CHAPTER 2

REVIEW OF EXISTING ARRANGEMENTS FOR THE FACILITATION OF PAPERLESS TRADE

This chapter attempts to review various initiatives taken at the individual country level as well as bilateral, regional and global levels to facilitate paperless trade. These initiatives range from putting single window systems in place to electronic exchanges of cross-border trade data and documentation for administration, trade and commerce. Such a review is important as it provides important lessons for formulating a viable regional arrangement for facilitating paperless trade. It should be noted that while several successful initiatives have been taken at the country level to establish single window systems, there are relatively few examples of such arrangements for cross-border exchanges of information in a paperless mode. Some international organizations, such as the Asia-Pacific Economic Cooperation (APEC) group, have suggested a step-by-step move towards cross-border paperless trade in which the first step should be to develop a national Single Window. The next step should be to interlink these national Single Windows to facilitate cross-border paperless exchanges of information and documentation. However, in practice, several different models have been followed for cross-border paperless trade.

This chapter first looks at the individual country initiatives in establishing a single window. It then reviews initiatives for cross-border electronic exchanges of information and documentation. The chapter further examines developments towards cross-border electronic information exchanges through free trade agreements (FTAs) and in international forums such as WCO, WTO and APEC. It also examines private initiatives that have been taken to develop cross-border paperless trade systems.

A. Single windows and use of ICT in a domestic setting

The World Bank (2011) explains that the term “National Single Window” denotes coordinated national electronic information exchanges with a focus on legislation,

procedures and information and communications technology (ICT). Most notable Single Window initiatives in Asia-Pacific region are those of Singapore, the Republic of Korea and Malaysia. These are discussed in some detail in order to understand their salient features.

1. Singapore Single Window

The United Nations Network of Experts for Paperless Trade in Asia and the Pacific (UNNExT) Brief No. 02, March 2010 describes the Single Window experience of Singapore. In 1989, Singapore developed an operational e-platform for the exchange of electronic information between different Parties involved in external trade transactions. This is called the TradeNet system. It links 35 agencies having a role in import-export activities to a single point of transaction, including the Narcotics Bureau and the agriculture, agri-food, customs and veterinary authorities. All trade documentation of the agencies is submitted electronically.

An important step in achieving the Single Window goal was to create a single administrative document. This document was a synthesis of 20 different forms used earlier for international trade, and it formed the core of computerization. From October 2007, TradeNet version 4.0 was implemented. This further simplified the issuance of permits and provided new facilities such as amendments of permit details, cancellation of unused permits and filing refund claims for duties.

The development of the Single Window was spearheaded by a government agency called the Singapore Trade Development Board (since renamed International Enterprise Singapore). The stimuli for undertaking this project were manifold, e.g., increasing the volume of trade to meet the demands of just-in-time stock inventory management, the lack of manpower, the recession of 1985 and a desire to keep up with its competitors such as Hong Kong, China.

The TradeNet system was developed through a private operator in order to reduce the financial burden on the Government. A new company called Singapore Network Services

Pte., Ltd, (now known as CrimsonLogic Pte., Ltd.) was created in March 1988 as the owner and operator of the TradeNet system. This company was owned by four key Singaporean agencies having a dominant role in international trade, i.e., the former Singapore Trade Development Board, the Port of Singapore Authority, the Civil Aviation Authority and Singapore Telecoms. The system was developed by IBM. TradeNet operated as a profit centre to which traders could subscribe and pay user charges. The advantage for the private players was that they did not have to pay for the development of the system.

Enabling legislative changes were also introduced, such as Section 47(1) of the Electronic Transaction Act, 2010 that permits filing, creation and retention of electronic documents as well as the issuance of statutory permits and licenses in the form of electronic records. The Electronic Transaction Act, 2010 is based on the United Nations Commission on International Trade Law (UNCITRAL, 1999) Model Law on Electronic Commerce, 1996 and the United Nations Convention on the Use of Electronic Communications in International Contracts (UNCITRAL, 2007), which legally recognize electronic functional equivalents of written documents and written signatures through a number of provisions. Specific provisions were incorporated in the relevant specific legislation of Singapore, such as the Customs Act, the Import and Export Act, and the Goods and Services Tax Act, in order to permit the operation of computer services and electronic submission of relevant documents. This facilitated electronic filing of documents such as manifests, returns, declarations, permits etc.

The Evidence Act (Sections 35-36) of Singapore provides for acceptance of electronic evidence in order to ensure that customs and other controlling agencies continue to carry out their enforcement functions effectively, after implementation of the National Single Window. Strict confidentiality laws are in place to protect business and trade-sensitive information submitted by traders that has a higher chance of misuse if submitted and maintained in electronic form.

TradeNet has provided several tangible benefits. The most important was the reduction, from 2-4 days to 15 minutes, in the turnaround time for processing documents. TradeNet also led to a reduction and better deployment of manpower requirements as well as early payment of taxes and improvement in the accuracy of statistics. It also enabled a three- to fourfold jump in the number of permit documents being processed efficiently in 2012 (30,000-40,000 per day) compared with 1987 (10,000 per day).

TradeNet has prepared Singapore for the move towards the next stage of paperless trade. It constitutes the core application of the Singapore Trade Exchange platform that has been operational since October 2007. This electronic platform is aimed at facilitating information exchange for trade and logistic operations, and it provides a basis for connectivity to commercial systems and regulatory systems in other countries.

2. Republic of Korea National Paperless Trade Platform - uTradeHub

UNNExT Brief No. 03, May 2010 provides a good description of the development of the paperless trade system in the Republic of Korea. That country's move towards paperless trade was actuated by its exponential growth in trade, which made it the ninth largest exporter in the world by 2010. In 2009, the contribution of its foreign trade to GDP had risen to 82.4 per cent. This generated huge amounts of paperwork and the Government of the Republic of Korea decided to move towards a paperless trade system to enhance its efficiency and competitiveness.

The process was led by the Ministry of Commerce, Industry and Energy, which laid out a "Basic Plan for Foreign Trade Process Automation" in 1989 to introduce EDI-based trade automation. The private sector was actively involved in the automation process. One of the Republic of Korea's foremost trade promotion organizations, the Korea International Trade Association, established a team for the Trade Business Automation Project.

The evolution to a paperless trade system went through four broad phases. The first phase lasted five years (1989-1993), during which some basic institutional arrangements were put in place. This included legislative action such as passing the "Act on Promotion of

Trade Business Automation" (December 1991). In the second stage, lasting six years (1994-2000), several automated services were launched, including: the EDI service for export/import approval and letters of credit (L/C); export declarations; EDI service for import declarations; and an export/import Manifest Consolidation System.

In the third stage (2001-2007), the paperless trading project received a further boost through the development of more e-applications. These included: (a) the development of the Internet Management System of Logistics (2001); (b) the establishment of a National e-Trade Committee (2003); (c) the amendment of the e-Trade Facilitation Act; and (d) the launch of the project for an Internet-based national paperless trade system (2005). These actions culminated in the opening the uTradeHub in 2007, which is a paperless trade platform linking various agencies connected to trade in an electronic format. This enabled agencies such as customs and other government organizations, banks and logistics firms to exchange information electronically and to provide a platform for data maintenance.

In the fourth stage (from 2008), the uTradeHub came to be used widely. It also gained international recognition and was recognized as a global network for paperless trade. Subsequently, paperless trade came to be used more widely through such means as: (a) the Ministry of Justice's designation of the Korea Trade Network (KTNET) – which facilitates exchanges of electronic documents within the Republic of Korea between the trade community, the Government and private agencies – as the Electronic Bill of Lading Title Registry; and (b) the use of an electronic negotiation (financial settlement) system.

The paperless trade system in the Republic of Korea now covers a large number of agencies. The uTradeHub platform, which is now used by trade and logistics firms, banks, forwarders and customs brokers, offers several main services including: notifying export L/C, local L/C and opening of import L/C; issuing certificates of origin and freight insurance policies; permitting export clearance, import clearance and customs duty refunds; and declaring transportation of bonded goods and manifests.

The economy of the Republic of Korea has benefited considerably from the uTradeHub leading to savings of some US$ 3 billion through productivity increases, reductions in extra fees and other systemic benefits, according to a research done by the Hyundai Research Institute in 2006. In order to make paperless trade a success, the Republic of Korea enacted several enabling legislations. These included: (a) the Act on Promotion of Trade Business Automation (1991); which was fully revised as the e-Trade Facilitation Act (2006); (b) the Framework Act on Electronic Commerce (1999); (c) the Digital Signature Act (1999); and (d) the Act on Promotion of Information and Communications Network Utilization and Information Protection (2001). In addition, in 2008 the Commercial Law was revised to permit the issuance of e-Bills of Lading.

Some of the key elements for the success of paperless trade in the Republic of Korea can be summarized as:

(a) The practical necessity for coping with high volumes of trade;
(b) The development of a sound legal framework for paperless trade;
(c) Active collaboration with the private sector;
(d) A highly-developed IT infrastructure.

3. Malaysian Single Window

The UNNExT Brief No. 04, July 2010, contains a detailed description of the development and benefits of the Malaysian Single Window system. In late 1990s, Malaysia began using ICT to establish a paperless trade environment. The Government of Malaysia realized that this was very important to the improvement of the country's trade competitiveness. In September 2009, the Government appointed Dagang Net as the service provider to develop a national Single Window system for trade facilitation.

The choice of Dagang Net showed a strong government-trade partnership in achieving the goal of a paperless trade environment. Dagang Net was set up in 1989 by the Malaysia National Chamber of Commerce and Industry in order to create an electronic interface for customs activities. The company introduced EDI in 1993. The network of Dagang Net was then linked to the Electronic Data Interchange for Administration, Commerce and

Transport (EDIFACT)-Electronic Data Interchange (EDI) system that had already been set up by the Malaysian customs authority. Called the "SMK-Dagang Net", this system constituted the national backbone for paperless trade.

The first interface between the two systems was implemented in August 1994. Port Klang used the system for activities such as the electronic exchange of data, digital signatures and electronic fund transfers. The results were positive in terms of efficiency, cost savings and greater accuracy in documentation. Cost savings amounted to US$ 29 million per year while the rate of documentation error was reduced from 40 per cent to 5 per cent. The cargo turn-around time was reduced from four days to two days, and subsequently to "same-day cargo turnaround". This success encouraged the use of automation at other customs entry points, and by 2003, the SMK-Dagang Net had achieved the automation of all customs entry points. It provided a nationwide portal for facilitating payments of duties and taxes. This integrated gateway permitted importers and exporters, customs brokers, freight forwarders, shipping agents, banks, insurance companies, etc. to file trade-related information and documentation only once at the single entry point. After establishment of the Single Window system, Malaysia started working on a national Single Window by linking participating permit issuing agencies electronically in 2009, thus allowing the submission of applications for, and approvals of import-export permits via the Internet.

The services offered by the SMK-Dagang Net are:

(a) Electronic declarations (e-Declare) through which importers and exporters can file import and export declarations with customs through the Internet;

(b) Electronic Preferential Certificates of Origin (e-PCO for various FTAs;

(c) Electronic customs duty payments (e-Payment);

(d) Electronic manifests (e-Manifest), enabling port users to submit cargo and vessel manifests via the Internet;

(e) Electronic permits (e-Permit), enabling importers and exporters to obtain permits electronically.

The critical elements ensuring the success of Malaysia's national Single Window project are:

(a) Steadfast support from the Government of Malaysia;

(b) Strong interagency collaboration by about 30 agencies;

(c) A robust public-private partnership in which the private sector was given a key role in devising and implementing the paperless system.

By 2009, Malaysia had fully developed its national Single Window system, which provided the single entry point for the submission of trade-related information and documentation by exporters-importers, freight forwarders, shipping agents, etc.

Malaysia is now preparing to connect to the ASEAN Single Window (ASW). It conducted the bilateral ASW pilot project with Thailand and Philippines. Malaysia is also conducting its data harmonization project compliance with ASEAN Data Model (ADM). This project will eventually lead to ASEAN-wide transmission of paperless information.

B. UN/CEFACT studies of national Single Windows

The United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) International Trade Procedures Working Group also studied the Single Window system of several countries (UNECE, 2005). The document showed that Single Windows in those countries provide a variety of services. These are briefly discussed below:

1. Mauritius

The Single Window in Mauritius allows the submission of customs declarations, their processing and their return by electronic means through TradeNet, a proprietary system developed by Mauritius Network Services Ltd. in collaboration with Singapore Network Services Ltd. (now operating under the name CrimsonLogic Pte., Ltd.) The system is an EDI-based network application that allows the electronic transmission of documents between various Parties connected with the import and export of goods, i.e., the Customs and Excise Department, freight forwarders, shipping agents, customs brokers, the Cargo Handling Corporation, Ministry of Commerce, operators within the freeport, and importers and exporters. Banks are being connected to TradeNet in a phased manner.

2. Sweden

The Swedish Single Window system is known as “the Virtual Customs Office”. It allows submission of electronic customs declarations and applications for import and export licences and licences for strategic products. It automatically updates changes in exchange rates, tariff codes and duty rates. It also contains trade-related regulations and can provide traders with automated updates on changes via Internet and/or Short Message Service (SMS) services.

3. The Netherlands

The Single Window at Schiphol Airport allows electronic submission of cargo manifests by airlines to customs. It has led to creation of a “Cargo Clearance Point” (CCP) where 10 other enforcement agencies coordinate with Customs for various agency functions. These agencies include: immigration, Health Care Inspectorate, Inspectorate General of Transport, Public Works and Water Management, Inspectorate for Health Protection and Veterinary Public Health, etc. The CCP is managed by Customs. The relevant agencies provide Customs with risk-profiles on the basis of which Customs analyses the information and passes it on, either electronically or on paper, to the other agencies.

4. The United States of America

The United States Single Window is called the International Trade Data System (ITDS). The Customs and Border Protection (CBP) of the United States has integrated ITDS requirements into a joint Automated Commercial Environment/International Trade Data System (ACE/ITDS). This eliminates parallel and duplicated data submissions to various agencies. The participants in this Single Window include government agencies dealing with border operations, licensing and permits, statistical functions and trade promotion.

5. Other countries

The report’s description of the Single Windows of Singapore, the Republic of Korea, Malaysia and other countries shows that the Single Window leads to substantial gains in terms of cost and time-saving for both the private sector and Governments. Experience underlines the fact that the development process of a Single Window is often driven by

growing trade volumes, and it is backed by strong political and government support. It is useful to follow a gradual approach in terms of interlinking various agencies dealing with trade. It is also very important to have the private stakeholders on board; in fact, in several instances, they have acted as the lead agency in the development of Single Window systems. This also reduces a Government's cost burden, and payment of user charges makes these systems self-sustaining.

The successful development of a Single Window system requires a good legal and technical base. The UNCITRAL Model Law on Electronic Commerce, the UNCITRAL Model Law on Electronic Signatures and the United Nations Convention on the Use of Electronic Communications in International Contracts have several provisions for legally recognizing electronic functional equivalents of written documents and written signatures and contracts. These provisions have been used as the basis for creating the enabling legal framework, both in terms of an overarching legal framework and in introducing enabling provisions in trade specific legislations such as the Customs Act, Import and Export Act, goods and services tax, etc. On the technical side, different types of systems have been used.

6. Use of ICT in border clearance: Case of India

Several countries in the Asia-Pacific region do not yet have a Single Window system but they are very advanced in using ICT for border clearance of goods. They are well-placed for moving towards a Single Window system. A case in point is India's use of ICT for the border clearance of goods. India uses an upgraded version of the Indian Customs EDI System, (ICES), which provides automated workflow relating to the clearance of import and export consignments at 108 customs locations.

ICES permits electronic filing of various documents such as cargo declarations, and import and export declarations on a 24/7 basis without the need to physically visit the Customs House. ICES also permits exchanges of electronic information with other agencies such as the Directorate-General of Foreign Trade (DGFT) for certain categories of licences, and with banks for refunds of duty drawback and service tax. During April

2011-March 2012, ICES handled about 8.6 million customs declarations for imports and exports, and more than 500,000 import and export manifests.

ICEGATE (Indian Customs Electronic Commerce/Electronic Data Interchange Gateway) is an e-commerce portal that provides e-filing services to traders, cargo carriers and other stakeholders, and links them with ICES through its message exchange facility, thus enabling faster customs clearance. About 8,500 users are registered with ICEGATE, which serves about 670,000 importers/exporters. The system accepts the communication protocols commonly used on the Internet. Apart from allowing e-filing of entry documents and manifests, the system enables custodians and cargo logistics operators to interact with ICES for cargo- and logistics-related information. In addition, it allows data exchanges between customs and various regulatory agencies such as DGFT, the Reserve Bank of India (the central bank), the Ministry of Steel and the Director-General of Commercial Intelligence and Statistics. The National Import Database and Export Commodity Database for Directorate of Valuation are also serviced through ICEGATE. The system also provides other services such as on-line registration for intellectual property rights, tracking status of document processing by customs, online verification of authorization under export promotion schemes. ICEGATE has a 24/7 helpdesk facility for all the stakeholders. To ensure secure filing of documents, work is underway on the use of digital signatures.

In addition, ICES provides a Risk Management System (RMS) to enable the Indian customs authorities to strike an appropriate balance between trade facilitation and enforcement. Under the RMS, Bills of Entry filed by importers are processed for risk and a large number of consignments are allowed clearance without examination, based on the importers' self-assessment. Other consignments undergo assessment or examination, or both, depending on the RMS evaluation of risk. The RMS is operational at 74 customs locations and covers more than 99 per cent of imports.

All qualified importers who have demonstrated the capacity and willingness to comply with the laws are registered with the Risk Management Division under the Accredited

Clients Programme (ACP), and receive assured facilitation. Except for a small percentage of consignments selected on a random basis by the RMS, and cases where specific intelligence is available or where a specifically observed pattern of non-compliance is required to be addressed, ACP importers are allowed clearance on the basis of self-assessment. Currently, there are 308 such ACP importers. With the introduction of the RMS, the then concurrent audit was replaced by post-clearance audits that are carried out only on Bills of Entry selected under the RMS for such audit. The implementation of the RMS has helped considerably to speed up the customs import clearance process by cutting down the waiting time of cargo as well as reduce transaction costs for importers. A module for cargo declaration-based selection of containers for scanning on arrival at Jawaharlal Nehru Port, Nhava Sheva, (near Mumbai) has been developed and successfully implemented by the Risk Management Division. An RMS for exports and courier clearance has also been developed and pilot projects are under implementation.

The countries that have operational Single Windows or which have advanced usage of ICT have already benefited from considerable reductions in transaction costs. As the international business environment is becoming increasingly competitive, and supply chains are getting fragmented, transaction costs need to be continuously reduced. The adoption of cross-border paperless trade provides an opportunity in this direction. However, such systems are currently being used in a very limited number of cases, and the prime focus of many of them is improved customs enforcement. Some such systems are discussed in the following section.

C. Cross-border paperless trade systems

WCO has prepared some useful case studies on the “Systematic Exchange of Commercial Information between Customs Administrations in Bilateral and Regional Arrangements”. WCO Research Paper No. 11 (Yasui, 2011) delineated four such systems. One exchange system involves China. None of the four systems make provisions for a generalized mechanism for the exchange of information. Instead, they focus on specific objectives

such as reducing congestion at the borders for landlocked countries or the improvement of customs control between the Customs Unions. The IT system used for such information flow is based on one of the two broad models; a “Push System” or a “Pull System”. In a Push System, the IT system automatically sends the necessary data while in a Pull System the relevant data are available online, which allows the user administration to access it, as and when required. The operation of the four systems is explained below:

1. New Computerized Transit System for Common Transit System between the European Union and European Free Trade Association

A common transit system is intended to promote easier movement of transit goods between 27 European Union member States and four European Free Trade Association (EFTA) countries (Iceland, Norway, Switzerland and Liechtenstein). The New Computerized Transit System (NCTS) is based on the exchange of electronic messages. The NCTS Customs Office, at the point of departure, sends an electronic message regarding transit goods to each customs office on the transit route. When the goods arrive at a transit point, a message of arrival is sent to the office of origin. This process is repeated at every subsequent transit point and at the final destination. If the goods arrive as per description, the bond is released electronically. The system has been fully implemented since 2003.

The legal basis for this transit procedure is the Common Transit Convention of 20 May 1987. Data protection is governed by Article 13 of the Community Customs Code, which requires an international agreement for transferring confidential data from the European Union to the third countries.

NCTS was implemented in stages. Its implementation was started in a limited number of offices in a few countries, and then gradually extended to all Contracting Parties. In the initial phase, the paper-based system coexisted with NCTS. The data exchange is on the basis of a pre-determined message format (IE 001), and includes information concerning: (a) the consignor, consignee and carrier; (b) the description of the goods; (c) classification code; (d) the quantity; (e) country of departure; (f) country of destination; (g) the customs

office of dispatch/transit/destination; (h) the means of transport; (i) container number; and (j) the itinerary with anticipated times and places during the transit operation. This is sent as anticipated arrival record message.

Traders can send and receive messages on NCTS using the Internet, the EDIFACT or the Extensible Mark-up Language (XML) channels. EDIFACT is recommended for operators who submit a high number of transit declarations. The EDIFACT system sends and receives messages as e-mail attachments, or in the body of the mail, via Simple Mail Transfer Protocol (SMTP) or the ISO standard for electronic mail (X.400). Traders who use their own software to send messages to NCTS must either buy specialized software or develop software that is compatible with NCTS.

Use of XML is also recommended for large businesses, as this route is only available to businesses that purchase or develop their own software. To send a message through the XML route, EDIFACT messages are "wrapped" with an XML envelope. A web channel is recommended for small businesses as it is free to use, requires no special software and online customer support is available.

Goods moving under the transit procedure must be accompanied by a Transit Accompanying Document (TAD) that includes the consignment's Movement Reference Number printed in numeric form and as a barcode. The TAD must be presented at the office of destination to enable that office to inform NCTS of the arrival of goods.

2. European Union-China Smart and Secure Trade Lanes pilot project

The impetus for the Smart and Secure Trade Lanes (SSTL) initiative was conceived as a result of the rapidly increasing trade volume between the European Union and China in recent years. The project aims to improve security and trade facilitation throughout the supply chain between the European Union and China. The pilot project, which was started in September 2006, seeks to test, strengthen, refine and agree on the principles for securing end-to-end supply chains. Its long-term goal is to facilitate an agreement on the

mutual recognition of security measures, control results, and Authorized Economic Operators (AEOs).

The SSTL pilot project involves the exchange of electronic information on sea containers between the United Kingdom of Great Britain and Northern Ireland, the Netherlands and China. The seaports that are participating in the pilot project are Rotterdam, Felixstowe and Shenzhen. The first phase lasted for nine months, starting from November 2007, and covered specific trade lanes of a limited number of economic operators. Since November 2010, more ports and more complex trade lanes have been added in the project.

The legal framework of the SSTL pilot project is Article 6, Para 2 of the European Union-China Customs Cooperation and Mutual Assessment Agreement, which states that:

> "The Contracting Parties undertake to develop trade facilitation action in customs matters, taking into account the work done in this connection by international organizations."

The data protection aspect is governed by Article 13 of the Community Customs Code as in the case of European Union-EFTA and NCTS. The relevant provisions are Article 25 (1) of Directive 95/46/EC and Article 9 of EC Regulation 45/2001. These provide protection of personal data "to ensure an adequate level of protection" of third countries. There is a provision to derogate from this obligation under Article 26 of the European Union Directive on the condition that the concerned person gives consent for sharing the data. The communication tool for this project is "WCO CENcomm", a WCO web-based application that enables a point-to-point, secure communications tool for operational purposes. It is accessible only by a closed user group of officers for the duration of an operation.

The electronic format of message exchange is based on the WCO Data Model. Initially 16 data elements relating to exporters/importers, goods, carriers and ports of departure/arrival were being exchanged between customs at exit and entry. This was later expanded to 23 data elements, mostly derived from the WCO SAFE Framework of Standards.

The operational aspects of the project are:

(a) An exporter lodges an export declaration of a sealed sea container to customs at the point of exit before departure;
(b) Customs at the point of exit conducts a risk analysis based on joint risk rules mutually agreed in advance with customs at entry;
(c) After processing the declaration, customs issues export permission;
(d) Before departure, customs at exit transmits 23 data elements including the Unique Consignment Reference number and control results to customs at entry, in the format of the WCO Data Model using WCO CENcomm platform;
(e) Customs at entry receives the information before the departure from the exporting countries;
(f) Once goods arrive in the port of the importing country, Customs of the importing country uses the Unique Consignment Reference to identify the sea container with the entry summary declaration lodged by the carrier;
(g) Customs may inspect the container only if there is a specific reason such as a broken seal. Other containers are released after duty payment;
(h) Customs at entry sends the control result back to customs at exit, using the WCO CENcomm platform.

The first phase of the programme has been evaluated as successful. The project has contributed to improving trust and cooperation between the customs authorities of the European Union and China. It also marks a progressive step in the mutual recognition process of AEO programmes between the European Union and China.

However, the first phase also experienced some difficulties. The companies identified for the pilot project found it difficult to participate as very few had moved full containers directly to and from Shenzhen/Felixstowe/Rotterdam. It was also reported that the companies were not sufficiently convinced that there were tangible benefits, in addition to those already available from AEOs, to encourage them to participate in such a project.

The second phase of the project started in November 2010 by extending the pilot project to ports in Belgium, France, Germany and Italy on the European Union's side and to the port of Shanghai on the Chinese side, and included more complex trade lanes such as consolidation and transit.

3. INDIRA of Mercosur

Established in 1991, Mercosur is a Customs Union comprising Argentina, Brazil, Paraguay, Uruguay and Venezuela. It has a common external tariff. The customs duty payment takes place at the first port of arrival; in order to avoid duty payment at another border crossing within Mercosur, the INDIRA (Customs Records Information Exchange) system was implemented. It is a web-based system for exchanges of information on exported goods destined for other Mercosur countries and imported goods from all non-Mercosur countries. The objectives of the system are to:

(a) Enable the automated exchange of trade information among the Customs administrations of Mercosur countries;
(b) Enhance the fight against illicit trade;
(c) Serve as a tool to identify transactions that comply with the Common Tariff Policy and the Mercosur Origin Regime.

The legal framework for this exchange is in the Treaty of Asuncion and certain follow-up Mercosur Decisions. The most important of these is Article 21 of Decision No. 27/05, which requires the customs administrations to establish information exchange mechanisms through the INDIRA system. Data confidentiality is provided for under Article 23 of Decision No. 37/05, which states that information exchanges through IT systems will enjoy the same level of confidentiality protection in the importing country as provided in the country of origin.

Each Mercosur member State covers the maintenance cost of its communication tools and database. Each member of Mercosur has the right to access databases of other members when necessary ("pull system"). Once an import or export declaration is accepted, the main data elements of the declaration are available in the system. The request for supply of data, made by the Virtual Private Network (VPN) via the Internet, comprises two

modules, the “service requester” and the “service provider”. The data are encrypted for communication in XML format.

The data that can be accessed by Mercosur members include: (a) the declaration reference number; (b) acceptance date of goods declaration; (c) importer/exporter; (d) country of exportation/destination; (e) total number of items; (f) associated government procedure code; (g) office of entry; (h) office of declaration; (i) total gross weight; (j) total invoice amount; (k) freight costs; (l) insurance costs; (m) date of arrival; (n) departure date; (o) mode of transport; (p) cargo manifest number; (q) total number of packages; and (r) duty assessed.

There are several ways to request data through the system once the portal is accessed through the Internet, for example, export declaration number followed by item number, period and destination or origin country of a declaration, and certification number.

INDIRA has been used extensively since 2009. Brazil has accessed the databases of other countries more than 11,000 times, while others have accessed the database of Brazil more than 47,000 times. The data exchanged have been used for origin investigation and inspection after clearance.

4. Revenue Digital Data Exchange of the East African Community

The East African Community was formed into a Customs Union in 2004. It comprises Burundi, Kenya, Rwanda, Tanzania and Uganda. The main objectives behind the development of the Revenue Digital Data Exchange **(**RADDEx) system were to minimize delays in border crossings and to plug revenue loss because of diversion of goods in transit. RADDEx enables the exchange of export/re-export and transit information between member States of the East African Community, which in turn permits targeting and profiling of goods before their arrival. It was developed by the Kenya Revenue Authority and the Uganda Revenue Authority in partnership with the East and Central Africa Global Competitiveness Hub. It was launched in October 2007 after a two-year

pilot phase. As of December 2010, the RADDEx system was being operated by Rwanda, Uganda and Kenya on a bilateral basis. Tanzania and Burundi are expected to join.

The legal framework for this system is the East African Customs Management Act (2004). Section 10 (1) of the Act provides that "Commissioners shall furnish each other with such information, certificate, official report or document on matters relating to any (a) prevention, investigation and suppression of offences under this Act; and (b) any other relevant information relating to Customs".

The RADDEx system is operated under bilateral Memoranda of Understanding (MoUs). It is a web-based system that interfaces with intermediate servers of national customs systems (e.g., SIMBA 2005 for Kenya, and ASYCUDA++ for Uganda and Rwanda). Intermediate servers are created to protect the data in each customs system. It has two distinct portals – one accessed by customs and the other by the private sector.

Data confidentiality is governed by Section 9 (2) of the East African Community Customs Management Act, which provides for fines and imprisonment to be imposed on persons disclosing information concerning any person, firm or business that is acquired in the course of official duties. The data, which are communicated in XML format, include: (a) declaration number and date; (b) exporter/importer/agent name; (c) the number of packages; (d) total/gross/weight; (e) country of origin; (f) customs value; (g) commodity description; and (h) commodity code. Supporting documents such as invoices and certificates of origin are not exchanged.

The benefits of RADDEx have been manifold. It has reduced the cost of cargo clearance, enhanced partnership between customs administrations, and expedited transit and import procedures through risk management methods. It has also proved effective in checking undervaluation of goods. RADEEx processed 95 per cent of transit goods between Mombasa (Kenya) and Kampala (Uganda) in 2009. The border-crossing time was substantially reduced (from three days to 15-20 minutes), and several cases of fraud were detected leading to substantial revenue recovery. The clearing agents also save time and

costs by “one-off data capture” declarations. As data elements from RADDEx are re-used, the operators do not have to re-key most of the data elements in declarations before different national customs administrations.

On the other hand, the operation of RADDEx has also thrown up many challenges. Network failure has been frequent at remote border posts. The expansion of RADDEx has been slow because it is done on a country-by-country basis. This also creates the risk of “disharmony” in the region. The automation process is incomplete as supporting documents, such as invoices and certificates of origin, have to be physically submitted.

5. Exchange of electronic Certificates of Origin between Taiwan Province of China and the Republic of Korea

In order to assess the contribution of the actions and measures of APEC’s Electronic Commerce Steering Group (ECSG) towards reducing trade transaction costs, a study was conducted on the exchange of electronic Certificates of Origin (CO) between Taiwan Province of China and the Republic of Korea (Say and others, 2011).

The Customs Administration of Taiwan Province of China requires a CO for certain products imported from the Republic of Korea, not as a part of an FTA arrangement but in order to ensure that such products do not originate in economies from which imports to Taiwan Province of China are prohibited. Products that require a CO are primary items such as pears, apples, honeydew and cabbages. On the side of the Republic of Korea, the main agencies involved in exporting are the Korea Chamber of Commerce and Industry, which issues COs, and KTNET,.

The normal exchange process of a CO between the two countries was part electronic and part paper-based. The Korea Chamber of Commerce and Industry has an online e-CO service through which an exporter from the Republic of Korea can obtain a CO electronically (within 10 minutes of filing an application online). The cross-border movement of a CO was in the paper mode. This meant that exporters printed a paper copy of COs with the “digital stamp”, had them authenticated at the Taipei Mission Office in Seoul (which normally took two to three days) and then sent them to the importers or their

customs broker by mail. On the Taiwan Province of China side, the importers or their customs broker would apply electronically for the required import permit/certificate and present the import declaration electronically together with the paper version of the CO to customs. The clearance of goods would be allowed after checking the authenticity of the CO.

In order to expedite this process, in mid-2010 the Global e-CO service was jointly introduced by Trade-Van in Taiwan Province of China and KTNET. This permitted a CO approved by the Korea Chamber of Commerce and Industry to be transmitted electronically to a Taiwan Province of China importer. The CO was sent with a digital signature that provided assurance to the Taiwan Province of China customs authorities that the e-CO was authentic. This eliminated the need to file a paper-based CO authenticated by the Taipei Mission office in Seoul. The importer would receive an e-mail notification that the e-CO had been sent by the exporter, and would use the Trade-Van e-CO service to digitally sign the e-CO and forward it electronically to the Taiwan Province of China customs. Goods would be cleared on this basis.

The benefits of the above improvements were considerable in terms of cost savings (US$ 420 per shipment) and time (five days per shipment). Of the cost savings, US$ 217 per shipment was recorded by exporters and US$ 203 by importers. The time saved was two days for exporters and three days for importers, due to the elimination of the need to authenticate the paper CO in the exporting country, its presentation in the importing country, the time and expenses involved in the physical delivery of the CO by mail, and the time taken for clearance of goods in the importing country.

The introduction of e-COs led to additional benefits such as an easier process for rectifying errors in a CO. In the case of rejection of a CO due to certain errors in the document, a fresh paper-based CO took eight days to reach the importer (six days to re-issue and two days for postal delivery). The goods would be held up during this period, leading to interest charges and loss of opportunity to sell the goods at the optimal price. These losses amounted to US$ 3,553 per shipment. There were errors in about 7 per cent

of the COs, leading to a pro-rata cost of US$ 249 per shipment. The study indicated that when taking all this into account, the overall savings from the implementation of the new Global e-CO was US$ 274 for exporters and US$ 397 for importers.

Judging from the encouraging results, the study (Say and others, 2011) suggested that the scope of the APEC e-CO Pathfinder Project between Taiwan Province of China and the Republic of Korea be expanded to include other electronic business-to-business and business-to-government documents such as e-Invoice, e-Packing List, e-Air Way Bill (AWB), e-Sanitary and Phyto-Sanitary (SPS), etc. It also suggested that e-CO Pathfinder Project should be expanded to those APEC member economies that have FTAs or Economic Partnership Agreements (EPAs), as in the majority of such cases a CO is a mandatory requirement for extending preferential tariff treatment. This would possibly encourage traders to adopt e-CO. More detailed description of this initiative can be found in annex 1.

6. Electronic Certificate of Origin submissions between Malaysia and Japan, and the private sector role in cross-border paperless trade

The private sector has also been playing an important role in promoting cross-border paperless trading systems. An important example of cooperation between the private sector and a Government in facilitating paperless trade is the partnership between Pan Asian e-Commerce Alliance (PAA) and the customs authorities of Malaysia and Japan. PAA is the first regional alliance established for developing commercial and IT infrastructure in order to facilitate trade across economies. A pilot project for electronic submission of preferential COs issued by the Ministry of International Trade and Industry of Malaysia, using a secure network established between the customs service provider DagangNet of Malaysia and NACCS of Japan, and PAA members, has been running since December 2010. The role of PAA in facilitating electronic exchanges and the limitations of private entities in dealing with the issues of cross-border electronic exchanges are discussed in box 1.

Box 1: Pan Asian e-Commerce Alliance

The Pan Asian e-Commerce Alliance (PAA) is a private sector organization that was founded in July 2000 by CrimsonLogic (Singapore), Trade-Van Information Services Co. (Taiwan Province of China) and Tradelink Electronic Commerce Ltd. (Hong Kong, China). In fact, PAA is the first regional e-Commerce alliance in Asia. It aims to promote and provide secure, reliable and value-added IT infrastructure and facilities in order to enhance seamless trade globally. The combined membership is more than 150,000 organizations. PAA members comprise the leading customs and trade service providers of some of the most active Asian economies, such as China, Japan, the Republic of Korea, Singapore and Malaysia, among others.

Private entities that want to use the electronic infrastructure of PAA have to sign an agreement with PAA permitting interconnection of network services. This allows such entities to use the PAA network for transmission of trade and logistics documentation. In order to ensure that the network is secure and reliable, the documents must bear a digital signature. In the system devised by PAA, before the originator's e-Document reaches the addressee, the format is converted twice from the format of the originator to the format of PAA, and then from the PAA format to the addressee's format. The digital signature on the e-Document is destroyed each time when formats are converted from one to another.

PAA provides a system of mutual recognition of Certificate Authorities based in the territories where the private users are located. An additional advantage for users is that they are able to re-use the relevant data from the received documents for the application and submission of trade or regulatory declarations, thus saving considerable time involved in re-keying in data.

A PAA Certificate Authority has been commissioned as the private framework for the mutual recognition of Public Key Infrastructure (PKI). Infrastructure to support both end-to-end digital signatures as well as digital signatures between service providers has been established. The alliance is aiming to have at least one Certificate Authority from each member country to be certified participants in PAA.

PAA provides a set of legal agreements, specifications and procedures that privately enforce the legality of the electronic transactions within the PAA network through contract law. Within this network, import and export trade declarations, electronic cargo manifests, electronic shipping orders, etc. in the e-commerce of trade can operate smoothly.

As pointed out in the ESCAP/UNECE (2012) guide, the lack of a common framework for international electronic transactions is deterring trading entities from carrying out cross-border business dealings. PAA has multiple limits in its operation. First, PAA rules and norms are merely operable within its network, rather than in the whole Asia-Pacific region. Second, PAA rules and norms are, by their nature, private contracts among their members, and not national or international laws.

The ESCAP/UNECE guide also points out that in international trade, contractual arrangements can, in most circumstances, pre-empt the application of non-mandatory legal norms and, as long as there is no dispute between trading partners, define their rights and obligations. However, contractual arrangements still need to comply with national laws of mandatory application and, when disputes are cross-border, relevant international law provisions. This compliance is critical to ensuring the recognition and enforcement of judgments and arbitral awards rendered on the basis of contractual agreements. This is particularly true when there are disputes arising from the contracts and the Parties have to rely on “external” interpretations or enforcement of their contractual arrangement. Further, where disputes involve third parties, i.e., individuals or entities that are not a party to PAA contract agreements, those third parties may not seek resolution under the PAA rules and norms. These limitations can be best overcome by providing a treaty-based international legal framework for cross-border paperless trade.

Legal challenges to cross-border paperless trade also exist. For example, there could be legal and/or practical problems with the use of foreign electronic evidence in the enforcement of customs or other regulatory laws. Customs administrations and other regulatory agencies often prefer a declarant to be a person within the jurisdiction of their

country so that he/she can be held accountable for the correctness of the declaration made. In such a situation, a Single Window electronic network can help the exporter to share data with the importer and the importer can then reuse this data while filing his/her import declaration.

The Australian case study in this section also highlights the challenges that customs administrations may face in converting export declaration into import declaration. Some of these legal limitations can be addressed by having a system where an exporter shares information electronically with the importer or his/her broker who will, in turn, file the declaration with the customs authorities for clearance of imported goods. The APEC model also emphasizes such an approach, which has been validated by some proof-of-concept studies as discussed in this section. The PAA model can play an important role in such business-to-business, paperless cross-border exchanges of data and documents.

7. ASEAN Single Window

An interesting example of an incremental approach to the development of a cross-border electronic exchange on the basis of Single Window electronic platforms is provided by the ASEAN framework for a Single Window. At the eleventh ASEAN Summit in December 2005, the ASEAN Economic Ministers signed an Agreement to establish and implement the ASW. This is a key component of the ASEAN plan to realize the ASEAN Economic Community by 2015, which will lead to a large single market for goods and services, and will facilitate development of regional production networks.

The ASW is the environment where national Single Windows of ASEAN member States operate and integrate, thus providing an infrastructure for electronic data/information/documentation exchanges and communication among ASEAN members. In order to implement the ASW, each ASEAN member is first establishing a national Single Window, which will serve as the single point of connectivity and communication with the Single Windows of other ASEAN members. Trade data between the sender and the recipient(s) are maintained and owned by the Parties concerned and will reside in the national domain, which is under the purview of the respective ASEAN member States.

The work on the ASW is being overseen by the ASW Steering Committee. Two working groups, i.e., the Working Group on Technical Matters and the Working Group on Legal and Regulatory Matters, were formed to assist the ASW Steering Committee to complete this task. As per the ASEAN Agreement to Establish and Implement the ASEAN Single Window of 9 December 2005, the ASW was to be implemented by 2012. However, the task of setting up a national Single Window has not yet been completed by some ASEAN members. It is understood that seven ASEAN countries – Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam – are in the process of conducting a pilot ASW project during 2013 and 2014, and full implementation of the ASW is envisaged for 2015. However, the remaining ASEAN members, i.e., Cambodia, the Lao People's Democratic Republic and Myanmar, are reported as not yet ready. The delay in meeting the deadline for establishing the ASW is to the result of several challenges in establishing the national Single Windows.

There are several challenges to achieving the goal of national Single Windows in the ASEAN members. These include: (a) the need for a consistent, strong leadership; (b) good interagency coordination; (c) efficient, technically sound and time-bound business process re-engineering; (d) a lack of similar levels of computerization between different agencies within each country; and (e) a lack of budgetary support.

Additional challenges faced in achieving the ASEAN-level Single Window can be summarized as: (a) a lack of consensus between ASEAN members on some issues; (b) different levels of computerization between ASEAN members; (c) the need for an effective regional and national Single Window Legal Framework; (d) a sustainable budget to establish and maintain the ASW, such as the regional services servers; and (e) the required manpower and facilities for maintaining the ASW.

The above example indicates that ambitious projects for developing cross-border paperless trade through national Single Window systems can be challenging and will take considerable time. The same lesson has also emerged from other studies, which indicate

that the stage is not yet ripe to undertake ambitious steps for cross-border information exchanges such as the one where a declaration of an exporting country can become the mirror declaration in the importing country. A case in point is the Australian Customs study discussed below.

8. Pilot study of export and import exchange declaration between two countries

In formulating a mechanism for cross-border electronic data exchange, the Australian Customs and Border Protection Service (CBP) collaborated with the New Zealand Customs Service, Korea Customs Service, and Japan Customs and Tariff Bureau. The aim was to explore whether obtaining information early would improve cargo risk assessment and would reduce the regulatory burden on the industry. In its report, CBP (2009) concluded that many of the anticipated benefits are not achievable in the current business environment. The analysis found that data available at the time of export were not sufficient to meet clearance requirements at the importing country end without supplementing data at a later time and also by other reporting Parties.

The report highlighted some of the difficulties encountered in electronic exchanges of information across border including:

(a) A high degree of data misalignment prevented an international data exchange from meeting objectives such as early risk assessment, a reduced regulatory burden on industry across supply chains and early certainty of status for importers. CBP found that there was insufficient similarity between export data of overseas Governments and the data requirements of CBP. This prevented CBP from undertaking a comprehensive risk assessment in advance of filing an import declaration as they would still require additional data for the risk assessment.

Similarly, on the export side, it was found that CBP did not capture data of House Air Way Bill numbers; as a result, importing countries could not match the export data with their corresponding import data. The report noted that only partial availability of data from exporting countries was not very beneficial as it would require developing two layers of risk assessment: (i) at the point of receipt of data

from exporting countries; and (ii) at the point of receipt of data from the importers or their agents. It noted that this two-step risk assessment process would make the process of clearance more complex than the existing system. The report pointed out that critical data required for import clearance were not available from overseas. It identified some elements of missing information, such as community protection questions, preference scheme data and quarantine directions, which usually required local knowledge to complete the information set. The lack of such data prevented CBP from conducting a comprehensive risk assessment without obtaining information from the local agents;

(b) Additional data sources could introduce linking and data quality issues, and might not relieve the reporting burden of Australian importers. The report noted that the existing challenges faced by industry in linking import declarations with cargo reports would be exacerbated by the requirement to link with a third document – the corresponding export declaration;

(c) Even currently, options exist for multinational companies to file information from any location, yet they are not being utilized because of various difficulties such as the requirement to update the data with tariff classification, statistical codes, community protection questions, Australian Quarantine and Inspection Service information relevant to Australian CBP and the need to provide supplementary information that might be needed on these issues, but which could only be furnished by a local agent;

(d) The high cost of implementation as well as the requirement to make significant changes to business processes that would be difficult to implement as a broad solution.

Two useful conclusions can be drawn from the CBP study. First, cross-border paperless information exchange is feasible, and is underway in a limited number of cases. This includes exchanges of data and documents. It has yielded encouraging results, both in terms of improving trade facilitation and in the compliance environment. Second, a very ambitious or prescriptive approach to cross-border information exchange can run into

technical and other difficulties. It is therefore advisable to follow an incremental approach with flexibility in the types of data to be exchanged.

D. Paperless trade under free trade agreements of Asian and Pacific countries

A review of the provisions of various FTAs among countries in the Asia-Pacific region shows considerable willingness to adopt paperless information exchange systems. A brief survey of the various relevant FTA provisions is provided below.

The ASEAN-Australia-New Zealand FTA (Article 8, Chapter 10) requires each Party, where possible, to work towards the implementation of initiatives that enable the use of paperless trade. For this, each Party is required to take into account the methods agreed upon by international organizations including WCO.

The Australia-Chile FTA has a provision (Article 5.11, Chapter 5) that states the customs administrations of each Party will work towards implementing an electronic system for its customs reporting requirements as soon as is practicable; for this, they will take into account the methods agreed upon by WCO, including the WCO data model for simplification and harmonization of data. The FTA also requires (Article 16.9, Chapter 16) that each Party will endeavour to accept an electronic version of trade administration documents used by the other Party as the legal equivalent of paper documents. It further requires that each will work towards developing a Single Window, using relevant international standards.

The Australia-Thailand FTA states (Article 309, Chapter 3) that the customs administrations of each Party will work towards introducing an electronic means for its customs reporting requirements as soon as is practicable. It also requires each Party to accept the electronic format of trade administration documents as the legal equivalent of paper document (Article 1107, Chapter 11).

The Australia-United States FTA requires (Article 16.7, Chapter 16) each Party to endeavour to accept trade administration documents submitted electronically as the legal equivalent of the paper version of such documents.

The China-Peru FTA (Article 61, Chapter 4) requires the customs administrations to endeavour to use information technology that expedites procedures for the release of goods, including the submission and processing of information and data, before the arrival of the shipment, as well as electronic or automated systems for risk management and targeting.

The India-Singapore Comprehensive Economic Cooperation Agreement (Article 4.4, Chapter 4) states that the Parties will cooperate with a view to realizing and promoting paperless trade between their respective customs administrations and trading communities.

The Japan-Philippines Economic Partnership Agreement states (Article 57, Chapter 5) that the Parties will cooperate, through the exchange of views and information, on realizing and promoting paperless trading between them. It further states that the Parties will encourage cooperation between the relevant private entities engaging in activities related to the paperless trade.

The Japan-Singapore New Age Economic Partnership Agreement requires (Article 40, Chapter 5) the Parties to recognize that using electronic filing and transfer of trade-related information as well as electronic versions of documents will significantly enhance the efficiency of trade through reductions in costs and time, and, hence, will cooperate in realizing and promoting paperless trading between them.

The Japan-Switzerland FTA requires (Article 79, Chapter 8) each Party to endeavour to accept trade administration documents submitted electronically as the legal equivalent of the paper version of such documents.

The Japan-Thailand Economic Partnership Agreement (Article 57, Chapter 5) requires the Parties to cooperate in realizing and promoting paperless trade between them, both in terms of electronic transfers of trade-related information and exchanges of electronic versions of documents such as bills of lading, invoices, etc. It also requires (Article 59, Chapter 5) the Parties to encourage cooperation between their relevant private entities engaging in activities related to paperless trading.

The Republic of Korea-Peru FTA states (Article 5.8, Chapter 5) that their customs administrations will endeavour to use information technology that expedites procedures for the release of goods, including the submission and processing of information and data, before the arrival of the shipments, as well as introduce electronic or automated systems for risk management and targeting.

The Republic of Korea-Singapore FTA states (Article 14, Chapter 14) that each Party will endeavour to accept trade administration documents submitted electronically as the legal equivalent of the paper version of such documents. It also commits (Article 14.7, Chapter 4) to adopting legislation to protect personal information of users engaged in electronic commerce. It also requires (Article 5.13, Chapter 5) the parties to endeavour to provide an electronic environment that supports business transactions between their customs administrations and their trading communities.

The New Zealand-China FTA requires (Article 53, Chapter 5) the customs administrations of both Parties to apply information technology that supports customs operations, where it is cost-effective and efficient, particularly in the paperless trading context, taking into account the developments in this area within WCO.

The New Zealand-Hong Kong, China Closer Economic Partnership Agreement contains (Article 7, Chapter 5) similar provisions as those in the New Zealand-China FTA.

The New Zealand-Singapore Closer Economic Partnership Agreement requires (Article 12, Chapter 4) both Parties to put in place, by the date of entry into force of the

Agreement, an electronic environment that supports electronic business applications between each customs administration and its trading communities, based on the APEC Blueprint for Action on Electronic Commerce.

The New Zealand-Thailand Closer Economic Partnership Agreement (Article 3.12, Chapter 3) requires the customs administrations of both Parties to adopt, as soon as practicable, electronic procedures for all reporting requirements and (Article 10.6, Chapter 10) that each Party accept the electronic format of the trade administration documents as the legal equivalent of paper documents.

The Trans-Pacific Strategic Economic Partnership (Brunei Darussalam, New Zealand, Singapore and Chile) requires (Article 5.10, Chapter 10) the customs administrations of the Parties to endeavour to provide an electronic environment that supports business transactions between them and their trading communities.

The above survey of the provisions of FTAs involving countries in the Asia-Pacific region confirms that a large number of provisions already exist that are related to the introduction of cross-border electronic exchanges of information between customs administrations. However, it also shows that most of these provisions are couched in a "best endeavour" language. The relevant FTA provisions and their nature (binding or best endeavour) are summarized in table 1. On the one hand, these provisions reflect caution to make binding commitments in an area where capacities are evolving. On the other hand, it also reflects the fact that there is a core body of Asian and Pacific countries that are willing to implement cross-border paperless exchange systems. A binding legal framework for countries in the Asia-Pacific region appears to be the next logical step to advance this process.

Table 1: Relevant international standards and instruments

Agreement	Commitments	Types(best endeavour/binding)
ASEAN-Australia-NZ FTA (Article 8, Chapter 10)	Where possible, work towards use of paperless trading.	Best endeavour

Australia-Chile FTA (a) Article 5.11, Chapter 5	Will work towards having electronic means for customs reporting requirements, as soon as practicable.	Best endeavour
(b) Article 16.9, Chapter 16	Accept each other's electronic version of trade administration document as legal equivalent of paper documents.	Best endeavour
(c) Article 16.9, Chapter 16	Work towards developing a Single Window, using relevant international standards.	Binding
Australia-Thailand FTA (a) Article 309, Chapter 3	Each Party to work towards providing electronic means for customs reporting requirements.	Best endeavour
(b) Article 1107, Chapter 11	Accept electronic format of trade administration documents as the legal equivalent of paper document.	Binding
Australia-United States FTA (Article 16.7, Chapter 16)	Accept trade administration documents submitted electronically as the legal equivalent of the paper version.	Best endeavour
China-Peru FTA (Article 61, Chapter 4)	Use information technology to expedite the release of goods.	Best endeavour
India-Singapore Comprehensive Economic Cooperation Agreement (Article 4.4, Chapter 4)	Promote paperless trade between customs administrations and between trading communities of the Parties.	Binding
Japan-Philippines Economic Partnership Agreement (Article 57, Chapter 5)	Exchange views and information on promoting paperless trade, and encourage cooperation between relevant private entities involved in paperless trade.	Best endeavour
Japan-Singapore New Age Economic Partnership (Article 40, Chapter 5)	Cooperate in realizing and promoting paperless trading.	Binding
Japan-Switzerland FTA (Article 79, Chapter 8)	Accept electronically submitted trade administration documents as the legal equivalent of the paper versions.	Best endeavour

Japan-Thailand Economic Partnership Agreement (a) Article 57, Chapter 5	Cooperate in electronic transfers of trade-related data and documents.	Binding
(b) Article 59, Chapter 5	Encourage cooperation between private entities engaged in activities relating to paperless trading.	Best endeavour
Republic. of Korea-Peru FTA (Article 5.8, Chapter 5)	Use information technology to expedite the clearance of goods.	Best endeavour
Republic of Korea-Singapore FTA (a) Article 14, Chapter 14	Accept electronic documents as legal equivalent of the paper version.	Best endeavour
(b) Article 14.74, Chapter 4	Commit to adopting legislation to protect personal information of users engaged in electronic commerce.	Binding
(c) Article 5.13, Chapter 5	Provide an electronic environment to support business transactions between customs administrations and trading communities.	Best endeavour
New Zealand-China FTA (Article 53, Chapter 5)	Apply information technology to support customs operations, particularly in the paperless trading context.	Best endeavour
New Zealand-Hong Kong, China Closer Economic Partnership Agreement (Article 7, Chapter 5)	Apply information technology to support customs operations, particularly in the paperless trading context.	Best endeavour
New Zealand-Singapore Closer Economic Partnership Agreement (Article 12, Chapter 4)	Put in place, by the date of entry into force of the Agreement, an electronic environment to support electronic business applications between the customs administrations and trading communities.	Binding
New Zealand-Thailand Closer Economic Partnership Agreement (a) Article 3.12, Chapter 3	Adopt electronic procedures for all reporting requirements.	Best endeavour
(b) Article 10.6, Chapter 10	Accept the electronic format of trade administration documents as the legal equivalent of paper documents.	Binding

Trans-Pacific SEP (Brunei Darussalam, New Zealand, Singapore and Chile)	Provide an electronic environment that supports business transactions between customs administrations and trading communities	Best endeavour

E. Status of paperless trade development in multilateral bodies

Considerable work is being done in multilateral bodies such as WTO, WCO and APEC to develop paperless trade. These initiatives are discussed below.

1. WTO negotiations on trade facilitation

Members of WTO have been negotiating an agreement on trade facilitation since the adoption of modalities for trade facilitation negotiations as part of July Framework Agreement of 1 August 2004 (WTO, 2004)). Several measures have been proposed to improve the trade facilitation environment at borders. In the initial study phase, the European Union proposed a discipline on cross-border exchange of information but this was not pursued when actual negotiating proposals were put on the table. The current draft legal texts do not contain any proposals on this issue. However, there is a proposal to introduce a Single Window system. Many countries have expressed reservation in making binding commitments on establishing a Single Window. The current draft legal text has various square parentheses reflecting such concern, and many countries prefer to make such commitments on a "best endeavour" basis only. This hesitation stems from various considerations, ranging from large resource requirements, the lack of domestic preparedness, difficulties in harmonizing data requirements for a large number of agencies, and wariness over facing the strong dispute settlement mechanism of WTO in case such commitments cannot be fulfilled. The latest draft text on the table at WTO (2012) states:

> "5.1 Members shall [where practicable] [endeavour to] establish or maintain a Single Window, enabling traders to submit documentation and/or data requirements for importation, exportation or transit of goods to a single entry point. [The Single Window shall undertake onward distribution of the aforementioned documentation and/or data requirements to the participating authorities or agencies.] After the examination by the

participating authorities or agencies of the documentation and/or data, the results shall be notified to the applicants through the Single Window in a timely manner.

5.2 In cases where documentation and/or data requirements have already been received by the Single Window, the same documentation and/or data requirements shall [normally] not be requested by participating authorities or agencies, except in urgent circumstances and other limited exceptions which are made public.

5.3 Members shall notify the Committee [of] the details of operation of the Single Window.

5.4 Members shall, to the extent possible and practical, use information technology to support the Single Window.

5.5 Members shall, where practicable, use relevant international standards as a basis for the Single Window schemes.

5.6 [With regard to the scope of the participating authorities or agencies, and of the documentation and/or data requirements] Members may implement the Single Window in a progressive manner."

[Footnote omitted]

One important element to encourage the WTO members to make commitments on this proposal (as on others) is to have a robust and firm commitment on technical assistance and capacity-building.

2. WCO Model of Globally Networked Customs

Members of WCO recognize that it will be cheaper and simpler to build one global system for paperless information exchange that can be used by all countries, However, they also recognize that this is not currently feasible due to several obstacles: (a) legal issues; (b) data security and protection concerns; (c) a general lack of trust; (d) the need for an organization that will be responsible for the system; (e) the complexity of setting up and financing such a system; and (f) the absence of initial investment funds.

With these limitations in mind, WCO is working on a paperless trading system called Globally Networked Customs (GNC). This system, which is a proposed voluntary method of information exchange, envisages information sharing between customs-to-customs, including data obtained from commercial sources. It is envisaged that the system will be based on bilateral arrangements between customs administrations. However, it can also be multilateral in those cases where more than two countries come together for information sharing or where a Customs Union is involved in the project. It is proposed that GNC will have a set of protocols, standards and guidelines that other WCO members will follow. Members of WCO can also continue, in parallel, to negotiate, develop and agree to other arrangements for information exchange, including those cases where the partner countries are using GNC for exchanges of some other data categories.

In order to make the system attractive, the GNC model proposes only a minimum level of automation. The customs system should be automated to the extent that it can process the information to be exchanged, and can send and receive information electronically. This can be achieved by existing IT systems of customs administrations. The model also proposes using a Unique Consignment Reference as an identifier for transactions in order to enable a sender and receiver to track individual exchanges. GNC recognizes and accommodates the diversity of national identifiers for use of the Unique Consignment Reference. It also proposes using a trade identifier.

The GNC model seeks to address legal issues by requiring each customs administration to have national laws that allow the exchange of information as well as protect information shared with others. It also requires that countries involved in bilateral exchanges of information to have in place laws that guarantee an equivalent level of data security and protection. Existing bilateral agreements may need to be amended if they are not based on texts of existing WCO models. GNC envisages “industrializing” the setting up of an exchange information agreement between the members of WCO. This will permit speeding up the creation of agreements as well as replicating them easily.

The information exchange is envisaged as a two-track system, i.e., a commercial track and an enforcement track. The commercial track will handle systematic exchanges of information through national customs application, which will essentially consist of the data furnished by traders to the customs administrations. The most common example is that of the export data. It is expected that a large part of information exchanges will take place in this track.

The enforcement track will involve information exchange at the request of customs administrations, either under a Mutual Assistance Agreement or where a risk assessment of data received from the commercial track has led a customs administration to seek more information from the exporting administration.

GNC is expected to expand steadily and to take in its fold further stakeholders such as commercial partners or other government agencies. It will conform to existing WCO instruments such as the Data Model, the Revised Kyoto Convention and the SAFE Framework of Standards. Pilot "proof of concept" projects will be run between willing members of WCO and the results will be validated by fellow members. The results will be made available to the WCO Secretariat so that they can then be easily replicated by other interested members of WCO.

The exchange of information is envisaged as being made through "Utility Blocks" (UBs), which refer to a specific part of a customs business process. Members may exchange information on specific parts of a customs business process, including relevant data elements. Examples are: (a) Authorized Economic Operator, commercial fraud, transit, laboratories and facilities recognition arrangements; (b) a test results sharing system; (c) mutual recognition of controls; (d) a transport means identification and information sharing system; and (e) product identification systems. These are all building blocks in producing an eventual paperless trade environment.

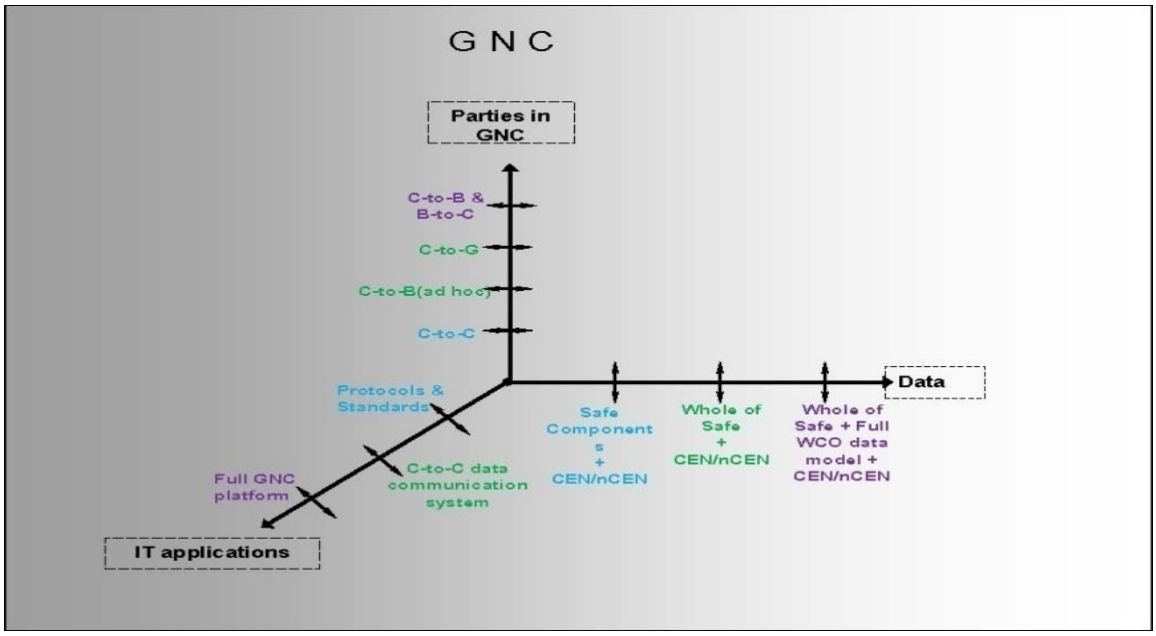
Each UB will have discrete business rules that will be determined by the countries exchanging information but based on international standards, wherever possible. Interested WCO members may continue to negotiate new international agreements, construct a UB

for the content of their agreement using a fixed template, and be in full conformity with the Data Model and other relevant WCO instruments. UBs would need to satisfy GNC standards as well as include Protocols and Guidelines that enable them to be used by other members. The standards can be implemented using a member's choice of infrastructure, as GNC messages will be interoperable.

WCO will play a role in the development of UBs to the extent that it will provide a "Certificate of Conformity" to confirm that each UB complies with the GNC architecture. In this way it expects to develop a library of GNC-compliant UBs at WCO, covering various aspects of customs business. Members can use them for various WCO instruments or other international agreements as per their requirements. As each UB will conform to the same GNC architecture, every UB that a member chooses to adopt will use the same components that would already have been used for earlier UBs. This is expected to expand into a regional network for the exchange of information.

Some six UB proposals are currently under development or at the planning stage. These will deal with subjects such as exit and entry data as well as information about Authorized Economic Operators. It is expected that the first UB will be deposited with the WCO Secretariat by 2014. The projected timeline for the GNC model to become globally operational is 20 years, starting from 2008 when GNC was first mooted. It is expected that a menu of seven to eight critical UBs should be available for global use by 2018. GNC is expected to initially operate through bilateral international agreements while slowly acquiring a core density that will enable it to be operated in a regional or a multilateral environment. The development of UBs is represented in figure 1.

Figure 1: Development of Utility Blocks in a Globally Networked Customs system



Source: Adapted from WCO, 2012b.

It can be seen from figure 1 that WCO is carrying out very important work on cross-border exchange of information. However, it has adopted a model where the exchange will be customs-to-customs, and where improved customs compliance is the major driver of the initiative. It will be left to the individual countries to decide on the areas of customs transactions (import, export, warehousing, export, transit etc.) and the countries with which they will develop a mechanism of cross-border information exchange. However, the model has the provision for subsequent incorporation of modalities for customs-to-business exchanges of information. Facilitation through the commercial track is also expected to reap significant trade facilitation gains. However, choices in this regard will again be left to the individual members. The WCO role is to help such countries develop a standardized model of cross-border information exchange that can then serve as the model for other countries adopting the same system.

WCO is a multilateral organization and, at this stage, its member countries do not appear to be ready for a global negotiation on a mechanism for cross-border paperless information exchange. However, the situation is somewhat different for countries of the Asia-Pacific region where the move towards the use of paperless systems is more

advanced. An important lesson provided by the WCO model is that the process needs to be gradual, and flexibilities need to be provided in the arrangement.

3. Asia-Pacific Economic Cooperation work on cross-border paperless trade

Members of APEC, in a Declaration in 1998, made a commitment to reduce or eliminate the requirement for paper documents by customs and other cross-border trade administrations for international trade.

In 2002, APEC leaders and ministers adopted the Trade Facilitation Action Plan with the aim of reducing business transaction costs by 5 per cent in 2006. In its report in 2003, the APEC Business Advisory Council recommended the implementation by APEC of paperless trading through the development of a Single Window system covering import- and export-related procedures.

The APEC paperless trading symposium hosted by Taiwan Province of China in 2003 recommended five strategies for achieving the goal of paperless trading:

(a) Enhance public-private partnership;

(b) Strengthen APEC's institutional arrangements and capacity-building programmes;

(c) Employ APEC Pathfinder as a valuable mechanism for initiating pilot programmes;

(d) Collaboration with international organizations to pursue common standards and procedures and an interoperable framework;

(e) Achieve a balance between trade facilitation and security.

Within APEC, the ECSG promotes the development and use of electronic commerce in the APEC region by creating the necessary legal regulatory policy environment. The ECSG Paperless Trading Subgroup develops projects on the use of paperless trading in commercial processes that (a) involve business-to-business and business-to-government transactions, and (b) promote the use of electronic documents and Internet technologies in international trade. The objective of these projects is to use electronic procedures and processes in cross-border trade in order to save time and costs for firms and government

agencies. Areas covered by these projects include electronic Certificates of Origin (e-CO), electronic invoices, etc. The e-CO project has been implemented in live transactions between member economies that are beyond the pilot stage, and it has shown substantial cost and time savings as discussed in section B of this chapter. The "APEC Strategies and Actions towards a Cross-Border Paperless Trading Environment" is aimed at enabling electronic transmission of trade-related information across the APEC region by 2020.

In order to achieve a paperless trading environment, the APEC economies have agreed to develop Paperless Trade Individual Action Plans (PTIAP) under which each APEC economy will establish a timetable for reducing or eliminating paper documents related to international trade. In order to achieve this objective, APEC members will provide a sound legal and regulatory framework for operating a paperless trading system and will ensure that the electronic equivalent of paper documents is secure and interoperable with, and between, Parties involved in the international supply chain. Thus, the APEC process is largely based on voluntary steps taken by its members towards eliminating a host of paper-based documentation ranging from declarations to customs and quarantine, import and export licences, health certificates, certificates of origin, standard certification, assurance certificate, letters of credit, bills of lading and manifests.

There is merit in this approach when participating countries are at various levels of development and where a binding commitment may not be agreeable to them, as evidenced in the ongoing work of WTO and WCO. However, this approach also presents the following limitations:

(a) Economies may adopt different approaches to paperless trade in the absence of an overarching common framework;
(b) Backsliding can occur due to other competing obligations;
(c) Timelines can be highly stretched;
(d) The legal framework may not be compatible with a wider regional or global expansion.

While it is recognized that a highly regulatory international agreement can be counterproductive, a fully voluntary approach will also achieve a less than optimal result.

Of the 21 APEC members, 17 have presented their PTIAPs to show progress in promoting and realizing paperless trading in their economies[2] as summarized in table 2.

Table 2: Status of APEC Paperless Trade Individual Action Plan

Sl. No.	Economy	Last update on APEC website
1.	Australia	2002
2.	Canada	2007
3.	Chile	2002
4.	China	2002
5.	Hong Kong, China	2007
6.	Indonesia	2002
7.	Japan	2002
8.	Republic of Korea	2007
9.	Malaysia	2010
10.	Mexico	2010
11.	Peru	2008
12.	Philippines	2009
13.	Singapore	2005
14.	Taiwan Province of China	2011
15.	Thailand	2011
16.	United States of America	2007
17.	Viet Nam	2007

A review of the PTIAP papers presented indicates that all 17 economies have furnished information regarding progress made in using electronic means for the clearance of goods within the country. However, none of the countries have provided information regarding any steps taken regarding cross-border paperless trade or the timelines within which it is likely to be achieved in future. In addition, the fact that several countries have not updated their PTIAP progress is an indication of the limitations to a purely voluntary approach.

[2]For more detailed information on these PTIAPs, see the APEC website at www.apec.org/Groups/Committee-on-Trade-and-Investment/Electronic-Commerce-Steering-Group/Paperless-Trading-Individual-Action-Plan.aspx (accessed on 31 December 2012).

F. Legal issues

Several legal issues need to be addressed during the creation of cross-border paperless trade or in the development of national Single Windows that can eventually be networked with other Single Windows.

The following Model Laws/Conventions of the United Nations Commission on International Trade Law (UNCITRAL) are crucial, and their relevant provisions need to be implemented in national law in order to ensure that the requisite enabling legal environment for cross-border paperless trade is in place:

(a) The UNCITRAL Model Law on Electronic Commerce with Guide to Enactment 1996 and additional Article 5 bis, adopted in 1998 (UNCITRAL, 1999);

(b) The UNCITRAL Model Law on Electronic Signatures with Guide to Enactment 2001 (United Nations, 2002);

(c) United Nations Convention on the Use of Electronic Communications in International Contracts (UNCITRAL, 2007).

Some examples of legal amendments mirroring the provisions of these laws have been discussed in sections A and B of this chapter. However, it is useful to recall the important provisions of these Conventions that are relevant to the establishment of cross-border paperless trade. These are summarized in box 2.

Box 2: Selected legal provisions of United Nations Conventions related to paperless trade

UNCITRAL Model Law on Electronic Commerce, 1996 with additional article 5 bis, as adopted in 1998

Article 1. Sphere of application

This Law applies to any kind of information in the form of a data message used in the context of commercial**** activities.

****The term "commercial" should be given a wide interpretation so as to cover matters arising from all relationships of a commercial nature, whether contractual or not.

Relationships of a commercial nature include, but are not limited to, the following transactions: any trade transaction for the supply or exchange of goods or services; distribution agreement; commercial representation or agency; factoring; leasing; construction of works; consulting; engineering; licensing; investment; financing; banking; insurance; exploitation agreement or concession; joint venture and other forms of industrial or business cooperation; and carriage of goods or passengers by air, sea, rail or road.

Article 2. Definitions

For the purposes of this Law:

(a) "Data message" means information generated, sent, received or stored by electronic, optical or similar means including, but not limited to, electronic data interchange (EDI), electronic mail, telegram, telex or telecopy;

(b) "Electronic data interchange (EDI)" means the electronic transfer from computer to computer of information using an agreed standard to structure the information;

Article 5. Legal recognition of data messages

Information shall not be denied legal effect, validity or enforceability solely on the grounds that it is in the form of a data message.

Article 5 bis. *Incorporation by reference*
(as adopted by the Commission at its thirty-first session, in June 1998)

Information shall not be denied legal effect, validity or enforceability solely on the grounds that it is not contained in the data message purporting to give rise to such legal effect, but is merely referred to in that data message.

Article 6. Writing

(1) Where the law requires information to be in writing, that requirement is met by a data message if the information contained therein is accessible so as to be usable for subsequent reference.

Article 7. Signature

(1) Where the law requires a signature of a person, that requirement is met in relation to a data message if:

(a) A method is used to identify that person and to indicate that person's approval of the information contained in the data message; and

(b) That method is as reliable as was appropriate for the purpose for which the data message was generated or communicated, in the light of all the circumstances, including any relevant agreement.

Article 8. Original

(1) Where the law requires information to be presented or retained in its original form, that requirement is met by a data message if:

(a) There exists a reliable assurance as to the integrity of the information from the time when it was first generated in its final form, as a data message or otherwise; and

(b) Where it is required that information be presented, that information is capable of being displayed to the person to whom it is to be presented.

Article 9. Admissibility and evidential weight of data messages

(1) In any legal proceedings, nothing in the application of the rules of evidence shall apply so as to deny the admissibility of a data message in evidence:

(a) On the sole ground that it is a data message; or,

(b) If it is the best evidence that the person adducing it could reasonably be expected to obtain, on the grounds that it is not in its original form.

(2) Information in the form of a data message shall be given due evidential weight. In assessing the evidential weight of a data message, regard shall be had to the reliability of the manner in which the data message was generated, stored or communicated, to the reliability of the manner in which the integrity of the information was maintained, to the manner in which its originator was identified, and to any other relevant factor.

Article 10. Retention of data messages

(1) Where the law requires that certain documents, records or information be retained, that requirement is met by retaining data messages, provided that the following conditions are satisfied:

(a) The information contained therein is accessible so as to be usable for subsequent reference; and

(b) The data message is retained in the format in which it was generated, sent or received, or in a format which can be demonstrated to represent accurately the information generated, sent or received; and

(c) Such information, if any, is retained as enables the identification of the origin and destination of a data message, and the date and time when it was sent or received.

Article 11. Formation and validity of contracts

(1) In the context of contract formation, unless otherwise agreed by the Parties, an offer and the acceptance of an offer may be expressed by means of data messages. Where a data message is used in the formation of a contract, that contract shall not be denied validity or enforceability on the sole ground that a data message was used for that

purpose.

Article 12. Recognition by Parties of data messages

(1) As between the originator and the addressee of a data message, a declaration of will or other statement shall not be denied legal effect, validity or enforceability solely on the grounds that it is in the form of a data message.

UNCITRAL Model Law on Electronic Signature (2001)

Article 1. Sphere of application

This Law applies where electronic signatures are used in the context of commercial activities. It does not override any rule of law intended for the protection of consumers.

Article 2. Definitions

(a) "Electronic signature" means data in electronic form in, affixed to, or logically associated with, a data message, which may be used to identify the signatory in relation to the data message and to indicate the signatory's approval of the information contained in the data message.

Article 3. Equal treatment of signature technologies

Nothing in this Law, except Article 5, shall be applied so as to exclude, restrict or deprive of legal effect any method of creating an electronic signature that satisfies the requirements referred to in Article 6, paragraph 1, or otherwise meets the requirements of applicable law.

Article 6. Compliance with a requirement for a signature

Where the law requires a signature of a person, that requirement is met in relation to a data message if an electronic signature is used that is as reliable as was appropriate for the purpose for which the data message was generated or communicated, in the light of all the circumstances, including any relevant agreement.

Article 7. Satisfaction of Article 6

[Any person, organ or authority, whether public or private, specified by the enacting State as competent] may determine which electronic signatures satisfy the provisions of article 6 of this Law.

Article 12. Recognition of foreign certificates and electronic signatures

1. In determining whether, or to what extent, a certificate or an electronic signature is legally effective, no regard shall be had:

(a) To the geographic location where the certificate is issued or the electronic signature

created or used; or

(b) To the geographic location of the place of business of the issuer or signatory.

2. A certificate issued outside *[the enacting State]* shall have the same legal effect in *[the enacting State]* as a certificate issued in *[the enacting State]* if it offers a substantially equivalent level of reliability.
3. An electronic signature created or used outside *[the enacting State]* shall have the same legal effect in *[the enacting State]* as an electronic signature created or used in *[the enacting State]* if it offers a substantially equivalent level of reliability.
4. In determining whether a certificate or an electronic signature offers a substantially equivalent level of reliability for the purposes of paragraph 2 or 3, regard shall be had to recognized international standards and to any other relevant factors.

United Nations Convention on the Use of Electronic Communications in International Contracts (UNCITRAL, 2007)

Article 1. Scope of application

This Convention applies to the use of electronic communications in connection with the formation or performance of a contract between Parties whose places of business are in different States.

Article 4. Definitions

"Electronic communication" means any communication that the Parties make by means of data messages;

Article 8. Legal recognition of electronic communications

A communication or a contract shall not be denied validity or enforceability on the sole ground that it is in the form of an electronic communication.

Article 9. Form requirements

1. Where the law requires that a communication or a contract should be in writing, or provides consequences for the absence of a writing, that requirement is met by an electronic communication if the information contained therein is accessible so as to be usable for subsequent reference.
2. Where the law requires that a communication or a contract should be signed by a Party, or provides consequences for the absence of a signature, that requirement is met in relation to an electronic communication if:

(a) A method is used to identify the Party and to indicate that Party's intention in respect

of the information contained in the electronic communication; and

(b) The method used is either:

(i) As reliable as appropriate for the purpose for which the electronic communication was generated or communicated, in the light of all the circumstances, including any relevant agreement; or

(ii) Proven in fact to have fulfilled the functions described in subparagraph *(a)* above, by itself or together with further evidence.

3. Where the law requires that a communication or a contract should be made available or retained in its original form, or provides consequences for the absence of an original, that requirement is met in relation to an electronic communication if:

(a) There exists a reliable assurance as to the integrity of the information it contains from the time when it was first generated in its final form, as an electronic communication or otherwise; and

(b) Where it is required that the information it contains be made available, that information is capable of being displayed to the person to whom it is to be made available.

ESCAP/UNECE (2012) suggested a step-by-step approach to address the legal issues connected with the development of a Single Window. Because those issues are also relevant to creating cross-border paperless trade systems they are discussed in detail in the following paragraphs.

As in the case of creating a Single Window, for those countries involved in the development of a regional arrangement for cross-border paperless trade, the first step should be to undertake a legal gap analysis to identify the potential legal barriers for implementation of such an arrangement. This should be done by a body infused with sufficient "political will" to move the process forward. Various subcommittees or working groups should be formed within this umbrella group. At least one Legal Working Group and one Technical Working Group should be established. Representatives from the private sector should preferably also be involved in order to ensure a clear understanding of their needs as well as to help create awareness of the benefits of a regional arrangement for cross-border paperless trade.

The Legal Working Group will need to undertake a legal gap analysis for the implementation of a regional arrangement. It will also need to prepare legal texts in terms

of new legislation, etc. Using the services of professional lawyers is also desirable. At the design stage, to the extent possible, international legal standards should be used, so that information exchanged across borders receives uniform legal protection. It is crucial that the development of technical architecture and the legal instruments be given equal importance as a lack of adequate legal instruments will render any regional arrangement unworkable.

Should a regional arrangement for cross-border paperless trade have to be implemented through a national Single Window, the legal gap analysis will, in particular, need to cover the following issues:

(a) Legal issues related to electronic transactions such as identification, authorization and authentication of electronic transactions, and legal requirements for electronic documents and messages;
(b) Legislative enactments to formally establish the Single Window in national law;
(c) The development of a service level arrangement for the operation of the Single Window;
(d) Laws and regulations on data protection and information security;
(e) Legal and/or regulatory requirements for accessing and sharing information and data between and among government agencies;
(f) Legal requirements and regulations on confidentiality and privacy;
(g) Laws relating to data accuracy and integrity for the Single Window;
(h) Liability issues related to operations of the Single Window, including cross-border transactions;
(i) Regulatory/legal requirements for data retention and electronic archiving;
(j) Dispute settlement considerations;
(k) Intellectual property rights and database ownership issues;
(l) Examination of laws concerning electronic payments in the Single Window;
(m) Cross-border (mutual) recognition of electronic signatures including, where appropriate, certification of authorities;
(n) Conflict of laws in cross-border transactions;

(o) The use of electronic evidence in judicial and enforcement proceedings;

(p) Competition law issues;

(q) An analysis of how international legal standards have been incorporated into a country's legal framework for its Single Window;

(r) Other legal issues such as laws governing individual ministries, e.g., customs and import licensing.

The domestic legislation of countries involved in cross-border paperless trade will need to address issues such as national law authorizing activities (where relevant) Single Window implementation, electronic commerce transactions and acceptance of electronic documents, records and messages in lieu of paper documents. Such authorization can be provided in various ways, such as creating a new, broad enabling legislation or by amending existing legislation such as customs and other regulatory laws. It is also important to make provision for recognition of electronic documents and data messages in judicial or administrative proceedings.

Use of electronic signatures and mutual recognition of certification authorities are very important aspects of the enabling legal environment for any regional arrangement for cross-border paperless trade. The purpose of electronic signatures is to provide the equivalent of handwritten signatures as well as other types of devices such as seals and rubber stamps used in a paper environment. The UNCITRAL Secretariat defines several categories of electronic signatures and authentication methods that can be considered based on the level of security needed for a particular transaction. These can include "digital signatures" (see box 3), authentication through a biometric device based on handwritten signatures, personal identification numbers (PINs), digitized versions of handwritten signatures, clicking an "OK box" etc. The methods used depend upon the level of security desired for different transactions.

Box 3: Digital signatures

"Digital signatures" is a subset of electronic signatures that are often used for transactions involving government or other regulatory agencies where the need for security is high.

Digital signatures are based on the Public Key Infrastructure (PKI) system, which involves use of two "keys". One key is private, known only by the sender of the message or document; the other is a public key, which is provided to the recipient of the digital electronic message or document. The sender digitally signs the message or document using the private key and, if the sender's public key matches the digital signature, the receiver can be reasonably certain that the message is from the person claiming to be the sender.

Certification authorities (CA) issue a "certificate" (an electronic record) that shows the public key and the name of the certificate subscriber as the subject of the certificate, and confirms that the subscriber is the owner of the private key associated with the public key.

In a cross-border or international environment, there may be a need to determine whether a certification authority in a different country is authorized to provide a valid certificate. For acceptance of certificates issued by a CA, different approaches can be adopted. One approach can be to insist upon having an office of the CA in the receiving country. A second more trade-facilitating option can be to have mutual recognition agreements between the two countries engaged in cross-border exchanges of electronic information. Under this approach, the CA certificate from one country can be accepted by the other.

The issues regarding data quality are also important. Complete and accurate data are important to ensure that there is no loss of revenue because of a wrong declaration of value or origin of goods. It is necessary to establish controls with regard to the data input process as well as responsibility for data entry and processing. Regulations should be drawn providing guidelines for data entry and responsibility for errors submitted in electronic form, and for subsequent processing of data in the course of cross-border paperless trade. It is also important to develop regulations covering error correction.

An arrangement for cross-border paperless trade should also contain provisions for ensuring data protection and information security. There should be laws criminalizing

unauthorized access to information by hacking or other means. There should be regulations providing for appropriate security features to be in place in order to protect the integrity of the facility involved in cross-border paperless trade.

Regulations should also be established for data retention and electronic archiving. This should typically define the period that such data may be retained and then destroyed. It is also important to define the format in which data are to be stored. The requirements of national laws, such as "original documents" that might be needed for proceedings in an enforcement action or for audit and civil disputes, should also be incorporated in such regulations.

Legal provisions for dispute resolution are important as cross-border paperless trade can create liabilities for various users. For example, traders can become liable for filing incorrect data filing or for delays in shipments leading to contractual violation because of breakdown of the computer system. Alternative dispute resolution mechanisms, such as arbitration, should also be established.

G. Conclusions drawn from a review of existing arrangements/potential arrangements under discussion

A survey of the existing paperless information exchange systems shows that considerable ground has been covered in the development of national Single Windows by many countries in the Asia-Pacific region, and, in a few cases, some steps have been taken to develop cross-border paperless exchanges of information and documents. This was confirmed by the findings of the "Survey on Trade Facilitation and Paperless Trade" that was conducted as part of the Asia-Pacific Trade Facilitation Forum 2012. More than 15 countries in the region have implemented, or are in the process of implementing, their national Single Windows. Eight countries in the region also confirmed that they were engaged in cross-border data exchanges. This experience is preparing them well to embark on cross-border paperless exchanges of information in a more systematic manner.

The high level of the region's preparedness to embark on cross-border paperless exchanges of information as well as a possible role in a regional arrangement as a facilitator was clearly illustrated in a recent study by APEC (2012) (see box 4).

Box 4: Readiness of e-CO implementation in cross-border trade in the APEC region

APEC (2012) carried out a study of nine selected APEC economies, seven of which are also ESCAP members (China; Hong Kong, China; Indonesia; Malaysia; Thailand; the Philippines; and Viet Nam), in which it analysed their readiness to implement cross-border e-CO. The results showed that all seven ESCAP members showed readiness in the basic conditions: (a) a domestic e-CO system; (b) a signature law; (c) PKI technology, secure networks and PKI mutual recognition; (d) Government acceptance of e-CO issuance; and (e) an online e-CO repository. The report concluded that the seven ESCAP members analysed "are well-prepared for e-CO cross-border transmission. All they need to do is to reach certain agreements for cooperation with other relative economies."

On the other hand, most of the selected ESCAP members in the study reported "coordination and cooperation between economies" as one of the major difficulties in implementing the cross-border e-CO system. The report recommended that "member economies should set up a cooperation framework for electronic trade document cross-border transmission in the APEC region".

Various provisions in the FTAs involving Asia-Pacific countries also show that many countries are committed to moving in the direction of paperless cross-border exchange of information, although the language used in most of these agreements is on a best endeavour basis.

This chapter also reviews the work being done on a paperless trading system in multilateral forums, such as in WTO, WCO and APEC. In WTO, a discipline on Single Windows is being negotiated as part of the trade facilitation negotiations. However, there

is no proposal in WTO for cross-border paperless exchange of information or the development of regional Single Windows.

Work is also proceeding in WCO on the preparation of a model for cross border paperless exchanges of information. The WCO model of Globally Networked Customs does not favour a set international agreement for information exchange. The model proposes a voluntary approach, based on the notion of voluntary development of electronic messaging exchange systems for individual customs processes (Utility Blocks), which is to be validated by the WCO membership as a whole and which can then be recognized as an internationally acceptable template for adoption by other countries. This model envisages a slow accretion of countries using paperless transactions across borders as per their individual needs, which would create momentum for a more widely-spread international cross-border paperless exchange system.

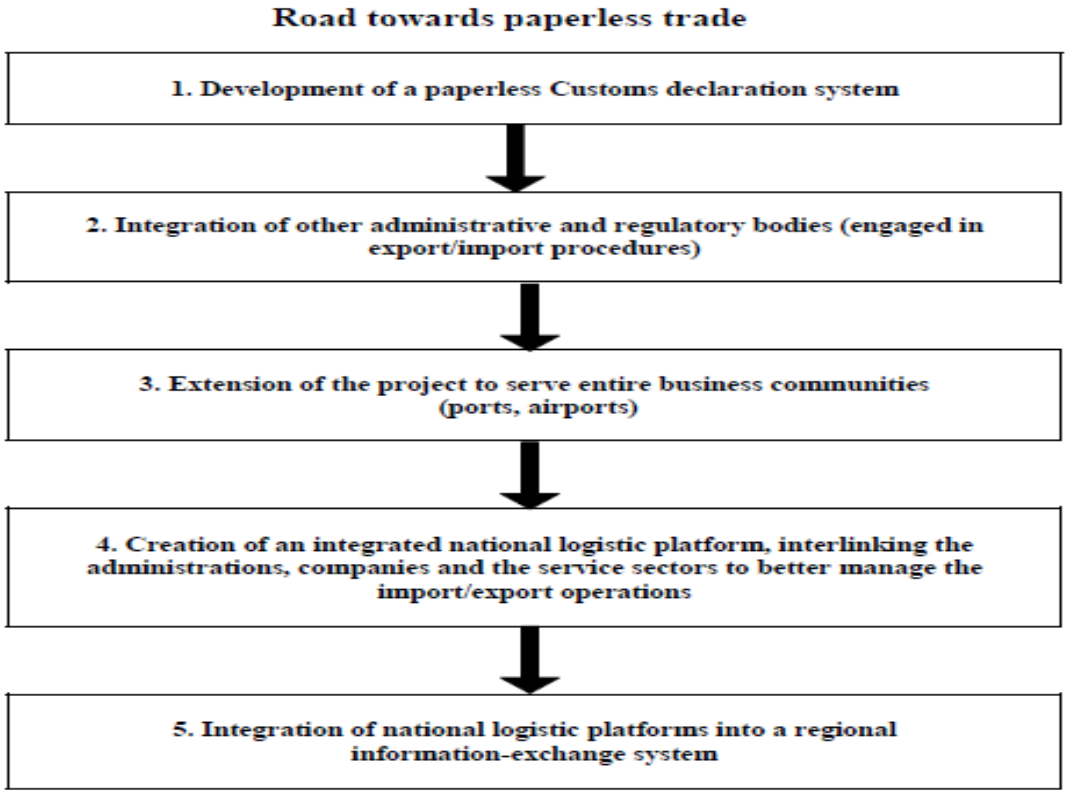
APEC's work is based on a voluntary approach where members set their own timelines for establishing paperless trade and, as discussed above, progress towards cross-border paperless trade is very limited. Some case studies in this section (see, for example, Australian Customs and Border Protection Service, 2009) also indicate that it is desirable to avoid overly ambitious and prescriptive approaches to cross-border paperless data exchange. The findings of that study noted that a regional approach to cross-border paperless trade was largely missing, except for the subregional case of the ASEAN initiative now underway, which covers only 10 countries in the region.

As a general proposition, it can be said that the degree of binding of any arrangement tends to decrease as its scope becomes wider, otherwise reaching a consensus among the players becomes difficult. At the same time, implementation becomes easier when the scope is narrower for the same reason. An approach with a wide scope, such as global one, although desirable for uniformity, is difficult to achieve. On the other hand, an approach with a narrower scope (such as bilateral and subregional), although easier to implement, may cause issues of divergence and lack of interoperability. A regional approach, which is

currently missing in the Asia-Pacific region, can be a practical one ensuring convergence with better implementation feasibility.

Cross-border paperless trade can be adopted on a bilateral, regional or global basis. However, the weaknesses of the bilateral and global approaches have been discussed above. It can be seen from the review of bilateral RTAs that the language for implementing cross-border paperless trade is very weak and largely on a 'best endeavour' basis. However, no such global arrangement is envisaged in the ongoing negotiations on trade facilitation in WTO, the most important multilateral organization dealing with rules on international trade. Even the proposal to establish national Single Windows is not finding a consensus. The work of WCO on GNC is a voluntary approach. At the same time, several countries are using a high degree of information technology in their domestic systems for paperless clearance of goods. This ensures that they are well-prepared to move towards the next stage of working out a regional arrangement for cross-border paperless trade. In view of these considerations, this study suggests that the best possible approach to adopt at this stage is a regional approach. This recommendation is congruent with the roadmap towards paperless trade shown in figure 2.

Figure 2: Roadmap towards paperless trade



Source: UNECE, 2006.

According to the roadmap in figure 2 (an outcome of the 2005 Executive Forum on "Paperless Trade in International Supply Chains: Enhancing Efficiency and Security"), national approaches to paperless trade should converge into a regional platform. In order to achieve a uniform approach as well as encourage countries to move in the same direction, the regional approach should be within an overarching agreement that lays down the key principles and an institutional framework for addressing the numerous challenges associated with establishing cross-border paperless trade. This will need to be followed up by the development of pilot projects or prototypes in a collaborative manner within a dedicated institutional framework before putting the exchange mechanism into operation. Table 3 lists possible options for regional arrangements together with their characteristics.

Table 3: Possible options of regional arrangements

Possible options of regional arrangements

Options	Examples	Characteristics
Guidance	Guidelines, recommendations	Non-binding with low effectiveness
Technical norms	Technical specifications/regulations	Medium degree of binding with medium effectiveness
Expression of will	Resolution, declaration	High degree of binding with low effectiveness
Convention/protocol	Agreement, treaty	Medium-to-high degree of binding with high effectiveness

Guidelines and recommendations are non-binding options that can provide some useful support, but their effectiveness in enabling actual cross-border paperless trade is very limited. In addition, there is ample number of guidelines produced by regional and international bodies. It may not be desirable to create additional regional recommendations or guidelines in cases where they already available. In any case, regional guidelines and recommendations may not constitute a regional arrangement in and of themselves. Rather, such documents should be incorporated into existing regional arrangements or developed as part of the implementation of new regional arrangements.

Regional technical norms in the form of technical standards and regulations can be another option with a medium degree of binding and effectiveness. Although such regional standards can contribute to actual facilitation of cross-border paperless trade, it is not easy to justify such an approach since there are many standards bodies that can provide platforms for the development of international standards. As with recommendations and guidelines, technical norms alone may also not be seen as regional cross-border facilitation arrangement(s) and should be rather referred to, and promoted as part of the implementation of such arrangement(s).

Expression of will in the form of a resolution or declaration adopted by an intergovernmental body can have a high degree of binding; however, its effectiveness can

be quite limited because it is not possible for all the detailed implementation issues of cross-border paperless trade to be covered in a resolution or declaration. Expression of will is normally used to move the work forward.

Conventions/protocols in the form of an intergovernmental agreement or treaty can have a medium to high degree of binding and high effectiveness, depending on how its substance is defined. A particular advantage of an intergovernmental agreement, compared to other options, is its binding nature that gives a clear direction in which to go, while allowing flexible arrangements for implementation in scope and timeframe as well as providing a platform for contracting Parties to work together in a cooperative manner. In particular, a framework agreement can be suitable for a region with countries having different levels of readiness for paperless trade.

Treaties may be considered as another option under the convention/protocol category. Although considered identical to an intergovernmental agreement, the name “treaty” may imbue a sense of strongest approach that can have the highest degree of binding because it is normally used for political, diplomatic or military issues. In that context, using the term “treaty” for a regional arrangement may not be the best option, since such a regional arrangement focuses on agreeing to facilitate cross-border paperless trade, not on complete mutual compulsoriness.

The regional agreement option can offer the choice of being in either a voluntary or a mandatory format. The voluntary format allows each ESCAP member to join such an agreement only as and when it wishes; it is purely the individual decision of each country. Examples of such an agreement are the Asia-Pacific Trade Agreement (APTA), the Intergovernmental Agreement on the Asian Highway Network and the Intergovernmental Agreement on Trans-Asian Railway Network. The mandatory format requires all ESCAP members to become Parties to such a regional agreement from the outset. Examples of such an agreement are the WTO Doha Development Agenda and the Agreement to Establish and Implement the ASW.

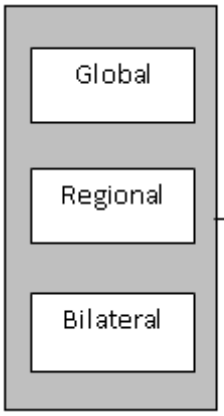
In view of the fact that ESCAP Resolution 68/3 is mainly focused on the "facilitation" of cross-border paperless trade, and as ESCAP members have different levels of readiness in paperless trade, the voluntary format would be the more practical approach to accommodating the requirements of the region as a whole or of individual ESCAP members. In a regional context, the voluntary format can have four possible models in its arrangement (table 3). Model 1 is the most liberal form where the Contracting Parties to an international agreement will, within a broader framework, have the freedom to decide (a) when they will adopt a system of cross-border paperless trade and with which countries, (b) the types of information/documentation to exchange, and (c) the number of agencies that may undertake such exchanges.

Model 2 proposes the retention of the voluntary nature of information exchange and the types of information/documentation to be exchanged, but suggests that such exchanges should take place through a national Single Window mechanism of the Contracting Parties. Countries will have a choice as to which partner countries they want to establish a cross-border exchange mechanism. It is also expected that the national Single Window will be developed in a progressive manner and that the agencies covered by the Single Window will also be included for cross-border information exchange.

Model 3 proposes that all Contracting Parties implement the system of cross-border paperless trade in a given timeframe, but that there will be flexibility regarding the type of information/documentation to be exchanged. It also proposes that Contracting Parties endeavour to develop national Single Windows.

Model 4 proposes that all Contracting Parties adopt a system of cross-border paperless trade in a given timeframe through their national Single Windows. In keeping with these four models, the possible approaches to cross-border paperless trade are summarized in table 4.

Table 4: Analysis of four model frameworks for cross-border paperless trade

Application scope	Model	Description
	Model 4	Paperless exchange of information and documents binding for all Contracting Parties; all regulatory information to be exchanged through national Single Windows
	Model 3	Paperless exchange of information binding between all Contracting Parties; flexibility regarding type of data and document exchange and number of agencies involved in such exchange (customs and/or other identified agencies). Countries develop national Single Window on a "best endeavour" basis
	Model 2	Paperless exchange of information on voluntary basis, data and document exchange through Single Window involving all agencies and all data (customs and other regulatory agencies); countries to have flexibility in choosing partner countries for data and document exchange
	Model 1	Paperless exchange of information on voluntary basis, flexibility regarding type of data and document exchange (customs and/or other identified agencies), number of agencies involved and choice of partner countries

The implications of the four models have been analysed in terms of possible advantages and disadvantages of each model, as shown in table 5.

Table 5: Analysis of four model frameworks for cross-border paperless trade

Analysis of four model frameworks for cross-border paperless trade

Model	Advantages	Disadvantages
Model 1	1. Being fully voluntary, this makes it highly acceptable. 2. A variety of menus available to implement cross-border paperless information exchanges in terms of choice of countries, and types of data and documents to be	1. Being fully voluntary, no certainty of implementation. 2. Only countries at a higher level of IT development may take part in the initiative and there will be no motivation or mechanism to encourage other countries to join

	exchanged. 3. Information exchange can be carried out with existing infrastructure, enabling countries to start with small steps, requiring minimal extra investment and changes. 4. Potentially even two countries can start cross-border paperless information exchange on few data elements only.	the same. 3. Menu too diverse, so no coherent system of cross-border paperless exchange of information can be developed in the long term. 4. As different systems and protocols will be used, there is less likelihood of the various exchanging mechanisms evolving as a regional arrangement.
Model 2	1. Voluntary nature makes it more acceptable. 2. Permitting choice of partner countries allows working with those partners which are keen to promote cross-border paperless exchange of information. 3. Exchange through a Single Window ensures that automation at domestic level reaches a level of maturity where cross-border paperless information exchange can take place without major technological challenges. 4. The timeframe to implement cross-border paperless information exchanges through a Single Window will be less as considerable groundwork on paperless trade would have been covered in the domestic setting in establishing a national Single Window. 5. Exchange of all data of all regulatory agencies in paperless mode will significantly improve the trade facilitation environment for international trade.	1. Being voluntary means no certainty of implementation. 2. Creation of a Single Window as a precondition to start cross-border paperless information exchange will be challenging and may severely discourage some countries from joining the initiative. 3. Existing systems may need to be changed to develop a national Single Window. This can have significant cost and time implications, and may in some cases delay cross-border exchanges unnecessarily. 4. Countries may not be ready or willing to exchange all data and documents in national Single Windows in a cross-border paperless trade mechanism.

Model 3	1. A binding mechanism for the facilitation of cross-border paperless information exchanges will ensure that all signatory countries move in the same direction. There will be a core group of countries undertaking this initiative. 2. The goal of cross-border paperless trade can be achieved over a defined period with various forms of special and differential treatments. 3. Flexibility to choose the type of data exchange and regulatory agencies to be involved enables a gradual movement towards setting up a cross-border paperless trade system. 4. The existing computerization system can be used instead of creating a new national Single Window electronic platform, which is resource-intensive and time-consuming. 5. Creating a national Single Window on a "best endeavour" basis helps in keeping the Single Window goal on the table without making it too binding or prescriptive.	1. Binding nature of the mechanism can make countries wary of joining the initiative. 2. The exchange mechanism may not be very robust as some countries may choose to exchange very limited data or involve a very limited number of agencies.
Model 4	1. Creates a very robust mechanism of cross-border paperless trade. 2. Exchange of cross-border paperless information through a Single Window will mean that all partner countries will achieve a very high level of use of information technology. This will help in achieving quicker and more efficient implementation of cross-border paperless trade. 3. Involving all agencies and exchanging all information and document in a system of cross-border paperless trade will greatly enhance trade facilitation and	1. The mechanism is too prescriptive and will discourage countries from joining it. 2. Development of a national Single Window will be challenging for many countries and will delay, and possibly derail the progress. 3. Some participating countries may not be interested in exchanging all information and documents of all relevant agencies. Hence, this mechanism will be unattractive to them. 4. The time and cost of implementing this model will be

	reduce international trade transaction costs.	very high, which will discourage countries from joining the initiative.

Asia and the Pacific is a dynamic region that has been a crucible for several important initiatives. It also accounts for a significant share of world trade, making it potentially the most important beneficiary of further simplification of trade procedures that a cross-border electronic exchange of information represents. This is borne out by the number of successful initiatives on Single Window in this region as well as a few instances of cross-border exchanges of electronic data and documentation. This region is, therefore, ideally poised for a more proactive role in moving this process forward. Various FTA provisions indicate that countries of the Asia-Pacific region are willing to develop cross-border electronic exchange systems. It is, therefore, an opportune time to create a regional framework for cross-border electronic information exchange.

This study therefore recommends that Model 3 be adopted, so that the Contracting Parties can take steps to attain the goal of a regional cross-border paperless exchange in a finite period, Under Model 3, technical assistance and capacity-building support should be made available to all Contracting Parties where needed in order for them to bring their domestic institutions to a level that would facilitate cross-border paperless information exchange. It should also permit flexibility regarding the types of data/document to be exchanged and the number of agencies to be involved in data exchange (only customs, or customs and a few identified agencies). The Contracting Parties should also be encouraged to move towards the creation of national Single Windows and to exchange information through them. The time limit can be flexible depending upon the level of development of each country. This requires the development of both technical and legal frameworks. The legal framework has been discussed in detail in section F of this chapter. With regard to technical requirements, Contracting Parties should have the flexibility to adopt a modern ICT system that is flexible enough to incorporate future changes and is interoperable with other systems. The next chapter outlines a regional paperless trading arrangement that takes into account the above aspects.