

Information Management in International Trade: Role of UNCITRAL in Advancing International Single Window Environment

Trisha Rajput

Assistant Professor at School of Business, Economics and Law

University of Gothenburg, Sweden

Email: trisha.rajput@law.gu.se

Abstract

So far the work of various UN institutions, WCO and WTO have supported the implementation of national and regional single windows across jurisdictions to fulfil import, export, and transit-related regulatory requirements. Internationalization and interoperability of national single windows is the next logical step, as it will allow collaborative information sharing for both public and private sector stakeholders in global supply chains. Given the increased emphasis on information management in international trade, the aim of this paper is to present the concept of ISWE and consider the legal framework necessary for implementing it. The paper highlights that integration of G2G, B2G and B2B information into the interoperable environment to allow flow of real-time data may offer numerous possibilities to enhance the visibility of international supply chains. It is suggested that such integration is only possible if transport and commercial requirements are enmeshed in the single window framework necessary for implementing ISWE. The inclusion of the transport stakeholders into a single window system requires complex coordination that can capture the existing relationships between carrier interests, shipper interests, ports, transport authorities, insurance providers etc. from legal and technical perspectives. The issue of dematerialization of transport and commercial documents is one challenge. In this respect, the contribution of UNCITRAL on the issue of dematerialisation of bill of lading is profound. However, what remains unanswered is the supporting framework that would support the channelizing of dematerialised information through ISWE which is an information interchange channel. The ISWE needs to be supported by a legal framework for trusted transboundary transaction. In this context UNCITRAL could make a significant contribution through its work on trust and identity management.

Keywords: International Single Window Environment, single window, supply chain visibility, transport single window, electronic bill of lading, electronic transferable records, identity management, trust services

1. INTRODUCTION

The various international and regional institutions that have been engaged in the work on issues related to trade in digital economy has to a certain extent directed their efforts following the mantra of “trade facilitation”. Some of those efforts have supported the implementation of national and regional single windows across jurisdictions to fulfil import, export, and transit-related regulatory requirements. Interoperability and internationalization of national single windows is the next logical step, as it will allow collaborative information sharing for both public and private sector stakeholders in global supply chains.

The purpose of this paper is to present the concept of international single window environment (ISWE) as an information channel and review the legal framework necessary for implementing it. ISWE is proposed as an information channel characterised by interoperability between various national single windows. The proposed ISWE will serve as information interchange channel which has the potential of enhancing the visibility of the entire supply chain.

With the entry into force of the WTO's Trade Facilitation Agreement (TFA),¹ several WTO Member States are likely to move to the broader use of electronic transactions through use of information and communications technologies (ICT) to meet their multilateral treaty obligations. For example, the TFA suggests that member-states should implement national single window (NSW) and recommend the use of ICT methods for trade. The paper considers the contribution of the TFA and suggests that once majority of the WTO Member States establish single windows, most of the necessary infrastructure for creating ISWE would be present. The paper examines past and on-going efforts of some of the relevant international and regional institutions² are examined in contextual detail to provide a legal basis for interoperability of National Single Windows through ISWE. In this context the contribution of UNCITRAL to develop the supplementary legal framework for ISWE is elaborated.

ASEAN Single Window is utilised as an example of regional single window interoperability to identify the prospects and challenges of interoperability.³ Since 2005, the Association of Southeast Asian Nations (ASEAN) has been working to develop both the technical and legal frameworks for a regional Single Window referred to as the ASEAN Single Window (ASW). During the past several months ASW has supported electronic exchange of customs declaration and certificate of origin between five Member States on a pilot basis. Building upon the interim findings from the ASW experience the paper emphasises that full potential of ISWE can be realised through integration of Government-to-Government (G2G), Business-to-Government (B2G) and Business-to-Business (B2B) information. Such integration of information into an interoperable environment will allow flow of real-time data that can offer numerous possibilities to enhance the visibility of international supply chains. It is argued that single window integration at international level should include transport and related commercial requirements in order to improve information flows among all supply chain actors.

However, the integration of transport and commercial requirements in the scope of ISWE is where the challenge lies. The inclusion of the transport stakeholders into the single window system requires complex coordination that can capture the existing relationships between carrier interests, shipper interests, ports, transport authorities, insurance providers, etc., from legal and technical perspectives. Emergence of new technology has opened up possibilities for

¹ WTO. Trade Facilitation Agreement (WT/MIN(13)/36 or WT/L/911)

https://www.wto.org/english/thewto_e/minist_e/mc9_e/desci36_e.htm

On 22 February 2017, the organization obtained the required acceptance from two-thirds of its 164 members for the TFA to take effect. https://www.wto.org/english/news_e/news17_e/fac_27feb17_e.htm

² The efforts of institutions considered are the United Nations Economic Commission for Europe (UNECE), United Nations Economic and Social Commission for Asia and the Pacific (UN/ESCAP), United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT), United Nations Network of Experts for Paperless Trade and Transport Facilitation in Asia and the Pacific (UNNExT), World Customs Organization (WCO), World Trade Organization (WTO) and United Nations Commission on International Trade Law (UNCITRAL).

³ It is to be noted that the ASW is conducting live operations on a pilot basis. Therefore, the interpretation of the empirical findings should not be related to the fully operating single window. The period analyzed in this study is significantly short. Therefore, this effect should be interpreted as short-run effect of ASW on exports.

creating technical solutions for such complex arrangements. The issue of dematerialization of transport and commercial documents is another challenge. In this respect, the contribution of UNCITRAL on the issue of dematerialisation of bill of lading is profound. However, what remains unanswered is the supporting framework that would support the channelizing of dematerialised information through ISWE which is an information exchange channel. The ISWE needs to be supported by a legal framework for trusted transboundary transaction. In this context UNCITRAL could make a significant contribution through its work on trust and identity management.

2. TRADE FACILITATION

Over the last several years, numerous multilateral and regional institutions have been engaged in law-making initiatives related to e-commerce, paperless trade, electronic single window and cross-border e-transaction. Most of these initiatives feature under the broad heading of trade facilitation. Trade facilitation initiatives are commonly considered to create standards and guidelines for the exchange of goods and services across borders.⁴ Commercial aspects of trade have also been considered within the ambit of trade facilitation by certain institutions.

WTO defines trade facilitation as:

the simplification and harmonization of international trade procedures, where trade procedures are the activities, practices and formalities involved in collecting, presenting, communicating and processing data and other information required for the movement of goods in international trade.⁵

UN/CEFACT defines trade facilitation as:

the simplification, standardization, and harmonization of procedures and associated information flows required to move goods from seller to buyer and to make payments.⁶

OECD defines trade facilitation as:

the simplification and standardization of procedures and associated information flows required to move goods internationally from seller to buyer and to pass payments in the other direction.⁷

The above-mentioned definitions are particularly interesting because they emphasise on the flow of information connected with the physical movement of goods.⁸ This flow of information, which can be enhanced through digitalization of trade processes, help businesses

⁴ See the definitions of trade facilitation as used by institutions such as WTO, UN/CEFACT and WCO.

⁵ WTO, *A Training Package: What is Trade Facilitation?*
www.gfptt.org/sites/default/files/refread/Training-guide-final.pdf

⁶ UNECE, *Trade Facilitation Implementation Guide*. <http://tfig.unece.org/details.html>

⁷ OECD. 2005. *The Costs and benefits of Trade Facilitation*.
<http://www.oecd.org/trade/facilitation/35459690.pdf>

⁸ A typical international supply chain features the physical movement of goods, the financial aspects of the transaction, and the flow of information within the various actors in the supply chain. The three layers exist as parallel processes with limited interaction between them. However, the use of ICT may enhance interaction between the three layers. Basu Bal, A., Rajput, T. 2015. *Creating Sustainable Global Supply Chains Through Single Window and Paperless Trade Initiatives: Efforts of WTO and UNCITRAL in Perspective* presented at UNCITRAL Emergence Conference, Macau, 30 November.

and governmental agencies to manage risks and reduce transaction costs.⁹ An important practical tool for coordinating trade processes¹⁰ and procedures at the border to ensure smooth flow of information is an electronic single window facility.

Single window is defined by the WCO as:

An intelligent 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.¹¹

The benefits of single window system are well established.¹² *Doing Business* data reveals that less time was spent on customs clearance in countries that utilise electronic systems for the submission and processing export and import customs declarations.¹³ Many of the upper middle-income countries use single windows and in several other countries the implementation process is underway. Some examples of national single window systems are International Trade Data System (ITDS) of US, UNI-PASS Korean Customs system and KTNET u TradeHub national trade single window of Korea, TradeXchange of Singapore and PortNet of Finland. ISWE is proposed as an information interchange channel characterised by interoperability between the various national single windows.

3. TFA CAN CONTRIBUTE TOWARDS CREATING ISWE

One interesting aspect that emerges from evaluating the single window reform across countries is that implementation is fragmented than desired.¹⁴ Such fragmentation created the need for a comprehensive trade facilitation reform which would consolidate and multilateralize the commitments of States to create efficient trading processes and procedures at the borders.¹⁵ The TFA,¹⁶ which is the result of the Bali Ministerial Conference in

⁹ There exists a positive correlation between digitalization and economic growth For more discussion on the issue *Doing Business-Trading Across Barriers: Technology Gains in Trade Facilitation*. <http://www.doingbusiness.org/reports/case-studies/2016/tab>

¹⁰ The concept of Single window is supported by several the border management models. Aniszewski, S. 2009. *Co-ordinated Border Management - A Concept Paper*. WCO Research Paper N° 2. Also see Doyle, T. 2011. Collaborative Border Management. *World Custom Journal* 4(1): 15-21. G. Mc Linden, E. Fanta, Widdowson, D., and Doyle, T. 2011. *Border Management Modernization Handbook* <http://issuu.com/world.bank.publications/docs/9780821385968>. Arvis, J-F., Mustra, M. A., Ojala L., Shepherd, B., Saslavsky, D. 2010. *Connecting to Compete: Trade Logistics in the Global Economy* <http://siteresources.worldbank.org/INTLAC/Resources/ConnectingtoCompete.pdf>

¹¹WCO, Single Window Information Store <http://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/single-window/single-window.aspx>

¹² Tsen, J.K.T. 2011. *Ten Years of Single Window Implementation: Lessons Learned for Future*. https://www.unece.org/fileadmin/DAM/trade/Trade_Facilitation_Forum/BkgrdDocs/TenYearsSingleWindow.pdf. For more discussion, see Lawrence, R.Z., Hanouz, M. D., and Doherty, S. 2012. *The Global Enabling Trade Report 2012 Reducing Supply Chain Barriers: The Enabling Trade Index 2012* <http://www.news1.co.il/uploadFiles/252620875835419.pdf>; Carballo, J., Graziano, A., Schaur, G., Martincus, C. V. 2016. *The border labyrinth: information technologies and trade in the presence of multiple agencies*. IDB Working Paper Series; 706. Research has shown that single window systems have positive impact on increasing the number of exporting firms and on improving international trade flows. Implementation of streamlined procedures to process export permits through the single window in Costa Rica resulted in an increase in the number of exporters by 22.4%.

¹³ World Bank, *Doing Business*. 2017. *Equal Opportunity for All*. Washington, DC: World Bank. DOI: 10.1596/978-1-4648-0948-4.

¹⁴ Choi, J. Y. 2011. *A Survey of Single Window Implementation*. WCO Research Paper No. 17. ¹_{SEP}

¹⁵OECD. 2013. *Interconnected Economies: Benefiting from Global Value Chains* <http://www.oecd.org/sti/ind/interconnected-economies-GVCs-synthesis.pdf>

December 2013,¹⁷ is a step in that direction. Article 10 of the TFA mandates that all Members of the WTO shall endeavour to establish and maintain a single window enabling traders to submit documentation for export, import and transit of goods through a single entry point. It is important to mention that the implementation of a single window system develops on the GATT 1994 Article VIII concerning Fees and Formalities connected with the importation and exportation, where paragraph 1(c) recognizes “the need for minimizing the incidence and complexity of import and export formalities and for decreasing and simplifying import and export documentation requirement”. The single window system under the TFA has to be implemented by the Members of the WTO thereby allowing traders to lodge information with a single body for the purposes of all import or export related regulatory requirements. This system seeks to ensure that all procedures, data and requirements related to the trade transaction is handled and overseen by one agency which takes the responsibility of combined controls. In addition to making the procedural requirements for the traders simple and standardized, this system facilitates information flows enhancing efficiency.

Once the TFA is fully implemented, it will result in an environment where WTO Member States would have an operational Single Window (to facilitate import, export and transit-related regulatory functions) across jurisdictions that will establish the infrastructure for the ISWE. As mentioned above, the concept of the ISWE simply stated refers to an environment which is characterized by interoperability¹⁸ between various national single windows. The interoperable environment reflects the position where national single windows communicate with each other to exchange relevant information. In practice the discussion on ISWE must begin with the deliberation on different technological and organizational models for making interoperability possible. After surveying existing literature it is revealed that two models are proposed for the design of interoperability, namely centralised server model¹⁹ and gateway model.²⁰ More recently, cloud computing has also been suggested as a way forward to build a supranational single window.²¹ The technological framework that is selected for the creation of the ISWE framework may entail distinct legal and political deliberations. If a centralised server model is adopted for ISWE then a central server may be used to host a gateway which will facilitate the trade data exchange. This model seems simple from a practical perspective but it poses problematic political questions. One such question is which Member State will host and be responsible for the maintenance of the central server? The main concern relates to flow of trade-related data between exporting country and importing country transmitted via a third country where the central server is installed. The legal questions pertaining to such a model is connected with data retention, accessibility, archiving etc. The other option is for

¹⁶ See note 1

¹⁷ WTO. 2013. Bali Ministerial Declaration and Decisions

http://wto.org/english/thewto_e/minist_e/mc9_e/balipackage_e.htm

¹⁸ The term “interoperability” is defined as the ability of two or more systems or components to exchange and use information across borders without additional effort on the part of the trader. UN/CEFACT. 2015. *Recommendation and Guidelines on Single Window Interoperability: Supporting Cross Border Interoperability of Trade Regulatory Single Window System: Draft Recommendation No. 36*; Keretho, S., Pikart, M., 2013. *Trends for collaboration in international trade: Building a Common Single Window Environment* ECE/TRADE/411

<https://www.unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-411.pdf> where interoperability is defined as the ability of diverse systems and organizations to work together.

¹⁹ Centralized Gateway Model” whereby the Gateway is installed in a single Central Server for the common use of all participating countries.

²⁰ “Distributed Gateway Model” whereby the Gateway is installed separately in the national network perimeter of each participating country.

²¹ Pugliatti, L. 2011. Cloud Single Window: Legal Implications of a New Model of Cross-Border Single Window. *World Customs Journal* 5(2):3.

the Member States' national single windows to be connected to each other through a common gateway application.

One crucial factor which is central to the concept of interoperability is that the national single windows which will ultimately participate to create the ISWE should actually be able to communicate or exchange the relevant information. Simply stated the single windows must be interoperable. For this purpose, it is important that the relevant international standards be used as guidelines for the implementation of single windows across jurisdictions. The TFA provides to this effect. Article 10.3 of the TFA provides that Members are encouraged to use relevant international standards or parts thereof as a basis for their import, export, or transit formalities and procedures, except as otherwise provided for in this Agreement. It is important to note that there are several important international instruments that have been developed by various international institutions with respect to developing or upgrading single windows. There are three important UN/CEFACT recommendations which is specific to single windows. They are as follows:

- UN/CEFACT Recommendation 33 defines the concept of single windows and recommends the government to establish single windows.²²
- UN/CEFACT Recommendation 34 focuses on the issues connected to the implementation of single windows.
- UN/CEFACT Recommendation 35 focuses on legal aspects of single window facilities.

Single windows need to be supported by a legal framework to formalise and induce trust in the emanating transactions in addition to technological or organizational infrastructure.²³ Many of the legal issues pertaining to the establishment and operation of single windows can be addressed through contracts and memoranda of understandings between relevant participants but others can be addressed through recourse to international standards. There are several standards that are relevant in context of single windows which have been developed by intergovernmental agencies and international organizations such as UNCEFACT,²⁴ UNNExT²⁵ and WCO²⁶.

²² UN/CEFACT. 2005. *Recommendation and Guidelines on Establishing a Single Window to Enhance the Efficient Exchange of Information between Trade and Government*, Recommendation No. 33, (ECE/TRADE/352, July 2005)

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

²³UN/CEFACT. 2013. *Establishing a legal framework for international trade Single Window (Recommendation No.35)*. http://www.unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-401E_Rec35.pdf

²⁴ UN/CEFACT. 2013. *Data Simplification and Standardization for International Trade (Recommendation No.34)*. http://www.unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-400E_Rec34.pdf;

UN/CEFACT. 2014. *Revision of Recommendation 14: Authentication of Trade Documents*.

[http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec14/ECE TRADE C CEFAC T 2014_6E_Rec_14.pdf](http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec14/ECE_TRADE_C_CEFAC T 2014_6E_Rec_14.pdf)

²⁵ UNNExT. 2012. *Single Window Planning and Implementation Guide*

<http://unnex t.unescap.org/tools/implement-guide.pdf> recommends single window implementation framework SWIF and identifies ten smaller and easier manageable components critical to single window development. The ten components include: identification and management of stakeholder requirements; single window vision articulation; establishment of stakeholder collaboration platform; business process analysis and simplification; data harmonization and document simplification; design of service functions and application architecture; establishment of standards and interoperability; introduction of legal infrastructure; enforcement of business and governance models; execution of IT infrastructure and solutions; UNNExT, UNESCAP/UNECE. 2012. *Electronic Single Window Legal Issues: A Capacity Building Guide*. <http://unnex t.unescap.org/pub/tipub2636.pdf>; UNNExT 2012. *Business Process Analysis Guide to Simplify Trade Procedures* <http://unnex t.unescap.org/pub/tipub2558new.asp>; UNNExT. 2012. *Data Harmonising and*

It is important that countries seek recourse to international standards so that the single window architecture is interoperable globally. Important legal issues considered by UNCITRAL related to electronic commerce such as authentication, and the legal status of electronic documents are hugely relevant in context of single window operation. It should be noted that UNCITRAL basic e-commerce laws such as the UN Electronic Communications Convention; UNCITRAL Model Law on Electronic Commerce (MLEC); UNCITRAL Model Law on Electronic Signatures (MLES) provides legal framework for the operation of single window facilities. The new Model Law on Electronic Transferable Records is also relevant because the processes connected with single window transactions are electronic but still based on paper.²⁷

Once the interoperable environment is set up it will allow for collaborative information sharing for both public and private sector stakeholders in global supply chains. This information will in turn enhance visibility of the supply chain itself and various actors involved in the process. More importantly it has the potential to meet the requirements of entire international supply chain as opposed to the piecemeal benefit presented by single point data submission at the national level. This will also reduce the volume of trade-related paperwork required of traders by making them shared electronically. Sharing of trade related documents prior to arrival of goods through the ISWE environment would minimise time and costs associated with cargo clearance.

To build the ISWE that complements the highly interconnected international trading scenario, the border agencies need to work together to encompass the entire supply chain where the goods can be assessed for admissibility and clearance prior to their arrival at the physical border. Measures of co-ordination and co-operation range from policy to documentary and physical control amongst domestic and international border agencies. However, the co-operation and co-ordination between international border agencies is based on a political mandate and can manifest through international agreements and ratification of relevant conventions. In this context the proposed TFA's role can be instrumental in achieving the desired result, as it will lead to political commitment from WTO Members because of its multilateral nature. Article 12 of the TFA is a building block in that direction because it emphasises the importance of customs cooperation. It has to be recognized that the cooperation is not easy to achieve as each Member State may have its own requirements and set of rules that need to be harmonized internally as the first step and then build a relationship based on trust with other Member States. Article 12 of the TFA can be helpful from a futuristic perspective when considering the ISWE because it would establish the process and procedures for the purposes of exchange and interaction between border agencies of different jurisdictions.

4. LEGAL ISSUES RELEVANT FOR ISWE

Modelling Guide for Single Window Environment. <http://unnex.unescap.org/pub/tipub2619.pdf> ; UNNEX.T. 2012. *Guide for the design of Aligned Forms for Paperless Trade* http://www.unece.org/fileadmin/DAM/trade/Publications/ece_372_ManualForDesignAlignedTradeForms.pdf .

²⁶ WCO. 2011. *How to Build SW Environment*

<http://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/single-window/single-windowguidelines.aspx#{228E2A1B-6B48-4D59-9FF4-1451CBCF62EC}>; WCO. 2009. *Data Model (version 3.0)* http://wcoomdpublications.org/data-model-3.html?id=836&_store=english&_from_store=french

²⁷UNCITRAL. 2016. *Draft Model Law on Electronic Transferable Records.* A/CN.9/WG.IV/WP.139, A/CN.9/WG.IV/WP.139/Add.1 and A/CN.9/WG.IV/WP.139/Add.2 <https://documents-dds-ny.un.org/doc/UNDOC/LTD/V16/051/96/PDF/V1605196.pdf?OpenElement>

4.1. The Legal Basis for Establishing Cross-Border Interoperability

The interoperability of Single Windows leading up to the creation of ISWE requires a legal basis. Interoperability can be established through a multilateral agreement that would obligate parties to harmonize technical and administrative requirements of their national single windows. Connecting single windows at a multilateral level requires international cooperation and coordination and for that political will is imperative. This may seem a herculean challenge but the advantages of connected environment would steer action in creation of interoperability. Perhaps a TFA style multilateral Framework Agreement may be undertaken through a trade driven institution such as the WTO which could provide the legal basis for ISWE. The pragmatism of a multilateral approach may be contested but after the implementation of the TFA, interoperability is the next step to facilitate trade. Once the economic benefits become clear from regional initiatives such as the ASW, there would be willingness to emulate interoperability at international level.

Another approach could be that interoperability is built at regional level. In such a case there will be several regional interoperable single window environments which may then serve as the building blocks in the grand scheme of creation of ISWE. However, integrating the fragmented regional interoperable environments may present technical and legal challenges. It should be noted that interoperability is guided by the robust structure of national single windows. Therefore, national single windows should be supported by legal frameworks and cross-border exchange of data authorised under national law.

4.2. Identification, Authentication and Authorisation Procedure

The legal issues related identification, authentication and authorisation are pertinent when considering the interoperability because it ensures that the individuals accessing and participating in the processes of the ISWE have the authority to do so. The lack of universally accepted standard for the electronic signature, authentication approach and authorization procedure can pose significant challenges from legal perspective.

Matters are also complicated by UN/CEFACT Recommendation No. 14 which states that, as far as possible, the requirement of a signature (manuscript or its electronic functional equivalent) should be eliminated unless it is essential in the context of the transaction.²⁸ This simply means that a certain authentication method be used depending on the nature of the transaction. For example, a low level authentication may be adequate for certain tasks. This seriousness (associated risk assessment) related with a certain transaction may vary across jurisdictions. In context of authentication methods, it is pertinent that countries which participate in exchange of information between their single windows ensure that their method is reliable and secure for the purposes of information exchange between traders and the local single window. In addition, when countries are exchanging information between single windows then the authentication method must ensure safe and secure cross-border transmission of information.

For ISWE to work, member countries that participate in creation of the environment must agree on a common standard or mutually recognise the standard in information exchange. The

²⁸ UN/CEFACT. 2014. *Revision of Recommendation 14: Authentication of Trade Documents*. http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec14/ECE_TRADE_C_CEFAC_T2014_6E_Rec_14.pdf

question that arises is how can countries achieve this practically? Participating countries may seek recourse to instruments which have been developed by various international institutions such as UNCITRAL,²⁹ UNESCAP³⁰ and OECD³¹. The only associated complication is when international standards, model laws and toolkits are implemented in different ways by countries. This in itself can pose a challenge for supporting cross-border transactions. Consider the issue of e-signatures. Although, the importance of concepts of “functional equivalence” and “technological neutrality” has been emphasised in relevant international instruments³² but countries have adopted different approaches in implementing them in context of e-signatures. Some countries adopt a regulatory approach to e-signatures³³ while the others take a more flexible view.³⁴ Individually these approaches are fine but in the ISWE context both approaches need to interoperate. Implementing a common standard for identification, authentication and authorization procedures for transactions seem to be most efficient.

4.3. Data Related Issues

4.3.1. Accuracy and Integrity of Data

Interoperability of national single windows will allow exchange of data and for this reason the data has to be accurate, seamless and secure. The accuracy of the data is crucial to the success of the ISWE because it is correlated with the element of trust desired by participants in the ISWE. Business entities demand secure and reliable e-commerce transactions. Ensuring the accuracy and integrity of the data is connected with the responsibility of actors for submitting correct data for the processes in the ISWE which is also connected to the issue of liability. Draft Recommendation 36 indicates that the issue of accuracy and integrity of data be addressed in the Framework Agreement leading to interoperability. Such a Framework Agreement address issues such as fraud and other behaviour that may impact the effectiveness of the ISWE alongside the associated liability.

²⁹ UNCITRAL. 2005. *UN Convention on the Use of Electronic Communications in International Contracts* http://www.uncitral.org/uncitral/en/uncitral_texts/electronic_commerce/2005Convention.html

UNCITRAL.1996. *Model Law on Electronic Commerce* http://www.uncitral.org/uncitral/uncitral_texts/electronic_commerce/1996Model.html;

UNCITRAL.2001. *Model Law on Electronic Signatures* http://www.uncitral.org/uncitral/uncitral_texts/electronic_commerce/2001Model_signatures.html;

UNCITRAL. 2009. *Promoting Confidence in Electronic Commerce: Legal Issues on International Use of Electronic Authentication and Signature Methods* http://www.uncitral.org/pdf/english/texts/electcom/08-55698_Ebook.pdf

³⁰ UNESCAP. 2016. *Framework Agreement on Facilitation of Cross-border Paperless Trade in Asia and the Pacific*, 2016E/ESCAP/RES/72/4 http://www.un.org/ga/search/view_doc.asp?symbol=E/ESCAP/RES/72/4&Lang=E

³¹ OECD. 2007. *Recommendation on Electronic Authentication and OECD Guidance for Electronic Authentication* <https://www.oecd.org/sti/ieconomy/38921342.pdf>.

³² See note 28 for UN/CEFACT instrument and note 29 for UNCITRAL instruments that encourages technological neutrality.

³³ Few countries have prescriptive e-signature laws such as Brazil, India, Israel and Malaysia.

³⁴ A minimalist approach is adopted by the USA. The two-tier approach that is a hybrid of minimalist and prescriptive approaches is adopted by the European Countries, China and South Korea. For more discussion, refer to ADOBE. *A Global Overview of Electronic Signatures* <https://acrobat.adobe.com/content/dam/doc-cloud/en/pdfs/adobe-global-overview-of-electronic-signatures.pdf> ; Spyrelli, C. 2002. Electronic Signatures: A Transatlantic Bridge? An EU and US Legal Approach Towards Electronic Authentication. *Journal of Information Law and Technology* (2) https://www2.warwick.ac.uk/fac/soc/law/elj/jilt/2002_2/spyrelli/

4.3.2. Right to Obtain Data; Privacy and Protection of Commercial Transactions

The treatment of information and right to obtain data varies across jurisdictions. Countries have different policies with respect to public documents. For example, the Swedish approach is different to that of the USA regarding what is considered confidential and what become available as a public document. In addition, it should be noted that important constitutional issues may be connected to the right to obtain data. A differential treatment of information could cause complications when the data is being transferred from one jurisdiction to another.

The issue of data protection and data privacy is an area of concern for the ISWE. Data protection is of fundamental consideration as the consumer loses a degree of control over personal data when provided to the service provider for processing. These issues are quite important because stakeholders involved in the international supply chain demand a certain level security of their data. The stakeholder such as a traders are protective of their trade data because it reflects their business strategy. From an interoperability perspective it is important that ISWE provides for privacy technically but also legally. If one single window shares a trade data with the other single window, then some level of certainty need to be provided for the stakeholders in the sense that there will be no unauthorised access to and dissemination of the data. In addition, some clarification of legal issues arising from private data processing at different geographical locations in the world is also required.

In most cases, data protection and privacy are issues that are addressed nationally. These issues have addressed in a fragmented manner regionally and there is limited harmonisation at an international level.³⁵ However, commercial secrets, trade data are regulated in many countries which could provide the basis for protection but some sort of minimum standards need to established for the purposes of information sharing.

4.3.3. Data Trails and Electronic Archiving

Data or information may be required on a later date for the purposes of dispute resolution, etc. Therefore, issues concerning data retention would have to be clarified in context of the ISWE because different countries have different approaches to access to information and transparency which is problematic specially in context of archived data.

4.4. Liability issues

Liability in context of ISWE may arise because of data processing errors, data breach, wrongful submissions, etc., which may result in loss to party (buyers, shippers, freight forwarders, financial institutions) utilising the operations of ISWE. A party may be held liable for his or her acts or omission which has harmful consequence in context of ISWE. The issue of liability is quite complex because of the cross-border context. For instance, to assess the liability of the party it would be imperative to determine in which jurisdiction the liability is to be determined and what court should consider the dispute and which substantive rules may apply. It is imperative that liability and legal recourse be considered through the contractual

³⁵ OECD. 2013. *Guidelines on the Protection of Privacy and Transborder Flow of Personal Data* <http://www.oecd.org/sti/ieconomy/oecdguidelinesonthe protectionofprivacyandtransborderflowsofpersonaldata.htm>; UNCITRAL considered working in this area at its 39th Plenary Session in 2006 but prioritized its work on international commercial and trade law over data protection law.

arrangement of parties participating in ISWE and also through agreements between the States involved.

4.5. Dispute Resolution

Dispute resolution mechanism is needed to provide a fast and reliable remedy in case of disputes arising from ISWE operations. The disputes may range from being administrative, civil and criminal in nature. Draft recommendation 36 suggests the inclusion of dispute resolution through arbitration in the Framework Agreement.

5. ASW – A CASE STUDY FOR INTEROPERABILITY

ASW creates an interoperable environment which connects and integrates National Single Windows (NSW) of ASEAN Member countries at the regional level.³⁶ The legal foundation of the ASW can be found in the Agreement to Establish and Implement the ASEAN Single Window,³⁷ Protocol to Establish and Implement the ASEAN Single Window³⁸ (Implementation Protocol) and Protocol on the Legal Framework to Implement the ASEAN Single Window³⁹ (Legal Framework Protocol). Currently the ASW supports the exchange of intra-ASEAN Customs Declaration Document (ACDD) and Certificate of Origin (ATIGA Form D) on a pilot basis among seven Member States and will include exchange of other type of data in the future.⁴⁰ Singapore, Malaysia, Indonesia, Thailand, Vietnam have already tested ATIGA Form D using the ASW architecture.⁴¹

Article 1 of the Legal Framework defines the ASW as an environment where NSW of the Member States operate and integrate. Further, the purpose of the ASW can be deciphered from Article 5 which defines the ASW. The Article provides that the ASW is a regional facility to “enable a seamless, standardized and harmonized routing and communication of trade and customs-related information and data for customs-clearance and release from and to NSW”.⁴² It is estimated that the ASW will reduce the cost of trading by 8%.⁴³

The ASW architecture is based on the distributed gateway model where the NSW of the ASEAN Member States are connected to the ASW Gateway Application through a secure ASW network. This ASW Gateway Application is regionally developed and installed by each Member State. In addition, the centralized regional services support the interaction of the MSWs. It is a facility which administrates and maintains standard formats, codes and other basic information of ASW.

³⁶ Several ASEAN countries such as Singapore, Malaysia, Indonesia, Thailand, Vietnam and Philippines have already developed and implemented the NSW system. Brunei, Lao, Cambodia and Myanmar have not implemented Single Windows.

³⁷ Signed on 9 December 2005. http://asean.org/?static_post=agreement-to-establish-and-implement-the-asean-single-window-kuala-lumpur-9-december-2005-2

³⁸ Signed on 20 December 2006. <http://asean.org/wp-content/uploads/images/archive/23084.pdf>

³⁹ Signed on 9 September 2015. <http://agreement.asean.org/media/download/20150915020056.pdf>

⁴⁰ ASEAN Website: <http://asw.asean.org/>

⁴¹ ASEAN Website: <http://asw.asean.org/about-asw>

⁴² Article 5, Protocol on the Legal Framework to Implement the ASEAN Single Window

⁴³ It is indicated that a large portion of saving is attributed to the reduction in documentation dispatch. UNNEXt, *Towards an Enabling Environment for Paperless Trade-ASEAN Single Window: A Regional Single Window for ASEAN Connectivity*, Brief No. 13, May 2015. <http://www.unescap.org/resources/unnex-t-brief-no-13-asean-single-window-regional-single-window-asean-connectivity>

The quantifiable benefits of interoperability in context of the ASW still remains to be seen as and when more data is available.⁴⁴ However, the expected benefits of the ASW will be for both governments and business. For example, the pre-arrival information received will enable expedited movement of goods that would benefit traders. It will also allow the border authorities to apply risk management procedures more efficiently. Most importantly, ASW has the potential to harmonise and streamline national procedures that will be beneficial for businesses.

Currently, there are several challenges for a fuller implementation of ASW both from participation and functional perspectives. The first challenge is that ASEAN Member States are at different levels of economic development. Some of the Member States do not have a single window yet which can be integrated into the ASW environment. Implementing a single window at the national level is a matter of resources, expertise and national priority and political will.

The second challenge is that the ASEAN Member States have their own customs regimes and laws governing issues relevant for their respective NSW. This can pose a challenge for interoperability and legal certainty. The notion of legal certainty has been in demand since centuries with respect to the commercial transactions. The quest for induction of the *ubi commercium, ibi ius* has been the propelling force towards emergence of commercial customs and emergence of institutions for the settlement of commercial disputes.⁴⁵ In other words, the Latin adage reflects the insight that the efficiency of markets and trade depend on legal certainty. In the context of the ASW, the notion of legal certainty is related to the ability of the businesses to predict and ascertain the meaning and effect of the legal framework. The hope is that a predictable rule oriented framework of the ASW will reduce risk associated with cross-border trade processes for businesses. In the same context, the success of the ASW will depend on how legal regimes of ASEAN Member States interoperate, especially to support cross-border transactions. In addition, some other legal issues crucial for providing the legal framework such as functional equivalence of paper and electronic documents, mutual recognition of digital signatures, etc. still need to be addressed.

For the future of ASW some interesting suggestions have been put forward. The first and foremost concerns the enlargement of scope of regional transactions for cross-border exchange of data within ASEAN and also between ASEAN and its dialogue partners. Other suggestions made in the same report are implementing the ASEAN Customs Transit System for the exchange of data in a single transit declaration directed to facilitate free movement of goods within the region; and launching a central trade repository for trade related information that can be accessed by traders.⁴⁶

An important aspect that merits consideration with respect to the ASW is the identification of key stakeholders. The identification is important because it will help in developing a business model for that can support the architecture's operation and maintenance. UN/CEFACT

⁴⁴ Please refer to the joint paper by Basu Bal, A., Rajput, T. and Alizada P., International Single Window Environment: Prospects and Challenges presented at the ADBI Conference on 28-29 November 2016 (forthcoming ADBI Working Paper publication)

⁴⁵ Petersmann, E.U.2006. Justice as Conflict Resolution: Proliferation, Fragmentation, and Decentralization of Dispute Settlement in International Trade. *University of Pennsylvania Journal of International Economic Law* 27(2) 273.

⁴⁶ UNNEXT.2015. *Towards an Enabling Environment for Paperless Trade-ASEAN Single Window: A Regional Single Window for ASEAN Connectivity* Brief No. 13.

Recommendation and Guidelines on Single Window Interoperability No. 36 also highlights the importance of identification of stakeholders.⁴⁷ The draft Recommendation indicates that it is crucial to identify what stakeholders require from interoperability for the assessment of feasibility. In such a case stakeholders' needs become the key drivers of the system. Identification of the role and benefits of stakeholders of the ASW is crucial for its success. Once the stakeholders and their needs are identified, a suitable business process⁴⁸ can be built for the operation and maintenance of the ASW.

6. INTEGRATION OF COMMERCIAL REQUIREMENTS IN ISWE AND ROLE OF UNCITRAL

The discussion on stakeholders brings us to the consideration about the scope of ISWE. The question that arises is: whether the ISWE environment should focus primarily on trade regulatory issues? This question is of tremendous important because the arguable merit of implementing an ISWE is for creating an information channel which would address the entire supply chain. However, the ISWE which is primarily driven by has trade regulatory processes and data would entail the flow of G2G, B2G data which is not inclusive of the entire supply chain operations. It is submitted that the full potential of ISWE can be realized through integration of G2G, B2G and B2B information which is possible through the interoperability between single windows that include transport and commercial requirements. It is further submitted that the commercial aspects of international trade when enmeshed with transport requirements in the single windows at the country level will form the building block for an ISWE which will encompass G2G, B2G and B2B interactions. The single windows thus proposed should function as an interface between trade, customs and transport stakeholders by developing extensive inter-linkages to share information. Such integration will allow flow of real-time data that can offer numerous possibilities to enhance the visibility of international supply chains. The inclusion of the commercial and transport requirements in the ISWE will entail the participation of transport stakeholders such as carriers, shippers, ports, transport authorities, insurance providers, etc. The participation of such stakeholders is necessary to make the integration of G2G, B2G and B2B information possible.

Regulatory aspects of transport requirements have already been included in certain national single window systems to fulfil reporting and/or customs requirements. For example, the EU Maritime Single Window initiative simplifies and harmonizes the administrative procedures applied to maritime transport by making electronic transmission of information standard and also rationalizes ship-reporting formalities.⁴⁹ It is noteworthy that the commercial and financial aspects of international trade which are enmeshed with transport are not captured through the existing transport oriented single window initiatives. The inclusion of the commercial aspects in existing transport single windows is understandable as addition of various transport stakeholders into the single window system would require complex coordination that can capture the prevalent relationships between carrier interests, shipper interests, ports, transport authorities, insurance providers, etc., from legal and technical perspectives.

⁴⁷ UN/CEFACT.2015. *Draft Recommendation and Guidelines on Single Window* (Recommendation No.36)

<http://www1.unece.org/cefact/platform/download/attachments/48562914/150424+Rec36+Internal+Review+v1.1.pdf>

⁴⁸ UN/CEFACT Rec. 36 defines business processes “as the way participants intend to play their respective roles, establish business relations and share responsibilities to interact efficiently with the support of their respective information systems”.

⁴⁹ The Reporting Formalities Directive 2010/65/EU requires all EU Member States to establish National Single Windows (NSW) to enable ships to report formalities when arriving in and/or departing from EU ports.

The question arises how can commercial and financial aspects of international trade connected with transport be included alongside the regulatory transport requirements in the ISWE. In the above context it is submitted that the emergence of blockchain, federated cloud computing and distributed ledger technology has opened up the possibilities for creating technical solutions for the complex arrangements of stakeholders in the transport industry. However, it should be noted that the enabling legal framework to support these technologies remains incomplete across jurisdictions.

The issue of dematerialization of transport and commercial documents is another challenge. In this respect, the contribution of UNCITRAL on the issue of dematerialisation of bill of lading is well settled. To illustrate, A bill of lading performs three functions, namely, it serves as evidence of the contract of carriage, acts as receipt for the goods, and is a document of title. The first two functions are easily replicated electronically as they essentially relate to transfer of information. The challenge lies in replicating the document of title function electronically which has implications under contract and property law. The Governing Framework Approach which has been created by UNCITRAL and CMI has settled the issue of dematerialization of bill of lading. The two relevant instruments are Rotterdam Rules and Model Law on Electronic Transferable Records.

The more pertinent question that arises is how can the relevant dematerialised information be channelized to fulfil the trade functions in an electronic business environment? It is submitted that the dematerialised information can be channelized to fulfil the trade functions in an electronic business environment through an information exchange channel. The ISWE can serve as information exchange infrastructure through which dematerialised information be channelized to fulfil the trade functions in an electronic business environment to facilitate the entire supply chain. However, for the ISWE to function as an information interchange channel, it should support trusted transboundary electronic interaction.⁵⁰ Trusted transboundary electronic interaction is possible if interoperability is agreed at political, legal, organizational, semantic and technical levels. It should be noted that large enterprises have already achieved trusted transboundary electronic interaction contractually. Large enterprises use electronic data interchange (EDI) provided by large logistics service providers, such as DHL or UPS. These large logistics service providers have their enterprise resource planning (ERP), transport management and logistics systems that are connected to the ERP system of the large enterprise at one end and with customs and port authorities interface on the other end.⁵¹ This set up excludes entities that do not have advanced internal ERP systems and do not use the services of such large logistics service providers.

The issue of legal interoperability of trust has to be aligned through a supporting legal framework so that exchanged data through the ISWE is accorded proper legal weight across jurisdictions. The ISWE needs to be supported by a legal framework for trusted transboundary transaction. UNCITRAL may serve as a forum to create such legal framework for establishing necessary level of trust between the participants of the trusted infrastructure that will ensure legal significance of transboundary electronic exchange of data issued in different

⁵⁰ See UNECE. 2016. *Recommendation for Ensuring Legally Significant Trusted Transboundary Electronic Interaction*
<https://www2.unece.org/cefact/display/uncefactpublic/Recommendation+for+ensuring+legally+significant+trust+ed+transboundary+electronic+interaction>

⁵¹ Gleaned from discussions with Abhinayan Basu Bal, Assistant Professor, Department of Law, University of Gothenburg, Sweden.

jurisdictions. In this context UNCITRAL could make a significant contribution through its work on trust and identity management. In 2015, several proposals were submitted to UNCITRAL recommending that it undertake a project to develop a basic legal framework covering identity management and trust services as well as of cloud computing to facilitate international cross-border interoperability.⁵² Working Group IV has now been tasked to move forward with such a project.⁵³ Also, organizational interoperability and semantic interoperability will require preparation of recommendations that can be agreed and understood by all parties. UN/CEFACT may take a leading role to prepare recommendations on how to build and manage national trust infrastructures in a best way so they would be interoperable with each other for trade facilitation.

Another effort worth noting is the Framework Agreement on Facilitation of Cross-Border Paperless Trade in Asia and the Pacific,⁵⁴ which was adopted by UN/ESCAP and is open for signature from 1 October 2016. Article 1 of the Agreement states that the objective is to facilitate cross-border paperless trade by enabling data exchange and mutual recognition of electronic trade data among willing ESCAP member States through dedicated intergovernmental framework to develop legal and technical solutions. This Agreement provide ESCAP member States with a digital complement for better implementation of the WTO TFA as well as on-going bilateral and sub-regional initiatives, such as the ASW. Article 5 of the Agreement sets out the general principles to facilitate interoperability between paperless trade systems and to ensure that solutions developed under the agreement lead both to higher levels of trade facilitation and regulatory compliance. Article 12 provides a comprehensive action plan to develop standardized solutions and protocols for cross-border electronic exchange and recognition of trade-related data and documents, including pilot projects. UNCITRAL participated in the drafting process of the Agreement with a view to ensuring its consistency with UNCITRAL texts on e-commerce.⁵⁵

7. CONCLUDING REMARKS

TFA's entry into force may serve as impetus to engage in the preparation of a multilateral Framework Agreement to provide the legal basis for ISWE. UNCITRAL has recently started work on identity management and trust services as well as cloud computing to facilitate cross-border interoperability. In the coming years this effort may ensure legally significant trusted transboundary electronic interaction to include the commercial and transport aspects in ISWE.

The efforts of various international institutions discussed above indicate that trade facilitation initiatives have picked momentum across the globe. What may be found in all such initiatives are a number of interwoven commercial and trade law issues that may need to be addressed. If

⁵² See in general UNCITRAL - *Report of Working Group IV (Electronic Commerce) on the work of its fifty-third session* (A/CN.9/869); *Legal Issues Related to Identity Management and Trust Services* (A/CN.9/891); *Possible future work in the area of electronic commerce — legal issues related to identity management and trust services — Proposal by Austria, Belgium, France, Italy and Poland* (A/CN.9/854); *Overview of identity management — Background paper submitted by the Identity Management Legal Task Force of the American Bar Association* (A/CN.9/WG.IV/WP.120); *Online dispute resolution for cross-border electronic commerce transactions: Submission by the Russian Federation* (A/CN.9/WG.III/WP.136); and *Possible future work in the area of electronic commerce — Contractual issues in the provision of cloud computing services — Proposal by Canada* (A/CN.9/856).

⁵³ See UNCITRAL. 2016. *Report of the United Nations Commission on International Trade Law on the work of its forty-ninth session* (A/71/17) 48.

⁵⁴<http://www.unescap.org/resources/framework-agreement-facilitation-cross-border-paperless-trade-asia-and-pacific>

⁵⁵ See note 54 above.

UNCITRAL has to be relevant as an institution engaged in the modernization and harmonization of rules on international business in the digital era it should co-operate with other international institutions engaged in facilitating trade. This is because UNCITRAL rules only provide a piece of the puzzle of international trade in the digital era. Both public and private law initiatives are relevant in context of single window, paperless trade and e-commerce issues. It is suggested that deeper cooperation between UNCITRAL, WTO, UNNeXT, WCO, UN/CEFACT can create synergetic norms in the area of both public and private law for facilitating trade in the digital era. UNCITRAL has the potential to support ISWE by providing a strong law framework that would contribute to achieve SW interoperability and enhanced information management. In addition, UNCITRAL's work must focus on build an inclusive trading environment in particular for the SME's and for that it must continue to lay emphasis on equality of opportunities for business actors participating in international trade.