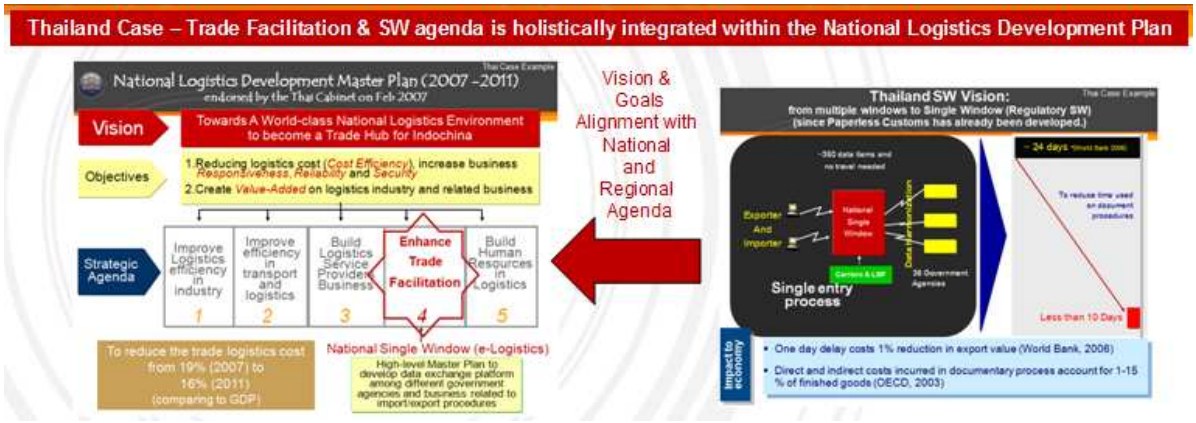
31 Adapted from The Open Group Enterprise Architecture Framework TOGAF-9, including its development methodology ADM (Architecture Development Method).

5. Viewpoints show how to clearly visualize the implementation issues based on the interest of the target audiences (normally with diagrams and associated descriptions).

6. Project Management Process. All of the above are put into use with a recommended project management process in five practical phases for preliminary and detailed analysis, planning and overseeing the Single Window projects.

1. Single Window Vision and Goals Alignment

The National Single Window vision, goals and its planning should be aligned and integrated as a part of the related national/regional development agenda.



2. An Evolutionary Single Window Roadmap in five maturity levels

The suggested Single Window roadmap is broken down into five evolutionary levels.

Level 1: Paperless Customs Declaration System (EDI/Paperless Customs) Submission of paperless Customs declaration, e-payment with banks for Customs duty, e-Container loading list (to associate between Customs declaration and physical containers of those declared goods) and risk-based inspections.

Level 2: Integration with other Regulatory Bodies (Regulatory SW) Extending the paperless Customs system by interconnecting with other governments' IT systems for exchanging import/export e-permits and e-certificates with the Customs Department for a more accurate and faster Customs clearance, Single Window data entry for electronic submissions of application forms and status e-tracking.

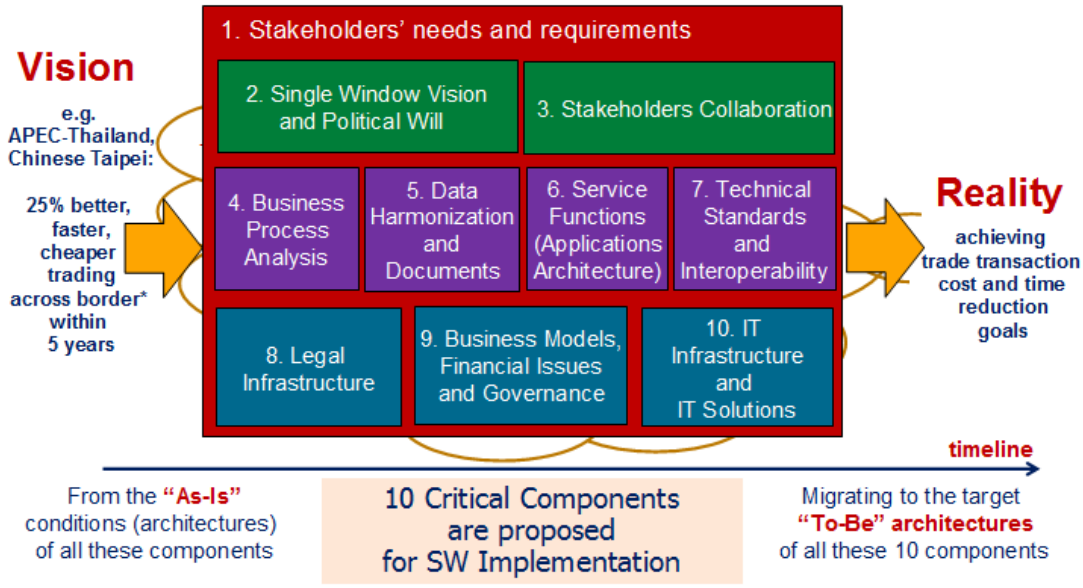
Level 3: Port Community Systems (PCS) in major sea/air ports (Port SW) Interconnection and e-document exchange for efficient port operations among all related stakeholders, e.g. customs brokers, freight forwarders, transporters, terminal operators, Customs department, warehouses, port authority, and other control agencies.

Level 4: An Integrated National Logistics Platform (Integrated SW) Extension of the interconnection with importers/exporters, logistics-service providers, insurance companies, banks for online payment of services and goods.

Level 5: A Regional Information-Exchange System (Cross-border SW) Cross-border e-document exchange between two or more economies.

3. Decomposition

With an initial Single Window vision and scope in mind, the complexity of the Single Window can be handled by decomposing its challenges into smaller and more manageable sub-components.



* Referring to World Bank's Index (www.doingbusiness.org)

4. Single Window Development Cycle

Key compenents that need to be analysed, planned, coordinated and agreed before they are implemented.

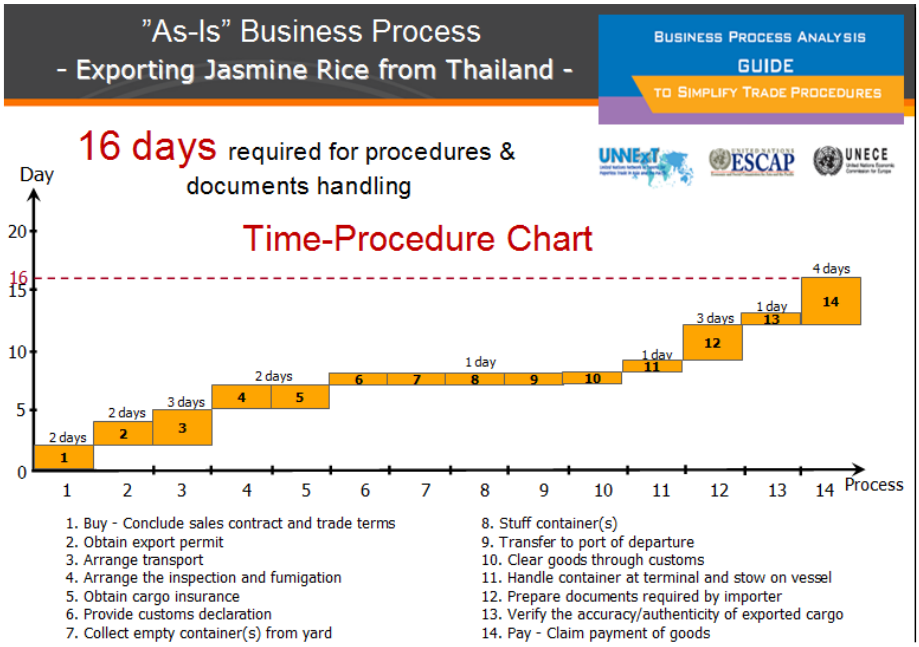
The **"as-is"** or current **conditions** of these 10 components must be analyzed, and then the target or **"to-be" architectures** (again of these 10 components) need to be developed and agreed.

Normally many iterations of the above activities are needed before we can politically, organizationally and financially agree on the "to-be" architectures before we make any commitments to implement.

Thai case example

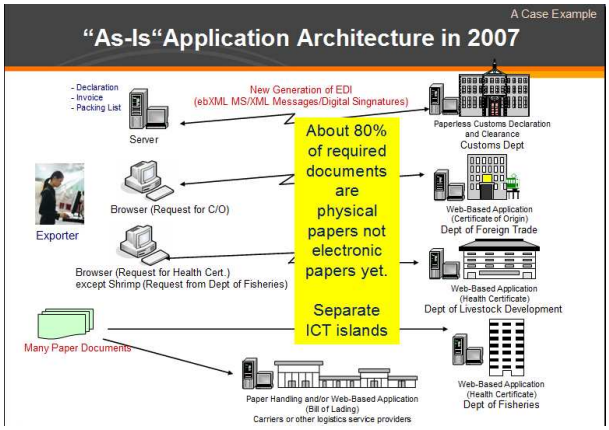
The "as-is" conditions for the export of jasmine rice in Thailand is that 1,140 data elements on 36 documents involving 15 parties have to be filled in for each shipment of rice.

The Time-Procedure Chart shows that 16 days are required for procedures and documents handling. The analysis of the "as-is" business process related to exporting rice from Thailand should be analysed. What are the different steps involved, what causes the delays? What are the bottlenecks and the opportunities for improvement?



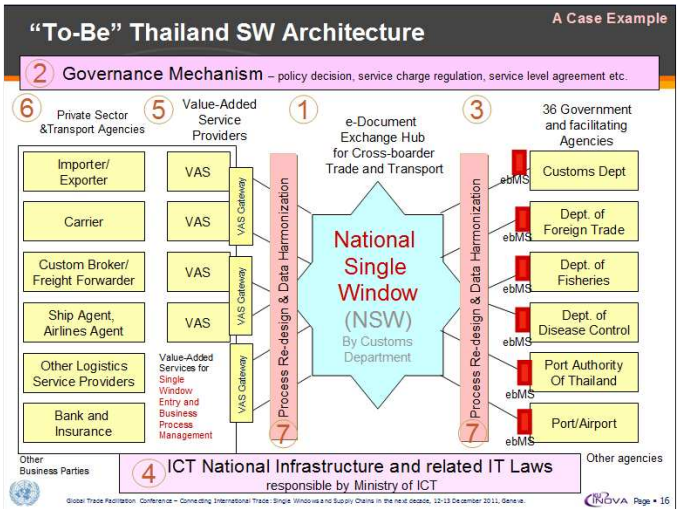
5. Viewpoints

Viewpoints are diagrams (sometimes called blueprints) along with verbal/written descriptions for explaining the same topic but with different levels of details based on the interest of the target audience.



An architect uses different diagrams to talk about the same building. For example, one diagram shows the interior design to communicate with normal users, one diagram shows concrete structures to be used by civil engineers, and another shows the wiring for electrical technicians.

Likewise, several detailed levels of diagrams and descriptions should be used to communicate about Single Window components with each being suitable for different target audiences (viewpoints/diagrams suitable for high-level policymakers, policy managers, business operators, and technical IT staff).



6. Single Window Project Management Process

All these concepts are put into action with a suggested five-step Single Window project management process. How to analyse, plan and oversee the Single Window projects by revisiting and refining those 10 Single Window critical components iteratively in each phase.

1. **Preliminary/Inception** phase – developing a concept paper for preliminary and initial discussion
2. **Elaboration** phase – conducting detailed feasibility study
3. **Planning** phase – formulating a high-level Single Window master plan
4. **Execution** phase – executing and overseeing the project plan
5. **Lessons-learned/Feedback** phase – collecting lessons learned

Summary

A UNNExT Managerial Guide for Single Window Planning and Implementation, based on the Single Window Implementation Framework (SWIF) is being developed and recommended as a holistic and systematic framework and as a guide for policy managers and relevant stakeholders in planning, managing and implementing Single Window projects[32].

This guide will cover: how the improvement of trade procedures and documentation can increase trade competitiveness of a nation, the evolutionary development and roadmap of Single Window projects, a holistic Single Window Implementation Framework (SWIF) and Development Cycle, how to systematically prepare the Single Window architecture of the country, including key project components and deliverables; how to conduct the initial Single Window concept and the feasibility analysis; how to develop a High Level Single Window Master Plan; how to secure sustained support of key policy makers; how to put in place an effective inter-agency collaboration mechanisms; and the five Single Window project management phases.

Recommendation

A guiding framework and map for Single Window implementation and operations are quite useful for our endeavour; therefore they should be further developed and refined, through the UN regional commissions and international collaborations.

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Part VIII

Key Messages and Outlook

Chapter 26
Achievements, Challenges and Future Developments

This chapter summarizes the key messages voiced by participants during the conference. It takes stock of achievements and challenges in Single Window development and looks at how cross-border information exchange and supply chain management in the future can address today's challenges and move trade facilitation forward.

Achievements

Successful implementation of Single Windows across the world

Many countries have now implemented Single Window systems to simplify and automate procedures and to better coordinate information exchange and controls at the borders (Chapter 2). What are the conditions for success in the process of Single Window implementation?

Political good will and commitment

Strong government support at the highest levels was repeatedly mentioned as crucial to success. Representatives of Benin and Mozambique, for example, highlighted that this kind of support was provided in their countries and that it had been a major driver.

Collaboration and coordination

Single Windows cannot function if the different, participating government agencies and other stakeholders do not work together. Collaboration and coordination are essential. Regular consultative meetings to gain the buy-in and joint ownership of the project by the different stakeholders were highlighted, for example, in the Kenyan experience.

Training

Training of all the stakeholders and continuous follow-up were seen as key to ensuring that different actors are using the Single Window system and know how to operate it.

Public-private partnerships

Collaboration with the private sector has been chosen by several governments to fund and operate Single Window systems with positive experience reported for example by the United Kingdom, Mozambique and Benin. Public-private partnerships were chosen when it was decided that Government alone could not shoulder the task sustainably. However, it was also stressed that no one business model can suit all the countries. In Kenya, for instance, the Government decided to take care of the start of the project, inviting the private sector to participate at a later stage. Overall, an adequate budget for the Single Window system is important to ensure continuous operation.

Legal frameworks and international standards

The development of legal frameworks underlies the successful implementation of Single Window systems. There has also been significant work towards developing a common legal framework for electronic information exchange. Reference texts and model laws have been developed by UNCITRAL for this purpose (Chapter 9). At the EU level the e-Maritime Reporting Formalities Directive (2010/65/EU) has laid the ground for Single Window development across the European Union (Chapter 18). In Asia, laws and regulations have been implemented that ensure that data and documents exchanged are accepted by Customs in the region. Data and messaging follow international standards and there is PKI Mutual Recognition between member countries of the Pan-Asian eCommerce Alliance (Chapter 7).

Tangible benefits for countries and economies

Single Windows have simplified and automated business procedures, introduced change and brought about collaboration between government agencies and the private sector which is reflected in improvements in international trade facilitation indicators (Chapter 2). Electronic and pre-arrival processing are clear advantages that Single Windows bring to business and a country's economy (Chapter 22).

Benefits of Single Window systems include reduced dwell time and faster procedures, through which higher trade volumes can be managed in less time, competitiveness increased and State revenues improved.

In Azerbaijan, the Single Window has achieved a reduction in border-crossing time from previously 2 - 3 hours to 15-20 minutes increasing at the same time the number of vehicles passing the border from 65000 to 180000 per year (Chapter 13). In Latin America, the TIM/Single Window for Road Transit of Goods achieved a reduction in border crossing time from one hour to 8 minutes (Chapter 4).

Challenges

Single Window development is not without challenges. Conference participants shared their experience and concerns about the key issues that need to be addressed moving forward, especially in view of cross-border information exchange.

Technological Capacity

In the move to a paperless environment, putting the relevant technology in place across all agencies and actors in a Single Window system to automate processes is far from simple. Users have to be trained to use the new computerised systems once the technological infrastructure is put in place. Many still rely on paper and human interaction. Trust in electronic information exchange needs to be created and behaviour changed.

Change Management

Single Window systems are not merely IT systems. By reengineering business processes, they are a catalyst to more fundamental change in the way things are done

going far beyond the move to paperless procedures. While technological innovation is an important part of the Single Window, a recurrent theme during the discussions was that the **key challenge is not technology but people's mindsets**.

Change needs to be carefully managed, ensuring political will, continuous stakeholder buy-in, joint ownership of the project, adequate training and inter-agency collaboration. An important aspect that was highlighted for example in the contribution from Senegal is sharing the benefits of the Single Window with all stakeholders (Chapter 10).

Interoperability

Interoperability of systems is one of the important concerns that need to be addressed. This is important at the national level between the systems of participating agencies and at international level for cross-border information exchange where several national Single Windows are linked (for example, ASEAN). Looking into the future, interoperability between different providers would also be essential in a data pipeline scenario.

At present, disparate independent systems are using different protocols and standards. This creates challenges for exchanging data and developing interoperable systems. The need for data harmonisation was therefore raised by many participants as a key priority for facilitating cross-border trade transactions.

Successfully dealing with technological interoperability and data harmonization, however, is not sufficient for a successful implementation of Single Window systems. An enabling legal environment is equally important.

Common legal framework needed

A common legal framework is particularly important for Business-to-Government and Government-to-Government information exchange as it is on the basis of legal frameworks that governments enforce laws, regulations and procedures to facilitate cross-border information exchange (Chapter 7).

Sustainability of Single Windows

Sustainability of Single Window systems is of utmost importance, and as once in place its continuous operation must be ensured. Long-term planning and adequate budgeting are essential in ensuring both its financial sustainability and its continuous development in line with technological innovation and international standards. Public-private partnerships have been mentioned as a successful model. The challenge for governments is how to engage business and create the right incentives for long-term private-sector participation.

Data quality and accuracy

It was estimated that 60 per cent of current data (Manifests, Bill-of-Lading) provided by logistic service providers is not accurate enough for advanced risk analysis (Chapter 20). This is an issue that must be addressed in future developments for cross-border information exchange and will be further discussed in the next section.

Future Developments

The Single Window initiatives that have developed over the past decade are diverse, or, as one speaker said "the Single Window has many flavours". Looking ahead, there could be a real risk of divergence between diverse systems (Chapter 8). A high level of collaboration and coordination between the different systems and models in place is needed to counteract this development. This is particularly important as we move from National Single Windows to Single Window networks at regional and even global level.

Connecting National Single Windows at the regional level

Regional Single Window networks are starting to be developed that will connect National Single Window systems. One example is the ASEAN Single Window that will inter-connect ten ASEAN Member States through a regional secured network architecture (Chapter 24). Other regional initiatives presented at the Conference are the Customs Union of Belarus, Kazakhstan and the Russian Federation (Chapter 11) and the e-Maritime initiative in the European Union where every Member State should have a Single Window in place for maritime vessel reporting by June 2014 (Chapter 18). Moving towards regional networks of Single Windows, technical interoperability, common legal frameworks, and data harmonisation will be essential to achieve optimal information exchange in cross-border trade.

The vision of a Data Pipeline in international supply chains

An innovative idea that was discussed at the Conference is the concept of a **data pipeline** that could significantly improve information exchange across international supply chains. The data pipeline concept emphasizes the benefits of pushing controls away from the border, thus reducing dwell times and enabling authorities to obtain relevant information for risk profiling before goods arrive at the border (Chapter 20).

A key promise of the data pipeline is to enhance the **quality and accuracy of data** by enabling government agencies to "pull" the information from the source, that is directly from the business systems.

The unifying theme of both the Single Window and data pipeline concepts is that international trade is managed on the basis of data. Both for Single Window and data pipeline development the adherence to international standards is important to ensure commonality.

Advances on the technology side, such as the development of **cloud computing,** need to be accompanied by the development of a supporting legal infrastructure (Chapter 8).

Monitoring and support at the international level

International organisations have accompanied and facilitated international trade through guidance on key aspects of Single Window development.

The United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) has developed Recommendations[33] on Document Standards (Recommendation No.1 on Layout Key for Trade Documents), Single Window (Recommendation No.33), Data Simplification and Standardisation (Recommendation No. 34), and on Establishing a legal framework for international trade Single Window (Recommendation No. 35) as well as many others.

Assistance through international organisations in monitoring Single Window developments was requested by several participants in the discussions. A number of reference resources have already been put in place. The World Customs Organisation and UN/CEFACT have created libraries and repositories to collect key resources and case studies to support countries in designing and implementing Single Window systems. These include the WCO Data Model 3, which is a standard from which data harmonisation and SW can be developed (Chapter 21) and UN/CEFACT's common dictionary, the core component library and the reference semantic library which provide useful resources to facilitated international data exchange. UNCITRAL and UN/CEFACT have done work on the legal framework needed for Single Windows in international trade.

Capacity-building

To work towards the vision of widespread adherence to international standards and interoperable systems, there is clearly a need to build capacity. International organisations are already active in doing so.

The United Nations Network for Experts on Paperless Trade (UNNexT), which is jointly supported by UNECE and UNESCAP, ran a two-day capacity-building workshop on Single Window Project Planning and Implementation following the Trade Facilitation Conference, providing training on the Single Window Implementation Framework (SWIF) (Chapter 25). UNCTAD's ASYCUDA programme provides technical assistance tailored to the specific requirements of countries (Chapter 16). The CITES e-permitting toolkit is another useful available tool developed in line with international standards (Chapter 17).

In the future, efforts will be made for enhanced collaboration between different international bodies for joint capacity-building programmes to provide effective support for those wishing to implement Single Window systems in line with international standards.

Moreover, the regional commissions were requested to set up a central repository for information on Single Windows worldwide, integrating sector-specific repositories as those developed by WCO and IMO.

[33] http://www.unece.org/cefact/recommendations/rec_index.html.

Chapter 27
Outlook

Where next? Participants in the Conference noted that the United Nations has a central role to play in consolidating and supporting Single Window implementation and development across all regions and proposed in the Conference conclusions the development of a roadmap for developing Single Window and supply-chain automation for cross-border trade (see Annex 1).

Roadmap

Central to the work of this group will be the creation of a roadmap for developing Single Window and supply-chain automation for cross-border trade. A **reference group** composed of Single Window and supply-chain stakeholders from government agencies, the private sector, and academia will develop it.

The purpose of the roadmap is to:

- outline options for the step-by-step development and sustainable maintenance of Single Window and collaboration between Single Window facilities in a regional and global context.
- identify activities of various Single Window initiatives in Trade, Maritime and Port Community Systems and attempt to achieve a "joined up" approach across the supply chain.
- explore the possibilities for improved information exchange, competitiveness and lower costs offered by data pipelines and cloud computing, through developing pilot projects.
- consider mechanisms to facilitate the financing of Single Window implementation, particularly in developing countries.

The roadmap will be discussed and developed jointly with all stakeholders and presented to the next Joint United Nations Regional Commission Trade Facilitation Conference, to be organized by UNESCAP in 2013.

Providing support and capacity-building

The regional commissions are also requested, in collaboration with other international organizations such as development banks and the regional economic communities, to continue to provide support and capacity-building for stakeholders in national and regional Single Window projects and trade facilitation initiatives, including on specific knowledge areas that enhance Single Window development.

This could include preparing national and regional master plans, data harmonization, business process analysis and legal frameworks for Single Windows. The United Nations should consider organizing specific workshops on legal frameworks for Single Windows, accompanied by training.

The regional commissions are requested to set up a central repository for information on Single Windows across the globe. To do so, they should seek input from sector-specific surveys and repositories made, inter alia, by the WCO and IMO.

UNECE will undertake to host this repository on behalf of the all the regional commissions, under joint maintenance. A common template will be developed and provided to the participants. All participants are invited to contribute to the repository and provide information about their Single Window activities.

UN/CEFACT, the World Customs Organization and other bodies, such as ISO, IEC and ITU, were requested to consider developing any additional standards that might be required to support electronic information flows across global supply chains and Single Window implementations.

The proposals of this meeting will support the implementation of trade facilitation measures currently being discussed under the WTO Doha Development Agenda.

The regional commissions should support the application of these measures by providing capacity-building and facilitating the exchange of best practice and networking among policymakers and stakeholders from the regions.

Annexes

Annex 1: Conclusions of the Conference

Summary of main points

Single Window implementation[34]

- In developing countries and countries in transition, the Single Window has been a success story. Many of these countries implement government Single Windows that provide users with access to both Customs and other government agencies to facilitate export and import procedures.
- The Single Window models vary greatly from one country to another, depending on a country's readiness and priorities. Models include paperless Customs, Port Community Systems and Single Window systems that link government agencies on the national and regional level.
- Many advanced trading countries have not implemented the national Single Window concept. Instead, other forms of Single Window networks, in particular Port Community Systems and Customs Single Windows, are being successfully used to support a high-performing logistics sector.
- The development of the Single Window is typically a major undertaking, involving the creation of interlinkages and information sharing between Customs and other government agencies responsible for trade, as well as the trading community. It is usually implemented in a phased approach.

Cross-border information exchange

- Both in developed and developing countries, there is a need to link or network national Single Windows either regionally or globally, for cross-border data exchange.
- Single Window interconnectivity is especially important for landlocked and transit countries as it provides new opportunities for access to markets. Project managers and operators should therefore collaborate on a regional level to analyse cross-border supply-chain issues and ensure technical interoperability in the development of single windows.
- Groups of Single Window operators, such as the Pan Asia E-Commerce Alliance (PAA) and the African Alliance for e-Commerce (AACE), are working to establish a mechanism and framework to conduct secure cross-border document and data interchanges among the stakeholders in their regions.
- Many aspects of regional/global Single Window integration, however, still have to be defined. Further international collaboration is required to develop and implement data harmonization, as well as common strategies, policies and standards to support inter-connectivity.

[34] A Single Window is defined as "a facility that allows parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfil all import, export, and transit-related regulatory requirements" - see www.unece.org/fileadmin/DAM/cefact/recommendations/rec33/rec33_trd352e.pdf.

An enabling legal environment

- Although the need for an enabling legislative environment for paperless international trade is well recognized, the legislation applicable to electronic transactions with governmental entities (e-government) is often specific to individual sectors and individual technologies. This creates barriers to the exchange of electronic communications among different public-sector entities, as well as between government and business.
- The widespread adoption of the United Nations Convention on the Use of Electronic Communications in International Contracts, 2005, was proposed as one element in the regulatory framework for national and international Single Window facilities.

New approaches for information sharing in global trade supply chains for security, trust and efficiency

- The conference discussed concepts for better managing international supply-chain processes through the advanced use of information and technology, such as information pipelines in which government agencies and private-sector companies share all the information required for increased security and efficiency.
- Information sharing in global supply chains can take advantage of different Single Window implementations in the developed and developing countries.
- New technologies and concepts were also presented, such as cloud computing and supply-chain traceability. These technologies provide additional opportunities for exploring new information-sharing concepts in global trade.

Proposals from the meeting

The United Nations has a central role to play in consolidating and supporting Single Window implementation and development across all regions.

Reference group

To implement and coordinate these initiatives, the meeting requested the regional commissions, with the support of their intergovernmental bodies (such as UN/CEFACT) and in collaboration with other international organizations (such as WCO, IMO, UNCTAD) and the business community, to establish a reference group of Single Window and supply-chain stakeholders from government agencies, the private sector and academia. UNECE will assist in drafting the terms of reference of this group.

Roadmap

Central to the work of this group will be the creation of a roadmap for developing Single Window and supply-chain automation for cross-border trade.

The purpose of the roadmap is to:

- outline options for the step-by-step development and sustainable maintenance of Single Window and collaboration between Single Window facilities in a regional and global context.
- identify activities of various Single Window initiatives in Trade, Maritime and Port Community Systems and attempt to achieve a "joined up" approach across the supply chain.
- explore the possibilities for improved information exchange, competitiveness and lower costs offered by data pipelines and cloud computing, through developing pilot projects.
- consider mechanisms to facilitate the financing of Single Window implementation, particularly in developing countries.

The roadmap will be discussed and developed jointly with all stakeholders during 2012 and presented to the next joint United Nations regional commission trade facilitation conference, to be organized by UNESCAP in early 2013.

Providing support and capacity-building

The regional commissions are also requested, in collaboration with other relevant international organizations, such as development banks and the regional economic communities, to continue to provide support and capacity-building for stakeholders in national and regional Single Window projects and trade facilitation initiatives, including on specific knowledge areas that enhance Single Window development.

This could include preparing national and regional master plans, data harmonization, business process analysis and legal frameworks for Single Windows. The United Nations should consider organizing specific workshops on legal frameworks for Single Windows, accompanied by relevant training.

The regional commissions are requested to set up a central repository for information on Single Windows across the globe. To do so, they should seek input from sector-specific surveys and repositories made, inter alia, by WCO and IMO.

UNECE would undertake to host this repository on behalf of the all the regional commissions, under joint maintenance. A common template would be developed and provided to the participants. All participants were invited to contribute to the repository and provide information about their Single Window activities.

UN/CEFACT, the World Customs Organization and other bodies, such as ISO, IEC and ITU, were requested to consider developing any additional standards that might be required to support electronic information flows across global supply chains and Single Window implementations.

The proposals of this meeting will support the implementation of trade facilitation measures currently being discussed under the WTO Doha Development Agenda.

The regional commissions should support the application of these measures by providing capacity-building and facilitating the exchange of best practice and networking among policymakers and stakeholders from the regions.

Annex 2: Ten Years of Single Window Implementation: Lessons Learned for the Future

Jonathan Koh Tat Tsen

Discussion paper

Abstract

This paper examines the Single Window concept and its developments in practice over the last 10 years and analyses its development over time. It also gives an overview of the emerging information technology that would impact its future development. It examines regional trends in Single Window implementation, based on a survey of tenders documents issued by various countries in the recent years. Finally, it offers an outlook on its future development and provides a number of recommendations.

1. Overview of Single Window development and automation and regional trends in the last 10 years

1.1 What was the initial idea behind the Single Window concept?

Global trade expanded rapidly during the 1980s and 1990s. The resulting complexity and speed of the modern supply chain and the number of parties involved greatly increased the requirements for information controlling the flow of goods. But despite the breakneck developments in information and communications technologies (ICT) and trade data-exchange standards during the same time, trade-documentation exchanges remained mostly paper-based. However, in the modern trade environment such paper-based exchanges cannot satisfy the need for efficiency and security.

One "omnibus" means of addressing this problem that has gained considerable momentum over the past 10 years is the so-called "Single Window". In Recommendation No. 33, UNECE defines the Single Window as a "facility that allows parties involved in trade and transport to lodge standardized trade-related information and/or documents to be submitted once at a single entry point to fulfil all import, export, and transit-related regulatory requirements[35].

The Recommendation identifies three basic models for the Single Window:

1. A Single Authority that receives information, and disseminates this information to all relevant governmental authorities, and coordinates controls in the logistical chain.
2. A Single Automated System for the collection, dissemination and integration of information and data related to trade that crosses the border. There are various possibilities:

[35] In 2004, UNECE published "Recommendation 33 - Guidelines on Establishing a Single Window", developed by its Centre for Trade Facilitation and Electronic Business (UN/CEFACT). It recommended that governments and those engaged in the international trade and movement of goods should actively consider implementing a "Single Window facility" in their country. The Recommendation and Guidelines were formally approved by UN/CEFACT in 2004.

   i. Integrated System: Data is processed through the system
   ii. Interfaced System (decentralized): Data is sent to the agency for processing
   iii. Combination of (i) and (ii)
3. An automated Information Transaction System through which a trader can submit electronic trade declarations to the various authorities for processing and approval in a single application. In this approach, approvals are transmitted electronically from governmental authorities to the trader's computer.

Many countries have seen that a Single Window facility can greatly improve the implementation of standards, techniques and tools for simplifying and expediting information flows between traders and government. It can also simplify processes, harmonize data and improve the sharing of relevant information across governmental systems. The improved efficiency and effectiveness of controls, and the reduction in costs both for governments and for traders, due to a better use of resources are expected to bring significant gains to all parties involved in cross-border trade.

1.2 Has this initial Single Window idea undergone any change in the meantime?

UNECE Recommendation 33 included three concepts that are critical to the understanding, evolution and development of the Single Window. Firstly, that a "Single Window" doesn't necessarily imply using high-tech information and communication technology (ICT), although it is usually better if governments do adopt ICT technologies for a Single Window". But in our digital and Internet-fuelled age, all implementations of the "Single Window" have invariably been coupled with the use of ICT to help automate and create a paperless trading environment. For practical purposes, the establishment of "Single Window" today can only be done through the use of ICT and the Internet.

Secondly, the idea of a "Single Window" at the national level has challenged the conventional "compartmentalized" approach to regulatory control of the movement of goods. For example, Recommendation 33 states that "a Single Window should represent a close cooperation between all involved governmental authorities and agencies, and the trading community".

However, most of us understand the challenge of involving all the relevant governmental authorities and agencies as well as the trading community. Many different government departments and agencies hold legislative powers and control and manage various levels of regulation—e.g. health, plant and animal quarantine, sanitary and phytosanitary, food and drug safety, and defence. Agencies other than Customs that are involved in the regulation of cross-border trade are termed "Other Government Agencies" (OGAs). There are often between 20 and 40 of these involved, but the number varies among countries.

It's rare to find a Single Window facility covering all OGAs. Many implementers have found that the challenge of coordinating these different agencies (and their procedural and data requirements) into coherent and simplified procedures that could be automated is often more political than technical. A recurrent challenge is to convince the OGAs to

agree to use the Harmonized System Codes (HS Code) as the commodity classification for the Single Window.

Indeed, not all players in the government and/or trade community welcome the implementation of a Single Window. Opposition can also come from within Customs. The anecdote below, which is drawn from the case study on Madagascar's trade reforms, provides some insights.

> Opposition to the reforms was widespread and came from many quarters. The private sector—resigned to the inefficiency and corruption in Customs—was reluctant to start paying the additional fees that the project would require and sceptical that such an ambitious and advanced solution would work in the Malagasy context. The 1,400-strong Customs service itself was also reluctant to change its ways. Wedded to the old way of doing things, many customs agents also had a vested interest in existing arrangements, which brought steady revenues under the table.
>
> *Source*: Kjartan Fjeldsted, 2009. Case study on trade reform in Madagascar, World Bank Publications.

Thirdly, the initial concept according to which the trading community can submit information and documents to government authorities in compliance with regulatory requirements implies a national or countrywide facility for all trade transactions.

However, Single Window implementation on a countrywide scale is an extremely complex and costly undertaking. Creating a national Single Window requires tremendous efforts, cost, changes of mindset and more importantly, strong political will. Therefore, most governments choose an incremental step-by-step rather than a "big bang" approach to their Single Window projects.

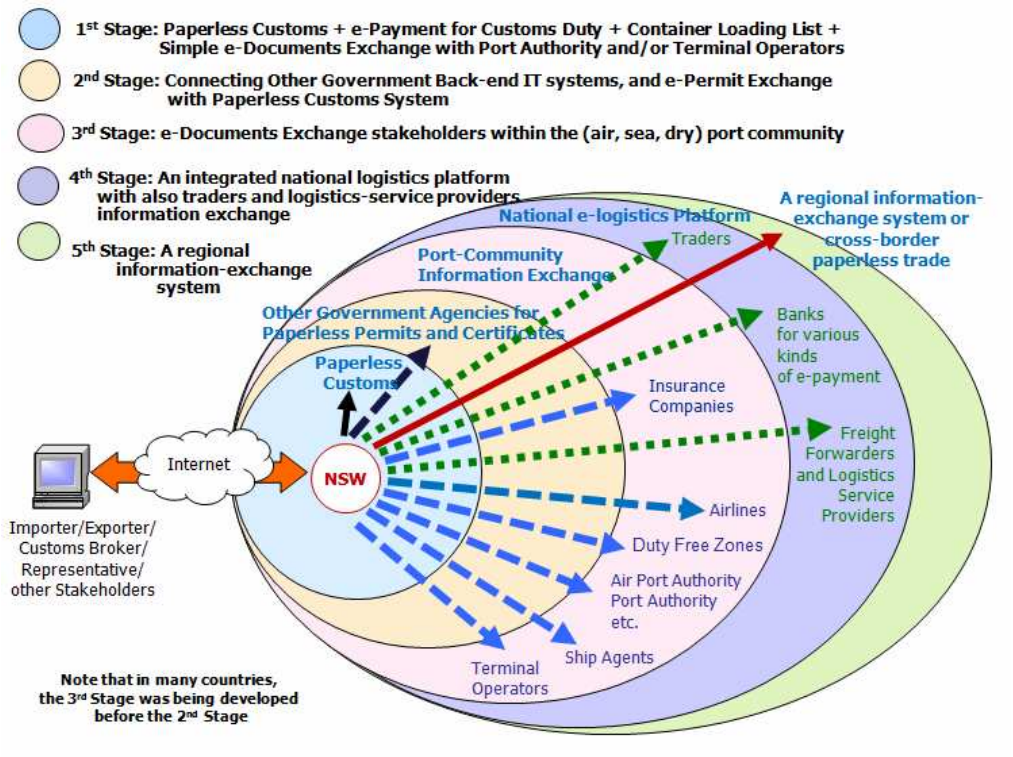
Some start with a limited form of the Single Window, for example to cover either a specific procedure such as export declarations or a specific area such as the port — "Port Single Window" or "Port Community System" — while others focus on exports only.

Many national Single Windows were introduced in stages, with each stage covering a selected group of OGAs. The selection of the initial group is usually based on their readiness for change and willingness to simplify cross-border trade processes.[36] Over time, all OGAs can gradually be incorporated into the Single Window system.

Figure A2.1 shows an evolutionary model of Single Window development that was drawn up by the United Nations Network of Experts for Paperless Trade (UNNEXT). It's used as a reference model to determine the current state of a Single Window implementation and its next stages.

[36] A deeper discussion on the staged inclusion of government agencies can be found in the Single Window Implementation Framework www.unece.org/fileadmin/DAM/cefact/publica/SWImplementationFramework.pdf.

Figure A2.1 – Staged approach to developing a Single Window



2. Different forms of Single Window

According to the World Bank's *Trading Across Borders 2012* report, out of 150 economies surveyed, 49 have introduced a Single Window, of which only 20 have a Single Window system that links all relevant government agencies. The remaining 29 have a Single Window that hasn't yet linked the government agencies.

Single Window facilities are being established at an increasing rate in all five continents. From recent issues of Single Window tenders it appears that most are in developing countries.

Indeed, many developed countries don't have a national Single Window or have only recently started to work on Single Window implementation. Most countries of the European Union, for example, have no national Single Window. On the other hand, many countries in Africa, Asia and Latin America have started or completed national Single Windows.

Table A2.1 – Good practices for trade across borders[37]

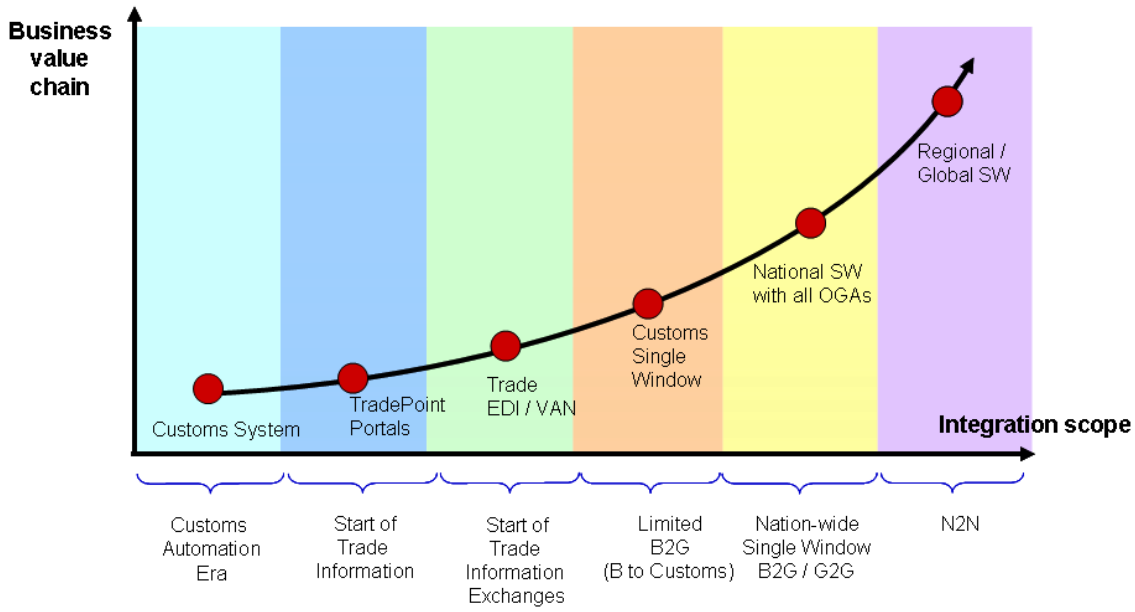
Practice	Economies[a]	Examples
Using electronic data interchange	130[b]	Belize; Chile; Estonia; Pakistan; Turkey
Using risk-based inspections	97	Morocco; Nigeria; Palau; Suriname; Vietnam
Providing a single window	49[c]	Colombia; Ghana; Republic of Korea; Singapore

a. Among 159 economies surveyed for electronic data interchange, 152 for risk-based inspections and 150 for single window.
b. Twenty-six have a full electronic data interchange system, 104 a partial one.
c. Twenty have a single-window system that links all relevant government agencies, 29 a system that does not.
Source: Doing Business database.

Governments have introduced a range of inter-agency collaborative systems to manage export- and import-related procedures. These systems perform certain functions and meet certain criteria of the Single Window, as contained in Recommendation 33.

The following is an attempt to describe these different forms of Single Windows and their evolution. Figure A2.2 depicts the evolution curve of inter-agency collaborative systems and Single Window development.[38]

Figure A2.2 – Evolution of Single Window development



2.1 Customs Automation

The pre-Single Window evolution can be said to start from the early days of Customs automation in the 1960s and 1970s, when the Customs authorities first begin to automate their functions using systems such as ASYCUDA (Automated System of

37 World Bank, 2011. *Trading Across Borders* report 2012.

38 This roadmap is formulated on the basis of experiences of many countries around the world as well as discussions during the 2005 UNECE Executive Forum "Paperless Trade in International Supply Chains: Enhancing Efficiency and Security," and "A Roadmap towards Paperless Trade (UN ECE/TRADE/371, 2005)"

Customs Data) provided by the United Nations Conference on Trade and Development (UNCTAD).

2.2 Trade Points Portals

Following this was the era of the development of national "Trade Points". These serve as an information source for trade-related information, providing traders with data about business and market opportunities. They also function as trade-facilitation centres, where players in trade transactions (e.g. Customs, banks, chambers of commerce, freight forwarders, transport and insurance companies) are grouped together under a single physical roof or linked virtually to the Trade Point to provide all the services required for trade transactions.

Trade Points were originally conceptualized to serve as gateways to global electronic networks, with all national Trade Points interconnected in a worldwide electronic network.

2.3 Trade Electronic Data Interchange / Value Added Network

With the advent of Electronic Data Interchange (EDI) techniques, a popular method for transmitting documents was the use of modems to communicate through a value-added network (VAN) provider. In its most basic form, the VAN provider acts as a clearing house or a post office.

Value-added networks are the go-betweens in EDI transmissions. They route, store and deliver EDI messages. They receive transactions, examine the *from* and the *to* information and route the transaction to the final recipient. They also provide value-added services such as providing a mailbox service, re-transmitting documents, producing delivery reports, and acting as a gateway for different transmission methods.

One of the earliest national trade EDI initiatives was the Hong Kong Trade Local and International Network (HOTLINE) Project, started in 1984. HOTLINE was to interconnect computers between organizations for data exchange for trade. The project failed due to the lack of support from the trading community and the government of Hong Kong SAR.[39]

The Tradelink project was subsequently initiated as a consortium of government and private companies. In 1997, it was appointed as an exclusive service provider by the Hong Kong SAR government and began operations to electronically process specific trade documents such as trade declarations, permits and certificates of origin.

Many countries have adopted the EDI-based approach for trade documentation:

- Chinese Taipei launched their EDI network for customs clearance automation under their Ministry of Finance in the 1992.
- Mauritius developed their TradeNet project in 1994 with the help of the Singaporean TradeNet.

[39] UNESCAP, 2002. Initiatives for E-Commerce Capacity-Building of Small and Medium Enterprises. Proceedings and papers presented at the Regional Consultative Meeting on Initiatives for E-Commerce Capacity-Building of Small and Medium Enterprises, Seoul, 13-15 November 2002.

- Japan started their nationwide "Trade and Settlement EDI System" (TEDI) in 1998 as an initiative of their Ministry of International Trade and Industry. The original objective of the TEDI system was to reduce time and cost incurred in trade administration and operation by standardizing and exchanging electronic trade documents over safe and reliable networks.
- Saudi Arabia initiated their SaudiEDI project in 2002. SaudiEDI incorporates an electronic gateway linking the trade users to Customs, Ports Authority and other government agencies for the electronic submission and processing of manifests, declarations and delivery orders.

Today, according to the World Bank's *Trading Across Borders* 2012 report[40], 82 per cent of economies around the world allow traders to submit at least some of their export and import declarations, manifests and other trade-related documents to Customs authorities electronically. However, many of these systems are not linked to the Internet, and others still require hard copies.

2.4 Limited forms of the Single Window

Customs Single Window

To circumvent the challenge of involving other government agencies (OGAs), a variation of the limited "Single Window" has emerged: the Customs Single Window. This essentially provides a single interface between the trading community and the Customs Authority. Such instances of a "Single Window for Customs Clearance" don't fully cover the permits and licensing of all of the OGAs and therefore don't cover all the regulatory processes described in Recommendation 33.

Examples of the Customs Single Window include:

- Mauritius' TradeNet system, which has not yet extended to include all of the OGAs.
- Australian Customs and Border Protection Service Integrated Cargo System, which is a Customs-centric Single Window initiative with a degree of interaction with selected OGAs.

Port Single Windows and Port Community Systems

Similarly, other authorities with a substantial role in trade—such as the Port Authority—have also established a limited, port-centric, "Single Window", commonly referred to as either a "Port Single Window" or a "Port Community System" (PCS).

The Port Single Window has been defined as a system which provides local level information about the vessel to the authorities on a port level, has B2G (Business to Government) character; while the Port Community System (PCS) provides a tool to exchange messages in the port environment, having a commercial and logistic nature and B2B (Business to Business) character[41].

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40 World Bank, 2012. Doing Business 2012 – Trading Across Borders report.

41 Kari Suvila, 2007, Single Window implementation in Customs Environment, National Board of Customs, Finland.

Examples of Port Single Windows include:

- Finland's PortNet System, which was first developed in 1993, and is owned by Finland Customs, the Finnish Maritime Administration and 20 of the largest ports in Finland.
- France's e-Maritime Port Single Window, which is a public-private partnership between Le Havre Port Authority, the French Customs, and SOGET.

A Port Community System can be characterized as a "centrally operated system for transferring data and providing other services with the help of this data, which can be used by any party who is interested in information concerning sea-borne transport. A Port Community System avoids bilateral data transfer". [42]

Europe has a long history of Port Community Systems, in particular Germany, the United Kingdom, France, the Netherlands and Spain. These systems have been established in many European ports and airports since the 1960s.

Examples include:

- Felixstowe Port Community System, which was started in 1984, and subsequently expanded to include other ports in the United Kingdom.
- India's Port Community System, which is a web-based centralized Port Community System initiative by the Indian Ports Association, intended to provide a Single Window system for the port communities in India. Established in 2007, it currently serves 22 of the country's major ports.

Today, the European PCS are providing services related to the Single Window and have started to offer support for cross-border transactions. For example, DAKOSY and Portbase, the PCS of the ports of Hamburg and Rotterdam, make it possible for their shippers to send advance cargo declarations required under the EU Import Control System to many EU Customs organizations.

While the landscape in Europe is characterized by a network of existing Port Community Systems and Customs Single Windows, the challenge for Europe is to build upon these long-established systems and turn them into the fuller national Single Windows that correspond to the "single entry point" criteria. This means that they should cover all government agencies and fulfil all import, export, and transit-related regulatory requirements.

Subnational "Single Window"

While the original concept implies countrywide, in some cases of "Single Window" implementation—especially in larger countries—it was found that the only feasible way was to take a subnational approach, whereby the local trade community and regulatory agencies can be grouped together at city or provincial level to establish a trade community "Single Window" system.

[42] Grizell, P. et al, 2001. An evaluation of Port Community Systems: What can the Port of the Netherlands learn and use of other platforms", NedCargo.

An example of this is China's massive E-Port project, which is characterized as an "integrated clearance information platform focused on clearance management and enforcement, extending gradually to logistics and commerce service". It comprises three components – data exchange, transaction processing and auxiliary support platforms. It supports data exchange and sharing between government departments, port management agencies and enterprises, and provides online services such as declaration and payment through a Single Window.

The project is implemented at both central and local levels, whereby the central government ministries and the local e-ports interconnect with each other via China's E-Port VPN for data exchange and sharing. It is at the local level where the subnational implementation of the E-Port - Shanghai's Easipass Platform - is currently the operational Single Window for port and customs clearance in Shanghai.[43]

2.5 National Single Windows

The preceding section traced the evolution of the Single Window in the national context. The limited forms of Single Window systems—Customs-centric as well as port-centric versions—provide a valuable "learning curve" for many countries as they progress towards fulfilling the "Single Window" vision: a countrywide facility that provides for all parties (regulatory agencies and the trading community) to submit standardized information only once, at a single entry point, to fulfil all import, export and transit-related regulatory requirements.

The Association of South East Asian Nations (ASEAN) has expanded the definition of the "National Single Window" further by introducing the concept of "submitting once at a single entry point":

ASEAN defines the "National Single Window" as a system which enables:

- *A single submission of data and information;*
- *A single and synchronous processing of data and information;*
- *A single decision-making for customs release and clearance;*
- *A single decision-making shall be uniformly interpreted as a single point of decision for the release of cargoes by the Customs on the basis of decisions, if required, taken by line ministries and agencies and communicated in a timely manner to the Customs".*[44]

The development of a National Single Window also means that all other government agencies have to be part of this system. It needs to be able to accommodate and to connect the various agencies' needs and requirements in order to facilitate trade.

But government agencies are traditionally organized through a variety of separate departments, which may have limited connection with each other either technologically or in the way their services are delivered. Those implementing the Single Window very

[43] Wang Jian, 2010. China Progress Towards Single Window and Paperless Trade, Presentation at the UNESCAP Asia Pacific Trade Facilitation Forum Oct 2010.

[44] ASEAN, 2005. Agreement to Establish and Implement the ASEAN Single Window.

often found themselves to be pioneers in establishing an unprecedented "connected government" framework![45]

Few, if any, E-Government initiatives have as wide a scope and breadth as a Single Window project that necessitates the interconnection of several government backend systems that are mainly operated as independent "silos". This makes Single Window projects even more challenging. Only countries that already have a strong electronic government foundation are able to build upon that foundation towards the "connected" government structure.

In recent years, we have seen several attempts to establish countrywide Single Window systems that meet this ambitious criterion.

Application-processing time in Singapore: 3 minutes

Singapore was an early starter to develop a countrywide system. They initiated their plan in 1986 and launched a fully automated national system for trade facilitation, called TradeNet, in Jan 1989.

TradeNet enabled traders to have 24-hour access to services for the electronic transmission of trade documents. It was further upgraded in January 1999 to embrace web-based technologies. It currently connects 35 government agencies to facilitate the processing and approvals of trade permits, reducing the processing time per application to less than 3 minutes.

The TradeNet system requires the cooperation of multiple government agencies and an integration of their systems. Having a strong sponsor for the project was important but not sufficient for success.

Earlier efforts by individual government statutory boards didn't offer an acceptable solution. It took several painstaking years to achieve the full coverage of the 35 government agencies involved in the trading eco-system.

Extended National Single Windows with Business-to-Government Services

A National Single Window, by definition, caters for Business-to-Government (B2G) and Government-to-Government (G2G) connectivity. An interesting variant of National Single Windows provides for the extension of the services to offer Business-to-Business (B2B) services as well, such as trade-financing instruments (letter of credit, letter of guarantee, bill of ladings), commercial documents (purchase/sales order, order confirmation, packing list, advanced shipment notice, commercial invoices), etc. These services hinge on the concept of "paperless trade".[46]

[45] The concept of "connected" government is derived from the whole-of-government approach, which is increasingly looking towards technology as a strategic tool and as an enabler for public service innovation and productivity growth - United Nations e-Government Survey 2008 - From e-Government to Connected Governance.

[46] For an in-depth analysis of "Paperless Trade", see UNECE (2005), A Roadmap Towards Paperless Trade.

So far, three Asian economies have extended their existing Single Window to cater for B2B services; these include Hong Kong SAR's Digital Trade and Transportation Network (DTTN); the Republic of Korea's u-TradeHub, and Singapore's TradeXchange, which were launched between 2006 and 2007.

The extended Single Window: challenges

There are significant challenges and issues to the success of the extended Single Window. First, the business world is still very much paper-based, especially for cross-border transactions. Many banks and even government regulatory authorities still require paper-based documents for verification. Although the landscape is slowly transitioning to a paperless environment, it will still take some years to come. Secondly, unlike B2G / G2G services, where a government mandate can guarantee the compulsory usage of the Single Window for B2G transactions, there is no such requirement for B2B services. Businesses have many choices and alternatives for exchanging digital documents, and cost is often the overriding factor. Because of this, the transaction volumes of the extended Single Windows are not at the anticipated level.

2.6 Regional / Global Single Windows

As we see more national Single Windows being created, there is considerable impetus in regional and international fora for greater connectivity between countries, regions and across continents. The model currently being contemplated foresees supra-national Nation-to-Nation (N2N) exchange of trade information between National Single Windows.

ASEAN was one of the first organizations to conceptualize a regional Single Window project. As early as Dec 2005, it concluded the agreement to establish and implement the ASEAN Single Window, and followed this in April 2006 with the establishment of a protocol for that Single Window.

The ASEAN Single Window (ASW) is the first regional initiative that seeks to enhance regional connectivity. It is defined as:

"The secured environment where National Single Windows (NSWs) integrate and operate. The ASW constitutes a regional facility to enable a seamless, standardized and harmonized routing and communication of trade and customs-related information and data for customs clearance and release from and to NSWs. Trade and related customs data and information will stay within, and belong to respective Member States."

The implementation of the ASW is planned for 2015, although some cross-border transactions are expected to begin as early as 2013.

Currently the European Community has two major Single Window initiatives: (a) the Single Window Initiative of the Directorate-General Taxation and Customs Union (DG TAXUD), aims at a community-level Single Window, and (b) the "Maritime Single Window" of Directorate-General for Mobility and Transport (DG MOVE) aims to provide electronic exchange between the operators of maritime transporters within the EU.

The next stage in this fascinating evolution of the Single Window lies in connecting national Single Windows— including the existing evolutionary forms of Single Windows such as Customs Single Windows, Port Community Systems and EDI VAN— in global networks that will facilitate cross-border trade and the sharing of information in the supply chain.

3. Trends in the use of ICT for Single Windows

In the 1960s, advances in information technology and computers contributed to making electronic data interchanges pervasive. In finance, the use of Electronic Data Interchange became widespread with the setting up of the Society for Worldwide Interbank Financial Telecommunications (SWIFT) in 1974. The society established the SWIFT messaging system in 1977 when it started operations with 230 banks from five countries. The use of EDI for trade began more or less around the same time:

- In 1971, the Simplification of Trade Procedures Board (SITPRO) in the United Kingdom began work on common EDI standards for Europe.
- In 1975, the United Nations began to develop terms of reference for international EDI standardization.
- In the 1980s, UNECE contributed by laying the groundwork for the use of EDI techniques for trade-information exchanges.
- In 1988, the United Nations chartered UN/EDIFACT (United Nations Electronic Data Interchange for Administration, Commerce, and Transport) to develop a worldwide and internationally approved standard structure for exchanging information among partners.

In the pre-Internet days, Single Window systems would invariably require a front-end client for traders to access the back-end Single Window main system. These front-end clients, frequently referred to as *thick clients*, are software programs that have to be installed at the traders' premises. The continued support and maintenance of these front-end clients necessitates the existence of first-tier service providers to service the ICT needs of the trading community. Since all of these incur additional cost to the traders, this becomes a barrier for the large number of small enterprises who cannot justify such costs in view of their low trading volumes.

Today, with the pervasiveness of the Internet and its associated technologies, the leveraged use of ICT for the Single Window development is imperative.

Many of the current Single Window technical requirements focus on the use of web-based technologies for better trading-community access to the Single Window portal. The use of browsers to access the Single Window system becomes pervasive, reducing the need for the front-end thick client. This allows traders to come "on board" to the Single Window in an easier and almost cost-free manner.

One of the significant technologies for the Single Window is the use of messaging and message translation technologies to enable messages to be exchanged, processed and analysed in a secured manner. When Singapore's TradeNet was first developed, in the late 1980s, it used a proprietary "Information Exchange Engine" developed by IBM that

comprised 1.2 million lines of assembly code. [47] Great advancements in secured messaging handling and processing technologies have provided Single Window implementers with a greater choice of messaging/translation engines, capable of handling increasingly massive amounts of trade message interchanges in a scalable and secure manner. This development has reduced the cost and overall duration of Single Window development to reasonable levels.

Another recent ICT innovation that significantly impacts the Single Window is the Services-Oriented Architecture (SOA). An SOA utilizes methodologies for designing and developing software to enable interoperability. Designing the Single Window using SOA principles will enable a web-based Single Window environment to integrate widely disparate systems and applications and to use multiple implementation platforms. Hence, a Single Window using the SOA integration approach provides a flexible integration model for online and transactional processing through a messaging architecture (such as those previously described above).

Two significant advances in ICT development are expected to dominate the Single Window development landscape in the coming years: cloud computing and mobile computing.

The advent of cloud computing where applications are served with data that is stored on the Internet "in the clouds" and can be accessed and shared by the parties involved in the supply chain operation has evoked various degree of interest.

Some Single Window initiatives already make use of cloud technology. One recent example is the Trans-Kalahari Corridor regional Single Window, which employs cloud computing to automate the Customs processes and exchanges between the Customs authorities of Botswana, Namibia and South Africa.

But cloud computing for Single Windows is still very new and there have been many issues that may arise such as data quality, data privacy and security, misuse of information, reliability, liability, lawful authority for data access and many others.

It is therefore unlikely that Single Window implementation would consider operating the public "cloud" were access to the data is given to the general public. Alternatives such as "private clouds" were data and services are restricted to authorized parties may be a possible option.

Second, the ubiquitous mobile computing and radio frequency identification technology is a phenomenon that will change the way trade transactions will be done in the coming years. Soon, desk-bound computers will no longer be required for data entry and retrieval. The combination of smart devices, tablets with scanners and wireless technology will transform the logistics and supply chain into dynamic, highly traceable and visible environments. Data and information shall be captured in real-time while the cargo is on the move. All these will transform the Single Window landscape drastically.

[47] Benn Konsynski, John King, 1990. Singapore TradeNet : A Tale of One City, July 1990 Harvard Business Review.

New ways and means to interconnect the Single Window and external systems with all these devices and appliances, will mean that the real-time flow of data and information, disseminated at the almost the same time as they are received, will present a set of new issues and challenges. Information management at the speed of thought would be the new operating envelope.

4. Trends in national "Single Window" developments

In recent years, there has been a spate of countries who have issued tenders/requests for proposals for their Single Window implementation. These tenders are publicly available and reflect the current objectives and priorities of governments when implementing a form of Single Window as described in the evolutionary model in chapter two.

Table A2.2 surveys a list of 24 countries that have issued tenders/requests for proposals (RFPs) for Single Windows or related initiatives from 2005 to present, and the dates of issue of their respective tenders. The specific requirements as specified in these tender documents were analysed to ascertain common trends as well as distinctive specifications among them.

From these 24 RFPs, it is found that there is a good spread across the various regions - 11 from Africa; 5 from Asia / Oceania; 4 from Middle East, and 4 from Latin America. 18 RFPs have called for a full National Single Window (NSW) implementation, while 6 are essentially for a Port Community System, or a port-centric Single Window. Of the 18 National Single Window RFPs, 9 include requirements for risk management functionalities within the Single Window.

Interestingly, 6 countries called for a combined National Single Window and a Customs Management System. These took the opportunity to refresh their existing Customs management systems, and therefore include requirements that provides seek for a seamless integration between the "front-end" NSW and the "back-end" Customs Management System.

Table A2.2 – Single Window Tenders / Request for Proposals

	Country	Name of Single Window Project	Date of Issue of RFP
1	Chile	Ventanilla Única de Comercio Exterior (VUCE)	Sep-11
2	Tanzania	Electronic Single Window System	Aug-11
3	Oman	Integrated Customs Management System and a Single Electronic Window	Jul-11
4	Brunei Darussalam	National Single Window For Trade Facilitation System (BDNSW)	Jul-11
5	Morocco	Guichet Unique De Formalites Du Commerce Exterieur (GUCE)	Jun-11
6	Mexico	Ventanilla Única de Comercio Exterior de México (VUCEM)	Jul-10
7	Benin	Single Window for Foreign Trade of Benin for the Port of Cotonou	May-10
8	New Zealand	Trade Single Window	May-10
9	Rwanda	Rwanda Single Electronic Window	Feb-10
10	Mozambique	Single Electronic Window System for the Customs Clearance of Traded Goods	Sep-09
11	Bahrain	Integrated Trade Facilitation System	Aug-09
12	Philippines	National Single Window	Aug-09
13	Libya	Libyan External Trade Single Window	May-09
14	Togo	Single Window of Foreign Trade (GUCE) for the Port of Lomé	May-09
15	Trinidad & Tobago	Single Economic Window (SEW)	May-09
16	Iran	Port Community System	Apr-09
17	Thailand	Thailand National Single Window	Jul-08
18	Qatar	Qatar Customs Clearance Single Window	Nov-07
19	Kenya	Kenya Electronic Single Window System	Nov-07
20	Congo Brazzaville	Maritime Single Window (GUMAR)	Aug-07
21	Pakistan	Pakistan Automated Commercial Community Sys	May-07
22	Madagascar	Malagasy Community Network Services	Mar-07
23	Peru	Ventanilla Única de Comercio Exterior (VUCE)	Jun-06
24	Ivory Coast	Abidjan Port Community of Côte d'Ivoire (Ivory Coast) - Abidjan Port Synergie	Aug-05

4.1 Common Goals / Objectives for the Single Window project

For some, if not most, countries, it may have taken extensive effort, strenuous justifications, and several years of "selling" for the sponsors of the Single Window project just to reach the RFP stage. It is laudable that by reaching this stage, these countries have taken the most perceptible step in their desire to improve and enhance the trade facilitation condition, i.e. the development of their Single Window facility.

But whereas the goals and objectives highlighted in the above RFPs are wide ranging, there is consensus on the following goals and objectives of the Single Window:

- to provide convenient and a "one stop" integrated services through multiple channels.
- to electronically link government agencies that are involved in the trade process.
- to provide tangible cost savings for business and the Government.
- to expedite cargo release and clearance by means of simplification of trade related processes and procedures among controlling agencies.
- to provide benefits and simplified treatment for the trading community through elimination of duplicated processes.

- to enable world-class trade-facilitation practices by providing a fully transparent and predictable border environment while ensuring safety and security through a high-performing risk management.
- to enhance transparency and impartial treatment in the fiscal and customs framework.
- to eliminate corruption by improving methods to counter dishonest practices, and reducing discretion.

4.2 Regional trends in the development of Single Windows

Trends in African Single Window projects

The African countries that have issued their RFPs are widely spread across the continent:

- East Africa (Mozambique, Madagascar, Kenya, Tanzania, Rwanda)
- Central Africa (Congo Brazzaville)
- West Africa (Ivory Coast, Togo, Benin)
- North Africa (Libya, Morocco).

The African countries' requirements are dissimilar. The requirements of the Western African countries are mainly for a limited, usually port-centric Single Window, termed as "Guichet Unique des Opérations du Commerce Extérieur" (GUCE), or "Single Window of foreign trade". Specifically the requirements by the Ivory Coast, Togo, Benin and Congo Brazzaville have focused on the port requirements and have not incorporated some key Single Window functionalities such as customs declaration and/or licensing/permit requirements from the other government agencies.

For the Eastern African countries, it is encouraging that the littoral countries—Kenya, Tanzania and Mozambique—are all enhancing their trade facilitation capacities. This augurs well for their neighbouring land-locked countries such as Rwanda, Uganda, Burundi, and Malawi. The requirements by the East African countries were essentially for a national Single Window creating electronic linkages with the government agencies for permits and licensing processing.

Only one, Mozambique, called for a combined Single Window and Customs Management System implementation, while the Tanzanian authorities called for two separate tenders for their Single Window and Custom Management respectively around the same time. The others chose to build a new Single Window that would integrate with their existing Customs management systems.

Trends in Asia / Oceania Single Window projects

As many Asian countries are trade-oriented, it is no surprise that they're very progressive in trade facilitation. Several already have a Single Window in place.

Table A2.3 – Asian Single Window implementations

Asian countries with a Single Window System		
Singapore	Singapore TradeNet	Jan-89
Hong Kong, SAR	TradeLink	Jan-97
Japan	Nippon Automated Cargo and Port Consolidated System (NACCS)	Jul-03
Republic of Korea	u-Trade Platform	Dec-03
Indonesia	Indonesian National Single Window	Dec-07
Malaysia	Malaysian National Single Window	Nov-09

The Asian requirements are also varied. The ASEAN Single Window initiative, which calls for the integration of the National Single Window of the 10 ASEAN member economies, gives a great impetus to these countries to build their Single Windows. Hence, in recent years, there has been a marked increase in Single Window development in the region. The four ASEAN countries (Indonesia, Thailand, Brunei, and the Philippines) called essentially for Single Window requirements to be integrated with the existing Customs system.

Although not seen in the ASEAN countries, there is an increasing trend for countries to include a centralized risk management in their Single Window projects. New Zealand's Trade Single Window is part of a broader Joint Border Management System that includes requirements for an integrated intelligence and risk management that supports the Customs' as well as other agencies' risk management needs. Likewise, Pakistan's initiative, the Automated Commercial Community System (PACCS) has also included a Risk Management System.

Trends in Middle East Single Window projects

The Middle Eastern countries, in particular, the Gulf countries, have been expending great efforts in enhancing trade facilitation in recent years. Saudi Arabia was an early implementer of the Single Window, when they launched their SaudiEDI project way in 2004. Initiated by the Public Investment Fund of the Ministry of Finance, one of the goals of SaudiEDI was to smooth Government-to-Business-to-Business interactions.

In recent years, three Gulf Cooperation Council countries—Qatar, Bahrain and Oman—had issued RFPs for Single Window. One common feature in their requirements called for an overhaul and replacement of their previous Customs management systems, paving the way for a single seamless "Single Window and Customs Management" system.

Trends in Latin America / Caribbean Single Window projects

While Latin America's trade has grown significantly since 2003, this growth has also exposed the region's deficiencies in cost and efficiency of international trade. The cost of trade is reportedly higher than those reported in the countries of Asia and the Pacific.

In recent years, we have seen a marked interest in developing Single Window systems for foreign trade or "Ventanilla Única de Comercio Exterior" (VUCE) as it is called in Spanish. Colombia and Peru had an early start in establishing their VUCEs around 2006. Mexico and Chile issued their RFPs in 2010 and 2111 respectively.

A common feature of the initiatives in this region, unlike in other regions, is that the VUCEs have most Single Window features, except risk management or Customs Management functionalities.

4.3 Funding models used in Single Window development

A survey of the various Single Window case studies in the UNECE repository showed that funding for SW development is either self-financed by the respective government, or via public-private partnership (PPP).

Table A2.4 – Funding and charging modes[48]

Country	Name of SW	Funding Mode	Charging mode	Operator
Singapore	Singapore TradeNet/ TradeXchange	TradeNet – Govt-funded TradeXchange – PPP	Transaction based	Private Company
Sweden	Swedish Customs Information System/Single Window	Govt-funded	Free of charge	Customs
Hong Kong, SAR	TradeLink/DTTN	PPP	Transaction based	Private Company
Malaysia	Malaysian National Single Window	Private funded	Transaction based	Private Company
Republic of Korea	u-Trade Platform	Govt-funded	Transaction based	Private Company
Indonesia	Indonesian National Single Window	Govt-funded	Free of charge	Private Company
Japan	Nippon Automated Cargo and Port Consolidated System (NACCS)	Govt-funded	Transaction based	Private Company
Ghana	Ghana Community Netwoet	PPP	Transaction based	Private Company
Mauritius	MauritiusTradeNet	PPP	Transaction based	Private Company
The former Yugoslav Republic of Macedonia	EXIM	Aid agency & Govt	Free of charge, except for digital certificates & administrative fees for respective licenses	Government
Senegal	ORBUS	PPP	Transaction based	Private Company
Colombia	VUCE	Govt-funded	Transaction based	Government

In the case of PPPs, the common structure consists of a special purpose vehicle (SPV) whose ownership is a judicious mix of government and private entities. In some cases, the SPV could be entirely owned by the government. The SPV is given the concession or a mandate to operate the Single Window on behalf of the government for a specified period of time.

To meet the continuing cost of operating and sustaining the maintenance of the Single Window, many countries charge fees based on transactions or a fixed schedule. Other countries, notably Sweden and Indonesia, provide Single Window services free of charge.

5. Conclusions and Lessons learned

After 10 years of Single Window implementation we are now in a position to leverage the experiences made and to draw some intermediary conclusions. This chapter is an attempt to establish shared and accepted knowledge about Single Window planning and

[48] Information for the table has been gathered from the various case studies in the UNECE Single Window Repository www.unece.org/cefact/single_window/welcome.html.

management. The observations may be useful to policymakers and managers in further developing their Single Window systems.

Different Forms of Single Windows

Depending on their readiness and priorities, countries have implemented very different forms of Single Windows ranging from integrated Customs solutions to sophisticated Port Community Systems and regional platforms. The Single Window concepts used do not strictly follow the definition of the Single Window facility as set out in UNECE Recommendation 33. The practical examples showed that Single Windows have generally been conceived as a large interagency collaborative system that facilitate and automate business processes and data exchange for international trade.

Evolutionary and Staged Development

To develop a Single Window is typically a massive undertaking involving interlinking and information-sharing by Customs and all government agencies responsible for trade, and also the trading community. It requires new ways of processing trade and necessitates streamlined business processes. Due to the complex change management, Single Window development typically follows a gradual evolutionary and staged pathway, usually starting from an advanced Customs solution, and progressing to encompass advanced national and regional trade-facilitation objectives.

Impact of Single Window in Different Forms

Particularly in developing countries and transition economies, the national Single Window has been a success story. Single Window projects have simplified and automated business procedures, introduced change and brought about collaboration between government agencies and the private sector. Many of these countries have shown marked improvements in their trade-facilitation indicators, as seen in the various surveys including the World Bank's *Doing Business - Trading Across Borders*, as well as the Logistics Performance Index.

In many advanced trading economies, such as the EU, the US and China, the national Single Window concept has not been implemented. Instead, other forms of Single Windows, in particular Port Community Systems and Customs Single Windows are being successfully used to enhance a high-performing logistics sector. However, linking these different platforms into a national or regional network remains a challenge.

Cross-border information exchange

Both in developed and developing countries, finding improved way to conduct cross-border trade transactions is now an imperative and pressing need. This requires connecting national Single Windows. Networked Single Windows effecting electronic exchange of information along the international supply chain is a natural progression in the increasingly globalised trade environment. Trade liberalization and regional integration are main drivers for a regional Single Window framework that facilitates cross-border trade exchanges.

Many aspects of regional Single Window integration remain to be defined. This includes data harmonization, creating an effective legal framework for data exchange within a Single Window network, and a sustainable business model for the service providers.

The future for global exchange of information in interregional supply chains is remote, as there's currently no framework for data exchange on a global level. There's no internationally accepted model to establish an information exchange for containerized cargo along such an international supply chain. For example, the ports of Hamburg, Mumbai, Singapore and Shanghai all use different data sets as well as Single Window capabilities.

Need for increased regional and global cooperation in Single Window development

Over the last 10 years, Single Window projects have been mainly at the national level. While these have been useful to governments for supporting the national economic agenda, they have increasingly become a major platform for an integrated world economy.

This trend will increase the complexity and demands on Single Window projects. There's a growing need for implementers of Single Windows to establish further international collaboration to develop common interconnectivity strategies, policies, data harmonization and standards.

Already, we see some form of such collaboration being done, albeit by private sector players. The Pan Asia E-Commerce Alliance (PAA) and their African counterpart African Alliance for e-Commerce (AACE) are examples of collaborating Single Window operators, who establish a mechanism and framework for the conduct of secure cross border document and data interchanges amongst the stakeholders in the respective Asian and African regions. However, their efforts are only part of the picture and need to be complemented by the corresponding government policies to truly effect cross border exchanges.

Recommendations

Single Window developments have come a long way from being just an idea to playing an effective role in trade facilitation. What started as a concept has now become a clarion call for improving trade facilitation, transforming the economic development of many countries and economies.

Taking into account the experiences from the last 10 years of Single Window development, it is suggested that national governments, regional and international organizations—as well as key stakeholders from the international private-sector community—collaborate on *key initiatives* to support and guide the future development of a globally networked Single Window.

The key initiatives should focus on the following:

- creating a common, global framework for Single Window planning and development that encompasses and interconnects different forms of Single Window models. The use of a standard evolutionary model for Single Window development will help policymakers and managers determine the state of their national Single Window and define objectives for the next step of implementation.
- prioritizing regional Single Window collaboration. Depending on the readiness of the countries, this could include the exchange of best practice, the development of sustainable business models and pilot projects for data exchange among national Single Windows, the development of technical and legal frameworks for information exchange and supporting trade agreements and policies.
- developing at the global level a vision for how to achieve electronic information exchange in global supply chains using the capabilities of Single Window implementations in the countries. Such a vision must take into account the different Single Window models of the developed and the developing countries and emerging technologies and requirements of international trade.
- ensuring that policymakers take into consideration the potential of Single Windows when developing bilateral or multilateral trade agreements. Those agreements should include provisions to enable information sharing in cross-border trade for use, security and efficiency.

Annex 3: The Data Pipeline

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Executive summary

Government agencies and businesses cooperate and invest heavily to achieve a reliable and secure global supply network. Supply chain visibility and transparency along with business-to-business and business-to-government interaction are growing increasingly important as companies struggle to rebound from the economic recession. But complexities of commercial transactions, logistics and border procedures within the international trade supply chain, require a fresh and innovative approach if the demand for efficiencies and savings is to be realized.

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Businesses themselves need to invest in the next generation of supply chain-management techniques in order to reach this goal:

- The first improvement is the realization of sustainable, cost-efficient supply chains by establishing shared knowledge between buyer and seller on the trade-transaction process, enabled by better real time data management and traceability.
- The second is the optimization of logistics and terminal operations by means of synchro-modality, which concerns the switching between different forms of transport (truck, barge, airplane, ship, and train) within a strategy of more timely, efficient and environmentally friendly distribution from the major ports – limiting the use of trucks for inland transport.
- The third is to acquire the Authorized Economic Operator (AEO) (trusted trader) status to prove that a business is compliant and trustworthy within the context of risk management and trade facilitation.
- The fourth is by the regulatory authorities through improving the coordination of border management, facilitation and supervision, and working in partnership with businesses trading internationally in order to capitalize on modern information technology and using twenty-first century innovation for risk and data management by "piggybacking" on sound, legitimate business practices used to buy, sell and ship goods globally.

To enable improvements in these four areas, we propose the “data pipeline” innovation. This is a web-based IT infrastructure that enables the seamless integration of all data elements from all the different sources in the supply chain at the Consignment Completion Point (CCP).

Part of the innovation suggested in this paper is to include the CCP as an additional waypoint to the supply chain, as the active participation of the consignor and the information provided in the packing list play a key role in maximizing safety, security, legal compliance and minimization of commercial risks.

This CCP waypoint is located at the point where a container is packed or a consignment is completed. At this waypoint, a full set of accurate data should be exchanged between the seller/consignor and the buyer/consignee. If the full amount of data relating to the goods and the consignor and consignee required by customs and other regulatory agencies for an export declaration is provided electronically at the CCP, then these complete and accurate data not only can bring the seller and buyer together without being dependent of intermediary logistic service providers but the data can also be used for advanced risk profiling by all cross-border inspection agencies. The data pipeline thus is viewed as connecting actors in so-called “smart" supply chains.

This paper explains the motivation for the data pipeline vision and provides a conceptual model of such a pipeline, which is a central topic of the EU-funded CASSANDRA project, within an environment of greater coordination and use of real time data from the right source in the supply chain.

1. Introduction

In *'The Wealth of Nations'*[49] Adam Smith, the eighteenth century moral philosopher and pioneer of political economy, suggested that wealth comes from the stream of goods and services a country creates and that regulations on commerce are ill-founded and counterproductive. In his Canons of Taxation, Smith also promoted the concepts of equity, certainty, convenience and economy.

In the twenty-first century globalized international trade has certainly proved to generate economic strength. But regulatory and contractual complexity has grown to a level that may be inhibiting rather than simplifying trade.

This paper follows a step-by-step approach, identifying some key problems in the international trade supply chain, and proposing a new concept for the future, using innovative information and communication technology to increase accountability and transparency. The topics we will be discussing include visibility and transparency in global trade chains, better coordination of logistic distribution systems, and streamlining data flows for commercial and regulatory purposes.

The systems used in international trade have developed since the eighteenth century to cater for general cargo and paper-based transactions. They are designed to minimize the liability of the major carriers, protect the financial interests of both buyer and seller but shield the consignor from taking full responsibility for sending goods into the supply chain.

Since the advent of the sea container in the twentieth century, the carrier has entered into a contract of carriage with the shipper concerning goods in a metal box that nobody can see. Outsourcing, consolidating cargo and multi-modal transport chains have allowed the identity of the true seller or consignor to be clouded and contractual terms to be over-complicated. Carriers and importers are being asked to make legal declarations about goods they have never seen and documents containing crucial information can lag three days behind the exported goods. This is all happening while advances in information technology have rapidly outstripped the enthusiasm or willingness of the international trade industry to adapt and keep pace with change. Complexity and mysticism have caused the simple buyer and seller to engage a range of logistics and service providers to handle the processes on their behalf resulting in a lack of visibility of events, costs and assurances.

In this paper we put forward the concept of a virtual, seamless, electronic 'data pipeline' that links the buyer and the seller to assist them in their commercial transactions, their logistics operations and their regulatory responsibilities. Other participants in the supply chain also use the pipeline where appropriate. We propose that if that demands of both business and government are to be realized in the future, a fresh and innovative approach needs to be taken.

To this end, we present the "data pipeline" vision. The data pipeline offers an innovative approach to the exchange of data throughout the international supply chain, as a

[49] Adam Smith (1776). An Inquiry into the Nature and Causes of the Wealth of Nations.

prerequisite to further establishing secure and reliable supply networks, for business and government.

The remainder of this paper is outlined as follows. Section 2 provides an analysis of the current situation. In section 3 we share the data pipeline vision, as a means to overcome the current issues and to support strategic improvements for both business and government. In section 4 we analyse the potential role of Single Windows and Port Community Systems for implementation of data pipelines. We also address the initial implications for implementation. The paper ends with the conclusions and next steps.

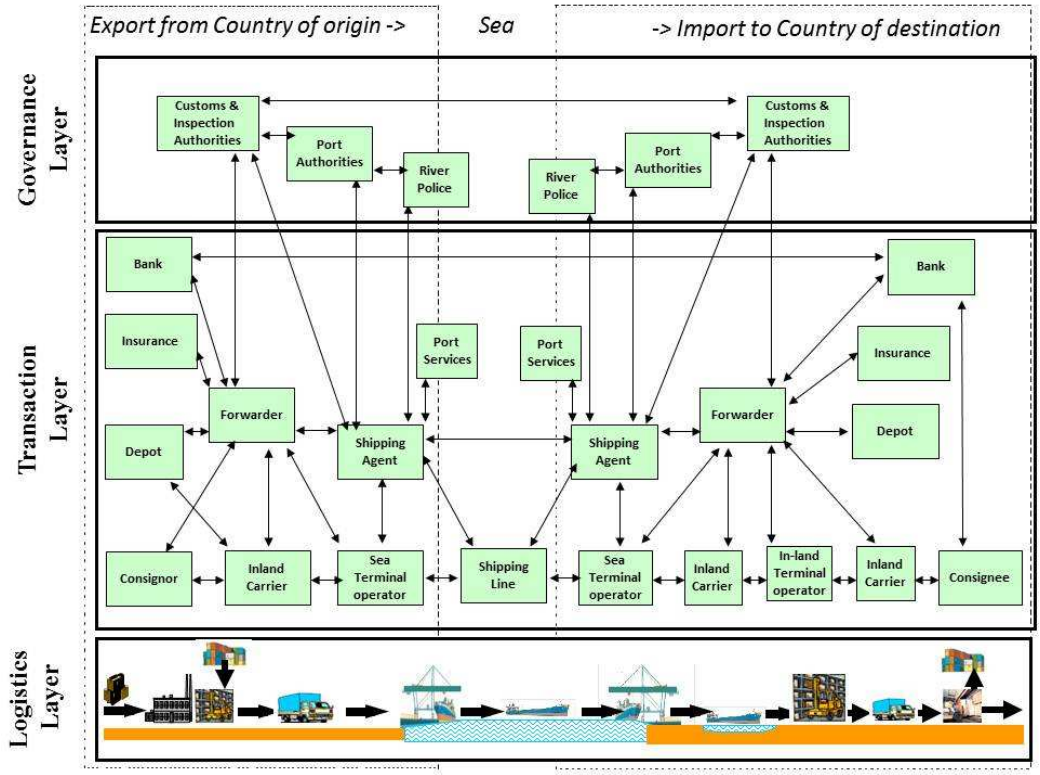
2. How we use information in today's supply chains

2.1 The parties in an international supply chain

An international trade supply chain is a global network of autonomous or semi-autonomous business entities involved in procurement, manufacturing, distribution and payment activities for products that cross the borders between countries or economic areas. One of the major challenges for supply chain managers is to develop a network structure and collaboration mechanism that can facilitate adaptive, flexible and synchronized behaviours in a dynamic environment that is both reliable and secure (Perona and Miragliotta, 2004). While there are many definitions of the international trade supply chain, most give the impression that it takes a linear form. It is often described as “only being as strong as its weakest link”. Van Oosterhout et al. (2000) make the distinction between physical, information and financial flows along the supply chain and describe the Logistics Layer, the Transaction Layer, and the Governance Layer (cf. Van Baalen et al., 2008).

Figure A3.1 presents a visualization of a (relatively straightforward) global supply chain relating these three layers, denoting the physical flow of goods with commercial transactions by business actors as well as the governance layer with governmental actors involved in export and import.

Figure A3.1 – Overview of the global chain (Source: Van Oosterhout et al., 2000)



We want to highlight the following parties:

The consignor is the person sending a shipment to be delivered whether by land, sea, rail or air. This is the actor who knows what is being sent into the supply chain and is generally the actor who 'packed the box', i.e. consigned the goods. Often the consignor is the seller of the goods but that is not always so.[50]

The consignee - the seller puts the consignment together to meet the order placed by the buyer, or consignee. The buyer and seller will have negotiated their International Contract of Sale, which includes details such as the full description of the goods, unit price, Incoterms[51], payment details, insurance, dates and logistics. The consignor holds the key to most of the information that is needed to improve supply chain visibility, which benefits both consignor and consignee.

Carriers are the companies that physically move the goods on ocean ships (or inland: barges), airplanes, trucks, and trains. Some carriers, such as national postal entities, use the term "sender" or "shipper".

Freight forwarders sometimes fulfil the role of **consolidators**, putting together "less than full container loads" (LCLs) or groupage consignments from different consignors.

[50] A detailed discussion of the differences between seller and consignor/ buyer and consignee is out of scope here, but may for example be derived from the UN Trade Data Elements Directory (UNTDED) (see www.unece.org/fileadmin/DAM/trade/untdid/UNTDED2005.pdf).

[51] Incoterms are terms agreed between consignor and consignee about who is responsible for arranging the transport of the goods, insurance during transport, and which party is responsible for the administrative handling of the documents (see International Chamber of Commerce, www.iccwbo.org/incoterms/).

In that case, they also are essential to bring together the information and, if it is on paper, put it into an electronic format.

Customs authorities are typically regarded as a central stakeholder. Generally Customs—at times jointly with other governmental (Border) agencies—are accountable for controlling imports and exports for customs, social, health, safety and security purposes. Customs administer and enforce the law, regulations and procedures regarding duties and taxes, the international trade in goods, trade statistics and import and export prohibitions and restrictions. This includes duty relief schemes, excise duty, customs duty, value added tax (VAT), tariff quotas, Common Agriculture Policy controls, commodity codes, import and export licensing, preferential duty rates, strategic exports, intellectual property rights – and safety and security along the international trade supply chain.

2.2. Supply chains in the twenty-first century: the need for visibility?

Supply-chain visibility relates to access to the underlying transaction data that are necessary for a private-sector operator or government agency to assess what is actually happening in the supply chain. Without accurate and timely data about the goods, the people involved, the payments and the integrity of the logistics, the risk of something going wrong increases, effective planning is inhibited and confidence decreases (Christopher and Lee, 2004).

Visibility is, in fact, a precondition for the parties to understand the current state of a supply chain and to make intelligent choices in the actions they have to perform. It is now regarded as "one of the largest unmet needs and value opportunities in supply chain management"[52]. Supply-chain visibility is consistently ranked as a top priority for internationally operating businesses and for governments that have to supervise goods flowing across borders[53].

However, in today's global trade, many supply chains have grown in complexity to a point where clear visibility is masked from those who need to know what is going on. This is particularly so in the case of "less than full container" shipments where a consolidator packs consignments from several consignors into one container and often provides only summary data of the contents to the shipper, e.g. "agent to agent"

[52] World Economic Forum, Logistics Supply Chain Report 2010-2011. http://www3.weforum.org/docs/WEF_GAC_LogisticsSupplyChain_Report_2010-11.pdf, p. 20

[53] Aberdeen Group, Supply Chain Visibility Roadmap, http://www.aberdeen.com/aberdeen-library/3609/RA_Visibility_BE_3609.aspx

The Hermes project commissioned by the former United Kingdom organization for simplified trade procedures, SITPRO, analysed the use of information in international food supply chains from suppliers in third countries to United Kingdom retailers[54]*. The project found that documentary systems incur costs for companies moving perishable goods along the international trade supply chain of more than US$1.6 billion annually. In a typical single complete consignment transaction from grower to retailer, 150 documents are used. One billion pieces of paper are produced each year by this supply chain of which over 90 per cent are destroyed. The report estimates up to 1.4 million incidents of missing or delayed documents in a single year for perishable foods imports into the United Kingdom alone. These result in additional costs from securing replacements or amendments, as well as costs that delays can exact in terms of additional spoiled food. The report also found that potential savings of over US$1 billion could be made by improving transparency of agriculture supply chains. To achieve this all the parties in the supply chain including importers, exporters and authorities would have to gain access to the information that is relevant for their decision making in electronic format.*

Data deficiencies and gaps, together with an outdated paper trail—as updates and changes may not clearly be reflected in them—are creating financial, safety and planning risks. Costs are ambiguous, thereby clouding overheads and profit margins. This lack of visibility is significantly adding to costs in supply-chain networks (Christopher and Gattorna, 2005). Businesses are increasingly interested in getting access to the data that create supply-chain visibility for them, to make better choices in managing the supply chains.

Government actors are also seeking further means to facilitate international trade while safeguarding public values (Tan et al., 2011). Both globalization and the large scale of international trade add to an unprecedented scale of risks related to security, safety, health and fraud (Van Oosterhout et al., 2007; Tan et al., 2011)[55].

Given the increase in international trade, and the substantive risks involved, border management has also increased in complexity, and can cause time delays, cost increases, as well as reductions in the competitiveness of supply chains (Holloway, 2010). For border agencies such as Customs to perform their functions they need transparent supply chains with all relevant information to assess risks and to make intelligent decisions. To do this, their focus lies on information provision by businesses.

Information required by border agencies is being requested further upstream in the supply chain from the parties that are at the source of the information. The best person to provide this information is the one who packed the box or consigned the goods. However, for commercial and reputational reasons, the seller often does not want to let the buyer know where the goods came from originally, i.e. who the producer(s) is / are, in order to prevent the buyer bypassing the seller and purchasing the goods directly from the initial producer.

54 webarchive.nationalarchives.gov.uk/20100918113753/http://www.sitpro.org.uk//news/articles/snar200807a.html.

55 See also the World Economic Forum's report "Global Risks 2011", http://riskreport.weforum.org/global-risks-2011.pdf.

The information that finds its way into the transport documents—and from there into the customs declaration—is often not from the originator. As a consequence, Customs and other parties in the supply chain have to manage their supply chain with second-hand information that is filtered, altered and likely to be inaccurate (Hesketh, 2010).

The lack of transparency in supply chains becomes particularly visible in supply chains with consolidated consignments were goods form different shippers are consolidated in one container. The contract of carriage is between the consignor and the 'consolidator' or 'agent' who takes the groupage container to the port for loading. The Bill of Lading becomes a contract between the carrier and the agent to deliver the goods to the port of unloading where another agent will deconsolidate the cargo.

Not only do the carriers not know what they are carrying but they also do not know who owns the goods, who is sending them or who is ultimately buying them (cf. Hesketh, 2010). This poses safety, security, legal compliance and commercial risks.

In everyday practice, despite the legal requirement to provide accurate data about the goods being carried, about 60 per cent of vessel manifest information is described as 'agent to agent', making the data unfit for regulatory pre-arrival risk-assessment purposes.

It is generally agreed within the container industry that up to 10 per cent of containers loaded onto a vessel might not be in their planned positions.[56] *Also, discrepancies in weight are widespread within the container industry. They can be due to shippers deliberately under-declaring container weight so as to minimize import taxes calculated on cargo weight, allow the overloading of containers and keep the declared weight within limits imposed by road or rail transportation. Well-established commercial practices within the Logistics Layer are masking the accuracy of data and thereby increasing the risks posed by a lack of visibility (Hesketh, 2010).*

Visibility of the supply chains could be ensured if Customs had access to information and data about the consignor, who holds the key to the majority of that information on the shipped goods. However, as the consignor is outside the jurisdiction of the importing country's authorities, Customs has to instead revert to the second-hand information provided by the carrier and the importer.

Many Customs organizations are currently aiming to increase the transparency of their part of the supply chain by requesting Advance Cargo Information prior to shipment to their countries such as the European Import Control System (ICS). However, the advance information comes with a cost: An impact assessment reveals that the estimated costs for businesses in the United Kingdom amount up to € 7.5 million for ICS implementation, and additional average annual costs of up to € 1.1 million (HM Revenues and Customs 2009). In addition ICS is unlikely to solve the transparency issue as the data provided is still coming from the shipper and not from the consignor[57].

[56] Marine Accident Investigation Branch, Report on the investigation of the structural failure of MSC Napoli, English Channel on 18 January 2007, (pp. 28-29) http://www.maib.gov.uk/cms_resources.cfm?file=/MSC%20Napoli.pdf.

[57] http://ec.europa.eu/ecip/help/faq/ens1_en.htm#faq_2.

Visibility is also a key issue to meet new demands of supply chains in the twenty-first century in areas such as environment protection and social accountability. Governments have already set ambitious environment objectives such as reduction of CO^2. Channelling goods to their most efficient and least polluting route or mode of transport can be greatly improved if more detailed "original" source data are available, as demonstrated in the case of bananas (see box below).

There is also a trend to establish supply chains with products that conform to social and environmental production standards. These supply chains can bring many additional benefits to the exporting and importing countries, and to the trading partners. They typically achieve higher profit margins and lead to a gradual improvement of quality and services—which is attractive also for developing countries and transition economies.

To create such supply chains all parties require transparency and access to information so as to establish trust and to ensure that the standards are met. This can only be achieved by establishing transparency in the supply chain where parties have access to relevant information at all stages of the supply chain.

The EU "Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system" found that if Europe sticks to "business as usual", by 2050 CO_2 emissions from transport would be one third higher than their 1990 level and congestion costs would increase by 50 per cent.[58]

At present, more than 95 per cent of the containers with fruit that arrive at the Port of Rotterdam are shipped to the hinterland by road, because normally fruit is a perishable good that has to be shipped as quickly as possible (e.g. strawberries). However, some fruit types like bananas do not need to be shipped as quickly as possible.

If it is known which container at the Port of Rotterdam would contain which fruit type, a choice can be made to ship containers with bananas and fruits with comparable characteristics by means of barge transport. Barge transport is much cheaper than road transport and causes only low emissions. It is estimated that road transport of vegetables and fruit could be reduced by 50 per cent (Overbeek et al., 2011) if traders had information to make intelligent logistic choices.

This section has offered a brief analysis of the current situation in global supply chains. We see critical issues regarding visibility and transparency, leading to high risks and high costs. It is a top priority for business and government to make ongoing strategic improvements in order to create and maintain sustainable and secure supply chains. To address the issues identified and to make strategic improvements, both businesses and government require timelier and more accurate data. To make this happen, we propose that an innovative data-sharing concept is required. This so-called "data pipeline" allows original trade data to be made available and used by businesses and government to make their operations more effective, efficient and secure. In that light, one may think of the actors becoming part of "smart" supply chains. We'll discuss the integrated data pipeline in the next section.

[58] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0144:FIN:EN:PDF.

3. Data pipelines for transparency in supply chains

Let's now look at the underpinning principles, the data pipeline and how it works, enabling IT innovations, and the benefits for business and government, as well as initial implications for its development and implementation.

3.1. Underpinning principles of the data pipeline[59]

Two core principles underlie the concept of the integrated data pipeline. The first is that the original trade data (usually supplied by the consignor) are gathered and shared and can be used by (authorized) parties in the trade network to improve their operations. Using what we call the "piggybacking principle", we focus on the re-use of available business data and data flows in the international supply chain for purposes different from those for which they were originally intended, including for control and (regulatory) compliance purposes (Baida et al., 2008; Rukanova et al., 2011; Tan et al., 2011).

Essentially, the parties participating in a supply chain provide data that can be of relevant to other supply-chain parties in a shared information space. The management, access and security of information in such a space can be ensured using different technologies and approaches—for example, cloud computing technology.

The information shared between the parties describes:

- the transactional data (as captured by consignor and consignee, and intermediate parties in the supply chain).
- the physical data (as captured by tracking and tracing, and monitoring devices).
- the relevant commercial risk management data (for example quality and technical compliance checks of the goods against ISO standards).

It is evident that access to this information is regulated and based on dedicated access rights. The piggybacking principle within the data pipeline concept involves a fundamental shift from a document perspective to a data perspective. Instead of sending (pushing) documents with filtered information from one party to another, the parties will rather access (pull) the information required when they need it.

In the traditional document-focused process, the data are "pushed" by business to a variety of government agencies (e.g. Customs, statistics, veterinary), through the obligatory documents and submitting data to the government information systems (Rukanova et al., 2011). Instead of this "data push" model, the radical change proposed here is the transformation towards increased "data pull"—i.e. where the governmental agencies requiring information can "pull" these from the existing information systems of companies (Tan et al., 2011).

[59] The web-based, integrated data pipeline vision has been put forward originally by Her Majesty's Revenue and Customs (HMRC) in the United Kingdom (UK) and the Dutch Tax and Customs Administration (DTCA) (Hesketh, 2010; Overbeek et al., 2011).

The key advantage for government agencies would be that they would obtain "original" quality data from the source. They can obtain the data any time, real-time, rather than only at the moment of border-crossing, thus improving compliance management and risk-based auditing.

The second core principle in the integrated data pipeline concept is the notion of synchronization points that determine when shared information must be available to parties in international transactions.

The supply-chain process includes two critical information points. The first is the sales agreement between the buyer and seller, where an accurate description of the goods and terms under which they are to be bought and shipped, is captured in the purchase order and contract of sale. The second is at the completion of the consignment, where the packing list, shipping note or dispatch note and the transport document show that the goods have started their journey along the supply chain, in accordance with the order and contract. The Consignment Completion Point (CCP) is the stage just before the completed consignment at either 'house' level (in waybill terms for a small individual consignment) or 'master' level (for a single, groupage or consolidated consignment) is dispatched into the international trade supply chain (Hesketh, 2010; Overbeek et al., 2011).

At this point, everything about the goods is known and agreed between the consignor and the consignee and their identity and status is known to each other. The buyer or consignor can confirm electronically with the buyer or consignee that the true packing list matches the purchase order and the contract of sale and that the goods, as ordered and agreed, are about to be sent. It is similar to the prompt or dialogue box on a computer screen saying: "Are you sure?" At this point, the data relating to the goods and to the people involved in the commercial transaction can be made available to the regulatory authorities in the country of export, transit and import—and at the same time by electronic message. Visibility of those two crucial points by buyer and seller ensures conformity with both the contract of sale and the regulatory requirements for safety, security, admissibility and compliance.

3.2. The integrated data pipeline vision

3.2.1. The data pipeline and how it works

Figure A3.2 shows a model of an Internet-based data pipeline that enables the seamless integration of data elements from all the different sources in the supply chain at the CCP. It visualizes what kind of shipment data are exchanged during transportation. For example, consider a manufacturer of baby foods in the Netherlands that imports bananas from a South-American exporter. They can agree upon an international Contract of Sale before the goods are consigned, which should contain all the relevant data about the goods and the parties, the terms and the planned movement of the goods. The consignor, in this case the South-American exporter, makes an entry in its records containing the necessary and accurate data about the shipment fed by the packing list, which should match the purchase order and invoice. This precise data are forwarded to the freight forwarder or a third-party logistics provider (3PL). The pipeline model shows that all other users of the shipment data get the original shipment data from the consignor: they

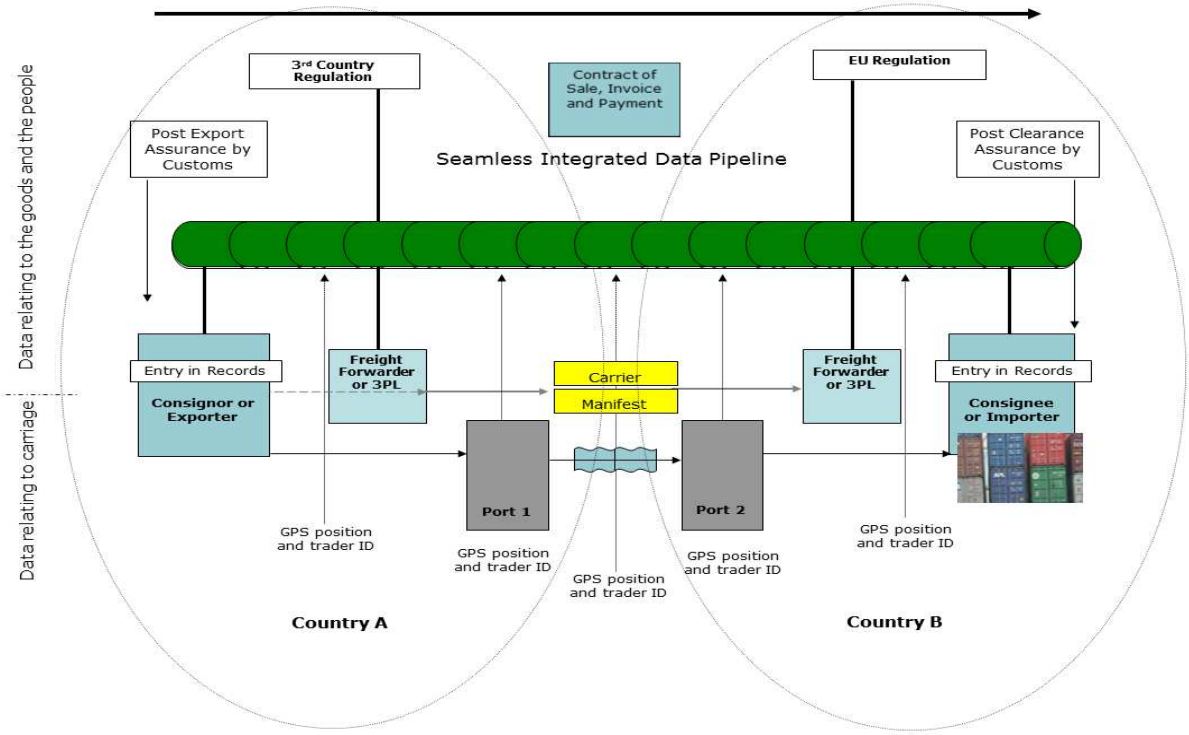
are not altered by someone else. This includes the planned port of departure, port of arrival, the carrier with the manifest, Customs and the consignee.

In the data pipeline, a distinction is drawn between (a) data related to goods and people and (b) data related to the carriage itself. The different types of data are shared with the relevant parties, for different purposes. Businesses can, for example, use the logistical data to optimize distribution logistics through synchro-modality. The carriage data are captured in the data pipeline by means of container seals with GPS or location data of the ship.

If the journey was short, the bananas will not yet be ripe upon arrival at the Port of Rotterdam. A choice can then be made by the baby food manufacturer to use cheaper and more sustainable barge transport to carry them inland. However, if the shipment is having major delays because of bad weather or re-routing, further transport by truck may be necessary to avoid a spoilt load.

The parties with which the data may be exchanged from a legal perspective are determined by legislation at the national level, EU level or federal level, depending on the country the goods are moving in. Governments can piggyback on the commercial data available in the data pipeline. These data are captured at the source, not changed to fit the regulatory document, and better fit for e.g. risk management purposes. The data pipeline makes real-time data management possible, which would allow for moving the moment and location of inspections and clearance procedures. For example, the physical inspection of the bananas would not necessarily have to take place at the Port of Rotterdam—which would optimize the flow there—but could instead take place at the premises of the South-American exporter (and be sealed afterwards) or at the bonded warehouse of the baby food manufacturer. The data pipeline thus also provides opportunities to improve border-management coordination.

Figure A3.2 – A seamless integrated data pipeline (Source: Overbeek et al., 2011, adapted from Hesketh, 2010).



3.2.2. Latest ICT technologies to enable the data pipeline concept

The data pipeline concept could be introduced through a cloud computing solution in the context of international trade. Cloud computing is an approach where data are provided through services over the Internet and where the network of services is referred to as 'the cloud' (Andriole and Khorasani).

Cloud computing builds a virtual pipeline of data, functions and applications that ideally can be viewed in or used by any computer system, eliminating the need for duplicative storage of data and services in disparate systems. It combines virtualization, service-oriented software, grid computing, the management of large facilities, and power efficiency to achieve durable and flexible computing services.

Cloud services provide access, confidentiality and sharing of data and can store large amounts of unstructured data (Dikaiakos et al., 2009). Cloud computing provides a new model for information delivery and consumption in which applications and data are accessed from a web browser, while software and data are stored on servers. Some disadvantages are that users must be connected to the Internet to use the cloud, and the availability of data across large geographic distances may in turn create risks for data custody, ownership and use.

A prerequisite for implementing a global data pipeline is to have a standardized, uniform means to describe, offer and discover data that are used for interaction (Baida et al., 2011). This means that data-sharing standards are essential. Such standards should be open standards developed in a standardization community open to all stakeholders.

Two types of data standards can be distinguished here: the trade or customs data standards and the IT standards needed for interoperability and Web service message

exchange protocols. The World Customs Organization (WCO) data model version 3 and the Core Component Library of the UNECE Centre for Trade Facilitation and Electronic Business (CEFACT) are the most prominent trade or customs data standards.

The main objective of the WCO data model is to define a set of standardized data usable by both customs and trade operators for electronic data exchange during customs clearance, including completion of the trade manifest and declarations. The WCO data model is essentially a set of harmonized data requirements derived from cross-border regulation. These are updated frequently to meet the procedural and legal needs of cross-border regulatory agencies such as customs, controlling export, import and transit transactions.

The UNECE Core Component Library (CCL) is the cornerstone of the UN/CEFACT standardization activities. Core Components are the syntax-neutral and technology-independent building blocks that can be used for data modelling. CCL is part of the ebXML (ISO 15000) suite of standards for eBusiness interoperability. Major benefits of the CCL include improved re-use of data artefacts, improved enterprise interoperability, and consistency across vertical industry standards.

One of the most widely used set of IT standards that is tailored for data sharing in international supply chains is EPC Global from GS1, which support sharing of data between heterogeneous hardware and software architectures. The definition of EPC Global standards is still an on-going process. What is available are specifications for Radio-Frequency Identification (RFID) tags and readers, standards for storing and sharing Electronic Products Codes (EPC) event data in EPC information services (EPCIS) repositories and an EPCIS discovery service to search EPC related data across the EPC network (Baida et al., 2011).

The pipeline concept draws upon Radio Frequency Identification (RFID) technology for localized tracking of goods at unit, pallet, consignment and container levels. It also draws upon GPS to track consignment and containers, where appropriate and cost effective, as well as the tracking of vessels carrying containers through the coastal Automated Identification System[60] (ShipAIS) and the Long Range Identification and Tracking system[61] (LRIT). Other sensors, for example to monitor temperatures, can also be used.

3.2.3. Benefits of the data pipeline

The data pipeline is a means to improve visibility and traceability of transactions and goods in international supply chains. The original commercial data are captured as far upstream as possible, preferably at the Consignment Completion Point (or even earlier), and complemented by data on the movement of the goods.

Such a pipeline offers important benefits for the business world. First of all, improved visibility supports cost-efficiency in the supply chain. For example, it enables cost identification and to bring about lower inventory levels, improved planning of logistics, purchase and sales, better choices of service providers, and it may make information to

[60] See: http://www.shipais.com.
[61] See: http://www5.imo.org/SharePoint/mainframe.asp?topic_id=905.

protect profit and capture more market share available (Hesketh, 2010). The data pipeline will also allow businesses to monitor and trace the goods more precisely during the carriage.

If the goods need to be transported under certain conditions, smart sensors can be mounted on the containers (also providing the GPS locations) or measure at product level, can give alerts if the sensor readings deviate from the set parameters (cf. Tan et al., 2011). For example, in the case of food products, if there have been alerts that the container has been too warm during transport, the consignor might not want to have the consignee pick up the goods before an extra quality test had been done, or it may be decided to ship another consignment, while forewarning the consignee about the delay as well. Again, this would improve logistic planning, which is an important part of managing food safety and quality. The location data can be used to check whether goods are e.g. re-routed or are encountering other delays (for example because of weather conditions). This would allow for better planning, also in terms of determining when exactly which goods will arrive.

Synchro-modality

The data pipeline also allows for the visibility that's needed to make advances in distribution logistics, like "synchro-modality". Synchro-modality describes a flexible and sustainable transport system in which companies can make an intelligent choice from a range of transport modes modalities. In this case, the data pipeline provides the information about which containers contain which food products, for example, so that a better choice can be made between e.g. barge transport versus road transport (Oosterbeek et al., 2011). This enables businesses to save costs and also to make more sustainable, environment-friendly choices. In the long run, this could also lead to less traffic congestion.

Indirect benefits to companies

Besides such direct commercial benefits, the data pipeline will also benefit companies in terms of their compliance with governmental procedures and regulations:

- It requires fewer message exchanges between business and government for completing a full declaration.
- It would reduce errors of e.g. retyping information at different points in the supply chain, which can be time consuming to resolve.
- It minimizes the number of costly interfaces and modifications of enterprise systems that would have to be invested in, both in terms of the linkages with the different governmental agencies involved, but also when the company operates in multiple countries.
- Sharing data through the data pipeline will be a way in which trusted traders (AEO (Authorized Economic Operator)-certified businesses) can demonstrate to government agencies that they have end-to-end transparency and are in-control of the physical flow of the goods (Tan et al., 2011). Already at the CCP, the data that have to be gathered for Customs purposes can be submitted and additional proof (e.g. regarding the final destination of the goods) is provided by the tracking functionality. Thus, the data pipeline supports the certification of

trusted traders—who may then get additional benefits such as fewer physical inspections, fast lane clearance, etc.

From a governmental perspective, the data pipeline supports the improvement of risk-management practices. Rather than gathering (electronic) regulatory documents, the data pipeline enables the capture, at the source, of digital commercial data that have not been adapted by business to fit the document. This should improve data quality, making the data more suitable for risk management, as more precise commercial data can be captured about the entities involved in the transactions, the contracts between them, as well as the flow of the goods.

Also, it may be part of the data-sharing between trusted traders and government to include commercial risk assessments in the data pipeline, or to piggyback on other controls put in place by business. For example, for food products, in the case of the temperature alerts we described earlier, government actors and AEOs may cooperate more closely, so that inspections already conducted by the businesses themselves are not necessarily repeated by Customs or the food-inspection agency. This would thus mean less governmental interference for the AEO, and greater efficiency for the governmental officials concerned.

The data pipeline also offers a means of communication for improved coordination of border management. This can include communicating about audits and inspections already conducted at the country of export to the authorities in the country of import. The data pipeline can also provide the data needed for e.g. the “export is import” procedure. If there's no formal mutual recognition between the two countries, the data pipeline can provide an informal basis for extended cooperation and coordination, and the country of import can take the data into account in their own risk-profiling and border management. The data pipeline thus offers a way for government to improve governance of international trade and to increase trade facilitation, while also providing efficiency benefits.

3.3. Initial considerations for realizing the data pipeline vision

Implementing a web-based, seamless, integrated data pipeline is a challenging endeavour, both from a technical point of view and from many other perspectives, including strategic, organizational, political and cultural viewpoints (Overbeek et al., 2011; Van Stijn et al., 2011a). It involves a large stakeholder group, from many different public and private organizations in different sectors, countries, etc., and affects an even larger network (cf. Overbeek et al., 2011; Van Stijn et al., 2011b).

Global supply chains are networks with complex interdependence between various stakeholders, including freight forwarders, port community systems, Customs and other authorities, terminal operators, consignors and consignees, providers of IT systems, providers of e-Government infrastructure, etc. (Overbeek et al., 2011).

The future situation concerns a shift in data-exchange and control responsibilities between government and businesses. From a governmental perspective, the two basic reasons for change are (a) to achieve further control of international trade to ensure societal values such as security, safety, limiting illegal activities (fraud, smuggling, trafficking) and (b) to further facilitate trade, interfering as little as possible in the

logistical operations of trusted parties, while focusing on the potential high-risk trade (Van Stijn et al., 2011c).

To do so, governments need to be able to profile international supply chains, the actors involved and the goods (and money) moving between them. There is also the need to carefully consider how stakeholders will be affected. It is foreseen that the cooperation between stakeholders in the inter-organizational supply chain and the governmental stakeholders will be based on trust and joint responsibility, fundamentally shifting the various interactions between companies and authorities from hierarchical to more horizontal relations (Tan et al., 2011).

Public-private cooperation: shifting boundaries for better collaboration

Public-private cooperation is essential for developing the solutions, with network collaboration and consensus-building being central themes. Developing a pipeline has major implications for the organizations involved, especially where the public and the private sector meet. The boundary between the sectors shifts from the current division of public and private functions to a stronger collaboration.

The "Living Lab" approach has been identified as very useful for bringing stakeholders together to find innovative solutions (Tan et al., 2011; Van Stijn et al., 2009). In a Living Lab, public and private actors from different organizations collaborate with a multidisciplinary research team. The Living Labs provide a real-life, experimental setting in which to develop and pilot IT innovations. We have observed that the Living Lab—through the key involvement of academics—provides a neutral ground where the real-life actors from companies and institutions are willing to set aside differences, overcome obstacles, and focus on creative cooperation to come to innovation (Rukanova et al., 2011).

It has also been demonstrated that a Living Lab goes beyond mere piloting. The collaboration within the Living Labs lays the foundations for collective action, focusing on network collaboration and consensus building and adoption of the innovation afterwards (Rukanova et al., 2007; Van Stijn et al., 2009). The CASSANDRA project will also apply the Living Lab approach.

Private parties involved in global supply chains are likely to finance the investment in the data pipeline. This requires that every private-sector party that participates in the data pipeline can expect a positive return on investment. However, some parts of the data pipeline may not have a revenue model or the current institutional structure may not yet support the more extensive collaboration needed between the various businesses (cf. Overbeek et al., 2011).

Given this strong organizational component, future research and development of a data pipeline in global supply chains should be accompanied by research or design of a public-private governance model to deal with the challenges of the overlap between the public- and the private-sector roles of the parties involved in global trade.

An important question is if and how a government could facilitate and ensure the public role, while at the same time enable private parties to improve data sharing to realize

public goals and be able to make fair revenue. The underpinning principles for the public-private governance model include:

- Identification of the network of stakeholders and stakeholder analysis, which includes:
  - Identification of possible conflicts of interests (often relating to revenue models);
  - Reconstruction of revenue models behind all interests (economic research);
  - Reconstruction of the logic of each of these interests.
- Aligning of conflicts. Those parties that have the greatest economic benefits from an innovation typically should invest most, and in some cases equity stakes should be taken in the others that have fewer benefits. Also, the investments should create enough economic benefits such that businesses are willing to invest.
- Define institutional arrangements in such a way that this alignment can emerge (institutional economics research). The arrangements should be market-driven, but for those parts of the data pipeline that are identified as inherently public goods, a suitable funding scheme has to be devised. In the setting of CASSANDRA, the institution is typically understood to be a government, or even a supranational body (EU), and could also be an international body (e.g. the United Nations or WCO). (Formal legislation should be used as little as possible).

To create the data pipeline and ensure that both the commercial parties and governments derive benefits from it, governments may have to:

- Lead in developing open standards to ensure a level playing field.
- Support the public role of the data pipeline in such a way that the private roles provide sufficient room for businesses to make fair revenue on their investments in the pipeline.
- Provide support for those parts of the data pipeline that cannot be created through a sustainable business model. This support may consist of service provisioning, a funding method (e.g. subsidies), and where needed, laws and regulations, agreements, etc.

4. Integrating the data pipeline concept into the Single Window environment

4.1. Single Windows have become a strategic instrument to support international trade

Single Window is a concept to facilitate business processes and data exchange for national export and import. This is done by enhancing the collaboration and coordination between the involved administrations and the private sector.

In the course of a Single Window implementation, the business processes and information flows are analysed, simplified and standardized. The Single Window supports the exchange and processing of the electronic documents, providing the participating agencies and companies with efficiency, security and automation.

In 2005 the Single Window concept was summarised in the UNECE Recommendation 33 on Establishing a Single Window[62]. Since then this concept has witnessed a stunning success. In particular in developing countries and transition economies, Single Windows have become a strategic instrument of governments for enhancing trade facilitation.

Single Window in developing countries

In developing countries, the main achievements of Single Windows are as follows:

- Efficient introduction of trade-facilitating measures, in particular the analysis and simplification of business processes.
- Automation of data-exchange among government agencies (G2G), and between the private sector and government agencies (B2G).
- Less time and cost for export and import and increased security.
- More efficient use of physical border infrastructure.
- Improved collaboration between border agencies, leading to joint inspections and coordination of other interventions.
- Support in the implementation of regional and global trade agreements.
- Implementation of modern Information and Communication Technologies (ICT) in the participating Government Agencies. This modernization of Government ICT is a side-effect of SW implementation but often has a significant impact on the overall efficiency of national cross border trade.

While the uptake of the Single Window concept in developed countries has been less dramatic (due in part to the often extensive existing installed base of systems, procedures and approaches to data automation), it still remains a key objective and will likely be an important priority for the future. The Single Window concept is included in the current draft agreement negotiated in the WTO under the Doha Development round.

In an effort to capitalize on this success, many Single Window operators are considering the next steps in its development, particularly with regard to the models through which information can be collected and exchanged within and between Single Windows (i.e. across borders).

The data pipeline concept represents a unique opportunity for business and governments to rethink, redefine and redesign the way in which data are exchanged throughout the entire international supply chain—both from an operational and a regulatory perspective. Starting from a “blank sheet”, and thinking in an open minded manner, one can conceptualize a totally new framework for the way in which traders and government use and exchange information to facilitate the international trade process.

Countries/companies that get this right will have a huge advantage over their competitors, both in terms of the currency and accuracy of their information, and the cost and time to delivery. Single Window operators and Port Community Systems can be a key catalyst and motivator here, taking advantage of their expertise in automating and simplifying business processes in the international supply chain.

[62] See http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec33/rec33_trd352e.pdf.

Clearly, such radical transformations of long established practices and procedures do not happen overnight. This change will require the design and implementation of pilot projects to test out new ideas and explore possible models. And such projects will require strong cooperation between governments and business from the outset.

While these projects will be experimental in nature, they should involve real shipments of products under real business- and government-control scenarios. This is where the business gains will be evaluated and realized.

National Single Window facilities improve the services at the border and along the supply chain through simplifying and automating the processes and encouraging greater collaboration between the parties. Using the data pipeline concept, Single Window operators can explore extending these services beyond the national border by integrating other key parties of the international supply chain into the solution—for example, the foreign buyer, sellers, logistic providers and even foreign regulatory bodies.

This new supply chain would be information and knowledge driven, and could become a “smart” supply chain. Establishing smart supply chains can thus be seen as an extension of the national Single Window concept towards a smart Single Window concept that extends its services beyond the national border.

The Single Window operator can support the development of these smart supply chains through a gradual, stepwise approach by identifying the “low hanging fruit”. For example, the Single Window operator should identify key export and import products and supply chains of the domestic country that would benefit most from a smart supply chain.

Typically candidates are supply chains with:

- goods with high value
- large trade volumes and/or fast-moving goods
- perishable goods
- parties with strong institutional capabilities.

For these goods, the Single Window operator can analyse the business processes along the complete, international supply chain, assess the potential benefits that an information-sharing concept can bring to the parties, and develop a proposal or "agreement" for that concept.

If the product is of high interest to the exporting or importing country, the operator can also aim to integrate into this agreement government agencies that will grant AEO benefits to the economic operators that meet the obligations of the agreement. The government agencies would be interested in participating in the agreements if the smart supply chain provides them with information and security that helps them to perform their duties more efficiently. The motivation for the private-sector operators to engage in a smart supply chain would then come both from the economic opportunities and the simplified regulatory processes.

4.2. Why Single Window operators are well positioned to lead the establishment of smart supply chains

In developing countries, national Single Window operators and Port Community Systems are in a strong position to champion smart supply chains and provide domestic traders with greater business opportunities. For example:

- Many national Single Windows have already concluded service agreement with border agencies and major exporters, importers and third-party service providers. They can leverage this expertise and negotiate the specific services and agreements for the smart supply chain with other Single Window service providers and their counterparts in the foreign market.
- Single Windows are seen as trusted partners in the national trade chain. They can leverage this trust when establishing information-sharing concepts.
- In many countries, Single Window operators are linked into regional and global networks—and therefore connected to other Single Window operators and port community systems. These international networks are crucial for identifying opportunities for commercially interesting smart supply chains and for bringing the stakeholders together.
- The concept of information-sharing in smart supply chains requires the data to be standardized. The Single Window operators have the experience to be able to provide the data formats based on international standards.
- The operators already have available most of the information and communication technology infrastructure and the expertise to operate smart supply chains. The start-up costs and associated risk to enter into smart supply chains is therefore limited.
- Smart supply chains are implemented for specific supply chains, i.e. specific products and export/import markets. Thus the costs and risks are limited.

Single Window operators can facilitate the development of smart supply chains if they:

- Leverage their existing contacts and know-how of cross-border supply chains and actively seeking opportunities to provide additional services for the international part of the supply chains that are supported by the Single Window.
- Engage in discussions with major national and foreign exporters/importers and forwarders to identify and try to get rid of bottlenecks.
- Engage with other operators to increase the number of operators that participate in electronic data exchange and information sharing.
- Support implementation of national export promotion strategies in developing value propositions for international supply chains for key products.

Developing countries may also negotiate with international donor agencies and governments from importing countries to develop smart supply chains for specific products. In this scenario, in establishing a smart supply chain, specific facilitation agreements with the importing countries agencies and the start-up costs could be considered as an aid for trade support mechanism.

As a first practical step towards the Single Window, operators can conduct business process analyses for smart supply chains to:

- Analyse possible improvements of logistics and regulatory processes for specific products and services using better information. This analysis can be done with key stakeholders by thinking creatively (i.e. using a “blank piece of paper” approach).
- Analyse minimum information requirements and additional information demands from the business/operational perspective and the regulatory perspective to support the ideas captured.
- Apply the data pipeline concept to determine how this information can be shared.
- Assess the regulatory and change management requirements for implementing the information pipeline.
- Perform a cost-benefit analysis to assess feasibility and support of stakeholders.

UNECE will establish a repository of information on pilots and implementations of smart supply chains, including in particular the costs and benefits for developing countries and transition economies. If member countries request this, UNECE will also provide networking between interested parties on the opportunities and lessons learned.

5. Conclusions and next steps

Both business and government are under pressure to produce cost-efficient, sustainable, and secure international supply chains. But, as we've seen, the current complexities of international trade, and the regulatory procedures governing it, are forming a barrier where visibility is obscured from those who need to know what's going on. This affects not only commercial processes but also the way in which government agencies can monitor and facilitate trade.

We have proposed to take an innovative look at data exchange in international supply chains, and at how improved visibility can also help bring about other strategic improvements. To this end, we have presented the data pipeline vision as a novel approach to data-sharing (a) between businesses and (b) between business and government. The actors are seen to become part of “smart supply chains”.

Starting at the Consignment Completion Point (or even further upstream), original commercial data on the entities, transactions and the physical flow of goods are captured and shared between those companies that are entitled to view them. The data pipeline is envisaged to bring major improvements for businesses, regarding visibility and traceability and synchro-modality, enabling the establishment of efficient, sustainable supply chains.

Moreover, the data pipeline supports trusted traders (Authorized Economic Operators) to demonstrate that they are in control of the supply chain and have end-to-end transparency, which can provide additional trade-facilitating benefits. The data pipeline also improves the data-sharing between business and government.

For businesses, costs for compliance could be reduced, because the data pipeline is ultimately a virtually integrated, global solution that would not require businesses to modify internal enterprise systems and interfaces for different national and international solutions.

Government actors can piggyback on the commercial data in the data pipeline, and increasingly rely on "data pull" instead of "data push". The pipeline allows the capture and sharing of data rather than electronic documents, data that are considered to be a better fit for the purpose of risk profiling and risk management.

The pipeline allows the moment of data-sharing to be de-coupled from the border crossing (or the current advance notification). This enables shifts in the timing of inspections and clearances. The pipeline also ensures coordinated border management and informal cooperation between agencies within and across countries.

Creating a data pipeline vision is not an easy task. Standardization and interoperability are prerequisites for an integrated, web-based Service Oriented Architecture, and to put the data in the "cloud". Public-private cooperation, consensus-building and networking are also essential aspects. Likewise, finding suitable ways in which the different interests between the parties can be aligned, and viable business models and institutional arrangements are established, are key.

With the support of governments, Single Window and Port Community Systems have been set up in many countries throughout the world. These systems provide important facilitation and automation of global supply chains at the national borders. They are usually managed in a public-private sector partnership, which is based on agreements, trust and knowledge. The implementation of smart supply chains for selected products and markets can be seen as a further development path for Single Windows and Port Community Systems.

Further research and design of a public-private governance model will be an important part of the CASSANDRA project, as are the Living Labs—both as a real-world research setting, where business and government stakeholders will further design, develop and pilot the data pipeline and the risk-based approach in practice, and as an important means to establish public-private cooperation as a prerequisite for successful adoption.

From a practical perspective, policy managers from both developed and developing countries can jointly pursue the data pipeline vision further. Gradual implementation would include the following first steps:

- Identify a specific trade lane of key interest, with high volume/ high value trade to a major trading partner. During the first stage, an additional selection criterion would be the current maturity and use of IT by the business actors in the trade lane.
- Set-up a Living Lab environment in which a data pipeline for this supply chain is co-developed, piloted and further evaluated. Business and governmental actors from both the exporting and importing country should be included.
- Share knowledge and experiences, e.g. facilitated by UNECE and UNNExT. The CASSANDRA project will also provide further insights into the data pipeline regarding the technological solutions as well as the ways in which they can be put in place.

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Carlos Grau Tanner is currently Director General of the Global Express Association. He has formerly been Director of Government and Industry Affairs at IATA, General Manager of Government and Industry Affairs at Swissair, and International Civil Servant at the Council of Europe.

Eng. Khuloud J. Habaybeh is Assistant to the Director General for Compliance and Facilitation at the Jordanian Customs. Graduated from JORDAN UNIVERSITY of SCIENCE &TECHNOLOGY, she holds a Bachelor degree in Electronic engineering. Started as a senior computer engineer in NEPCO/JORDAN ELECTRICITY AUTHORITY responsible for scientific apps (WASP/MAED that predicted loads on electrical substations). Dealing, meanwhile, with Austrian Atomic Energy. A leader in different ICT projects related to Sweden power. In 2000, officially designing and provisioning JCD Network and computer centre. Been an advisor, consultant and full admin (Network, security, servers). Leading different national ICT projects (courts, Jordan customs academy). Currently, managerial and technically responsible for many directorates; (IT, Communication, electronic tracking) Inspection, Escort, Quality assurance, Risk management (single window + golden list), which eventually aim, for facilitation trade, simplification and evolution of customs procedures. Participating in many seminars; lecturing in various topics related to ICT, single window, electronic facilitation trade.

Alex Kabuga is the Chief Executive Officer of Kenya Trade Network Agency (KENTRADE) the Single Window Operator Entity in Kenya. He has been involved and spearheaded the development of the Kenya Single Window System since its inception last 5 years and sensitisation of the need for the single window systems in East African Community Partner States. He led the initiative to set up the relevant implementation mechanisms including the creation of the KENTRADE as the Special Purpose Vehicle to implement, operationalize and manage the Single Window System. Mr. Kabuga has a wealth of experience in business logistics and business process re-engineering and having worked previously in maritime logistics arena in Kenya and the East African region. He has a Master's Degree in Business Administration (MBA) and qualifications in Management Information Systems.

Somnuk Keretho is the founding Director of Institute for IT Innovation (INOVA), a research and development institute of Kasetsart University, Thailand, specializing in ICT-enabled innovation, trade facilitation and e-logistics initiatives including Single Window strategic planning and implementation, enterprise information architecture for e-government and e-business, business process analysis and improvement, data harmonization and modelling, ICT-related standards and interoperability, e-transaction related laws, and process-oriented quality software engineering.

He has led several ICT strategic projects at organizational, national and regional levels. For the past seven years, for example, he has assisted Ministry of Information and Communication Technology, National Economic and Social Development Board, Ministry of Transport, Port Authority of Thailand, and Ministry of Agriculture in architecting "Thailand Single-Window e-Logistics" related projects including its national e-logistics strategy, implementation plans, interoperability and standards,

harmonization and simplification of import, export, and transport-related documents and procedures, automatic electronic-gate systems development for the Bangkok Sea Port and the Leamchabang Sea Port, and several related software development projects. Several of those projects are being aligned somehow with several regional and international collaborations, in which Dr. Keretho has actively engaged mostly related to trade facilitation, single window and paperless trading initiatives through UNESCAP, UNECE, APEC and ASEAN. He has played several roles in catalysing the creation of and actively contributing to the United Nations Network of Experts for Paperless Trade in Asia and the Pacific (www.unescap.org/unnext), and providing technical support to the APEC Paperless Trading and ASEAN Single Window Initiatives. He is the main author of the UNNExT Business Process Analysis Guide, the UNNExT Data Harmonization Guide and an upcoming UNNExT Guide for Single Window Planning and Implementation.

Paul Kimberley, BSc, MBA, CEng, Ing Eur., is a British born, Australian resident with joint citizenship. He is an engineer by profession. During the first part of his career he served as a VP and CEO of major international ICT companies. For the past 25 years he has been an independent consultant specialising in ICT in trade facilitation. Since the early 1990s his major focus has been on single windows, providing advice and assistance on single window strategy, technology, planning, implementation and support to industries, countries, regions and government agencies involved in the adoption of automated trade facilitation and single windows. His clients include global supply chains, governments and government departments in Asia, sub Saharan Africa, the middle east and north Africa, Latin America and the Caribbean, and Australasia. He regularly works with international development agencies, including the World Bank, IMF, IFC, the Asian Development Bank, the Commonwealth Secretariat, USAID, AusAID and various UN agencies. He has written books on Microelectronics and Electronic Data Interchange (EDI) for McGraw Hill, NY, and is currently completing a three volume book on single windows, due for publication during the first half of 2012.

Jonathan Koh Tat Tsen currently heads CrimsonLogic's Trade Facilitation Centre of Excellence, which provides domain expertise for the company's flagship trade solutions. His current research focuses on Business Process Modelling, Reference Models for Trade Facilitation, as well as Supply Chain Operations, and Government Procurement. Jonathan has been involved in providing consultancy and advisory services to many governments for their Single Window/Trade Facilitation initiatives, including countries in Asia Pacific, Middle East, Central Asia, North and Central America, and the Caribbean. He currently serves on the International Advisory Committee for the United Nations Network of Experts for Paperless Trade in Asia and the Pacific (UNNeXT). Jonathan has hands-on experience in many Single Window projects including Qatar's Customs Clearance Single Window and Kenya's Electronic Single Window System.

He has also served as the lead consultant for several Trade Facilitation Benchmarking studies including Mongolia, Jamaica, Sri Lanka, Bangladesh, Kenya and Papua New Guinea. Most recently, he conducted a trade facilitation diagnostic study for the Government of Peru, under the auspices of APEC Ease of Doing Business Action Plan. Prior to CrimsonLogic, Jonathan served with SAP AG where he provided strategic advisory services to governments, public sector companies and multinational corporations on Supplier Relationship Management and Strategic Procurement.

Prior to this, Jonathan was a partner in a consultancy practice, specialising in global trade management, free trade agreements, preferential trading regimes and trade financing. He started his career with the Ministry of Defence, in the logistics and supply chain roles. Jonathan has a B. Eng (Hons) in Mechanical Engineering from the University of New South Wales, Australia, and a MBA (Finance and Investment) from the University of Hull, United Kingdom.

Gareth Lewis, after a background in Economics at the University of Adelaide in South Australia, Gareth Lewis began his Customs career in Port Adelaide and spent several years learning the basic functions of trade regulation and security at several marine, air and land ports in that part of Australia. In subsequent years he worked in the Canberra Headquarters of Australian Customs and also as a senior manager in Melbourne, Australia's biggest port. In 2006 he won selection to work in the Facilitation area of the WCO where his broad customs background has been put to good use.

Francis Norman O. Lopez is the President of InterCommerce Network Services, Inc., a value-added service provider accredited by Customs and other government agencies, and currently, the Deputy Chairman of the Pan Asian e-Commerce Alliance (PAA). He works closely with Customs, Freeport and Economic Zone Authorities, the Export Development Council and other government agencies to facilitate trade by enabling electronic transactions between private companies and government agencies (B2G), as well as cross border information exchange. He has participated in the UN/ESCAP Training of Trainors for Multi-Modal Transport, and conducts training on e-Logistics and Cargo Security for freight forwarders. He is a graduate of Economics at the University of San Carlos, Cebu City, with a Certificate in Development Economics from the School of Economics, University of the Philippines, Quezon City. He has completed the academic requirements for MBA at the De La Salle University, Manila.

William "Bill" Luddy, Before retiring in July 2008, William J. Luddy, Jr. was a Professor of Management in the Lally School of Management and Technology at Rensselaer Polytechnic Institute (RPI) for 34 years and former Dean of the Graduate School of Management at Rensselaer's Hartford Campus. Over the past 15 years, Professor Luddy has worked extensively on the development of global E-Commerce law and policy, private international law, international business law, trade facilitation, coordinated border management, and the global supply chain. He is involved in a number of other legal areas related to Information and Communications Technology (ICT) law including, among others, the international Single Window, data privacy, cloud computing, information security/critical information infrastructure protection, and intellectual property rights.

He works in various high-level roles as legal advisor, consultant, and participant with a number of United Nations and intergovernmental organizations, and governments including, among others: the WCO as Special Legal Counsel, UNCITRAL, UNECE, UESCAP, UN/CEFACT, APEC, OAS, ASEAN Single Window as Senior Legal Advisor, EurAsE. He is a member of the United States Secretary of State's Advisory Committee on Private International Law He has also worked with developing and transition economy countries in Asia, Europe, and South America.

Pascal Ollivier is the Chairman of the European Port Community System Association. He is also Director of Corporate Development at SOGET, Le Havre, a world leader in Port Single Window. As an active member of International Association of Ports and Harbors' (IAPH) PCS committee, he introduced the IAPH advanced PCS benchmarking during IAHP World Conference in Busan in May 2011. He has the worldwide responsibility of Government and Port Community affairs including Ports and Customs authorities as well as International Organizations such as World Bank, World Customs Organization, Organization of American States, European Commission, UN, IAPH and EPCSA. He is a recognized expert in supply chain security and trade facilitation, and has been a contributor to the World Bank Supply Chain Security Guide. He holds a Master in Monetary Economics from Paris IX University and a Master in Business Administration from European University of America, San Francisco. He is visiting professor in International Finance at Paris IX University, in Port and Maritime affairs at Normandy Business School Executive MBA in Maritime, Transport and Logistics and in Supply Chain Security at University of Le Havre Master in Customs and Logistics. He is a board member of the SEFACIL Foundation.

Maria L. Ortiz has fourteen years of experience in trade and economic development. She joined the Inter-American Development Bank in 2009 as a consultant and specializes on trade facilitation. Ms. Ortiz has worked on a range of trade facilitation operations in Latin America and the Caribbean, as well as integration initiatives in Europe and Asia. Prior to joining the IDB, she worked for the Colombian government at the Department of Transportation and the Superintendency of Ports. She also worked for private sector companies as an adviser on trade and competitiveness. Her academic background includes a law degree and master's degree in commercial law from Universidad Libre and Pontificia Universidad Javeriana in Colombia, as well as a master's degree in international commerce and policy from George Mason University (USA).

Nicolae Popa is Regional Coordinator, DTL, UNCTAD/ASYCUDA Programme.

Saadia Sánchez-Vegas holds a Ph.D. in Information Studies from the University of California at Berkeley (USA), a Master's degree in Library and Information Science from San Jose State University (California, USA) and a Bachelor's degree in Sociology from the University of Zulia (Venezuela). Currently, she is Director of the Information and Knowledge Network of the Latin American and Caribbean Economic System (SELA). At SELA she has been responsible for the creation and development since 2005, of the Permanent Secretariat's work program in Information and Communication Technologies for Development (ICT4D), Knowledge Management and Digital Integration in Latin America and the Caribbean. Among its activities are to promote cross-regional dialogue between governments, the private sector and civil society organizations in Latin America and the Caribbean about various topics related to ICT, competitiveness and sustainable development in the region. In this field, since March of 2010 has organized along with the Ministry of Trade, Industry and Tourism of Colombia, the National Customs Services of Chile, with the IADB and CAF, and the Ministry of Trade and Tourism of Peru, four international events -including the first ever organized in the region- on International Trade Single Windows in the context of trans-border paperless trading in Latin American and the Caribbean. In addition, she has coordinated two research papers on these matters and is responsible for a Pilot Project on Interoperability and Harmonization of Foreign Trade Single Windows in the context

of the Latin American Pacific-Arch Forum (ARCO) under the Technical Cooperation Agreement between SELA and CAF (Latin American Development Bank).

Jukka Savo is working as a policy officer for the maritime transport facilitation in the European Commission. He is responsible for the coordination of the implementation process for the single window services required under the directive 2010/65/EU on the vessel Reporting Formalities. Furthermore, he is occupied with the formulation of measures and estimating the impacts of the EU e-Maritime initiative to the maritime transport sector. Previous to his current position, he worked as a new technology advisor at the European Commission. Before joining to the Commission he gained extensive experience in the United States' Department of State, where he worked as a regional officer responsible for implementation of new technical services in Russia, Baltic States, Caucasus and Central Asia.

Yao-Hua Tan, born 1958 in Amsterdam, is professor of Information and Communication Technology at the ICT Group of the Department of Technology, Policy and Management of the Delft University of Technology and part-time professor of Electronic Business at the Department of Economics and Business Administration of the Vrije University Amsterdam. He was also Reynolds visiting professor at the Wharton Business School of the University of Pennsylvania. His research interests are service engineering and governance; ICT-enabled electronic negotiation and contracting; multi-agent modelling to develop automation of business procedures in international trade. He published five books and over 190 conference papers and journal articles. He was coordinator and scientific director of various EU-funded projects on IT innovation to facilitate international trade; including the integrated research project ITAIDE (2006-2010) and the integrated research project CASSANDRA (2011-2014). He is vice-chair of the Committee on Trade of the Trade and Sustainable Land Management Division of the United Nations Economic Commission for Europe.

Juan Carlos Vásquez is responsible for coordinating outreach and fund-raising activities in the CITES Secretariat since October 2008. During over ten years Mr Vasquez worked as Legal and Trade Policy officer, assisting the member States in developing wildlife trade policies and in drafting national CITES legislation. As the Secretariat’s spokesperson and press officer, he is in charge of providing information on the Convention, particularly to the mainstream media and the private sector. Mr Vasquez is a lawyer from the Universidad Nacional de Colombia with postgraduate studies at the University of Geneva in environmental policy and public management. Before joining CITES, Mr Vasquez worked as an international consultant, lawyer of indigenous communities, consultant of the Ministry of Agriculture of Colombia, licensed attorney and magazine reporter.

Desmond Vertannes is Manager of Cargo Business Processes and Standards, IATA. Des Vertannes' career in aviation spans four decades joining IATA from Etihad where he was Executive Vice President Cargo since April 2007 and prior to that Head of Cargo at rival Gulf Air. Des began with British Airways in 1970 and during 14 years at the airline he held several management posts including Cargo Manager Gulf States and Saudi Arabia in the early Eighties. In 1984 he established and managed his own forwarding business before joining Air Canada as GM Cargo in 1991 responsible for Europe, Africa and Middle-East. His next move was to ground handling company Menzies Aviation where he served as Chief Executive at Air Menzies International

(AMI) and Managing Director Menzies World Cargo between 1999 and 2005. In June 2010 he joined IATA as Global Head of Cargo and is based in Geneva.

Mats Wicktor currently holds the position as Director of Change Management of Swedish Customs with specific responsibility for strategies in the areas of technical, legal and business development and also for cooperation with other governmental agencies and issues related to Single Window and Coordinated Border Management. Wicktor has been involved in the strategic development of Swedish Customs since 1999 and has participated in several innovation projects, for instance The Stairway, StairSec and The Virtual Customs Office. Wicktor has also been very involved in the implementation of strategic project management within Swedish Customs, been a promoter of the use of strategic environmental scanning and responsible for business development of Swedish Customs. During a period of two years Wicktor held the position as director of Swedish Customs Future Centre. Wicktor started as a Customs Officer in 1990 and has also worked at the Swedish Board of Agriculture as Customs expert. Wicktor has been chairperson of the Permanent Technical Committee at WCO and is the Swedish delegate to a number of international committees. Currently Wicktor is elected chair of WCO Information Management Subcommittee and also the Data Model Project Team. Wicktor is also an elected vice-chair of UN/CEFACT with responsibilities for the program development areas Trade and Transport Facilitation and also Regulatory Issues leading development of international standards and recommendations in the domains of International Trade Procedures, Transport, Customs, Environmental Management and eGovernment.

Annex 5: Global Trade Facilitation Conference 2011 (Programme)

Session 1: Visions for information sharing in global supply chains and Single Window

Chair*:* Ms. Virginia Cram-Martos, Director of the Trade and Sustainable Land Management Division, UNECE

The Data Pipeline Vision - towards a Generation of Smart Single Windows
Prof. Dr. Yao-Hua Tan, Professor of Information and Communication Technology, Delft University of Technology

Customs in the 21st Century
Mr. Gareth Lewis, Senior Technical Officer in the Compliance and Facilitation Directorate, Compliance and Facilitation, WCO

Opportunities and Challenges in Express Supply Chains
Mr. Carlos Grau Tanner, Director General, Global Express Association:

Transforming the Air Cargo Supply Chain
Mr. Desmond Vertannes, Global Head of Cargo, IATA

Information Sharing Challenges: Going Forward with Standards
Mr. Mats Wicktor, Director Change Management,
Swedish Customs and and Vice-chair UN/CEFACT

Session 2: Lessons learned from ten years of Single Window implementation

Chair: Dr. Magdi Farahat, Principal Advisor on Trade, Geneva Inter-Regional Advisory Services, UNECA

Ten Years of Single Window Implementation: Lessons Learned for the Future
Mr. Jonathan Tat Tsen Koh, Director, CrimsonLogic, Singapore

Single Window Developments in Latin America and the Caribbean
Ms. Maria L. Ortiz, Trade Facilitation Expert, Inter-American Development Bank
Port Single Window for Global Trade in Cotonou

HE Mr. Jean Michel Abimbola, Minister for Maritime Economy, Maritime Transport and Port Infrastructures of Benin

Single Window in Azerbaijan Customs Service. Reality and Visions
Dr. Igbal Babayev, Chief Statistics and IT,
State Customs Committee Republic of Azerbaijan

Implementing Single Window: the Kenyan Experience and the East African Context
Mr. Alex Kabuga, Chief Executive Officer, Kenya Trade Network Agency (KENTRADE) - Single Window Implementing Agency in Kenya

Steady and Smooth Progress for Single Window in Jordan
Ms. Khuloud Habaybeh, Assistant to Director General for Compliance and Facilitation, Jordanian Customs

Session 3: Roundtable and open discussion on the evolution of the Single Window concept: achievements, challenges and future developments

Chair: Mr. Tim McGrath, Vice-chair UN/CEFACT and Director of Document Engineering Services, Australia

Prof. Dr. Yao-Hua Tan, Professor of Information and Communication Technology, Delft University of Technology

Mr. David Hesketh, Senior Manager International Customs Research and Development, HM Revenue and Customs, United Kingdom

Mr. Alan Long, Managing Director, Maritime Cargo Processing Plc

Mr. Guilherme Mambo, Commissioner Customs and Project Manager Mozambique SW Project

Ms. Maria L. Ortiz, Trade Facilitation Expert, Customs, Trade Facilitation and Logistics, Integration and Trade Sector, IDB

Mr. Tom Butterly, Chief, Global Trade Solutions Section, UNECE and Secretary to the Joint UN Regional Commissions Approach to TF

Session 4: Cross-border information exchange for regional integration

Chair*:* Mr. David Hesketh, Senior Manager, International Customs Research and Development, HM Revenue and Customs, United Kingdom

Experiences and Lessons Learned from Western Asian Countries
Ms. Fathia Abdel Fadil, First Economic Affairs Officer, ESCWA and Mr. Paul Kimberly, ESCWA Consultant

Progress and Challenges in Latin America and the Caribbean: Foreign Trade Single Windows Development in the Context of Regional Integration and International Trade
Ms. Saadia Sánchez-Vegas, Director of the Information and Knowledge Network of the Latin American and Caribbean Economic System (SELA)

Maritime Transport Single Window Services in the European Union
Mr. Jukka Savo, Policy Officer, Directorate Maritime Transport, European Commission DG Mobility and Transport

The Role of Port Community Systems in the Implementation of National Single Window
Mr. Pascal Ollivier, Chairman of European Port Community System Association

Single Window and Cross-Border Trade: The Challenge for Africa (Senegal case)
Mr. Ibrahima Diagne, General Manager GAINDE, Senegal

Improving the Mechanisms of Cross-Border Information Exchange in the Customs Union of Belarus, Kazakhstan and the Russian Federation
Ms. Dina Akpanbayeva, Director of the Department of Trade Policy Secretariat of the Commission of the Customs Union of the Republic of Belarus, the Republic of Kazakhstan and the Russian Federation

Session 5: Legal frameworks to enable data sharing in international supply chains

Chair: Mr. Yann Duval, UNESCAP

Legal Framework to Facilitate Cross Border Information Exchange
Mr. Francis Lopez, President of InterCommerce Network Services, Philippines

Single Window and Paperless Trade Legal Issues: A Possible Mosaic
Mr. Bill Luddy, Special Legal Counsel at World Customs Organization (WCO)

UNCITRAL Texts as the Backbone of a Uniform Legislative Framework for Cross-Border Electronic Transactions
Mr. Luca Castellani, Legal Officer and Secretary of e-Commerce WG, UNCITRAL Secretariat

Session 6: Connecting the supply chain - using technology and tools to implement the vision

Chair*:* Mr. Mats Wicktor, Director Change Management, Swedish Customs and Vice-chair UN/CEFACT

Single Window Implementation Framework (SWIF) - Using State of the Art Management Concepts for Single Window Planning and Implementation
Dr. Somnuk Keretho, Director, Dept. of Computer Engineering Innovation, Kasetsart University, Thailand

Paperless Trade and the ASYCUDA World
Mr. Nicolae Popa, Regional Coordinator, DTL, UNCTAD/ASYCUDA Programme

CITES Electronic Permitting Systems: Ensuring Sustainable, Legal and Traceable Wildlife Trade
Mr. Juan Carlos Vásquez, Communication and outreach officer
CITES Secretariat – UNEP

Session 7: Roundtable and open discussion on the future development of information exchange in cross-border trade: government and business visions and objectives

Chair*:* Mr. Peter Wilmott, President EUROPRO

Mr. Eoin O'Neil, Vice President, Integration Management and Enterprise Architecture, DHL Supply Chain, DHL

Ms. Marianne Wong, Senior Assistant Director of Customs, Directorate of Royal Malaysian Customs Department

Mr. Jonathan Tat Tsen Koh, Director CrimsonLogic, Singapore

Ms. Saadia Sánchez-Vegas, Director of the Information and Knowledge Network of the Latin American and Caribbean Economic System (SELA)

Mr. Alex Kabuga, Chief Executive Officer, Kenya Trade Network Agency (KENTRADE) - Single Window Implementing Agency in Kenya

Mr. Frank Heijmann, Head of National and International Trade Relations, Dutch Tax and Customs Administration

Session 8: Conference conclusions

UN regional commission representatives

Ms. Virginia Cram-Martos, Director, Trade and Sustainable Land Management Division, UNECE

Mr. Tom Butterly, Chief, Global Trade Solutions Section, UNECE

Ms. Shamika Sirimane, Chief Trade Facilitation Section, Trade and Investment Division, UNESCAP

Ms. Fathia Abdel Fadil, First Economic Affairs Officer, ESCWA

Mr. Jose Carlos Mattos, Economic Affairs Officer, International Trade and Integration Division, ECLAC

Ms. Marie Therese Guiebo, Economic Affairs Officer, UNECA