

Asia Pacific Trade Facilitation Forum: Background Paper for Session 4 (National Single Window)

Evolving National Single Windows for Supply Chain Connectivity¹

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Executive Summary

This background paper provides an overview of the Single Window concept and its implementation challenges in the Asia-Pacific region. The definition of Single Window as initially proposed in the UNECE Recommendation No. 33 in 2005 is a facility for submission and processing of trade-related data and documents to regulatory agencies such that the efficient exchange of information and coordination between trade and government can be enhanced. After about ten years of Single Window implementation around the world, different forms of electronic Single Window² have been implemented and gradually evolved by policy reform and adoption of information and communication technology (ICT). The Asia-Pacific region has hosted a diversity of economies ranging from those having the most advanced Single Window environments with the world best trade facilitation performance to economies with less sophisticated systems and worst trade facilitation performance.

This paper examines those different forms of electronic Single Window (SW) and lessons learnt from on-going national and regional SW implementation. Some economies choose to establish a limited form of Single Window, e.g. an integrated "Customs SW" to streamline all Customs related transactions. Some countries went further and integrated the logistics service providers within a major sea port or airport with the Customs SW thus creating an electronic exchange platform called a "Port Community System" (PCS). Other countries opted for a model where they connected the other trade regulating agencies such as Sanitary and Phytosanitary agencies to their SW, thus creating a "trade-regulatory SW". Yet another model that can be found is a "transport-regulatory SW" which connects government agencies and private sector operators that manage cross border transport movements. A

¹ This paper is prepared by Somnuk Keretho for the Asia-Pacific Trade Facilitation Forum. The author appreciates comments from ADB and UNESCAP staff/consultants. The views expressed in this paper are those of the author and do not necessarily reflect the views and policies of ADB and UNESCAP.

² A Single Window doesn't necessarily mean using information and communication technology (ICT), but most economies adopt ICT for implementing their SWs. Therefore, this paper focuses mainly about the establishment of electronic SW through the use of ICT and Internet.

typical example is a maritime SW providing single window services and electronic information exchange for maritime transport security, traffic control, vessels piloting and coordination among several port-related and maritime-related authorities, vessels and related services.

In general we note that countries, due to their priorities and readiness, and their ability to engage key stakeholders, have implemented very different forms of Single Windows. Countries in the Asia Pacific region wish to further develop their Single Window environments and to exchange information between their national SW through a regional SW. This requires that they can use common model to describe and compare the different stages of the SW implementation in the countries of the region. The paper describes such an evolution model that encompasses the different SW implementation forms found in the Asia Pacific region.

A frequent evolution of a SW project starts by upgrading the country's traditional semi-paper/semi-electronic Customs solutions to a more efficient electronic Customs Single Window facility, e.g. with paperless declaration submission using better authentication scheme, electronic payment for Customs duty, better risk analysis to reduce physical examination and better coordination for Customs clearance, thus creating a Customs SW.

In the next stage of improvement, the Customs SW can evolve by electronically linking with some other trade-related regulatory agencies based upon strategic benefits, readiness, ability to engage key stakeholders, and of course financial support. Later on, this regulatory SW could extend to cover more or all government agencies related to other trade and transport regulatory procedures and documentation.

As an alternative evolution path the Customs SW should be further expanded to electronically connect to other logistics service providers and entities in major ports to create a Port Community System (PCS) for streamlining all related operations for port efficiency.

With a more advanced level, the governments could establish an integrated SW environment by electronically linking their regulatory Single Window with their Port Community Systems to streamlining all regulatory, transport and commercial transactions for major airports and sea ports.

In this paper, we propose a simplified evolutionary and staged model for SW long-term evolution that can be used by policymakers and managers to (a) assess their current status by comparing with different stages and their preferred functions in the proposed model, and (b) determine the next stage for their next step of development.

This paper also identifies some particular challenges that Asia-Pacific countries will need to address going forward to ensure the success of the single window planning and implementation. Some challenges and critical success factors in managing SW feasibility study, SW design, planning and implementation are identified in this paper. The challenges can be divided into different levels i.e. strategic or policy level, management level, technical ICT implementation level, and operation level. For example, some of these challenges need high-level strategic decision makers to actively take their parts, e.g. those related to how can we engage and create the political will to strategically support and sustain the SW initiative, how can the country institutionalize and turn those political will into routine management and effective inter-agency collaborative platform among different Ministries and business stakeholders. Many challenges need active participations from middle management and technical personnel in different areas, e.g. business process reform, document simplification and harmonization, and interoperability.

To manage those multifaceted challenges in transforming SW vision into reality, this paper proposes a systematic approach for guiding planning, implementation and operations of SW environments. The paper also examines case studies and lessons learned from Single Window implementations in the Asia-Pacific region.

Based on this material, the paper suggests five questions for policy-level discussion at the 2013 Asia-Pacific Trade Facilitation Forum:

- What would be a common model for the evolution of Single Windows in the Asia Pacific region?³ This common evolution model would help policymakers and managers to assess their current development status, and then determine the next step for the development of their SW.
- Based on such an evolution model, how to effectively conduct a feasibility study and to formulate an implementation plan for the next step of SW development?
- How to establish a dialogue between the public and private sector stakeholders that need to support the implementation and to collaborate in the operation of the SW?
- How to improve the exchange of structured, electronic data among the regulatory agencies and between the agencies and the private sector companies that are using the Single Window?
- How to create a regional and global environment for fostering more interconnection and interoperability among different ICT platforms and among different forms of SWs that have been set up to manage and secure exchange of goods and services in the global economy.

Although recommendations are preliminary at this stage and will be revised in light of discussions at the Forum, we suggest that policymakers and managers would benefit from the following points in mind:

- International organizations or the country especially those in the early stage of single window study should conduct capacity building programmes to support policy makers and managers in the planning of Single Window projects and the establishment of a collaborative environment for its operation.
- Guidelines and lessons learnt on governance, business and operational models for SW sustainability should be made available. Guidelines could focus on how to develop the business case, estimation of costs and benefits, sustainability, possible mechanisms for revenue collection or free-of-charge services, implementation models and how to set up Special Corporate Vehicles (SCV) to implement, operate and further develop the SW.

1. Introduction

Trading goods across borders require traders to duly complying with a vast number of commercial, transport and regulatory procedures and documentation requirements. In recent years, these requirements have become more complicated as a result of increasing attention to security concerns, safety and health measures, border protection and control by governments. However, to remain competitive in this rapidly changing and increasingly complex trading environment, traders and governments have the challenge to conduct their business and regulatory procedures faster but at lower costs and more effectiveness.

As trade competition continues to intensify worldwide, reducing the time and costs involved in moving goods through the supply chain has become essential for all economies especially the developing countries, landlocked and least developed countries. Consequently, several trade facilitation measures including simplification and automation of procedures and documentation requirements for conducting trade across borders have been adopted as important elements of many national and regional economic development strategies. The experience from many economies with good performance in trading across borders shares common features. Many of them allow electronic information submission and processing, linking customs and other regulatory agencies through an electronic single window platform, using risk-based inspections, overcoming geographical barriers

³ This issue was also raised in Tat Tsen (2011).

through regional cooperation, sparking competition by making private participation easier, and improving transparency to minimize costs⁴.

This paper discusses lessons learned from several on-going national and regional single window implementation initiatives in the Asia-Pacific region. Some common natures of single window implementation are observed including its evolutionary long-term development life cycle, critical success factors, and project management challenges. Recommendations and approaches will be addressed with an aim to ensure that the single window facilities being developed in many more economies could lead to actual significant improvement in trade facilitation performance.

Section 2 in this paper provides basic background of the Single Window (SW) by referring to the original definition offered by UN/CEFACT published in 2005, but later adopted by many economies with different interpretations and approaches. Essentially, the Single Window facility can be an effective platform for supply chain connectivity whose relevant stakeholders can better be coordinated and enhanced. Some evidences about the effectiveness of SW implementation on trade facilitation performance are provided.

Section 3 discusses some lessons learn and observations about the single window implementation in several Asia-Pacific economies. Single window has been adopted in many economies in this region but with different types, scopes and approaches. One common observation is its evolutionary long-term development life cycle since single window initiatives deal mainly with several government agencies and different business stakeholders and they normally are large-scale change management projects. Consequently, several economies have established their SW implementation from a small scope and then growing larger later - mostly starting with electronic Customs systems, then linking electronically with other government agencies (OGA), or electronically connecting with several logistics service providers at major ports. We observe that different types of inter-organization information exchange platforms and interoperability among them have been implemented in many economies. Some of them are related to paperless Customs systems, e-sanitary and phyto-sanitary certificates issuing systems, and electronic permit systems for importing, exporting and transiting several types of goods.

Section 4 discusses several issues about challenges and bottlenecks in formulating SW plans and in managing the implementation of SW projects. Challenges and critical success factors are addressed. A state-of-the-art systematic approach for collaborative project management is proposed such that reasonable plans and single window implementation can be effectively conducted to ensure the success of SW establishment and to reach its expected significant improvement in trade facilitation performance.

Section 5 provides examples of attempts to solve bottlenecks and challenges as described in the previous section. This section discusses the evolution and connectivity of a regulatory National Single Window (NSW) of Thailand.

Challenges and further discussion topics are provided in Section 6. Section 7 provides recommendations, while conclusions are summarized in the last section.

⁴ <http://www.doingbusiness.org/~media/GIAWB/Doing%20Business/Documents/Annual-Reports/English/DB12-Chapters/Trading-across-borders.pdf>

2. Description of the Sector

2.1. Definition of Single Window

Difficult access to international markets can prevent the growth of businesses and economies of scale. Making trade across borders easier but safer is, therefore, essential for business and government to maintain national trade participations and even necessary to increase the competitiveness of domestic industry. Many governments recognize this and have set strategies for trade facilitation improvement by simplifying their commercial, transport and regulatory procedures and documentations but at the same time meeting safety and security concerns also.

Over the past 10 years, one of key strategies that has gained considerable momentum and been adopted by many economies around the world is so-called "Single Window". Developed by its Centre for Trade Facilitation and electronic Business (UN/CEFACT) in 2004, UNECE published "Recommendation 33 - Guidelines on Establishing a Single Window." This recommendation defined the Single Window as a "facility that allows parties involved in trade and transport to lodge standardized trade-related information and/or documents to be submitted once at a single entry point to fulfill all import, export and transit-related regulatory requirements."

According to the World Bank Trading Across Borders report (2012), economies with the most efficient trading environments share common features. Those economies allow traders to exchange information with customs and other control agencies electronically. They also use risk-based assessments to limit physical inspections to only a small percentage of shipments and thereby reducing customs clearance times. Those mentioned features are the key functions normally provided by the electronic Single Window platforms. Based on the Trading Across Borders report in 2013⁵, out of the 185 economies surveyed, 71 have implemented a Single Window. These Single Windows have been established in various forms to address specific needs, resources and stages of context of individual economies.

A Single Window is a one-stop facility, mostly enabled by the use of ICT, that allows electronic exchange of information between traders and government to reduce the complexity, time and costs involved in international trade.⁶ According to the initial definition of SW, this facility should virtually link not only traders and customs but also several regulatory agencies involved in trade and transport through an electronic Single Window environment. In the best case, a regulatory electronic Single Window may include the following features:

- allowing traders to lodge standardized information and documents through a single entry point to fulfill all import, export and transit related regulatory requirements, e.g. for getting electronic Customs declaration approval, import/export electronic permits, healthy and quarantine electronic certificates, or other electronic information related to cargos or associated vehicles.
- sharing relevant information with several government agencies involved in trade and transport regulations,
- providing coordinated controls and inspections by various government authorities,
- allowing electronic payment of duties and other charges,
- facilitating private participants including banks and insurance companies as well as other public agencies such as immigration and vehicle registration authorities, and

⁵ <http://www.doingbusiness.org/data/exploretopics/trading-across-borders/good%20practices#sub-menu-item-link> (as data collected by June 2012).

⁶ ADB and UNESCAP (2009), Design and implementing trade facilitation in Asia and the Pacific.

- providing a single source of trade-related regulatory and statistical information.

However, many economies have expanded the initial concept of SW and its functions to implement different forms of SWs not just connecting among several regulatory agencies, but also connecting among trade-related businesses, and/or transport-related entities to cover several parts of international supply chain connectivity. The next section, therefore, examines those different types and scopes of SW.

2.2. Different Models of Single Window

Referring to a discussion paper on "Ten Years of Single Window Implementation: Lessons Learned for Future," proposed during the Global Trade Facilitation Conference in December 2011, some observations were discussed that are also useful to policy makers and managers in the Asia and Pacific region.

Economies have implemented very different models of Single Window ranging from integrated Customs Single Window, to sophisticated Port Community Systems (PCS), or extending to other government agencies to establish regulatory Single Window. Some more advanced economies have extended their regulatory SW to business-to-business electronic transactions, some establishing interoperability among those different exchange platforms, and some becoming a part of regional platforms.

For the past 10 years, we can notice that the Single Window concepts implemented around the world do not strictly follow the original definition of the Single Window facility as set out in UNECE Recommendation 33 which was largely referring only to the regulatory Single Window. The actual implementations showed that Single Windows have generally been adopted as large inter-organization collaborative platforms that facilitate and automate business processes and data exchange among a selected set of stakeholders along the international supply chain.

Another discussion paper⁷ provides similar observations and analyses further in details the role of different types of inter-organization information exchange systems (called IOSs) based on a different set of closely-related stakeholders in the global trade. It argues that the interoperability among different inter-organization collaboration and information exchange platforms (IOSs) in global supply chains will be the key success factor to future supply chain efficiency.

In Section 3, we will examine in more details of those different models of SWs that have been implemented in the Asia-Pacific region. Next section provide some evidences indicating benefits of SW environments in trade facilitation performance.

2.3. Single Window and Trade Facilitation Performance

The Single Window can enhance the availability and authenticity of information thereby reducing fraud, expedite and simplify information flows between trade and government agencies and can result in a greater harmonization and sharing of the relevant data across governmental systems, bringing meaningful gains to all parties involved in cross-border trade. The use of such a facility can result in improved efficiency and effectiveness of security and official controls, and can reduce costs for both governments and traders due to better use of resources.

⁷ A discussion paper on the 7th Tranche of the UN Development account, "Trends for collaboration in international trade: building a common Single Window Environment," submitted by Somnu Keretho, Kasetsart University and Markus Pikart, UNECE, September 2013.

Based on an expert survey conducted during the Asia-Pacific Trade Facilitation Forum (APTFF) in 2012⁸, a report was provided with a correlation analysis for 26 economies in the Asia-Pacific region. The report stated that the countries with good logistics performance indicators and efficient trading-across-border transactions⁹ are often those implementing advanced trade facilitation measures including electronic Single Windows.¹⁰ This particular survey examined the development stage of Single Window environments at the national levels and revealed that Republic of Korea, Thailand, Japan, Singapore and Malaysia are the best performances in adopting single window platforms, whilst the countries with lower trade facilitation performance indicators including Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, Pakistan, and Sri Lanka do not have national single window platforms in operations yet.¹¹ However, most of these economies are in the process of establishing such environments. The report also noted that even though China does not have national single window systems, it does have very advanced single window systems at the provincial level. For example, a very advanced Single Window platform provides operational services in Shanghai Port significantly making it one of the busiest and most efficient ports in the world.

Several economies have reported positive results from the adoption of electronic single-window systems. As also reported in the World Bank trading-across-border report of 2012, the Korea Customs Service estimates that its single-window system brought some \$18 million in benefits in 2010, part of the overall economic benefits that year of up to \$3.47 billion from the agency's trade facilitation efforts¹².

The implementation of TradeNet, the Singapore Single Window, also led to big gains in government productivity. Trade can be considered as the world's first national single window for trade established in 1989. This electronic platform brings together more than 35 border agencies in this connected environment. In term of a good gain in government productivity, Singapore Customs reported that for every \$1 earned in customs revenue it spends only 1 cent—a profit margin of 9,900%.

The Single Window environment in Japan called NACCS has greatly contributed to the reduction of cargo clearance time and streamlining of user's businesses and government regulations for import and export procedures, the. While the number of the import declarations has been tripled in 20 years (1991-2009), but because of this SW environment the time needed for the customs clearance of import goods has been shortened to less than a third in this time period. Interfaces between NACCS and systems of the relevant Ministries were initiated in 2003, and have contributed to further shortening processing time for procedures related to the trade and international logistics since then. The result of the estimation of benefits by a company as an example, Mitsubishi Research Institute Inc. (March, 2005), was 55.2 billion yen/year (benefits of the private sector user: 22.7 billion yen/year and benefits of customs: 32.6 billion yen/year) while the implementation costs of NACCS was 9.7 billion yen/year¹³.

Based on the trade transaction cost for import and export goods to and from Thailand provided in the World Bank trading-across-borders database of 2007 and after 2008, it is estimated that logistics cost savings because of the regulatory reform enabled by its Paperless Customs and National Single Window contribute to about US\$ 1.5 billion annually¹⁴.

⁸ UNESCAP Trade and Investment Division, Staff Working Paper (2013), Trade Facilitation and Paperless Trade in Asia: Results from an Expert Survey.

⁹ For details on logistics performance indicators and trading-across-borders database, please refer to <http://go.worldbank.org/7TEVSUEAR0> and <http://www.doingbusiness.org/data/exploretopics/trading-across-borders> respectively.

¹⁰ For more detailed analysis, please refer to UNESCAP Trade and Investment Division, Staff Working Paper (2013), Trade Facilitation and Paperless Trade in Asia: Results from an Expert Survey (page 51).

¹¹ Pakistan's Federal Board of Revenue announced in March 2013 the formal launch of its Web-Based One Customs (WeBOC), an online computerised system, that can be regarded as a precursor to a paperless Customs single window. <http://www.thenews.com.pk/Todays-News-3-163973-WeBOC-formally-launched-across-Pakistan>

¹² Korea Customs Service. 2011. The Embodiment of Business-Friendly Environment by KCS Challenges. Seoul.

¹³ World Bank. 2012. Trading Across Borders Report.

¹⁴ UNNExT Brief No. 08, August 2010, "Toward a Single Window Trading Environment: Developing a National Single Window for Import, Export and Logistics in Thailand."

The Asia-Pacific region hosts both the most and least efficient economies in conducting international trade transactions. According to the World Bank's Trading Across Borders Indicators (2013)¹⁵, the top-3 most efficient economies and the top-4 least efficient economies in the world are members of this Asia-Pacific region.

3. Review of the Current Status

3.1. Current Single Window Implementation in the Asia-Pacific Region

According to an expert survey conducted during the APTFF 2012¹⁶, seven (7) out of 26 countries participating in the survey have established nationwide electronic national single window systems in operations. These countries include **Indonesia, Japan, Malaysia, Philippines, Republic of Korea, Singapore** and **Thailand**.¹⁷ Amongst them, on average, over 80% of agencies involved in regulating trade, imports and exports are connected to their National Single Window.

All major sea ports and airports are connected to the National Single Window environments in **Japan, Malaysia, Republic of Korea, Singapore, and Thailand** while in Indonesia only a small percentage of sea ports are connected to the national single window. Japan's NACSS, the most advanced SW platform, has integrated their electronic connectivity to not just paperless Customs systems and other regulatory agencies (the scope of "trade-regulatory SW"), but also transport-regulatory authorities (the scope of "transport-regulatory SW") and logistics service providers in within those ports (the scope of "PCS"). Meanwhile, the trade-regulatory NSW of Thailand has been deployed national-wide to all seaports, airports and land ports but Thailand still have the challenge to collaborate among transport stakeholders in sea and air ports to establish any holistic Port Community System (PCS). Among these countries, Indonesia and Philippines are still at the stage of implementation of key functions (as listed in Section 2.1) to their National Single Window systems.

Republic of Korea and Singapore have also very well advanced their trade-regulatory Single Window environments, called uTradeHub and TradeNet respectively, by electronically connecting traders with all government authorities in charge of different regulations on goods. Three (3) economies in Asia, including Hong Kong, Republic of Korea and Singapore, have evolved their platforms to now cover other types of electronic B2B commercial transactions, e.g. electronic trade financing including e-L/C (letter of credits), and electronic insurance policy. This type of extended B2B -transaction SW is in the Singapore's TradeXchange, Hong Kong's Digital Trade and Transport Network (DTTN), and Korea's uTradeHub.

Another observations in the advanced economies like Singapore and Republic of Korea, they have established different electronic SW platforms for Port Community Systems that are not directly interconnected with trade-regulation SW. The PortNet of Singapore can be considered as another type of SW at the port level but not electronically connecting with TradeNet, and KLNNet in Republic of Korea is running their PCS systems for port level operations also not directly linking with uTradeHub. However, some synergies could be leveraged if these different types of SWs in the economy are interconnected but sound business cases and return on investment analysis should be conducted in details.

It is noted for another country, **China**, that should be classified as having very advanced Single Window systems, although not at the nationwide level. This situation could be particularly true for

¹⁵ <http://www.doingbusiness.org/data/exploretopics/trading-across-borders>

¹⁶ UNESCAP Trade and Investment Division, Staff Working Paper (2013), Trade Facilitation and Paperless Trade in Asia: Results from an Expert Survey.

¹⁷ Azerbaijan has also developed and put into operation a single window facility managed by its State Customs Service.

any large countries like China - where the organizational structure of such huge country does not easily allow to establish only one centralized national single window. Instead, provincial governments with major sea ports have developed their own well-integrated single window systems at the port level. For example, the single window system at the Shanghai Port¹⁸ virtually interconnects Customs, several other government agencies, transport service providers and traders for well efficient and effective coordination among them.

In the second tier, another ten (10) out of 26 countries are in the process of putting a single window in place including **India, Kazakhstan, Kyrgyz Republic, Mongolia, Myanmar, Russian Federation, Tajikistan, Turkey, Uzbekistan, and Viet Nam**. The progress status of the countries are different, e.g. some are just awarded with finance support for implementation, some during on-going procurement procedures, and some during implementation.

It should be noted that the countries in this group in the process of National Single Window implementation have already established electronic and automated customs systems. This is quite natural, since the national single window envisions the electronic environment that extends on the top of customs automation systems to electronically link to other regulatory agencies.

The rest of the countries according to the expert survey conducted by UNESCAP have no single window. However, most of these countries are in the process of conducting detailed feasibility studies, formulating implementation plans, searching for funding and resources, or preparing for their implementation. For example, Sri Lanka has just completed one version of a feasibility study on implementing national single window in December 2012¹⁹. Cambodia has conducted several study visits in some countries including technical consultation as a preparation for formulating single window implementation plans.²⁰ To ensure the success, these developing countries, including least developed and landlocked countries, need a good management approach for single window planning and implementation. They should have the capability to address properly all critical success factors. Since there are so many challenges in this endeavor, a systematic approach for collaborative project management is suggested in this paper to effectively manage and formulate detailed feasibility analysis, implementation plans, and manage all key components to its actual implementation and to realization.

First, it should be recognized first on "what" we want to achieve when we talk about "single window" including setting up some measurable goals. Therefore, the next section will discuss the goals or possible scopes of the single window that we want to develop. Realizing that the single window is a long-term evolutionary journey, we need a map (roadmap) to assess where we are and plot out where we want to go in a phasing fashion. The next section offers an evolutionary roadmap for long-term single window development.

When we set our goals then we will discuss on the "how" to achieve those goals in section 3.3, particularly on how to conduct feasibility, design the target architectures, formulate the plans, and manage the execution of the plans.

¹⁸ <http://www.easipass.com>

¹⁹ Sri Lankan Government - National IT Industry Promotion Agency, and NIPA (December 2012), "Feasibility Study - Implementation of Paperless National Single Window."

²⁰ Referring to one Cambodia official visit to Thailand and the UNNEX Capacity Building Workshop for Cambodia Single Window Implementation, 28-29 March 2013, Bangkok.

3.2. An Evolutionary Development Model in Establishing Single Window

Establishing a Single Window is typically a massive undertaking involving interlinking and information sharing with Customs and several government agencies responsible for different trade and transport regulations, and also with trading community. Creating a Single Window at the country scale requires tremendous efforts, cost, time, changes of mindset and more importantly, strong political will and effective inter-agency collaborative platforms. Therefore, most governments choose an **evolutionary or incremental step-by-step** rather than a “big bang” **approach** to their Single Window projects.²¹

Proposed by the United Nations Network of Experts for Paperless Trade (UNNExT)²², Figure 1 shows a simplified evolutionary model to developing a Single Window. Economies can use this evolutionary model as a reference to (a) assess the current stage of Single Window implementation in their economies and (b) decide on the next stage of development.

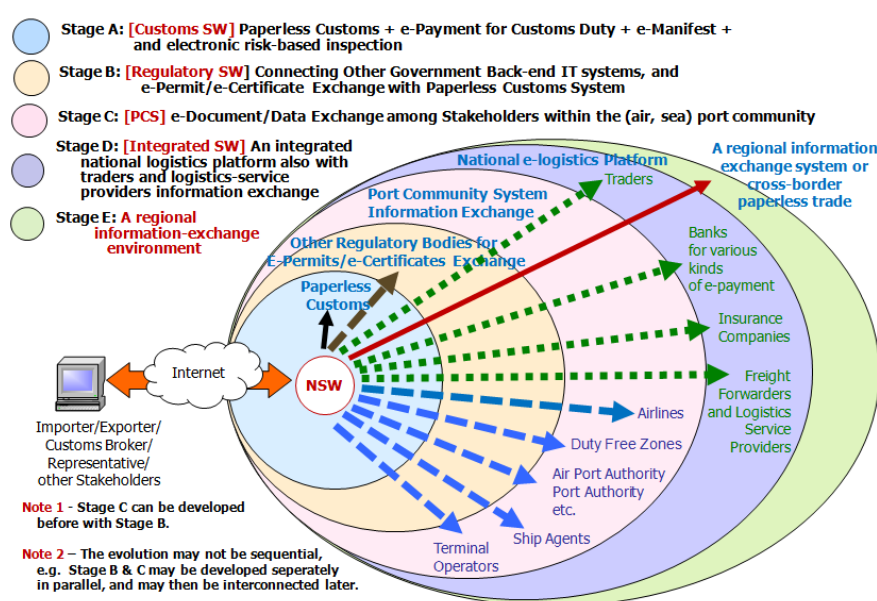


Figure 1. An evolutionary development model for establishing single windows

This figure is aimed to illustrate that this evolutionary model can be used as a long-term development roadmap and also as a simplified reference model for any country engaging in implementing single window environments. Policy makers and policy managers can use this reference model to (a) assess the current development status of the country by comparing to different stages in the model, and (b) decide the next stage as the future target for the stepwise implementation. However, this model is very simplified one and it does not necessary mean all these stages must be implemented in sequential fashion. Depending on business cases, readiness and resources, each economy may decide to develop few stages in this model in parallel or slightly different orders as discussed below.

Before we explain the key characteristics of each SW stage of development and their preferred features, some pre-Single Window development should be mentioned to provide some context and other related electronic trade facilitation measures that have been adopted in some economies before the term SW have been coined as following.

²¹ The Azerbaijan example is notable in this regard: the single window facility was put into operation on the basis of four agencies. Over time, additional agencies involved in regulation of foreign trade have joined the single window, making it a more comprehensive and robust facility.

²² UNNExT Single Window Planning and Implementation Guide, UNESCAP and UNECE, 2012. (<http://www.unescap.org/unnxt>)

Pre-SW Stage: Basic Customs automation

The pre-Single Window evolution starts from the early days of Customs automation (e.g. 30 years ago in some economies) when many Customs authorities first begin to automate only their basic back-end or internal operations and functions using basic electronic systems.

Pre-SW Stage: Trade point portals

The development of national “Trade portals” serves as an information source for trade-related regulatory procedures and possibly with trade information, and data about business and market opportunities. In some countries, they also function as one stop import/export centers, where players in trade transactions, e.g. Customs, several regulatory agencies, banks, chambers of commerce, freight forwarders, transport and insurance companies, provide their services under a single physical location or virtually linked with the electronic Trade Point. As a very recent example in 2012, Lao PDR has just established such a trade portal with consolidated information about trade-related and regulatory procedures.

Pre-SW Stage: Traditional trade Electronic Data Interchange (EDI)

One method for electronically transmitting documents between organizations, e.g. traders and customs department, was the use of basic communication through a value added network (VAN) provider. The technique called traditional Electronic Data Interchange (EDI) had been popularly adopted in the past before the Internet era. VAN providers were used in this scheme to provide supporting services between the senders and the receivers of EDI transmissions. They receive EDI transactions, examine the "from" and the "to" information and route the transaction to the final recipient. They also provide value-added services such as software services, mailbox services, and information re-transmissions. Many countries in the Asia-Pacific region still have such the systems for traders to send electronic customs declarations to customs information systems. However, traders still need to submit electronic customs declarations and also physical paper declarations in most of those countries using this type of solutions.

SW Stage A - Paperless Customs Single Window

With a more secure and authentication scheme, Paperless Customs environments should be developed such that only electronic customs documents shall be submitted through secure Value Added Networks (VANs) or through secure internet connection without requiring physical visit and without submitting physical papers at a later stage.

In the best case as illustrated in Figure 2, this Paperless Customs system should also provide other integrated Customs operations, e.g. Customs duty e-payment, e-manifests for vessels and containers, information-based risk assessment and customs clearance. With secure electronic information provided before the arrival of the goods at the borders, risk-based assessments can be analyzed and effectively limit physical inspections to only a small percentage of shipments, thereby reducing customs clearance times. This platform essentially provides a single interface between traders and the Customs Authority.

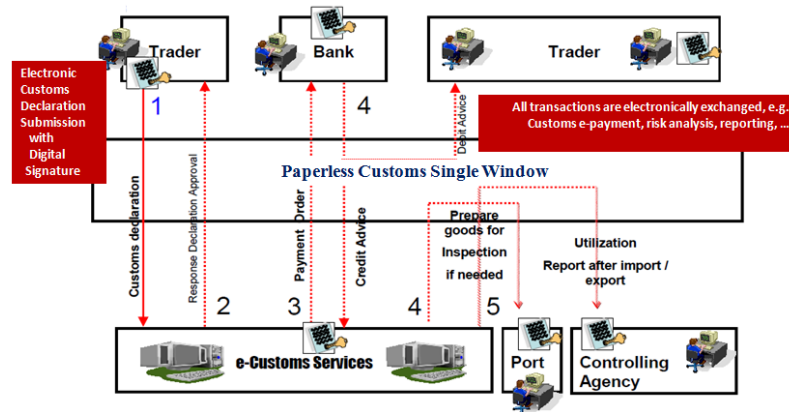


Figure 2. Preferred features and business process scenarios for paperless Customs SW²³

UNIPASS of the Republic of Korea and Paperless Customs of Thailand are good examples of Paperless Customs single window as discussed in this stage.

SW Stage B - Regulatory National Single Window

After linking traders and Customs electronically, countries can develop a regulatory Single Window e-document exchange system linking several other government agencies dealing with the regulations related to import and export cargoes, vessels and vehicles. This system allows electronic application submission for issuance of electronic import/export-related permits and certificates and their information exchange between government agencies. A trade-related regulatory single window is conceptually illustrated in Figure 3. The more challenging development feature of this regulatory Single Window is the single submission feature where traders submit their export or import data only once to the Single Window. Such a regulatory Single Window Entry facility is then able to communicate with several authorities to obtain any necessary permits and certificates.

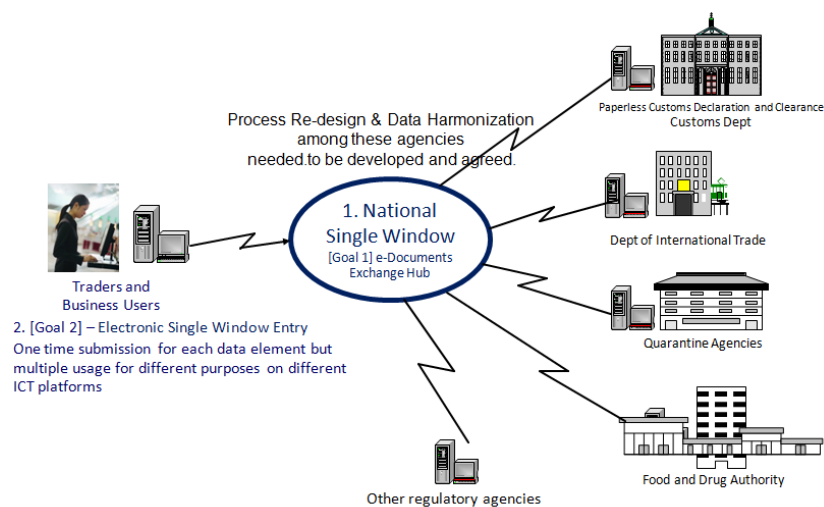


Figure 3. A typical regulatory Single Window virtually linking several government agencies

²³ Referring to "Thailand NSW" presentation by S.Kiatjanon, Thai Customs Department, February 2010 in Nepal.

Due to the sheer number of agencies and diverse interest, regulatory SWs can be divided into two models, namely "trade-related regulatory SW" and "transport-related regulatory SW." Many economies in Asia and the Pacific have established a trade-regulatory SW since there are several authorities having mandates in regulating different types of goods and trade, e.g. issuing goods-related permits, licenses and certificates.

While those goods carried by transport means along the international supply chain, those transport means also need to be regulated but by a different set of authorities. For the case of sea mode of transportation with the scope which is larger than just coordination of stakeholders within the port physical vicinity but also on the ocean ways, another specific transport-regulatory SW, called "Maritime Single Window" is also emerged in the literatures and in actual implementation. Maritime SW is an integrated information exchange platform between vessels, sea border regulatory agencies, safety and traffic control authorities, vessel piloting, and port authority.²⁴ In even better case, the Maritime SW may be connected to the trade regulatory NSW to further leveraging and streamlining related services.

SW Stage C - Port Community System (Port SW)

The next stage in developing a Single Window is to integrate the private-sector stakeholders and transport/logistics service providers, and also with regulatory agencies, e.g. freight forwarders, haulers, terminal operators, warehouses and vessels, at major airports, seaports, or borders. The systems are referred to as Port Community Systems (PCS)²⁵.

More precisely, the term "Port Community Systems (PCS)" can be defined as an electronic information exchange facility that simplifies information exchanges between non-public entities in a port. The services may include functions as also found in single windows, such as single window entry, electronic transaction and exchanges. However, in other literatures or in real situations, exchange of information with regulatory agencies, especially with Customs clearance systems, is also the key functions of a PCS environment. Therefore, most of the PCS systems have some electronic connectivity with electronic Customs systems but with different levels of sophistications.

SW Stage D - National e-Trade or e-Logistics Platform (Integrated SW)

The level of development at this stage normally includes the collaboration processes as of Stage B (regulations) and C (port), i.e. the interoperability between paperless Customs, trade-related regulatory SW, transport SW (e.g. Maritime SW), and PCS. However, the coordination between traders and transport service providers, e.g. freight forwarders and transporters (transport transactions), and between traders and other supporting business entities (commercial transactions), e.g. traders and banks, can also be further enhanced with electronic information exchange.

At this advanced stage, many economies have established a national e-trade and e-logistics integrated platform by interconnecting not just regulatory electronic platforms (regulatory NSW) and PCS, but also electronic exchange among transport service providers e.g. traders,

²⁴ Port Single Window is similarly defined in the "Guidelines for Setting Up a Single Window System for Maritime Transport," International Maritime Organization, November 2011.

²⁵ For a better definition and details, please refer to "How to develop a port community system," European Community Port System Association, 2011.

freight forwarders, transporters, ship agents and carriers, and among business sectors such as importers, exporters, banks and trade finance, cargo insurance companies.

SW Stage E - Cross-border Paperless or Regional Information Exchange Platform

Electronic cross-border information exchange is an important instrument for regional integration and increased security, trust and collaboration between trading countries. National single windows, especially with a cross-border e-document exchange platform between two economies and among several economies within a regional grouping contribute and enable the economic integration by easing the flow of goods but with better risk management and simplified procedures between those economies.

An evolutionary model for phased development of single window is proposed as shown in Figure 4 . By adding another 3 pre-single window evolutions, this classification is the same as shown in Figure 1 but with assessment of current progress of some economies. The assessment shown in the figure was the author's own opinion just to demonstrate the usefulness of this reference model. The numbers in parentheses are the rankings of economies based on the World Bank Trading Across Borders Indicators (collected in 2012).

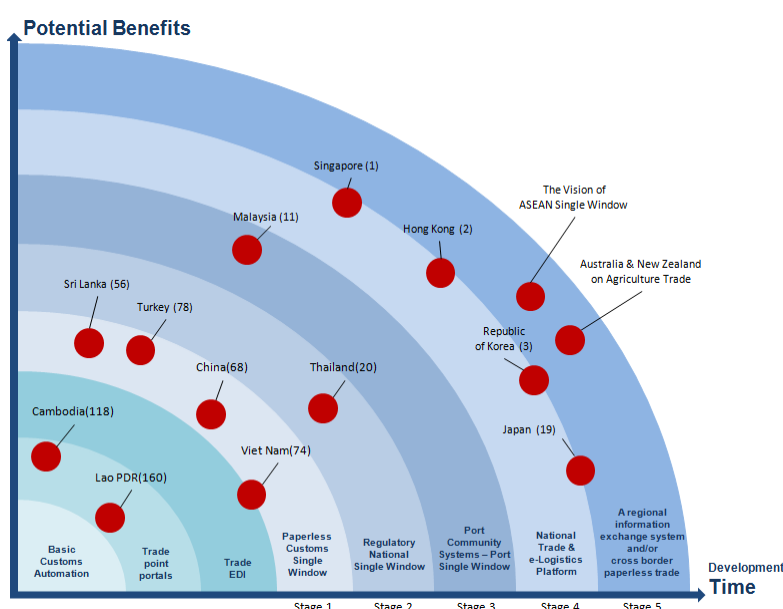


Figure 4. An evolutionary development model for establishing single window²⁶ with assessment of current progress in some economies

Some economies in their early stage of SW evolution may start with a limited form of the Single Window, for example to cover either a specific procedure such as export declarations, then the whole paperless Customs SW, and then extending the interconnection to other regulatory agencies, to create an environment of the regulatory National Single Window (NSW).

For example, the National Single Window currently in operations in Thailand can be classified as a regulatory Single Window platform (Stage B as in Figure 1 & Figure 4). Therefore, the next development target is to plan and establish Port Community Systems at major seaports and airports

²⁶ The numbers in the parenthesis are the country rankings based on the World Bank Trading Across Borders Indicators (collected in 2012) (www.doingbusiness.org). The classification is provided by the author but further adapted from the UNNExT Single Window Planning and Implementation Guide (2012), UNECE Single Window Roadmap (2006) and Tat Tsen (2011).

(Stage C), and then also implement interoperability between the regulatory NSW, the PCSs and other logistics services providers (Stage D).

In some economies, the single window may be applied just in a very specific area such as at the port, so called “Port Single Window” or “Port Community System²⁷” which involves also not just customs or some regulatory agencies, but also the logistics service providers involved within that port, e.g. freight forwarders, haulers, terminal operators, and ship agents. the Shanghai port community system in China, and Japan's NACCS are examples in this category which are ones of the most full-fledged inter-organization single windows. These two large inter-organization information systems, the first one at a port level the second one at the national level, are connecting to not just Customs automation systems but also other regulatory agencies and several logistics service providers.

One important observation should be noted here again, that in many advanced trading economies such as EU countries and China, the centralized "National Single Window" has not been implemented, probably because a centralized concept for all types of information flow and coordination is too complicated and not flexible enough to cover the many specialized needs of their highly developed supply chains²⁸. Instead a very diverse and advanced set of inter-organization information exchange and collaboration systems (IOSs) has emerged and many of these platforms are in rapid expansion.

Full-fledged inter-organization national single windows typically evolve from Customs automation system, and then extending the Customs automation system to cover other stakeholders to become a port community system. In some countries, the Customs automation systems are interlinked electronically to other regulatory and government agencies to become a regulatory Single Window. In an even more advance countries, e.g. Japan's NACCS, the regulatory Single Window platform is also interconnected and interoperable with Port Community Systems.

Single Window development typically follows a gradual evolutionary and staged pathway as suggested in this section. However, there are still a lot of challenges and bottlenecks in planning and implementing even to turn the staged vision into reality. The next section will address critical success factor and challenges, and how we can apply a systematic approach to manage such complicated SW projects.

4. Challenges

There is a need to create a common framework for Single Window planning and development that encompasses and interconnects different forms of Single Window models. Such a vision must take into account the different Single Window models appropriate also to the least developed and landlocked economies, and developing countries and with emerging technologies and requirements of international trade. The use of a common evolutionary model for Single Window development will help policymakers and managers determine the state of their national Single Window and define objectives for the next step of implementation. A simplified evolutionary model for SW development discussed in Section 3.3 provides one such attempt but still needs to be refined to real reflecting vast scopes and different models of SWs.

The topics for APTFF-2013 discussion should include the exchange of best practices at least on the following topics:

- Single Window evolution
- Challenges on how to plan and implement the different scopes of SW, e.g. trade-regulatory NSW, transport-regulatory SW, or Port Community Systems (PCS).

²⁷ For more concepts about Port Community Systems, refer to "The role of Port Community Systems in the development of the Single Window," a white paper published by European Port Community Systems Association, 15th June 2011.

²⁸ Referring again to a discussion paper on the 7th Tranche of the UN Development account, "Trends for collaboration in international trade: building a common Single Window Environment," submitted by Somnuk Keretho, Kasetsart University and Markus Pikart, UNECE, September 2013.

- Approaches for connectivity and interoperability between different types of SWs, e.g. the interoperability between NSW and PCS for better supply chain connectivity.
- The development of sustainable business models
- Possible pilot projects but towards actual deployment for data exchange among national Single Windows including the development of enabling technical and legal frameworks.

4.1. Critical Success Factors for Implementing Single Window

There are many complicated challenges to be managed such that the SW Vision could be transformed into reality. Complexity of single window implementation can be handled by decomposing its challenges into smaller and more manageable components. As discussed in the UNNExT SW Planning and Implementation Guide (2012), there are 10 challenges that must be carefully addressed as following., and here we classify these challenges into 4 categories as shown in Figure 5.

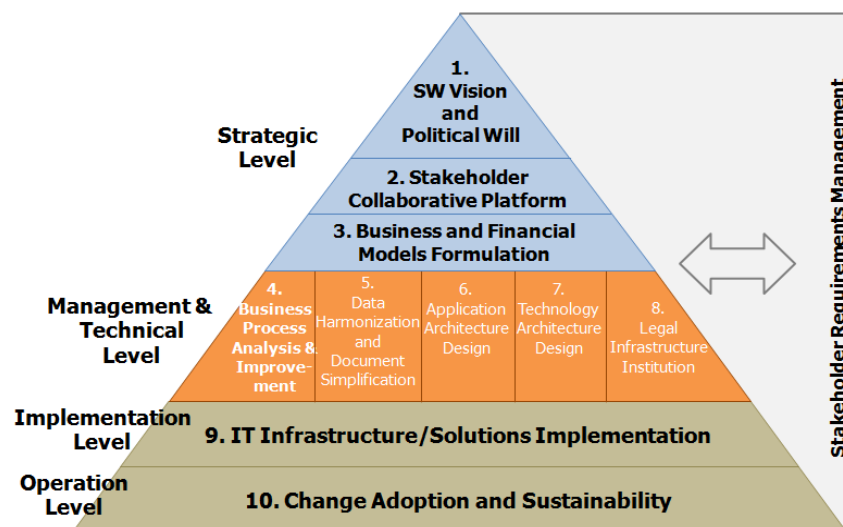


Figure 5. Ten critical challenges for SW implementation

At the strategic level

1. SW Vision Articulation and Political Will Creating
2. Stakeholder Collaborative Platform Establishment
3. Business and Financial Models Formulation

At the management & technical level

4. Business Process Analysis and Improvement
5. Data Harmonization and Document Simplification
6. Service Functions (Applications Architecture) Design
7. Technology Architecture Design including Technical Standards and Interoperability
8. Legal Infrastructure Institution

Implementation level

9. IT Infrastructure and Solutions Implementation

Operation level

10. Change Adoption and Operations

The “as-is” or current conditions of these 10 components must be analyzed, and then the target or “to-be” architectures (again of these 10 components) need to be developed and agreed. Normally many iterations of these activities are needed before we can politically, organizationally and financially agree on the “to-be” architectures before we make any commitments to implement.

To create political will and support by the high-level policy makers, the economy should attempt to establish it as the national commitment, e.g. by developing a national strategic plan, and obtaining endorsement by the highest political institution, e.g. the Prime Minister, the Cabinet, the President. If possible, the establishment should be the establishment as a regional commitment, e.g. MOU signing among the Head of States to develop the National SW and the regional SW.

The SW vision and goals should be articulated, refined and verified for its feasibility in the process of collaboration and analysis among key stakeholders. These vision and goals should be aligned with national and/or regional policy directions, and where possible with quantitative indicators and timeline. For example, the SW environment should achieve 25% faster, cheaper and better of World Bank's Trading-Across-Borders-Indicators within 5 years.

With the political will, the economy must strive to institutionalizing those policy directions by transforming into normal routine management, e.g. by institutionalize or legalizing the National High-level Committee, and Project Management Group for steering and overseeing the SW implementation, by the Cabinet's mandates and by laws. Inter-agency collaborative platform should be formally set up with the support from several working groups, governments, business sectors and academia. This collaborative platform involves key stakeholders both public and private representatives engaging in the interactive process where collaborative actions, such as planning, coordination of task-specialized activities, determination of norms/rules and institutional structures, are jointly made.

Business and financial models for implementing, operating and sustaining the SW projects are another strategic decision that should be made. There are varieties of business/finance models that must be explored before any final decisions. There is no unique model for a Single Window, as operators adopt their systems to specific national/regional conditions and requirements.

For example, financing can be provided by the State like in cases of Republic of Korea, Azerbaijan and Philippines, by the private sector e.g. Germany, or with the help of a private-public partnership, e.g. Hong Kong SAR, Japan, Malaysia, Singapore).

The use of Single Window facilities can be compulsory, e.g. in Republic of Korea and Senegal, or voluntary like in Hong Kong SAR, Japan, Malaysia, and Republic of Korea. Services vary and may be provided free of charge (Azerbaijan) or based on various payment schemes (Hong Kong SAR, Japan, Malaysia, Singapore, Thailand). Even within one country there may be more than one service providers offering different models, e.g. UNIPASS of Korea Customs provide a single window facility free of charge, while a KTNET single window charges fees from its users.

All those 10 critical challenges should be analyzed, refined and agreed upon the best conditions for the context of the economy and these analysis needs to go through several rounds of fact finding, articulation, feasibility check from each other angles since there are all inter-related. Therefore, this paper provides a systematic approach on how to manage the feasibility study, design, planning and execution of SW projects.

4.2. A Systematic Approach for Collaborative Project Management

A systematic approach for collaborative project management is proposed in five (5) stepwise pathway as shown in Figure 6.

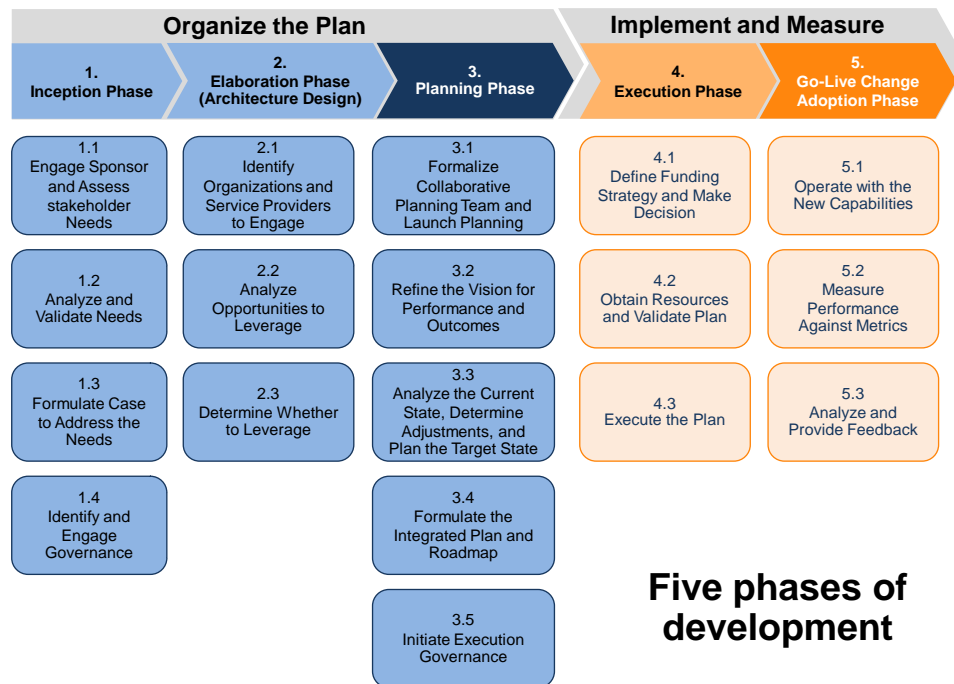


Figure 6. Five Phases of Development for Collaborative Project Management

The basic concept of each phase is as following

1. Inception Phase – developing a concept paper for preliminary and initial discussion
2. Elaboration Phase – conducting detailed feasibility study and SW architecture design of all aspects (not just the technical IT issues)
3. Planning Phase – formulating a SW high-level master and action plan
4. Investment and Execution Phase (Implementation & Oversight)
5. Change Adoption and Operation – operating with the new environment, and measuring performances and lessons learnt collection

Inception phase

An inception phase should be conducted as an initial preparation at least for two occasions, i.e. when a country starts to think about the possible implementation of a Single Window, or when a country thinks about the possible extensions of the existing Single Window.

The purpose of this inception phase is to develop a concept paper aiming to facilitate initial discussion on the SW and then to obtain feedback and approval to go forward for an in-depth study into the need

for, approach to and feasibility of a Single Window. Normally, this initial concept paper is not intended to seek commitment or agreement for the implementation of a Single Window yet.

The inception phase can be conducted by understanding the “As-Is” conditions and propose the “To-Be” architectures of these 10 key components mainly at the conceptual feasibility and policy level, but some technical components should be roughly explored their feasibility, potential benefits, and risks. Some of the following topics should be explored, for example, stakeholders’ requirements and any related national agenda, articulation of possible SW vision and goals, possible SW scope, business process and document requirements for export-import of some strategic goods and/or strategic ports, what are the existing ICT systems, what should be the “to-be” SW architecture (which SW levels in the Roadmap), and what could be the platform for stakeholder collaboration, etc.

With the concept paper, a meeting should be conducted, if possible, among high-level (as possible) key government representatives and relevant business representatives to discuss the proposed Single Window concept. Upon the feedback from the meeting, and presuming that a positive decision is reached to proceed with a recommended next step, an elaboration phase (a detailed feasibility analysis), the meeting should establish a Project Management Group made up of senior representatives of the key agencies who will be directly involved in implementing and utilizing the Single Window.

Elaboration phase

The purpose of the elaboration phase is to conduct a detailed feasibility study and design of the target architecture. This phase aims to provide decision-makers with an insight into the options available and their consequences for each involved governmental authority and each involved business sector, e.g.

- detailed analysis of “as-is” and “to-be” procedures and documentation
- possible service functions to be provided by the “to-be” applications architecture,
- technical and interoperability issues,
- legal infrastructure
- implementation options i.e. full or phased implementation) and the possible steps,
- financial and business concerns, e.g. options for investment (by public, public-private, or private only), and other required resources, free services or fee charge for services, how to sustain the operational cost, etc.
- potential benefits and risks,
- a time frame, and
- implementation and management institutions and strategy.

A task force (or called, a working group) comprising of all stakeholders’ representatives should be identified and mandated to involve actively in this study, normally by the assistance of a consulting team who may do the detailed analysis, reporting, facilitating the discussion, consolidating the feedback and refinement of the final report and most (if not all) of the agreement.

During a detailed feasibility study, all components related to SW implementation will be analyzed again but with much more details than in the preliminary study. It is strongly recommended that this study be based on direct face-to-face interviews with key players in both government and trade, complemented by relevant questionnaires to collect information from a wider circle of potential participants and users.

Several meetings among key stakeholders and focus groups for presentation of findings, obtaining feedbacks and refinement should be conducted.

Suggested topics to be included in the feasibility study are

1. Project Needs and Potential Benefits of a Single Window
2. Organizational Aspects and Interagency Collaboration

3. Human Resources and Training
4. Legal Infrastructure
5. Procedures, Information and Documentation
6. Technical aspects of a Single Window
7. Impact assessment
8. Implementation Options
9. Financial Options and Business Models
10. Promotion and Communications

To conduct the feasibility and detailed blueprint, we suggest to use the architecture concept i.e. trying to describe all key issues as clearly as possible, where possible using diagrams/pictures to help conveying the messages so that verification, validation, and refinement can be less ambiguous, and then common understandings and agreements by relevant stakeholders can be easily reached. We should develop several architectures/pictures and each picture should be suitable for a different viewpoint with several smaller components with inter-relationships (links) between those components. Governing principles should be defined for each component and/or each relationship, e.g. who is in charge of each component.

The outcome of this study should be presented, refined, then (hopefully) finalized, and approved by the high-level Project Management Group. The next step of formulating a (more detailed) SW master plan can be mandated by the Project Management Group as a way forward. In some cases, the SW high-level master plan may be developed along with the feasibility study and then at the same time be approved by the Project Management Group.

Financial Analysis and Business Model Study

It is necessary to conduct a comprehensive cost benefit analysis, e.g. cost of design, cost of development, cost of maintaining individual agency systems; its potential benefits; and who should finance the development and operations e.g. a system totally financed by government or possibilities for public-private partnerships with some service fees. Some or all parts financially supported by private sectors with service fees, or public agencies. Clarity on the financial model can significantly influence decision-makers to support the implementation of the system.

Planning Phase and Investment Decision

After the inception and elaboration phases, the SW vision, objectives, and target “to-be” architectures and associated issues should be commonly clarified and agreed. Here, the architecture analysis has already been conducted, i.e. we’ve already agreed upon the clear “to-be” architecture, we can now readily take those components and put into sub-projects with tasks (what to do), schedule, and plans including risk management plan.

To formulate the SW project implementation plan, again we should revisit all SW critical components, but with the perspectives of prioritizing these components into sub projects with associated deliverables, tasks, schedules, budgets, management issues, project risks, other necessary resources, etc.

Key contents that should be included in a SW implementation plan are as following.

- Clear project's scope, goals and objectives
- Key deliverables, responsibility for delivery, time frame and milestones
- Defined roles and responsibilities of various participants, including a clear agreement on who is in charge of the project (the project manager) and the level of authority of this manager

- Specification of the management and monitoring responsibilities of the project manager and the line of authority and communication between the project manager, Project Management Group and the Task Force;
- Clear communication strategy for communicating with project stakeholders and potential users on a regular basis throughout the implementation, including an agreement on what information needs to be communicated with what groups and in what manner and frequency;
- A clear and agreed project budget, including financial and human resources; it is essential that the necessary funds and personnel be allocated to the project from the outset;
- A clear statement of the project risks (such as a cutback in budget, delay in required legal reforms, etc.) and an agreed response plan (to the best extent possible) to manage these risks, including contingency plans for high-level risks;
- Agreement on the criteria for measuring the project success;
- An agreed project review and feedback mechanism to provide ongoing monitoring of the project process and to deal with any changes in the implementation that may be required.

The draft project plan could be developed by a consulting team or a designated task force, but it should be reviewed and refined by relevant stakeholders through several rounds of communication and discussions.

The final SW high-level master plan should be commonly understood by all relevant stakeholders, and then agreed by the senior-level Project Management group.

The project should be approved and funded by the government authority or those high-level policy decision makers who have the resources and can grant the sponsorship for the project.

In summary, a SW implementation plan is to align SW objectives with the current As-Is context, and to define clear paths for development and deployment of the target To-Be Single Window. After a SW implementation plan is initially established, approved and financially funded, it would become the reference for future solution implementation and deployment initiatives responding to SW requirements.

Over the time, this implementation master plan should be periodically refined with changes in environments or business objectives in order to stay as strategic and reference.

5. Examples of overcoming challenges

Thailand SW - Challenges and Lessons Learnt

The establishment of National Single Window (NSW) is recognized as an important national strategy to improve the efficiency in documentary procedures required to expedite the movement of goods in and out of Thailand. It allows Thailand to pursue its agenda on Trade Facilitation Enhancement within the National Logistics Development Strategy (2007-2011) and its associated national long-term vision to become the world class logistics hub for Indochina as firstly identified in Thailand Logistics Master Plan (2005-2009) with an aim to achieve:

- A reduction in average trade transaction cycle time from 24 (World Bank's Trading Across Border Report, 2004) to 14 days by 2011.
- A reduction in trade logistics costs from 19% of GDP in 2005 to 16% by 2011.

In addition to the responses toward national policy directives, the NSW implementation in Thailand also reflects the need to foster regional integration and realization of an ASEAN Economic Community by 2015. In this regard, the Thai government together with governments of ASEAN member economies signed the "Agreement to Establish and Implement the ASEAN Single Window". According to the Agreement, Thailand is obligated to develop the system as well as make necessary procedural changes and regulatory reforms to enable the operation of National Single Window by the year 2015.

Thailand National Single Window is the facilitator to enable electronic data and information sharing and integration between government to government partnerships (G2G), government to business partnerships (G2B) and business to business partnerships (B2B) for import, export and logistics. It also facilitates international cross-border data and information sharing between government and business sectors in Thailand and other countries. National Single Window system enables a single submission of electronic document by the trader such as a single data preparation and submission of customs declaration and duty payment for customs release and clearance.

Thailand NSW vision, goals and its planning have been aligned and integrated as a part of the related national/regional development agenda with quantitative goals and the time frame as shown in Figure 7.

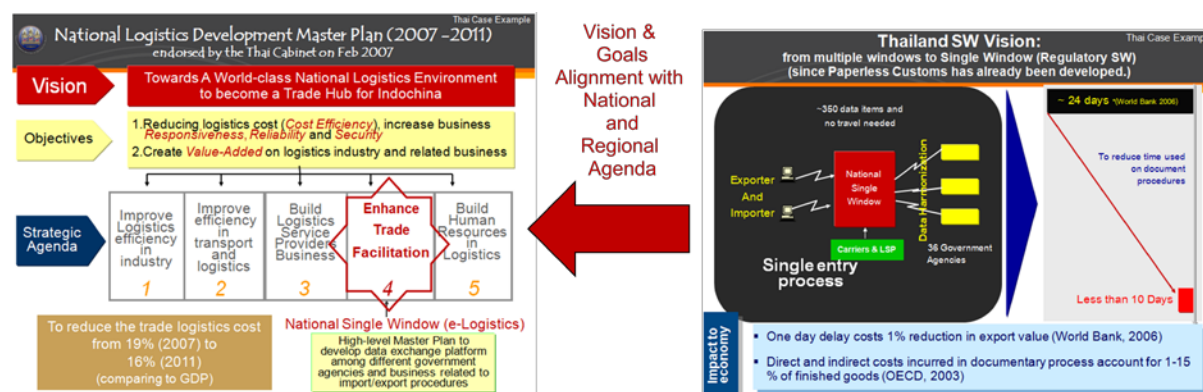


Figure 7. Alignment of Thailand NSW vision and goals with national development agenda

The quantitative goals and its action plans of Thailand NSW had been analysed and refined according to several rounds of analysis, e.g. business process analysis, to-be business process suggestion and agreement, data harmonization, high-level architecture and envision. Figure 8 illustrates a high-level NSW architecture that had been used to collaborate with several stakeholders during the early stage of our inception and elaboration phase.

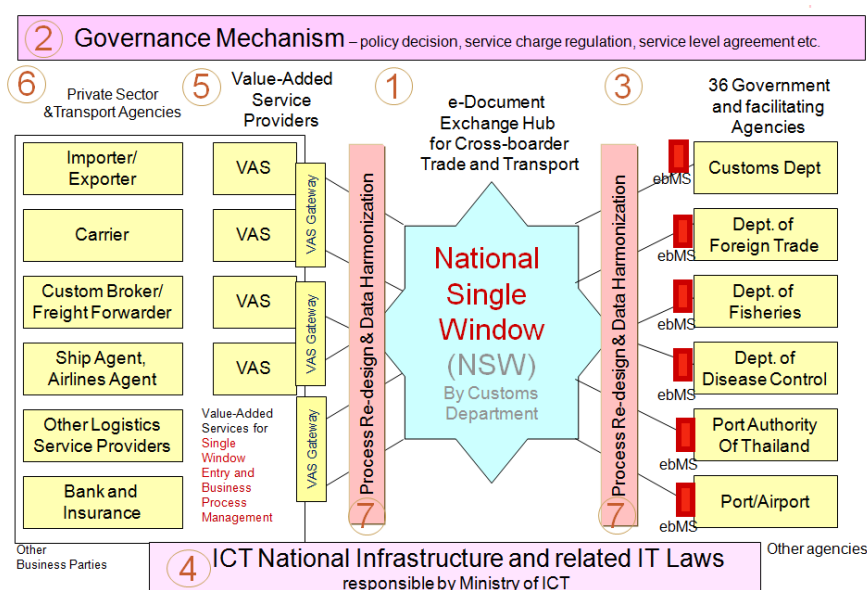


Figure 8. A high-level NSW architecture for Thailand

Then later on, core components of Thailand NSW environment leading by the Customs Department have been further refined with the following:

- National gateways for electronic document exchanged among government and business sectors in relation to import, export and logistics including international cross-border data and information sharing between Thailand and other countries.
- National standard data set for import, export and logistics sectors
- Steering Committee on Quality Assurance for Thailand National Single Window.
- Registration system for electronic document sharing, single window entry, tracking and security service accessed by 35 government authorities and 125,000 Thai companies.
- Architectures of the National Single Window system, technical standards and relevant legal frameworks.
- Single window entry point for data capture of customs declaration and permit required for import and export of goods.
- International cross-border data exchanged facilitator between Thai government authorities and other countries, such as the Customs Department, Live-Stock Department, Department of Agriculture, Department of Foreign Trade, Department of Industrial Work and Thai Chamber of Commerce.
- International cross-border data exchanged facilitator between Thai businesses and their business partners in oversea.
- Call center available 24 x 7.
- National Action Plan for Thailand National Single Window enhancement (2011-2015).

The collaborative effort of Thai Customs Department, Ministry of Information and Communication Technology, Ministry of Commerce, Ministry of Agriculture and many other government agencies and business stakeholders in simplifying procedural and documentary requirements as well as automating all import/export-related process as part of National Single Window initiative since 2008 yields remarkable outcomes, including an annual cost saving of about 1,600 million USD as discussed earlier.

Political will creation, strong lead agency, partnership between government and business sector, enhancement of national legislation, resource mobilization to establish a SW environment, data harmonization and standardization, awareness and capacity building for government and trade are considered by key stakeholders the critical factors to be effectively managed.

However, the current stage of Thailand NSW is now only the trade-regulatory SW. By applying the evolutionary model as described in this paper, the next step of NSW development in Thailand could be to engage high-level policy decision makers to further develop further transport-regulatory SW, esp. Maritime SW, the Port Community Systems, and the interoperability and integration among them.

6. Questions for discussions

Based on this material, the paper suggests five questions for policy-level discussion at the 2013 Asia-Pacific Trade Facilitation Forum:

- What would be a common model for the evolution of Single Windows in the Asia Pacific region?²⁹ This common evolution model would help policymakers and managers to assess their current development status, and then determine the next step for the development of their SW.
- Based on such an evolution model, how to effectively conduct a feasibility study and to formulate an implementation plan for the next step of SW development?

²⁹ This issue was also raised in Tat Tsen (2011).

- How to establish a dialogue between the public and private sector stakeholders that need to support the implementation and to collaborate in the operation of the SW?
- How to improve the exchange of structured, electronic data among the regulatory agencies and between the agencies and the private sector companies that are using the Single Window?
- How to create a regional and global environment for fostering more interconnection and interoperability among different ICT platforms and among different forms of SWs that have been set up to manage and secure exchange of goods and services in the global economy.

7. Recommendations

This paper recommends a systematic approach to guide the planning and implementation of SW environment. By treating this endeavor as a collaborative long-term project, this paper proposes that the systematic approach based on enterprise architecture concept should be adopted as following.

For SW planning and implementation,

- Establish the Measurable Trade Facilitation Vision (and Single Window Vision) at the national level, and aligning with the regional level, e.g. 25% better, faster and cheaper Trading Across Border within 5 years
- Conduct detailed business process analysis (based on, for example, some key export products, strategic trade partners, and/or through major ports) to identify bottlenecks, and also propose better, faster and cheaper business process (that is feasible by e-documents, and Single Window functions).
- Prioritize the SW scope(s) for iterative implementation based upon the context, needs and the strategy of the country, e.g. development of e-customs declaration first, then e-cargo clearance at some major ports, etc.
- Analyze and agree upon the new business process as the common understanding for the within-the country connectivity, and regional connectivity e.g. single-stop cargo clearance at the border).
- Conduct the targeted documents and the associated data simplification/harmonization based on international standards, e.g. UNLK, WCO DM 3.0, CCL etc.
- Adopt international standards for technical interoperability, e.g. ebXML Message Services, and UN/CEFACT XML NDR.
- Develop your SW architectures (Business, Data, Application, Technology)
- Handle your change management carefully

For capacity building,

- International organizations or the country especially those in the early stage of single window study should conduct capacity building programmes to support policy makers and managers in the planning of Single Window projects and the establishment of a collaborative environment for its operation.
- Guidelines and lessons learnt on governance, business and operational models for SW sustainability should be made available. Guidelines could focus on how to develop the business case, estimation of costs and benefits, sustainability, possible mechanisms for revenue collection or free-of-charge services, implementation models and how to set up Special Corporate Vehicles (SCV) to implement, operate and further develop the SW.

8. Conclusion

The following three most critical issues normally determine whether the SW project will succeed or fail, and also determine how fast or how effective the SW projects will proceed and gain the acceptance.

- National commitment is the most critical factor for the successful implementation of a SW environment.
- The SW political will needs to be institutionalized, i.e. transforming this policy mandate into routine management mechanisms among those stakeholders involving in the planning, implementation and operations of SW.
- Inter-agency collaboration and coordination mechanism among governments and trade is one of the most important issues to enable the success of SW implementation.

We discuss in this paper that policy makers and managers need a systematic approach to address SW implementation challenges. An evolutionary SW roadmap is proposed as a long-term development roadmap and also as a reference model for assessment of the “as-is” conditions and then prioritization or guiding the “to-be” architecture of the future SW development. We propose also that the complexity of Single Window can be handled by decomposing its challenges into smaller and more manageable sub-components. Ten (10) critical success components are proposed such that analysis of “as-is” conditions and synthesis of “to-be” architecture should be systematically articulated and agreed among key stakeholder. A five (5) step-step project management approach is also proposed to guide policy makers, policy managers, and relevant stakeholders on how to conduct analysis, formulate plans and manage the implementation.

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