

Cross-border E-Trade: The ASEAN Single Window

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Abstract

This paper presents Asian Single Window background and evolution; a description of what we mean by national versus regional single window; an update on Member States' National Single Window (NSW) status; an overview of Asian Single Window (ASW) technical, legal aspects; an assessment of institutional and technical aspects of the Asian Single Window work; potential benefits from the cross-border exchange of data using the Asian Single Window; incremental benefits from Asian Single Window; challenges to Asian Single Window implementation; and conclusions.

Key words: Asian Single Window, Cross-border, Trade Facilitation, market access, supply chain

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1. Introduction

The ASEAN Single Window (ASW) is a unique regional initiative that combines the direct exchange of data between Association of Southeast Asian Nations (ASEAN) Member States and regional operations that allow National Single Windows (NSWs) to synchronize the data exchange across borders. The objective is to expedite cargo clearance within the context of increased economic integration in ASEAN. Key benefits from the ASW are similar to benefits from the bilateral exchange of data between countries, particularly ones with single window mechanisms in place, i.e. improved risk management and targeting, track-and-trace capabilities, supply chain integration, pre-arrival clearance, harmonization of data and procedures, and, overall, improved trade facilitation and compliance.

However, a regional mechanism provides incremental benefits that are not easy to achieve in a bilateral setting. ASW implementation ensures compatibility of Member States with international open communication standards while also ensuring that each of those Member States can then exchange data securely and reliably with any trading partners that use international open standards. This currently supports the exchange of the intra-ASEAN certificate of origin (ATIGA Form D) and ASEAN Customs Declaration Document (ACDD) on a pilot basis among seven Member States and will be expanded to exchange other types of data. Eventually the ASW, because it uses international operability standards, can support the exchange of certificates of origin and advance cargo information with non-ASEAN trading partners. Other incremental benefits include legal inter-operability, data validation at the regional level, support for ASEAN's policy harmonization efforts (e.g. phytosanitary measures and conformity assessment procedures), and better view of data exchange among Member States.

On the institutional side ASW development is managed by the ASW Steering Committee and supported by technical and legal working groups, which have been developing the technical and legal architectures. They have initiated consultations with the private sector on data to be exchanged in the ASW architecture and other complementary initiatives, and have been studying ASW sustainability options, including governance, business model, and financial feasibility.

Challenges in developing the ASW have been numerous, particularly in the first years of development while Member States worked to launch their NSWs and made difficult decisions related to the regional mechanism and functionalities. While ASW and NSW development is a long and arduous journey, Member States need to implement a panoply of complementary measures at the national level to support paperless clearance in ASEAN, including a single window-ready legal environment, risk management systems, pre-arrival processing mechanism, and Authorized Economic Operator (AEO) programs among others.

This chapter presents ASW background and evolution; a description of what we mean by national versus regional single window; an update on Member States' NSW status; an overview of ASW technical, legal aspects; an assessment of institutional and technical aspects of the ASW work; potential benefits from the cross-border exchange of data using the ASW; incremental benefits from ASW; challenges to ASW implementation; and conclusions. We hope that this discussion will inform policymakers,

researchers, and other countries and governments who are considering implementing similar cross-border data exchange arrangements.

2. Concept of National Single Window and Regional Single Window

A single window is described in UN/CEFACT Recommendation Number 33 as a facility that allows parties involved in trade and transport to lodge standardized information and document with a single entry point to fulfill all import, export, and transit-related regulatory requirements. This concept would involve a single authority or a single automated system that serves as the single point for the collection and dissemination of information. It could work well within the same regime in a country.

With existence of different regimes in a region, implementation of a single window with a single authority or single automated processing for a group of countries could be far more complex or impractical especially in terms of governance and operation. However, a regional single window in the ASEAN context involves not centralized processing of information but the electronic cross-border exchange of data between ASEAN stakeholders to expedite cargo clearance. And while the national single window does not necessarily imply the implementation and use of high-tech information and communication technology (ICT), use of ICT is inevitable for the regional single window.

3. Member State NSW status

Before going into a detailed discussion of the regional ASW architecture, perhaps it is useful to summarize the status of participating Member State NSWs, as gathered from recent NSW reports, since effective NSWs are essential to a functional regional architecture. As NSWs are constantly evolving, more accurate information may be obtained directly from Member States.

Table 1: Member State NSW Status

AMS	NSW status	Key NSW Applications
Brunei Darussalam	Brunei Darussalam has implemented some features of its NSW through the eCustoms system which was launched in stages since 2008. The e-Customs serves as the main platform of Brunei Darussalam NSW offering the on-line services on the submission and processing of customs declarations and approval permits. Several relevant government agencies utilized the eCustoms system to endorse and approve permits prior to importation or exportation of goods. i-Banking has also been introduced with cooperation of several local Banks where traders and importers will be able to pay their duties and taxes online. At present, the submission and processing of ATIGA Form D can be accessed via the web portal of the Ministry of	e-Declaration e-Manifest e-Permit i-Banking e-CO

AMS	NSW status	Key NSW Applications
<p>Brunei Darussalam (continued)</p>	<p>Foreign Affairs and Trade. Integration of the ATIGA Form D application with e-Customs project is being completed.</p> <p>A new project commenced recently on the interfacing and integration with a number of government departments on the exchange and processing of import permits and licences. The vision of this project is to provide a common online platform (electronic single window) for <u>electronic</u> exchange and submission of trade information and documents by business and public to the controlling agencies. Multiple trade declarations will be consolidated into <u>single declaration</u> and submitted electronically to <u>multiple agencies</u> for approval and decision-making automatically.</p> <p>The launch of the first stage of her NSW is scheduled early 2013 and it involves:</p> <ul style="list-style-type: none"> • Newly developed online Certificate of Origin system • Newly developed Brunei Darussalam NSW Portal • Integration with ASEAN Single Window <p>The second stage includes:</p> <ul style="list-style-type: none"> • Involvement of Other Government Agencies (OGA) • Centralize processing of trade documents 	
<p>Cambodia</p>	<p>Under the strategic plan of action to implement the Risk Management System, the Ministry of Economy and Finance (the General Department of Customs and Excise-GDCE) signed Service Level Arrangements-SLA last year with three Government bodies namely: the Ministry of Industry Mine and Energy, the Ministry of Health, and the Ministry of Commerce. Other SLAs are currently being negotiated and considered by the GDCE and other related Government bodies. Additionally, the implementation of the Risk Management System will be linked with ASYCUDA World soon.</p> <p>Cambodia is focusing on the implementation of her Customs automation system (ASYCUDA World) and, currently, extensive work is being carried out to complete the countrywide roll out of the ASYCUDA system. Then, this system will be used as a platform for the development and implementation of her NSW. In line with these developments, the composition of her National Single Window Steering Committee will be reviewed.</p>	<p>ASYCUDA World:</p> <ul style="list-style-type: none"> -Geographic expansion to 20 operational Customs offices (covered 95% of import & export operation) -Manifest pilot implementation -Customs bonded warehouse -Direct Trader Input is testing -Customs Transit is developing
<p>Indonesia</p>	<p>Export and import procedures are already implemented in 10 major ports nationwide. Mandatory Export-INSW Procedure to five major ports in Indonesia as of September 2010 and extended to five other ports in 2012. The port system has been integrated into the INSW expansion, particularly the electronic manifest system since November 2010. In the meantime the</p>	<p>e-licenses, e-payment, e-declaration, e-manifest, Single Sign On, e-logic, NTR</p>

AMS	NSW status	Key NSW Applications
	<p>INSW has also added more trade facilitation assistance tools features such as trade simulation, duty rate calculator, Indonesia National Trade Repository (NTR) on line tariff information system, control goods regulation, information system, etc. INSW is also enhancing its ASW module to support utilization report generator and statistics. On-going development of INSW is the integration of Post Customs Clearance System with Port Terminal Operators to enhance to overall process of goods release.</p> <p>The number of messages exchanged per day in the INSW is about 140 million. There is no fee for usage as all costs are covered by the government.</p> <p>The NSW website of Indonesia can be accessed through http://www.insw.go.id.</p>	
Lao PDR Lao PDR (continued)	<p>In 2011 Lao PDR conducted a legal gap analysis and workshops for relevant government agencies and private sector in Vientiane. Now, Lao PDR is working on the Lao National Single Window Road Map Development and revising the existing NSW Committee. Besides this, the Customs Automation System has been upgraded, and testing at a major Customs border checkpoint will take place and, after the completion of the testing stage, it will be operated at the other checkpoints all over the country. The Customs Automation (ASYCUDA World) will be the platform for further development of Lao National Single Window.</p> <p>In May 2012, the National Single Window Team led by the Vice Minister of Finance, together with the representatives from the relevant government agencies such as Customs Department (MOF), Ministry of Public Work and Transport, Ministry of Agriculture and Forestry, Ministry of Industry and Commerce, Ministry of Science and Technology, Ministry of Planning and Investment, and the Ministry of Health officially headed to Singapore and Indonesia for the observation of the actual implementation of their NSWs.</p> <p>In August 2012, the Lao National Single Window Committee was established to replace the former NSW Team. The new committee is chaired by Vice Minister of Finance.</p> <p>The Lao NSW Committee agreed at its second meeting in 2012 to allow an international consulting company to conduct a feasibility study on establishment of Lao NSW. The study began in September 2012 and is expected to be complete in early 2013.</p> <p>The Lao Government urged the Lao NSW Committee to</p>	ASYCUDA World modules

AMS	NSW status	Key NSW Applications
	<p>expedite the development of the NSW while using a Public Private Partnership approach.</p>	
<p>Malaysia</p>	<p>Malaysia's NSW has been fully operationalized since September 2009 and continuous effort is being carried out for nationwide implementation. NSW offers six core services, which are eDeclare (Electronic Customs Declaration), eManifest (Electronic Manifest), ePermit (Electronic Permit), ePermitSTA (Electronic Permit for Strategic Trade Act 2010), ePCO (Electronic Preferential Certificate of Origin) and ePayment (Electronic Customs Duty Payment). Future expansion plan of NSW will focus on completing the roll-out of its services especially to include more Permit Issuance Agencies as well as existing ports nationwide. Moreover, the promotion to utilize Online Service such as for ePayment and ePCO will be enhanced and encouraged through awareness programme.</p> <p>A comprehensive NSW portal covering all six core services can be accessed through (http://www.mytradelink.gov.my). The development of a National Trade Repository (NTR) is currently on-going and NSW is engaging with all stakeholders to provide relevant information to be included in the NTR.</p>	<p>ePermit ePCO eManifest ePayment ePermitSTA</p>
<p>Myanmar</p>	<p>As an initial implementation of the NSW, in terms of e-Customs action plan, the electronic export clearance system has been implemented since 29th August 2011 and on 2nd January 2012 import clearance system has also been implemented. The ACDD has been implemented in electronic format since 1st November 2011.</p>	<p>Ongoing development</p>
<p>Myanmar (continued)</p>	<p>Myanmar is in the process of choosing a system for her NSW (ASYCUDA, UNIPASS and two local systems). Her e-Customs was launched in January 2012 and four government agencies were involved. In addition, the website of Myanmar Customs Department can be accessed through the address: https://www.myanmarcustoms.gov.mm.</p>	
<p>Philippines</p>	<p>The Philippine Bureau of Customs (BOC) expects to start the second phase of the Philippine NSW in the first half of 2013. As of now, there are already 30 out of the 40 (government) agencies linked to the NSW and the remaining 10 will be connected soon. Through the NSW, traders electronically submit forms for export, import, and transit procedures only once, and they are processed and cleared by multiple government agencies in a single integrated process. NSW's phase 2 involves government-wide rationalization, standardization, and harmonization of all trade data and</p>	<p>ePayment, eForms including ePermits, eLicenses, eClearances</p>

AMS	NSW status	Key NSW Applications
	<p>enhancement of trade portals. It will also link NSW to the ASW.</p> <p>The NSW website could be accessed through: http://www.nsw.gov.ph</p>	
Singapore	<p>Singapore has implemented her National Single Window, TradeNet (TN) since 1989. Since then, TN has gone through several version upgrades. The latest Version 4.1 was implemented on 1 January 2012 to align the system to international standards and to incorporate the revised set of tariff codes under the ASEAN Harmonised Tariff Nomenclature 2012/1.</p> <p>The NSW website of Singapore can be accessed through: http://www.tradexchange.gov.sg/tradexchange/default.portal.</p>	<p>All types for import, export, transshipment</p>
Thailand	<p>The Thai Customs Department has signed an MOU with 36 relevant agencies on the implementation of the Thai NSW. The NSW has officially entered into operation since 2008. Nowadays, it enables live data exchange among 12 government agencies and 9,400 agents serving about 100,000 traders. In addition, the NSW is also serving 660 Customs stations and business communities including Customs House, Ports, Container Yards, Inland Container Depots, Warehouse, Industrial Estates, Export Processing Zones, and Free zones. There are 14 government agencies that are conducting the pilot test.</p> <p>The NSW website could be accessed through http://www.thainsw.net.</p>	<p>e-Import, e-Export, e-Payment, e-Licensing, e-Express, e-Tracking, e-Manifest, RFID (e-Seal) e-Certificate, (e-Service available for sea, land and air modes)</p>
<p>Vietnam</p> <p>Vietnam (continued)</p>	<p>Viet Nam has established the Master Plan on NSW and has activated working groups on NSW. The electronic clearance system of Viet Nam Customs was expanded and available in thirteen Customs Departments nationwide. The NSW Steering Committee has approved the first version of Viet Nam's Data Model that comprises data requirements and business processes of six ministries. Viet Nam has also conducted several legal gap analysis activities that form the springboard for the development of legal framework of Viet Nam's NSW. Viet Nam is working to introduce an integrated IT system for the NSW pilot phase shortly.</p> <p>The Customs website can be accessed through http://www.customs.gov.vn.</p>	<p>Electronic Customs Declaration (E-Declare), Customs Assessment and Customs Release</p>

4. ASW Background and Evolution

The ASW Agreement was signed by Economic Ministers in December 2005. The ASW Protocol, which included more technical provisions and annexes, was signed by Finance Ministers December 2006. ASEAN Heads of State re-affirmed their ASW commitment by signing the Declaration on the ASEAN Economic Community Blueprint in November 2007. To manage ASW development an ASW Steering Committee (ASWSC) was established as the decision-making body, reporting to the Customs DGs and the Senior Economic Officials Meeting. Two working groups support the ASWSC; a Working Group on Technical Matters (TWG), and the Working Group on Legal and Regulatory Matters (LWG).

With deadlines to establish National Single Windows (NSWs) by 2008 for the ASEAN-6 and 2012 for Cambodia, Lao PDR, Myanmar, and Viet Nam (CLMV), most early efforts focused on NSW development.

At the regional level there were intensive discussions as to what the ASW was and what functions it would perform. As the “environment where National Single Windows operate and integrate”, a key question was what “integrate” meant and how it would be possible to integrate cargo clearance operations across 10 countries.

One initial idea was to have ASW serve as a central portal through which all traders in ASEAN would come to satisfy all trade requirements. Technically and legally this proved a very challenging concept, particularly given that ASEAN is not a Customs Union. Such a “super-portal” would have required a single automated processing system for all Member States and, at minimum, a carefully coordinated and air-tight security procedures, established NSWs in ASEAN that provide similar value-added services, standardized forms and perhaps processes across ASEAN, and a harmonized legal framework both at the national and regional levels that set out rules for electronic signatures, data protection, use of electronic data in judicial proceedings, data retention and archiving, liability, and dispute settlement. Another idea was for NSWs to exchange key data for cargo clearance through a hub, or central server, and use that data to expedite cargo clearance. This raised issues of single point of failure – should the central server malfunction – and protection of confidential data, particularly data belonging to traders.

Finally, the logjam was broken in 2010 with a broad agreement that, though the ASW architecture will be developed using the “federated” approach (as opposed to strictly bilateral data exchange between Member States via ‘leased line’ connectivity), that this approach would not involve trade data being transmitted through a central server.

In the meantime, several Member States initiated bilateral pilots to exchange the intra-ASEAN preferential certificate of origin (ATIGA Form D) between their certificate issuing authorities and Customs administrations, since this was one of the concerns of the private sector.

At the regional level Member States launched discussions for a broader Pilot project involving most, if not all, Member States. Besides the technical aspects of the Pilot, discussions began on a Memorandum of Understanding that would outline the basic legal framework governing the pilot.

With the key issue of how the ASW will operate at a high level resolved, Member States started to put the technical outlines of the ASW Pilot Project, which would consist of three components: (i)

technical architecture design, (ii) implementation of that design, and (iii) a full pilot evaluation, including a Cost-Benefit Analysis. Seven Member States signed on to join the Pilot while the remaining three signed on as observers. All 10 Member States (at the Customs DG level) signed the Memorandum of Understanding for the Implementation of the ASW Pilot Project.

5. ASW Overview

The first component of the work took place in 2010 and resulted in a technical architecture design that would allow NSWs to exchange data directly between each other but maintain a Regional Services (RS) function that would play the role of keeping data such as regional and national Reference Data, managing PKI certificates, and tracking transaction statistics. The RS server would not retain actual content of trade data and information exchanged, as was agreed by Member States. Figure 1 depicts the overall business and architectural environment of the NSW and ASW coexistence:

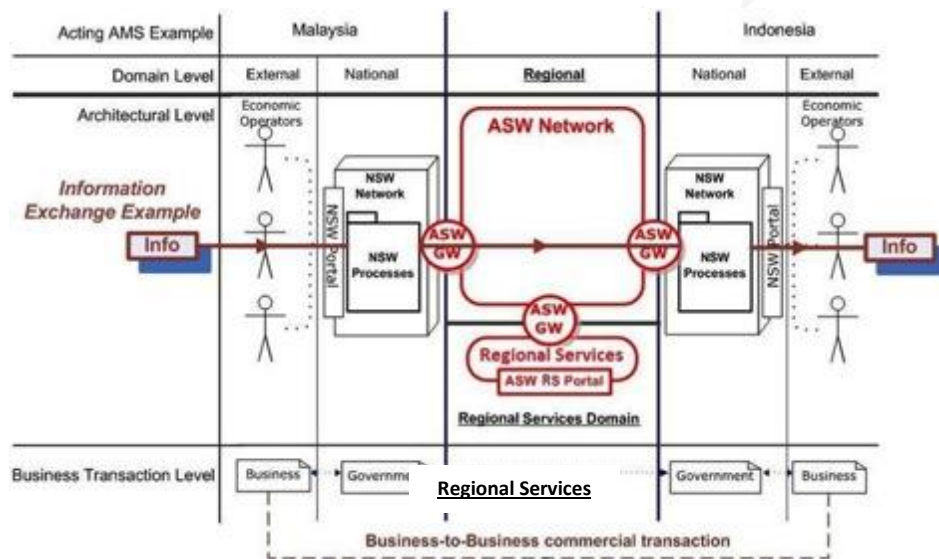


Figure 1: Overall Business and Architectural Environment of NSW and ASW coexistence

The three types of domains that constitute the ASW architecture are defined as follows:

1. The Regional Domain consists of a close secure ASW Network and Regional Services
 - a. The ASW network will allow for the communication between the Member States and the Regional Services. All Member States must have the means to access the ASW Network.
 - b. The ASW Gateway constitutes the single point of access to the ASW network for a Member State. The ASW Gateway provides the facility for the information exchange through the ASW Network.
 - c. The Regional Services consist of a set of applications that will be accessible by Member States via the ASEAN close secure network. Regional Services do not participate in the

- business transactions between Member States; they provide supporting services to the ASW. These applications are described below.
- d. A Reference Data Services (RDS) application serves to manage the master copy of the regionally agreed reference (nomenclature) data and disseminate changes to all ASW Gateways. Reference data covers both national reference data, e.g. a list of Customs office codes or Authorized Economic Operator codes, which each Member State is responsible to maintain and update, and common reference data, e.g. ASEAN Harmonized Tariff Code, country names and codes, currency codes, etc., which would be maintained by a regional management team;
 - e. Management Information System (MIS) application serves to maintain the master copy of the trusted PKI certificate list and to disseminate changes to all ASW Gateways in the ASW network. The MIS application also allows the collection and consolidation of relevant statistics and makes them available to Member States. Moreover, it enables the management of the master copy of the unavailability data and disseminates changes to all in the ASW network;
 - f. Portal allows authorized personnel to effect and/or view on-line changes to Reference Data, PKI Trusted Certificates, and Management Information;
2. The National Domain represents the network infrastructure hosted by each of the Member States including existing national customs systems. The individual Member State will be responsible for the national domain network, including its security.
 3. The External Domain refers to the network used by economic operators and the trading community. The External Domain does not have direct access to the Regional Domain for the purposes of preserving the integrity and confidentiality of the data exchanged through the Regional Domain.

Faced with budget limitations, Member States decided to implement a scaled-down version of the architecture design. This scaled down Pilot implementation took place between November 2011 and October 2012 and was recently extended to March 2013.

While the Pilot is ongoing at the technical level, the LWG has made substantial progress in drafting a regional Legal Framework Agreement (LFA) that would govern the cross-border exchange of electronic data.¹ A full working draft LFA is expected to be finalized in 2013.

To complement the LFA three Member States conducted legal gap analyses to identify constraints to make most effective and legally-sound use of their NSWs. Using UNCEFACT Recommendation 35 as their basis, legal teams analyzed legislation for existence of national enabling legislation for NSW; functional equivalence of electronic and paper copies; acceptance of electronic (including digital) signatures; electronic data retention and archiving; ability to use electronic data in judicial proceedings; liability and dispute resolution issues; etc. To maximize capacity building opportunities the analyses were undertaken using regional law firms (selected through open procurement), supported by a legal expert.

As more Member States began to show NSW readiness, others, especially CLMV, were implementing e-Customs activities nationwide and yet others began to launch NSW efforts. A general update on Member State NSW efforts is shown below.

¹ As of time of writing, Member States had not yet decided whether the LFA would be an agreement, a protocol, or other legal type.

6. Summary of Key ASW Institutional and Technical Matters

The ASWSC generally meets once or twice a year and continues to make decisions on recommendations advanced by the TWG and LWG. It needs to play a more forward-looking and strategic role as the work proceeds. The TWG meets normally four times a year, follows up on all technical matters, and makes inter-sessional decisions if need be for ASWSC's consideration. The LWG, which leads the discussion on the LFA, meets about three times a year. Unfortunately delegates to the LWG rotate often and it could lead to a lack of continuity of expertise in this complex area.

While much discussion has been at the technical level of the ASW architecture, Member States began developing a private sector consultations work program in 2011 with the objective of informing businesses of ASW plans and to seek their input on its development. A work program was agreed that included private sector roundtables, developing outreach material, disseminating email news on NSWs and ASW, conducting a major ASW/NSW Symposium bringing together private sector and government representatives at the regional level, and other activities. Member States also agreed to develop an ASW Web Portal.

The ASW/NSW Symposium, which took place September 2012, saw participation of about 30 officials from Member States and 30 private sector representative, in addition to officials from the ASEAN Secretariat and donor representatives. It was an opportunity for the private sector to be updated on ASW and NSW efforts and for them, together with government officials, to brainstorm on their expectation on ASW as well as key areas where they can benefit from the regional architecture.

In 2011 Member States also agreed to develop a five-year work plan, both for the TWG and LWG, which included detailed strategic objectives and tasks. An annual work plan for 2012 was then developed on the basis of the five-year work plans to guide implementation.

To support both ASW and NSW development, capacity building was conducted at the regional level in business process analysis, data harmonization, and legal aspects, while national-level events consisted of awareness and training in use of software applications.

Since effective NSWs are essential to a functional regional architecture, Member States agreed to a set of NSW progress indicators that they report on every six months. The private sector has indicated its interest in not only seeing these indicators but also in providing or outlining its own set of indicators. In addition, the ASEAN Secretariat, on occasion, also conducts NSW fact-finding missions to see how NSW implementation is moving and to try to draw common lessons from Member States' experiences. This generated the idea of conducting case studies of different aspects of NSW implementation in different Member States (e.g. business process analysis, national trade repositories, data harmonization, legal framework) to allow Member States to learn from each other's experiences. Those case studies, however, have not been developed yet.

Business Process Analysis (BPA) and data harmonization play an important role both at the national and regional levels. Business processes for ACDD and ATIGA Form D were developed to support the electronic exchange of that data among Member States. To further expedite cargo clearance in ASEAN, Member States will soon begin work, taking private sector and government agencies' views into

consideration, to identify, analyze, and prioritize other business processes and data/information that may be implemented in ASW. The analysis will cover G2G data, including, for example, phytosanitary, veterinary, and health certificates, as well as B2B data, including Bills of Lading, Air Waybills, Packing Lists, and invoices. Member States will then work to ensure that data received through the ASW and B2B cross-border providers is incorporated into domestic cargo clearance procedures. To complement the BPA work, Member States developed an ASEAN Data Set while they also decided to comply with the WCO Data Model.

One technical area of importance that has not yet been thoroughly addressed in regional discussions is information security policy. The ASW Agreement urges Member States to “make use of information and communication technology that are in line with relevant internationally accepted standards.” Given the cross-border exchange of data that will be taking place between Member States through the ASW and the necessity to protect any sensitive data or to retain it so it can be accessed when needed (e.g. in case of disputes), information security standards need to be maintained particularly at the national level (no transaction data is retained at the regional level). Member State NSWs’ compliance with information security standards, e.g. ISO 27002, is unknown and, likely, uneven. ISO 27002 includes standards on information security policy, organizational security, asset management, human resource security, physical and environmental security, information security incident management, and business continuity management, all of which are necessary to secure ASW and NSW data.

7. Benefits from cross-border exchange of data and incremental benefits from ASW

The benefits section is separated into two parts; the first explains the benefits from the cross-border exchange of data, which may take place with or without a regional mechanism such as ASW in place, and the second that explains the incremental benefits from ASW.²

7.1. Potential Benefits from the Cross-Border Exchange of Data between Member States

ASW does not produce benefits in isolation. It only does so where NSWs are substantially in place and are able to take advantage of the cross-border exchange of data through the ASW architecture where ASW ensures correct routing across national and regional domains.

7.1.1. Expected benefits to governments from the cross-border exchange of data include:

- a. **Improved compliance.** Electronic exchange of cross-border data/information ensures operational transparency and better compliance with guidelines, specifications, and laws.
- b. **Risk management.** The number of cargo clearance transactions is on the rise and multiple documents from multiple government agencies must be cross checked by border agencies before cargo is cleared. In addition, to enforce regulations and manage risk effectively, border control agencies need documents to be submitted in a timely manner. Pre-arrival information received through the ASW will enable border control officials to begin risk management on electronically processed information before goods arrive and without seeing the physical goods.

- c. **Track-and-trace of declaration support documents.** The ASW will help NSWs provide improved track and trace capability of documents during submission of entry declaration.
- d. **Validation at point of origin.** With the ASW in place, regulatory agencies can exchange e-certificates to speed up clearance and ensure certificate authenticity.
- e. **Real-time updates of regional code sets.** The regional services component of the ASW architecture ensures synchronized control, standardized reference tables, and operational efficiency among participating governments in a distributed working environment (further information on this point in the next section).
- f. **Harmonized regional procedures.** The ASW helps harmonize regional procedures and encourages Member States to carry out business process re-engineering to streamline procedures at the national level.

7.1.2 Expected benefits to business from the cross-border data exchange include:

- a. **Efficient supply chain management.** Supply chain management spans all movement of cross-border goods from point of origin to point of consumption, based on efficient design parameters, information security control, and seamless connectivity between government and business in the clearance of cargo. It provides businesses with competitive infrastructure, leveraging global logistics, synchronized operation, user-friendly data visibility to ensure operational transparency, and better compliance in accordance with established guidelines, specifications, and laws. Electronic cross-border data exchange through ASW complements data submission and processing through an NSW and potentially provides the missing link to efficient supply chain management.
- b. **Pre-arrival clearance.** Customs procedure could allow cargo clearance and release to be expedited for compliant traders who would submit, through the NSW, required electronic entry declaration and supporting documents, including cross-border data transmitted/received through the ASW, to Customs authorities ahead of the arrival of goods at the port of destination.
- c. **Customs transit regime.** Electronic cross-border data exchange through the ASW could support a customs transit regime for traders in ASEAN to provide uninterrupted overland connectivity and facilitate movement of goods across the borders.²
- d. **End of paper submission of cross-border documents.** The ASW environment would discourage border control agencies from entertaining paper submission of cross-border documents unless there is an order to do so due to “denial of service” attack or natural disasters. The ASW architecture would assure traders that an automated system will trigger cargo clearance processing instead of paper submission that leads to significant delay.
- e. **Convergence of commercial documents, freight papers, and other B2G cross-border data.** Data exchanged through the ASW architecture would allow traders, through the NSW, to cross-reference commercial documents, freight papers, and other cross-border data with customs declaration to increase compliance and reduce double encoding errors. On the other

² Please note that ASEAN Member States’ Customs Procedure and Trade Facilitation Working Group (CPTFWG) agreed that the ASEAN Customs Transit System (ACTS) will utilize the same network infrastructure of the ASEAN Single Window for ACTS implementation.

- hand, this cross-border data would allow government officials to cross-check different documents to support risk management activities.
- f. **Track-and-trace.** The ASW would enhance NSWs' ability to allow traders to track and trace the current position of their container in the ASEAN region based on a specified tracking number.
 - g. **Unique reference key.** A unique reference key could be assigned that would allow traders to use a transactional "dashboard" that consolidates all documentary requirements, whether from cross-border data using ASW or domestic data through the NSW, such as commercial documents, freight papers, and regulatory permits. Such a dashboard, when implemented through NSWs, would allow traders to attach supporting documents to a customs declaration. The unique reference key and dashboard concepts enhance the benefits of ASW and NSW as trade facilitation tools.
 - h. **Trader-driven process to automatically populate declarations/ supporting documents from previous cross-border messages received.** A trader-driven process, through the NSW, that derives customs declarations from previous cross-border messages received (including through ASW), such as commercial documents, freight papers, and government permits and licenses would promote re-use of data, increase traders' compliance, promote consistency in use of data elements, and provide a tool for faster processing of cargo clearance documentary requirements.
 - i. **Savings on storage and insurance fees.** Electronic cross-border data exchange through ASW would improve predictability and operational transparency that would encourage traders to push for just-in-time delivery of goods. It would possibly translate to storage and insurance fees savings.

7.2. Incremental Benefits from ASW

ASW represents Member States' commitment to establishing NSWs and to connecting and integrating them to expedite cargo clearance. Before all else, therefore, ASW represents a continuous endeavor of Member States to establish and improve their NSWs. Indeed, working group meetings and regional capacity building activities have provided Member States with the opportunity not only to develop the overall ASW technical and legal architectures but also to share NSW information, develop NSW progress indicators, and even discuss the sharing of data bilaterally.

- a. And though the potential benefits outlined in the section above can accrue to business and government even if the data exchange is bilateral only, i.e. without an ASW in place, a regional architecture promotes the use of international technical and legal standards in ASEAN on the one hand and, on the other, allows Member States to discuss and agree on data to be exchanged that fosters closer economic cooperation and integration. Incremental benefits of ASW relative to bilateral data exchange mechanisms include:
- b. **Technical inter-operability:** The technical solution that allows ASW Gateways of Member States to seamlessly, reliably, and securely communicate and exchange any kind of data with each other is based on international open industry standards. This means that not only can Member States exchange any type of data among each other but they can also exchange data with any other trading partner that uses international open standards for communication (and not

necessarily the same commercial solution currently being used in ASEAN). Thus, the ASW ensures compatibility of all participating Member States – seven currently – with international open communication standards AND ensures that each of those Member States can then exchange data securely and reliably with any trading partners that use international open communication standards (e.g. ebMS). The way this works is that each NSW is “internally” integrated with the ASW Gateway (residing at that NSW), which then sends/receives data from/to other ASW Gateways residing in and integrated with other NSWs. This would support, for example, the exchange of certificates of origin or advance cargo information with non-ASEAN trading partners. In addition, the same ASW Gateway software that allows Member State NSWs to exchange data across borders is capable to interface with NSWs themselves using different methods (e.g. FTP, JMS, Web Services, etc.) to ensure NSWs are able to pull data from the ASW Gateway and disseminate it to relevant parties.

- c. **Legal inter-operability:** Ongoing discussions between Member States seek to ensure that each Member State possesses an appropriate legal framework for single window, which affects not only data exchanged domestically but also data exchanged across borders. Though the eventual Legal Framework that will govern the cross-border exchange of data among Member States will only be binding in ASEAN, it will have implications and an impact at the national level, for example on adoption of information security and data protection principles, which would better enable Member States to exchange data with non-ASEAN trading partners.
- d. **Data validation:** ASW helps NSWs perform real-time control and validation using agreed common data sets. For instance, Mutual Recognition Agreements (MRAs) of Authorized Economic Operator (AEO) programs can be executed using only the AEO code (based on an agreed naming convention) and the AEO name to be uploaded to the ASW Regional Services and replicated to other AMS instantaneously, thus keeping the regional single window operations synchronized. All the other data elements provided by the trader during the accreditation process would be retained at the national level. This kind of setup allows just a single reference point to update, add, or suspend new actors between one AMS NSW to the ASW as opposed to ten iterations if the agreed setup were a direct and independent NSW-to-NSW link. The same concept of operation applies to the management of Public Key Infrastructure (PKI) and digital certificates, information security enhancement tools, trade repositories, and changes in information or business rules in using the ASW against the ‘spaghetti connections’ of independent NSWs. It is not far-fetched to envisage, eventually, use of ASW’s Regional Services feature to synchronize information about NGOs in ASEAN who might provide assistance in case of disasters (and types of goods and equipment that they can bring in) or to synchronize information about intellectual property rights in ASEAN for enforcement objectives.
- e. **Data validation “plus”:** In some circles there seems to be an attempt to shift the burden for entering customs information from importers to exporters, as importers cannot always be expected to vouch for goods that were manufactured, packed, and shipped by the exporter. This extends the realm of performing risk profiling at the point of origin or exporting country against the current practice of performing risk management at the importing country upon arrival of the goods. ASW Regional Services would allow a Member State on the import side to conduct real-time validation of or, at minimum, access information about, authorized cargo clearance actors on the export side to support their risk profiling and targeting, which relates to the point above. This would be difficult to perform on a bilateral basis only, i.e. without an ASW, because countries would not normally allow access to their system for trading partners to check economic operator data (e.g. added exporters/importers, suspended broker, cancelled logistics provider, etc.).
- f. **Standardization and harmonization of forms, data, and processes:** To the extent that ASEAN agrees to standard forms, e.g. ATIGA Form D, the ASW architecture allows that data to be

exchanged seamlessly, reliably, and securely between Member States, thus promoting regional economic integration. Though the standardization of forms is a complex process and outside of ASW working group discussions, there are ongoing efforts in ASEAN related to MRAs for conformity assessment procedures, as well as equivalence discussions for sanitary and phytosanitary measures, that would make the ASW an ideal vehicle to exchange data related to such measures among Member States to expedite clearance. Forms themselves need not be standardized so long as individual data elements exchanged are standardized and harmonized with international standards, which is the case currently for the ACDD.

- g. **Platform for any business application:** As ASEAN economic integration proceeds, and data necessary for trade facilitation, enforcement, and compliance is required or desired, ASW can serve as the platform that can be used by any business application to exchange data across borders. For example, ASEAN will soon be developing, with EU assistance, an ASEAN Customs Transit System (ACTS) that will use the ASW architecture. Other applications may be developed, as long as a business case can be made, for the exchange of any other types of data. Since Member States have agreed to comply with the WCO Data Model and since the ASW uses international open communication standards, it would be relatively straightforward to develop business applications whether for intra-ASEAN use or for use between Member States and non-ASEAN trading partners.
- h. **Better view of regional data and pace of paperless clearance in ASEAN:** The ASW Regional Services Portal allows Member States and the ASEAN Secretariat to have a full view of what cargo clearance data is being exchanged between which Member States and during what time periods. The analysis will be valuable to policymakers and researchers who study the pace of economic integration and who are promoting paperless clearance in ASEAN. ASW will also allow government officials to perform pattern recognition in the exchange of cross-border messages, timely information retrieval, cross-referencing capability of cross-border security credentials, and data visualization.
- i. **Time stamping for record keeping in case of disputes:** In case of regional dispute in the exchange of electronic cross-border messages, electronic stamping in conducting audits, which the ASW architecture allows, is vital in back-tracing to establish the sequence of exchange of a cross-border transaction.
- j. **General support for regional policies:** Aside from the above, a regional set-up like ASW will support Member States' efforts to implement regional guarantee charges for a transit regime, monitor balances of permits and quotas (e.g. for certificates of origin), implement a regional identifier mechanism for consignments and traders, and support common use of other regional parameters.

8. Challenges to the Realization of ASW

There are technical and institutional, regional and national types of challenges to realizing the ASW. From a technical perspective, it is increasingly difficult for border control agencies to perform their trade facilitation and enforcement mandates without the timely submission of cross-border documents, which is what the ASW architecture supports. However, managing vast amounts of data, whether from national or international sources, requires robust automated and risk management systems to manage that data and effectively use it to achieve national objectives. Implementing the ASW adds another layer of

complexity to design and development of such systems. One significant challenge is the functional integration of ASW and NSW. Underlying information systems vary greatly in terms of architectures, mix of messaging enablers, and differences in business mandates of participating government (customs, port authorities, and permit issuing agencies) and trade entities (trading partners, consolidators, logistics service providers, banks, and insurance companies) at the national level. Using and relying on international technical, legal, and data standards helps to minimize potential incompatibilities.

As ASW develops, another challenge will be to continue developing the architecture in a modular way that allows its components, including ASW Reference Data Systems, Management Information Systems, ASW Gateway software, ASW Regional Services portal, and the ASW/NSW middleware solutions, to work independently of each other to execute only one aspect of the desired functionality even if other components are not used or functioning. The key challenge will be the development and use of complex interface scripts that can easily be configured to cater to additional cross-border applications or security enablers without any tweaking to be done to existing components. This kind of setup would allow easy scaling up of additional applications, retain existing investment for other possible use, and reuse configurable software components to accommodate additional security or data conversion requirements. It would also allow seamless expandability by rolling out the modules to non-ASEAN Member States and extensibility to additional entities at the national level.

More generally, with ten Member States at different levels of economic development, the interest and expectations relative to ASW in ASEAN are relatively diverse and coming to terms with each Member State's objectives on various matters can take time. Among the challenges encountered at the regional and national levels are:

- a. ASEAN's decision making is based on consensus and compromise solutions are not always readily available unless all countries have a strong commitment to the project;
- b. In the current ASEAN environment, individual Member States have their own customs regime and legislation as well as different levels of automation, and it takes time to have all Member States in agreement on ASW at the same time;
- c. Planning and preparation costs could be high and up-front financial and other support is required for some programs to be successful. Thus, financial constraints remain an issue and implementation of the ASW Pilot, for example, is very much dependent on external funding.
- d. Operating and maintaining the ASW at the regional level will require more than Information and Communications Technology staff to manage ASW Regional Services and the ASW network. It will require, among other elements, a sustainable source of revenue, a budget to manage expenditures, and agreed location(s) to house staff and the Regional Services server, in order to answer some important questions such as:
 - Who will "own" and oversee the ASW?
 - What organizational entity is required to run the ASW?
 - What professional roles will be required?
 - What business model (is it for profit or not for profit?) and why?
 - Where will the Regional Services be located?
 - What will it cost to run the entity?

- How could the entity be funded?
- e. Effective regional and NSW Legal Frameworks (e.g. mutual recognition of digital signatures, functional equivalence of paper and electronic documents, data confidentiality, liability, etc.) need to be in place and such legal matters tend to be complex;
- f. The NSW is one of the pre-requisites in the ASW implementation and its implementation has its own many sub-challenges (e.g. political will, national champion, business process re-engineering, data harmonization, public awareness, involvement of government agencies other than customs, etc.); and
- g. Business process reengineering needs to be carried out to streamline the cross-border processes, followed by data harmonization. Apart from having to get all AMS to agree on the regional processes, sourcing for expertise for these tasks usually requires financial support.

9. Lessons Learned

In many ways lessons learned from ASW development are the same as for any complex undertaking involving multiple stakeholders in multiple countries. The commitment at the Heads of State, economic and trade ministers, and finance ministers levels has been critical. As has been the push from the private sector, anxious to see expedited, if not paperless, clearance within and among ASEAN Member States. Having ASW and NSW champions is also very important. But there are also specific lessons learned from the development of the ASW architecture itself, which may be helpful to other regions looking to establish similar mechanisms. A short list of essential components would include:

- a. A clear vision from senior officials, and informed by the private sector, as to what the regional mechanism is supposed to accomplish. The vision should be ambitious but feasible. A regional SW system for processing all forms for all countries in a region may not be a reasonable objective.
- b. An institutional set-up where relevant officials can come together to discuss and agree on functionalities and other technical and legal matters. The ASEAN Secretariat has played a critical role in coordinating the work of ASW working groups and steering committee.
- c. Intellectual leadership is important to provide fresh ideas and learn from others' experiences.
- d. Once there is agreement on business process, data definitions, structures, schemas, etc. at the regional level, bilateral pilot testing for exchange of data between any two countries should be encouraged to work out kinks and promote collaboration between technical experts.
- e. Legal gap analysis for a single window environment at the national level, but that also looks at impediments to cross-border exchanges, should start as early as possible as issuing new or amended legislation can be a very lengthy process.
- f. Regional legal impediments should also be reviewed as early as possible. In ASEAN the regionally adopted operational certification procedures for the ATIGA Form D mandate that only hard copy with manual signature be accepted by local authorities. Such procedures and related issues need to be reviewed to cater for an electronic environment and addressed early.
- g. NSWs need to be substantially under way – if not in place – by the time discussions of a regional mechanism to exchange data between them are initiated.

Of course, lessons in ASW development are still being learned on a daily basis and the list will continue to grow.

10. Conclusions and Prospects

Though it is premature to call ASW an unqualified success, it has indeed already succeeded in galvanizing national efforts to establish NSWs and has built Member States' capacity in various technical and legal areas. Indeed, there is recognized political will in most if not all Member States to make the NSWs and ASW a reality, not only because it is an ASEAN commitment but also because leaders and other officials are persuaded that it makes a difference in trade facilitation, economic development, and regional economic integration. The importance of a healthy competitive environment between NSWs of Member States should also not be understated.

In addition, despite the seemingly slow start to ASW development, the years that it took to resolve key technical matters in the regional aspect of the architecture also gave time to Member States to develop their own NSWs, and increase collaboration and esprit de corps among Member State technical and legal experts.

Though many benefits from ASW also occur in bilateral exchange of data, the ASW takes the best features of a regional mechanism, including a commitment to open technical standards, a regional legal framework complemented by incentives to improve and update national e-legislation, agreement to comply with the WCO Data Model, promotion of effective NSWs, and regional connectivity, while providing Member States with the tools to easily connect to non-ASEAN trading partners.

Indeed, this hybrid of a "hub-less" (NSW-to-NSW) data exchange approach combined with common Regional Services for better synchronization of data exchange would allow both increased economic integration in ASEAN while supporting Member States' participation, if they so wish, in the WCO's Globally Networked Customs initiative.

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