

Background Paper

Electronic Sanitary and Phytosanitary (SPS) Certificates in the Context of Paperless Trade

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Executive Summary

This background paper aims to provide practitioners in the Sanitary and Phytosanitary (SPS) area involved in trade transactions with basic information on the concepts of paperless trade, the role of electronic SPS certification, and how it relates to other trade procedures, noting that SPS certification is one process of many in the end-to-end supply chain process.

Issues with paper-based cross-border exchange of SPS certificates specifically and paper-based trade in general are linked with community safety risks, administrative costs, and delays in clearance, due to double entry of data, manual matching processes, transmission delays, and resulting errors and corrections. A key benefit of *electronic* SPS certificates in particular, and other certificates issued by the authorities of the exporting country in response to the importing-country requirements, is enhanced authenticity and integrity of the data contained in the certificate. For SPS, this is accompanied with improved safety of the consignment and reduction in fraud opportunities. The recommended process is for the electronic certificate to be sent directly from the issuing competent authority in the exporting country to the competent authority in the importing country. Electronic certificates also provide improved efficiency, reduced administrative costs and reduced clearance times due to electronic transmission with automated validation and cross checking against the import permit and import declaration. The opportunities for faster clearance and preferably pre-arrival clearance are especially critical for perishable agricultural and food products. The reduction in time required to clear the goods contributes to the swift movement of food from surplus to deficit areas, hence contributing to food security. As an indication of the possible benefits of implementing electronic export side certificates required for import, an Asia Pacific Economic Cooperation (APEC) study¹ analysed the benefits of an Electronic Certificate of Origin (e-CO) exchanged between exporters in Korea and importers in Chinese Taipei and estimated that on average, exporters experienced a reduction of two days in processing time and total savings of USD 274 per container (Twenty Foot Equivalent Unit (TEU)), while importers experienced a reduction of three days in processing time and total savings of USD 397 per container (TEU).

There are a plethora of standards, recommendations and developments to assist with the implementation of Government to Government (G2G) paperless trade and electronic SPS certificates. WTO's Trade Facilitation Agreement supports the implementation of paperless trade. United Nation's Economic and Social Commission for Asia and the Pacific (UNESCAP)'s Regional Arrangement on Facilitation of Cross-Border Paperless Trade in Asia and the Pacific aims to simplify the mutual recognition and interoperability of electronic documents. United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) has developed a number of recommendations which are relevant to the implementation of paperless trade facilities and electronic data structure standards for information exchange. The World Customs Organization (WCO) has provided the WCO Data Model that consists of standardized and reusable components, to meet the procedural and legal needs of Customs and its partner cross-border regulatory agencies controlling export, import and transit transactions. The International Standard for Phytosanitary

¹ http://publications.apec.org/publication-detail.php?pub_id=1215

Measures (ISPM) – 12 developed by the International Plant Protection Convention (IPPC) and the related documents prepared by the ePhyto Steering Group provides countries with detailed guidance to facilitate implementation of electronic phytosanitary certification². The ASEAN Single Window has implemented the ASEAN electronic certificate of origin and is planning the implementation of electronic SPS certificates.

Prerequisites and challenges to implementing G2G paperless trade include the need for strong government support to bring the various stakeholders together, a trusted legal and data transmission security framework to give legal recognition to cross-border electronic transactions, and the implementation of a sustainable business model. IT systems may need to be upgraded to issue, process and receive electronic certificates on the export and/or import side.

On 28 June 2016, the STDF organized a Seminar to raise awareness of the opportunities and the challenges related to the implementation of electronic SPS certification systems, mainly in developing countries. The Seminar also identified good practice and considered avenues for future action to support the smooth transition of developing countries from paper based to automated SPS cross-border trade procedures. This paper builds on the information presented during this Seminar.

² <http://ephyto.ippc.int/>

Abbreviations

Abbreviation	Description
CPM	Commission on Phytosanitary Measures is the governing body of the IPPC
ePhyto	Electronic Phytosanitary Certificate for fresh products of plant origin
IPPC	International Plant Protection Convention
NPPO	National Plant Protection Organization
OIE	World Organisation for Animal Health
SPS	Sanitary and Phytosanitary
UNECE	UN Nations Economic Commission for Europe
UN/CEFACT	United Nations Centre for Trade Facilitation and Electronic Business
UNCITRAL	United Nations Commission on International Trade Law
WCO	World Customs Organization
WTO	World Trade Organization
XML	Extensible Markup Language

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1. Introduction

Cross-border trade may be defined as the buying and selling of goods, together with the associated shipment and payment, where the buyers and sellers are located in different countries. Certification by trusted authorities, generally in the country of export, is commonly required to provide assurance to the buyer or the competent authorities in the country of import, that the goods exported comply with specified standards or criteria. These standards or criteria may be set by the buyer or may be established by appropriate competent authorities in the country of import. Criteria set by the buyer address commercial requirements while official SPS requirements, set by the competent authorities, determine the entry of the goods into the territory of the importing countries.

Paperless trade, and specifically cross-border paperless trade, refers to “trade taking place on the basis of electronic communications, including exchange of trade-related data and documents in electronic form”.³

Within the context of cross-border paperless trade, electronic certification may be defined as the authenticated, secure and preferably non-repudiated, electronic transmission and receipt of certification data, including the certifying statement, from a competent authority in the exporting country to a competent authority in the importing country.

SPS certificates are used to attest that agricultural consignments meet certain sanitary and phytosanitary import requirements and are required for the majority of agricultural products traded around the world. They are issued by the relevant competent authority of the exporting country. A phytosanitary certificate for export or for re-export can be issued only by a public officer who is technically qualified and duly authorized by a National Plant Protection Organization (NPPO), and is usually issued by the NPPO of the country where the plants, plant products or regulated articles were grown or processed. Phytosanitary certificates are issued to indicate that consignments of agricultural products such as plants, plant products or other regulated articles meet specified phytosanitary import requirements and are in conformity with the certifying statement of the appropriate model certificate. For the safety of food products for consumers, various national institutions can be designated as the competent authority for food safety issues depending on the administrative arrangement of each country, the type of products (processed or unprocessed, plant or animal origin, ...) and the type of risks being managed (such as maximum residue limits or absence of pathogens, etc.). In the case of requirements related to animal health, certification is the responsibility of the veterinary authority.

An electronic SPS certificate is a certificate produced and transmitted electronically rather than as a paper document. Many countries have the capability to produce electronic SPS certificates, where the application, inspection request and certification process is fully electronic. However, due to the current common practice on the import side of accepting only paper certificates, even those countries capable of producing an electronic SPS certificate, will print a paper version of a SPS

³ <http://unnex.unescap.org/fcpt-igm-wp1e.pdf>

certificate for the exporter, who provides this to the importer with the other delivery documents. The importer will then submit the paper SPS certificate to the Customs or appropriate competent authority on the import side, together with the import declarations and other clearance documents. For the electronic SPS certificate, the issuing authority on the export side can send it directly to the designated competent authority on the import side.

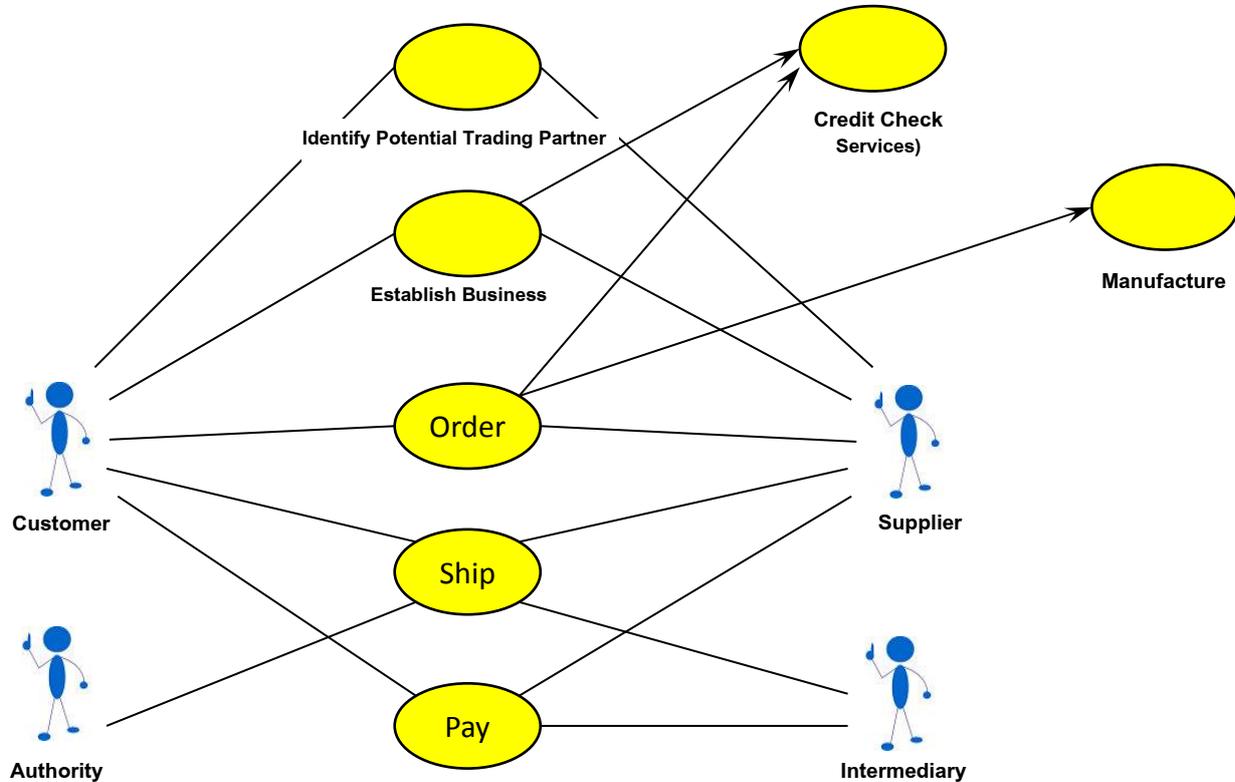
There is significant activity around pilots of end-to-end electronic SPS certificate processes, albeit the paper SPS certificate may still be provided. For example, for the export of agricultural goods from Australia to the Philippines, in pilot mode the Australian Quarantine and Inspection Service (AQIS) sends its electronic SPS certificate to the Philippines Department of Agriculture Trade System which is matched electronically to the import permit, while there is a manual process for matching to the paper SPS certificate.

This paper builds on the information presented during the STDF Seminar on electronic certification held on 28 June 2016⁴. It provides an overview of export-import business processes, customs clearance and specifically electronic SPS certificates within the overall supply chain context. It identifies both the advantages of paperless trade and electronic SPS certificates, as well as some pre-requisites and challenges in their effective implementation. International standards and regional trends that may be relevant to addressing the challenges in implementing paperless trade and electronic SPS certificates are also highlighted including related UNCEFACT recommendations, the state of play in the area of electronic certification within the work of the SPS standard-setting bodies, and legal acceptance of cross-border electronic transactions.

⁴ Please see Annex A.

2. Overview of Cross-Border (Paperless) Trade Processes

A simplified overview of the processes involved in global supply (and distribution) trade chains, is provided by the UNECE developed buy-ship-pay model, outlined below

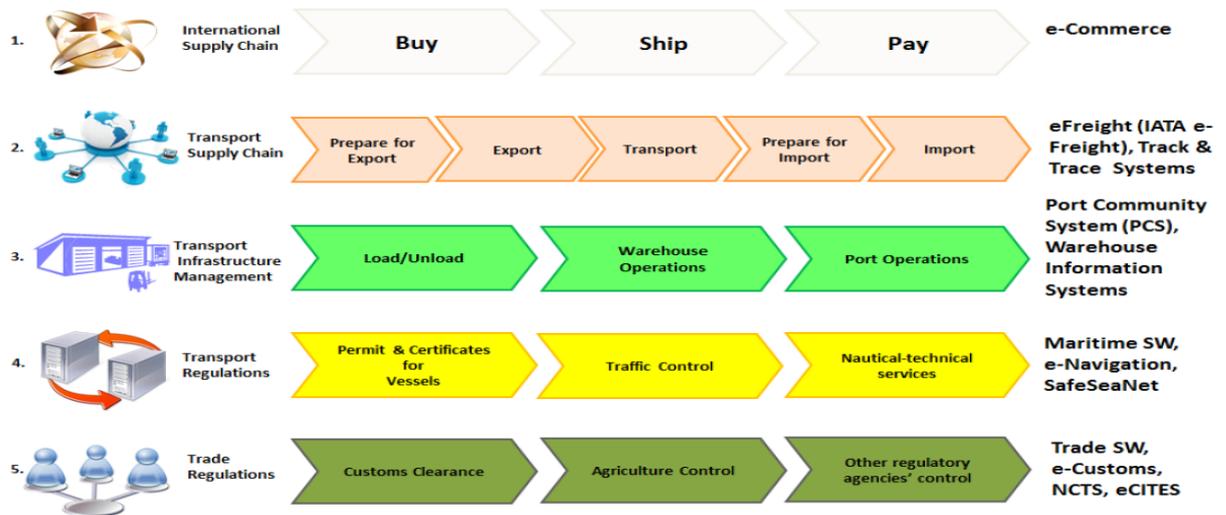


The (potential) customer and supplier (buyer and seller) identify each other as potential trading partners and after mutual due diligence, including check on creditworthiness, they may agree to establish a business relationship. The “customer” then “orders” goods from the “supplier” who may “manufacture” the goods or may sub-contract the manufacturing or part of the manufacturing to another. The goods are then “shipped” to the “customer”. This is commonly organized by an “intermediary” such as a freight forwarder who may ship the goods, for example, using an ocean carrier. During the shipment process, required government documents such as customs declarations and SPS certificates may be submitted to the appropriate “authorities” for clearance to export and import. “Payment” for the goods, and “payment” for the services rendered associated with the shipment of the goods is then made.

Expanding on this simple buy-ship-pay model of the international supply chain, the following diagram, from the UNECE paper “*Trends for collaboration in international trade: building a common Single Window Environment*”⁵, illustrates multiple underlying layers including the transport supply

⁵ <http://www.unece.org/ece/trade/411.html>

chain processes and transport infrastructure management, and regulations for transport and for trade, together with some examples of systems⁶ that may be involved.



Each of the layers illustrated in the diagram deals with a specific workflow that addresses specific objectives:

The international supply chain layer deals with the processes related to the trade transaction including the purchase and order phase, the regulatory and transport phase and activities link to the settlement of the payment.

The second layer represents all the processes that are included in the transport supply chain that deals with all activities required to move the goods from the seller to the buyer. This layer includes all activities related to the preparation for export, exportation and importation processes and the transportations between the point of export to the import destination.

To support cross-border transportation processes, a sophisticated infrastructure is required including facilities such as sea ports, air ports, loading platforms or warehouses. These facilities constitute the transport infrastructure management represented in the layer 3 of the diagram. Cross-border transport of goods is subject to a regulatory framework that comprises several procedures for each type and at each step of the transport. These are represented under the fourth layer "transport regulations".

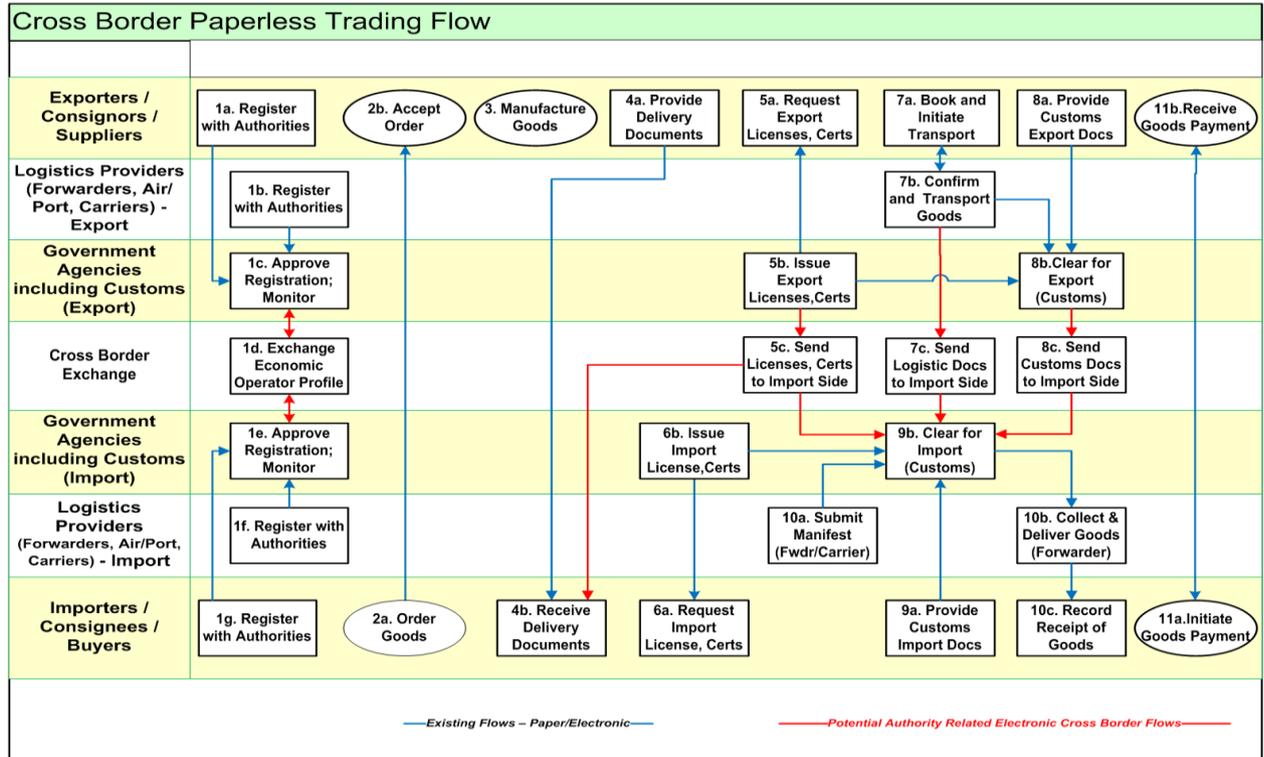
Finally, layer 5 encompasses trade-related regulations and procedures such as customs declaration and clearance and SPS certification.

Within this context, cross-border transactions or documents, some or all of which may be electronically exchanged may include:

⁶ IATA – International Air Transport Association e-Freight Initiative for paperless exchange of air cargo documents NCTS – EU’s New Customs Transit System

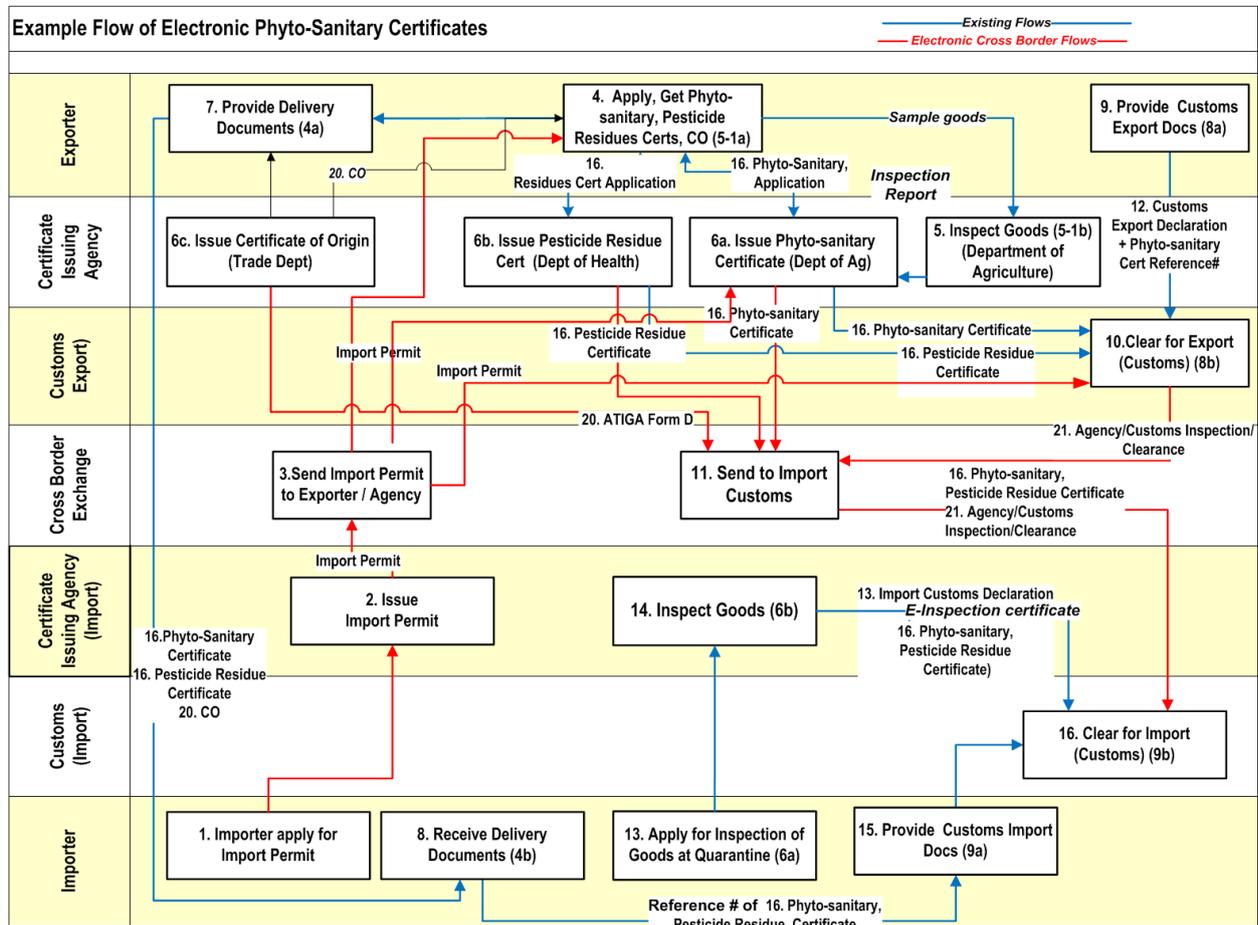
#	(Cross-Border) Trade Transactions and documents	
1	Exchange of trader profile information between Members in support of risk management initiatives	
2	Certificates of Origin and related utilization status or in some situations where the exporter is trusted there is a trend towards Self-Certification (of Origin) on Commercial Invoice, submitted by exporter to Export Customs, shared with Import Customs and optionally Importer.	
3	Export Licenses, Permits and Certificates required for Import	
	3.1	SPS certificates for food and agricultural products
	3.2	Other certificates related to health and community safety
4	Export Customs to Import Customs including	
	4.1	Customs Declaration
	4.2	Commercial Invoice and if needed, Packing List submitted by exporter prior to departure,
	4.3	Export Manifest Summaries, (House and Master) Manifests listing details of the cargo to be shipped submitted at point of departure, shared with Import Customs and optionally with Import forwarder and Shipping Agent - provides “pre-arrival” consignment and loading details to Customs for the total vessel (Master Manifest) and House Manifests consolidating forwarders consignments who book space on the vessel.
	4.4	Customs Inspections <i>shared by export Customs with Import customs</i>
5	In support of pre-arrival clearance, Ocean Logistics documents	
	5.1	Transport Documents include House and Master bills of lading, sea waybills, etc. House bill of lading is submitted by forwarder and Master bill of lading by carrier prior to / at point of departure. These documents shared with Import Customs and Agencies, optionally with Import Forwarder and Shipping Agent to provide proof of carriage, and accurate carriage details.
6	In support of pre-arrival clearance, Air Logistics documents	
	6.1	Transport Document (<i>master air waybill, house air waybill</i>) - house bill submitted by forwarder, master bill by carrier prior to / at point of departure, shared with Import Customs and Agencies, (and optionally with Import Forwarder and Shipping Agent), to provide proof of carriage, accurate details.
7	Payment of Goods, including the use of Letter of Credit and Open Account, by way of presentment of all required documents.	

The diagram below depicts cross-border trade transactions that are (can be) carried out electronically. Potential cross-border electronic exchanges between government authorities in the exporting and importing countries are shown in red. These include the exchange of: (i) economic operator profile, (ii) licences and certificates, (iii) logistics documents; and (iv) Customs documents.



3. Electronic SPS Certificate – Example Cross-Border Flow

To illustrate the process of an electronic SPS certificate, an example cross-border flow focussing on ePhyto for fresh products of plant origin is shown below.



The steps involved are explained in the table below:

#	Description	Who
1	Apply for Import Permit	Importer
2	Approve and Issue Import Permit	Permit Issuing Agency (e.g. NPPO for the plant import permit)
3	Send Import Permit to Exporter, Export Customs, Certificate Issuing Agency for SPS requirements	Import Agency through Cross-Border Exchange facilities
4	Apply for phytosanitary certificate, pesticide residue certificate, as well as Certificate of Origin. Applications are addressed to the relevant agencies, which in this case are distinct (in the example above, Trade Department for CO, Health Department for the pesticide residue certificate and NPPO for the Phytosanitary certificate). An arrangement must also be made to have the goods inspected. Quote the Import	Exporter

#	Description	Who
	Permit Number on the application for the Phytosanitary Certificate	
5	Inspect the goods to ensure they meet the phytosanitary criteria required by the importing country	NPPO assigned inspector or equivalent
6a	Once the goods are inspected, review and issue phytosanitary certificate	NPPO
6b	Issue the Pesticide Residue Certificate (after conducting any required tests)	Competent Authority for food safety issues
6c	Review and issue Certificate of Origin	Department of Trade or equivalent
7	Once the set of certificates is issued, send these together with the delivery document set to the importer	Exporter
8	Receive the delivery document set – and prepare for import.	Importer
9	Submit customs export declaration for export clearance together with, if required by local regulations, the reference # to the relevant certificates	Exporter
10	Clear goods for export	Customs (Export)
11	Send to the competent authority on the import side	via Cross-Border Exchange facilities
13	When the goods are close to arriving, request an inspection of the goods at quarantine, if required.	Importer
14	Inspect goods and send e-inspection certificate to Customs	NPPO
15	Submit customs import declaration for import clearance, including the references to the 4 certificates – Phytosanitary; Pesticide Residue, Certificate of Origin, Import inspection certificate <i>Note – no need to submit paper certificates to import declaration</i>	Importer
16	Clear customs for import, with automatic check against each of the certificates received from the import authority	Customs (Import)

A number of countries including developing countries are managing the transition to electronic SPS certificates at various stages of implementation.

Examples of successful implementation of ePhyto have been reported. With financial and technical assistance from the Netherlands, Kenya has experimented and made enormous progress in development and application of electronic phytosanitary certification. A survey conducted by the Asia Pacific Plant Protection Commission (APPPC) highlighted that ten countries had a system for ePhyto at the time of survey (2014). Among these, five countries could only send electronic certificates while the other five countries could only receive electronic certificates.

On the animal products side, examples include the Philippines that receiving electronic certificates for meat imports, and the fully paperless exchange of health certificates between the Netherlands and China for dairy products.

4. Benefits of Paperless Trade and Electronic SPS Certificates

There are significant benefits that may accrue with cross-border paperless trade. An Asia Pacific Economic Cooperation (APEC) study⁷ analysed the benefits of an Electronic Certificate of Origin (e-CO) exchanged between exporters in Korea and importers in Chinese Taipei and estimated that on average, exporters experienced a reduction of two days in processing time and total savings of USD 274 per container (Twenty Foot Equivalent Unit (TEU)), while importers experienced a reduction of three days in processing time and total savings of USD 397 per container (TEU).

The 2014 UNESCAP report “*Estimating the Benefits of Cross-Border Paperless Trade*”⁸ estimates that partial implementation of cross-border paperless trade measures would be associated with an export increase of \$36bn annually. Under a more ambitious scenario of full region-wide implementation of cross-border paperless trade, the export gain would be of the order of \$257bn annually. The time required to export would fall by between 24% and 44%, and the cost by between 17% and 31%, depending on the reform scenario considered. Total direct cost savings across all trade would be approximately \$1bn annually for partial reform, and \$7bn annually for full implementation.

Issues with paper-based cross-border exchange of SPS certificates specifically and paper-based trade in general, include risk of fraud and the associated introduction of SPS risks with a non-certified shipment, administrative costs, and delays in clearance. This is due to double entry of data, manual matching processes, transmission delays, and resulting errors and corrections. A key benefit of *electronic* SPS certificates in particular, and other export-side certificates that are required for import, is enhanced authenticity and integrity of the data contained in the certificate and corresponding reduction in the risks that the certificate is delivered to control. As noted above, the recommended process is for the electronic Certificate to be sent directly from the issuing authority in the exporting country to the designated competent authority in the importing country. Electronic certificates also provide improved efficiency, reduced administrative costs and reduced clearance times due to electronic transmission with automated validation and cross-checking against the import permit and import declaration. The opportunities for faster clearance and, preferably, pre-arrival clearance are especially critical for agricultural and food products with a short shelf life.

⁷ http://publications.apec.org/publication-detail.php?pub_id=1215

⁸ <http://www.unescap.org/sites/default/files/Benefits%20of%20Cross-Border%20Paperless%20Trade.pdf>

5. Standards and Trends Related to Paperless Trade

The following international legal frameworks standards and trends may be relevant in helping to address some of the challenges to implementing paperless trade in general, and electronic SPS certificates in particular.

5.1 GENERAL INSTITUTIONAL AGREEMENTS, ARRANGEMENTS, AND STANDARDS

5.1.1 WTO Trade Facilitation Agreement⁹ and SPS Agreement¹⁰

The Trade Facilitation Agreement (TFA) of the World Trade Organization contains provisions for expediting the movement, release and clearance of goods, including goods in transit. It also sets out measures for effective cooperation between customs and other appropriate authorities on trade facilitation and customs compliance issues. It further contains provisions for technical assistance and capacity building in this area. The entry into force of the TFA is likely to provide an impetus to countries to step-up their efforts for the implementation of paperless trade including electronic SPS certification. The TFA provides for additional obligations for members related to the enforcement and application of SPS measures. As such it closely linked to the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) that sets out the rights and obligations of WTO members when taking measures to protect human, animal and plant health. In particular, the TFA is related to Annex C of the SPS Agreement that disciplines the implementation of SPS measures as follows:

Members are required to avoid unnecessary trade disruption and transaction costs for traders when performing control, inspection and approval procedures, including:

- no undue delays;
- information requirements limited to what is necessary;
- non-discriminatory fees (not higher than actual cost of service),
- non-discrimination in siting of facilities and selection of samples;
- establishing a procedure to review complaints, take corrective action, etc.

5.1.2 UNESCAP Arrangement on Facilitation of Cross-Border Paperless Trade in Asia and the Pacific¹¹

UNESCAP's regional arrangement aims to simplify the mutual recognition and interoperability of electronic documents. Article 1 states *"The objective of the present Agreement/Framework Arrangement is to promote cross-border paperless trade by enabling exchange and mutual recognition of trade-related data and documents in electronic form and facilitating interoperability among national and subregional single windows and/or other paperless trade systems, for the*

⁹ https://www.wto.org/english/tratop_e/tradfa_e/tradfa_e.htm#tradfac

¹⁰ https://www.wto.org/english/tratop_e/sps_e/spsagr_e.htm

¹¹ <http://unnexnext.unescap.org/tipub2684.pdf>

purpose of making international trade transactions more efficient and transparent while improving regulatory compliance”.

5.2 TECHNICAL E-BUSINESS STANDARDS AND RECOMMENDATIONS

5.2.1 DATA Interchange related Standards

UNECE/UNCEFACT developed UN/EDIFACT (the United Nations rules for Electronic Data Interchange for Administration, Commerce and Transport) which comprises a set of internationally agreed standards, directories, and guidelines for the electronic interchange of structured data, between independent computerized information systems. Recommended within the framework of the United Nations, the rules are approved and published by UNECE in the UNTDID (United Nations Trade Data Interchange Directory) and are maintained under agreed procedures. The GOVCBR message for example is the Government Cross-Border Regulatory message.

UN/CEFACT also publishes the Core Component Library which is a collation of data elements and composite data elements that may be used to compile business document structures using a commonly understood terminology. eCert is an XML based document structure for an SPS and other certificates that utilizes the Core Component Library where possible.

5.2.2 Recommendations related to infrastructure

UN/CEFACT has developed a number of recommendations which are relevant to the implementation of paperless trade facilities and notably those related to the establishment of single windows.

UN/CEFACT Recommendation No. 33 - Single Window Recommendation¹², *defines a Single Window as a facility that allows parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfil all import, export, and transit-related regulatory requirements. If information is electronic, then individual data elements should only be submitted once.*

It also states, *“the implementation of a Single Window can be highly beneficial for both Governments and trade. For Governments it can bring better risk management, improved levels of security and increased revenue yields with enhanced trader compliance. Trading communities benefit from transparent and predictable interpretation and application of rules, and better deployment of human and financial resources, resulting in appreciable gains in productivity and competitiveness”.*

And supplements this with *“The use of standards and available tools will help ensure that the systems developed to implement the Single Window are more likely to be compatible with similar developments in other countries, and they could also help in the exchange of information between such Single Window facilities over time. In addition, the use of existing tools and best practices should help reduce the overall cost of implementation, as the project will be drawing on work already completed by other international standards organizations”.*

¹² http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec33/rec33_trd352e.pdf

UN/CEFACT Recommendation No. 35 - Establishing a Legal Framework for an International Trade Single Window¹³ provides advice and guidance in the form of a Checklist of the common legal issues encountered when introducing a Single Window facility. *“Creating legally enabling conditions for an International Trade Single Window constitutes, therefore, one of the main challenges for countries and economies establishing such a national facility and/or seeking to exchange information with other Single Windows. For many governments, the list of legal issues will provide the basis for discovering other issues related not only to B2G and G2B transactions but also to the broader B2B environment nationally and internationally”*. Recommendation 35 also contains indications related to the compliance of a national legal framework with international regulations or obligations.

The UNCEFACT Recommendation No. 34 - Data Simplification and Standardisation for International Trade¹⁴ recommends a simple, easy-to-use and cost effective 4 stage process to achieve the creation of a national simplified and standardised dataset. *“When undertaking the simplification and standardization exercise, Government should have a clear objective for the way in which the National Data Set will be used, whether to meet purely domestic trade needs or for incorporation into a national Single Window facility or utilization in any regional trade agreements, bilateral arrangements or other trade protocols”*.

5.3 EXISTING FRAMEWORKS UNDER THE WCO

The WCO Revised Kyoto Convention (RKC) provides extensive guidance to customs authorities on a variety of procedures in paperless cross-border exchange. The RKC as well as the WCO SAFE Framework of Standards (Standard No. 6) encourage Customs administration to adopt implementation of the advanced submission of cargo information prior to vessel's arrival. Advanced pre-arrival submission was introduced by several countries for security purposes. It requires more detailed consignment information to be submitted to the importing Customs authority prior to vessel's arrival and in some cases, even before loading is allowed.

To implement the concept of an authorized supply chain requires the sharing of information between Customs administrations. Bringing benefits to Customs, as outlined in section 2.2 of the WCO SAFE Framework of Standards, it states *“one of the main thrusts of the SAFE Framework is to establish and enhance Customs-to-Customs network arrangements to promote the seamless movement of goods through secure international trade supply chains. These network arrangements will result, inter alia, in the exchange of timely and accurate information that will place Customs administrations in the position of managing risk on a more effective basis. Not only will this improve the ability of Customs to detect high-risk shipments, it will also enable Customs administrations to improve their controls along the international trade supply chain and make for better and more efficient allocation of Customs resources”*.

To harvest this benefit, again from section 1.3.8 of the WCO SAFE Framework of Standards, *“National Legislation must contain provisions to allow Customs to transmit information they collect for their purposes to other Customs administrations. If not, such provisions must be developed and enabled. The guidelines for the Development of National Law for the Collection and Transmission of Customs Information may be used as a basis to develop these provisions.....”*

¹³ http://www.unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-401E_Rec35.pdf

¹⁴ http://www.unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-400E_Rec34.pdf

The WCO Data Model Version 3.0 incorporates the ‘Single Window’ and the ‘cross-border whole-of-government’ approach, catering not only for the legal requirements of customs, but also for those of partner cross-border regulatory agencies. It includes a Message Implementation Guideline for the new UN/EDIFACT Government Cross-Border Regulatory message (GOVCBR), which was developed by the Data Model Project Team to represent the entire requirements for the “Whole-of-Government Single Window” for cross-border release of goods, containers, and means of transport.

5.4 SANITARY AND PHYTOSANITARY SPECIFIC STANDARDS AND DIRECTION

5.4.1 International Plant Protection Convention - ePhyto

Article 1 of the IPPC states “*With the purpose of securing common and effective action to prevent the spread and introduction of pests of plants and plant products, and to promote appropriate measures for their control...*”. The Commission on Phytosanitary Measures (CPM) which is the governing body of the IPPC, has the objective to identify actions to control the spread of pests into new areas by developing and adopting international standards while facilitating trade. In 2014, the CPM approved Appendix 1 *Electronic phytosanitary certificates*¹⁵, *information on standard XML schemas and exchange mechanisms* to the International Standard for Phytosanitary Measures (ISPM) 12 which describes the format and contents of ePhytos, the mechanism for exchange and guidance on harmonized codes and schema.

CPM is leading the ePhyto project with the goal to improve the capacity of developing countries to facilitate safe, secure and efficient trade in plants and plant products through the establishment of a self-sustaining global framework for electronic phytosanitary certification. The project will develop the ePhyto solution which consists of: (i) a Generic National System for the production, sending and receipt of electronic phytosanitary certificates for countries which do not have such a system, and (ii) a hub which facilitates the transfer of electronic certificates between NPPOs and is easily accessible and free of costly bilateral agreements required for point to point systems will make electronic phytosanitary certification feasible for many developing countries. Once established and accessible to all Contracting Parties, the ePhyto Solution should enable them to communicate phytosanitary assurances in a modern, cost effective and globally harmonized way.

5.4.2 World Organization for Animal Health, OIE¹⁶

The OIE Animal Health Code provides the standards for veterinary certification. The OIE has also provided standards for electronic certification. Certification may be provided by electronic exchange of data sent directly from the *Veterinary Authority* of the *exporting country* to the *Veterinary Authority* of the *importing country*.

The standards set out that systems providing electronic certificates normally provide an interface with the commercial organisation marketing the *commodity* for provision of information to the certifying authority. The certifying *veterinarian* should have access to all information such as

¹⁵ <http://ephyto.ippc.int/>

¹⁶ <http://www.oie.int/>

laboratory results and *animal identification* data. When exchanging electronic certificates and in order to fully utilise electronic data exchange the *Veterinary Authorities* should use internationally standardised language, message structure and exchange protocols. Guidance for electronic certification in standardised Extensible Markup Language (XML) as well as secure exchange mechanisms between *Veterinary Authorities* is provided by the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT). A secure method of electronic data exchange should be ensured by digital authentication of the certificates, encryption, non-repudiation mechanisms, controlled and audited access and firewalls.

5.4.3 Codex Alimentarius¹⁷

The Codex Committee on Food Import and Export Inspection and Certification Systems (CCFICS) is the committee of Codex that deals with standards related to certification procedures. Codex guidance on electronic certification is contained in Codex guideline CAC/GL 38 2001: Guideline for design, production, issuance and use of generic official certificates (Sections 2, 3, 4, 8 and 9). The Guidelines are applicable regardless the mode of transmission (paper or electronic). As part of these guidelines certificates are defined as paper or electronic documents and should meet the requirements of the importing country. The guidelines stipulate that the competent authority of the exporting country is ultimately responsible for any certificate it issues or authorizes to be issued. In 2016, CCFICS decided to an electronic Working Group to assess the review existing Codex guidance with regard to the implementation of electronic certification and to identify the outstanding gaps and the way forward.

5.5 REGIONAL ARRANGEMENTS TO SUPPORT PAPERLESS TRADE

5.5.1 ASEAN Single Window (ASW)

The Association of South East Nations (ASEAN) comprising Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam, has established the ASEAN Single Window (ASW) for the paperless exchange of trade information amongst its members. It has agreed the Protocol for the Legal Framework as the legal basis for recognizing the electronic transactions. “Live” electronic ASEAN Trade in Goods in Agreement (ATIGA) Form D’s – certificates of origin – are now being exchanged amongst some of the member states.

The electronic SPS certificate is a priority for implementation in the ASW.

5.5.2 ASEAN Customs Transit System (ACTS)

The ASEAN Customs Transit System (ACTS) is an ASEAN initiative that aims to automate the requisite information flow related to the Goods-In-Transit by land between AMS that involves transiting over one or more jurisdictions, under a single Customs transit declaration and a single guarantee valid throughout the transit. In 1998, Member States signed the ASEAN Framework Agreement for the

¹⁷ <http://www.fao.org/fao-who-codexalimentarius/about-codex/en/>

Facilitation of Goods in Transit (AFAGIT) which detailed out a set of measures designed to facilitate transportation of goods in transit and to simplify and harmonize transport, trade and customs regulations. ACTS also set the objectives which underpin the vision of the ASEAN Economic Community.

Drawing parallel experience from the EU transit regime, an IT infrastructure similar to that of the EU's New Computerized Transit System is prerequisite to the implementation of the information exchange required under the ACTS business model.

5.5.3 Pan Asian e-Commerce Alliance (PAA)

The Pan Asian e-Commerce Alliance aims to promote and provide, amongst its membership, secure, trusted, reliable and value-adding IT infrastructure and facilities to enhance seamless trade globally. A Certification Authority (CA) Mutual Recognition Scheme and supporting legal framework, underpinned by the PAA Certificate Policy managed by the Pan Asian Certificate Policy Authority ("PAA Policy Authority"), has been established to mutually recognize the digital certificates issued by the participating CA's and so enable electronic trading and logistic activities within the membership of PAA. Its members are government linked service providers from China, Indonesia, Hong Kong, Japan, Korea, Macau, Malaysia, Philippines, Singapore, Taiwan, and Thailand.

5.6 TRADE FACILITATION TRENDS AND DEVELOPMENTS

5.6.1 Risk Management, and Secured Supply Chains

A key focus for governments, is to facilitate cross-border supply chain processes, while ensuring the security and community health and safety of participating countries, collecting applicable revenue, enforcing export and import regulations, protecting IPR and combating smuggling. A common strategy approach is, for example, as described in the WCO SAFE Framework of Standards, is to establish a risk assessment and management regime where shipments handled by "trusted economic operators" are perceived as "low risk" and are processed speedily with no or limited regulatory intervention, and perceived "high risk" shipments may be inspected and processed more thoroughly.

This strategy will be particularly effective if not only "in-a-country" economic operators are trusted, but also all the economic operators within specified supply chains are also trusted. As described in the WCO SAFE Framework of Standards section 1.4.1, *"the Authorized Supply Chain is a concept under which all participants in an international trade transaction are approved by Customs as observing specified standards in the secure handling of goods and relevant information. Consignments passing from origin to destination entirely within such a chain would benefit from an integrated cross-border simplified procedure, where only one simplified declaration with minimum information would be required for both export and import purposes"*.

5.6.2 National Single Windows

Worldwide support for Single Windows is clear. The UNECE paper *“Trends for collaboration in international trade: building a common Single Window Environment”*¹⁸ in Section 2, cites a World Bank study that 71 economies have implemented Single Window systems. The TFA¹⁹, identifies Single Windows, (Article 10.4) and [Cross] Border Agency Cooperation (Article 8.2) as important tools for international trade facilitation.

UNCTAD developed the ASYCUDA (Automated System for Customs Data) which is used by smaller Customs organizations and is being expanded to provide a degree of single window capability as well as ASYCER for electronic SPS certificates.

6. Challenges in Implementing Paperless Trade and electronic SPS certification

While cross-border electronic Business-to-Business (B2B) exchanges are common and have been for many years, G2G related cross-border electronic exchanges supporting supply chain processes are still in their infancy. Prerequisites and challenges to implementing G2G paperless trade include the following:

6.1 GOVERNMENT POLICY AND SUPPORT

The need for strong Government policy for Trade Facilitation and the associated paperless trade implementation, together with high-level support to drive agreement and the establishment of the supporting legal framework is a pre-requisite for G2G paperless trade. This, and related institutional arrangements are addressed in Chapter 2 (G) of the UNESCAP report *“Enhancing Regional Connectivity: Towards a Regional Arrangement for the Facilitation of Cross-border Paperless Trade”*²⁰. The report analyses four possible models of institutional arrangements that can be implemented by the “Contracting Parties” to a regional arrangement on cross-border electronic information exchange (see table below). The Model 3 is recommended to be adopted as it makes paperless exchange binding while leaving flexibility on the scope of implementation.

¹⁸ <http://www.unece.org/ece/trade/411.html>

¹⁹ https://www.wto.org/english/tratop_e/tradfa_e/tradfa_e.htm#tradfac

²⁰ <http://unnexnext.unescap.org/tipub2684.pdf>

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

6.2 LEGAL FRAMEWORK

As many jurisdictions provide explicitly for paper documents and handwritten signatures, and this is included in many esoteric and sometimes unexpected areas, legislation needs to be comprehensively examined and changed to give legal recognition to electronic transactions and electronic forms of authentication. Key factors in the recognition of cross-border electronic transactions include trust in the authenticity and integrity of electronic transactions from another jurisdiction, the liability in case of processing errors and the need for agreed dispute resolution processes. The UNCITRAL Model Law on Electronic Commerce may be used as a basis for upgrading domestic legislation to give legal recognition to domestic and cross-border electronic transactions. While it is usually recommended that the legislation is technology agnostic - that is, no specific technology such as Public Key Infrastructure (PKI) digital signatures is mentioned in the legislation – decisions are required practically on how to verify the authenticity of electronic transactions, and putting such an infrastructure in place.

6.3 SUSTAINABLE BUSINESS MODEL

A sustainable business model for the on-going operation and evolution of paperless trade projects in general and electronic SPS certificate project specifically is preferred. This may be based on one of, or a combination of, revenue sources such as a private sector paid usage fee, government paid usage fee, and/or direct government paid funding/subsidies. The revenue model should be based on the premise that the perceived and actual, direct and indirect, benefits to the stakeholders is significantly greater than their costs, and that the fees charged will over time cover the asset and operations costs of the paperless trade IT implementation and operation. The major likely one-time costs in establishing an electronic SPS certificate system include the costs for the initial business process analysis and design, review and changes to legislation to recognize electronic transactions (if

needed), the IT development, testing and implementation for both the export and import processes, the IT infrastructure (if not using cloud services), the cross-border connectivity and integration testing with the cross-border partners, and training. The ongoing incremental costs include the IT operation costs and help desk support.

6.4 IT READINESS AND AGREED DOCUMENT STRUCTURE STANDARDS

While many authorities have IT systems for the application and approval of electronic SPS certificates and other documents, the appropriate system on the import side, also needs the capability to accept these documents. In order to do this, there needs to be an agreed communication protocol for the exchange of information between the exporting and importing authority and an agreed document structure standard for the specific document being exchanged.

7. Conclusion

Electronic SPS certification can contribute significantly to facilitating safe trade through reducing transaction costs, improving compliance with regulations and policies, reducing errors and fraud, supporting risk management, and enhancing trust among trading partners. In addition, there are overarching benefits improving food security and contributing to Sustainable Development Goals.

Implementation of electronic SPS certification can act as a driver for reform, including by streamlining import-export business processes, and by promoting regulatory reform and inter-institutional collaboration.

The existence of internationally recognized standards facilitates exchange of electronic SPS certificates by achieving greater harmonization of requirements and exchange frameworks, hence reducing the resources required for bilateral arrangements amongst trading partners. This is particularly crucial in view of the limited resources available in developing countries.

Prior to engaging in the automation of certification systems, developing countries should carry out a comprehensive analysis of their export/import business process to identify their outstanding needs. Any decision to invest in an electronic certification system should be made after due consideration of the costs and benefits of such an endeavour. A key pre-requisite for electronic certification is to have an optimal paper certificate in place to start with, including a proper knowledge of principles and provisions of the SPS Agreement and the relevant procedures under the relevant agreement that sets out additional SPS procedural requirements. Once that is in place, other pre-requisites for eCert include political will, a mature trade sector with a sustainable business model for all stakeholders, and an adequate IT infrastructure and capabilities within the SPS authorities. Guidance and support is required to enable developing countries carry out their business process analysis, map out their business process reengineering needs and undertake the necessary cost-benefit analysis to inform their investment decision.

As governments and business transition to paperless documentation, greater co-operation between these two core groups is fundamental to ensure that data flows between B2G, G2G and B2B are harmonized and implemented in a coordinated manner.

Annex A: STDF Seminar June 28, 2016 Presentations

Title	Speaker and Organization
Electronic certification in the context of agricultural trade http://www.standardsfacility.org/sites/default/files/Ecert_Presentation_Koh_Intro.pdf	Jonathan Tat Tsen Koh , CrimsonLogic
IPPC's standards governing electronic phytosanitary certification: recent developments http://www.standardsfacility.org/sites/default/files/Ecert_Presentation_Fedchock_Sela.pdf	Craig Fedchock/Shane Sela , IPPC
Update on the work of the Codex Committee on Food Import and Export Inspection and Certification Systems (CCFICS) in the area of paperless certification http://www.standardsfacility.org/sites/default/files/Ecert_Presentation_Bosker.pdf	Erik Bosker , CCFICS WG on paperless trade
OIE's standards governing electric veterinary certification http://www.standardsfacility.org/sites/default/files/Ecert_Presentation_Ishibashi.pdf	Tomoko Ishibashi , OIE
Standards of the United Nations Centre for Trade Facilitation and electronic Business (UN/CEFACT) to simplify and automate agriculture trade http://www.standardsfacility.org/sites/default/files/Ecert_Presentation_Pikart.pdf	Markus Pikart , UNECE
Use of the World Customs Organization (WCO) Data Model in the area of electronic certificate(s)	Tejo Kusuma , WCO

Title	Speaker and Organization
http://www.standardsfacility.org/sites/default/files/Ecert_Presentation_Kusuma.pdf	
Summary of the linkages between electronic SPS certification and other trade procedures, http://www.standardsfacility.org/sites/default/files/Ecert_Presentation_Koh_Summary.pdf	Jonathan Tat Tsen Koh , CrimsonLogic
Lessons learned from implementation of electronic phytosanitary certification in Kenya http://www.standardsfacility.org/sites/default/files/Ecert_Presentation_Syanda.pdf	Josiah Syanda , KEPHIS
Philippines' experience in the implementation of electronic certification to facilitate quarantine clearance for animal products http://www.standardsfacility.org/sites/default/files/Ecert_Presentation_Lopez.pdf	Francis Norman Lopez , InterCommerce, Pan Asian eCommerce Alliance
The Netherland's Client System: lessons learned from exchange electronic SPS certificates with developing countries http://www.standardsfacility.org/sites/default/files/Ecert_Presentation_Slot_Moret.pdf	Benno Slot , NVWA
Initiatives in the Asia-Pacific Region to support implementation of paperless trade (UNNEXt and other initiatives) http://www.standardsfacility.org/sites/default/files/Ecert_Presentation_Agyeben.pdf	Maame Agyeben , United Nations ESCAP
From Customs automation to electronic phytosanitary certificates: UNCTAD's experience http://www.standardsfacility.org/sites/default/files/Ecert_Presentation_David.pdf	John David , UNCTAD

Title	Speaker and Organization
TRAdE Control and Expert System (TRACES) of the European Union: the path towards authentic electronic certificates using qualified electronic seals and signatures http://www.standardsfacility.org/sites/default/files/Ecert_Presentation_Carton_English.pdf	Didier Carton , Directorate General for Health and Food Safety at the European Commission